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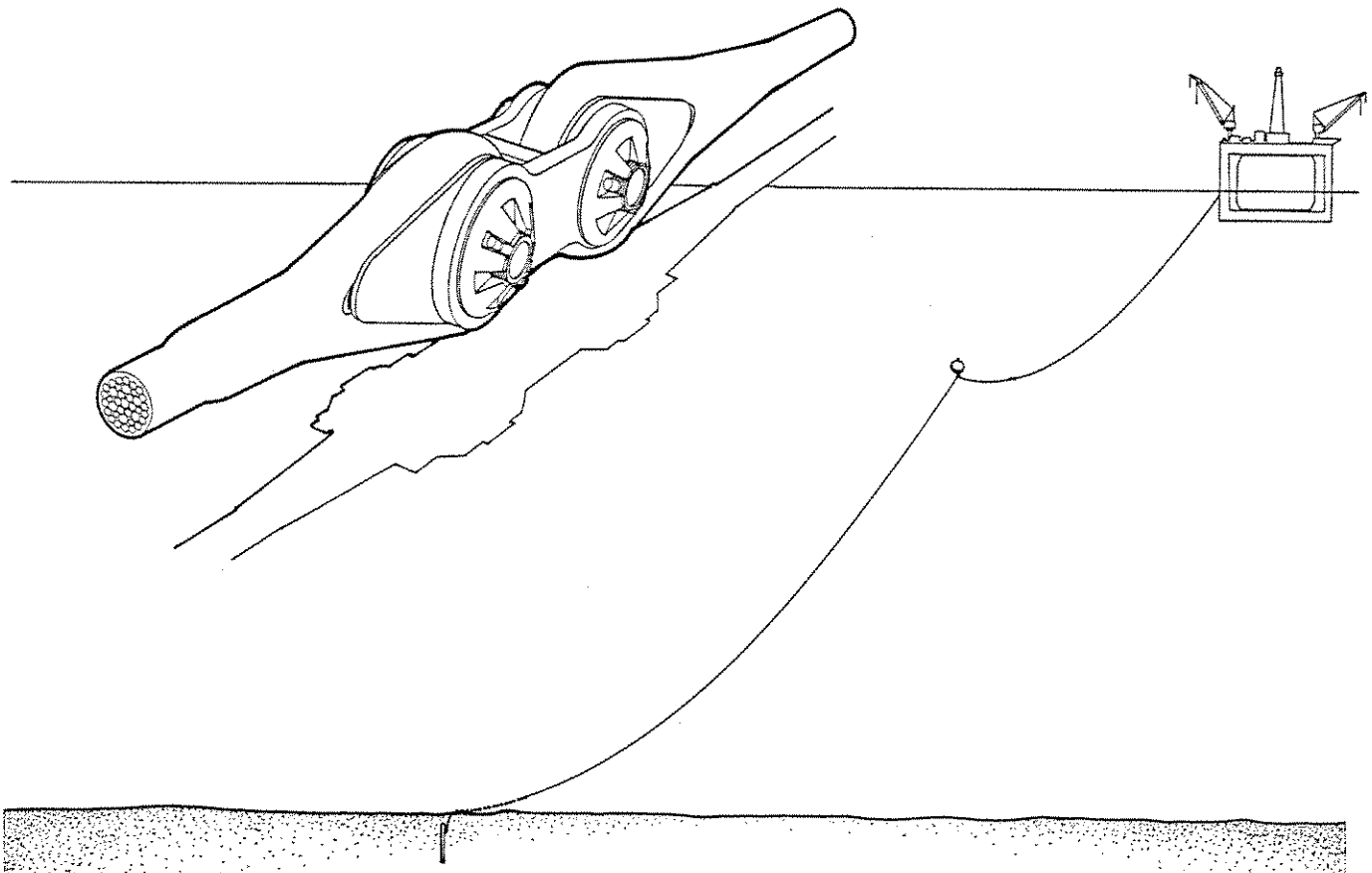
DEEPWATER MOORING
JOINT INDUSTRY PROJECT

ARAMID VERSUS STEEL
PHASE 1 EXTENSION
VOLUME 2 - APPENDICES



OMEGA MARINE SERVICES INTERNATIONAL, INC.
11757 KATY FREEWAY, SUITE 1212
HOUSTON, TEXAS 77079

OMEGA MARINE ENGINEERING SYSTEMS, INC.
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APRIL 1990

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TABLE A-1

ANALYSIS AND COST SUMMARY MATERIALS, HARDWARE, AND SPECIAL EQUIPMENT

CASE NUMBER	TABLE NO.	CONCEPT	WATER DEPTH (FSW)	LINE MAT'L	NUMBE OF POINTS	WATCH CIRCLE	ANCHOR CHAIN LENGT (FT)	ANCHOR CHAIN DIA. (IN)	GROUND WIRE LENGT (FT)	GROUND WIRE DIA. (IN)	RISER LINE LENGT (FT)	RISER LINE DIA. (IN)	INTER. LINE LENGT (FT)	INTER. LINE DIA. (IN)	PLATFORM LINE LENGTH (FT)	PLATFORM LINE DIA. (IN)	INTER. BUOY SIZE (KIP)	INTER. BUOY DEPTH (FT)	RISER BUOY SIZE (KIP)	RISER BUOY DEPTH (FT)	PRE-TENSIO (KIP)	ANCHOR LOADS HOR. (KIP)	ANCHOR LOADS VERT. (KIP)	COSTS MOOR. COMP. (M$)	COSTS PLAT. COMP. (M$)	COSTS TOTAL (M$)
T1A16N	A.1-1	TAUT-LEG	1,500	HA	16	10%	90	5.500			1110	6.000	300	5.625	2500	6.000			125	1040	167.0	1627	675	15,073	7,898	22,971
T1A16N-A	A.1-2																									
T1A16T	A.3-1			HA	16	10%	90	5.500			1110	6.000	300	5.625	1000	6.000			300	762	273.0	1401	1092	14,383	7,974	22,357
T1S16N	A.1-3			HA	16	2%	90	5.500			1110	6.000	300	5.625	2500	6.000			100	1050	358.0	1678	675	14,022	8,871	22,893
T1S16T				AS	16	10%	750	5.625			1260	6.000			1350	6.000			106	900	140.0	1876	681	14,402	9,087	23,489
T3A16N-A	A.1-4	TAUT-LEG	3,000	HA	16	10%	250	5.500			2610	5.940			2150	5.500			200	1500	183.5	1407	789	18,835	7,729	26,564
T3A16N	A.1-5																									
T3A16T-A	A.3-2			HA	16	10%	250	5.500			2610	5.940			800	5.500			100	1362	97.0	1466	951	16,113	7,003	23,116
T3A16T	A.3-3			HA	16	2%	250	5.500			2610	5.940	1350	5.940	2150	5.500			200	1500	442.5	1390	978	18,831	9,181	28,011
T3S16N	A.1-6			HA	16	2%	250	5.500			2610	5.940			800	5.500			100	1500	275.0	1317	900	16,696	7,304	24,000
T3S16T				AS	16	10%	250	5.500			2610	5.940	1350	5.940	2150	5.500			200	1500	442.5	1390	978	18,831	9,181	28,011
T6A12N	A.1-7	TAUT-LEG	6,000	HA	12	10%	250	5.750			2610	5.000			800	5.500			100	1500	275.0	1317	900	16,696	7,304	24,000
T6A12T	A.3-4														1500	5.000			400	1500	260.4	1111	1037	22,571	7,304	29,875
T6A16N	A.1-8			HA	12	2%	250	5.625			5610	5.940			3150	5.875			70	2000	210.7	1389	1110	19,626	6,364	25,990
T6A16N-0	A.1-9			HA	16	10%	250	5.500			5610	5.940			3150	5.875			70	2000	409.7	1216	963	19,590	6,351	25,941
T6A16T	A.3-5			HA	16	10%	250	5.500			5610	5.500			3150	5.250			70	2000	166.5	1147	921	22,084	7,246	29,331
T6S16N	A.1-10			HA	16	2%	250	5.500			5610	5.625			3150	5.250					187.2	832	728	19,369	7,329	26,698
T6S16T	A.3-6			AS	16	10%	250	5.500			5610	5.500			3150	5.250			70	2000	311.0	954	745	21,903	7,135	29,038
T8A12N-0	A.5-1	TAUT-LEG	8,000	HA	12	10%	250	5.500			5610	5.000			3150	5.000			400	2000	234.4	991	709	32,820	6,209	39,029
T8A12T-0	A.5-2										5750	5.500			3000	5.250			400	2000	584.3	1134	789	35,498	8,496	43,995
T8S12N-2	A.5-3			HA	12	2%	250	6.250			7450	5.940			1950	5.625					200.0	1107	1445	17,760	6,515	24,276
T8S12T-2	A.5-4			HA	12	10%	250	6.000			7450	5.940			1950	5.625					275.0	994	1291	17,625	6,599	24,224
T8S12T	A.5-5			HA	12	2%	250	5.750	1850	6.000	5800	6.000	2000	6.000	2300	6.000	322	1570	200	2882	360.0	1310	808	43,412	6,869	50,281
T10A12N-0	A.5-6	TAUT-LEG	10,000	HA	12	2%	250	5.750	1850	6.000	5800	6.000	2000	6.000	2300	6.000	322	1570	200	2882	760.0	1447	908	43,459	9,060	52,519
T10A12T-0	A.5-7							5.625			7750	6.000			4000	6.000			531	3260	750.0	1349	992	51,236	8,857	60,094
T10S12N-2	A.5-8			HA	12	10%	250	6.250			9450	5.875			2950	5.500					210.0	1220	1390	21,764	6,688	28,452
T10S12T-2	A.5-9			HA	12	2%	250	6.250			9450	5.875			2950	5.500					440.0	995	1122	21,508	6,345	27,853
T10S12T	A.5-10			HA	12	10%	250	5.750	2950	6.000	7500	6.000	2300	6.000	2700	6.000	452	1771	200	3227	480.0	1099	964	56,486	6,759	63,244
C1A12N	A.2-1	CATENARY	1,500	HA	12	10%	250	5.750	2950	6.000	7500	6.000	2300	6.000	2700	6.000	452	1771	200	3227	960.0	1432	724	56,687	9,412	66,099
C1A12T	A.4-1						350	5.750			9750	6.000			6000	6.000			662	4625	980.0	1450	912	94,490	9,488	103,978
C1S12N	A.2-2			HA	12	2%	1200	5.000	3500	4.250	1400	4.625	1300	4.250	500	4.250					410.0	1000	0	11,834	5,028	16,863
C1S12T	A.4-2			AS	12	10%	1450	5.625	1700	5.375	3000	5.750	800	5.375	500	5.375					900.0	1589	0	15,538	8,299	23,837
C1S12T-1	A.4-3			AS	12	2%	1200	5.000	4500	4.250	1300	4.250	2100	4.250	600	4.250	50	*500	45	0	125.0	1000	0	14,626	4,981	19,607
C1S16T	A.4-4			AS	12	2%	1450	8.000	2600	5.500	1300	5.500	1600	5.500	700	5.500	50	*500	86	939	1000.0	1625	0	21,378	9,206	30,584
C1S16T-1	A.4-5			AS	18	2%	1550	6.125	1950	5.625	1300	5.625	1700	5.625	700	5.625			90	1015	1000.0	1730	0	20517	9544	30,061
C3A12N	A.2-3	CATENARY	3,000	AS	16	2%	1200	5.125	2500	4.625	1300	4.625	2200	4.625	700	4.625	20	*500	81	1106	700.0	1175	0	19679	9026	28,705
C3A12T	A.4-6			HA	12	10%	1200	5.125	2600	4.750	1300	4.750	2200	4.750	700	4.750			64	1112	750.0	1221	0	18899	9217	28,116
C3A16T	A.4-7			HA	12	2%	1400	5.000	4400	4.250	2800	4.625	2100	4.250	500	4.250					420.0	*1000	0	13,827	5,029	18,856
C3S12N	A.2-4			HA	18	2%	1900	5.625	1800	5.250	5200	5.625	1200	5.250	500	5.250					950.0	1432	0	20,646	8,008	28,654
C3S12T	A.4-8			AS	12	10%	1700	4.500	1650	4.375	6300	4.750	1200	4.375	500	4.375					650.0	1012	0	19,384	8,432	27,816
C3S12T-3	A.4-9			AS	12	2%	1500	4.125	6000	4.250	2800	4.250	2300	4.250	700	4.250	60	*500			180.0	*1000	0	19,772	5,029	24,801
C3S16T	A.4-10			AS	12	2%	1700	6.000	2600	5.500	2800	5.500	2900	5.500	700	5.500	175	*500	94	1450	1000.0	1481	0	29,826	9,014	38,940
C4A12N		CATENARY	4,500	AS	16	2%	1600	6.000	2800	5.500	2800	5.500	3000	5.500	700	5.500	175	*500	168	1588	1000.0	1457	0	31,271	8,930	40,202
C4S12N				HA	12	10%	1600	4.750	2600	4.500	2800	4.500	3700	4.500	700	4.500	100	*500	112	1898	1000.0	1069	0	27,854	8,781	36,635
C6A12N	A.2-5	CATENARY	6,000	AS	12	10%	1600	5.000	4500	4.250	3900	4.625	2900	4.250	500	4.250					430.0	*1000	0	17,553	5,234	22,787
C6A12T	A.4-11			HA	12	10%	1900	4.125	6100	4.250	4300	4.250	2500	4.250	800	4.250	70	*500	143	1450	235.0	*1000	0	24,020	5,029	29,049
C6A16T	A.4-12			HA	12	2%	1900	5.000	4500	4.250	5000	4.625	3300	4.250	500	4.250					440.0	*1000	0	18,237	5,496	23,733
C6S12N	A.2-6			HA	18	2%	4400	5.500	1000	5.375	7500	5.750	3300	5.375	500	5.375					1090.0	1456	0	33,937	9,133	43,070
C6S12T	A.4-13			AS	12	10%	4400	5.000	1000	4.875	7500	5.250	3300	4.875	500	4.875					790.0	1054	0	36,305	8,994	45,299
C8A12N	A.6-1	CATENARY	8,000	AS	12	2%	2300	4.125	6100	4.250	5800	4.250	2700	4.250	800	4.250	75	*500	192	1985	280.0	*1000	0	27,694	5,443	33,137
C8S12N	A.6-2			HA	12	10%	1900	6.000	3800	5.500	5800	5.500	5000	5.500	800	5.500	200	*500	332	2814	1100.0	1435	0	46,892	9,192	56,185
C10A12N	A.6-3	CATENARY	10,000	HA	12	10%	1900	5.000	7200	4.250	3300	4.250	7000	4.625	500	4.250					420.0	*1000	0	22,174	4,989	27,163
C10S12N	A.6-4			AS	12	10%	2300	4.875	5350	4.625	7800	4.625	3000	4.625	800	4.625	120	*500	312	2012	285.0	*1000	0	35,775	5,502	41,278
				HA	12	10%	2160	5.000	7700	4.250	3300	4.250	9100	4.688	500	4.250					445.0	*1000	0	25,352	5,065	30,416
				AS	12	10%	2300	5.125	5000	4.750	9800	4.750	3700	4.750	800	4.750	150	*500	411	2369	290.0	*1000	0	45,412	5,786	51,198

04/10/90

HA=HYBRID ARAMID AS=ALL-STEEL

* maximum expected

TABLE A-2
TOTAL INSTALLED COST SUMMARY
TAUT-LEG MOORING SYSTEMS - 1,500 THROUGH 10,000-FT. WATER DEPTH

04/11/90																
CASE NO.	T1A16N	T1A16T	T1S16N	T1S16T	T3A16N	T3A16T	T3S16N	T3S16T	T6A12N	T6A12T	T6S16N	T6S16T	T8A12T-0	T8S12T-2	T10A12T-0	T10S12T-2
SYSTEM	TAUT-LEG	TAUT-LEG	TAUT-LEG	TAUT-LEG	TAUT-LEG	TAUT-LEG	TAUT-LEG	TAUT-LEG	TAUT-LEG	TAUT-LEG	TAUT-LEG	TAUT-LEG	TAUT-LEG	TAUT-LEG	TAUT-LEG	TAUT-LEG
DEPTH (FT)	1,500	1,500	1,500	1,500	3,000	3,000	3,000	3,000	6,000	6,000	6,000	6,000	8,000	8,000	10,000	10,000
TYPE	ARAMID	ARAMID	STEEL	STEEL	ARAMID	ARAMID	STEEL	STEEL	ARAMID	ARAMID	STEEL	STEEL	ARAMID	STEEL	ARAMID	STEEL
NO. OF LEGS	16	16	16	16	16	16	16	16	12	12	16	16	12	12	12	12
WATCH CIRCLE	10%	2%	10%	2%	10%	2%	10%	2%	10%	2%	10%	2%	2%	2%	2%	2%
BUOY SIZE	200 K	200 K	200 K	? K	100 K	100 K	400 K	? K	70 K	70 K	400 K	400 K	-	200 K	-	200 K
MOORING																
COMPONENTS	$15,072,683	$14,021,700	$14,402,331		$16,112,520	$16,695,746	$22,570,740		$19,625,834	$19,589,667	$32,820,104	$35,498,418	$17,625,003	$43,458,314	$21,507,754	$56,686,548
PLATFORM																
COMPONENTS	$7,898,334	$8,871,209	$9,086,844		$7,003,162	$7,304,080	$7,304,080		$6,364,040	$6,350,877	$6,209,210	$8,496,339	$6,599,383	$9,060,018	$6,345,474	$9,412,202
MISCELLANEOUS																
Installation Aids	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,600,000	$0	$2,000,000	$0
Final Leg & Hook-up	$1,600,000	$1,600,000	$1,067,000	$1,067,000	$2,000,000	$2,000,000	$1,333,000	$1,333,000	$1,800,000	$1,800,000	$1,600,000	$1,600,000	$2,040,000	$1,380,000	$2,280,000	$1,560,000
SUBTOTAL	$1,600,000	$1,600,000	$1,067,000	$1,067,000	$2,000,000	$2,000,000	$1,333,000	$1,333,000	$1,800,000	$1,800,000	$1,600,000	$1,600,000	$3,640,000	$1,380,000	$4,280,000	$1,560,000
INSTALLATION																
D.P. DERRICK VESSEL																
Special Equipment	$2,000,000	$2,000,000	$1,800,000	$1,800,000	$2,900,000	$2,900,000	$2,700,000	$2,700,000	$3,900,000	$3,900,000	$3,700,000	$3,700,000	N.A.	N.A.	N.A.	N.A.
Installation Cost	$2,574,500	$2,574,500	$2,574,500	$2,574,500	$2,803,400	$2,803,400	$2,803,400	$2,803,400	$2,609,600	$2,609,600	$3,288,100	$3,288,100	N.A.	N.A.	N.A.	N.A.
TOTAL COST	$28,145,517	$28,067,408	$28,830,675		$30,819,083	$31,703,226	$36,711,220		$34,299,474	$34,250,183	$47,617,415	$52,582,858	$27,864,386	$53,899,332	$32,133,229	$67,858,749
D.P. DRILLSHIP	(Drill & Grouted Pile)															
Special Equipment	$600,000	$600,000	$500,000	$500,000	$600,000	$600,000	$500,000	$500,000	$600,000	$600,000	$500,000	$500,000	$600,000	$500,000	$600,000	$500,000
Installation Cost	$3,150,300	$3,150,300	$3,150,300	$3,150,300	$3,553,300	$3,553,300	$3,553,300	$3,553,300	$3,399,600	$3,399,600	$4,444,600	$4,444,600	$4,060,400	$4,060,400	$4,429,200	$4,429,200
TOTAL COST	$28,321,317	$28,243,208	$28,206,475		$29,268,983	$30,153,126	$35,261,120		$31,789,474	$31,740,183	$45,573,915	$50,539,358	$32,524,788	$58,459,732	$37,162,429	$72,587,949
D.P. DRILLSHIP	(Driven Pile)				(Driven Pile)											
Special Equipment	$1,100,000	$1,100,000	$1,000,000	$1,000,000	$1,100,000	$1,100,000	$1,000,000	$1,000,000	$2,100,000	$2,100,000	$2,000,000	$2,000,000	N.A.	N.A.	N.A.	N.A.
Installation Cost	$2,243,500	$2,243,500	$2,243,500	$2,243,500	$2,441,700	$2,441,700	$2,441,700	$2,441,700	$2,148,200	$2,148,200	$2,792,000	$2,792,000	N.A.	N.A.	N.A.	N.A.
TOTAL COST	$27,914,517	$27,836,408	$27,799,675		$28,857,383	$29,541,526	$34,649,520		$32,038,074	$31,988,783	$45,421,315	$50,386,758	$27,864,386	$53,899,332	$32,133,229	$67,858,749
D.P. MSV SEMI																
Special Equipment	$2,600,000	$2,600,000	$2,400,000	$2,400,000	$3,100,000	$3,100,000	$2,900,000	$2,900,000	$4,600,000	$4,600,000	$4,400,000	$4,400,000	N.A.	N.A.	N.A.	N.A.
Installation Cost	$2,280,600	$2,280,600	$2,280,600	$2,280,600	$2,473,400	$2,473,400	$2,473,400	$2,473,400	$2,309,700	$2,309,700	$2,888,200	$2,888,200	N.A.	N.A.	N.A.	N.A.
TOTAL COST	$29,451,817	$29,373,508	$29,236,775		$30,685,083	$31,573,226	$36,581,220		$34,699,574	$34,650,283	$47,917,515	$52,882,958	$27,864,386	$53,899,332	$32,133,229	$67,858,749

TABLE A-3
TOTAL INSTALLED COST SUMMARY
CATENARY MOORING SYSTEMS - 1,500 THROUGH 10,000-FT. WATER DEPTH

04/11/90	* C1A12N CATENARY 1,500 ARAMID 12 10% -	C1A12T CATENARY 1,500 ARAMID 12 2% -	* C1S12N CATENARY 1,500 STEEL 12 10% 45 K	C1S16T CATENARY 1,500 STEEL 16 2% 61 K	* C3A12N CATENARY 3,000 ARAMID 12 10% -	C3A16T CATENARY 3,000 ARAMID 16 2% -	* C3S12N CATENARY 3,000 STEEL 12 10% 94 K	C3S16T CATENARY 3,000 STEEL 16 2% 112 K	* C6A12N CATENARY 6,000 ARAMID 12 10% -	C6A12T CATENARY 6,000 ARAMID 12 2% -	* C6S12N CATENARY 6,000 STEEL 12 10% 192 K	C6S12T CATENARY 6,000 STEEL 12 2% 332 K	C8A12N CATENARY 8,000 ARAMID 12 10% -	C8S12N CATENARY 8,000 STEEL 12 10% 312 K	C10A12N CATENARY 10,000 ARAMID 12 10% -	C10S12N CATENARY 10,000 STEEL 12 10% 411 K
MOORING COMPONENTS	$11,833,844	$15,537,601	$14,625,900	$19,679,334	$13,827,000	$19,384,344	$19,772,004	$27,854,079	$18,237,324	$33,936,797	$27,693,972	$46,992,116	$22,173,557	$35,775,303	$25,351,570	$45,411,873
PLATFORM COMPONENTS	$5,029,140	$8,299,325	$4,981,158	$9,025,915	$5,029,140	$8,431,660	$5,029,140	$8,781,010	$5,496,084	$9,133,060	$5,443,140	$9,192,486	$4,989,261	$5,502,481	$5,064,894	$5,788,103
MISCELLANEOUS																
Installation Aids	$540,000	$540,000	$0	$0	$1,321,200	$1,781,600	$0	$0	$2,610,000	$2,610,000	$0	$0	$3,200,000	$0	$4,200,000	$0
Final Leg & Hook-up	$1,200,000	$1,200,000	$800,000	$1,067,000	$1,500,000	$2,000,000	$1,000,000	$1,333,000	$1,800,000	$1,800,000	$1,200,000	$1,200,000	$2,040,000	$2,040,000	$2,280,000	$2,280,000
SUBTOTAL	$1,740,000	$1,740,000	$800,000	$1,067,000	$2,821,200	$3,781,600	$1,000,000	$1,333,000	$4,410,000	$4,410,000	$1,200,000	$1,200,000	$5,240,000	$2,040,000	$6,480,000	$2,280,000
INSTALLATION																
DAMON CHOUEST																
Special Equipment	$1,420,000	$1,420,000	$920,000	$920,000	$1,420,000	$1,420,000	$920,000	$920,000	$1,420,000	N.A.	$920,000	$920,000	$1,420,000	$920,000	$1,420,000	$920,000
Installation Cost	$1,560,900	$1,560,900	$1,560,900	$2,080,000	$1,855,600	$2,474,000	$1,855,600	$2,474,000	$2,431,000	N.A.	$2,431,000	$2,431,000	$2,760,000	$2,760,000	$3,120,000	$3,120,000
TOTAL COST	$21,383,884	$28,557,826	$22,887,958	$32,772,249	$24,952,940	$35,471,604	$28,576,744	$41,362,088	$31,994,408	N.A.	$37,688,112	$60,735,602	$38,582,818	$46,997,784	$41,436,463	$57,517,976
D.P. DERRICK VESSEL																
Special Equipment	$1,600,000	$1,600,000	$1,200,000	$1,200,000	$1,600,000	$1,600,000	$1,200,000	$1,200,000	$1,600,000	$2,600,000	$1,200,000	$1,200,000	$1,600,000	$1,200,000	$1,600,000	$1,200,000
Installation Cost	$3,022,400	$3,022,400	$3,022,400	$4,029,800	$3,598,900	$4,700,000	$3,598,900	$4,700,000	$4,751,800	$4,751,800	$4,751,800	$4,751,800	$5,450,000	$5,450,000	$6,250,000	$6,250,000
TOTAL COST	$23,025,384	$30,199,326	$24,629,458	$35,002,049	$26,876,240	$37,877,604	$30,600,044	$43,868,088	$34,495,208	$54,831,857	$40,288,912	$63,336,402	$39,452,818	$49,997,784	$44,748,463	$60,927,976

* UPDATED COST FROM PHASE 1

Appendix A.1 - Taut-Leg, Nominal (10%), Watch Circle Designs

TABLE A.1-1
TAUT LEG MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE T1A16N - HYBRID ARAMID MOORING SYSTEM WITH 125 K RISER BUOY
16 POINT - 10% WATCH CIRCLE - 1,500-FT WATER DEPTH
MAX LINE LOAD =1771 K, PRE-TENSION = 167.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Riser Line, 6" Diameter Aramid	132.00	1110	$/ft.	16	2,344.3
2	Platform Line, 6" Diameter Aramid	132.00	2500	$/ft.	16	5,280.0
3	Pendant Line, 5 5/8" dia. Spiral Strand	135.80	300	$/ft.	16	651.8
4	125 kip Net Buoyancy Riser Buoy	200,000	1	Each	16	3,200.0
5	Connecting Links ($2.24/kip cap., 3 per leg)	11,901	1	$/Leg	16	190.4
6	Shackles ($1.10/kip cap., 3 per leg)	5,844	1	$/Leg	16	93.5
7	Triplates ($3.25/kip cap., 1 per leg)	5,756	1	$/Leg	16	92.1
8	Anchor Chain Section, 5 1/2" dia. ORQ	255.09	350	$/ft.	16	1,428.5
9	Driven Pile Anchor	112,000	1	Each	16	1,792.0
	Total: Mooring Line Components					15,072.7

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	149,154	1	$/Leg	16	2,386.5
2	Upper Fairleads ($29.38/kip mooring cap.)	52,032	1	$/Leg	16	832.5
3	Spooling Winches ($743.31/kip 15% mooring)	197,460	1	$/Leg	16	3,159.4
4	Linear Winches ($317.50/kip pretension cap.)	95,000	1	$/Leg	16	1,520.0
5						
	Total: Platform Components					7,898.3

TABLE A.1-2
TAUT LEG MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE T1A16N-A - HYBRID ARAMID MOORING SYSTEM WITH 300 K RISER BUOY
16 POINT - 10% WATCH CIRCLE - 1,500-FT WATER DEPTH
MAX LINE LOAD =1792 K, PRE-TENSION = 273.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Riser Line, 6" Diameter Aramid	132.00	1110	$/ft.	16	2,344.3
2	Platform Line, 6" Diameter Aramid	132.00	1000	$/ft.	16	2,112.0
3	Pendant, 5 5/8" dia. Spiral Strand	135.80	300	Each	16	651.8
4	300 kip Net Buoyancy Riser Buoy	430,950	1	Each	16	6,895.2
5	Connecting Links ($2.24/kip cap., 3 per leg)	12,042	1	$/Leg	16	192.7
6	Shackles ($1.10/kip cap., 3 per leg)	5,914	1	$/Leg	16	94.6
7	Triplates ($3.25/kip cap., 1 per leg)	5,824	1	$/Leg	16	93.2
8	Anchor Chain Section, 5 1/2" dia. ORQ	255.09	90	$/ft.	16	367.3
9	Driven Pile Anchor	102,000	1	Each	16	1,632.0
	Total: Mooring Line Components					14,383.2

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	150,922	1	$/Leg	16	2,414.8
2	Upper Fairleads ($29.38/kip mooring cap.)	52,649	1	$/Leg	16	842.4
3	Spooling Winches ($743.31/kip 15% mooring)	199,802	1	$/Leg	16	3,196.8
4	Linear Winches ($317.50/kip pretension cap.)	95,000	1	$/Leg	16	1,520.0
	Total: Platform Components					7,974.0

TABLE A.1-3
TAUT LEG MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE T1S16N - ALL-STEEL MOORING SYSTEM WITH 106 KIP RISER BUOY
16 POINT - 10% WATCH CIRCLE - 1,500-FT WATER DEPTH
MAX LINE LOAD =2101 K, PRE-TENSION = 140.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Riser Line, 6" Dia. Spiral Strand	148.99	1260	$/ft.	16	3,003.6
2	Platform Line, 6" dia. Spiral Strand	148.99	1350	$/ft.	16	3,218.2
3	106 kip Net Buoyancy Riser Buoy	180,000	1	Each	16	2,880.0
4	Connecting Links ($2.24/kip cap., 4 per leg)	18,825	1	$/Leg	16	301.2
5	Shackles ($1.10/kip cap., 1 per leg)	2,311	1	$/Leg	16	37.0
6	Triplates ($3.25/kip cap., 1 per leg)	6,828	1	$/Leg	16	109.3
7	Anchor Chain Section, 5 5/8" dia. ORQ	255.09	750	$/ft.	16	3,061.1
8	Driven Pile Anchor	112,000	1	Each	16	1,792.0
9						
	Total: Mooring Line Components					14,402.3

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	176,946	1	$/Leg	16	2,831.1
2	Upper Fairleads ($29.38/kip mooring cap.)	61,727	1	$/Leg	16	987.6
3	Spooling Winches ($743.31/kip 15% mooring)	234,254	1	$/Leg	16	3,748.1
4	Linear Winches ($317.50/kip pretension cap.)	95,000	1	$/Leg	16	1,520.0
5						
	Total: Platform Components					9,086.8

TABLE A.1-4
TAUT LEG MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE T3A16N-A - HYBRID ARAMID MOORING SYSTEM WITH 200 KIP RISER BUOY
16 POINT - 10% WATCH CIRCLE - 3,000-FT WATER DEPTH
MAX LINE LOAD =1724 K, PRE-TENSION = 184.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Aramid Riser Line, 5.94" Diameter	132.00	2610	$/ft.	16	5,512.3
2	Platform Line, 5 1/2" dia. Spiral Strand	129.60	2150	$/ft.	16	4,458.2
3	200 kip Net Buoyancy Riser Buoy	365,363	1	Each	16	5,845.8
4	Connecting Links ($2.24/kip cap., 3 per leg)	11,585	1	$/Leg	16	185.4
5	Shackles ($1.10/kip cap., 3 per leg)	5,689	1	$/Leg	16	91.0
6	Triplates ($3.25/kip cap., 1 per leg)	5,603	1	$/Leg	16	89.6
7	Anchor Chain Section, 5 1/2" dia. ORQ	255.09	250	$/ft.	16	1,020.4
8	Driven Pile Anchor	102,000	1	Each	16	1,632.0
9						
	Total: Mooring Line Components					18,834.8

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	145,195	1	$/Leg	16	2,323.1
2	Upper Fairleads ($29.38/kip mooring cap.)	50,651	1	$/Leg	16	810.4
3	Spooling Winches ($743.31/kip 15% mooring)	192,220	1	$/Leg	16	3,075.5
4	Linear Winches ($317.50/kip pretension cap.)	95,000	1	$/Leg	16	1,520.0
5						
	Total: Platform Components					7,729.1

TABLE A.1-5
TAUT LEG MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE T3A16N - HYBRID ARAMID MOORING SYSTEM WITH 100 KIP RISER BUOY
16 POINT - 10% WATCH CIRCLE - 3,000-FT WATER DEPTH - ARAMID IN PLATFORM LINE
MAX LINE LOAD =1789 K, PRE-TENSION = 97.1 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Riser Line, 5.94" Diameter Aramid	132.00	2610	$/ft.	16	5,512.3
2	Platform Line, 5 1/2" dia. Spiral Strand	129.60	500	$/ft.	16	1,036.8
3	Platform Line, 5.94" Diameter Aramid	132.00	1350	$/ft.	16	2,851.2
4	100 kip Net Buoyancy Riser Buoy	230,000	1	Each	16	3,680.0
5	Connecting Links ($2.24/kip cap., 3 per leg)	12,022	1	$/Leg	16	192.4
6	Shackles ($1.10/kip cap., 3 per leg)	5,904	1	$/Leg	16	94.5
7	Triplates ($3.25/kip cap., 1 per leg)	5,814	1	$/Leg	16	93.0
8	Anchor Chain Section, 5 1/2" dia. ORQ	255.09	250	$/ft.	16	1,020.4
9	Driven Pile Anchor	102,000	1	Each	16	1,632.0
	Total: Mooring Line Components					16,112.5

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	150,670	1	$/Leg	16	2,410.7
2	Upper Fairleads ($29.38/kip mooring cap.)	52,561	1	$/Leg	16	841.0
3	Spooling Winches ($743.31/kip 15% mooring)	199,467	1	$/Leg	16	3,191.5
4	Linear Winches ($317.50/kip pretension cap.)	35,000	1	$/Leg	16	560.0
5						
	Total: Platform Components					7,003.2

TABLE A.1-6
TAUT LEG MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE T3S16N - ALL-STEEL MOORING SYSTEM WITH 400 KIP RISER BUOY
16 POINT - 10% WATCH CIRCLE - 3,000-FT WATER DEPTH
MAX LINE LOAD =1606 K, PRE-TENSION = 274.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Riser Line, 5.0" Dia. Spiral Strand	106.79	2610	$/ft.	16	4,459.6
2	Platform Line, 5.0" dia. Spiral Strand	106.79	1500	$/ft.	16	2,563.0
3	400 kip Net Buoyancy Riser Buoy	784,616	1	Each	16	12,553.9
4	Connecting Links ($2.24/kip cap., 4 per leg)	14,390	1	$/Leg	16	230.2
5	Shackles ($1.10/kip cap., 1 per leg)	1,767	1	$/Leg	16	28.3
6	Triplates ($3.25/kip cap., 1 per leg)	5,220	1	$/Leg	16	83.5
7	Anchor Chain Section, 5 1/2" dia. ORQ	255.09	250	$/ft.	16	1,020.4
8	Driven Pile Anchor	102,000	1	Each	16	1,632.0
9						
	Total: Mooring Line Components					22,570.7

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	135,257	1	$/Leg	16	2,164.1
2	Upper Fairleads ($29.38/kip mooring cap.)	47,184	1	$/Leg	16	754.9
3	Spooling Winches ($743.31/kip 15% mooring)	179,063	1	$/Leg	16	2,865.0
4	Linear Winches ($317.50/kip pretension cap.)	95,000	1	$/Leg	16	1,520.0
5						
	Total: Platform Components					7,304.1

TABLE A.1-7
TAUT LEG MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE T6A12N - HYBRID ARAMID MOORING SYSTEM WITH 70 KIP RISER BUOY
12 POINT - 10% WATCH CIRCLE - 6,000-FT WATER DEPTH
MAX LINE LOAD =1934 K, PRE-TENSION = 211.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Aramid Riser Line, 5.94" Diameter	132.00	5610	$/ft.	12	8,886.2
2	Platform Line, 5 7/8" dia. Spiral Strand	145.42	3150	$/ft.	12	5,496.9
3	70 kip Net Buoyancy Riser Buoy	214,929	1	Each	12	2,579.1
4	Connecting Links ($2.24/kip cap., 3 per leg)	12,996	1	$/Leg	12	156.0
5	Shackles ($1.10/kip cap., 3 per leg)	6,382	1	$/Leg	12	76.6
6	Triplates ($3.25/kip cap., 1 per leg)	6,286	1	$/Leg	12	75.4
7	Anchor Chain Section, 5 3/4" dia. ORQ+10%	377.20	250	$/ft.	12	1,131.6
8	Driven Pile Anchor	102,000	1	Each	12	1,224.0
9						
	Total: Mooring Line Components					19,625.8

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	162,881	1	$/Leg	12	1,954.6
2	Upper Fairleads ($29.38/kip mooring cap.)	56,821	1	$/Leg	12	681.9
3	Spooling Winches ($743.31/kip 15% mooring)	215,634	1	$/Leg	12	2,587.6
4	Linear Winches ($317.50/kip pretension cap.)	95,000	1	$/Leg	12	1,140.0
5						
	Total: Platform Components					6,364.0

TABLE A.1-8
TAUT LEG MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE T6A16N - HYBRID ARAMID MOORING SYSTEM WITH 70 KIP RISER BUOY
16 POINT - 10% WATCH CIRCLE - 6,000-FT WATER DEPTH
MAX LINE LOAD =1590 K, PRE-TENSION = 167.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Aramid Riser Line, 5.50" Diameter	108.00	5610	$/ft.	16	9,694.1
2	Platform Line, 5 1/4" dia. Spiral Strand	118.28	3150	$/ft.	16	5,961.3
3	70 kip Net Buoyancy Riser Buoy	214,929	1	Each	16	3,438.9
4	Connecting Links ($2.24/kip cap., 3 per leg)	10,685	1	$/Leg	16	171.0
5	Shackles ($1.10/kip cap., 3 per leg)	5,247	1	$/Leg	16	84.0
6	Triplates ($3.25/kip cap., 1 per leg)	5,168	1	$/Leg	16	82.7
7	Anchor Chain Section, 5 1/2" dia. ORQ	255.09	250	$/ft.	16	1,020.4
8	Driven Pile Anchor	102,000	1	Each	16	1,632.0
9						
	Total: Mooring Line Components					22,084.2

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	133,910	1	$/Leg	16	2,142.6
2	Upper Fairleads ($29.38/kip mooring cap.)	46,714	1	$/Leg	16	747.4
3	Spooling Winches ($743.31/kip 15% mooring)	177,279	1	$/Leg	16	2,836.5
4	Linear Winches ($317.50/kip pretension cap.)	95,000	1	$/Leg	16	1,520.0
5						
	Total: Platform Components					7,246.5

TABLE A.1-9
TAUT LEG MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE T6A16N-0 - HYBRID ARAMID MOORING SYSTEM WITHOUT RISER BUOY
16 POINT - 10% WATCH CIRCLE - 6,000-FT WATER DEPTH
MAX LINE LOAD =1613 K, PRE-TENSION = 187.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Aramid Riser Line, 5.625" Diameter	115.00	5610	$/ft.	16	10,322.4
2	Platform Line, 5 1/4" dia. Spiral Strand	118.28	3150	$/ft.	16	5,961.3
3	70 kip Net Buoyancy Riser Buoy	214,929	1	Each	0	0.0
4	Connecting Links ($2.24/kip cap., 2 per leg)	7,226	1	$/Leg	16	115.6
5	Shackles ($1.10/kip cap., 3 per leg)	5,323	1	$/Leg	16	85.2
6	Triplates ($3.25/kip cap., 1 per leg)	5,242	1	$/Leg	0	0.0
7	Anchor Chain Section, 5 1/2" dia. ORQ+10%	345.12	250	$/ft.	16	1,380.5
8	Driven Pile Anchor	94,000	1	Each	16	1,504.0
9						
	Total: Mooring Line Components					19,369.0

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	135,847	1	$/Leg	16	2,173.5
2	Upper Fairleads ($29.38/kip mooring cap.)	47,390	1	$/Leg	16	758.2
3	Spooling Winches ($743.31/kip 15% mooring)	179,844	1	$/Leg	16	2,877.5
4	Linear Winches ($317.50/kip pretension cap.)	95,000	1	$/Leg	16	1,520.0
5						
	Total: Platform Components					7,329.3

TABLE A.1-10
TAUT LEG MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE T6S16N - ALL-STEEL MOORING SYSTEM WITH 400 KIP RISER BUOY
16 POINT - 10% WATCH CIRCLE - 3,000-FT WATER DEPTH
MAX LINE LOAD =1302 K, PRE-TENSION = 234.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Riser Line, 5.0" Dia. Spiral Strand	106.79	5610	$/ft.	16	9,585.5
2	Platform Line, 5.0" dia. Spiral Strand	106.79	3150	$/ft.	16	5,382.2
3	400 kip Net Buoyancy Riser Buoy	940,674	1	Each	16	15,050.8
4	Connecting Links ($2.24/kip cap., 4 per leg)	11,666	1	$/Leg	16	186.7
5	Shackles ($1.10/kip cap., 1 per leg)	1,432	1	$/Leg	16	22.9
6	Triplates ($3.25/kip cap., 1 per leg)	4,232	1	$/Leg	16	67.7
7	Anchor Chain Section, 5 1/2" dia. ORQ	255.09	250	$/ft.	16	1,020.4
8	Driven Pile Anchor	94,000	1	Each	16	1,504.0
9						
	Total: Mooring Line Components					32,820.1

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	109,654	1	$/Leg	16	1,754.5
2	Upper Fairleads ($29.38/kip mooring cap.)	38,253	1	$/Leg	16	612.0
3	Spooling Winches ($743.31/kip 15% mooring)	145,168	1	$/Leg	16	2,322.7
4	Linear Winches ($317.50/kip pretension cap.)	95,000	1	$/Leg	16	1,520.0
5						
	Total: Platform Components					6,209.2

Appendix A.2 - Catenary, Nominal (10%), Watch Circle Designs

TABLE A.2-1
PHASE 1 - CATENARY MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE C1A12N - HYBRID ARAMID MOORING SYSTEM WITH NO RISER BUOY
1,500-FT WATER DEPTH - 12 POINT - 10% WATCH CIRCLE
MAX LINE LOAD =1000 K, PRE-TENSION = 410.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Aramid Riser Line, 4 5/8" Diameter	74.00	1400	$/ft.	12	1,243.2
2	Fairlead Wire, 4 1/4" dia. Multi-Strand	72.99	500	$/ft.	12	437.9
3	Intermediate Wire, 4 1/4" dia. Spiral Strand	72.99	1300	$/ft.	12	1,138.6
4	Ground Wire Length, 4 1/4" dia. Spiral Strand	72.99	3500	$/ft.	12	3,065.6
5	Dip Zone Chain, 5" dia. Grade 3 Chain	285.20	1100	$/ft.	12	3,764.6
6	Ground Chain, 5" dia. Grade 3 Chain	285.20	100	$/ft.	12	342.2
7	Connecting Links ($2.24/kip capacity, 5 per leg	11,200	1	$/Leg	12	134.4
8	Shackles ($1.10/kip capacity, 16 per leg)	17,600	1	$/Leg	12	211.2
9	Anchor, 80 kip Drag Embedment with Depressor	108,000	1	Each	12	1,296.0
10						0.0
	Total: Mooring Line Components					11,633.8

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	84,220	1	$/Leg	12	1,010.6
2	Upper Fairleads ($29.38/kip mooring cap.)	29,375	1	$/Leg	12	352.5
3	Spooling Winches ($743.31/kip 15% mooring)	115,500	1	$/Leg	12	1,386.0
4	Linear Winches ($317.50/kip pretension cap.)	190,000	1	$/Leg	12	2,280.0
						0.0
	Total: Platform Components					5,029.1

TABLE A.2-2
PHASE 1 - CATENARY MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE C1S12N - ALL STEEL MOORING SYSTEM WITH 45 K RISER & 50 K INTER. BUOY
1,500-FT WATER DEPTH - 12 POINT - 10% WATCH CIRCLE
MAX LINE LOAD =1000 K, PRE-TENSION = 125.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Fairlead Wire Length, 4 1/4" dia. Multi-Stran	72.99	600	$/ft.	12	525.5
2	Intermediate Wire, 4 1/4" dia. Spiral Strand	72.99	2100	$/ft.	12	1,839.3
3	Riser Wire, 4 1/4" dia. Spiral Strand	72.99	1300	$/ft.	12	1,138.6
4	Ground Wire, 4 1/4" dia. Spiral Strand	72.99	4500	$/ft.	12	3,941.5
5	Dip Zone Chain, 4-1/8" dia. ORQ+20% Chain	204.25	1100	$/ft.	12	2,696.1
6	Ground Chain, 4-1/8" dia. ORQ+20% Chain	204.25	100	$/ft.	12	245.1
7	Intermediate Buoy (50 kips net buoyancy)	101,300	1	Each	12	1,215.6
8	Riser Buoy (45 kips net buoyancy)	98,900	1	Each	12	1,186.8
9	Triplates ($3.25/kip capacity, 3 per leg)	9,750	1	$/Leg	12	117.0
10	Connecting Links ($2.24/kip capacity, 4 per l	8,960	1	$/Leg	12	107.5
11	Shackles ($1.10/kip capacity, 24 per leg)	26,400	1	$/Leg	12	316.8
12	Anchor, 80 kip Drag Embedment with Depressor	108,000	1	Each	12	1,296.0
	Total: Mooring Line Components					14,625.9

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	84,220	1	$/Leg	12	1,010.6
2	Upper Fairleads ($29.38/kip mooring cap.)	29,380	1	$/Leg	12	352.6
3	Spooling Winches ($743.31/kip 15% mooring)	111,496	1	$/Leg	12	1,338.0
4	Linear Winches ($317.50/kip pretension cap.)	190,000	1	$/Leg	12	2,280.0
	Total: Platform Components					4,981.2

TABLE A.2-3
PHASE 1 - CATENARY MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE C3A12N - HYBRID ARAMID MOORING SYSTEM WITH NO RISER BUOY
3,000-FT WATER DEPTH - 12 POINT - 10% WATCH CIRCLE
MAX LINE LOAD =1000 K, PRE-TENSION = 420.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Aramid Riser Line, 4 5/8" Diameter	74.00	2800	$/ft.	12	2,486.4
2	Fairlead Wire, 4 1/4" dia. Multi-Strand	72.99	500	$/ft.	12	437.9
3	Intermediate Wire, 4 1/4" dia. Spiral Strand	72.99	2100	$/ft.	12	1,839.3
4	Ground Wire, 4 1/4" dia. Spiral Strand	72.99	4400	$/ft.	12	3,853.9
5	Dip Zone Chain Length, 5" dia. ORQ	210.80	1200	$/ft.	12	3,035.5
6	Ground Chain Length, 5" dia. ORQ	210.80	200	$/ft.	12	505.9
7	Connecting Links ($2.24/kip capacity, 5 per leg	11,200	1	$/Leg	12	134.4
8	Shackles ($1.10/kip capacity, 16 per leg)	19,800	1	$/Leg	12	237.6
9	Anchor, 80 kip Drag Embedment with Depressor	108,000	1	Each	12	1,296.0
10						
	Total: Mooring Line Components					13,827.0

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	84,220	1	$/Leg	12	1,010.6
2	Upper Fairleads ($29.38/kip mooring cap.)	29,375	1	$/Leg	12	352.5
3	Spooling Winches ($743.31/kip 15% mooring)	115,500	1	$/Leg	12	1,386.0
4	Linear Winches ($317.50/kip pretension cap.)	190,000	1	$/Leg	12	2,280.0
						0.0
	Total: Platform Components					5,029.1

TABLE A.2-4
PHASE 1 - CATENARY MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE C3S12N - ALL STEEL MOORING SYSTEM WITH 94 K RISER & 60 K INTER. BUOY
3,000-FT WATER DEPTH - 12 POINT - 10% WATCH CIRCLE
MAX LINE LOAD =1000 K, PRE-TENSION = 180.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Fairlead Wire, 4 1/4" dia. Multi-Strand	72.99	700	$/ft.	12	613.1
2	Intermediate Wire, 4 1/4" dia. Spiral Strand	72.99	2300	$/ft.	12	2,014.5
3	Riser Wire, 4 1/4" dia. Spiral Strand	72.99	2800	$/ft.	12	2,452.5
4	Ground Wire, 4 1/4" dia. Spiral Strand	72.99	6000	$/ft.	12	5,255.3
5	Dip Zone Chain, 4-1/8" dia. ORQ+20% Chain	204.25	1400	$/ft.	12	3,431.4
6	Ground Chain, 4-1/8" dia. ORQ+20% Chain	204.25	100	$/ft.	12	245.1
7	Intermediate Buoy (60 kips net buoyancy)	116,000	1	Each	12	1,392.0
8	Riser Buoy (94 kips net buoyancy)	210,900	1	Each	12	2,530.8
9	Triplates ($3.25/kip capacity, 3 per leg)	9,750	1	$/Leg	12	117.0
10	Connecting Links ($2.24/kip capacity, 4 per l	8,960	1	$/Leg	12	107.5
11	Shackles ($1.10/kip capacity, 24 per leg)	26,400	1	$/Leg	12	316.8
12	Anchor, 80 kip Drag Embedment with Depressor	108,000	1	Each	12	1,296.0
	Total: Mooring Line Components					19,772.0

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	84,220	1	$/Leg	12	1,010.6
2	Upper Fairleads ($29.38/kip mooring cap.)	29,375	1	$/Leg	12	352.5
3	Spooling Winches ($743.31/kip 15% mooring)	115,500	1	$/Leg	12	1,386.0
4	Linear Winches ($317.50/kip pretension cap.)	190,000	1	$/Leg	12	2,280.0
	Total: Platform Components					5,029.1

TABLE A.2-5
PHASE 1 - CATENARY MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE C6A12N - HYBRID ARAMID MOORING SYSTEM WITH NO RISER BUOY
6,000-FT WATER DEPTH - 12 POINT - 10% WATCH CIRCLE
MAX LINE LOAD =1000 K, PRE-TENSION = 440.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Aramid Riser Line, 4 5/8" Diameter	74.00	5000	$/ft.	12	4,440.0
2	Fairlead Wire, 4 1/4" dia. Multi-Strand	72.99	500	$/ft.	12	437.9
3	Intermediate Wire, 4 1/4" dia. Spiral Strand	72.99	3300	$/ft.	12	2,890.4
4	Ground Wire, 4 1/4" dia. Spiral Strand	72.99	4500	$/ft.	12	3,941.5
5	Dip Zone Chain, 5" dia. ORQ	210.80	1500	$/ft.	12	3,794.4
6	Ground Chain, 5" dia. ORQ	210.80	400	$/ft.	12	1,011.8
7	Connecting Links ($2.24/kip capacity, 5 per leg	13,440	1	$/Leg	12	161.3
8	Shackles ($1.10/kip capacity, 16 per leg)	22,000	1	$/Leg	12	264.0
9	Anchor, 80 kip Drag Embedment with Depressor	108,000	1	Each	12	1,296.0
10						0.0
	Total: Mooring Line Components					18,237.3

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	84,220	1	$/Leg	12	1,010.6
2	Upper Fairleads ($29.38/kip mooring cap.)	33,787	1	$/Leg	12	405.4
3	Spooling Winches ($743.31/kip 15% mooring)	150,000	1	$/Leg	12	1,800.0
4	Linear Winches ($317.50/kip pretension cap.)	190,000	1	$/Leg	12	2,280.0
						0.0
	Total: Platform Components					5,496.1

TABLE A.2-6
PHASE 1 - CATENARY MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE C6S12N - ALL STEEL MOORING SYSTEM WITH 192 K RISER & 75 K INTER. BUOY
6,000-FT WATER DEPTH - 12 POINT - 10% WATCH CIRCLE
MAX LINE LOAD =1000 K, PRE-TENSION = 280.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Fairlead Wire, 4 1/4" dia. Multi-Strand	72.99	800	$/ft.	12	700.7
2	Intermediate Wire, 4 1/4" dia. Spiral Strand	72.99	2700	$/ft.	12	2,364.9
3	Riser Wire, 4 1/4" dia. Spiral Strand	72.99	5800	$/ft.	12	5,080.1
4	Ground Wire, 4 1/4" dia. Spiral Strand	72.99	6100	$/ft.	12	5,342.9
5	Dip Zone Chain, 4-1/8" dia. ORQ+20% Chain	204.25	2100	$/ft.	12	5,147.1
6	Ground Chain, 4-1/8" dia. ORQ+20% Chain	204.25	200	$/ft.	12	490.2
7	Intermediate Buoy (75 kips net buoyancy)	133,500	1	Each	12	1,602.0
8	Riser Buoy (192 kips net buoyancy)	427,400	1	Each	12	5,128.8
9	Triplates ($3.25/kip capacity, 3 per leg)	9,750	1	$/Leg	12	117.0
10	Connecting Links ($2.24/kip capacity, 4 per l	8,960	1	$/Leg	12	107.5
11	Shackles ($1.10/kip capacity, 24 per leg)	26,400	1	$/Leg	12	316.8
12	Anchor, 80 kip Drag Embedment with Depressor	108,000	1	Each	12	1,296.0
	Total: Mooring Line Components					27,694.0

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	84,220	1	$/Leg	12	1,010.6
2	Upper Fairleads ($29.38/kip mooring cap.)	29,375	1	$/Leg	12	352.5
3	Spooling Winches ($743.31/kip 15% mooring)	150,000	1	$/Leg	12	1,800.0
4	Linear Winches ($317.50/kip pretension cap.)	190,000	1	$/Leg	12	2,280.0
	Total: Platform Components					5,443.1

Appendix A.3 - Taut-Leg, Tight (2%), Watch Circle Designs

TABLE A.3-1
TAUT LEG MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE T1A16T - HYBRID ARAMID MOORING SYSTEM WITH 100 K RISER BUOY
16 POINT - 2% WATCH CIRCLE - 1,500-FT WATER DEPTH
MAX LINE LOAD =1819 K, PRE-TENSION = 356.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Riser Line, 6" Diameter Aramid	132.00	1110	$/ft.	16	2,344.3
2	Platform Line, 6" Diameter Aramid	132.00	2500	$/ft.	16	5,280.0
3	Pendant, 5 5/8" dia. Spiral Strand	135.80	300	$/ft.	16	651.8
4	100 kip Net Buoyancy Riser Buoy	200,000	1	Each	16	3,200.0
5	Connecting Links ($2.24/kip cap., 3 per leg)	12,224	1	$/Leg	16	195.6
6	Shackles ($1.10/kip cap., 3 per leg)	6,003	1	$/Leg	16	96.0
7	Triplates ($3.25/kip cap., 1 per leg)	5,912	1	$/Leg	16	94.6
8	Anchor Chain Section, 5 1/2" dia. ORQ	255.09	90	$/ft.	16	367.3
9	Driven Pile Anchor	112,000	1	Each	16	1,792.0
	Total: Mooring Line Components					14,021.7

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	153,196	1	$/Leg	16	2,451.1
2	Upper Fairleads ($29.38/kip mooring cap.)	53,442	1	$/Leg	16	855.1
3	Spooling Winches ($743.31/kip 15% mooring)	202,812	1	$/Leg	16	3,245.0
4	Linear Winches ($317.50/kip pretension cap.)	145,000	1	$/Leg	16	2,320.0
	Total: Platform Components					8,871.2

TABLE A.3-2
TAUT LEG MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE T3A16T-A - HYBRID ARAMID MOORING WITH 200 KIP RISER BUOY
16 POINT - 2% WATCH CIRCLE - 3,000-FT WATER DEPTH
MAX LINE LOAD =1705 K, PRE-TENSION = 443.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Aramid Riser Line, 5.94" Diameter	132.00	2610	$/ft.	16	5,512.3
2	Platform Line, 5 1/2" Dia. Spiral Strand	129.60	2150	$/ft.	16	4,458.2
3	200 kip Net Buoyancy Riser Buoy	365,363	1	Each	16	5,845.8
4	Connecting Links ($2.24/kip cap., 3 per leg)	11,458	1	$/Leg	16	183.3
5	Shackles ($1.10/kip cap., 3 per leg)	5,627	1	$/Leg	16	90.0
6	Triplates ($3.25/kip cap., 1 per leg)	5,541	1	$/Leg	16	88.7
7	Anchor Chain Section, 5 1/2" dia. ORQ+10%	255.09	250	$/ft.	16	1,020.4
8	Driven Pile Anchor	102,000	1	Each	16	1,632.0
9						
	Total: Mooring Line Components					18,830.7

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	143,595	1	$/Leg	16	2,297.5
2	Upper Fairleads ($29.38/kip mooring cap.)	50,093	1	$/Leg	16	801.5
3	Spooling Winches ($743.31/kip 15% mooring)	190,099	1	$/Leg	16	3,041.6
4	Linear Winches ($317.50/kip pretension cap.)	190,000	1	$/Leg	16	3,040.0
5						
	Total: Platform Components					9,180.6

TABLE A.3-3
TAUT LEG MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE T3A16T - HYBRID ARAMID MOORING SYSTEM WITH 100 KIP RISER BUOY
16 POINT - 2% WATCH CIRCLE - 3,000-FT WATER DEPTH - ARAMID IN PLATFORM LINE
MAX LINE LOAD =1606 K, PRE-TENSION = 275.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Riser Line, 5.94" Diameter Aramid	132.00	2610	$/ft.	16	5,512.3
2	Platform Line, 5 1/2" dia. Spiral Strand	129.60	800	$/ft.	16	1,658.9
3	Intermediate Line, 5.94" Diameter Aramid	132.00	1350	$/ft.	16	2,851.2
4	100 kip Net Buoyancy Riser Buoy	230,000	1	Each	16	3,680.0
5	Connecting Links ($2.24/kip cap., 3 per leg)	10,792	1	$/Leg	16	172.7
6	Shackles ($1.10/kip cap., 3 per leg)	5,300	1	$/Leg	16	84.8
7	Triplates ($3.25/kip cap., 1 per leg)	5,220	1	$/Leg	16	83.5
8	Anchor Chain Section, 5 1/2" dia. ORQ	255.09	250	$/ft.	16	1,020.4
9	Driven Pile Anchor	102,000	1	Each	16	1,632.0
					Total: Mooring Line Components	16,695.7

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	135,257	1	$/Leg	16	2,164.1
2	Upper Fairleads ($29.38/kip mooring cap.)	47,184	1	$/Leg	16	754.9
3	Spooling Winches ($743.31/kip 15% mooring)	179,063	1	$/Leg	16	2,865.0
4	Linear Winches ($317.50/kip pretension cap.)	95,000	1	$/Leg	16	1,520.0
5						
					Total: Platform Components	7,304.1

TABLE A.3-4
TAUT LEG MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE T6A12T - HYBRID ARAMID MOORING SYSTEM WITH 70 KIP RISER BUOY
12 POINT - 2% WATCH CIRCLE - 6,000-FT WATER DEPTH
MAX LINE LOAD =1707 K, PRE-TENSION = 410.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Aramid Riser Line, 5.94" Diameter	132.00	5610	$/ft.	12	8,886.2
2	Platform Line, 5 7/8" dia. Spiral Strand	145.42	3150	$/ft.	12	5,496.9
3	70 kip Net Buoyancy Riser Buoy	214,929	1	Each	12	2,579.1
4	Connecting Links ($2.24/kip cap., 3 per leg)	11,471	1	$/Leg	12	137.7
5	Shackles ($1.10/kip cap., 3 per leg)	5,633	1	$/Leg	12	67.6
6	Triplates ($3.25/kip cap., 1 per leg)	5,548	1	$/Leg	12	66.6
7	Anchor Chain Section, 5 3/4" dia. ORQ+10%	377.20	250	$/ft.	12	1,131.6
8	Driven Pile Anchor	102,000	1	Each	12	1,224.0
9						
	Total: Mooring Line Components					19,589.7

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	143,764	1	$/Leg	12	1,725.2
2	Upper Fairleads ($29.38/kip mooring cap.)	50,152	1	$/Leg	12	601.8
3	Spooling Winches ($743.31/kip pretension cap	190,325	1	$/Leg	12	2,283.9
4	Linear Winches ($317.50/kip pretension cap.)	145,000	1	$/Leg	12	1,740.0
5						
	Total: Platform Components					6,350.9

TABLE A.3-5
TAUT LEG MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE T6A16T - HYBRID ARAMID MOORING SYSTEM WITH 70 KIP RISER BUOY
16 POINT - 2% WATCH CIRCLE - 6,000-FT WATER DEPTH
MAX LINE LOAD =1337 K, PRE-TENSION = 311.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Aramid Riser Line, 5.500" Diameter	108.00	5610	$/ft.	16	9,694.1
2	Platform Line, 5 1/4" dia. Spiral Strand	118.28	3150	$/ft.	16	5,961.3
3	70 kip Net Buoyancy Riser Buoy	214,939	1	Each	16	3,439.0
4	Connecting Links ($2.24/kip cap., 3 per leg)	8,985	1	$/Leg	16	143.8
5	Shackles ($1.10/kip cap., 3 per leg)	4,412	1	$/Leg	16	70.6
6	Triplates ($3.25/kip cap., 1 per leg)	4,345	1	$/Leg	16	69.5
7	Anchor Chain Section, 5 1/2" dia. ORQ	255.09	250	$/ft.	16	1,020.4
8	Driven Pile Anchor	94,000	1	Each	16	1,504.0
9						
	Total: Mooring Line Components					21,902.6

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	112,602	1	$/Leg	16	1,801.6
2	Upper Fairleads ($29.38/kip mooring cap.)	39,281	1	$/Leg	16	628.5
3	Spooling Winches ($743.31/kip 15% mooring)	149,071	1	$/Leg	16	2,385.1
4	Linear Winches ($317.50/kip pretension cap.)	145,000	1	$/Leg	16	2,320.0
5						
	Total: Platform Components					7,135.3

TABLE A.3-6
TAUT LEG MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE T6S16T - ALL-STEEL MOORING SYSTEM WITH 400 KIP RISER BUOY
16 POINT - 2% WATCH CIRCLE - 6,000-FT WATER DEPTH
MAX LINE LOAD =1515 K, PRE-TENSION = 584.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Riser Line, 5 1/2" Dia. Spiral Strand	129.60	5750	$/ft.	16	11,923.2
2	Platform Line, 5 1/4" dia. Spiral Strand	118.28	3000	$/ft.	16	5,677.4
3	400 kip Net Buoyancy Riser Buoy	940,674	1	Each	16	15,050.8
4	Connecting Links ($2.24/kip cap., 4 per leg)	13,574	1	$/Leg	16	217.2
5	Shackles ($1.10/kip cap., 1 per leg)	1,667	1	$/Leg	16	26.7
6	Triplates ($3.25/kip cap., 1 per leg)	4,924	1	$/Leg	16	78.8
7	Anchor Chain Section, 5 1/2" dia. ORQ	255.09	250	$/ft.	16	1,020.4
8	Driven Pile Anchor	94,000	1	Each	16	1,504.0
9						
	Total: Mooring Line Components					35,498.4

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	127,593	1	$/Leg	16	2,041.5
2	Upper Fairleads ($29.38/kip mooring cap.)	44,511	1	$/Leg	16	712.2
3	Spooling Winches ($743.31/kip 15% mooring)	168,917	1	$/Leg	16	2,702.7
4	Linear Winches ($317.50/kip pretension cap.)	190,000	1	$/Leg	16	3,040.0
5						
	Total: Platform Components					8,496.3

Appendix A.4 - Catenary, Tight (2%), Watch Circle Designs

TABLE A.4-1
PHASE 1 - CATENARY MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE C1A12T - HYBRID ARAMID MOORING SYSTEM WITH NO RISER BUOY
1,500-FT WATER DEPTH - 12 POINT - 2% WATCH CIRCLE
MAX LINE LOAD =1662 K, PRE-TENSION = 900.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Aramid Riser Line, 5 3/4" Diameter	120.00	3000	$/ft.	12	4,320.0
2	Fairlead Wire, 5 3/8" dia. Multi-Strand	123.90	500	$/ft.	12	743.4
3	Intermediate Wire, 5 3/8" dia. Spiral Strand	123.90	800	$/ft.	12	1,189.4
4	Ground Wire Length, 5 3/8" dia. Spiral Strand	123.90	1700	$/ft.	12	2,527.6
5	Dip Zone Chain, 5 3/8" dia. ORQ Chain	243.61	1250	$/ft.	12	3,654.2
6	Ground Chain, 5 3/8" dia. ORQ Chain	243.61	200	$/ft.	12	584.7
7	Connecting Links ($2.24/kip capacity, 5 per le	18,614	1	$/Leg	12	223.4
8	Shackles ($1.10/kip capacity, 16 per leg)	29,251	1	$/Leg	12	351.0
9	Anchor, 120 kip Drag Embedment with Depressor	162,000	1	Each	12	1,944.0
10						0.0
	Total: Mooring Line Components					15,537.6

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	139,974	1	$/Leg	12	1,679.7
2	Upper Fairleads ($29.38/kip mooring cap.)	48,830	1	$/Leg	12	586.0
3	Spooling Winches ($743.31/kip 15% mooring)	185,307	1	$/Leg	12	2,223.7
4	Linear Winches ($317.50/kip pretension cap.)	317,500	1	$/Leg	12	3,810.0
						0.0
	Total: Platform Components					8,299.3

TABLE A.4-2
PHASE 1 - CATENARY MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE C1S12T - ALL STEEL MOORING SYSTEM WITH 86 K RISER & 50 K INTER. BUOY
1,500-FT WATER DEPTH - 12 POINT - 2% WATCH CIRCLE
MAX LINE LOAD =1720 K, PRE-TENSION = 1000.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Fairlead Wire Length, 5 1/2" dia. Multi-Stran	129.60	700	$/ft.	12	1,088.6
2	Intermediate Wire, 5 1/2" dia. Spiral Strand	129.60	1600	$/ft.	12	2,488.3
3	Riser Wire, 5 1/2" dia. Spiral Strand	129.60	1300	$/ft.	12	2,021.8
4	Ground Wire, 5 1/2" dia. Spiral Strand	129.60	2600	$/ft.	12	4,043.5
5	Dip Zone Chain, 6" dia. ORQ Chain	303.54	1350	$/ft.	12	4,917.3
6	Ground Chain, 6" dia. ORQ Chain	303.54	100	$/ft.	12	364.2
7	Intermediate Buoy (50 kips net buoyancy)	101,300	1	Each	12	1,215.6
8	Riser Buoy (86 kips net buoyancy)	170,000	1	Each	12	2,040.0
9	Triplates ($3.25/kip capacity, 3 per leg)	16,770	1	$/Leg	12	201.2
10	Connecting Links ($2.24/kip capacity, 4 per l	15,411	1	$/Leg	12	184.9
11	Shackles ($1.10/kip capacity, 24 per leg)	45,408	1	$/Leg	12	544.9
12	Anchor, 140 kip Drag Embedment with Depressor	189,000	1	Each	12	2,268.0
	Total: Mooring Line Components					21,378.5

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	144,858	1	$/Leg	12	1,738.3
2	Upper Fairleads ($29.38/kip mooring cap.)	50,534	1	$/Leg	12	606.4
3	Spooling Winches ($743.31/kip 15% mooring)	191,774	1	$/Leg	12	2,301.3
4	Linear Winches ($317.50/kip pretension cap.)	380,000	1	$/Leg	12	4,560.0
	Total: Platform Components					9,206.0

TABLE A.4-3
PHASE 1 - CATENARY MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE C1S12T-1 - ALL STEEL MOORING SYSTEM WITH 90 KIP RISER BUOY
1,500-FT WATER DEPTH - 12 POINT - 2% WATCH CIRCLE
MAX LINE LOAD =1845 K, PRE-TENSION = 1000.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Fairlead Wire Length, 5 5/8" dia. Multi-Stran	135.80	700	$/ft.	12	1,140.7
2	Intermediate Wire, 5 5/8" dia. Spiral Strand	135.80	1700	$/ft.	12	2,770.3
3	Riser Wire, 5 5/8" dia. Spiral Strand	135.80	1300	$/ft.	12	2,118.5
4	Ground Wire, 5 5/8" dia. Spiral Strand	135.80	1950	$/ft.	12	3,177.7
5	Dip Zone Chain, 6 1/8" dia. ORQ Chain	316.29	1450	$/ft.	12	5,503.4
6	Ground Chain, 6 1/8" dia. ORQ Chain	316.29	100	$/ft.	12	379.5
7	Riser Buoy (90 kips net buoyancy)	180,000	1	Each	12	2,160.0
8	Triplates ($3.25/kip capacity, 3 per leg)	17,989	1	$/Leg	12	215.9
9	Connecting Links ($2.24/kip capacity, 4 per l	16,531	1	$/Leg	12	198.4
10	Shackles ($1.10/kip capacity, 24 per leg)	48,708	1	$/Leg	12	584.5
11	Anchor, 140 kip Drag Embedment with Depressor	189,000	1	Each	12	2,268.0
						0.0
	Total: Mooring Line Components					20,517.0

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	155,386	1	$/Leg	12	1,864.6
2	Upper Fairleads ($29.38/kip mooring cap.)	54,206	1	$/Leg	12	650.5
3	Spooling Winches ($743.31/kip 15% mooring)	205,711	1	$/Leg	12	2,468.5
4	Linear Winches ($317.50/kip pretension cap.)	380,000	1	$/Leg	12	4,560.0
	Total: Platform Components					9,543.6

TABLE A.4-4
PHASE 1 - CATENARY MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE C1S16T - ALL STEEL MOORING SYSTEM WITH 61 K RISER & 20 K INTER BUOY
1,500-FT WATER DEPTH - 12 POINT - 2% WATCH CIRCLE
MAX LINE LOAD =1240 K, PRE-TENSION = 700.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Fairlead Wire Length, 4 5/8" dia. Multi-Stran	86.30	700	$/ft.	16	966.6
2	Intermediate Wire, 4 5/8" dia. Spiral Strand	86.30	2200	$/ft.	16	3,037.8
3	Riser Wire, 4 5/8" dia. Spiral Strand	86.30	1300	$/ft.	16	1,795.0
4	Ground Wire, 4 5/8" dia. Spiral Strand	86.30	2500	$/ft.	16	3,452.0
5	Dip Zone Chain, 5 1/8" dia. ORQ Chain	221.51	1100	$/ft.	16	3,898.6
6	Ground Chain, 5 1/8" dia. ORQ Chain	221.51	100	$/ft.	16	354.4
7	Intermediate Buoy (20 kips net buoyancy)	50,000	1	Each	16	800.0
8	Riser Buoy (61 kips net buoyancy)	140,000	1	Each	16	2,240.0
9	Triplates ($3.25/kip capacity, 3 per leg)	12,090	1	$/Leg	16	193.4
10	Connecting Links ($2.24/kip capacity, 4 per l	11,110	1	$/Leg	16	177.8
11	Shackles ($1.10/kip capacity, 24 per leg)	32,736	1	$/Leg	16	523.8
12	Anchor, 104 kip Drag Embedment with Depressor	140,000	1	Each	16	2,240.0
	Total: Mooring Line Components					19,679.3

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	104,433	1	$/Leg	16	1,670.9
2	Upper Fairleads ($29.38/kip mooring cap.)	36,431	1	$/Leg	16	582.9
3	Spooling Winches ($743.31/kip 15% mooring)	138,256	1	$/Leg	16	2,212.1
4	Linear Winches ($317.50/kip pretension cap.)	285,000	1	$/Leg	16	4,560.0
	Total: Platform Components					9,025.9

TABLE A.4-5
PHASE 1 - CATENARY MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE C1S16T-1 - ALL STEEL MOORING SYSTEM WITH 64 KIP RISER BUOY
1,500-FT WATER DEPTH - 12 POINT - 2% WATCH CIRCLE
MAX LINE LOAD =1293 K, PRE-TENSION = 750.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Fairlead Wire Length, 4 3/4" dia. Multi-Stran	89.29	700	$/ft.	16	1,000.0
2	Intermediate Wire, 4 3/4" dia. Spiral Strand	89.29	1700	$/ft.	16	2,428.7
3	Riser Wire, 4 3/4" dia. Spiral Strand	89.29	1300	$/ft.	16	1,857.2
4	Ground Wire, 4 3/4" dia. Spiral Strand	89.29	1950	$/ft.	16	2,785.8
5	Dip Zone Chain, 5 1/8" dia. ORQ Chain	221.51	1450	$/ft.	16	5,139.0
6	Ground Chain, 5 1/8" dia. ORQ Chain	221.51	100	$/ft.	16	354.4
7	Riser Buoy (64 kips net buoyancy)	135,000	1	Each	16	2,160.0
8	Triplates ($3.25/kip capacity, 3 per leg)	12,607	1	$/Leg	16	201.7
9	Connecting Links ($2.24/kip capacity, 4 per l	11,585	1	$/Leg	16	185.4
10	Shackles ($1.10/kip capacity, 24 per leg)	34,162	1	$/Leg	16	546.6
11	Anchor, 104 kip Drag Embedment with Depressor	140,000	1	Each	16	2,240.0
						0.0
	Total: Mooring Line Components					18,898.9

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	108,896	1	$/Leg	16	1,742.3
2	Upper Fairleads ($29.38/kip mooring cap.)	37,988	1	$/Leg	16	607.8
3	Spooling Winches ($743.31/kip 15% mooring)	144,165	1	$/Leg	16	2,306.6
4	Linear Winches ($317.50/kip pretension cap.)	285,000	1	$/Leg	16	4,560.0
	Total: Platform Components					9,216.8

TABLE A.4-6
PHASE 1 - CATENARY MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE C3A12T - HYBRID ARAMID MOORING SYSTEM WITH NO RISER BUOY
3,000-FT WATER DEPTH - 12 POINT - 2% WATCH CIRCLE
MAX. LINE LOAD 1554 K, PRE-TENSION = 950 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Aramid Riser Line, 5 5/8" Diameter	114.00	5200	$/ft.	12	7,113.6
2	Fairlead Wire, 5 1/4" dia. Multi-Strand	118.28	500	$/ft.	12	709.7
3	Intermediate Wire, 5 1/4" dia. Spiral Strand	118.28	1200	$/ft.	12	1,703.2
4	Ground Wire, 5 1/4" dia. Spiral Strand	118.28	1800	$/ft.	12	2,554.8
5	Dip Zone Chain Length, 5 5/8" dia. ORQ	266.82	1700	$/ft.	12	5,443.1
6	Ground Chain Length, 5 5/8" dia. ORQ	266.82	200	$/ft.	12	640.4
7	Connecting Links ($2.24/kip capacity, 5 per le	17,405	1	$/Leg	12	208.9
8	Shackles ($1.10/kip capacity, 16 per leg)	27,350	1	$/Leg	12	328.2
9	Anchor, 120 kip Drag Embedment with Depressor	162,000	1	Each	12	1,944.0
10						
	Total: Mooring Line Components					20,645.9

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	130,878	1	$/Leg	12	1,570.5
2	Upper Fairleads ($29.38/kip mooring cap.)	45,657	1	$/Leg	12	547.9
3	Spooling Winches ($743.31/kip 15% mooring)	173,266	1	$/Leg	12	2,079.2
4	Linear Winches ($317.50/kip pretension cap.)	317,500	1	$/Leg	12	3,810.0
						0.0
	Total: Platform Components					8,007.6

TABLE A.4-7
PHASE 1 - CATENARY MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE C3A16T - HYBRID ARAMID MOORING SYSTEM WITH NO RISER BUOY
3,000-FT WATER DEPTH - 12 POINT - 2% WATCH CIRCLE
MAX. LINE LOAD 1,075 K, PRE-TENSION = 650 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Aramid Riser Line, 4 3/4" Diameter	77.00	6300	$/ft.	16	7,761.6
2	Fairlead Wire, 4 3/8" dia. Multi-Strand	79.15	500	$/ft.	16	633.2
3	Intermediate Wire, 4 3/8" dia. Spiral Strand	79.15	1200	$/ft.	16	1,519.7
4	Ground Wire, 4 3/8" dia. Spiral Strand	79.15	1650	$/ft.	16	2,089.6
5	Dip Zone Chain Length, 4 1/2" dia. ORQ	170.77	1500	$/ft.	16	4,098.5
6	Ground Chain Length, 4 1/2" dia. ORQ	170.77	200	$/ft.	16	546.5
7	Connecting Links ($2.24/kip capacity, 5 per le	12,040	1	$/Leg	16	192.6
8	Shackles ($1.10/kip capacity, 16 per leg)	18,920	1	$/Leg	16	302.7
9	Anchor, 104 kip Drag Embedment with Depressor	140,000	1	Each	16	2,240.0
10						
	Total: Mooring Line Components					19,384.3

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	90,537	1	$/Leg	16	1,448.6
2	Upper Fairleads ($29.38/kip mooring cap.)	31,584	1	$/Leg	16	505.3
3	Spooling Winches ($743.31/kip 15% mooring)	119,859	1	$/Leg	16	1,917.7
4	Linear Winches ($317.50/kip pretension cap.)	285,000	1	$/Leg	16	4,560.0
						0.0
	Total: Platform Components					8,431.7

TABLE A.4-8
PHASE 1 - CATENARY MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE C3S12T - ALL STEEL MOORING SYSTEM WITH 168 K RISER & 175 K INTER. BUOY
3,000-FT WATER DEPTH - 12 POINT - 2% WATCH CIRCLE
MAX LINE LOAD =1649 K, PRE-TENSION = 1000.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Fairlead Wire, 5 1/2" dia. Multi-Strand	129.60	700	$/ft.	12	1,088.6
2	Intermediate Wire, 5 1/2" dia. Spiral Strand	129.60	2900	$/ft.	12	4,510.1
3	Riser Wire, 5 1/2" dia. Spiral Strand	129.60	2800	$/ft.	12	4,354.6
4	Ground Wire, 5 1/2" dia. Spiral Strand	129.60	2600	$/ft.	12	4,043.5
5	Dip Zone Chain, 6" dia. ORQ Chain	303.54	1600	$/ft.	12	5,828.0
6	Ground Chain, 6" dia. ORQ Chain	303.54	100	$/ft.	12	364.2
7	Intermediate Buoy (175 kips net buoyancy)	250,000	1	Each	12	3,000.0
8	Riser Buoy (168 kips net buoyancy)	325,000	1	Each	12	3,900.0
9	Triplates ($3.25/kip capacity, 3 per leg)	16,078	1	$/Leg	12	192.9
10	Connecting Links ($2.24/kip capacity, 4 per l	14,775	1	$/Leg	12	177.3
11	Shackles ($1.10/kip capacity, 24 per leg)	43,534	1	$/Leg	12	522.4
12	Anchor, 120 kip Drag Embedment with Depressor	162,000	1	Each	12	1,944.0
	Total: Mooring Line Components					29,925.7

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	138,879	1	$/Leg	12	1,666.5
2	Upper Fairleads ($29.38/kip mooring cap.)	48,448	1	$/Leg	12	581.4
3	Spooling Winches ($743.31/kip 15% mooring)	183,858	1	$/Leg	12	2,206.3
4	Linear Winches ($317.50/kip pretension cap.)	380,000	1	$/Leg	12	4,560.0
	Total: Platform Components					9,014.2

TABLE A.4-9
PHASE 1 - CATENARY MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE C3S12T-3 - ALL STEEL MOORING SYSTEM WITH 56 KIP RISER BUOY, 175 K INTER. BUOY & 112 K MIDDLE BU
3,000-FT WATER DEPTH - 12 POINT - 2% WATCH CIRCLE
MAX LINE LOAD =1618 K, PRE-TENSION = 1000.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Fairlead Wire, 5 1/2" dia. Multi-Strand	129.60	700	$/ft.	12	1,088.6
2	Intermediate Wire, 5 1/2" dia. Spiral Strand	129.60	3000	$/ft.	12	4,665.6
3	Riser Wire, 5 1/2" dia. Spiral Strand	129.60	2800	$/ft.	12	4,354.6
4	Ground Wire, 5 1/2" dia. Spiral Strand	129.60	2800	$/ft.	12	4,354.6
5	Dip Zone Chain, 6" dia. ORQ Chain	303.54	1500	$/ft.	12	5,463.7
6	Ground Chain, 6" dia. ORQ Chain	303.54	100	$/ft.	12	364.2
7	Intermediate Buoy (175 kips net buoyancy)	250,000	1	Each	12	3,000.0
8	Middle Buoy (112 kips net buoyancy)	250,000	1	Each	12	3,000.0
9	Riser Buoy (56 kips net buoyancy)	180,000	1	Each	12	2,160.0
10	Triplates ($3.25/kip capacity, 3 per leg)	15,776	1	$/Leg	12	189.3
11	Connecting Links ($2.24/kip capacity, 4 per l	14,497	1	$/Leg	12	174.0
12	Shackles ($1.10/kip capacity, 24 per leg)	42,715	1	$/Leg	12	512.6
13	Anchor, 120 kip Drag Embedment with Depressor	162,000	1	Each	12	1,944.0
	Total: Mooring Line Components					31,271.2

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	136,268	1	$/Leg	12	1,635.2
2	Upper Fairleads ($29.38/kip mooring cap.)	47,537	1	$/Leg	12	570.4
3	Spooling Winches ($743.31/kip 15% mooring)	180,401	1	$/Leg	12	2,164.8
4	Linear Winches ($317.50/kip pretension cap.)	380,000	1	$/Leg	12	4,560.0
	Total: Platform Components					8,930.5

TABLE A.4-10
PHASE 1 - CATENARY MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE C3S16T - ALL STEEL MOORING SYSTEM WITH 112 K RISER & 100 K INTER. BUOY
3,000-FT WATER DEPTH - 16 POINT - 2% WATCH CIRCLE
MAX LINE LOAD =1172 K, PRE-TENSION = 750.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Fairlead Wire, 4 1/2" dia. Multi-Strand	82.18	700	$/ft.	16	920.4
2	Intermediate Wire, 4 1/2" dia. Spiral Strand	82.18	2900	$/ft.	16	3,813.2
3	Riser Wire, 4 1/2" dia. Spiral Strand	82.18	2800	$/ft.	16	3,681.7
4	Ground Wire, 4 1/2" dia. Spiral Strand	82.18	2600	$/ft.	16	3,418.7
5	Dip Zone Chain, 4 3/4" dia. ORQ Chain	190.23	1600	$/ft.	16	4,869.9
6	Ground Chain, 4 3/4" dia. ORQ Chain	190.23	100	$/ft.	16	304.4
7	Intermediate Buoy (100 kips net buoyancy)	175,000	1	Each	16	2,800.0
8	Riser Buoy (112 kips net buoyancy)	310,000	1	Each	16	4,960.0
9	Triplates ($3.25/kip capacity, 3 per leg)	11,427	1	$/Leg	16	182.8
10	Connecting Links ($2.24/kip capacity, 4 per l	10,501	1	$/Leg	16	168.0
11	Shackles ($1.10/kip capacity, 24 per leg)	30,941	1	$/Leg	16	495.1
12	Anchor, 104 kip Drag Embedment with Depressor	140,000	1	Each	16	2,240.0
	Total: Mooring Line Components					27,854.1

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	98,706	1	$/Leg	16	1,579.3
2	Upper Fairleads ($29.38/kip mooring cap.)	34,433	1	$/Leg	16	550.9
3	Spooling Winches ($743.31/kip 15% mooring)	130,674	1	$/Leg	16	2,090.8
4	Linear Winches ($317.50/kip pretension cap.)	285,000	1	$/Leg	16	4,560.0
	Total: Platform Components					8,781.0

TABLE A.4-11
PHASE 1 - CATENARY MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE C6A12T - HYBRID ARAMID MOORING SYSTEM WITH OUT RISER BUOY
6,000-FT WATER DEPTH - 12 POINT - 2% WATCH CIRCLE
MAX LINE LOAD =1693 K, PRE-TENSION = 1090.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Aramid Riser Line, 5 3/4" Diameter	120.00	7500	$/ft.	12	10,800.0
2	Fairlead Wire, 5 3/8" dia. Multi-Strand	123.94	500	$/ft.	12	743.6
3	Intermediate Wire, 5 3/8" dia. Spiral Strand	123.94	3300	$/ft.	12	4,908.0
4	Ground Wire, 5 3/8" dia. Spiral Strand	123.94	1000	$/ft.	12	1,487.3
5	Dip Zone Chain, 5 1/2" dia. ORQ	255.09	4000	$/ft.	12	12,244.3
6	Ground Chain, 5 1/2" dia. ORQ	255.09	400	$/ft.	12	1,224.4
7	Connecting Links ($2.24/kip capacity, 5 per leg	18,962	1	$/Leg	12	227.5
8	Shackles ($1.10/kip capacity, 16 per leg)	29,797	1	$/Leg	12	357.6
9	Anchor, 120 kip Drag Embedment with Depressor	162,000	1	Each	12	1,944.0
10						0.0
	Total: Mooring Line Components					33,936.8

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	142,584	1	$/Leg	12	1,711.0
2	Upper Fairleads ($29.38/kip mooring cap.)	49,740	1	$/Leg	12	596.9
3	Spooling Winches ($743.31/kip 15% mooring)	188,764	1	$/Leg	12	2,265.2
4	Linear Winches ($317.50/kip pretension cap.)	380,000	1	$/Leg	12	4,560.0
						0.0
	Total: Platform Components					9,133.1

TABLE A.4-12
PHASE 1 - CATENARY MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE C6A16T - HYBRID ARAMID MOORING SYSTEM WITH OUT RISER BUOY
6,000-FT WATER DEPTH - 16 POINT - 2% WATCH CIRCLE
MAX LINE LOAD =1231 K, PRE-TENSION = 790.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Aramid Riser Line, 5 1/4" Diameter	97.00	7500	$/ft.	16	11,640.0
2	Fairlead Wire, 4 7/8" dia. Multi-Strand	98.04	500	$/ft.	16	784.3
3	Intermediate Wire, 4 7/8" dia. Spiral Strand	98.04	3300	$/ft.	16	5,176.5
4	Ground Wire, 4 7/8" dia. Spiral Strand	98.04	1000	$/ft.	16	1,568.6
5	Dip Zone Chain, 5" dia. ORQ	210.80	4000	$/ft.	16	13,491.2
6	Ground Chain, 5" dia. ORQ	210.80	400	$/ft.	16	1,349.1
7	Connecting Links ($2.24/kip capacity, 5 per leg	13,787	1	$/Leg	16	220.6
8	Shackles ($1.10/kip capacity, 16 per leg)	21,666	1	$/Leg	16	346.6
9	Anchor, 80 kip Drag Embedment with Depressor	108,000	1	Each	16	1,728.0
10						0.0
	Total: Mooring Line Components					36,305.0

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	103,675	1	$/Leg	16	1,658.8
2	Upper Fairleads ($29.38/kip mooring cap.)	36,167	1	$/Leg	16	578.7
3	Spooling Winches ($743.31/kip 15% mooring)	137,252	1	$/Leg	16	2,196.0
4	Linear Winches ($317.50/kip pretension cap.)	285,000	1	$/Leg	16	4,560.0
						0.0
	Total: Platform Components					8,993.5

TABLE A.4-13
PHASE 1 - CATENARY MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE C6S12T - ALL STEEL MOORING SYSTEM WITH 332 K RISER & 200 K INTER. BUOY
6,000-FT WATER DEPTH - 12 POINT - 2% WATCH CIRCLE
MAX LINE LOAD =1715 K, PRE-TENSION = 1100.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Fairlead Wire, 5 1/2" dia. Multi-Strand	129.60	800	$/ft.	12	1,244.2
2	Intermediate Wire, 5 1/2" dia. Spiral Strand	129.60	5000	$/ft.	12	7,776.0
3	Riser Wire, 5 1/2" dia. Spiral Strand	129.60	5800	$/ft.	12	9,020.2
4	Ground Wire, 5 1/2" dia. Spiral Strand	129.60	3600	$/ft.	12	5,598.7
5	Dip Zone Chain, 6" dia. ORQ Chain	303.54	1700	$/ft.	12	6,192.2
6	Ground Chain, 6" dia. ORQ Chain	303.54	200	$/ft.	12	728.5
7	Intermediate Buoy (200 kips net buoyancy)	280,000	1	Each	12	3,360.0
8	Riser Buoy (332 kips net buoyancy)	850,000	1	Each	12	10,200.0
9	Triplates ($3.25/kip capacity, 3 per leg)	16,721	1	$/Leg	12	200.7
10	Connecting Links ($2.24/kip capacity, 4 per l	15,366	1	$/Leg	12	184.4
11	Shackles ($1.10/kip capacity, 24 per leg)	45,276	1	$/Leg	12	543.3
12	Anchor, 120 kip Drag Embedment with Depressor	162,000	1	Each	12	1,944.0
	Total: Mooring Line Components					46,992.1

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	144,437	1	$/Leg	12	1,733.2
2	Upper Fairleads ($29.38/kip mooring cap.)	50,387	1	$/Leg	12	604.6
3	Spooling Winches ($743.31/kip 15% mooring)	191,216	1	$/Leg	12	2,294.6
4	Linear Winches ($317.50/kip pretension cap.)	380,000	1	$/Leg	12	4,560.0
	Total: Platform Components					9,192.5

Appendix A.5 - Taut-Leg, Depth Extension Designs

TABLE A.5-1
TAUT LEG MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE T8A12N-0 - HYBRID ARAMID MOORING SYSTEM WITH NO RISER BUOY
12 POINT - 10% WATCH CIRCLE - 8,000-FT WATER DEPTH
MAX LINE LOAD =1990 K, PRE-TENSION = 200.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Aramid Riser Line, 5.94" Diameter	132.00	7450	$/ft.	12	11,800.8
2	Platform Line, 5 5/8" dia. Spiral Strand	135.80	1950	$/ft.	12	3,177.7
3	0 kip Net Buoyancy Riser Buoy	0	1	Each	12	0.0
4	Connecting Links ($2.24/kip cap., 3 per leg)	13,373	1	$/Leg	12	160.5
5	Shackles ($1.10/kip cap., 3 per leg)	6,567	1	$/Leg	12	78.8
6	Triplates ($3.25/kip cap., 1 per leg)	6,468	1	$/Leg	12	77.6
7	Anchor Chain Section, 6 1/4" dia. ORQ+10%	445.63	250	$/ft.	12	1,336.9
8	Driven Pile Anchor	94,000	1	Each	12	1,128.0
9						
	Total: Mooring Line Components					17,760.3

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	167,598	1	$/Leg	12	2,011.2
2	Upper Fairleads ($29.38/kip mooring cap.)	58,466	1	$/Leg	12	701.6
3	Spooling Winches ($743.31/kip pretension cap	221,878	1	$/Leg	12	2,662.5
4	Linear Winches ($317.50/kip pretension cap.)	95,000	1	$/Leg	12	1,140.0
5						
	Total: Platform Components					6,515.3

TABLE A.5-2
TAUT LEG MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE T8A12T-0 - HYBRID ARAMID MOORING SYSTEM WITH NO RISER BUOY
12 POINT - 2% WATCH CIRCLE - 8,000-FT WATER DEPTH
MAX LINE LOAD =1799 K, PRE-TENSION = 330.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Aramid Riser Line, 5.94" Diameter	132.00	7450	$/ft.	12	11,800.8
2	Platform Line, 5 5/8" dia. Spiral Strand	135.80	1950	$/ft.	12	3,177.7
3	0 kip Net Buoyancy Riser Buoy	0	1	Each	12	0.0
4	Connecting Links ($2.24/kip cap., 3 per leg)	12,089	1	$/Leg	12	145.1
5	Shackles ($1.10/kip cap., 3 per leg)	5,937	1	$/Leg	12	71.2
6	Triplates ($3.25/kip cap., 1 per leg)	5,847	1	$/Leg	12	70.2
7	Anchor Chain Section, 6" dia. ORQ+10%	410.67	250	$/ft.	12	1,232.0
8	Driven Pile Anchor	94,000	1	Each	12	1,128.0
9						
	Total: Mooring Line Components					17,625.0

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	151,512	1	$/Leg	12	1,818.1
2	Upper Fairleads ($29.38/kip mooring cap.)	52,855	1	$/Leg	12	634.3
3	Spooling Winches ($743.31/kip pretension cap.	200,582	1	$/Leg	12	2,407.0
4	Linear Winches ($317.50/kip pretension cap.)	145,000	1	$/Leg	12	1,740.0
5						
	Total: Platform Components					6,599.4

TABLE A.5-3
TAUT LEG MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE T8S12N-2 - ALL-STEEL MOORING SYSTEM WITH 200 K RISER & 322 K INTER. BUOY
12 POINT - 10% WATCH CIRCLE - 8,000-FT WATER DEPTH
MAX LINE LOAD =1899 K, PRE-TENSION = 360.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Platform Line, 6.0" Dia. Spiral Strand	148.99	2300	$/ft.	12	4,112.1
2	Intermediate Line, 6.0" dia. Spiral Strand	148.99	2000	$/ft.	12	3,575.8
3	Riser Line, 6.0" dia. Spiral Strand	148.99	5800	$/ft.	12	10,369.7
4	Ground Line, 6.0" dia. Spiral Strand	148.99	1850	$/ft.	12	3,307.6
5	322 kip Net Buoyancy Intermediate Buoy	725,000	1	Each	12	8,700.0
6	200 kip Net Buoyancy Riser Buoy	880,000	1	Each	12	10,560.0
7	Connecting Links ($2.24/kip cap., 6 per leg)	25,523	1	$/Leg	12	306.3
8	Shackles ($1.10/kip cap., 1 per leg)	2,089	1	$/Leg	12	25.1
9	Triplates ($3.25/kip cap., 2 per leg)	12,344	1	$/Leg	12	148.1
10	Anchor Chain Section, 5 3/4" dia. ORQ4	360.99	250	$/ft.	12	1,083.0
11	Driven Pile Anchor	102,000	1	Each	12	1,224.0
	Total: Mooring Line Components					43,411.6

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	159,934	1	$/Leg	12	1,919.2
2	Upper Fairleads ($29.38/kip mooring cap.)	55,793	1	$/Leg	12	669.5
3	Spooling Winches ($743.31/kip 15% mooring)	211,732	1	$/Leg	12	2,540.8
4	Linear Winches ($317.50/kip pretension cap.)	145,000	1	$/Leg	12	1,740.0
	Total: Platform Components					6,869.5

TABLE A.5-4
TAUT LEG MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE T8S12T-2 - ALL-STEEL MOORING SYSTEM WITH 200 K RISER & 322 K INTER. BUOY
12 POINT - 2% WATCH CIRCLE - 8,000-FT WATER DEPTH
MAX LINE LOAD =2088 K, PRE-TENSION = 760.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Platform Line, 6.0" Dia. Spiral Strand	148.99	2300	$/ft.	12	4,112.1
2	Intermediate Line, 6.0" dia. Spiral Strand	148.99	2000	$/ft.	12	3,575.8
3	Riser Line, 6.0" dia. Spiral Strand	148.99	5800	$/ft.	12	10,369.7
4	Ground Line, 6.0" dia. Spiral Strand	148.99	1850	$/ft.	12	3,307.6
5	322 kip Net Buoyancy Intermediate Buoy	725,000	1	Each	12	8,700.0
6	200 kip Net Buoyancy Riser Buoy	880,000	1	Each	12	10,560.0
7	Connecting Links ($2.24/kip cap., 6 per leg)	28,063	1	$/Leg	12	336.8
8	Shackles ($1.10/kip cap., 1 per leg)	2,297	1	$/Leg	12	27.6
9	Triplates ($3.25/kip cap., 2 per leg)	13,572	1	$/Leg	12	162.9
10	Anchor Chain Section, 5 3/4" dia. ORQ4	360.99	250	$/ft.	12	1,083.0
11	Driven Pile Anchor	102,000	1	Each	12	1,224.0
	Total: Mooring Line Components					43,459.3

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	175,851	1	$/Leg	12	2,110.2
2	Upper Fairleads ($29.38/kip mooring cap.)	61,345	1	$/Leg	12	736.1
3	Spooling Winches ($743.31/kip 15% mooring)	232,805	1	$/Leg	12	2,793.7
4	Linear Winches ($317.50/kip pretension cap.)	285,000	1	$/Leg	12	3,420.0
	Total: Platform Components					9,060.0

TABLE A.5-5
TAUT LEG MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE T8S12T - ALL-STEEL MOORING SYSTEM WITH 531 K RISER BUOY
12 POINT - 2% WATCH CIRCLE - 8,000-FT WATER DEPTH
MAX LINE LOAD =2013 K, PRE-TENSION = 750.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Riser Line, 6.0" Dia. Spiral Strand	148.99	7750	$/ft.	12	13,856.1
2	Platform Line, 6.0" dia. Spiral Strand	148.99	4000	$/ft.	12	7,151.5
3	531 kip Net Buoyancy Riser Buoy	2,300,000	1	Each	12	27,600.0
4	Connecting Links ($2.24/kip cap., 4 per leg)	18,036	1	$/Leg	12	216.4
5	Shackles ($1.10/kip cap., 1 per leg)	2,214	1	$/Leg	12	26.6
6	Triplates ($3.25/kip cap., 1 per leg)	6,542	1	$/Leg	12	78.5
7	Anchor Chain Section, 5 5/8" dia. ORQ	360.99	250	$/ft.	12	1,083.0
8	Driven Pile Anchor	102,000	1	Each	12	1,224.0
9						0.0
				Total: Mooring Line Components		51,236.1

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	169,535	1	$/Leg	12	2,034.4
2	Upper Fairleads ($29.38/kip mooring cap.)	59,142	1	$/Leg	12	709.7
3	Spooling Winches ($743.31/kip 15% mooring)	224,442	1	$/Leg	12	2,693.3
4	Linear Winches ($317.50/kip pretension cap.)	285,000	1	$/Leg	12	3,420.0
				Total: Platform Components		8,857.4

TABLE A.5-6
TAUT LEG MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE T10A12N-0 - HYBRID ARAMID MOORING SYSTEM WITH NO RISER BUOY
12 POINT - 10% WATCH CIRCLE - 10,000-FT WATER DEPTH
MAX LINE LOAD =2054 K, PRE-TENSION = 210.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Aramid Riser Line, 5 7/8" Diameter	126.00	9450	$/ft.	12	14,288.4
2	Platform Line, 5 1/2" dia. Spiral Strand	129.60	2950	$/ft.	12	4,587.8
3	0 kip Net Buoyancy Riser Buoy	0	1	Each	12	0.0
4	Connecting Links ($2.24/kip cap., 3 per leg)	13,803	1	$/Leg	12	165.6
5	Shackles ($1.10/kip cap., 3 per leg)	6,778	1	$/Leg	12	81.3
6	Triplates ($3.25/kip cap., 1 per leg)	6,676	1	$/Leg	12	80.1
7	Anchor Chain Section, 6 1/4" dia. ORQ+10%	445.63	250	$/ft.	12	1,336.9
8	Driven Pile Anchor	102,000	1	Each	12	1,224.0
9						
	Total: Mooring Line Components					21,764.2

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	172,988	1	$/Leg	12	2,075.9
2	Upper Fairleads ($29.38/kip mooring cap.)	60,347	1	$/Leg	12	724.2
3	Spooling Winches ($743.31/kip pretension cap.)	229,014	1	$/Leg	12	2,748.2
4	Linear Winches ($317.50/kip pretension cap.)	95,000	1	$/Leg	12	1,140.0
5						
	Total: Platform Components					6,688.2

TABLE A.5-7
TAUT LEG MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE T10A12T-0 - HYBRID ARAMID MOORING SYSTEM WITH NO RISER BUOY
12 POINT - 2% WATCH CIRCLE - 10,000-FT WATER DEPTH
MAX LINE LOAD =1705 K, PRE-TENSION = 440.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Aramid Riser Line, 5 7/8" Diameter	126.00	9450	$/ft.	12	14,288.4
2	Platform Line, 5 1/2" dia. Spiral Strand	129.60	2950	$/ft.	12	4,587.8
3	0 kip Net Buoyancy Riser Buoy	0	1	Each	12	0.0
4	Connecting Links ($2.24/kip cap., 3 per leg)	11,458	1	$/Leg	12	137.5
5	Shackles ($1.10/kip cap., 3 per leg)	5,627	1	$/Leg	12	67.5
6	Triplates ($3.25/kip cap., 1 per leg)	5,541	1	$/Leg	12	66.5
7	Anchor Chain Section, 6" dia. ORQ+10%	410.67	250	$/ft.	12	1,232.0
8	Driven Pile Anchor	94,000	1	Each	12	1,128.0
9						
	Total: Mooring Line Components					21,507.8

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	143,595	1	$/Leg	12	1,723.1
2	Upper Fairleads ($29.38/kip mooring cap.)	50,093	1	$/Leg	12	601.1
3	Spooling Winches ($743.31/kip pretension cap.	190,102	1	$/Leg	12	2,281.2
4	Linear Winches ($317.50/kip pretension cap.)	145,000	1	$/Leg	12	1,740.0
5						
	Total: Platform Components					6,345.5

TABLE A.5-8
TAUT LEG MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE T10S12N-2 - ALL-STEEL MOORING SYSTEM WITH 200 K RISER & 452 K INTER. BUOY
12 POINT - 10% WATCH CIRCLE - 10,000-FT WATER DEPTH
MAX LINE LOAD =1658 K, PRE-TENSION = 480.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Platform Line, 6.0" Dia. Spiral Strand	148.99	2700	$/ft.	12	4,827.3
2	Intermediate Line, 6.0" dia. Spiral Strand	148.99	2300	$/ft.	12	4,112.1
3	Riser Line, 6.0" dia. Spiral Strand	148.99	7500	$/ft.	12	13,409.1
4	Ground Line, 6.0" dia. Spiral Strand	148.99	2950	$/ft.	12	5,274.2
5	452 kip Net Buoyancy Intermediate Buoy	1,100,000	1	Each	12	13,200.0
6	200 kip Net Buoyancy Riser Buoy	1,050,000	1	Each	12	12,600.0
7	Connecting Links ($2.24/kip cap., 6 per leg)	22,284	1	$/Leg	12	267.4
8	Shackles ($1.10/kip cap., 1 per leg)	1,824	1	$/Leg	12	21.9
9	Triplates ($3.25/kip cap., 2 per leg)	10,777	1	$/Leg	12	129.3
10	Anchor Chain Section, 5 3/4" dia. ORQ	360.99	350	$/ft.	12	1,516.2
11	Driven Pile Anchor	94,000	1	Each	12	1,128.0
	Total: Mooring Line Components					56,485.5

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	139,637	1	$/Leg	12	1,675.6
2	Upper Fairleads ($29.38/kip mooring cap.)	48,712	1	$/Leg	12	584.5
3	Spooling Winches ($743.31/kip 15% mooring)	184,861	1	$/Leg	12	2,218.3
4	Linear Winches ($317.50/kip pretension cap.)	190,000	1	$/Leg	12	2,280.0
	Total: Platform Components					6,758.5

TABLE A.5-9
TAUT LEG MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE T10S12T-2 - ALL-STEEL MOORING SYSTEM WITH 200 K RISER & 452 K INTER. BUOY
12 POINT - 2% WATCH CIRCLE - 10,000-FT WATER DEPTH
MAX LINE LOAD =2074 K, PRE-TENSION = 960.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Platform Line, 6.0" Dia. Spiral Strand	148.99	2700	$/ft.	12	4,827.3
2	Intermediate Line, 6.0" dia. Spiral Strand	148.99	2300	$/ft.	12	4,112.1
3	Riser Line, 6.0" dia. Spiral Strand	148.99	7500	$/ft.	12	13,409.1
4	Ground Line, 6.0" dia. Spiral Strand	148.99	2950	$/ft.	12	5,274.2
5	452 kip Net Buoyancy Intermediate Buoy	1,100,000	1	Each	12	13,200.0
6	200 kip Net Buoyancy Riser Buoy	1,050,000	1	Each	12	12,600.0
7	Connecting Links ($2.24/kip cap., 6 per leg)	27,875	1	$/Leg	12	334.5
8	Shackles ($1.10/kip cap., 2 per leg)	2,281	1	$/Leg	12	27.4
9	Triplates ($3.25/kip cap., 1 per leg)	13,481	1	$/Leg	12	161.8
10	Anchor Chain Section, 5 3/4" dia. ORQ	360.99	350	$/ft.	12	1,516.2
11	Driven Pile Anchor	102,000	1	Each	12	1,224.0
	Total: Mooring Line Components					56,686.5

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	174,672	1	$/Leg	12	2,096.1
2	Upper Fairleads ($29.38/kip mooring cap.)	60,934	1	$/Leg	12	731.2
3	Spooling Winches ($743.31/kip 15% mooring)	231,244	1	$/Leg	12	2,774.9
4	Linear Winches ($317.50/kip pretension cap.)	317,500	1	$/Leg	12	3,810.0
	Total: Platform Components					9,412.2

TABLE A.5-10
TAUT LEG MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE T10S12T - ALL-STEEL MOORING SYSTEM WITH 662 KIP RISER BUOY
12 POINT - 2% WATCH CIRCLE - 10,000-FT WATER DEPTH
MAX LINE LOAD =2102 K, PRE-TENSION = 980.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Riser Line, 6.0" Dia. Spiral Strand	148.99	9750	$/ft.	12	17,431.8
2	Platform Line, 6.0" dia. Spiral Strand	148.99	6000	$/ft.	12	10,727.3
3	662 kip Net Buoyancy Riser Buoy	5,300,000	1	Each	12	63,600.0
4	Connecting Links ($2.24/kip cap., 4 per leg)	18,834	1	$/Leg	12	226.0
5	Shackles ($1.10/kip cap., 1 per leg)	2,312	1	$/Leg	12	27.7
6	Triplates ($3.25/kip cap., 1 per leg)	6,832	1	$/Leg	12	82.0
7	Anchor Chain Section, 5 3/4" dia. ORQ	278.8	350	$/ft.	12	1,171.0
8	Driven Pile Anchor	102,000	1	Each	12	1,224.0
9						
	Total: Mooring Line Components					94,489.8

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	177,030	1	$/Leg	12	2,124.4
2	Upper Fairleads ($29.38/kip mooring cap.)	61,757	1	$/Leg	12	741.1
3	Spooling Winches ($743.31/kip 15% mooring)	234,366	1	$/Leg	12	2,812.4
4	Linear Winches ($317.50/kip pretension cap.)	317,500	1	$/Leg	12	3,810.0
5						
	Total: Platform Components					9,487.8

Appendix A.6 - Catenary, Depth Extension Designs

TABLE A.6-1
PHASE 1 - CATENARY MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE C8A12N - HYBRID ARAMID MOORING SYSTEM WITH NO RISER BUOY
8,000-FT WATER DEPTH - 12 POINT - 10% WATCH CIRCLE
MAX LINE LOAD =1003 K, PRE-TENSION = 420.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Fairlead Wire, 4 1/4" dia. Multi-Strand	72.99	500	$/ft.	12	437.9
2	Intermediate Wire, 4 5/8" dia. Aramid Line	72.50	7000	$/ft.	12	6,090.0
3	Riser Line, 4 1/4" Diameter Spiral Strand	72.99	3300	$/ft.	12	2,890.4
4	Ground Wire, 4 1/4" dia. Spiral Strand	72.99	7200	$/ft.	12	6,306.3
5	Dip Zone Chain, 5" dia. ORQ	210.80	1700	$/ft.	12	4,300.3
6	Ground Chain, 5" dia. ORQ	210.80	200	$/ft.	12	505.9
7	Connecting Links ($2.24/kip capacity, 5 per leg	11,234	1	$/Leg	12	134.8
8	Shackles ($1.10/kip capacity, 16 per leg)	17,653	1	$/Leg	12	211.8
9	Anchor, 80 kip Drag Embedment with Depressor	108,000	1	Each	12	1,296.0
10						0.0
	Total: Mooring Line Components					22,173.6

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	84,473	1	$/Leg	12	1,013.7
2	Upper Fairleads ($29.38/kip mooring cap.)	29,468	1	$/Leg	12	353.6
3	Spooling Winches ($743.31/kip 15% mooring)	111,831	1	$/Leg	12	1,342.0
4	Linear Winches ($317.50/kip pretension cap.)	190,000	1	$/Leg	12	2,280.0
						0.0
	Total: Platform Components					4,989.3

TABLE A.6-2
PHASE 1 - CATENARY MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE C8S12N - ALL STEEL MOORING SYSTEM WITH 312 K RISER & 120 K INTER. BUOY
8,000-FT WATER DEPTH - 12 POINT - 10% WATCH CIRCLE
MAX LINE LOAD =1193 K, PRE-TENSION = 285.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Fairlead Wire, 4 5/8" dia. Multi-Strand	86.30	800	$/ft.	12	828.5
2	Intermediate Wire, 4 5/8" dia. Spiral Strand	86.30	3000	$/ft.	12	3,106.8
3	Riser Wire, 4 5/8" dia. Spiral Strand	86.30	7800	$/ft.	12	8,077.7
4	Ground Wire, 4 5/8" dia. Spiral Strand	86.30	5300	$/ft.	12	5,488.7
5	Dip Zone Chain, 4-7/8" dia. ORQ Chain	200.43	2100	$/ft.	12	5,050.8
6	Ground Chain, 4-7/8" dia. ORQ Chain	200.43	200	$/ft.	12	481.0
7	Intermediate Buoy (120 kips net buoyancy)	200,000	1	Each	12	2,400.0
8	Riser Buoy (312 kips net buoyancy)	700,000	1	Each	12	8,400.0
9	Triplates ($3.25/kip capacity, 3 per leg)	11,632	1	$/Leg	12	139.6
10	Connecting Links ($2.24/kip capacity, 4 per le	10,689	1	$/Leg	12	128.3
11	Shackles ($1.10/kip capacity, 24 per leg)	31,495	1	$/Leg	12	377.9
12	Anchor, 80 kip Drag Embedment with Depressor	108,000	1	Each	12	1,296.0
	Total: Mooring Line Components					35,775.3

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	100,474	1	$/Leg	12	1,205.7
2	Upper Fairleads ($29.38/kip mooring cap.)	35,050	1	$/Leg	12	420.6
3	Spooling Winches ($743.31/kip 15% mooring)	133,015	1	$/Leg	12	1,596.2
4	Linear Winches ($317.50/kip pretension cap.)	190,000	1	$/Leg	12	2,280.0
	Total: Platform Components					5,502.5

TABLE A.6-3
PHASE 1 - CATENARY MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE C10A12N - HYBRID ARAMID MOORING SYSTEM WITH NO RISER BUOY
10,000-FT WATER DEPTH - 12 POINT - 10% WATCH CIRCLE
MAX LINE LOAD =1031 K, PRE-TENSION = 445.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Fairlead Wire, 4 1/4" dia. Multi-Strand	72.99	500	$/ft.	12	437.9
2	Intermediate Wire, 4.688" dia. Aramid Line	74.75	9100	$/ft.	12	8,162.7
3	Riser Line, 4 1/4" Diameter Spiral Strand	72.99	3300	$/ft.	12	2,890.4
4	Ground Wire, 4 1/4" dia. Spiral Strand	72.99	7700	$/ft.	12	6,744.3
5	Dip Zone Chain, 5" dia. ORQ	210.80	1900	$/ft.	12	4,806.2
6	Ground Chain, 5" dia. ORQ	210.80	260	$/ft.	12	657.7
7	Connecting Links ($2.24/kip capacity, 5 per leg	11,547	1	$/Leg	12	138.6
8	Shackles ($1.10/kip capacity, 16 per leg)	18,146	1	$/Leg	12	217.7
9	Anchor, 80 kip Drag Embedment with Depressor	108,000	1	Each	12	1,296.0
10						0.0
	Total: Mooring Line Components					25,351.6

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	86,831	1	$/Leg	12	1,042.0
2	Upper Fairleads ($29.38/kip mooring cap.)	30,291	1	$/Leg	12	363.5
3	Spooling Winches ($743.31/kip 15% mooring)	114,953	1	$/Leg	12	1,379.4
4	Linear Winches ($317.50/kip pretension cap.)	190,000	1	$/Leg	12	2,280.0
						0.0
	Total: Platform Components					5,064.9

TABLE A.6-4
PHASE 1 - CATENARY MOORING COSTS
MATERIALS, HARDWARE & SPECIAL EQUIPMENT
CASE C10S12N - ALL STEEL MOORING SYSTEM WITH 411 K RISER & 150 K INTER. BUOY
10,000-FT WATER DEPTH - 12 POINT - 10% WATCH CIRCLE
MAX LINE LOAD =1298 K, PRE-TENSION = 290.0 K

MOORING LINE COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Fairlead Wire, 4 3/4" dia. Multi-Strand	89.29	800	$/ft.	12	857.2
2	Intermediate Wire, 4 3/4" dia. Spiral Strand	89.29	3700	$/ft.	12	3,964.5
3	Riser Wire, 4 3/4" dia. Spiral Strand	89.29	9800	$/ft.	12	10,500.5
4	Ground Wire, 4 3/4" dia. Spiral Strand	89.29	5000	$/ft.	12	5,357.4
5	Dip Zone Chain, 5-1/8" dia. ORQ Chain	221.51	2100	$/ft.	12	5,582.1
6	Ground Chain, 5-1/8" dia. ORQ Chain	221.51	200	$/ft.	12	531.6
7	Intermediate Buoy (150 kips net buoyancy)	235,000	1	Each	12	2,820.0
8	Riser Buoy (411 kips net buoyancy)	1,150,000	1	Each	12	13,800.0
9	Triplates ($3.25/kip capacity, 3 per leg)	12,656	1	$/Leg	12	151.9
10	Connecting Links ($2.24/kip capacity, 4 per le	11,630	1	$/Leg	12	139.6
11	Shackles ($1.10/kip capacity, 24 per leg)	34,267	1	$/Leg	12	411.2
12	Anchor, 80 kip Drag Embedment with Depressor	108,000	1	Each	12	1,296.0
	Total: Mooring Line Components					45,411.9

PLATFORM COMPONENTS:

ITEM NO.	ITEM DESCRIPTION	UNIT COST ($)	LNGTH/WT (FT/KIP)	UNITS	ITEMS REQD.	ESTIMATED COST (M$)
1	Lower Fairleads ($84.22/kip mooring cap.)	109,318	1	$/Leg	12	1,311.8
2	Upper Fairleads ($29.38/kip mooring cap.)	38,135	1	$/Leg	12	457.6
3	Spooling Winches ($743.31/kip 15% mooring)	144,722	1	$/Leg	12	1,736.7
4	Linear Winches ($317.50/kip pretension cap.)	190,000	1	$/Leg	12	2,280.0
	Total: Platform Components					5,786.1

APPENDIX B - INSTALLATION DURATION ESTIMATE TABLES

TABLE B-1 INSTALLATION DURATIONS SUMMARY

TAUT-LEG MOORING SYSTEMS - 1,500 THROUGH 10,000-FT. WATER DEPTH

CASE NO.	TABLE NO.	INSTALLATION VESSEL	WATER DEPTH (FEET)	NO OF MOORING POINTS	PILE INSTALLATION METHOD	PILE ASSEMBLY METHOD	DURATION IN DAYS
DB1D	B-2	DP Derrick Barge	1,500	16	Driven	One-piece	16.6
DB3D	B-3	DP Derrick Barge	3,000	16	Driven	One-piece	18.3
DB6D	B-4	DP Derrick Barge	6,000	16	Driven	One-piece	21.9
DB6D	B-5	DP Derrick Barge	6,000	12	Driven	One-piece	16.5
DS1GK	B-6	DP Drillship	1,500	16	Grouted	Keelhauled	28.1
DS1DK	B-7	DP Drillship	1,500	16	Driven	Keelhauled	16.7
DS3GW	B-8	DP Drillship	3,000	16	Grouted	Welded	39.3
DS3GK	B-9	DP Drillship	3,000	16	Grouted	Keelhauled	32.0
DS3DW	B-10	DP Drillship	3,000	16	Driven	Welded	22.1
DS3DK	B-11	DP Drillship	3,000	16	Driven	Keelhauled	18.6
DS6GW	B-12	DP Drillship	6,000	16	Grouted	Welded	44.9
DS6GW	B-13	DP Drillship	6,000	12	Grouted	Welded	33.7
DS6GK	B-14	DP Drillship	6,000	16	Grouted	Keelhauled	40.7
DS6GK	B-15	DP Drillship	6,000	12	Grouted	Keelhauled	30.5
DS6DW	B-16	DP Drillship	6,000	16	Driven	Welded	32.3
DS6DW	B-17	DP Drillship	6,000	12	Driven	Welded	24.2
DS6DK	B-18	DP Drillship	6,000	16	Driven	Keelhauled	21.9
DS6DK	B-19	DP Drillship	6,000	12	Driven	Keelhauled	16.5
DS8GK	B-20	DP Drillship	8,000	16	Grouted	Keelhauled	49.3
DS8GK	B-21	DP Drillship	8,000	12	Grouted	Keelhauled	37.0
DS10GK	B-22	DP Drillship	10,000	16	Grouted	Keelhauled	54.1
DS10GK	B-23	DP Drillship	10,000	12	Grouted	Keelhauled	40.6
MSV1DK	B-24	DP MSV	1,500	16	Driven	Keelhauled	15.7
MSV3DK	B-25	DP MSV	3,000	16	Driven	Keelhauled	17.5
MSV6DK	B-26	DP MSV	6,000	16	Driven	Keelhauled	21.3
MSV6DK	B-27	DP MSV	6,000	12	Driven	Keelhauled	16.0

Table B-2
16 POINT MOORING INSTALLATION USING D.P. DERRICK BARGE
DRIVEN PILES IN 1,500 FT WATER DEPTH
MINIMUM RISER BUOY INSTALLATION CONCEPT 04/04/90

CASE DB1D

	ACTIVITY	ESTIMATED DURATION (HOURS)	CRITICAL PATH TIME (HOURS)	CUMMULATIVE TIME (HOURS)
1	Offload mooring components from cargo barge & lay on barge deck	2.0	1.0	1.0
2	Install riser spool to riser deployment winch	1.0	1.0	2.0
3	Connect anchor chain section to end of riser line	1.0	1.0	3.0
4	Upend anchor pile and hang on landing beams	0.5	0.5	3.5
5	Attach one end of chain section to anchor pile padeye	1.0	1.0	4.5
6	Reposition anchor pile and hang on landing beams	1.0	1.0	5.5
7	Pick up follower section and latch it into top of anchor pile	0.5	0.5	6.0
8	Pick up riser buoy and set into water along side crane vessel	0.5	0.5	6.5
9	Lower anchor chain over side until weight of chain is supported by anchor pile and riser line	0.5	0.5	7.0
10	Upend underwater pile hammer and stab onto follower & connect	2.0	2.0	9.0
11	Attatch hammer power umbilical to hammer	1.5	1.5	10.5
12	Lift anchor pile assembly out of landing beams & lower over side of vessel	1.0	1.0	11.5
13	Survey rigging with ROV and rearrange as required	0.2	0.2	11.7
14	Lower anchor pile assembly until riser line is deployed	1.4	1.4	13.1
15	Lift riser spelter socket from retainer & set in cantilevered stopper	0.5	0.5	13.6
16	Make connection between riser socket & riser buoy pendant	1.0	1.0	14.6
17	Lift connection from stopper and lower over side until supported by riser buoy	1.0	1.0	15.6
18	Attach aux. lowering winch line to riser buoy marker pendant	1.0	0.2	15.8
19	Lower anchor pile to transfer weight of chain to riser buoy	1.0	1.0	16.8
20	Continue lowering anchor pile assembly & chain to 20' above seafloor	1.0	1.0	17.8
21	Position anchor pile over predetermined pile location within tolerance	1.0	1.0	18.8
22	Lower anchor pile into seafloor until it self-supports	1.0	1.0	19.8
23	Drive anchor pile to proper penetration	2.5	2.5	22.3
24	Release hammer/follower assembly from anchor pile & return to surface	1.6	1.6	23.9
25	Reposition barge & pay-in lowering line to lay chain on seafloor & find riser buoy equilibrium position	1.0	0.0	23.9
26	Deploy surface marker buoy and release lowering winch line	1.5	1.0	24.9
	TOTAL HOURS			24.9
	REPEAT FOR REMAINING 15 MOORINGS			373.5
	TOTAL ELAPSED DURATION (HOURS)			398.4
	TOTAL ELAPSED DURATION (DAYS)			16.6

TABLE B-3
16 POINT MOORING INSTALLATION USING D.P. DERRICK BARGE
DRIVEN PILES IN 3,000 FT WATER DEPTH
MINIMUM RISER BUOY INSTALLATION CONCEPT 04/04/90

CASE D83D

	ACTIVITY	ESTIMATED DURATION (HOURS)	CRITICAL PATH TIME (HOURS)	CUMMULATIVE TIME (HOURS)
1	Offload mooring components from cargo barge & lay on barge deck	2.0	1.0	1.0
2	Install riser spool to riser deployment winch	1.0	1.0	2.0
3	Connect anchor chain section to end of riser line	1.0	1.0	3.0
4	Upend anchor pile and hang on landing beams	0.5	0.5	3.5
5	Attach one end of chain section to anchor pile padeye	1.0	1.0	4.5
6	Reposition anchor pile and hang on landing beams	1.0	1.0	5.5
7	Pick up follower section and latch it into top of anchor pile	0.5	0.5	6.0
8	Pick up riser buoy and set into water along side crane vessel	0.5	0.5	6.5
9	Lower anchor chain over side until weight of chain is supported by anchor pile and riser line	0.5	0.5	7.0
10	Upend underwater pile hammer and stab onto follower & connect	2.0	2.0	9.0
11	Attatch hammer power umbilical to hammer	1.5	1.5	10.5
12	Lift anchor pile assembly out of landing beams & lower over side of vessel	1.0	1.0	11.5
13	Survey rigging with ROV and rearrange as required	0.2	0.2	11.7
14	Lower anchor pile assembly until riser line is deployed	2.6	2.6	14.3
15	Lift riser spelter socket from retainer & set in cantilevered stopper	0.5	0.5	14.8
16	Make connection between riser socket & riser buoy pendant	1.0	1.0	15.8
17	Lift connection from stopper and lower over side until supported by riser buoy	1.0	1.0	16.8
18	Attach aux. lowering winch line to riser buoy marker pendant	1.0	0.2	17.0
19	Lower anchor pile to transfer weight of chain to riser buoy	1.0	1.0	18.0
20	Continue lowering anchor pile assembly & chain to 20' above seafloor	1.0	1.0	19.0
21	Position anchor pile over predetermined pile location within tolerance	1.0	1.0	20.0
22	Lower anchor pile into seafloor until it self-supports	1.0	1.0	21.0
23	Drive anchor pile to proper penetration	3.0	3.0	24.0
24	Release hammer/follower assembly from anchor pile & return to surface	3.0	3.0	27.0
25	Reposition barge & pay-in lowering line to lay chain on seafloor & find riser buoy equilibrium position	1.0	0.0	27.0
26	Deploy surface marker buoy and release lowering winch line	1.5	0.5	27.5
	TOTAL HOURS			27.5
	REPEAT FOR REMAINING 15 MOORINGS			412.5
	TOTAL ELAPSED DURATION (HOURS)			440
	TOTAL ELAPSED DURATION (DAYS)			18.3

TABLE B-4

16 POINT MOORING INSTALLATION USING D.P. DERRICK BARGE

DRIVEN PILES IN 6,000 FT WATER DEPTH

MINIMUM RISER BUOY INSTALLATION CONCEPT 04/04/90

CASE DB6D

	ACTIVITY	ESTIMATED DURATION (HOURS)	CRITICAL PATH TIME (HOURS)	CUMMULATIVE TIME (HOURS)
1	Offload mooring components from cargo barge & lay on barge deck	2.0	1.0	1.0
2	Install riser spool to riser deployment winch	1.0	1.0	2.0
3	Connect anchor chain section to end of riser line	1.0	1.0	3.0
4	Upend anchor pile and hang on landing beams	0.5	0.5	3.5
5	Attach one end of chain section to anchor pile padeye	1.0	1.0	4.5
6	Reposition anchor pile and hang on landing beams	1.0	1.0	5.5
7	Pick up follower section and latch it into top of anchor pile	0.5	0.5	6.0
8	Pick up riser buoy and set into water along side crane vessel	0.5	0.5	6.5
9	Lower anchor chain over side until weight of chain is supported by anchor pile and riser line	0.5	0.5	7.0
10	Upend underwater pile hammer and stab onto follower & connect	2.0	2.0	9.0
11	Attatch hammer power umbilical to hammer	1.5	1.5	10.5
12	Lift anchor pile assembly out of landing beams & lower over side of vessel	1.0	1.0	11.5
13	Survey rigging with ROV and rearrange as required	0.2	0.2	11.7
14	Lower anchor pile assembly until riser line is deployed	5.5	5.5	17.2
15	Lift riser spelter socket from retainer & set in cantilevered stopper	0.5	0.5	17.7
16	Make connection between riser socket & riser buoy pendant	1.0	1.0	18.7
17	Lift connection from stopper and lower over side until supported by riser buoy	1.0	1.0	19.7
18	Attach aux. lowering winch line to riser buoy marker pendant	1.0	0.2	19.9
19	Lower anchor pile to transfer weight of chain to riser buoy	1.0	1.0	20.9
20	Continue lowering anchor pile assembly & chain to 20' above seafloor	1.0	1.0	21.9
21	Position anchor pile over predetermined pile location within tolerance	1.0	1.0	22.9
22	Lower anchor pile into seafloor until it self-supports	1.0	1.0	23.9
23	Drive anchor pile to proper penetration	3.0	3.0	26.9
24	Release hammer/follower assembly from anchor pile & return to surface	5.5	5.5	32.4
25	Reposition barge & pay-in lowering line to lay chain on seafloor & find riser buoy equilibrium position	1.0	0.0	32.4
26	Deploy surface marker buoy and release lowering winch line	1.5	0.5	32.9
	TOTAL HOURS			32.9
	REPEAT FOR REMAINING 15 MOORINGS			493.5
	TOTAL ELAPSED DURATION (HOURS)			526.4
	TOTAL ELAPSED DURATION (DAYS)			21.9

TABLE B-5
12 POINT MOORING INSTALLATION USING D.P. DERRICK BARGE
DRIVEN PILES IN 6,000 FT WATER DEPTH
MINIMUM RISER BUOY INSTALLATION CONCEPT 04/04/90

CASE DB6D

	ACTIVITY	ESTIMATED DURATION (HOURS)	CRITICAL PATH TIME (HOURS)	CUMMULATIVE TIME (HOURS)
1	Offload mooring components from cargo barge & lay on barge deck	2.0	1.0	1.0
2	Install riser spool to riser deployment winch	1.0	1.0	2.0
3	Connect anchor chain section to end of riser line	1.0	1.0	3.0
4	Upend anchor pile and hang on landing beams	0.5	0.5	3.5
5	Attach one end of chain section to anchor pile padeye	1.0	1.0	4.5
6	Reposition anchor pile and hang on landing beams	1.0	1.0	5.5
7	Pick up follower section and latch it into top of anchor pile	0.5	0.5	6.0
8	Pick up riser buoy and set into water along side crane vessel	0.5	0.5	6.5
9	Lower anchor chain over side until weight of chain is supported by anchor pile and riser line	0.5	0.5	7.0
10	Upend underwater pile hammer and stab onto follower & connect	2.0	2.0	9.0
11	Attatch hammer power umbilical to hammer	1.5	1.5	10.5
12	Lift anchor pile assembly out of landing beams & lower over side of vessel	1.0	1.0	11.5
13	Survey rigging with ROV and rearrange as required	0.2	0.2	11.7
14	Lower anchor pile assembly until riser line is deployed	5.5	5.5	17.2
15	Lift riser spelter socket from retainer & set in cantilevered stopper	0.5	0.5	17.7
16	Make connection between riser socket & riser buoy pendant	1.0	1.0	18.7
17	Lift connection from stopper and lower over side until supported by riser buoy	1.0	1.0	19.7
18	Attach aux. lowering winch line to riser buoy marker pendant	1.0	0.2	19.9
19	Lower anchor pile to transfer weight of chain to riser buoy	1.0	1.0	20.9
20	Continue lowering anchor pile assembly & chain to 20' above seafloor	1.0	1.0	21.9
21	Position anchor pile over predetermined pile location within tolerance	1.0	1.0	22.9
22	Lower anchor pile into seafloor until it self-supports	1.0	1.0	23.9
23	Drive anchor pile to proper penetration	3.0	3.0	26.9
24	Release hammer/follower assembly from anchor pile & return to surface	5.5	5.5	32.4
25	Reposition barge & pay-in lowering line to lay chain on seafloor & find riser buoy equilibrium position	1.0	0.0	32.4
26	Deploy surface marker buoy and release lowering winch line	1.5	0.5	32.9
	TOTAL HOURS			32.9
	REPEAT FOR REMAINING 11 MOORINGS			361.9
	TOTAL ELAPSED DURATION (HOURS)			394.8
	TOTAL ELAPSED DURATION (DAYS)			16.5

TABLE B-6
16 POINT MOORING INSTALLATION USING D.P. DRILLSHIP
DRILLED & GROUTED PILES IN 1,500 FT WATER DEPTH
MINIMUM RISER BUOY INSTALLATION CONCEPT
(KEELHAULED ANCHOR PILE OPTION) 04/04/90

	CASE DS1GK ACTIVITY	ESTIMATED DURATION (HOURS)	CRITICAL PATH TIME (HOURS)	CUMMULATIVE TIME (HOURS)
1	Launch anchor pile from cargo barge and tow to drillship	3.0	1.0	1.0
2	Run messenger lines thru moonpool with diver	3.0	1.0	2.0
3	Pass end of messenger line to workboat & connect to triplate	0.5	0.5	2.5
4	Connect anchor pile tow sling to triplate	0.5	0.5	3.0
5	Open valves on anchor pile to upend pile	1.0	1.0	4.0
6	Lower pile to about 250' below ship	0.5	0.5	4.5
7	Heave in on moonpool winch to lift pile into moonpool	1.0	1.0	5.5
8	Heave top of pile up through cellar deck and secure pile on stops on landing beams in cellar deck	0.5	0.5	6.0
9	Release pile sling from triplate and return messenger winch line to outside of drillship	1.0	0.5	6.5
10	Remove elliptical head and internal diaphragm from anchor pile	2.0	0.5	7.0
11	Pass triplate to workboat and connect to end of anchor chain	0.5	0.5	7.5
12	Keelhaul anchor chain under ship & up thru moonpool	0.5	0.5	8.0
13	Stopper off end of anchor chain to underside of drillfloor	0.5	0.5	8.5
14	Remove rotary table using drawworks	1.0	0.5	9.0
15	Install false rotary table using drawworks	1.0	0.5	9.5
16	Pick up and stab drill bit and mud motor into anchor pile string	0.2	0.2	9.7
17	Make up drill collar joints and lower into pile string	0.2	0.2	9.9
18	Attach J-latch sub to drill string and lower & latch into top of anchor pile	0.2	0.2	10.1
19	Lift anchor pile through rotary table to position where padeye is adjacent to end of anchor chain	0.2	0.2	10.3
20	Make anchor chain connection to anchor pile padeye	1.0	1.0	11.3
21	Release chain from chain stopper	0.5	0.5	11.8
22	Lower anchor pile to rest on landing beams in cellar deck area	0.5	0.5	12.3
23	Test mud motor to ensure drill bitt turns	0.2	0.2	10.3
24	Pick up pile string and lower thru moonpool on drill string	0.2	0.2	10.5
25	Pull end of chain back on workboat & attach to end of riser line	1.0	1.0	11.5
26	Lower anchor pile on drillstring while paying out riser line on workboat	1.3	1.3	12.8
27	Stopper off riser line and remove from deployment winch	1.0	1.0	13.8
28	Transfer riser buoy lower connection pendant to deck of workboat	1.0	0.5	14.3
29	Connect end of riser line to riser buoy connection pendant	0.5	0.5	14.8
30	Attach surface buoy connection pendant (spooled onto workboat winch) to riser buoy	0.2	0.2	15.0
31	Lower end of riser line/buoy pendant connection over stern of workboat & release	0.5	0.5	15.5
32	Continue lowering anchor pile until chain weight shifts to riser buoy	0.5	0.5	16.0
33	Continue lowering anchor pile & riser buoy until pile tip is just above mudline	0.5	0.5	16.5
34	Position tip of pile within tolerances & lower to self support in mud	0.5	0.5	17.0
35	Dyna-drill anchor pile into seafloor to proper penetration	5.0	5.0	22.0
36	Hold pile on drillstring to allow skin friction to set up	1.0	1.0	23.0
37	Test pull on anchor pile with drill string	0.2	0.2	23.2
38	Un-latch J-tool from anchor pile and trip drillstring back to surface	1.0	1.0	24.2
39	Make up pilot bitt and hole opener to drill hole for insert pile	0.2	0.2	24.4
40	Trip back down into hole with drill bitt for insert pile	1.2	1.2	25.6
41	Drill 54" dia. hole for insert pile below tip of anchor pile	2.0	2.0	27.6
42	Return drillstring to surface	1.2	1.2	28.8

43	Launch insert pile from cargo barge and tow to side of drillship	2.0	0.0	28.8
44	Pass end of messenger line to workboat & connect to triplate	1.0	0.5	29.3
45	Connect insert pile tow sling to triplate	1.0	1.0	30.3
46	Open valves on insert pile to upend pile	0.5	0.5	30.8
47	Lower pile to about 250' below ship	1.0	1.0	31.8
48	Heave in on moonpool winch to lift pile into moonpool	1.0	1.0	32.8
49	Heave top of pile up through cellar deck and secure pile on stops on landing beams in cellar deck	1.0	1.0	33.8
50	Release pile sling from triplate and return messenger winch line	2.0	0.5	34.3
51	Remove elliptical head and internal diaphragm from anchor pile	2.0	1.2	35.5
52	Make up grouting string and stab into insert pile	1.0	1.0	36.5
53	Attach J-latch tool into top of insert pile	0.2	0.2	36.7
54	Lower insert pile on drillstring and stab into top of anchor pile	1.2	1.2	37.9
55	Lower insert pile until stops rest on top of anchor pile	0.5	0.5	38.4
56	Pump grout down drillstring to grout annulus between insert pile and anchor pile	2.2	2.2	40.6
57	Unlatch J-latch tool and return drillstring to surface	1.0	1.0	41.6
58	Release pendant from workboat winch and attach to surface marker buoy	1.0	0.0	41.6
59	Deploy surface marker buoy to mark riser buoy location	1.0	0.5	42.1
	TOTAL HOURS			42.1
	REPEAT FOR REMAINING 15 MOORINGS			631.5
	TOTAL ELAPSED DURATION (HOURS)			673.6
	TOTAL ELAPSED DURATION (DAYS)			28.1

TABLE B-7
16 POINT MOORING INSTALLATION USING D.P. DRILLSHIP
DRIVEN PILES IN 1,500 FT WATER DEPTH
(KEELHAULED ANCHOR PILE OPTION)

04/04/90

CASE DS1DK

	ACTIVITY	ESTIMATED DURATION (HOURS)	CRITICAL PATH TIME (HOURS)	CUMMULATIVE TIME (HOURS)
1	Launch anchor pile from cargo barge and tow to drillship	3.0	1.0	1.0
2	Run messenger lines thru moonpool with diver	3.0	1.0	2.0
3	Pass end of messenger line to workboat & connect to triplate	0.5	0.5	2.5
4	Connect anchor pile tow sling to triplate	0.5	0.5	3.0
5	Open valves on anchor piles to upend pile	1.0	1.0	4.0
6	Lower pile to about 250' below ship	0.5	0.5	4.5
7	Heave in on moonpool winch to lift pile into moonpool	1.0	1.0	3.5
8	Heave top of pile up through cellar deck and secure pile on pilestops on landing beams in cellar deck	0.5	0.5	4.0
9	Release pile sling from triplate and return messenger winch line to side of ship	1.0	0.5	4.5
10	Remove elliptical head and internal diaphragms from anchor pile	2.0	0.5	5.0
11	Pass triplate to workboat and connect to end of anchor chain	0.5	0.5	5.5
12	Keelhaul anchor chain under ship & up thru moonpool	0.5	0.5	6.0
13	Stopper off end of anchor chain to underside of drillfloor	0.5	0.5	6.5
14	Remove rotary table using drawworks	1.0	0.5	7.0
15	Install false rotary table using drawworks	1.0	0.5	7.5
16	Attach internal elevator into top of anchor pile	0.5	0.5	8.0
17	Lift anchor pile through false rotary table to position where padeye is adjacent to end of anchor chain	0.5	0.5	8.5
18	Make anchor chain connection to anchor pile padeye	1.0	1.0	9.0
19	Release chain from chain stopper	0.5	0.5	9.0
20	Pick up pile follower and stab into top of pile string & latch	1.0	1.0	10.0
21	Pick up underwater pile hammer and latch onto top of follower	3.0	3.0	13.0
22	Pick up hammer/pile string and lower thru moonpool on drill string	0.5	0.5	13.5
23	Pull end of chain back on workboat & attach to end of riser line	1.0	1.0	14.5
24	Lower anchor pile on drillstring while paying out riser line on workboat	1.3	1.3	15.8
25	Stopper off riser line and remove from deployment winch	1.0	1.0	16.8
26	Transfer riser buoy lower connection pendant to deck of workboat	0.5	0.5	17.3
27	Connect end of riser line to riser buoy connection pendant	0.5	0.5	17.8
28	Attach surface buoy connection pendant (spooled onto workboat winch) to riser buoy	0.2	0.2	18.0
29	Lower end of riser line/buoy pendant connection over stern of workboat & release	0.5	0.5	18.5
30	Continue lowering anchor pile until chain weight shifts to riser buoy	0.2	0.2	18.7
31	Continue lowering anchor pile & riser buoy until pile tip is just above mudline	0.5	0.5	19.2
32	Position tip of pile within tolerances & lower to self support in mud	0.5	0.5	19.7
33	Activate pile hammer to drive anchor pile to proper penetration	2.5	2.5	22.2
34	Unlatch follower from pile and return underwater hammer to surface	1.4	1.4	23.6
35	Remove hammer from drillstring and disconnect	2.0	1.0	24.6
36	Release pendant from workboat winch and attach to surface marker buoy	1.0	0.0	24.6
37	Deploy surface marker buoy to mark riser buoy location	1.0	0.5	25.1
	TOTAL HOURS			25.1
	REPEAT FOR REMAINING 15 MOORINGS			376.5
	TOTAL ELAPSED DURATION (HOURS)			401.6

TOTAL ELAPSED DURATION (DAYS) 16.7

TABLE B-8
16 POINT MOORING INSTALLATION USING D.P. DRILLSHIP
DRILLED & GROUTED PILES IN 3,000 FT WATER DEPTH
MINIMUM RISER BUOY INSTALLATION CONCEPT
(WELDED ANCHOR PILE OPTION) 04/04/90

CASE DS3GW

	ACTIVITY	ESTIMATED DURATION (HOURS)	CRITICAL PATH TIME (HOURS)	CUMMULATIVE TIME (HOURS)
1	Offload pile sections from cargo barge & lay on drillship deck	1.3	0.5	0.5
2	Run messenger lines thru moonpool with diver	1.0	1.0	1.5
3	Pass end of messenger line to workboat & connect to anchor chain	0.5	0.5	2.0
4	Keelhaul anchor chain under ship & up thru moonpool	0.5	0.5	2.5
5	Stopper off end of anchor chain to BOP trolley on drillship	0.5	0.5	3.0
6	Remove rotary table using drawworks	1.0	0.0	3.0
7	Install false rotary table using drawworks	0.5	0.0	3.0
8	Pick up lower pile section from riser rack & stab thru false rotary table	0.5	0.5	3.5
9	Pick up upper pile section and stab onto lower pile section	0.5	0.5	4.0
10	Weld out upper pile section to lower pile section	3.0	3.0	7.0
11	Remove guide tabs, cool and test weld	2.0	2.0	9.0
12	Lift and lower pile until pile is supported on BOP skid beams	0.2	0.2	9.2
13	Make anchor chain connection to anchor pile padeye	1.0	1.0	10.2
14	Release chain from BOP trolley	0.5	0.5	10.7
15	Pick up and stab drill bit and mud motor into anchor pile string	0.2	0.2	10.9
16	Make up drill collar joints and lower into pile string	0.2	0.2	11.1
17	Attach J-latch sub to drill string and lower & latch into top of anchor pile	0.2	0.2	11.3
18	Test mud motor to ensure drill bitt turns	0.2	0.2	11.5
19	Pick up pile string and lower thru moonpool on drill string	0.2	0.2	11.7
20	Pull end of chain back on workboat & attach to end of riser line	1.0	0.5	12.2
21	Lower anchor pile on drillstring while paying out riser line on workboat	2.5	2.5	14.7
22	Stopper off riser line and remove from deployment winch	1.0	1.0	15.7
23	Transfer riser buoy lower connection pendant to deck of workboat	0.5	0.5	16.2
24	Connect end of riser line to riser buoy connection pendant	0.5	0.5	16.7
25	Attach surface buoy connection pendant (spooled onto workboat winch) to riser buoy	0.2	0.2	16.9
26	Lower end of riser line/buoy pendant connection over stern of workboat & release	0.5	0.5	17.4
27	Continue lowering anchor pile until chain weight shifts to riser buoy	0.2	0.2	17.6
28	Continue lowering anchor pile & riser buoy until pile tip is just above mudline	0.5	0.5	18.1
29	Position tip of pile within tolerances & lower to self support in mud	0.5	0.5	18.6
30	Dyna-drill anchor pile into seafloor to proper penetration	6.0	6.0	24.6
31	Hold pile on drillstring to allow skin friction to set up	1.0	1.0	25.6
32	Test pull on anchor pile with drill string	0.2	0.2	25.8
33	Un-latch J-tool from anchor pile and trip drillstring back to surface	1.7	1.7	27.5
34	Make up pilot bitt and hole opener to drill hole for insert pile	0.2	0.2	27.7
35	Trip back down into hole with drill bitt for insert pile	1.7	1.7	29.4
36	Drill 54" dia. hole for insert pile below tip of anchor pile	2.0	2.0	31.4
37	Return drillstring to surface	1.7	5.0	36.4
38	Lift insert pile lower section from riser rack & stab thru rotary table	0.5	0.5	36.9
39	Lift insert pile middle section and stab onto insert pile lower section	0.5	0.5	37.4
40	Weld out connection between lower and middle insert pile sections	3.0	3.0	40.4
41	Cool and inspect weld between insert pile sections	2.0	2.0	42.4
42	Lift pile, burn off pile stops and lower pile to rest on middle stops	2.0	1.2	43.6
43	Lift insert pile upper section from riser rack & stab onto middle pile section	0.5	0.5	44.1
44	Weld out connect between middle & upper insert pile sections	3.0	3.0	47.1
45	Cool and inspect weld between insert pile sections	2.0	2.0	49.1
46	Lift pile, burn off pile stops and lower pile string to rest on upper stops on BOP beams	2.0	1.2	50.3
47	Make up grouting string and stab into insert pile	1.0	1.0	51.3
48	Attach J-latch toll into top of insert pile	0.2	0.2	51.5
49	Lower insert pile on drillstring and stab into top of anchor pile	2.5	2.5	54.0

50	Lower insert pile until stops rest on top of anchor pile	0.5	0.5	54.5
51	Pump grout down drillstring to grout annulus between insert pile and anchor pile	2.2	2.2	56.7
52	Unlatch J-latch tool and return drillstring to surface	1.7	1.7	58.4
53	Release pendant from workboat winch and attach to surface marker buoy	1.0	0.0	58.4
54	Deploy surface marker buoy to mark riser buoy location	1.0	0.5	58.9
	TOTAL HOURS			58.9
	REPEAT FOR REMAINING 15 MOORINGS			883.5
	TOTAL ELAPSED DURATION (HOURS)			942.4
	TOTAL ELAPSED DURATION (DAYS)			39.3

TABLE B-9
16 POINT MOORING INSTALLATION USING D.P. DRILLSHIP
DRILLED & GROUTED PILES IN 3,000 FT WATER DEPTH
MINIMUM RISER BUOY INSTALLATION CONCEPT
(KEELHAULED ANCHOR PILE OPTION)

04/04/90

CASE DS3GK

	ACTIVITY	ESTIMATED DURATION (HOURS)	CRITICAL PATH TIME (HOURS)	CUMMULATIVE TIME (HOURS)
1	Launch anchor pile from cargo barge and tow to drillship	3.0	1.0	1.0
2	Run messenger lines thru moonpool with diver	3.0	1.0	2.0
3	Pass end of messenger line to workboat & connect to triplate	0.5	0.5	2.5
4	Connect anchor pile tow sling to triplate	0.5	0.5	3.0
5	Open valves on anchor pile to upend pile	1.0	1.0	4.0
6	Lower pile to about 250' below ship	0.5	0.5	4.5
7	Heave in on moonpool winch to lift pile into moonpool	1.0	1.0	5.5
8	Heave top of pile up through cellar deck and secure pile on stops on landing beams in cellar deck	0.5	0.5	6.0
9	Release pile sling from triplate and return messenger winch line to outside of drillship	1.0	0.5	6.5
10	Remove elliptical head and internal diaphragm from anchor pile	2.0	0.5	7.0
11	Pass triplate to workboat and connect to end of anchor chain	0.5	0.5	7.5
12	Keelhaul anchor chain under ship & up thru moonpool	0.5	0.5	8.0
13	Stopper off end of anchor chain to underside of drillfloor	0.5	0.5	8.5
14	Remove rotary table using drawworks	1.0	0.5	9.0
15	Install false rotary table using drawworks	1.0	0.5	9.5
16	Pick up and stab drill bit and mud motor into anchor pile string	0.2	0.2	9.7
17	Make up drill collar joints and lower into pile string	0.2	0.2	9.9
18	Attach J-latch sub to drill string and lower & latch into top of anchor pile	0.2	0.2	10.1
19	Lift anchor pile through rotary table to position where padeye is adjacent to end of anchor chain	0.2	0.2	10.3
20	Make anchor chain connection to anchor pile padeye	1.0	1.0	11.3
21	Release chain from chain stopper	0.5	0.5	11.8
22	Lower anchor pile to rest on landing beams in cellar deck area	0.5	0.5	12.3
23	Test mud motor to ensure drill bitt turns	0.2	0.2	10.3
24	Pick up pile string and lower thru moonpool on drill string	0.2	0.2	10.5
25	Pull end of chain back on workboat & attach to end of riser line	1.0	1.0	11.5
26	Lower anchor pile on drillstring while paying out riser line on workboat	2.5	2.5	14.0
27	Stopper off riser line and remove from deployment winch	1.0	1.0	15.0
28	Transfer riser buoy lower connection pendant to deck of workboat	1.0	0.5	15.5
29	Connect end of riser line to riser buoy connection pendant	0.5	0.5	16.0
30	Attach surface buoy connection pendant (spooled onto workboat winch) to riser buoy	0.2	0.2	16.2
31	Lower end of riser line/buoy pendant connection over stern of workboat & release	0.5	0.5	16.7
32	Continue lowering anchor pile until chain weight shifts to riser buoy	0.5	0.5	17.2
33	Continue lowering anchor pile & riser buoy until pile tip is just above mudline	0.5	0.5	17.7
34	Position tip of pile within tolerances & lower to self support in mud	0.5	0.5	18.2
35	Dyna-drill anchor pile into seafloor to proper penetration	6.0	6.0	24.2
36	Hold pile on drillstring to allow skin friction to set up	1.0	1.0	25.2
37	Test pull on anchor pile with drill string	0.2	0.2	25.4
38	Un-latch J-tool from anchor pile and trip drillstring back to surface	1.7	1.7	27.1
39	Make up pilot bitt and hole opener to drill hole for insert pile	0.2	0.2	27.3
40	Trip back down into hole with drill bitt for insert pile	1.7	1.7	29.0
41	Drill 54" dia. hole for insert pile below tip of anchor pile	2.0	2.0	31.0
42	Return drillstring to surface	1.7	1.7	32.7

43	Launch insert pile from cargo barge and tow to side of drillship	2.0	0.0	32.7
44	Pass end of messenger line to workboat & connect to triplate	1.0	0.5	33.2
45	Connect insert pile tow sling to triplate	1.0	1.0	34.2
46	Open valves on insert pile to upend pile	0.5	0.5	34.7
47	Lower pile to about 250' below ship	1.0	1.0	35.7
48	Heave in on moonpool winch to lift pile into moonpool	1.0	1.0	36.7
49	Heave top of pile up through cellar deck and secure pile on stops on landing beams in cellar deck	1.0	1.0	37.7
50	Release pile sling from triplate and return messenger winch line	2.0	0.5	38.2
51	Remove elliptical head and internal diaphragm from anchor pile	2.0	1.2	39.4
52	Make up grouting string and stab into insert pile	1.0	1.0	40.4
53	Attach J-latch tool into top of insert pile	0.2	0.2	40.6
54	Lower insert pile on drillstring and stab into top of anchor pile	2.5	2.5	43.1
55	Lower insert pile until stops rest on top of anchor pile	0.5	0.5	43.6
56	Pump grout down drillstring to grout annulus between insert pile and anchor pile	2.2	2.2	45.8
57	Unlatch J-latch tool and return drillstring to surface	1.7	1.7	47.5
58	Release pendant from workboat winch and attach to surface marker buoy	1.0	0.0	47.5
59	Deploy surface marker buoy to mark riser buoy location	1.0	0.5	48.0
	TOTAL HOURS			48
	REPEAT FOR REMAINING 15 MOORINGS			720
	TOTAL ELAPSED DURATION (HOURS)			768
	TOTAL ELAPSED DURATION (DAYS)			32.0

TABLE B-10
16 POINT MOORING INSTALLATION USING D.P. DRILLSHIP
DRIVEN PILES IN 3,000 FT WATER DEPTH
MINIMUM RISER BUOY INSTALLATION CONCEPT
(WELDED ANCHOR PILE OPTION)

04/04/90

CASE DS3DW

	ACTIVITY	ESTIMATED DURATION (HOURS)	CRITICAL PATH TIME (HOURS)	CUMMULATIVE TIME (HOURS)
1	Offload pile sections from cargo barge & lay on drillship deck	2.0	1.0	1.0
2	Run messenger lines thru moonpool with diver	1.0	1.0	2.0
3	Pass end of messenger line to workboat & connect to anchor chain	0.5	0.5	2.5
4	Keelhaul anchor chain under ship & up thru moonpool	0.5	0.5	3.0
5	Stopper off end of anchor chain to BOP trolley on drillship	0.5	0.5	3.5
6	Remove rotary table using drawworks	1.0	0.0	3.5
7	Install false rotary table using drawworks	0.5	0.0	3.5
8	Pick up lower pile section from riser rack & stab thru false rotary table	0.5	0.5	4.0
9	Pick up upper pile section and stab onto lower pile section	0.5	0.5	4.5
10	Weld out upper pile section to lower pile section	5.0	5.0	9.5
11	Remove guide tabs, cool and test weld	3.0	3.0	12.5
12	Lift and lower pile until pile is supported on BOP skid beams	0.2	0.2	12.7
13	Make anchor chain connection to anchor pile padeye	1.0	1.0	13.7
14	Release chain from BOP trolley	0.5	0.5	14.2
15	Pick up pile follower and stab into top of pile string & latch	1.0	1.0	15.2
16	Pick up underwater pile hammer and latch onto top of follower	3.0	3.0	18.2
17	Pick up hammer/pile string and lower thru moonpool on drill string	0.5	0.5	18.7
18	Pull end of chain back on workboat & attach to end of riser line	1.0	1.0	19.7
19	Lower anchor pile on drillstring while paying out riser line on workboat	2.5	2.5	22.2
20	Stopper off riser line and remove from deployment winch	1.0	1.0	23.2
21	Transfer riser buoy lower connection pendant to deck of workboat	0.5	0.5	23.7
22	Connect end of riser line to riser buoy connection pendant	0.5	0.5	24.2
23	Attach surface buoy connection pendant (spooled onto workboat winch) to riser buoy	0.2	0.2	24.4
24	Lower end of riser line/buoy pendant connection over stern of workboat & release	0.5	0.5	24.9
25	Continue lowering anchor pile until chain weight shifts to riser buoy	0.2	0.2	25.1
26	Continue lowering anchor pile & riser buoy until pile tip is just above mudline	0.5	0.5	25.6
27	Position tip of pile within tolerances & lower to self support in mud	0.5	0.5	26.1
28	Activate pile hammer to drive anchor pile to proper penetration	3.0	3.0	29.1
29	Unlatch follower from pile and return underwater hammer to surface	2.5	2.5	31.6
30	Remove hammer from drillstring and disconnect	2.0	1.0	32.6
31	Release pendant from workboat winch and attach to surface marker buoy	1.0	0.0	32.6
32	Deploy surface marker buoy to mark riser buoy location	1.0	0.5	33.1
	TOTAL HOURS			33.1
	REPEAT FOR REMAINING 15 MOORINGS			496.5
	TOTAL ELAPSED DURATION (HOURS)			529.6
	TOTAL ELAPSED DURATION (DAYS)			22.1

TABLE B-11
16 POINT MOORING INSTALLATION USING D.P. DRILLSHIP
DRIVEN PILES IN 3,000 FT WATER DEPTH
(KEELHAULED ANCHOR PILE OPTION) 04/04/90

CASE DS3DK	ACTIVITY	ESTIMATED DURATION (HOURS)	CRITICAL PATH TIME (HOURS)	CUMMULATIVE TIME (HOURS)
1	Launch anchor pile from cargo barge and tow to drillship	3.0	1.0	1.0
2	Run messenger lines thru moonpool with diver	3.0	1.0	2.0
3	Pass end of messenger line to workboat & connect to triplate	0.5	0.5	2.5
4	Connect anchor pile tow sling to triplate	0.5	0.5	3.0
5	Open valves on anchor piles to upend pile	1.0	1.0	4.0
6	Lower pile to about 250' below ship	0.5	0.5	4.5
7	Heave in on moonpool winch to lift pile into moonpool	1.0	1.0	3.5
8	Heave top of pile up through cellar deck and secure pile on pilestops on landing beams in cellar deck	0.5	0.5	4.0
9	Release pile sling from triplate and return messenger winch line to side of ship	1.0	0.5	4.5
10	Remove elliptical head and internal diaphragms from anchor pile	2.0	0.5	5.0
11	Pass triplate to workboat and connect to end of anchor chain	0.5	0.5	5.5
12	Keelhaul anchor chain under ship & up thru moonpool	0.5	0.5	6.0
13	Stopper off end of anchor chain to underside of drillfloor	0.5	0.5	6.5
14	Remove rotary table using drawworks	1.0	0.5	7.0
15	Install false rotary table using drawworks	1.0	0.5	7.5
16	Attach internal elevator into top of anchor pile	0.5	0.5	8.0
17	Lift anchor pile through false rotary table to position where padeye is adjacent to end of anchor chain	0.5	0.5	8.5
18	Make anchor chain connection to anchor pile padeye	1.0	1.0	9.0
19	Release chain from chain stopper	0.5	0.5	9.0
20	Pick up pile follower and stab into top of pile string & latch	1.0	1.0	10.0
21	Pick up underwater pile hammer and latch onto top of follower	3.0	3.0	13.0
22	Pick up hammer/pile string and lower thru moonpool on drill string	0.5	0.5	13.5
23	Pull end of chain back on workboat & attach to end of riser line	1.0	1.0	14.5
24	Lower anchor pile on drillstring while paying out riser line on workboat	2.5	2.5	17.0
25	Stopper off riser line and remove from deployment winch	1.0	1.0	18.0
26	Transfer riser buoy lower connection pendant to deck of workboat	0.5	0.5	18.5
27	Connect end of riser line to riser buoy connection pendant	0.5	0.5	19.0
28	Attach surface buoy connection pendant (spooled onto workboat winch) to riser buoy	0.2	0.2	19.2
29	Lower end of riser line/buoy pendant connection over stern of workboat & release	0.5	0.5	19.7
30	Continue lowering anchor pile until chain weight shifts to riser buoy	0.2	0.2	19.9
31	Continue lowering anchor pile & riser buoy until pile tip is just above mudline	0.5	0.5	20.4
32	Position tip of pile within tolerances & lower to self support in mud	0.5	0.5	20.9
33	Activate pile hammer to drive anchor pile to proper penetration	3.0	3.0	23.9
34	Unlatch follower from pile and return underwater hammer to surface	2.5	2.5	26.4
35	Remove hammer from drillstring and disconnect	2.0	1.0	27.4
36	Release pendant from workboat winch and attach to surface marker buoy	1.0	0.0	27.4
37	Deploy surface marker buoy to mark riser buoy location	1.0	0.5	27.9
	TOTAL HOURS			27.9
	REPEAT FOR REMAINING 15 MOORINGS			418.5
	TOTAL ELAPSED DURATION (HOURS)			446.4
	TOTAL ELAPSED DURATION (DAYS)			18.6

TABLE B-12
16 POINT MOORING INSTALLATION USING D.P. DRILLSHIP
DRILLED & GROUTED PILES IN 6,000 FT WATER DEPTH
(WELDED ANCHOR PILE OPTION)

04/04/90

CASE DS6GW

	ACTIVITY	ESTIMATED DURATION (HOURS)	CRITICAL PATH TIME (HOURS)	CUMMULATIVE TIME (HOURS)
1	Offload pile sections from cargo barge & lay on drillship deck	1.3	0.5	0.5
2	Run messenger lines thru moonpool with diver	1.0	1.0	1.5
3	Pass end of messenger line to workboat & connect to anchor chain	0.5	0.5	2.0
4	Keelhaul anchor chain under ship & up thru moonpool	0.5	0.5	2.5
5	Stopper off end of anchor chain to BOP trolley on drillship	0.5	0.5	3.0
6	Remove rotary table using drawworks	1.0	0.0	3.0
7	Install false rotary table using drawworks	0.5	0.0	3.0
8	Pick up lower pile section from riser rack & stab thru false rotary table	0.5	0.5	3.5
9	Pick up upper pile section and stab onto lower pile section	0.5	0.5	4.0
10	Weld out upper pile section to lower pile section	3.0	3.0	7.0
11	Remove guide tabs, cool and test weld	2.0	2.0	9.0
12	Lift and lower pile until pile is supported on BOP skid beams	0.2	0.2	9.2
13	Make anchor chain connection to anchor pile padeye	1.0	1.0	10.2
14	Release chain from BOP trolley	0.5	0.5	10.7
15	Pick up and stab drill bit and mud motor into anchor pile string	0.2	0.2	10.9
16	Make up drill collar joints and lower into pile string	0.2	0.2	11.1
17	Attach J-latch sub to drill string and lower & latch into top of anchor pile	0.2	0.2	11.3
18	Test mud motor to ensure drill bitt turns	0.2	0.2	11.5
19	Pick up pile string and lower thru moonpool on drill string	0.2	0.2	11.7
20	Pull end of chain back on workboat & attach to end of riser line	1.0	0.5	12.2
21	Lower anchor pile on drillstring while paying out riser line on workboat	5.0	5.0	17.2
22	Stopper off riser line and remove from deployment winch	1.0	1.0	18.2
23	Transfer riser buoy lower connection pendant to deck of workboat	0.5	0.5	18.7
24	Connect end of riser line to riser buoy connection pendant	0.5	0.5	19.2
25	Attach surface buoy connection pendant (spooled onto workboat winch) to riser buoy	0.2	0.2	19.4
26	Lower end of riser line/buoy pendant connection over stern of workboat & release	0.5	0.5	19.9
27	Continue lowering anchor pile until chain weight shifts to riser buoy	0.2	0.2	20.1
28	Continue lowering anchor pile & riser buoy until pile tip is just above mudline	0.5	0.5	20.6
29	Position tip of pile within tolerances & lower to self support in mud	0.5	0.5	21.1
30	Dyna-drill anchor pile into seafloor to proper penetration	6.0	6.0	27.1
31	Hold pile on drillstring to allow skin friction to set up	1.0	1.0	28.1
32	Test pull on anchor pile with drill string	0.2	0.2	28.3
33	Un-latch J-tool from anchor pile and trip drillstring back to surface	3.4	3.4	31.7
34	Make up pilot bitt and hole opener to drill hole for insert pile	0.2	0.2	31.9
35	Trip back down into hole with drill bitt for insert pile	3.4	3.4	35.3
36	Drill 54" dia. hole for insert pile below tip of anchor pile	2.0	2.0	37.3
37	Return drillstring to surface	3.4	3.4	40.7
38	Lift insert pile lower section from riser rack & stab thru rotary table	0.5	0.5	41.2
39	Lift insert pile middle section and stab onto insert pile lower section	0.5	0.5	41.7
40	Weld out connection between lower and middle insert pile sections	3.0	3.0	44.7
41	Cool and inspect weld between insert pile sections	2.0	2.0	46.7
42	Lift pile, burn off pile stops and lower pile to rest on middle stops	2.0	1.2	47.9
43	Lift insert pile upper section from riser rack & stab onto middle pile section	0.5	0.5	48.4
44	Weld out connect between middle & upper insert pile sections	3.0	3.0	51.4

45	Cool and inspect weld between insert pile sections	2.0	2.0	53.4
46	Lift pile, burn off pile stops and lower pile string to rest on upper stops on BOP beams	2.0	1.2	54.6
47	Make up grouting string and stab into insert pile	1.0	1.0	55.6
48	Attach J-latch tool into top of insert pile	0.2	0.2	55.8
49	Lower insert pile on drillstring and stab into top of anchor pile	5.0	5.0	60.8
50	Lower insert pile until stops rest on top of anchor pile	0.5	0.5	61.3
51	Pump grout down drillstring to grout annulus between insert pile and anchor pile	2.2	2.2	63.5
52	Unlatch J-latch tool and return drillstring to surface	3.4	3.4	66.9
53	Release pendant from workboat winch and attach to surface marker buoy	1.0	0.0	66.9
54	Deploy surface marker buoy to mark riser buoy location	1.0	0.5	67.4
	TOTAL HOURS			67.4
	REPEAT FOR REMAINING 15 MOORINGS			1011
	TOTAL ELAPSED DURATION (HOURS)			1078.4
	TOTAL ELAPSED DURATION (DAYS)			44.9

TABLE B-13
12 POINT MOORING INSTALLATION USING D.P. DRILLSHIP
DRILLED & GROUTED PILES IN 6,000 FT WATER DEPTH
(WELDED ANCHOR PILE OPTION)

04/04/90

CASE DS6GW

	ACTIVITY	ESTIMATED DURATION (HOURS)	CRITICAL PATH TIME (HOURS)	CUMMULATIVE TIME (HOURS)
1	Offload pile sections from cargo barge & lay on drillship deck	1.3	0.5	0.5
2	Run messenger lines thru moonpool with diver	1.0	1.0	1.5
3	Pass end of messenger line to workboat & connect to anchor chain	0.5	0.5	2.0
4	Keelhaul anchor chain under ship & up thru moonpool	0.5	0.5	2.5
5	Stopper off end of anchor chain to BOP trolley on drillship	0.5	0.5	3.0
6	Remove rotary table using drawworks	1.0	0.0	3.0
7	Install false rotary table using drawworks	0.5	0.0	3.0
8	Pick up lower pile section from riser rack & stab thru false rotary table	0.5	0.5	3.5
9	Pick up upper pile section and stab onto lower pile section	0.5	0.5	4.0
10	Weld out upper pile section to lower pile section	3.0	3.0	7.0
11	Remove guide tabs, cool and test weld	2.0	2.0	9.0
12	Lift and lower pile until pile is supported on BOP skid beams	0.2	0.2	9.2
13	Make anchor chain connection to anchor pile padeye	1.0	1.0	10.2
14	Release chain from BOP trolley	0.5	0.5	10.7
15	Pick up and stab drill bit and mud motor into anchor pile string	0.2	0.2	10.9
16	Make up drill collar joints and lower into pile string	0.2	0.2	11.1
17	Attach J-latch sub to drill string and lower & latch into top of anchor pile	0.2	0.2	11.3
18	Test mud motor to ensure drill bitt turns	0.2	0.2	11.5
19	Pick up pile string and lower thru moonpool on drill string	0.2	0.2	11.7
20	Pull end of chain back on workboat & attach to end of riser line	1.0	0.5	12.2
21	Lower anchor pile on drillstring while paying out riser line on workboat	5.0	5.0	17.2
22	Stopper off riser line and remove from deployment winch	1.0	1.0	18.2
23	Transfer riser buoy lower connection pendant to deck of workboat	0.5	0.5	18.7
24	Connect end of riser line to riser buoy connection pendant	0.5	0.5	19.2
25	Attach surface buoy connection pendant (spooled onto workboat winch) to riser buoy	0.2	0.2	19.4
26	Lower end of riser line/buoy pendant connection over stern of workboat & release	0.5	0.5	19.9
27	Continue lowering anchor pile until chain weight shifts to riser buoy	0.2	0.2	20.1
28	Continue lowering anchor pile & riser buoy until pile tip is just above mudline	0.5	0.5	20.6
29	Position tip of pile within tolerances & lower to self support in mud	0.5	0.5	21.1
30	Dyna-drill anchor pile into seafloor to proper penetration	6.0	6.0	27.1
31	Hold pile on drillstring to allow skin friction to set up	1.0	1.0	28.1
32	Test pull on anchor pile with drill string	0.2	0.2	28.3
33	Un-latch J-tool from anchor pile and trip drillstring back to surface	3.4	3.4	31.7
34	Make up pilot bitt and hole opener to drill hole for insert pile	0.2	0.2	31.9
35	Trip back down into hole with drill bitt for insert pile	3.4	3.4	35.3
36	Drill 54" dia. hole for insert pile below tip of anchor pile	2.0	2.0	37.3
37	Return drillstring to surface	3.4	3.4	40.7
38	Lift insert pile lower section from riser rack & stab thru rotary table	0.5	0.5	41.2
39	Lift insert pile middle section and stab onto insert pile lower section	0.5	0.5	41.7
40	Weld out connection between lower and middle insert pile sections	3.0	3.0	44.7
41	Cool and inspect weld between insert pile sections	2.0	2.0	46.7
42	Lift pile, burn off pile stops and lower pile to rest on middle stops	2.0	1.2	47.9
43	Lift insert pile upper section from riser rack & stab onto middle pile section	0.5	0.5	48.4
44	Weld out connect between middle & upper insert pile sections	3.0	3.0	51.4

45	Cool and inspect weld between insert pile sections	2.0	2.0	53.4
46	Lift pile, burn off pile stops and lower pile string to rest on upper stops on BOP beams	2.0	1.2	54.6
47	Make up grouting string and stab into insert pile	1.0	1.0	55.6
48	Attach J-latch tool into top of insert pile	0.2	0.2	55.8
49	Lower insert pile on drillstring and stab into top of anchor pile	5.0	5.0	60.8
50	Lower insert pile until stops rest on top of anchor pile	0.5	0.5	61.3
51	Pump grout down drillstring to grout annulus between insert pile and anchor pile	2.2	2.2	63.5
52	Unlatch J-latch tool and return drillstring to surface	3.4	3.4	66.9
53	Release pendant from workboat winch and attach to surface marker buoy	1.0	0.0	66.9
54	Deploy surface marker buoy to mark riser buoy location	1.0	0.5	67.4
	TOTAL HOURS			67.4
	REPEAT FOR REMAINING 11 MOORINGS			741.4
	TOTAL ELAPSED DURATION (HOURS)			808.8
	TOTAL ELAPSED DURATION (DAYS)			33.7

TABLE B-14
16 POINT MOORING INSTALLATION USING D.P. DRILLSHIP
DRILLED & GROUTED PILES IN 6,000 FT WATER DEPTH
(KEELHAULED ANCHOR PILE OPTION)

04/04/90

CASE DS6GK

	ACTIVITY	ESTIMATED DURATION (HOURS)	CRITICAL PATH TIME (HOURS)	CUMMULATIVE TIME (HOURS)
1	Launch anchor pile from cargo barge and tow to drillship	3.0	1.0	1.0
2	Run messenger lines thru moonpool with diver	3.0	1.0	2.0
3	Pass end of messenger line to workboat & connect to triplate	0.5	0.5	2.5
4	Connect anchor pile tow sling to triplate	0.5	0.5	3.0
5	Open valves on anchor pile to upend pile	1.0	1.0	4.0
6	Lower pile to about 250' below ship	0.5	0.5	4.5
7	Heave in on moonpool winch to lift pile into moonpool	1.0	1.0	5.5
8	Heave top of pile up through cellar deck and secure pile on stops on landing beams in cellar deck	0.5	0.5	6.0
9	Release pile sling from triplate and return messenger winch line to outside of drillship	1.0	0.5	6.5
10	Remove elliptical head and internal diaphragm from anchor pile	2.0	0.5	7.0
11	Pass triplate to workboat and connect to end of anchor chain	0.5	0.5	7.5
12	Keelhaul anchor chain under ship & up thru moonpool	0.5	0.5	8.0
13	Stopper off end of anchor chain to underside of drillfloor	0.5	0.5	8.5
14	Remove rotary table using drawworks	1.0	0.5	9.0
15	Install false rotary table using drawworks	1.0	0.5	9.5
16	Pick up and stab drill bit and mud motor into anchor pile string	0.2	0.2	9.7
17	Make up drill collar joints and lower into pile string	0.2	0.2	9.9
18	Attach J-latch sub to drill string and lower & latch into top of anchor pile	0.2	0.2	10.1
19	Lift anchor pile through rotary table to position where padeye is adjacent to end of anchor chain	0.5	0.5	10.6
20	Make anchor chain connection to anchor pile padeye	1.0	1.0	11.6
21	Release chain from chain stopper	0.5	0.5	12.1
22	Lower anchor pile to rest on landing beams in cellar deck area	0.2	0.2	12.3
23	Test mud motor to ensure drill bitt turns	0.2	0.2	12.5
24	Pick up pile string and lower thru moonpool on drill string	0.2	0.2	12.7
25	Pull end of chain back on workboat & attach to end of riser line	1.0	1.0	13.7
26	Lower anchor pile on drillstring while paying out riser line on workboat	3.0	3.0	16.7
27	Stopper off riser line and remove from deployment winch	1.0	1.0	17.7
28	Transfer riser buoy lower connection pendant to deck of workboat	1.0	0.5	18.2
29	Connect end of riser line to riser buoy connection pendant	0.5	0.5	18.7
30	Attach surface buoy connection pendant (spooled onto workboat winch) to riser buoy	0.2	0.2	18.9
31	Lower end of riser line/buoy pendant connection over stern of workboat & release	0.5	0.5	19.4
32	Continue lowering anchor pile until chain weight shifts to riser buoy	0.5	0.5	19.9
33	Continue lowering anchor pile & riser buoy until pile tip is just above mudline	0.5	0.5	20.4
34	Position tip of pile within tolerances & lower to self support in mud	0.5	0.5	20.9
35	Dyna-drill anchor pile into seafloor to proper penetration	6.0	6.0	26.9
36	Hold pile on drillstring to allow skin friction to set up	1.0	1.0	27.9
37	Test pull on anchor pile with drill string	0.2	0.2	28.1
38	Un-latch J-tool from anchor pile and trip drillstring back to surface	3.4	3.4	31.5
39	Make up pilot bitt and hole opener to drill hole for insert pile	0.2	0.2	31.7
40	Trip back down into hole with drill bitt for insert pile	3.4	3.4	35.1
41	Drill 54" dia. hole for insert pile below tip of anchor pile	2.0	2.0	37.1
42	Return drillstring to surface	3.4	3.4	40.5
43	Launch insert pile from cargo barge and tow to side of drillship	2.0	0.0	40.5

44	Pass end of messenger line to workboat & connect to triplate	1.0	0.5	41.0
45	Connect insert pile tow sling to triplate	1.0	1.0	42.0
46	Open valves on insert pile to upend pile	0.5	0.5	42.5
47	Lower pile to about 250' below ship	1.0	1.0	43.5
48	Heave in on moonpool winch to lift pile into moonpool	1.0	1.0	44.5
49	Heave top of pile up through cellar deck and secure pile on stops on landing beams in cellar deck	1.0	1.0	45.5
50	Release pile sling from triplate and return messenger winch line	2.0	0.5	46.0
51	Remove elliptical head and internal diaphragm from anchor pile	2.0	1.2	47.2
52	Make up grouting string and stab into insert pile	1.0	1.0	48.2
53	Attach J-latch tool into top of insert pile	0.2	0.2	48.4
54	Lower insert pile on drillstring and stab into top of anchor pile	5.0	5.0	53.4
55	Lower insert pile until stops rest on top of anchor pile	0.5	0.5	53.9
56	Pump grout down drillstring to grout annulus between insert pile and anchor pile	3.2	3.2	57.1
57	Unlatch J-latch tool and return drillstring to surface	3.4	3.4	60.5
58	Release pendant from workboat winch and attach to surface marker buoy	1.0	0.0	60.5
59	Deploy surface marker buoy to mark riser buoy location	1.0	0.5	61.0
	TOTAL HOURS			61
	REPEAT FOR REMAINING 15 MOORINGS			915
	TOTAL ELAPSED DURATION (HOURS)			976
	TOTAL ELAPSED DURATION (DAYS)			40.7

TABLE B-15
12 POINT MOORING INSTALLATION USING D.P. DRILLSHIP
DRILLED & GROUTED PILES IN 6,000 FT WATER DEPTH
(KEELHAULED ANCHOR PILE OPTION)

04/04/90

CASE DS6GK

	ACTIVITY	ESTIMATED DURATION (HOURS)	CRITICAL PATH TIME (HOURS)	CUMMULATIVE TIME (HOURS)
1	Launch anchor pile from cargo barge and tow to drillship	3.0	1.0	1.0
2	Run messenger lines thru moonpool with diver	3.0	1.0	2.0
3	Pass end of messenger line to workboat & connect to triplate	0.5	0.5	2.5
4	Connect anchor pile tow sling to triplate	0.5	0.5	3.0
5	Open valves on anchor pile to upend pile	1.0	1.0	4.0
6	Lower pile to about 250' below ship	0.5	0.5	4.5
7	Heave in on moonpool winch to lift pile into moonpool	1.0	1.0	5.5
8	Heave top of pile up through cellar deck and secure pile on stops on landing beams in cellar deck	0.5	0.5	6.0
9	Release pile sling from triplate and return messenger winch line to outside of drillship	1.0	0.5	6.5
10	Remove elliptical head and internal diaphragm from anchor pile	2.0	0.5	7.0
11	Pass triplate to workboat and connect to end of anchor chain	0.5	0.5	7.5
12	Keelhaul anchor chain under ship & up thru moonpool	0.5	0.5	8.0
13	Stopper off end of anchor chain to underside of drillfloor	0.5	0.5	8.5
14	Remove rotary table using drawworks	1.0	0.5	9.0
15	Install false rotary table using drawworks	1.0	0.5	9.5
16	Pick up and stab drill bit and mud motor into anchor pile string	0.2	0.2	9.7
17	Make up drill collar joints and lower into pile string	0.2	0.2	9.9
18	Attach J-latch sub to drill string and lower & latch into top of anchor pile	0.2	0.2	10.1
19	Lift anchor pile through rotary table to position where padeye is adjacent to end of anchor chain	0.5	0.5	10.6
20	Make anchor chain connection to anchor pile padeye	1.0	1.0	11.6
21	Release chain from chain stopper	0.5	0.5	12.1
22	Lower anchor pile to rest on landing beams in cellar deck area	0.2	0.2	12.3
23	Test mud motor to ensure drill bitt turns	0.2	0.2	12.5
24	Pick up pile string and lower thru moonpool on drill string	0.2	0.2	12.7
25	Pull end of chain back on workboat & attach to end of riser line	1.0	1.0	13.7
26	Lower anchor pile on drillstring while paying out riser line on workboat	3.0	3.0	16.7
27	Stopper off riser line and remove from deployment winch	1.0	1.0	17.7
28	Transfer riser buoy lower connection pendant to deck of workboat	1.0	0.5	18.2
29	Connect end of riser line to riser buoy connection pendant	0.5	0.5	18.7
30	Attach surface buoy connection pendant (spooled onto workboat winch) to riser buoy	0.2	0.2	18.9
31	Lower end of riser line/buoy pendant connection over stern of workboat & release	0.5	0.5	19.4
32	Continue lowering anchor pile until chain weight shifts to riser buoy	0.5	0.5	19.9
33	Continue lowering anchor pile & riser buoy until pile tip is just above mudline	0.5	0.5	20.4
34	Position tip of pile within tolerances & lower to self support in mud	0.5	0.5	20.9
35	Dyna-drill anchor pile into seafloor to proper penetration	6.0	6.0	26.9
36	Hold pile on drillstring to allow skin friction to set up	1.0	1.0	27.9
37	Test pull on anchor pile with drill string	0.2	0.2	28.1
38	Un-latch J-tool from anchor pile and trip drillstring back to surface	3.4	3.4	31.5
39	Make up pilot bitt and hole opener to drill hole for insert pile	0.2	0.2	31.7
40	Trip back down into hole with drill bitt for insert pile	3.4	3.4	35.1
41	Drill 54" dia. hole for insert pile below tip of anchor pile	2.0	2.0	37.1
42	Return drillstring to surface	3.4	3.4	40.5
43	Launch insert pile from cargo barge and tow to side of drillship	2.0	0.0	40.5

44	Pass end of messenger line to workboat & connect to triplate	1.0	0.5	41.0
45	Connect insert pile tow sling to triplate	1.0	1.0	42.0
46	Open valves on insert pile to upend pile	0.5	0.5	42.5
47	Lower pile to about 250' below ship	1.0	1.0	43.5
48	Heave in on moonpool winch to lift pile into moonpool	1.0	1.0	44.5
49	Heave top of pile up through cellar deck and secure pile on stops on landing beams in cellar deck	1.0	1.0	45.5
50	Release pile sling from triplate and return messenger winch line	2.0	0.5	46.0
51	Remove elliptical head and internal diaphragm from anchor pile	2.0	1.2	47.2
52	Make up grouting string and stab into insert pile	1.0	1.0	48.2
53	Attach J-latch tool into top of insert pile	0.2	0.2	48.4
54	Lower insert pile on drillstring and stab into top of anchor pile	5.0	5.0	53.4
55	Lower insert pile until stops rest on top of anchor pile	0.5	0.5	53.9
56	Pump grout down drillstring to grout annulus between insert pile and anchor pile	3.2	3.2	57.1
57	Unlatch J-latch tool and return drillstring to surface	3.4	3.4	60.5
58	Release pendant from workboat winch and attach to surface marker buoy	1.0	0.0	60.5
59	Deploy surface marker buoy to mark riser buoy location	1.0	0.5	61.0
	TOTAL HOURS			61
	REPEAT FOR REMAINING 11 MOORINGS			671
	TOTAL ELAPSED DURATION (HOURS)			732
	TOTAL ELAPSED DURATION (DAYS)			30.5

TABLE B-16
16 POINT MOORING INSTALLATION USING D.P. DRILLSHIP
DRIVEN PILES IN 6,000 FT WATER DEPTH
(WELDED ANCHOR PILE OPTION) 04/04/90

CASE DS6DW

	ACTIVITY	ESTIMATED DURATION (HOURS)	CRITICAL PATH TIME (HOURS)	CUMMULATIVE TIME (HOURS)
1	Offload pile sections from cargo barge & lay on drillship deck	2.0	1.0	1.0
2	Run messenger lines thru moonpool with diver	1.0	1.0	2.0
3	Pass end of messenger line to workboat & connect to anchor chain	0.5	0.5	2.5
4	Keelhaul anchor chain under ship & up thru moonpool	0.5	0.5	3.0
5	Stopper off end of anchor chain to BOP trolley on drillship	0.5	0.5	3.5
6	Remove rotary table using drawworks	1.0	0.0	3.5
7	Install false rotary table using drawworks	0.5	0.0	3.5
8	Pick up lower pile section from riser rack & stab thru false rotary table	1.0	1.0	4.5
9	Pick up upper pile section and stab onto lower pile section	1.0	1.0	5.5
10	Weld out upper pile section to lower pile section	5.0	5.0	10.5
11	Remove guide tabs, cool and test weld	3.0	3.0	13.5
12	Lift and lower pile until pile is supported on BOP skid beams	0.5	0.5	14.0
13	Make anchor chain connection to anchor pile padeye	1.0	1.0	15.0
14	Release chain from BOP trolley	0.5	0.5	15.5
15	Pick up pile follower and stab into top of pile string & latch	1.0	1.0	16.5
16	Pick up underwater pile hammer and latch onto top of follower	3.0	3.0	19.5
17	Pick up hammer/pile string and lower thru moonpool on drill string	0.5	0.5	20.0
18	Pull end of chain back on workboat & attach to end of riser line	1.0	1.0	21.0
19	Lower anchor pile on drillstring while paying out riser line on workboat	8.0	8.0	29.0
20	Stopper off riser line and remove from deployment winch	1.0	1.0	30.0
21	Transfer riser buoy lower connection pendant to deck of workboat	0.5	0.5	30.5
22	Connect end of riser line to riser buoy connection pendant	0.5	0.5	31.0
23	Attach surface buoy connection pendant (spooled onto workboat winch) to riser buoy	0.2	0.2	31.2
24	Lower end of riser line/buoy pendant connection over stern of workboat & release	0.5	0.5	31.7
25	Continue lowering anchor pile until chain weight shifts to riser buoy	0.2	0.2	31.9
26	Continue lowering anchor pile & riser buoy until pile tip is just above mudline	2.0	2.0	33.9
27	Position tip of pile within tolerances & lower to self support in mud	0.5	0.5	34.4
28	Activate pile hammer to drive anchor pile to proper penetration	3.0	3.0	37.4
29	Unlatch follower from pile and return underwater hammer to surface	9.5	9.5	46.9
30	Remove hammer from drillstring and disconnect	2.0	1.0	47.9
31	Release pendant from workboat winch and attach to surface marker buoy	1.0	0.0	47.9
32	Deploy surface marker buoy to mark riser buoy location	1.0	0.5	48.4
	TOTAL HOURS			48.4
	REPEAT FOR REMAINING 15 MOORINGS			726
	TOTAL ELAPSED DURATION (HOURS)			774.4
	TOTAL ELAPSED DURATION (DAYS)			32.3

TABLE B-17
12 POINT MOORING INSTALLATION USING D.P. DRILLSHIP
DRIVEN PILES IN 6,000 FT WATER DEPTH
(WELDED ANCHOR PILE OPTION) 04/04/90

CASE DS6DW ACTIVITY	ESTIMATED DURATION (HOURS)	CRITICAL PATH TIME (HOURS)	CUMMULATIVE TIME (HOURS)
1 Offload pile sections from cargo barge & lay on drillship deck	2.0	1.0	1.0
2 Run messenger lines thru moonpool with diver	1.0	1.0	2.0
3 Pass end of messenger line to workboat & connect to anchor chain	0.5	0.5	2.5
4 Keelhaul anchor chain under ship & up thru moonpool	0.5	0.5	3.0
5 Stopper off end of anchor chain to BOP trolley on drillship	0.5	0.5	3.5
6 Remove rotary table using drawworks	1.0	0.0	3.5
7 Install false rotary table using drawworks	0.5	0.0	3.5
8 Pick up lower pile section from riser rack & stab thru false rotary table	1.0	1.0	4.5
9 Pick up upper pile section and stab onto lower pile section	1.0	1.0	5.5
10 Weld out upper pile section to lower pile section	5.0	5.0	10.5
11 Remove guide tabs, cool and test weld	3.0	3.0	13.5
12 Lift and lower pile until pile is supported on BOP skid beams	0.5	0.5	14.0
13 Make anchor chain connection to anchor pile padeye	1.0	1.0	15.0
14 Release chain from BOP trolley	0.5	0.5	15.5
15 Pick up pile follower and stab into top of pile string & latch	1.0	1.0	16.5
16 Pick up underwater pile hammer and latch onto top of follower	3.0	3.0	19.5
17 Pick up hammer/pile string and lower thru moonpool on drill string	0.5	0.5	20.0
18 Pull end of chain back on workboat & attach to end of riser line	1.0	1.0	21.0
19 Lower anchor pile on drillstring while paying out riser line on workboat	8.0	8.0	29.0
20 Stopper off riser line and remove from deployment winch	1.0	1.0	30.0
21 Transfer riser buoy lower connection pendant to deck of workboat	0.5	0.5	30.5
22 Connect end of riser line to riser buoy connection pendant	0.5	0.5	31.0
23 Attach surface buoy connection pendant (spooled onto workboat winch) to riser buoy	0.2	0.2	31.2
24 Lower end of riser line/buoy pendant connection over stern of workboat & release	0.5	0.5	31.7
25 Continue lowering anchor pile until chain weight shifts to riser buoy	0.2	0.2	31.9
26 Continue lowering anchor pile & riser buoy until pile tip is just above mudline	2.0	2.0	33.9
27 Position tip of pile within tolerances & lower to self support in mud	0.5	0.5	34.4
28 Activate pile hammer to drive anchor pile to proper penetration	3.0	3.0	37.4
29 Unlatch follower from pile and return underwater hammer to surface	9.5	9.5	46.9
30 Remove hammer from drillstring and disconnect	2.0	1.0	47.9
31 Release pendant from workboat winch and attach to surface marker buoy	1.0	0.0	47.9
32 Deploy surface marker buoy to mark riser buoy location	1.0	0.5	48.4
TOTAL HOURS			48.4
REPEAT FOR REMAINING 11 MOORINGS			532.4
TOTAL ELAPSED DURATION (HOURS)			580.8
TOTAL ELAPSED DURATION (DAYS)			24.2

TABLE B-18
16 POINT MOORING INSTALLATION USING D.P. DRILLSHIP
DRIVEN PILES IN 6,000 FT WATER DEPTH
(KEELHAULED ANCHOR PILE OPTION) 04/04/90

CASE DS6DK

	ACTIVITY	ESTIMATED DURATION (HOURS)	CRITICAL PATH TIME (HOURS)	CUMMULATIVE TIME (HOURS)
1	Launch anchor pile from cargo barge and tow to drillship	3.0	1.0	1.0
2	Run messenger lines thru moonpool with diver	3.0	1.0	2.0
3	Pass end of messenger line to workboat & connect to triplate	0.5	0.5	2.5
4	Connect anchor pile tow sling to triplate	0.5	0.5	3.0
5	Open valves on anchor piles to upend pile	1.0	1.0	4.0
6	Lower pile to about 250' below ship	0.5	0.5	4.5
7	Heave in on moonpool winch to lift pile into moonpool	1.0	1.0	3.5
8	Heave top of pile up through cellar deck and secure pile on pilestops on landing beams in cellar deck	0.5	0.5	4.0
9	Release pile sling from triplate and return messenger winch line to side of ship	1.0	0.5	4.5
10	Remove elliptical head and internal diaphragms from anchor pile	2.0	0.5	5.0
11	Pass triplate to workboat and connect to end of anchor chain	0.5	0.5	5.5
12	Keelhaul anchor chain under ship & up thru moonpool	0.5	0.5	6.0
13	Stopper off end of anchor chain to underside of drillfloor	0.5	0.5	6.5
14	Remove rotary table using drawworks	1.0	0.5	7.0
15	Install false rotary table using drawworks	1.0	0.5	7.5
16	Attach internal elevator into top of anchor pile	0.5	0.5	8.0
17	Lift anchor pile through false rotary table to position where padeye is adjacent to end of anchor chain	0.5	0.5	8.5
18	Make anchor chain connection to anchor pile padeye	1.0	1.0	9.0
19	Release chain from chain stopper	0.5	0.5	9.0
20	Pick up pile follower and stab into top of pile string & latch	1.0	1.0	10.0
21	Pick up underwater pile hammer and latch onto top of follower	3.0	3.0	13.0
22	Pick up hammer/pile string and lower thru moonpool on drill string	0.5	0.5	13.5
23	Pull end of chain back on workboat & attach to end of riser line	1.0	1.0	14.5
24	Lower anchor pile on drillstring while paying out riser line on workboat	5.0	5.0	19.5
25	Stopper off riser line and remove from deployment winch	1.0	1.0	20.5
26	Transfer riser buoy lower connection pendant to deck of workboat	0.5	0.5	21.0
27	Connect end of riser line to riser buoy connection pendant	0.5	0.5	21.5
28	Attach surface buoy connection pendant (spooled onto workboat winch) to riser buoy	0.2	0.2	21.7
29	Lower end of riser line/buoy pendant connection over stern of workboat & release	0.5	0.5	22.2
30	Continue lowering anchor pile until chain weight shifts to riser buoy	0.2	0.2	22.4
31	Continue lowering anchor pile & riser buoy until pile tip is just above mudline	0.5	0.5	22.9
32	Position tip of pile within tolerances & lower to self support in mud	0.5	0.5	23.4
33	Activate pile hammer to drive anchor pile to proper penetration	3.0	3.0	26.4
34	Unlatch follower from pile and return underwater hammer to surface	5.0	5.0	31.4
35	Remove hammer from drillstring and disconnect	2.0	1.0	32.4
36	Release pendant from workboat winch and attach to surface marker buoy	1.0	0.0	32.4
37	Deploy surface marker buoy to mark riser buoy location	1.0	0.5	32.9
	TOTAL HOURS			32.9
	REPEAT FOR REMAINING 15 MOORINGS			493.5
	TOTAL ELAPSED DURATION (HOURS)			526.4
	TOTAL ELAPSED DURATION (DAYS)			21.9

TABLE B-19
12 POINT MOORING INSTALLATION USING D.P. DRILLSHIP
DRIVEN PILES IN 6,000 FT WATER DEPTH
(KEELHAULED ANCHOR PILE OPTION) 04/04/90

	CASE DS6DK ACTIVITY	ESTIMATED DURATION (HOURS)	CRITICAL PATH TIME (HOURS)	CUMMULATIVE TIME (HOURS)
1	Launch anchor pile from cargo barge and tow to drillship	3.0	1.0	1.0
2	Run messenger lines thru moonpool with diver	3.0	1.0	2.0
3	Pass end of messenger line to workboat & connect to triplate	0.5	0.5	2.5
4	Connect anchor pile tow sling to triplate	0.5	0.5	3.0
5	Open valves on anchor piles to upend pile	1.0	1.0	4.0
6	Lower pile to about 250' below ship	0.5	0.5	4.5
7	Heave in on moonpool winch to lift pile into moonpool	1.0	1.0	3.5
8	Heave top of pile up through cellar deck and secure pile on pilestops on landing beams in cellar deck	0.5	0.5	4.0
9	Release pile sling from triplate and return messenger winch line to side of ship	1.0	0.5	4.5
10	Remove elliptical head and internal diaphragms from anchor pile	2.0	0.5	5.0
11	Pass triplate to workboat and connect to end of anchor chain	0.5	0.5	5.5
12	Keelhaul anchor chain under ship & up thru moonpool	0.5	0.5	6.0
13	Stopper off end of anchor chain to underside of drillfloor	0.5	0.5	6.5
14	Remove rotary table using drawworks	1.0	0.5	7.0
15	Install false rotary table using drawworks	1.0	0.5	7.5
16	Attach internal elevator into top of anchor pile	0.5	0.5	8.0
17	Lift anchor pile through false rotary table to position where padeye is adjacent to end of anchor chain	0.5	0.5	8.5
18	Make anchor chain connection to anchor pile padeye	1.0	1.0	9.0
19	Release chain from chain stopper	0.5	0.5	9.0
20	Pick up pile follower and stab into top of pile string & latch	1.0	1.0	10.0
21	Pick up underwater pile hammer and latch onto top of follower	3.0	3.0	13.0
22	Pick up hammer/pile string and lower thru moonpool on drill string	0.5	0.5	13.5
23	Pull end of chain back on workboat & attach to end of riser line	1.0	1.0	14.5
24	Lower anchor pile on drillstring while paying out riser line on workboat	5.0	5.0	19.5
25	Stopper off riser line and remove from deployment winch	1.0	1.0	20.5
26	Transfer riser buoy lower connection pendant to deck of workboat	0.5	0.5	21.0
27	Connect end of riser line to riser buoy connection pendant	0.5	0.5	21.5
28	Attach surface buoy connection pendant (spooled onto workboat winch) to riser buoy	0.2	0.2	21.7
29	Lower end of riser line/buoy pendant connection over stern of workboat & release	0.5	0.5	22.2
30	Continue lowering anchor pile until chain weight shifts to riser buoy	0.2	0.2	22.4
31	Continue lowering anchor pile & riser buoy until pile tip is just above mudline	0.5	0.5	22.9
32	Position tip of pile within tolerances & lower to self support in mud	0.5	0.5	23.4
33	Activate pile hammer to drive anchor pile to proper penetration	3.0	3.0	26.4
34	Unlatch follower from pile and return underwater hammer to surface	5.0	5.0	31.4
35	Remove hammer from drillstring and disconnect	2.0	1.0	32.4
36	Release pendant from workboat winch and attach to surface marker buoy	1.0	0.0	32.4
37	Deploy surface marker buoy to mark riser buoy location	1.0	0.5	32.9
	TOTAL HOURS			32.9
	REPEAT FOR REMAINING 11 MOORINGS			361.9
	TOTAL ELAPSED DURATION (HOURS)			394.8
	TOTAL ELAPSED DURATION (DAYS)			16.5

TABLE B-20
16 POINT MOORING INSTALLATION USING D.P. DRILLSHIP
DRILLED & GROUTED PILES IN 8,000 FT WATER DEPTH
(KEELHAULED ANCHOR PILE OPTION) 04/04/90

CASE DS8GK

	ACTIVITY	ESTIMATED DURATION (HOURS)	CRITICAL PATH TIME (HOURS)	CUMMULATIVE TIME (HOURS)
1	Launch anchor pile from cargo barge and tow to drillship	3.0	1.0	1.0
2	Run messenger lines thru moonpool with diver	3.0	1.0	2.0
3	Pass end of messenger line to workboat & connect to triplate	0.5	0.5	2.5
4	Connect anchor pile tow sling to triplate	0.5	0.5	3.0
5	Open valves on anchor pile to upend pile	1.0	1.0	4.0
6	Lower pile to about 250' below ship	0.5	0.5	4.5
7	Heave in on moonpool winch to lift pile into moonpool	1.0	1.0	5.5
8	Heave top of pile up through cellar deck and secure pile on stops on landing beams in cellar deck	0.5	0.5	6.0
9	Release pile sling from triplate and return messenger winch line to outside of drillship	1.0	0.5	6.5
10	Remove elliptical head and internal diaphragm from anchor pile	2.0	0.5	7.0
11	Pass triplate to workboat and connect to end of anchor chain	0.5	0.5	7.5
12	Keelhaul anchor chain under ship & up thru moonpool	0.5	0.5	8.0
13	Stopper off end of anchor chain to underside of drillfloor	0.5	0.5	8.5
14	Remove rotary table using drawworks	1.0	0.5	9.0
15	Install false rotary table using drawworks	1.0	0.5	9.5
16	Pick up and stab drill bit and mud motor into anchor pile string	0.2	0.2	9.7
17	Make up drill collar joints and lower into pile string	0.2	0.2	9.9
18	Attach J-latch sub to drill string and lower & latch into top of anchor pile	0.2	0.2	10.1
19	Lift anchor pile through rotary table to position where padeye is adjacent to end of anchor chain	0.5	0.5	10.6
20	Make anchor chain connection to anchor pile padeye	1.0	1.0	11.6
21	Release chain from chain stopper	0.5	0.5	12.1
22	Lower anchor pile to rest on landing beams in cellar deck area	0.2	0.2	12.3
23	Test mud motor to ensure drill bitt turns	0.2	0.2	12.5
24	Pick up pile string and lower thru moonpool on drill string	0.2	0.2	12.7
25	Pull end of chain back on workboat & attach to end of riser line	1.0	1.0	13.7
26	Lower anchor pile on drillstring while paying out riser line on workboat	7.0	7.0	20.7
27	Stopper off riser line and remove from deployment winch	1.0	1.0	21.7
28	Transfer riser buoy lower connection pendant to deck of workboat	1.0	0.5	22.2
29	Connect end of riser line to riser buoy connection pendant	0.5	0.5	22.7
30	Attach surface buoy connection pendant (spooled onto workboat winch) to riser buoy	0.2	0.2	22.9
31	Lower end of riser line/buoy pendant connection over stern of workboat & release	0.5	0.5	23.4
32	Continue lowering anchor pile until chain weight shifts to riser buoy	0.5	0.5	23.9
33	Continue lowering anchor pile & riser buoy until pile tip is just above mudline	0.5	0.5	24.4
34	Position tip of pile within tolerances & lower to self support in mud	0.5	0.5	24.9
35	Dyna-drill anchor pile into seafloor to proper penetration	6.0	6.0	30.9
36	Hold pile on drillstring to allow skin friction to set up	1.0	1.0	31.9
37	Test pull on anchor pile with drill string	0.2	0.2	32.1
38	Un-latch J-tool from anchor pile and trip drillstring back to surface	4.5	4.5	36.6
39	Make up pilot bitt and hole opener to drill hole for insert pile	0.2	0.2	36.8
40	Trip back down into hole with drill bitt for insert pile	7.0	7.0	43.8
41	Drill 54" dia. hole for insert pile below tip of anchor pile	2.0	2.0	45.8
42	Return drillstring to surface	4.5	4.5	50.3
43	Launch insert pile from cargo barge and tow to side of drillship	2.0	0.0	50.3

44	Pass end of messenger line to workboat & connect to triplate	1.0	0.5	50.8
45	Connect insert pile tow sling to triplate	1.0	1.0	51.8
46	Open valves on insert pile to upend pile	0.5	0.5	52.3
47	Lower pile to about 250' below ship	1.0	1.0	53.3
48	Heave in on moonpool winch to lift pile into moonpool	1.0	1.0	54.3
49	Heave top of pile up through cellar deck and secure pile on stops on landing beams in cellar deck	1.0	1.0	55.3
50	Release pile sling from triplate and return messenger winch line	2.0	0.5	55.8
51	Remove elliptical head and internal diaphragm from anchor pile	2.0	1.2	57.0
52	Make up grouting string and stab into insert pile	1.0	1.0	58.0
53	Attach J-latch tool into top of insert pile	0.2	0.2	58.2
54	Lower insert pile on drillstring and stab into top of anchor pile	7.0	7.0	65.2
55	Lower insert pile until stops rest on top of anchor pile	0.5	0.5	65.7
56	Pump grout down drillstring to grout annulus between insert pile and anchor pile	3.2	3.2	68.9
57	Unlatch J-latch tool and return drillstring to surface	4.5	4.5	73.4
58	Release pendant from workboat winch and attach to surface marker buoy	1.0	0.0	73.4
59	Deploy surface marker buoy to mark riser buoy location	1.0	0.5	73.9
	TOTAL HOURS			73.9
	REPEAT FOR REMAINING 15 MOORINGS			1108.5
	TOTAL ELAPSED DURATION (HOURS)			1182.4
	TOTAL ELAPSED DURATION (DAYS)			49.3

TABLE B-21
12 POINT MOORING INSTALLATION USING D.P. DRILLSHIP
DRILLED & GROUTED PILES IN 8,000 FT WATER DEPTH
(KEELHAULED ANCHOR PILE OPTION) 04/04/90

CASE DS8GK

	ACTIVITY	ESTIMATED DURATION (HOURS)	CRITICAL PATH TIME (HOURS)	CUMMULATIVE TIME (HOURS)
1	Launch anchor pile from cargo barge and tow to drillship	3.0	1.0	1.0
2	Run messenger lines thru moonpool with diver	3.0	1.0	2.0
3	Pass end of messenger line to workboat & connect to triplate	0.5	0.5	2.5
4	Connect anchor pile tow sling to triplate	0.5	0.5	3.0
5	Open valves on anchor pile to upend pile	1.0	1.0	4.0
6	Lower pile to about 250' below ship	0.5	0.5	4.5
7	Heave in on moonpool winch to lift pile into moonpool	1.0	1.0	5.5
8	Heave top of pile up through cellar deck and secure pile on stops on landing beams in cellar deck	0.5	0.5	6.0
9	Release pile sling from triplate and return messenger winch line to outside of drillship	1.0	0.5	6.5
10	Remove elliptical head and internal diaphragm from anchor pile	2.0	0.5	7.0
11	Pass triplate to workboat and connect to end of anchor chain	0.5	0.5	7.5
12	Keelhaul anchor chain under ship & up thru moonpool	0.5	0.5	8.0
13	Stopper off end of anchor chain to underside of drillfloor	0.5	0.5	8.5
14	Remove rotary table using drawworks	1.0	0.5	9.0
15	Install false rotary table using drawworks	1.0	0.5	9.5
16	Pick up and stab drill bit and mud motor into anchor pile string	0.2	0.2	9.7
17	Make up drill collar joints and lower into pile string	0.2	0.2	9.9
18	Attach J-latch sub to drill string and lower & latch into top of anchor pile	0.2	0.2	10.1
19	Lift anchor pile through rotary table to position where padeye is adjacent to end of anchor chain	0.5	0.5	10.6
20	Make anchor chain connection to anchor pile padeye	1.0	1.0	11.6
21	Release chain from chain stopper	0.5	0.5	12.1
22	Lower anchor pile to rest on landing beams in cellar deck area	0.2	0.2	12.3
23	Test mud motor to ensure drill bitt turns	0.2	0.2	12.5
24	Pick up pile string and lower thru moonpool on drill string	0.2	0.2	12.7
25	Pull end of chain back on workboat & attach to end of riser line	1.0	1.0	13.7
26	Lower anchor pile on drillstring while paying out riser line on workboat	7.0	7.0	20.7
27	Stopper off riser line and remove from deployment winch	1.0	1.0	21.7
28	Transfer riser buoy lower connection pendant to deck of workboat	1.0	0.5	22.2
29	Connect end of riser line to riser buoy connection pendant	0.5	0.5	22.7
30	Attach surface buoy connection pendant (spooled onto workboat winch) to riser buoy	0.2	0.2	22.9
31	Lower end of riser line/buoy pendant connection over stern of workboat & release	0.5	0.5	23.4
32	Continue lowering anchor pile until chain weight shifts to riser buoy	0.5	0.5	23.9
33	Continue lowering anchor pile & riser buoy until pile tip is just above mudline	0.5	0.5	24.4
34	Position tip of pile within tolerances & lower to self support in mud	0.5	0.5	24.9
35	Dyna-drill anchor pile into seafloor to proper penetration	6.0	6.0	30.9
36	Hold pile on drillstring to allow skin friction to set up	1.0	1.0	31.9
37	Test pull on anchor pile with drill string	0.2	0.2	32.1
38	Un-latch J-tool from anchor pile and trip drillstring back to surface	4.5	4.5	36.6
39	Make up pilot bitt and hole opener to drill hole for insert pile	0.2	0.2	36.8
40	Trip back down into hole with drill bitt for insert pile	7.0	7.0	43.8
41	Drill 54" dia. hole for insert pile below tip of anchor pile	2.0	2.0	45.8
42	Return drillstring to surface	4.5	4.5	50.3
43	Launch insert pile from cargo barge and tow to side of drillship	2.0	0.0	50.3

44	Pass end of messenger line to workboat & connect to triplate	1.0	0.5	50.8
45	Connect insert pile tow sling to triplate	1.0	1.0	51.8
46	Open valves on insert pile to upend pile	0.5	0.5	52.3
47	Lower pile to about 250' below ship	1.0	1.0	53.3
48	Heave in on moonpool winch to lift pile into moonpool	1.0	1.0	54.3
49	Heave top of pile up through cellar deck and secure pile on stops on landing beams in cellar deck	1.0	1.0	55.3
50	Release pile sling from triplate and return messenger winch line	2.0	0.5	55.8
51	Remove elliptical head and internal diaphragm from anchor pile	2.0	1.2	57.0
52	Make up grouting string and stab into insert pile	1.0	1.0	58.0
53	Attach J-latch tool into top of insert pile	0.2	0.2	58.2
54	Lower insert pile on drillstring and stab into top of anchor pile	7.0	7.0	65.2
55	Lower insert pile until stops rest on top of anchor pile	0.5	0.5	65.7
56	Pump grout down drillstring to grout annulus between insert pile and anchor pile	3.2	3.2	68.9
57	Unlatch J-latch tool and return drillstring to surface	4.5	4.5	73.4
58	Release pendant from workboat winch and attach to surface marker buoy	1.0	0.0	73.4
59	Deploy surface marker buoy to mark riser buoy location	1.0	0.5	73.9
	TOTAL HOURS			73.9
	REPEAT FOR REMAINING 11 MOORINGS			812.9
	TOTAL ELAPSED DURATION (HOURS)			886.8
	TOTAL ELAPSED DURATION (DAYS)			37.0

TABLE B-22
16 POINT MOORING INSTALLATION USING D.P. DRILLSHIP
DRILLED & GROUTED PILES IN 10,000 FT WATER DEPTH
(KEELHAULED ANCHOR PILE OPTION) 04/04/90

CASE DS10GK

	ACTIVITY	ESTIMATED DURATION (HOURS)	CRITICAL PATH TIME (HOURS)	CUMMULATIVE TIME (HOURS)
1	Launch anchor pile from cargo barge and tow to drillship	3.0	1.0	1.0
2	Run messenger lines thru moonpool with diver	3.0	1.0	2.0
3	Pass end of messenger line to workboat & connect to triplate	0.5	0.5	2.5
4	Connect anchor pile tow sling to triplate	0.5	0.5	3.0
5	Open valves on anchor pile to upend pile	1.0	1.0	4.0
6	Lower pile to about 250' below ship	0.5	0.5	4.5
7	Heave in on moonpool winch to lift pile into moonpool	1.0	1.0	5.5
8	Heave top of pile up through cellar deck and secure pile on stops on landing beams in cellar deck	0.5	0.5	6.0
9	Release pile sling from triplate and return messenger winch line to outside of drillship	1.0	0.5	6.5
10	Remove elliptical head and internal diaphragm from anchor pile	2.0	0.5	7.0
11	Pass triplate to workboat and connect to end of anchor chain	0.5	0.5	7.5
12	Keelhaul anchor chain under ship & up thru moonpool	0.5	0.5	8.0
13	Stopper off end of anchor chain to underside of drillfloor	0.5	0.5	8.5
14	Remove rotary table using drawworks	1.0	0.5	9.0
15	Install false rotary table using drawworks	1.0	0.5	9.5
16	Pick up and stab drill bit and mud motor into anchor pile string	0.2	0.2	9.7
17	Make up drill collar joints and lower into pile string	0.2	0.2	9.9
18	Attach J-latch sub to drill string and lower & latch into top of anchor pile	0.2	0.2	10.1
19	Lift anchor pile through rotary table to position where padeye is adjacent to end of anchor chain	0.5	0.5	10.6
20	Make anchor chain connection to anchor pile padeye	1.0	1.0	11.6
21	Release chain from chain stopper	0.5	0.5	12.1
22	Lower anchor pile to rest on landing beams in cellar deck area	0.2	0.2	12.3
23	Test mud motor to ensure drill bitt turns	0.2	0.2	12.5
24	Pick up pile string and lower thru moonpool on drill string	0.2	0.2	12.7
25	Pull end of chain back on workboat & attach to end of riser line	1.0	1.0	13.7
26	Lower anchor pile on drillstring while paying out riser line on workboat	8.3	8.3	22.0
27	Stopper off riser line and remove from deployment winch	1.0	1.0	23.0
28	Transfer riser buoy lower connection pendant to deck of workboat	1.0	0.5	23.5
29	Connect end of riser line to riser buoy connection pendant	0.5	0.5	24.0
30	Attach surface buoy connection pendant (spooled onto workboat winch) to riser buoy	0.2	0.2	24.2
31	Lower end of riser line/buoy pendant connection over stern of workboat & release	0.5	0.5	24.7
32	Continue lowering anchor pile until chain weight shifts to riser buoy	0.5	0.5	25.2
33	Continue lowering anchor pile & riser buoy until pile tip is just above mudline	0.5	0.5	25.7
34	Position tip of pile within tolerances & lower to self support in mud	0.5	0.5	26.2
35	Dyna-drill anchor pile into seafloor to proper penetration	6.0	6.0	32.2
36	Hold pile on drillstring to allow skin friction to set up	1.0	1.0	33.2
37	Test pull on anchor pile with drill string	0.2	0.2	33.4
38	Un-latch J-tool from anchor pile and trip drillstring back to surface	5.6	5.6	39.0
39	Make up pilot bitt and hole opener to drill hole for insert pile	0.2	0.2	39.2
40	Trip back down into hole with drill bitt for insert pile	8.3	8.3	47.5
41	Drill 54" dia. hole for insert pile below tip of anchor pile	2.0	2.0	49.5
42	Return drillstring to surface	5.6	5.6	55.1
43	Launch insert pile from cargo barge and tow to side of drillship	2.0	0.0	55.1

44	Pass end of messenger line to workboat & connect to triplate	1.0	0.5	55.6
45	Connect insert pile tow sling to triplate	1.0	1.0	56.6
46	Open valves on insert pile to upend pile	0.5	0.5	57.1
47	Lower pile to about 250' below ship	1.0	1.0	58.1
48	Heave in on moonpool winch to lift pile into moonpool	1.0	1.0	59.1
49	Heave top of pile up through cellar deck and secure pile on stops on landing beams in cellar deck	1.0	1.0	60.1
50	Release pile sling from triplate and return messenger winch line	2.0	0.5	60.6
51	Remove elliptical head and internal diaphragm from anchor pile	2.0	1.2	61.8
52	Make up grouting string and stab into insert pile	1.0	1.0	62.8
53	Attach J-latch tool into top of insert pile	0.2	0.2	63.0
54	Lower insert pile on drillstring and stab into top of anchor pile	8.3	8.3	71.3
55	Lower insert pile until stops rest on top of anchor pile	0.5	0.5	71.8
56	Pump grout down drillstring to grout annulus between insert pile and anchor pile	3.2	3.2	75.0
57	Unlatch J-latch tool and return drillstring to surface	5.6	5.6	80.6
58	Release pendant from workboat winch and attach to surface marker buoy	1.0	0.0	80.6
59	Deploy surface marker buoy to mark riser buoy location	1.0	0.5	81.1
	TOTAL HOURS			81.1
	REPEAT FOR REMAINING 15 MOORINGS			1216.5
	TOTAL ELAPSED DURATION (HOURS)			1297.6
	TOTAL ELAPSED DURATION (DAYS)			54.1

TABLE B-23
12 POINT MOORING INSTALLATION USING D.P. DRILLSHIP
DRILLED & GROUTED PILES IN 10,000 FT WATER DEPTH
(KEELHAULED ANCHOR PILE OPTION) 04/04/90

CASE DS10GK

	ACTIVITY	ESTIMATED DURATION (HOURS)	CRITICAL PATH TIME (HOURS)	CUMMULATIVE TIME (HOURS)
1	Launch anchor pile from cargo barge and tow to drillship	3.0	1.0	1.0
2	Run messenger lines thru moonpool with diver	3.0	1.0	2.0
3	Pass end of messenger line to workboat & connect to triplate	0.5	0.5	2.5
4	Connect anchor pile tow sling to triplate	0.5	0.5	3.0
5	Open valves on anchor pile to upend pile	1.0	1.0	4.0
6	Lower pile to about 250' below ship	0.5	0.5	4.5
7	Heave in on moonpool winch to lift pile into moonpool	1.0	1.0	5.5
8	Heave top of pile up through cellar deck and secure pile on stops on landing beams in cellar deck	0.5	0.5	6.0
9	Release pile sling from triplate and return messenger winch line to outside of drillship	1.0	0.5	6.5
10	Remove elliptical head and internal diaphragm from anchor pile	2.0	0.5	7.0
11	Pass triplate to workboat and connect to end of anchor chain	0.5	0.5	7.5
12	Keelhaul anchor chain under ship & up thru moonpool	0.5	0.5	8.0
13	Stopper off end of anchor chain to underside of drillfloor	0.5	0.5	8.5
14	Remove rotary table using drawworks	1.0	0.5	9.0
15	Install false rotary table using drawworks	1.0	0.5	9.5
16	Pick up and stab drill bit and mud motor into anchor pile string	0.2	0.2	9.7
17	Make up drill collar joints and lower into pile string	0.2	0.2	9.9
18	Attach J-latch sub to drill string and lower & latch into top of anchor pile	0.2	0.2	10.1
19	Lift anchor pile through rotary table to position where padeye is adjacent to end of anchor chain	0.5	0.5	10.6
20	Make anchor chain connection to anchor pile padeye	1.0	1.0	11.6
21	Release chain from chain stopper	0.5	0.5	12.1
22	Lower anchor pile to rest on landing beams in cellar deck area	0.2	0.2	12.3
23	Test mud motor to ensure drill bitt turns	0.2	0.2	12.5
24	Pick up pile string and lower thru moonpool on drill string	0.2	0.2	12.7
25	Pull end of chain back on workboat & attach to end of riser line	1.0	1.0	13.7
26	Lower anchor pile on drillstring while paying out riser line on workboat	8.3	8.3	22.0
27	Stopper off riser line and remove from deployment winch	1.0	1.0	23.0
28	Transfer riser buoy lower connection pendant to deck of workboat	1.0	0.5	23.5
29	Connect end of riser line to riser buoy connection pendant	0.5	0.5	24.0
30	Attach surface buoy connection pendant (spooled onto workboat winch) to riser buoy	0.2	0.2	24.2
31	Lower end of riser line/buoy pendant connection over stern of workboat & release	0.5	0.5	24.7
32	Continue lowering anchor pile until chain weight shifts to riser buoy	0.5	0.5	25.2
33	Continue lowering anchor pile & riser buoy until pile tip is just above mudline	0.5	0.5	25.7
34	Position tip of pile within tolerances & lower to self support in mud	0.5	0.5	26.2
35	Dyna-drill anchor pile into seafloor to proper penetration	6.0	6.0	32.2
36	Hold pile on drillstring to allow skin friction to set up	1.0	1.0	33.2
37	Test pull on anchor pile with drill string	0.2	0.2	33.4
38	Un-latch J-tool from anchor pile and trip drillstring back to surface	5.6	5.6	39.0
39	Make up pilot bitt and hole opener to drill hole for insert pile	0.2	0.2	39.2
40	Trip back down into hole with drill bitt for insert pile	8.3	8.3	47.5
41	Drill 54" dia. hole for insert pile below tip of anchor pile	2.0	2.0	49.5
42	Return drillstring to surface	5.6	5.6	55.1
43	Launch insert pile from cargo barge and tow to side of drillship	2.0	0.0	55.1

44	Pass end of messenger line to workboat & connect to triplate	1.0	0.5	55.6
45	Connect insert pile tow sling to triplate	1.0	1.0	56.6
46	Open valves on insert pile to upend pile	0.5	0.5	57.1
47	Lower pile to about 250' below ship	1.0	1.0	58.1
48	Heave in on moonpool winch to lift pile into moonpool	1.0	1.0	59.1
49	Heave top of pile up through cellar deck and secure pile on stops on landing beams in cellar deck	1.0	1.0	60.1
50	Release pile sling from triplate and return messenger winch line	2.0	0.5	60.6
51	Remove elliptical head and internal diaphragm from anchor pile	2.0	1.2	61.8
52	Make up grouting string and stab into insert pile	1.0	1.0	62.8
53	Attach J-latch tool into top of insert pile	0.2	0.2	63.0
54	Lower insert pile on drillstring and stab into top of anchor pile	8.3	8.3	71.3
55	Lower insert pile until stops rest on top of anchor pile	0.5	0.5	71.8
56	Pump grout down drillstring to grout annulus between insert pile and anchor pile	3.2	3.2	75.0
57	Unlatch J-latch tool and return drillstring to surface	5.6	5.6	80.6
58	Release pendant from workboat winch and attach to surface marker buoy	1.0	0.0	80.6
59	Deploy surface marker buoy to mark riser buoy location	1.0	0.5	81.1
	TOTAL HOURS			81.1
	REPEAT FOR REMAINING 11 MOORINGS			892.1
	TOTAL ELAPSED DURATION (HOURS)			973.2
	TOTAL ELAPSED DURATION (DAYS)			40.6

TABLE B-24
16 POINT MOORING INSTALLATION USING D.P. MULTI-SERVICE VESSEL
DRIVEN PILES IN 1,500 FT WATER DEPTH
(KEELHAULED ANCHOR PILE OPTION) 04/04/90

CASE MSV1DK

	ACTIVITY	ESTIMATED DURATION (HOURS)	CRITICAL PATH TIME (HOURS)	CUMMULATI TIME (HOURS)
1	Offload riser buoy from cargo barge and set on MSV's deck	2.0	1.0	1.0
2	Run messenger lines thru moonpool with diver	2.0	1.0	2.0
3	Insert internal elevator with lifting sling attached into top of pile	2.0	1.0	3.0
4	Attach lowering winch line and moonpool winch line to internal elevator sling	0.5	0.5	3.5
5	Rig lifting slings to 1/3 points of pile for horizontal lift	1.0	1.0	4.5
6	Lift pile from barge using MSV's main deck crane	0.5	0.5	4.0
7	Lower main deck crane block while heaving in on lowering winch to upend pile	1.0	1.0	5.0
8	Lower pile to about 250' below MSV	0.5	0.5	5.5
9	Heave in on moonpool winch to lift pile into moonpool	0.7	0.7	6.2
10	Heave top of pile up through moonpool and secure pile on pilestops on landing beams in pile module	0.2	0.2	6.4
11	Release pile sling from triplate and return messenger winch line to bow of SSCV	1.0	0.5	6.9
12	Lift pile using main deck crane and center pile on landing beams	0.5	0.5	7.4
13	Pass triplate to workboat and connect to end of anchor chain	0.5	0.5	7.9
14	Keelhaul anchor chain under MSV & up thru moonpool	1.0	1.0	8.9
15	Stopper off anchor chain to landing beam and release winch line from end of chain	1.0	1.0	9.9
16	Lift anchor pile to where padeye is in position adjacent to end of anchor chain	0.5	0.5	10.4
17	Make anchor chain connection to anchor pile padeye	1.0	1.0	11.4
18	Lower pile so that pile stops rest on landing beams	0.5	0.5	11.9
19	Remove internal elevator from top of pile	0.2	0.2	12.1
20	Pick up pile follower and stab into top of pile string & latch	0.5	0.5	12.6
21	Attach moonpool winch line to chain stopper and heave in to take weight of chain	1.0	0.5	13.1
22	Lift follower/anchor pile and lower until follower pile stops rest on landing beam	0.5	0.5	13.1
23	Pay out winch line until chain weight is on padeye and release stopper from chain	0.5	0.5	13.6
24	Pull end of chain back on workboat & attach to end of riser line	1.0	1.0	14.6
25	Lower anchor pile/hammer string while paying out riser line on workboat	1.2	1.2	15.8
26	Stopper off riser line and remove from deployment winch	0.5	0.5	16.3
27	Lift riser buoy off of deck with MSV main crane and deploy in water	1.0	1.0	17.3
28	Transfer riser buoy lower connection pendant to deck of workboat	0.5	0.5	16.8
29	Connect end of riser line to riser buoy connection pendant	0.5	0.5	17.3
30	Attach surface buoy connection pendant (spooled onto workboat winch) to riser buoy	0.2	0.2	17.5
31	Lower end of riser line/buoy pendant connection over stern of workboat & release	0.5	0.5	18.0
32	Continue lowering anchor pile until chain weight shifts to riser buoy	0.2	0.2	18.2
33	Continue lowering anchor pile & riser buoy until pile tip is just above mudline	0.5	0.5	18.7
34	Position tip of pile within tolerances & lower to self support in mud	0.2	0.2	18.9
35	Activate pile hammer to drive anchor pile to proper penetration	2.0	2.0	20.9
36	Unlatch follower from pile and return underwater hammer to surface	1.2	1.2	22.1
37	Remove follower from anchor pile and set on deck of MSV	1.0	0.0	22.1
38	Release pendant from workboat winch and attach to surface marker buoy	1.0	1.0	23.1
39	Deploy surface marker buoy to mark riser buoy location	1.0	0.5	23.6
	TOTAL HOURS			23.6
	REPEAT FOR REMAINING 15 MOORINGS			354
	TOTAL ELAPSED DURATION (HOURS)			377.6
	TOTAL ELAPSED DURATION (DAYS)			15.7

TABLE B-25
16 POINT MOORING INSTALLATION USING D.P. MULTI-SERVICE VESSEL
DRIVEN PILES IN 3,000 FT WATER DEPTH
(KEELHAULED ANCHOR PILE OPTION) 04/04/90

	CASE MSV3DK ACTIVITY	ESTIMATED DURATION (HOURS)	CRITICAL PATH TIME (HOURS)	CUMMULATI TIME (HOURS)
1	Offload riser buoy from cargo barge and set on MSV's deck	2.0	1.0	1.0
2	Run messenger lines thru moonpool with diver	2.0	1.0	2.0
3	Insert internal elevator with lifting sling attached into top of pile	2.0	1.0	3.0
4	Attach lowering winch line and moonpool winch line to internal elevator sling	0.5	0.5	3.5
5	Rig lifting slings to 1/3 points of pile for horizontal lift	1.0	1.0	4.5
6	Lift pile from barge using MSV's main deck crane	0.5	0.5	4.0
7	Lower main deck crane block while heaving in on lowering winch to upend pile	1.0	1.0	5.0
8	Lower pile to about 250' below MSV	0.5	0.5	5.5
9	Heave in on moonpool winch to lift pile into moonpool	0.7	0.7	6.2
10	Heave top of pile up through moonpool and secure pile on pilestops on landing beams in pile module	0.2	0.2	6.4
11	Release pile sling from triplate and return messenger winch line to bow of SSCV	1.0	0.5	6.9
12	Lift pile using main deck crane and center pile on landing beams	0.5	0.5	7.4
13	Pass triplate to workboat and connect to end of anchor chain	0.5	0.5	7.9
14	Keelhaul anchor chain under MSV & up thru moonpool	1.0	1.0	8.9
15	Stopper off anchor chain to landing beam and release winch line from end of chain	1.0	1.0	9.9
16	Lift anchor pile to where padeye is in position adjacent to end of anchor chain	0.5	0.5	10.4
17	Make anchor chain connection to anchor pile padeye	1.0	1.0	11.4
18	Lower pile so that pile stops rest on landing beams	0.5	0.5	11.9
19	Remove internal elevator from top of pile	0.2	0.2	12.1
20	Pick up pile follower and stab into top of pile string & latch	0.5	0.5	12.6
21	Attach moonpool winch line to chain stopper and heave in to take weight of chain	1.0	0.5	13.1
22	Lift follower/anchor pile and lower until follower pile stops rest on landing beam	0.5	0.5	13.1
23	Pay out winch line until chain weight is on padeye and release stopper from chain	0.5	0.5	13.6
24	Pull end of chain back on workboat & attach to end of riser line	1.0	1.0	14.6
25	Lower anchor pile/hammer string while paying out riser line on workboat	2.5	2.5	17.1
26	Stopper off riser line and remove from deployment winch	0.5	0.5	17.6
27	Lift riser buoy off of deck with MSV main crane and deploy in water	1.0	1.0	18.6
28	Transfer riser buoy lower connection pendant to deck of workboat	0.5	0.5	18.1
29	Connect end of riser line to riser buoy connection pendant	0.5	0.5	18.6
30	Attach surface buoy connection pendant (spooled onto workboat winch) to riser buoy	0.2	0.2	18.8
31	Lower end of riser line/buoy pendant connection over stern of workboat & release	0.5	0.5	19.3
32	Continue lowering anchor pile until chain weight shifts to riser buoy	0.2	0.2	19.5
33	Continue lowering anchor pile & riser buoy until pile tip is just above mudline	0.5	0.5	20.0
34	Position tip of pile within tolerances & lower to self support in mud	0.2	0.2	20.2
35	Activate pile hammer to drive anchor pile to proper penetration	2.0	2.0	22.2
36	Unlatch follower from pile and return underwater hammer to surface	2.5	2.5	24.7
37	Remove follower from anchor pile and set on deck of MSV	1.0	0.0	24.7
38	Release pendant from workboat winch and attach to surface marker buoy	1.0	1.0	25.7
39	Deploy surface marker buoy to mark riser buoy location	1.0	0.5	26.2
	TOTAL HOURS			26.2
	REPEAT FOR REMAINING 15 MOORINGS			393
	TOTAL ELAPSED DURATION (HOURS)			419.2
	TOTAL ELAPSED DURATION (DAYS)			17.5

TABLE B-26
16 POINT MOORING INSTALLATION USING D.P. MULTI-SERVICE VESSEL
DRIVEN PILES IN 6,000 FT WATER DEPTH
(KEELHAULED ANCHOR PILE OPTION) 04/04/90

	CASE MSV6DK ACTIVITY	ESTIMATED DURATION (HOURS)	CRITICAL PATH TIME (HOURS)	CUMMULATI TIME (HOURS)
1	Offload riser buoy from cargo barge and set on MSV's deck	2.0	1.0	1.0
2	Run messenger lines thru moonpool with diver	2.0	1.0	2.0
3	Insert internal elevator with lifting sling attached into top of pile	2.0	1.0	3.0
4	Attach lowering winch line and moonpool winch line to internal elevator sling	0.5	0.5	3.5
5	Rig lifting slings to 1/3 points of pile for horizontal lift	1.0	1.0	4.5
6	Lift pile from barge using MSV's main deck crane	0.5	0.5	4.0
7	Lower main deck crane block while heaving in on lowering winch to upend pile	1.0	1.0	5.0
8	Lower pile to about 250' below MSV	0.5	0.5	5.5
9	Heave in on moonpool winch to lift pile into moonpool	0.7	0.7	6.2
10	Heave top of pile up through moonpool and secure pile on pilestops on landing beams in pile module	0.2	0.2	6.4
11	Release pile sling from triplate and return messenger winch line to bow of SSCV	1.0	0.5	6.9
12	Lift pile using main deck crane and center pile on landing beams	0.5	0.5	7.4
13	Pass triplate to workboat and connect to end of anchor chain	0.5	0.5	7.9
14	Keelhaul anchor chain under MSV & up thru moonpool	1.0	1.0	8.9
15	Stopper off anchor chain to landing beam and release winch line from end of chain	1.0	1.0	9.9
16	Lift anchor pile to where padeye is in position adjacent to end of anchor chain	0.5	0.5	10.4
17	Make anchor chain connection to anchor pile padeye	1.0	1.0	11.4
18	Lower pile so that pile stops rest on landing beams	0.5	0.5	11.9
19	Remove internal elevator from top of pile	0.2	0.2	12.1
20	Pick up pile follower and stab into top of pile string & latch	0.5	0.5	12.6
21	Attach moonpool winch line to chain stopper and heave in to take weight of chain	1.0	0.5	13.1
22	Lift follower/anchor pile and lower until follower pile stops rest on landing beam	0.5	0.5	13.1
23	Pay out winch line until chain weight is on padeye and release stopper from chain	0.5	0.5	13.6
24	Pull end of chain back on workboat & attach to end of riser line	1.0	1.0	14.6
25	Lower anchor pile/hammer string while paying out riser line on workboat	5.0	5.0	19.6
26	Stopper off riser line and remove from deployment winch	0.5	0.5	20.1
27	Lift riser buoy off of deck with MSV main crane and deploy in water	1.0	1.0	21.1
28	Transfer riser buoy lower connection pendant to deck of workboat	0.5	0.5	20.6
29	Connect end of riser line to riser buoy connection pendant	0.5	0.5	21.1
30	Attach surface buoy connection pendant (spooled onto workboat winch) to riser buoy	0.2	0.2	21.3
31	Lower end of riser line/buoy pendant connection over stern of workboat & release	0.5	0.5	21.8
32	Continue lowering anchor pile until chain weight shifts to riser buoy	0.5	0.5	22.3
33	Continue lowering anchor pile & riser buoy until pile tip is just above mudline	0.5	0.5	22.8
34	Position tip of pile within tolerances & lower to self support in mud	0.2	0.2	23.0
35	Activate pile hammer to drive anchor pile to proper penetration	2.5	2.5	25.5
36	Unlatch follower from pile and return underwater hammer to surface	5.0	5.0	30.5
37	Remove follower from anchor pile and set on deck of MSV	1.0	0.0	30.5
38	Release pendant from workboat winch and attach to surface marker buoy	1.0	1.0	31.5
39	Deploy surface marker buoy to mark riser buoy location	1.0	0.5	32.0
	TOTAL HOURS			32
	REPEAT FOR REMAINING 15 MOORINGS			480
	TOTAL ELAPSED DURATION (HOURS)			512
	TOTAL ELAPSED DURATION (DAYS)			21.3

TABLE B-27
12 POINT MOORING INSTALLATION USING D.P. MULTI-SERVICE VESSEL
DRIVEN PILES IN 6,000 FT WATER DEPTH
(KEELHAULED ANCHOR PILE OPTION) 04/04/90

CASE MSV60K

	ACTIVITY	ESTIMATED DURATION (HOURS)	CRITICAL PATH TIME (HOURS)	CUMMULATI TIME (HOURS)
1	Offload riser buoy from cargo barge and set on MSV's deck	2.0	1.0	1.0
2	Run messenger lines thru moonpool with diver	2.0	1.0	2.0
3	Insert internal elevator with lifting sling attached into top of pile	2.0	1.0	3.0
4	Attach lowering winch line and moonpool winch line to internal elevator sling	0.5	0.5	3.5
5	Rig lifting slings to 1/3 points of pile for horizontal lift	1.0	1.0	4.5
6	Lift pile from barge using MSV's main deck crane	0.5	0.5	4.0
7	Lower main deck crane block while heaving in on lowering winch to upend pile	1.0	1.0	5.0
8	Lower pile to about 250' below MSV	0.5	0.5	5.5
9	Heave in on moonpool winch to lift pile into moonpool	0.7	0.7	6.2
10	Heave top of pile up through moonpool and secure pile on pilestops on landing beams in pile module	0.2	0.2	6.4
11	Release pile sling from triplate and return messenger winch line to bow of SSCV	1.0	0.5	6.9
12	Lift pile using main deck crane and center pile on landing beams	0.5	0.5	7.4
13	Pass triplate to workboat and connect to end of anchor chain	0.5	0.5	7.9
14	Keelhaul anchor chain under MSV & up thru moonpool	1.0	1.0	8.9
15	Stopper off anchor chain to landing beam and release winch line from end of chain	1.0	1.0	9.9
16	Lift anchor pile to where padeye is in position adjacent to end of anchor chain	0.5	0.5	10.4
17	Make anchor chain connection to anchor pile padeye	1.0	1.0	11.4
18	Lower pile so that pile stops rest on landing beams	0.5	0.5	11.9
19	Remove internal elevator from top of pile	0.2	0.2	12.1
20	Pick up pile follower and stab into top of pile string & latch	0.5	0.5	12.6
21	Attach moonpool winch line to chain stopper and heave in to take weight of chain	1.0	0.5	13.1
22	Lift follower/anchor pile and lower until follower pile stops rest on landing beam	0.5	0.5	13.1
23	Pay out winch line until chain weight is on padeye and release stopper from chain	0.5	0.5	13.6
24	Pull end of chain back on workboat & attach to end of riser line	1.0	1.0	14.6
25	Lower anchor pile/hammer string while paying out riser line on workboat	5.0	5.0	19.6
26	Stopper off riser line and remove from deployment winch	0.5	0.5	20.1
27	Lift riser buoy off of deck with MSV main crane and deploy in water	1.0	1.0	21.1
28	Transfer riser buoy lower connection pendant to deck of workboat	0.5	0.5	20.6
29	Connect end of riser line to riser buoy connection pendant	0.5	0.5	21.1
30	Attach surface buoy connection pendant (spooled onto workboat winch) to riser buoy	0.2	0.2	21.3
31	Lower end of riser line/buoy pendant connection over stern of workboat & release	0.5	0.5	21.8
32	Continue lowering anchor pile until chain weight shifts to riser buoy	0.5	0.5	22.3
33	Continue lowering anchor pile & riser buoy until pile tip is just above mudline	0.5	0.5	22.8
34	Position tip of pile within tolerances & lower to self support in mud	0.2	0.2	23.0
35	Activate pile hammer to drive anchor pile to proper penetration	2.5	2.5	25.5
36	Unlatch follower from pile and return underwater hammer to surface	5.0	5.0	30.5
37	Remove follower from anchor pile and set on deck of MSV	1.0	0.0	30.5
38	Release pendant from workboat winch and attach to surface marker buoy	1.0	1.0	31.5
39	Deploy surface marker buoy to mark riser buoy location	1.0	0.5	32.0
	TOTAL HOURS			32
	REPEAT FOR REMAINING 11 MOORINGS			352
	TOTAL ELAPSED DURATION (HOURS)			384
	TOTAL ELAPSED DURATION (DAYS)			16.0

APPENDIX C - INSTALLATION DETAILED COST TABLES

TABLE C-1
INSTALLATION DURATIONS AND COSTS
TAUT-LEG MOORING SYSTEMS - 1,500 THROUGH 10,000-FT. WATER DEPTH

CASE NO.	TABLE NO.	INSTALLATION VESSEL	WATER DEPTH (FEET)	NO. OF MOORING POINTS	PILE INSTALLATION METHOD	PILE ASSEMBLY METHOD	DURATION IN DAYS	INSTALLATION COST ($)
DB1D	C-2	DP Derrick Barge	1,500	16	Driven	One-Piece	16.6	2,574,490
DB3D	C-3	DP Derrick Barge	3,000	16	Driven	One-Piece	18.3	2,807,883
DB6D	C-4	DP Derrick Barge	6,000	16	Driven	One-Piece	21.9	3,292,623
DB6D	C-5	DP Derrick Barge	6,000	12	Driven	One-Piece	16.5	2,609,643
DS1GK	C-6	DP Drillship	1,500	16	Grouted	Keelhauled	28.1	3,150,330
DS1DK	C-7	DP Drillship	1,500	16	Driven	Keelhauled	16.7	2,243,543
DS3GW	C-8	DP Drillship	3,000	16	Grouted	Welded	39.3	4,182,223
DS3GK	C-9	DP Drillship	3,000	16	Grouted	Keelhauled	32.0	3,553,300
DS3DW	C-10	DP Drillship	3,000	16	Driven	Welded	22.1	2,742,290
DS3DK	C-11	DP Drillship	3,000	16	Driven	Keelhauled	18.6	2,441,690
DS6GW	C-12	DP Drillship	6,000	16	Grouted	Welded	44.9	4,746,907
DS6GW	C-13	DP Drillship	6,000	12	Grouted	Welded	33.7	4,109,455
DS6GK	C-14	DP Drillship	6,000	16	Grouted	Keelhauled	40.7	4,441,200
DS6GK	C-15	DP Drillship	6,000	12	Grouted	Keelhauled	30.5	3,399,625
DS6DW	C-16	DP Drillship	6,000	16	Driven	Welded	32.3	3,796,460
DS6DW	C-17	DP Drillship	6,000	12	Driven	Welded	24.2	2,962,770
DS6DK	C-18	DP Drillship	6,000	16	Driven	Keelhauled	21.9	2,795,523
DS6DK	C-19	DP Drillship	6,000	12	Driven	Keelhauled	16.5	2,213,467
DS8GK	C-20	DP Drillship	8,000	12	Grouted	Keelhauled	37.0	4,060,428
DS10GK	C-21	DP Drillship	10,000	12	Grouted	Keelhauled	54.1	4,429,248
MSV1DK	C-22	DP MSV	1,500	16	Driven	Keelhauled	15.7	2,280,593
MSV3DK	C-23	DP MSV	3,000	16	Driven	Keelhauled	17.5	2,469,787
MSV6DK	C-24	DP MSV	6,000	16	Driven	Keelhauled	21.3	2,891,833
MSV6DK	C-25	DP MSV	6,000	12	Driven	Keelhauled	16.0	2,309,700

TABLE C-2
MARINE EQUIPMENT, AUX. EQUIPMENT & PERSONNEL
1,500-FT WATER DEPTH - 16 POINT - DRIVEN ANCHOR PILES
INSTALLATION OF TAUT LEG MOORINGS WITH D.P. DERRICK BARGE
CASE T1A16N/DB1D - ARAMID/STEEL MOORING SYSTEM W/ MINIMAL RISER BUOY

ITEM NO.	MARINE EQUIPMENT DESCRIPTION	SIZE	DAY RATE ($/DAY)	NUMBER REQUIRED	DURATION (DAYS) MOB.	ACTIVITY	DEMOB.	ESTIMATED COST (M$)
1	DP Derrick Vessel (DB 50)	4,000 T	100,000	1	1	16.6	1	1,860.0
2	Cargo Barge with Tug	4300 HP	6,000	1	1	16.6	1	111.6
3	Crew/Supply Boat	-	2,300	1	1	16.6	1	42.8
4	Transponder Spread		1,400	1	1	16.6	1	26.0
5	ROV Spread		2,300	2	1	16.6	1	85.6
6	Surface Diving Spread		6,000	1	1	16.6	1	111.6
7	Underwater Hydraulic Pile Hammer		10,000	1	1	16.6	1	186.0
8	Transponder Team		2,000	1	1	16.6	1	37.2
9	Surveyors		600	1	1	16.6	1	11.2
10	ROV Operators		350	5	1	16.6	1	32.6
11	Deploy Transponder Spread (lump sum)		20,000	1				20.0
12	Misc Equipment (lump sum)		50,000	1				50.0
13								0.0
14								0.0
							Total: Marine Equipment	2,574.5

TABLE C-3

MARINE EQUIPMENT, AUX. EQUIPMENT & PERSONNEL

3,000-FT WATER DEPTH - 16 POINT - DRIVEN ANCHOR PILES

INSTALLATION OF TAUT LEG MOORINGS WITH D.P. DERRICK BARGE

CASE T3A16N/DB3D - ARAMID/STEEL MOORING SYSTEM W/ MINIMAL RISER BUOY

ITEM NO.	MARINE EQUIPMENT DESCRIPTION	SIZE	DAY RATE ($/DAY)	NUMBER REQUIRED	DURATION (DAYS) MOB.	ACTIVITY	DEMOB.	ESTIMATED COST (M$)
1	DP Derrick Vessel (DB 50)	4,000 T	100,000	1	1	18.3	1	2,033.3
2	Cargo Barge with Tug	4300 HP	6,000	1	1	18.3	1	122.0
3	Crew/Supply Boat	-	2,300	1	1	18.3	1	46.8
4	Transponder Spread		1,400	1	1	18.3	1	28.5
5	ROV Spread		2,300	2	1	18.3	1	93.5
6	Surface Diving Spread		6,000	1	1	18.3	1	122.0
7	Underwater Hydraulic Pile Hammer		10,000	1	1	18.3	1	203.3
8	Transponder Team		2,000	1	1	18.3	1	40.7
9	Surveyors		600	1	1	18.3	1	12.2
10	ROV Operators		350	5	1	18.3	1	35.6
11	Deploy Transponder Spread (lump sum)		20,000	1				20.0
12	Misc Equipment (lump sum)		50,000	1				50.0
13								0.0
14								0.0
							Total: Marine Equipment	2,807.9

TABLE C-4
MARINE EQUIPMENT, AUX. EQUIPMENT & PERSONNEL
6,000-FT WATER DEPTH - 16 POINT - DRIVEN ANCHOR PILES
INSTALLATION OF TAUT LEG MOORINGS WITH D.P. DERRICK BARGE
CASE T6A16N/DB6D - ARAMID/STEEL MOORING SYSTEM W/ MINIMAL RISER BUOY

ITEM NO.	MARINE EQUIPMENT DESCRIPTION	SIZE	DAY RATE ($/DAY)	NUMBER REQUIRED	DURATION (DAYS) MOB.	ACTIVITY	DEMOB.	ESTIMATED COST (M$)
1	DP Derrick Vessel (DB 50)	4,000 T	100,000	1	1	21.9	1	2,393.3
2	Cargo Barge with Tug	4300 HP	6,000	1	1	21.9	1	143.6
3	Crew/Supply Boat	-	2,300	1	1	21.9	1	55.0
4	Transponder Spread		1,400	1	1	21.9	1	33.5
5	ROV Spread		2,300	2	1	21.9	1	110.1
6	Surface Diving Spread		6,000	1	1	21.9	1	143.6
7	Underwater Hydraulic Pile Hammer		10,000	1	1	21.9	1	239.3
8	Transponder Team		2,000	1	1	21.9	1	47.9
9	Surveyors		600	1	1	21.9	1	14.4
10	ROV Operators		350	5	1	21.9	1	41.9
11	Deploy Transponder Spread (lump sum)		20,000	1				20.0
12	Misc Equipment (lump sum)		50,000	1				50.0
13								0.0
14								0.0
						Total: Marine Equipment		3,292.6

TABLE C-5

MARINE EQUIPMENT, AUX. EQUIPMENT & PERSONNEL

6,000-FT WATER DEPTH - 12 POINT - DRIVEN ANCHOR PILES

INSTALLATION OF TAUT LEG MOORINGS WITH D.P. DERRICK BARGE

CASE T6A12N/DB6D - ARAMID/STEEL MOORING SYSTEM W/ MINIMAL RISER BUOY

ITEM NO.	MARINE EQUIPMENT DESCRIPTION	SIZE	DAY RATE ($/DAY)	NUMBER REQUIRED	DURATION (DAYS) MOB.	ACTIVITY	DEMOB.	ESTIMATED COST (M$)
1	DP Derrick Vessel (DB 50)	4,000 T	100,000	1	1	16.5	1	1,845.0
2	Cargo Barge with tug		6,000	1	1	16.5	1	110.7
3	Crew/Supply Boat	-	2,300	1	1	16.5	1	42.4
4	Transponder Spread		1,400	1	1	16.5	1	25.8
5	ROV Spread		2,300	2	1	16.5	1	84.9
6	Surface Diving Spread		6,000	1	1	16.5	1	110.7
7	AHV Crew		250	12	1	16.5	1	55.4
8	Transponder Team		2,000	1	1	16.5	1	36.9
9	Surveyors		600	1	1	16.5	1	11.1
10	ROV Operators		350	5	1	16.5	1	32.3
11	Deploy Transponder Spread (lump sum)		20,000	1				20.0
12	Misc Equipment (lump sum)		50,000	1				50.0
13	Underwater Hydraulic Pile Hammer		10,000	1	1	16.5	1	184.5
14	.							0.0
						Total: Marine Equipment		2,609.6

TABLE C-6

MARINE EQUIPMENT, AUX. EQUIPMENT & PERSONNEL

1,500-FT WATER DEPTH - 16 POINTS - DRILLED & GROUTED ANCHOR PILES - KEELHAULED

INSTALLATION OF TAUT LEG MOORINGS WITH D.P. DRILLING VESSEL

CASE T1A16N/DS1GK - ARAMID/STEEL MOORING SYSTEM W/ MINIMAL RISER BUOY

ITEM NO.	MARINE EQUIPMENT DESCRIPTION	SIZE	DAY RATE ($/DAY)	NUMBER REQUIRED	DURATION (DAYS) MOB.	ACTIVITY	DEMOB.	ESTIMATED COST (M$)
1	DP Drilling Vessel		55,000	1	1	28.1	1	1,653.7
2	Anchor Handling Vessel	8500 HP	13,500	1	1	28.1	1	405.9
3	Crew/Supply Boat	-	2,300	1	1	28.1	1	69.2
4	Dyna-Drill Spread & Operators		4,500	1	1	28.1	1	135.3
5	Transponder Spread		1,400	1	1	28.1	1	42.1
6	ROV Spread		2,300	2	1	28.1	1	138.3
7	Surface Diving Spread		6,000	1	1	28.1	1	180.4
8	AHV Crew		250	12	1	28.1	1	90.2
9	Transponder Team		2,000	1	1	28.1	1	60.1
10	Surveyors		600	1	1	28.1	1	18.0
11	ROV Operators		350	5	1	28.1	1	52.6
12	Deploy Transponder Spread (lump sum)		20,000	1				20.0
13	Misc. Equipment (lump sum)		50,000	1				50.0
14	Cargo Barge with tug		6,000	1	1	28.1	1	180.4
15	Grouting Supervisors		600	3	1	28.1	1	54.1
							Total: Marine Equipment	3,150.3

TABLE C-7

MARINE EQUIPMENT, AUX. EQUIPMENT & PERSONNEL

1,500-FT WATER DEPTH - 16 POINTS - DRIVEN ANCHOR PILES - KEELHAULED

INSTALLATION OF TAUT LEG MOORINGS WITH D.P. DRILLING VESSEL

CASE T1A16N/DS1DK - ARAMID/STEEL MOORING SYSTEM W/ MINIMAL RISER BUOY

ITEM NO.	MARINE EQUIPMENT DESCRIPTION	SIZE	DAY RATE ($/DAY)	NUMBER REQUIRED	DURATION (DAYS) MOB.	ACTIVITY	DEMOB.	ESTIMATED COST (M$)
1	DP Drilling Vessel		55,000	1	3	16.7	2	1,195.3
2	Anchor Handling Vessel	8500 HP	13,500	1	1	16.7	1	252.9
3	Crew/Supply Boat	-	2,300	1	1	16.7	1	43.1
4	Underwater Hydraulic Pile Hammer		10,000	1	2	16.7	2	207.3
5	Transponder Spread		1,400	1	1	16.7	1	26.2
6	ROV Spread		2,300	2	1	16.7	1	86.2
7	Surface Diving Spread		6,000	1	1	16.7	1	112.4
8	AHV Crew		250	12	1	16.7	1	56.2
9	Transponder Team		2,000	1	1	16.7	1	37.5
10	Surveyors		600	1	1	16.7	1	11.2
11	ROV Operators		350	5	1	16.7	1	32.8
12	Deploy Transponder Spread (lump sum)		20,000	1				20.0
13	Misc. Equipment (lump sum)		50,000	1				50.0
14	Cargo Barge with tug		6,000	1	1	16.7	1	112.4
							Total: Marine Equipment	2,243.5

TABLE C-8

MARINE EQUIPMENT, AUX. EQUIPMENT & PERSONNEL

3,000-FT WATER DEPTH - 16 POINT - DRILLED & GROUTED ANCHOR PILES - WELDED ON SHIP

INSTALLATION OF TAUT LEG MOORINGS WITH D.P. DRILLSHIP

CASE T3A16N/DS3GW - ARAMID/STEEL MOORING SYSTEM W/ MINIMAL RISER BUOY

ITEM NO.	MARINE EQUIPMENT DESCRIPTION	SIZE	DAY RATE ($/DAY)	NUMBER REQUIRED	DURATION (DAYS) MOB.	ACTIVITY	DEMOB.	ESTIMATED COST (M$)
1	DP Drilling Vessel		55,000	1	1	39.3	1	2,269.7
2	Anchor Handling Vessel	8500 HP	13,500	1	1	39.3	1	557.1
3	Crew/Supply Boat	-	2,300	1	1	39.3	1	94.9
4	Dyna-Drill Spread & Operators		4,500	1	1	39.3	1	185.7
5	Transponder Spread		1,400	1	1	39.3	1	57.8
6	ROV Spread		2,300	2	1	39.3	1	189.8
7	Surface Diving Spread		6,000	1	1	39.3	1	247.6
8	AHV Crew		250	12	1	39.3	1	123.8
9	Transponder Team		2,000	1	1	39.3	1	82.5
10	Surveyors		600	1	1	39.3	1	24.8
11	ROV Operators		350	5	1	39.3	1	72.2
12	Grouting Supervisors		600	3	1	39.3	1	74.3
13	Welding Crew (8 @ $400/day)		3,200	1	1	39.3	1	132.1
14	Deploy Transponder Spread (lump sum)		20,000	1				20.0
15	Misc. Equipment (lump sum)		50,000	1				50.0
							Total: Marine Equipment	4,182.2

TABLE C-9

MARINE EQUIPMENT, AUX. EQUIPMENT & PERSONNEL

3,000-FT WATER DEPTH - 16 POINT - DRILLED & GROUTED ANCHOR PILES - KEELHAULED

INSTALLATION OF TAUT LEG MOORINGS WITH D.P. DRILLSHIP

CASE T3A16N/DS3GK - ARAMID/STEEL MOORING SYSTEM W/ MINIMAL RISER BUOY

ITEM NO.	MARINE EQUIPMENT DESCRIPTION	SIZE	DAY RATE ($/DAY)	NUMBER REQUIRED	DURATION (DAYS) MOB.	ACTIVITY	DEMOB.	ESTIMATED COST (M$)
1	DP Drilling Vessel		55,000	1	1	32.0	1	1,870.0
2	Anchor Handling Vessel	8500 HP	13,500	1	1	32.0	1	459.0
3	Crew/Supply Boat	-	2,300	1	1	32.0	1	78.2
4	Dyna-Drill Spread & Operators		4,500	1	1	32.0	1	153.0
5	Transponder Spread		1,400	1	1	32.0	1	47.6
6	ROV Spread		2,300	2	1	32.0	1	156.4
7	Surface Diving Spread		6,000	1	1	32.0	1	204.0
8	AHV Crew		250	12	1	32.0	1	102.0
9	Transponder Team		2,000	1	1	32.0	1	68.0
10	Surveyors		600	1	1	32.0	1	20.4
11	ROV Operators		350	5	1	32.0	1	59.5
12	Grouting Supervisors		600	3	1	32.0	1	61.2
13	Cargo Barge with tug		6,000	1	1	32.0	1	204.0
14	Deploy Transponder Spread (lump sum)		20,000	1				20.0
15	Misc. Equipment (lump sum)		50,000	1				50.0
							Total: Marine Equipment	3,553.3

TABLE C-10
MARINE EQUIPMENT, AUX. EQUIPMENT & PERSONNEL
3,000-FT WATER DEPTH - 16 POINTS - DRIVEN ANCHOR PILES - WELDED ON SHIP
INSTALLATION OF TAUT LEG MOORINGS WITH D.P. DRILLING VESSEL
CASE T3A16N/DS3DW - ARAMID/STEEL MOORING SYSTEM W/ MINIMAL RISER BUOY

ITEM NO.	MARINE EQUIPMENT DESCRIPTION	SIZE	DAY RATE ($/DAY)	NUMBER REQUIRED	DURATION (DAYS) MOB.	ACTIVITY	DEMOB.	ESTIMATED COST (M$)
1	DP Drilling Vessel		55,000	1	3	22.1	2	1,488.7
2	Anchor Handling Vessel	8500 HP	13,500	1	1	22.1	1	324.9
3	Crew/Supply Boat	-	2,300	1	1	22.1	1	55.4
4	Underwater Hydraulic Pile Hammer		10,000	1	2	22.1	2	260.7
5	Transponder Spread		1,400	1	1	22.1	1	33.7
6	ROV Spread		2,300	2	1	22.1	1	110.7
7	Surface Diving Spread		6,000	1	1	22.1	1	144.4
8	AHV Crew		250	12	1	22.1	1	72.2
9	Transponder Team		2,000	1	1	22.1	1	48.1
10	Surveyors		600	1	1	22.1	1	14.4
11	ROV Operators		350	5	1	22.1	1	42.1
12	Deploy Transponder Spread (lump sum)		20,000	1				20.0
13	Misc. Equipment (lump sum)		50,000	1				50.0
14	Welding Crew (8 @ $400/day)		3,200	1	1	22.1	1	77.0
							Total: Marine Equipment	2,742.3

TABLE C-11

MARINE EQUIPMENT, AUX. EQUIPMENT & PERSONNEL

3,000-FT WATER DEPTH - 16 POINTS - DRIVEN ANCHOR PILES - KEELHAULED

INSTALLATION OF TAUT LEG MOORINGS WITH D.P. DRILLING VESSEL

CASE T3A16N/DS3DK - ARAMID/STEEL MOORING SYSTEM W/ MINIMAL RISER BUOY

ITEM NO.	MARINE EQUIPMENT DESCRIPTION	SIZE	DAY RATE ($/DAY)	NUMBER REQUIRED	DURATION (DAYS) MOB.	ACTIVITY	DEMOB.	ESTIMATED COST (M$)
1	DP Drilling Vessel		55,000	1	3	18.6	2	1,298.0
2	Anchor Handling Vessel	8500 HP	13,500	1	1	18.6	1	278.1
3	Crew/Supply Boat	-	2,300	1	1	18.6	1	47.4
4	Underwater Hydraulic Pile Hammer		10,000	1	2	18.6	2	226.0
5	Transponder Spread		1,400	1	1	18.6	1	28.8
6	ROV Spread		2,300	2	1	18.6	1	94.8
7	Surface Diving Spread		6,000	1	1	18.6	1	123.6
8	AHV Crew		250	12	1	18.6	1	61.8
9	Transponder Team		2,000	1	1	18.6	1	41.2
10	Surveyors		600	1	1	18.6	1	12.4
11	ROV Operators		350	5	1	18.6	1	36.1
12	Deploy Transponder Spread (lump sum)		20,000	1				20.0
13	Misc. Equipment (lump sum)		50,000	1				50.0
14	Cargo Barge with tug		6,000	1	1	18.6	1	123.6
							Total: Marine Equipment	2,441.7

TABLE C-12

MARINE EQUIPMENT, AUX. EQUIPMENT & PERSONNEL

6,000-FT WATER DEPTH - 16 POINT - DRILLED & GROUTED ANCHOR PILES - WELDED ON SHIP

INSTALLATION OF TAUT LEG MOORINGS WITH D.P. DRILLSHIP

CASE T6A16N/DS6GW - ARAMID/STEEL MOORING SYSTEM W/ MINIMAL RISER BUOY

ITEM NO.	MARINE EQUIPMENT DESCRIPTION	SIZE	DAY RATE ($/DAY)	NUMBER REQUIRED	DURATION (DAYS) MOB.	ACTIVITY	DEMOB.	ESTIMATED COST (M$)
1	DP Drilling Vessel		55,000	1	1	44.9	1	2,581.3
2	Anchor Handling Vessel	8500 HP	13,500	1	1	44.9	1	633.6
3	Crew/Supply Boat	-	2,300	1	1	44.9	1	107.9
4	Dyna-Drill Spread & Operators		4,500	1	1	44.9	1	211.2
5	Transponder Spread		1,400	1	1	44.9	1	65.7
6	ROV Spread		2,300	2	1	44.9	1	215.9
7	Surface Diving Spread		6,000	1	1	44.9	1	281.6
8	AHV Crew		250	12	1	44.9	1	140.8
9	Transponder Team		2,000	1	1	44.9	1	93.9
10	Surveyors		600	1	1	44.9	1	28.2
11	ROV Operators		350	5	1	44.9	1	82.1
12	Grouting Supervisors		600	3	1	44.9	1	84.5
13	Welding Crew (8 @ $400/day)		3,200	1	1	44.9	1	150.2
14	Deploy Transponder Spread (lump sum)		20,000	1				20.0
15	Misc. Equipment (lump sum)		50,000	1				50.0
							Total: Marine Equipment	4,746.9

TABLE C-13

MARINE EQUIPMENT, AUX. EQUIPMENT & PERSONNEL

6,000-FT WATER DEPTH - 12 POINT - DRILLED & GROUTED ANCHOR PILES - WELDED ON SHIP

INSTALLATION OF TAUT LEG MOORINGS WITH D.P. DRILLSHIP

CASE T6A12N/DS6GW - ARAMID/STEEL MOORING SYSTEM W/ MINIMAL RISER BUOY

ITEM NO.	MARINE EQUIPMENT DESCRIPTION	SIZE	DAY RATE ($/DAY)	NUMBER REQUIRED	DURATION (DAYS) MOB.	ACTIVITY	DEMOB.	ESTIMATED COST (M$)
1	DP Drilling Vessel		55,000	1	1	33.7	1	1,963.5
2	Anchor Handling Vessel	8500 HP	13,500	2	1	33.7	1	963.9
3	Crew/Supply Boat	-	2,300	1	1	33.7	1	82.1
4	Dyna-Drill Spread & Operators		4,500	1	1	33.7	1	160.7
5	Transponder Spread		1,400	1	1	33.7	1	50.0
6	ROV Spread		2,300	2	1	33.7	1	164.2
7	Surface Diving Spread		6,000	1	1	33.7	1	214.2
8	AHV Crew		250	12	1	33.7	1	107.1
9	Transponder Team		2,000	1	1	33.7	1	71.4
10	Surveyors		600	1	1	33.7	1	21.4
11	ROV Operators		350	5	1	33.7	1	62.5
12	Grouting Supervisors		600	3	1	33.7	1	64.3
13	Welding Crew (8 @ $400/day)		3,200	1	1	33.7	1	114.2
14	Deploy Transponder Spread (lump sum)		20,000	1				20.0
15	Misc. Equipment (lump sum)		50,000	1				50.0
							Total: Marine Equipment	4,109.5

TABLE C-14

MARINE EQUIPMENT, AUX. EQUIPMENT & PERSONNEL

6,000-FT WATER DEPTH - 16 POINT - DRILLED & GROUTED ANCHOR PILES - KEELHAULED

INSTALLATION OF TAUT LEG MOORINGS WITH D.P. DRILLSHIP

CASE T6A16N/DS6GK - ARAMID/STEEL MOORING SYSTEM W/ MINIMAL RISER BUOY

ITEM NO.	MARINE EQUIPMENT DESCRIPTION	SIZE	DAY RATE ($/DAY)	NUMBER REQUIRED	DURATION (DAYS) MOB.	ACTIVITY	DEMOB.	ESTIMATED COST (M$)
1	DP Drilling Vessel		55,000	1	1	40.7	1	2,346.7
2	Anchor Handling Vessel	8500 HP	13,500	1	1	40.7	1	576.0
3	Crew/Supply Boat	-	2,300	1	1	40.7	1	98.1
4	Dyna-Drill Spread & Operators		4,500	1	1	40.7	1	192.0
5	Transponder Spread		1,400	1	1	40.7	1	59.7
6	ROV Spread		2,300	2	1	40.7	1	196.3
7	Surface Diving Spread		6,000	1	1	40.7	1	256.0
8	AHV Crew		250	12	1	40.7	1	128.0
9	Transponder Team		2,000	1	1	40.7	1	85.3
10	Surveyors		600	1	1	40.7	1	25.6
11	ROV Operators		350	5	1	40.7	1	74.7
12	Grouting Supervisors		600	3	1	40.7	1	76.8
13	Cargo Barge with tug		6,000	1	1	40.7	1	256.0
14	Deploy Transponder Spread (lump sum)		20,000	1				20.0
15	Misc. Equipment (lump sum)		50,000	1				50.0
							Total: Marine Equipment	4,441.2

TABLE C-15

MARINE EQUIPMENT, AUX. EQUIPMENT & PERSONNEL

6,000-FT WATER DEPTH - 12 POINT - DRILLED & GROUTED ANCHOR PILES - KEELHAULED

INSTALLATION OF TAUT LEG MOORINGS WITH D.P. DRILLSHIP

CASE T6A12N/DS6GK - ARAMID/STEEL MOORING SYSTEM W/ MINIMAL RISER BUOY

ITEM NO.	MARINE EQUIPMENT DESCRIPTION	SIZE	DAY RATE ($/DAY)	NUMBER REQUIRED	DURATION (DAYS) MOB.	ACTIVITY	DEMOB.	ESTIMATED COST (M$)
1	DP Drilling Vessel		55,000	1	1	30.5	1	1,787.5
2	Anchor Handling Vessel	8500 HP	13,500	1	1	30.5	1	438.8
3	Crew/Supply Boat	-	2,300	1	1	30.5	1	74.8
4	Dyna-Drill Spread & Operators		4,500	1	1	30.5	1	146.3
5	Transponder Spread		1,400	1	1	30.5	1	45.5
6	ROV Spread		2,300	2	1	30.5	1	149.5
7	Surface Diving Spread		6,000	1	1	30.5	1	195.0
8	AHV Crew		250	12	1	30.5	1	97.5
9	Transponder Team		2,000	1	1	30.5	1	65.0
10	Surveyors		600	1	1	30.5	1	19.5
11	ROV Operators		350	5	1	30.5	1	56.9
12	Grouting Supervisors		600	3	1	30.5	1	58.5
13	Cargo Barge with tug		6,000	1	1	30.5	1	195.0
14	Deploy Transponder Spread (lump sum)		20,000	1				20.0
15	Misc. Equipment (lump sum)		50,000	1				50.0
							Total: Marine Equipment	3,399.6

TABLE C-16

MARINE EQUIPMENT, AUX. EQUIPMENT & PERSONNEL

6,000-FT WATER DEPTH - 16 POINTS - DRIVEN ANCHOR PILES - WELDED ON SHIP

INSTALLATION OF TAUT LEG MOORINGS WITH D.P. DRILLING VESSEL

CASE T6A16N/DS6DW - ARAMID/STEEL MOORING SYSTEM W/ MINIMAL RISER BUOY

ITEM NO.	MARINE EQUIPMENT DESCRIPTION	SIZE	DAY RATE ($/DAY)	NUMBER REQUIRED	DURATION (DAYS) MOB.	ACTIVITY	DEMOB.	ESTIMATED COST (M$)
1	DP Drilling Vessel		55,000	1	3	32.3	2	2,049.7
2	Anchor Handling Vessel	8500 HP	13,500	1	1	32.3	1	462.6
3	Crew/Supply Boat	-	2,300	1	1	32.3	1	78.8
4	Underwater Hydraulic Pile Hammer		10,000	1	2	32.3	2	362.7
5	Transponder Spread		1,400	1	1	32.3	1	48.0
6	ROV Spread		2,300	2	1	32.3	1	157.6
7	Surface Diving Spread		6,000	1	1	32.3	1	205.6
8	AHV Crew		250	12	1	32.3	1	102.8
9	Transponder Team		2,000	1	1	32.3	1	68.5
10	Surveyors		600	1	1	32.3	1	20.6
11	ROV Operators		350	5	1	32.3	1	60.0
12	Deploy Transponder Spread (lump sum)		20,000	1				20.0
13	Misc. Equipment (lump sum)		50,000	1				50.0
14	Welding Crew (8 @ $400/day)		3,200	1	1	32.3	1	109.7
							Total: Marine Equipment	3,796.5

TABLE C-17

MARINE EQUIPMENT, AUX. EQUIPMENT & PERSONNEL

6,000-FT WATER DEPTH - 12 POINTS - DRIVEN ANCHOR PILES - WELDED ON SHIP

INSTALLATION OF TAUT LEG MOORINGS WITH D.P. DRILLING VESSEL

CASE T6A12N/DS6DW - ARAMID/STEEL MOORING SYSTEM W/ MINIMAL RISER BUOY

ITEM NO.	MARINE EQUIPMENT DESCRIPTION	SIZE	DAY RATE ($/DAY)	NUMBER REQUIRED	DURATION (DAYS) MOB.	ACTIVITY	DEMOB.	ESTIMATED COST (M$)
1	DP Drilling Vessel		55,000	1	3	24.2	2	1,606.0
2	Anchor Handling Vessel	8500 HP	13,500	1	1	24.2	1	353.7
3	Crew/Supply Boat	-	2,300	1	1	24.2	1	60.3
4	Underwater Hydraulic Pile Hammer		10,000	1	2	24.2	2	282.0
5	Transponder Spread		1,400	1	1	24.2	1	36.7
6	ROV Spread		2,300	2	1	24.2	1	120.5
7	Surface Diving Spread		6,000	1	1	24.2	1	157.2
8	AHV Crew		250	12	1	24.2	1	78.6
9	Transponder Team		2,000	1	1	24.2	1	52.4
10	Surveyors		600	1	1	24.2	1	15.7
11	ROV Operators		350	5	1	24.2	1	45.9
12	Deploy Transponder Spread (lump sum)		20,000	1				20.0
13	Misc. Equipment (lump sum)		50,000	1				50.0
14	Welding Crew (8 @ $400/day)		3,200	1	1	24.2	1	83.8
							Total: Marine Equipment	2,962.8

TABLE C-18

MARINE EQUIPMENT, AUX. EQUIPMENT & PERSONNEL

6,000-FT WATER DEPTH - 16 POINTS - DRIVEN ANCHOR PILES - KEELHAULED

INSTALLATION OF TAUT LEG MOORINGS WITH D.P. DRILLING VESSEL

CASE T6A16N/DS6DK - ARAMID/STEEL MOORING SYSTEM W/ MINIMAL RISER BUOY

ITEM NO.	MARINE EQUIPMENT DESCRIPTION	SIZE	DAY RATE ($/DAY)	NUMBER REQUIRED	DURATION (DAYS) MOB.	ACTIVITY	DEMOB.	ESTIMATED COST (M$)
1	DP Drilling Vessel		55,000	1	3	21.9	2	1,481.3
2	Anchor Handling Vessel	8500 HP	13,500	1	1	21.9	1	323.1
3	Crew/Supply Boat	-	2,300	1	1	21.9	1	55.0
4	Underwater Hydraulic Pile Hammer		10,000	1	2	21.9	2	259.3
5	Transponder Spread		1,400	1	1	21.9	1	33.5
6	ROV Spread		2,300	2	1	21.9	1	110.1
7	Surface Diving Spread		6,000	1	1	21.9	1	143.6
8	AHV Crew		250	12	1	21.9	1	71.8
9	Transponder Team		2,000	1	1	21.9	1	47.9
10	Surveyors		600	1	1	21.9	1	14.4
11	ROV Operators		350	5	1	21.9	1	41.9
12	Deploy Transponder Spread (lump sum)		20,000	1				20.0
13	Misc. Equipment (lump sum)		50,000	1				50.0
14	Cargo Barge with tug		6,000	1	1	21.9	1	143.6
							Total: Marine Equipment	2,795.5

TABLE C-19

MARINE EQUIPMENT, AUX. EQUIPMENT & PERSONNEL

6,000-FT WATER DEPTH - 12 POINTS - DRIVEN ANCHOR PILES - KEELHAULED

INSTALLATION OF TAUT LEG MOORINGS WITH D.P. DRILLING VESSEL

CASE T6A12N/DS6DK - ARAMID/STEEL MOORING SYSTEM W/ MINIMAL RISER BUOY

ITEM NO.	MARINE EQUIPMENT DESCRIPTION	SIZE	DAY RATE ($/DAY)	NUMBER REQUIRED	DURATION (DAYS) MOB.	ACTIVITY	DEMOB.	ESTIMATED COST (M$)
1	DP Drilling Vessel		55,000	1	3	16.5	2	1,179.8
2	Anchor Handling Vessel	8500 HP	13,500	1	1	16.5	1	249.1
3	Crew/Supply Boat	-	2,300	1	1	16.5	1	42.4
4	Underwater Hydraulic Pile Hammer		10,000	1	2	16.5	2	204.5
5	Transponder Spread		1,400	1	1	16.5	1	25.8
6	ROV Spread		2,300	2	1	16.5	1	84.9
7	Surface Diving Spread		6,000	1	1	16.5	1	110.7
8	AHV Crew		250	12	1	16.5	1	55.4
9	Transponder Team		2,000	1	1	16.5	1	36.9
10	Surveyors		600	1	1	16.5	1	11.1
11	ROV Operators		350	5	1	16.5	1	32.3
12	Deploy Transponder Spread (lump sum)		20,000	1				20.0
13	Misc. Equipment (lump sum)		50,000	1				50.0
14	Cargo Barge with tug		6,000	1	1	16.5	1	110.7
							Total: Marine Equipment	2,213.5

TABLE C-20

MARINE EQUIPMENT, AUX. EQUIPMENT & PERSONNEL

8,000-FT WATER DEPTH - 12 POINT - DRILLED & GROUTED ANCHOR PILES - KEELHAULED

INSTALLATION OF TAUT LEG MOORINGS WITH D.P. DRILLSHIP

CASE T8S12T/DS8GK - ARAMID/STEEL MOORING SYSTEM W/ MINIMAL RISER BUOY

ITEM NO.	MARINE EQUIPMENT DESCRIPTION	SIZE	DAY RATE ($/DAY)	NUMBER REQUIRED	DURATION (DAYS) MOB.	ACTIVITY	DEMOB.	ESTIMATED COST (M$)
1	DP Drilling Vessel		55,000	1	1	37.0	1	2,142.3
2	Anchor Handling Vessel	8500 HP	13,500	1	1	37.0	1	525.8
3	Crew/Supply Boat	-	2,300	1	1	37.0	1	89.6
4	Dyna-Drill Spread & Operators		4,500	1	1	37.0	1	175.3
5	Transponder Spread		1,400	1	1	37.0	1	54.5
6	ROV Spread		2,300	2	1	37.0	1	179.2
7	Surface Diving Spread		6,000	1	1	37.0	1	233.7
8	AHV Crew		250	12	1	37.0	1	116.9
9	Transponder Team		2,000	1	1	37.0	1	77.9
10	Surveyors		600	1	1	37.0	1	23.4
11	ROV Operators		350	5	1	37.0	1	68.2
12	Grouting Supervisors		600	3	1	37.0	1	70.1
13	Cargo Barge with tug		6,000	1	1	37.0	1	233.7
14	Deploy Transponder Spread (lump sum)		20,000	1				20.0
15	Misc. Equipment (lump sum)		50,000	1				50.0
							Total: Marine Equipment	4,060.4

TABLE C-21

MARINE EQUIPMENT, AUX. EQUIPMENT & PERSONNEL

10,000-FT WATER DEPTH - 12 POINT - DRILLED & GROUTED ANCHOR PILES - KEELHAULED

INSTALLATION OF TAUT LEG MOORINGS WITH D.P. DRILLSHIP

CASE T10S12T/DS10GK - ARAMID/STEEL MOORING SYSTEM W/ MINIMAL RISER BUOY

ITEM NO.	MARINE EQUIPMENT DESCRIPTION	SIZE	DAY RATE ($/DAY)	NUMBER REQUIRED	DURATION (DAYS) MOB.	ACTIVITY	DEMOB.	ESTIMATED COST (M$)
1	DP Drilling Vessel		55,000	1	1	40.6	1	2,340.3
2	Anchor Handling Vessel	8500 HP	13,500	1	1	40.6	1	574.4
3	Crew/Supply Boat	-	2,300	1	1	40.6	1	97.9
4	Dyna-Drill Spread & Operators		4,500	1	1	40.6	1	191.5
5	Transponder Spread		1,400	1	1	40.6	1	59.6
6	ROV Spread		2,300	2	1	40.6	1	195.7
7	Surface Diving Spread		6,000	1	1	40.6	1	255.3
8	AHV Crew		250	12	1	40.6	1	127.7
9	Transponder Team		2,000	1	1	40.6	1	85.1
10	Surveyors		600	1	1	40.6	1	25.5
11	ROV Operators		350	5	1	40.6	1	74.5
12	Grouting Supervisors		600	3	1	40.6	1	76.6
13	Cargo Barge with tug		6,000	1	1	40.6	1	255.3
14	Deploy Transponder Spread (lump sum)		20,000	1				20.0
15	Misc. Equipment (lump sum)		50,000	1				50.0
							Total: Marine Equipment	4,429.2

TABLE C-22

MARINE EQUIPMENT, AUX. EQUIPMENT & PERSONNEL

1,500-FT WATER DEPTH - 16 POINT - DRIVEN ANCHOR PILES - KEELHAULED

INSTALLATION OF TAUT LEG MOORINGS WITH D.P. MULTI-SERVICE VESSEL

CASE T1A16N/MSV1DK - ARAMID/STEEL MOORING SYSTEM W/ MINIMAL RISER BUOY

ITEM NO.	MARINE EQUIPMENT DESCRIPTION	SIZE	DAY RATE ($/DAY)	NUMBER REQUIRED	DURATION (DAYS) MOB.	ACTIVITY	DEMOB.	ESTIMATED COST (M$)
1	DP Multi-Service Vessel		55,000	1	4	15.7	3	1,250.3
2	Anchor Handling Vessel	8500 HP	13,500	1	1	15.7	1	239.4
3	AHV Crew		250	12	1	15.7	1	53.2
4	Cargo Barge with tug		6,000	1	1	15.7	1	106.4
5	Crew/Supply Boat	-	2,300	1	1	15.7	1	40.8
6	Transponder Spread		1,400	1	1	15.7	1	24.8
7	ROV Spread		2,300	2	1	15.7	1	81.6
8	Surface Diving Spread		6,000	1	1	15.7	1	106.4
9	AHV Crew		250	12	1	15.7	1	53.2
10	Transponder Team		2,000	1	1	15.7	1	35.5
11	Surveyors		600	1	1	15.7	1	10.6
12	ROV Operators		350	5	1	15.7	1	31.0
13	Underwater Hydraulic Pile Hammer		10,000	1	1	15.7	1	177.3
14	Misc Equipment (lump sum)		50,000	1				50.0
15	Deploy Transponder Spread (lump sum)		20,000	1				20.0
							Total: Marine Equipment	2,280.6

TABLE C-23

MARINE EQUIPMENT, AUX. EQUIPMENT & PERSONNEL

3,000-FT WATER DEPTH - 16 POINT - DRIVEN ANCHOR PILES - KEELHAULED

INSTALLATION OF TAUT LEG MOORINGS WITH D.P. MULTI-SERVICE VESSEL

CASE T3A16N/MSV3DK - ARAMID/STEEL MOORING SYSTEM W/ MINIMAL RISER BUOY

ITEM NO.	MARINE EQUIPMENT DESCRIPTION	SIZE	DAY RATE ($/DAY)	NUMBER REQUIRED	DURATION (DAYS) MOB.	ACTIVITY	DEMOB.	ESTIMATED COST (M$)
1	DP Multi-Service Vessel		55,000	1	4	17.5	3	1,345.7
2	Anchor Handling Vessel	8500 HP	13,500	1	1	17.5	1	262.8
3	AHV Crew		250	12	1	17.5	1	58.4
4	Cargo Barge with tug		6,000	1	1	17.5	1	116.8
5	Crew/Supply Boat	-	2,300	1	1	17.5	1	44.8
6	Transponder Spread		1,400	1	1	17.5	1	27.3
7	ROV Spread		2,300	2	1	17.5	1	89.5
8	Surface Diving Spread		6,000	1	1	17.5	1	116.8
9	AHV Crew		250	12	1	17.5	1	58.4
10	Transponder Team		2,000	1	1	17.5	1	38.9
11	Surveyors		600	1	1	17.5	1	11.7
12	ROV Operators		350	5	1	17.5	1	34.1
13	Underwater Hydraulic Pile Hammer		10,000	1	1	17.5	1	194.7
14	Misc Equipment (lump sum)		50,000	1				50.0
15	Deploy Transponder Spread (lump sum)		20,000	1				20.0
							Total: Marine Equipment	2,469.8

TABLE C-24
MARINE EQUIPMENT, AUX. EQUIPMENT & PERSONNEL
6,000-FT WATER DEPTH - 16 POINT - DRIVEN ANCHOR PILES - KEELHAULED
INSTALLATION OF TAUT LEG MOORINGS WITH D.P. MULTI-SERVICE VESSEL
CASE T6A16N/MSV6DK - ARAMID/STEEL MOORING SYSTEM W/ MINIMAL RISER BUOY

ITEM NO.	MARINE EQUIPMENT DESCRIPTION	SIZE	DAY RATE ($/DAY)	NUMBER REQUIRED	DURATION (DAYS) MOB.	ACTIVITY	DEMOB.	ESTIMATED COST (M$)
1	DP Multi-Service Vessel		55,000	1	4	21.3	3	1,558.3
2	Anchor Handling Vessel	8500 HP	13,500	1	1	21.3	1	315.0
3	AHV Crew		250	12	1	21.3	1	70.0
4	Cargo Barge with tug		6,000	1	1	21.3	1	140.0
5	Crew/Supply Boat		2,300	1	1	21.3	1	53.7
6	Transponder Spread		1,400	1	1	21.3	1	32.7
7	ROV Spread		2,300	2	1	21.3	1	107.3
8	Surface Diving Spread		6,000	1	1	21.3	1	140.0
9	AHV Crew		250	12	1	21.3	1	70.0
10	Transponder Team		2,000	1	1	21.3	1	46.7
11	Surveyors		600	1	1	21.3	1	14.0
12	ROV Operators		350	5	1	21.3	1	40.8
13	Underwater Hydraulic Pile Hammer		10,000	1	1	21.3	1	233.3
14	Misc Equipment (lump sum)		50,000	1				50.0
15	Deploy Transponder Spread (lump sum)		20,000	1				20.0
							Total: Marine Equipment	2,891.8

TABLE C-25

MARINE EQUIPMENT, AUX. EQUIPMENT & PERSONNEL

6,000-FT WATER DEPTH - 12 POINT - DRIVEN ANCHOR PILES - KEELHAULED

INSTALLATION OF TAUT LEG MOORINGS WITH D.P. MULTI-SERVICE VESSEL

CASE T6A12N/MSV60K - ARAMID/STEEL MOORING SYSTEM W/ MINIMAL RISER BUOY

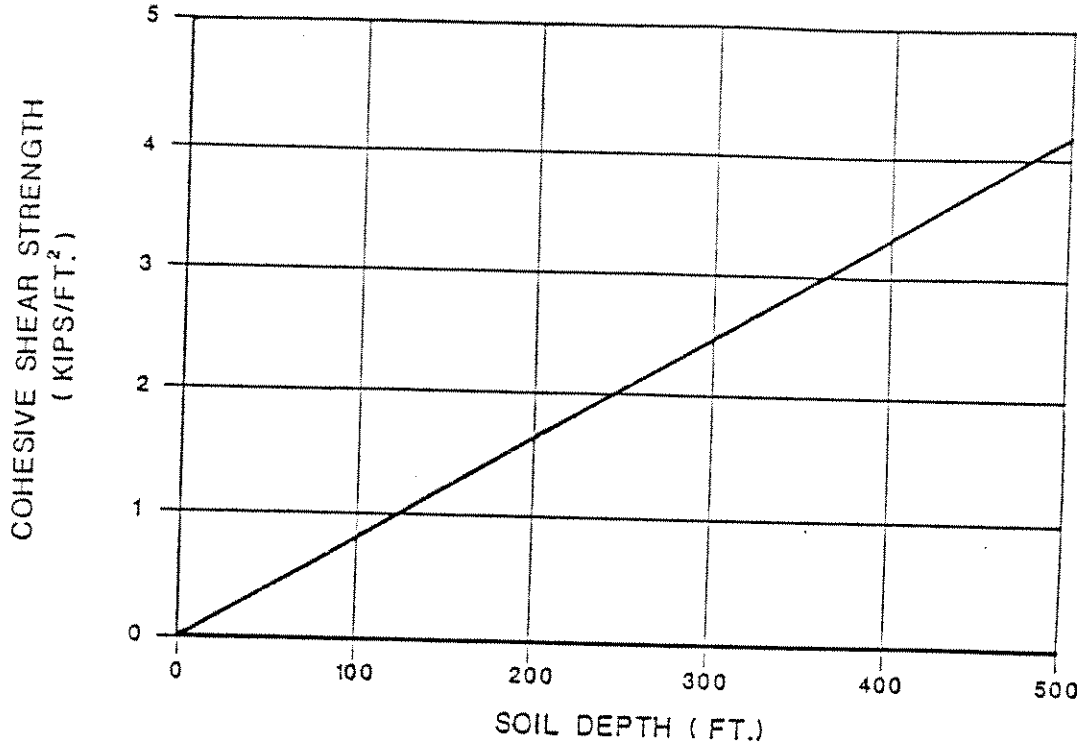
ITEM NO.	MARINE EQUIPMENT DESCRIPTION	SIZE	DAY RATE ($/DAY)	NUMBER REQUIRED	DURATION (DAYS) MOB.	ACTIVITY	DEMOB.	ESTIMATED COST (M$)
1	DP Multi-Service Vessel		55,000	1	4	16.0	3	1,265.0
2	Anchor Handling Vessel	8500 HP	13,500	1	1	16.0	1	243.0
3	AHV Crew		250	12	1	16.0	1	54.0
4	Cargo Barge with tug		6,000	1	1	16.0	1	108.0
5	Crew/Supply Boat	-	2,300	1	1	16.0	1	41.4
6	Transponder Spread		1,400	1	1	16.0	1	25.2
7	ROV Spread		2,300	2	1	16.0	1	82.8
8	Surface Diving Spread		6,000	1	1	16.0	1	108.0
9	AHV Crew		250	12	1	16.0	1	54.0
10	Transponder Team		2,000	1	1	16.0	1	36.0
11	Surveyors		600	1	1	16.0	1	10.8
12	ROV Operators		350	5	1	16.0	1	31.5
13	Underwater Hydraulic Pile Hammer		10,000	1	1	16.0	1	180.0
14	Misc Equipment (lump sum)		50,000	1				50.0
15	Deploy Transponder Spread (lump sum)		20,000	1				20.0
							Total: Marine Equipment	2,309.7

APPENDIX D - ANCHOR PILE CALCULATIONS

APPENDIX D

This section includes the calculations for the determination of the required anchor pile make-up, weight and cost for the taut-leg mooring systems. This section includes:

- Assumed soil characteristics
- Calculated ultimate pile capacity curve for 60 inch diamater piles
- Calculated P-Y data developed from the assumed soil characteristics
- Actual P-Y data from Gulf of Mexico locations which have similar soil characteristics to those assumed for this study
- Anchor pile loads used for pile design
- SACS pile analysis computer output
- Assumed pile arrangements from analysis results
- Calculated weights and costs for anchor piles for three different ranges of mooring loads
- Calculated lowering weights for both driven and drilled and grouted pile alternatives

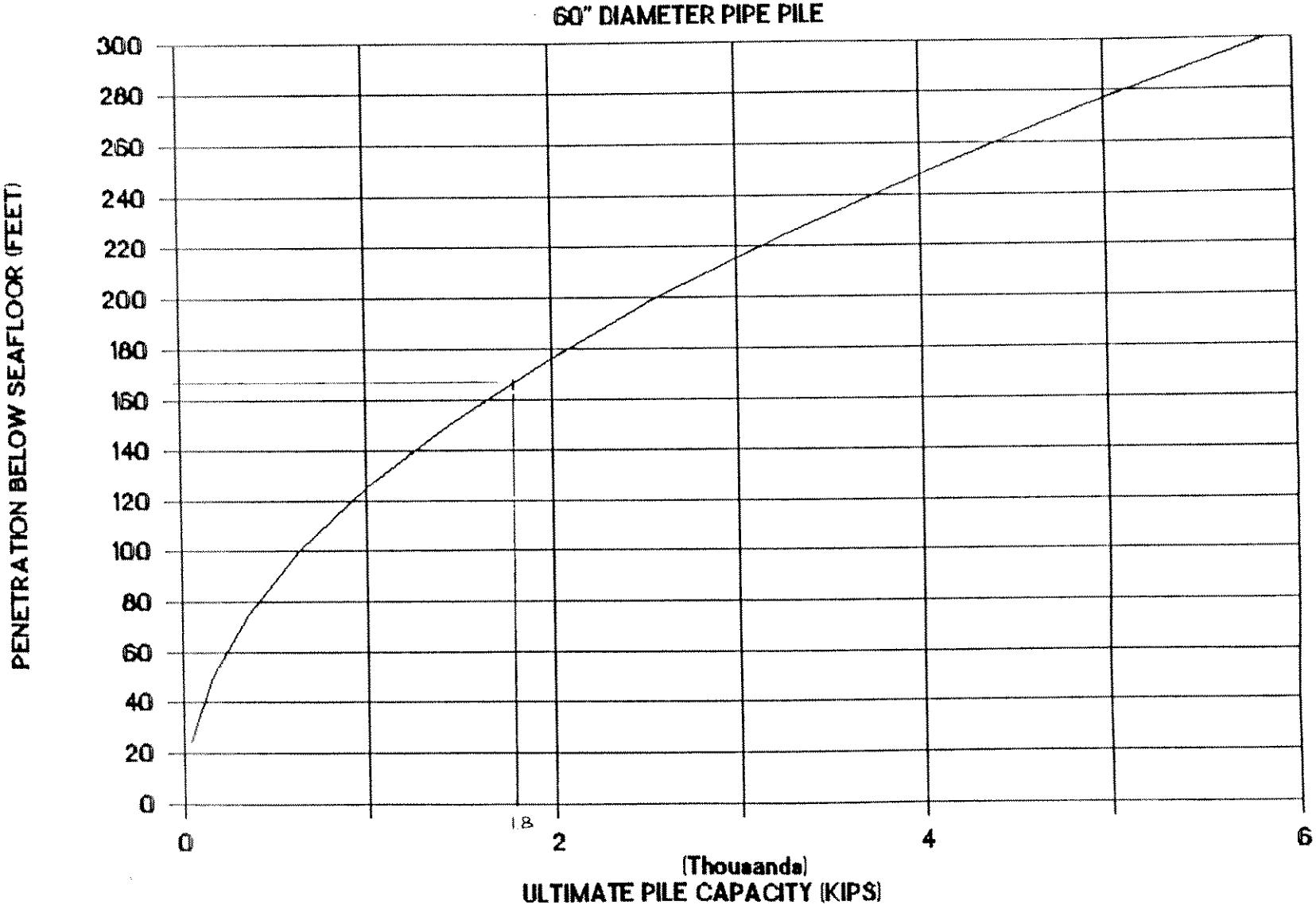


SOIL WEIGHT : 100 LB/FT^3 AT MUDLINE INCREASING LINEARLY TO 120 LB/ FT^3 AT 100 FT. DEPTH. 120 LB/FT^3 BELOW 100 FT.

SOIL STRENGTH
SOIL : UNCONSOLIDATED SOFT CLAY

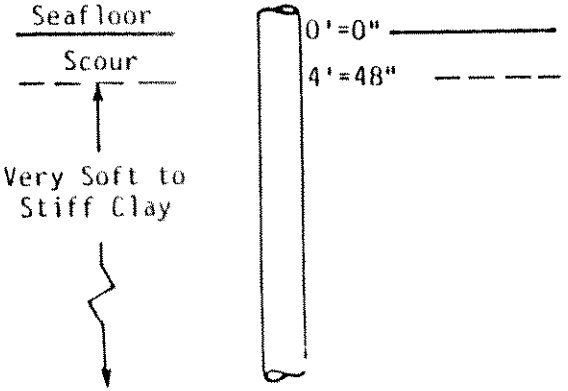
FIGURE 3.2-1

ULTIMATE PILE CAPACITY CURVE



PENETRATION IN INCHES	Y1 (inch)	P1 (lb/in)	Y2 (inch)	P2 (lb/in)	Y3 (inch)	P3 (lb/in)	Y4 (inch)	P4 (lb/in)	Y5 (inch)	P5 (lb/in)	Y6 (inch)	P6 (lb/in)
0	.00	.00	.20	20.00	1.20	25.00	3.60	36.00	18.00	.00	48.00	.00
96	.00	.00	.20	100.00	1.20	117.00	3.60	168.00	18.00	34.00	48.00	34.00
192	.00	.00	.20	200.00	1.20	232.00	3.60	335.00	18.00	134.00	48.00	134.00
288	.00	.00	.20	220.00	1.20	371.00	3.60	550.00	18.00	321.00	48.00	321.00
384	.00	.00	.20	300.00	1.20	460.00	3.60	660.00	18.00	660.00	48.00	660.00
480	.00	.00	.20	450.00	1.20	555.00	3.60	800.00	18.00	800.00	48.00	800.00
648	.00	.00	.20	600.00	1.20	723.00	3.60	1050.00	18.00	1050.00	48.00	1050.00
864	.00	.00	.20	620.00	1.20	940.00	3.60	1350.00	18.00	1350.00	48.00	1350.00
1200	.00	.00	.20	660.00	1.20	1275.00	3.60	1850.00	18.00	1850.00	48.00	1850.00
1800	.00	.00	.20	900.00	1.20	1875.00	3.60	2700.00	18.00	2700.00	48.00	2700.00
2400	.00	.00	.20	1100.00	1.20	2475.00	3.60	3550.00	18.00	3550.00	48.00	3550.00
3000	.00	.00	.20	1400.00	1.20	3075.00	3.60	4450.00	18.00	4450.00	48.00	4450.00
3600	.00	.00	.20	1800.00	1.20	3675.00	3.60	5300.00	18.00	5300.00	48.00	5300.00

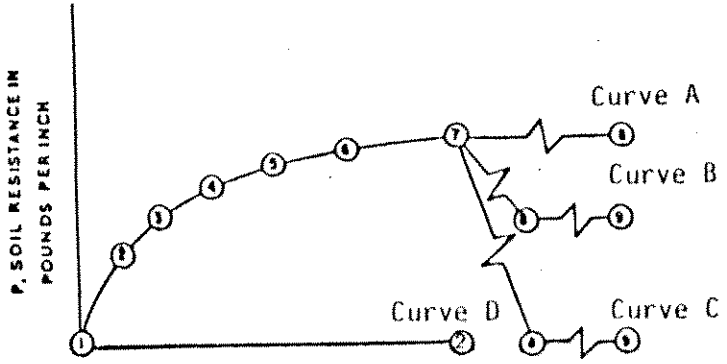
PENETRATION, INCHES	CURVE	COORDINATES OF CURVE POINTS																	
		Y1	P1	Y2	P2	Y3	P3	Y4	P4	Y5	P5	Y6	P6	Y7	P7	Y8	P8	Y9	P9
0.	D	0.	0.	60.00	0.														
48.	D	0.	0.	60.00	0.														
48.	C	0.	0.	.028	21.	.069	28.	.17	38.	.43	52.	1.08	70.	3.24	101.	16.20	0.	60.00	0.
96.	B	0.	0.	.028	31.	.069	42.	.17	58.	.43	78.	1.08	106.	3.24	153.	16.20	47.	60.00	47.
144.	B	0.	0.	.028	42.	.069	57.	.17	78.	.43	106.	1.08	144.	3.24	207.	16.20	106.	60.00	106.
180.	B	0.	0.	.028	51.	.069	69.	.17	94.	.43	128.	1.08	173.	3.24	249.	16.20	163.	60.00	163.
180.	B	0.	0.	.028	69.	.069	94.	.17	127.	.43	173.	1.08	234.	3.24	337.	16.20	210.	60.00	210.
228.	B	0.	0.	.028	85.	.069	116.	.17	157.	.43	213.	1.08	289.	3.24	416.	16.20	328.	60.00	328.
276.	B	0.	0.	.028	103.	.069	139.	.17	189.	.43	256.	1.08	348.	3.24	501.	16.20	478.	60.00	478.
336.	A	0.	0.	.028	126.	.069	171.	.17	232.	.43	315.	1.08	427.	3.24	615.	60.00	615.		
480.	A	0.	0.	.028	150.	.069	204.	.17	277.	.43	376.	1.08	510.	3.24	734.	60.00	734.		
1200.	A	0.	0.	.028	370.	.069	502.	.17	682.	.43	925.	1.08	1255.	3.24	1808.	60.00	1808.		



STRATIGRAPHY ASSUMED FOR P-Y DATA

48-Inch-Diameter Caissons

P-Y DATA



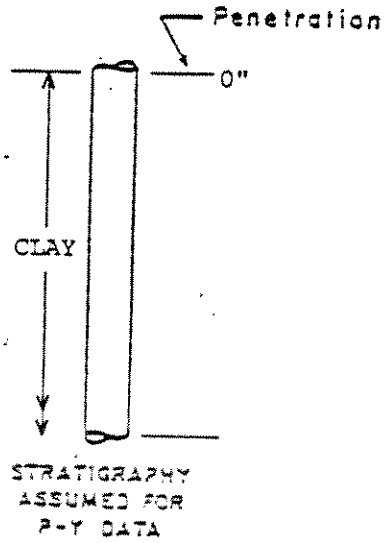
Typical p-y curves

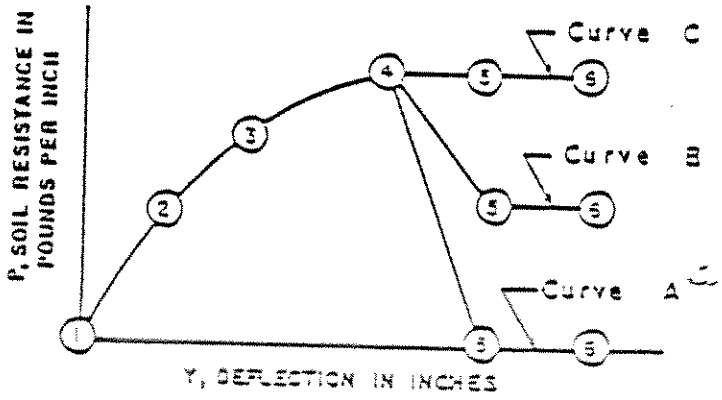
GULF OF MEXICO

Figure

48 - IN. DIAMETER PILE

PENETRATION, INCHES	CURVE	COORDINATES OF CURVE POINTS											
		Y1	P1	Y2	P2	Y3	P3	Y4	P4	Y5	P5	Y6	P6
0	A	0	0			1.92	10	5.76	14	28.8	0	48	0
40	B	0	0			1.92	31	5.76	44	28.8	11	48	11
80	B	0	0			1.92	62	5.76	90	28.8	45	48	45
120	B	0	0			1.92	104	5.76	150	28.8	112	48	112
160	C	0	0			1.92	157	5.76	226	28.8	226	48	226
720	C	0	0			1.92	600	5.76	864	28.8	864	48	864
1200	C	0	0			1.92	1029	5.76	1482	28.8	1482	48	1482





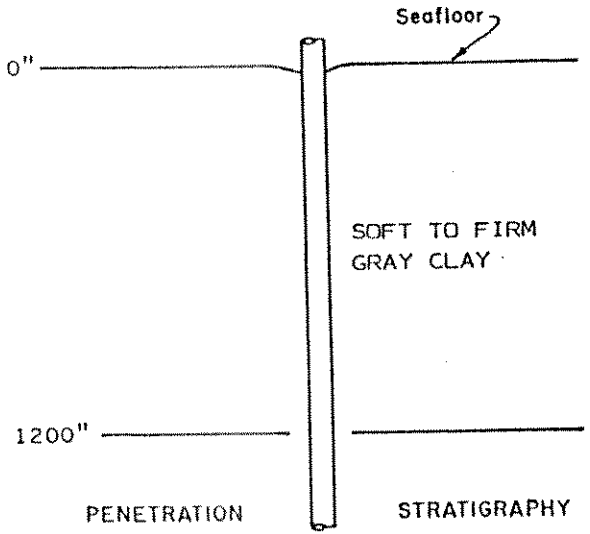
CYCLIC P-Y DATA

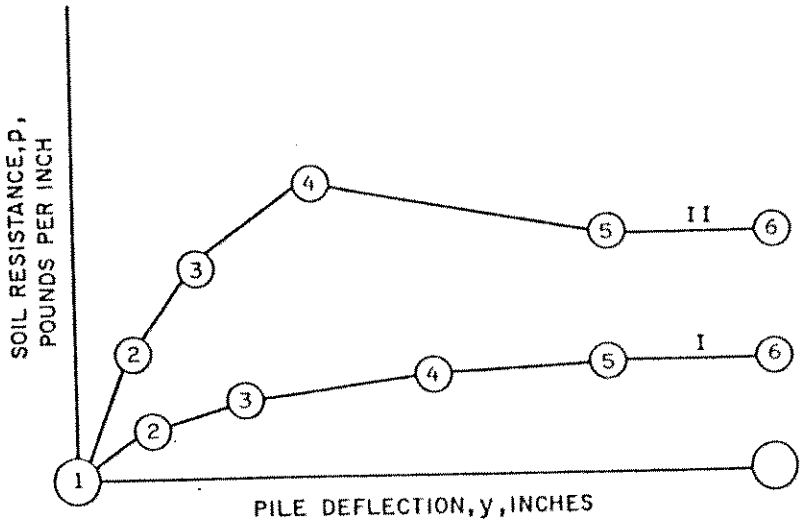
GULF OF MEXICO

Figure

FUGRO GULF, INC.
Consulting Engineers and Geologists

PENETRATION IN INCHES	TYPICAL CURVE	COORDINATES OF CURVE POINTS															
		y_1	p_1	y_2	p_2	y_3	p_3	y_4	p_4	y_5	p_5	y_6	p_6	y_7	p_7	y_8	p_8
0	I	0	0	0.14	64	0.48	100	1.44	144	7.20	200	48.00	200				
144	II	0	0	0.14	455	0.48	690	1.44	994	7.20	690	48.00	690				
480	II	0	0	0.14	594	0.48	900	1.44	1296	7.20	900	48.00	900				
720	II	0	0	0.25	594	0.84	900	2.52	1296	12.60	900	48.00	900				
1200	II	0	0	0.25	1007	0.84	1526	2.52	2197	12.60	1526	48.00	1526				





SOIL RESISTANCE-PILE DEFLECTION (p-y) DATA

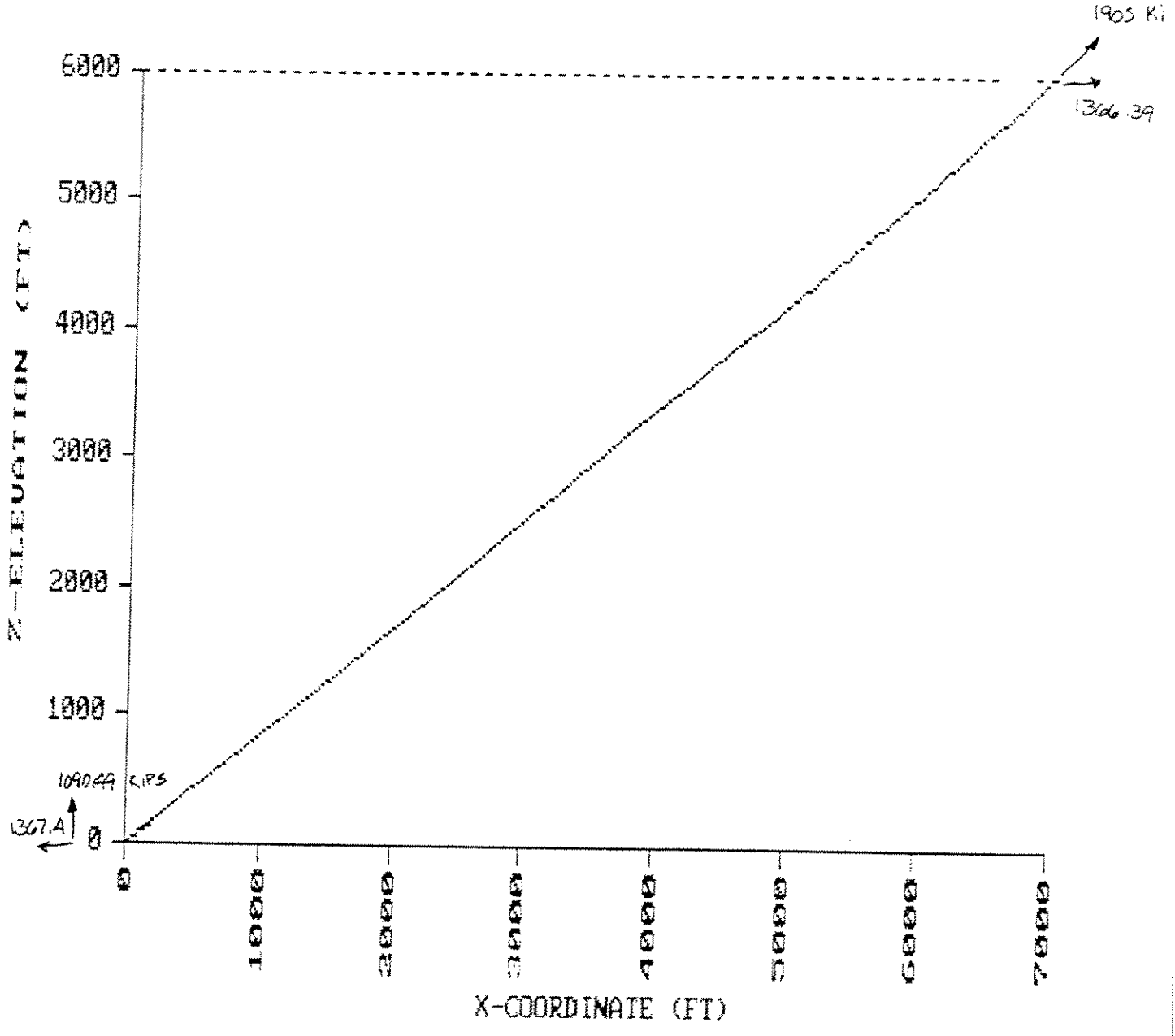
48-IN. DIAMETER PILE

PLATE

12 FT 6000 FT

TAUT SIDE @ 10% OFFSET

TGAIZN



TAUT-LEG 6000FT - STATIC DEFLECTION SHAPE

SACS PILE RUNS

Attached is the final pile analysis output from SACS. The pile model was split into two sections. The top is the 70 foot section above the padeye. The bottom is the 115 foot section below the padeye. Shear and moment forces were iteratively applied to each section at the payeye location to balance the forces and cause approximately equal deflection and rotation. In other words, the two ends should meet. The two computer runs shown are the final iteration. The difference in deflection is about 2.1 inches.

* * * I N P U T E C H O * * *

```
CARD   0       1       2       3       4       5       6       7       8
COUNT  12345678901234567890123456789012345678901234567890123456789012345678901234567890

   1   TITLE PILE ANALYSIS - TAUT-BUOY MOORING - 60 IN. DIA. SINGLE PILE (TOP)
   2   TITLE          12 PT - 6000 FT - TAUT SIDE @ 10% OFFSET
   3   PLOPT ENPTEN100   20          490.      PTPT              PT
   4   PLGRUP
   5   PLGRUP PIL         60.   3.00                50.0   70.0                  10.0
   6   PILE
   7   PILE    10     PIL          0.0       0.0       8.0                  SOL1
   8   SOIL AXIAL   HEAD  5                    SOL1 API AXIAL SOIL
   9   SOIL         SLOC    0.0   50.   50.  100.  100.  150.  150.  200.  200.  250.
  10   SOIL                 0.05  0.40  0.40  0.80  0.80  1.25  1.25  1.70  1.70  2.10
  11   SOIL TORSION HEAD  2                    SOL1
  12   SOIL         SOLC    0.0  100.  100.  250.
  13   SOIL                 0.05  0.80  0.80  2.10
  14   SOIL LATERAL HEAD  7   YEXP  48.0       SOL1 P-Y LATERAL SOIL
  15   SOIL         SLOCSM   6   00.0       .001
  16   SOIL         P-Y    0.0   0.0 638.0   0.2 1095.   1.2 1582.   3.6 1582.  18.0
  17   SOIL         P-Y  1582.  60.0
  18   SOIL         SLOCSM   6   13.0       .001
  19   SOIL         P-Y    0.0   0.0 620.0   0.2 940.0   1.2 1350.   3.6 1350.  18.0
  20   SOIL         P-Y  1350.  60.0
  21   SOIL         SLOCSM   6   31.0       .001
  22   SOIL         P-Y    0.0   0.0 600.0   0.2 723.0   1.2 1050.   3.6 1050.  18.0
  23   SOIL         P-Y  1050.  60.0
  24   SOIL         SLOCSM   6   45.0       .001
  25   SOIL         P-Y    0.0   0.0 450.0   0.2 555.0   1.2 800.0   3.6 800.0  18.0
  26   SOIL         P-Y  800.0  60.0
  27   SOIL         SLOCSM   6   53.0       .001
  28   SOIL         P-Y    0.0   0.0 300.0   0.2 460.0   1.2 660.0   3.6 660.0  18.0
  29   SOIL         P-Y  660.0  60.0
  30   SOIL         SLOCSM   6   61.0       .001
  31   SOIL         P-Y    0.0   0.0 220.0   0.2 371.0   1.2 550.0   3.6 321.0  18.0
  32   SOIL         P-Y  321.0  60.0
  33   SOIL         SLOCSM   6   70.0       .001
  34   SOIL         P-Y    0.0  00.0 187.5   0.2 217.6   1.2 314.1   3.6 121.0  18.0
  35   SOIL         P-Y  121.0  60.0
  36   PLLOAD
  37   PLLOAD   FM            350.00  -190000.       0.0

     12345678901234567890123456789012345678901234567890123456789012345678901234567890
     0       1       2       3       4       5       6       7       8
```

PART 1 OF 2

TOP SECTION OF PILE (70')

BOTTOM SECTION FOLLOWS

12 PT - 6000 FT - TAUT SIDE @ 10% OFFSET

GRUP ID	SEGMENT LENGTH FT	TYPE	* * * * * * * * * CROSS SECTION PROPERTIES * * * * * * * * * * DIAMETER * FW * IN	THICKNESS * WH * IN	AREA IN**2	IYY IN**4	IZZ IN**4	J IN**4	** SHEAR AREAS ** Y IN**2	Z IN**2	** MATL. PROP. ** E 1000 KSI	G	FY KSI	END BEARING AREA FT**2	T FACTOR
PIL	70.0	TUB	60.00	3.000	537.21	218779.7	218779.7	437559.5	268.61	268.61	29.0	11.6	50.0	10.000	1.000

12 PT - 6000 FT - TAUT SIDE @ 10% OFFSET

* * AXIAL SOIL ADHESION TABLE * *

SOIL TABLE ID		SOL1
NUMBER OF SOIL STRATA	=	5
UNIT BEARING CAPACITY	=	0.00 KSF
LINEAR STIFFNESS VALUE	=	0.00 K/IN

API AXIAL SOIL

SOIL STRATA LOCATIONS FT		TENSION LOADS ADHESION EXTERNAL KSF		TENSION LOADS ADHESION INTERNAL KSF		COMPRESSION LOADS ADHESION EXTERNAL KSF		COMPRESSION LOADS ADHESION INTERNAL KSF	
FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO
0.000	50.000	0.050	0.400	0.050	0.400	0.050	0.400	0.050	0.400
50.000	100.000	0.400	0.800	0.400	0.800	0.400	0.800	0.400	0.800
100.000	150.000	0.800	1.250	0.800	1.250	0.800	1.250	0.800	1.250
150.000	200.000	1.250	1.700	1.250	1.700	1.250	1.700	1.250	1.700
200.000	250.000	1.700	2.100	1.700	2.100	1.700	2.100	1.700	2.100

12 PT - 6000 FT - TAUT SIDE @ 10% OFFSET

LATERAL SOIL DESCRIPTION

STRATUM	FROM DEPTH FT	TO DEPTH FT	P LB /IN	Y IN	P LB /IN	Y IN	P LB /IN	Y IN	P LB /IN	Y IN	P LB /IN	Y IN
1	0.00	0.00	0.000 1582.000	0.000 60.000	638.000	0.200	1095.000	1.200	1582.000	3.600	1582.000	18.000
2	13.00	0.00	0.000 1350.000	0.000 60.000	620.000	0.200	940.000	1.200	1350.000	3.600	1350.000	18.000
3	31.00	0.00	0.000 1050.000	0.000 60.000	600.000	0.200	723.000	1.200	1050.000	3.600	1050.000	18.000
4	45.00	0.00	0.000 800.000	0.000 60.000	450.000	0.200	555.000	1.200	800.000	3.600	800.000	18.000
5	53.00	0.00	0.000 660.000	0.000 60.000	300.000	0.200	460.000	1.200	660.000	3.600	660.000	18.000
6	61.00	0.00	0.000 321.000	0.000 60.000	220.000	0.200	371.000	1.200	550.000	3.600	321.000	18.000
7	70.00	0.00	0.000 121.000	0.000 60.000	187.500	0.200	217.600	1.200	314.100	3.600	121.000	18.000

NOTE- ABOVE P-Y DATA IS BASED ON A PILE DIAMETER OF 48.00 IN
BOTH P AND Y VALUES WILL BE FACTORED BY THE RATIO OF ACTUAL
DIAMETER TO THE P-Y DIAMETER

* * ADHESION PILE/SOIL MODEL DESCRIPTION * *

INC	STA	FROM	TO	SEG	OCIR	ICIR	AE/GJ	EBA	WPF
1	0.00000E+00	0.00000E+00	0.50000E+02	0.50000E+02	0.18850E+03	0.16965E+03	0.15579E+08	0.00000E+00	0.18280E+01
2	0.50000E+02	0.50000E+02	0.70000E+02	0.20000E+02	0.18850E+03	0.16965E+03	0.15579E+08	0.00000E+00	0.18280E+01
3	0.70000E+02	0.70000E+02	0.70000E+02	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.10000E+02	0.00000E+00

I	TEA	TIA	SEG	OC	IC	NEW1	NEW2	NEW3	NEW4	F
1	176.715	159.043	50.000	188.496	169.646	0.050	0.400	0.050	0.400	0.15579E+08
2	150.796	135.717	20.000	188.496	169.646	0.400	0.560	0.400	0.560	0.15579E+08
3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00000E+00

* * ULTIMATE PILE CAPACITY * *

ULTIMATE CAPACITY = 455.47
RESULTING DEFLECTION = 0.01

* * AXIAL SOLUTION * *

AXIAL LOAD = 0.00
AXIAL DEFLECTION = 0.000000
PILE LENGTH REQUIRED = 0.00
PILEHEAD STIFFNESS = 0.000000E+00

* * AXIAL LOAD-OUT DISTRIBUTION * *

INC	STA	LOAD
1	0.000000E+00	0.000000E+00
2	0.700000E+02	0.000000E+00
3	0.000000E+00	0.000000E+00

DEPTH	SOIL REACTION	Q	S
0.00	0.448335E+01	0.287031E+04	0.191165E+04
0.70	0.866542E+01	0.574461E+04	0.377683E+04
1.40	0.836886E+01	0.574993E+04	0.371487E+04
2.10	0.808825E+01	0.575524E+04	0.365290E+04
2.80	0.782308E+01	0.576056E+04	0.359094E+04
3.50	0.757285E+01	0.576587E+04	0.352897E+04
4.20	0.733706E+01	0.577119E+04	0.346700E+04
4.90	0.711525E+01	0.577650E+04	0.340504E+04
5.60	0.690691E+01	0.578182E+04	0.334307E+04
6.30	0.671159E+01	0.578713E+04	0.328110E+04
7.00	0.603637E+01	0.000000E+00	0.263889E+05
7.70	0.467653E+01	0.000000E+00	0.263482E+05
8.40	0.336580E+01	0.000000E+00	0.263075E+05
9.10	0.210292E+01	0.000000E+00	0.262668E+05
9.80	0.886605E+00	0.000000E+00	0.262261E+05
10.50	-0.284413E+00	0.000000E+00	0.261854E+05
11.20	-0.141140E+01	0.000000E+00	0.261447E+05
11.90	-0.249563E+01	0.000000E+00	0.261040E+05
12.60	-0.353834E+01	0.000000E+00	0.260633E+05
13.30	-0.454138E+01	0.000000E+00	0.260260E+05
14.00	-0.550659E+01	0.000000E+00	0.259933E+05
14.70	-0.643453E+01	0.000000E+00	0.259607E+05
15.40	-0.656235E+01	-0.586516E+04	0.246736E+04
16.10	-0.663246E+01	-0.587308E+04	0.240301E+04
16.80	-0.669539E+01	-0.588100E+04	0.233865E+04
17.50	-0.675148E+01	-0.588892E+04	0.227430E+04
18.20	-0.680103E+01	-0.589685E+04	0.220995E+04
18.90	-0.684435E+01	-0.590477E+04	0.214559E+04
19.60	-0.688172E+01	-0.591269E+04	0.208124E+04
20.30	-0.691342E+01	-0.592061E+04	0.201689E+04
21.00	-0.693972E+01	-0.592853E+04	0.195253E+04
21.70	-0.696088E+01	-0.593645E+04	0.188818E+04
22.40	-0.697714E+01	-0.594438E+04	0.182383E+04
23.10	-0.698876E+01	-0.595230E+04	0.175947E+04
23.80	-0.699595E+01	-0.596022E+04	0.169512E+04
24.50	-0.699894E+01	-0.596814E+04	0.163077E+04
25.20	-0.699793E+01	-0.597606E+04	0.156641E+04
25.90	-0.699314E+01	-0.598398E+04	0.150206E+04
26.60	-0.698475E+01	-0.599191E+04	0.143771E+04
27.30	-0.697295E+01	-0.599983E+04	0.137335E+04
28.00	-0.695792E+01	-0.600775E+04	0.130900E+04
28.70	-0.693982E+01	-0.601567E+04	0.124465E+04
29.40	-0.691882E+01	-0.602359E+04	0.118029E+04
30.10	-0.689507E+01	-0.603151E+04	0.111594E+04
30.80	-0.686780E+01	-0.603749E+04	0.105289E+04
31.50	-0.681192E+01	-0.598680E+04	0.102780E+04
32.20	-0.674291E+01	-0.590994E+04	0.102024E+04
32.90	-0.667317E+01	-0.583308E+04	0.101268E+04
33.60	-0.660273E+01	-0.575622E+04	0.100512E+04
34.30	-0.653162E+01	-0.567936E+04	0.997560E+03

DEPTH	SOIL REACTION	Q	S
35.00	-0.645988E+01	-0.560250E+04	0.990000E+03
35.70	-0.638753E+01	-0.552564E+04	0.982440E+03
36.40	-0.631460E+01	-0.544878E+04	0.974880E+03
37.10	-0.624113E+01	-0.537192E+04	0.967320E+03
37.80	-0.616714E+01	-0.529506E+04	0.959760E+03
38.50	-0.609266E+01	-0.521820E+04	0.952200E+03
39.20	-0.601771E+01	-0.514134E+04	0.944640E+03
39.90	-0.594232E+01	-0.506448E+04	0.937080E+03
40.60	-0.586650E+01	-0.498762E+04	0.929520E+03
41.30	-0.579029E+01	-0.491076E+04	0.921960E+03
42.00	-0.571370E+01	-0.483390E+04	0.914400E+03
42.70	-0.563675E+01	-0.475704E+04	0.906840E+03
43.40	-0.555946E+01	-0.468018E+04	0.899280E+03
44.10	-0.548186E+01	-0.460332E+04	0.891720E+03
44.80	-0.540341E+01	-0.452483E+04	0.885262E+03
45.50	-0.530925E+01	-0.439884E+04	0.910875E+03
46.20	-0.520824E+01	-0.425093E+04	0.951300E+03
46.90	-0.510762E+01	-0.410301E+04	0.991725E+03
47.60	-0.500736E+01	-0.395509E+04	0.103215E+04
48.30	-0.490745E+01	-0.380717E+04	0.107258E+04
49.00	-0.480791E+01	-0.365925E+04	0.111300E+04
49.70	-0.470870E+01	-0.351133E+04	0.115342E+04
50.40	-0.460984E+01	-0.336341E+04	0.119385E+04
51.10	-0.451132E+01	-0.321549E+04	0.123427E+04
51.80	-0.441313E+01	-0.306757E+04	0.127470E+04
52.50	-0.431528E+01	-0.291966E+04	0.131513E+04
53.20	-0.422575E+01	-0.279522E+04	0.134103E+04
53.90	-0.415354E+01	-0.272163E+04	0.133550E+04
54.60	-0.408174E+01	-0.264978E+04	0.132888E+04
55.30	-0.400979E+01	-0.257793E+04	0.132226E+04
56.00	-0.393768E+01	-0.250609E+04	0.131565E+04
56.70	-0.386544E+01	-0.243424E+04	0.130904E+04
57.40	-0.379306E+01	-0.236239E+04	0.130242E+04
58.10	-0.372055E+01	-0.229055E+04	0.129580E+04
58.80	-0.364793E+01	-0.221870E+04	0.128919E+04
59.50	-0.357520E+01	-0.214686E+04	0.128257E+04
60.20	-0.350236E+01	-0.207501E+04	0.127596E+04
60.90	-0.342839E+01	-0.200731E+04	0.126473E+04
61.60	-0.334214E+01	-0.198708E+04	0.120070E+04
62.30	-0.325173E+01	-0.198028E+04	0.112171E+04
63.00	-0.316053E+01	-0.197349E+04	0.104272E+04
63.70	-0.306854E+01	-0.196669E+04	0.963732E+03
64.40	-0.297577E+01	-0.195990E+04	0.884744E+03
65.10	-0.288221E+01	-0.195310E+04	0.805756E+03
65.80	-0.278788E+01	-0.194631E+04	0.726768E+03
66.50	-0.269278E+01	-0.193951E+04	0.647780E+03
67.20	-0.259690E+01	-0.193272E+04	0.568792E+03
67.90	-0.250026E+01	-0.192592E+04	0.489804E+03
68.60	-0.240284E+01	-0.191913E+04	0.410816E+03
69.30	-0.230466E+01	-0.191233E+04	0.331828E+03

DEPTH	SOIL REACTION	Q	S
70.00	-0.220570E+01	-0.190554E+04	0.252840E+03
70.70	0.000000E+00	0.000000E+00	0.000000E+00

12 PT - 6000 FT - TAUT SIDE @ 10% OFFSET

PILE NUMBER 1

GRUP ID..... PIL

LENGTH ..... 70.00 FT

BATTER RATIO 0.000

PILE HEAD SHEAR ..... 350.00 KIPS

PILE HEAD MOMENT ..... -190000.00 IN-KIP

PILE HEAD AXIAL LOAD ..... 0.00 KIPS

PILE HEAD LATERAL DEFLECTION . -0.84379 IN

PILE HEAD ROTATION ..... 0.00851160 RADIANS

PILE HEAD AXIAL DEFLECTION ... 0.00000 IN

NO. INCREMENTS 100

INCREMENT LENGTH ..... 0.70 FT

AXIAL LOAD DISTRIBUTION TYPE . ADHESION

LATERAL FORCE SPECIFIED

LATERAL MOMENT SPECIFIED

API RP2A 17TH EDITION CODE CHECK

LATERAL SOLUTION CONVERGED IN 5 ITERATIONS

12 PT - 6000 FT - TAUT SIDE @ 10% OFFSET

* PILE ID. PIL *

DISTANCE FROM PILEHEAD FT	****** DEFLECTIONS ******* LATERAL IN	AXIAL IN	ROTATION RAD	***** SOIL ****** REACTIONS LATERAL KIPS	AXIAL KIPS	******* INTERNAL LOADS ******* BENDING MOMENT IN-KIP	SHEAR KIPS	AXIAL LOAD KIPS	********** STRESSES ********** BENDING STRESS KSI	AXIAL STRESS KSI	SHEAR STRESS KSI	COMBINED STRESS KSI	UNITY CHECK
0.0	-0.844	0.000	0.00851	4.48	1.28	-190000.01	354.48	0.00	-26.05	0.00	1.32	26.05	0.695
0.7	-0.773	0.000	0.00826	8.67	1.28	-187022.35	358.82	0.00	-25.65	0.00	1.34	25.65	0.684
1.4	-0.705	0.000	0.00802	8.37	1.28	-183971.90	367.33	0.00	-25.23	0.00	1.37	25.23	0.673
2.1	-0.639	0.000	0.00777	8.09	1.28	-180851.15	375.56	0.00	-24.80	0.00	1.40	24.80	0.661
2.8	-0.574	0.000	0.00754	7.82	1.28	-177662.46	383.52	0.00	-24.36	0.00	1.43	24.36	0.650
3.5	-0.512	0.000	0.00730	7.57	1.28	-174408.06	391.22	0.00	-23.92	0.00	1.46	23.92	0.638
4.2	-0.452	0.000	0.00708	7.34	1.28	-171090.04	398.67	0.00	-23.46	0.00	1.48	23.46	0.626
4.9	-0.393	0.000	0.00685	7.12	1.28	-167710.40	405.90	0.00	-23.00	0.00	1.51	23.00	0.613
5.6	-0.337	0.000	0.00663	6.91	1.28	-164270.98	412.91	0.00	-22.53	0.00	1.54	22.53	0.601
6.3	-0.282	0.000	0.00642	6.71	1.28	-160773.55	419.72	0.00	-22.05	0.00	1.56	22.05	0.588
7.0	-0.229	0.000	0.00621	6.04	1.28	-157219.74	426.09	0.00	-21.56	0.00	1.59	21.56	0.575
7.7	-0.177	0.000	0.00600	4.68	1.28	-153615.22	431.45	0.00	-21.06	0.00	1.61	21.06	0.562
8.4	-0.128	0.000	0.00580	3.37	1.28	-149971.42	435.47	0.00	-20.56	0.00	1.62	20.56	0.548
9.1	-0.080	0.000	0.00560	2.10	1.28	-146299.35	438.20	0.00	-20.06	0.00	1.63	20.06	0.535
9.8	-0.034	0.000	0.00541	0.89	1.28	-142609.62	439.70	0.00	-19.56	0.00	1.64	19.56	0.521
10.5	0.011	0.000	0.00523	-0.28	1.28	-138912.43	440.00	0.00	-19.05	0.00	1.64	19.05	0.508
11.2	0.054	0.000	0.00504	-1.41	1.28	-135217.64	439.15	0.00	-18.54	0.00	1.63	18.54	0.494
11.9	0.096	0.000	0.00487	-2.50	1.28	-131534.70	437.20	0.00	-18.04	0.00	1.63	18.04	0.481
12.6	0.136	0.000	0.00470	-3.54	1.28	-127872.73	434.18	0.00	-17.53	0.00	1.62	17.53	0.468
13.3	0.174	0.000	0.00453	-4.54	1.28	-124240.47	430.14	0.00	-17.04	0.00	1.60	17.04	0.454
14.0	0.212	0.000	0.00437	-5.51	1.28	-120646.37	425.12	0.00	-16.54	0.00	1.58	16.54	0.441
14.7	0.248	0.000	0.00421	-6.43	1.28	-117098.52	419.15	0.00	-16.06	0.00	1.56	16.06	0.428
15.4	0.283	0.000	0.00406	-6.56	1.28	-113604.72	412.65	0.00	-15.58	0.00	1.54	15.58	0.415
16.1	0.316	0.000	0.00391	-6.63	1.28	-110166.04	406.05	0.00	-15.11	0.00	1.51	15.11	0.403
16.8	0.348	0.000	0.00377	-6.70	1.28	-106783.08	399.39	0.00	-14.64	0.00	1.49	14.64	0.390
17.5	0.379	0.000	0.00363	-6.75	1.28	-103456.36	392.66	0.00	-14.19	0.00	1.46	14.19	0.378
18.2	0.409	0.000	0.00349	-6.80	1.28	-100186.35	385.89	0.00	-13.74	0.00	1.44	13.74	0.366
18.9	0.438	0.000	0.00336	-6.84	1.28	-96973.47	379.06	0.00	-13.30	0.00	1.41	13.30	0.355
19.6	0.466	0.000	0.00323	-6.88	1.28	-93818.08	372.20	0.00	-12.86	0.00	1.39	12.86	0.343
20.3	0.492	0.000	0.00311	-6.91	1.28	-90720.50	365.30	0.00	-12.44	0.00	1.36	12.44	0.332
21.0	0.518	0.000	0.00299	-6.94	1.28	-87680.99	358.38	0.00	-12.02	0.00	1.33	12.02	0.321
21.7	0.543	0.000	0.00288	-6.96	1.28	-84699.77	351.43	0.00	-11.61	0.00	1.31	11.61	0.310
22.4	0.566	0.000	0.00277	-6.98	1.28	-81777.03	344.46	0.00	-11.21	0.00	1.28	11.21	0.299
23.1	0.589	0.000	0.00266	-6.99	1.28	-78912.89	337.47	0.00	-10.82	0.00	1.26	10.82	0.289
23.8	0.611	0.000	0.00256	-7.00	1.28	-76107.46	330.48	0.00	-10.44	0.00	1.23	10.44	0.278
24.5	0.632	0.000	0.00246	-7.00	1.28	-73360.79	323.48	0.00	-10.06	0.00	1.20	10.06	0.268
25.2	0.652	0.000	0.00237	-7.00	1.28	-70672.92	316.49	0.00	-9.69	0.00	1.18	9.69	0.258
25.9	0.672	0.000	0.00227	-6.99	1.28	-68043.83	309.49	0.00	-9.33	0.00	1.15	9.33	0.249
26.6	0.691	0.000	0.00219	-6.98	1.28	-65473.48	302.50	0.00	-8.98	0.00	1.13	8.98	0.239
27.3	0.709	0.000	0.00210	-6.97	1.28	-62961.80	295.52	0.00	-8.63	0.00	1.10	8.63	0.230
28.0	0.726	0.000	0.00202	-6.96	1.28	-60508.70	288.56	0.00	-8.30	0.00	1.07	8.30	0.221
28.7	0.742	0.000	0.00194	-6.94	1.28	-58114.04	281.61	0.00	-7.97	0.00	1.05	7.97	0.213
29.4	0.758	0.000	0.00187	-6.92	1.28	-55777.68	274.68	0.00	-7.65	0.00	1.02	7.65	0.204
30.1	0.774	0.000	0.00179	-6.90	1.28	-53499.43	267.77	0.00	-7.34	0.00	1.00	7.34	0.196
30.8	0.789	0.000	0.00172	-6.87	1.28	-51279.11	260.89	0.00	-7.03	0.00	0.97	7.03	0.188

12 PT - 6000 FT - TAUT SIDE @ 10% OFFSET

* PILE ID. PIL *

DISTANCE FROM PILEHEAD FT	****** DEFLECTIONS ******* LATERAL IN	AXIAL IN	ROTATION RAD	***** SOIL ****** REACTIONS LATERAL KIPS	AXIAL KIPS	******* INTERNAL LOADS ******* BENDING MOMENT IN-KIP	SHEAR KIPS	AXIAL LOAD KIPS	********** STRESSES ********** BENDING STRESS KSI	AXIAL STRESS KSI	SHEAR STRESS KSI	COMBINED STRESS KSI	UNITY CHECK
31.5	0.803	0.000	0.00166	-6.81	1.28	-49116.47	254.05	0.00	-6.74	0.00	0.95	6.74	0.180
32.2	0.816	0.000	0.00159	-6.74	1.28	-47011.05	247.27	0.00	-6.45	0.00	0.92	6.45	0.172
32.9	0.830	0.000	0.00153	-6.67	1.28	-44962.28	240.57	0.00	-6.17	0.00	0.90	6.17	0.164
33.6	0.842	0.000	0.00147	-6.60	1.28	-42969.56	233.93	0.00	-5.89	0.00	0.87	5.89	0.157
34.3	0.854	0.000	0.00142	-6.53	1.28	-41032.30	227.36	0.00	-5.63	0.00	0.85	5.63	0.150
35.0	0.866	0.000	0.00137	-6.46	1.28	-39149.90	220.86	0.00	-5.37	0.00	0.82	5.37	0.143
35.7	0.877	0.000	0.00132	-6.39	1.28	-37321.77	214.44	0.00	-5.12	0.00	0.80	5.12	0.136
36.4	0.888	0.000	0.00127	-6.31	1.28	-35547.30	208.09	0.00	-4.87	0.00	0.77	4.87	0.130
37.1	0.899	0.000	0.00122	-6.24	1.28	-33825.87	201.81	0.00	-4.64	0.00	0.75	4.64	0.124
37.8	0.909	0.000	0.00118	-6.17	1.28	-32156.86	195.61	0.00	-4.41	0.00	0.73	4.41	0.118
38.5	0.918	0.000	0.00114	-6.09	1.28	-30539.66	189.48	0.00	-4.19	0.00	0.71	4.19	0.112
39.2	0.928	0.000	0.00110	-6.02	1.28	-28973.63	183.42	0.00	-3.97	0.00	0.68	3.97	0.106
39.9	0.937	0.000	0.00106	-5.94	1.28	-27458.16	177.44	0.00	-3.77	0.00	0.66	3.77	0.100
40.6	0.946	0.000	0.00102	-5.87	1.28	-25992.60	171.54	0.00	-3.56	0.00	0.64	3.56	0.095
41.3	0.954	0.000	0.00099	-5.79	1.28	-24576.32	165.71	0.00	-3.37	0.00	0.62	3.37	0.090
42.0	0.962	0.000	0.00096	-5.71	1.28	-23208.67	159.96	0.00	-3.18	0.00	0.60	3.18	0.085
42.7	0.970	0.000	0.00093	-5.64	1.28	-21889.03	154.28	0.00	-3.00	0.00	0.57	3.00	0.080
43.4	0.978	0.000	0.00090	-5.56	1.28	-20616.73	148.68	0.00	-2.83	0.00	0.55	2.83	0.075
44.1	0.985	0.000	0.00087	-5.48	1.28	-19391.13	143.16	0.00	-2.66	0.00	0.53	2.66	0.071
44.8	0.992	0.000	0.00085	-5.40	1.28	-18211.57	137.72	0.00	-2.50	0.00	0.51	2.50	0.067
45.5	0.999	0.000	0.00083	-5.31	1.28	-17077.41	132.36	0.00	-2.34	0.00	0.49	2.34	0.062
46.2	1.006	0.000	0.00080	-5.21	1.28	-15987.85	127.11	0.00	-2.19	0.00	0.47	2.19	0.058
46.9	1.013	0.000	0.00078	-5.11	1.28	-14942.03	121.95	0.00	-2.05	0.00	0.45	2.05	0.055
47.6	1.019	0.000	0.00076	-5.01	1.28	-13939.12	116.89	0.00	-1.91	0.00	0.44	1.91	0.051
48.3	1.026	0.000	0.00075	-4.91	1.28	-12978.27	111.93	0.00	-1.78	0.00	0.42	1.78	0.047
49.0	1.032	0.000	0.00073	-4.81	1.28	-12058.64	107.08	0.00	-1.65	0.00	0.40	1.65	0.044
49.7	1.038	0.000	0.00071	-4.71	1.28	-11179.40	102.32	0.00	-1.53	0.00	0.38	1.53	0.041
50.4	1.044	0.000	0.00070	-4.61	1.28	-10339.71	97.66	0.00	-1.42	0.00	0.36	1.42	0.038
51.1	1.050	0.000	0.00069	-4.51	1.28	-9538.74	93.10	0.00	-1.31	0.00	0.35	1.31	0.035
51.8	1.056	0.000	0.00068	-4.41	1.28	-8775.67	88.64	0.00	-1.20	0.00	0.33	1.20	0.032
52.5	1.061	0.000	0.00066	-4.32	1.28	-8049.67	84.27	0.00	-1.10	0.00	0.31	1.10	0.029
53.2	1.067	0.000	0.00065	-4.23	1.28	-7359.92	80.00	0.00	-1.01	0.00	0.30	1.01	0.027
53.9	1.072	0.000	0.00064	-4.15	1.28	-6705.66	75.81	0.00	-0.92	0.00	0.28	0.92	0.025
54.6	1.078	0.000	0.00064	-4.08	1.28	-6086.30	71.69	0.00	-0.83	0.00	0.27	0.83	0.022
55.3	1.083	0.000	0.00063	-4.01	1.28	-5501.22	67.65	0.00	-0.75	0.00	0.25	0.75	0.020
56.0	1.088	0.000	0.00062	-3.94	1.28	-4949.82	63.67	0.00	-0.68	0.00	0.24	0.68	0.018
56.7	1.093	0.000	0.00062	-3.87	1.28	-4431.50	59.77	0.00	-0.61	0.00	0.22	0.61	0.016
57.4	1.098	0.000	0.00061	-3.79	1.28	-3945.65	55.94	0.00	-0.54	0.00	0.21	0.54	0.014
58.1	1.104	0.000	0.00060	-3.72	1.28	-3491.66	52.19	0.00	-0.48	0.00	0.19	0.48	0.013
58.8	1.109	0.000	0.00060	-3.65	1.28	-3068.92	48.50	0.00	-0.42	0.00	0.18	0.42	0.011
59.5	1.114	0.000	0.00060	-3.58	1.28	-2676.83	44.89	0.00	-0.37	0.00	0.17	0.37	0.010
60.2	1.119	0.000	0.00059	-3.50	1.28	-2314.76	41.35	0.00	-0.32	0.00	0.15	0.32	0.008
60.9	1.124	0.000	0.00059	-3.43	1.28	-1982.12	37.89	0.00	-0.27	0.00	0.14	0.27	0.007
61.6	1.129	0.000	0.00059	-3.34	1.28	-1678.28	34.50	0.00	-0.23	0.00	0.13	0.23	0.006
62.3	1.133	0.000	0.00059	-3.25	1.28	-1402.51	31.20	0.00	-0.19	0.00	0.12	0.19	0.006

12 PT - 6000 FT - TAUT SIDE @ 10% OFFSET

* PILE ID. PIL *

DISTANCE FROM PILEHEAD FT	****** DEFLECTIONS ******* LATERAL IN	AXIAL IN	ROTATION RAD	***** SOIL ****** REACTIONS LATERAL KIPS	AXIAL KIPS	******* INTERNAL LOADS ******* BENDING MOMENT IN-KIP	SHEAR KIPS	AXIAL LOAD KIPS	********** STRESSES ********** BENDING STRESS KSI	AXIAL STRESS KSI	SHEAR STRESS KSI	COMBINED STRESS KSI	UNITY CHECK
63.0	1.138	0.000	0.00058	-3.16	1.28	-1154.05	28.00	0.00	-0.16	0.00	0.10	0.16	0.005
63.7	1.143	0.000	0.00058	-3.07	1.28	-932.14	24.88	0.00	-0.13	0.00	0.09	0.13	0.005
64.4	1.148	0.000	0.00058	-2.98	1.28	-736.01	21.86	0.00	-0.10	0.00	0.08	0.10	0.004
65.1	1.153	0.000	0.00058	-2.88	1.28	-564.88	18.93	0.00	-0.08	0.00	0.07	0.08	0.004
65.8	1.158	0.000	0.00058	-2.79	1.28	-417.95	16.10	0.00	-0.06	0.00	0.06	0.06	0.003
66.5	1.163	0.000	0.00058	-2.69	1.28	-294.45	13.36	0.00	-0.04	0.00	0.05	0.04	0.002
67.2	1.168	0.000	0.00058	-2.60	1.28	-193.56	10.71	0.00	-0.03	0.00	0.04	0.03	0.002
67.9	1.173	0.000	0.00058	-2.50	1.28	-114.49	8.16	0.00	-0.02	0.00	0.03	0.02	0.002
68.6	1.177	0.000	0.00058	-2.40	1.28	-56.41	5.71	0.00	-0.01	0.00	0.02	0.01	0.001
69.3	1.182	0.000	0.00058	-2.30	1.28	-18.53	3.36	0.00	0.00	0.00	0.01	0.00	0.001
70.0	1.187	0.000	0.00058	-2.21	1.28	0.00	1.10	0.00	0.00	0.00	0.00	0.00	0.000

* * * I N P U T E C H O * * *

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CARD   0        1         2         3         4         5         6         7         8
COUNT  12345678901234567890123456789012345678901234567890123456789012345678901234567890

   1   TITLE PILE ANALYSIS - TAUT-BUOY MOORING - 60 IN. DIA. SINGLE PILE (BOT)
   2   TITLE           12 PT - 6000 FT - TAUT SIDE @ 10% OFFSET
   3   PLOPT ENPTEN100   20          490.      PTPT                PT
   4   PLGRUP
   5   PLGRUP PIL          60.   3.00                 50.0    5.0                  10.0
   6   PLGRUP PIL          60.   3.00                 50.0   40.0    72.           10.0
   7   PLGRUP PIL          60.   3.00                 50.0   70.0                  10.0
   8   PILE
   9   PILE    10     PIL          0.0       0.0       8.0                  SOL1
  10   SOIL AXIAL   HEAD  5                     SOL1 API AXIAL SOIL
  11   SOIL         SLOC    0.0   50.   50.  100.  100.  150.  150.  200.  200.  250.
  12   SOIL                0.05  0.40  0.40  0.80  0.80  1.25  1.25  1.70  1.70  2.10
  13   SOIL TORSION HEAD  2                     SOL1
  14   SOIL         SOLC    0.0  100.  100.  250.
  15   SOIL                0.05  0.80  0.80  2.10
  16   SOIL LATERAL HEAD  6   YEXP  48.0       SOL1 P-Y LATERAL SOIL
  17   SOIL         SLOCSM   6   00.0       .001
  18   SOIL         P-Y    0.0   0.0 638.0   0.2 1095.   1.2 1582.   3.6 1582.  18.0
  19   SOIL         P-Y  1582.  60.0
  20   SOIL         SLOCSM   6  15.0        .001
  21   SOIL         P-Y    0.0   0.0 660.0   0.2 1275.   1.2 1850.   3.6 1850.  18.0
  22   SOIL         P-Y  1850.  60.0
  23   SOIL         SLOCSM   6   65.0       .001
  24   SOIL         P-Y    0.0   0.0 900.0   0.2 1875.   1.2 2700.   3.6 2700.  18.0
  25   SOIL         P-Y  2700.  60.0
  26   SOIL         SLOCSM   6   115.       .001
  27   SOIL         P-Y    0.0   0.0 1100.   0.2 2475.   1.2 3550.   3.6 3550.  18.0
  28   SOIL         P-Y  3550.  60.0
  29   SOIL         SLOCSM   6   165.       .001
  30   SOIL         P-Y    0.0   0.0 1400.   0.2 3075.   1.2 4450.   3.6 4450.  18.0
  31   SOIL         P-Y  4450.  60.0
  32   SOIL         SLOCSM   6   215.       .001
  33   SOIL         P-Y    0.0   0.0 1800.   0.2 3675.   1.2 5300.   3.6 5300.  18.0
  34   SOIL         P-Y  5300.  60.0
  35   PLLOAD
  36   PLLOAD   FM            1017.40  -190000.    1090.5

       12345678901234567890123456789012345678901234567890123456789012345678901234567890
       0        1         2         3         4         5         6         7         8
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PART 2 OF 2

BOTTOM SECTION OF PILE (115')

12 PT - 6000 FT - TAUT SIDE @ 10% OFFSET

GRUP ID	SEGMENT LENGTH FT	TYPE	* * * * * * * * CROSS SECTION PROPERTIES * * * * * * * * * DIAMETER * FW * IN	THICKNESS * WH * IN	AREA IN**2	IYY IN**4	IZZ IN**4	J IN**4	** SHEAR AREAS ** Y IN**2	Z IN**2	** MATL. PROP. ** E 1000 KSI	G KSI	FY KSI	END BEARING AREA FT**2	T FACTOR
PIL	5.0	TUB	60.00	3.000	537.21	218779.7	218779.7	437559.5	268.61	268.61	29.0	11.6	50.0	10.000	1.000
PIL	40.0	TUB	72.00	3.000	537.21	218779.7	218779.7	437559.5	268.61	268.61	29.0	11.6	50.0	10.000	1.000
PIL	70.0	TUB	60.00	3.000	537.21	218779.7	218779.7	437559.5	268.61	268.61	29.0	11.6	50.0	10.000	1.000

12 PT - 6000 FT - TAUT SIDE @ 10% OFFSET

* * AXIAL SOIL ADHESION TABLE * *

SOIL TABLE ID = SOL1
NUMBER OF SOIL STRATA = 5
UNIT BEARING CAPACITY = 0.00 KSF
LINEAR STIFFNESS VALUE = 0.00 K/IN

API AXIAL SOIL

SOIL STRATA LOCATIONS FT		TENSION LOADS ADHESION EXTERNAL KSF		TENSION LOADS ADHESION INTERNAL KSF		COMPRESSION LOADS ADHESION EXTERNAL KSF		COMPRESSION LOADS ADHESION INTERNAL KSF	
FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO
0.000	50.000	0.050	0.400	0.050	0.400	0.050	0.400	0.050	0.400
50.000	100.000	0.400	0.800	0.400	0.800	0.400	0.800	0.400	0.800
100.000	150.000	0.800	1.250	0.800	1.250	0.800	1.250	0.800	1.250
150.000	200.000	1.250	1.700	1.250	1.700	1.250	1.700	1.250	1.700
200.000	250.000	1.700	2.100	1.700	2.100	1.700	2.100	1.700	2.100

12 PT - 6000 FT - TAUT SIDE @ 10% OFFSET

LATERAL SOIL DESCRIPTION

STRATUM	FROM DEPTH FT	TO DEPTH FT	P LB /IN	Y IN	P LB /IN	Y IN	P LB /IN	Y IN	P LB /IN	Y IN	P LB /IN	Y IN
1	0.00	0.00	0.000 1582.000	0.000 60.000	638.000	0.200	1095.000	1.200	1582.000	3.600	1582.000	18.000
2	15.00	0.00	0.000 1850.000	0.000 60.000	660.000	0.200	1275.000	1.200	1850.000	3.600	1850.000	18.000
3	65.00	0.00	0.000 2700.000	0.000 60.000	900.000	0.200	1875.000	1.200	2700.000	3.600	2700.000	18.000
4	115.00	0.00	0.000 3550.000	0.000 60.000	1100.000	0.200	2475.000	1.200	3550.000	3.600	3550.000	18.000
5	165.00	0.00	0.000 4450.000	0.000 60.000	1400.000	0.200	3075.000	1.200	4450.000	3.600	4450.000	18.000
6	215.00	0.00	0.000 5300.000	0.000 60.000	1800.000	0.200	3675.000	1.200	5300.000	3.600	5300.000	18.000

NOTE- ABOVE P-Y DATA IS BASED ON A PILE DIAMETER OF 48.00 IN
BOTH P AND Y VALUES WILL BE FACTORED BY THE RATIO OF ACTUAL
DIAMETER TO THE P-Y DIAMETER

* * ADHESION PILE/SOIL MODEL DESCRIPTION * *

INC	STA	FROM	TO	SEG	OCIR	ICIR	AE/GJ	EBA	WPF
1	0.00000E+00	0.00000E+00	0.50000E+01	0.50000E+01	0.18850E+03	0.16965E+03	0.15579E+08	0.00000E+00	0.18280E+01
2	0.50000E+01	0.50000E+01	0.45000E+02	0.40000E+02	0.22619E+03	0.20735E+03	0.15579E+08	0.10000E+02	0.18280E+01
3	0.45000E+02	0.45000E+02	0.50000E+02	0.50000E+01	0.18850E+03	0.16965E+03	0.15579E+08	0.10000E+02	0.18280E+01
4	0.50000E+02	0.50000E+02	0.10000E+03	0.50000E+02	0.18850E+03	0.16965E+03	0.15579E+08	0.00000E+00	0.18280E+01
5	0.10000E+03	0.10000E+03	0.11500E+03	0.15000E+02	0.18850E+03	0.16965E+03	0.15579E+08	0.00000E+00	0.18280E+01
6	0.11500E+03	0.11500E+03	0.11500E+03	0.00000E+00	0.00000E+00	0.00000E+00	0.00000E+00	0.10000E+02	0.00000E+00

I	TEA	TIA	SEG	OC	IC	NEW1	NEW2	NEW3	NEW4	F
1	5.301	4.771	5.000	188.496	169.646	0.050	0.085	0.050	0.085	0.15579E+08
2	169.646	155.509	40.000	226.195	207.345	0.085	0.365	0.085	0.365	0.15579E+08
3	30.041	27.037	5.000	188.496	169.646	0.365	0.400	0.365	0.400	0.15579E+08
4	471.239	424.115	50.000	188.496	169.646	0.400	0.800	0.400	0.800	0.15579E+08
5	204.400	183.960	15.000	188.496	169.646	0.800	0.935	0.800	0.935	0.15579E+08
6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00000E+00

* * ULTIMATE PILE CAPACITY * *

TOTAL INTERNAL ADHESION = 795.39
TOTAL END-BEARING = 0.00
TOTAL END CAPACITY = 795.39

ULTIMATE CAPACITY = 1465.80
RESULTING DEFLECTION = 0.08

* * AXIAL SOLUTION * *

AXIAL LOAD = 1090.50
AXIAL DEFLECTION = 0.051952
PILE LENGTH REQUIRED = 99.11
PILEHEAD STIFFNESS = 0.209906E+05

* * AXIAL LOAD-OUT DISTRIBUTION * *

INC	STA	LOAD
1	0.000000E+00	-0.109050E+07
2	0.500000E+01	-0.108957E+07
3	0.450000E+02	-0.837533E+06
4	0.500000E+02	-0.789594E+06
5	0.991070E+02	0.561218E-10
6	0.000000E+00	0.000000E+00

DEPTH	SOIL REACTION	Q	S
0.00	-0.120428E+02	-0.736667E+04	0.140497E+04
1.15	-0.241964E+02	-0.148682E+05	0.283904E+04
2.30	-0.243659E+02	-0.150481E+05	0.287784E+04
3.45	-0.245175E+02	-0.152280E+05	0.291663E+04
4.60	-0.251206E+02	-0.158767E+05	0.295542E+04
5.75	-0.278867E+02	-0.187052E+05	0.299422E+04
6.90	-0.280242E+02	-0.189210E+05	0.303301E+04
8.05	-0.281464E+02	-0.191369E+05	0.307180E+04
9.20	-0.282539E+02	-0.193527E+05	0.311060E+04
10.35	-0.283476E+02	-0.195685E+05	0.314939E+04
11.50	-0.284281E+02	-0.197844E+05	0.318818E+04
12.65	-0.284962E+02	-0.200002E+05	0.322698E+04
13.80	-0.285528E+02	-0.202160E+05	0.326577E+04
14.95	-0.285981E+02	-0.204329E+05	0.330397E+04
16.10	-0.286310E+02	-0.206576E+05	0.333787E+04
17.25	-0.286550E+02	-0.208837E+05	0.337094E+04
18.40	-0.286716E+02	-0.211099E+05	0.340400E+04
19.55	-0.286815E+02	-0.213360E+05	0.343706E+04
20.70	-0.286855E+02	-0.215622E+05	0.347012E+04
21.85	-0.286845E+02	-0.217883E+05	0.350319E+04
23.00	-0.286791E+02	-0.220144E+05	0.353625E+04
24.15	-0.286701E+02	-0.222406E+05	0.356931E+04
25.30	-0.281781E+02	-0.118323E+05	0.951041E+04
26.45	-0.276684E+02	-0.119123E+05	0.962467E+04
27.60	-0.271505E+02	-0.119923E+05	0.973894E+04
28.75	-0.266265E+02	-0.120722E+05	0.985320E+04
29.90	-0.260981E+02	-0.121522E+05	0.996746E+04
31.05	-0.255672E+02	-0.122322E+05	0.100817E+05
32.20	-0.250355E+02	-0.123122E+05	0.101960E+05
33.35	-0.245047E+02	-0.123922E+05	0.103103E+05
34.50	-0.239764E+02	-0.124722E+05	0.104245E+05
35.65	-0.234522E+02	-0.125521E+05	0.105388E+05
36.80	-0.229337E+02	-0.126321E+05	0.106530E+05
37.95	-0.224223E+02	-0.127121E+05	0.107673E+05
39.10	-0.219193E+02	-0.127921E+05	0.108816E+05
40.25	-0.214261E+02	-0.128721E+05	0.109958E+05
41.40	-0.209438E+02	-0.129521E+05	0.111101E+05
42.55	-0.204737E+02	-0.130321E+05	0.112244E+05
43.70	-0.200167E+02	-0.131120E+05	0.113386E+05
44.85	-0.187613E+02	-0.123795E+05	0.114529E+05
46.00	-0.169340E+02	-0.110600E+05	0.115672E+05
47.15	-0.165087E+02	-0.111267E+05	0.116814E+05
48.30	-0.160998E+02	-0.111933E+05	0.117957E+05
49.45	-0.157081E+02	-0.112600E+05	0.119100E+05
50.60	-0.153340E+02	-0.113266E+05	0.120242E+05
51.75	-0.149781E+02	-0.113933E+05	0.121385E+05
52.90	-0.146406E+02	-0.114599E+05	0.122527E+05
54.05	-0.132162E+02	0.000000E+00	0.584734E+05
55.20	-0.114520E+02	0.000000E+00	0.588542E+05
56.35	-0.978673E+01	0.000000E+00	0.592351E+05

DEPTH	SOIL REACTION	Q	S
57.50	-0.821942E+01	0.000000E+00	0.596160E+05
58.65	-0.674869E+01	0.000000E+00	0.599969E+05
59.80	-0.537286E+01	0.000000E+00	0.603778E+05
60.95	-0.409002E+01	0.000000E+00	0.607586E+05
62.10	-0.289799E+01	0.000000E+00	0.611395E+05
63.25	-0.179438E+01	0.000000E+00	0.615204E+05
64.40	-0.776617E+00	0.000000E+00	0.619013E+05
65.55	0.157944E+00	0.000000E+00	0.622518E+05
66.70	0.101089E+01	0.000000E+00	0.625692E+05
67.85	0.178503E+01	0.000000E+00	0.628866E+05
69.00	0.248370E+01	0.000000E+00	0.632040E+05
70.15	0.311025E+01	0.000000E+00	0.635214E+05
71.30	0.366805E+01	0.000000E+00	0.638388E+05
72.45	0.416052E+01	0.000000E+00	0.641562E+05
73.60	0.459104E+01	0.000000E+00	0.644736E+05
74.75	0.496297E+01	0.000000E+00	0.647910E+05
75.90	0.527964E+01	0.000000E+00	0.651084E+05
77.05	0.554434E+01	0.000000E+00	0.654258E+05
78.20	0.576026E+01	0.000000E+00	0.657432E+05
79.35	0.593057E+01	0.000000E+00	0.660606E+05
80.50	0.605830E+01	0.000000E+00	0.663780E+05
81.65	0.614644E+01	0.000000E+00	0.666954E+05
82.80	0.619783E+01	0.000000E+00	0.670128E+05
83.95	0.621526E+01	0.000000E+00	0.673302E+05
85.10	0.620136E+01	0.000000E+00	0.676476E+05
86.25	0.615867E+01	0.000000E+00	0.679650E+05
87.40	0.608961E+01	0.000000E+00	0.682824E+05
88.55	0.599645E+01	0.000000E+00	0.685998E+05
89.70	0.588138E+01	0.000000E+00	0.689172E+05
90.85	0.574643E+01	0.000000E+00	0.692346E+05
92.00	0.559351E+01	0.000000E+00	0.695520E+05
93.15	0.542441E+01	0.000000E+00	0.698694E+05
94.30	0.524080E+01	0.000000E+00	0.701868E+05
95.45	0.504420E+01	0.000000E+00	0.705042E+05
96.60	0.483603E+01	0.000000E+00	0.708216E+05
97.75	0.461758E+01	0.000000E+00	0.711390E+05
98.90	0.439003E+01	0.000000E+00	0.714564E+05
100.05	0.415443E+01	0.000000E+00	0.717738E+05
101.20	0.391174E+01	0.000000E+00	0.720912E+05
102.35	0.366279E+01	0.000000E+00	0.724086E+05
103.50	0.340833E+01	0.000000E+00	0.727260E+05
104.65	0.314900E+01	0.000000E+00	0.730434E+05
105.80	0.288535E+01	0.000000E+00	0.733608E+05
106.95	0.261785E+01	0.000000E+00	0.736782E+05
108.10	0.234688E+01	0.000000E+00	0.739956E+05
109.25	0.207275E+01	0.000000E+00	0.743130E+05
110.40	0.179571E+01	0.000000E+00	0.746304E+05
111.55	0.151595E+01	0.000000E+00	0.749478E+05
112.70	0.123359E+01	0.000000E+00	0.752652E+05
113.85	0.948731E+00	0.000000E+00	0.755826E+05

DEPTH	SOIL REACTION	Q	S
115.00	0.661411E+00	0.000000E+00	0.759000E+05
116.15	0.000000E+00	0.000000E+00	0.000000E+00

12 PT - 6000 FT - TAUT SIDE @ 10% OFFSET

PILE NUMBER 1

GRUP ID..... PIL

LENGTH ..... 115.00 FT

BATTER RATIO 0.000

PILE HEAD SHEAR ..... 1017.40 KIPS

PILE HEAD MOMENT ..... -190000.00 IN-KIP

PILE HEAD AXIAL LOAD ..... 1090.50 KIPS

PILE HEAD LATERAL DEFLECTION . 3.32829 IN

PILE HEAD ROTATION ..... -0.00288094 RADIANS

PILE HEAD AXIAL DEFLECTION ... -0.05195 IN

NO. INCREMENTS 100

INCREMENT LENGTH ..... 1.15 FT

AXIAL LOAD DISTRIBUTION TYPE . ADHESION

LATERAL FORCE SPECIFIED

LATERAL MOMENT SPECIFIED

API RP2A 17TH EDITION CODE CHECK

LATERAL SOLUTION CONVERGED IN 5 ITERATIONS

12 PT - 6000 FT - TAUT SIDE @ 10% OFFSET

* PILE ID. PIL *

DISTANCE FROM PILEHEAD FT	****** DEFLECTIONS ******* LATERAL IN	AXIAL IN	ROTATION RAD	***** SOIL ****** REACTIONS LATERAL KIPS	AXIAL KIPS	******* INTERNAL LOADS ******* BENDING MOMENT IN-KIP	SHEAR KIPS	AXIAL LOAD KIPS	********** STRESSES ********** BENDING STRESS KSI	AXIAL STRESS KSI	SHEAR STRESS KSI	COMBINED STRESS KSI	UNITY CHECK
0.0	3.328	0.000	-0.00288	-12.04	2.32	-190000.01	1008.72	-1090.50	-26.05	-2.03	3.76	-28.08	0.762
1.1	3.286	0.000	-0.00328	-24.20	2.32	-176079.62	996.83	-1090.29	-24.14	-2.03	3.71	-26.17	0.712
2.3	3.238	0.000	-0.00365	-24.37	2.32	-162487.40	972.95	-1090.07	-22.28	-2.03	3.62	-24.31	0.662
3.4	3.185	0.000	-0.00399	-24.52	2.32	-149226.12	948.88	-1089.86	-20.46	-2.03	3.53	-22.49	0.613
4.6	3.128	0.000	-0.00430	-25.12	2.32	-136298.34	924.39	-1089.64	-18.69	-2.03	3.44	-20.72	0.566
5.8	3.066	0.000	-0.00458	-27.89	9.35	-123713.03	898.16	-1084.84	-16.96	-2.02	3.34	-18.98	0.520
6.9	3.001	0.000	-0.00484	-28.02	9.35	-111509.00	870.45	-1077.60	-15.29	-2.01	3.24	-17.30	0.475
8.0	2.933	0.000	-0.00507	-28.15	9.35	-99688.59	842.58	-1070.35	-13.67	-1.99	3.14	-15.66	0.431
9.2	2.862	0.000	-0.00527	-28.25	9.35	-88253.92	814.56	-1063.10	-12.10	-1.98	3.03	-14.08	0.389
10.3	2.788	0.000	-0.00545	-28.35	9.35	-77206.87	786.41	-1055.86	-10.59	-1.97	2.93	-12.55	0.348
11.5	2.711	0.000	-0.00561	-28.43	9.35	-66549.13	758.14	-1048.61	-9.13	-1.95	2.82	-11.08	0.308
12.6	2.633	0.000	-0.00574	-28.50	9.35	-56282.16	729.78	-1041.37	-7.72	-1.94	2.72	-9.66	0.270
13.8	2.553	0.000	-0.00585	-28.55	9.35	-46407.27	701.33	-1034.12	-6.36	-1.92	2.61	-8.29	0.234
14.9	2.471	0.000	-0.00594	-28.60	9.35	-36925.55	672.80	-1026.87	-5.06	-1.91	2.50	-6.97	0.199
16.1	2.389	0.000	-0.00601	-28.63	9.35	-27837.95	644.22	-1019.63	-3.82	-1.90	2.40	-5.72	0.165
17.3	2.305	0.000	-0.00606	-28.66	9.35	-19145.21	615.58	-1012.38	-2.63	-1.88	2.29	-4.51	0.133
18.4	2.221	0.000	-0.00610	-28.67	9.35	-10847.93	586.91	-1005.14	-1.49	-1.87	2.19	-3.36	0.109
19.5	2.137	0.000	-0.00611	-28.68	9.35	-2946.60	558.20	-997.89	-0.40	-1.86	2.08	-2.26	0.104
20.7	2.053	0.000	-0.00611	-28.69	9.35	4558.39	529.47	-990.64	0.63	-1.84	1.97	-2.47	0.099
21.8	1.969	0.000	-0.00609	-28.68	9.35	11666.78	500.72	-983.40	1.60	-1.83	1.86	-3.43	0.104
23.0	1.885	0.000	-0.00606	-28.68	9.35	18378.37	471.97	-976.15	2.52	-1.82	1.76	-4.34	0.128
24.1	1.801	0.000	-0.00601	-28.67	9.35	24693.05	443.20	-968.91	3.39	-1.80	1.65	-5.19	0.150
25.3	1.719	0.000	-0.00595	-28.18	9.35	30610.77	414.68	-961.66	4.20	-1.79	1.54	-5.99	0.172
26.4	1.637	0.000	-0.00588	-27.67	9.35	36138.15	386.64	-954.41	4.96	-1.78	1.44	-6.73	0.191
27.6	1.556	0.000	-0.00579	-27.15	9.35	41282.09	359.11	-947.17	5.66	-1.76	1.34	-7.42	0.210
28.7	1.477	0.000	-0.00570	-26.63	9.35	46049.61	332.09	-939.92	6.31	-1.75	1.24	-8.06	0.227
29.9	1.399	0.000	-0.00560	-26.10	9.35	50447.81	305.59	-932.68	6.92	-1.74	1.14	-8.65	0.242
31.0	1.323	0.000	-0.00548	-25.57	9.35	54483.89	279.61	-925.43	7.47	-1.72	1.04	-9.19	0.257
32.2	1.248	0.000	-0.00536	-25.04	9.35	58165.09	254.16	-918.18	7.98	-1.71	0.95	-9.69	0.270
33.3	1.175	0.000	-0.00523	-24.50	9.35	61498.67	229.23	-910.94	8.43	-1.70	0.85	-10.13	0.281
34.5	1.104	0.000	-0.00509	-23.98	9.35	64491.88	204.83	-903.69	8.84	-1.68	0.76	-10.53	0.292
35.6	1.034	0.000	-0.00495	-23.45	9.35	67151.97	180.95	-896.45	9.21	-1.67	0.67	-10.88	0.301
36.8	0.967	0.000	-0.00480	-22.93	9.35	69486.13	157.59	-889.20	9.53	-1.66	0.59	-11.18	0.309
37.9	0.902	0.000	-0.00465	-22.42	9.35	71501.47	134.74	-881.95	9.80	-1.64	0.50	-11.45	0.316
39.1	0.839	0.000	-0.00449	-21.92	9.35	73205.04	112.40	-874.71	10.04	-1.63	0.42	-11.67	0.322
40.3	0.778	0.000	-0.00433	-21.43	9.35	74603.76	90.56	-867.46	10.23	-1.61	0.34	-11.84	0.327
41.4	0.719	0.000	-0.00416	-20.94	9.35	75704.43	69.20	-860.22	10.38	-1.60	0.26	-11.98	0.330
42.5	0.663	0.000	-0.00400	-20.47	9.35	76513.71	48.32	-852.97	10.49	-1.59	0.18	-12.08	0.333
43.7	0.609	0.000	-0.00383	-20.02	9.35	77038.11	27.91	-845.72	10.56	-1.57	0.10	-12.14	0.334
44.8	0.557	0.000	-0.00366	-18.76	9.35	77283.90	8.34	-838.48	10.60	-1.56	0.03	-12.16	0.335
46.0	0.508	0.000	-0.00350	-16.93	13.13	77268.37	-9.68	-827.95	10.60	-1.54	-0.04	-12.14	0.334
47.1	0.461	0.000	-0.00333	-16.51	13.13	77016.70	-26.58	-816.92	10.56	-1.52	-0.10	-12.08	0.332
48.3	0.416	0.000	-0.00316	-16.10	13.13	76534.84	-43.05	-805.89	10.49	-1.50	-0.16	-11.99	0.330
49.4	0.373	0.000	-0.00300	-15.71	13.13	75828.47	-59.13	-794.87	10.40	-1.48	-0.22	-11.88	0.327
50.6	0.333	0.000	-0.00283	-15.33	20.59	74902.93	-74.82	-779.95	10.27	-1.45	-0.28	-11.72	0.322

12 PT - 6000 FT - TAUT SIDE @ 10% OFFSET

* PILE ID. PIL *

DISTANCE FROM PILEHEAD FT	****** DEFLECTIONS ****** LATERAL IN	AXIAL IN	ROTATION RAD	***** SOIL ****** REACTIONS LATERAL KIPS	AXIAL KIPS	******* INTERNAL LOADS ******* BENDING MOMENT IN-KIP	SHEAR KIPS	AXIAL LOAD KIPS	********** STRESSES ********** BENDING STRESS KSI	AXIAL STRESS KSI	SHEAR STRESS KSI	COMBINED STRESS KSI	UNITY CHECK
51.7	0.295	0.000	-0.00267	-14.98	20.59	73763.32	-90.15	-761.46	10.11	-1.42	-0.34	-11.53	0.317
52.9	0.260	0.000	-0.00251	-14.64	20.59	72414.67	-105.13	-742.97	9.93	-1.38	-0.39	-11.31	0.311
54.0	0.226	0.000	-0.00236	-13.22	20.59	70861.74	-119.22	-724.47	9.72	-1.35	-0.44	-11.07	0.304
55.2	0.195	0.000	-0.00220	-11.45	20.59	69124.30	-131.70	-705.98	9.48	-1.31	-0.49	-10.79	0.297
56.3	0.165	0.000	-0.00205	-9.79	20.59	67226.82	-142.46	-687.49	9.22	-1.28	-0.53	-10.50	0.288
57.5	0.138	0.000	-0.00191	-8.22	20.59	65192.40	-151.60	-669.00	8.94	-1.25	-0.56	-10.18	0.280
58.6	0.112	0.000	-0.00177	-6.75	20.59	63042.76	-159.21	-650.51	8.64	-1.21	-0.59	-9.86	0.271
59.8	0.089	0.000	-0.00164	-5.37	20.59	60798.33	-165.38	-632.02	8.34	-1.18	-0.62	-9.51	0.262
60.9	0.067	0.000	-0.00151	-4.09	20.59	58478.20	-170.22	-613.53	8.02	-1.14	-0.63	-9.16	0.252
62.1	0.047	0.000	-0.00138	-2.90	20.59	56100.18	-173.82	-595.04	7.69	-1.11	-0.65	-8.80	0.242
63.2	0.029	0.000	-0.00126	-1.79	20.59	53680.82	-176.26	-576.55	7.36	-1.07	-0.66	-8.43	0.232
64.4	0.013	0.000	-0.00115	-0.78	20.59	51235.48	-177.63	-558.06	7.03	-1.04	-0.66	-8.06	0.222
65.5	-0.003	0.000	-0.00104	0.16	20.59	48778.27	-178.02	-539.56	6.69	-1.00	-0.66	-7.69	0.212
66.7	-0.016	0.000	-0.00094	1.01	20.59	46322.20	-177.50	-521.07	6.35	-0.97	-0.66	-7.32	0.202
67.8	-0.028	0.000	-0.00084	1.79	20.59	43879.14	-176.17	-502.58	6.02	-0.94	-0.66	-6.95	0.192
69.0	-0.039	0.000	-0.00075	2.48	20.59	41459.84	-174.10	-484.09	5.69	-0.90	-0.65	-6.59	0.182
70.1	-0.049	0.000	-0.00066	3.11	20.59	39074.04	-171.35	-465.60	5.36	-0.87	-0.64	-6.22	0.172
71.3	-0.057	0.000	-0.00058	3.67	20.59	36730.45	-168.01	-447.11	5.04	-0.83	-0.63	-5.87	0.162
72.4	-0.065	0.000	-0.00050	4.16	20.59	34436.86	-164.14	-428.62	4.72	-0.80	-0.61	-5.52	0.153
73.6	-0.071	0.000	-0.00043	4.59	20.59	32200.12	-159.81	-410.13	4.42	-0.76	-0.59	-5.18	0.143
74.8	-0.077	0.000	-0.00036	4.96	20.59	30026.24	-155.06	-391.64	4.12	-0.73	-0.58	-4.85	0.134
75.9	-0.081	0.000	-0.00030	5.28	20.59	27920.41	-149.97	-373.15	3.83	-0.69	-0.56	-4.52	0.125
77.0	-0.085	0.000	-0.00024	5.54	20.59	25887.06	-144.58	-354.66	3.55	-0.66	-0.54	-4.21	0.117
78.2	-0.088	0.000	-0.00018	5.76	20.59	23929.89	-138.95	-336.16	3.28	-0.63	-0.52	-3.91	0.108
79.3	-0.090	0.000	-0.00013	5.93	20.59	22051.94	-133.13	-317.67	3.02	-0.59	-0.50	-3.62	0.100
80.5	-0.091	0.000	-0.00009	6.06	20.59	20255.59	-127.15	-299.18	2.78	-0.56	-0.47	-3.33	0.093
81.6	-0.092	0.000	-0.00004	6.15	20.59	18542.64	-121.06	-280.69	2.54	-0.52	-0.45	-3.07	0.085
82.8	-0.092	0.000	-0.00001	6.20	20.59	16914.36	-114.90	-262.20	2.32	-0.49	-0.43	-2.81	0.078
83.9	-0.092	0.000	0.00003	6.22	20.59	15371.47	-108.70	-243.71	2.11	-0.45	-0.40	-2.56	0.071
85.1	-0.092	0.000	0.00006	6.20	20.59	13914.25	-102.50	-225.22	1.91	-0.42	-0.38	-2.33	0.065
86.3	-0.091	0.000	0.00009	6.16	20.59	12542.54	-96.32	-206.73	1.72	-0.38	-0.36	-2.10	0.059
87.4	-0.089	0.000	0.00012	6.09	20.59	11255.77	-90.20	-188.24	1.54	-0.35	-0.34	-1.89	0.053
88.5	-0.087	0.000	0.00014	6.00	20.59	10053.00	-84.16	-169.75	1.38	-0.32	-0.31	-1.69	0.047
89.7	-0.085	0.000	0.00016	5.88	20.59	8932.97	-78.22	-151.26	1.22	-0.28	-0.29	-1.51	0.042
90.8	-0.083	0.000	0.00018	5.75	20.59	7894.10	-72.41	-132.76	1.08	-0.25	-0.27	-1.33	0.037
92.0	-0.080	0.000	0.00019	5.59	20.59	6934.56	-66.73	-114.27	0.95	-0.21	-0.25	-1.16	0.032
93.1	-0.078	0.000	0.00021	5.42	20.59	6052.23	-61.22	-95.78	0.83	-0.18	-0.23	-1.01	0.028
94.3	-0.075	0.000	0.00022	5.24	20.59	5244.79	-55.89	-77.29	0.72	-0.14	-0.21	-0.86	0.024
95.4	-0.072	0.000	0.00023	5.04	20.59	4509.73	-50.74	-58.80	0.62	-0.11	-0.19	-0.73	0.020
96.6	-0.068	0.000	0.00024	4.84	20.59	3844.32	-45.80	-40.31	0.53	-0.08	-0.17	-0.60	0.017
97.7	-0.065	0.000	0.00025	4.62	20.59	3245.71	-41.07	-21.82	0.45	-0.04	-0.15	-0.49	0.013
98.9	-0.061	0.000	0.00025	4.39	20.59	2710.88	-36.56	-3.33	0.37	-0.01	-0.14	-0.38	0.010
100.0	-0.058	0.000	0.00026	4.15	2.10	2236.65	-32.29	0.00	0.31	0.00	-0.12	0.31	0.008
101.2	-0.054	0.000	0.00026	3.91	2.10	1819.75	-28.25	0.00	0.25	0.00	-0.11	0.25	0.007
102.3	-0.051	0.000	0.00027	3.66	2.10	1456.83	-24.47	0.00	0.20	0.00	-0.09	0.20	0.005

PILE VERSION III.D.005

12 PT - 6000 FT - TAUT SIDE @ 10% OFFSET

* PILE ID. PIL *

DISTANCE FROM PILEHEAD FT	****** DEFLECTIONS ******* LATERAL IN	AXIAL IN	ROTATION RAD	***** SOIL ****** REACTIONS LATERAL KIPS	AXIAL KIPS	******* INTERNAL LOADS ******* BENDING MOMENT IN-KIP	SHEAR KIPS	AXIAL LOAD KIPS	********** STRESSES ********** BENDING STRESS KSI	AXIAL STRESS KSI	SHEAR STRESS KSI	COMBINED STRESS KSI	UNITY CHECK
103.5	-0.047	0.000	0.00027	3.41	2.10	1144.46	-20.93	0.00	0.16	0.00	-0.08	0.16	0.004
104.6	-0.043	0.000	0.00027	3.15	2.10	879.12	-17.65	0.00	0.12	0.00	-0.07	0.12	0.003
105.8	-0.039	0.000	0.00027	2.89	2.10	657.25	-14.64	0.00	0.09	0.00	-0.05	0.09	0.003
106.9	-0.036	0.000	0.00028	2.62	2.10	475.18	-11.88	0.00	0.07	0.00	-0.04	0.07	0.002
108.1	-0.032	0.000	0.00028	2.35	2.10	329.25	-9.40	0.00	0.05	0.00	-0.04	0.05	0.002
109.2	-0.028	0.000	0.00028	2.07	2.10	215.70	-7.19	0.00	0.03	0.00	-0.03	0.03	0.001
110.4	-0.024	0.000	0.00028	1.80	2.10	130.75	-5.26	0.00	0.02	0.00	-0.02	0.02	0.001
111.5	-0.020	0.000	0.00028	1.52	2.10	70.59	-3.60	0.00	0.01	0.00	-0.01	0.01	0.001
112.7	-0.016	0.000	0.00028	1.23	2.10	31.35	-2.23	0.00	0.00	0.00	-0.01	0.00	0.000
113.8	-0.013	0.000	0.00028	0.95	2.10	9.13	-1.14	0.00	0.00	0.00	0.00	0.00	0.000
115.0	-0.009	0.000	0.00028	0.66	2.10	0.00	-0.33	0.00	0.00	0.00	0.00	0.00	0.000

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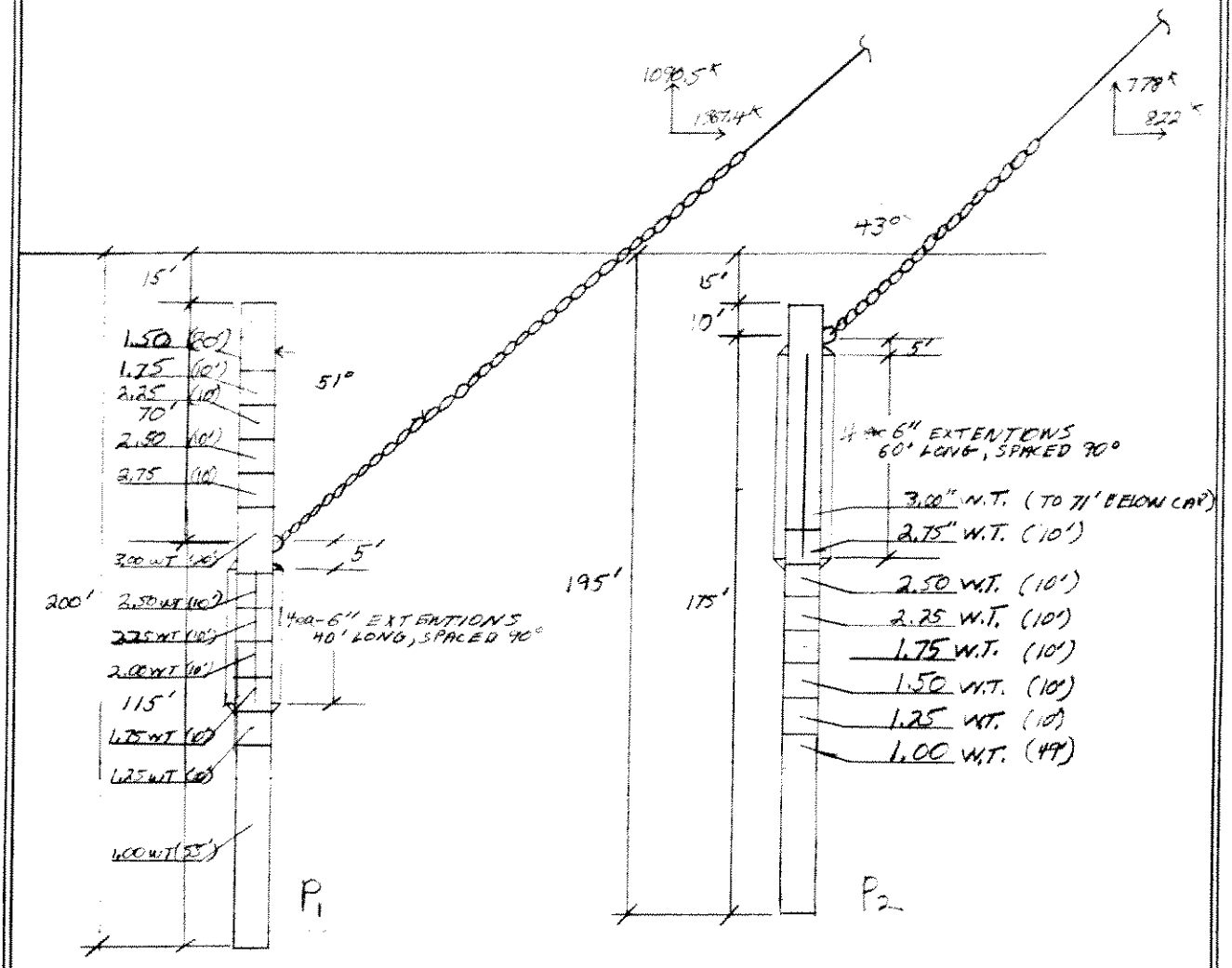
Houston, Texas

CALCULATION SHEET

PROJECT: ARAMID JIP EXT.	PAGE NO. 1 OF 1
	DATE 10 JAN 90
SUBJECT:	PROJECT NO. 8116
	ENGINEER D. SORREL

UPDATED 17 JAN 90



60" DIA. SINGLE PILE
12 PT - TAUT SIDE @ 10% EXCURSION

WT OF PILE 207 K
WT OF EXTENTIONS ~ .1 K

60" DIA. SINGE PILE
16PT - TAUT SIDE @ 2% EXCURSION

WT OF PILE 244 K
WT OF EXTENTIONS ~ .1-.2 K

Omega Marine Services International
Houston, Texas

CALCULATION SHEET

PROJECT: ARAMID SIP PHASE I EXTENSION

SUBJECT: ANCHOR PILE COSTS

PAGE NO. OF

DATE 1/17/90

PROJECT NO. 8116

ENGINEER

ASSUME: PILE COSTS — $950/TON

FINS, PADEYES, ETC. — $5,000/TON

FIND PILE COSTS FOR 3 CASES:

900 – 1250k SHEAR

SECTION	LENGTH	WT.
60"ϕ x 1.50 W.T.	20'	18.8k
" x 1.50"	10'	9.4k
" x 2.00"	10'	12.4k
" x 2.25"	10'	13.9k
" x 2.50"	10'	15.4k
" x 2.75"	20'	33.7k
" x 2.25"	10'	13.9k
" x 2.00"	10'	12.4k
" x 1.75"	10'	10.9k
" x 1.50"	10'	9.4k
" x 1.00"	10'	6.3k
" x 1.00"	55'	34.7k
TOTAL WT.		191.2k

FINS, PADEYES, ETC = 1.4k

EST. COST

$\left(\frac{191.2}{2}\right)(\$950/\text{TON}) = \$90,820$

$\left(\frac{1.4}{2}\right)(5000/\text{TON}) = \$3,500$

EST COST = $ 94,000

1370k SHEAR

SECTION	LENGTH	WT.
60"ϕ x 1.50" W.T.	20'	18.8k
" x 1.75"	10'	10.9k
" x 2.25	10'	13.9k
" x 2.50"	10'	15.4k
" x 2.75"	10'	16.8k
" x 3.00"	20'	36.6k
" x 2.50"	10'	15.4k
" x 2.25"	10'	13.9k
" x 2.00"	10'	12.4k
" x 1.75"	10'	10.9k
" x 1.25"	10'	7.9k
" x 1.00"	55'	34.7k
TOTAL WT.		207.6k

FINS, PADEYES, ETC = 1.4k

EST COST

$\left(\frac{207.6}{2}\right)(\$950/\text{TON}) = \$98,610$

$\left(\frac{1.4}{2}\right)(\$5000/\text{TON}) = \$3,500$

EST. COST = $ 102,000

1500 – 2000k SHEAR

SECTION	LENGTH	WT.
60"ϕ x 1.25 W.T.	20'	20.3k
" x 2.00"	10'	12.4k
" x 2.50"	10'	15.4k
" x 2.75"	10'	16.8k
" x 3.00"	10'	18.3k
" x 3.25"	20'	38.4k
" x 2.75"	10'	16.8k
" x 2.50"	10'	15.4k
" x 2.25"	10'	13.9k
" x 2.00"	10'	12.4k
" x 1.50"	10'	9.4k
" x 1.25"	10'	7.9k
" x 1.00"	45'	28.4k
TOTAL WT.		225.8k

FINS, PADEYE, ETC = 1.4k

EST COST

$\left(\frac{225.3}{2}\right)(\$950/\text{TON}) = \$107,255$

$\left(\frac{1.4}{2}\right)(\$5000/\text{TON}) = \$3,500$

EST. COST = $ 112,000

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CALCULATION SHEET

PROJECT: ARAMID JIP EXTENSION	PAGE NO. OF
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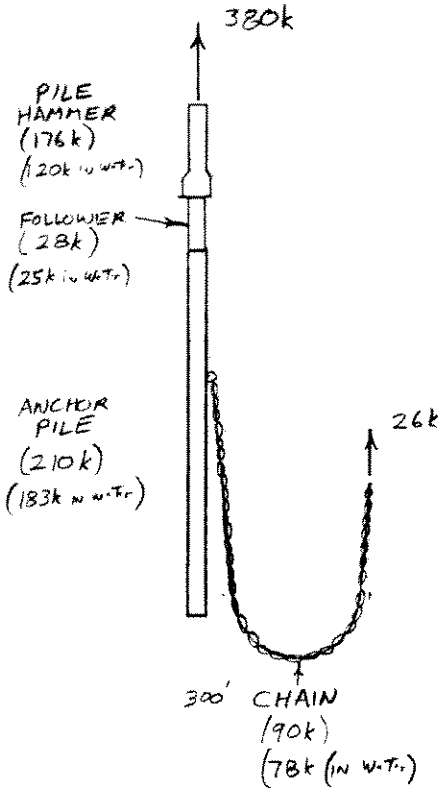
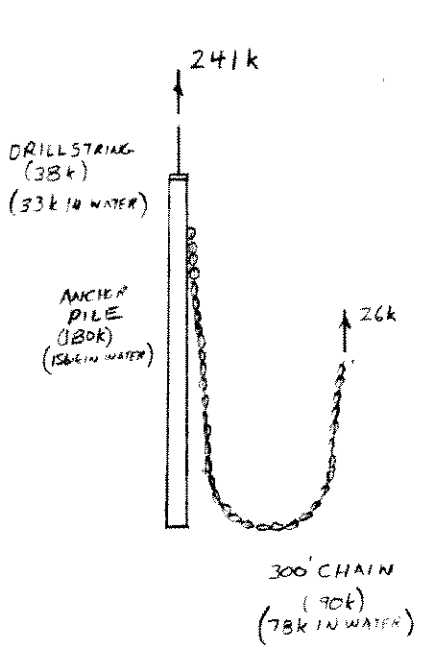
	ENGINEER D. HARDIN

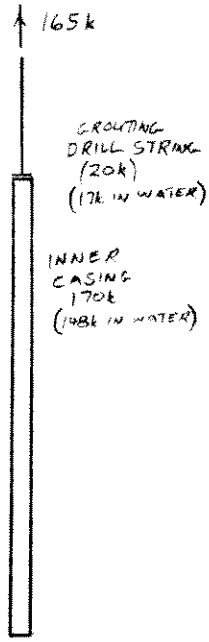
TO BE LOWERED



DRIVEN ANCHOR PILE



OUTER CASING



INSERT CASING

DRILL & GROUTED ANCHOR PILE

APPENDIX E - SUBMERSIBLE BUOY CALCULATIONS

E.1 Spherical Buoy Calculations

E.2 Draped Steel Calculations

Appendix E.1 - Spherical Buoy Calculations

FAX NOS:
201-368-0255
201-368-1986
PHONE: 201-368-9100

ABS
45 EISENHOWER DRIVE
PARAMUS, NEW JERSEY

DATE: October 25, 1989

BRANCH CODE: 454

RAC/AJF

TO: OMEGA MARINE, HOUSTON, TEXAS

ATTN: PHILL ABBOTT

FAX NO. 713-870-8008

FROM: ABS WHQ/R.A. CAMPBELL

REF NO: OS:4-2

SUBJ: SUBMERGED BUOY DESIGN CRITERIA

THE ATTACHED IS OUR DRAFT DESIGN CRITERIA. THE VALUE η IS THE RECIPROCAL OF THE FACTOR OF SAFETY. OUR RULES UTILIZE η = 0.67, OR FOS = 1.5, THEREFORE A SPHERE DESIGNED FOR 1300 FEET SHOULD SURVIVE TO 1,950 FEET. IF SHELL WANTS A HIGHER FACTOR OF SAFETY WE WOULD SUGGEST ALTERING η TO 0.5 AND DESIGN FOR 1300 FEET OR ALTERING η TO 1.0 AND DESIGN FOR THE FULL 2,700 FEET. THIS DRAFT CRITERIA RESULTS IN APPROXIMATELY THE SAME SCANTLINGS AS WOULD OUR CURRENT RULES.

OUR DESIGN FORMULATION IS BASED ON A LOWER BOUND CURVE FIT TO A SERIES OF TEST RESULTS COLLECTED BY THE BRITISH ADMIRALTY. THE RESULTS ARE FOR PRESSURE LOADS ONLY. LOCAL BENDING EFFECTS CAUSED BY THE CHAIN LOADS MUST BE CONSIDERED SEPARATELY AND APPROPRIATE STIFFENING PROVIDED.

ON THE PLACID JOB EXTERNAL PRESSURE TESTING AS REQUIRED BY OUR RULES WAS WAIVED.

REGARDS,
Roger Campbell
R.A. CAMPBELL
ABS WHQ/PARAMUS, NJ

CC: SRM, DEJ

OMEGA.FAX

c. Remaining Stiffeners

The same assessment as above is to be followed for the remaining heavy stiffeners bounding a compartment length and non-heavy stiffeners within that compartment length.

6.23 Spherical Shells Under External Pressure

Shell Geometry

t	Shell Thickness
D_o	Outer Diameter
D	Mean Diameter
D_i	Inner Diameter
R_o	Outer Radius

P_{ys} = Yield

P_{es} = Buckling

P_{cs} = Combined

P_a = Allowable

6.23.1 General

The limit pressure for spherical shells is to be obtained from the following equation:

$$\frac{P_{cs}}{P_{ys}} = 0.7391\ [1 + (P_{ys}/(0.3P_{es}))^2]^{-1/2} \quad \text{for } P_{es}/P_{ys} > 1$$

$$= 0.2124\ P_{es}/P_{ys} \quad \text{for } P_{es}/P_{ys} \leq 1$$

where:

$$P_{ys} = 2\sigma_y t/R_o$$

where R_o is the nominal outside radius of the spherical shell and P_{es} is given by

$$P_{es} = (2/\sqrt{3(1-\nu^2)})\ E\ (t/R_o)^2$$

The maximum allowable working pressure is given by:

where $P_a = P_{cs}\eta$ where $\eta = 0.67$

6.23.2 Hemispherical Dished Heads

For hemispherical dished heads, the maximum allowable working pressure is to be determined as for spherical shells, using the hemisphere external radius R_o. The applicable usage factor, η is to be taken at 0.67.

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PROJECT: SPRING BUOYS

SUBJECT: ABS DESIGN CRITERIA

PAGE NO. 1 OF 1

DATE 10/27/89

PROJECT NO.

ENGINEER H. TREU

NOMENCLATURE

t = SHELL THICKNESS
D_o = OUTER DIAMETER
D = MEAN DIAMETER
D_i = INNER DIAMETER
R_o = OUTER RADIUS

P_{ys} = YIELD PRESSURE
P_{es} = BUCKLING PRESSURE
P_{cs} = COMBINED COLLAPSE PRESSURE.
P_a = ALLOWABLE PRESSURE

LIMIT PRESSURE FOR SPHERICAL SHELLS.

$$\frac{P_{cs}}{P_{ys}} = 0.7391\left[1+\left(P_{ys}/(0.3P_{es})\right)^2\right]^{-1/2} \quad \text{FOR } \frac{P_{es}}{P_{ys}} > 1$$

$$\frac{P_{cs}}{P_{ys}} = 0.2124 \times \frac{P_{es}}{P_{ys}} \quad \text{FOR } \frac{P_{es}}{P_{ys}} \leq 1$$

WHERE:

$$P_{ys} = 2 \cdot \sigma_y \cdot t/R_o$$

AND:

$$P_{es} = \left(2/\sqrt{3(1-\nu^2)}\right) \cdot E \cdot \left(t/R_o\right)^2$$

MAXIMUM ALLOW. WORKING PRESSURE IS:

$$P_a = \eta \times P_{cs} \quad (\text{WHERE } \eta = 0.67)$$

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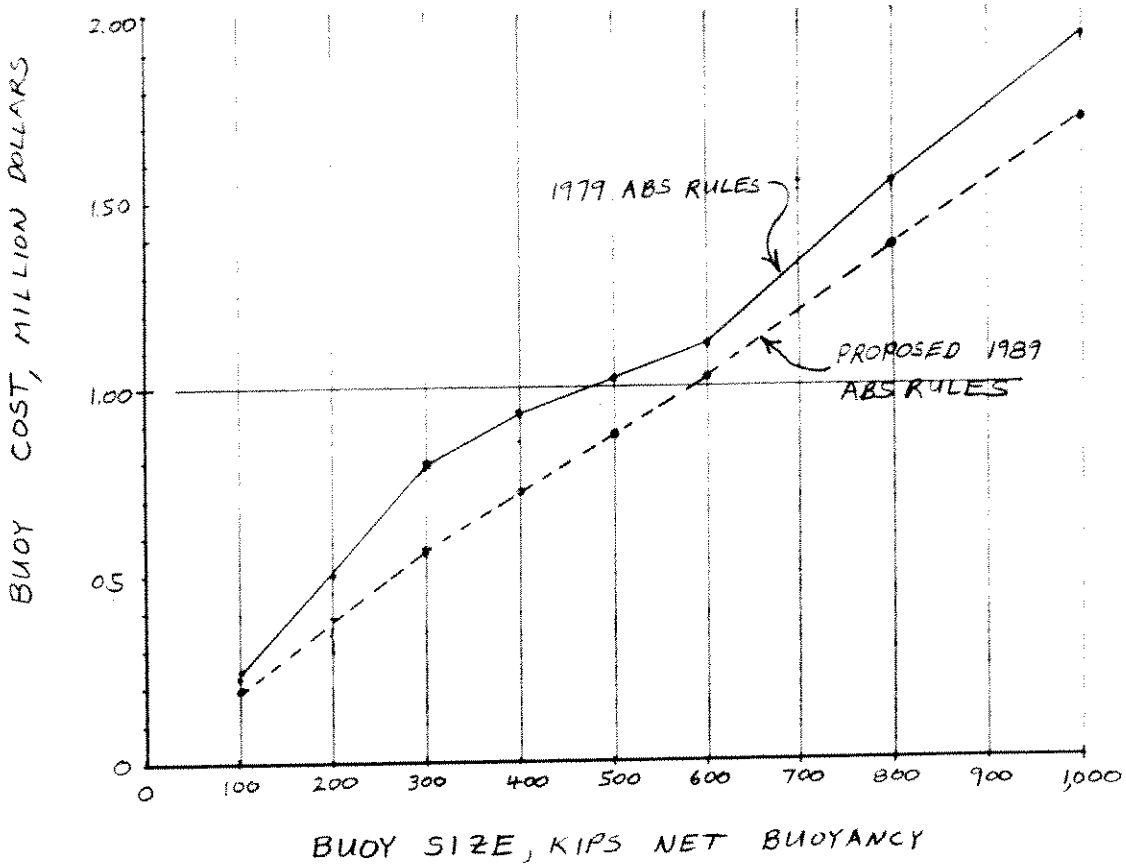
CALCULATION SHEET

PROJECT: ARAMID JIP EXTENSION	PAGE NO. 1 OF
	DATE 10/25/89
SUBJECT:	PROJECT NO. 8116
	ENGINEER D. HARDIN

COST OF MULTI-SPHERE BUOY FOR 800' WATER DEPTH

(ASSUMING 80 ksi STEEL, F.S. = 1.50)



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CALCULATION SHEET

PROJECT: ARAMID MOORING JIP EXTENSION

SUBJECT:

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DATE 10/25/89

PROJECT NO. 8116

ENGINEER D. HARDIN

FIND COST VS SIZE CURVE FOR RISER BUOYS IN 800' W.D.

ASSUME MULTI-SPHERE BUOY ARRANGEMENT
3-SPHERES PER BUOY

DESIGN FOR 1.5 TIMES WORKING WATER DEPTH = 1200' W.D.
ASSUME 80 KSI STEEL

PRELIMINARY BUOY SIZING:

BUOY NET BUOY. (k)	SPHERE NET BUOY. (k)	SPHERE DIAMETER (FT)	SPHERE WALL THICK. (IN)	SPHERE WT. (k)	TOTAL BUOYANCY (k)	TOTAL WEIGHT (k)	TOTAL NET BUOY (k)
300	100k	17'	1 1/8"	42	495	186	309
400	133k	18.5'	1 1/4"	54	636	222	414
500	167k	19.5'	1 1/4"	60	745	240	505
600	200k	21'	1 3/8"	77	930	291	639

USING ABOVE SIZES, CHECK EACH BUOY FOR ABS CRITERIA
DESIGN WATER DEPTH = 1200', DESIGN PRESSURE = 0.533 ksi

17'ϕ x 1 1/8" W.T. SPHERICAL SHELL

$t = 1.125$, $R_o = 8.5' = 102"$, $t/R_o = 0.011$, $C = 0.006845$

$P = (80 ksi)(0.006845)/0.75$ $\quad P = 0.730 ksi \geq 0.533 ksi$

O.K.

$P = 0.92(29000 ksi)(.006845)^2/\sqrt{3(1-(.3)^2)}$ $\quad P = 0.757 ksi \geq 0.533 ksi$

O.K.

18.5'ϕ x 1.25" W.T SPHERICAL SHELL

$t = 1.25"$, $R_o = 9.25' = 111'$, $t/R_o = 0.01126$, $C = 0.007045$

$P = (80 ksi)(0.007045)/.75$ $\quad P = 0.751 ksi \geq 0.533 ksi$

O.K.

$P = 0.92(29000 ksi)(.007045)^2/\sqrt{3(1-(.3)^2)}$ $\quad P = 0.801 ksi \geq 0.533 ksi$

O.K.

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COST vs. SIZE CURVE FOR BUOYS

19.5'ϕ x 1.25" W.T. SPHERICAL SHELL

$t = 1.25$", $R_o = 9.75' = 117$" $t/R_o = 0.0107$, $C = 0.00655$

$P = (80\ ksi)(0.00655)/0.75$ $P = 0.699\ ksi \geq 0.533\ ksi$

O.K.

$P = 0.92(29000\ ksi)(.00655)^2/\sqrt{3(1-.3^2)}$ $P = 0.693\ ksi \geq 0.533$

O.K.

21'ϕ x 1.375" W.T. SPHERICAL SHELL

$t = 1.375$", $R_o = 10.5' = 126$" $t/R_o = 0.0109$, $C = 0.006745$

$P = (80ksi)(0.006745)/.75$ $P = 0.719\ ksi \geq 0.533\ ksi$

O.K.

$P = 0.92(29000\ ksi)(.006745)^2/\sqrt{3(1-.3^2)}$ $P = 0.735\ ksi \geq 0.533\ ksi$

O.K.

ALL SPHERE SIZES O.K. AS SIZED

BUOY COSTS

FROM JIP, PHASE I - BUOY STUDY

100k BUOY, 1000' W.D., 16'ϕ x 1.00" W.T., wt = 39k, COST = $175,000

200k BUOY, 1000' W.D., 20ϕ x 1.250" W.T., wt = 77k, COST = $225,000

USE $3.50/lb Steel + $2,900/ft DIA/SPHERE

PRELIMINARY BUOY COST

BUOY NET BUOY. (KIP)	SPHERE DIAMETER (FT.)	SPHERE WALL THICK (IN)	BUOY WT. (kip)	FAB. COST ($3.50/lb)	COATING/ FENDER COST	TOTAL BUOY COST
300	17'	1 1/8"	186k	$650,000	$150,000	$809,000
400	18.5'	1 1/4"	222k	$775,000	$160,000	$935,000
500	19.5'	1 1/4"	240k	$850,000	$170,000	$1,020,000
600	21'	1 3/8"	291k	$1025,000	$185,000	$1,210,000

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	ENGINEER D HARDIN

EXTEND BUOY COST CURVE

FIND BUOY SIZES + COSTS FOR 100k, 200k, 800k & 1000k BUOYS FOR DESIGN DEPTH OF 1200 FT, PRESSURE = 0.533 ksi

PRELIMINARY BUOY SIZING:

BUOY NET BUOYANCY (KIP)	NO OF SPHERES	SPHERE DIAMETER (FT)	SPHERE WALL THICK (IN)	SPHERE NET BUOY (KIP)	SPHERE WEIGHT (KIP)	TOTAL BUOYANCY (KIP)	TOTAL WEIGHT (KIP)	TOTAL NET BUOY (KIP)
100	1	16.5'	1.125"	100	50	100	50	100
200	1	20.625'	1.375"	201.8	92	201.8	92	201.8
800	4	20.625	1.375	200	92	801.2	375	800
1000	5	20.625	1.375	200	92	1004	466	1004

FIND BUOY COST AS BEFORE:

BUOY NET BUOYANCY (KIP)	NO OF SPHERES	SPHERE DIAMETER (FT)	BUOY WT (K)	FAB COST ($3.50/lb)	COATING/ FENDER COST	TOTAL BUOY COST
100	1	16.5	50	$175,000	$47,850	$225,000
200	1	20.625	92	$322,000	$59,812	$385,000
800	4	20.625	375	$1,312,500	$239,250	$1,550,000
1000	5	20,625	466	$1,631,000	$299,063	$1,930,000
200	3	14.50	90	$315,000	$126,150	$445,000

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CALCULATION SHEET

PROJECT: ARAMID JIP EXTENSION

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ENGINEER D HARDY

COST VS SIZE CURVE FOR BUOYS
RISER BUOYS DESIGNED FOR 800' W.D. (WORKING)

DESIGN BUOYS FOR NEW ABS PROPOSED RULES

USE SF = 1.5 ON WD OF 900'

PRELIMINARY BUOY SIZES

BUOY NET BUOYANCY (KIP)	NO. OF SPHERES	SPHERE DIAMETER (FT.)	SPHERE WALL THICK. (IN)	SPHERE WEIGHT (KIP)	APPURT. WEIGHT (KIP)	TOTAL WEIGHT (KIP)	ACTUAL NET BUOY. (KIP)	RATED W. D. (FT)
100	1	16.25	15/16"	31.5	12.0	43.5	100.3	934
200	1	20.375	1 3/16"	62.6	18.0	80.6	202.8	951
300	3	16.125	15/16"	92.9	28.0	120.9	300.6	947
400	3	17.75	1 1/16"	127.5	34.0	161.5	400.7	994
500	3	19.125	1 1/8"	156.8	46.0	202.8	500.4	966
600	3	20.375	1 3/16"	187.9	54.0	241.9	608.5	951
800	4	20.375	1 3/16	250.5	74.0	324.5	809.3	951
1000	5	20.375	1 3/16	313.1	90.0	403.1	1014.1	951

DETERMINE BUOY COSTS

FROM PHASE I OF JIP:

USE $ 3.50/lb BUOY STEEL, + $ 2,900/FT SPHERE DIA

BUOY NET BUOYANCY (KIPS)	SPHERE DIA (FT.)	SPHERE WALL THICK (IN)	NO OF SPHERES	STEEL WEIGHT (KIP)	FABRICATION COST ($3.50/lb Steel)	COATING/ FENDER COST ($2900/Ft Dia)	TOTAL BUOY COST
100	16.25	15/16	1	43.5	$152,250	$47,125	$200,000
200	20.375	1-3/16	1	80.6	$282,100	$59,088	$340,000
300	16.125	15/16	3	120.9	$423,150	$140,288	$565,000
400	17.75	1-1/16	3	161.5	$565,250	$154,425	$720,000
500	19.125	1-1/8	3	202.8	$709,800	$166,388	$875,000
600	20.375	1-3/16	3	241.9	$846,650	$177,263	$1,025,000
800	20.375	1-3/16	4	324.5	$1,135,750	$236,350	$1,375,000
1000	20.375	1-3/16	5	403.1	$1,410,850	$295,438	$1,710,000

CASE 1

DESIGN OF SPHERICAL SUBMERGED BUOYS

BASED O ABS DRAFT DESIGN CRITERIA, RCVD OCT. 25, 1989

Nomenclature:		t = Shell thickness
Pys = yield pressure		Do = Outer diameter
Pes = buckling pressure		D = Mean diameter
Pcs = Combined collapse pressure		Di = Inner diameter
Pa = Allowable working pressure		Ro = Outer radius

SPHERE SPECIFICS:		Qty of Spheres=	1	
Outer diam in ft=	20.750	Do =	249	inch
Shell thickness =	1.700	D =	247.3	inch
Matl yield (ksi)=	80	Di =	245.6	inch
E-Modulus (ksi) =	30000	Ro =	124.5	inch
Poisons ratio =	0.3	Safety Factor =	1.5	(ABS=1.5)

Pys =	2.18473896 ksi	Pcs/Pys =	0.5032543	for Pes/Pys > 1
Pes =	6.77062977 ksi	Pcs/Pys =	0.6582396	for Pes/Pys<1,=1
Pes/Pys =	3.09905664	Pcs,ksi =	1.0994793 or	1.438081764

ALLOWABLE WORKING PR 732.99 psi, or 1649.22 feet

Net Buoyancy Calculation:	
Displ. in seawtr. (kips) =	299.4
Buoy shell weight (kips) =	92.6
Estimated wt appurtenances (kips) =	6.0
NET BUOYANCY (kips) =	200.8

TOTAL STEEL WEIGHT (kips)	98.6
STEEL FAB COST ($ U.S.) =	$278,602
FENDER/COATING COST ($	$55,459
TOTAL BUOY COST	$334,061

CASE 2

DESIGN OF SPHERICAL SUBMERGED BUOYS

BASED O ABS DRAFT DESIGN CRITERIA, RCVD OCT. 25, 1989

Nomenclature:			t = Shell thickness		
Pys = yield pressure			Do = Outer diameter		
Pes = buckling pressure			D = Mean diameter		
Pcs = Combined collapse pressure			Di = Inner diameter		
Pa = Allowable working pressure			Ro = Outer radius		
SPHERE SPECIFICS:			Qty of Spheres=	4	
Outer diam in ft=	19.250		Do =	231	inch
Shell thickness =	1.850		D =	229.15	inch
Matl yield (ksi)=	80		Di =	227.3	inch
E-Modulus (ksi) =	30000		Ro =	115.5	inch
Poisons ratio =	0.3		Safety Factor =	1.5	(ABS=1.5)
Pys =	2.56277056	ksi	Pcs/Pys =	0.5447575	for Pes/Pys > 1
Pes =	9.31642764	ksi	Pcs/Pys =	0.7721367	for Pes/Pys<1,=1
Pes/Pys =	3.63529524		Pcs,ksi =	1.3960885	or 1.978809231
ALLOWABLE WORKING PR			930.73 psi, or	2094.13	feet

Net Buoyancy Calculation:	Displ. in seawtr. (kips) =	956.2
	Buoy shell weight (kips) =	346.2
	Estimated wt appurtenances (kips) =	110.0
	NET BUOYANCY (kips) =	500.0

TOTAL STEEL WEIGHT (kips)	456.2
STEEL FAB COST ($ U.S.) =	$1,357,091
FENDER/COATING COST ($	$190,922
TOTAL BUOY COST	$1,548,012

CASE 3

DESIGN OF SPHERICAL SUBMERGED BUOYS

BASED O ABS DRAFT DESIGN CRITERIA, RCVD OCT. 25, 1989

Nomenclature:			
Pys = yield pressure		t = Shell thickness	
Pes = buckling pressure		Do = Outer diameter	
Pcs = Combined collapse pressure		D = Mean diameter	
Pa = Allowable working pressure		Di = Inner diameter	
		Ro = Outer radius	
SPHERE SPECIFICS:		Qty of Spheres=	3
Outer diam in ft=	19.250	Do =	231 inch
Shell thickness =	2.250	D =	228.75 inch
Matl yield (ksi)=	80	Di =	226.5 inch
E-Modulus (ksi) =	30000	Ro =	115.5 inch
Poisons ratio =	0.3	Safety Factor =	1.5 (ABS=1.5)

Pys =	3.11688312 ksi	Pcs/Pys =	0.5901662	for Pes/Pys > 1
Pes =	13.780691 ksi	Pcs/Pys =	0.9390852	for Pes/Pys<1,=1
Pes/Pys =	4.42130503	Pcs,ksi =	1.8394791 or	2.927018767

ALLOWABLE WORKING PR 1226.32 psi, or 2759.22 feet

Net Buoyancy Calculation:	
Displ. in seawtr. (kips) =	717.1
Buoy shell weight (kips) =	314.7
Estimated wt appurtenances (kips) =	70.0
NET BUOYANCY (kips) =	332.5

TOTAL STEEL WEIGHT (kips)	384.7
STEEL FAB COST ($ U.S.) =	$1,144,365
FENDER/COATING COST ($	$143,191
TOTAL BUOY COST	$1,287,556

SPHERICAL BUOY SIZES, WEIGHTS AND COSTS

REQD NET BUOY. (KIP)	REQD. WATER DEPTH (FT)	NO. OF SPHERE	SPHERE DIA. (FT)	SPHERE WALL THICK. (INCH)	SPHERE WEIGHT (KIP)	APPURT. WEIGHT (KIP)	TOTAL STEEL WEIGHT (KIP)	ACTUAL NET BUOY. (KIP)	RATED WATER DEPTH (FT)	STEEL FAB. COST	COATING/ FENDER COST	TOTAL BUOY COST
60	900	1	14.000	0.8750	21.8	5	26.8	62.2	1069	$93,800	$25,246	$119,046
100	900	1	16.250	0.9375	31.5	7	38.5	100.3	934	$126,088	$34,013	$160,100
200	900	1	20.375	1.1875	62.6	9	71.6	202.8	951	$204,955	$53,472	$258,427
300	900	3	16.125	0.9375	92.9	35	127.9	300.6	947	$420,471	$33,491	$453,963
400	900	3	17.750	1.0625	127.5	34	161.5	400.7	994	$504,688	$40,582	$545,269
600	900	3	20.375	1.1875	187.9	54	241.9	608.5	951	$692,439	$53,472	$745,911
800	900	4	20.375	1.1875	250.5	74	324.5	809.3	951	$928,881	$53,472	$982,354
60	1200	1	14.250	1.0000	25.7	6	31.7	63.2	1292	$110,158	$26,156	$136,313
100	1200	1	16.750	1.1250	40.0	8	48.0	105.4	1204	$154,800	$36,138	$190,938
200	1200	1	20.500	1.3750	73.3	10	83.3	200.4	1201	$237,405	$54,130	$291,535
300	1200	2	18.750	1.3125	117.0	24	141.0	300.8	1287	$426,525	$45,283	$471,808
400	1200	3	18.250	1.2500	158.4	42	200.4	410.7	1243	$616,230	$42,900	$659,130
600	1200	3	20.750	1.4375	235.5	58	293.5	604.7	1266	$829,138	$55,459	$884,596
800	1200	4	20.750	1.4375	313.9	80	393.9	803.6	1266	$1,112,768	$55,459	$1,168,226
60	1600	1	14.500	1.2500	33.2	6	39.2	60.9	1782	$135,240	$27,081	$162,321
100	1600	1	17.000	1.3750	50.3	8	58.3	101.3	1617	$186,560	$37,225	$223,785
200	1600	1	21.000	1.6875	94.2	14	108.2	200.1	1601	$302,960	$56,803	$359,763
300	1600	2	19.250	1.5625	146.6	28	174.6	303.5	1626	$519,435	$47,730	$567,165
400	1600	3	18.625	1.5000	197.6	46	243.6	405.9	1606	$739,935	$44,681	$784,616
600	1600	4	19.250	1.5625	293.1	60	353.1	603.1	1626	$1,050,473	$47,730	$1,098,203
800	1600	5	19.750	1.6250	401.0	88	489.0	801.8	1660	$1,430,325	$50,242	$1,480,567
60	2000	1	14.750	1.3750	37.8	7	44.8	60.8	2003	$153,440	$28,023	$181,463
100	2000	1	17.625	1.6875	66.2	9	75.2	102.3	2083	$235,940	$40,012	$275,952
200	2000	2	17.500	1.6875	130.5	27	157.5	200.7	2104	$496,125	$39,447	$535,572
300	2000	2	19.750	1.8750	184.7	35	219.7	301.6	2057	$642,623	$50,242	$692,865
400	2000	3	19.125	1.8125	251.1	50	301.1	404.1	2052	$899,536	$47,113	$946,649
600	2000	4	19.750	1.8750	369.4	62	431.4	601.2	2057	$1,261,845	$50,242	$1,312,087
800	2000	5	20.250	1.9375	501.5	90	591.5	800.0	2081	$1,700,563	$52,818	$1,753,381
60	2400	1	15.125	1.6250	46.8	7	53.8	60.1	2456	$182,248	$29,466	$211,714
100	2400	1	18.250	1.9375	81.3	12	93.3	104.4	2415	$286,898	$42,900	$329,798
200	2400	2	18.000	1.9375	158.2	32	190.2	204.7	2462	$589,620	$41,733	$631,353
300	2400	2	20.375	2.3750	228.8	45	273.8	304.0	2453	$783,753	$53,472	$837,225
400	2400	3	19.750	2.1250	313.3	56	369.3	405.2	2461	$1,080,203	$50,242	$1,130,445
600	2400	4	20.375	2.1875	457.7	66	523.7	610.1	2453	$1,499,091	$53,472	$1,552,564
800	2400	5	20.875	2.2500	617.7	98	715.7	808.5	2467	$2,012,906	$56,129	$2,069,035
60	2800	1	15.625	1.8750	57.6	8	65.6	66.6	2860	$218,940	$31,447	$250,387
100	2800	1	18.500	2.2500	96.8	13	109.8	100.0	2911	$334,890	$44,084	$378,974
200	2800	2	18.625	2.2500	196.2	37	233.2	206.0	2885	$708,345	$44,681	$753,026
300	2800	3	18.750	2.2500	298.4	55	353.4	304.0	2860	$1,069,035	$45,283	$1,114,318
400	2800	3	20.250	2.3750	367.5	70	437.5	402.0	2772	$1,257,813	$52,818	$1,310,631
600	2800	4	20.875	2.5000	547.9	82	629.9	600.0	2851	$1,771,594	$56,129	$1,827,723
800	2800	5	21.500	2.6000	755.4	112	867.4	805.0	2890	$2,385,350	$59,540	$2,444,890

CASE T1A16N

DESIGN OF SPHERICAL SUBMERGED BUOYS

BASED ON: ABS DRAFT DESIGN CRITERIA, RCVD OCT. 25, 1989

Nomenclature:			t = Shell thickness		
Pys = yield pressure			Do = Outer diameter		
Pes = buckling pressure			D = Mean diameter		
Pcs = Combined collapse pressure			Di = Inner diameter		
Pa = Allowable working pressure			Ro = Outer radius		
SPHERE SPECIFICS:			Qty of Spheres=	1	
Outer diam in ft=	17.500		Do =	210	inch
Shell thickness =	1.125		D =	208.875	inch
Matl yield (ksi)=	80		Di =	207.75	inch
E-Modulus (ksi) =	30000		Ro =	105	inch
Poisons ratio =	0.3		Safety Factor =	1.5	(ABS=1.5)
Pys =	1.71428571	ksi	Pcs/Pys =	0.4355931	for Pes/Pys > 1
Pes =	4.16865903	ksi	Pcs/Pys =	0.5164969	for Pes/Pys<1,=1
Pes/Pys =	2.43171777		Pcs,ksi =	0.7467309	or 0.885423177
ALLOWABLE WORKING PRESSURE			497.82	psi, or	1120.10 feet

Net Buoyancy Calculation:	Displ. in seawtr. (kips) =	179.6
	Buoy shell weight (kips) =	43.7
	Estimated wt appurtenances (kips) =	8.0
	NET BUOYANCY (kips) =	127.9

TOTAL STEEL WEIGHT (kips) =	51.7
STEEL FAB COST ($ U.S.) =	$162,934
FENDER/COATING COST ($US) =	$39,447
TOTAL BUOY COST	$202,381

CASE T1A16N-A

DESIGN OF SPHERICAL SUBMERGED BUOYS

BASED ON: ABS DRAFT DESIGN CRITERIA, RCVD OCT. 25, 1989

Nomenclature:	t = Shell thickness
Pys = yield pressure	Do = Outer diameter
Pes = buckling pressure	D = Mean diameter
Pcs = Combined collapse pressure	Di = Inner diameter
Pa = Allowable working pressure	Ro = Outer radius

SPHERE SPECIFICS:		Qty of Spheres=	2		
Outer diam in ft=	18.375	Do =	220.5	inch	
Shell thickness =	1.000	D =	219.5	inch	
Matl yield (ksi)=	80	Di =	218.5	inch	
E-Modulus (ksi) =	30000	Ro =	110.25	inch	
Poisons ratio =	0.3	Safety Factor =	1.5		(ABS=1.5)

Pys =	1.45124717	ksi	Pcs/Pys =	0.3883609	for Pes/Pys > 1
Pes =	2.98753313	ksi	Pcs/Pys =	0.437246	for Pes/Pys<1,=1
Pes/Pys =	2.05859705		Pcs,ksi =	0.5636076	or 0.634552038

ALLOWABLE WORKING PRESSURE 375.74 psi, or 845.41 feet

Net Buoyancy Calculation:		
Displ. in seawtr. (kips) =		415.8
Buoy shell weight (kips) =		85.8
Estimated wt appurtenances (kips) =		26.5
NET BUOYANCY (kips) =		303.5

TOTAL STEEL WEIGHT (kips) =	112.3
STEEL FAB COST ($ U.S.) =	$343,973
FENDER/COATING COST ($US) =	$86,980
TOTAL BUOY COST	$430,953

CASE T3S16N

DESIGN OF SPHERICAL SUBMERGED BUOYS

BASED ON: ABS DRAFT DESIGN CRITERIA, RCVD OCT. 25, 1989

Nomenclature:	t = Shell thickness
Pys = yield pressure	Do = Outer diameter
Pes = buckling pressure	D = Mean diameter
Pcs = Combined collapse pressure	Di = Inner diameter
Pa = Allowable working pressure	Ro = Outer radius

SPHERE SPECIFICS:		Qty of Spheres=	2	
Outer diam in ft=	21.000	Do =	252	inch
Shell thickness =	1.625	D =	250.375	inch
Matl yield (ksi)=	80	Di =	248.75	inch
E-Modulus (ksi) =	30000	Ro =	126	inch
Poisons ratio =	0.3	Safety Factor =	1.5	(ABS=1.5)

Pys =	2.06349206	ksi	Pcs/Pys =	0.4876815	for Pes/Pys > 1
Pes =	6.03998093	ksi	Pcs/Pys =	0.6217092	for Pes/Pys<1,=1
Pes/Pys =	2.92706768		Pcs,ksi =	1.0063269	or 1.282891949

ALLOWABLE WORKING PRESSURE 670.88 psi, or 1509.49 feet

Net Buoyancy Calculation:		
Displ. in seawtr. (kips) =		620.7
Buoy shell weight (kips) =		181.5
Estimated wt appurtenances (kips) =		39.0
NET BUOYANCY (kips) =		400.2

TOTAL STEEL WEIGHT (kips) =	220.5
STEEL FAB COST ($ U.S.) =	$661,276
FENDER/COATING COST ($US) =	$119,148
TOTAL BUOY COST	$780,424

CASE T3A16N-A

DESIGN OF SPHERICAL SUBMERGED BUOYS

BASED ON: ABS DRAFT DESIGN CRITERIA, RCVD OCT. 25, 1989

Nomenclature:	t = Shell thickness
Pys = yield pressure	Do = Outer diameter
Pes = buckling pressure	D = Mean diameter
Pcs = Combined collapse pressure	Di = Inner diameter
Pa = Allowable working pressure	Ro = Outer radius

SPHERE SPECIFICS:		Qty of Spheres=	1	
Outer diam in ft=	21.000	Do =	252	inch
Shell thickness =	1.750	D =	250.25	inch
Matl yield (ksi)=	80	Di =	248.5	inch
E-Modulus (ksi) =	30000	Ro =	126	inch
Poisons ratio =	0.3	Safety Factor =	1.5	(ABS=1.5)

Pys =	2.22222222	ksi	Pcs/Pys =	0.5078306	for Pes/Pys > 1
Pes =	7.00494829	ksi	Pcs/Pys =	0.669533	for Pes/Pys<1,=1
Pes/Pys =	3.15222673		Pcs,ksi =	1.1285125	or 1.487851018

ALLOWABLE WORKING PRESSURE 752.34 psi, or 1692.77 feet

Net Buoyancy Calculation:	
Displ. in seawtr. (kips) =	310.3
Buoy shell weight (kips) =	97.6
Estimated wt appurtenances (kips) =	12.6
NET BUOYANCY (kips) =	200.1

TOTAL STEEL WEIGHT (kips) =	110.2
STEEL FAB COST ($ U.S.) =	$308,560
FENDER/COATING COST ($US) =	$56,803
TOTAL BUOY COST	$365,363

Appendix E.2 - Draped Steel Calculations

OMEGA MARINE SERVICES INTERNATIONAL

DEEPWATER ARAMID MOORING LINE JIP

EXTERNAL PRESSURE VESSEL SUBMERSIBLE BUOY DESIGN

Design Method

A standard hand calculation method of steelwork design has been computerised using a LOTUS spreadsheet. This method enables rapid optimisation of the variable parameters for any particular buoy design which is specified by the required buoyancy and design submergence depth. A safety factor of 1.5 is used in accordance with ABS requirements to increase the design pressure to the ultimate strength required. The structural members are then checked against the yield stress for bending and tension and against unity stress stability requirements for buckling and 60% of yield for shear stresses.

The following design checks are undertaken:

1) Axial compression of cylindrical buoy.
2) Axial compression of radial struts.
3) Bending and compression of outer longitudinal tubes.
4) Shear on outer longitudinal tubes.
4) Combined compression and membrane stress in shell membranes.
5) Buckling stress of intermediate diaphragm under radial compression.
6) Buckling stress of central tube under axial compression.
7) Buckling stress of outer tube under radial compression.

The following designs have been optimised using this program:

1) 500 kip net buoy for 2000 ft water depth

2) 200 kip net buoy for 1500 ft water depth

3) 332 kip net buoy for 2800 ft water depth

The chosen designs are shown on figures 1 through 3 enclosed. The dimensions of all the structural components are shown on the corresponding data sheets. Stiffeners type E and F refer to the 75% and 50% circumferential stiffeners respectively.

The design for each buoy was selected from a range consisting of 6, 8, 10 and 12 external support tubes. The choice was influenced by the number of joints between the tubes and radial struts and the internal dimensions of the buoy for welder access.

A finite element analysis will be undertaken for the 332 Kip 2800 ft buoy to confirm the above manual method of analysis. This will probably lead to further optimisation of the primary structural member sizes.

Fabrication Considerations

The weld volume was calculated for each design and on the basis of butt welds throughout the weld volume is given below:

1) 500 Kip 2000 ft. buoy - weld volume 110 cu. ins. per kip

2) 200 Kip 1500 ft. buoy - weld volume 95 cu. ins. per kip

3) 332 Kip 2800 ft. buoy - weld volume 110 cu. ins per kip

These are considered typical weld volumes for offshore structures and they are approximately twice the normal range for ship construction. The fabrication cost in Europe would therefore be in the region of $2000 per kip.

DESIGN PARAMETERS (UNITS: KIPS & INCHES)

Water depth 2000 ft.	24000			
Safety factor 1.5 (ABS 1989)	1.5			
Design depth 3000 ft	36000			
Density of sea water	0.000037			
Design pressure	1.333			
Material yield stress	100			
Required buoyancy	500			
Weight/displacement ratio	0.54			
Required volume	29347826			
Nominal buoy diameter	240	240	240	240
Nominal buoy length	598.7298	612.296896	652.3511	703.1058
Centre tube outside diameter	60	60	60	60
Centre tube thickness	1	1	1	1
Outer tube outside diameter	33	35	34	36
Outer tube thickness	0.9375	1	1	1
Overall buoy diameter	273	275	274	276
Number of outer tubes	12	10	8	6
Membrane shell radius	18	24.6666666	37.33333	56
Membrane shell thickness	0.3125	0.375	0.5625	0.8125
Number of outer tube radial supports (excluding end caps)	8	8	10	12
Primary radial support plate thickness (width OTOD)	1.375	1.45833333	1.416666	1.5
Secondary radial support plate thickness	0.875	1	1.25	1.375
Secondary radial support plate width	20.5	26.5	29	35.5
Actual thickness of diaphragm	2.5	2.625	2.25	2
Depth of radial stiffener (assume 1/5 nominal diameter)	48	48	48	48
Web thickness of radial stiffener	1.5	1.625	1.625	1.75
Flange area of radial stiffener	11	13	16	21
Spacing of circumferential stiffeners	24	25	22	19
Depth of circumferential stiffener (assume 22% of length)	14	17	21	28
Web thickness of circumferential stiffener	1.25	1.25	1.125	1
Flange area of circumferential stiffener	9.023638	11.1468473	12.40750	14.28742
Depth of 75% circumferential stiffener (assume 22% of length)	10	12	16	21
Web thickness of 75% circumferential stiffener	1.25	1.25	1.125	1
Flange area of 75% circumferential stiffener	7.106115	8.88264396	9.160226	10.71557
Depth of 50% circumferential stiffener (assume 22% of length)	7	8	10	14
Web thickness of 50% circumferential stiffener	1.25	1.25	1.125	1
Flange area of 50% circumferential stiffener	4.511819	5.92176264	6.513938	7.143713
TOTAL BUOY WEIGHT	572.498	583.216	588.071	631.721

BILLINGTON OSBORNE-MOSS

DESIGN PARAMETERS (UNITS: KIPS & INCHES)

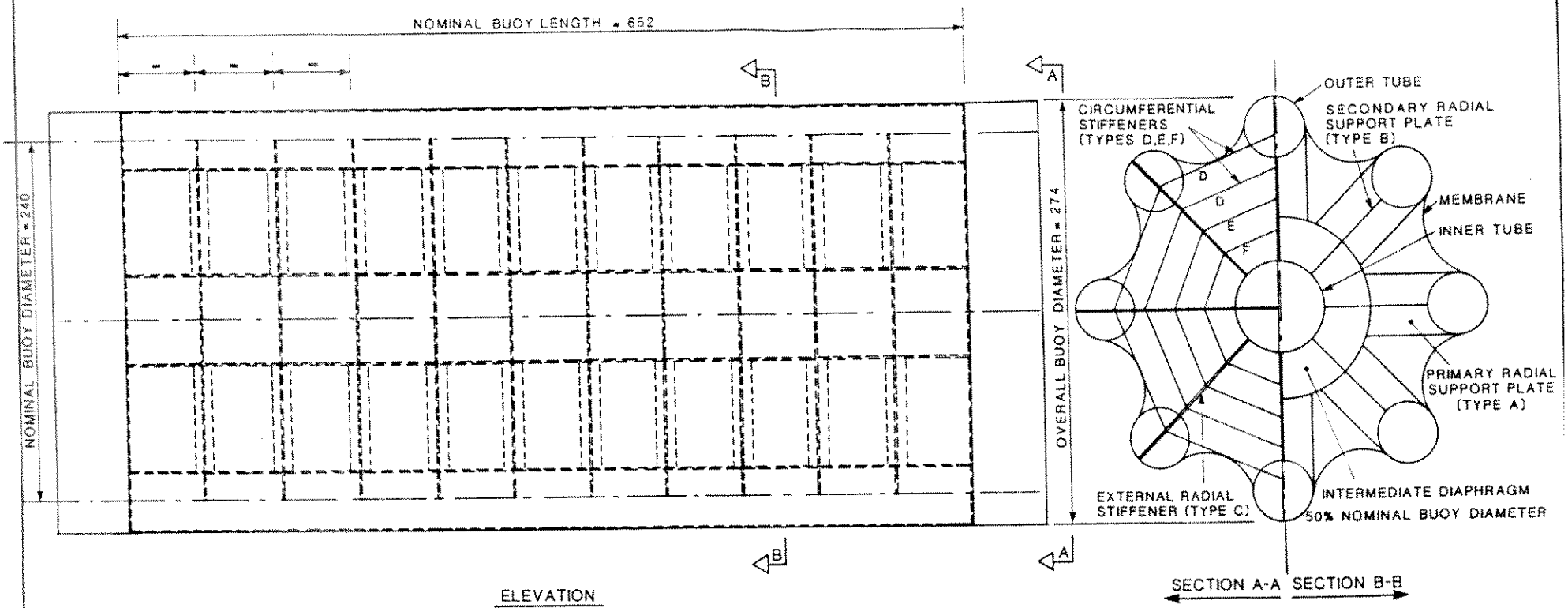
Water depth	1500 ft.	18000			
Safety factor	1.5 (ABS 1989)	1.5			
Design depth	2250 ft.	27000			
Density of sea water		0.000037			
Design pressure		1.000			
Material yield stress		100			
Required buoyancy		200			
Weight/displacement ratio		0.5			
Required volume		10800000			
Nominal buoy diameter		180	180	180	180
Nominal buoy length		399.3956	397.330358	424.5581	441.1998
Centre tube outside diameter		60	60	60	60
Centre tube thickness		1	1	1	1
Outer tube outside diameter		23	27	26	31
Outer tube thickness		0.625	0.6875	0.75	0.8125
Overall buoy diameter		203	207	206	211
Number of outer tubes		12	10	8	6
Membrane shell radius		14.66666	18	27.66666	39.33333
Membrane shell thickness		0.1875	0.25	0.3125	0.4375
Number of outer tube radial supports (excluding end caps)		6	5	6	6
Primary radial support plate thickness (width OTOD)		0.958333	1.125	1.083333	1.291666
Secondary radial support plate thickness		0.625	0.625	0.875	1
Secondary radial support plate width		13.5	19	23.5	27.5
Actual thickness of diaphragm		1.625	1.875	1.75	1.75
Depth of radial stiffener (assume 15% nominal diameter)		27	27	27	27
Web thickness of radial stiffener		1	1.125	1.25	1.5
Flange area of radial stiffener		6	7	9	12
Spacing of circumferential stiffeners		18	21	20	20
Depth of circumferential stiffener (assume 22% of length)		10	12	16	21
Web thickness of circumferential stiffener		0.75	0.875	0.75	0.75
Flange area of circumferential stiffener		3.997189	5.59606569	6.245609	8.459660
Depth of 75% circumferential stiffener (assume 22% of length)		8	9	12	16
Web thickness of 75% circumferential stiffener		0.625	0.875	0.75	0.75
Flange area of 75% circumferential stiffener		2.810524	4.19704927	4.684206	6.245609
Depth of 50% circumferential stiffener (assume 22% of length)		5	6	8	10
Web thickness of 50% circumferential stiffener		0.75	0.875	0.75	0.75
Flange area of 50% circumferential stiffener		1.998594	2.79803284	3.122804	4.441321
TOTAL BUOY WEIGHT		184.201	193.378	198.165	211.685

BILLINGTON OSBORNE-MOSS

DESIGN PARAMETERS (UNITS: KIPS & INCHES)

Water depth	2800 ft	33600			
Safety factor	1.5 (ABS 1989)	1.5			
Design depth	4200 ft	50400			
Density of sea water		0.000037			
Design pressure		1.867			
Material yield stress		100			
Required buoyancy		332			
Weight/displacement ratio		0.64			
Required volume		24900000			
Nominal buoy diameter		210	200	180	180
Nominal buoy length		669.0711	742.014444	918.7001	965.3897
Centre tube outside diameter		60	60	60	60
Centre tube thickness		1	1	1	1
Outer tube outside diameter		28	30	32	36
Outer tube thickness		0.875	0.9375	1	1.125
Overall buoy diameter		238	230	212	216
Number of outer tubes		12	10	8	6
Membrane shell radius		16.33333	20	23.66666	36
Membrane shell thickness		0.375	0.375	0.375	0.625
Number of outer tube radial supports (excluding end caps)		14	14	16	16
Primary radial support plate thickness (width OTOD)		1.166666	1.25	1	1.125
Secondary radial support plate thickness		0.875	1	1.375	1.75
Secondary radial support plate width		22	28	35.5	41.5
Actual thickness of diaphragm		2.375	2.625	2.875	3
Depth of radial stiffener (assume 1/5 nominal diameter)		42	40	36	36
Web thickness of radial stiffener		1.625	1.875	2	2.375
Flange area of radial stiffener		12	12	12	16
Spacing of circumferential stiffeners		19	21	24	25
Depth of circumferential stiffener (assume 22% of length)		12	14	16	21
Web thickness of circumferential stiffener		1.375	1.5	1.625	1.75
Flange area of circumferential stiffener		8.933362	11.0539569	13.99016	19.73920
Depth of 75% circumferential stiffener (assume 22% of length)		9	10	12	16
Web thickness of 75% circumferential stiffener		1.375	1.5	1.625	1.75
Flange area of 75% circumferential stiffener		6.700022	8.70499108	10.49262	14.57308
Depth of 50% circumferential stiffener (assume 22% of length)		6	7	8	10
Web thickness of 50% circumferential stiffener		1.375	1.5	1.625	1.875
Flange area of 50% circumferential stiffener		4.466681	5.52697846	6.995082	10.36308
TOTAL BUOY WEIGHT		573.066	582.017	592.928	644.598

BILLINGTON OSBOURNE MOSES



TOTAL DISPLACEMENT = 1087 KIPS

WEIGHT (EXCL. APPURTENANCES) = 588 KIPS

ALL MATERIAL 100 KSI YIELD STRESS

ALL DIMENSIONS IN INCHES

BILLINGTON OSBORNE-MOSS
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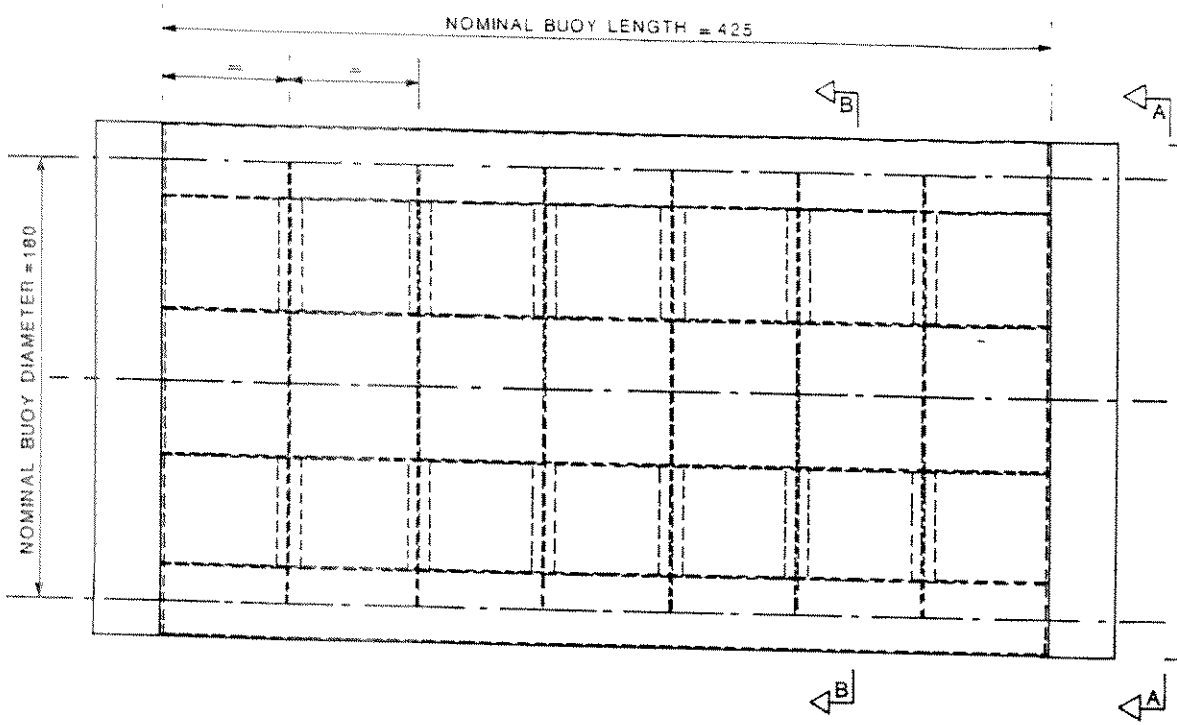
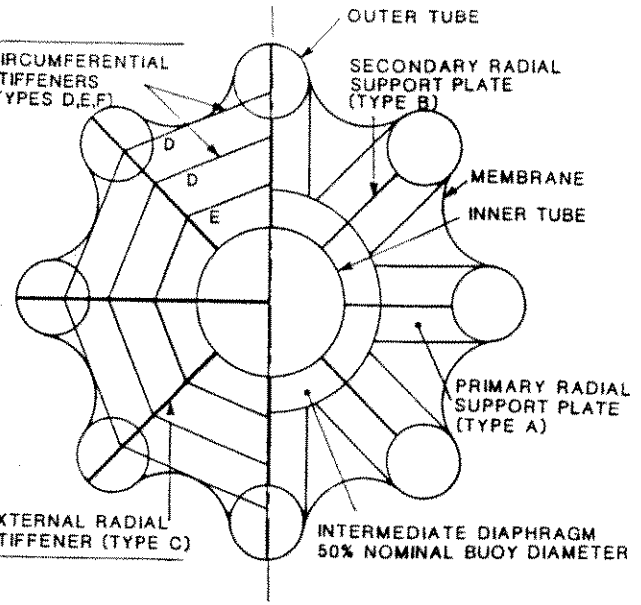
OMEGA MARINE SERVICES INTERNATIONAL
ARAMID MOORING LINE JIP
EPV SUBMERSIBLE BUOY

Document No. 533/005

Figure No. 1



ELEVATION



SECTION A-A SECTION B-B

TOTAL DISPLACEMENT = 400 KIPS

WEIGHT (EXCL. APPURTENANCES) = 198 KIPS

ALL MATERIAL 100 KSI YIELD STRESS

ALL DIMENSIONS IN INCHES

OMEGA MARINE SERVICES INTERNATIONAL
ARAMID MOORING LINE JIP
EPV SUBMERSIBLE BUOY

BILLINGTON OSBORNE-MOSS
Engineering Limited
Technology Transfer Centre, Silwood Park
Buckhurst Road, Ascot, Berkshire SL5 7PW
Tel: 0990 872323 Fax: 0990 872433
Telex: 9312100278

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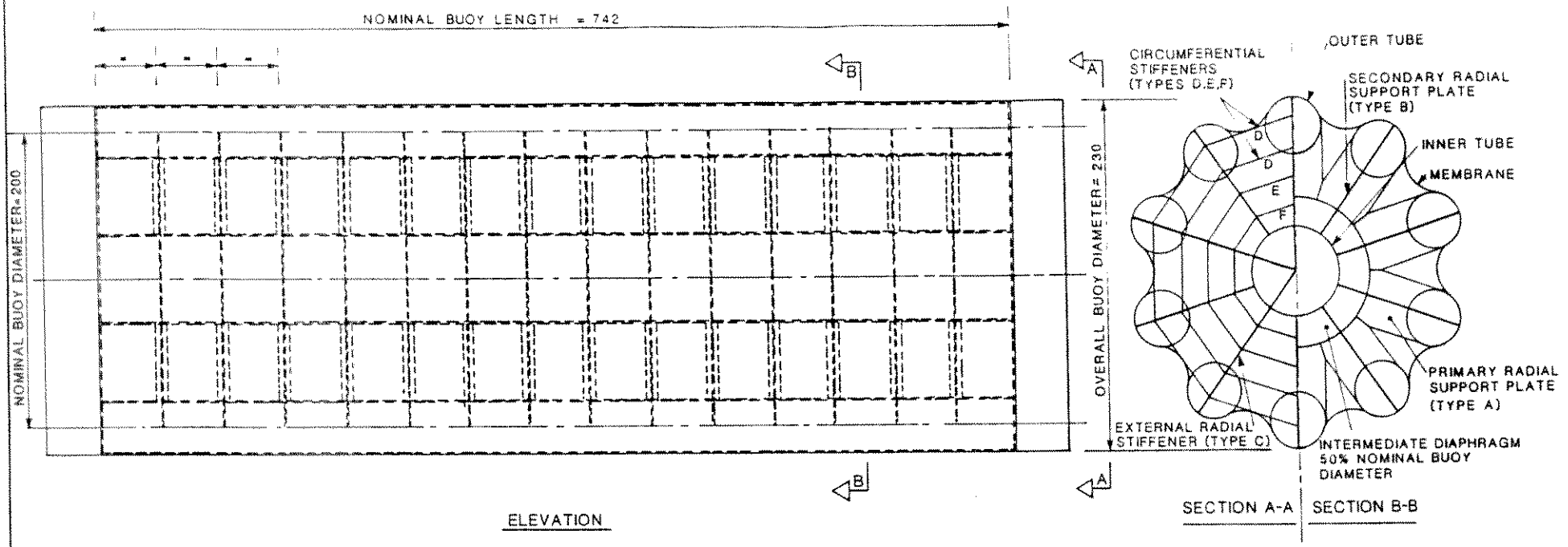
Figure No. 2



TOTAL DISPLACEMENT • 922 KIPS

WEIGHT (EXCL. APPURTENANCES) • 582 KIPS

ALL MATERIAL 100 KSI YIELD STRESS

ALL DIMENSIONS IN INCHES

BILLINGTON OSBORNE-MOSS
Engineering Limited
Technology Transfer Centre, Silwood Park
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OMEGA MARINE SERVICES INTERNATIONAL
ARAMID MOORING LINE JIP
EPV SUBMERSIBLE BUOY

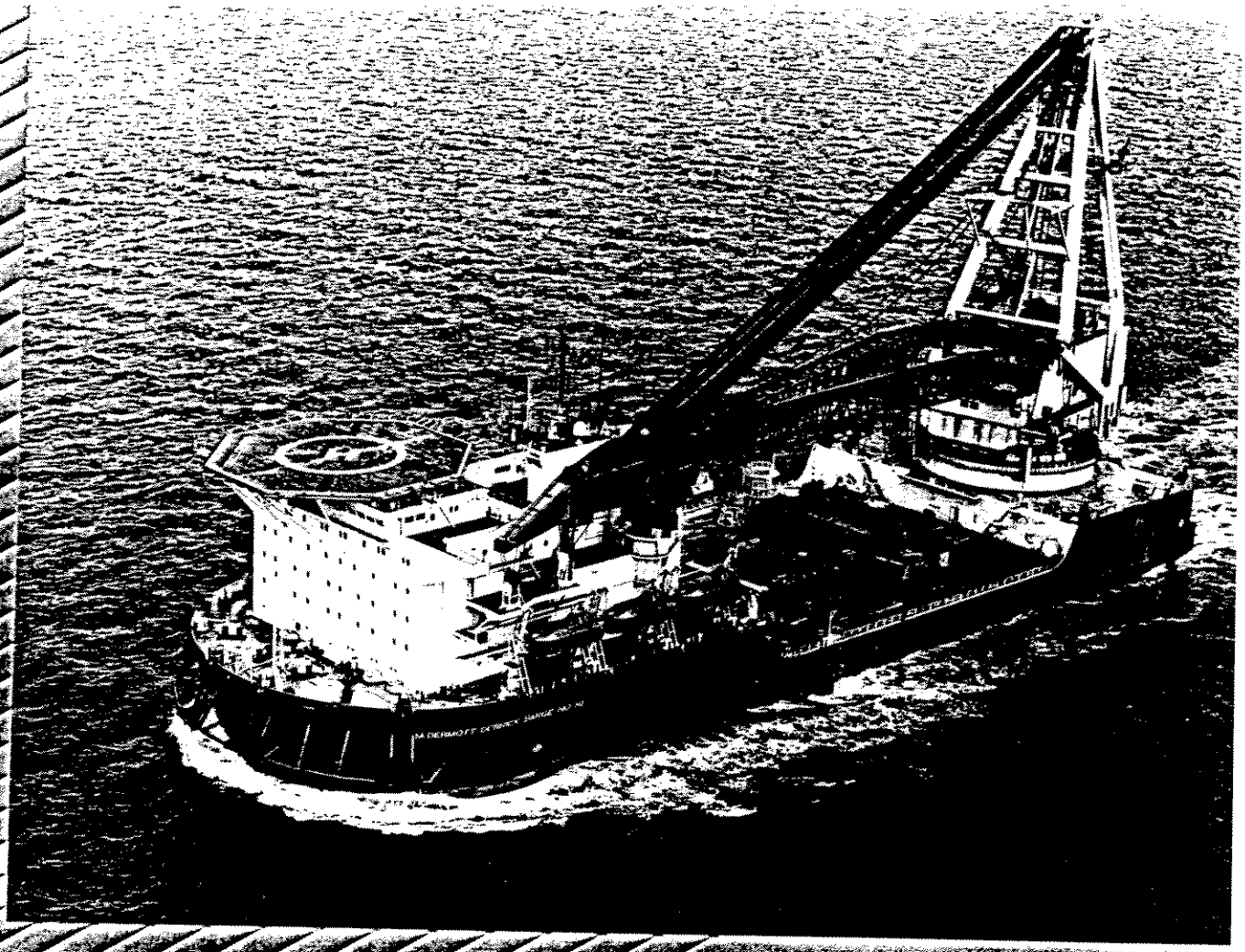
Document No. 533/005

Figure No. 3

APPENDIX F - EQUIPMENT SPECIFICATIONS

F.1	McDermott "*Derrick Barge 50*"
F.2	SONAT "*Discoverer 534*"
F.3	Rockwater "*SEMI 1*" and "*SEMI 2*"
F.4	Safe "*Karina*" and "*Regalia*"
F.5	Swire Pacific "*Installer*"
F.6	Swire Pacific "*Constructor*"
F.7	Allseas "*Lorelay*"
F.8	Menck Deep Water Hammer
F.9	A-Z International Marine Anchoring System

Appendix F.1 - McDermott "Derrick Barge 50"



DERRICK BARGE 50

McDERMOTT

OVERVIEW

Derrick Barge 50 is a self-propelled, dynamically positioned monohull vessel designed for worldwide operation in a variety of marine construction roles. The vessel is equipped with a heavy-lift revolving crane mounted at the stern. The crane is certified to lift 3,527 short (3,200 metric) tons full revolving, 4,189 short (3,800 metric) tons slewing over the stern, and 4,409 short (4,000 metric) tons with tie-back arrangement fitted.

The vessel is of welded construction built to Lloyd's Register of Shipping standards and is classed LROS + 100 A1 Crane Ship, LROS + LMC, UMS (Transit Mode), LROS + DP (AA), LROS + LA and FFII firefighting. It is registered under the flag of Bermuda. Its principal dimensions are 497 ft (151.5 m) by 150.9 ft (46 m) by 41 ft (12.5 m).

DB 50 has approximately 31,593 ft² (2,935 m²) of available deck space with a loading capacity of 1 ton/ft² (10 metric tons/m²) and a total load capacity of up to 19,836 short (18,000 metric) tons.

This shallow-draft crane ship has a transit speed of 10 knots and a dynamic positioning system, which makes it highly maneuverable. It is extremely economical to mobilize and utilize, and can load and transport modules directly from fabrication sites to installation locations.

ACCOMMODATIONS

Living quarters on *DB 50* are equipped to accommodate 237 people with two people to a stateroom. All quarters are centrally heated and air conditioned.

Lounges, cinema, game rooms, and gymnasium are provided for off duty personnel. One dining room, one cafeteria style galley, and complete laundry and hospital facilities are provided. Ample offices and a conference room are allocated for customers.

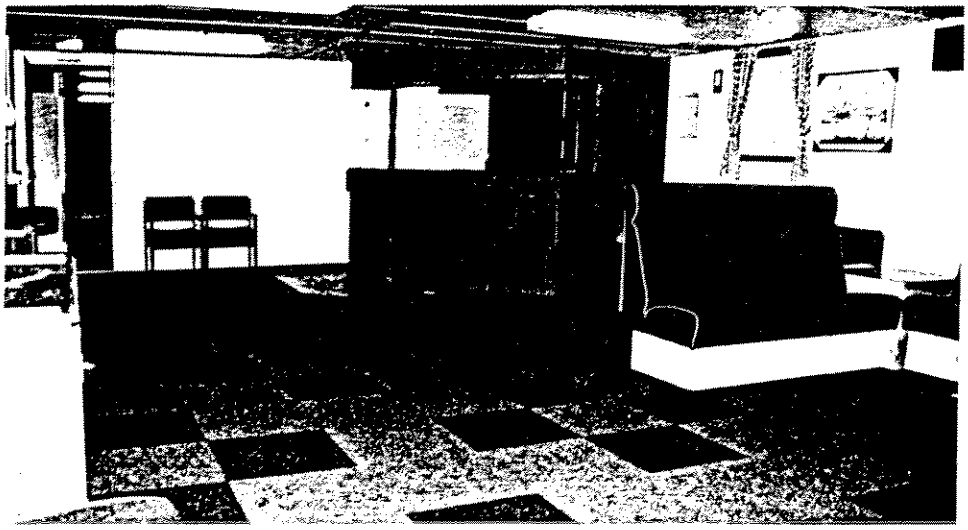
PROPULSION/DYNAMIC POSITIONING

Four 3,000-hp electrically driven azimuthing, controllable-pitch thrusters provide propulsion, mooring assistance, and full dynamic positioning. Dynamic positioning is controlled by a GEC Uni-Control Duplex DP System rated for all modes of construction work, including DP diving operations. A GEC Tams 80 mooring system monitors position and anchor lines and has computer assisted thruster control.

MOORING SYSTEM

The mooring system is composed of eight 26,460-lb (12,000-kg) Delta Flipper anchors, each with 7,710 ft (2,350 m) of 3 in (74 mm) diameter 6 x 36 I.W.R.C.I.P.S. wire rope on eight single-drum Hagglund anchor hoists. Power for the hoists is provided by four 225-kW electro-hydraulic units.

The anchor hoists are controlled remotely from the aft bridge station, as well as from local controls adjacent to each winch. The control system interfaces with the dynamic positioning system in anchor-assist and anchor-only modes. Closed-circuit television provides constant monitoring of hoist drums.



Officers' lounge

POWER GENERATION

Five 2,700-kW, 6,600-V, 3-phase, 60-cycle alternators powered by Allen Model S37 diesel engines provide ample electrical power to the entire vessel. The auto paralleling switchboard is rated for unmanned service during transit. Engines consume medium-heavy or gas-oil fuels.

FIREFIGHTING AND SAFETY EQUIPMENT

The vessel carries a safety certificate and has onboard all lifesaving equipment required to meet regulatory standards. There are four fire monitor stations, two fitted port and starboard in the main crane A-frame and two on platforms atop the crane machinery house. They are 127.3 ft (38.8 m) and 60.7 ft (18.5 m) above the main deck level, respectively. The monitors are remotely operated by joystick controls mounted in the aft bridge station.

WATER/FUEL

Two desalinization plants can produce 300 gal (1,137 L) of water an hour each, or a total of 600 gal (2,274 L) of water an hour in combination.

Fuel and water storage is sufficient to allow continuous offshore operations for up to 40 days without resupply.

WORKSHOP

Machine shop facilities are aft within the crane tub perimteter and forward below deck adjacent to the engine room. Adequate machine tools facilitate repairs while the vessel is operating in remote locations.

NAVIGATION/ COMMUNICATION SYSTEMS

The vessel is equipped with a full complement of navigational instrumentation including an automatic pilot/steering control system interfaced with the dynamic positioning system and associated gyro compasses. Wireless (SSB, FM, VHF, and HF) and satellite communications are provided for telephone, telex, and facsimile services. Instant worldwide communications are available for client representatives.

DIVING EQUIPMENT

A wide range of equipment supports conventional air, surface, mixed gas, and saturation diving as required in support of subsea installations.

HELIPORT

DB 50 is equipped with a heliport deck designed to service Boeing Chinook LR 234 aircraft and is complete with traffic control and arrival and departure lounges. The helideck complies with British Civil Aviation Authority (CAA) regulations.

CONSTRUCTION EQUIPMENT

A. Main Revolving Crane

The ship is outfitted with a Clyde Model 80-262-49-33 revolving crane. Components include a fully active computerized motion suppression and heel compensation system. The crane has a 344.5 ft (105 m) boom with the main block at 262.5 ft (80 m). It is mounted on a 80 ft (12.19 m) diameter tub at the centerline aft of the vessel. Rated capacities of the crane are:

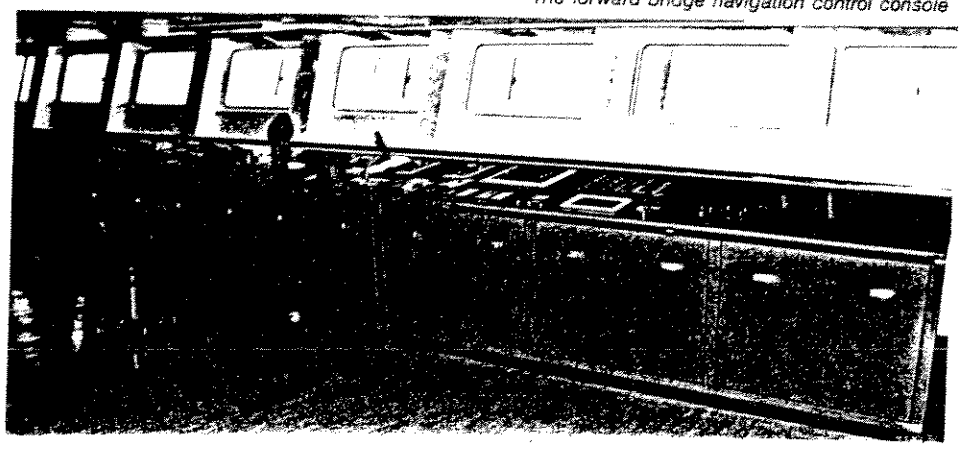
Main Block

Full Revolving: 3,527 short (3,200 metric) tons at 82 ft (25 m) radius.

Slewing (over the stern): 4,189 short (3,800 metric) tons at 100 ft (30 m) radius.

Fixed (over the stern): 4,400 short (4,000 metric) tons at 121 ft (37 m) radius.

The forward bridge navigation control console



Auxilliary Block
Full Revolving: 550 short (500 metric) tons at 313 ft (95 m) radius.

Whip Block
Full Revolving: 100 metric (110 short) tons at 109 m (357 ft) radius.

B. Deck Crane
A heavy-lift crawler crane supports anchoring and main deck operations.

C. Pile Driving
The vessel is outfitted with a Johnston 2,000-hp diesel-fired boiler capable of producing 69,000 lb (31,326 kg) of steam an hour at 250 psi (17,578 kg/m²).

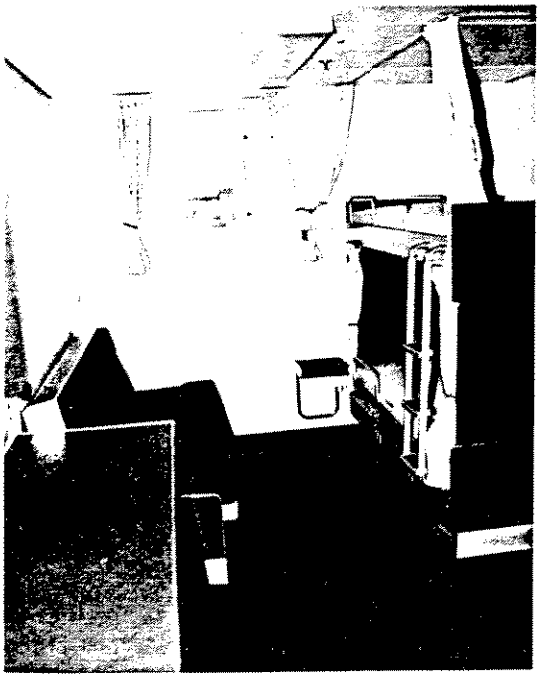
The boiler capacity is sufficient to operate the largest pile driving hammers in use, including the Vulcan 6300.

Underwater hydraulic equipment includes a HBM 3000A power unit with dual 1,300 ft (400 m) hoses mounted on a constant tension winch capable of accommodating a wide range of underwater hammers, including the Menck MHU 2100.

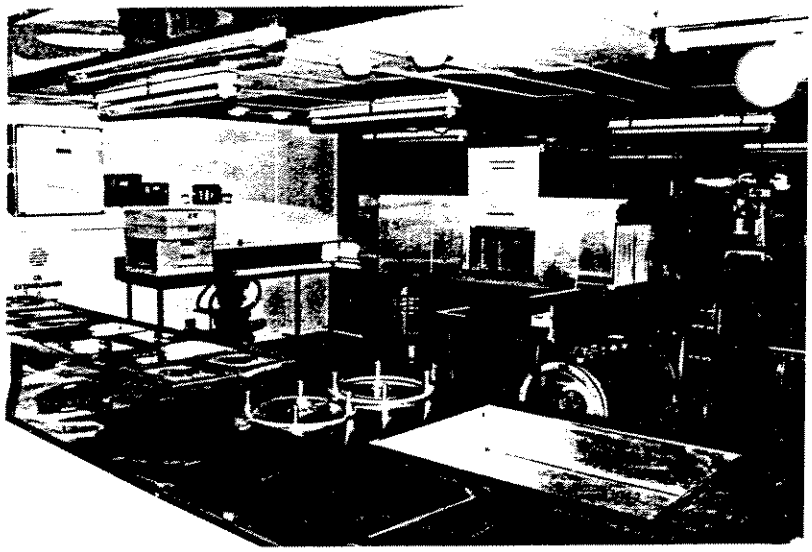
D. Grout System
The vessel is outfitted with an electronically controlled grout injection system capable of mixing and discharging 1,766 to 2,649 ft³ (50 to 75 m³) an hour, depending on density. Supporting components include a 5 x 4 x 14 Mission Magnum mixing and discharging pump, bulk storage for approximately 220 short (200 metric) tons of cement, centralized control panel, and laboratory facilities for continuous quality control.

PIPELAYING FACILITIES

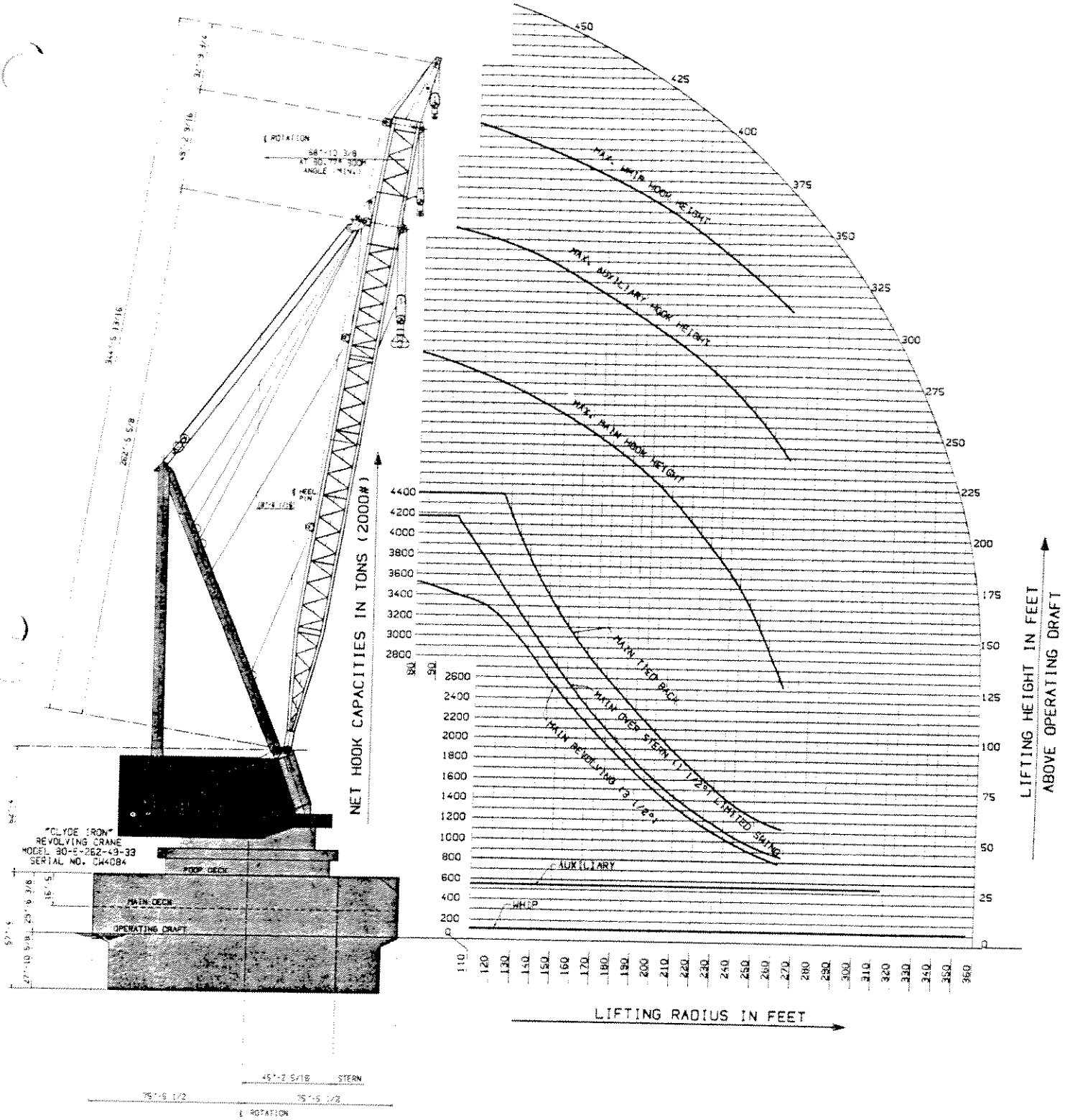
DB 50 is fitted with a pipelaying ramp on the starboard side. While the vessel is not currently equipped for pipelaying, a complete complement of pipelaying equipment can be made available to it as required.



Typical two-man auxiliary worker's cabin



DB 50's galley and serving line (foreground)



McDERMOTT DERRICK BARGE 50

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Offshore Division
P. O. Box 188
Morgan City, Louisiana 70381
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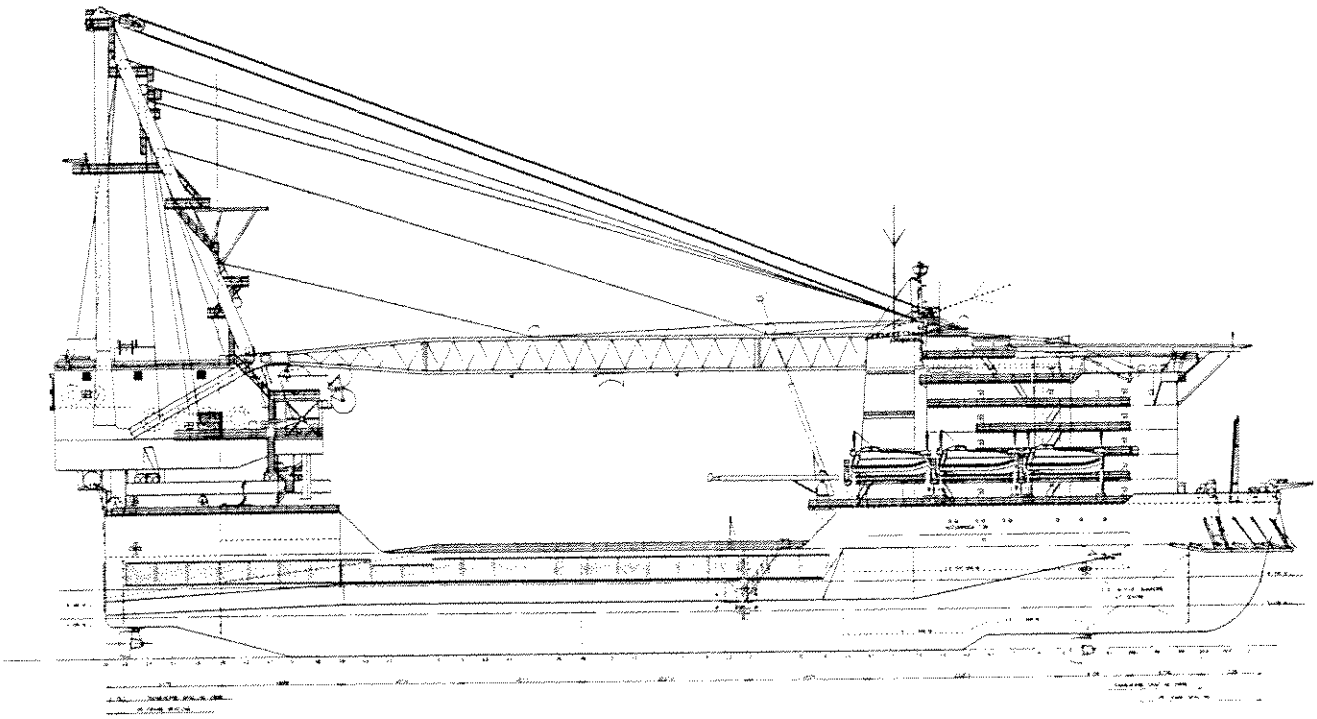
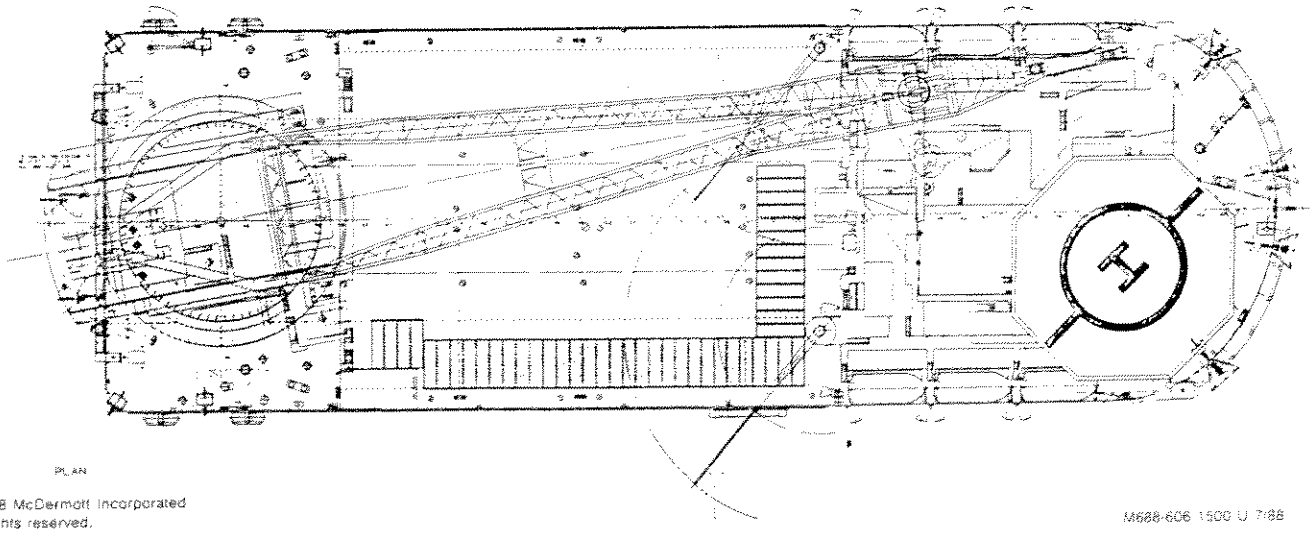
Telex: 586-394



ELEVATION



PLAN

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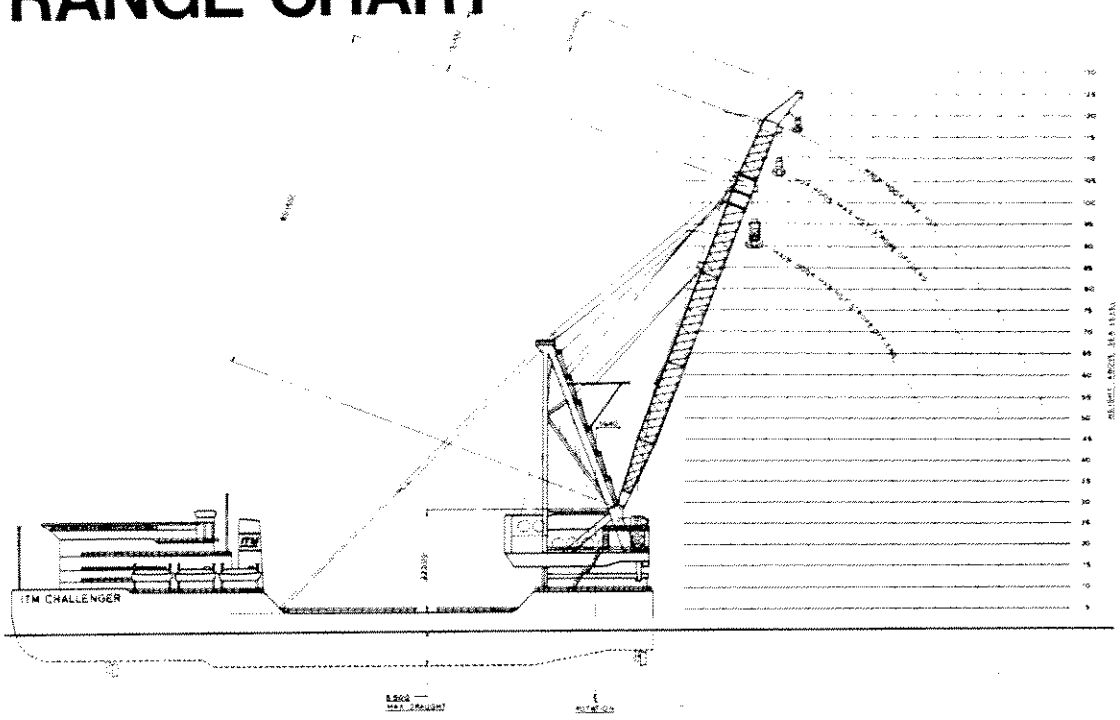
M688-606 1500 U 7/88

ITM

CHALLENGER

- **The World's Largest Mono-Hull Crane Vessel**

CAPABILITY & RANGE CHART



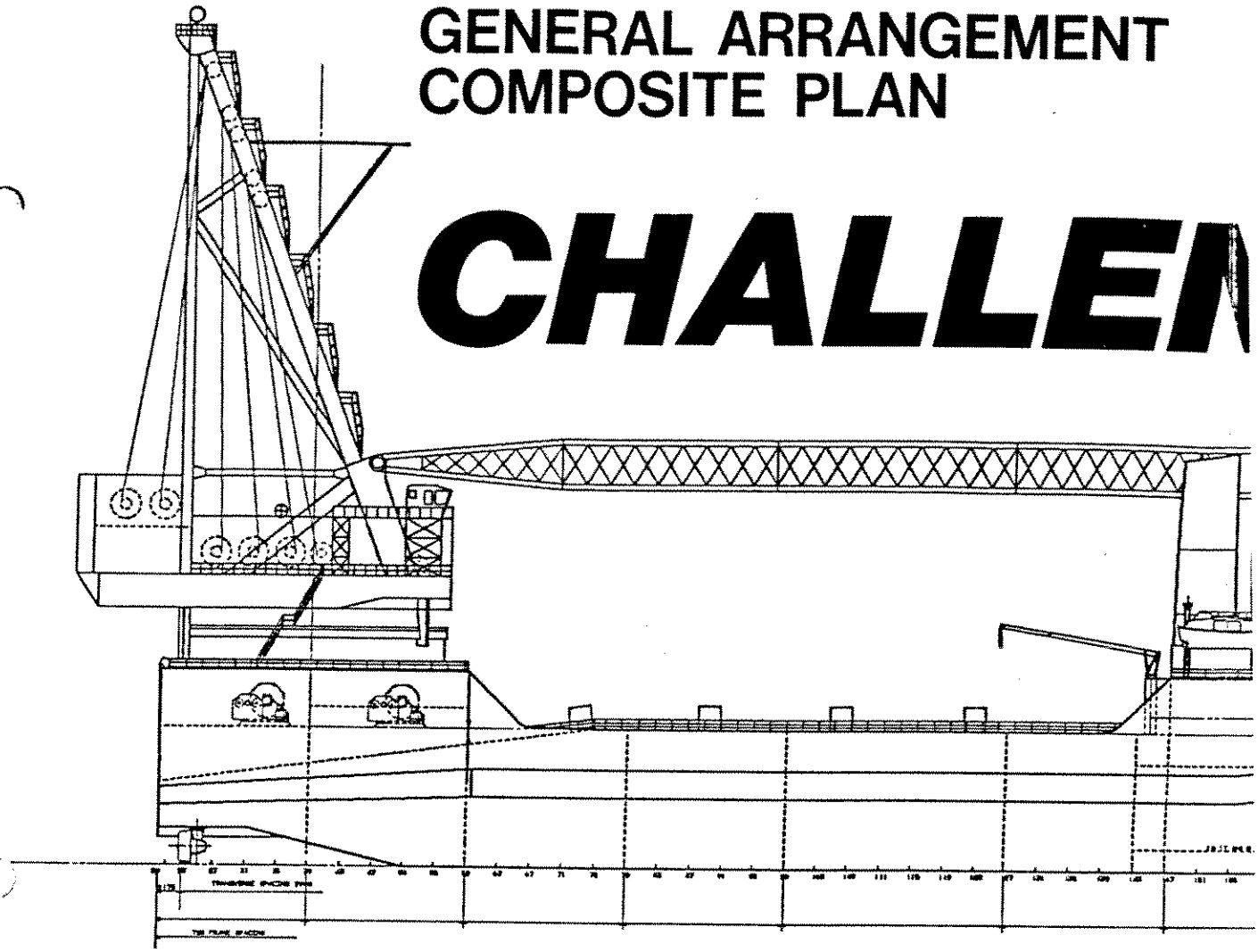
ADVANTAGES OF THE ITM CHALLENGER

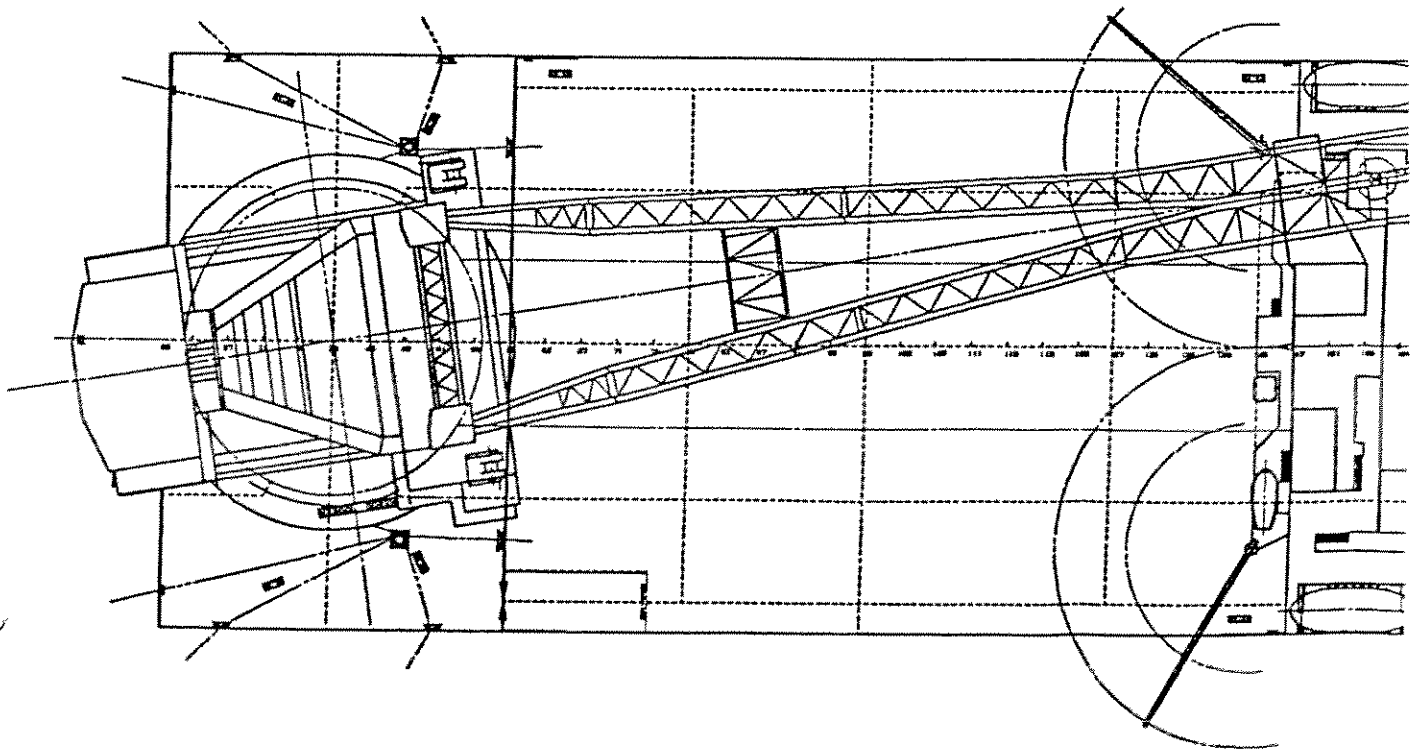
CONCEPT

- The world's largest monohull crane vessel
- Transit speed of up to 13 knots, fastest of any crane vessel
  - Extremely cost effective mobilisation
  - unbeatable rapid deployment capability
- Shallow draught combined with thruster manoeuverability allows loading of modules etc., directly at fabrication yard quaysides
- Large cargo capability – up to 18000 tonnes
- Superior stability:
  - eliminates the need to move large quantities of ballast
  - allows full utilisation of crane slewing under load
  - satisfies latest rules for accidental loss of load from crane hook
- Full dynamic positioning for:
  - ability to operate and remain in close proximity to other structures under adverse conditions
  - reduced mooring stress
  - greater manoeuverability on joystick control
  - shorter time for anchor deployment
  - interference on subsea pipelines from moorings greatly reduced
  - reduced support vessel requirements
  - superior underwater lifting capability

GENERAL ARRANGEMENT
COMPOSITE PLAN

CHALLEN

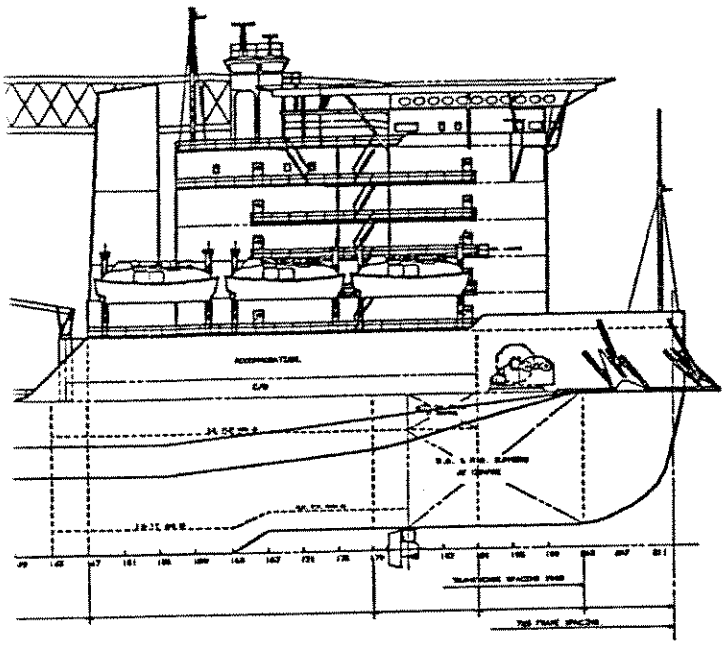




IT

ITM

ENGER

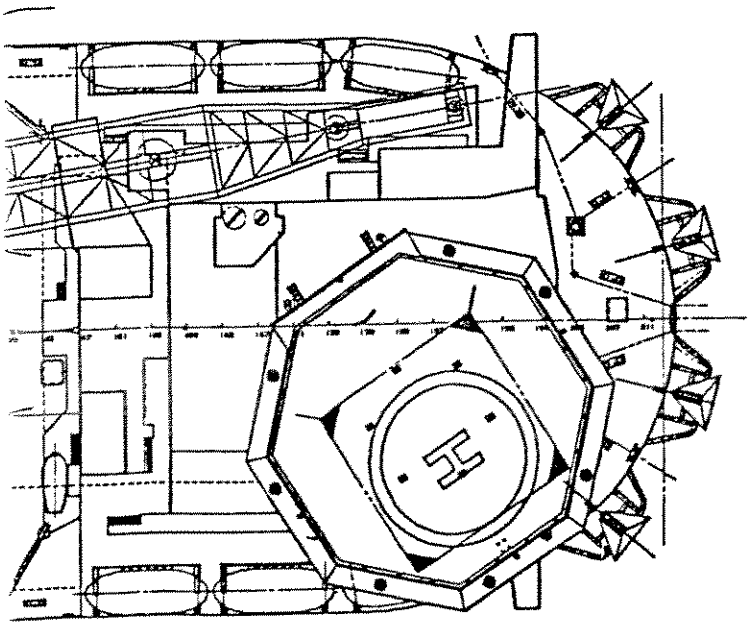


PRINCIPAL CHARACTERISTICS

- Revolver crane – Clyde Model 80 – Max. lift 4000 tonnes
- Self propelled – superior mobility
- Full dynamic positioning
- 8 point anchor spread with dynamic mooring
- Underwater lifting capability
- Large accommodation for contractor personnel
- Patented motion suppression system
- Low operational draught
- 12 man saturation spread & 4 man hyperbaric life raft
- Pipelay for up to 42" dia pipe (coated)
- Large deck area and capacity
- High capacity fire monitors
- Hydraulic hammers for underwater and above water pile driving

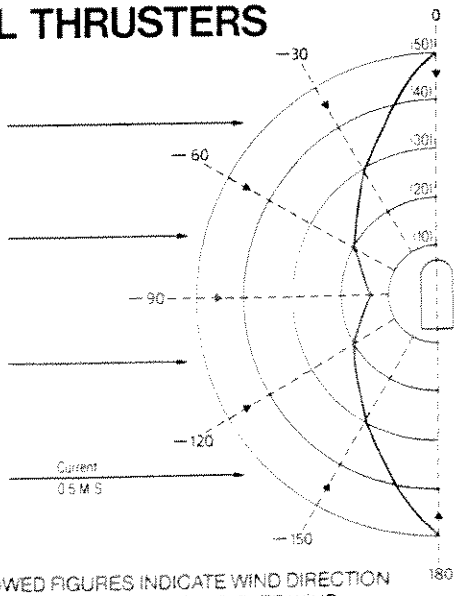
WORK APPLICATIONS

- Jacket/topsides installation
- Pile driving
- Sub-sea installation
- Shallow water operations
- Accommodation and hook up and commissioning support
- Decommissioning
- Diving support
- Marine salvage
- Pipe laying



D.P. 'FOOTPRINT'

ALL THRUSTERS



ARROWED FIGURES INDICATE WIND DIRECTION
FIGURES IN PARENTHESIS INDICATE WIND SPEED IN METRES/SEC

GENERAL INFORMATION

Classification	LROS +OU 100 A1 Cranesnip + LMC, UMS. DP (AA), LA, FIFI 2
Flag	British
Port of registry	Middlesbrough

PRINCIPAL DIMENSIONS

Length overall	151.5m
Beam overall	46m
Depth, keel to main cargo deck	12.5m

DECK CHARACTERISTICS

Cargo area	2935m^2
Cargo capacity	18000 tonnes
Clear cargo height	21m
Deck load	10 tonnes/m^2

ACCOMMODATION

(excluding ship's permanent crew)

94 Cabins for contractor personnel

Bed space (2 men per cabin)	188 persons
or	
Bed space (4 men per cabin)	376 persons Complies with DOE requirements for Cert of F when operating as an offshore installation.
Fully air conditioned	
Recreation facilities:	cinema, games room, gymnasium, television lounge and quiet lounge

HELIDECK

Suitable for Chinook helicopter operations with full CAA approval. One deck down from helideck the transit lounge is located where passengers will be received, allocated rooms or dispatched onshore.

DRAUGHTS

Transit	4.80m
Operational min:	5.00m
max:	8.50m

CRANES

Heavy Lift Crane – 4000 Tonne Clyde

Main Hook:

static at 37 rad.	4000 tonnes
revolving at 25m rad.	3800 tonnes
revolving at 75m rad.	1100 tonnes
full load hoist speed	2.75m/min.
minimum radius	21m
maximum hook height underwater (max. 2200 tonnes)	93.5m – 91m

Auxilliary Hook:

capacity	500 tonnes
max. radius	95m
underwater (combined with whip hook)	– 197m
full load hoist speed	20.0m/min
max. hook height	111.0m

Whip Hook:

capacity	100 tonnes
max. radius	105m
full load hoist speed	115m/min
underwater	– 496m
max. hook height	122m
dynamic heave compensation	6m

Boom:

Length	105m
luffing (rest to min. rad)	12 mins. no load 40 – 28m in 2.5mins. with 2000 tonnes
slewing – light	0.33 rpm
– full load	0.2 rpm

Deck Crane

1 – 150 tonne crawler crane

Cargo Cranes

2 – 6 tonne pedestal mounted stores cranes

MOTION SUPPRESSION SYSTEM

The vessel is fitted with a motion suppression system which consists of eight tanks that can be opened and closed to the sea and/or filled with air by means of control valves. The motion suppression system compensates the vessel for crane and sea induced movements and thereby gives the vessel a greater all round operability world wide than any other mono-hull crane vessel. System is installed under license from UCL & BPP.

MOORING EQUIPMENT

Quantity	8
Winches	Electric/Hydraulic
Size	150 tonnes
Type	Wire rope (72mm dia)
Length each wire	2500m
Anchors (high holding power)	12 tonnes

Hydraulic Mooring through DP compensation with joystick control. Design survival conditions with thruster assist:

head sea	100 year return storm
beam sea	1 year return storm

PROPULSION

4 No. azimuthing, controllable pitch thrusters

Size	2200KW
Bollard pull	37 tonnes/thruster
Transit speed	Up to 13 knots

POWER GENERATION

Type	diesel/alternator
No.	5
Size (each)	9 cyl. – 2700KW
Generated voltage	6600 volts

TANK CAPACITIES (approx)

Fuel: diesel oil	1000m^3
heavy fuel oil	1500m^3
Fresh water	1000m^3
Ballast water	20,000m^3

DIVING SUPPORT

Saturation spread (Modular deck system) – to be mobilised as required	12 man (3 x 4 man chambers)
Hyperbaric life raft	1 x 4 man

PILING EQUIPMENT

Vessel is designed to operate and accommodate the latest and largest hydraulic piling hammers and power packs for both under and above water pile driving. Surface piling power pack accommodated on left hand side of crane rotating frame with umbilicals through sheaves to auxilliary block.

The following hammers will be available to be carried onboard the vessel, depending what operations are to be carried out:–

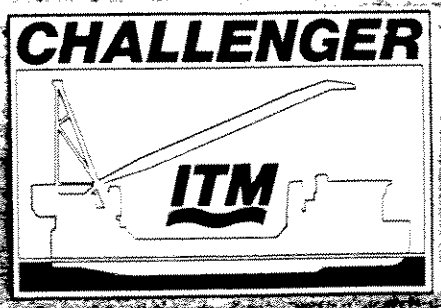
i) 2 – Menck MHU – Flat bottom Anvil suitable for piles	220 16 – 42 in.
ii) 2 – Menck MHU – Flat bottom Anvil suitable for piles	600 36 – 60 in.
iii) 2 – Menck MHU – Flat bottom Anvil suitable for piles	1700 60 – 84 in.

Auxilliary block is of the slimline type to fit inside MHU hammer adapter.

GROUT SYSTEM

Permanent grout mixing equipment and monitoring system with bulk cement storage is intergrated into the vessel, plus onboard laboratory for analysis and compression testing of grout samples.

CHALLENGER



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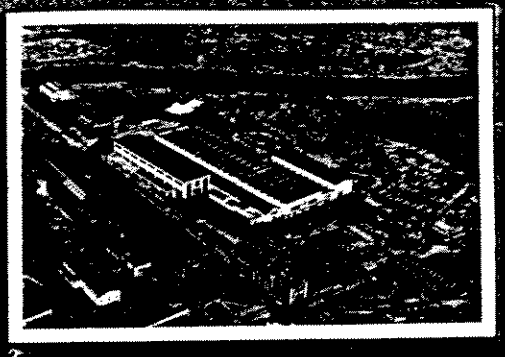

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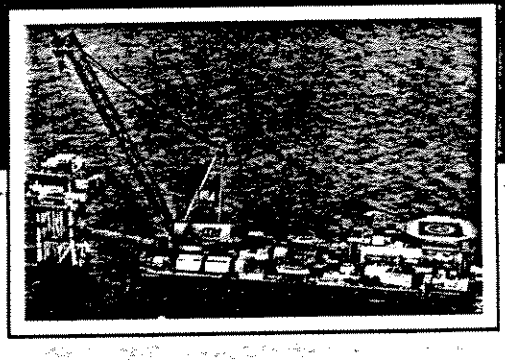

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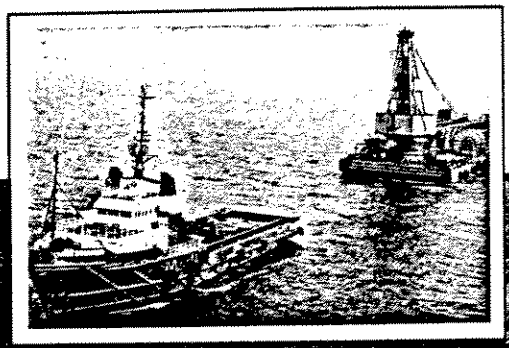

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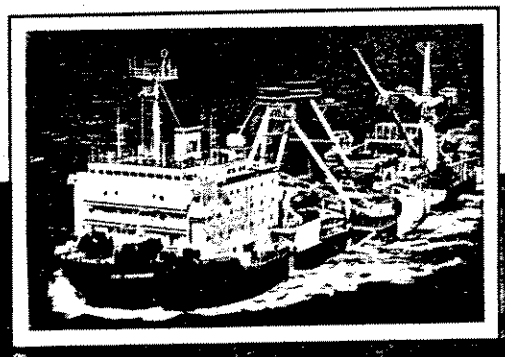


6

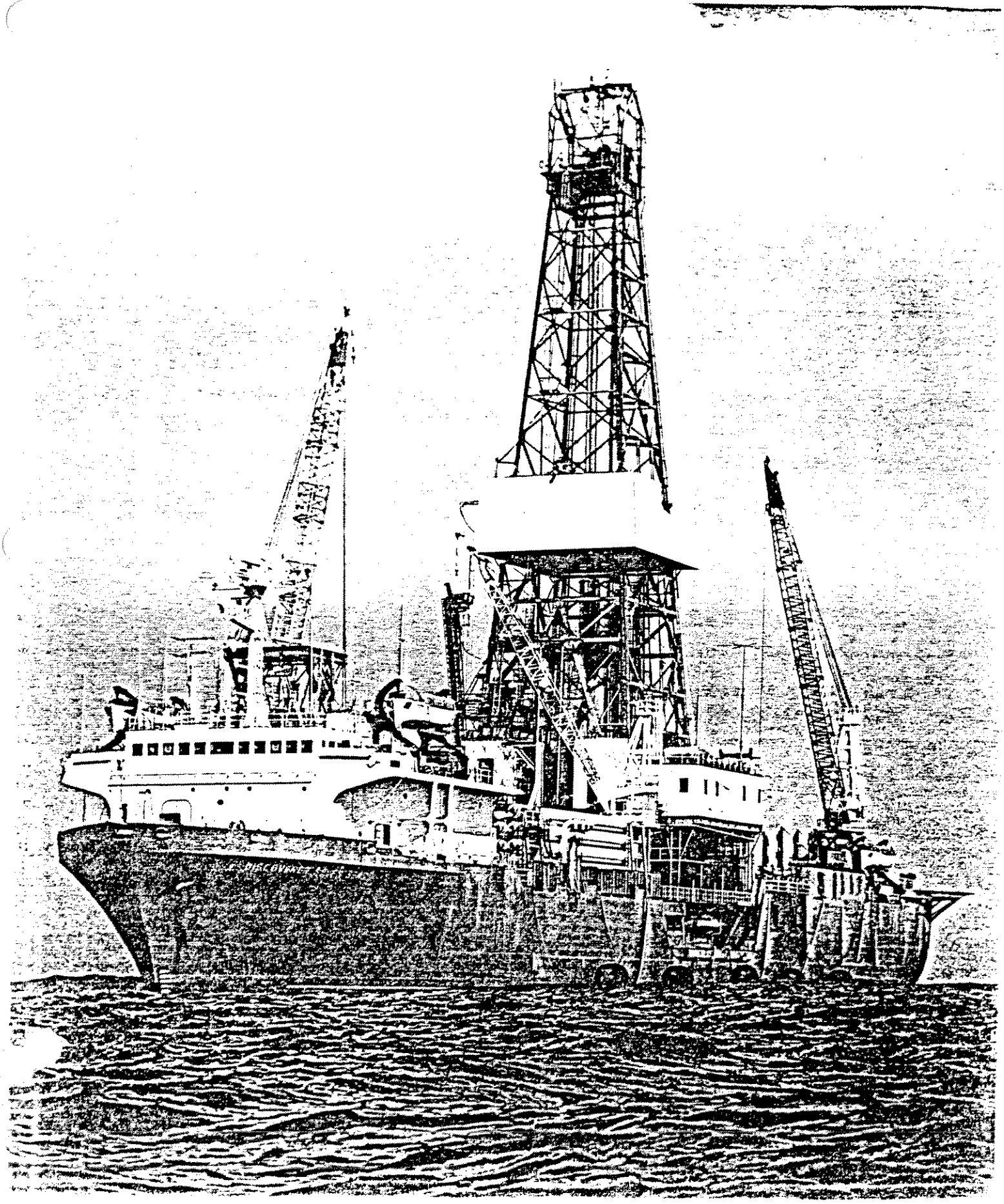
1. Marine Base, Normanby Wharf, Teesside.
2. Heavy Engineering, Thornaby, Teesside.
3. Subsea Installation.
4. Platform Maintenance.
5. Marine Transportation and Towage.
6. Heavy Cable Installation.

ITM CHALLENGER LTD

Registered Office:
20 Southfield Road
Middlesbrough
Cleveland TS1 7 3BZ
Tel: (0642) 672241, 225431, 241541
Telex: 587373 (ITM G)

Appendix F.2 - SONAT "Discoverer 534"

SONAT OFFSHORE DRILLING



Diversified Equipment for Worldwide Drilling

Sonat Offshore Drilling and its worldwide subsidiaries constitute one of the largest and most experienced international drilling companies. We have been a technological leader in the industry, pioneering advances in both jack-up and floating drilling operations.

At the same time, we're proud of the operating and safety records compiled by our rigs. Sonat Offshore's improvements in all aspects of offshore drilling have helped make the industry safer and more efficient.

The company began operations as The Offshore Company in 1954 with the world's first jack-up drilling platform. Today Sonat Offshore Drilling operates 31 marine units, one of the largest fleets in the world. We also have two large desert rigs working in the Middle East, and our domestic land drilling subsidiary, Sonat Southland Drilling, operates 14 land rigs in the southwestern United States.

We have worked in more than 60 countries, and our clients include virtually every major international oil company and many of the national petroleum companies owned by foreign governments. We were one of the first contractors in such major areas as Lake Marocaibo, the Gulf of Suez, the Arabian Gulf and the North Sea.

Our wholly owned foreign subsidiaries, **Offshore International, S.A.** and **International Drilling Company**, conduct many of our operations in foreign countries and are a substantial portion of our total operations.

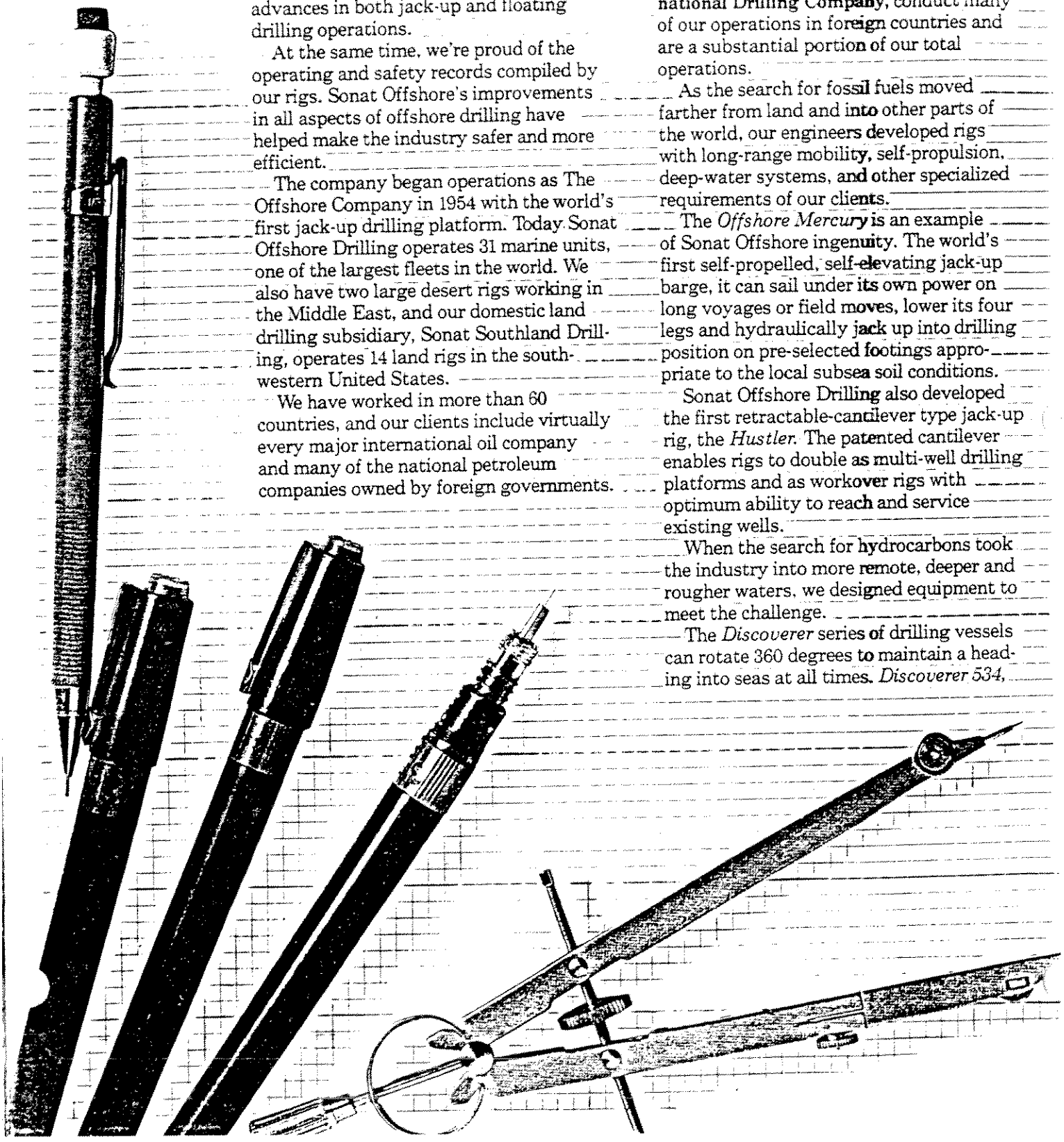
As the search for fossil fuels moved farther from land and into other parts of the world, our engineers developed rigs with long-range mobility, self-propulsion, deep-water systems, and other specialized requirements of our clients.

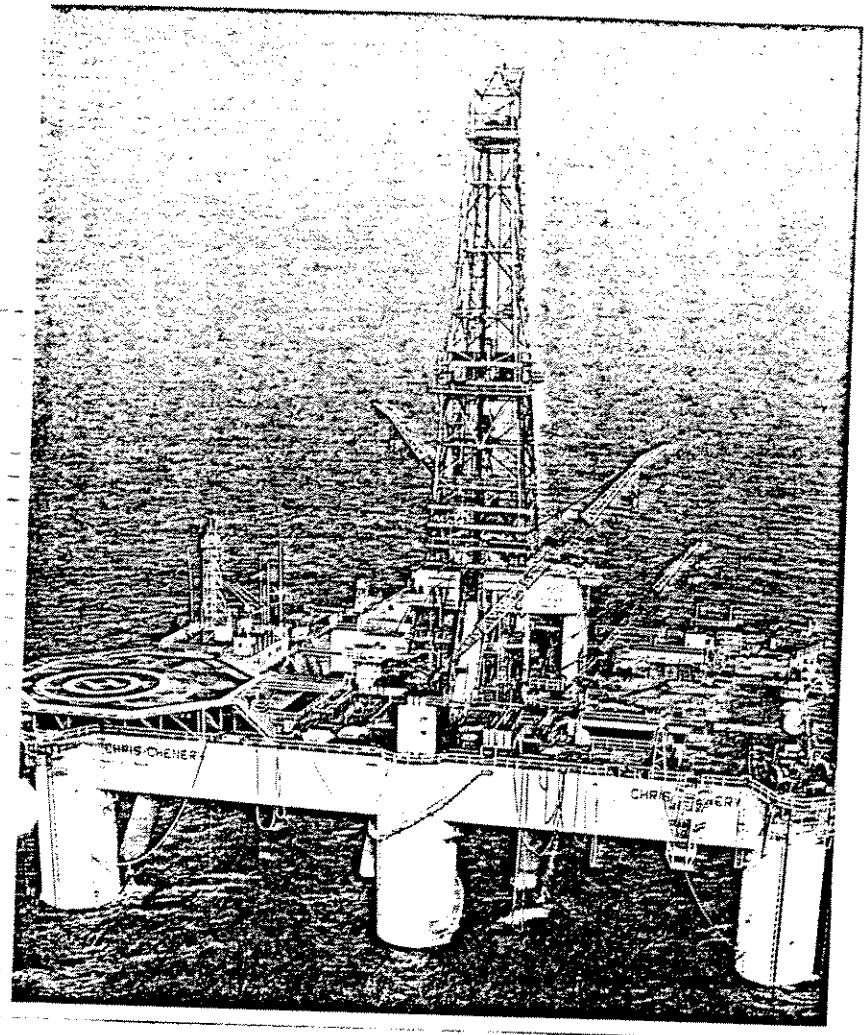
The *Offshore Mercury* is an example of Sonat Offshore ingenuity. The world's first self-propelled, self-elevating jack-up barge, it can sail under its own power on long voyages or field moves, lower its four legs and hydraulically jack up into drilling position on pre-selected footings appropriate to the local subsea soil conditions.

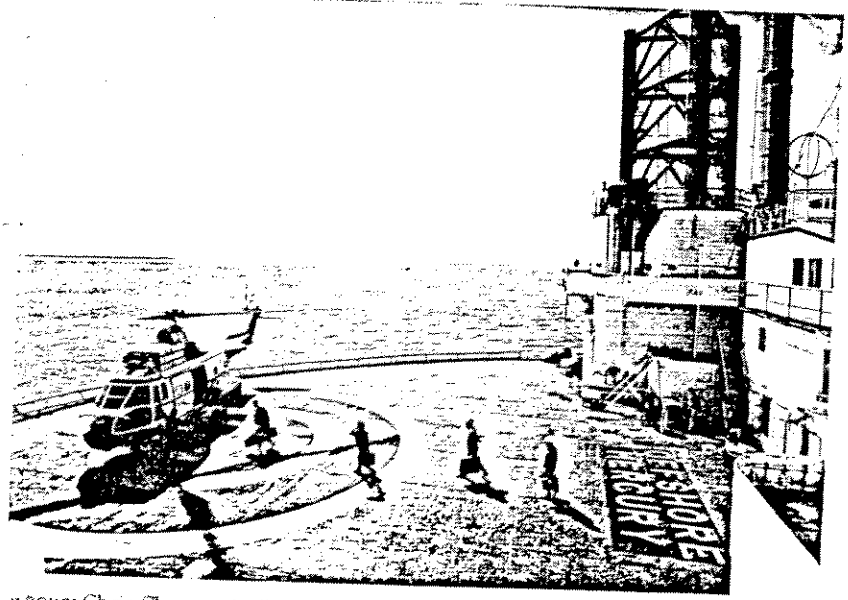
Sonat Offshore Drilling also developed the first retractable-cantilever type jack-up rig, the *Hustler*. The patented cantilever enables rigs to double as multi-well drilling platforms and as workover rigs with optimum ability to reach and service existing wells.

When the search for hydrocarbons took the industry into more remote, deeper and rougher waters, we designed equipment to meet the challenge.

The *Discoverer* series of drilling vessels can rotate 360 degrees to maintain a heading into seas at all times. *Discoverer 534*,







Above: Chris Chenery drilling in the North Sea.
Below: Crew change on The Offshore Mercury in the Gulf of Mexico.

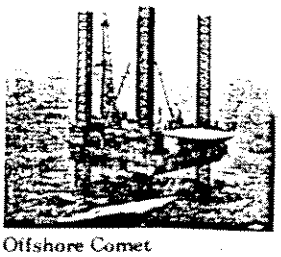
which can use its patented turret-mooring system or its computer-controlled dynamic positioning system for station-keeping, set three successive deep-water drilling records of 2,629 feet, 2,957 feet, and 3,461 feet while drilling in the Andaman Sea near Thailand.

Recently *Discoverer Seven Seas* established a world's record by drilling a well in 4,876 feet of water offshore East Canada. Capable of drilling in water depths of 6,000 feet to 25,000 feet, it is equipped with a computer-controlled, dynamic positioning system. Like the other rigs in the *Discoverer* fleet, it is a totally self-propelled, self-contained drilling unit designed to explore marine locations all over the world.

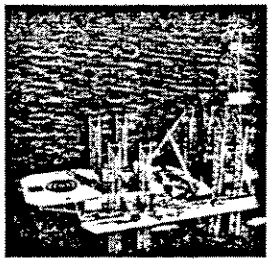
Along with drilling records, our innovative technology continues. We offer four modern jack-up designs suited to any environment and water depth. We can build severe environmental and dynamically positioned semisubmersibles, as well as drillships ranging from medium water depth to ultra deep water dynamically positioned units. We are ready to build the next generation of drilling equipment, offering such designs as an arctic drill barge and a single-leg jack-up.

Sonat Offshore Drilling is a wholly owned subsidiary of Sonat Inc., a diversified energy, services and resources company with assets and annual revenues of $3 billion. Sonat Inc., headquartered in Birmingham, Alabama, is also involved in natural gas transmission, oil and gas production, marine transportation and forest products.

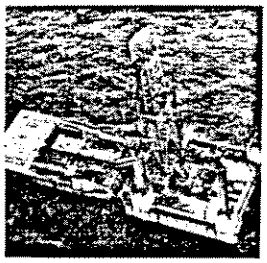
Innovative Equipment & Technology



Offshore Comet
Water Depth 225 ft.
Drilling Depth 20,000 ft.

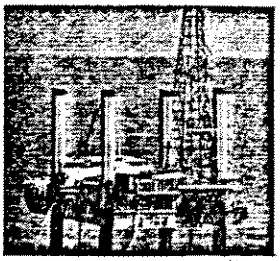


Rig 54
Water Depth 150 ft.
Drilling Depth 14,000 ft.

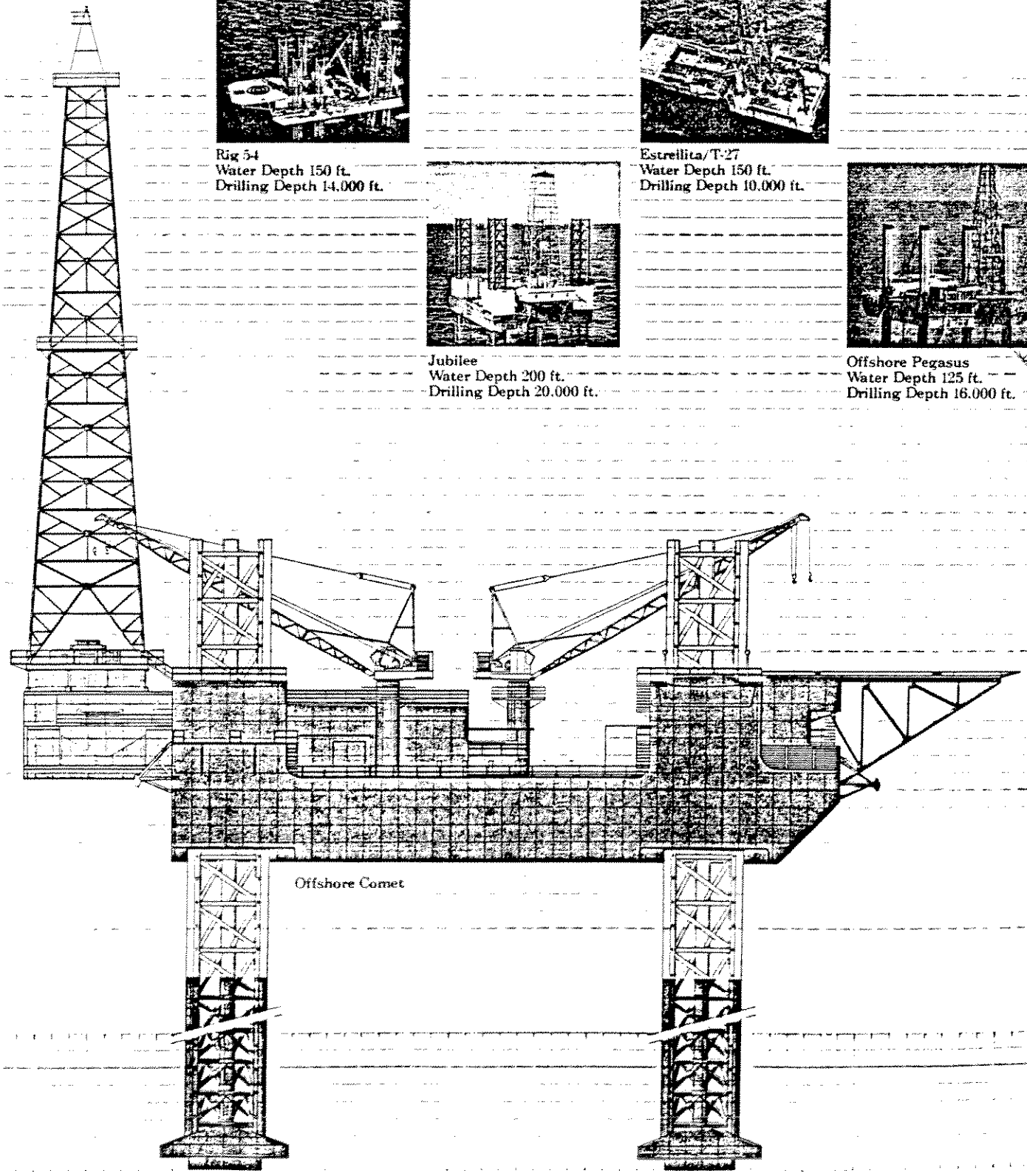


Estrellita/T-27
Water Depth 150 ft.
Drilling Depth 10,000 ft.

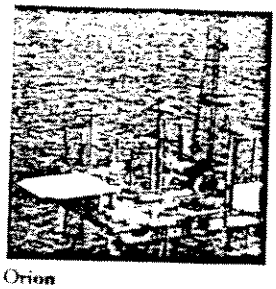
Jubilee
Water Depth 200 ft.
Drilling Depth 20,000 ft.



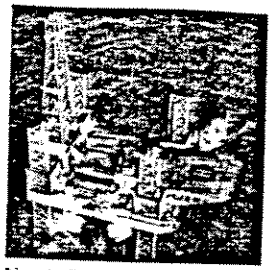
Offshore Pegasus
Water Depth 125 ft.
Drilling Depth 16,000 ft.



Offshore Comet

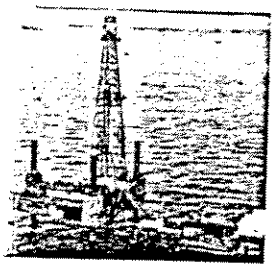


Orion
Water Depth 275 ft.
Drilling Depth 20.000 ft.

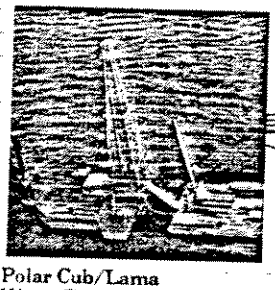


North Star
Water Depth 250 ft.
Drilling Depth 20.000 ft.

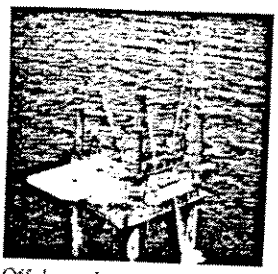
Offshore
Water D
Drilling



Rig 60/OV-1
Water Depth 120 ft.
Drilling Depth 14.000 ft.



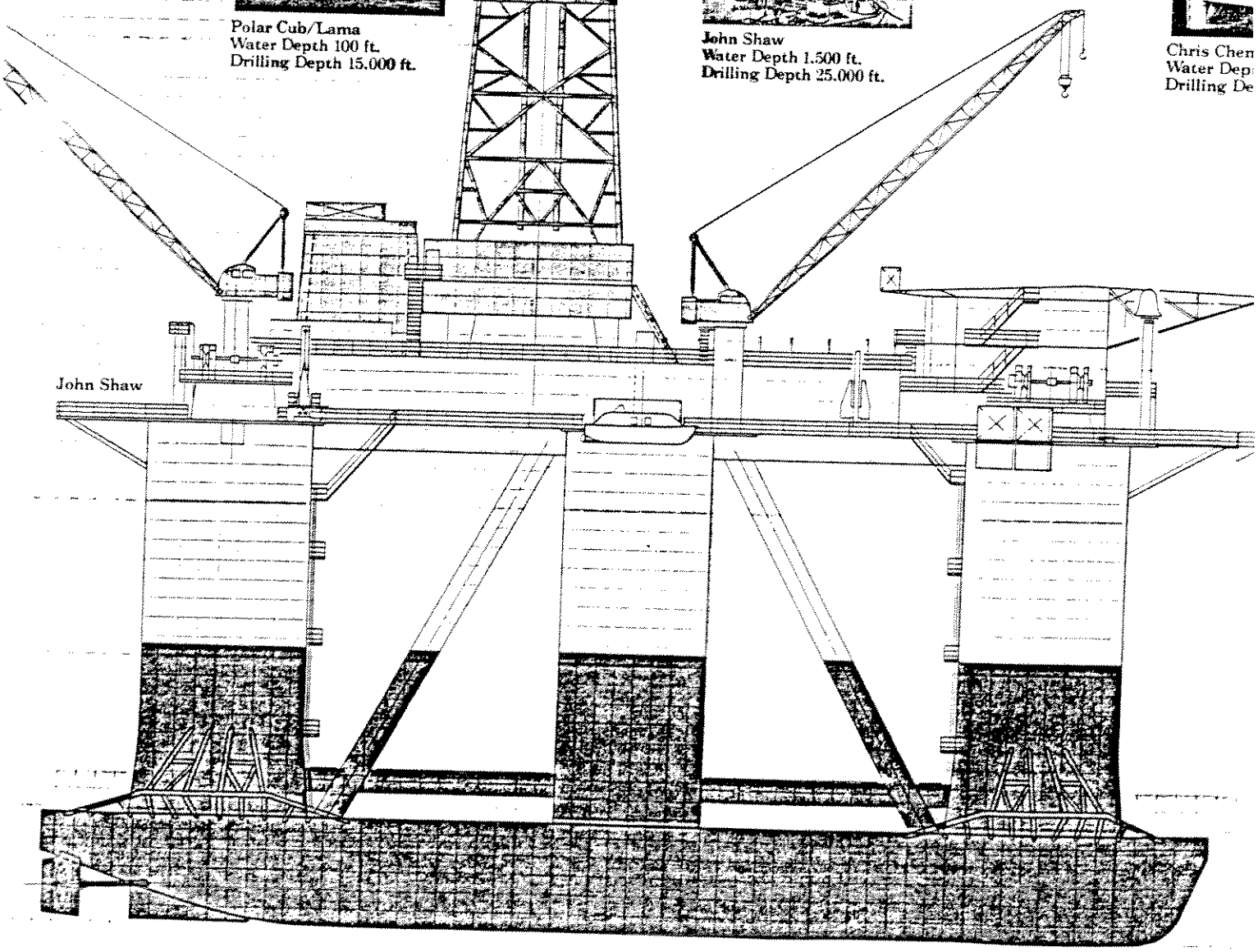
Polar Cub/Lama
Water Depth 100 ft.
Drilling Depth 15.000 ft.



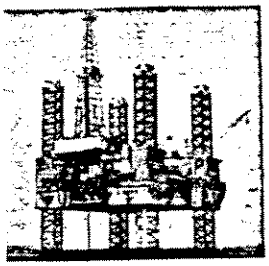
Offshore Antares
Water Depth 115 ft.
Drilling Depth 12.000 ft.

John Shaw
Water Depth 1,500 ft.
Drilling Depth 25.000 ft.

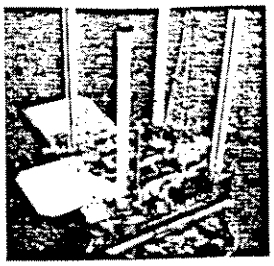
Chris Chen
Water Dep
Drilling De



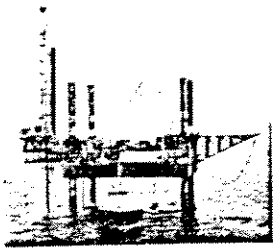
John Shaw



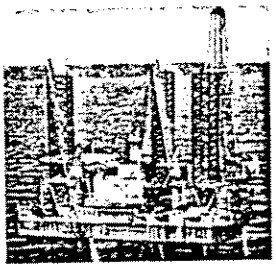
Interocean III
Water Depth 307 ft.
Drilling Depth 20.000 ft.



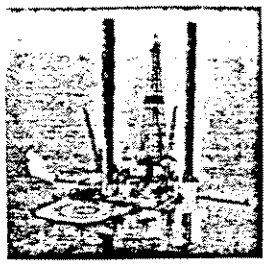
Offshore Jupiter
Water Depth 130 ft.
Drilling Depth 16.000 ft.



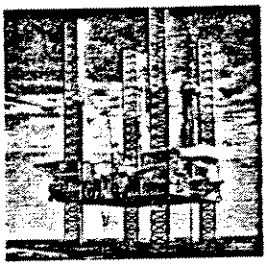
Hustler
Water Depth 90 ft.
Drilling Depth 10.000 ft.



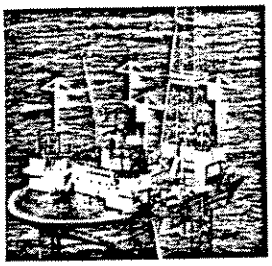
Offshore Aquarius
Water Depth 250 ft.
Drilling Depth 20.000 ft.



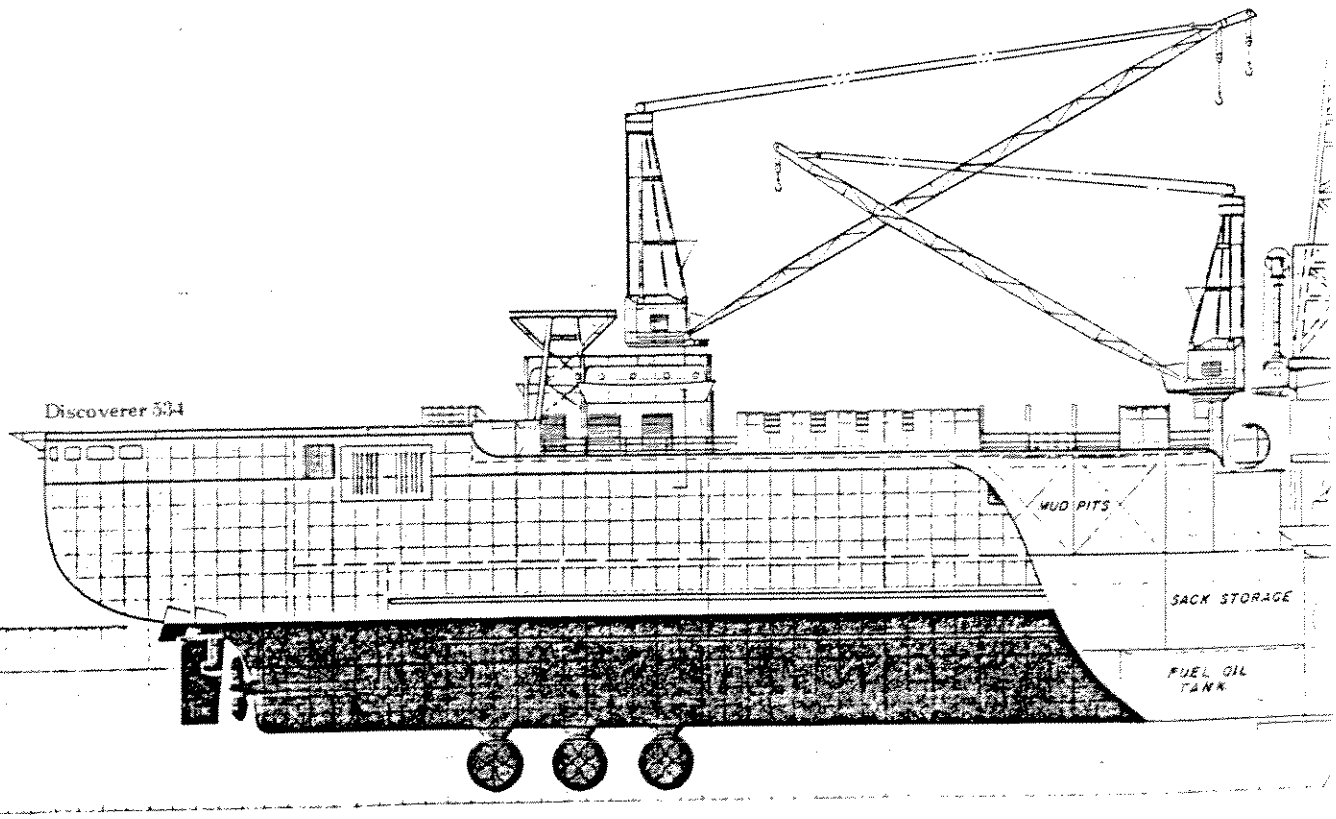
Offshore Taurus
Water Depth 250 ft.
Drilling Depth 20.000 ft.

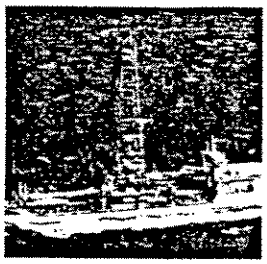


Interocean II
Water Depth 307 ft.
Drilling Depth 20.000

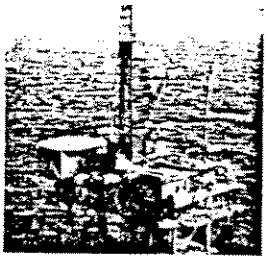


Offshore Mercury
Water Depth 250 ft.
Drilling Depth 20.000 ft.

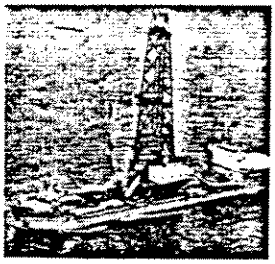




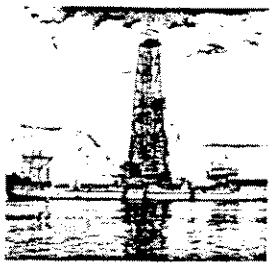
Interocean Discoverer
Water Depth 1,500 ft.
Drilling Depth 25,000 ft.



Rig 25
Water Depth N.A.
Drilling Depth 15,000 ft.



Discoverer III
Water Depth 600 ft.
Drilling Depth 20,000 ft.



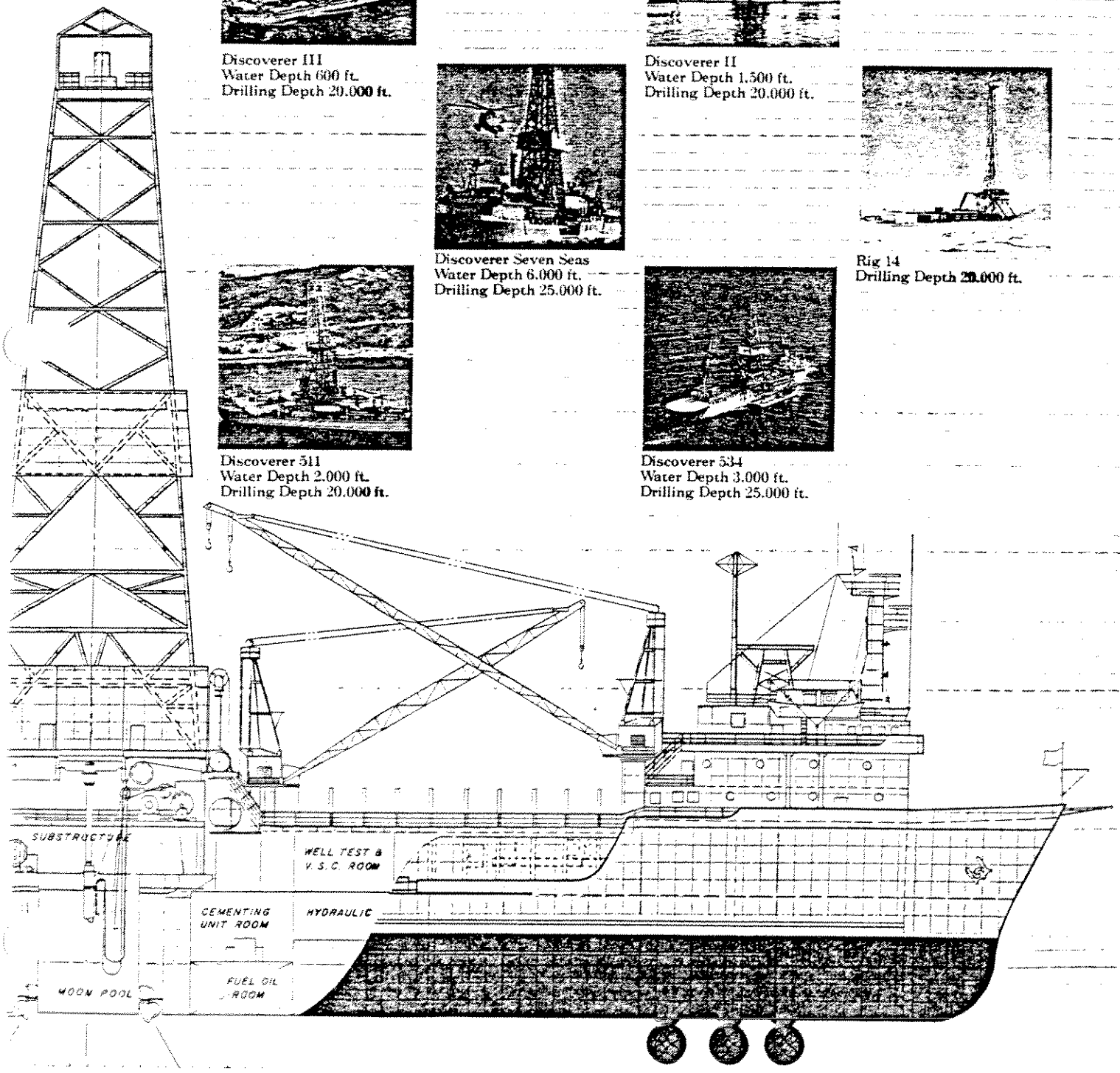
Discoverer II
Water Depth 1,500 ft.
Drilling Depth 20,000 ft.

Discoverer Seven Seas
Water Depth 6,000 ft.
Drilling Depth 25,000 ft.

Rig 14
Drilling Depth 20,000 ft.

Discoverer 511
Water Depth 2,000 ft.
Drilling Depth 20,000 ft.

Discoverer 534
Water Depth 3,000 ft.
Drilling Depth 25,000 ft.

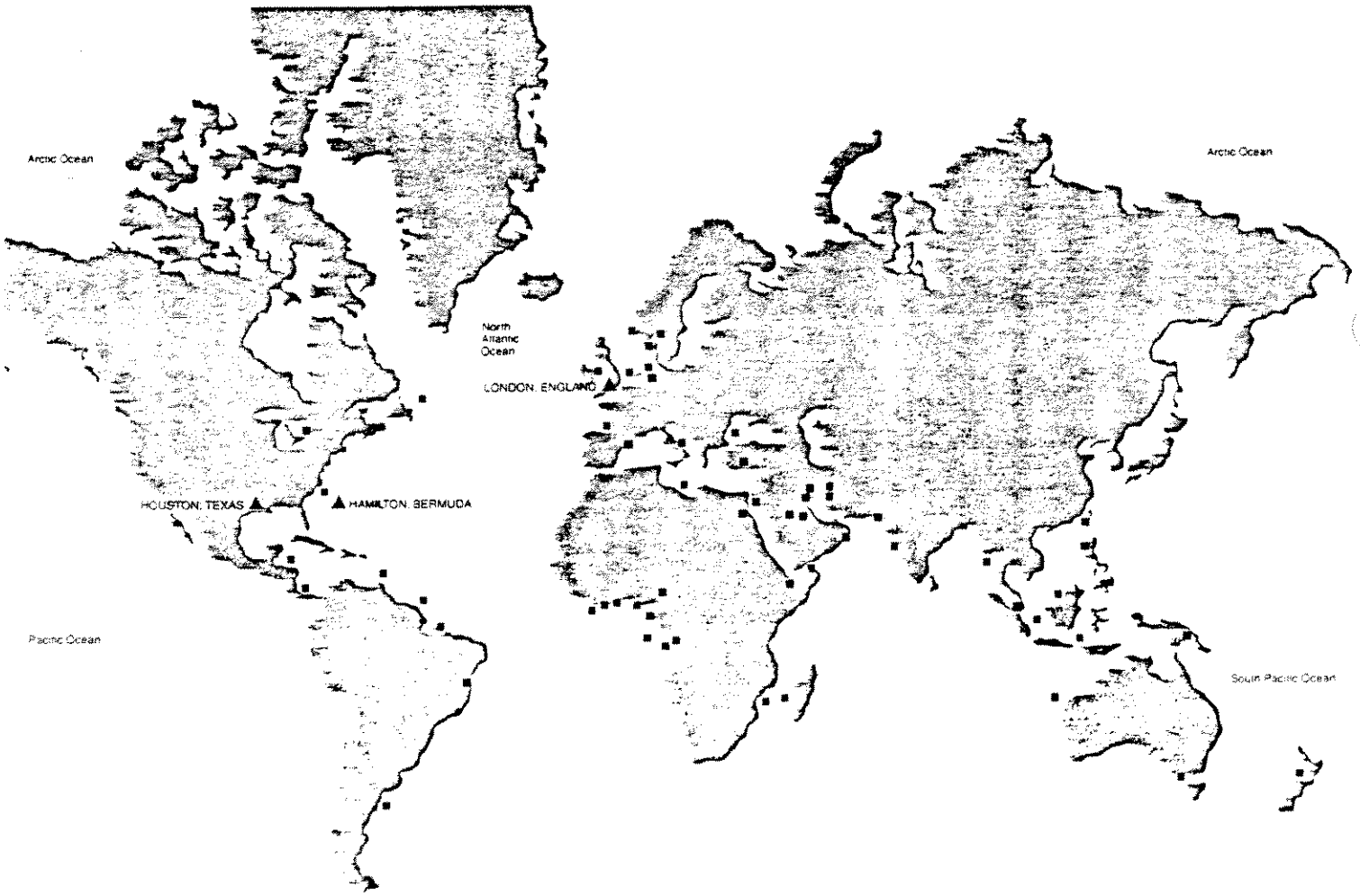


Sonat Offshore Drilling Inc. and Subsidiaries
P.O. Box 2765
Houston, Texas 77252-2765
A.C. 713 871-7500 Telex 775139

International Drilling Company Ltd.
14/15 Stratford Place
London W1N. OET. England
Phone 409-2579 Telex 262-578

Offshore International S.A.
P.O. Box 2765
Houston, Texas 77252-2765
A.C. 713 871-7500 Telex 775139

SONAT OFFSHORE DRILLING



▲ Principal Offices
■ Current and Former Drilling Locations

Appendix F.3 - Rockwater "SEMI 1" and "SEMI 2"

Rockwater Semi 1 and Rockwater Semi 2

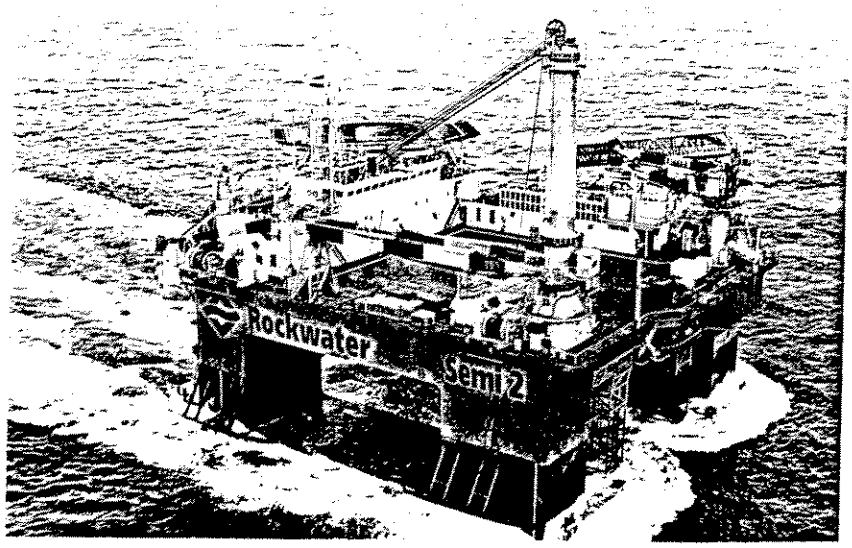
A new generation of semi-submersibles offering maximum flexibility and weather-independence at minimum cost.

The Semis were designed to work under severe conditions in remote areas, and offer unusual stability, spaciousness, flexibility and cost-effectiveness. With excellent cranage and deck space, and twin diving bells, the Semis rule out the need for larger and more costly semi-submersibles.

They are particularly appropriate for:

- Inspection, Maintenance and Repair: underwater or topside
- Construction and Installation work (light to medium) including –

- platform upgrading and hook-up
- riser/spoolpiece installation
- well stimulation and work-over services
- subsea completion
- SPM/CALM installation
- flexible pipeline and submarine cable installation
- logistical support, accommodation etc.



Rockwater

Class and Regulations

The vessels are classed by Lloyds with the following notations:

+OU 100 A1, + LMC, UMS, DP (AA), PC Column Stabilised Multi-Purpose Vessel.

The diving spread is also classed by Lloyds as follows:
+100 AT manned submersible craft diving bell and associated tweendeck decompression chamber complex.

DNV ERN: 99/99/99.

SEMI 2 has in addition to the above NMD class 3 approval.

Principal Dimensions

Length Overall	63.45m
Breadth Overall	49.00m
Keel to Main Deck	22.60m
Main Deck Length	50.00m
Main Deck Width	43.20m
Pontoon Length	54.00m
Pontoon Width	12.48m
Pontoon Depth	6.60m
Draught Operational	12.60m
Draught Transit/Survival	6.20m

(Note: the retractable thrusters extend a further 3.4m below the keel.)

Maximum Deckload SEMI 1	750t
Maximum Deckload SEMI 2	650t
Main deck area	1200m^2
Main deck loading	5t/m^2
Working Moonpool	9.6m x 9.6m
Fuel Oil	880m^3
Fresh Water	290m^3
Watermakers	18t/day

Power Generation

The vessels have a diesel-electric power generation system.

Main engines:
6 x Stork 6 SW 280 diesels,
total output 11,370kW.
Alternators:
6 x 2250kVA, 6kV, 3-phase, 60 Hz.
Main Switchboard:
1 x 6kV split.
Standby Generator:
1 x 440kW, 550kVA, 440V, 60 Hz.
Power Management:
Kongsberg + Asea.

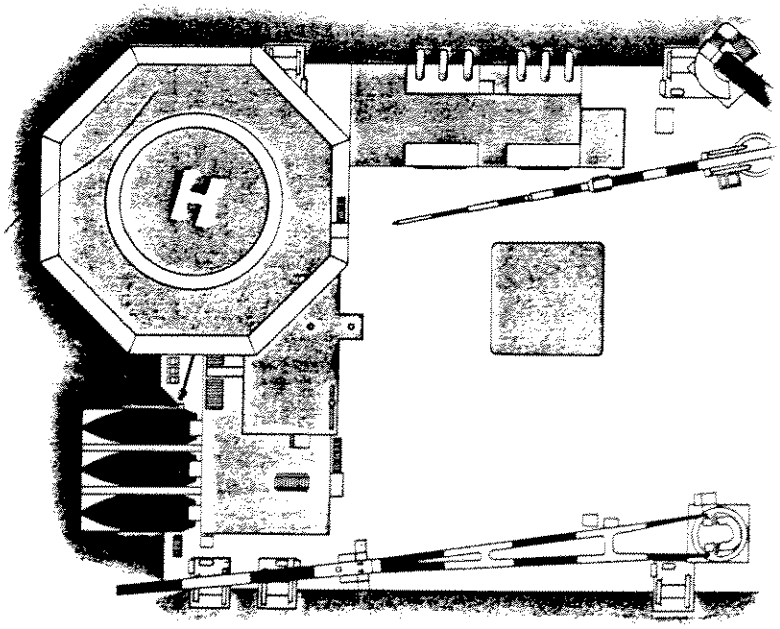
Propulsion

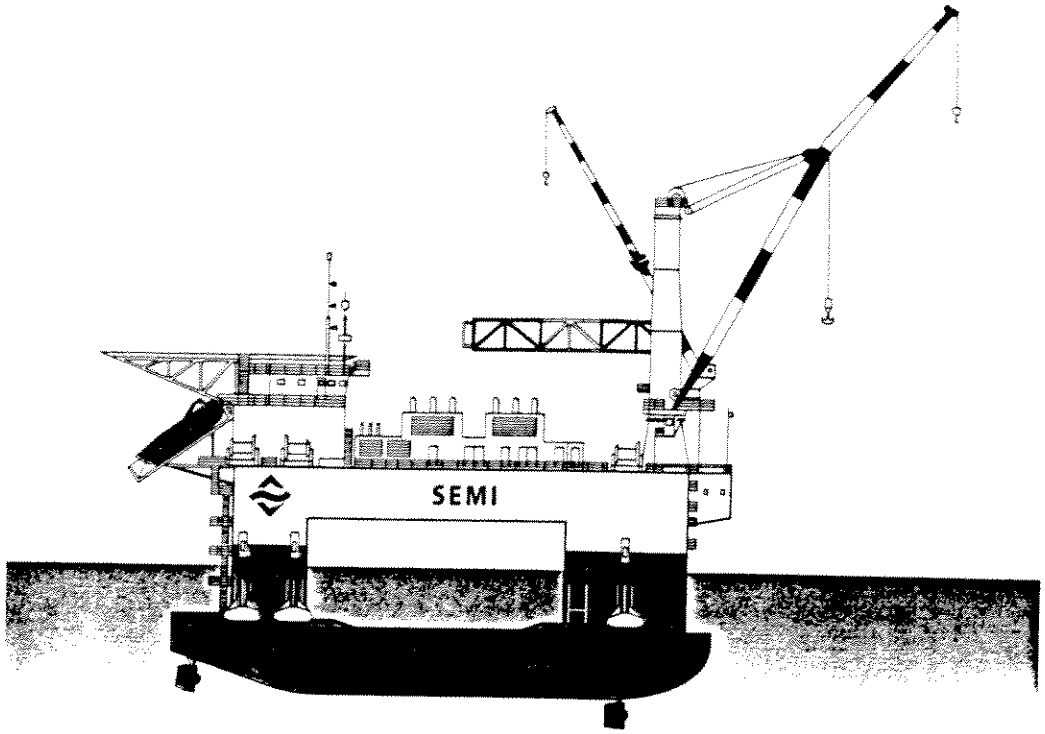
Azimuthing thrusters:
4 x Schottel, c.p., 1,375kW.
Tunnel thrusters:
2 x Schottel, c.p., 1375kW.
Control:
Manual, dp, levers.
Maximum speed:
8 knots approx.
Transit speed:
6 knots approx.

Dynamic Positioning (dp) System

The dp system is a Kongsberg ADP 703 voting system. This is based on the triple modular redundancy (TMR) concept, in which 3 independent and separate microprocessors continuously monitor input data from gyrocompasses, windsensors and position reference systems and use voted information for thrusters commands. The system capabilities also include manual settings, fire-fighting and mooring modes, auto-tracking and joystick control.
The SEMI 2 has an additional ADP100 system as part of her NMD3 certification.

The following position reference systems are fitted:
2 x lightweight tautwire
1 x Artemis microwave
1 x Simrad hydro-acoustic
1 x KONMAP

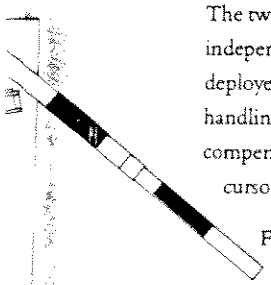




Diving System

The vessels are equipped with an 18-man twin bell saturation diving system rated to 450m water depth located on the lower deck. The system consists of two triple-lock deck decompression chambers giving three six-man living chambers and three entry locks which can be paired in various arrangements.

The two three-man bells can be operated independently of each other and are deployed via vertical guiderails. The bell handling systems include passive heave compensation together with guidewire and cursor systems.



For the emergency evacuation of divers, a self-propelled 18-man hyperbaric rescue vessel is installed.

Both diver and chamber gas reclaim systems are available. Other major facilities include gas transfer pumps, photographic laboratory, data collection room and dedicated laundry.

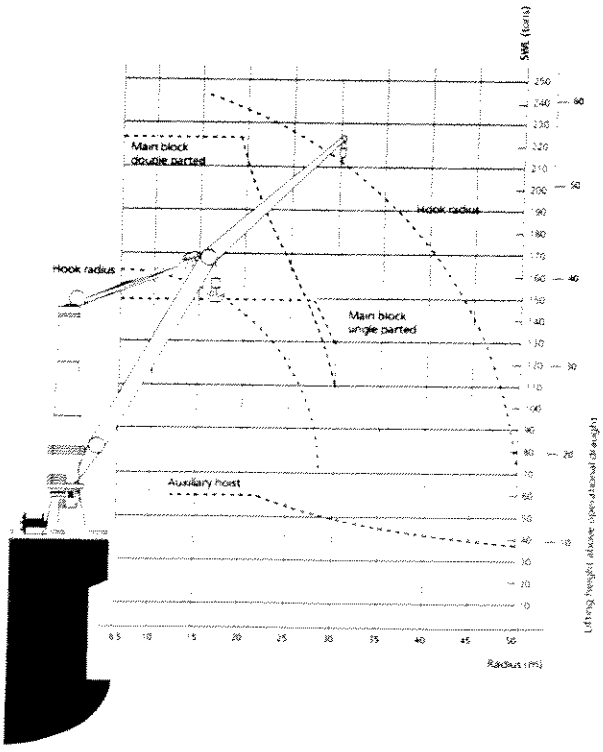
Fixed gas storage exists for up to 10,000m³ in bottles fitted inside the forward columns.

Cranes

The main crane is of the mast head type and has constant-tensioning and heave compensation capabilities.

Main line capacities:
225t swl at 19m radius.
130t swl at 30m radius.
Max hook travel = 350m.
Auxiliary line capacities:
60t swl at 22m radius.
38t swl at 50m radius.

A secondary crane is fitted which is of the telescopic knuckle boom type.
Line capacities:
30t swl at 9.5m radius.
7.7t swl at 30.0m radius.

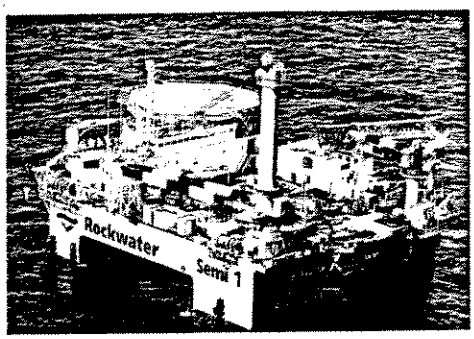


Helideck

The helideck is approved for Sikorsky S61N helicopter operations and has a refuelling system with two fuel tanks. A separate arrival and departure room is available at bridge deck level.

Communications

Communications equipment includes main and reserve SSB transceivers, marine VHF, heli VHF, TOR, auto alarm and satellite facilities (telephone, telex, fax and datalink), together with extensive internal communications systems.



Navigation Equipment

The vessels are fitted with the following navigation equipment:

- two radars of which one is of the bright track view type with a performance monitor and an extra slave unit
- autopilot with gyro and magnetic compass complete with a number of repeaters
- speed log and echo sounder
- satellite marine navigation, video plotter and an AP navigator

Fire Fighting (3rd Party)

SEMI 2 has two gas turbine-driven pump units each supplying 3600m³/h. The monitors are remotely controlled from the bridge. Vessel protection is provided by a water spray system.

Mooring System

The vessels have 6-point mooring systems consisting of 8t Delta Flipper anchors with 1200m of wire cable on electric constant-tension winches. Control can be local or bridge remote.

Accommodation

Fully air-conditioned accommodation to a high standard is available for up to 89 persons in single and double cabins. Appropriate facilities such as messroom, galley, gymnasium, cinema and conference rooms are also on board.

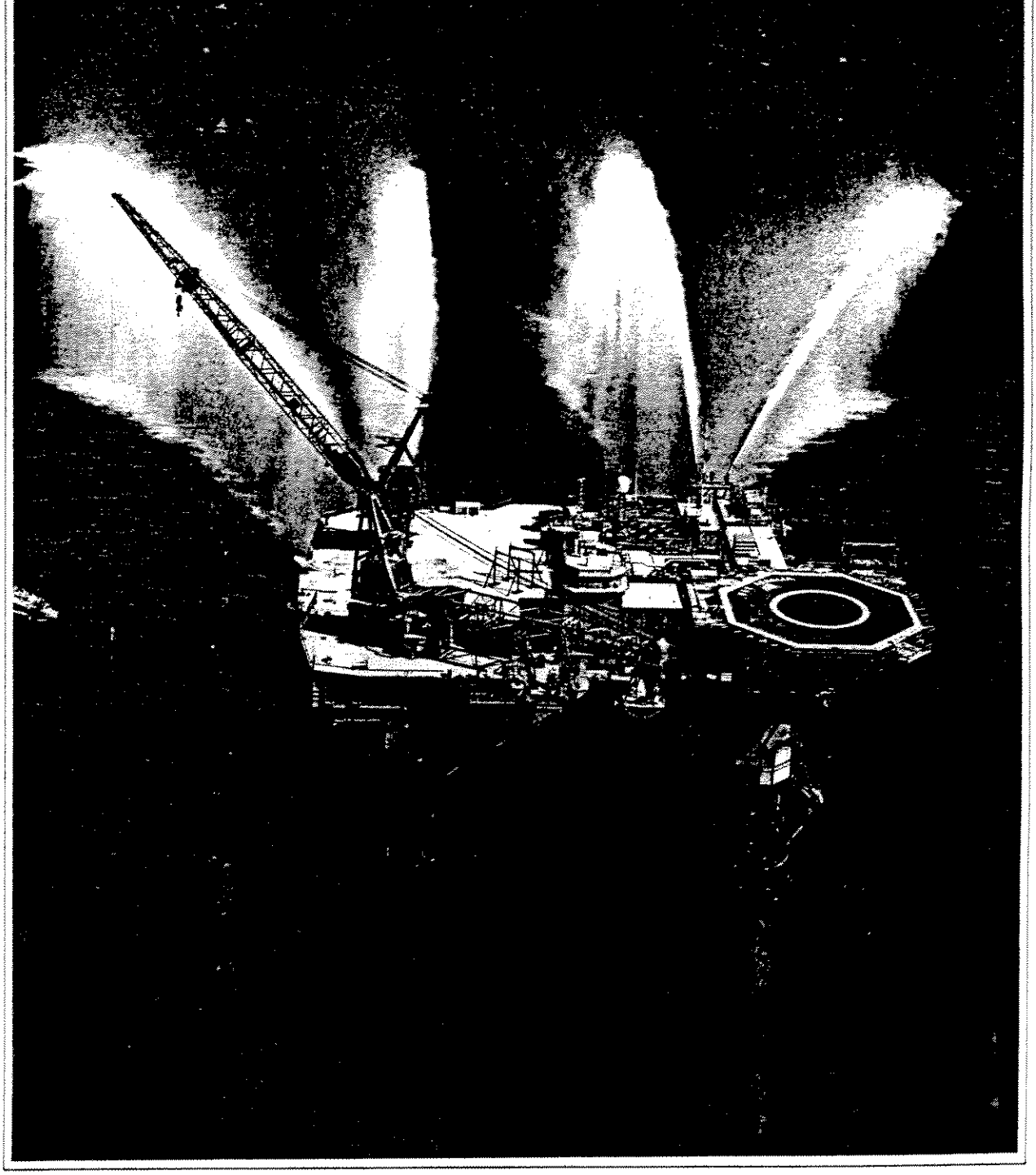
Gangway

The vessels are provided with an hydraulically-operated, pedestal-type gangway for safe transfer of personnel to and from fixed platforms. The total extended length of the gangway is 32m. A working stroke of 12m allows the gangway to be connected in up to 5m significant waves (seastate 6).

Rockwater Limited
Stoneywood Industrial Park
Dyce, Aberdeen AB2 0DF
Tel: (0224) 722877
Fax: (0224) 722442
Telex: 73368
Geographical coverage: UK Continental Shelf

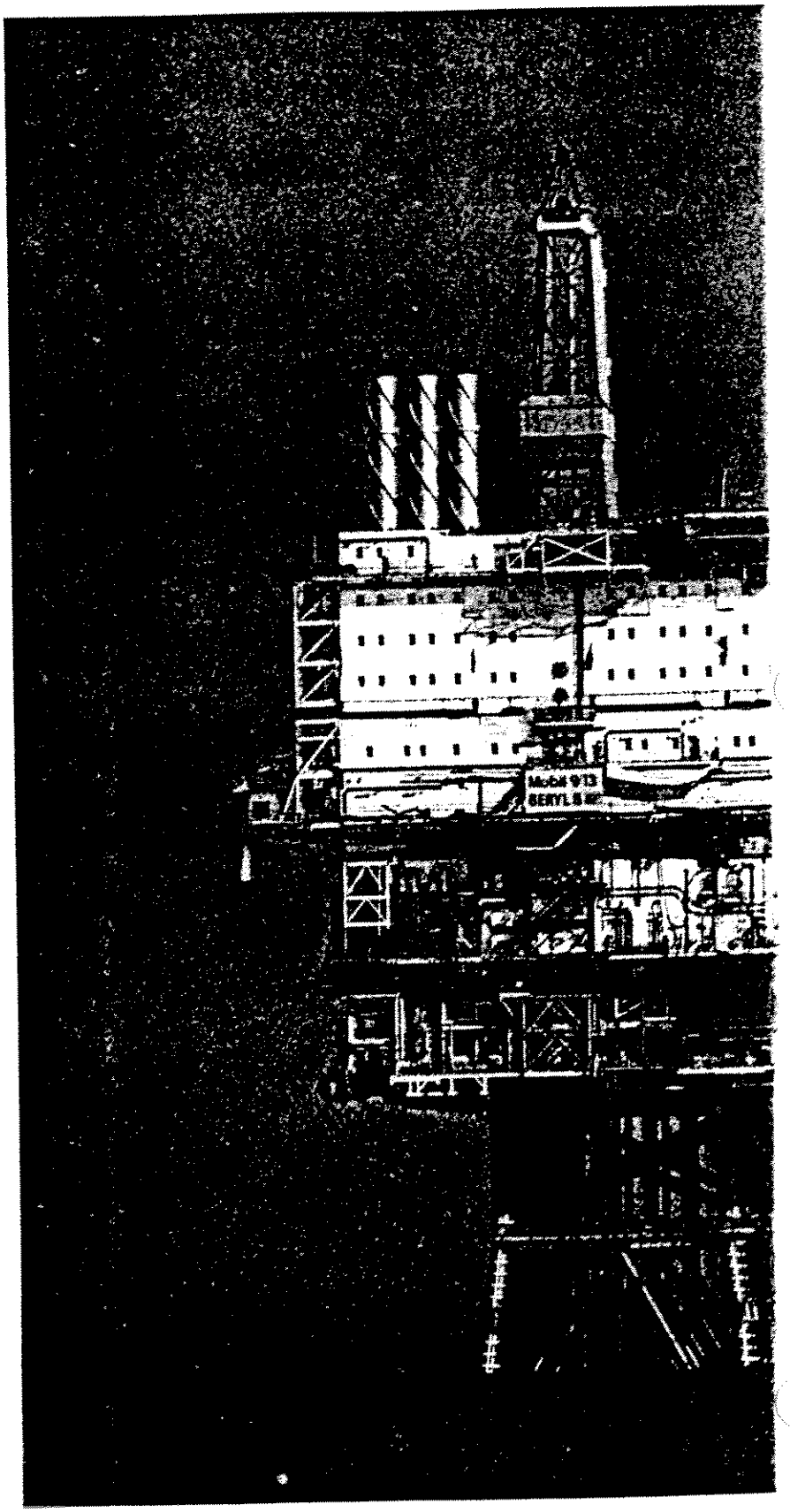
Appendix F.4 - Safe "Karina" and "Regalia"

MULTI PURPOSE SUPPORT VESSEL



SAFE
OFFSHORE

THE SAFE OFFSH



Search for hydrocarbons offshore steadily moves towards more remote and harsh areas in ever increasing depths. The technology and skill to install complicated equipment on the ocean floor, to lay pipelines and operate ancillary support services has undergone a dramatic development.

At the same time as the oil industry is involved in the development of new fields with new techniques, the industry is faced with increasing maintenance of existing fields, not to mention secondary and tertiary recovery aiming at the most economic depletion.

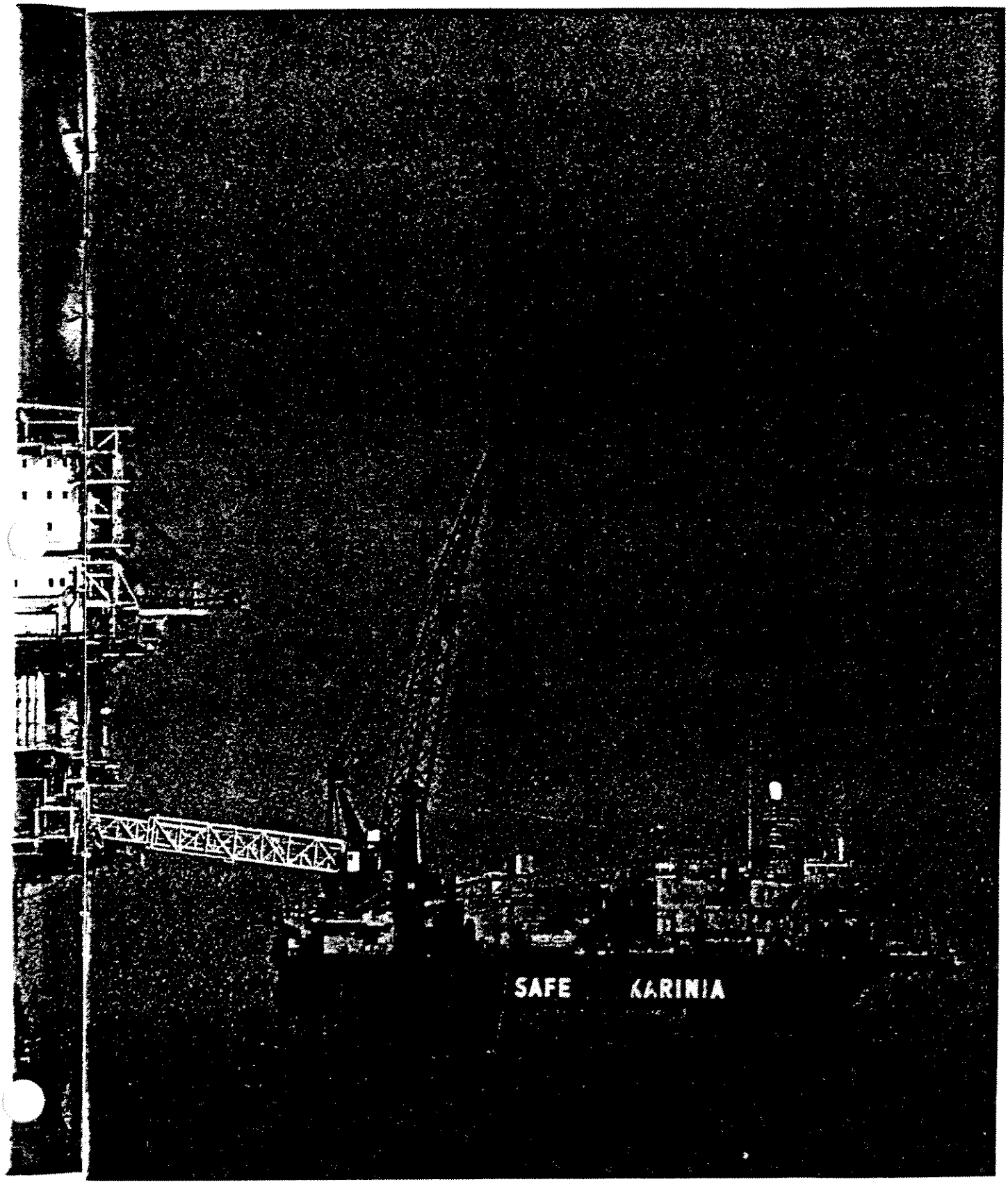
Safe Offshore has carefully and scientifically developed skills and hardware to stay in the forefront in the business of construction and maintenance of offshores installations, whether subsea or topside.

A natural development has therefore been to add to Safe Offshore's fleet of advanced semi-submersible construction and accommodation units a new breed of sophisticated, cost effective and highly flexible semisubmersible multi purpose support vessels, MSV's.

This brochure describes the versatility of the Safe Offshore MSV concept.

Safe Offshore's experienced and qualified personnel will provide you with any additional information you may seek and undertake to evaluate any of your requirements.

ORE MSV CONCEPT



MAIN SERVIC

SUBSEA CONSTRUCTION

HEAVY LIFT CAPABILITY

The main crane of the Safe Offshore MSV's with lifting capability of 400 tons provides the necessary support for hook-up and construction operations.

Heavy lifts can be handled onto other fixed or floating structures as well as to the seabed at 450 m depth (or 860 m using single fall).

The motion compensation systems increase the weather windows and facilitate particularily sensitive lifting operations. Constant tension system is standard, a necessary complement during advanced diving and bottom operations. The auxiliary cranes perform the complementary lifting services.

SATURATION DIVING & SURFACE DIVING

The MSV's are equipped with Dräger saturation systems in compliance with all of the latest requirements.

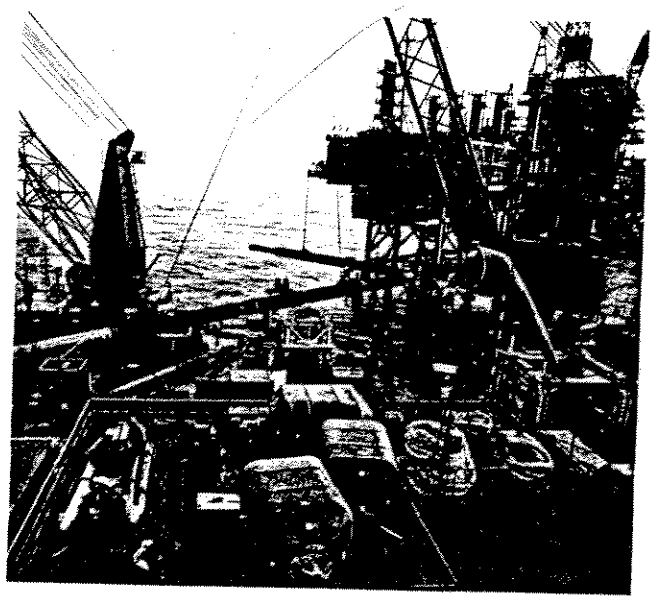
Two bells connected to a unique chamber configuration ensure that advanced diving operations can be undertaken safely and extremely efficiently.

The modular Air Diving System can be mobilized at several locations on deck as required.

RISER AND SPOOL PIECE MANUFACTURING

The large working deck area, equipped with necessary service outlets for electricity and rigging air, facilitates construction, maintenance and storage of various pipe structures.

Large complex three dimensional pipe structures can thus be fabricated onboard and easily launched for installation.



TIE-IN OPERATIONS/ HYPERBARIC WELDING

These tasks are performed utilizing the diving system and the cranage installed. The MSV station keeping and motion characteristics ensure safe and efficient performance under the most severe conditions.

TRENCHING

A variety of trenching equipement can be adapted to provide trenching of subsea piping either in conjunction with tie-in's or independently.

FLEXIBLE PIPING LAYING

Flowlines of the Flexpipe type can be laid off the MSV. Cranage and large deck area allows for laying of around 20 km of pipe without reload or dependency upon supply.

HARD PIPE LAYING

The MSV can also be equipped to lay conventional piping of smaller diameter, utilizing a 4—5 station welding line ending in a stinger arrangement over her aft end or utilizing the J-lay concept.

SUBSEA INSPECTION AND MAINTENANCE

REMOTE OPERATED VEHICLES

Facilities for the operation of ROV's are provided onboard.

"FLYING BELLS" OR "MOBILE DIVING UNITS"

Bell launching systems and umbilical design are prepared for installation of "flying bells" or MDU's.

ATMOSPHERIC DIVING SUITS AND MANNED SUBMARINES

The diving system is designed for the integration of diver lockout submarines. Atmospheric diving suits can also be deployed from the vessel.

WORK OVER OPERATIONS AND WELL STIMULATION

The moonpool in the centre of main deck is designed to allow for advanced workover operations and light drilling. The main deck is reinforced for derrick installation and lower deck is pre-engineered for BOP handling.

CE FUNCTIONS

LOGISTICS SUPPORT

ACCOMMODATION

The accommodation facilities onboard the vessels are of the latest Safe Offshore standard and the modular concept allows flexibility for various combinations of accommodation and laydown area on deck.

The accommodation includes dayrooms, messrooms, recreation rooms and a cinema. Several offices and conference rooms are available.

COMMUNICATIONS

In addition to required radio communications equipment and several VHF stations, the vessel is equipped with a Marine Telex System (Maritex) and a sophisticated Satellite Communications Terminal connected to the internal telephone system. Facsimile and data transmission facilities are included.

HELICOPTER TRANSPORTATIONS

The helideck is approved for Boeing 234 Chinook and includes a heli fuel system. A heli communications centre is installed in the Control Tower.

STORAGE AND WORKSHOP

Open storage area is provided on main deck and on top of the modular accommodation. Special efforts have been made to keep the deck easy to operate and all hatches are flush mounted.

Sheltered storage space is arranged on lower deck. A fully equipped workshop is installed on main deck.

SUPPLY OF FW/DO/ELECTRICITY

The Safe Offshore MSV's can supply other fixed or mobile platforms with sterilized fresh water, diesel oil, electrical power and compressed air as back-up services.

RAPID INTERVENTION AND RESCUE

RAPID DEBALLASTING

By utilizing the fire fighting pumps, the vessels can deballast from operational to transit draft in about one hour, which enables them to act as truly rapid intervention vessels.

FIRE FIGHTING

An external fire fighting system is arranged to comply with the "Fire Fighting III" requirements. The water monitors are remotely operated from the Control Tower. The MSV is protected by a water spray system.

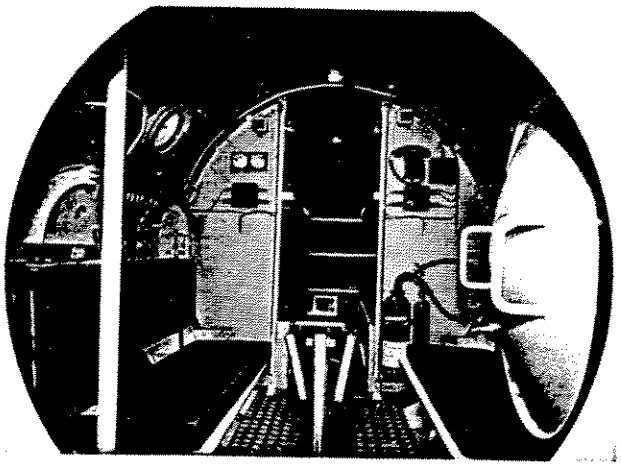
EMERGENCY FIRST AID AND MEDICAL SUPPORT

The fully equipped treatment room located adjacent to the sick bay is designed to be extended into a large first aid facility by utilizing the adjoining arrival/departure hall.

RESCUE FACILITIES

In addition to required rescue facilities for the divers, an articulated fire protected rescue gangway is arranged to evacuate personnel from other vessels or platforms or to rescue persons out of the water.

DIVING SYSTEM



DESIGN

The diving system is custom designed and built to our requirements by Drägerwerk of West Germany.

The system is a 16 men, 450 metres saturation system classified by Det Norske Veritas and built in full compliance with all rules of the Norwegian Petroleum Directorate and UK Department of Energy.

The system has been layed-out to give optimum support to the divers and the diving operations and special attention has been given to the problems associated with ultra deep diving in particular relation to divers life support at great depth.

Recognizing the necessity to implement novel designs, the following systems in particular have been given new solutions:

— gas reclaim systems
— umbilical systems
— gas analysation systems
— life support systems
— hot water systems

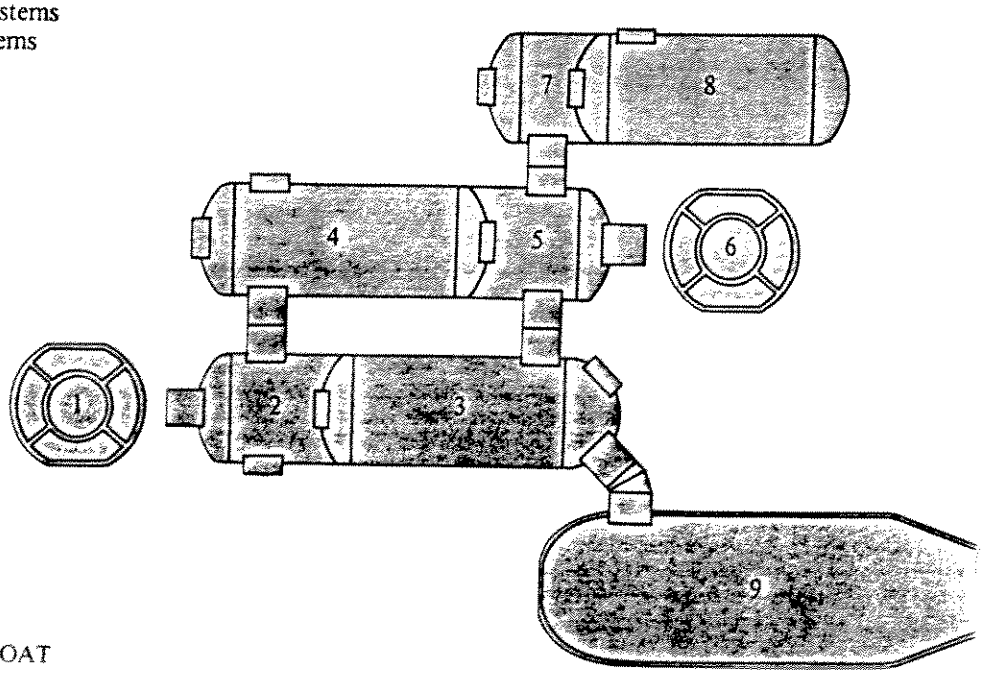
Additionally, to provide for divers' safety, a hull hyperbaric lifeboat has been designed and b our requirements to improve the lifesaving faciliti divers in saturation. This innovative design provid unequalled hyperbaric life support to the divers true double bell system, — in addition to allowir additional work capability and flexibility — alsc vides a realistic means of divers rescue.

DIVING BELLS

Two 3 men bells, located well apart, allow for saf efficient double bell operations. In normal singl operation, both bell handling systems can be ope simultaneously which reduces bell crew turn-arounc and maximizes the vessel's effectiveness. The cross ing booms installed allow for operating the two b variable internal distances. The system permits divi a Beaufort 9 seastate.

SATURATION CHAMBERS

The chamber complex is designed with regard t economy as well as comfort, flexibility and safety system consists of three, well layed-out and equi double lock chambers. The unique double trunk arr ment permits virtually unlimited flexibility simultaneous split level diving and decompression necessary facilities and equipment for suppor long term saturation diving are included. In order to for future addition of chambers, divers lockout marines or hyperbaric lifeboats, spare trunks are p ded.



1. SDC (BELL)
2. ENTRANCE LOCK
3. MAIN CHAMBER
4. MAIN CHAMBER
5. ENTRANCE LOCK
6. SDC (BELL)
7. ENTRANCE LOCK
8. MAIN CHAMBER
9. HYPERBARIC LIFEBOAT

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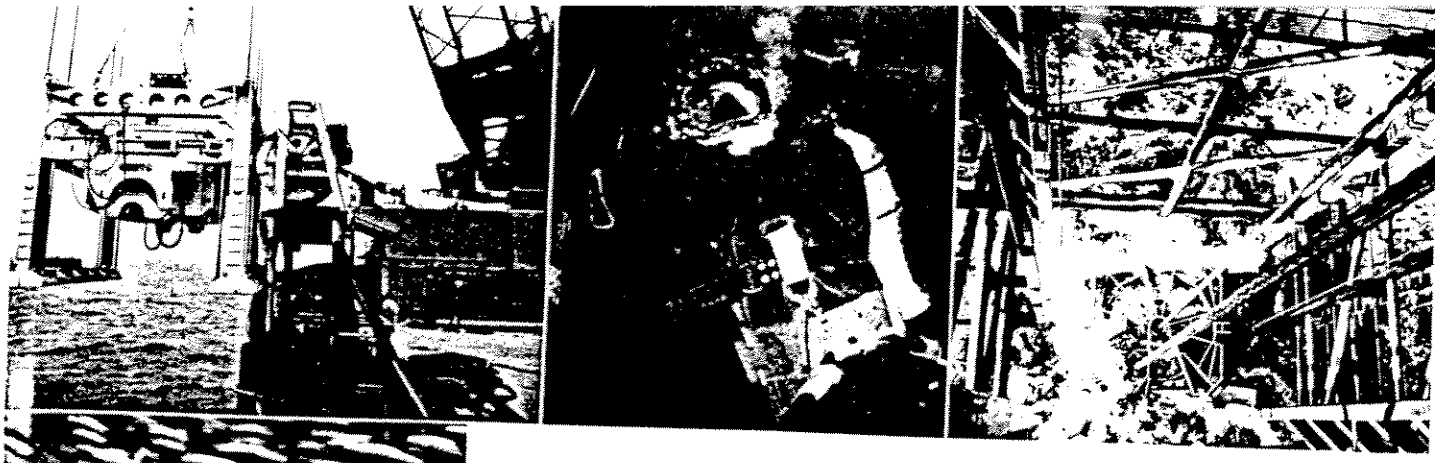
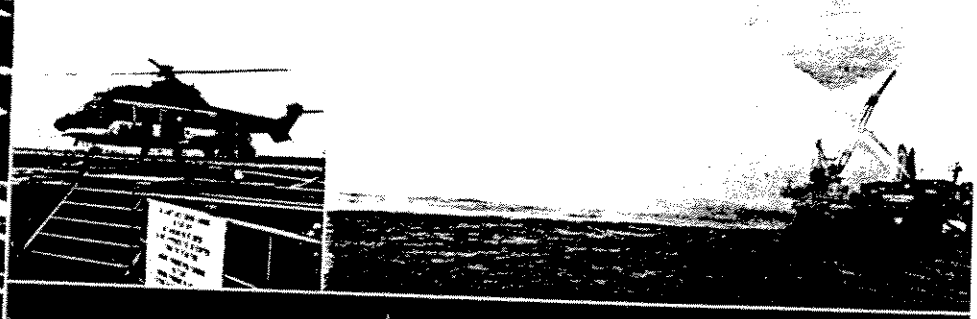
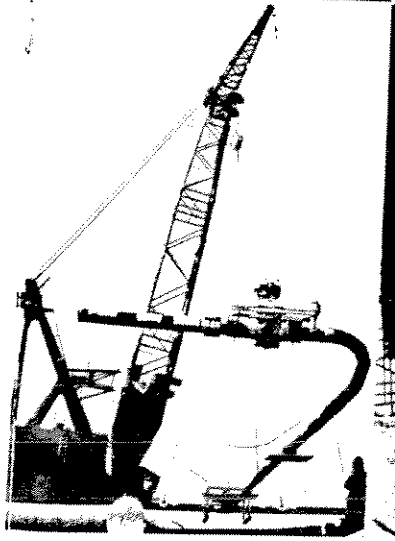
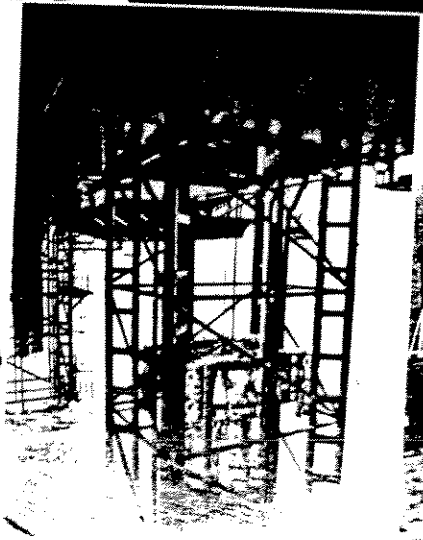
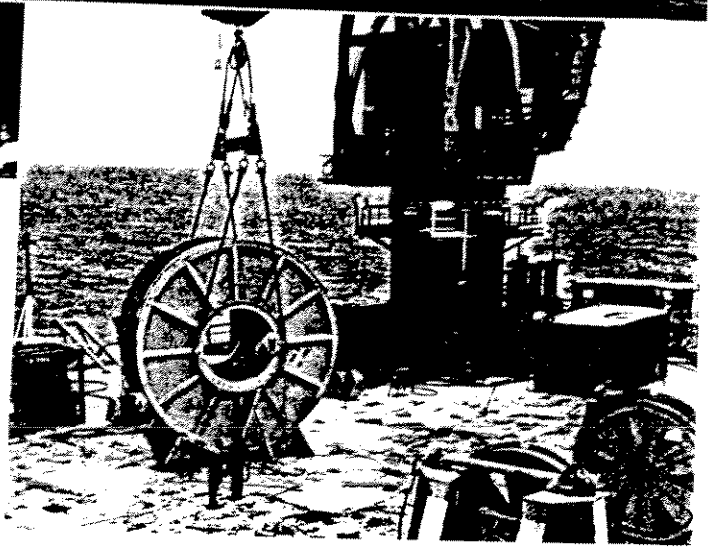










SAFE KARINIA

Vessel particulars

Flag: Swedish
Platform type: Enhanced GVA 2000
Yard: Götaverken Arendal
Delivered: 1983

Main dimension

Length over all	89.9 m	Pontoon length	74.8 m
Width over all	65.4 m	Pontoon height	7.2 m
Height to main deck	27.2 m	Pontoon width	9.8 m
Height to lower deck	22.2 m	Columns, octagonal	9.8 × 9.8 m
Main deck length	72.1 m		
Main deck width	55.8 m		

Operating conditions	Transit	Operation	Survival
Total draught (m)	10.7	19.4	15.8
Draught excl thruster (m)	6.9	15.6	12.0
Displacement (tons)	10 800	14 560	13 270

Tank Capacities:

Fresh Water	865 m³
Fuel Oil	2810 m³
Lub Oil	20 m³
Ballast	5620 m³

Evaporators: 2 × 135 tons/day

Compressed air: 2 × 1300 m³/h at 7 bar
2 × 300 m³/h at 7 bar

Diving gas: 17000 Nm³

Diesel generators
Five Nohab F316 diesels: 5 × 3000 kW MCR
Five Strömberg HSPTL 15/654; 5 × 3600 kVa
Voltage 6300/440 V, 60 Hz
Emergency Generator: 500 kVa/440 V
Engine rooms as well as high and low voltage switchboard rooms and transformer rooms are subdivided by fire insulated bulkheads with separate halon systems for increased redundancy.

Thrusters
One azimuthing thruster under each column: 4 × 2640 kW
Two fixed thrusters on the starboard pontoon: 2 × 1500 kW

Anchor system
8 × 9 ton Flipper Delta anchors
8 + 2 marking buoys
4 × 2 anchor winches
(hydraulic double drum type)
8 × 2300 m, 64 mm wires
Automatic Anchor Assist System

Dynamic positioning
Kongsberg ADP 503 MkII, fully redundant

Positioning reference systems
Simrad Hydro Acoustic Positioning System (HPR 309)
Artemis Surface Microwave System, coded type
Kongsberg Vertical Taut Wire Systems
Kongsberg Horizontal Taut Wire System

Accommodation

Normal bed capacity (1 an 2-man cabins):	194
Increased bed capacity (Pullman berths added):	335 (450)

Accommodation capacity can be further increased by adding accommodation modules.

4 mess rooms	TV room
3 day rooms	Music room
2 conference rooms	Gymnasium with sauna
8 offices	Various other utility spaces
Arrival/Departure Hall	
Hospital & Sick Bay	
All Accommodation fully air conditioned	

Cranes

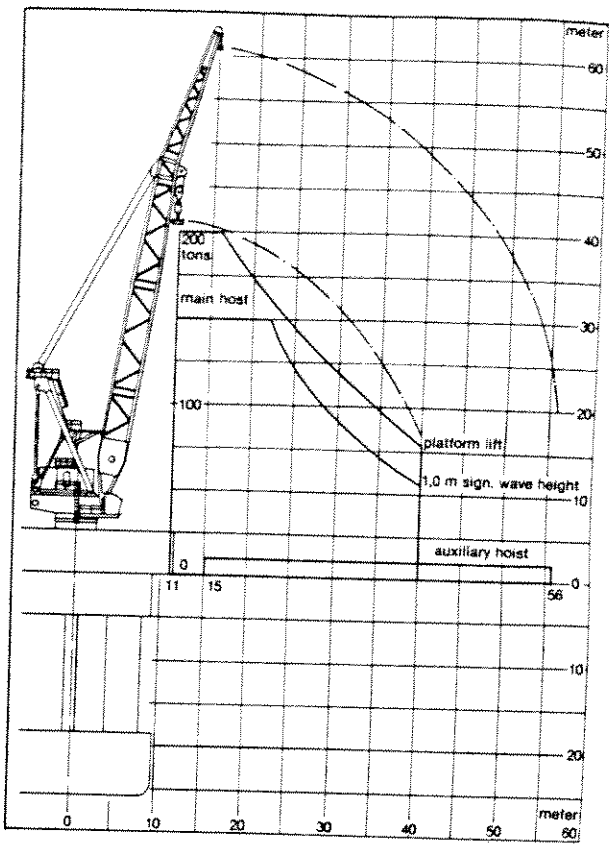
Main crane:	200 T static load	Auxiliary crane:	25 T × 28 m
	150 T × 20 m		14 T × 40 m
	40 T × 40 m		
	10 T × 56 m		

Main crane has a lifting capability down to 450 m

Storage areas

Top of accommodation	320 m²
Main deck	1900 m²
Lower deck	300 m²

Workshops
Mechanical/piping workshop
Electrical workshop
Subsea inspection and maintenance workshops
Vessel electrical and mechanical workshop



Diving system
16 man 450 m saturation diving system
3 chambers
2 bells
Hyperbaric lifeboat for 16 men

Fire Fighting

Fire fighting	II
Monitors	4 × 1800 m³/h
Hose Stations	8

Monitors remotely joy stick manoeuvred from the control tower.
DP systems compensated.
Aft/SB side spray protected.

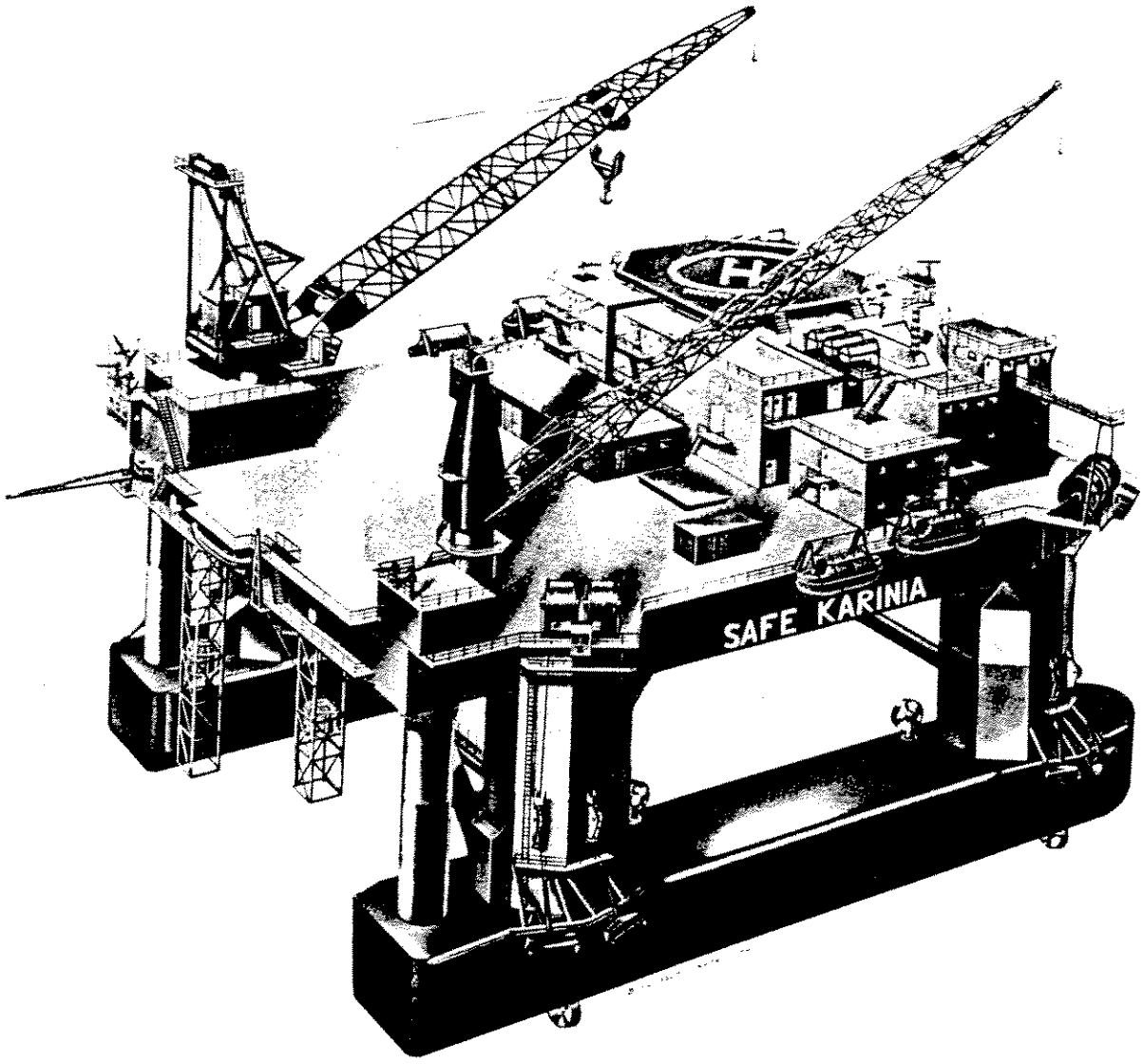
Gangway
A telescopic aluminium hydraulically operated gangway located on vessel starboard side. Equipped with water spray and automatic quick release.

Length	27 m
Telescopic action	+/— 5 m

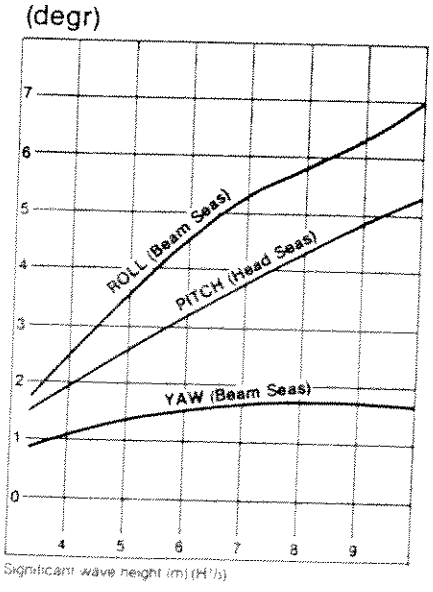
Helicopter Facilities
Helideck for SIKORSKY S61
Refueling station, 3 × 2500 l (2000 gallons)
Arrival/Departure Hall
Heli Control Room

Communications
— Satellite Communication
— Maritex station
— HF, MF, LF Main Radio Station
— HF, MF Spare Radio System
— VHF stations
— Public address system
— Automatic telephone exchange
— Loudspeaker command system
— Sound powered emergency telephone
— TV coverage of decks, engine and diving areas.

Classification
Lloyd's Register of Shipping
+ OU 100 A1 Diving & Construction Support Vessel
+ LMC, UMS, DP (AA),
Fire fighting Ship II, (7200 m³/h)
PC, (150 tons)
Diving System certified by DNV, DSV-I, DSV-III
Certificate of fitness for offshore installations (DOE)

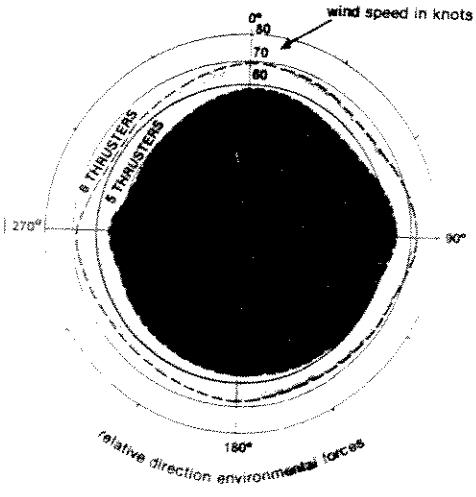


PITCH ROLL & YAW

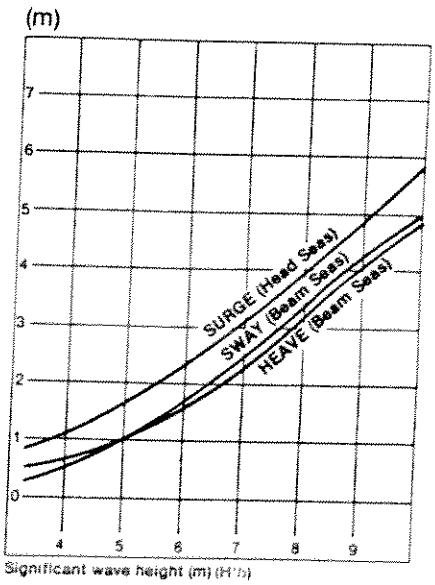


Significant vessel motion, double ampl.

D.P. CAPABILITY GRAPH



SWAY HEAVE & SURGE



Significant vessel motion, double ampl.

MSV REGALIA

Vessel particulars

Flag: Swedish
Platform type: GVA 3000
Yard: Götaverken Arendal
Delivery: 1985

Main dimension

Length over all	97.8 m	Pontoon length	87.6 m
Width over all	92.0 m	Pontoon height	7.9 m
Height to main deck	31.0 m	Pontoon width	12.0 m
Height to lower deck	25.5 m	Columns, octagonal	12.0 × 12.0 m
Main deck length	74.0 m		
Main deck width	75.0 m		

Operating conditions	Transit	Operation	Survival
Total draught (m)	11.4	21.3	17.8
Draught excl thruster (m)	7.6	17.5	14.0
Displacement (tons)	15 262	21 036	19 266

Tank Capacities:

Fresh Water	800 m³
Heavy Fuel Oil	2200 m³
Diesel Oil	600 m³
Lub Oil	20 m³
Ballast	7700 m³

Evaporators: 2 × 135 tons/day

Compressed air: 2 × 1350 m³/h at 7 bar
2 × 300 m³/h at 7 bar

Diving Gas: 17000 Nm³

Diesel generators
Six Nohab F316 diesels: 6 × 2850/3100 kW MCR, (mixed fuel oil/diesel oil), 900 RPM
Six ASEA, type GBA 800 SH, 4430 kVA 406 A
Voltage 6300/440 V, 60 Hz
Emergency Generator: 600 kW/450 V, 60 Hz
Engine rooms as well as high and low voltage switchboard rooms and transformer rooms are subdivided by fire insulated bulkheads with separate halon systems for increased redundancy.

Thrusters
Six azimuthing thrusters, each 2640 kW

Anchor system
8 × 12 ton Flipper Delta anchors
8 + 2 marking buoys
8 single hydraulic anchor winches
8 × 2500 m, 86 mm wires
Automatic Anchor Assist System

Dynamic positioning
Kongsberg ADP 503 MkII, fully redundant

Positioning reference systems
Simrad Hydro Acoustic Positioning System (HPR 309)
Artemis Surface Microwave System
2 Kongsberg Vertical Taut Wire Systems (el.type)

Accommodation

Normal bed capacity (1 and 2-man cabins):	243
Increased bed capacity (Pullman berths added):	500

Accommodation capacity can be further increased by adding accommodation modules.

3 mess rooms	TV room/Music room
3 day rooms	Gymnasium with sauna
1 conference rooms	Various other utility spaces
7 offices	
Arrival/Departure Hall	
Hospital & Sick Bay	

All Accommodation fully air conditioned

Cranes

Forward crane:	400 T × 20 m	Aft crane:	100 T × 25 m
	200 T × 40 m		25 T × 45 m
		Whip hoist	10 T × 60 m

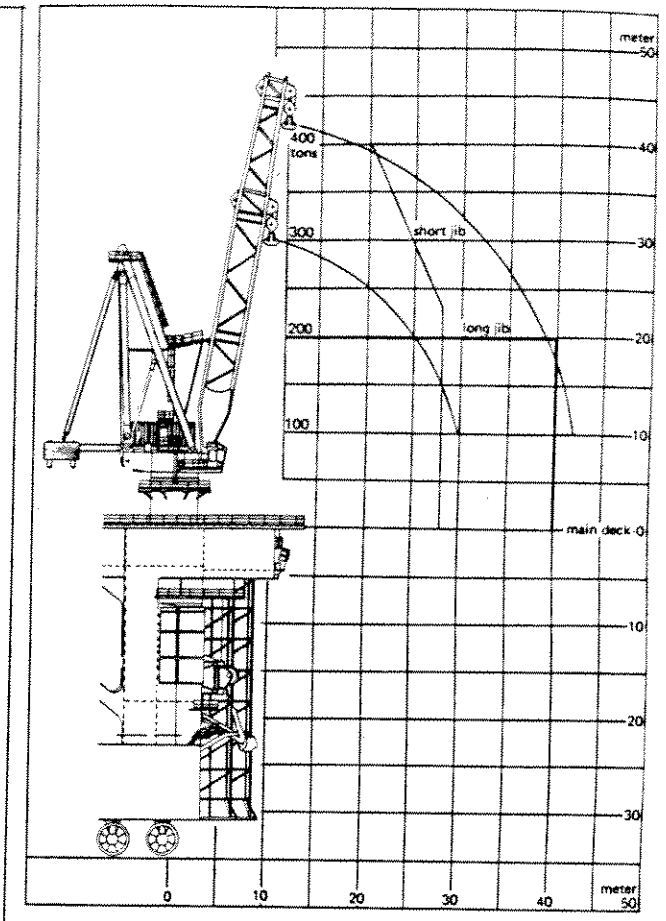
Both cranes have a lifting capability down to 450 m

Storage areas

Top of accommodation	320 m²
Main deck	3000 m²
Lower deck	300 m²

Workshops
Mechanical/piping workshop
Electrical workshop
Subsea inspection and maintenance workshops
Vessel electrical and mechanical workshop

Diving system
16 man 450 m saturation diving system
3 chambers
2 bells
Hyperbaric lifeboat for 16 men



Fire Fighting

Fire fighting	III with spray
LRS class	4 × 2600 m³/h
Monitors	4 × 2500 m³/h
Hose Stations	8

Monitors remotely joy stick manoeuvred from the control tower.
DP systems compensated.
Aft/SB side spray protected.

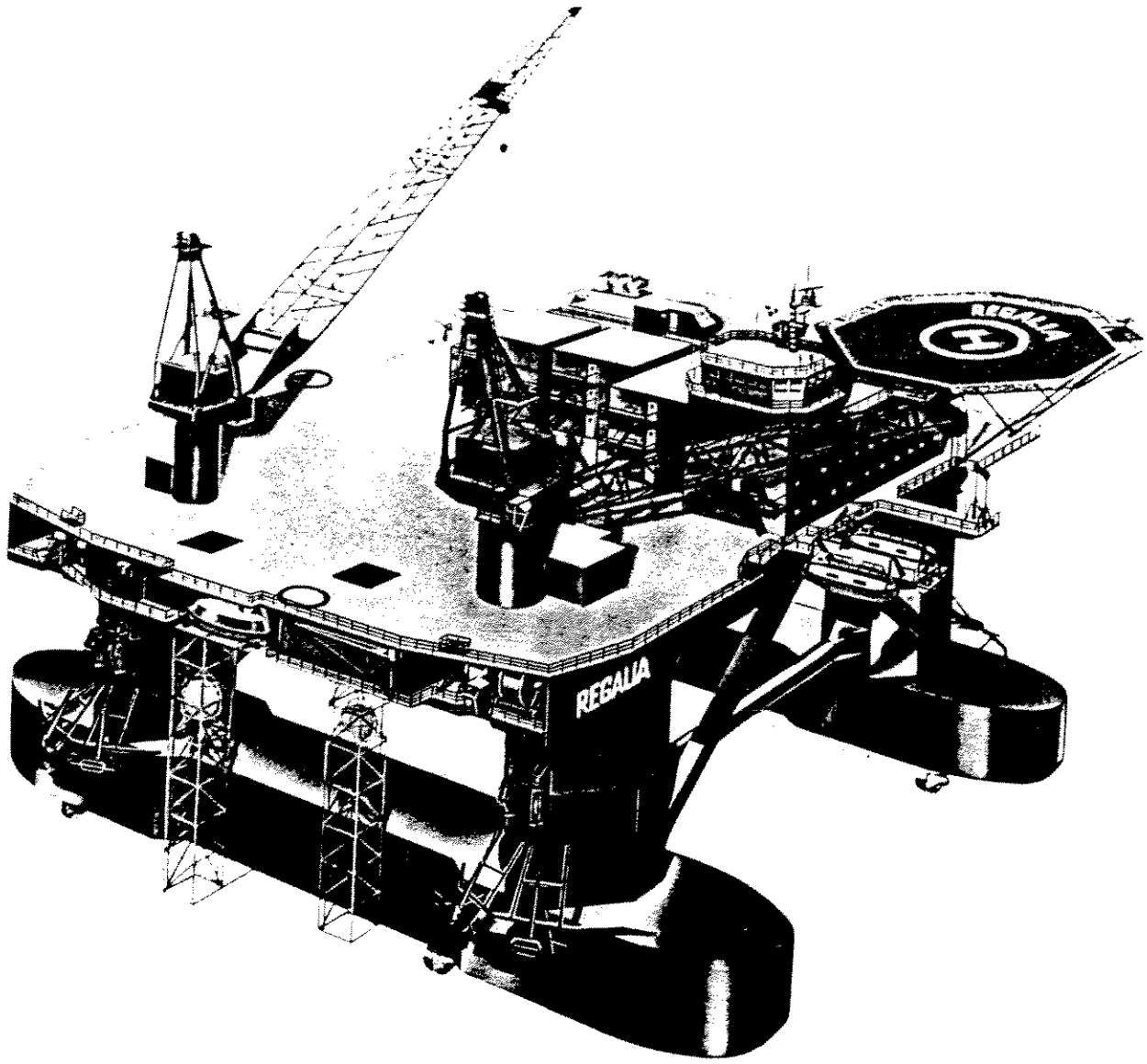
Gangway
A telescopic aluminium hydraulic operated gangway located on vessel starboard side. An alternative position for gangway is located at the aft end of the platform. Equipped with water spray and automatic quick release.

Length	36.5 m
Telescopic action	+/— 6 m

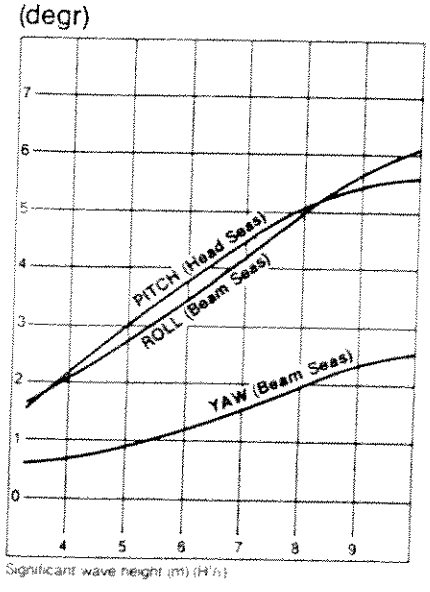
Helicopter Facilities
Helideck for Chinook 234
Refuelling station, 4 × 2500 l (2670 gallons)
Arrival/Departure Hall

Communications
— Satellite Communication
— Maritex station
— HF, MF, LF Main Radio Station
— HF, MF Spare Radio System
— VHF stations
— Public address system
— Automatic telephone exchange
— Loudspeaker command system
— Sound powered emergency telephone
— TV coverage of decks, engine and diving areas.

Classification
Lloyd's Register of Shipping
+ OU 100 A1 Diving & Construction Support Vessel
+ LMC, UMS, DP (AA),
Fire fighting Ship III, (10 000 m³/h)
PC, (400 tons and 100 tons)
Diving System certified by DNV.
Certificate of fitness (DOE)
Full compliance with NMD and USCG



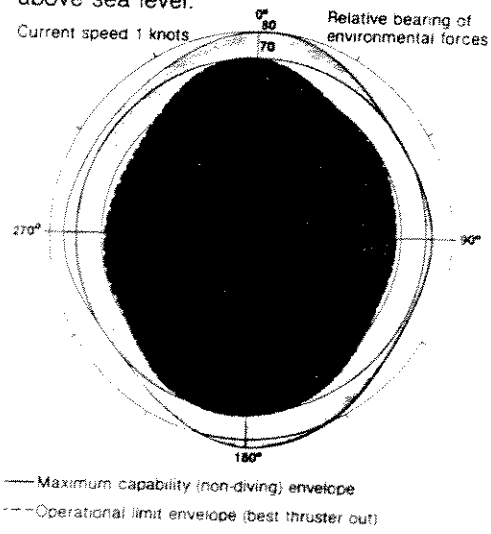
PITCH ROLL & YAW



Significant vessel motion, double ampl.

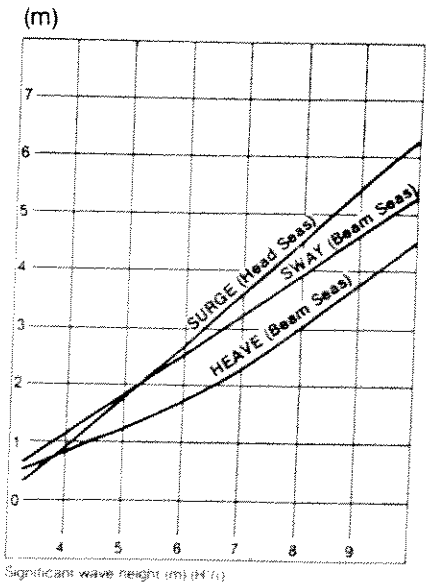
D.P. CAPABILITY GRAPH

Wind speed in knots, 10 m height above sea level.

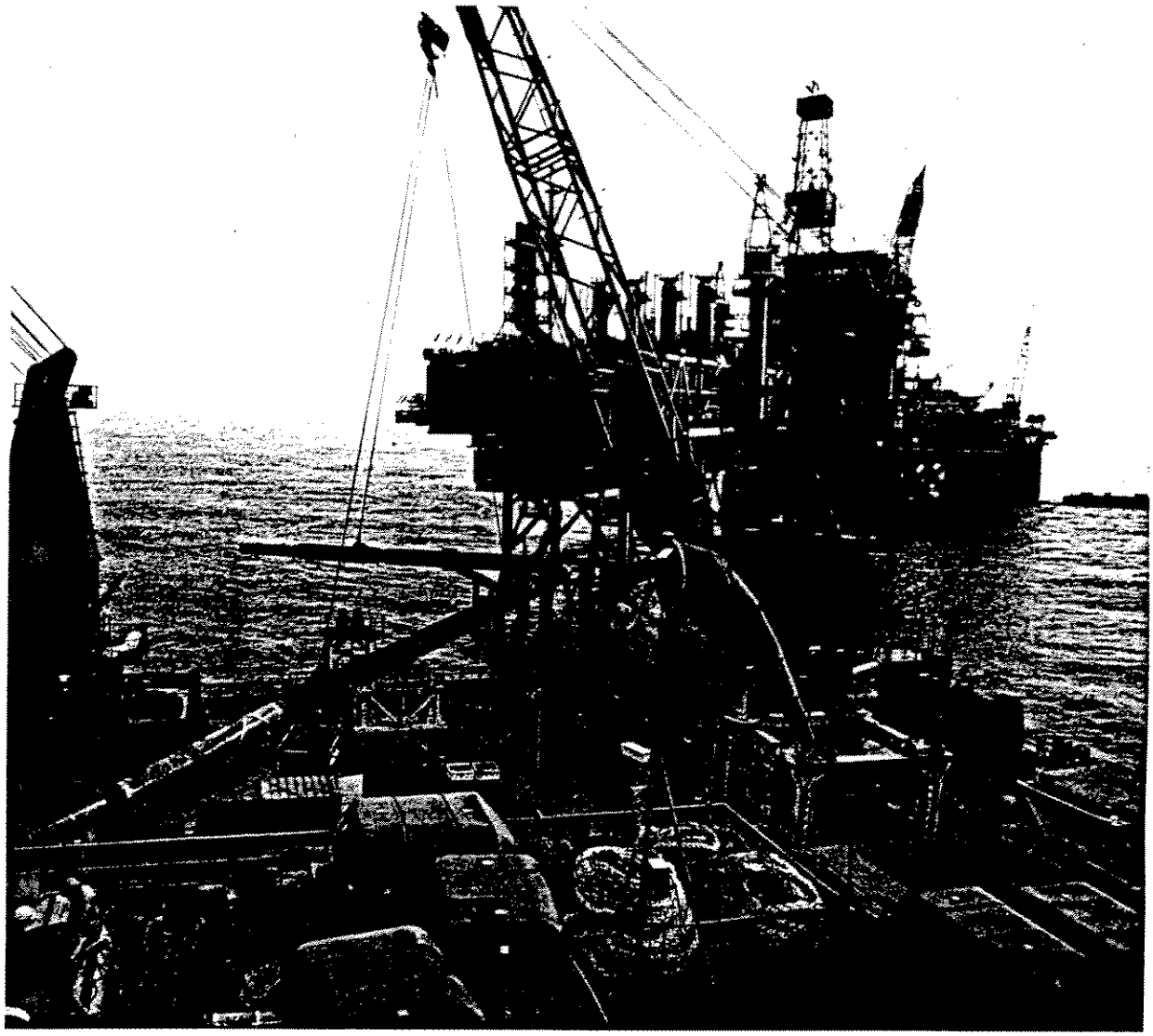


Above envelopes are based on wind with coincident wave and current forces.

SWAY HEAVE & SURGE



Significant vessel motion, double ampl.



Safe Karinia installing spool piece in Southern North Sea.

SAFE OFFSHORE

SAFE OFFSHORE AB
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PHONE: + 46(0)31-80 00 60
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SAFE OFFSHORE LTD.
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62 HUNTLY STREET
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SAFE OFFSHORE LTD.
PORT CAUSEWAY
BROMBOROUGH, WIRRAL
MERSEY SIDE L62 4 YH
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TELEX: 628215 SAFE OF G
TELEFAX: 051-645 4888

SAFE OFFSHORE LTDA
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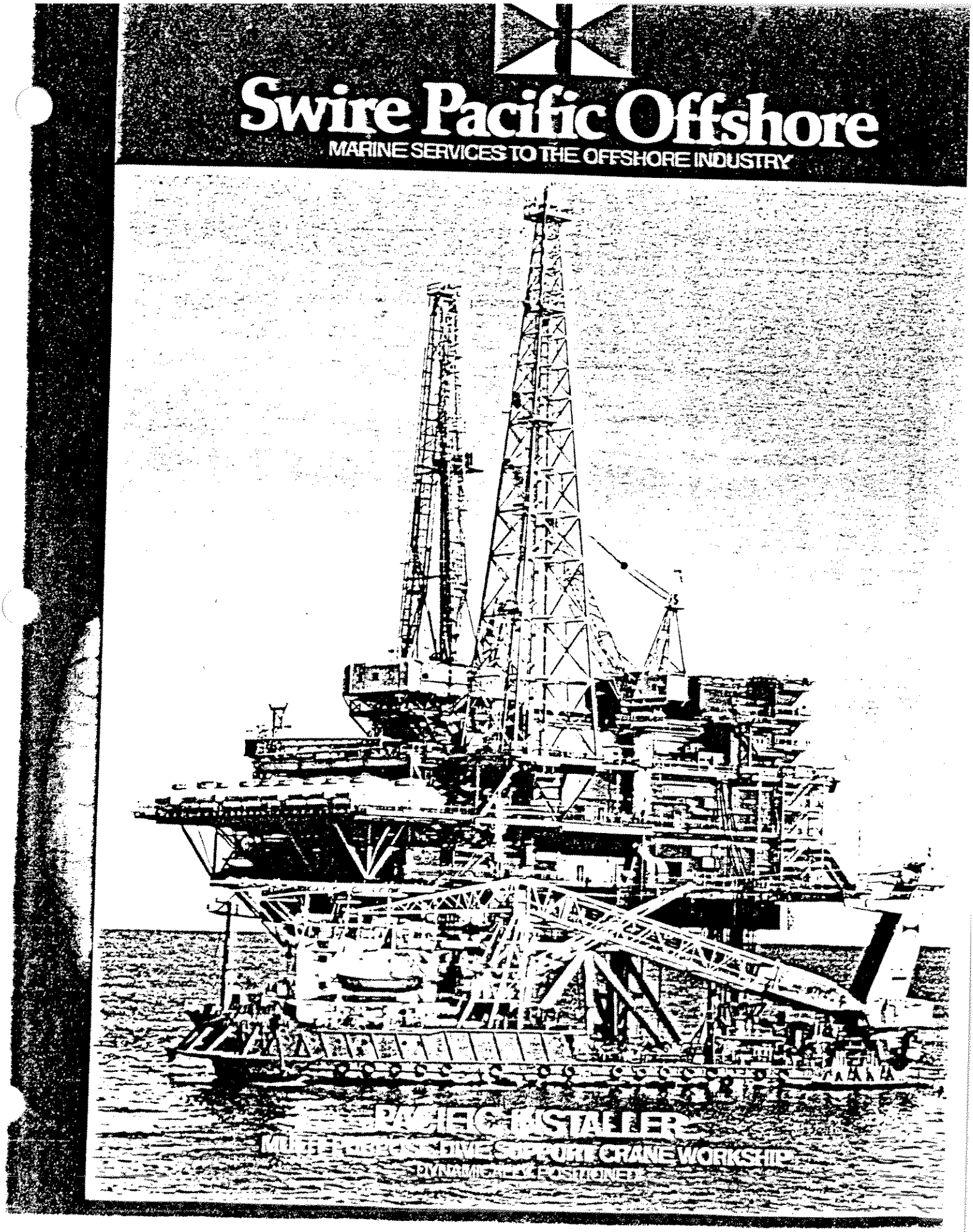
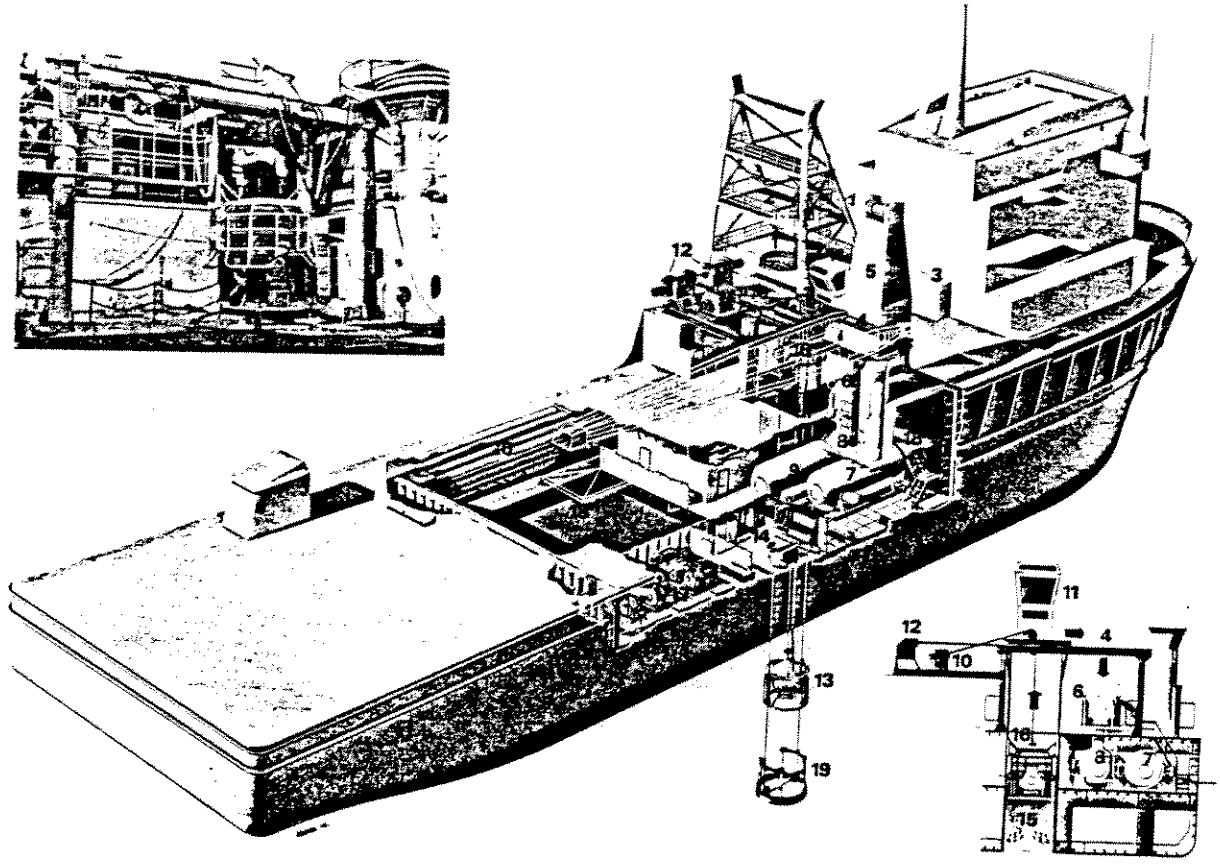
PHONE: + 55(0)21-220 4384/220 4234
TELEX: 2134325 CSRJ BR
TELEFAX: + 55(0)21-220 4234

Appendix F.5 - Swire Pacific "Installer"


Swire Pacific Offshore
MARINE SERVICES TO THE OFFSHORE INDUSTRY

SATURATION DIVING SYSTEM

Seaforth Perry	1,000 ft, 12 man saturation diving system comprising: 6 ft Submersible Decompression Chamber (S.D.C. – "Bell") 18 ft x 7 ft Deck Decompression Chamber (D.D.C.) 21 ft x 7 ft Deck Decompression Chamber (D.D.C.) with shower and toilet Transfer lock with shower and toilet Diving Control Room. Complies with North Sea operating regulations, Lloyds classed.
Gas Storage	180,00 cu. ft. tube trailer Facility for quads
Ethyd	Hydraulic handling system comprising: Electro/diesel – hydraulic power packs 2 Hydraulic constant tension to drop–weight winches Hydraulic bell winch Horizontal bell transfer gantry Moon pool cursor
Moon pool	3m square, aerated
Compressors	2 x Ingersoll Rand L.P. air compressors 1 x Ingersoll Rand H.P. air compressors 1 x Corbin Helium compressor 1 x Haskel oxygen transfer pump 1 x Gas blender
Diver Heating	2 x boilers



1 Umbilical stowage on sparred deck
2 Hydraulic umbilical power block
3 Stowage deck over anchor winches for laboratory/equipment containers and gas quads
4 Horizontal transfer gantry
5 10 tonnes S.W.L. general service crane
6 Bell in mated position
7 21 ft D.D.C. with shower and toilet
8 Transfer lock with shower/toilet
9 18 ft D.D.C.
10 Hydraulic S.D.C. winch
11 S.D.C. Control Room
12 Constant tension hydraulic drop-weight winches
13 S.D.C. (Bell)
14 Diving Control Room
15 Moonpool aeration
16 S.D.C. positioning cursor
17 Diving compressor, gas transfer and boiler rooms
18 Stowage space for diving equipment
19 Drop weight/bell stand
20 Diving gas tube trailer

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DUBAI

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Tel: 435384/435399
Telex: 46839 SWIRE EM

SINGAPORE

Swire Pacific Offshore
14th Floor Ocean Building
Collyer Quay
Singapore 1
Tel: 92891/92892
Telex: RS 23280 SWIRE
Cable: SWIREBOAT

BRUNEI

Swire Pacific Offshore
Lot 2505 Jalan Temanggong
P O Box 685
Kuala Belait
Brunei
Tel: KB2474
Cable: SWIREFLEET KB

TOKYO

Swire Pacific Offshore
c/o Swire Management Services K.K.
Swire House
14 Ichibancho, Chiyoda-ku
Tokyo 102
Japan
Tel: 03-230-9203/9205
Telex: 22248 SWIRE A

"PACIFIC INSTALLER" has been designed to provide comprehensive site utility services to offshore production and development operations including:

- Heavy lift (incl. subsea)
- Hook-up work
- Diver and submersible support
- Maintenance, repair and installation
- Firefighting and rescue
- Pipeline tie-in and repair
- Pile driving and core drilling
- S. B. M. installation and maintenance
- Berthed accommodation for about 130 charterer's personnel.

"PACIFIC INSTALLER" can undertake prolonged periods of duty and be refuelled on location.

"PACIFIC INSTALLER" has the following characteristics:—

Length overall	77.3m (254 ft)
Breadth	18.8m (62 ft)
Depth	6.7m (22 ft)
Max. Draft	5.49m (18 ft)
Clear Deck Area	About 26.5m (87 ft) x 18m (59 ft) = 477m2. Max deck load: 5 tons/m2
Gross tonnage	2647
Cranes — Main	Liebherr BOS 300/5000 300 tonnes at 12m outreach.
— Aux.	10 tonnes at 22m
Speed	10 knots
Propulsion	2 x 1650bhp = 3300bhp CPP
Thrusters — Bow	2 x 600bhp CPP
— Stern	1 x 600bhp CPP
Generating capacity	1,020 KW
Dynamic positioning	Honeywell Micro ASK System
Mooring	8 points tug assisted to 800 ft.
Designer	Maritime Engineering A/S Oslo
Builders	Far East Levingston, Singapore
Delivered	March 1978
CLASSIFICATION	ABS + A1 (E) + AMS.
FLAG	Panama
CALL SIGN	3FCY

MACHINERY

Main Engines	2 x Wichmann 5AX, total max. ratin 3300 bhp. Service rating 3000bhp at 375rpm with CPP
Thrusters — Bow	2 x Brunvoll SPX — VP 600bhp at 450rpm with CPP
— Stern	1 x Brunvoll SPX — VP 600bhp at 450rpm with CPP
Generators	3 x 340 KW Delco = 1020 KW 440V/220V 3 Ø 60HZ driven by GM 16V71T1 x 16V — 71N
Emergency Gen:	1 x 75 KW Delco, driven by GM4 — 71N
Air Compressors	2 x Ingersoll Rand 14m3/hr at 30 kg/cm 2 1 x Ingersoll Rand manually operated 2 x Ingersoll Rand each 600 CFM at 7 kg/cm 2

CAPACITIES

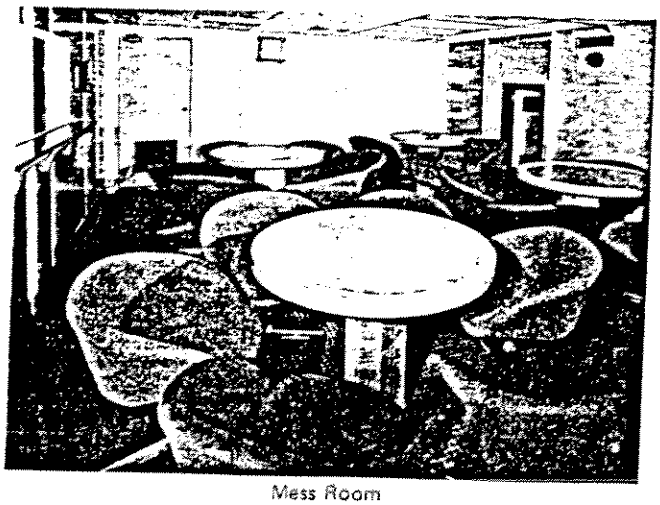
Deadweight	4340 tonnes
Fresh Water	863 tonnes
Fuel Oil	685 tonnes
Lube Oil	57 tonnes
Ballast Water	2181 tonnes
Refrigerated Storage	Large walk-in freezer rooms at $-20^{\circ}C$ and Chiller room at $+4^{\circ}C$ with sea temperature $32^{\circ}C$

PUMPING

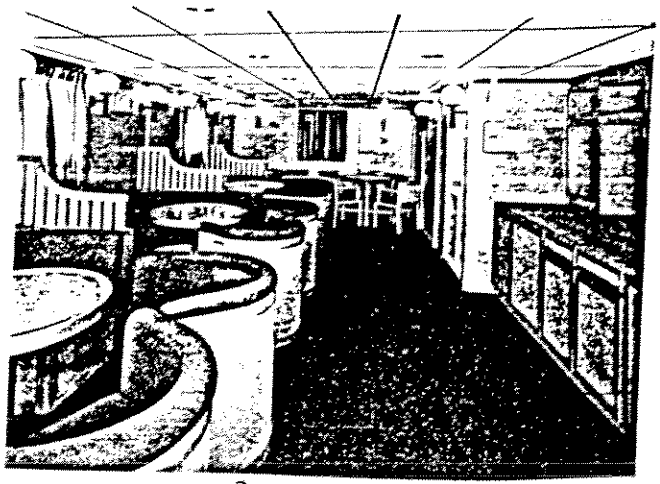
Fuel Oil	2 x 5m3/hr at 20MWH
Ballast Water	2 x 400m3/hr at 25MWH 1 x 150m3/hr at 25MWH
Gen. Service:	3 x 100 m 3/hr at 30 MWH

RIG TRANSFER:

Pumps:	
F.O.	50 m^3/n at 60 MWH
F.W.	50 m^3/n at 60 MWH
Electrical:	150 KW, 440 V, 60 HZ



Mess Room



Recreation Room

ACCOMMODATION

	No. of Accom. units	Total Persons
1 berth suites with bathroom	4	4
1 berth cabins with shared bathrooms	6	6
1 berth cabins	3	3
2 berths cabins	23	46
2/4 berth cabins	32	64/128
4 berth cabin	1	4
8 berth cabin	1	8
		135/199

All accommodation fully airconditioned/heated and includes toilets, showers, mess, recreation and conference rooms, hospital facilities for 3 persons, laundries and store rooms.

FIREFIGHTING AND RESCUE

Fire fighting capacity: 20,000 USGPM.
Range of water jets: Horizontal: 150 m Height: 75 m
Two monitors at stern. Containerized
fire pump package on main deck.
Comprehensive rescue and survivor accommodation facilities.

HELICOPTER DECK

Diameter of 66 ft Suitable for S—61

REPAIR, MAINTENANCE AND INSTALLATION

Clear deck area: Approximately 26.5m (87 ft) x 18m (59 ft) = 477m2. Max. deck load: 5 tons/m2.

Workshop: Full machine-shop and metal fabrication facilities. Sand blasting equipment, welding machines, etc.

Pipe Davits: 3 x 45 tonne constant tension synchronised davits (optional). One davit revolves to provide auxiliary subsea cranage and fitted to launch/recover a sub-marine (PC 1801 — diver lockout) and allow divers to transfer to DDC.

Pile Driving: Facility for Hydroblock hydraulic pile driving equipment with offshore guide frames and subsea capability. Maximum striking energy of Hydroblock system 299,000 ft/lbs.

Tugger Winches: 2 x 10 ton Brattvaag
2 x 4½ ton Ingersoll Rand
2 x 2½ ton Ingersoll Rand

MAIN CRANE

Type	Liebherr BOS 300/5000 offshore crane
Motive power	2 x Mercedes diesel
Main hook	300 tonnes
First aux. hook	70 tonnes
Second aux. hook	30 tonnes
Tugger winch	2 x 5 tons self tensioning winches 1 x 12 tons self tensioning winch

Max. load computer in crane cab.

Special features
* Subsea operating depth to 600 ft
* Duplicated diesel hydraulic drive all systems

AUXILIARY CRANE

Type	Liebherr B 10/2426
Capacity	10 tonnes
Outreach	26 m
Dive	Electrohydraulic

NAVIGATION AND COMMUNICATIONS

Navigation Equipment

Radar:	Decca RM916A Decca RM1216C
Auto pilot	Sperry SRP 680 Gyro Pilot
Echo Sounder	Simrad EL388
Radio Directional Finder	Marconi Marine Lodestar III D
Master Gyro	2 x Arma Brown Mark 10

Communication Equipment

MF/HF Station:	ITT
SSB Radio:	Sailor T1127
V.H.F.	25 W sailor RT144
Telex and Teleprinter	Sait ARQ equipment type XH 5110A
Aero. V.H.F.	Southern Avionic SS—400A

CONTROL STATIONS

Forward	Wheelhouse
	Navigation complex
	Communication complex
Aft	Dynamic positioning control
	Duplicated ship — manoeuvring controls
	Central ballast controls, with stability Computer assistance
	Winch control (and pipe davit controls).
	Operations office
	Intercommunication to all parts of the ship

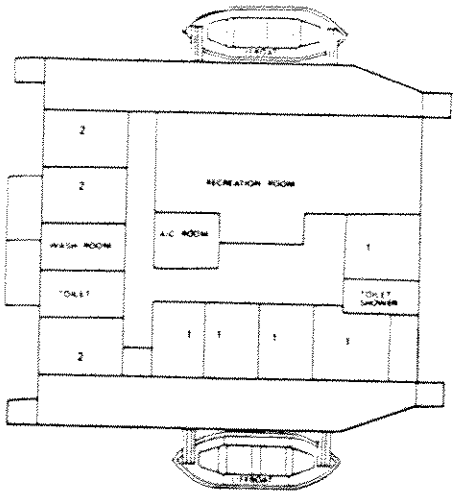
DYNAMIC POSITIONING

System	Honeywell Micro ASK
Positioning input	Duplicated RS 7 acoustic system with mini—ranger and taut wire sensing system.

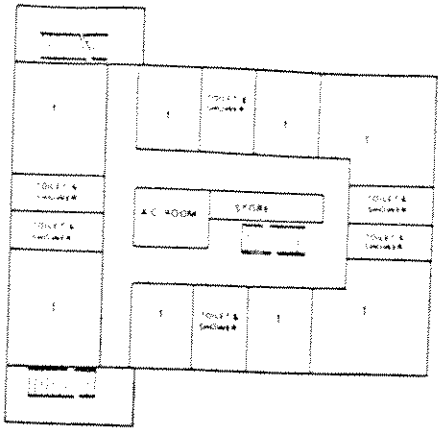
MOORING ARRANGEMENTS

Winches	4 x Brattvaag double-drum hydraulic mooring winches, each powered by individual electro/hydraulic power packs.
	Linepulls 60 tonnes at 12.7m/min 20 tonnes at 19.1m/min 6 tonnes at 38.0m/min
	Capacity 1500m x 44mm wire. Each winch fitted with hydraulic automatic level winders, footage counter, strain gauge, and with local and remote control from bridge. TV monitors.
Anchors	8 x 4.5 tonnes high holding Danforth anchors, racked on bolsters or 7 ton Stevin anchors.
Fairleads	8 x Turner swivel — head fairleads

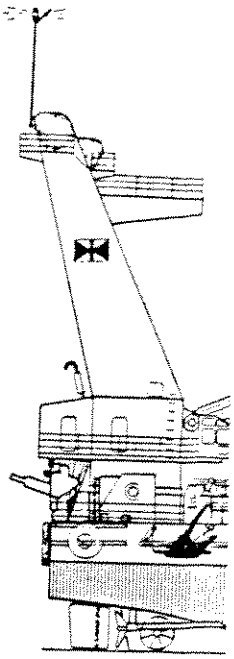
With tug assistance, capable of mooring to an 8 point system in up to 800 ft. of water.

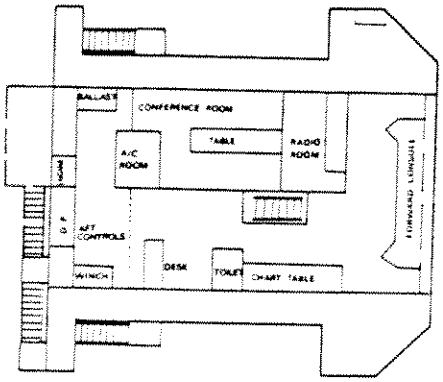


BOAT DECK

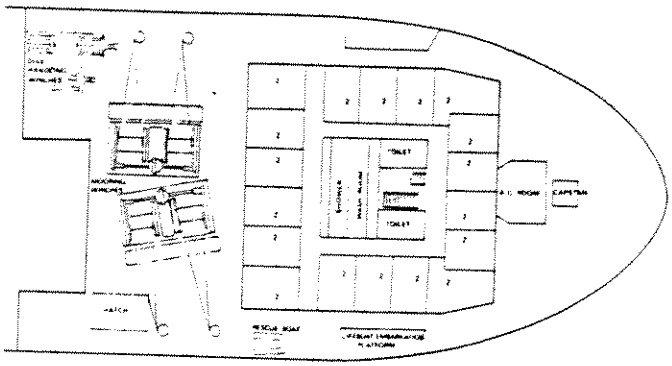


LOWER BRIDGE DECK

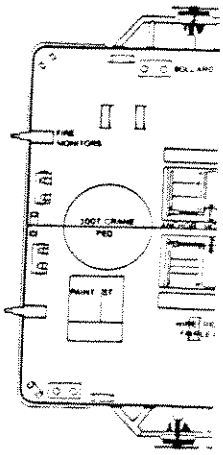


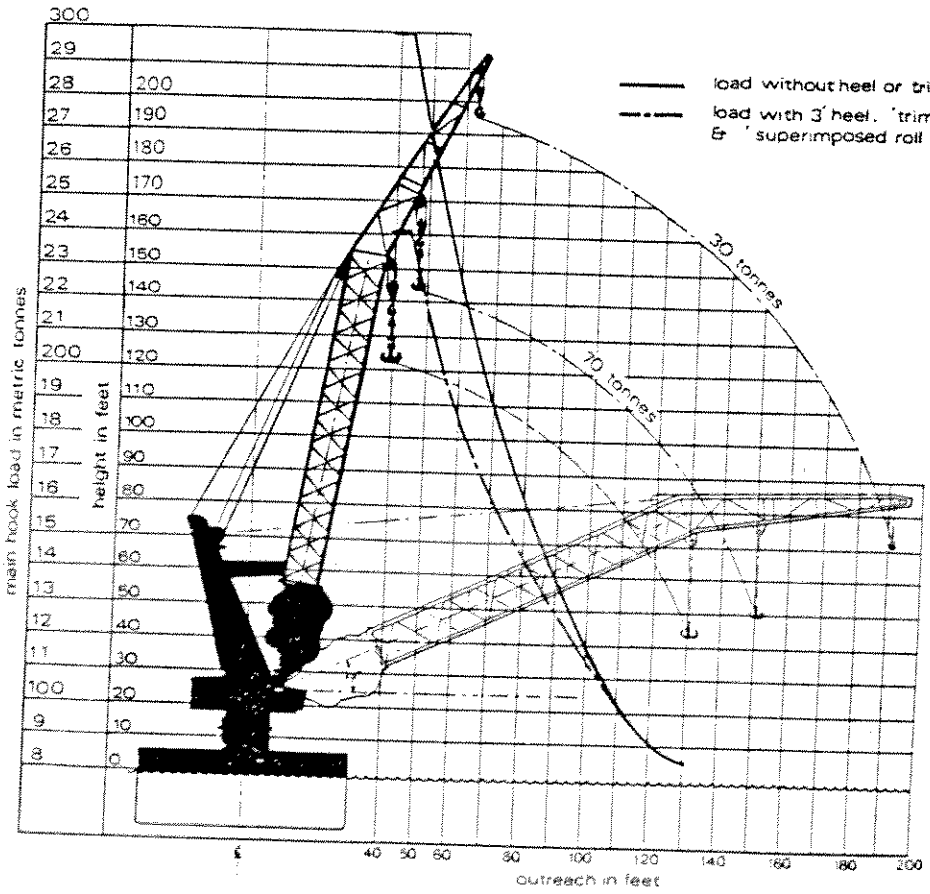


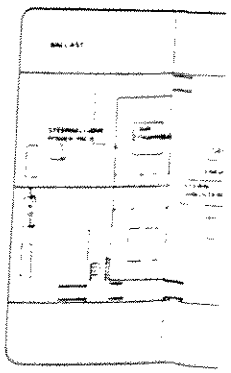
UPPER BRIDGE DECK



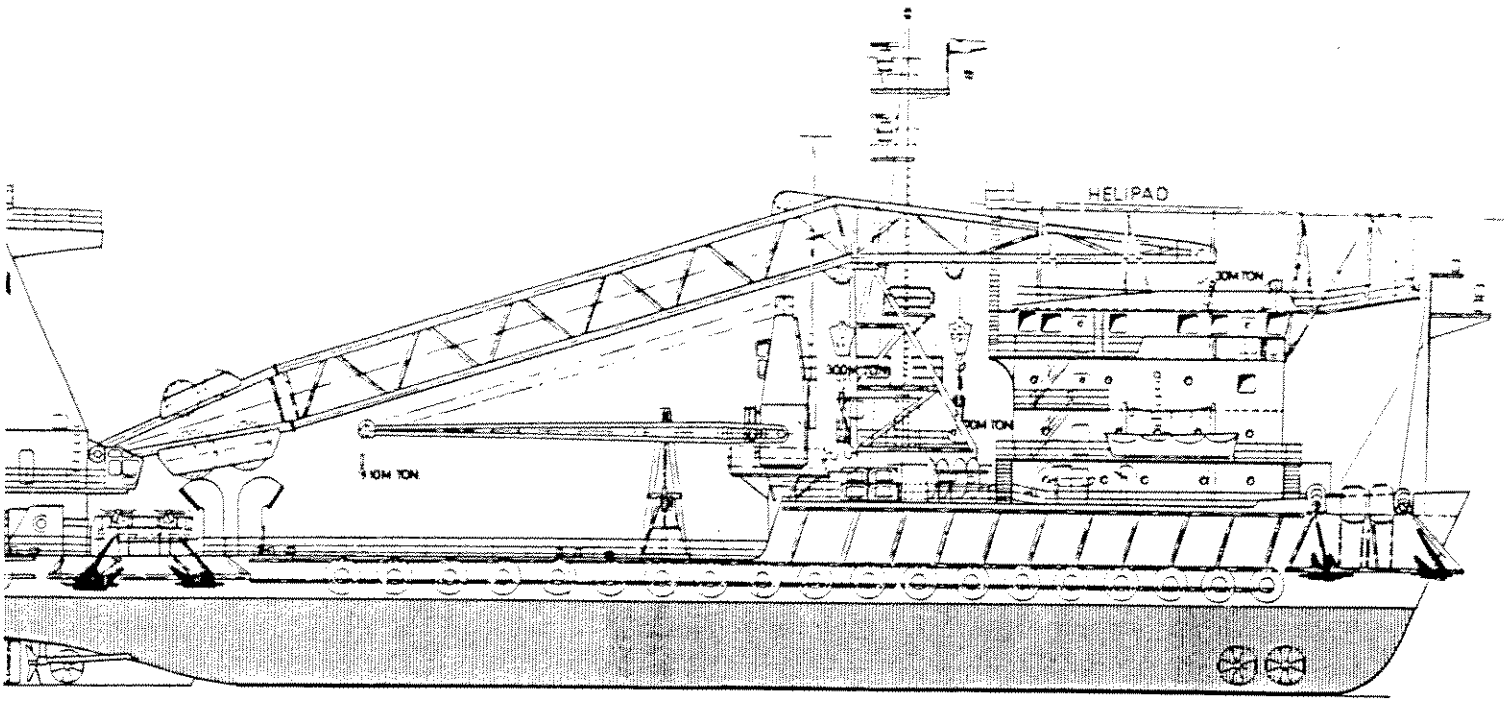
FORECASTLE DECK

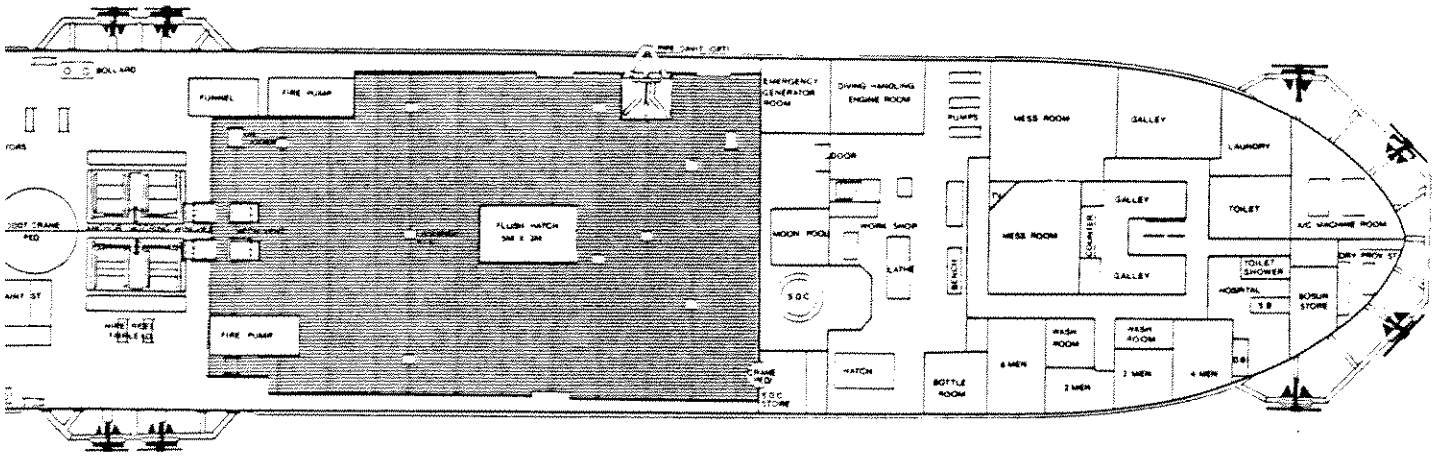




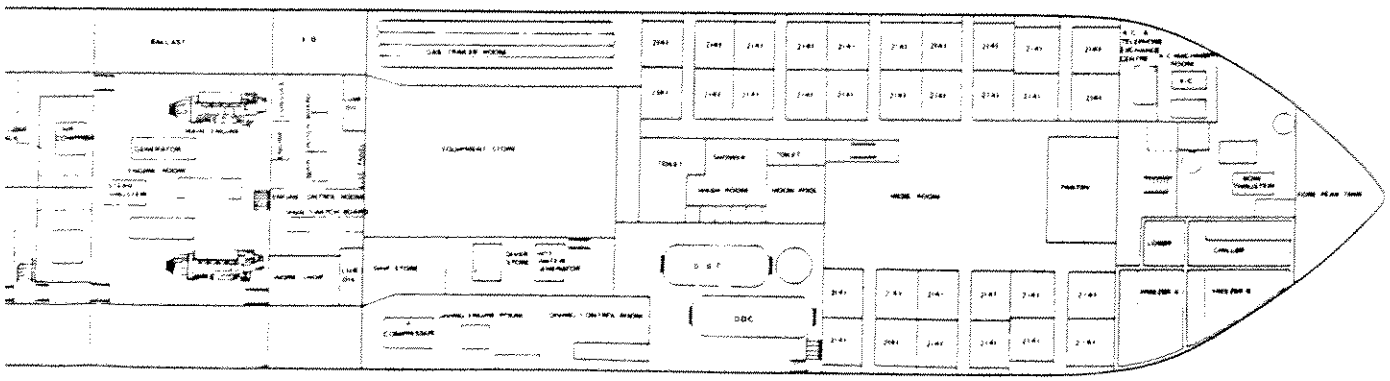


PACIFIC INSTALLER





MAIN DECK

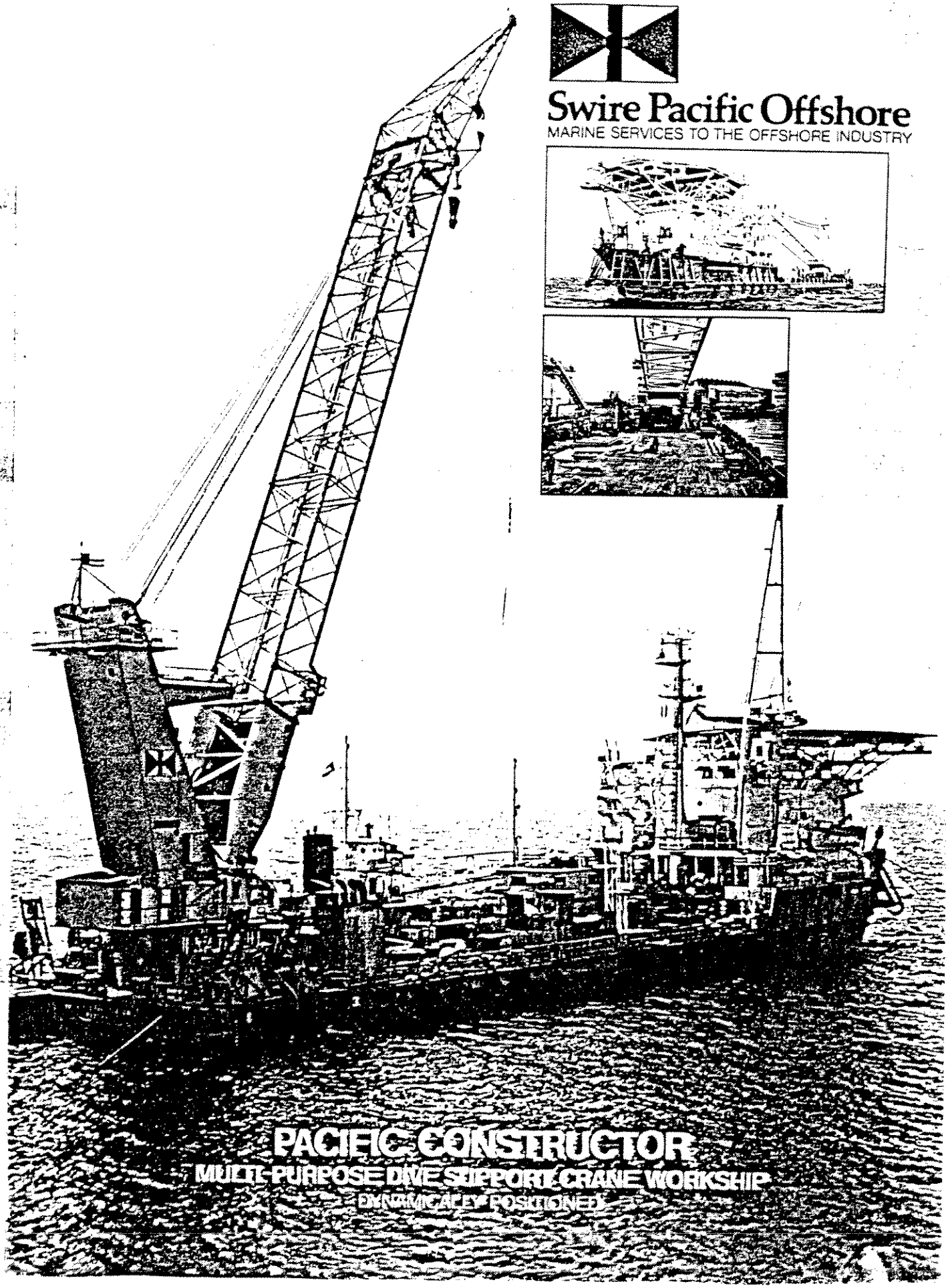


TWEEN DECK

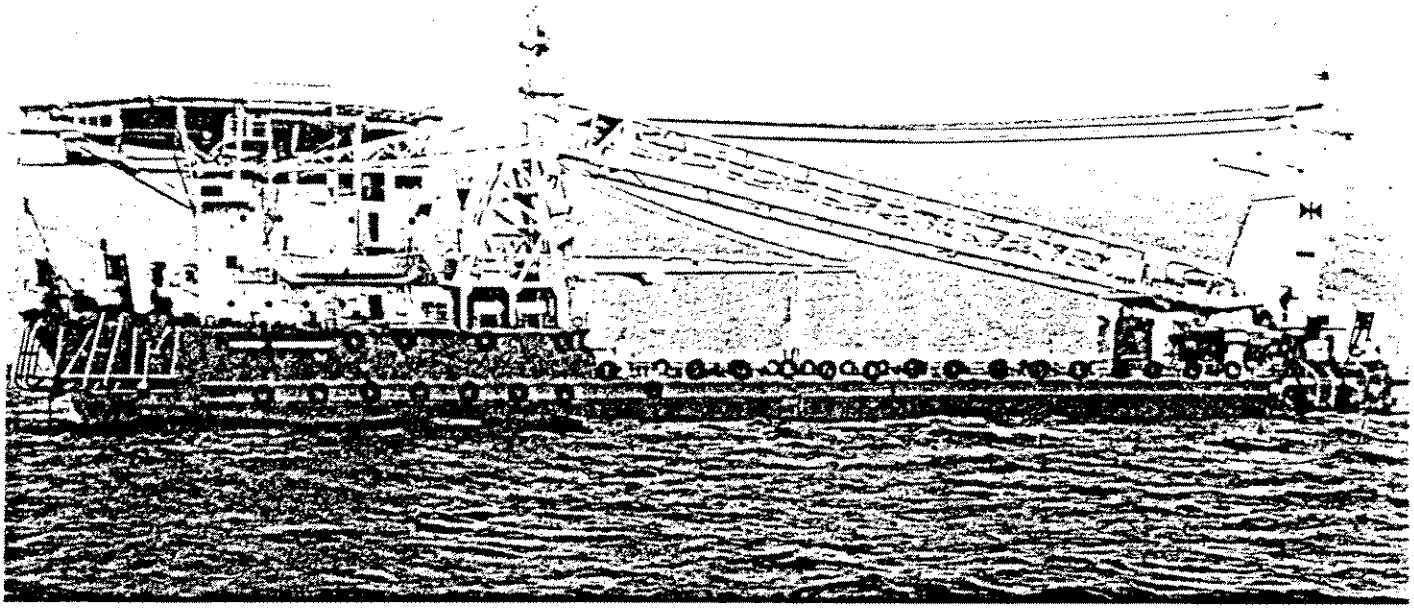
Appendix F.6 - Swire Pacific "Constructor"

Swire Pacific Offshore

MARINE SERVICES TO THE OFFSHORE INDUSTRY



PACIFIC CONSTRUCTOR



MULTI-PURPOSE DIVE SUPPORT CRANE WORKSHIP
Dynamically positioned

"PACIFIC CONSTRUCTOR" has been designed to provide comprehensive site utility services to offshore production and development operations including:—

* Heavy lift (incl. subsea)
* Hook-up work
* Diver and submersible support
* Maintenance, repair and installation
* Firefighting and rescue
* Pipeline tie-in and repair
* Pile driving and core drilling
* S.B.M. installation and maintenance
* Berthed accommodation for about 200 charterer's personnel

"PACIFIC CONSTRUCTOR" can undertake prolonged periods of duty and may be refuelled on location.

HONG KONG

Swire Pacific Offshore
Swire House
9 Connaught Road Central
Hong Kong
Tel: 5-230011
Telex: 73206 SWIRE HX

DUBAI

Swire Pacific Offshore
c/o Gulf Agency Co (Dubai) Ltd
P O Box 2404
Dubai
United Arab Emirates
Tel: 435384/435399
Telex: 46839 SWIRE EM

SINGAPORE

Swire Pacific Offshore
14th Floor Ocean Building
Collyer Quay
Singapore 1
Tel: 92891/92892
Telex: RS 23280 SWIRE
Cable: SWIREBOAT

BRUNEI

Swire Pacific Offshore
Lot 2505 Jalan Temanggong
P O Box 685
Kuala Belait
Brunei
Tel: KB2474
Cable: SWIREFLEET KB

TOKYO

Swire Pacific Offshore
c/o Swire Management Services K.K.
Swire House
14 Ichibancho, Chiyoda-ku
Tokyo 102
Japan
Tel: 03-230-9203/9205
Telex: 22248 SWIRE A

"PACIFIC CONSTRUCTOR" has the following characteristics:

Length overall	94.1m (309 ft)
Breadth	18.8m (62 ft)
Depth	6.7m (22 ft)
Draft maximum	5.3m (17 ft)
Clear Deck Area	44m (144 ft) x 18m (59 ft) = 792 m2 – Max. deck loading: 5 tons/m2
Gross tonnage	3371
Cranes – Main	Liebherr BOS 2400/15000 240 tonnes at 14m outreach.
– Aux.	10 tonnes at 22m.
Speed	10½ knots
Propulsion	2 x 2100bhp = 4200bhp CPP
Thrusters – Bow	2 x 1000bhp CPP
– Stern	2 x 850bhp CPP
Generating capacity	3 x 400KW 440 V 60HZ 3 1 x 220KW (emergency)
Dynamic positioning	Honeywell Micro ASK System
Mooring	8 pts tug assisted to 800 ft water depth.
Accommodation	Above main deck: 71 Below main deck: 96/192 in 2/4 berth cabins.
Designer	Maritime Engineering A/S Oslo, Norway
Builders	Mitsubishi Heavy Industries Ltd, Kobe, Japan
Delivered	July 1978
CLASSIFICATION	ABS + 1A(E) + AMS
FLAG	Panama
CALL SIGN	HPWC

MACHINERY

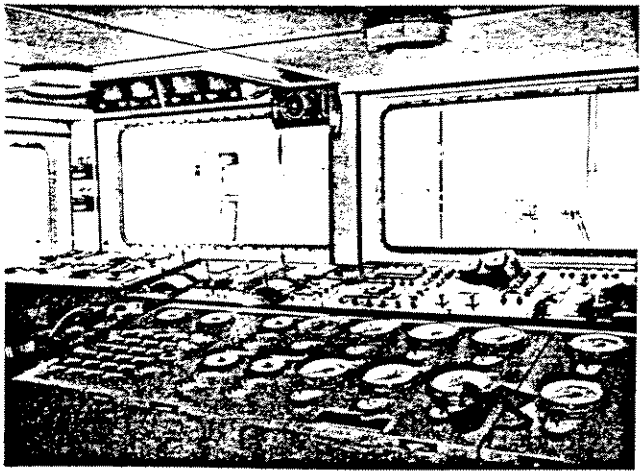
Main Engines	2 x Daihatsu 6DSM – 32, to 4200bhp at 600rpm with C
Thrusters – Bow	2 x Kamome TC – 110DLN, driv by 1000bhp x 2 Daihatsu with CF 11 tonnes thrust
– Stern	2 x Kamome TC – 70DLN, driv by 850hp x 2 Daihatsu with CF 8.3 tonnes thrust
Generators	3 x 400KW = 1200KW 440V 60HZ. 1 x 220KW (emergenc driven by Daihatsu 6DS – 600hp at 900rpm
Air Compressors	3 x aircooled 400m3/hr at 7kg/cr

CAPACITIES

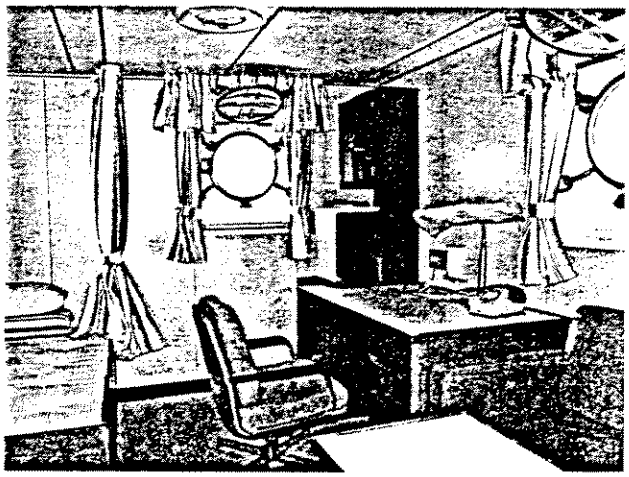
Deadweight	4346 tonnes
Fresh Water	780 tonnes
Fuel Oil	772 tonnes
Lube Oil	27 tonnes
Ballast Water	2880 tonnes
Refrigerated Storage	Large Walk-in freezer rooms –20°C and chiller rooms at +4

PUMPING

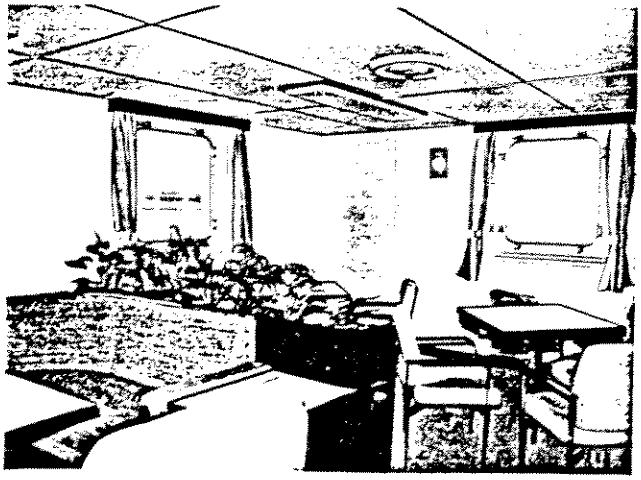
Fuel Oil	1 x 50m3/hr at 60MWH
Fresh Water	1 x 50m3 at 60MWH
Ballast Water	2 x 400m3/hr at 25MWH
	1 x 150m3/hr at 25MWH
Rig Transfer (electrics):	150 KW, 440 V, 60 HZ



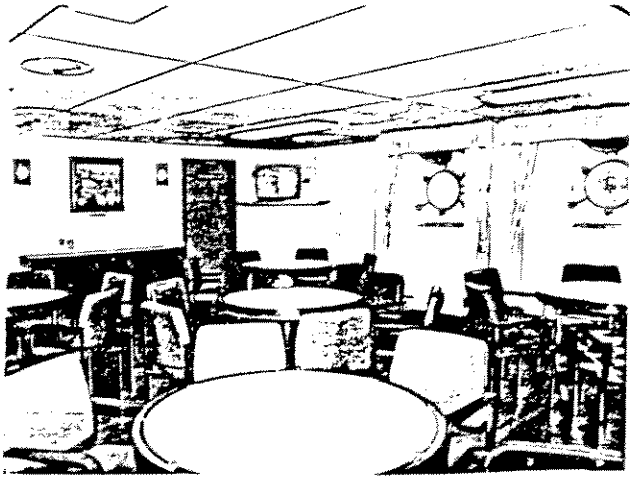
Control Room



Accommodation



Recreation Room



Mess Room

FRESH WATER
GENERATOR 1 x 36m3/day freshwater

WASTE/SEWAGE DISPOSAL 1 x sewage plant
1 x Volcano incinerator

ACCOMMODATION	No. of accom. units	Total persons
1 berth suites with bathrooms	4	4
1 berth cabins with shared bathroom	6	6
1 berth cabins	3	3
2 berth cabins	23	46
2/4 berth cabins	48	96/192
4 berth cabins	1	4
8 berth cabins	1	8
		167/263

All accommodation fully airconditioned/heated and includes toilets, showers, mess, recreation and conference rooms, hospital facilities for 3 persons, laundries and store rooms.

FIREFIGHTING AND RESCUE

Remote controlled fire monitors served by diesel pumps can be mounted to deliver 40,000 gallons per minute of water from an elevated position.

Comprehensive rescue and survivor accommodation facilities are provided.

HELICOPTER DECK

Diameter of 73 ft. Suitable for Sikorsky S61N.

REPAIR, MAINTENANCE AND INSTALLATION

Clear deck area:
Approximately 44m (144 ft) x 18m (59 ft) = 792m2 max deck load: 5 tons/m2 wooden sheathed.
Workshop: Full machine-shop and metal fabrication facilities. Sand blasting and welding equipment etc
Pipe Davits :
3 x 45 tonne constant tension synchrouised davits (optional). One davit revolves to provide auxiliary subsea cranage and fitted to launch/recover a sub-marine (PC 1801 — diver lockout) and allow divers to transfer to DDC.
Pile Driving: Facility for Hydroblock hydraulic pile driving equipment with offshore guide frames and subsea capability. Maximum striking energy of Hydroblock system 299,000ft/lbs.
Tugger Winches: 2 x 7 tons Ingersoll Rand
2 x 4½ tons Ingersoll Rand

MAIN CRANE

Type	Liebherr BOS 240/5000 offshore crane
Motive power	2 x Mercedes diesel
Main hook	240 tonnes
First aux. hook	70 tonnes
Second aux. hook	30 tonnes
Tugger winch	2 x 5 tons self tensioning winches 1 x 10 tons self tensioning winch
Max. load computer crane cab.	
Special features	* Subsea operating depth of 600 ft * Duplicated diesel hydraulic drive all systems
Performance	See diagram for loading curves, lifting heights, outreach. All hooks are fitted with swing and swell compensation.

AUXILIARY CRANE

Type	Liebherr B 10/2426
Capacity	10 tonnes
Outreach	26m
Drive	Electrohydraulic
Special features	Subsea operating depth to 1000 ft Able to launch/recover submarine (PC 1801 — Diver lockout) and allow diver transfer to DDC

NAVIGATION AND COMMUNCATIONS

Navigation Equipment

Radar	Decca 1216 and 916 RM
Gyrocompass	2 x Sperry MK — 37
Gyro pilot	Sperry FR — 248 — P — J2
Echo Sounder	Simrad ED
RDF	Decca Navigator

Communication Equipment

W.T. Station	ITT
R.T.M. F./H.F.	SSB 400 W Sailor
V.H.F.	25 W, 55 channels, Sailor
Telex and Teleprinter	Sait ARQ
Weather fascimile receiver	
Aero. V.H.F.	Southern Avionics SS-400A

CONTROL STATIONS

Forward	Wheelhouse Navigation complex Communication complex
After	Dynamic positioning controls Duplicated ship — manoeuvring controls Central ballast controls, with stability Computer assistance Winch control and pipe davit controls Operations office Intercommunication to all parts of the ship.

DYNAMIC POSITIONING

System	Honeywell Micro ASK
Positioning input	Duplicated RS 7 acoustic system with mini-ranger and taut wire sensing system.

MOORING ARRANGEMENTS

Winches	4 x Brattvaag double-drum hydraulic mooring winches, each powered by individual electro/hydraulic power packs. Line pulls 60 tonnes at 12.7m/min 20 tonnes at 19.1m/min 6 tonnes at 38.0m/min Capacity 1500m 44mm wire. Each winch fitted with hydraulic automatic level winders, footage counter, strain gauge, and with local and remote control from bridge. TV monitors.
Anchors	8 x 4.5 tonnes high holding Danforth anchors, racked on recessed anchor box.
Fairleads	8 x Turner swivel-head fairleads

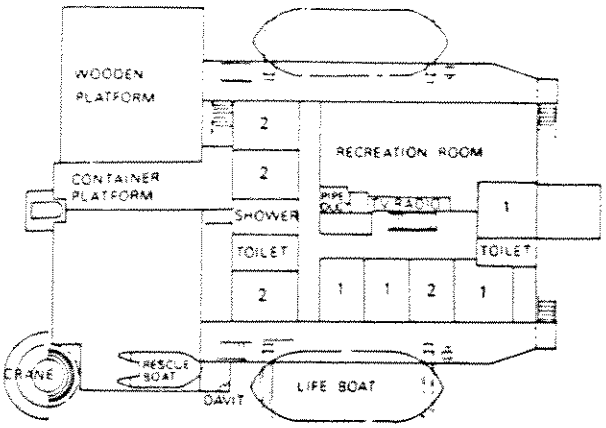
With tug assistance, capable of mooring to an 8 point system in up to 800 ft. of water.

DIVE SYSTEM

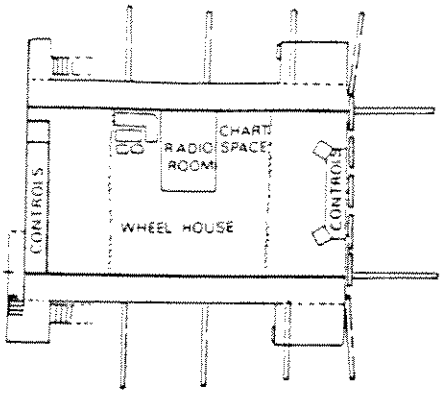
Designed for easy installation of any kind of diving system. Two 3m x 3m moonpools.

SUBMERSIBLE OPERATIONS

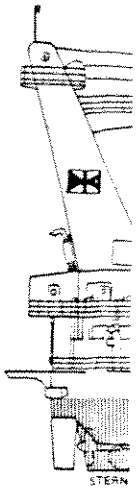
Facility for a self controlled diver lock-out submersible, complete with saturated diving system.

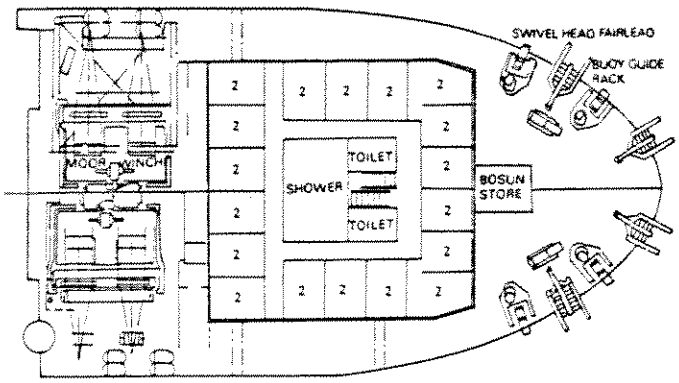


BOAT DECK

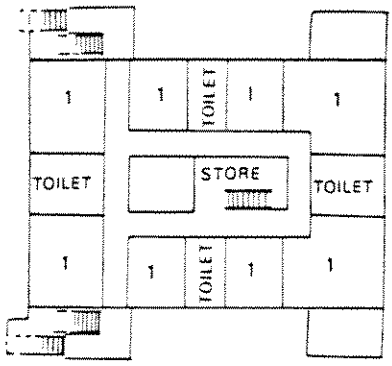


UPPER BRIDGE DECK

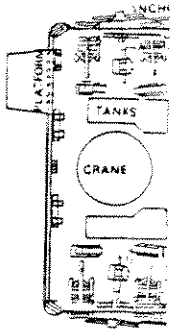




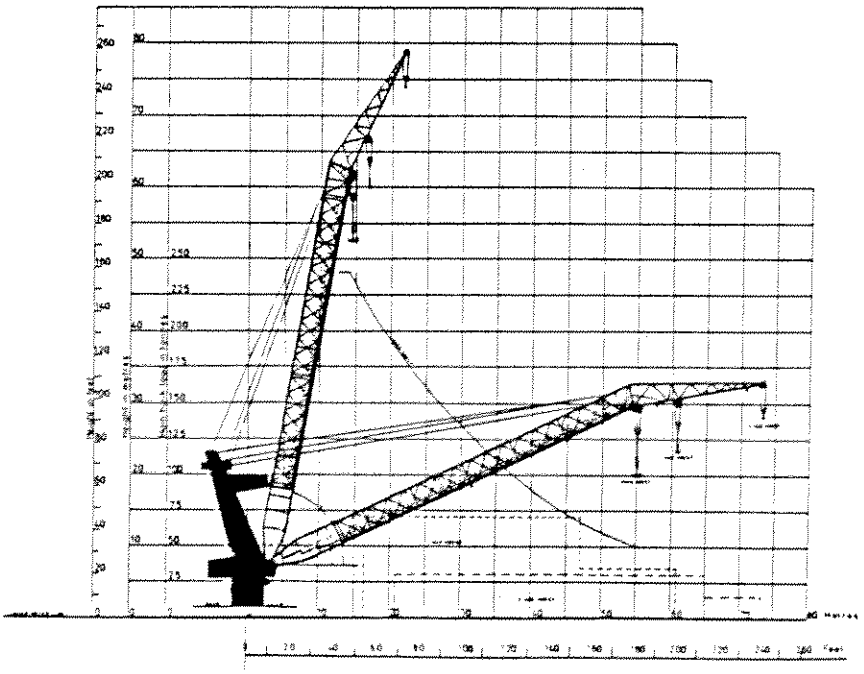
FORECASTLE DECK

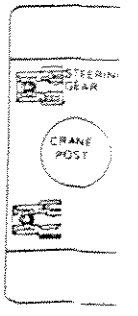


LOWER BRIDGE DECK

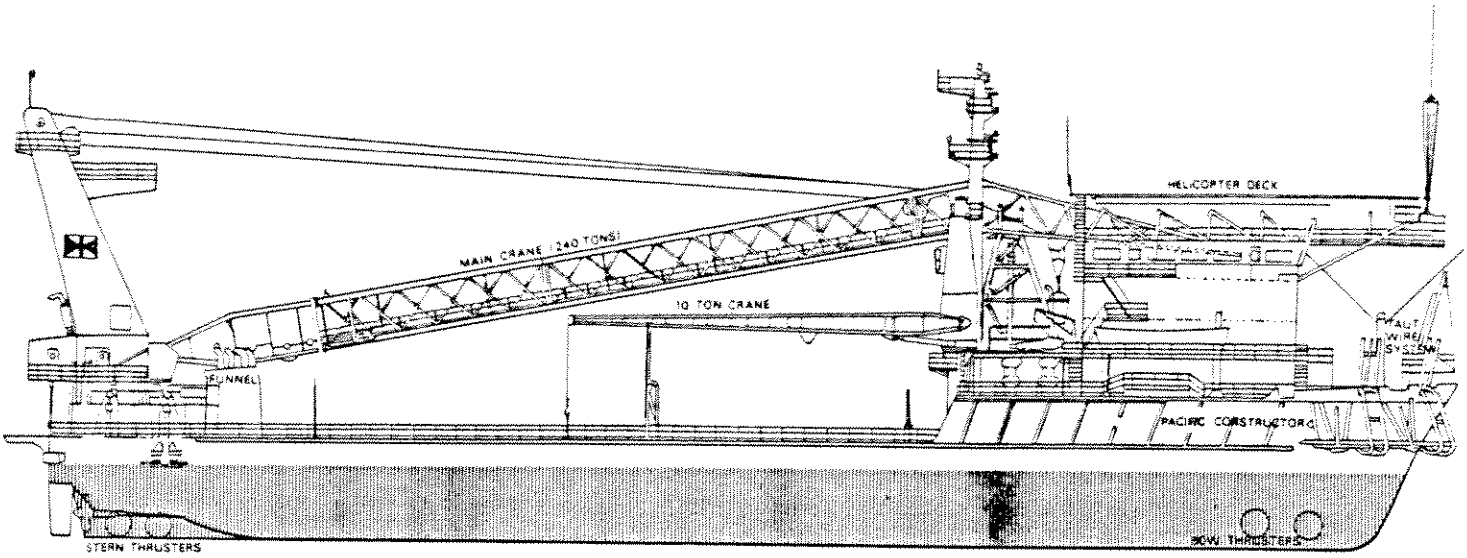


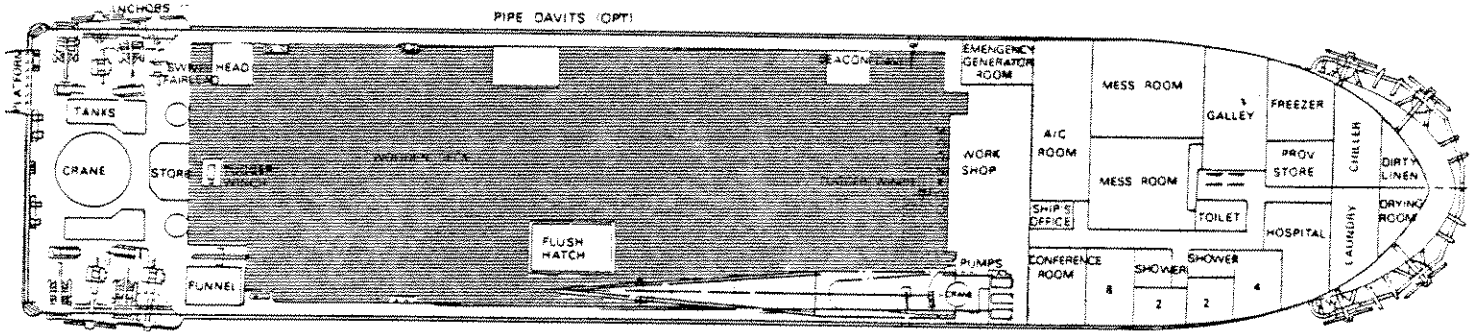
CRANE PERFORMANCE GRAPH
Liebherr BOS 240/5000



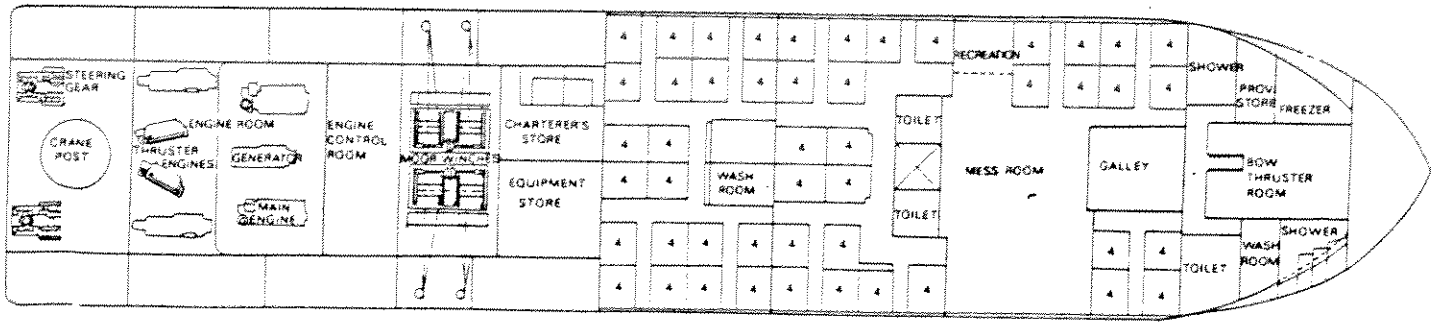


PACIFIC CONSTRUCTOR





MAIN DECK



TWEEN DECK

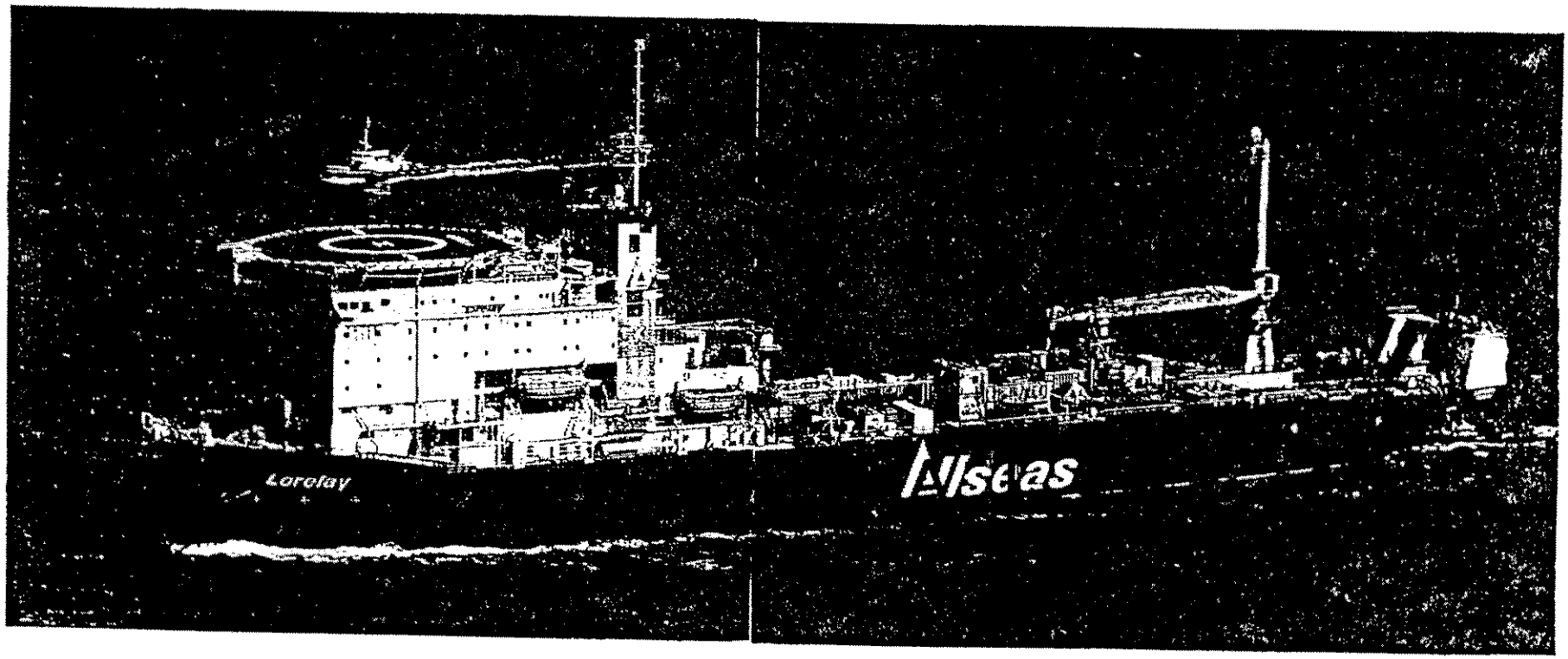
Appendix F.7 - Allseas "Lorelay"

Allseas' operating companies are Allseas Marine Contractors S.A. situated in Châtel-St. Denis, Switzerland, and Allseas Engineering B.V., situated in The Hague, Netherlands.

Allseas Marine Contractors S.A. is the operating company for the "Lorelay", while Allseas Engineering B.V. is the design, project engineering and R & D company.

Allseas' specialists in pipelaying, naval architecture, subsea technology and robotics development were responsible for the design of the "Lorelay" and the trencher "Digging Donald".

In its first season, Allseas' team of project engineers proved its quality with a high technical standard and an excellent work rate. Between them and the experienced offshore team, a unique spirit of cooperation and performance has grown.



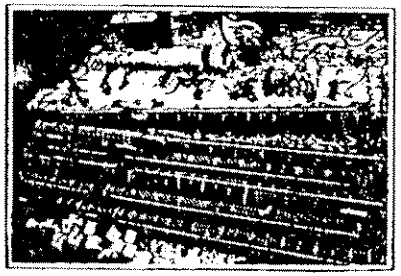
Between them and the experienced offshore team, a unique spirit of cooperation and performance has grown.

Services Offered

- Project management
- Installation engineering for pipelines and subsea systems
- Pipeline installation
- Riser, spoolpiece, and J-tube installation
- Subsea template installation and pile driving
- Pipeline trenching
- Pipeline inspection
- Pipeline tie-in and repair
- Diving support

Engineering Services Concerning Subsea Systems Include:

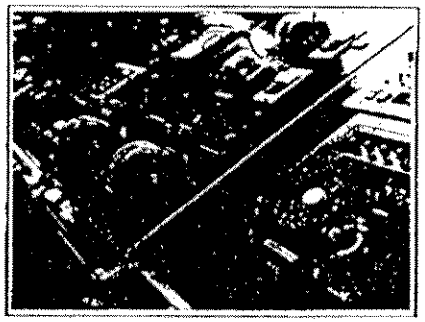
- Feasibility studies, preliminary and detailed designs
- Bid preparation assistance
- Structural specifications
- Fabrication specifications
- Purchasing services
- Field assistance
- Computer simulation
- Model testing
- Cost studies



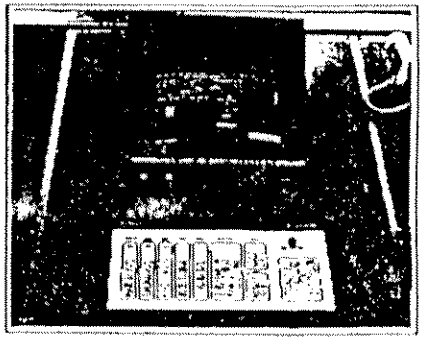
"Lorelay" – Versatile and Cost Effective

The "Lorelay" is a thoroughly thought out unit with clever details which save time and cost, reduce fuel consumption, and increase safety. It has been built to meet the most demanding requirements of the various certifying authorities and governmental regulatory bodies.

As a result it is the most modern and safe construction vessel in the industry today.
The design has six major features setting it apart from conventional vessels, of which the dynamic positioning system for pipelaying is the most appealing one.



Details of bridge and control room



DP Capability for Pipelaying

"Lorelay" has a fully redundant Kongsberg Albatross D.P. System with an extremely high station keeping ability. The vessel lays pipe on dynamic positioning, or optionally on anchors in rare cases where desirable. Pipelaying on DP has several advantages:

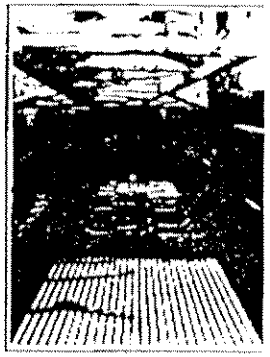
- It is the safest method of operating in congested areas, where anchors present a hazard to existing pipelines.
- It saves time in setting up and abandoning the pipeline.
- It enables pipelaying in really unlimited water depths.

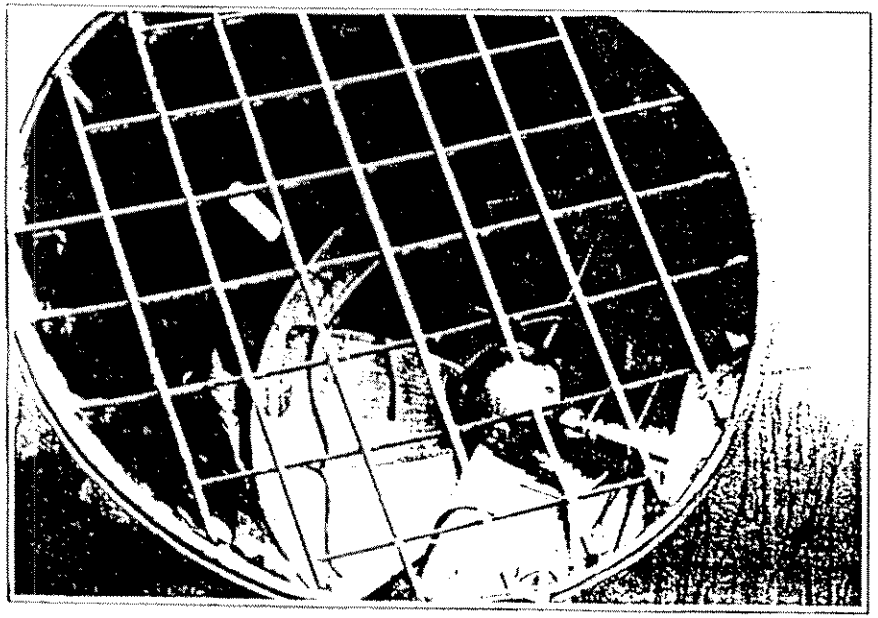
D.P. control panel

Large Pipe Carrying Capacity

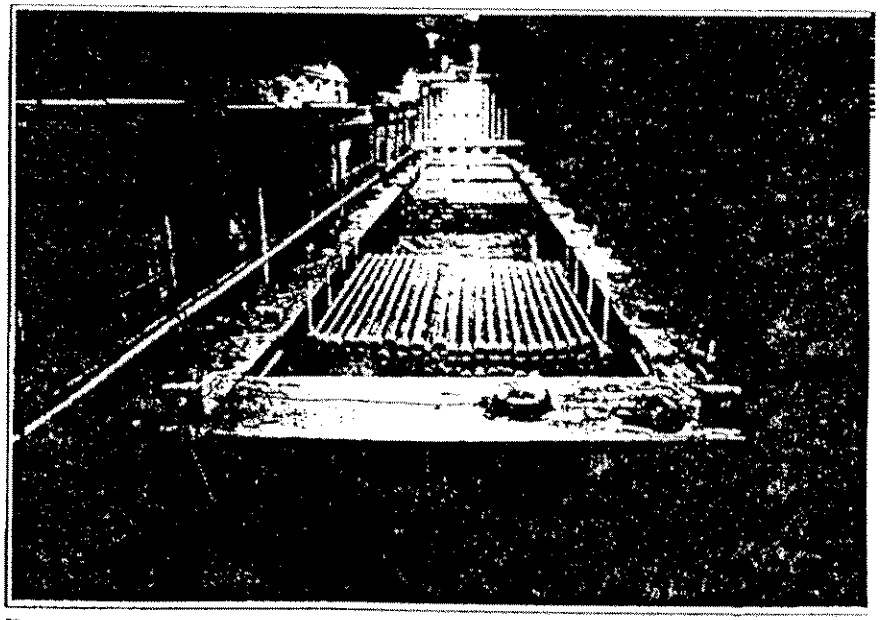
When mobilising, the vessel can take along sizeable quantities of pipe – about 4000 tons in its 93 m long cargo hold, making it independent from offshore pipe supply.

This enables "Lorelay" to continue working in poor weather conditions as it is not necessary to take alongside a pipe carrier and load pipes offshore by crane.





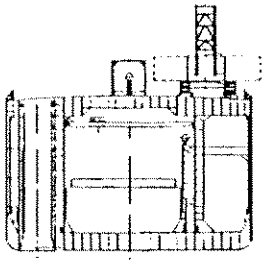
Tunnel thruster

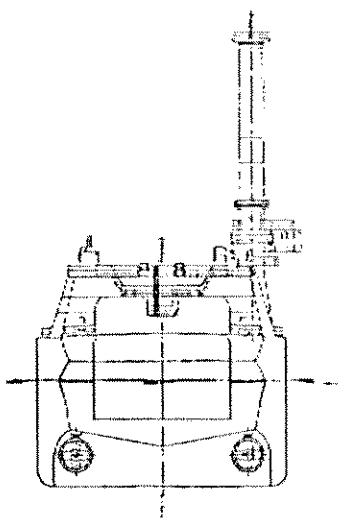


93 m long cargo hold

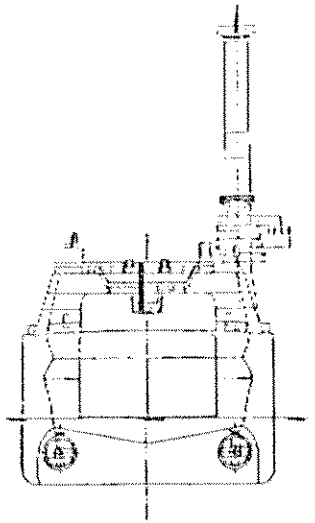
Quick Loading of Pipes

The vessel can be supplied with pipe in a very short time inshore by bringing in one or more barges, pre-loaded with double joints of different diameters, through the specially designed open stern. In this way for example, 10 kilometres (6 miles) of 24" pipe or 40 kilometres (24 miles) of 6" pipe can be taken out to location inside the ship.

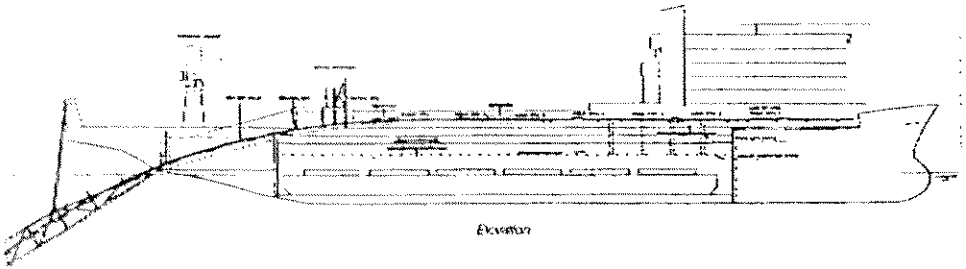




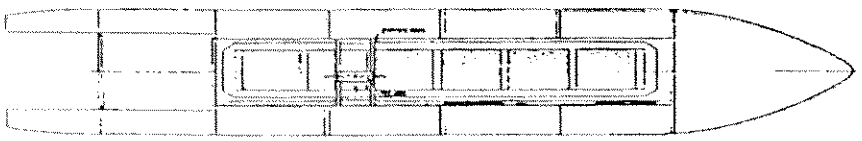
Inshore loading draft



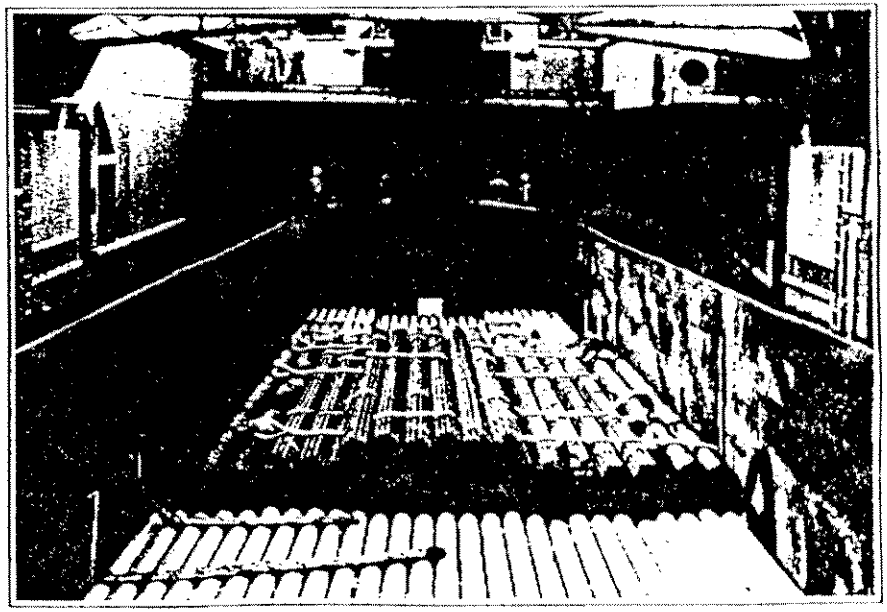
Transit draft



Elevation



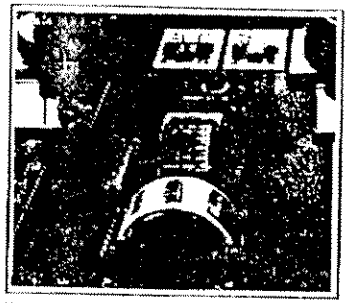
Plan of hold



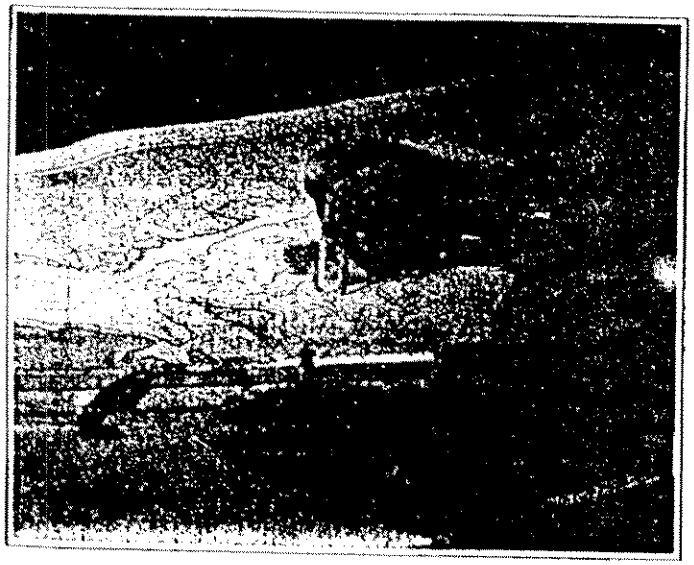
Barges are floated in

Fast Mobilisation

Travelling at 16 knots, the vessel is on location quickly and at low cost. Turn-around time is short if a contract necessitates returning to shore for reloading pipes. Fast mobilisation makes the vessel commercially viable for work in any part of the world.



Dennis of Lodge



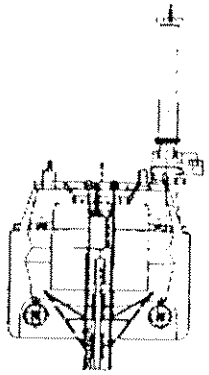
Versatility

The "Lorelay" is equipped with:

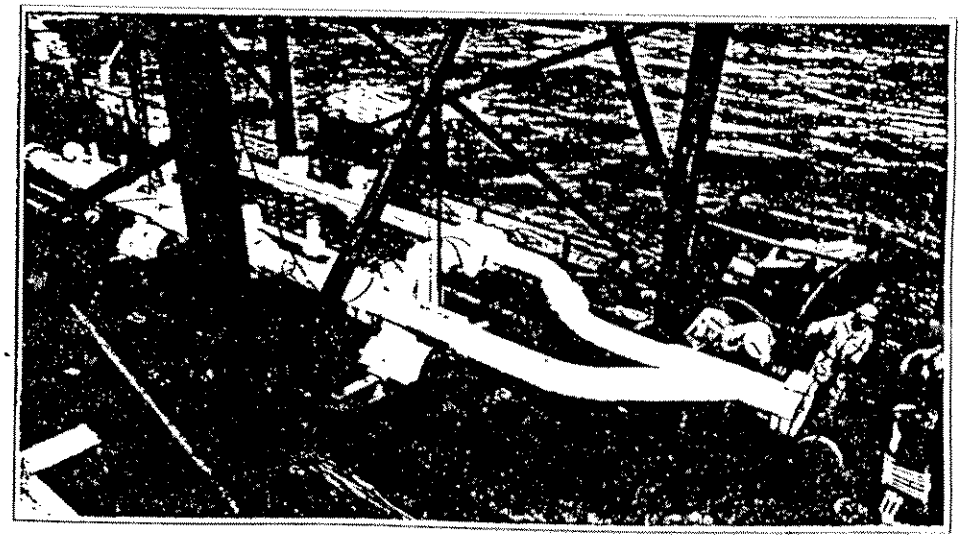
- the pipeline trencher "Digging Donald"
- a 300 T heave compensated revolving crane
- a 1000 T lift capacity from the aft outriggers

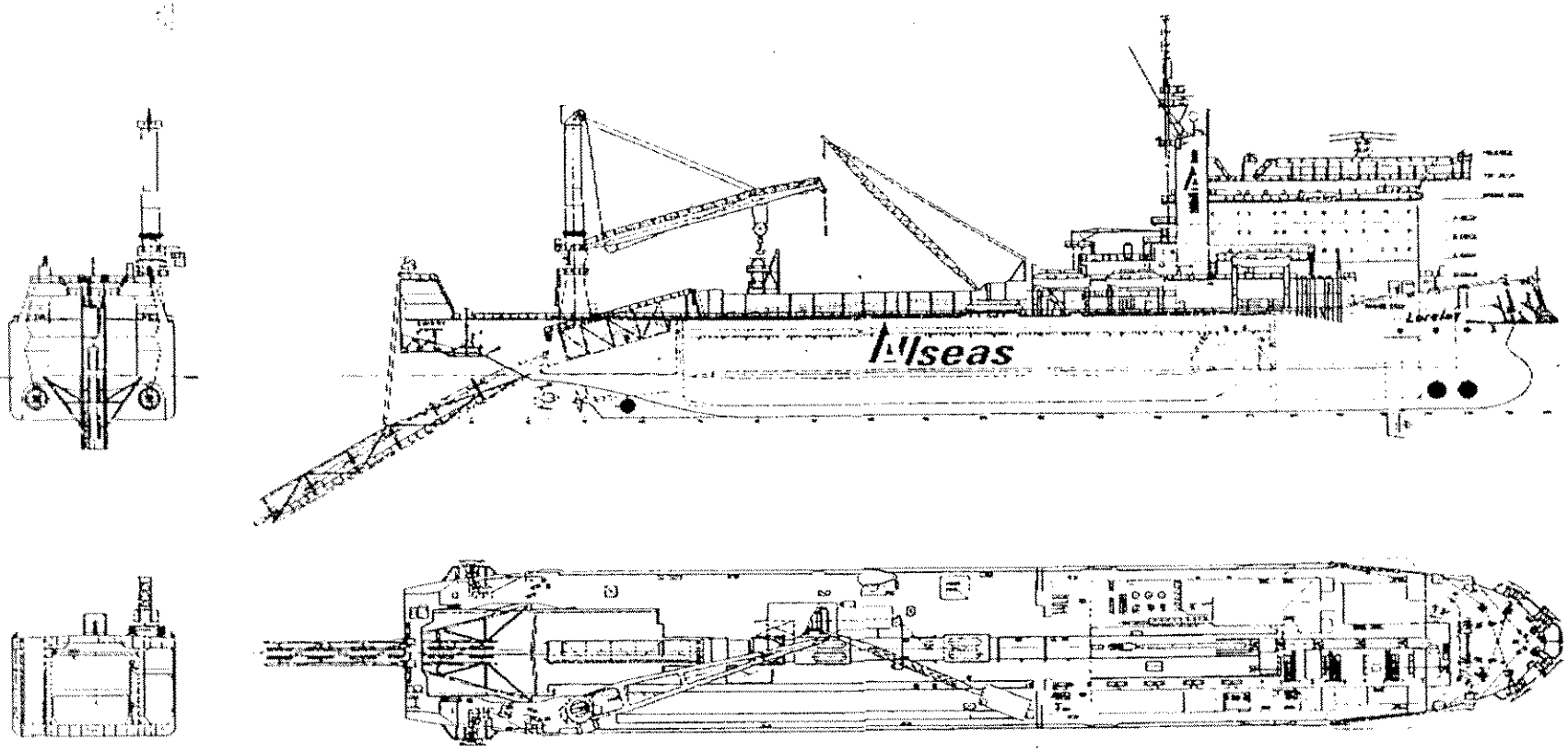
The large deck area is practical, for example, for assembling and handling spool pieces.

On a complex job, as is general practice today, the vessel's versatility makes her uniquely suitable for all required functions.

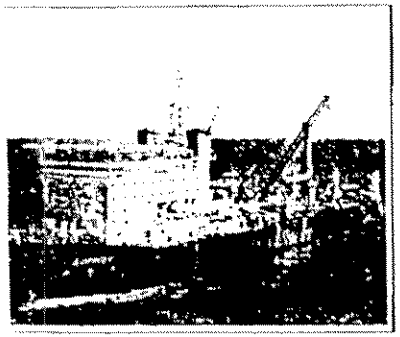


Spoolpiece installation





Vessel Specifications



length overall	182.5 m (599 ft)
length between p.p.	149.8 m (491 ft)
breadth	25.8 m (85 ft)
depth to deck	15.5 m (51 ft)
minimum draught	6.0 m (20 ft)
operating draught	6.8 m (22 ft)
bow thrusters	2 x 2600 kW* tunnel 1 x 2600 kW* retractable
stern thrusters	1 x 1000 kW* tunnel 2 x 3000 kW* azimuth 1 x 6000 kW* main propeller
station keeping ability	ERN No. 99 99 99
cruising speed	16 knots
installed power	19200 kW (26000 hp)

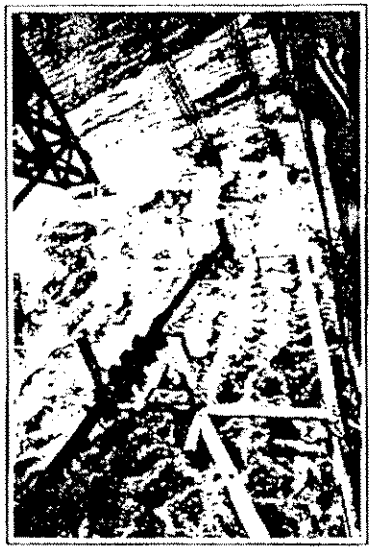
accommodation	186 men (1 and 2 man rooms, air conditioned)
dynamic positioning system	fully redundant, type Kongsberg Albatross ADP-503-MK II and ADP-311 supervisory
helideck	suitable for S-61-N and BV-234-LR helicopters
cranes	fully revolving heave compensated pedestal crane, capacity 300 T at 14 m, 120 T at 28 m radius mobile deck crane, type American Hoist 9310
mooring system	4 bow and 2 stern Delta Flipper anchors of 10 T each, on 3" wire ropes, 1800 m long, on drums with 160 T pulling force, 350 T holding force

Pipelaying equipment

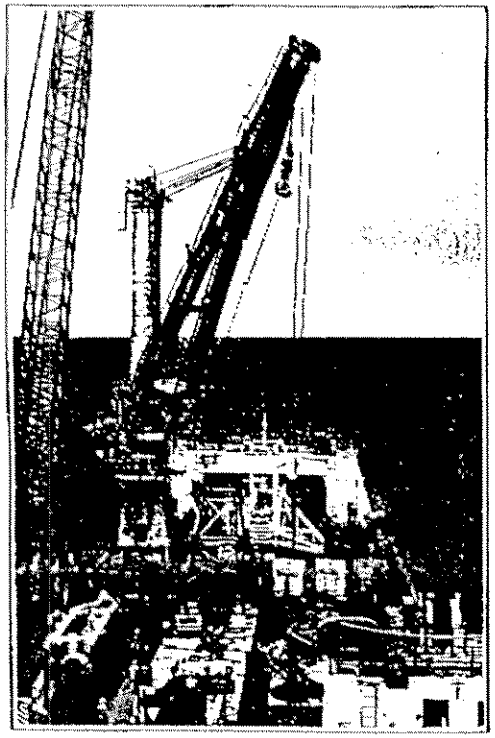
pipe diameters from 2" to 30"
pipe storage capacity: 4000 T
seven welding stations, X-ray station, coating station tension capacity: 2 x 5 T
all dedicated equipment for pipe cleaning, end preparation, beveling, and pre-heating

High Workability

Due to her large length (182.5 metres, almost 600 ft) and her high roll period (13 seconds), "Lorelay" can continue laying pipe in 3.5 m (12') significant wave height. This makes her competitive even on winter work.



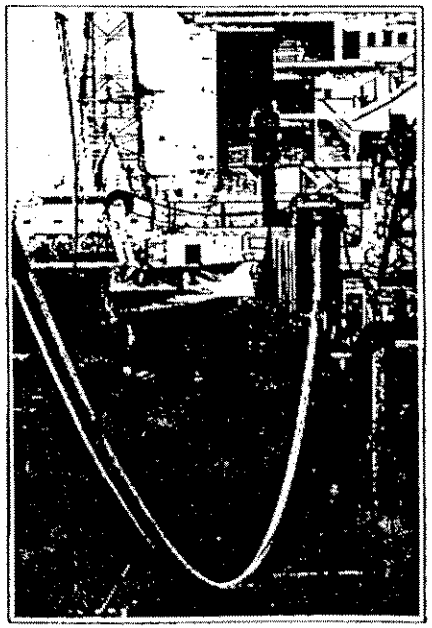
45 m stinger



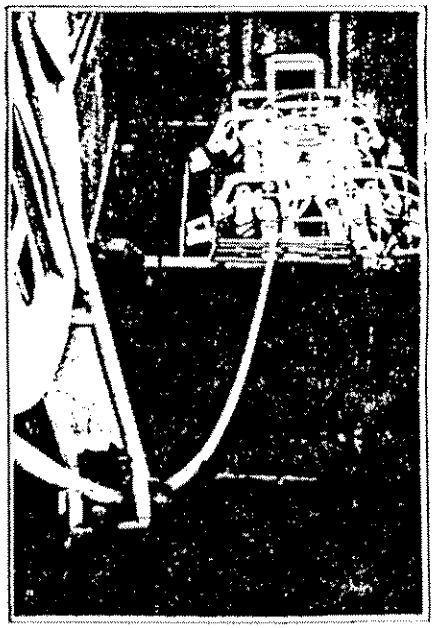
300 T heave compensated crane

Trenching Without Touching

Allseas has designed and built a mechanical pipeline trencher, "Digging Donald", suitable for nearly all soil types, ranging from loose or dense sand to very hard clay.

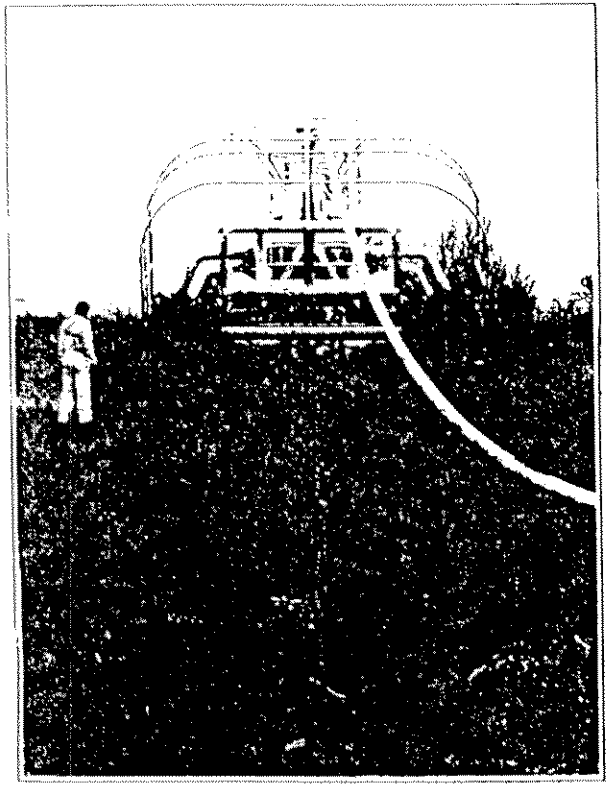


Trencher umbilical winch



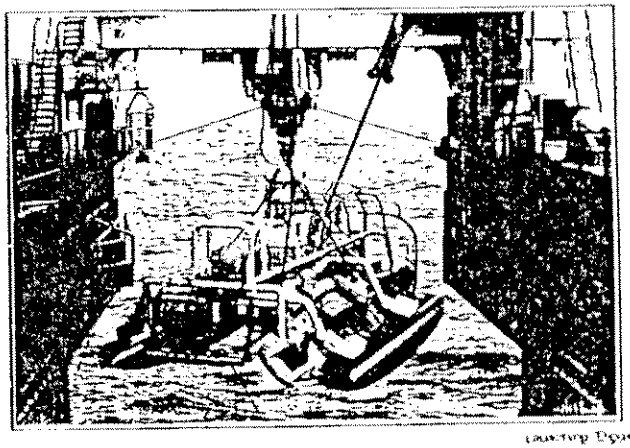
Trencher stowed in aft hold

The remotely controlled trencher travels on crawler tracks automatically straddling the pipeline. An important feature is that it is never in physical contact with the pipeline. This enables the machine to make second passes at trench partly buried pipeline sections.



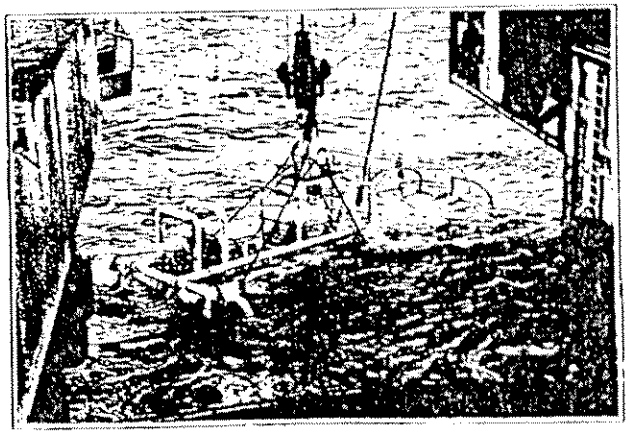
Land demonstration

A redundant safety shut off system ensures pipeline integrity at all times.
'Digging Donald' is suitable for cables and pipes from 2 to 36 inches diameter. It forms a narrow trench with a depth of 2.4 metres (8 ft).



Launching 'Digging Donald'

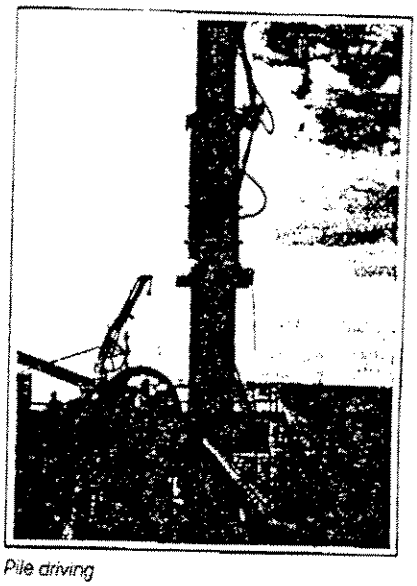
The trencher can perform in water depths up to 350 metres. Surface support is provided by 'Lochiel'. In this machine, Allseas has combined extensive knowledge of the specific problems of soil trenching with its expertise in designing the most advanced remote control systems.



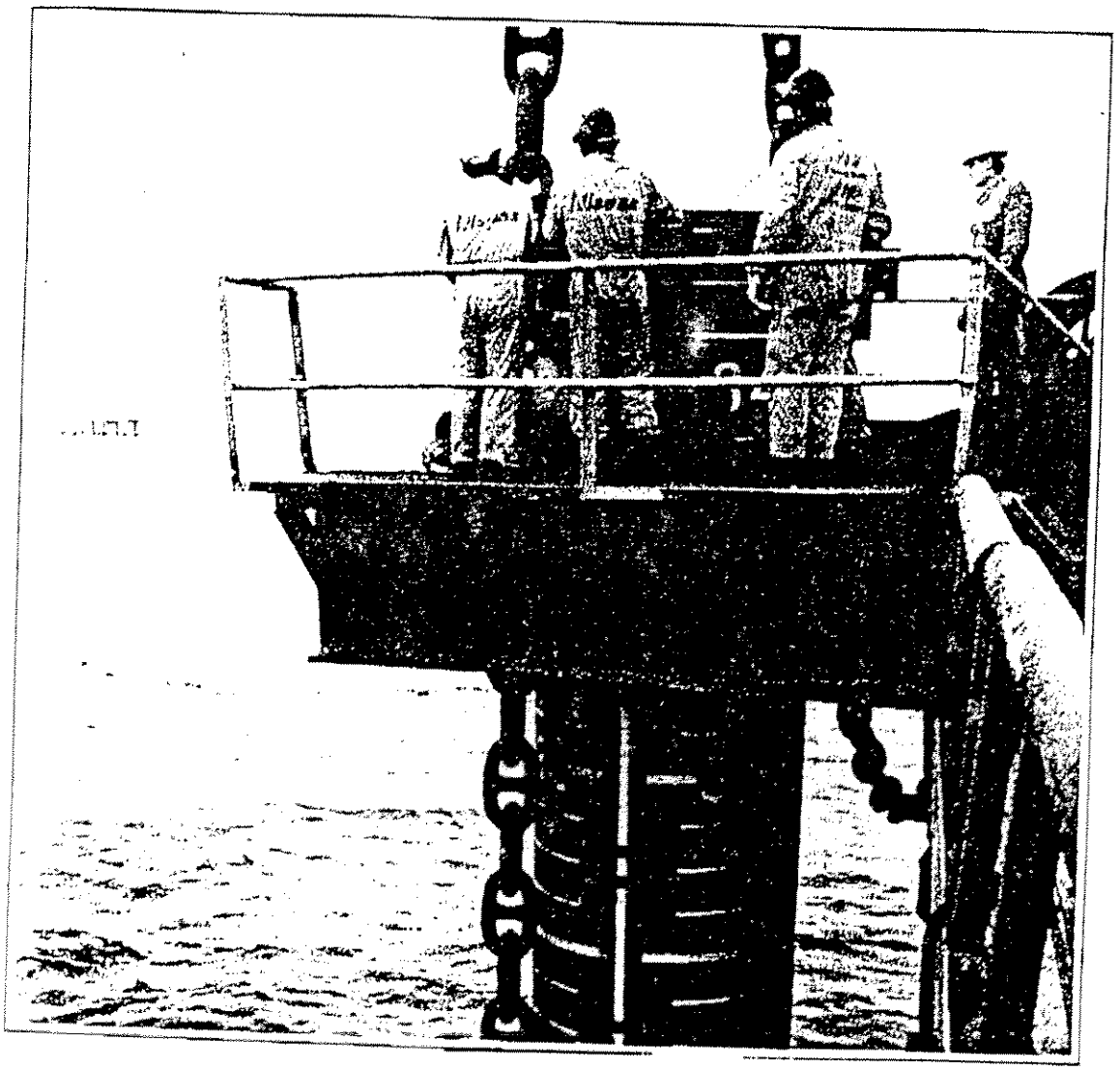
A Reputation Secured

In the 1986 work season, Allseas conquered its place in the offshore market. The industry has widely recognised the many advantages of Allseas' pipelay/support vessel "Lorelay" and its pipeline trencher "Digging Donald"; indeed our approach proved to be the low-cost "simplifying alternative" the industry needs now.

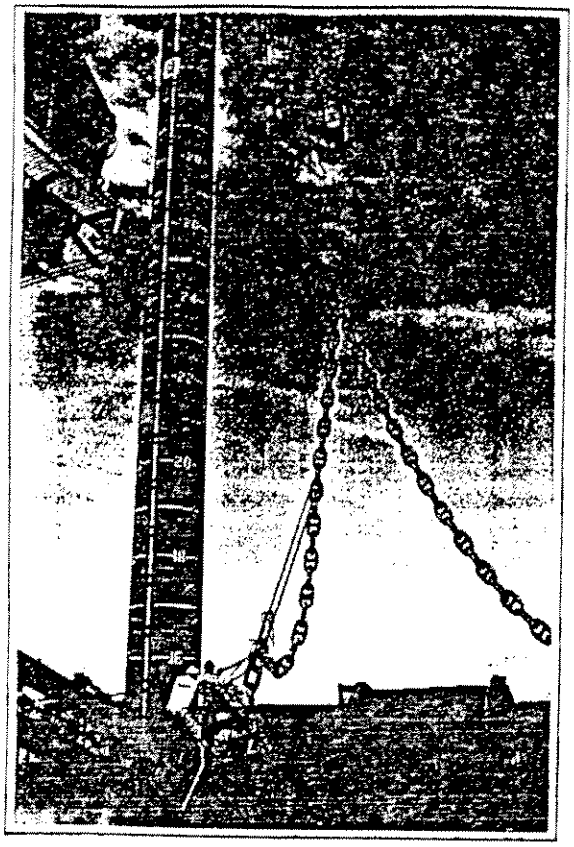
Allseas' two components for success are superior equipment, tuned to today's technical and commercial demands, and an excellent engineering and operations team for whom only performance counts.



Pile driving



Handling 60" piles with heavy mooring chains

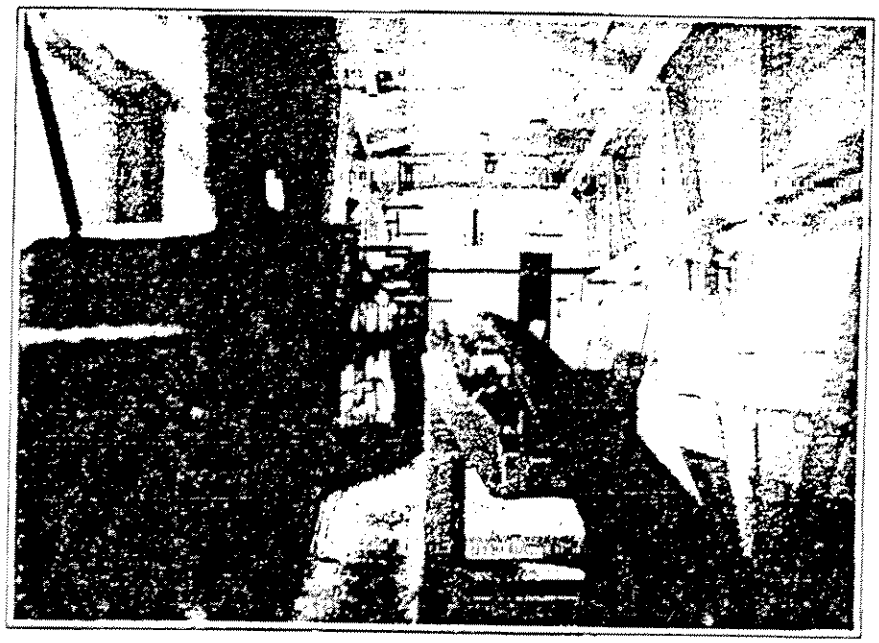


The experience of our project engineers was reflected in the compilation of optimised installation procedures – saving time and cost. The offshore team in 1986 showed that the enthusiasm of a young organisation combined with the many years of experience of each individual involved, leads to the operational success we expected.

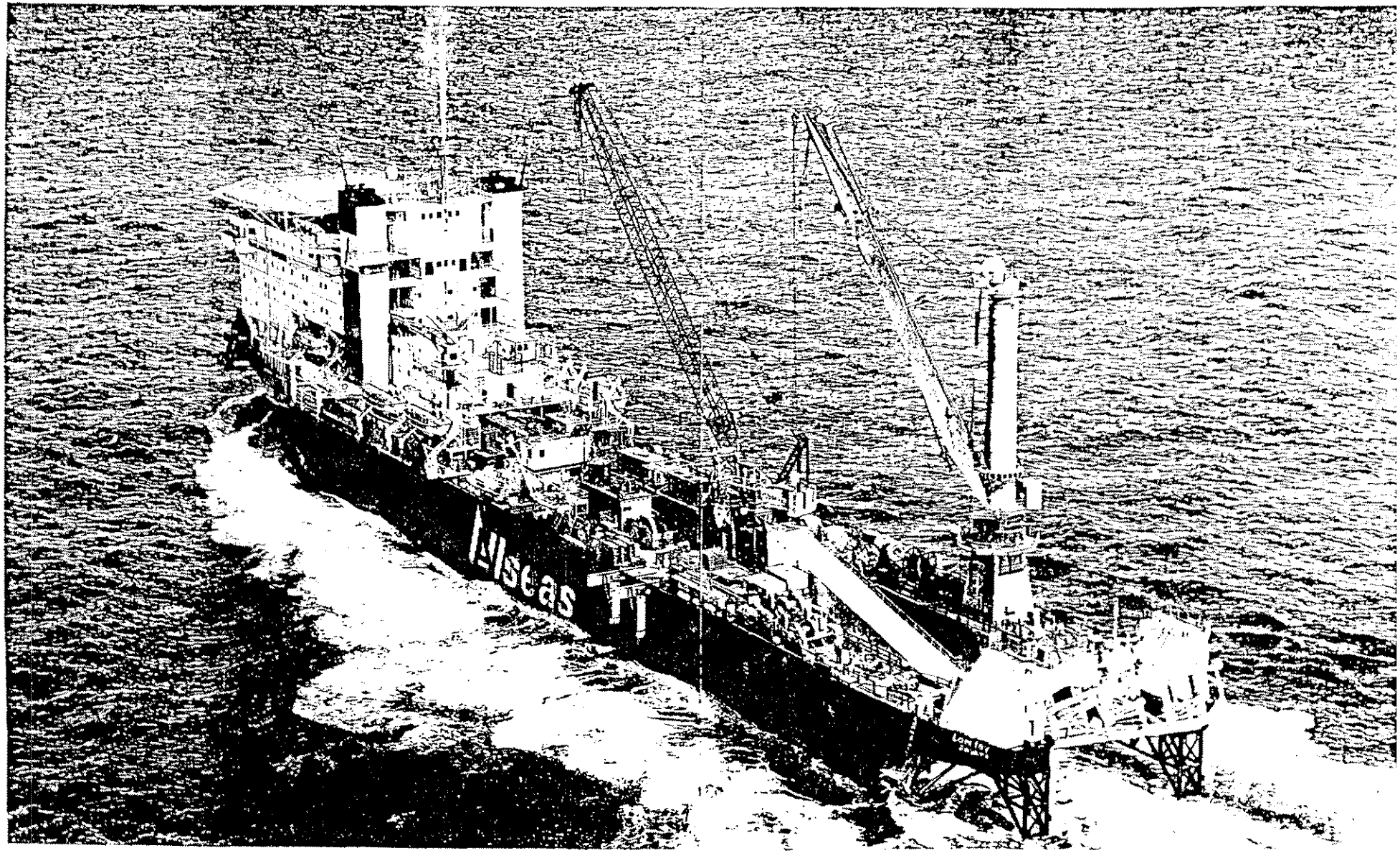
Allseas' offshore team started the 1986 season with a quick installation of six ø 60" anchor piles with 400 metres of chain attached, driven with hydraulic underwater hammers to 40 m (130') penetration in Balmoral field in the Northern North Sea for Bechtel/North Sea Sun Oil Ltd.

"Lorelay" laid an 8" oil line for Unocal in the Southern North Sea. For NGT/Placid she laid and trenched a 14" gas line in the Southern North Sea.

In these operations the efficiency and competence of the Allseas team and its equipment has been proven. This is only the beginning. Complacency is not part of our policy and many technical and cost problems have still to be solved throughout the changing offshore industry. It is our intention to be in the vanguard of such breakthroughs in order to keep ahead of tomorrow's demands.



Overbend during pipelaying

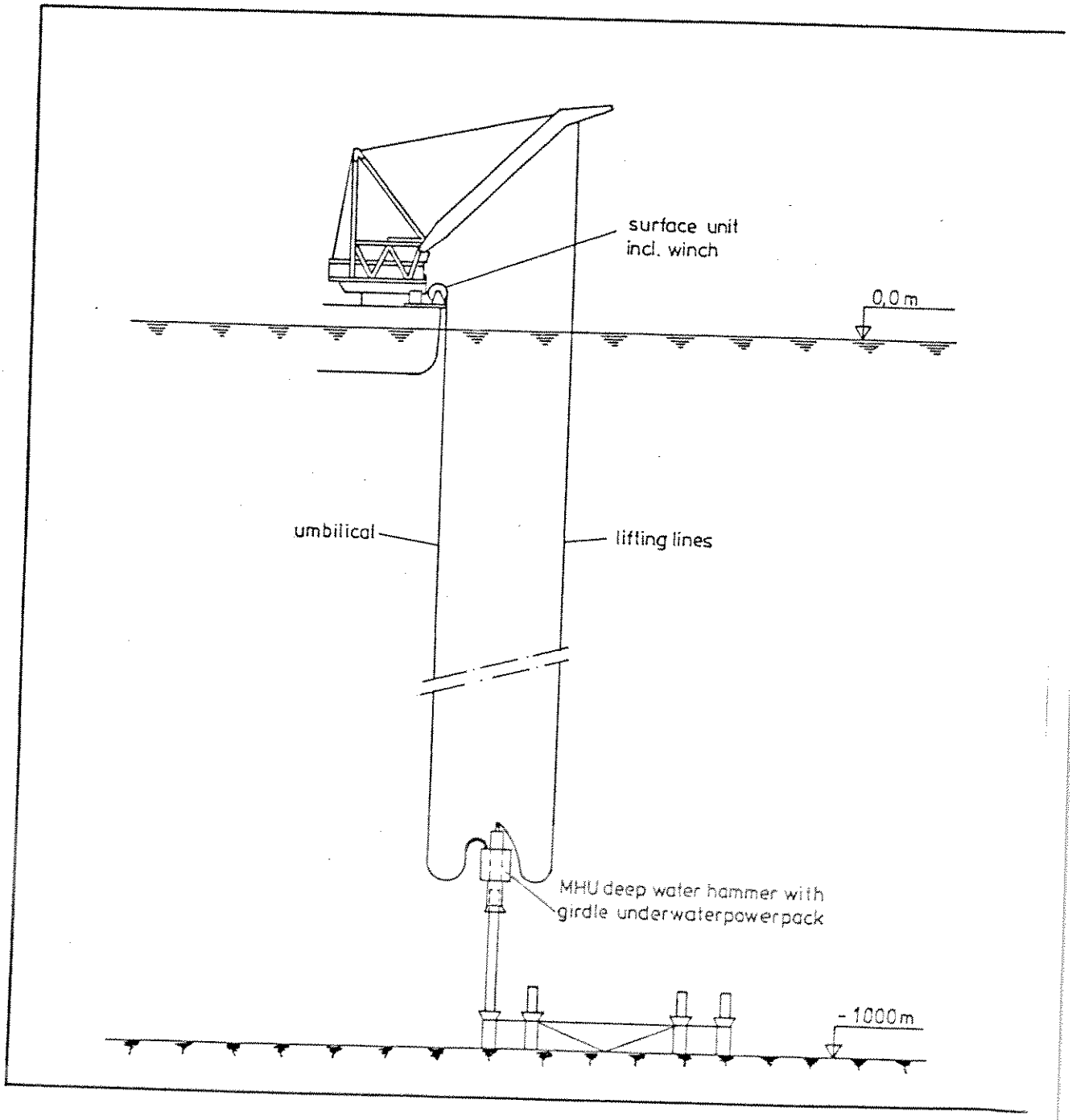


It is our intention to be in the vanguard of such breakthroughs in order to keep ahead of tomorrow's demands.

Appendix F.8 - Menck Deep Water Hammer

MENCK

Deep water hammer MHU



Optimal deepwater design

The design of the deepwater hammer MHU is similar to that of the conventional MHU.
The following design features should be mentioned:
- Hammer housing is optimized to reduce energy losses due to high density air circulation inside hammer.
- Total weight is minimized.
- Electro-hydraulic control unit.
- Hammer can be operated with the hydraulic oil from the underwater powerpack (UWPP). This UWPP is designed in a circular fashion (i.e. motor-pump units and hydraulic oil tanks are arranged in a circle) and can be mounted - shock isolated - as a girdle around the hammer housing. No underwater ballast is required.
- A thruster system for hammer positioning is incorporated and can be driven by the UWPP.

Advantages

- Proven components are used for this hammer and UWPP design, i.e. they have already proved reliable in existing MENCK Hydraulic Hammers. By now more than 700 piles have been driven underwater with MENCK MHU hammers at about 60 locations around the world, in water depths down to 330 m and approx. 60% of these installations were done using the UWPP.

- Low weight. Example: the deepwater hammer MHU 400, complete with UWPP, weighs 20% less than the conventional MHU 400 without UWPP.

- Low energy losses in the hammer, due to minimized air circulation losses in the hammer housing.

- Low energy transfer losses between barge and hammer. The high voltage power required for the motors is transferred through the power cores in the umbilical with minimum losses. This compares very favorable to the high losses associated with long hydraulic hoses for pressure and return line.

- Only one operating line has to be handled: the power umbilical. Handling is further simplified by reeling the continuous length on a winch. This power umbilical includes all necessary lines:
  power cores, electric conductors for control and monitoring of hammer and UWPP, air hose for supply of air to the hammer.

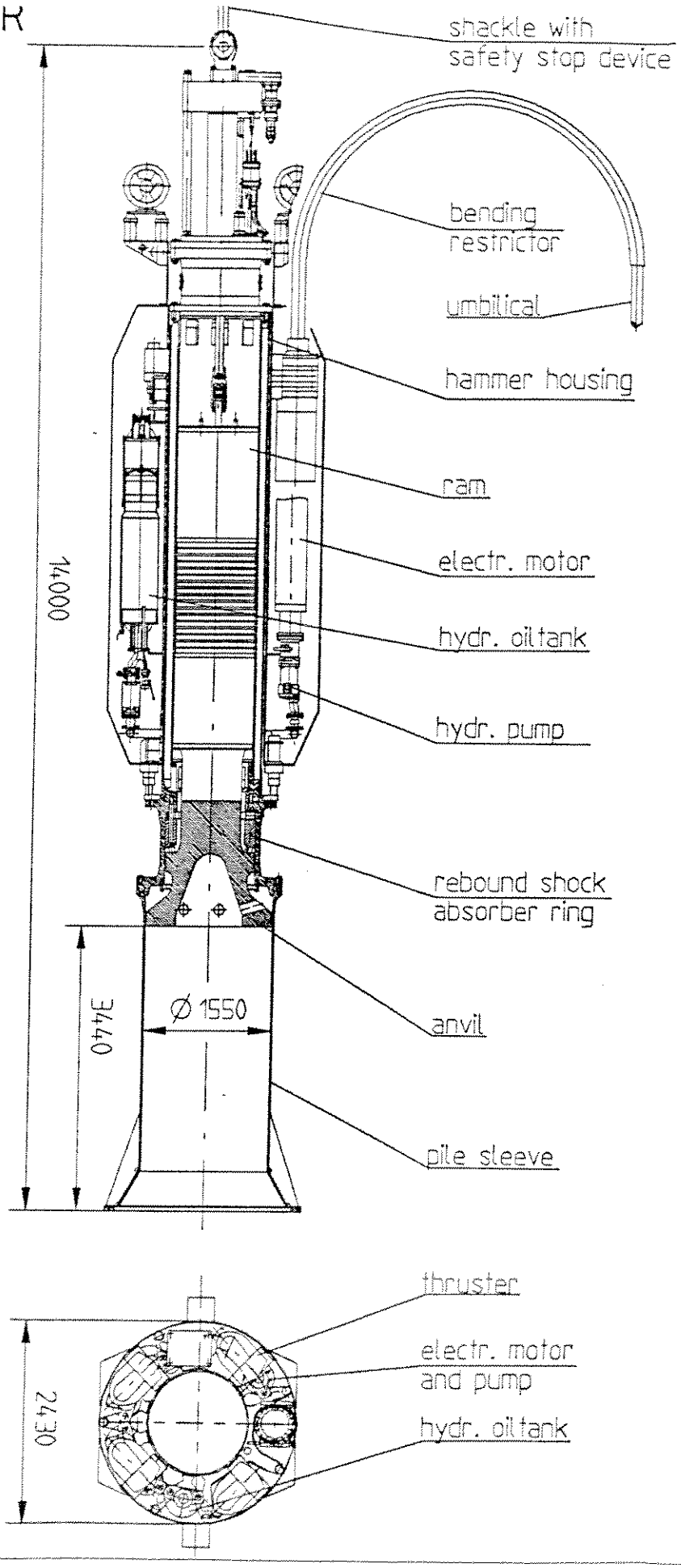
- All underwater equipment can be handled as one unit, as UWPP and hammer are fully integrated. Easy uprighting on board and good control during hammer stabbing on the pile as well as during driving.

- Hammer can position itself towards the pile, after having been brought near the pile with the aid of barge and crane movements. This is increasingly important in deeper water due to the time delay associated with long lifting lines.

- UWPP can be used for other applications because it can be easily removed. For example:
  + as surface powerpack for hammer or other equipment
  + as fully separated UWPP for the operation of hydraulic hammers
  + as hydraulic power plant for other functions, e.g. driving of jet pumps.

- Low risk of oil pollution due to short and well protected hydraulic hoses inside the hammer assembly. Furthermore the small amount of hydraulic oil required for the operation of this system reduces the severity of oil pollution.

DEEP WATER HAMMER MHU 400 with GIRDLE UNDERWATER POWERPACK

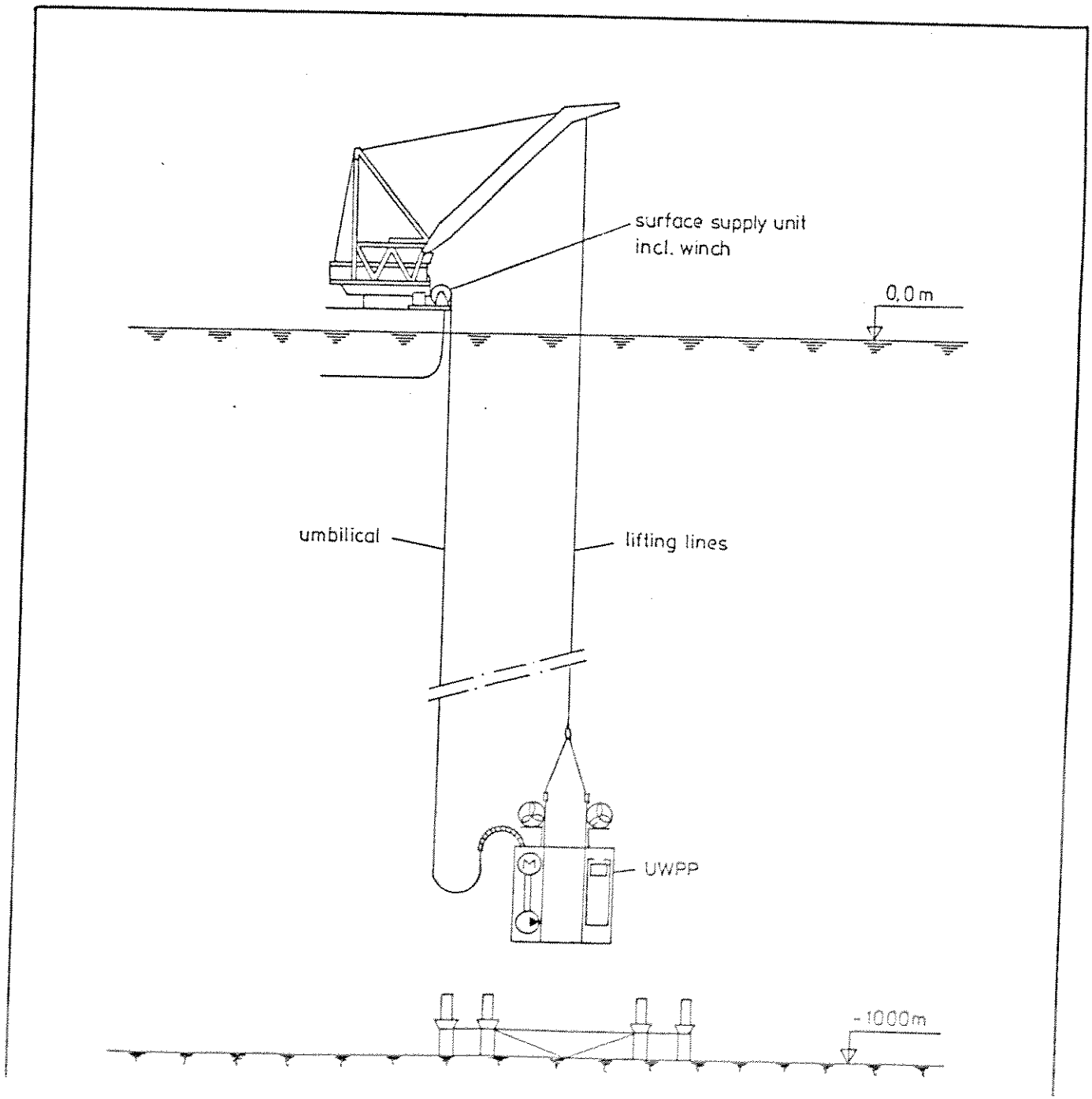


	UNIT	MHU 200	MHU 400	MHU 600	MHU 1000	MHU 1700	MHU 2100	MHU 3000
OPERATION DATA Max. net impact energy at 1000 m waterdepth	kNm(ft.kips)	200 (148)	400 (295)	600 (443)	1000 (738)	1700 (1254)	2100 (1549)	3000 (2213)
Minimum net impact energy	kNm	20	40	60	100	170	210	300
Blow rate at max. energy	bl/min	40	35	30	30	30	30	30
WEIGHT DATA Ram	t	12,0	24,0	36,0	57,6	94,0	116,5	168,0
Hammer (incl. ram)	t	22,0	44,6	64,2	110,0	154,0	183,0	282,2
Flat bottom anvil	t	3,9	7,9	9,8	26,8	26,8	33,7	43,7
Pile sleeve	t	3,1	5,5	5,5	35,7	69,3	97,3	111,6
Power pack	t	16,0	22,0	26,5	45,0	57,9	65,0	98,0
Total weight	t(kips)	45,0(99)	80,0 (176)	106,0 (234)	217,5 (480)	308 (679)	379,0 (836)	535,5 (1181)
DIMENSIONAL DATA Hammer housing diameter	mm (in)	1104 (44)	1219 (48)	1380 (54)	2134 (84)	2134 (84)	2134 (84)	2134 (84)
Pile sleeve suitable for piles up to	mm (in)	1372 (54)	1524 (60)	1524 (60)	2134 (84)	2134 (84)	2438 (96)	2591 (102)
Powerpack housing diameter Powerpack housing height Length of hammer incl. pile sleeve	mm mm mm	2185 5300 10250	2370 5300 13840	2946 5300 14970	3744 5500 15760	3744 5500 18560	3744 5500 20150	3744 5800 23300
Flat bottom anvil suitable for piles	(in)	30–54	36–60	36–60	60–84	60–84	48–96	60–102
HYDRAULIC DATA Average operation pressure	bar	210	200	210	210	215	220	215
max. effective oil flow	l/min	590	1000	1250	1800	2900	3500	5500
Power umbilical O.D.	mm	110	140	140	140	150	160	180
Required drive power	kW	315	420	525	690	1150	1380	2240
No. of motor/pump units x power	kW	3x105	4x105	5x105	3x230	5x230	6x230	7x320

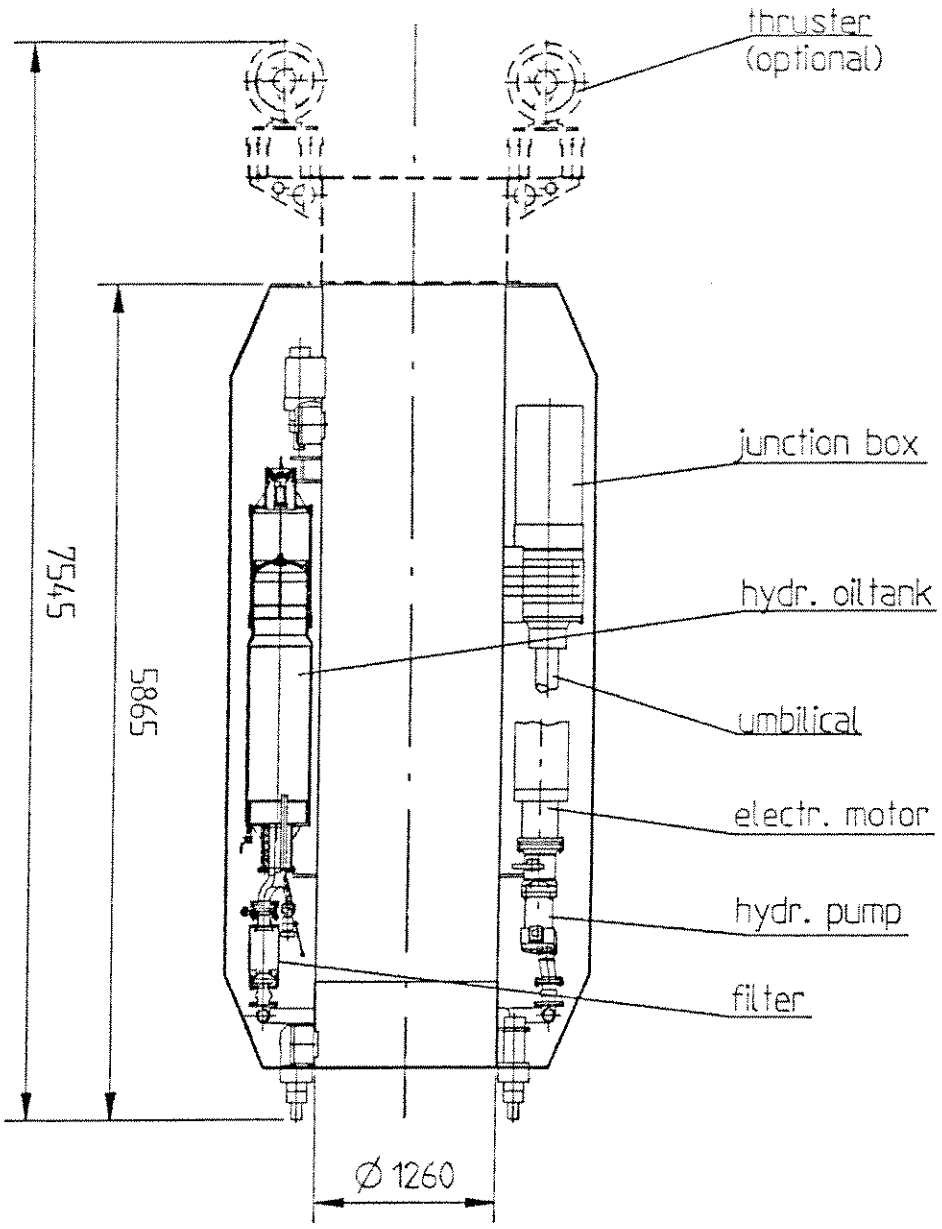
MENCK

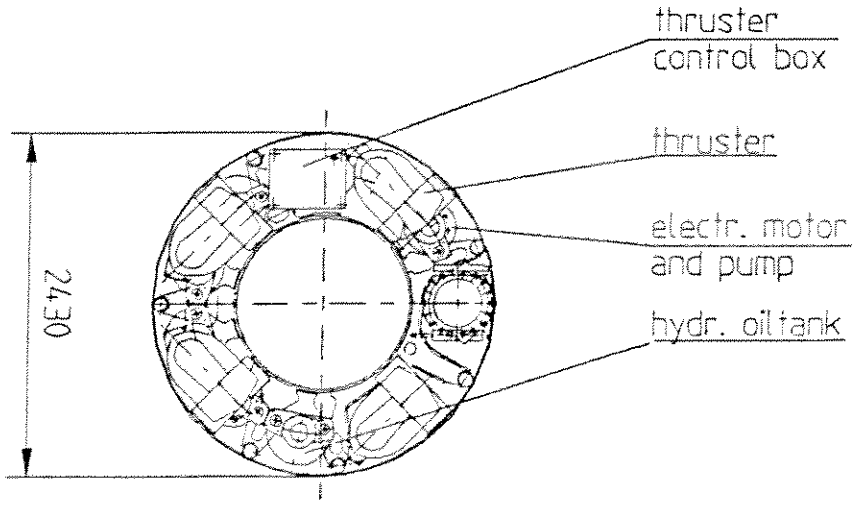
Electric hydraulic underwater powerpack

UWPP



GIRDLE UNDERWATER POWERPACK 400





General

The underwater powerpack consists of two main units, i.e. the motor-pump unit and the hydraulic oil tank unit. The high-voltage electric motors drive hydraulic pumps. The hydraulic oil tank is provided with a compensating piston. This piston equalizes the hydraulic oil pressure in the tank and the surrounding water pressure. In case of more then one tank, they are interconnected.

On board of the crane vessel, a surface supply unit (SSU) is needed for the underwater powerpack. This consists of the following units:

- a constant tension winch with spooling device and fairlead for the umbilical
- a transformer unit for transforming the available voltage into the required voltage (generally 3300 V) for the underwater motors
- a switchboard unit
- an air supply unit, containing compressors and air receiver tanks.

Operation is controlled from a separate cabin.

In conjunction with an underwater powerpack only one operating line is required: an umbilical which contains the power cables, an air hose and the electric cables for control and monitoring of the powerpack and any other additional functions.

Types of UWPP

There are 2 basic types of UWPP:

- slender
- girdle

The slender type has a relatively small diameter and a longer length. This type have been combined with slender MENCK pile driving hammers. The motor-pump units are mounted on a foundation frame and the hydraulic oil tank is seperately and connected with hydraulic hoses..

The girdle type has a larger outside diameter and has a shorter length. It also has an inner hollow space which allows it to be mounted around the housing of a MENCK pile driving hammer.

Other applications

The UWPP (especially the girdle type) can also be used for other purposes. This include:

- above or underwater use
- operating MENCK pile driving hammers
- positioning of loads in deep water (in combination with MENCK thruster system)
- powering other tools, i.e. pumps, manipulator, a.s.o.

TECHNICAL DATA UWPP

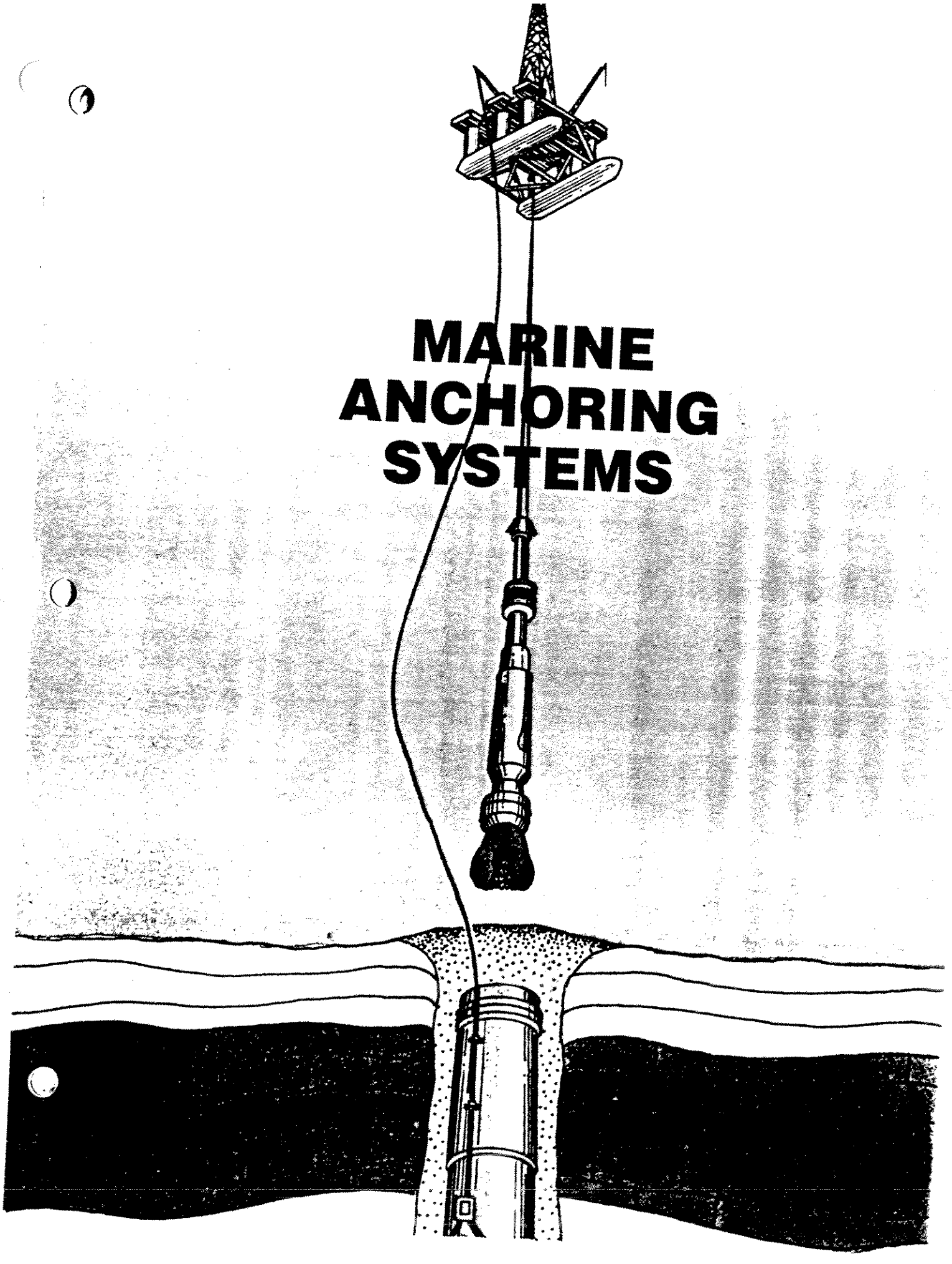
SIZE		200 T	400 T	600 T	1000 T	1700 T	2100 T	3000 T	1700 S	30
TYPE		girdle	girdle	girdle	girdle	girdle	girdle	girdle	slender	sl
MOTOR										
voltage	V	3300	3300	3300	3300	3300	3300	3300	3300	3
power max.	kW	105	105	105	230	230	230	320	230	
number		3	4	5	5	5	6	7	5	
power total	kW	315	420	525	1150	1150	1380	2240	1150	2
PUMP										
oil flow max.	l/min	200	250	250	550	550	550	750	550	
operating pressure	bar	210	210	210	140	225	235	215	230	
number		3	4	5	5	5	6	7	5	
total oil flow	l/min	600	100	1250	2750	2750	3300	5250	2750	5
HYDR. OIL TANK										
volume each	l	250	250	250	550	550	550	750	6500	11
number		3	4	5	5	5	6	7	1	
volume total[1]	l	750	1000	1250	2850	2850	3450	5500	8600	17
DIMENSIONS										
O.D.	mm	2185	2430	2946	3744	3744	3744	3744	1830	2
I.D.	mm	1140	1260	1420	2180	2180	2180	2180	--	
length	mm	5865	5865	5865	6350	6350	6350	6650	33850	35
WEIGHT										
above water	t	16	22	26	58	58	65	98	143[2]	2
submerged	t	13	18	22	48	48	54	81	116	1
UMBILICAL										
O.D. approx.	mm	110	140	140	140	150	160	180	150	1

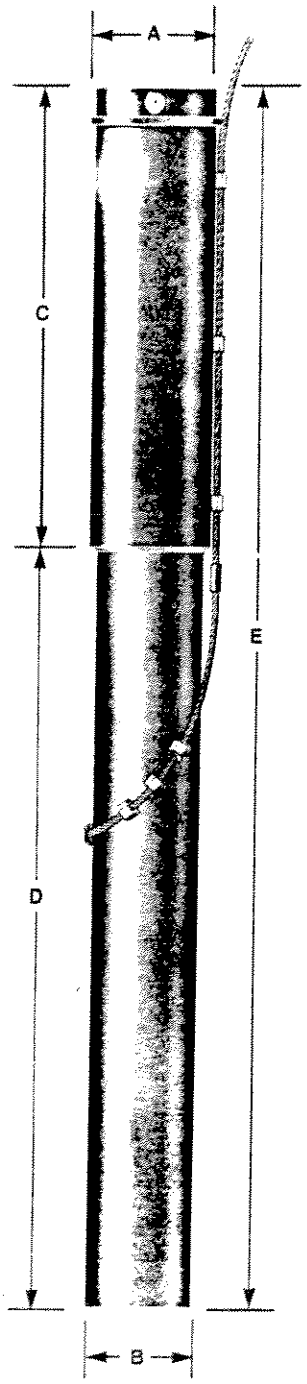
1) incl. piping, hoses

2) incl. standard steel pipe

Appendix F.9 - A-Z International Marine Anchoring System

MARINE ANCHORING SYSTEMS





A-Z MARINE ANCHORING SYSTEMS

A-Z International Tool Company has developed two types of Marine Anchoring Systems. All of the systems are aimed at reducing the high cost of drilling offshore. These two systems are:

1. A-Z Permanent Anchor Pile Systems for drillships and semisubmersibles.
2. A-Z Permanent Anchoring Systems for marine structures such as templates, single-buoy mooring systems, and storage tanks.

A-Z PERMANENT ANCHOR PILE SYSTEM

The A-Z Permanent Anchor Pile System is used to drill-in, set, and cement anchor pilings for drillships, semisubmersibles, and other floating structures. This method requires only one trip in the hole to complete the entire operation.

ADVANTAGES:

- Only one trip required to drill, set, and cement piling.
- Eliminates the danger of losing the hole due to sloughing or re-entry problems, risks which are encountered when drilling and setting operations are conducted separately.
- Eliminates the need for divers.
- Installation technique uses standard drilling tools.
- Anchoring time is reduced from days to hours.
- Is effective in both soft and hard bottom formations.

APPLICATION;

In many cases, the topography of the sea floor is such that conventional marine anchors will not hold. This is especially true in silt and gravel type bottoms where the anchors simply plow up the sea bottom and never reach a formation which is competent enough to hold fast. In other cases, the bottom is too hard for the anchor to dig in. In either case, the A-Z Permanent Anchoring System solves the problem and holds the vessel on location, even under severe weather conditions. In other cases, the presence of subsea structures such wellheads, pipe lines, or communications cables may prevent the use of conventional anchors. In these cases the precise locating and minimal bottom disturbance of the A-Z drilled in Permanent Anchor Pile provides an ideal solution.

	A	B	C	D	E
16" Doubler-Pile	16"	13⅜"	10'	26'	36'
22" Doubler-Pile	22"	20"	10'	26'	36'
36" Pipe Pile	36"	36"	not a doubler-pile	not a doubler-pile	50'

Wire rope attachment depth is 11' for all piles.

A-Z Permanent Anchor Piles are set in such a manner that the top of the piling is buried in competent formation at any desired depth below the ocean floor. This eliminates the bending moment and potential for failure which is inherent in piling when the top extends above the ocean floor. In addition, the buried piling satisfies the coastal regulations of most countries which require that no obstruction exist above the ocean floor.

The A-Z Permanent Anchor Pile System has been 100% successful at holding vessels on location, even under severe weather conditions. Installations have been made off the coast of South America, Nicaragua, Argentina, the Irish Sea, the North Sea, and in the Mediterranean. Detailed operational reports are available upon request.

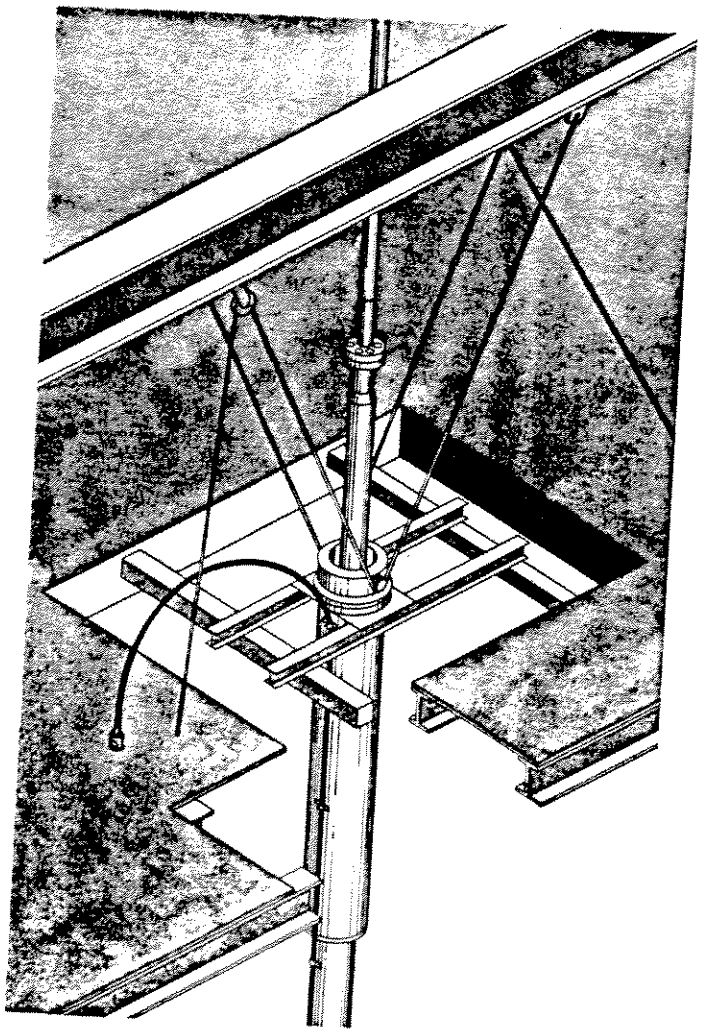


Figure 1
Spider deck assembly

PILE DESIGN:

To aid in the planning and design of Permanent Anchor Piles, A-Z, in conjunction with Law Engineering Testing Company, has developed a detailed design procedure for selecting anchor piles. The calculations are based on five idealized offshore soil conditions which are common to most active offshore basins worldwide. Starting with the desired mooring load, the design procedure assists with selection of the appropriate wire rope leader, embedment depth, and anchor pile. Although the design procedure addresses only the A-Z standard size anchor piles, our experience and engineering expertise is available to assist in the design and running of any size or capacity Permanent Anchor Pile System.

EQUIPMENT

The installation of an A-Z anchor pile system requires a vessel with conventional drilling capability to operate a drill string composed of the appropriate bit, underreamer, spacers, packoff, and locator sub. The drill string drills the hole in which the specially designed anchor pile is placed and cemented. The anchor piles are manufactured to standard sizes and are compatible with conventional sized drilling equipment.

INSTALLATION PROCEDURE

A-Z manufactures three standard size anchor piles, a 16-inch-diameter, 22-inch-diameter, and a 36-inch-diameter. For purpose of discussion, the 16-inch-diameter pile has been chosen and it is assumed that operations are being conducted from a drilling vessel.

1. The 16 inch O.D. anchor pile is lowered through the rotary and hung off in a specially designed clamp at spider beam level. Tugger lines are secured to two eyes located 180° apart at the top of the piling. The ship's cable with thimble is then lowered over the side of the vessel and brought up through the moon pool and attached to a 1⅞" open spelter socket. (see Figure 1)

2. The drill string is then run through the suspended piling consisting of the following components, bottom to top:
   12¼" Jet Tri-cone Bit
   A-Z 13⅜" Dual Jet-type Underreamer
   7¾" O.D. Spacer Sub
   A-Z Free-Wheeling Packoff Assembly
   7¾" O.D. Spacer Sub
   A-Z Free-Wheeling Locator Sub

3. The hole is then drilled to depth, so that the top of the piling will be located in firmly consolidated formation when set, or at the design depth. (see Figure 2)

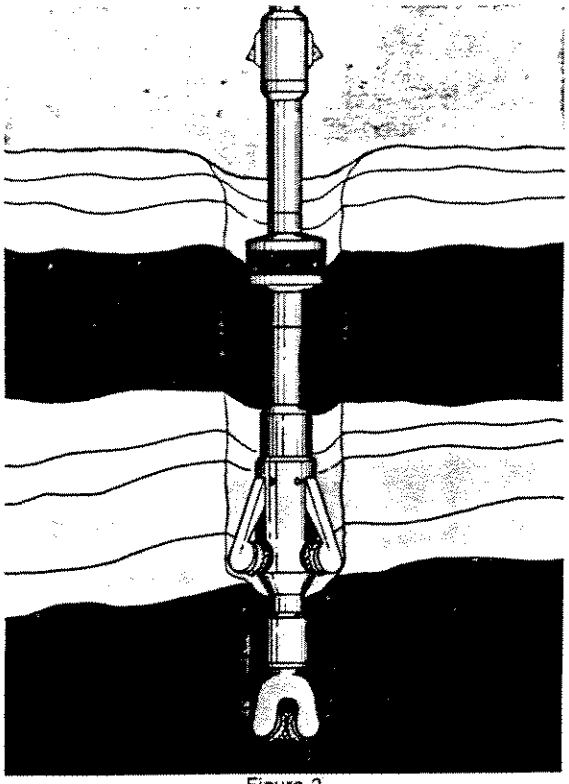


Figure 2
Drilling Operations

4. The rotary is stopped, the drilling string is picked up off the bottom, and the anchor pile is lowered to the bottom of the hold with tugger lines or sand line attached to sheaves secured to the top of the piling (See Figure 3). The drill string serves as a guide as the pile is lowered into the drilled hole.

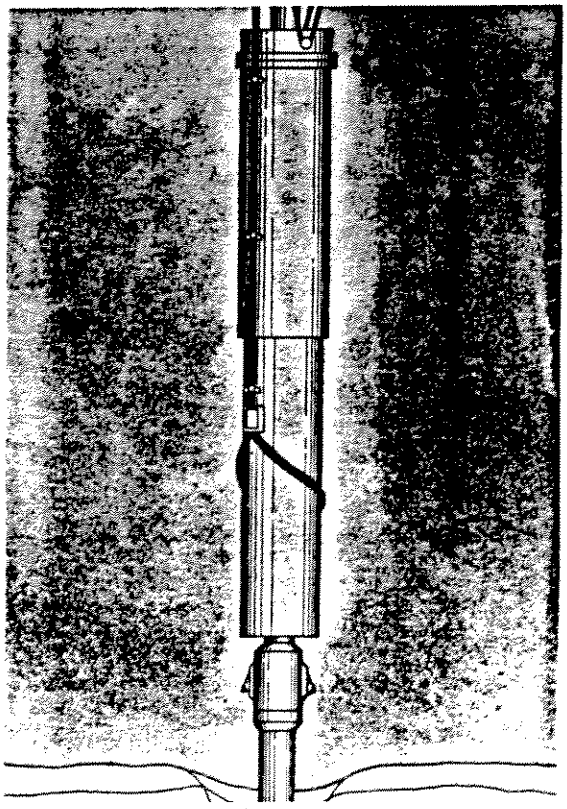


Figure 3
Running the pile

5. The drilling string is lowered until it reaches bottom. The drill string is then picked up until the expanded dogs of the locator sub come in contact with and rest on top of the pile. In this position the Free-Wheeling Packoff is inside the pile for cementing purposes and the pile can be "pushed" to its desired position (See Figure 4).

6. Cementing equipment is then nippled up and a sufficient volume of cement is pumped through the drill string to fill the annulus of the underreamed hole and spill over onto the ocean floor.

7. While continuing to pump cement by calculated volume, the drilling string is picked up slowly, in this manner filling the entire bore of the anchor piling with cement as the bit is withdrawn from the hole. (See Figures 5 and 6).

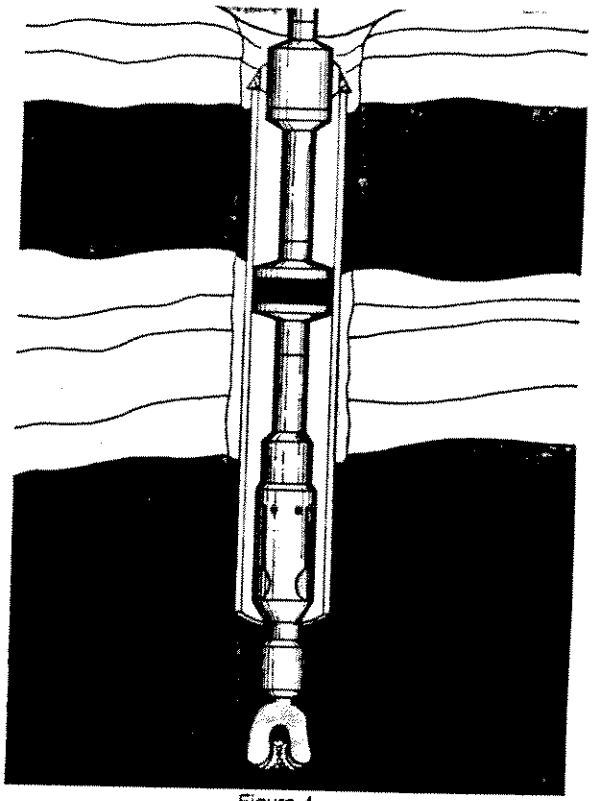


Figure 4
Drill String prior to cementing

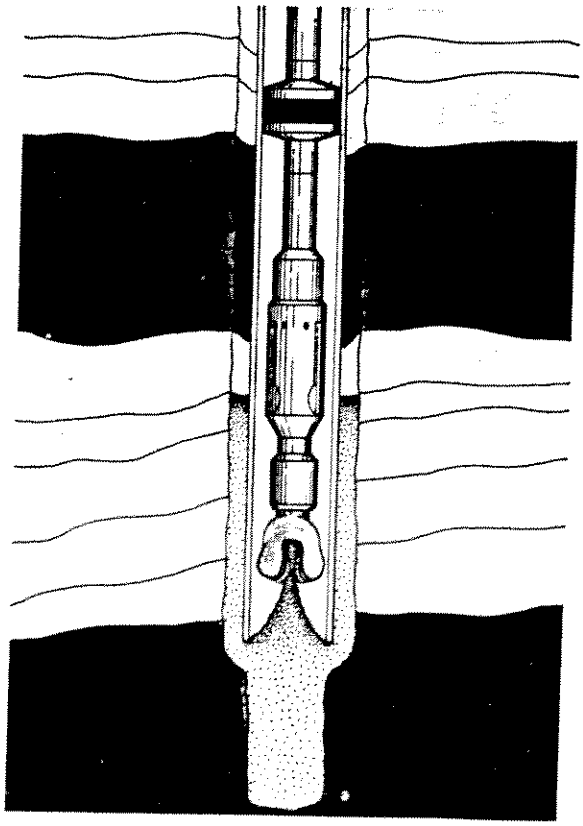


Figure 5
Initial cementing operations

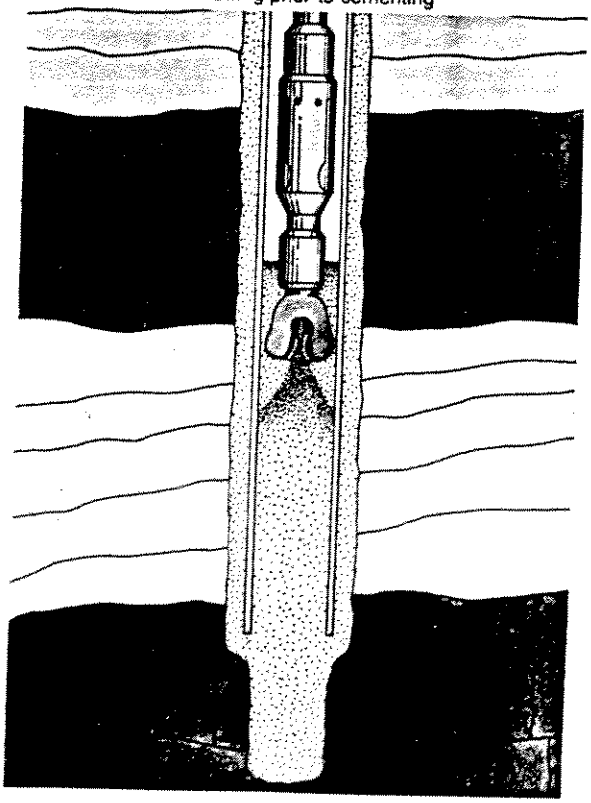


Figure 6
Final cementing operations

After retrieving the drill string, the tugger or sand lines can be released from the sheaves if they were deadlined on the rig floor.

A buoy is then attached to a pendant and set afloat. The vessel is then free to move to the next position to set another piling. By using this one-trip operation, the required number of pilings may be quickly set and the floater securely anchored for the drilling operation.

Larger pilings are set in the same manner. Figures 7 and 8 illustrate the final configuration of the anchor pile after cementing operations have been completed.

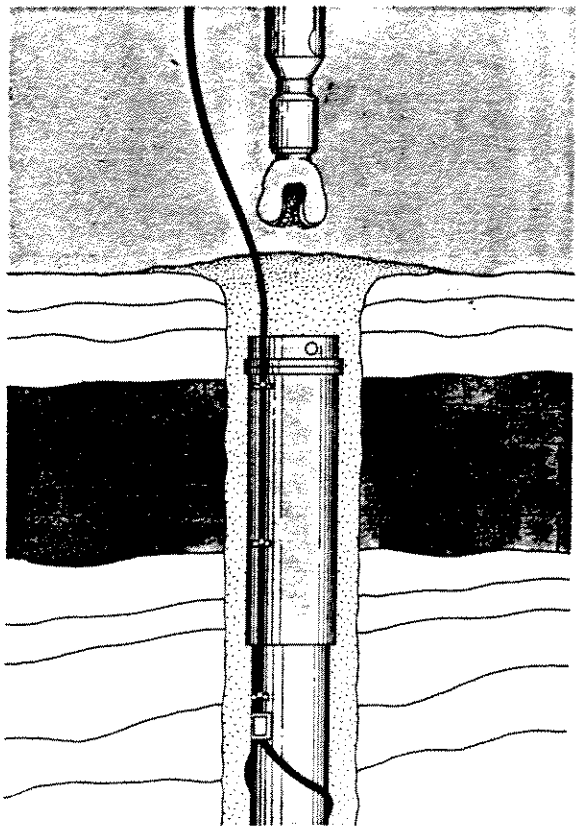


Figure 7
Final position of pile
after cementing operations

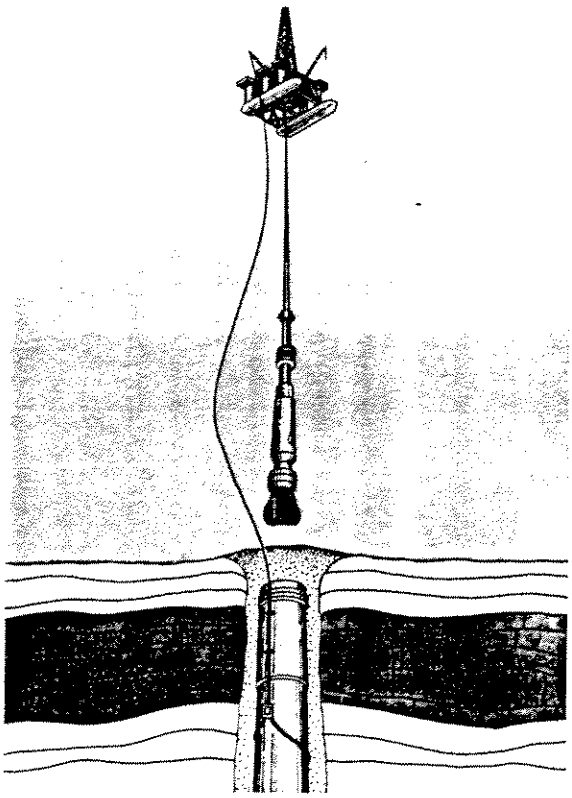
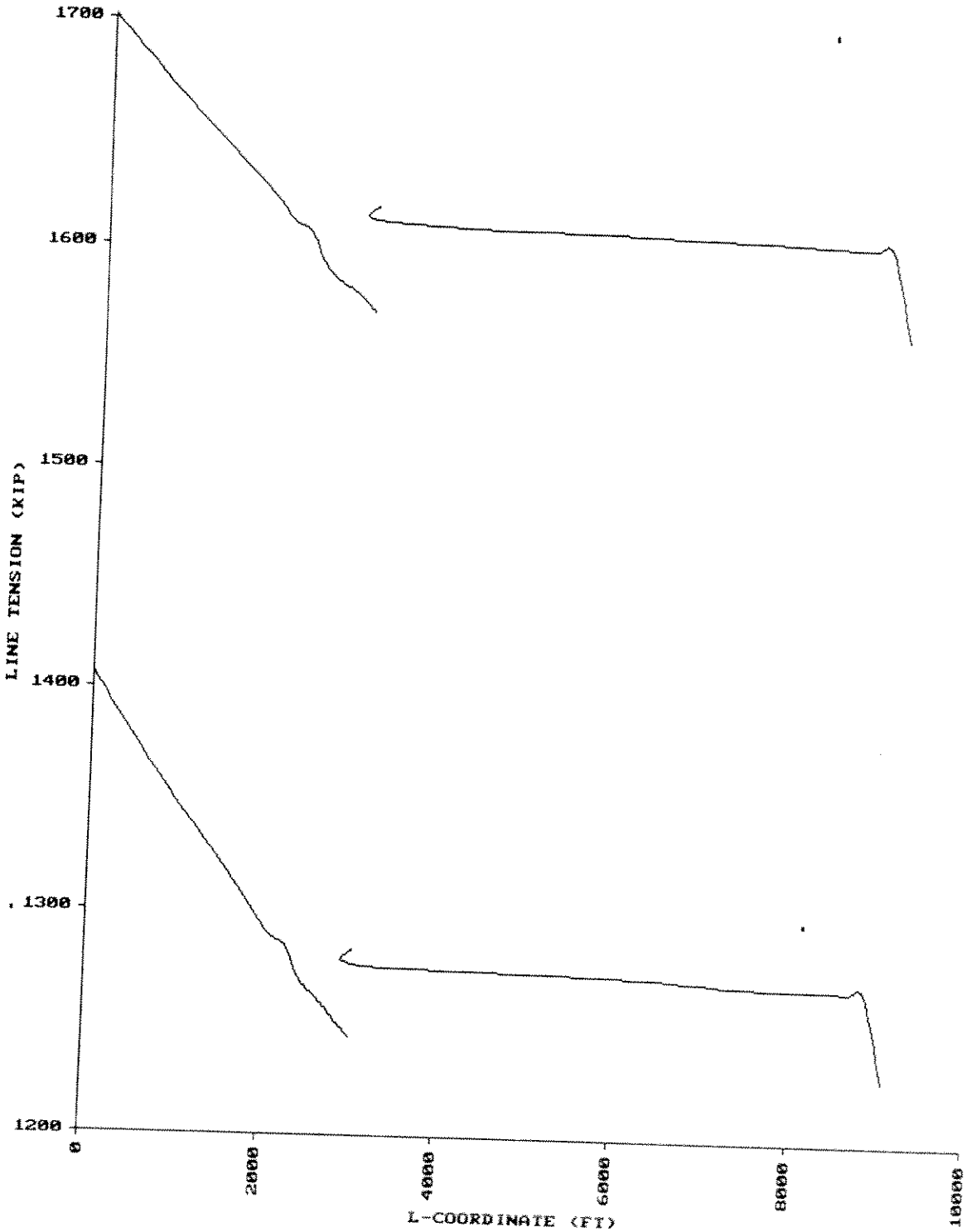


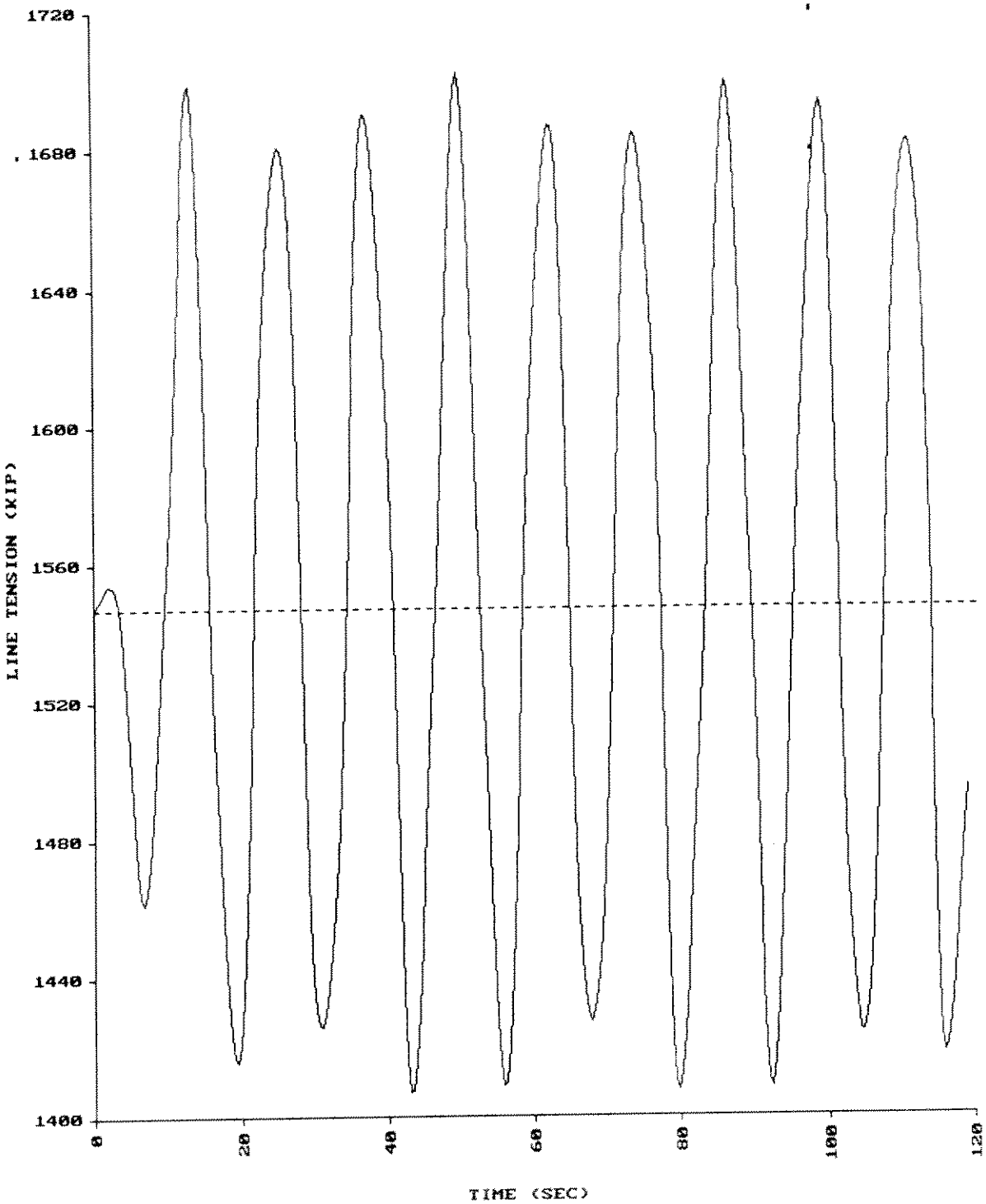
Figure 8

APPENDIX G - LINE DYNAMICS ANALYSIS



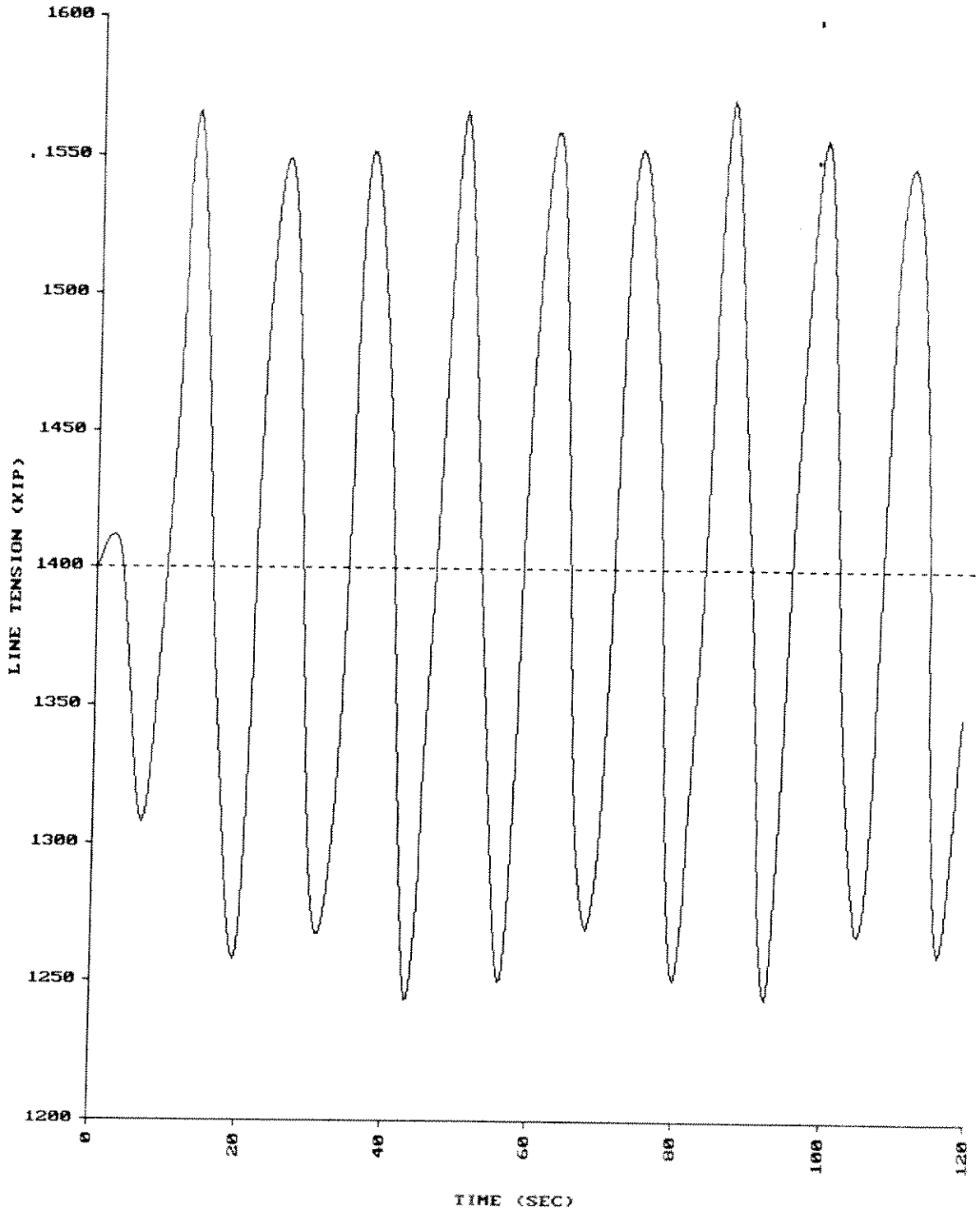
TAUT-LEG 6000FT - TENSION ENVELOPE

12.25 SEC PERIOD



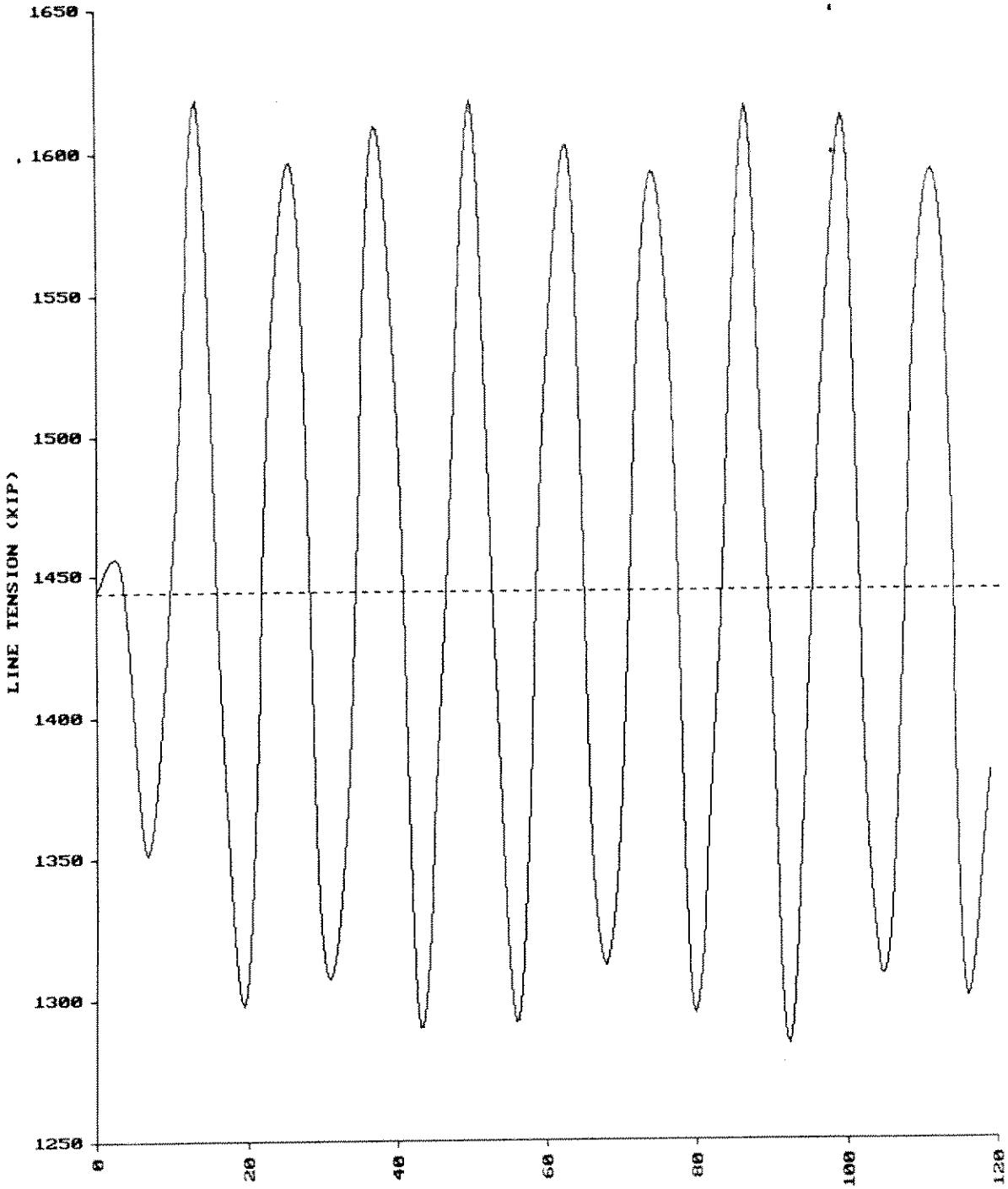
TAUT-LEG 6000FT - TENSION AT 1st END OF 1st SECTION

12.25 SEC PERIOD



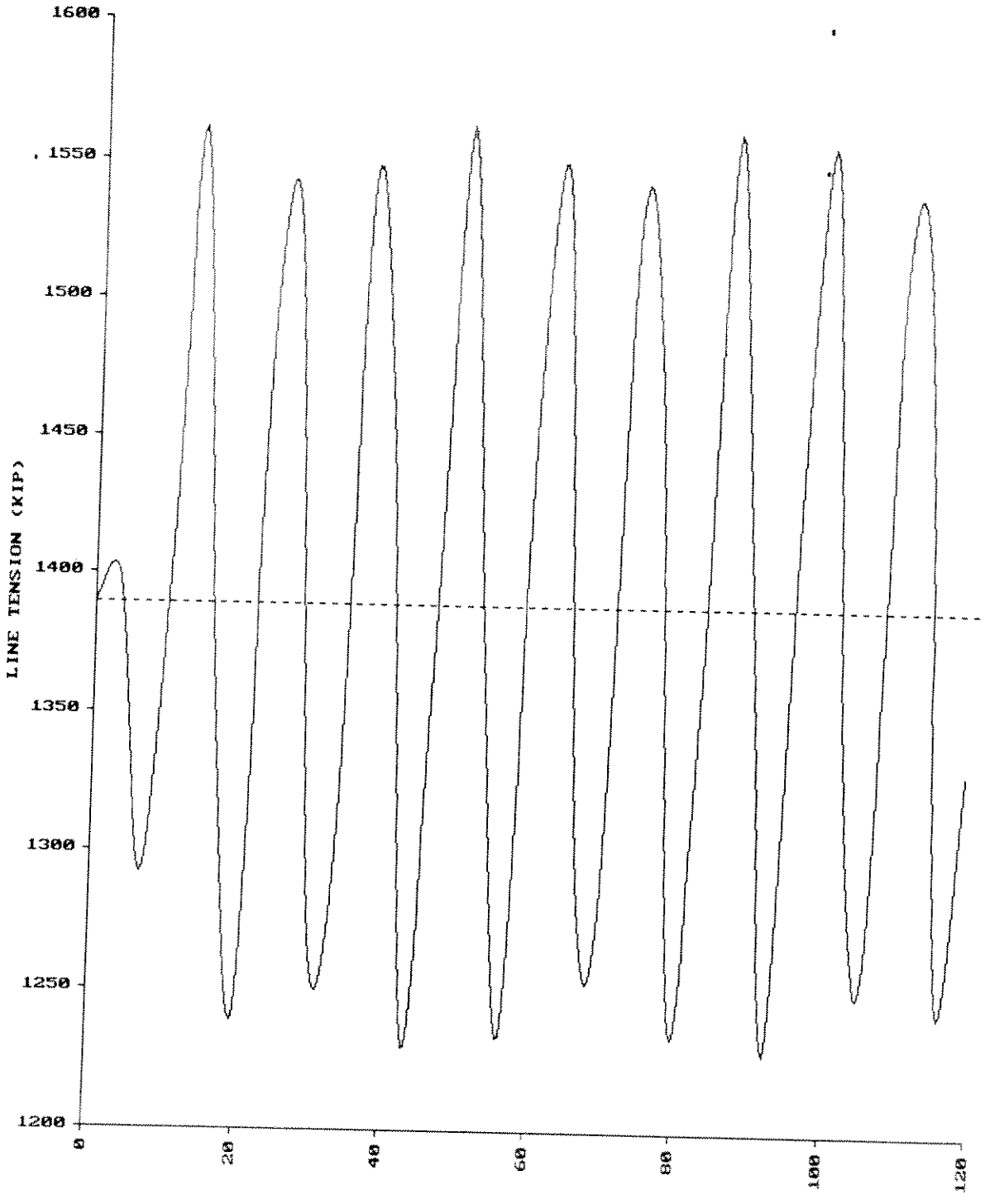
TAUT-LEG 6000FT - TENSION AT 2nd END OF 1st SECTION

12.25 SEC PERIOD



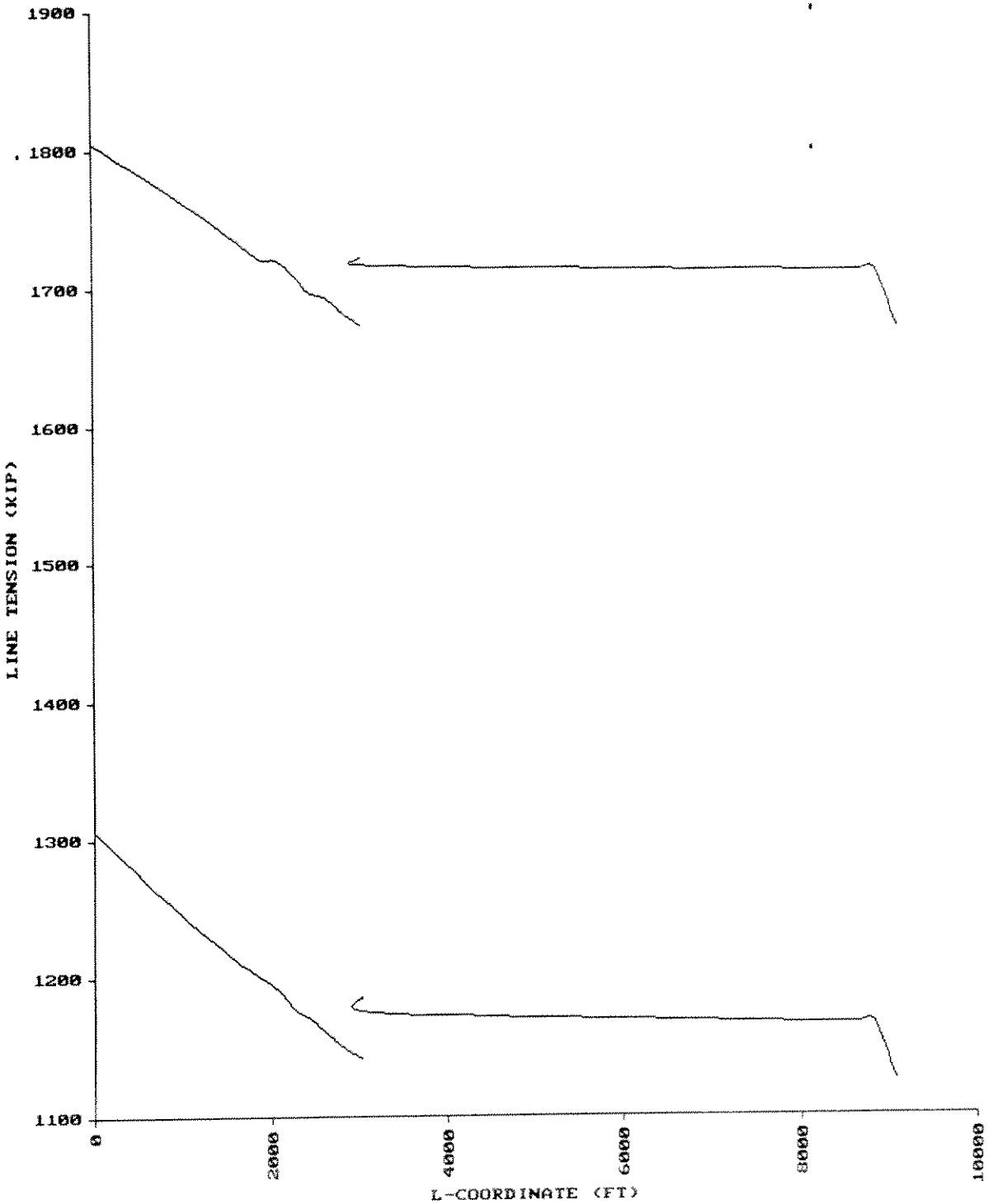
TAUT-LEG 6000FT - TENSION AT 1st END OF 2nd SECTION

12.25 SEC PERIOD



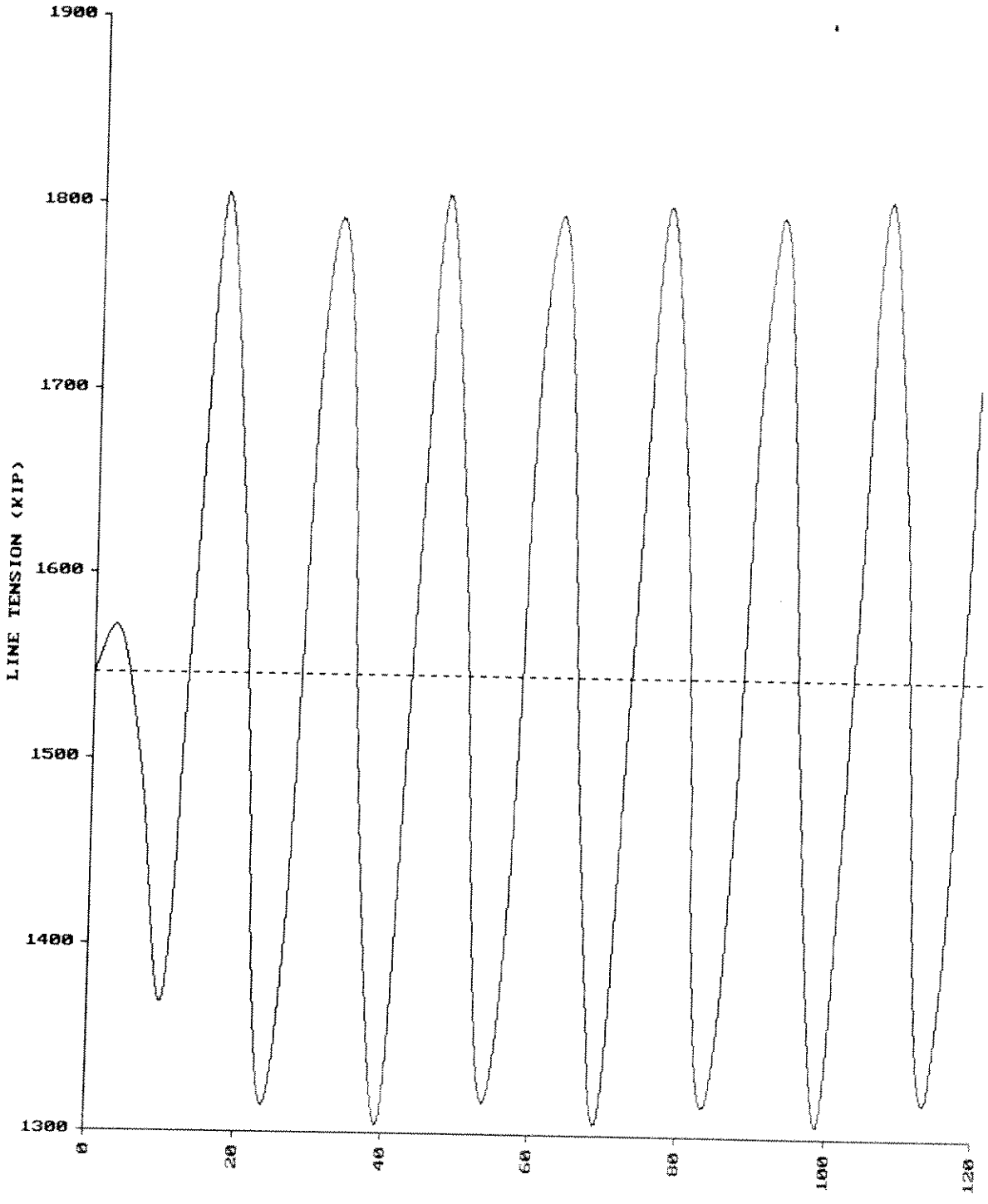
TAUT-LEG 6000FT - TENSION AT 2nd END OF 2nd SECTION

12.25 SEC PERIOD



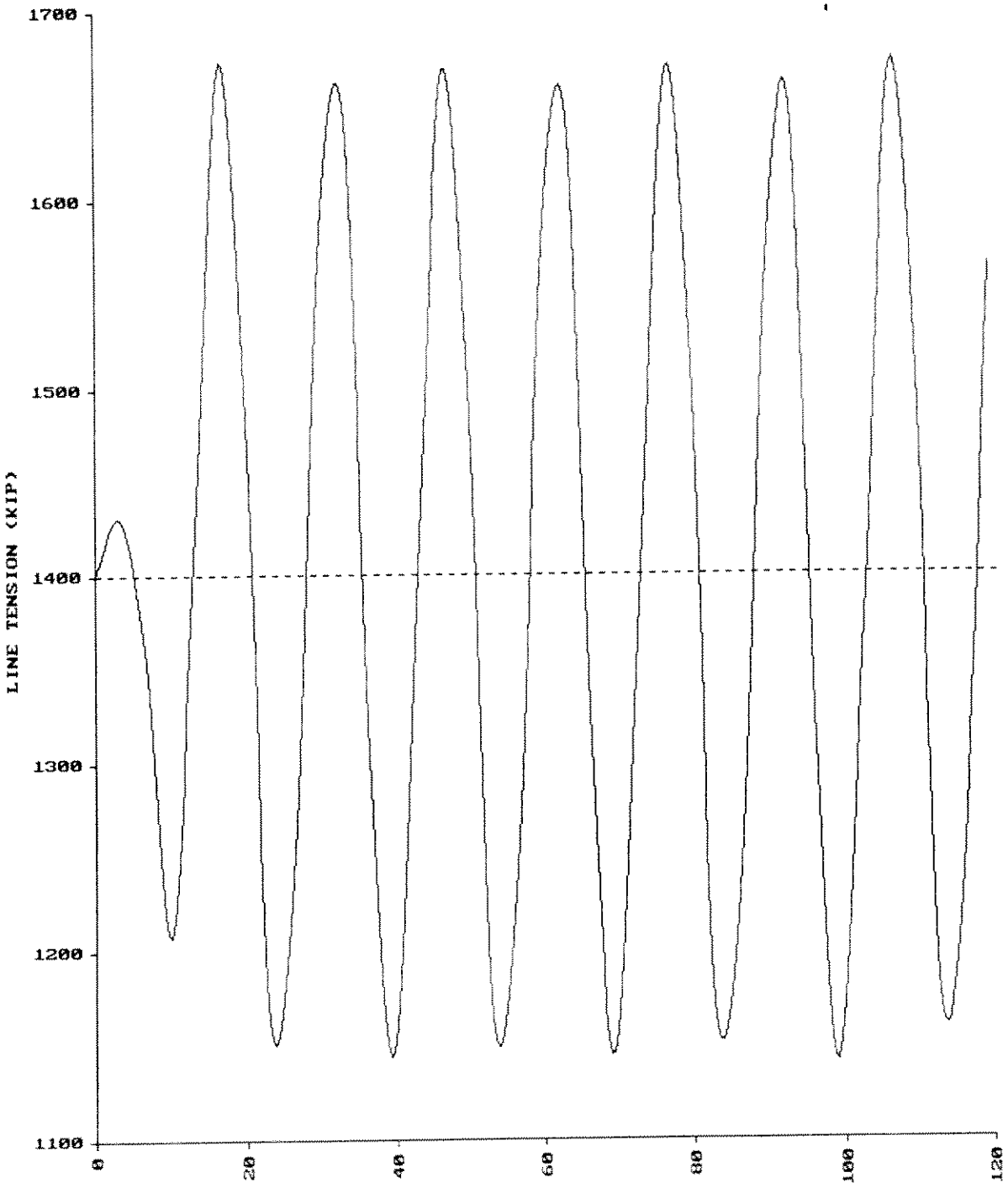
TAUT-LEG 6000FT - TENSION ENVELOPE

14.9 SEC PERIOD



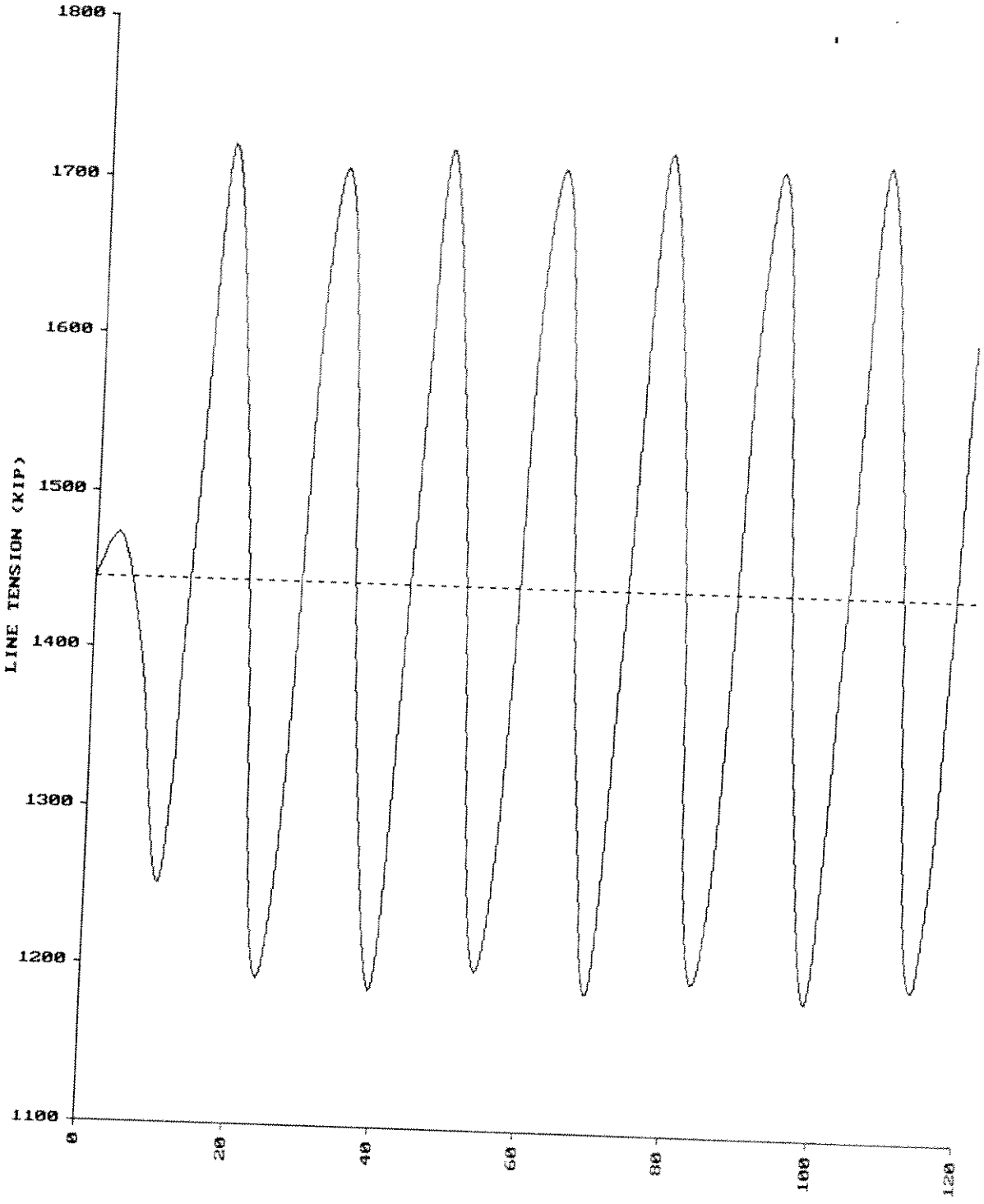
TAUT-LEG 6000FT - TENSION AT 1st END OF 1st SECTION

14.9 SEC PERIOD



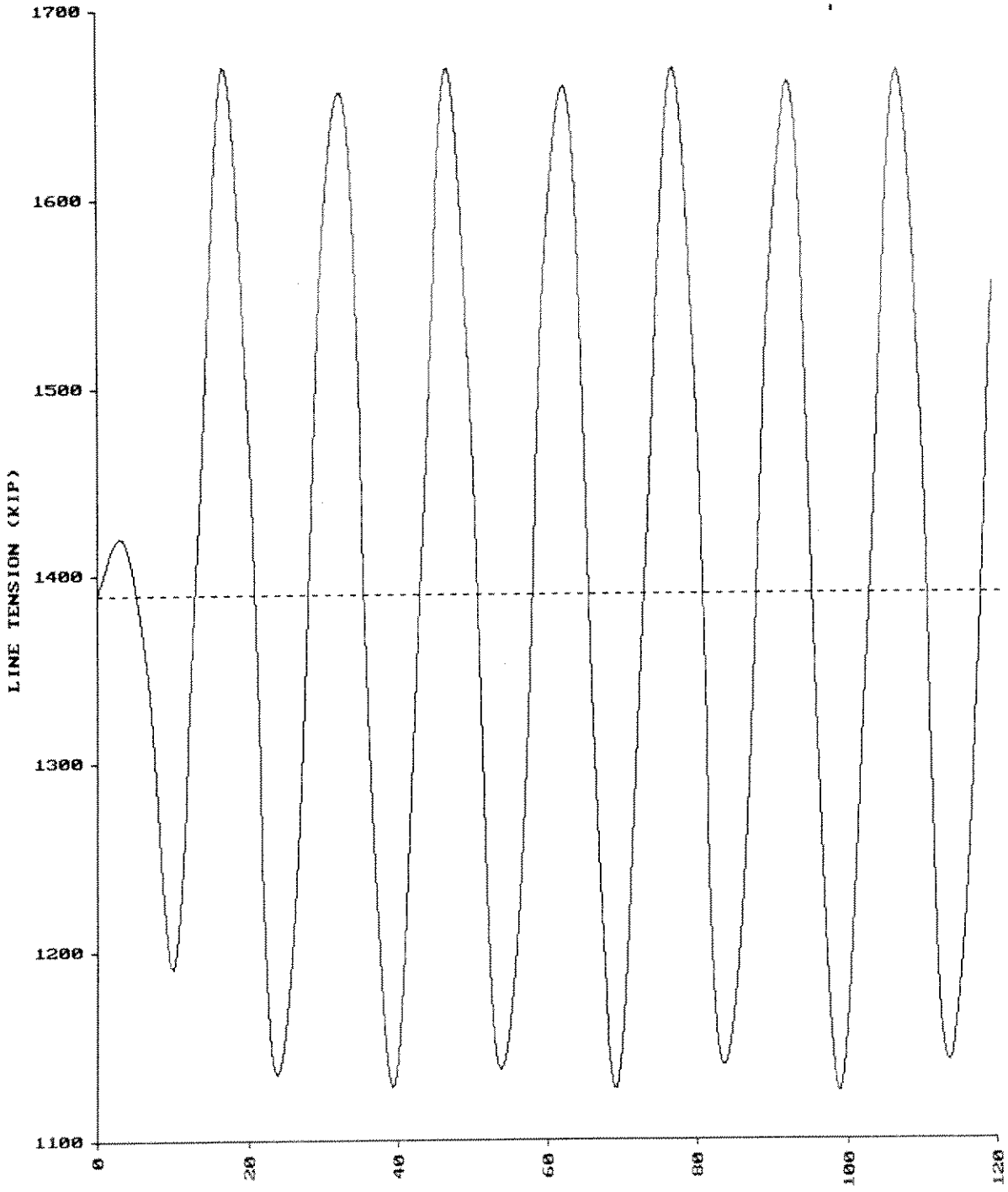
TAUT-LEG 6000FT - TENSION AT 2nd END OF 1st SECTION

14.9 SEC PERIOD



TAUT-LEG 6000FT - TENSION AT 1st END OF 2nd SECTION

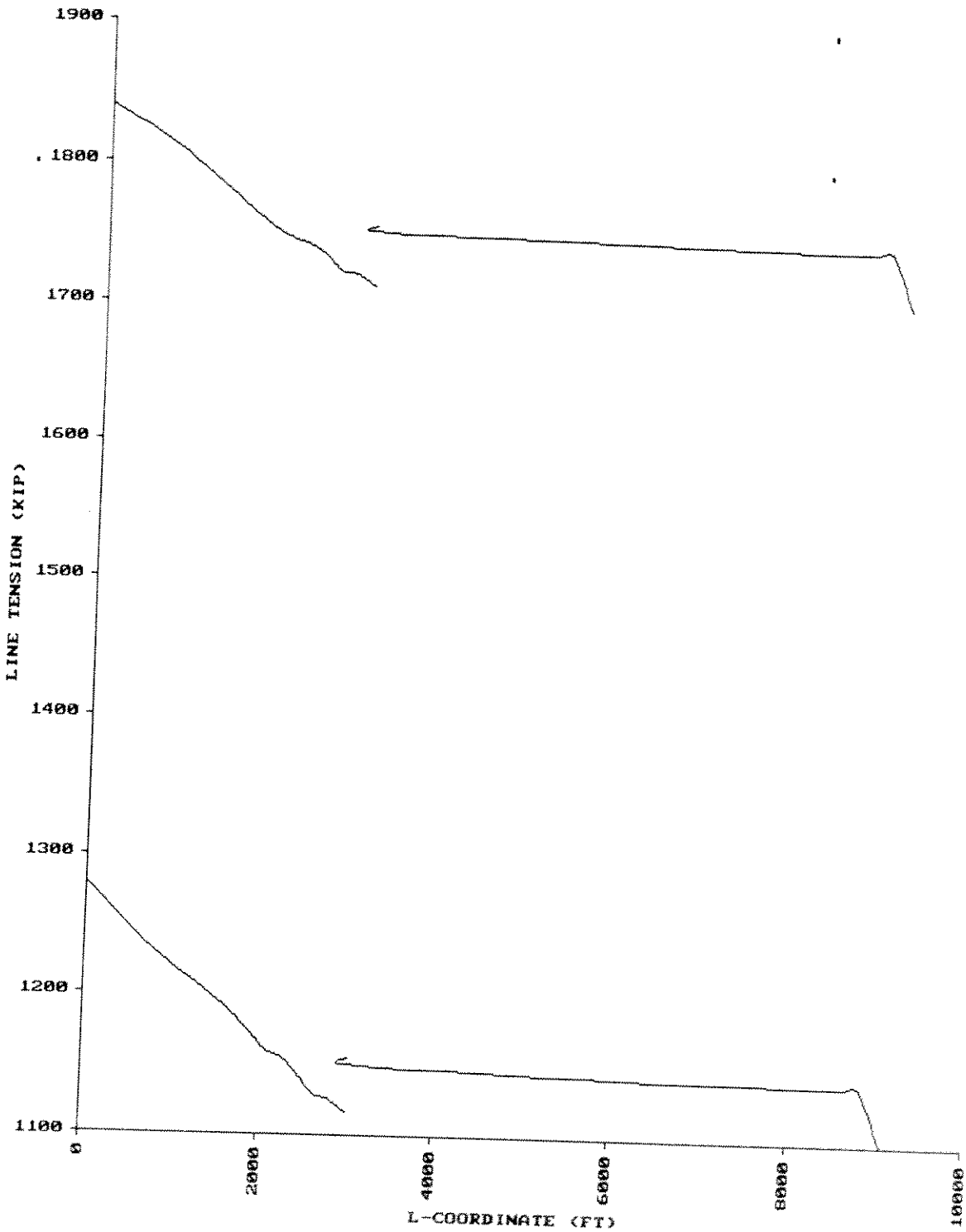
14.9 SEC PERIOD



TAUT-LEG 6000FT - TENSION AT 2nd END OF 2nd SECTION

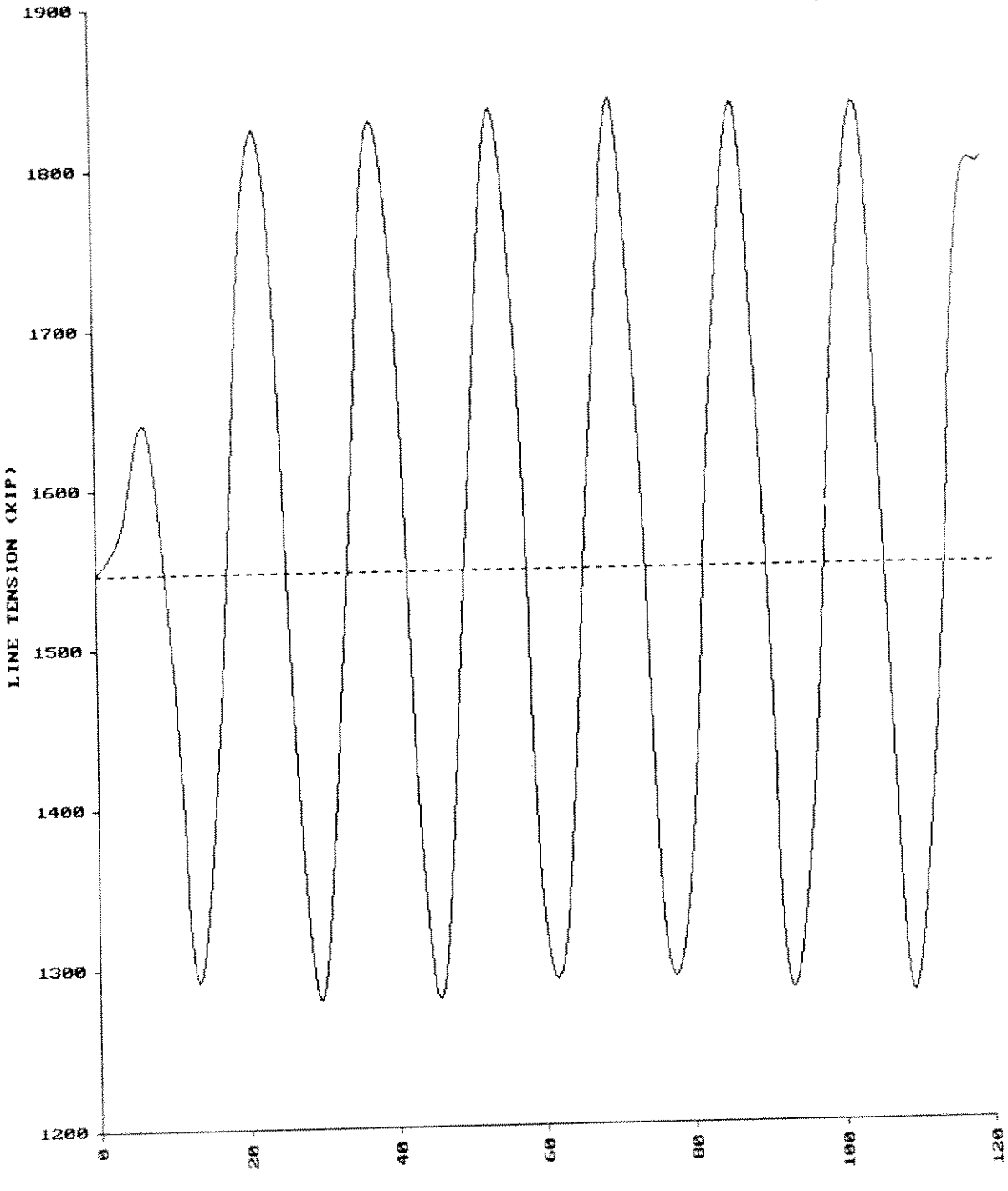
14.9 SEC PERIOD

16 SEC



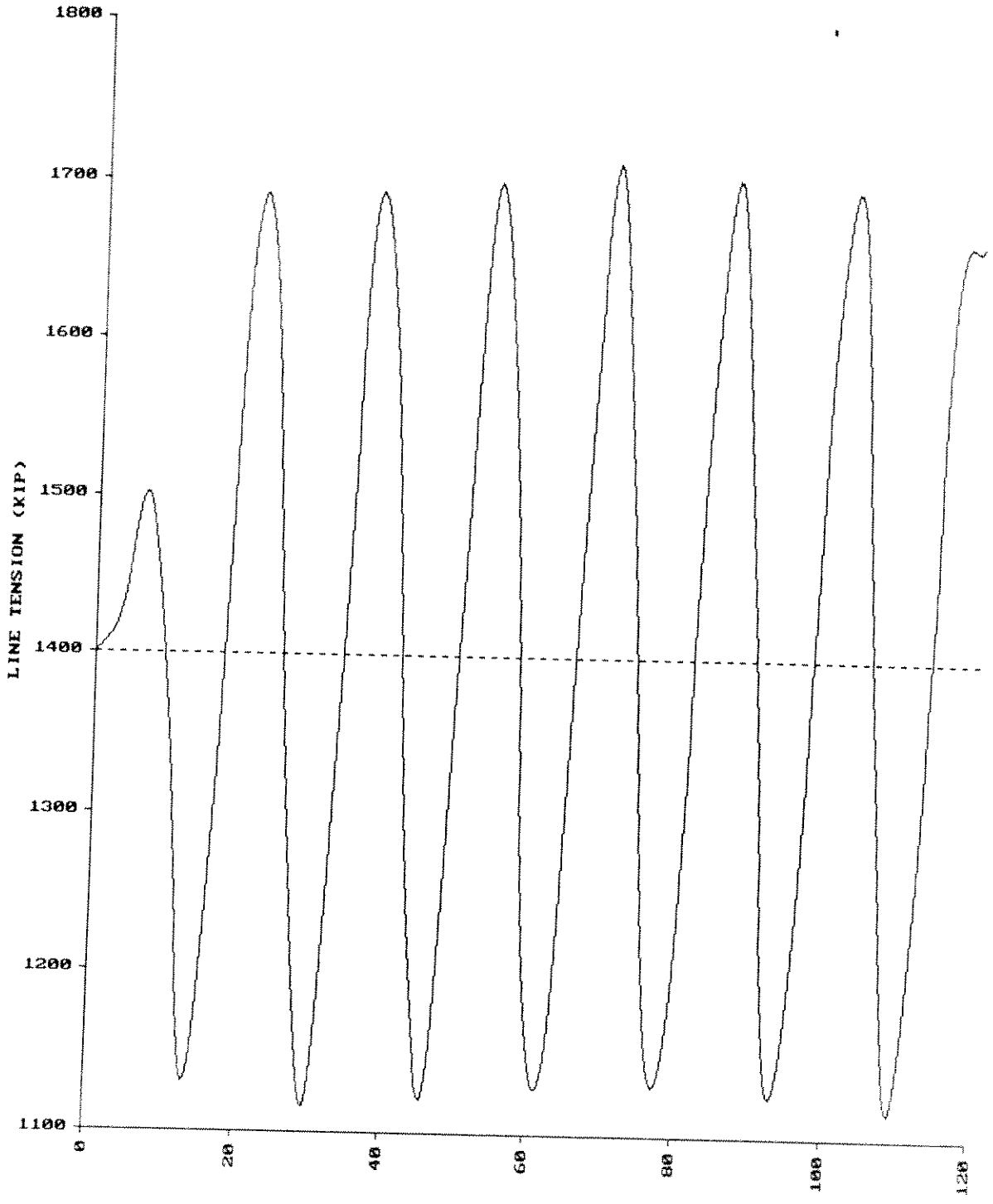
TAUT-LEG 6000FT - TENSION ENVELOPE

16.0 SEC PERIOD



TAUT-LEG 6000FT - TENSION AT 1st END OF 1st SECTION

16.0 SEC PERIOD



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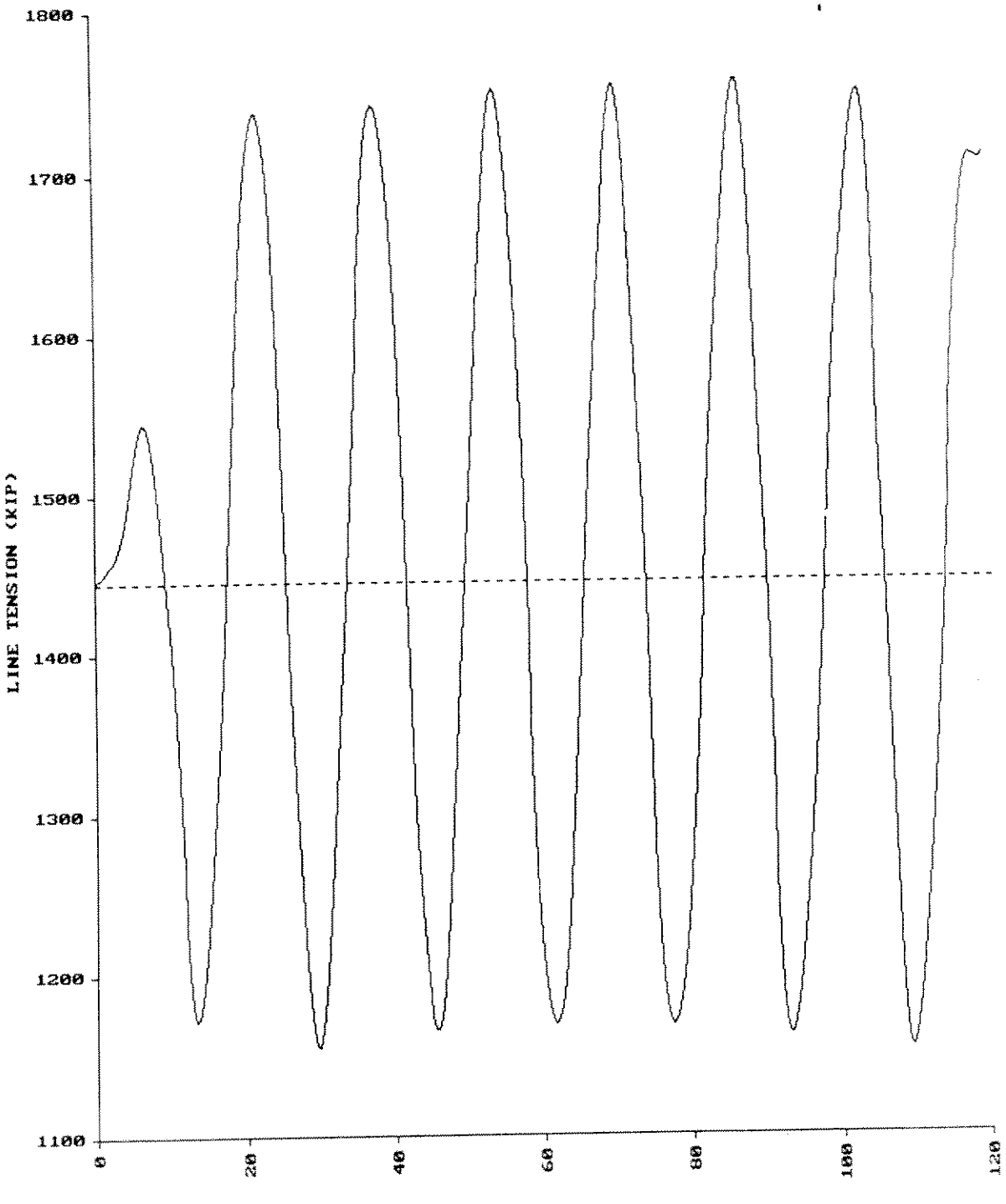

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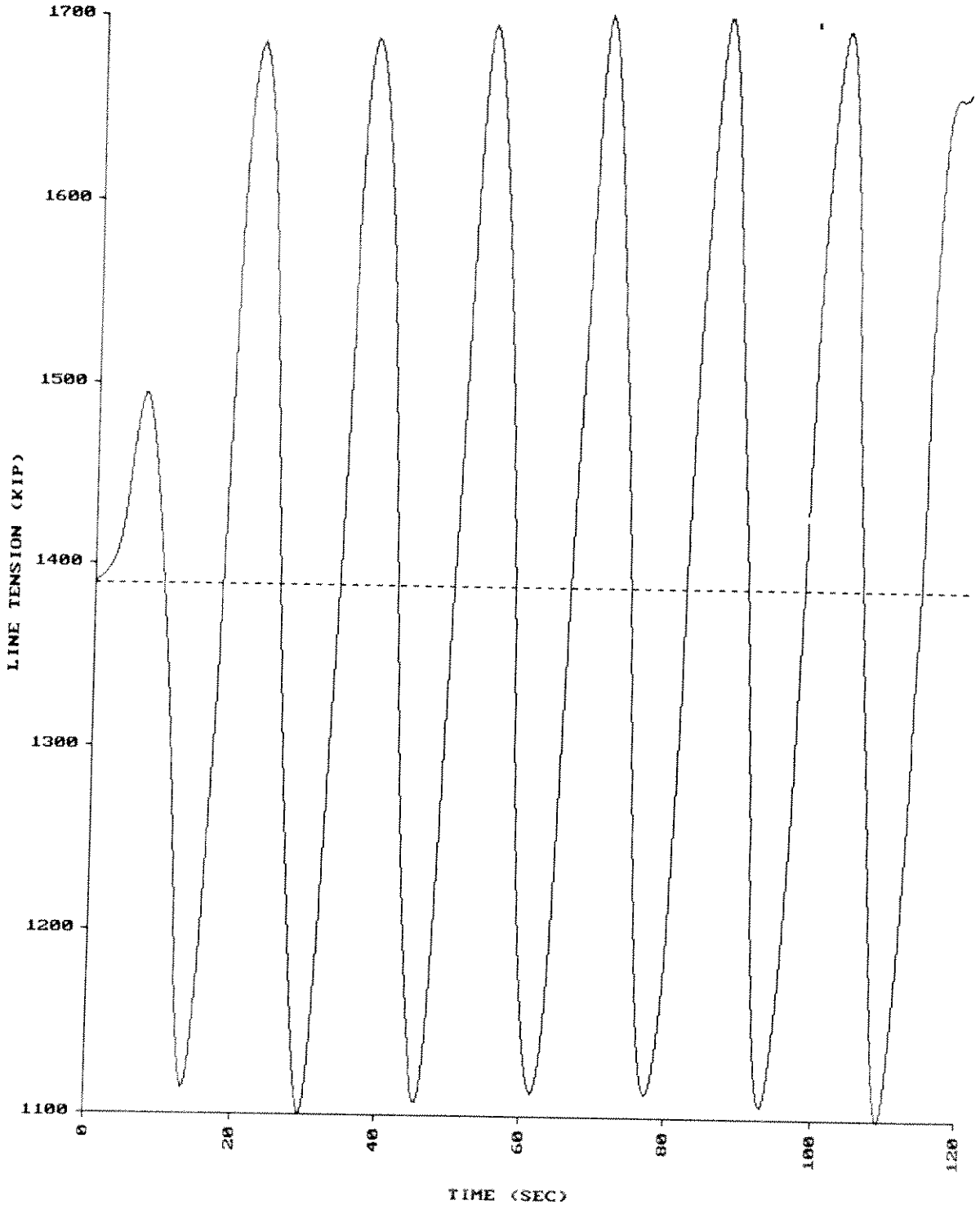
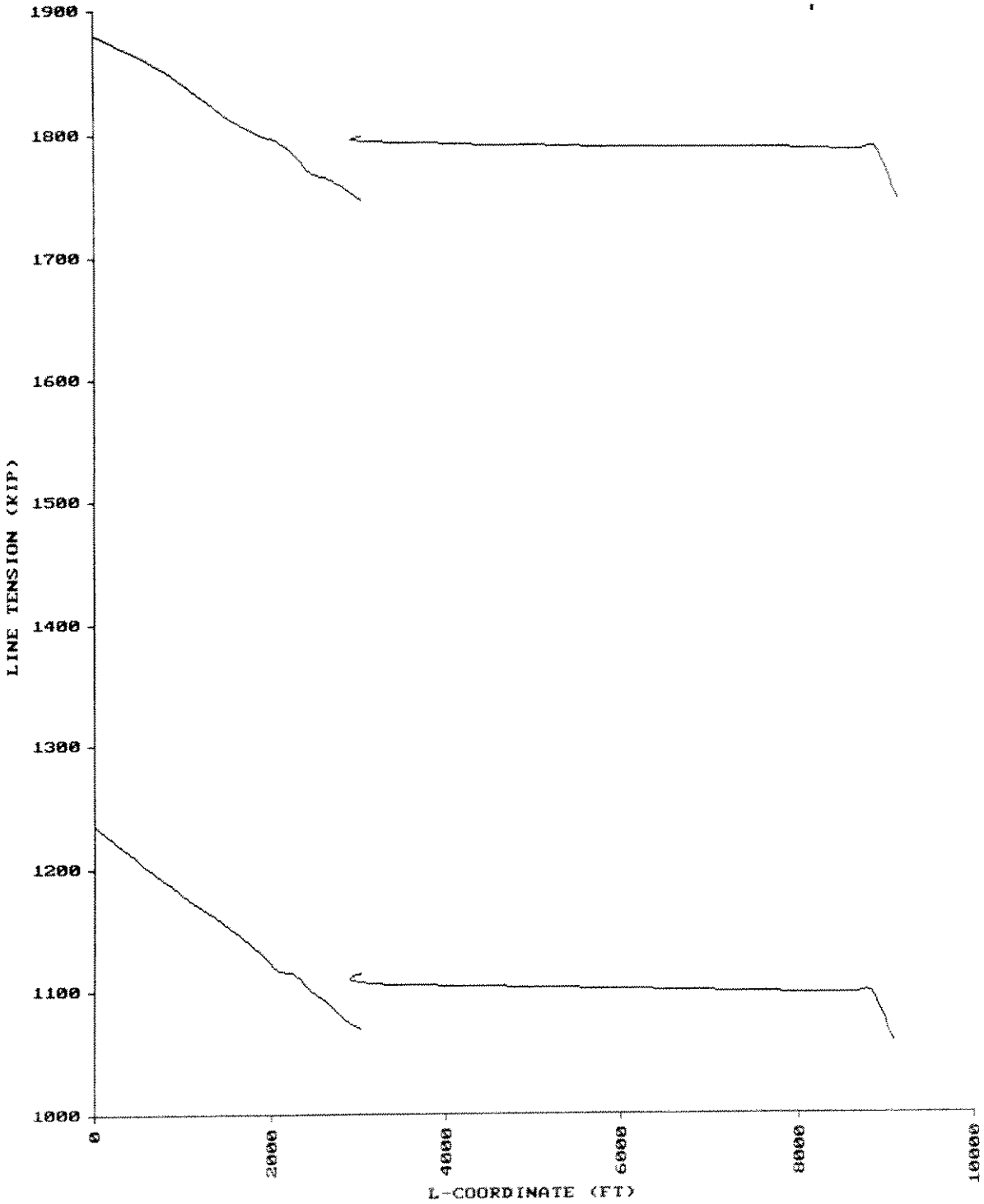
16.0 SEC PERIOD



TAUT-LEG 6000FT - TENSION AT 2nd END OF 2nd SECTION

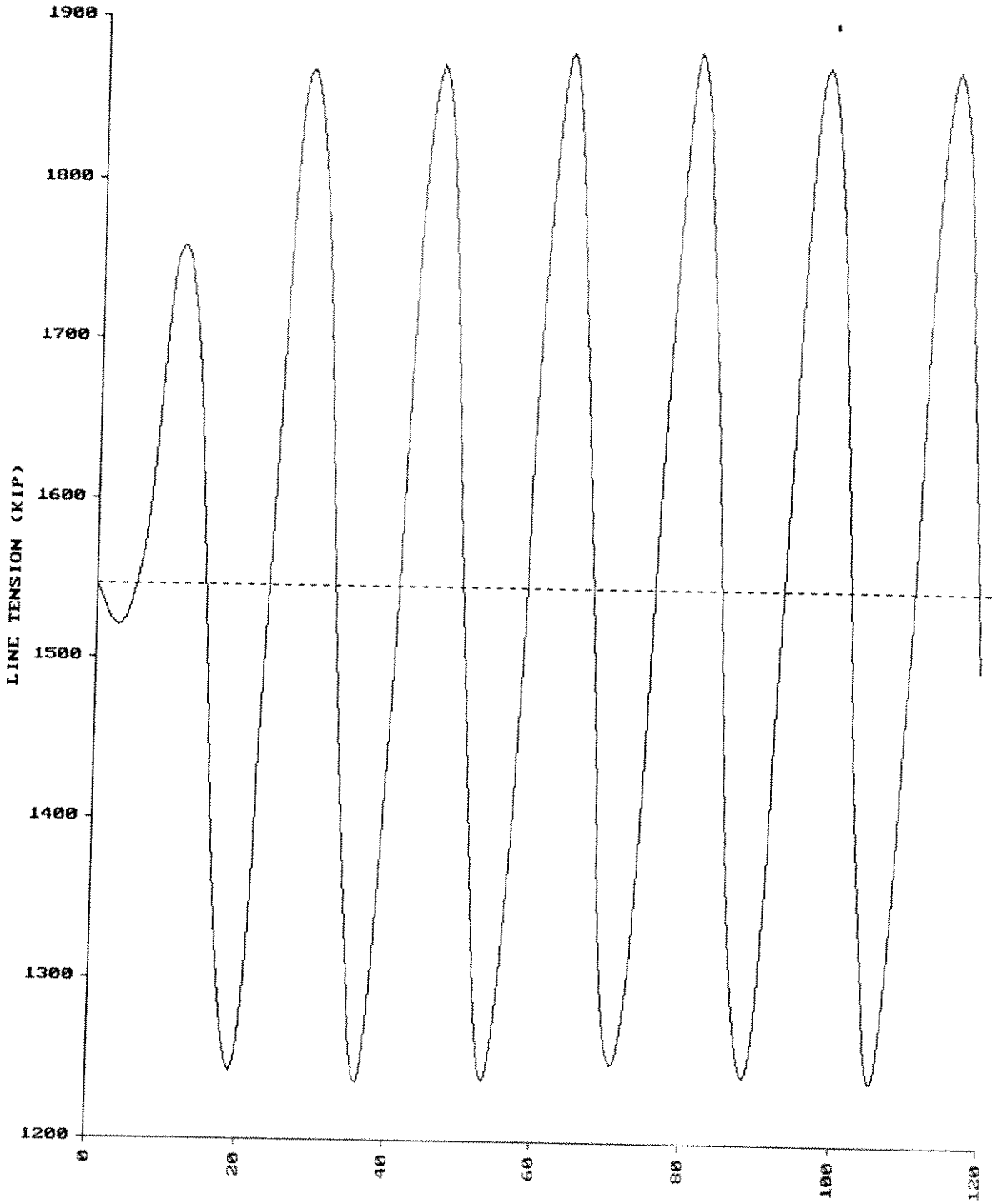
16.0 SEC PERIOD

17.3 SEC



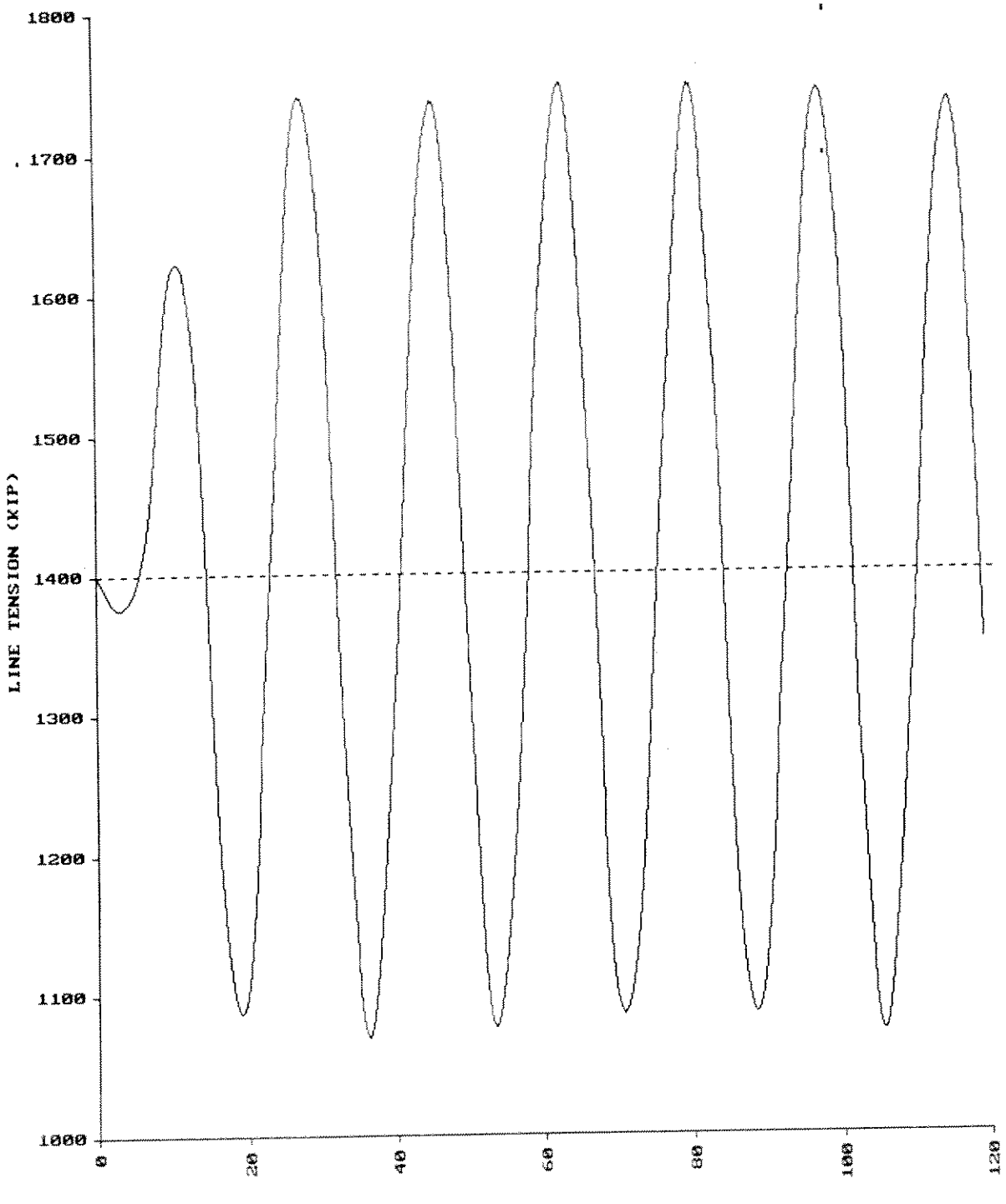
TAUT-LEG 6000FT - TENSION ENVELOPE

17.3 SEC PERIOD



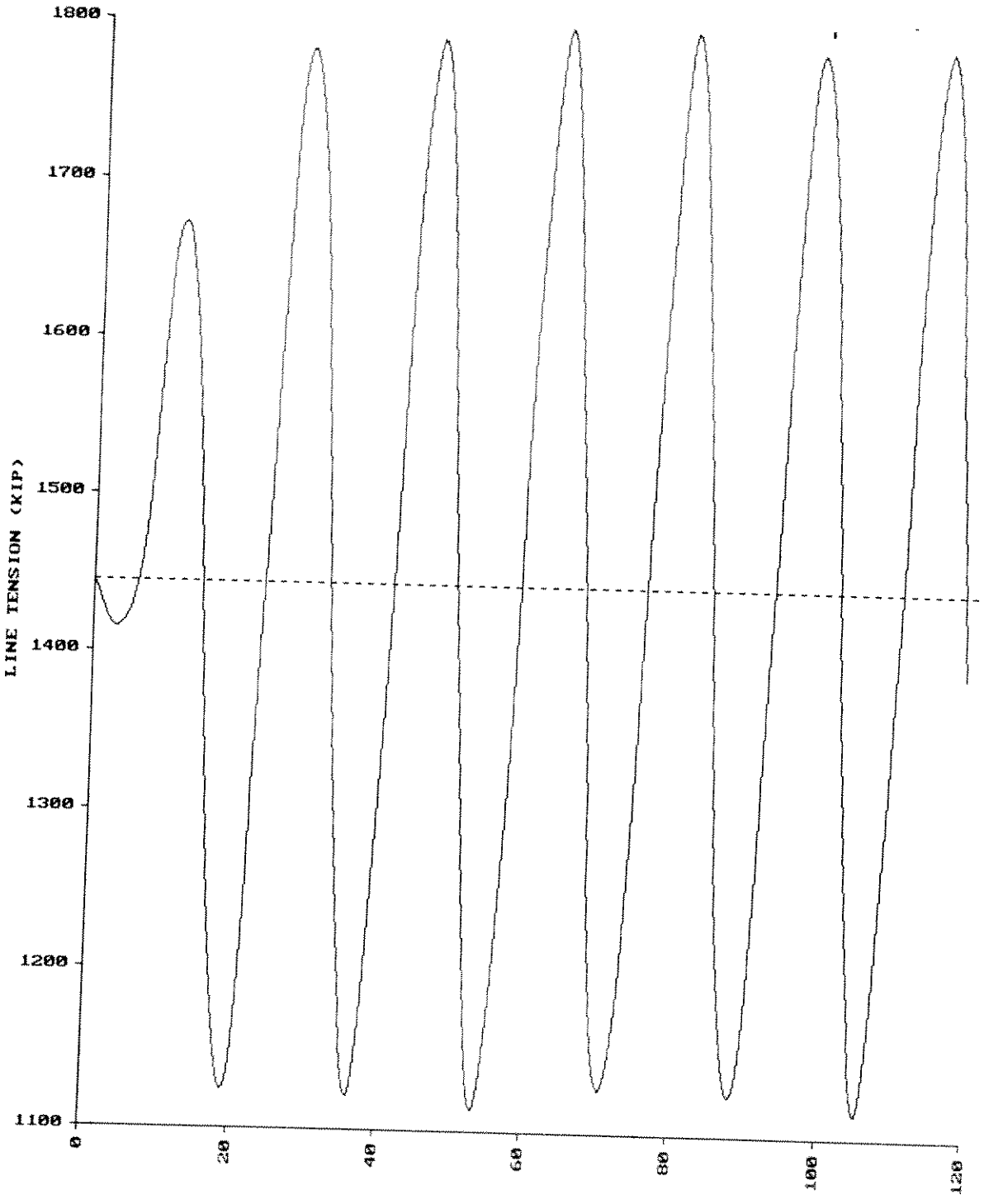
TAUT-LEG 6000FT - TENSION AT 1st END OF 1st SECTION

17.3 SEC PERIOD



TAUT-LEG 6000FT - TENSION AT 2nd END OF 1st SECTION

17.3 SEC PERIOD



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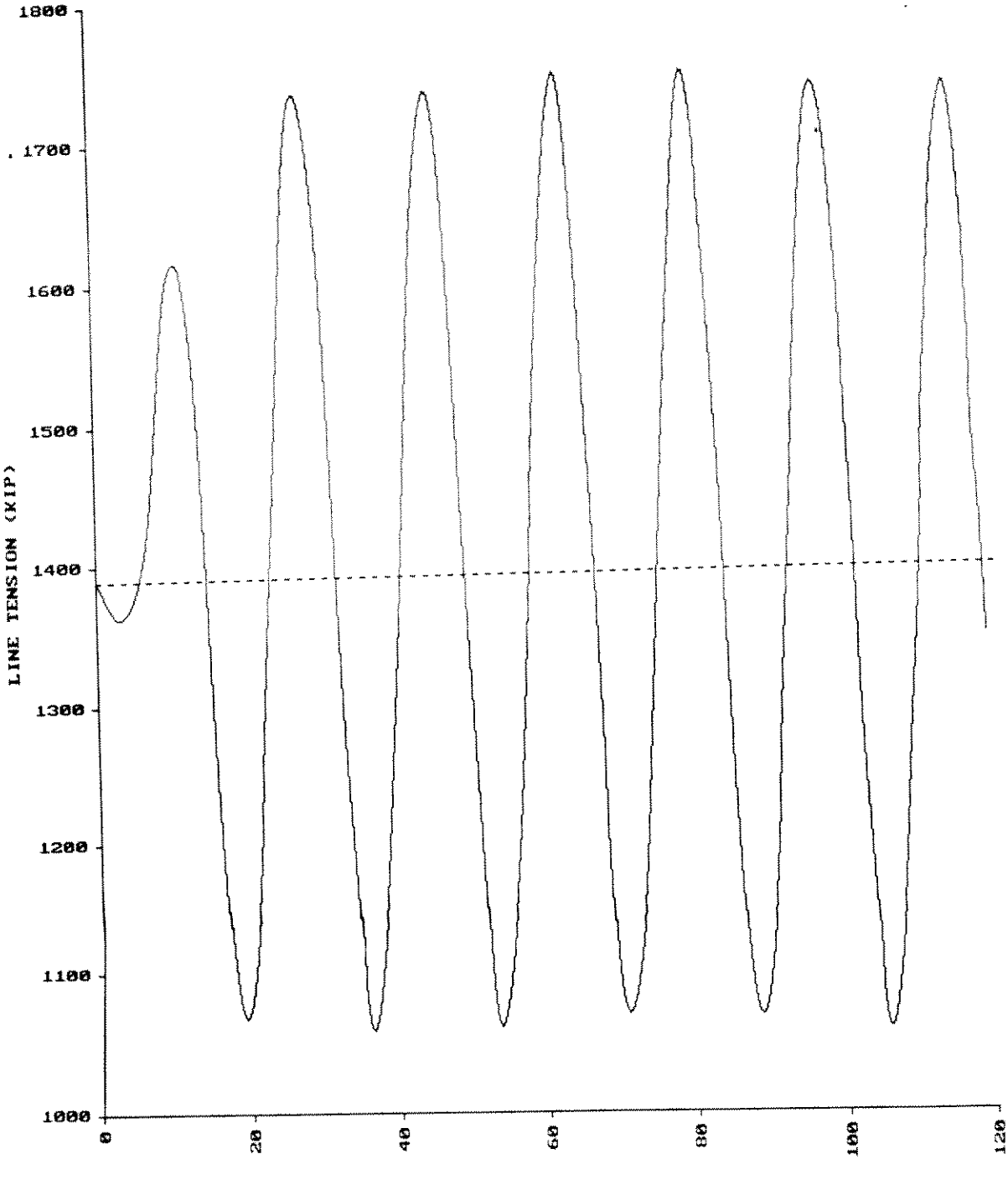
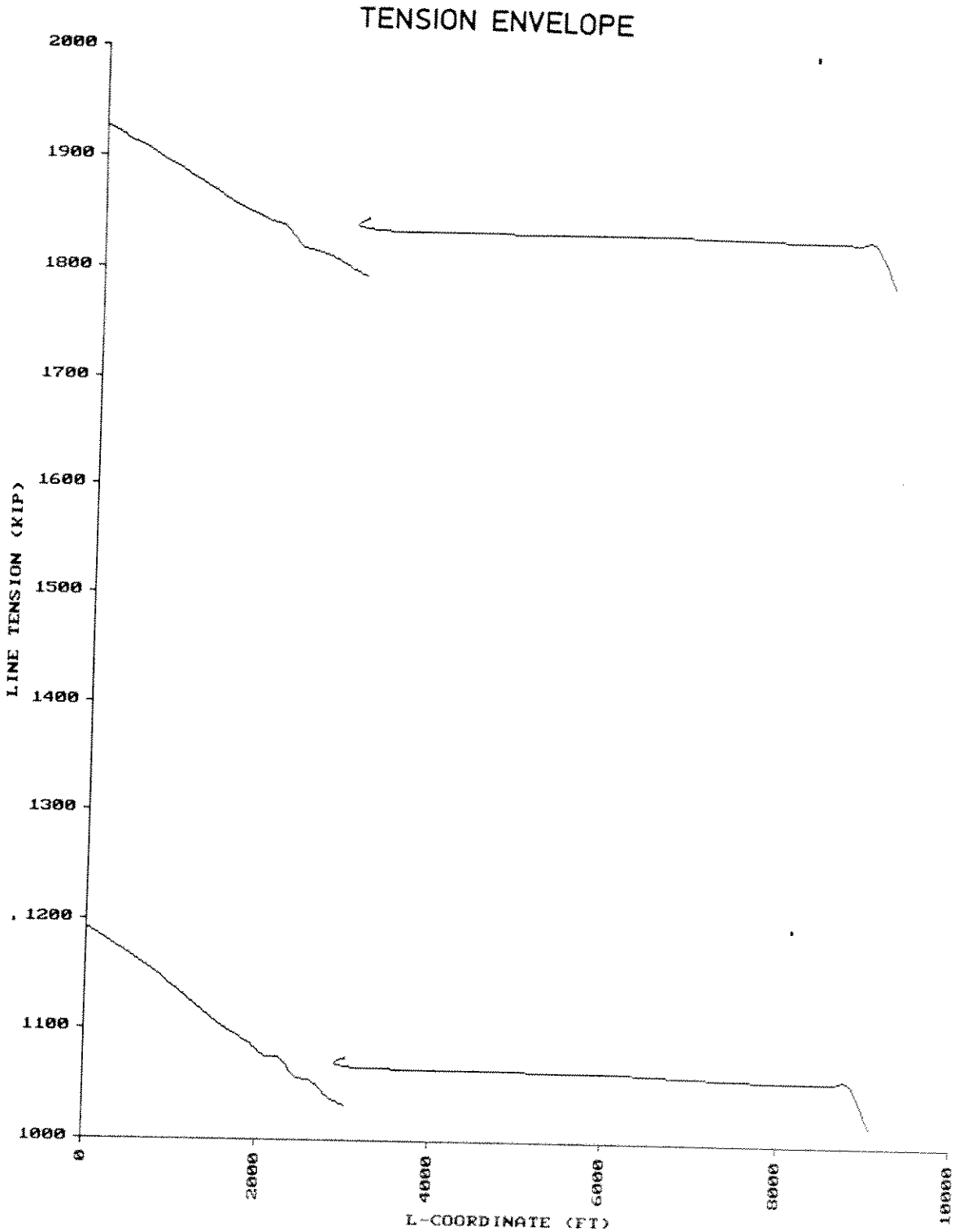
17.3 SEC PERIOD



TAUT-LEG 6000FT - TENSION AT 2nd END OF 2nd SECTION

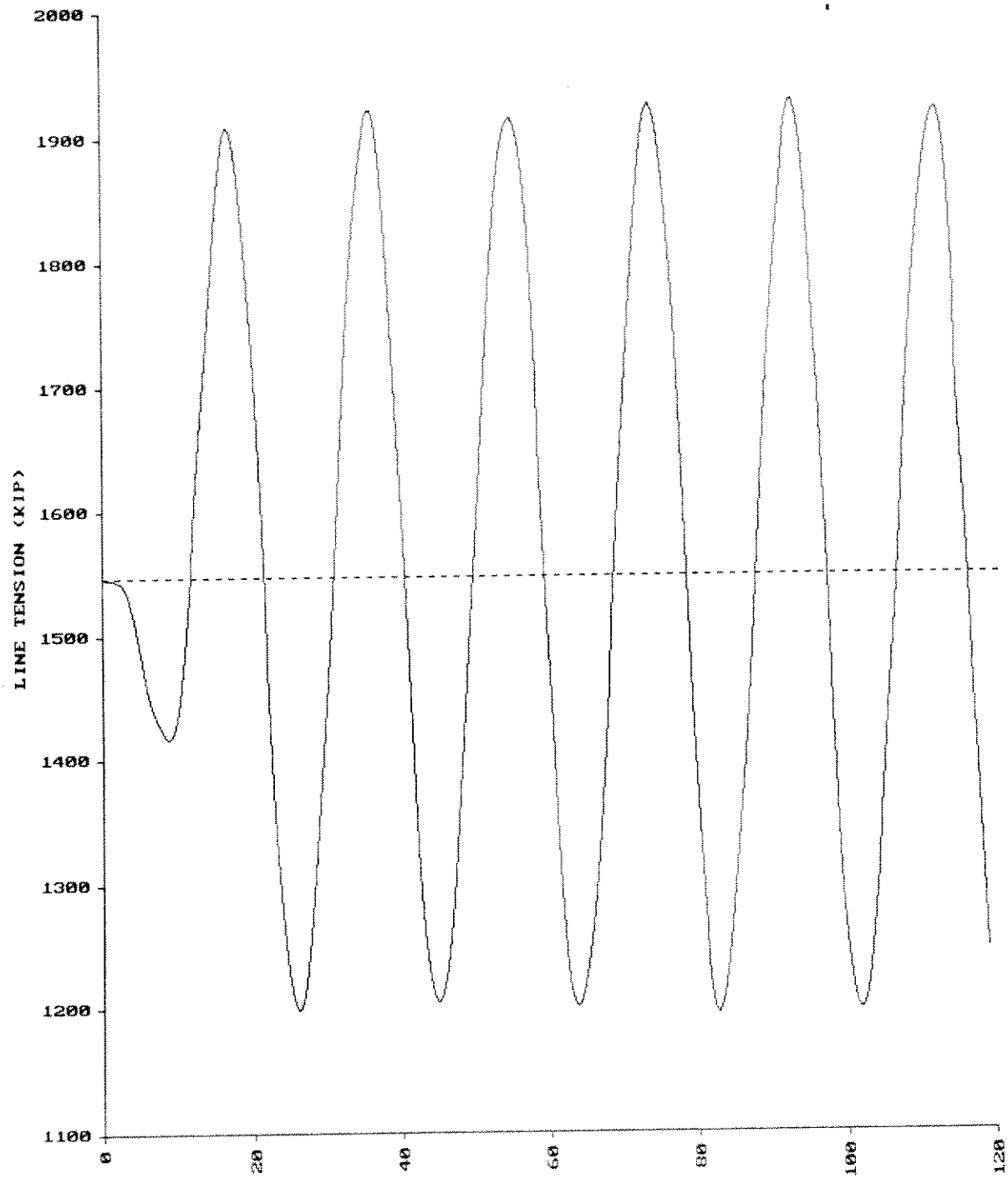
17.3 SEC PERIOD



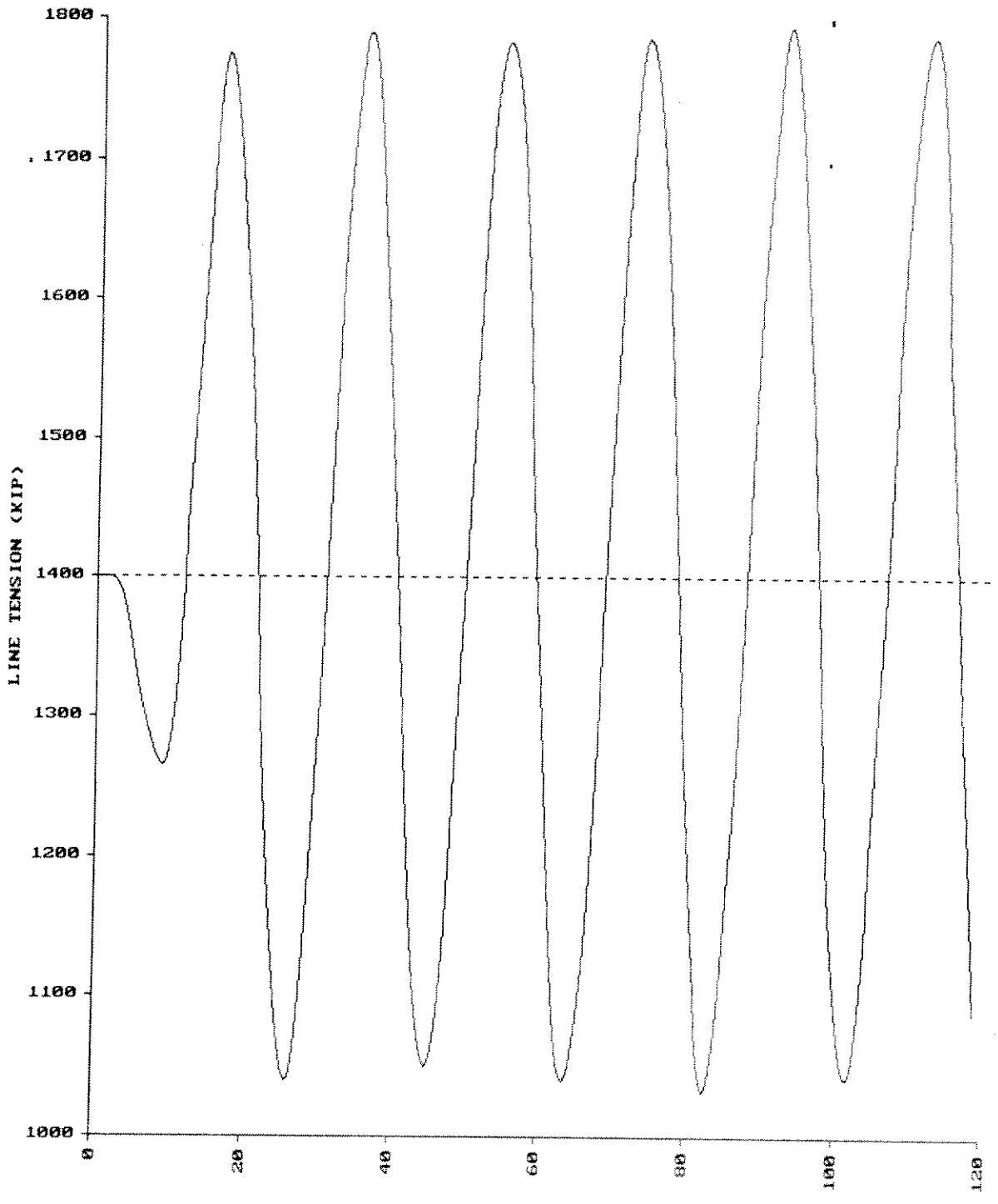
TAUT-LEG 6000FT - TENSION ENVELOPE

18.9 SEC PERIOD

TIME HISTORY OF THE
TENSION AT THE FAIRLEAD

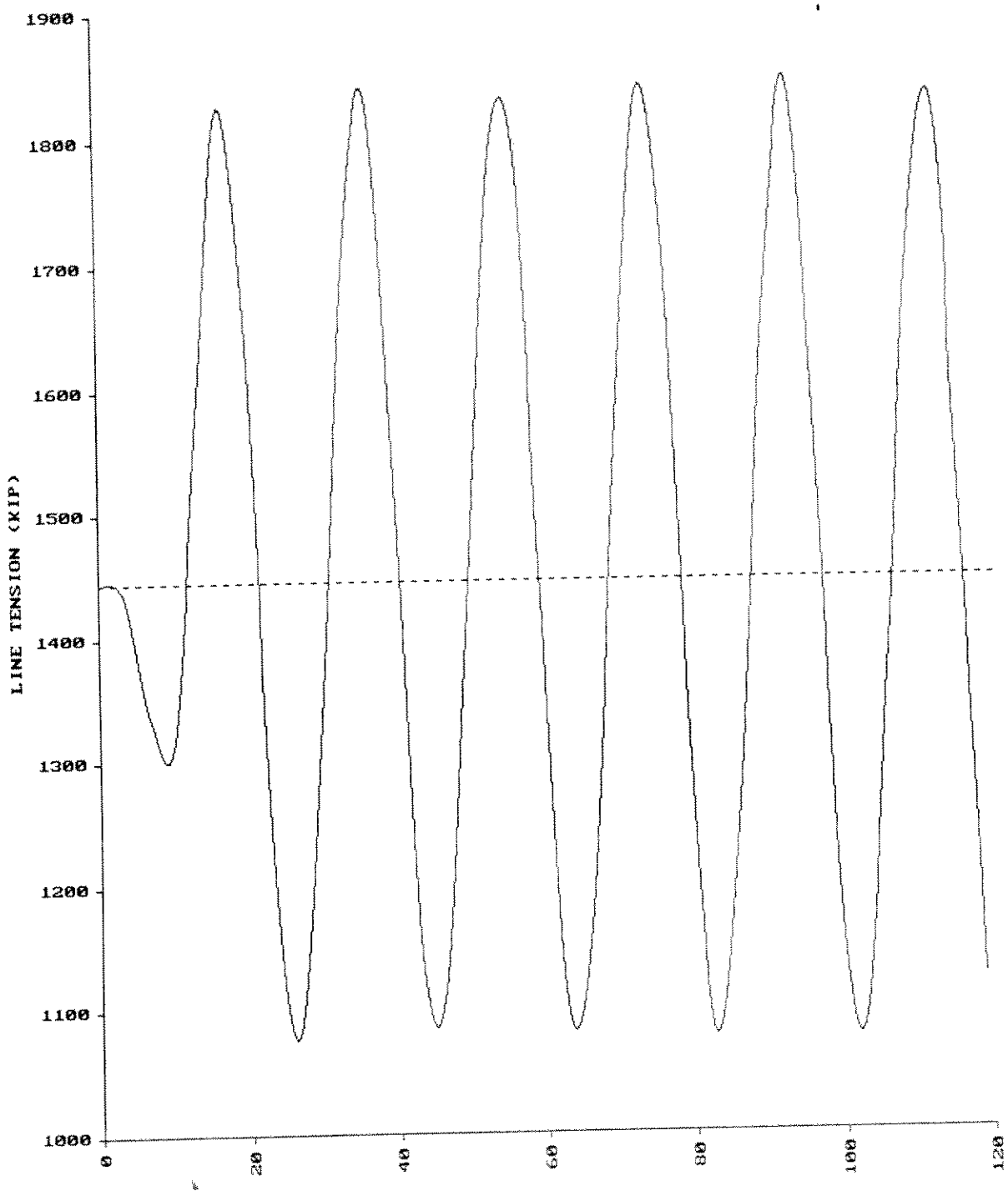


TAUT-LEG 6000FT - TENSION AT 1st END OF 1st SECTION
18.9 SEC PERIOD



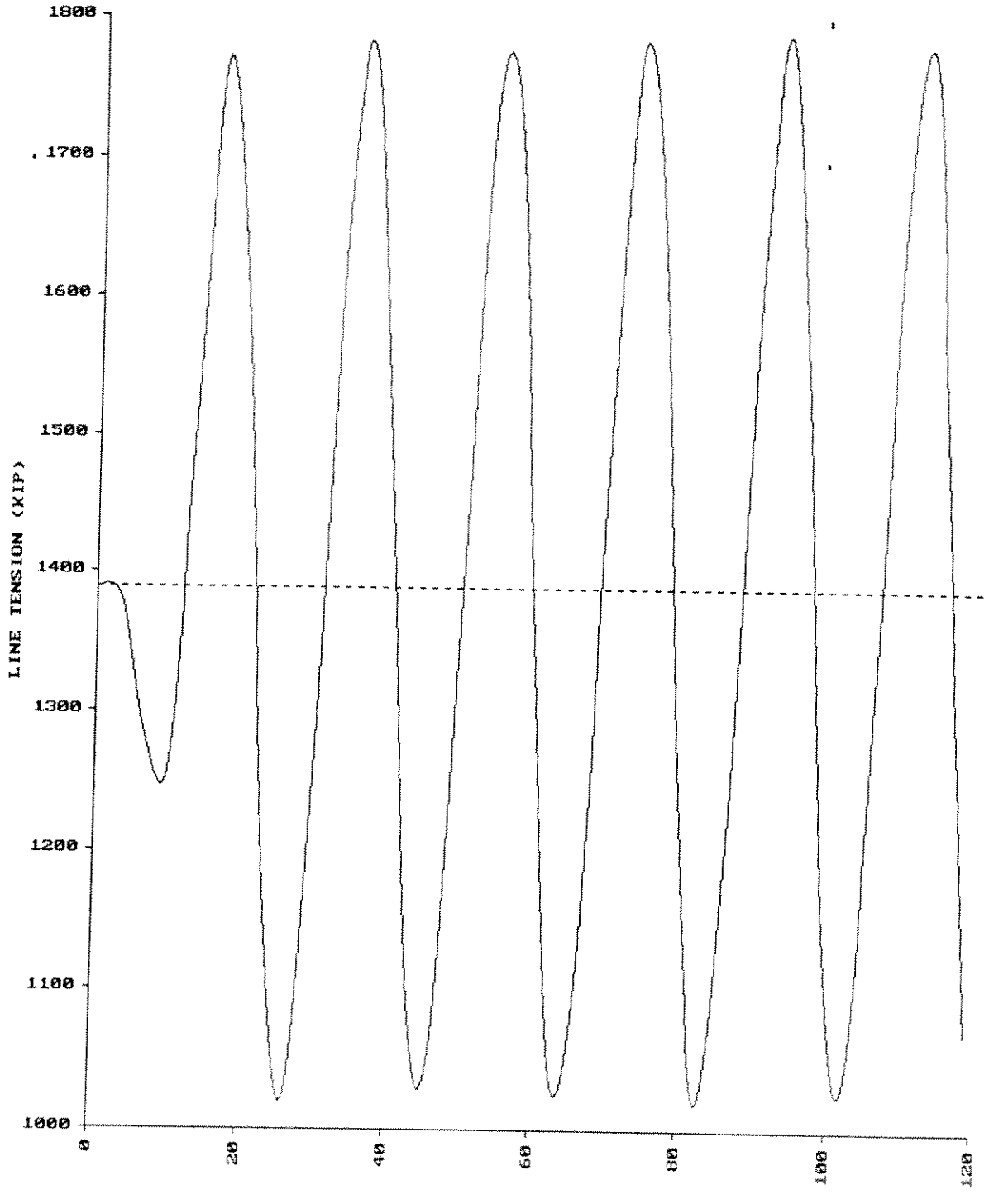
TAUT-LEG 6000FT - TENSION AT 2nd END OF 1st SECTION

18.9 SEC PERIOD



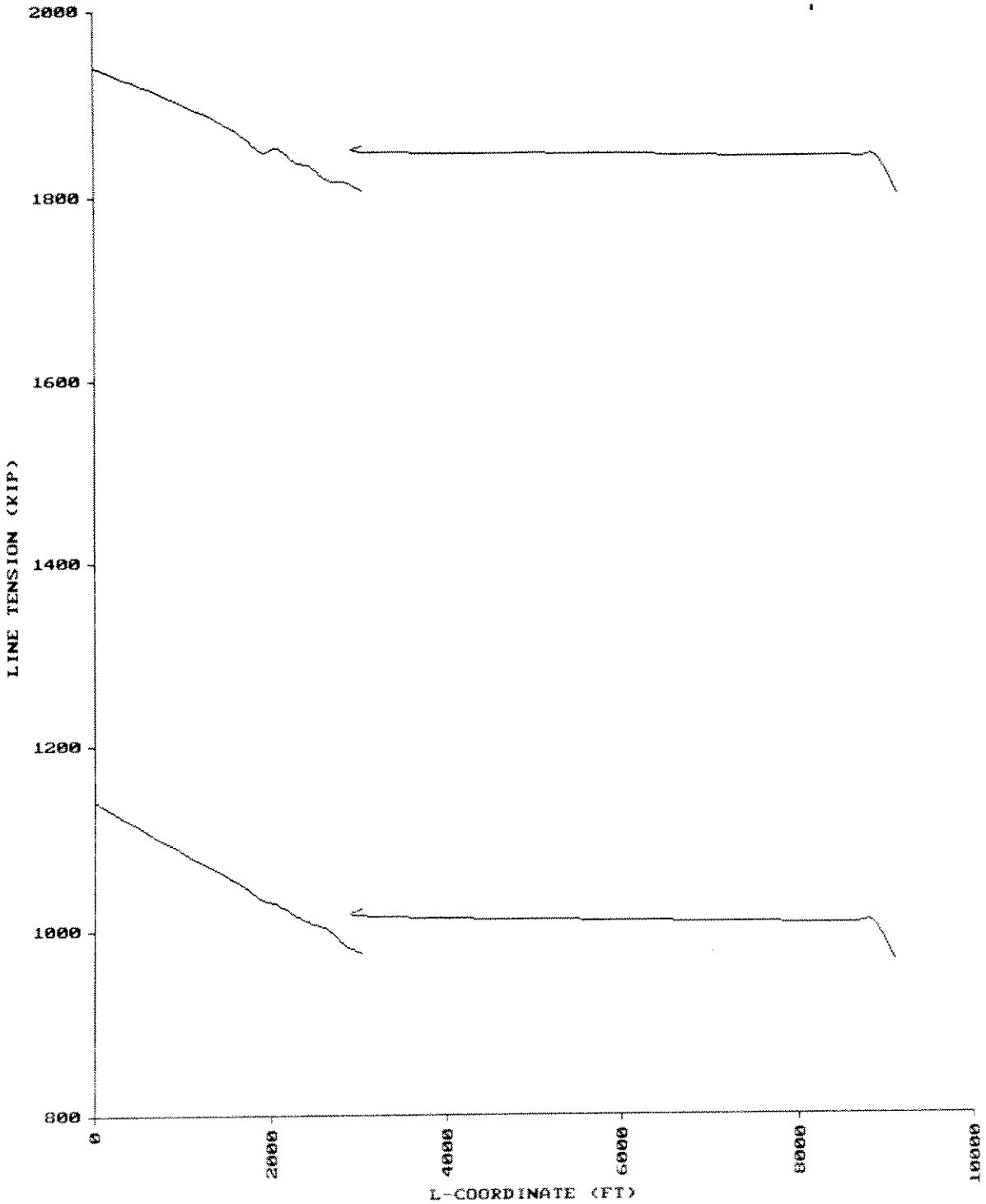
TAUT-LEG 6000FT - TENSION AT 1st END OF 2nd SECTION

18.9 SEC PERIOD



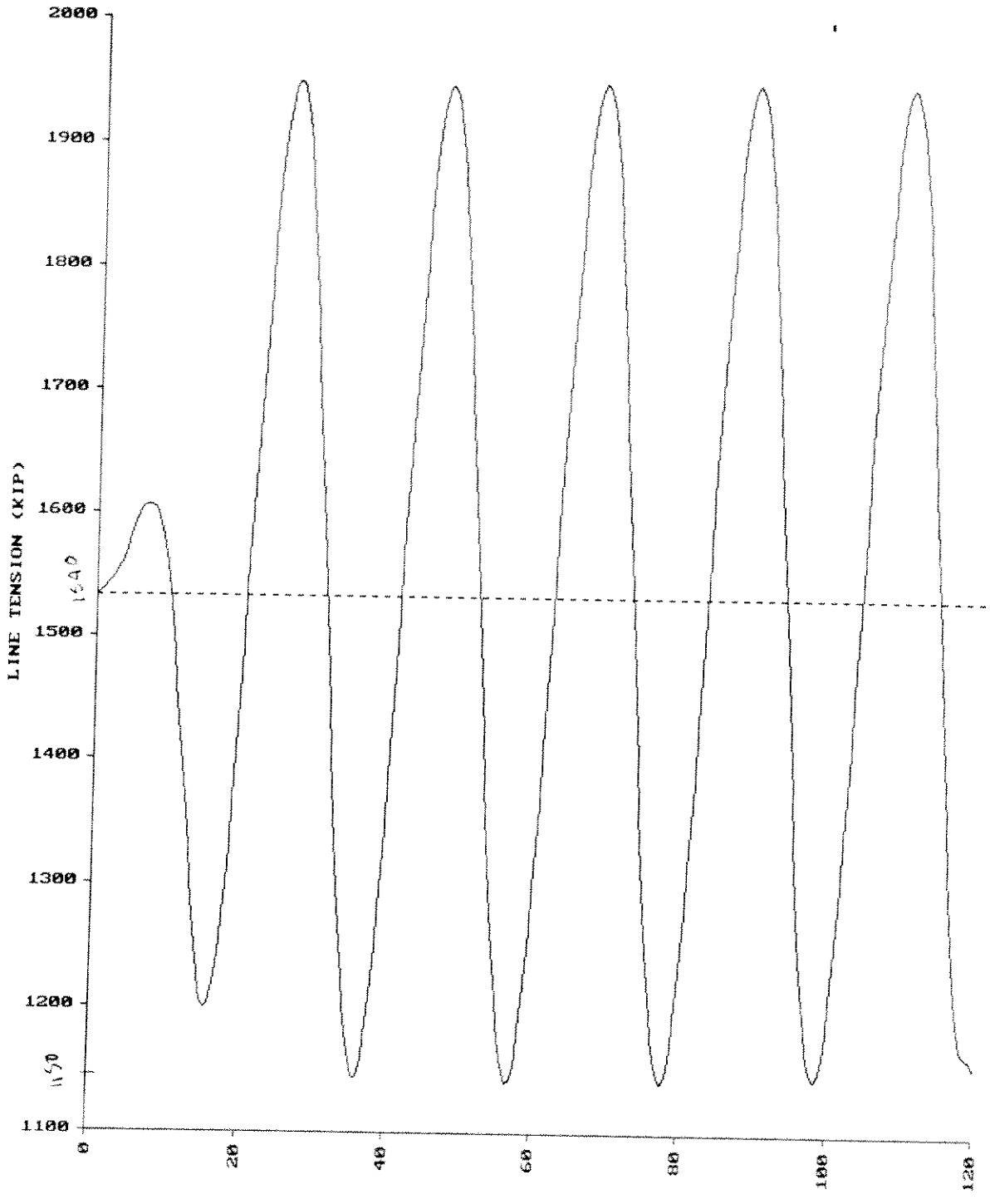
TAUT-LEG 6000FT - TENSION AT 2nd END OF 2nd SECTION

18.9 SEC PERIOD

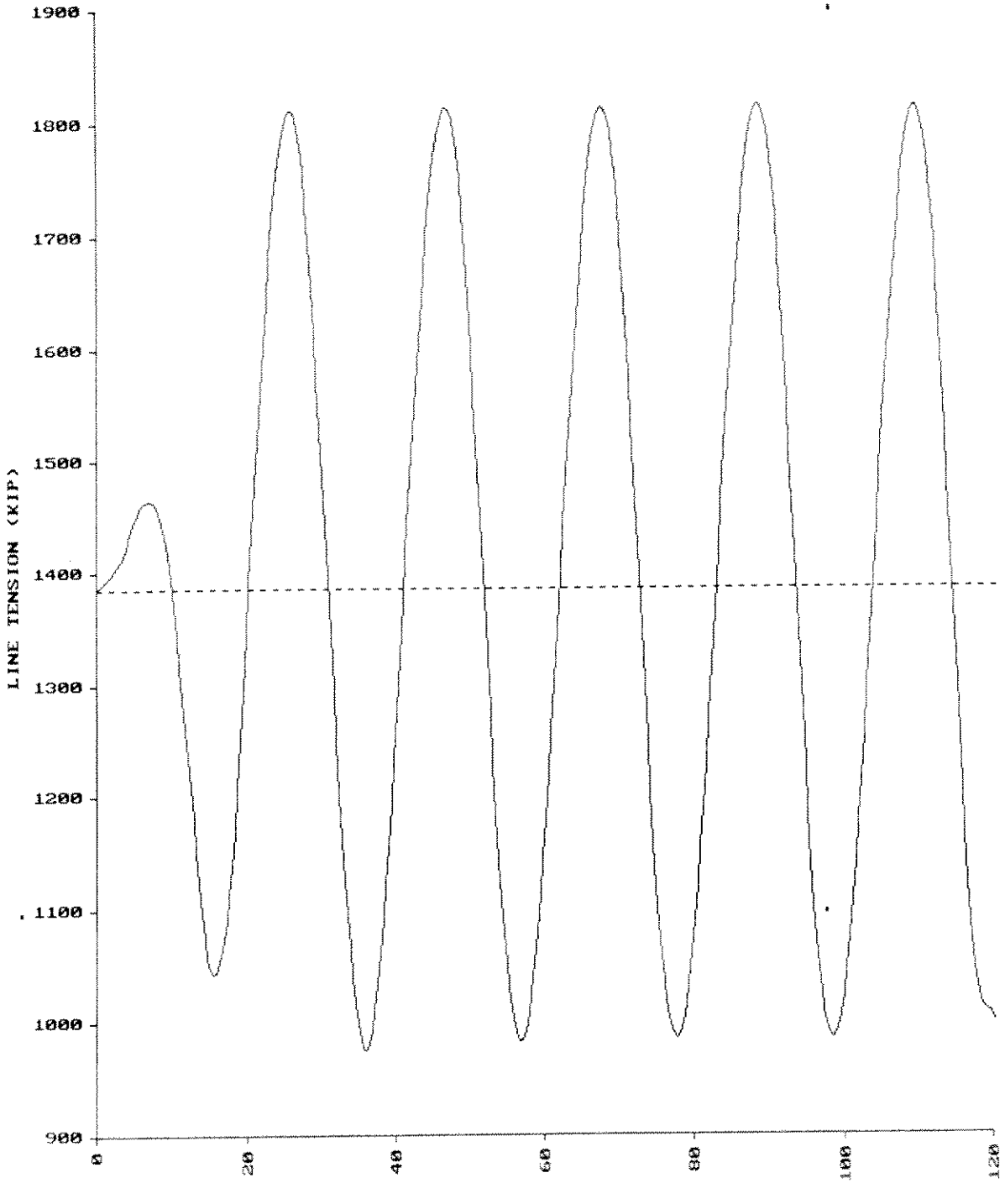


TAUT-LEG 6000FT - TENSION ENVELOPE

20.0 SEC PERIOD

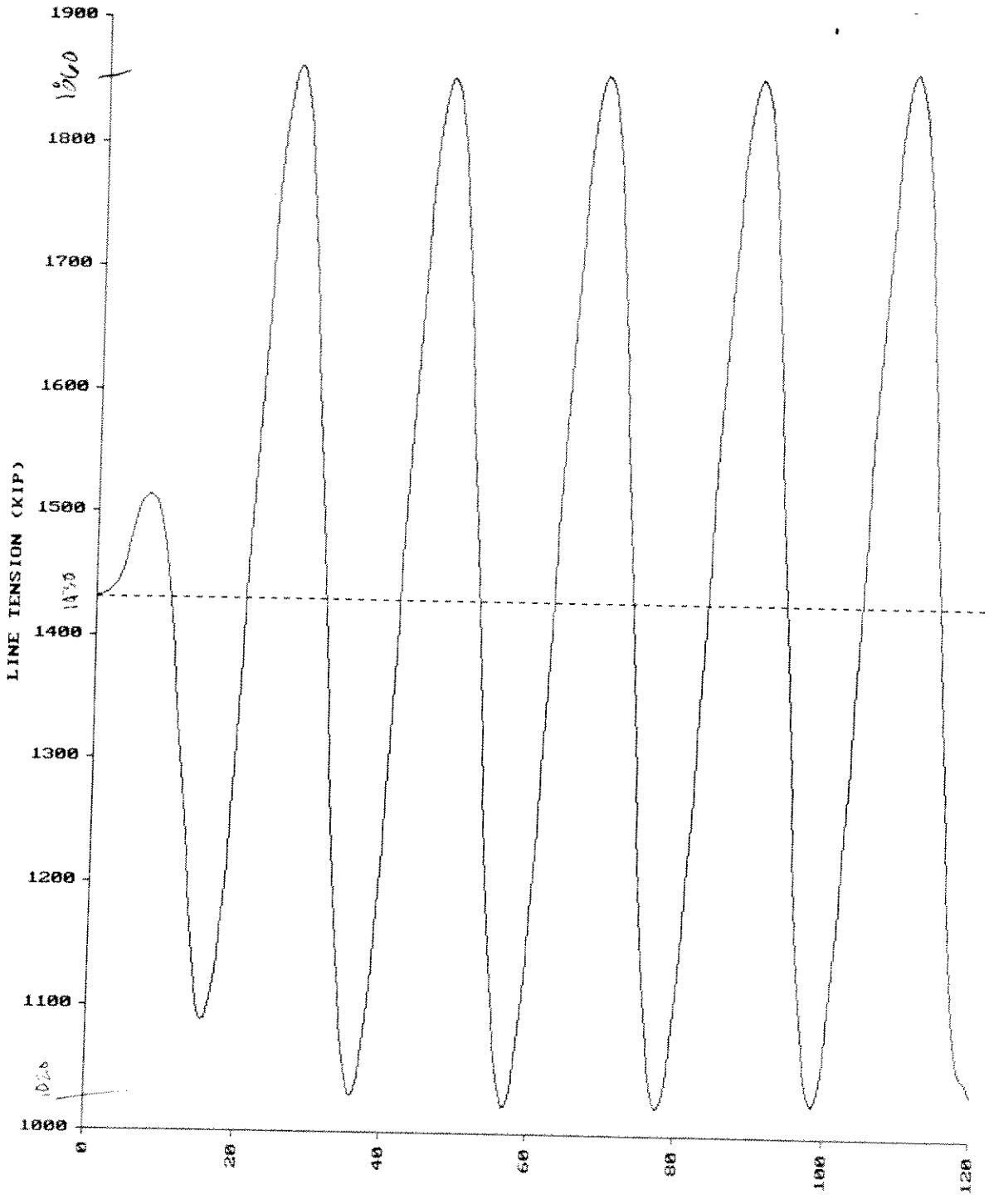


TAUT-LEG 6000FT - TENSION AT 1st END OF 1st SECTION
20.0 SEC PERIOD



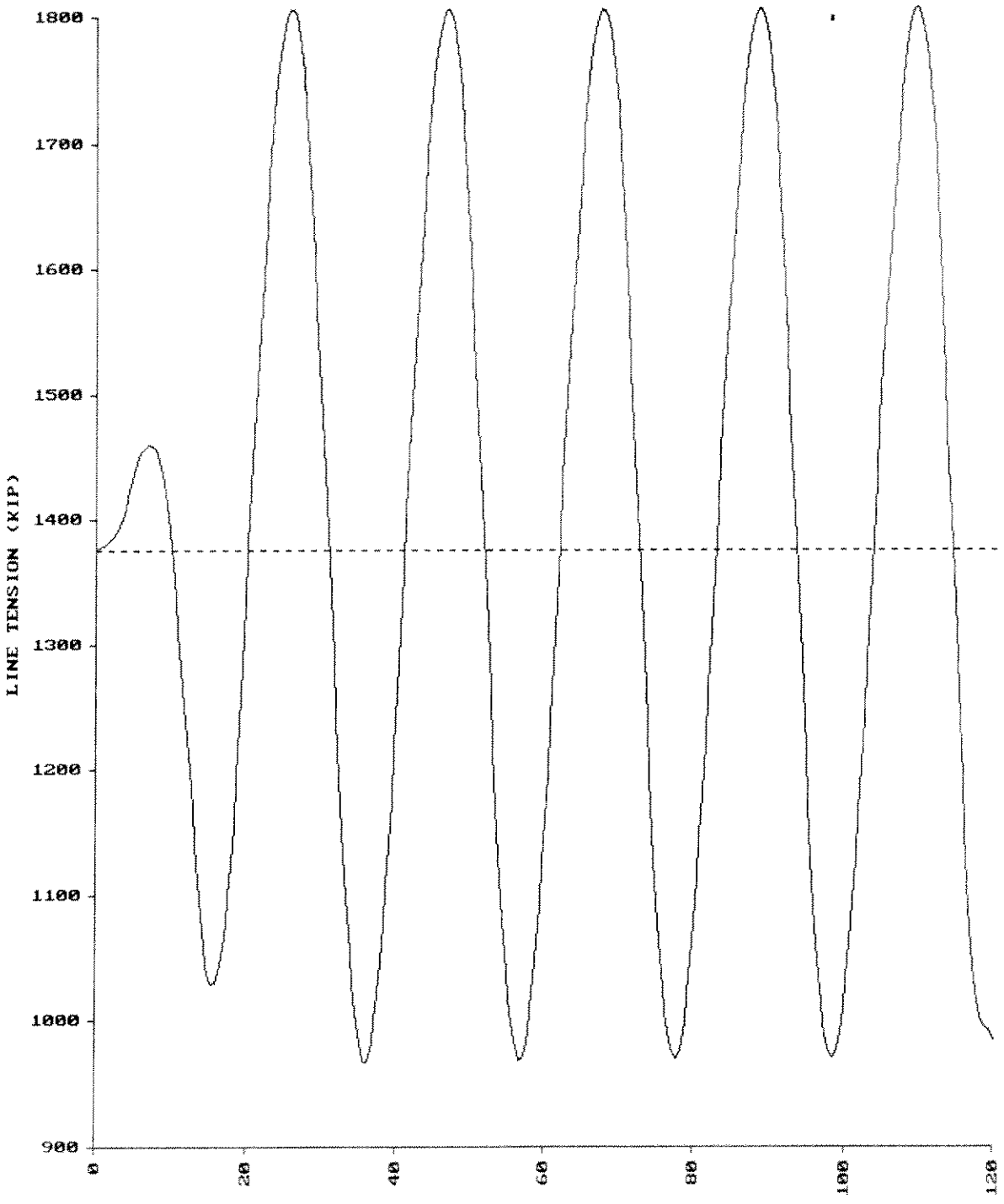
TAUT-LEG 6000FT - TENSION AT 2nd END OF 1st SECTION

20.0 SEC PERIOD



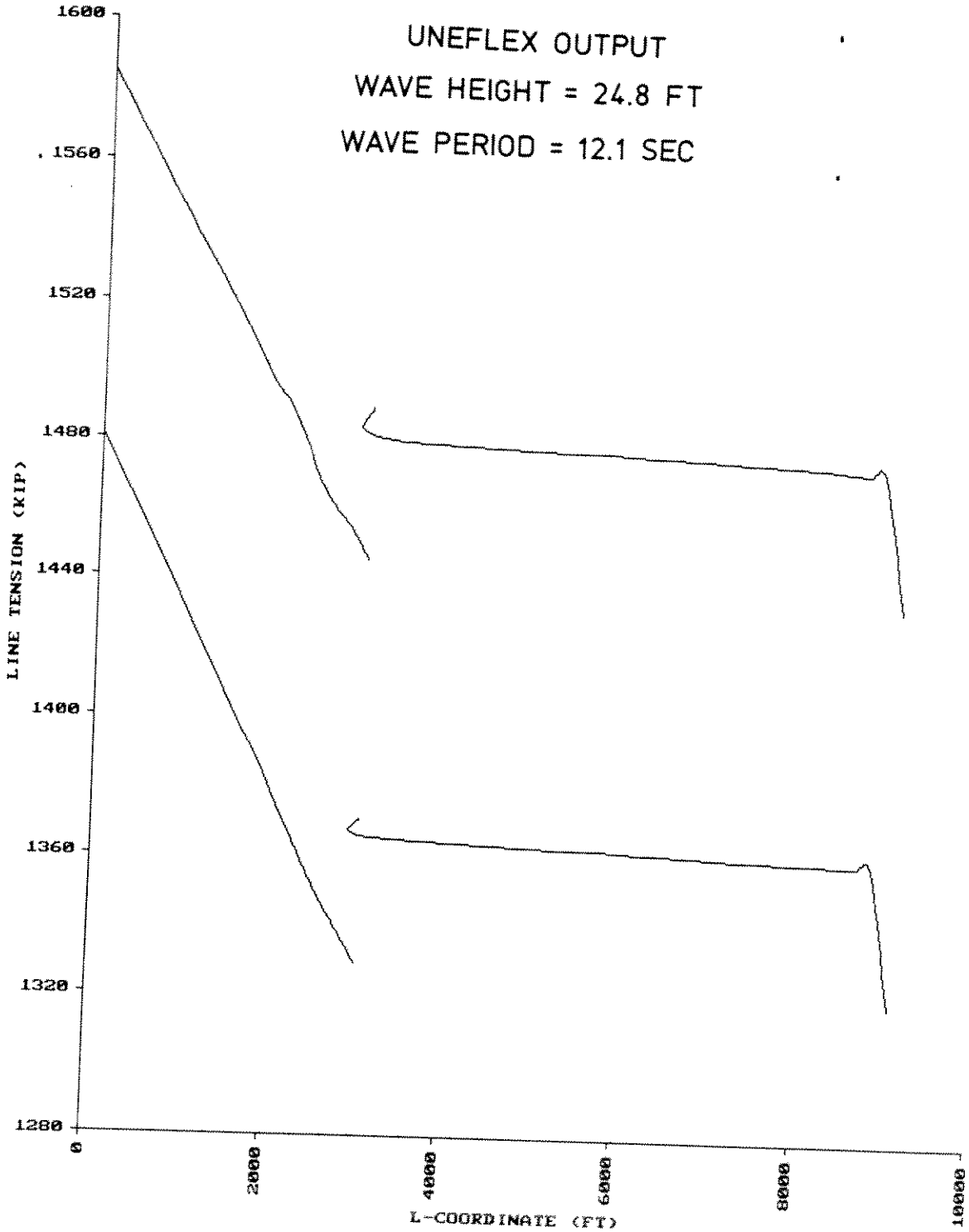
TAUT-LEG 6000FT - TENSION AT 1st END OF 2nd SECTION

20.0 SEC PERIOD

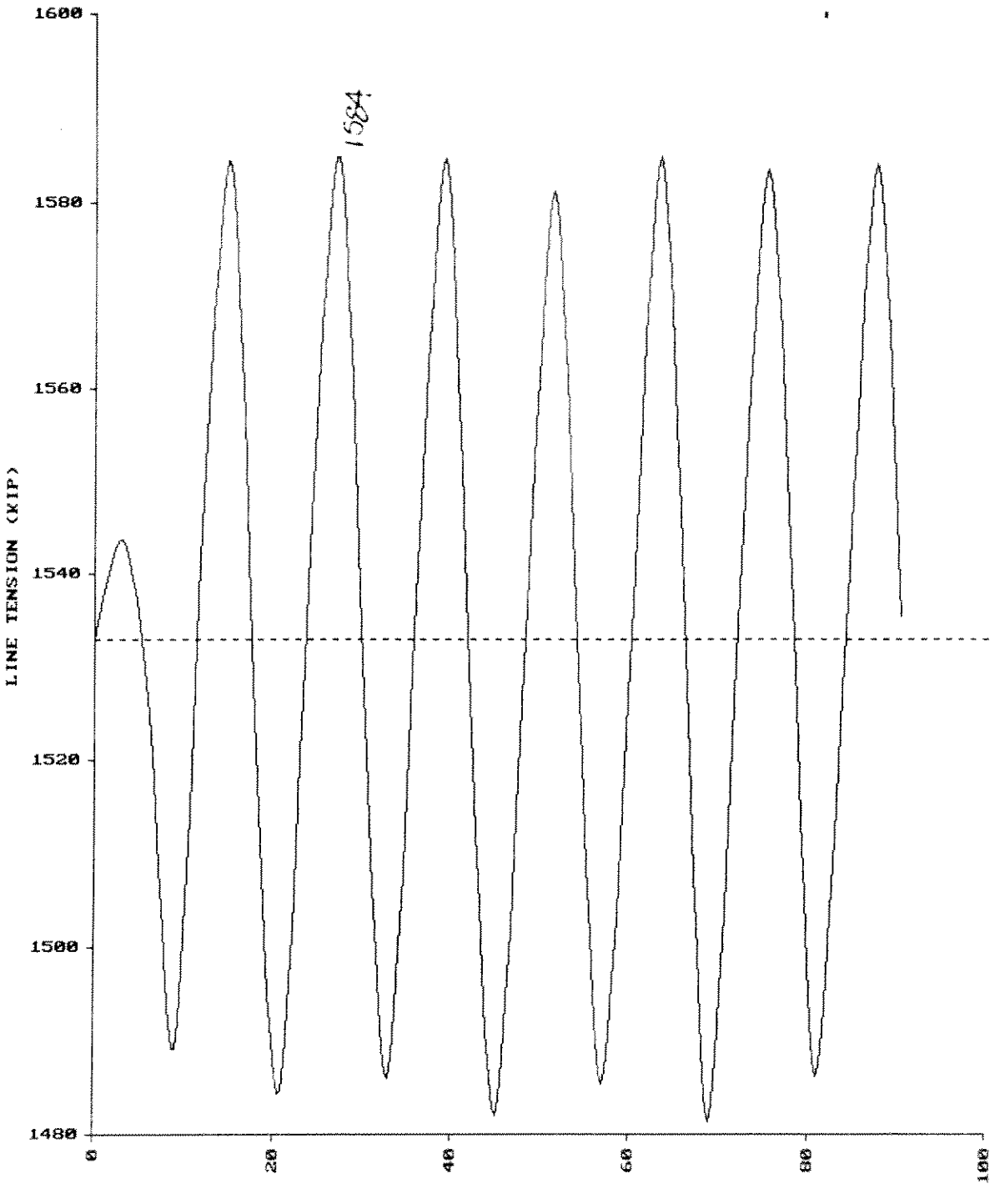


TAUT-LEG 6000FT - TENSION AT 2nd END OF 2nd SECTION

20.0 SEC PERIOD



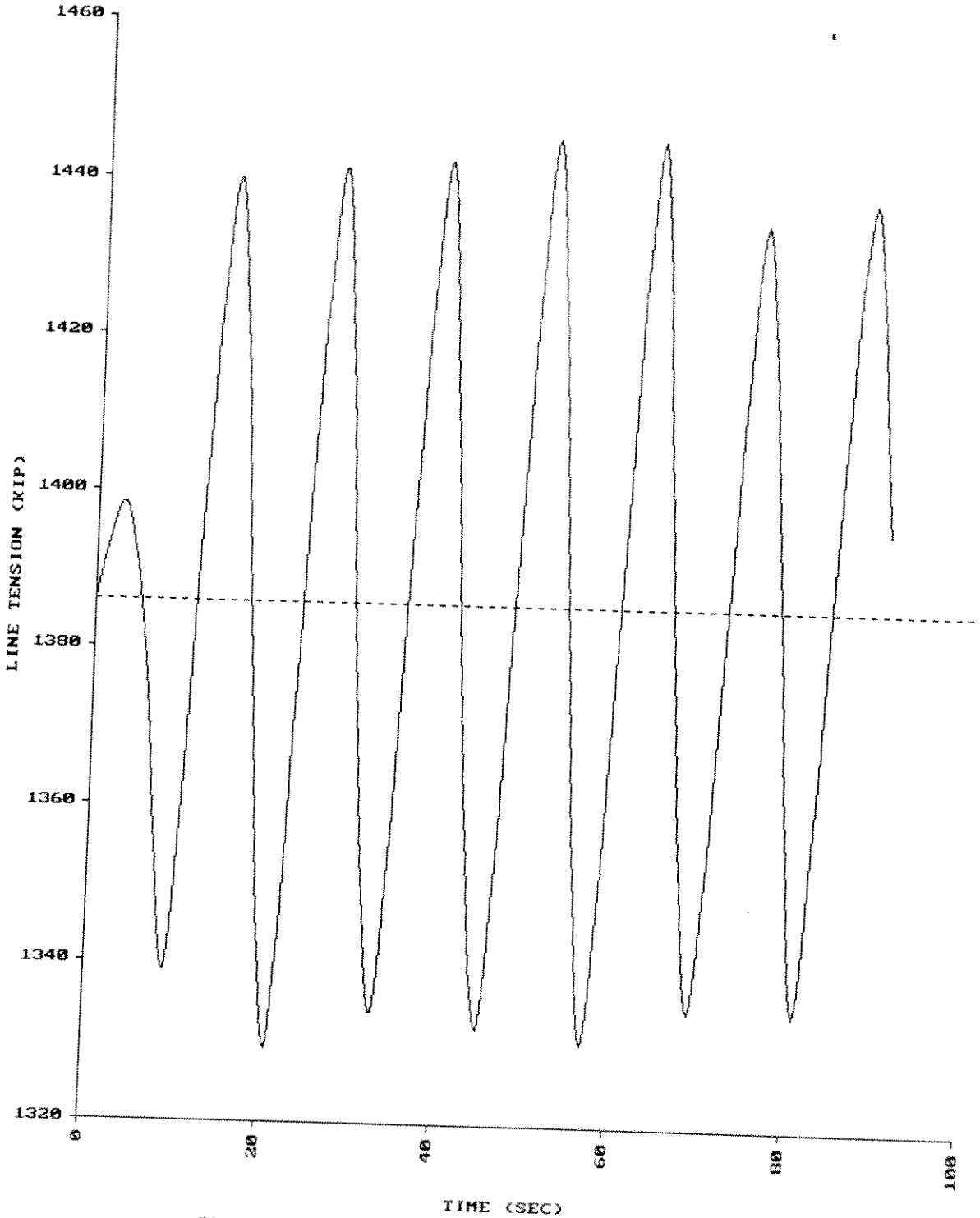
TAUT-LEG 6000FT - TENSION ENVELOPE



TAUT-LEG 6000FT - TENSION AT 1st END OF 1st SECTION

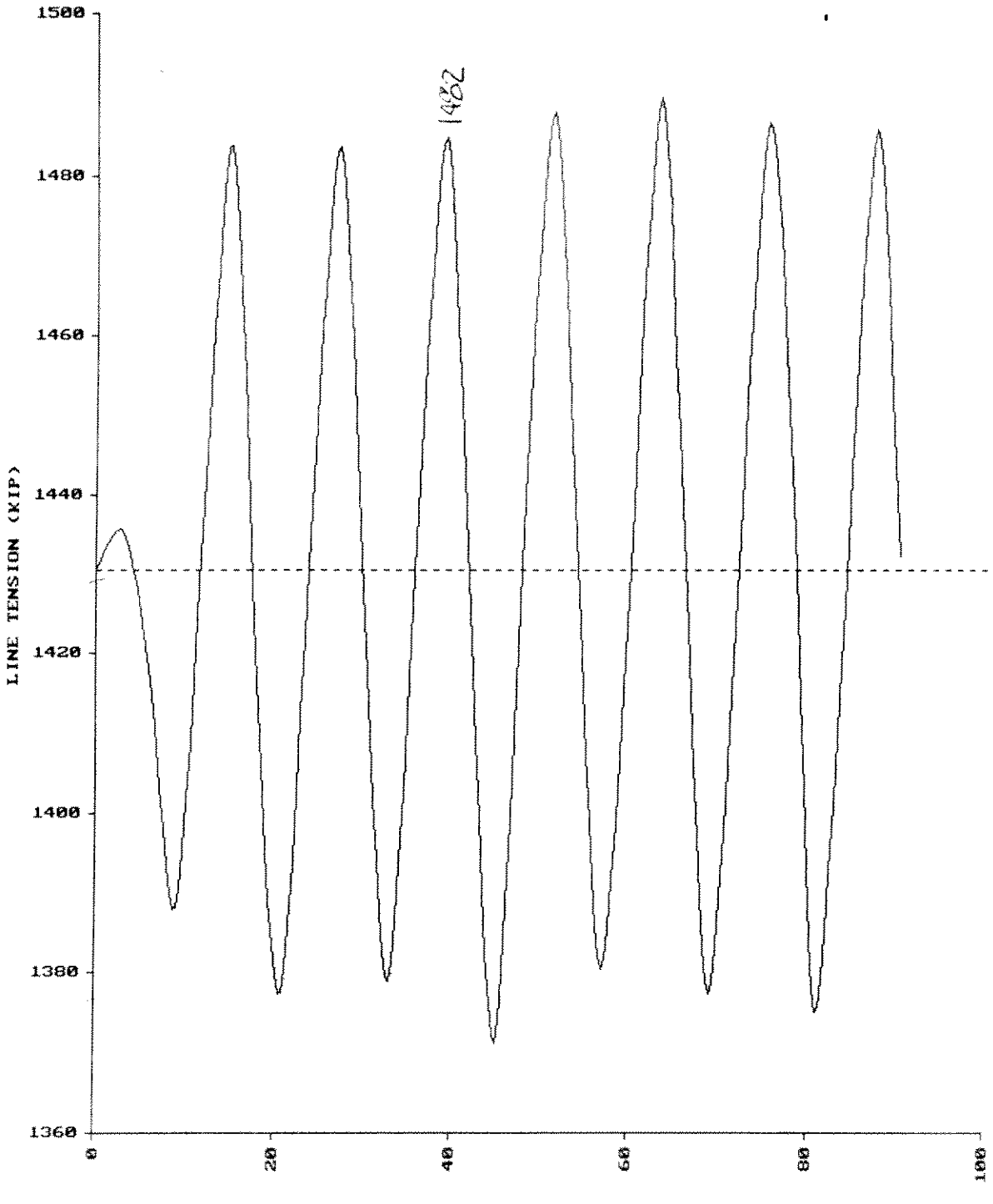
12.1 SEC PERIOD

OW



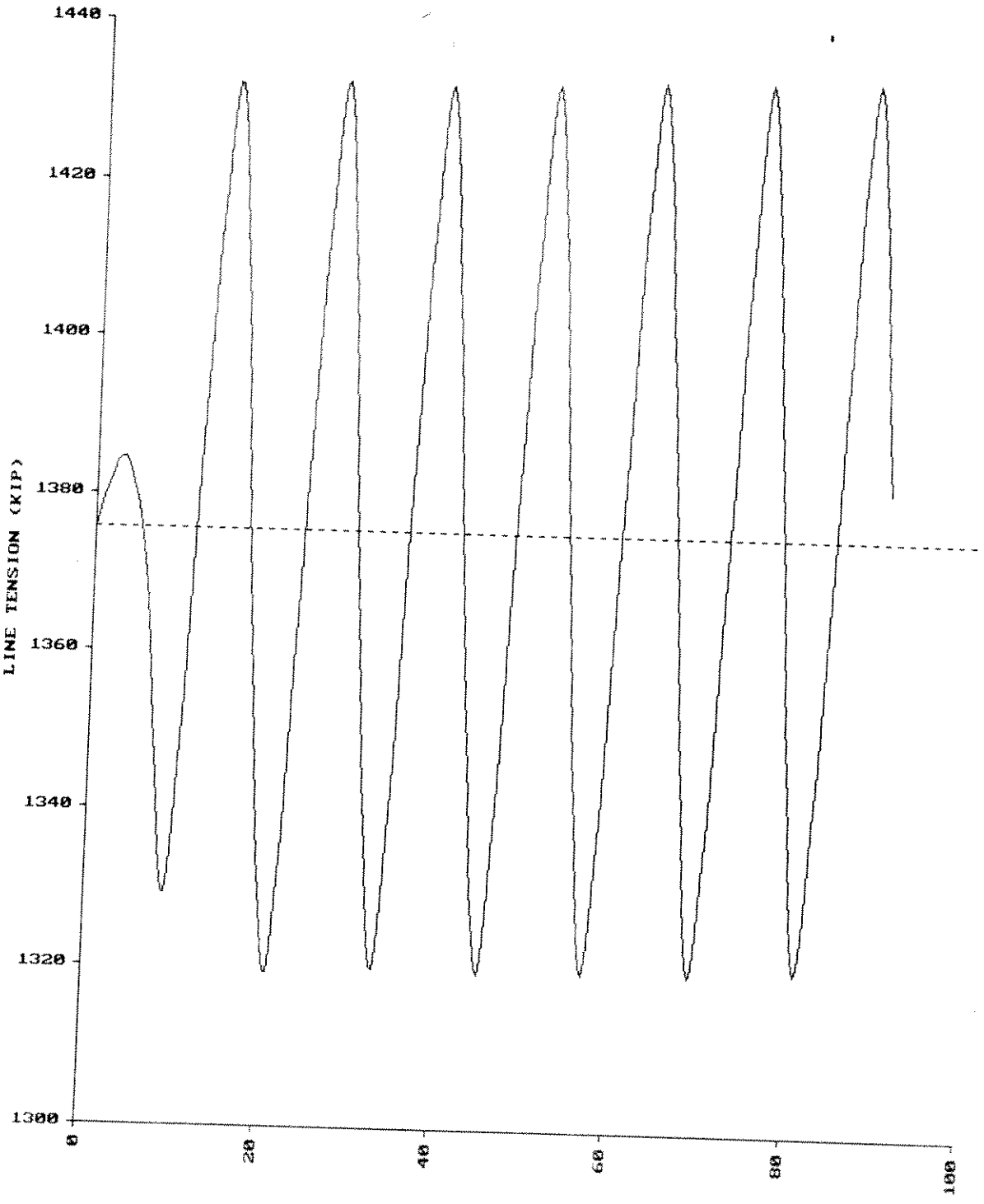
TAUT-LEG 6000FT - TENSION AT 2nd END OF 1st SECTION

12.1 SEC PERIOD



TAUT-LEG 6000FT - TENSION AT 1st END OF 2nd SECTION

12.1 SEC PERIOD



TAUT-LEG 6000FT - TENSION AT 2nd END OF 2nd SECTION

12.1 SEC PERIOD

FREECOM OUTPUT

WAVE HEIGHT = 24.8 FT

WAVE PERIOD = 12.1 SEC

FREECOM-3D POST PROCESSING MODULE - VERSION 2.1, JULY 1989

FREECOM-3D ANALYSIS TITLE ECHO :

TAUT LEG 12 PT 6000 FT "ENDLD6D"

SUMMARY OF DISCRETIZATION DETAILS AND SOLUTION PARAMETERS

*** ELEMENT PROPERTIES ***

ELEMENT SET START	END	INTERNAL DIAMETER	BUOYANCY DIAMETER	STIFFNESS TERMS EA	EIyy	EIzz	GJ	DRAG DIAMETER	DRAG COEFFICIENT	MASS/ # LENGTH
1	12	0.0000E+00	0.8998E+00	0.3630E+09	0.1000E+05	0.1000E+05	0.1000E+01	0.4500E+00	0.5000E+00	0.9028E+01
13	33	0.0000E+00	0.5000E+00	0.1460E+09	0.1200E+06	0.1200E+06	0.1000E+01	0.5000E+00	0.5000E+00	0.4607E+00
34	57	0.0000E+00	0.4900E+00	0.2660E+09	0.8000E+07	0.8000E+07	0.1000E+01	0.4900E+00	0.5000E+00	0.2653E+01

*** CONCENTRATED MASSES ***

NODE	MAGNITUDE	MASS TYPE
37	0.9472E+03	MASS

*** CONSTANT BOUNDARY CONDITIONS ***

NODE	DEGREE OF FREEDOM	MAGNITUDE
1	1	0.0000E+00
1	2	0.0000E+00
1	3	0.0000E+00
1	4	0.0000E+00
1	5	0.0000E+00
1	6	0.0000E+00
58	3	0.0000E+00
58	1	0.0000E+00
58	2	0.9400E+02

*** HARMONIC BOUNDARY CONDITIONS ***

NODE	DEGREE OF FREEDOM	AMPLITUDE	PHASE
58	1	0.7000E+01	-0.5117E+02
58	2	0.6607E+01	0.8998E+02

*** CONSTANT POINT LOADS ***

NODE	DEGREE OF FREEDOM	MAGNITUDE
37	1	0.1005E+06

1

FREECOM RESULTS OUTPUT - VERSION 2.3.8 JANUARY 1988

FREECOM ANALYSIS SEASTATE PARAMETERS

WATER DEPTH : 6000.00000

REGULAR WAVE ANALYSIS - WAVE PARAMETERS

WAVE AMPLITUDE : 28.00000

WAVE PERIOD : 12.07000 SECONDS

WAVE DIRECTION : 0.00000 DEGREES

PARAMETER --- DISPLACEMENT , D.O.F. 1

NODE	MINIMUM	MEAN VALUE	MAXIMUM	PHASE ANGLE (DEGREES)
1	0.00000	0.00000	0.00000	0.00000
2	-0.72395	-0.69470	-0.66546	-154.05887
3	-1.47225	-1.41116	-1.35008	-153.87187
4	-2.18629	-2.09304	-1.99978	-153.79829
5	-2.85621	-2.73087	-2.60552	-153.76511
6	-3.48050	-3.32323	-3.16596	-153.74991
7	-4.05905	-3.87006	-3.68107	-153.74438
8	-4.59202	-4.37154	-4.15106	-153.74492
9	-5.07960	-4.82788	-4.57616	-153.74963
10	-5.52198	-5.23930	-4.95661	-153.75761
11	-5.91938	-5.60603	-5.29268	-153.76816
12	-6.27199	-5.92829	-5.58460	-153.78090
13	-6.58016	-6.20646	-5.83276	-153.79456
14	-9.17661	-8.43560	-7.69460	-157.24203

15	-11.70112	-10.59876	-9.49641	-158.55916
16	-14.14967	-12.69560	-11.24154	-159.46046
17	-16.51930	-14.72599	-12.93268	-160.32115
18	-18.80776	-16.69000	-14.57224	-161.29147
19	-21.01328	-18.58772	-16.16216	-162.45717
20	-23.13452	-20.41911	-17.70369	-163.87939
21	-25.17099	-22.18427	-19.19756	-165.60716
22	-27.12279	-23.88318	-20.64358	-167.68211
23	-28.99103	-25.51591	-22.04079	-170.13963
24	-30.77777	-27.08250	-23.38723	-173.00847
25	-32.48625	-28.58315	-24.68005	-176.30930
26	-34.12018	-30.01747	-25.91475	179.94685
27	-35.68516	-31.38593	-27.08671	175.76195
28	-37.18682	-32.68822	-28.18963	171.15196
29	-38.63210	-33.92470	-29.21730	166.14911
30	-40.02774	-35.09526	-30.16279	160.80072
31	-41.38043	-36.19989	-31.01935	155.16702
32	-42.69646	-37.23873	-31.78100	149.31625
33	-43.98090	-38.21171	-32.44252	143.31834
34	-45.23771	-39.11928	-33.00085	137.23967
35	-45.57050	-39.38682	-33.20315	136.12956
36	-45.83906	-39.59462	-33.35019	134.99898
37	-46.12157	-39.82281	-33.52406	133.84248
38	-50.06900	-43.74809	-37.42718	130.07109
39	-53.45799	-47.13843	-40.81887	126.00567
40	-56.22363	-49.92137	-43.61911	121.64860
41	-58.36444	-52.08956	-45.81468	117.00380
42	-59.89037	-53.64734	-47.40431	112.08156
43	-60.81221	-54.60011	-48.38801	106.90022
44	-61.14017	-54.95306	-48.76595	101.48695
45	-60.88483	-54.71252	-48.54022	95.87762
46	-60.05468	-53.88363	-47.71258	90.11523
47	-58.65818	-52.47269	-46.28719	84.24733
48	-56.70075	-50.48417	-44.26758	78.32242
49	-54.18831	-47.92442	-41.66054	72.38603
50	-51.12379	-44.79797	-38.47216	66.47704
51	-47.50984	-41.11010	-34.71035	60.62477
52	-43.34859	-36.86634	-30.38410	54.84716
53	-38.64071	-32.07127	-25.50183	49.15069
54	-33.38789	-26.73064	-20.07339	43.53055
55	-27.59008	-20.84831	-14.10655	37.97295
56	-21.24964	-14.42986	-7.61009	32.40564
57	-14.38277	-7.47965	-0.57653	26.81351
58	-7.00000	0.00000	7.00000	21.42769

1

FREECOM RESULTS OUTPUT - VERSION 2.3.8 JANUARY 1988

FREECOM ANALYSIS SEASTATE PARAMETERS

WATER DEPTH : 6000.00000

REGULAR WAVE ANALYSIS - WAVE PARAMETERS

WAVE AMPLITUDE : 28.00000

WAVE PERIOD : 12.07000 SECONDS

WAVE DIRECTION : 0.00000 DEGREES

PARAMETER --- DISPLACEMENT , D.O.F. 2

NODE	MINIMUM	MEAN VALUE	MAXIMUM	PHASE ANGLE (DEGREES)
1	0.00000	0.00000	0.00000	0.00000
2	0.66764	0.69516	0.72269	35.68715
3	1.35237	1.40969	1.46701	35.47542
4	2.00682	2.09423	2.18163	35.39168
5	2.62306	2.74048	2.85790	35.35359
6	3.19991	3.34720	3.49449	35.33587
7	3.73736	3.91434	4.09132	35.32896
8	4.23558	4.44205	4.64852	35.32865
9	4.69478	4.93052	5.16626	35.33288
10	5.11518	5.37995	5.64472	35.34046
11	5.49699	5.79052	6.08406	35.35077
12	5.84043	6.16245	6.48447	35.36340
13	6.14584	6.49605	6.84626	35.37893
14	10.99317	11.72720	12.46124	39.20714
15	15.79455	16.90688	18.01921	40.37550
16	20.55394	22.03480	23.51567	40.87672
17	25.27484	27.11084	28.94683	41.05504
18	29.96089	32.13506	34.30922	41.00259
19	34.61562	37.10754	39.59945	40.74227
20	39.24237	42.02824	44.81411	40.27170
21	43.84439	46.89727	49.95015	39.57757
22	48.42458	51.71458	55.00459	38.64070
23	52.98555	56.48026	59.97496	37.43819
24	57.52953	61.19432	64.85911	35.94387
25	62.05835	65.85696	69.65558	34.12801
26	66.57272	70.46782	74.36292	31.95593
27	71.07346	75.02733	78.98120	29.38718
28	75.55987	79.53519	83.51052	26.37238
29	80.03094	83.99174	87.95254	22.85101
30	84.48412	88.39687	92.30963	18.74706
31	88.91557	92.75058	96.58559	13.96508
32	93.31986	97.05299	100.78613	8.38614
33	97.68906	101.30404	104.91902	1.86667
34	102.01286	105.50411	108.99537	-5.75039
35	102.61910	106.08975	109.56040	-7.43838
36	103.17791	106.62375	110.06959	-9.14446
37	103.76118	107.17632	110.59145	-10.86280
38	108.38625	111.59308	114.79991	-15.50611
39	112.57932	115.54683	118.51434	-20.81837
40	116.26723	118.97403	121.68082	-27.08692
41	119.43221	121.86823	124.30426	-34.70403
42	122.06192	124.23327	126.40462	-44.20631
43	124.13723	126.07387	128.01050	-56.23616
44	125.62913	127.39456	129.15999	-71.24956
45	126.50426	128.20091	129.89757	-88.79628
46	126.73962	128.49741	130.25519	-106.98039
47	126.34261	128.28957	130.23653	-123.46106
48	125.34345	127.58133	129.81920	-137.07724
49	123.77919	126.37824	128.97729	-147.95430
50	121.67902	124.68429	127.68956	-156.70692

51	119.06522	122.50409	125.94296	-163.93980
52	115.95468	119.84250	123.73032	-170.11368
53	112.35976	116.70352	121.04728	-175.55333
54	108.29141	113.09216	117.89291	179.51462
55	103.75743	109.01188	114.26633	174.93240
56	98.76207	104.46749	110.17291	170.54991
57	93.30266	99.46284	105.62302	166.37804
58	87.39300	94.00000	100.60700	162.57570

1

FREECOM RESULTS OUTPUT - VERSION 2.3.8 JANUARY 1988

FREECOM ANALYSIS SEASTATE PARAMETERS

WATER DEPTH : 6000.00000

REGULAR WAVE ANALYSIS - WAVE PARAMETERS

WAVE AMPLITUDE : 28.00000

WAVE PERIOD : 12.07000 SECONDS

WAVE DIRECTION : 0.00000 DEGREES

PARAMETER --- AXIAL FORCE (TRUE WALL TENSION)

NOTE : ELEMENT MID-POINT VALUES ONLY OUTPUT

ELEMENT	MINIMUM	MEAN VALUE	MAXIMUM	PHASE ANGLE (DEGREES)
1	0.107051E+07	0.113471E+07	0.119892E+07	98.01584
2	0.107450E+07	0.113870E+07	0.120291E+07	98.01584
3	0.107849E+07	0.114269E+07	0.120690E+07	98.01584
4	0.108248E+07	0.114668E+07	0.121089E+07	98.01584
5	0.108647E+07	0.115067E+07	0.121487E+07	98.01584
6	0.109046E+07	0.115466E+07	0.121886E+07	98.01584
7	0.109445E+07	0.115865E+07	0.122285E+07	98.01584
8	0.109844E+07	0.116264E+07	0.122684E+07	98.01584
9	0.110243E+07	0.116663E+07	0.123083E+07	98.01584
10	0.110643E+07	0.117062E+07	0.123482E+07	98.01584
11	0.111042E+07	0.117461E+07	0.123881E+07	98.01584
12	0.111441E+07	0.117860E+07	0.124279E+07	98.01584
13	0.128306E+07	0.134725E+07	0.141144E+07	98.00723
14	0.128567E+07	0.134986E+07	0.141405E+07	98.00723
15	0.128829E+07	0.135247E+07	0.141665E+07	98.00723
16	0.129092E+07	0.135509E+07	0.141925E+07	98.00723

17	0.129355E+07	0.135770E+07	0.142185E+07	98.00722
18	0.129618E+07	0.136031E+07	0.142444E+07	98.00722
19	0.129882E+07	0.136292E+07	0.142702E+07	98.00722
20	0.130146E+07	0.136553E+07	0.142961E+07	98.00722
21	0.130410E+07	0.136814E+07	0.143218E+07	98.00721
22	0.130675E+07	0.137076E+07	0.143476E+07	98.00721
23	0.130940E+07	0.137337E+07	0.143733E+07	98.00721
24	0.131206E+07	0.137598E+07	0.143990E+07	98.00720
25	0.131472E+07	0.137859E+07	0.144246E+07	98.00720
26	0.131739E+07	0.138120E+07	0.144502E+07	98.00720
27	0.132005E+07	0.138381E+07	0.144758E+07	98.00719
28	0.132272E+07	0.138643E+07	0.145013E+07	98.00719
29	0.132540E+07	0.138904E+07	0.145268E+07	98.00719
30	0.132808E+07	0.139165E+07	0.145522E+07	98.00719
31	0.133076E+07	0.139426E+07	0.145776E+07	98.00719
32	0.133345E+07	0.139687E+07	0.146030E+07	98.00719
33	0.133614E+07	0.139949E+07	0.146283E+07	98.00718
34	0.134004E+07	0.140329E+07	0.146655E+07	98.00566
35	0.134295E+07	0.140611E+07	0.146928E+07	98.00569
36	0.134586E+07	0.140893E+07	0.147200E+07	98.00569
37	0.130598E+07	0.136823E+07	0.143047E+07	98.00538
38	0.131429E+07	0.137627E+07	0.143825E+07	98.00536
39	0.132260E+07	0.138431E+07	0.144603E+07	98.00536
40	0.133091E+07	0.139235E+07	0.145380E+07	98.00536
41	0.133923E+07	0.140040E+07	0.146157E+07	98.00534
42	0.134754E+07	0.140844E+07	0.146933E+07	98.00532
43	0.135587E+07	0.141648E+07	0.147709E+07	98.00534
44	0.136419E+07	0.142452E+07	0.148485E+07	98.00531
45	0.137252E+07	0.143257E+07	0.149261E+07	98.00533
46	0.138086E+07	0.144061E+07	0.150036E+07	98.00527
47	0.138919E+07	0.144865E+07	0.150811E+07	98.00531
48	0.139753E+07	0.145669E+07	0.151585E+07	98.00526
49	0.140588E+07	0.146473E+07	0.152359E+07	98.00527
50	0.141422E+07	0.147278E+07	0.153133E+07	98.00528
51	0.142257E+07	0.148082E+07	0.153907E+07	98.00525
52	0.143092E+07	0.148886E+07	0.154680E+07	98.00526
53	0.143928E+07	0.149690E+07	0.155453E+07	98.00521
54	0.144764E+07	0.150495E+07	0.156225E+07	98.00524
55	0.145600E+07	0.151299E+07	0.156998E+07	98.00521
56	0.146436E+07	0.152103E+07	0.157770E+07	98.00520
57	0.147273E+07	0.152907E+07	0.158541E+07	98.00520

1

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!
!  FREECOM RESULTS OUTPUT - VERSION 2.3.8 JANUARY 1988
!
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FREECOM ANALYSIS SEASTATE PARAMETERS

WATER DEPTH : 6000.00000

REGULAR WAVE ANALYSIS - WAVE PARAMETERS

WAVE AMPLITUDE : 28.00000

WAVE PERIOD : 12.07000 SECONDS

WAVE DIRECTION : 0.00000 DEGREES

PARAMETER --- EFFECTIVE TENSION

NOTE : ELEMENT MID-POINT VALUES ONLY OUTPUT

ELEMENT	MINIMUM	MEAN VALUE	MAXIMUM	PHASE ANGLE (DEGREES)
1	0.131593E+07	0.138014E+07	0.144434E+07	98.01584
2	0.131936E+07	0.138357E+07	0.144777E+07	98.01584
3	0.132279E+07	0.138700E+07	0.145120E+07	98.01584
4	0.132622E+07	0.139042E+07	0.145463E+07	98.01584
5	0.132965E+07	0.139385E+07	0.145805E+07	98.01584
6	0.133308E+07	0.139728E+07	0.146148E+07	98.01584
7	0.133651E+07	0.140071E+07	0.146491E+07	98.01584
8	0.133993E+07	0.140413E+07	0.146833E+07	98.01584
9	0.134336E+07	0.140756E+07	0.147176E+07	98.01584
10	0.134679E+07	0.141099E+07	0.147519E+07	98.01584
11	0.135022E+07	0.141442E+07	0.147861E+07	98.01584
12	0.135365E+07	0.141785E+07	0.148204E+07	98.01584
13	0.135573E+07	0.141992E+07	0.148412E+07	98.00723
14	0.135612E+07	0.142031E+07	0.148450E+07	98.00723
15	0.135652E+07	0.142069E+07	0.148487E+07	98.00723
16	0.135691E+07	0.142108E+07	0.148525E+07	98.00723
17	0.135732E+07	0.142147E+07	0.148561E+07	98.00722
18	0.135772E+07	0.142185E+07	0.148598E+07	98.00722
19	0.135813E+07	0.142224E+07	0.148634E+07	98.00722
20	0.135855E+07	0.142262E+07	0.148670E+07	98.00722
21	0.135897E+07	0.142301E+07	0.148705E+07	98.00721
22	0.135939E+07	0.142339E+07	0.148740E+07	98.00721
23	0.135982E+07	0.142378E+07	0.148774E+07	98.00721
24	0.136025E+07	0.142416E+07	0.148808E+07	98.00720
25	0.136068E+07	0.142455E+07	0.148842E+07	98.00720
26	0.136112E+07	0.142494E+07	0.148875E+07	98.00720
27	0.136156E+07	0.142532E+07	0.148908E+07	98.00719
28	0.136200E+07	0.142571E+07	0.148941E+07	98.00719
29	0.136245E+07	0.142609E+07	0.148973E+07	98.00719
30	0.136291E+07	0.142648E+07	0.149005E+07	98.00719
31	0.136336E+07	0.142686E+07	0.149036E+07	98.00719
32	0.136383E+07	0.142725E+07	0.149067E+07	98.00719
33	0.136429E+07	0.142763E+07	0.149098E+07	98.00718
34	0.136580E+07	0.142906E+07	0.149231E+07	98.00566
35	0.136831E+07	0.143148E+07	0.149464E+07	98.00569
36	0.137082E+07	0.143389E+07	0.149697E+07	98.00569
37	**0.133017E+07**	**0.139242E+07**	**0.145466E+07**	**98.00538**
38	0.133733E+07	0.139932E+07	0.146130E+07	98.00536
39	0.134450E+07	0.140622E+07	0.146793E+07	98.00536
40	0.135167E+07	0.141311E+07	0.147456E+07	98.00536
41	0.135884E+07	0.142001E+07	0.148118E+07	98.00534
42	0.136602E+07	0.142691E+07	0.148781E+07	98.00532
43	0.137320E+07	0.143381E+07	0.149442E+07	98.00534
44	0.138038E+07	0.144071E+07	0.150104E+07	98.00531
45	0.138757E+07	0.144761E+07	0.150765E+07	98.00533
46	0.139476E+07	0.145451E+07	0.151426E+07	98.00527
47	0.140195E+07	0.146141E+07	0.152086E+07	98.00531
48	0.140915E+07	0.146831E+07	0.152747E+07	98.00526
49	0.141635E+07	0.147521E+07	0.153406E+07	98.00527

50	0.142355E+07	0.148210E+07	.4066E+07	98.00528
51	0.143075E+07	0.148900E+07	0.154725E+07	98.00525
52	0.143796E+07	0.149590E+07	0.155384E+07	98.00526
53	0.144518E+07	0.150280E+07	0.156043E+07	98.00521
54	0.145239E+07	0.150970E+07	0.156701E+07	98.00524
55	0.145961E+07	0.151660E+07	0.157359E+07	98.00521
56	0.146683E+07	0.152350E+07	0.158016E+07	98.00520
57	0.147406E+07	0.153040E+07	0.158674E+07	98.00520

APPENDIX H - FATIGUE ANALYSIS

JIP SPRING BUOY FATIGUE ANALYSIS
FATIGUE LIFE CALCULATIONS
T6A12N
ARAMID LINE
DIAMETER (IN) 6.0000
BREAKING STRENGTH (KIPS) 3,641.0
STEEL LINE
DIAMETER (IN) 5.8800
BREAKING STRENGTH (KIPS) 4,075.0
CHAIN
DIAMETER (IN) 5.5000
BREAKING STRENGTH (KIPS) 4,000.0

LOAD FACTOR 1.0000

SUBMERGED WEIGHT OF SYSTEM 235.6000

20 YEAR WAVE COUNT				STEADY ENVIRONMENTAL LOADS						VESSEL DYNAMICS					ARAMID FATIGUE DATA		
H (FT)	T (SEC)	F (rad/sec)	N CYCLES	Vw (KNTS)	Vc (KNTS)	Fw (KIPS)	Fc (KIPS)	Fwa (KIPS)	F TOT (KIPS)	RAO (FT/FT)	MOT (FT)	ARAMID (KIPS)	STEEL (KIPS)	CHAIN (KIPS)	% BS	Nc CYCLES	N/N
1.0000	5.3000	1.1855	49,998,000	6.3266	1.1265	4.8912	86.8556	.0000	91.7468	.0192	.0128	.0028	.0028	.0000	.0000781	5.4050e8	.0925
3.0000	5.8000	1.0833	27,507,000	10.9581	1.2192	14.6737	101.7261	.0000	116.3998	.0192	.0384	.0085	.0085	.0171	.0002344	5.4048e8	.0508
5.0000	6.2000	1.0134	14,628,000	14.1468	1.2829	24.4562	112.6472	1.2600	138.3633	.0192	.0640	.0284	.0284	.0284	.0007812	5.4042e8	.0270
7.0000	6.5000	.9666	7,778,000	16.7387	1.3348	34.2387	121.9343	4.0000	160.1730	.0192	.0896	.0398	.0398	.0398	.0010937	5.4039e8	.0143
9.0000	6.8000	.9240	4,136,000	18.9799	1.3796	44.0211	130.2614	7.9800	182.2625	.0192	.1152	.0512	.0512	.0525	.0014062	5.4035e8	.0076
12.5000	7.3000	.8607	3,729,200	22.3681	1.4474	61.1405	143.3719	13.8400	218.3524	.0192	.1600	.1422	.1422	.1197	.0039061	5.4008e8	.0069
17.5000	7.8000	.8055	768,900	26.4663	1.5293	85.5966	160.0700	21.0800	266.7466	.0192	.2240	.2489	.2489	.2775	.0068357	5.3976e8	.0014
22.5000	8.4000	.7480	158,540	30.0099	1.6002	110.0528	175.2499	27.1200	312.4227	.0192	.2880	.3840	.3840	.3849	.0105466	5.3936e8	.0002
27.5000	9.0000	.6981	32,690	33.1772	1.6635	134.5090	189.3995	32.3800	356.2885	.0217	.3978	.8839	.8839	.8754	.0242767	5.3787e8	.0000
32.5000	9.6000	.6545	6,747	36.0674	1.7213	158.9652	202.7906	37.3300	399.0858	.0804	1.7429	4.6476	4.6476	4.7788	.1276466	5.2681e8	.0000
37.5000	10.2000	.6160	1,390	38.7427	1.7749	183.4214	215.5931	41.9500	440.9645	.1323	3.3068	10.2878	10.2878	10.3391	.2825545	5.1065e8	.0000
42.5000	10.9000	.5764	287	41.2447	1.8249	207.8776	227.9215	46.3600	482.1591	.1855	5.2567	19.2586	19.2586	19.8348	.5289382	4.8597e8	.0000
47.5000	11.7000	.5370	59	43.6034	1.8721	232.3337	239.8576	50.2800	522.4713	.2386	7.5555	42.0409	42.0409	43.1733	1.154652	4.2852e8	.0000
52.5000	12.6000	.4987	12	45.8409	1.9168	256.7899	251.4618	53.6600	561.9117	.2902	10.1583	64.5949	64.5949	65.8514	1.774097	3.7833e8	3.172
57.5000	13.6000	.4620	3	47.9742	1.9595	281.2461	262.7806	56.2600	600.2867	.3396	13.0181	91.6618	91.6618	92.5282	2.517490	3.2580e8	9.208

TOTAL .201

DAMAGED SUM FATIGUE LIFE 99.39

STEEL FATIGUE DATA			CHAIN FATIGUE DATA		
% BS	Nc CYCLES	N/Nc	% BS	Nc CYCLES	N/Nc
.0000007	1.103e28	4.53e-21	0	ERROR	0
.0000021	1.233e26	2.23e-19	.0000043	4.084e20	3.59e-20
.0000070	8.964e23	1.63e-17	.0000071	7.340e19	3.33e-19
.0000098	2.264e23	3.44e-17	.0000100	2.369e19	1.45e-18
.0000126	8.099e22	5.11e-17	.0000131	9.359e18	4.70e-18
.0000349	1.241e21	3.01e-15	.0000299	5.866e17	1.04e-16
.0000611	1.258e20	6.11e-15	.0000694	3.481e16	2.46e-15
.0000942	2.135e19	7.43e-15	.0000962	1.159e16	9.49e-15
.0002169	7.055e17	4.63e-14	.0002189	7.333e14	1.83e-13
.0011405	7.950e14	8.49e-12	.0011947	2.447e12	6.50e-11
.0025246	3.083e13	4.51e-11	.0025848	1.830e11	1.002e-9
.0047260	2.373e12	1.21e-10	.0049587	2.050e10	1.014e-8
.0103168	9.739e10	6.06e-10	.0107933	1.5024e9	.0000002
.0158515	1.681e10	7.14e-10	.0164628	3.6370e8	.0000007
.0224937	4.0178e9	7.47e-10	.0231320	1.1600e8	.0000024
		2.241e-9			3.297e-6
		8.9252e9			6.0670e6

INDEX	RESTORING FORCE ABOVE	RESTORING FORCE BELOW	EXCURSION ABOVE	EXCURSION BELOW	INTERPOLATED EXCURSION	STATIC MAXIMUM LINE LOAD ARAMID ABOVE	STATIC MAXIMUM LINE LOAD ARAMID BELOW	STATIC INTERPOLATED MAXIMUM LINE LOAD ARAMID	EXCURSI DESIG DYNAM MOTIO
18.0000	91.0000	97.0000	153.0000	162.0000	154.1203	230.0000	231.0000	230.1245	154.13
22.0000	112.0000	117.0000	189.0000	198.0000	196.9197	235.0000	236.0000	235.8800	196.95
26.0000	136.0000	144.0000	225.0000	234.0000	227.6588	242.0000	244.0000	242.5908	227.72
29.0000	159.0000	167.0000	252.0000	261.0000	253.3196	249.0000	251.0000	249.2932	253.40
31.0000	175.0000	183.0000	270.0000	279.0000	278.1703	254.0000	256.0000	255.8156	278.28
36.0000	216.0000	226.0000	315.0000	324.0000	317.1171	267.0000	271.0000	267.9410	317.27
40.0000	258.0000	271.0000	351.0000	360.0000	357.0553	284.0000	289.0000	287.3641	357.27
44.0000	312.0000	327.0000	387.0000	396.0000	387.2536	306.0000	312.0000	306.1691	387.54
46.0000	344.0000	363.0000	405.0000	414.0000	410.8209	320.0000	330.0000	326.4676	411.21
48.0000	383.0000	405.0000	423.0000	432.0000	429.5806	342.0000	354.0000	350.7741	431.32
50.0000	431.0000	461.0000	441.0000	450.0000	443.9893	368.0000	382.0000	372.6501	447.29
51.0000	461.0000	491.0000	450.0000	459.0000	456.3477	382.0000	397.0000	392.5795	461.60
52.0000	491.0000	526.0000	459.0000	468.0000	467.0926	397.0000	415.0000	413.1852	474.64
53.0000	526.0000	568.0000	468.0000	477.0000	475.6954	415.0000	441.0000	437.2311	485.85
54.0000	568.0000	612.0000	477.0000	486.0000	483.6041	441.0000	470.0000	462.2799	496.62

/btable"
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(calc)

DYNAMIC INDEX	DYNAMIC MAXIMUM LINE LOAD ARAMID ABOVE	DYNAMIC MAXIMUM LINE LOAD ARAMID BELOW	DYNAMIC INTERPOLATED MAXIMUM LINE LOAD ARAMID	DYNAMIC EXCURSION ABOVE	DYNAMIC EXCURSION BELOW	DOUBLE AMPLITUDE TENSION ARAMID	DYNAMIC MAXIMUM LINE LOAD STEEL ABOVE	DYNAMIC MAXIMUM LINE LOAD STEEL BELOW	DYNAMIC INTERPOLATED MAXIMUM LINE LOAD STEEL	STATIC MAXIMUM LINE LOAD STEEL ABOVE	STATIC MAXIMUM LINE LOAD STEEL BELOW	STATIC INTERPOLATED MAXIMUM LINE LOAD STEEL	DOUBLE AMPLITUDE TENSION STEEL	DYNAM MAXIM HOR LO ON ANC ABOV
18.0000	230.0000	231.0000	230.1259	153.0000	162.0000	.0028	230.000	231.0000	230.1259	230.0000	231.0000	230.1245	.0028	66.00
22.0000	235.0000	236.0000	235.8842	189.0000	198.0000	.0085	235.000	236.0000	235.8842	235.0000	236.0000	235.8800	.0085	70.00
26.0000	242.0000	244.0000	242.6051	225.0000	234.0000	.0284	242.000	244.0000	242.6051	242.0000	244.0000	242.5908	.0284	77.00
29.0000	249.0000	251.0000	249.3132	252.0000	261.0000	.0398	249.000	251.0000	249.3132	249.0000	251.0000	249.2932	.0398	84.00
31.0000	254.0000	256.0000	255.8412	270.0000	279.0000	.0512	254.000	256.0000	255.8412	254.0000	256.0000	255.8156	.0512	88.00
36.0000	267.0000	271.0000	268.0121	315.0000	324.0000	.1422	267.000	271.0000	268.0121	267.0000	271.0000	267.9410	.1422	101.00
40.0000	284.0000	289.0000	287.4885	351.0000	360.0000	.2489	284.000	289.0000	287.4885	284.0000	289.0000	287.3641	.2489	115.00
44.0000	306.0000	312.0000	306.3611	387.0000	396.0000	.3840	306.000	312.0000	306.3611	306.0000	312.0000	306.1691	.3840	134.00
46.0000	320.0000	330.0000	326.9096	405.0000	414.0000	.8839	320.000	330.0000	326.9096	320.0000	330.0000	326.4676	.8839	146.00
48.0000	342.0000	354.0000	353.0979	423.0000	432.0000	4.6476	342.000	354.0000	353.0979	342.0000	354.0000	350.7741	4.6476	164.00
50.0000	368.0000	382.0000	377.7940	441.0000	450.0000	10.2878	368.000	382.0000	377.7940	368.0000	382.0000	372.6501	10.2878	185.00
52.0000	397.0000	415.0000	402.2089	459.0000	468.0000	19.2586	397.000	415.0000	402.2089	382.0000	397.0000	392.5795	19.2586	208.00
53.0000	415.0000	441.0000	434.2057	468.0000	477.0000	42.0409	415.000	441.0000	434.2057	397.0000	415.0000	413.1852	42.0409	223.00
54.0000	441.0000	470.0000	469.5285	477.0000	486.0000	64.5949	441.000	470.0000	469.5285	415.0000	441.0000	437.2311	64.5949	244.00
56.0000	500.0000	545.0000	508.1108	495.0000	504.0000	91.6618	500.000	545.0000	508.1108	441.0000	470.0000	462.2799	91.6618	290.00

DYNAMIC MAXIMUM HOR LOAD ON ANCHOR BELOW 66.0000	DYNAMIC MAXIMUM VERT LOAD ON ANCHOR ABOVE .0000	DYNAMIC MAXIMUM VERT LOAD ON ANCHOR BELOW .0000	DYNAMIC MAXIMUM LINE LOAD CHAIN ABOVE 66.0000	DYNAMIC MAXIMUM LINE LOAD CHAIN BELOW 66.0000	DYNAMIC INTERPOLATED MAXIMUM LINE LOAD CHAIN 66.0000	STATIC MAXIMUM HOR LOAD CHAIN ABOVE 66.0000	STATIC MAXIMUM HOR LOAD CHAIN BELOW 66.0000	STATIC MAXIMUM VERT LOAD CHAIN ABOVE .0000	STATIC MAXIMUM VERT LOAD CHAIN BELOW .0000	STATIC MAXIMUM LINE LOAD CHAIN ABOVE 66.0000	STATIC MAXIMUM LINE LOAD CHAIN BELOW 66.0000	STATIC INTERPOLATED MAXIMUM LINE LOAD CHAIN 66.0000	DOUBLE AMPLITUDE TENSION CHAIN .0000
72.0000	.0000	.0000	70.0000	72.0000	71.7685	70.0000	72.0000	.0000	.0000	70.0000	72.0000	71.7599	.0171
79.0000	.0000	.0000	77.0000	79.0000	77.6051	77.0000	79.0000	.0000	.0000	77.0000	79.0000	77.5908	.0284
86.0000	.0000	.2071	84.0000	86.0002	84.3132	84.0000	86.0000	.0000	.2071	84.0000	86.0002	84.2933	.0398
90.0000	2.6688	4.0581	88.0405	90.0914	89.9286	88.0000	90.0000	2.6688	4.0581	88.0405	90.0914	89.9024	.0525
104.0000	11.5599	14.6499	101.6594	105.0268	102.5114	101.0000	104.0000	11.5599	14.6499	101.6594	105.0268	102.4515	.1197
120.0000	24.0748	27.3087	117.4930	123.0681	121.3828	115.0000	120.0000	24.0748	27.3087	117.4930	123.0681	121.2440	.2775
139.0000	39.5000	43.7260	139.7006	145.7153	140.0625	134.0000	139.0000	39.5000	43.7260	139.7006	145.7153	139.8701	.3849
154.0000	49.1525	56.2630	154.0518	163.9559	160.8951	146.0000	154.0000	49.1525	56.2630	154.0518	163.9559	160.4574	.8754
174.0000	64.5133	72.6856	176.2327	188.5715	187.6439	164.0000	174.0000	64.5133	72.6856	176.2327	188.5715	185.2545	4.7788
196.0000	82.5179	92.2841	202.5690	216.6388	212.4118	185.0000	196.0000	82.5179	92.2841	202.5690	216.6388	207.2423	10.3391
223.0000	102.5494	114.3943	231.9060	250.6293	237.3241	196.0000	208.0000	92.2841	102.5494	216.6388	231.9060	227.4068	19.8348
244.0000	114.3943	131.7486	250.6293	277.2971	270.3283	208.0000	223.0000	102.5494	114.3943	231.9060	250.6293	248.7416	43.1733
267.0000	131.7486	151.1958	277.2971	306.8374	306.3571	223.0000	244.0000	114.3943	131.7486	250.6293	277.2971	273.4314	65.8514
325.0000	171.7082	201.8929	337.0218	382.6039	345.2375	244.0000	267.0000	131.7486	151.1958	277.2971	306.8374	298.9735	92.5282

APPENDIX I - IN-PLACE DYNAMICS ANALYSIS

VERTICAL EXCITATION AND RESPONSE OF A SINGLE SPHERICAL SUBMERGED BUOY

BUOY NET BUOYANCY (KIPS)	70.00
BUOY RADIUS (FT)	7.21
BUOY WEIGHT (KIPS IN AIR)	35.00
WATER DEPTH (FT)	3,000.00
BUOY IMERSION (FT)	150.00
AE (KIPS)	146,000.00
STIFFNESS (K/FT)	51.10
HEAVE NATURAL PERIOD	1.43
ADDED MASS (KIPS SEC²/FT)	1.57
BUOY MASS (KIPS SEC²/FT)	1.09

SEASTATE

SIGNIFICANT HEIGHT (FT)	40.00
SIGNIFICANT PERIOD (SEC)	17.00

WAVE PERIOD (SEC)	WAVE FREQUENCY (RAD/SEC)	WAVE FREQUENCY (HZ)	RAO OF VERTICAL FORCE ON BUOY (KIPS/FT)	HEAVE RAO (FT/FT)	PIERSON-MOSKOWITZ WAVE SPECTRUM	HEAVE RESPONSE SPE
25.0000	.2513	.0400	7.38683904536e-2	.0000	.430.1969	9.048633e-4
20.0000	.3142	.0500	6.78129791611e-1	1.922637268603e-3	2249.9595	9.338633e-4
16.6667	.3776	.0600	1.15054335098e-1	2.268145852693e-3	2225.6882	9.368633e-3
14.2857	.4398	.0700	1.23301025079e-1	2.437183528 4e-3	1733.9696	1.638181e-2
12.5000	.5027	.0800	1.22251336819e-1	2.467277572251e-3	1033.2332	1.029646e-2
11.1111	.5655	.0900	1.13155332631e-1	2.251376978 8e-3	624.8629	9.421236e-3
10.0000	.6283	.1000	9.85002805501e-2	1.967496864 8e-3	377.3365	3.434328e-3
9.0909	.6911	.1100	8.20052411291e-2	1.625036791 1e-3	549.3923	1.649410e-3
8.3333	.7540	.1200	6.71568741891e-2	1.322073549 2e-3	274.8353	2.557704e-4
7.6923	.8168	.1300	5.47289119826e-2	9.748682200 5e-4	182.9228	2.952851e-4
7.1429	.8796	.1400	4.47291992612e-2	6.731742633 8e-4	124.4751	1.115247e-4
6.6667	.9425	.1500	3.70332439526e-2	4.421377670 5e-4	86.5858	3.933754e-5
6.2500	1.0053	.1600	3.12476761352e-2	3.586478088 7e-4	61.7882	1.885573e-5
5.8824	1.0681	.1700	2.67312668482e-2	1.083333832 8e-4	44.9880	3.553238e-6
5.5556	1.1310	.1800	2.31066246805e-2	1.643057743 7e-4	33.3561	3.117448e-6
5.2632	1.1938	.1900	2.18699569805e-2	9.178778652 3e-5	25.1382	2.268807e-7
5.0000	1.2566	.2000	2.92652394728e-2	5.178734847 7e-5	19.2225	1.222298e-8
4.7619	1.3195	.2100	5.58279924062e-2	3.370333473 9e-5	14.8022	1.022795e-8
4.5455	1.3823	.2200	8.20996278617e-2	1.764092417 1e-5	11.4802	3.038861e-9
4.3478	1.4451	.2300	1.08611797158e-1	8.864277090 4e-6	8.9225	1.288392e-10
4.1667	1.5080	.2400	1.35213778971e-1	4.278902562 8e-6	7.0136	1.360392e-10
4.0000	1.5708	.2500	1.65555399211e-1	1.983678639 3e-6	5.5139	1.365812e-11
3.8462	1.6336	.2600	1.97233526276e-1	8.840127655 2e-7	4.3049	3.833082e-12
3.7037	1.6965	.2700	2.26080532083e-1	3.787369219 4e-7	3.3409	5.785392e-13
3.5714	1.7593	.2800	2.48203096244e-1	1.560349241 6e-7	2.6063	8.134096e-14
3.4483	1.8221	.2900	2.61882430678e-1	6.183204451 2e-8	2.0385	1.055726e-14
3.3333	1.8850	.3000	2.67850917853e-1	2.357255312 9e-8	1.5973	1.266426e-15
3.2258	1.9478	.3100	3.61233818197e-1	8.247863174 5e-9	1.2585	1.376744e-16
3.1250	2.0106	.3200	1.55728472109e-1	3.053011771 3e-9	1.0000	1.376935e-17
3.0303	2.0734	.3300	1.20366794162e-8	1.037555070 1e-9	.7920	1.376935e-18
2.9412	2.1363	.3400	1.33336163042e-8	3.382723960 4e-10	.6234	1.376935e-19
2.8571	2.1991	.3500	4.19006865145e-9	1.043923436 1e-10	.4931	1.376935e-20
2.7778	2.2619	.3600	1.24825274868e-9	3.907253987 3e-11	.3903	1.376935e-21
2.7027	2.3248	.3700	3.57849941127e-10	1.484567192 5e-11	.3090	1.376935e-22
2.6316	2.3876	.3800	8.87313534566e-11	2.680572833 6e-12	.2445	1.376935e-23
2.5641	2.4504	.3900	2.62180681170e-11	7.436350738 1e-13	.1935	1.376935e-24
2.5000	2.5133	.4000	6.70148085002e-12	1.850679912 7e-13	.1532	1.376935e-25
2.4390	2.5761	.4100	1.64809558209e-12	4.760234041 6e-14	.1212	1.376935e-26
2.3810	2.6389	.4200	3.80572555468e-13	1.155058291 2e-14	.0959	1.376935e-27
2.3256	2.7018	.4300	8.60278219228e-14	2.701459819 3e-15	.0759	1.376935e-28
2.2727	2.7646	.4400	1.95556028658e-14	6.090691703 3e-16	.0601	1.376935e-29
2.2222	2.8274	.4500	1e9	1.202461972 8e-16	.0476	1.376935e-30
2.1739	2.8903	.4600	8.41520883467e-16	2.774905554 7e-17	.0376	1.376935e-31
2.1277	2.9531	.4700	1.04327886069e-16	5.608902735 1e-18	.0298	1.376935e-32
2.0833	3.0159	.4800	1.11346744371e-17	1.108786136 2e-18	.0235	1.376935e-33
2.0408	3.0788	.4900	3.85245737362e-18	2.053910575 2e-19	.0186	1.376935e-34
2.0000	3.1416	.5000	6.90727840478e-18	5.239210465 6e-21	.0147	1.376935e-35
1.9608	3.2044	.5100	1.67031464118e-19	9.533792479 2e-21	.0116	1.376935e-36
1.9231	3.2673	.5200	2.71219248488e-20	1.733745958 1e-20	.0092	1.376935e-37
1.8868	3.3301	.5300	4.24165811255e-21	3.154775958 1e-21	.0073	1.376935e-38
1.8519	3.3929	.5400	6.38833021783e-22	5.801726683 1e-22	.0058	1.376935e-39
1.8182	3.4558	.5500	9.27022016495e-23	1.054882419 2e-22	.0046	1.376935e-40
1.7857	3.5186	.5600	1.28555772991e-23	2.817488990 6e-23	.0036	1.376935e-41
1.7544	3.5814	.5700	1.72726277231e-24	4.316609050 2e-24	.0029	1.376935e-42
1.7241	3.6443	.5800	2.25158872772e-24	6.345208749 6e-25	.0023	1.376935e-43
1.6949	3.7071	.5900	2.86579425388e-25	9.007576741 3e-26	.0018	1.376935e-44
1.6667	3.7699	.6000	3.58286520017e-26	1.236203410 3e-26	.0014	1.376935e-45
1.6393	3.8327	.6100	4.40050823271e-26	1.640173889 7e-27	.0011	1.376935e-46
1.6129	3.8956	.6200	4.73409335815e-30	2.104322627 2e-28	.0009	1.376935e-47
				2.611186974 2e-29	.0007	1.376935e-48
				3.133980503 8e-30	.0005	1.376935e-49
				3.637676911 5e-31	.0004	1.376935e-50
					.0003	1.376935e-51
					.0002	1.376935e-52
					.0002	1.376935e-53
					.0001	1.376935e-54
					.0001	1.376935e-55
					.0001	1.376935e-56
					.0000	1.376935e-57
					.0000	1.376935e-58
					.0000	1.376935e-59
					.0000	1.376935e-60
					.0000	1.376935e-61
					.0524	6.93937e-63

SIGNIFICANT HEAVE	.11
MAXIMUM HEAVE	.20
LINE STRETCH @ BUOY PRETENSION	1.36
MAXIMUM LINE TENSION	80.15
MINIMUM LINE TENSION	59.85

VERTICAL EXCITATION AND RESPONSE OF A SINGLE SPHERICAL SUBMERGED BUOY

BUOY NET BUOYANCY (KIPS)	100.00
BUOY RADIUS (FT)	8.00
BUOY WEIGHT (KIPS IN AIR)	43.50
WATER DEPTH (FT)	3,000.00
BUOY IMERSION (FT)	150.00
AE (KIPS)	146,000.00
STIFFNESS (K/FT)	51.08
HEAVE NATURAL PERIOD	1.65
ADDED MASS (KIPS SEC²/FT)	2.15
BUOY MASS (KIPS SEC²/FT)	1.35

SEASTATE

SIGNIFICANT HEIGHT (FT)	40.00
SIGNIFICANT PERIOD (SEC)	17.00

WAVE PERIOD (SEC)	WAVE FREQUENCY (RAD/SEC)	WAVE FREQUENCY (HZ)	RAO OF VERTICAL FORCE ON BUOY (KIPS/FT)	HEAVE RAO (FT/FT)	PIERSON-MOSKOWITZ WAVE SPECTRUM	HEAVE RESPONSE SPE
25.0000	.2513	.0400	1.013677280 44e-1	.0000	430.1969	1.708514e-3
20.0000	.3142	.0500	1.343262828 93e-1	2.645245370 09e-3	2249.9579	1.674368e-3
16.6667	.3770	.0600	1.578861604 93e-1	1.120772895 52e-3	2445.6884	2.281911e-3
14.2857	.4398	.0700	1.726201912 38e-1	1.556251410 06e-3	1733.4509	1.952637e-3
12.5000	.5027	.0800	1.777221254 70e-1	1.324255835 64e-3	1023.6028	1.220314e-3
11.1111	.5655	.0900	1.747600427 48e-1	1.077565678 90e-3	577.5522	6.640093e-4
10.0000	.6283	.1000	1.661027241 79e-1	1.218763431 16e-3	426.0803	5.149585e-4
9.0909	.6911	.1100	1.531577432 96e-1	1.246805264 16e-3	372.8355	4.389878e-4
8.3333	.7540	.1200	8.669485267 77e-2	1.794416867 74e-3	183.2328	2.672900e-4
7.6923	.8168	.1300	6.421987488 79e-2	1.316892245 31e-3	124.2451	1.751045e-4
7.1429	.8796	.1400	4.533068648 98e-2	9.304241662 17e-4	86.5818	1.263175e-4	
6.6667	.9425	.1500	3.052800343 35e-2	6.358878368 42e-4	61.6886	9.004752e-5
6.2500	1.0053	.1600	1.964091373 81e-2	4.127339066 24e-4	44.9690	6.568511e-5
5.8824	1.0681	.1700	1.208513732 47e-2	2.563973281 57e-4	33.4361	4.885882e-5
5.5556	1.1310	.1800	7.117083295 13e-3	1.525611445 57e-4	25.1384	3.672882e-5
5.2632	1.1938	.1900	4.016091017 04e-3	8.701950821 37e-5	19.2263	2.808897e-5
5.0000	1.2566	.2000	2.172035454 12e-3	4.761198286 08e-5	14.9024	2.177820e-5
4.7619	1.3195	.2100	1.162432747 12e-3	2.500276605 04e-5	11.6220	1.698086e-5
4.5455	1.3823	.2200	6.209725733 36e-4	1.260797205 19e-5	9.2752	1.355402e-5
4.3478	1.4451	.2300	3.294886860 22e-4	6.710766239 39e-6	7.4330	1.086098e-5
4.1667	1.5080	.2400	1.748738168 08e-4	2.813745734 79e-6	6.0123	8.789378e-6
4.0000	1.5708	.2500	9.312421098 52e-5	1.472761672 22e-6	4.9049	7.172106e-6
3.8462	1.6336	.2600	4.922803871 22e-5	7.477400534 75e-7	4.0333	5.898111e-6
3.7037	1.6965	.2700	2.592139677 52e-6	3.766173822 84e-7	3.3406	4.885713e-6
3.5714	1.7593	.2800	1.364800929 37e-6	2.033704652 67e-8	2.7863	4.074383e-6
3.4483	1.8221	.2900	1.372070181 89e-6	1.463329478 16e-8	2.3485	3.433500e-6
3.3333	1.8850	.3000	4.261297232 18e-7	1.278156748 28e-8	1.9923	2.914540e-6
3.2258	1.9478	.3100	1.725340093 36e-7	4.541702445 02e-9	1.6761	2.457756e-6
3.1250	2.0106	.3200	5.771331980 19e-8	1.554135391 7e-9	1.4302	2.097432e-6
3.0303	2.0735	.3300	1.857184011 4e-8	5.122472670 29e-10	1.2292	1.802445e-6
2.9412	2.1363	.3400	5.749923016 66e-9	1.626575178 28e-10	1.0565	1.549330e-6
2.8571	2.1991	.3500	1.712945745 56e-9	4.976848325 09e-11	.9141	1.340526e-6
2.7778	2.2619	.3600	4.916682743 35e-10	1.467582388 71e-11	.7940	1.170206e-6
2.7027	2.3248	.3700	1.354845733 53e-10	4.171585533 07e-12	.6924	1.020498e-6
2.6316	2.3876	.3800	3.567886758 64e-11	1.171325631 54e-12	.6060	7.920806e-7
2.5641	2.4504	.3900	9.178927342 7e-12	3.031568473 36e-13	.5323	6.858536e-7
2.5000	2.5133	.4000	2.266212320 77e-12	7.961560309 18e-14	.4690	5.978161e-7
2.4390	2.5761	.4100	5.332725299 43e-13	1.803847891 4e-14	.4145	5.248685e-7
2.3810	2.6389	.4200	1.226626884 14e-13	4.433407616 86e-15	.3672	4.622639e-7
2.3256	2.7018	.4300	2.683574222 37e-14	1.022396890 3e-15	.3262	4.080598e-7
2.2727	2.7646	.4400	1e0	4.016893282 3e-17	.2903	3.607233e-7
2.2222	2.8274	.4500	1.154797555 77e-15	4.861984434 04e-17	.2593	3.192500e-7
2.1739	2.8903	.4600	2.263538213 55e-16	1.003217325 54e-17	.2322	2.834285e-7
2.1277	2.9531	.4700	4.272532800 17e-17	2.000404044 73e-18	.2084	2.522637e-7
2.0833	3.0159	.4800	7.766330529 26e-18	3.857331601 41e-19	.1885	2.256508e-7
2.0408	3.0788	.4900	1.359550813 04e-18	7.103879505 11e-20	.1701	2.000078e-7
2.0000	3.1416	.5000	2.292130629 29e-19	1.298354684 99e-20	.1537	1.790131e-7
1.9608	3.2044	.5100	3.721876527 87e-20	2.268753565 82e-21	.1392	1.616329e-7
1.9231	3.2673	.5200	5.820702385 5e-21	3.840103174 18e-22	.1264	1.468322e-7
1.8868	3.3301	.5300	8.672166134 49e-22	9.981224787 8e-23	.1149	4.556662e-46
1.8519	3.3929	.5400	1.277861168 14e-22	1.000978033 69e-23	.1046	1.048330e-47
1.8182	3.4557	.5500	1.777861168 14e-23	1.940863900 28e-24	.0955	2.266330e-49
1.7857	3.5186	.5600	2.393255074 84e-24	2.349485826 26e-25	.0872	4.588423e-51
1.7544	3.5814	.5700	3.103251106 02e-25	2.688382713 08e-26	.0798	8.633397e-53
1.7241	3.6442	.5800	3.876738580 02e-26	4.307188522 9e-27	.0735	1.988823e-54
1.6949	3.7071	.5900	4.664942284 02e-27	5.845160888 54e-28	.0677	2.398561e-56
1.6667	3.7699	.6000	5.407576314 78e-28	7.059631729 43e-29	.0618	2.627116e-58
1.6393	3.8327	.6100	6.038706345 9e-29	7.853233326 95e-30	.0597	3.508136e-60
1.6129	3.8956	.6200	6.496476843 72e-30	8.037201596 24e-31	.0524	3.387516-62

SIGNIFICANT HEAVE	.15
MAXIMUM HEAVE	.27
LINE STRETCH @ BUOY PRETENSION	1.95
MAXIMUM LINE TENSION	113.96
MINIMUM LINE TENSION	88.04

VERTICAL EXCITATION AND RESPONSE OF A SINGLE SPHERICAL SUBMERGED BUOY

BUOY NET BUOYANCY (KIPS)	200.00
BUOY RADIUS (FT)	10.03
BUOY WEIGHT (KIPS IN AIR)	80.60
WATER DEPTH (FT)	3,000.00
BUOY IMERSION (FT)	150.00
AE (KIPS)	146,000.00
STIFFNESS (K/FT)	51.05
HEAVE NATURAL PERIOD	2.28
ADDED MASS (KIPS SEC^2/FT)	2.63
BUOY MASS (KIPS SEC^2/FT)	2.50

SEASTATE

SIGNIFICANT HEIGHT (FT)	40.00
SIGNIFICANT PERIOD (SEC)	17.00

WAVE PERIOD (SEC)	WAVE FREQUENCY (RAD/SEC)	WAVE FREQUENCY (HZ)	RAO OF VERTICAL FORCE ON BUOY (KIPS/FT)	HEAVE RAO (FT/FT)	PIERSON-MOSKOWITZ WAVE SPECTRUM	HEAVE RESPONSE SPE
25.0000	.2513	.0400	1.98640889656e-1	.0000	.430.1969	6.622711e-3
20.0000	.3142	.0500	2.63030733793e-1	5.21986482138e-3	2249.9576	8.3225[illegible]e-3
16.6667	.3770	.0600	3.09384787174e-1	6.17544762182e-3	2445.6884	8.3325[illegible]e-3
14.2857	.4398	.0700	3.31577134479e-1	6.66359096708e-3	1733.4509	5.8691[illegible]e-3
12.5000	.5027	.0800	3.28611785393e-1	6.65885950509e-3	1093.6028	3.8741[illegible]e-3
11.1111	.5655	.0900	3.05867610010e-1	6.23856224801e-3	677.5562	2.5219[illegible]e-3
10.0000	.6283	.1000	2.69587211225e-1	5.47083557211e-3	426.0883	1.6241[illegible]e-3
9.0909	.6911	.1100	2.25869272852e-1	4.56088345254e-3	268.8325	1.0252[illegible]e-3
8.3333	.7540	.1200	1.78453705969e-1	3.59599555347e-3	169.3358	6.4622[illegible]e-4
7.6923	.8168	.1300	1.32812392081e-1	2.68233428922e-3	106.8251	4.0722[illegible]e-4
7.1429	.8796	.1400	9.23452703829e-1	1.86524211195e-3	67.4961	2.5720[illegible]e-4
6.6667	.9425	.1500	8.88303217086e-2	1.79454569052e-3	42.6058	1.6240[illegible]e-4
6.2500	1.0053	.1600	3.98228830472e-5	8.04891907971e-4	26.8980	1.0254[illegible]e-4
5.8824	1.0681	.1700	3.84884682123e-5	7.77533085125e-4	16.9761	6.4732[illegible]e-5
5.5556	1.1310	.1800	3.36821173315e-5	6.80357385733e-4	10.7138	4.0852[illegible]e-5
5.2632	1.1938	.1900	1.39248485011e-2	1.04995154503e-4	6.7617	2.5780[illegible]e-5
5.0000	1.2566	.2000	7.86955028571e-3	5.59417968808e-5	4.2675	1.6268[illegible]e-5
4.7619	1.3195	.2100	4.25633529024e-3	3.02155665841e-5	2.6933	1.0268[illegible]e-5
4.5455	1.3823	.2200	2.20755229054e-3	1.56496611849e-5	1.6999	6.4807[illegible]e-6
4.3478	1.4451	.2300	1.09884666776e-3	7.79125655741e-6	1.0728	4.0902[illegible]e-6
4.1667	1.5080	.2400	5.24889217691e-4	3.72156257532e-6	.6770	2.5812[illegible]e-6
4.0000	1.5708	.2500	2.40655490096e-4	1.70127687532e-6	.4273	1.6292[illegible]e-6
3.8462	1.6336	.2600	1.06121038939e-4	7.50267952213e-7	.2697	1.0285[illegible]e-6
3.7037	1.6965	.2700	4.45699406802e-5	3.14861650159e-7	.1702	6.4918[illegible]e-7
3.5714	1.7593	.2800	1.86814455944e-5	1.32812109474e-7	.1074	4.0984[illegible]e-7
3.4483	1.8221	.2900	7.15021513029e-6	5.27506806987e-8	.0678	2.5880[illegible]e-7
3.3333	1.8850	.3000	2.68871806[illegible]e-6	2.13272842007e-8	.0428	1.6340[illegible]e-7
3.2258	1.9478	.3100	9.72219181624e-7	7.73734273084e-9	.0270	1.0318[illegible]e-7
3.1250	2.0106	.3200	3.38098818743e-7	2.73280097459e-9	.0170	6.5122[illegible]e-8
3.0303	2.0734	.3300	1.13095742046e-7	1.30293821435e-9	.0107	4.1124[illegible]e-8
2.9412	2.1363	.3400	3.69355436298e-8	4.64776760542e-10	.0068	2.5970[illegible]e-8
2.8571	2.1991	.3500	1.12675885901e-8	1.60501169[illegible]e-9	.0043	1.6401[illegible]e-8
2.7778	2.2619	.3600	3.35670015213e-9	5.37144071782e-10	.0027	1.0356[illegible]e-8
2.7027	2.3248	.3700	9.62301083178e-10	1.74434670591e-10	.0017	6.5387[illegible]e-9
2.6316	2.3876	.3800	2.65500383304e-10	5.50505070724e-11	.0011	4.1295[illegible]e-9
2.5641	2.4504	.3900	7.05015226881e-11	1.69138247238e-11	.0007	2.6078[illegible]e-9
2.5000	2.5133	.4000	1.80315058881e-11	5.06911335502e-12	.0004	1.6466[illegible]e-9
2.4390	2.5761	.4100	4.42410277449e-12	1.48473331555e-12	.0003	1.0398[illegible]e-9
2.3810	2.6389	.4200	1.03930143219e-12	3.55358053556e-13	.0002	6.5650[illegible]e-10
2.3256	2.7018	.4300	3.32314290728e-13	1.18769442886e-13	.0001	4.1457[illegible]e-10
2.2727	2.7646	.4400	5.25875030715e-14	7.88901787489e-14	.0001	2.6178[illegible]e-10
2.2222	2.8274	.4500	1e0	1.53216396328e-14	.0000	1.6531[illegible]e-10
2.1739	2.8903	.4600	2.26294914837e-15	3.11226286071e-15	.0000	1.0439[illegible]e-10
2.1277	2.9531	.4700	4.43564488603e-16	6.13032945349e-16	.0000	6.5931[illegible]e-11
2.0833	3.0159	.4800	8.37248432862e-17	1.23135187748e-16	.0000	4.1638[illegible]e-11
2.0408	3.0788	.4900	1.52188571598e-17	2.24069503697e-17	.0000	2.6297[illegible]e-11
2.0000	3.1416	.5000	2.66418502262e-18	3.73737041268e-18	.0000	1.6605[illegible]e-11
1.9608	3.2044	.5100	4.48167477852e-19	5.15836421238e-19	.0000	1.0486[illegible]e-11
1.9231	3.2673	.5200	7.39321770342e-20	6.03092219386e-20	.0000	6.6220[illegible]e-12
1.8868	3.3301	.5300	1.17893225719e-20	6.05125529901e-21	.0000	4.1822[illegible]e-12
1.8519	3.3929	.5400	1.81486206111e-21	5.17226621e-22	.0000	2.6410[illegible]e-12
1.8182	3.4558	.5500	2.70488367399e-22	4.14076422e-23	.0000	1.6678[illegible]e-12
1.7857	3.5186	.5600	3.48300884266e-23	1.41060942136e-25	.0000	1.0533[illegible]e-12
1.7544	3.5814	.5700	4.08997610266e-24	1.68038530612e-26	.0000	6.6509[illegible]e-13
1.7241	3.6443	.5800	4.08168107799e-25	1.37788758187e-27	.0000	4.2004[illegible]e-13
1.6949	3.7071	.5900	3.59688331921e-26	1.10285406349e-28	.0000	2.6523[illegible]e-13
1.6667	3.7699	.6000	2.91452643[illegible]e-27	5.23461102151e-29	.0000	1.6746[illegible]e-13
1.6393	3.8327	.6100	1.05967233436e-27	2.43633264747e-30	.0000	1.0573[illegible]e-13
1.6129	3.8956	.6200	1.18334961236e-28	2.45723743619e-31	.0524	3.16640e-63
			1.27305402297e-29			

SIGNIFICANT HEAVE	.29
MAXIMUM HEAVE	.55
LINE STRETCH @ BUOY PRETENSION	3.89
MAXIMUM LINE TENSION	227.93
MINIMUM LINE TENSION	172.07

VERTICAL EXCITATION AND RESPONSE OF A SINGLE SPHERICAL SUBMERGED BUOY

BUOY NET BUOYANCY (KIPS)	400.00
BUOY RADIUS (FT)	32.61
BUOY WEIGHT (KIPS IN AIR)	158.40
WATER DEPTH (FT)	3,000.00
BUOY IMERSION (FT)	150.00
AE (KIPS)	146,000.00
STIFFNESS (K/FT)	51.00
HEAVE NATURAL PERIOD	3.21
ADDED MASS (KIPS SEC²/FT)	8.40
BUOY MASS (KIPS SEC²/FT)	4.92

SEASTATE

SIGNIFICANT HEIGHT (FT)	40.00
SIGNIFICANT PERIOD (SEC)	17.00

WAVE PERIOD (SEC)	WAVE FREQUENCY (RAD/SEC)	WAVE FREQUENCY (HZ)	RAO OF VERTICAL FORCE ON BUOY (KIPS/FT)	HEAVE RAO (FT/FT)	PIERSON-MOSKOWITZ WAVE SPECTRUM	HEAVE RESPONSE SPE
25.0000	.2513	.0400	3.95490406495e-1	.0000	430.1969	2.673771e-2
20.0000	.3142	.0500	5.23689424708e-1	1.053801573 4e-2	2249.9579	2.498523e-1
16.6667	.3770	.0600	6.15889421097e-1	1.254063795 1e-2	2445.6884	3.842675e-1
14.2857	.4398	.0700	6.70152194435e-1	1.522801212 4e-2	1733.4509	3.219412e-1
12.5000	.5027	.0800	6.94377450169e-1	1.723085125 1e-2	1093.2028	2.061838e-1
11.1111	.5655	.0900	6.93831239382e-1	1.795255523 8e-2	677.5522	1.136933e-1
10.0000	.6283	.1000	6.72770200151e-1	1.752655233 8e-2	426.0803	5.655161e-2
9.0909	.6911	.1100	4.33686239182e-1	2.706481222 5e-2	268.8355	2.580374e-2
8.3333	.7540	.1200	3.38107023239e-1	2.678190392 1e-2	169.5328	1.101889e-2
7.6923	.8168	.1300	2.70226212728e-1	2.540776867 2e-2	107.2751	4.378233e-3
7.1429	.8796	.1400	1.76859258485e-1	2.338193846 6e-2	68.1858	1.882238e-3
6.6667	.9425	.1500	1.19106274522e-1	2.034009713 3e-2	43.3886	6.897732e-4
6.2500	1.0053	.1600	7.66298417462e-2	2.035691209 3e-2	27.6890	1.964389e-4
5.8824	1.0681	.1700	4.71506658509e-2	1.312409974 5e-2	17.6384	5.725327e-5
5.5556	1.1310	.1800	2.77711078 38e-2	8.141987070 9e-4	11.2261	1.666460e-5
5.2632	1.1938	.1900	1.56689461182e-2	4.867774954 9e-4	7.1384	4.552709e-6
5.0000	1.2566	.2000	8.77286651164e-3	2.808873436 9e-4	4.5424	1.257693e-6
4.7619	1.3195	.2100	4.36560345 05e-3	1.566966477 2e-4	2.8908	2.870823e-7
4.5455	1.3823	.2200	2.18770237379e-3	8.767275840 3e-5	1.8392	6.649861e-8
4.3478	1.4451	.2300	1.02517175294e-3	2.422015558 9e-5	1.1704	1.466637e-8
4.1667	1.5080	.2400	5.17821934 51e-4	1.358905727 7e-5	0.7448	3.095067e-9
4.0000	1.5708	.2500	2.61650952 11e-4	7.592593033 5e-6	0.4740	1.299185e-9
3.8462	1.6336	.2600	1.31 4526927 4e-4	4.255213877 2e-6	0.3016	5.524367e-10
3.7037	1.6965	.2700	6.63280284183e-5	2.497412776 8e-6	0.1919	2.343133e-10
3.5714	1.7593	.2800	3.46359485668e-5	1.301650886 0e-6	0.1221	9.943080e-11
3.4483	1.8221	.2900	1.85318887427e-5	6.317776252 6e-7	0.0777	4.223308e-11
3.3333	1.8850	.3000	1.03567074744e-5	3.014547025 6e-7	0.0494	1.792196e-11
3.2258	1.9478	.3100	6.73148612514e-6	1.231492424 2e-7	0.0315	7.611188e-12
3.1250	2.0106	.3200	2.25170917303e-6	3.570809610 6e-8	0.0200	1.843332e-12
3.0303	2.0734	.3300	7.24588065429e-8	8.481899933 6e-9	0.0127	8.823332e-13
2.9412	2.1363	.3400	2.24335637687e-8	1.954662927 9e-9	0.0081	4.037924e-13
2.8571	2.1991	.3500	6.78312906173e-9	4.525433497 9e-10	.0052	1.871974e-13
2.7778	2.2619	.3600	1.91592395358e-9	1.047555595 01e-10	.0033	8.713584e-14
2.7027	2.3248	.3700	5.24606583304e-10	2.404555897 65e-11	.0021	4.003584e-14
2.6316	2.3876	.3800	1.40391203247e-10	5.435895523 3e-12	.0013	1.790776e-14
2.5641	2.4504	.3900	3.58761217147e-11	1.304278827 05e-12	.0008	7.719186e-15
2.5000	2.5133	.4000	8.86241913826e-12	2.606259521 4e-13	.0005	3.183126e-15
2.4390	2.5761	.4100	2.09113091288e-12	5.188830424 7e-14	.0003	1.348956e-15
2.3810	2.6389	.4200	4.76868062866e-13	1.124103481 2e-14	.0002	6.243716e-16
2.3256	2.7018	.4300	1.04700764291e-13	2.233278270 2e-15	.0001	1.931115e-16
2.2727	2.7646	.4400	1e0	1.245285269 33e-16	.0001	1.001112e-16
2.2222	2.8274	.4500	4.50549068782e-15	8.036478431 68e-17	.0000	1.681112e-32
2.1739	2.8903	.4600	8.83128847281e-16	1.451842253 45e-17	.0000	4.915826e-35
2.1277	2.9531	.4700	1.66692643996e-16	2.537163098 05e-18	.0000	1.348246e-36
2.0833	3.0159	.4800	3.03006615345e-17	4.286921123 87e-19	.0000	3.464596e-38
2.0408	3.0788	.4900	5.30434203607e-18	7.000067043 5e-20	.0000	8.334326e-40
2.0000	3.1416	.5000	8.94384297189e-19	1.104554455 1e-20	.0000	1.875456e-41
1.9608	3.2044	.5100	1.45210561187e-19	1.683325753 51e-21	.0000	3.945256e-43
1.9231	3.2673	.5200	2.37078263107e-20	2.477330787 6e-22	.0000	7.754226e-45
1.8868	3.3301	.5300	3.77048819985e-21	3.516627908 2e-23	.0000	1.423296e-46
1.8519	3.3929	.5400	5.92498212228e-22	4.827368186 2e-24	.0000	2.438696e-48
1.8182	3.4557	.5500	9.23922282852e-23	6.391273700 6e-25	.0000	3.889018e-50
1.7857	3.5186	.5600	9.33765730935e-24	8.165124060 4e-26	.0000	5.815696e-52
1.7544	3.5814	.5700	1.21085166598e-24	1.006524906 2e-26	.0000	8.084641e-54
1.7241	3.6442	.5800	1.51252568251e-25	1.197150111 7e-27	.0000	1.049208e-55
1.6949	3.7071	.5900	1.82004663198e-26	1.373752221 8e-28	.0000	1.268218e-57
1.6667	3.7699	.6000	2.10978838744e-27	1.520667003 35e-29	.0000	1.468692e-59
1.6393	3.8327	.6100	2.35602641272e-28	1.623722984 23e-30	.0000	1.499969e-61
1.6129	3.8956	.6200	2.53462745716e-29	1.672303161 01e-31	.0524	1.466566-63

SIGNIFICANT HEAVE	.59
MAXIMUM HEAVE	1.10
LINE STRETCH @ BUOY PRETENSION	7.77
MAXIMUM LINE TENSION	456.59
MINIMUM LINE TENSION	343.41

VERTICAL EXCITATION AND RESPONSE OF A SINGLE SPHERICAL SUBMERGED BUOY

BUOY NET BUOYANCY (KIPS)	70.00
BUOY RADIUS (FT)	9.21
BUOY WEIGHT (KIPS IN AIR)	35.00
WATER DEPTH (FT)	6,000.00
BUOY IMERSION (FT)	150.00
AE (KIPS)	146,000.00
STIFFNESS (K/FT)	24.93
HEAVE NATURAL PERIOD	2.05
ADDED MASS (KIPS SEC²/(FT)	1.57
BUOY MASS (KIPS SEC²/FT)	1.09

SEASTATE

SIGNIFICANT HEIGHT (FT)	40.00
SIGNIFICANT PERIOD (SEC)	17.88

WAVE PERIOD (SEC)	WAVE FREQUENCY (RAD/SEC)	WAVE FREQUENCY (HZ)	RAO OF VERTICAL FORCE ON BUOY (KIPS/FT)	HEAVE RAO (FT/FT)	PIERSON-MOSKOWITZ WAVE SPECTRUM	HEAVE RESPONSE SPE
25.0000	.2513	.0400	7.38683904536e-2	.0000	430.1969	3.828406e-3
20.0000	.3142	.0500	9.78126791611e-2	3.96462726777e-3	2249.0658	2.937168e-3
16.6667	.3770	.0600	1.15054335098e-1	4.68543720856e-3	4733.6884	5.368952e-3
14.2857	.4398	.0700	1.23301045042e-1	5.04870010151e-3	7733.2309	4.418458e-3
12.5000	.5027	.0800	1.22221335813e-1	4.69554836188e-3	11224.6028	1.773852e-3
11.1111	.5655	.0900	1.13155328825e-1	4.12170723013e-3	15277.2509	1.492524e-3
10.0000	.6283	.1000	9.85004866367e-2	3.42039662982e-3	19826.0883	7.338864e-4
9.0909	.6911	.1100	8.10025175581e-2	2.69344750217e-3	24869.8355	3.215332e-4
8.3333	.7540	.1200	6.31505118221e-2	2.01808884717e-3	30408.4355	1.321824e-4
7.6923	.8168	.1300	4.72681186949e-2	1.44172662715e-3	36442.0751	5.053184e-5
7.1429	.8796	.1400	3.40611926012e-2	9.83700857858e-4	42970.5868	1.783754e-5
6.6667	.9425	.1500	2.39225233325e-2	6.71905167477e-4	49994.0882	5.977231e-6
6.2500	1.0053	.1600	1.65192676332e-2	4.70102774377e-4	57512.5793	1.842938e-6
5.8824	1.0681	.1700	1.13129684682e-2	3.20132743706e-4	65526.0601	5.433735e-7
5.5556	1.1310	.1800	8.00665246805e-3	2.27866783945e-4	74034.5307	1.564912e-7
5.2632	1.1938	.1900	5.78699569805e-3	1.64828293336e-4	83038.9910	4.449495e-8
5.0000	1.2566	.2000	4.22853947428e-3	1.20966278617e-4	92539.4410	1.656094e-8
4.7619	1.3195	.2100	3.08279924082e-3	8.82930448131e-5	102535.7808	6.092218e-9
4.5455	1.3823	.2200	2.20966278617e-3	6.32304711158e-5	113028.1104	1.892574e-9
4.3478	1.4451	.2300	1.58611797158e-3	4.53633533273e-5	124016.4297	3.884068e-10
4.1667	1.5080	.2400	1.13521718971e-3	3.24705920012e-5	135500.7388	7.44177e-11
4.0000	1.5708	.2500	8.05545399211e-4	2.30547079227e-5	147481.0377	1.33120e-11
3.8462	1.6336	.2600	5.74233125705e-4	1.64209771414e-5	159957.3263	2.22342e-12
3.7037	1.6965	.2700	4.09805394083e-4	1.17257834496e-5	172930.0047	3.42784e-13
3.5714	1.7593	.2800	2.92688327332e-4	8.38874585723e-6	186398.6729	5.05147e-14
3.4483	1.8221	.2900	2.09155911853e-4	5.99703549681e-6	200363.3308	7.82734e-15
3.3333	1.8850	.3000	1.49530917853e-4	4.28577607021e-6	214824.0785	1.21147e-15
3.2258	1.9478	.3100	1.06853814997e-4	3.06337268113e-6	229780.9160	1.82734e-16
3.1250	2.0106	.3200	7.63728421109e-5	2.18957678813e-6	245234.8432	2.73830e-17
3.0303	2.0734	.3300	5.45839794162e-5	1.56502108687e-6	261185.7602	4.07295e-18
2.9412	2.1363	.3400	3.90116630422e-5	1.11854382922e-6	277633.6670	6.02330e-19
2.8571	2.1991	.3500	2.78900661714e-5	7.99551907853e-7	294578.5635	8.86147e-20
2.7778	2.2619	.3600	1.99400686857e-5	5.71538161997e-7	312020.4498	1.29758e-20
2.7027	2.3248	.3700	1.42482527486e-5	4.08603917853e-7	329959.3259	1.88930e-21
2.6316	2.3876	.3800	1.01844941127e-5	2.91572842109e-7	348395.1918	2.73830e-22
2.5641	2.4504	.3900	7.27813524589e-6	2.08396794162e-7	367328.0474	3.95025e-23
2.5000	2.5133	.4000	5.20148085002e-6	1.49033163042e-7	386757.8929	5.70395e-24
2.4390	2.5761	.4100	3.71648955846e-6	1.06500668617e-7	406684.7281	8.23025e-25
2.3810	2.6389	.4200	2.65574550868e-6	7.61024842769e-8	427108.5531	1.18810e-25
2.3256	2.7018	.4300	1.89067421527e-6	5.41771215271e-8	448029.3679	1.71502e-26
2.2727	2.7646	.4400	1.35556620658e-6	3.88482741758e-8	469447.1725	2.47585e-27
2.2222	2.8274	.4500	1e9	2.77580424175e-8	491361.9668	3.57411e-28
2.1739	2.8903	.4600	8.41520633467e-16	1.98254241758e-8	513773.7509	5.16010e-29
2.1277	2.9531	.4700	6.01337860969e-16	1.41620471178e-8	536682.5248	7.44711e-30
2.0833	3.0159	.4800	4.29707454371e-16	1.01157479560e-8	560088.2884	1.07510e-30
2.0408	3.0788	.4900	3.06945737362e-16	7.22553585718e-9	583990.0418	1.55204e-31
2.0000	3.1416	.5000	2.19247449478e-16	5.16252889381e-9	608388.7850	2.24039e-32
1.9608	3.2044	.5100	1.56633146118e-16	3.68750218554e-9	633284.5180	3.23447e-33
1.9231	3.2673	.5200	1.11871948488e-16	2.63500192756e-9	658677.2408	4.67075e-34
1.8868	3.3301	.5300	7.99241641255e-17	1.88250137143e-9	684566.9534	6.74425e-35
1.8519	3.3929	.5400	5.71011302782e-17	1.34500714342e-9	710953.6558	9.73855e-36
1.8182	3.4557	.5500	4.08000711255e-17	9.61000509713e-10	737837.3480	1.40625e-36
1.7857	3.5186	.5600	2.91500577231e-17	6.86500364118e-10	765218.0300	2.03078e-37
1.7544	3.5814	.5700	2.08220276771e-17	4.90500260295e-10	793095.7018	2.93238e-38
1.7241	3.6442	.5800	1.48786705844e-17	3.50500185988e-10	821470.3634	4.23353e-39
1.6949	3.7071	.5900	1.06286726388e-17	2.50500132925e-10	850342.0148	6.11293e-40
1.6667	3.7699	.6000	7.59476660017e-18	1.79000094946e-10	879710.6560	8.82766e-41
1.6393	3.8327	.6100	5.42540229084e-18	1.27928067852e-10	909576.2870	1.27469e-41
1.6129	3.8956	.6200	4.00508233771e-29	2.87310420225e-30	.0048	4.29244e-63
			4.73409335815e-30	2.86099139072e-31	.0524	

SIGNIFICANT HEAVE	.22
MAXIMUM HEAVE	.42
LINE STRETCH @ BUOY PRETENSION	2.80
MAXIMUM LINE TENSION	80.40
MINIMUM LINE TENSION	59.60

VERTICAL EXCITATION AND RESPONSE OF A SINGLE SPHERICAL SUBMERGED BUOY

BUOY NET BUOYANCY (KIPS)	100.00
BUOY RADIUS (FT)	8.01
BUOY WEIGHT (KIPS IN AIR)	49.50
WATER DEPTH (FT)	6,000.00
BUOY IMERSION (FT)	150.00
AE (KIPS)	146,000.00
STIFFNESS (K/FT)	24.92
HEAVE NATURAL PERIOD	2.36
ADDED MASS (KIPS SEC²/FT)	2.12
BUOY MASS (KIPS SEC²/FT)	1.35

SEASTATE

SIGNIFICANT HEIGHT (FT)	40.00
SIGNIFICANT PERIOD (SEC)	17.00

WAVE PERIOD (SEC)	WAVE FREQUENCY (RAD/SEC)	WAVE FREQUENCY (HZ)	RAO OF VERTICAL FORCE ON BUOY (KIPS/FT)	HEAVE RAO (FT/FT)	PIERSON-MOSKOWITZ WAVE SPECTRUM	HEAVE RESPONSE SPE
25.0000	.2513	.0400	1.013677280446-1	.0000	.430.1969	7.242443e-3
20.0000	.3142	.0500	1.342262828936-1	5.460187794398e-3	2328.9696	6.707873e-2
16.6667	.3770	.0600	1.578821604936-1	6.461955258347e-2	4245.6884	9.021243e-1
14.2857	.4398	.0700	1.692029124386-1	6.973161547603e-3	4443.2598	8.424835e-2
12.5000	.5027	.0800	1.677212547046-1	6.973163239e-3	1722.2229	3.377222e-2
11.1111	.5655	.0900	1.552800634286-1	6.518558780336-3	1022.2229	3.376564e-2
10.0000	.6283	.1000	1.351827221796-1	6.518558780336-3	677.2588	1.902743e-2
9.0909	.6911	.1100	1.111877231796-1	5.736521554816e-3	446.0892	1.104121e-2
8.3333	.7540	.1200	8.665782577476-2	5.225281153486-3	274.8355	6.267157e-3
7.6923	.8168	.1300	6.421987408746-2	4.734885719196-3	182.2228	3.934710e-3
7.1429	.8796	.1400	4.733068899386-2	4.238388320496-3	124.6751	2.655410e-3
6.6667	.9425	.1500	3.052800333356-2	3.724857191e-3	86.5858	1.990708e-3
6.2500	1.0053	.1600	1.964091313816-2	3.224076133296-3	61.7882	1.204269e-3
5.8824	1.0681	.1700	1.208513732476-2	2.764916830496-3	44.9890	3.773003e-4
5.5556	1.1310	.1800	7.117983295136-3	2.467494870346-4	33.3561	1.104608e-5
5.2632	1.1938	.1900	4.016091017046-3	2.005211561686-4	25.1882	3.022495e-6
5.0000	1.2566	.2000	3.172035454126-3	1.113721653146-4	19.2353	1.258637e-7
4.7619	1.3195	.2100	1.126232474126-3	5.045103019296-5	14.9057	1.878455e-8
4.5455	1.3823	.2200	5.607276573336-4	3.051049697879e-5	11.6920	1.135433e-8
4.3478	1.4451	.2300	2.678868600446-4	1.507581614756-5	9.2556	4.136419e-9
4.1667	1.5080	.2400	1.228928065066-4	7.169858707876-6	7.4330	1.885367e-9
4.0000	1.5708	.2500	5.415435108886-5	3.284731374556-6	6.0123	2.990716-10
3.8462	1.6336	.2600	3.302838471256-5	1.750378125766-6	4.9049	3.892116-11
3.7037	1.6965	.2700	1.326138787256-6	9.537325277186-7	4.0333	8.442386-12
3.5714	1.7593	.2800	3.948809076176-6	5.175772088866-7	3.3409	1.274236-12
3.4483	1.8221	.2900	1.372070181896-6	2.837233745576-7	2.7863	1.793826-13
3.3333	1.8850	.3000	4.261497232186-7	1.856800192376-8	2.3385	2.368806-14
3.2258	1.9478	.3100	1.227340093366-7	1.169513499196-8	1.9743	2.936776-15
3.1250	2.0106	.3200	5.711331980196-8	5.121200013186-9	1.6761	3.421726-16
3.0303	2.0734	.3300	1.857184011466-8	1.777376254736-9	1.4303	3.751136-17
2.9412	2.1363	.3400	5.749923016666-9	5.978054500436-10	1.2265	3.874396-18
2.8571	2.1991	.3500	1.712945745566-9	1.950303666286-10	1.0565	3.775736-19
2.7778	2.2619	.3600	4.910684433566-10	6.175857107236-11	.9141	3.478826-20
2.7027	2.3248	.3700	1.354885743353e-10	1.868492452521e-11	.7950	3.028896-21
2.6316	2.3876	.3800	3.597839459076-11	5.658823837446-12	.6924	2.477226-22
2.5641	2.4504	.3900	8.196273048976-12	1.623822441507e-12	.6060	1.911666-23
2.5000	2.5133	.4000	2.225515207726-12	4.783751789926-13	.5333	1.411856-24
2.4390	2.5761	.4100	5.355755486256-13	1.152221260386-13	.4690	9.948236-26
2.3810	2.6389	.4200	1.272662473326-13	2.727364243326-14	.4142	6.705196-27
2.3256	2.7018	.4300	2.683574223746-14	5.866703752026e-15	.3675	4.386726-28
2.2727	2.7646	.4400	0	2.003872525096-15	.3267	2.772866-29
2.2222	2.8274	.4500	1.154797335776-15	2.041267775896-16	.2913	1.755956-30
2.1739	2.8903	.4600	2.263538213756-16	5.476233841716-17	.2603	1.108436-31
2.1277	2.9531	.4700	4.272533280016-17	9.622332631086-18	.2332	6.794206-33
2.0833	3.0159	.4800	7.766330529266-18	1.033562911376-18	.2094	4.153056-34
2.0408	3.0788	.4900	1.355750813046-18	1.391744543676-19	.1884	2.602026-35
2.0000	3.1416	.5000	2.292130629296-19	2.082623786916-20	.1701	1.626736-36
1.9608	3.2044	.5100	3.721876574876-20	3.026596514936-21	.1539	9.976706-38
1.9231	3.2673	.5200	5.820720383546-21	4.268752976266-22	.1396	6.234706-39
1.8868	3.3301	.5300	8.729916617186-22	5.838861875236-23	.1269	3.916716-40
1.8519	3.3929	.5400	1.272861176816-22	6.936107501386-25	.1156	2.457846-41
1.8182	3.4557	.5500	1.764996762846-23	1.234740818816-25	.1054	1.542776-42
1.7857	3.5186	.5600	2.333551076766-24	1.484586271346-26	.0962	9.684046-44
1.7544	3.5814	.5700	3.103244580806-25	1.782569061766-27	.0878	6.078446-45
1.7241	3.6442	.5800	3.876795870026-26	1.952927529486-28	.0801	3.816716-46
1.6949	3.7071	.5900	4.664242268496-27	2.104147347796-29	.0732	2.396116-47
1.6667	3.7699	.6000	5.407576314786-28	2.108342147696-30	.0668	1.504476-48
1.6393	3.8327	.6100	6.038706394526-29	2.029625486626-31	.0610	9.447776-50
1.6129	3.8956	.6200	6.496476843726-30	2.239681204046-31	.0524	2.630536-51

SIGNIFICANT HEAVE	.31
MAXIMUM HEAVE	.57

LINE STRETCH @ BUOY PRETENSION	4.00
MAXIMUM LINE TENSION	114.32
MINIMUM LINE TENSION	85.68

VERTICAL EXCITATION AND RESPONSE OF A SINGLE SPHERICAL SUBMERGED BUOY

BUOY NET BUOYANCY (KIPS)	200.00
BUOY RADIUS (FT)	10.03
BUOY WEIGHT (KIPS IN AIR)	80.60
WATER DEPTH (FT)	6,000.00
BUOY IMERSION (FT)	150.00
AE (KIPS)	146,000.00
STIFFNESS (K/FT)	24.91
HEAVE NATURAL PERIOD	3.26
ADDED MASS (KIPS SEC²/FT)	4.58
BUOY MASS (KIPS SEC²/FT)	2.50

SEASTATE

SIGNIFICANT HEIGHT (FT)	40.00
SIGNIFICANT PERIOD (SEC)	17.00

WAVE PERIOD (SEC)	WAVE FREQUENCY (RAD/SEC)	WAVE FREQUENCY (HZ)	RAO OF VERTICAL FORCE ON BUOY (KIPS/FT)	HEAVE RAO (FT/FT)	PIERSON-MOSKOWITZ WAVE SPECTRUM	HEAVE RESPONSE SPE
25.0000	.2513	.0400	1.98640889656e-1	.0000	430.1960	2.829140e-2
20.0000	.3142	.0500	2.25303973733e-1	1.08426666935e-2	2378.6296	2.645128e-1
16.6667	.3770	.0600	3.03832773734e-1	1.29073221933e-2	5272.2587	4.074422e-1
14.2857	.4398	.0700	3.31211124574e-1	1.40319104482e-2	7333.9883	3.413070e-1
12.5000	.5027	.0800	3.12271178793e-1	1.41442444691e-2	7333.4209	2.187858e-1
11.1111	.5655	.0900	2.72867710516e-1	1.33507907318e-2	6923.6028	1.247702e-1
10.0000	.6283	.1000	3.04287874852e-1	1.18809129065e-2	677.5562	6.614510e-2
9.0909	.6911	.1100	5.64879911265e-1	1.00170842247e-2	446.0803	3.544210e-2
8.3333	.7540	.1200	1.17895470769e-1	8.03138218731e-3	274.8355	1.124335e-2
7.6923	.8168	.1300	1.99819239081e-1	6.07113861823e-3	182.2228	4.748385e-3
7.1429	.8796	.1400	1.25845703829e-1	4.41431294523e-3	124.0751	1.962478e-3
6.6667	.9425	.1500	8.88303217086e-2	3.18611211225e-3	86.5858	1.072478e-3
6.2500	1.0053	.1600	5.98228830476e-2	2.31311269298e-3	61.7483	6.144880e-4
5.8824	1.0681	.1700	3.84884682123e-2	1.71156961671e-3	44.6880	3.604885e-4
5.5556	1.1310	.1800	2.36821173177e-2	1.29269415409e-3	33.3561	2.008985e-4
5.2632	1.1938	.1900	1.39284485011e-2	9.94210274372e-4	25.7382	1.199269e-4
5.0000	1.2566	.2000	7.86985978514e-3	7.87633468842e-4	19.1392	6.803948e-5
4.7619	1.3195	.2100	4.26233629249e-3	6.07755239842e-4	14.6652	4.249178e-5
4.5455	1.3823	.2200	2.30775523904e-3	4.63999230784e-4	11.2054	2.823616e-5
4.3478	1.4451	.2300	1.50860599554e-3	3.88823121767le-4	9.0220	3.144638e-6
4.1667	1.5080	.2400	5.27885213671e-3	4.97066839109e-5	7.2753	7.317750e-8
4.0000	1.5708	.2500	3.20435613841e-4	2.39073555588e-5	7.4330	1.621513e-8
3.8462	1.6336	.2600	1.06161038832e-4	1.16268255915e-5	6.0123	3.436373e-9
3.7037	1.6965	.2700	4.42299206802e-5	5.85176856755e-6	4.9040	7.003096e-10
3.5714	1.7593	.2800	1.82814255924e-5	2.81165973739e-6	4.0333	1.381112e-10
3.4483	1.8221	.2900	7.50215113029e-6	1.33665534231e-6	3.3409	2.750028e-11
3.3333	1.8850	.3000	2.68871806[illegible]e-6	6.37227280922e-7	2.7863	5.332268e-12
3.2258	1.9478	.3100	9.72219181647e-7	3.07423987855e-7	2.3385	1.039624e-12
3.1250	2.0106	.3200	3.38098818743e-7	1.46262792778e-7	1.9743	2.039324e-13
3.0303	2.0735	.3300	1.13095414207e-7	7.05151843614e-8	1.6761	3.958172e-14
2.9412	2.1363	.3400	3.63955043238e-8	3.47680379[illegible]e-8	1.4303	7.670172e-15
2.8571	2.1991	.3500	1.12675885998e-8	1.67103427665e-8	1.2305	1.480129e-15
2.7778	2.2619	.3600	3.35270015011e-9	8.37745686527e-9	1.0622	2.978246e-17
2.7027	2.3248	.3700	9.23381001378e-10	3.63599075406e-10	.9265	5.629039e-18
2.6316	2.3876	.3800	2.65501283178e-10	9.18073866485e-11	.8141	1.345049e-19
2.5641	2.4504	.3900	7.20035206881e-11	2.15669510849e-11	.7040	6.692659e-21
2.5000	2.5133	.4000	1.89210725449e-11	4.95927818396e-12	.6024	3.221649e-22
2.4390	2.5761	.4100	4.43410327751e-12	1.11269590722e-12	.5123	1.490519e-23
2.3810	2.6389	.4200	1.05030143219e-12	2.43078631962e-13	.4290	6.589776e-25
2.3256	2.7018	.4300	2.39314290728e-13	5.16125835062e-14	.3545	2.711116e-26
2.2727	2.7646	.4400	5.25875030715e-14	1.05367609091e-14	.2911	1.104326e-27
2.2222	2.8274	.4500	0e0	2.13247074338e-15	.2367	4.153226e-29
2.1739	2.8903	.4600	2.26294914837e-15	3.80726192063e-16	.1904	1.722339e-30
2.1277	2.9531	.4700	4.43564488603e-16	7.15142252238e-17	.1511	6.993347e-32
2.0833	3.0159	.4800	8.37248234862e-17	1.43296271466e-17	.1202	2.922e-33
2.0408	3.0788	.4900	1.52188671598e-17	2.44994946718e-18	.0947	1.249e-34
2.0000	3.1416	.5000	2.66218502223e-18	4.14374692812e-19	.0744	5.23376e-36
1.9608	3.2044	.5100	4.58167747876e-19	6.78090345211e-20	.0581	2.137204e-38
1.9231	3.2673	.5200	7.76321777942e-20	1.07184590062e-20	.0454	7.81934e-40
1.8868	3.3301	.5300	1.29402993992e-20	1.63615075863e-21	.0354	1.76603e-41
1.8518	3.3929	.5400	2.12468270611e-21	2.41141140763e-22	.0276	3.72721e-43
1.8182	3.4557	.5500	3.42588625399e-22	3.43083315428e-23	.0214	7.34717e-45
1.7857	3.5186	.5600	5.48300884296e-23	4.71131092661e-24	.0166	1.35213e-46
1.7544	3.5814	.5700	4.68997610268e-24	6.24367138781e-25	.0128	2.32230e-28
1.7241	3.6442	.5800	6.08168107799e-25	7.88426207172e-26	.0099	3.72113e-50
1.6949	3.7071	.5900	7.59688337921e-26	9.85126072148e-27	.0077	5.52113e-52
1.6667	3.7699	.6000	9.14145264345e-27	1.13792527952e-27	.0060	7.79929e-54
1.6393	3.8327	.6100	1.05967233436e-27	1.24670049352e-28	.0047	1.08684e-55
1.6129	3.8956	.6200	1.18334901426e-28	1.32377634558e-29	.0036	1.51862e-57
			1.27305402297e-29	1.37320871509e-30	.0028	1.37491e-59
				1.64259003517e-31	.0524	1.44512e-61
						1.41491e-63

SIGNIFICANT HEAVE	.61
MAXIMUM HEAVE	1.14
LINE STRETCH @ BUOY PRETENSION	8.00
MAXIMUM LINE TENSION	228.39
MINIMUM LINE TENSION	171.61

VERTICAL EXCITATION AND RESPONSE OF A SINGLE SPHERICAL SUBMERGED BUOY

BUOY NET BUOYANCY (KIPS)	400.00
BUOY RADIUS (FT)	12.61
BUOY WEIGHT (KIPS IN AIR)	158.40
WATER DEPTH (FT)	6,000.00
BUOY IMERSION (FT)	150.00
AE (KIPS)	146,000.00
STIFFNESS (K/FT)	24.90
HEAVE NATURAL PERIOD	4.60
ADDED MASS (KIPS SEC^2/FT)	8.40
BUOY MASS (KIPS SEC^2/FT)	4.92

SEASTATE

SIGNIFICANT HEIGHT (FT)	40.00
SIGNIFICANT PERIOD (SEC)	17.00

WAVE PERIOD (SEC)	WAVE FREQUENCY (RAD/SEC)	WAVE FREQUENCY (HZ)	RAO OF VERTICAL FORCE ON BUOY (KIPS/FT)	HEAVE RAO (FT/FT)	PIERSON-MOSKOWITZ WAVE SPECTRUM	HEAVE RESPONSE SPE
25.0000	.2513	.0400	3.95490406495e-1	.0000	430.1969	1.161489e-1
20.0000	.3142	.0500	5.27682247708e-1	2.21901101144e-2	2248.9579	1.107881e0
16.6667	.3770	.0600	6.15922421097e-1	2.87311244113e-2	5272.6887	1.750194e0
14.2857	.4398	.0700	6.60152129433e-1	2.93369223231e-2	4333.9880	1.513313e0
12.5000	.5027	.0800	6.54371450129e-1	3.03327826158e-2	1083.2758	1.005531e0
11.1111	.5655	.0900	6.05831632824e-1	2.92875224422e-2	677.3864	5.897681e-1
10.0000	.6283	.1000	5.27370301211e-1	2.67715223336e-2	446.0822	3.833854e-1
9.0909	.6911	.1100	4.33286559185e-1	2.33041572282e-2	274.8353	1.925384e-1
8.3333	.7540	.1200	3.38107023239e-1	1.94099286064e-2	182.2228	6.865159e-2
7.6923	.8168	.1300	2.50545513556e-1	1.55350829661e-2	124.0751	2.994413e-2
7.1429	.8796	.1400	1.76865658485e-1	1.19693555995e-2	86.5858	1.242702e-2
6.6667	.9425	.1500	1.18106277258e-1	8.98638879507e-3	61.7882	4.989714e-3
6.2500	1.0053	.1600	7.66278216409e-2	6.56182356629e-3	44.9890	1.937114e-3
5.8824	1.0681	.1700	4.71506628309e-2	4.70726246628e-3	33.3561	7.386551e-4
5.5556	1.1310	.1800	2.77711076838e-2	3.30477218733e-3	25.1382	2.817419e-4
5.2632	1.1938	.1900	1.56684611182e-2	2.37218766478e-3	19.2223	1.102996e-4
5.0000	1.2566	.2000	8.47428662164e-3	1.74243733006e-3	14.9880	4.548189e-5
4.7619	1.3195	.2100	4.39540345054e-3	1.24622226481e-3	11.6550	1.816716e-5
4.5455	1.3823	.2200	2.18770227379e-3	9.67332778044e-4	9.2436	7.338858e-6
4.3478	1.4451	.2300	1.04517172494e-3	7.54925431637e-4	7.4330	2.973196e-6
4.1667	1.5080	.2400	4.79479198351e-4	5.88762210012e-4	6.0123	1.227524e-6
4.0000	1.5708	.2500	2.11285062716-4	4.59081700980e-4	4.7049	4.844421e-7
3.8462	1.6336	.2600	8.94542696534e-5	3.58061244391e-4	4.0333	1.932107e-7
3.7037	1.6965	.2700	3.63980264183e-5	2.79278894688e-4	3.3402	7.622484e-8
3.5714	1.7593	.2800	1.42359485668e-5	2.17824078190e-4	2.7863	2.991016e-8
3.4483	1.8221	.2900	5.35318887227e-6	1.69846512467e-4	2.3385	1.171063e-8
3.3333	1.8850	.3000	1.93556707727e-6	1.32447056862e-4	1.9743	4.415476e-9
3.2258	1.9478	.3100	8.72174881347e-7	1.03258512467e-4	1.6761	1.711991e-9
3.1250	2.0106	.3200	4.25170217305e-7	8.05104170389e-5	1.4303	6.428824e-10
3.0303	2.0734	.3300	2.47298092469e-8	6.27744813574e-5	1.2265	2.609779e-10
2.9412	2.1363	.3400	2.24333637684e-8	4.89291783892e-5	1.0565	1.048111e-10
2.8571	2.1991	.3500	6.83312906175e-9	3.81516502582e-5	.9171	4.569816e-11
2.7778	2.2619	.3600	1.91392925356e-9	2.97417853172e-5	.7990	1.534729e-11
2.7027	2.3248	.3700	5.28606383304e-10	2.31878962117e-5	.6984	5.207469e-12
2.6316	2.3876	.3800	1.40371202747e-10	1.80722672211e-5	.6099	1.766908e-12
2.5641	2.4504	.3900	3.58796417415e-11	1.40877649149e-5	.5363	5.993208e-13
2.5000	2.5133	.4000	8.82821915822e-12	1.09769801156e-5	.4690	2.033728e-13
2.4390	2.5761	.4100	2.09113109128e-12	8.55796392827e-6	.4142	1.022111e-13
2.3810	2.6389	.4200	4.76868406286e-13	6.66964020852e-6	.3675	4.242420e-14
2.3256	2.7018	.4300	1.04700764291e-13	5.19676485395e-6	.3267	1.769159e-14
2.2727	2.7646	.4400	0e0	4.05147877876e-6	.2912	6.791416e-15
2.2222	2.8274	.4500	4.50549068782e-15	3.15933480139e-6	.2603	4.887924e-15
2.1739	2.8903	.4600	8.83136847681e-16	2.46019774803e-6	.2332	7.883606e-16
2.1277	2.9531	.4700	1.66624643275e-16	1.91821171335e-6	.2094	2.422466e-16
2.0833	3.0159	.4800	3.03006615345e-17	1.49388388476e-6	.1885	6.945369e-17
2.0408	3.0788	.4900	5.30434403607e-18	1.16178258279e-6	.1701	1.857436e-17
2.0000	3.1416	.5000	8.94284297189e-19	9.03705972196e-7	.1537	4.733228e-18
1.9608	3.2044	.5100	1.45210361127e-19	7.02712076379e-7	.1392	1.077706e-18
1.9231	3.2673	.5200	2.27097826367e-20	5.46373072744e-7	.1264	2.334433e-19
1.8868	3.3301	.5300	3.42083912985e-21	4.25248734203e-7	.1149	5.377488e-20
1.8519	3.3929	.5400	4.96328526368e-22	3.30822933129e-7	.1046	1.225986e-20
1.8182	3.4557	.5500	6.93439928255e-23	2.57497814416e-7	.0955	2.541036e-21
1.7857	3.5186	.5600	9.33765730955e-24	2.00356366785e-7	.0872	5.862296e-22
1.7544	3.5814	.5700	1.21085166598e-24	1.55883808152e-7	.0798	1.473506e-22
1.7241	3.6443	.5800	1.51255268251e-25	1.21288567753e-7	.0732	3.722486e-23
1.6949	3.7071	.5900	1.82004263198e-26	9.43526572886e-8	.0673	8.870006e-24
1.6667	3.7699	.6000	2.10978838744e-27	7.34088567553e-8	.0618	1.014136e-24
1.6393	3.8327	.6100	2.35602691472e-28	5.71491175268e-8	.0569	1.079336e-25
1.6129	3.8956	.6200	2.53462745716e-29	1.42791403807e-31	.0524	1.069246e-63

SIGNIFICANT HEAVE	1.29
MAXIMUM HEAVE	2.40
LINE STRETCH @ BUOY PRETENSION	15.99
MAXIMUM LINE TENSION	460.00
MINIMUM LINE TENSION	340.00

VERTICAL EXCITATION AND RESPONSE OF A SINGLE SPHERICAL SUBMERGED BUOY

BUOY NET BUOYANCY (KIPS)	70.00
BUOY RADIUS (FT)	9.21
BUOY WEIGHT (KIPS IN AIR)	35.00
WATER DEPTH (FT)	10,000.00
BUOY IMERSION (FT)	150.00
AE (KIPS)	146,000.00
STIFFNESS (K/FT)	14.81
HEAVE NATURAL PERIOD	2.66
ADDED MASS (KIPS SEC²/FT)	1.57
BUOY MASS (KIPS SEC²/FT)	1.09

SEASTATE

SIGNIFICANT HEIGHT (FT)	40.00
SIGNIFICANT PERIOD (SEC)	17.00

WAVE PERIOD (SEC)	WAVE FREQUENCY (RAD/SEC)	WAVE FREQUENCY (HZ)	RAO OF VERTICAL FORCE ON BUOY (KIPS/FT)	HEAVE RAO (FT/FT)	PIERSON-MOSKOWITZ WAVE SPECTRUM	HEAVE RESPONSE SPE
25.0000	.2513	.0400	7.38683904536e-2	.0000	430.1969	1.094063e-2
20.0000	.3142	.0500	9.78167291911e-2	6.719013078277e-3	2278.9379	1.016019e-1
16.6667	.3770	.0600	1.12054335098e-1	8.671223108226e-3	5445.6884	1.551957e-1
14.2857	.4398	.0700	1.23301045046e-1	8.534555102376e-3	1733.4709	1.586002e-1
12.5000	.5027	.0800	1.22221335812e-1	8.085527768e-3	1023.6028	8.150886e-2
11.1111	.5655	.0900	1.13155226223e-1	7.424956922e-3	677.5562	5.439622e-2
10.0000	.6283	.1000	9.85004809301e-2	6.442917366e-3	476.0893	3.743933e-2
9.0909	.6911	.1100	8.10025711591e-2	5.299743740005e-3	347.8355	2.784733e-2
8.3333	.7540	.1200	6.31505118274e-2	4.133401718674e-3	262.5328	2.082714e-2
7.6923	.8168	.1300	4.67081168219e-2	3.057287403345e-3	182.9338	1.452532e-2
7.1429	.8796	.1400	3.30391435512e-2	2.162078120658e-3	124.6751	9.895102e-3
6.6667	.9425	.1500	2.22754721358e-2	1.457286308144e-3	85.5858	6.786993e-3
6.2500	1.0053	.1600	1.44126694688e-2	1.172699063467e-3	61.0889	4.951175e-3
5.8824	1.0681	.1700	8.86424886802e-3	7.418361362816e-4	44.9890	3.566993e-3
5.5556	1.1310	.1800	5.38868269405e-3	4.503168732e-4	32.7381	2.595566e-3
5.2632	1.1938	.1900	3.08263629472e-3	2.625570085e-4	24.1388	1.913538e-3
5.0000	1.2566	.2000	1.78852324728e-3	1.471606831594e-4	19.2293	1.525385e-3
4.7619	1.3195	.2100	1.02799627861e-3	8.385795249e-5	14.9024	1.182388e-3
4.5455	1.3823	.2200	5.86117971158e-4	7.935505804e-5	11.6920	1.522388e-3
4.3478	1.4451	.2300	3.32137188971e-4	1.116272782e-5	9.2752	1.552712e-8
4.1667	1.5080	.2400	1.85555392912e-5	6.040267482e-6	7.4330	1.552712e-8
4.0000	1.5708	.2500	8.95553292912e-5	2.938028048782e-6	6.0123	1.552712e-8
3.8462	1.6336	.2600	3.94631252085e-5	2.938028048782e-6	4.9079	1.552712e-8
3.7037	1.6965	.2700	1.67080524402e-5	5.842527368682e-6	4.0333	1.552712e-8
3.5714	1.7593	.2800	6.79830302595e-6	6.077629311975e-6	3.3209	1.552712e-8
3.4483	1.8221	.2900	2.65824340278e-6	5.086783764488e-7	2.7483	2.719866e-12
3.3333	1.8850	.2900	6.90850917853e-7	3.780051616559e-7	2.2755	4.000266e-13
3.2258	1.9478	.3000	3.61533818865e-7	1.540106731101e-7	1.8723	3.346776e-14
3.1250	2.0106	.3100	1.55238191776e-7	6.963337385686e-8	1.5423	7.258376e-15
3.0303	2.0735	.3200	4.50622362102e-8	2.313211303146e-8	1.2693	8.968576e-16
2.9412	2.1363	.3300	1.53399174164e-8	8.550658716le-9	1.0455	1.045726e-16
2.8571	2.1991	.3400	7.23391830426e-9	3.057919052926-9	.8611	1.146856e-17
2.7778	2.2619	.3500	1.17008986514e-9	1.053666079066-9	.7092	1.172076e-18
2.7027	2.3248	.3600	3.54495274868e-10	3.467411637586-10	.5841	1.098086e-19
2.6316	2.3876	.3700	5.78419241127e-10	1.073309128726-10	.4811	9.142906e-21
2.5641	2.4504	.3800	2.87313524599e-11	3.062958288766-10	.3962	6.504216e-22
2.5000	2.5133	.3900	2.62180691179e-12	7.823972987e-12	.3264	3.823716e-23
2.4390	2.5761	.4000	6.70148085002e-12	1.888031775e-12	.2689	1.802726e-24
2.3810	2.6389	.4100	1.64890558426e-13	4.153784e-13	.2215	7.062726e-26
2.3256	2.7018	.4200	3.90574550998e-13	8.941222078726-14	.1825	2.022726e-26
2.2727	2.7646	.4300	8.60679413371e-14	1.723438648876-14	.1504	4.092726e-27
2.2222	2.8274	.4400	1.95556625658e-14	3.193048889836-15	.1239	6.092726e-28
2.1739	2.8903	.4500	1e0	1.499829764926-15	.1021	7.092726e-29
2.1277	2.9531	.4600	8.41520653467e-16	1.121228342876-16	.0841	7.292669e-30
2.0833	3.0159	.4700	1.24267884097e-16	2.268955918926-17	.0693	6.538217e-31
2.0408	3.0788	.4800	1.17327996099e-16	3.353073532826-18	.0571	5.273238e-33
2.0000	3.1416	.4900	5.15827443371e-17	5.533522111476e-18	.0471	4.041326e-35
1.9608	3.2044	.5000	8.87232677396e-18	8.849060030726-20	.0388	2.354816e-36
1.9231	3.2673	.5100	1.39767840478e-19	1.369795219826-20	.0320	1.774596e-38
1.8868	3.3301	.5200	1.67031494718e-19	2.051818458026-21	.0264	1.331656e-39
1.8519	3.3929	.5300	2.27121248488e-20	2.973725108176-22	.0217	2.884326e-41
1.8182	3.4557	.5400	4.24165811255e-21	4.164258419396-23	.0179	5.861596e-43
1.7857	3.5186	.5500	6.38933021826e-22	5.638689219396-23	.0148	1.116576e-42
1.7544	3.5814	.5600	9.27026010667e-23	2.976084254226-24	.0122	1.949006e-48
1.7241	3.6443	.5700	1.29555772231e-23	6.351742290736-25	.0101	3.335896e-48
1.6949	3.7071	.5800	1.74405675773e-24	1.376760471le-26	.0083	5.163196e-20
1.6667	3.7699	.5900	2.26158870542e-25	1.350809433038e-27	.0069	7.372416e-52
1.6393	3.8327	.6000	2.82507525588e-26	2.522608723926-28	.0057	9.372496e-53
1.6129	3.8956	.6100	3.38623362017e-27	2.675515139496-29	.0047	1.315876-55
		.6200	3.84056560604e-28	2.776093695086-30	.0039	1.293956-57
			4.00508233971e-29	1.816900358076-31	.0032	1.734476-59
			4.73409335815e-30		.0026	1.794366-61
					.0524	1.731146-63

SIGNIFICANT HEAVE	.38
MAXIMUM HEAVE	.70
LINE STRETCH @ BUOY PRETENSION	4.72
MAXIMUM LINE TENSION	80.41
MINIMUM LINE TENSION	59.59

VERTICAL EXCITATION AND RESPONSE OF A SINGLE SPHERICAL SUBMERGED BUOY

BUOY NET BUOYANCY (KIPS)	100.00
BUOY RADIUS (FT)	8.31
BUOY WEIGHT (KIPS IN AIR)	43.50
WATER DEPTH (FT)	10,000.00
BUOY IMERSION (FT)	150.00
AE (KIPS)	146,000.00
STIFFNESS (K/FT)	14.81
HEAVE NATURAL PERIOD	3.06
ADDED MASS (KIPS SEC²/FT)	9.12
BUOY MASS (KIPS SEC²/FT)	1.35

SEASTATE

SIGNIFICANT HEIGHT (FT)	40.00
SIGNIFICANT PERIOD (SEC)	17.00

WAVE PERIOD (SEC)	WAVE FREQUENCY (RAD/SEC)	WAVE FREQUENCY (HZ)	RAO OF VERTICAL FORCE ON BUOY (KIPS/FT)	HEAVE RAO (FT/FT)	PIERSON-MOSKOWITZ WAVE SPECTRUM	HEAVE RESPONSE SPE
25.0000	.2513	.0400	1.91367728044e-1	.0000	430.1969	2.075595e-2
20.0000	.3142	.0500	1.34226828803e-1	9.27505162094e-3	226.9269	1.835562e-2
16.6667	.3770	.0600	1.57886160493e-1	1.10233276261e-2	133.6888	1.849188e-2
14.2857	.4398	.0700	1.69220912438e-1	1.19602547129e-2	85.7333	1.774992e-2
12.5000	.5027	.0800	1.67721254704e-1	1.20278863776e-2	58.9228	1.648116e-2
11.1111	.5655	.0900	1.55280652438e-1	1.13220997723e-2	42.5333	1.488390e-2
10.0000	.6283	.1000	1.35126972179e-1	1.00435169959e-2	31.8855	1.308535e-2
9.0909	.6911	.1100	1.11157735569e-1	8.43679810251e-3	24.4355	1.125667e-2
8.3333	.7540	.1200	8.69158837399e-2	6.73572018256e-3	19.1228	9.574735e-3
7.6923	.8168	.1300	6.54213067487e-2	5.12547395271e-3	15.2771	7.959461e-3
7.1429	.8796	.1400	4.82300893338e-2	3.75577327577e-3	12.4151	6.201827e-3
6.6667	.9425	.1500	3.52280032443e-2	2.75917288296e-3	10.2868	4.504102e-3
6.2500	1.0053	.1600	2.56409137381e-2	1.99688387271e-3	8.6868	3.034774e-3
5.8824	1.0681	.1700	1.90852137247e-2	1.48643801536e-3	7.4883	1.871567e-3
5.5556	1.1310	.1800	1.41798329515e-2	1.10618337241e-3	6.5521	1.124007e-3
5.2632	1.1938	.1900	4.01609101704e-3	6.80422901536e-4	5.8382	6.190088e-4
5.0000	1.2566	.2000	2.17203542412e-3	4.02773387384e-4	5.3205	3.556432e-4
4.7619	1.3195	.2100	1.12663247412e-3	2.29650792913e-4	4.9058	1.882132e-4
4.5455	1.3823	.2200	5.60727857333e-4	1.26276451717e-4	4.5769	9.664396e-5
4.3478	1.4451	.2300	2.67886860044e-4	7.03906294235e-5	4.3200	4.868115e-5
4.1667	1.5080	.2400	1.28948065064e-4	3.44044979371e-5	4.1233	2.426181e-5
4.0000	1.5708	.2500	6.21543510888e-5	1.70903178972e-5	3.9756	1.236923e-5
3.8462	1.6336	.2600	3.00260387125e-5	8.22871470624e-6	3.8649	6.321119e-6
3.7037	1.6965	.2700	1.45235210755e-5	3.85560727945e-6	3.7803	3.264685e-6
3.5714	1.7593	.2800	7.02613867255e-6	1.77267817288e-6	3.7140	1.681904e-6
3.4483	1.8221	.2900	3.37207018189e-6	7.71073131192e-7	3.6600	8.661562e-7
3.3333	1.8850	.3000	1.62147723418e-6	3.30376246285e-7	3.6145	4.455204e-7
3.2258	1.9478	.3100	7.75534009336e-7	1.39243481293e-7	3.5753	2.270937e-7
3.1250	2.0106	.3200	3.71133196019e-8	5.82276214623e-8	3.5411	1.155774e-7
3.0303	2.0735	.3300	1.85718401114e-8	2.90766988523e-8	3.5107	5.888135e-8
2.9412	2.1363	.3400	5.74992301666e-9	1.40726078288e-8	3.4835	2.999235e-8
2.8571	2.1991	.3500	1.71294574556e-9	6.07990112254e-9	3.4590	1.526634e-8
2.7778	2.2619	.3600	4.91068443335e-10	1.71302774315e-9	3.4370	7.780244e-9
2.7027	2.3248	.3700	1.35486543353e-10	4.41863685666e-10	.9141	2.284666e-9
2.6316	2.3876	.3800	3.50783425997e-11	1.07668843654e-10	.7940	9.204990e-10
2.5641	2.4504	.3900	8.16627304897e-12	2.52680938456e-11	.6924	4.421433e-10
2.5000	2.5133	.4000	1.85225153077e-12	5.75804830539e-12	.6060	2.009326e-10
2.4390	2.5761	.4100	5.38675586623e-13	1.27715427943e-12	.5323	8.681686e-11
2.3810	2.6389	.4200	1.33225288214e-13	2.77258811399e-13	.4690	3.565476e-11
2.3256	2.7018	.4300	2.68357422237e-14	5.78603885493e-14	.4145	1.538236e-11
2.2727	2.7646	.4400	7.90670147523e-15	1.18077076371e-14	.3675	6.123626e-12
2.2222	2.8274	.4500	1.15479735577e-15	2.26270478523e-15	.3267	2.784725e-12
2.1739	2.8903	.4600	2.69232811352e-16	8.33978826167e-17	.2912	1.220766e-13
2.1277	2.9531	.4700	4.27253280017e-17	1.50119476884e-17	.2603	5.181048e-13
2.0833	3.0159	.4800	7.76633052926e-18	2.61437713728e-18	.2333	2.255572e-13
2.0408	3.0788	.4900	1.35955081304e-18	4.40396438957e-19	.2098	9.733177e-14
2.0000	3.1416	.5000	2.29213062929e-19	7.17111742451e-20	.1701	1.775436e-14
1.9608	3.2044	.5100	3.72187654487e-20	1.12844332767e-20	.1552	7.842776e-15
1.9231	3.2673	.5200	5.82072038356e-21	1.71551601046e-21	.1392	3.447726e-15
1.8868	3.3301	.5300	8.77291661248e-22	2.51896348144e-22	.1264	1.527458e-15
1.8519	3.3929	.5400	1.27211343996e-22	3.57162977443e-23	.1149	6.774097e-16
1.8182	3.4558	.5500	1.77781178814e-23	4.88929932517e-24	.1046	3.004109e-16
1.7857	3.5186	.5600	1.30749516284e-23	6.60847477182e-25	.0955	1.331754e-16
1.7544	3.5814	.5700	5.10325110808e-23	8.74031322175e-26	.0872	5.905311e-17
1.7241	3.6442	.5800	3.87673838706e-23	1.01452331098e-26	.0798	2.618146e-17
1.6949	3.7071	.5900	4.66424228406e-27	1.08269116372e-27	.0732	1.160634e-17
1.6667	3.7699	.6000	5.40757614178e-28	1.08329688526e-28	.0672	5.145873e-18
1.6393	3.8327	.6100	6.03870639459e-29	1.02900315272e-29	.0618	2.280624e-18
1.6129	3.8956	.6200	6.49647684372e-30	1.87430098026e-31	.0524	1.47007e-63

SIGNIFICANT HEAVE	.52
MAXIMUM HEAVE	.97
LINE STRETCH @ BUOY PRETENSION	6.74
MAXIMUM LINE TENSION	114.38
MINIMUM LINE TENSION	85.62

VERTICAL EXCITATION AND RESPONSE OF A SINGLE SPHERICAL SUBMERGED BUOY

BUOY NET BUOYANCY (KIPS)	200.00
BUOY RADIUS (FT)	10.03
BUOY WEIGHT (KIPS IN AIR)	80.60
WATER DEPTH (FT)	10,000.00
BUOY IMMERSION (FT)	150.00
AE (KIPS)	146,000.00
STIFFNESS (K/FT)	14.81
HEAVE NATURAL PERIOD	4.23
ADDED MASS (KIPS SEC²/FT)	4.53
BUOY MASS (KIPS SEC²/FT)	2.50

SEASTATE

SIGNIFICANT HEIGHT (FT)	40.00
SIGNIFICANT PERIOD (SEC)	17.00

WAVE PERIOD (SEC)	WAVE FREQUENCY (RAD/SEC)	WAVE FREQUENCY (HZ)	RAO OF VERTICAL FORCE ON BUOY (KIPS/FT)	HEAVE RAO (FT/FT)	PIERSON-MOSKOWITZ WAVE SPECTRUM	HEAVE RESPONSE SPE
25.0000	.2513	.0400	1.986408889656e-1	.0000	.430.1269	8.198524e-2
20.0000	.3142	.0500	2.230309213733e-1	1.858332643963e-2	2249.9679	9.270037e-1
16.6667	.3770	.0600	2.083824781774e-1	5.211380074431e-2	2445.6884	1.211277e0
14.2857	.4398	.0700	1.815211738634e-1	9.509970713726e-2	1733.2500	1.511417e0
12.5000	.5027	.0800	1.482677195112e-1	1.501808596296e-1	1093.2028	1.811431e0
11.1111	.5655	.0900	1.125875758459e-1	2.396924045088e-1	677.5525	2.111324e0
10.0000	.6283	.1000	7.784729193936e-2	3.170902173315e-1	422.7883	2.411098e0
9.0909	.6911	.1100	4.948527111295e-2	3.868640089852e-1	262.8422	2.710754e0
8.3333	.7540	.1200	2.778834706599e-2	4.535748935339e-1	165.9338	3.010293e0
7.6923	.8168	.1300	1.426917239081e-2	5.208013135382e-1	106.2551	3.309714e0
7.1429	.8796	.1400	7.134534703829e-3	5.913277884302e-1	68.4751	3.609018e0
6.6667	.9425	.1500	3.883032170866e-3	6.658811220138e-1	44.0858	3.908204e0
6.2500	1.0053	.1600	2.082288304766e-3	7.452681427038e-1	28.3891	4.207272e0
5.8824	1.0681	.1700	1.124884682123e-3	8.262814274147e-1	18.2882	4.506223e0
5.5556	1.1310	.1800	6.368211733375e-4	9.113524997748e-1	11.7890	4.805056e0
5.2632	1.1938	.1900	3.594844850116e-4	1.000564996248e0	7.5961	5.103771e0
5.0000	1.2566	.2000	2.026335745605e-4	1.097499284238e0	4.8938	5.402369e0
4.7619	1.3195	.2100	1.149972258695e-4	1.201749229881e0	3.1532	5.700850e0
4.5455	1.3823	.2200	6.558099756676e-5	1.311160326533e0	2.0312	5.999213e0
4.3478	1.4451	.2300	3.788803113611e-5	1.426922753836e0	1.3085	6.297459e0
4.1667	1.5080	.2400	2.208931384841e-5	1.550392275383e0	.8429	6.595588e0
4.0000	1.5708	.2500	1.299537138041e-5	1.682625482886e0	.5431	6.893599e0
3.8462	1.6336	.2600	7.662549290028e-6	1.826821918024e0	.3499	7.191493e0
3.7037	1.6965	.2700	4.508169026802e-6	1.982915168342e0	.2254	7.489270e0
3.5714	1.7593	.2800	2.662177268944e-6	2.152412231588e0	.1452	7.786930e0
3.4483	1.8221	.2900	1.582814455944e-6	2.337973978842e0	.0936	8.084473e0
3.3333	1.8850	.3000	9.422191811647e-7	2.541329882785e0	.0603	8.381899e0
3.2258	1.9478	.3100	5.650988818743e-7	2.764172177525e0	.0389	8.679208e0
3.1250	2.0106	.3200	3.380988187743e-7	3.008207177525e0	.0251	8.976400e0
3.0303	2.0735	.3300	2.030504236738e-7	3.275244244725e0	.0162	9.273475e0
2.9412	2.1363	.3400	1.130954142074e-7	3.567200139135e0	.0104	9.570434e0
2.8571	2.1991	.3500	6.639350423238e-8	3.885968701e0	.0067	9.867276e0
2.7778	2.2619	.3600	3.926758827016e-8	4.233139687016e0	.0043	1.016400e1
2.7027	2.3248	.3700	2.655004533104e-8	4.611922393946e0	.0028	1.046060e1
2.6316	2.3876	.3800	1.705055026881e-8	5.024607578749e0	.0018	1.075708e1
2.5641	2.4504	.3900	1.093167206881e-8	5.474611961104e0	.0012	1.105344e1
2.5000	2.5133	.4000	7.021072554e-9	5.965371196104e0	.0008	1.134968e1
2.4390	2.5761	.4100	4.503103277731e-9	6.500241949935e0	.0005	1.164580e1
2.3810	2.6389	.4200	2.890301432519e-9	7.082160440012e0	.0003	1.194180e1
2.3256	2.7018	.4300	1.854314290728e-9	7.715946417507e0	.0002	1.223769e1
2.2727	2.7646	.4400	1.189275076881e-9	8.405294617507e0	.0001	1.253345e1
2.2222	2.8274	.4500	7.629494914837e-10	9.154850762161e0	.0001	1.282910e1
2.1739	2.8903	.4600	4.893644886603e-10	9.969116762161e0	.0000	1.312464e1
2.1277	2.9531	.4700	3.138484348666e-10	1.085521684744e1	.0000	1.342006e1
2.0833	3.0159	.4800	2.012885415298e-10	1.182014684744e1	.0000	1.371537e1
2.0408	3.0788	.4900	1.290941652463e-10	1.287014684744e1	.0000	1.401057e1
2.0000	3.1416	.5000	8.278477778429e-11	1.402014684744e1	.0000	1.430566e1
1.9608	3.2044	.5100	5.309421470729e-11	1.527014684744e1	.0000	1.460064e1
1.9231	3.2673	.5200	3.404713993496e-11	1.663014684744e1	.0000	1.489551e1
1.8868	3.3301	.5300	2.182982617e-11	1.811014684744e1	.0000	1.519027e1
1.8519	3.3929	.5400	1.399588396e-11	1.972014684744e1	.0000	1.548492e1
1.8182	3.4557	.5500	8.974882823296e-12	2.147014684744e1	.0000	1.577946e1
1.7857	3.5186	.5600	5.754830984296e-12	2.337014684744e1	.0000	1.607390e1
1.7544	3.5814	.5700	3.689976102e-12	2.543014684744e1	.0000	1.636823e1
1.7241	3.6443	.5800	2.366168107799e-12	2.766014684744e1	.0000	1.666245e1
1.6949	3.7071	.5900	1.517288331921e-12	3.007014684744e1	.0000	1.695657e1
1.6667	3.7699	.6000	9.731452643456e-13	3.267014684744e1	.0000	1.725059e1
1.6393	3.8327	.6100	1.059672334236e-27	3.547014684744e1	.0000	1.754450e1
1.6129	3.8956	.6200	1.183349014226e-28	3.847014684744e1	.0000	1.783831e1
			1.273054022697e-29	1.455100715536e-31	.0524	1.110340e-83

SIGNIFICANT HEAVE	1.07
MAXIMUM HEAVE	1.99
LINE STRETCH @ BUOY PRETENSION	13.48
MAXIMUM LINE TENSION	226.52
MINIMUM LINE TENSION	170.48

VERTICAL EXCITATION AND RESPONSE OF A SINGLE SPHERICAL SUBMERGED BUOY

BUOY NET BUOYANCY (KIPS)	400.00
BUOY RADIUS (FT)	12.61
BUOY WEIGHT (KIPS IN AIR)	158.20
WATER DEPTH (FT)	10,000.00
BUOY IMERSION (FT)	150.00
AE (KIPS)	146,000.00
STIFFNESS (K/FT)	14.80
HEAVE NATURAL PERIOD	5.96
ADDED MASS (KIPS SEC²/FT)	8.49
BUOY MASS (KIPS SEC²/FT)	4.92

SEASTATE

SIGNIFICANT HEIGHT (FT)	40.00
SIGNIFICANT PERIOD (SEC)	17.00

WAVE PERIOD (SEC)	WAVE FREQUENCY (RAD/SEC)	WAVE FREQUENCY (HZ)	RAO OF VERTICAL FORCE ON BUOY (KIPS/FT)	HEAVE RAO (FT/FT)	PIERSON-MOSKOWITZ WAVE SPECTRUM	HEAVE RESPONSE SPE
25.0000	.2513	.0400	3.95490406495e-1	.0000	430.1969	3.447150e-1
20.0000	.3142	.0500	5.33268292708e-1	3.87802814264e-2	2249.9579	3.383787[illegible]e0
16.6667	.3770	.0600	6.15880751709e-1	4.76224794869e-2	2245.6884	5.548232[illegible]e0
14.2857	.4398	.0700	6.19122781027e-1	5.38481877416e-2	1733.4509	5.422316e0
12.5000	.5027	.0800	6.04371420169e-1	5.69824482664e-2	1093.2028	3.550978e0
11.1111	.5655	.0900	5.77370301121e-1	5.71168648281e-2	677.5523	2.210472e0
10.0000	.6283	.1000	5.43703203185e-1	5.47597689209e-2	426.0805	1.574222e0
9.0909	.6911	.1100	5.07745840464e-1	5.06774584046e-2	272.8553	1.058332e-1
8.3333	.7540	.1200	4.73045299005e-1	4.57304529905e-2	183.5338	7.381077e-1
7.6923	.8168	.1300	4.40755333665e-1	4.07553336657e-2	132.4569	5.190873e-1
7.1429	.8796	.1400	4.11025442354e-1	3.62511544254e-2	98.6853	3.954319e-1
6.6667	.9425	.1500	3.83106274525e-1	3.20975769098e-2	74.6882	2.978781e-2
6.2500	1.0053	.1600	3.57066217258e-1	2.83126931252e-2	61.2886	2.365968e-2
5.8824	1.0681	.1700	3.32502745856e-2	2.48752458509e-2	44.2890	1.493881e-2
5.5556	1.1310	.1800	3.09721997858e-2	2.17721997858e-2	33.3561	1.065084e-3
5.2632	1.1938	.1900	2.87680491182e-2	1.89680491182e-2	25.1382	7.008196e-3
5.0000	1.2566	.2000	8.54428662164e-3	1.64428662164e-3	19.2263	5.350845e-5
4.7619	1.3195	.2100	4.39260342402e-3	1.39260342402e-3	14.9024	4.093429e-5
4.5455	1.3823	.2200	2.18770227379e-3	1.18770227379e-3	11.6920	3.253746e-6
4.3478	1.4451	.2300	1.04517172494e-3	1.02517172494e-3	9.2752	2.558178e-7
4.1667	1.5080	.2400	4.79479198351e-4	8.74791983510e-4	7.4336	2.038556e-8
4.0000	1.5708	.2500	2.11285062716e-4	7.51285062716e-4	6.0123	1.638825e-9
3.8462	1.6336	.2600	8.94546965346e-5	6.44546965346e-4	4.9026	1.340254e-10
3.7037	1.6965	.2700	3.63980261183e-5	5.53980261183e-4	4.0333	1.104529e-11
3.5714	1.7593	.2800	1.47356285668e-5	4.75356285668e-4	3.3442	9.178144e-13
3.4483	1.8221	.2900	5.95318887427e-6	4.09531888743e-4	2.7886	7.634806e-14
3.3333	1.8850	.3000	2.40356707437e-6	3.52403567074e-4	2.3392	6.414699e-15
3.2258	1.9478	.3100	9.73148612517e-7	3.03148612517e-4	1.9743	5.892111e-15
3.1250	2.0106	.3200	3.95170817703e-7	2.61170817703e-4	1.6761	5.872094e-16
3.0303	2.0734	.3300	1.61758067798e-7	2.25758067798e-4	1.4303	5.702084e-17
2.9412	2.1363	.3400	6.62396637267e-8	1.94396637267e-4	1.2265	3.534129e-18
2.8571	2.1991	.3500	2.73315837667e-8	1.67815837667e-4	1.0565	2.490579e-19
2.7778	2.2619	.3600	1.13206206173e-8	1.44706206173e-4	.9141	1.644184e-20
2.7027	2.3248	.3700	4.71133223256e-9	1.24633223256e-4	.7940	1.012006e-21
2.6316	2.3876	.3800	1.96106383304e-10	1.07106383304e-4	.6924	5.872874e-23
2.5641	2.4504	.3900	1.40371202747e-10	9.17371202747e-5	.6060	3.174370e-24
2.5000	2.5133	.4000	3.58796417415e-11	7.88796417415e-5	.5323	1.733706e-25
2.4390	2.5761	.4100	8.82821915822e-12	6.78821915822e-5	.4692	9.669669e-27
2.3810	2.6389	.4200	2.09113109128e-12	5.84911310913e-5	.4142	5.388436e-28
2.3256	2.7018	.4300	4.76868062866e-13	5.04768680629e-5	.3657	3.026790e-29
2.2727	2.7646	.4400	1.04700764291e-13	4.34700764291e-5	.3227	1.687554e-30
2.2222	2.8274	.4500	1e0	3.74999999999e-5	.2846	9.829795e-32
2.1739	2.8903	.4600	4.50549068782e-15	3.23254981732e-5	.2503	5.625850e-33
2.1277	2.9531	.4700	8.83138847681e-16	2.78138847681e-5	.2202	3.194637e-34
2.0833	3.0159	.4800	1.60662621422e-16	2.39662621422e-5	.1941	1.842435e-35
2.0408	3.0788	.4900	2.80436033442e-17	2.06436033442e-5	.1705	1.052445e-36
2.0000	3.1416	.5000	4.80423239607e-18	1.77923239607e-5	.1504	6.037886e-38
1.9608	3.2044	.5100	8.02457977182e-19	1.53257977182e-5	.1327	3.451788e-40
1.9231	3.2673	.5200	1.32610511477e-19	1.32010511477e-5	.1172	1.971986e-41
1.8868	3.3301	.5300	2.12709782397e-20	1.13709782397e-5	.1034	1.126689e-42
1.8519	3.3929	.5400	3.42083912985e-21	9.75083912985e-6	.0913	6.436288e-44
1.8182	3.4558	.5500	5.46362228255e-22	8.36362228255e-6	.0805	3.678856e-45
1.7857	3.5186	.5600	8.33765730955e-23	7.17765730955e-6	.0711	2.102489e-46
1.7544	3.5814	.5700	1.21085166598e-24	6.15585166598e-6	.0628	1.201942e-47
1.7241	3.6443	.5800	1.51252568251e-25	5.28252568251e-6	.0554	6.869332e-49
1.6949	3.7071	.5900	1.82004663198e-26	4.53004663198e-6	.0490	3.926703e-50
1.6667	3.7699	.6000	2.10978838744e-27	3.89078838744e-6	.0433	2.244682e-51
1.6393	3.8327	.6100	2.35602241273e-28	3.34102241273e-6	.0383	1.282393e-52
1.6129	3.8956	.6200	2.55462745716e-29	2.87162745716e-6	.0339	7.329160e-54
				1.35149430681e-31	.0524	9.57856e-84

SIGNIFICANT HEAVE	2.40
MAXIMUM HEAVE	4.46
LINE STRETCH @ BUOY PRETENSION	26.95
MAXIMUM LINE TENSION	499.11
MINIMUM LINE TENSION	333.89

APPENDIX J - NOMINAL WATCH CIRCLE DESIGNS

J.1 Preferred Designs

J.2 Alternate Designs

Appendix J.1 - Preferred Designs

DEEPWATER, ARAMID MOORING LINE JIP
CASE t1a16n
1500 ft 10% 100 kip buoy

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG

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|-------------------\
|                    \
|     +X -FWD--->     |  0 DEG <--
|     Y  \            |  BOW
|     |   \          /
|-----STBD----\------/
|     |        \
|     \|/        \<-- + ANGLE CLOCKWISE
```

CATENARY OPTIMIZATION - NO

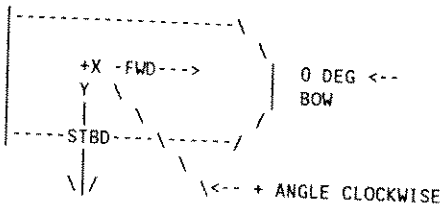
INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO



(2) T1A16N

T1A16N
2500 Ft Platform line
125 Kip buoy

NE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
NE TYPE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EGREES - CLOCKWISE FROM BOW	11.3	33.8	56.3	78.8	101.3	123.8	146.3	168.8	-168.8	-146.3	-123.8	-101.3	-78.8	-56.3	-33.8	-11.3
AIRLEAD LOCATION X(FT)	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0	132.0
AIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
NITIAL TENSION (KIPS)	167.3	167.3	167.3	167.3	167.3	167.3	167.3	167.3	167.3	167.3	167.3	167.3	167.3	167.3	167.3	167.3

NITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	1500.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	1500.0
LINE MATERIAL	ARAMID
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	2.19
LINE B.S. (KIPS)	3641.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	146000.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	ARAMID
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	1500.0
WEIGHT IN WATER (LB/FT)	2.19
LINE B.S. (KIPS)	3641.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	146000.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.625"
LINE LENGTH (FT)	150.0
WEIGHT IN WATER (LB/FT)	57.26
LINE B.S. (KIPS)	3634.0
AREA (SQ IN)	24.85
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-125.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.625"
LINE LENGTH (FT)	150.0
WEIGHT IN WATER (LB/FT)	57.26
LINE B.S. (KIPS)	3634.0
AREA (SQ IN)	24.85
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	ARAMID
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	1110.0
WEIGHT IN WATER (LB/FT)	2.19
LINE B.S. (KIPS)	3641.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	146000.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.5 "
LINE LENGTH (FT)	90.0
WEIGHT IN WATER (LB/FT)	250.01
LINE B.S. (KIPS)	3038.0
AREA (SQ IN)	23.75
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	5800.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.25 "
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	.01
LINE B.S. (KIPS)	9999.0
AREA (SQ IN)	1000.00
APP.MOD. OF ELAS.(KSI)	99999.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
1	-17.9	.0	14.1	3562.00	1438.00	3562.0	.0	.0				
2	14.2	83.7	84.9	4422.84	1438.00	1000.0	83.7	.0	2.71	-125.00	2014.74	150.51
3	46.2	185.9	191.6	4644.81	1438.00	1000.0	185.9	.0	5.40	-125.00	2349.34	243.44
4	78.3	275.1	286.0	4694.57	1438.00	1000.0	275.1	.0	7.86	-125.00	3114.40	333.91
5	110.4	361.8	378.3	4715.94	1438.00	1000.0	361.8	.0	10.27	-125.00	3380.23	424.12
6	142.4	447.0	469.1	4727.34	1438.00	1000.0	447.0	.0	12.66	-125.00	3957.50	513.80
7	174.5	532.2	560.1	4735.33	1438.00	1000.0	532.2	.0	15.06	-125.00	4534.76	603.89
8	206.6	617.4	651.0	4741.47	1438.00	1000.0	617.4	.0	17.46	-125.00	4544.02	694.22
9	238.7	701.5	741.0	4745.79	1438.00	1000.0	701.5	.0	19.83	-125.00	4425.00	783.82
10	270.7	786.7	832.0	4750.20	1438.00	1000.0	786.7	.0	22.24	-125.00	5570.28	874.42
11	334.9	956.1	1013.0	4757.24	1438.00	1000.0	956.1	.0	27.04	-125.00	11131.65	1054.92
12	399.0	1126.5	1195.1	4763.82	1438.00	1000.0	1126.5	.0	31.88	-125.00	11910.60	1236.52
13	463.1	1296.8	1377.1	4769.81	1438.00	1000.0	1296.8	.0	36.74	-125.00	13514.12	1418.23
14	527.3	1467.2	1559.1	4775.48	1438.00	1000.0	1467.2	.0	41.60	-125.00	15117.63	1600.02
15	591.4	1637.6	1741.1	4780.81	1438.00	1000.0	1637.6	.0	46.48	-125.00	16721.17	1781.86
16	655.6	1810.0	1925.0	4786.60	1438.00	1000.0	1810.0	.0	51.42	-125.00	16858.71	1965.59
17	719.7	1980.3	2107.1	4791.65	1438.00	1000.0	1980.3	.0	56.32	-125.00	19928.20	2147.50
18	783.9	2152.7	2291.0	4797.15	1438.00	1000.0	2152.7	.0	61.29	-125.00	21531.73	2331.28
19	848.0	2325.1	2474.9	4802.53	1438.00	1000.0	2325.1	.0	66.27	-125.00	23135.25	2515.08
20	912.1	2499.5	2660.7	4808.27	1438.00	1000.0	2499.5	.0	71.31	-125.00	26717.87	2700.76
21	976.3	2671.9	2844.6	4813.45	1438.00	1000.0	2671.9	.0	76.32	-125.00	24234.90	2884.59
22	1040.4	2848.3	3032.3	4819.34	1438.00	1000.0	2848.3	.0	81.44	-125.00	22356.64	3072.16
23	1104.6	3020.6	3216.2	4824.38	1438.00	1000.0	3020.6	.0	86.47	-125.00	27185.37	3256.01
24	1168.7	3197.0	3403.9	4830.18	1438.00	1000.0	3197.0	.0	91.61	-125.00	24922.27	3443.60
25	1232.8	3373.4	3591.6	4835.70	1438.00	1000.0	3373.4	.0	96.77	-125.00	26205.08	3631.20
26	1297.0	3549.8	3779.3	4841.40	1438.00	1000.0	3549.8	.0	101.94	-125.00	27487.89	3818.80
27	1361.1	3726.2	3967.0	4846.90	1438.00	1000.0	3726.2	.0	107.13	-125.00	28770.71	4006.41
28	1425.3	3902.6	4154.7	4852.45	1438.00	1000.0	3902.6	.0	112.33	-125.00	30053.53	4194.03
29	1489.4	4079.0	4342.4	4857.75	1438.00	1000.0	4079.0	.0	117.54	-125.00	31336.34	4381.66
30	1553.5	4259.3	4533.8	4863.71	1438.00	1000.0	4259.3	.0	122.87	-125.00	35881.07	4573.02
31	1617.7	4439.7	4725.3	4869.60	1438.00	1000.0	4439.7	.0	128.21	-125.00	50852.94	4764.39
32	1681.8	4616.1	4913.0	4874.88	1438.00	1000.0	4616.1	.0	133.47	-125.00	35184.80	4952.04
33	1746.0	4796.5	5104.4	4880.75	1438.00	1000.0	4796.5	.0	138.84	-125.00	40114.37	5143.42
34	1810.1	4976.9	5295.9	4886.43	1438.00	1000.0	4976.9	.0	144.22	-125.00	41525.46	5334.81
35	1874.2	5161.3	5491.1	4892.72	1438.00	1000.1	5161.3	.0	149.74	-125.00	39033.23	5529.94
36	1938.4	5337.7	5678.8	4897.85	1438.00	1000.1	5337.7	.0	155.04	-125.00	40316.05	5717.60
37	2002.5	5522.1	5874.0	4903.99	1438.00	1000.1	5522.1	.0	160.59	-125.00	41598.86	5912.74
38	2066.7	5706.5	6069.2	4909.94	1438.00	1000.1	5706.5	.0	166.13	-125.00	42881.69	6107.89
39	2130.8	5890.9	6264.5	4915.95	1438.00	1000.1	5890.9	.0	171.70	-125.00	44164.50	6303.05
40	2195.0	6075.3	6459.7	4922.00	1438.00	1000.1	6075.3	.0	177.29	-125.00	68170.98	6498.21
41	2259.1	6259.7	6654.9	4927.94	1438.00	1000.1	6259.7	.0	182.88	-125.00	51403.15	6693.38
42	2323.2	6444.1	6850.1	4933.93	1438.00	1000.1	6444.1	.0	188.50	-125.00	48012.96	6888.55
43	2387.4	6628.5	7045.4	4939.80	1438.00	1000.1	6628.5	.0	194.13	-125.00	49295.77	7083.72
44	2451.5	6812.9	7240.6	4945.77	1438.00	1000.1	6812.9	.0	199.77	-125.00	50578.59	7278.90
45	2515.7	6997.4	7435.8	4951.76	1438.00	1000.1	6997.4	.0	205.44	-125.00	51861.40	7474.08

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	LINE TENSION COMPONENTS HORIZONTAL (KIPS)	LINE TENSION COMPONENTS TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	FORCES ON ANCHOR VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
46	2579.8	7189.8	7638.6	4958.16	1438.00	1000.1	7189.8	.0	211.33	-125.00	37200.95	7676.78
47	2643.9	7374.2	7833.8	4964.27	1438.00	1000.1	7374.2	.0	217.02	-125.00	54427.04	7871.96
48	2708.1	7566.6	8036.6	4970.55	1438.00	1000.1	7566.6	.0	222.95	-125.00	50138.86	8074.67
49	2772.2	7751.0	8231.8	4976.39	1438.00	1000.1	7751.0	.0	228.67	-125.00	56992.66	8269.86
50	2836.4	7943.4	8434.6	4982.78	1438.00	1000.1	7943.4	.0	234.62	-125.00	40792.84	8472.58
51	2900.5	8135.8	8637.4	4989.43	1438.00	1000.1	8135.8	.0	240.60	-125.00	41690.82	8675.30
52	2964.6	8328.3	8840.2	4995.81	1438.00	1000.1	8328.3	.0	246.61	-125.00	42588.79	8878.02
53	3028.8	8520.7	9043.0	5002.08	1438.00	1000.1	8520.7	.0	252.62	-125.00	43486.75	9080.75
54	3092.9	8713.1	9245.8	5008.84	1438.00	1000.1	8713.1	.0	258.66	-125.00	57066.07	9283.48
55	3157.1	8905.5	9448.6	5014.97	1438.00	1000.1	8905.5	.0	264.68	-125.00	45282.71	9486.22
56	3221.2	9098.0	9651.4	5021.35	1438.00	1000.1	9098.0	.0	270.77	-125.00	46180.68	9688.96
57	3285.3	9290.4	9854.2	5027.85	1438.00	1000.1	9290.4	.0	276.86	-125.00	60529.70	9891.71
58	3349.5	9482.8	10057.0	5033.97	1438.00	1000.1	9482.8	.0	282.94	-125.00	47976.63	10094.46
59	3413.6	9683.2	10267.3	5041.14	1438.00	1000.1	9683.2	.0	289.31	-125.00	94258.13	10304.74
60	3477.8	9875.7	10470.1	5047.39	1438.00	1000.1	9875.7	.0	295.43	-125.00	63993.30	10507.50
61	3541.9	10076.1	10680.5	5054.29	1438.00	1000.1	10076.1	.0	301.82	-125.00	97721.72	10717.79
62	3606.0	10268.5	10883.3	5060.65	1438.00	1000.1	10268.5	.0	307.98	-125.00	66302.37	10920.56
63	3670.2	10477.0	11101.2	5067.98	1438.00	1000.1	10477.0	.0	314.65	-125.00	134913.90	11138.40
64	3734.3	10669.4	11304.0	5074.48	1438.00	1000.1	10669.4	.0	320.87	-125.00	68611.44	11341.17
65	3798.5	10869.8	11514.4	5081.36	1438.00	1000.1	10869.8	.0	327.33	-125.00	120152.50	11551.49
66	3862.6	11070.3	11724.8	5088.39	1438.00	1000.1	11070.3	.0	333.82	-125.00	122140.90	11761.81
67	3926.8	11278.7	11942.8	5095.71	1438.00	1000.1	11278.7	.0	340.56	-125.00	116120.90	11979.69
68	3990.9	11471.2	12145.6	5101.81	1438.00	1000.1	11471.2	.0	346.82	-125.00	73229.58	12182.47
69	4055.0	11679.6	12363.5	5109.25	1438.00	1000.1	11679.6	.0	353.60	-125.00	103311.30	12400.35
70	4119.2	11888.1	12581.5	5116.68	1438.00	1000.1	11888.1	.0	360.43	-125.00	134291.00	12618.25
71	4183.3	12080.5	12784.3	5123.02	1438.00	1000.1	12080.5	.0	366.78	-125.00	76693.20	12821.04
72	4247.5	12289.0	13002.3	5130.21	1438.00	1000.1	12289.0	.0	373.59	-125.00	77847.73	13038.94
73	4311.6	12497.4	13220.3	5137.77	1438.00	1000.1	12497.4	.0	380.48	-125.00	122892.40	13256.85
74	4375.7	12705.9	13438.2	5144.69	1438.00	1000.1	12705.9	.0	387.35	-125.00	124688.40	13474.77
75	4439.9	12914.3	13656.2	5152.11	1438.00	1000.1	12914.3	.0	394.27	-125.00	121967.00	13692.69
76	4504.0	13122.8	13874.2	5159.78	1438.00	1000.1	13122.8	.0	401.23	-125.00	128280.20	13910.62
77	4568.2	13331.2	14092.2	5167.20	1438.00	1000.1	13331.2	.0	408.18	-125.00	125430.60	14128.55
78	4632.3	13539.7	14310.2	5174.36	1438.00	1000.1	13539.7	.0	415.15	-125.00	131872.10	14346.49
79	4696.4	13748.2	14528.2	5181.78	1438.00	1000.1	13748.2	.0	422.15	-125.00	119346.50	14564.43
80	4760.6	13956.6	14746.2	5188.94	1438.00	1000.1	13956.6	.0	429.19	-125.00	120950.00	14782.38
81	4824.7	14181.1	14979.4	5197.43	1438.00	1000.1	14181.1	.0	436.72	-125.00	186281.30	15015.47
82	4888.9	14389.6	15197.4	5204.58	1438.00	1000.1	14389.6	.0	443.77	-125.00	134089.60	15233.43
83	4953.0	14598.0	15415.4	5212.00	1438.00	1000.1	14598.0	.0	450.89	-125.00	125760.50	15451.39
84	5017.1	14822.5	15648.6	5220.47	1438.00	1000.1	14822.5	.0	458.50	-125.00	183404.20	15684.51
85	5081.3	15031.0	15866.6	5227.38	1438.00	1000.2	15031.0	.0	465.60	-125.00	139285.00	15902.49
86	5145.4	15255.5	16099.8	5236.09	1438.00	1000.2	15255.5	.0	473.31	-125.00	120125.40	16135.62
87	5209.6	15463.9	16317.8	5243.25	1438.00	1000.2	15463.9	.0	480.50	-125.00	142748.60	16353.60
88	5273.7	15688.4	16551.1	5251.72	1438.00	1000.2	15688.4	.0	488.19	-125.00	155182.60	16586.76
89	5337.8	15896.9	16769.1	5258.88	1438.00	1000.2	15896.9	.0	495.44	-125.00	135381.60	16804.75
90	5402.0	16121.4	17002.3	5267.09	1438.00	1000.2	16121.4	.0	503.18	-125.00	120546.90	17037.91
91	5466.1	16345.8	17235.6	5275.56	1438.00	1000.2	16345.8	.0	510.99	-125.00	121958.00	17271.09
92	5530.3	16570.3	17468.8	5284.02	1438.00	1000.2	16570.3	.0	518.85	-125.00	123369.10	17504.27
93	5594.4	16794.8	17702.1	5292.48	1438.00	1000.2	16794.8	.0	526.71	-125.00	164483.00	17737.46
94	5658.6	17019.3	17935.3	5300.44	1438.00	1000.2	17019.3	.0	534.55	-125.00	131927.30	17970.65
95	5722.7	17243.8	18168.6	5308.89	1438.00	.0	17243.8	.1	542.52	-125.00	.00	18203.86
96	5786.8	17532.4	18462.8	5320.67	1438.00	.0	17532.4	64.2	552.51	-125.00	.00	18497.85
97	5851.0	17805.0	18741.8	5331.55	1438.00	.0	17805.0	128.4	562.06	-125.00	.00	18776.69

98	5915.1	18093.7	19036.0	5343.75	1438.00	.0	18093.7	192.5	572.16	-125.00	.00	19070.78
99	5979.3	18382.3	19330.3	5355.19	1438.00	.0	18382.3	256.7	582.32	-125.00	.00	19364.91

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
5	14	15	16																		
.0	.0	0.	.00	0.	456.	0.	196.	1000.	137.	140	140	140	140	140	140	140	140	140	140	140	140
3.0	.2	23.	7.81	0.	456.	1422.	199.	1000.	140.	143	143	143	143	142	141	140	139	138	137	137	138
6.0	.4	47.	7.82	0.	457.	2845.	201.	1000.	143.	145	146	146	145	144	141	139	137	135	135	135	135
9.0	.6	70.	7.83	0.	457.	4268.	204.	1000.	146.	148	150	150	148	145	142	139	135	133	132	132	133
12.0	.8	94.	7.84	0.	458.	5694.	207.	1000.	149.	151	153	153	151	147	143	138	134	131	129	129	131
15.0	1.0	117.	7.85	0.	460.	7122.	210.	1000.	152.	154	156	156	154	149	143	137	132	129	127	127	129
18.0	1.2	141.	7.87	0.	461.	8553.	214.	1000.	156.	157	160	160	157	151	144	137	131	127	124	124	127
21.0	1.4	165.	7.89	0.	463.	9987.	217.	1000.	159.	160	163	163	160	153	144	136	129	125	122	122	125
24.0	1.6	188.	7.91	0.	465.	11426.	221.	1000.	163.	163	167	167	163	155	145	136	128	123	120	120	123
27.0	1.8	212.	7.94	0.	467.	12869.	224.	1000.	166.	166	171	171	166	157	146	135	127	121	118	118	121
30.0	2.0	236.	7.97	0.	470.	14317.	228.	1000.	170.	169	175	175	169	159	146	135	125	119	116	116	119
33.0	2.2	260.	8.01	0.	473.	15771.	232.	1000.	174.	172	179	179	172	161	147	134	124	117	114	114	117
36.0	2.4	284.	8.04	0.	476.	17230.	236.	1000.	178.	176	183	183	176	163	148	134	123	115	112	112	115
39.0	2.6	309.	8.09	0.	479.	18697.	240.	1000.	182.	179	187	187	179	165	148	133	121	114	110	110	114
42.0	2.8	333.	8.01	0.	483.	20143.	244.	1000.	186.	183	192	192	183	167	149	133	120	112	108	108	112
45.0	3.0	352.	6.53	0.	485.	21242.	245.	1000.	188.	186	194	194	186	169	150	132	119	110	106	106	110
48.0	3.2	372.	6.75	0.	487.	22389.	247.	1000.	190.	190	196	196	190	171	150	132	118	109	105	105	109
51.0	3.4	391.	6.25	0.	489.	23387.	250.	1000.	192.	192	198	198	192	174	151	131	116	107	103	103	107
54.0	3.6	409.	6.08	0.	491.	24325.	253.	1000.	195.	194	202	202	194	176	152	131	115	106	102	102	106
57.0	3.8	429.	6.44	0.	494.	25348.	256.	1000.	199.	196	205	205	196	178	152	130	114	105	101	101	105
60.0	4.0	449.	6.81	0.	497.	26459.	260.	1000.	203.	198	209	209	198	181	153	130	113	103	99	99	103
63.0	4.2	471.	7.20	0.	501.	27660.	264.	1000.	207.	201	214	214	201	183	154	129	112	102	98	98	102
66.0	4.4	494.	7.61	0.	506.	28955.	269.	1000.	212.	204	219	219	204	186	155	129	111	101	97	97	101
69.0	4.6	518.	8.04	0.	511.	30345.	274.	1000.	217.	207	224	224	207	188	155	128	110	100	96	96	100
72.0	4.8	543.	8.48	-0.	517.	31835.	280.	1000.	222.	211	230	230	211	191	156	128	109	99	95	95	99
75.0	5.0	569.	8.57	0.	524.	33426.	286.	1000.	228.	215	237	237	215	192	157	127	108	98	94	94	98
78.0	5.2	595.	8.86	0.	530.	35121.	293.	1000.	235.	219	244	244	219	193	158	127	107	97	93	93	97
81.0	5.4	624.	9.39	0.	538.	36923.	300.	1000.	242.	224	251	251	224	195	158	126	106	96	92	92	96
84.0	5.6	653.	9.92	0.	546.	38834.	308.	1000.	250.	229	259	259	229	196	159	126	105	95	91	91	95
87.0	5.8	685.	10.48	-0.	556.	40858.	317.	1000.	258.	234	268	268	234	197	160	126	105	94	90	90	94
90.0	6.0	718.	11.05	0.	566.	42997.	326.	1000.	267.	240	278	278	240	199	161	125	104	93	90	90	93
93.0	6.2	752.	11.38	0.	577.	45193.	335.	1000.	276.	246	287	287	246	201	161	125	103	93	89	89	93
96.0	6.4	785.	10.83	-0.	588.	47247.	343.	1000.	284.	253	296	296	253	203	162	124	102	92	88	88	92
99.0	6.6	820.	11.80	0.	600.	49505.	353.	1000.	293.	260	305	305	260	205	163	124	101	91	88	88	91
02.0	6.8	859.	12.87	0.	613.	51989.	363.	1000.	304.	268	316	316	268	207	164	123	101	91	87	87	91
05.0	7.0	901.	14.03	0.	628.	54717.	375.	1000.	315.	276	329	329	276	210	165	123	100	90	87	87	90
08.0	7.2	947.	15.29	0.	645.	57712.	389.	1000.	329.	284	343	343	284	212	165	123	99	89	86	86	89
11.0	7.4	994.	15.79	0.	663.	60763.	405.	1000.	343.	291	359	359	291	215	166	122	98	89	86	86	89
14.0	7.6	1045.	17.15	0.	682.	64101.	422.	1000.	360.	299	377	377	299	218	167	122	98	88	86	86	88
17.0	7.8	1102.	18.71	0.	704.	67784.	442.	1000.	379.	307	396	396	307	221	168	121	97	88	85	85	88
20.0	8.0	1164.	20.73	-0.	728.	71908.	463.	1000.	399.	317	418	418	317	224	169	121	96	87	85	85	87
23.0	8.2	1233.	22.97	-0.	755.	76522.	488.	1000.	422.	328	443	443	328	228	170	121	96	87	85	85	87
26.0	8.4	1309.	25.41	0.	785.	81667.	515.	1000.	448.	339	470	470	339	231	171	120	95	87	85	85	87
29.0	8.6	1393.	27.93	0.	819.	87361.	545.	1000.	477.	352	501	501	352	235	171	120	95	86	84	84	86
32.0	8.8	1485.	30.90	-0.	856.	93707.	579.	1000.	509.	367	535	535	367	239	172	120	94	86	84	84	86
35.0	9.0	1586.	33.70	0.	897.	100656.	616.	1000.	544.	383	572	572	383	243	173	119	94	86	84	84	86
38.0	9.2	1698.	37.03	0.	942.	108331.	657.	1000.	583.	400	614	614	400	248	174	119	93	85	84	84	85
41.0	9.4	1829.	43.83	-0.	995.	117536.	708.	1000.	631.	419	665	665	419	252	175	118	93	85	84	84	85
44.0	9.6	1983.	51.37	0.	1058.	128437.	770.	1000.	688.	440	727	727	440	257	176	118	92	85	84	84	85
47.0	9.8	2139.	51.81	0.	1121.	139378.	830.	1000.	745.	463	787	787	463	262	177	118	92	85	84	84	85
50.0	10.0	2304.	55.09	0.	1188.	151024.	894.	1000.	805.	489	851	851	489	267	178	117	91	85	84	84	85

LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
140	140	140	140	140	140	140	140	140	140	140	140
143	143	143	143	142	141	140	139	138	137	137	138
145	146	146	145	144	141	139	137	135	135	135	135
148	150	150	148	145	142	139	135	133	132	132	133
151	153	153	151	147	143	138	134	131	129	129	131
154	156	156	154	149	143	137	132	129	127	127	129
157	160	160	157	151	144	137	131	127	124	124	127
160	163	163	160	153	144	136	129	125	122	122	125
163	167	167	163	155	145	136	128	123	120	120	123
166	171	171	166	157	146	135	127	121	118	118	121
169	175	175	169	159	146	135	125	119	116	116	119
172	179	179	172	161	147	134	124	117	114	114	117
176	183	183	176	163	148	134	123	115	112	112	115
179	187	187	179	165	148	133	121	114	110	110	114
183	192	192	183	167	149	133	120	112	108	108	112
186	194	194	186	169	150	132	119	110	106	106	110
190	196	196	190	171	150	132	118	109	105	105	109
192	198	198	192	174	151	131	116	107	103	103	107
194	202	202	194	176	152	131	115	106	102	102	106
196	205	205	196	178	152	130	114	105	101	101	105
198	209	209	198	181	153	130	113	103	99	99	103
201	214	214	201	183	154	129	112	102	98	98	102
204	219	219	204	186	155	129	111	101	97	97	101
207	224	224	207	188	155	128	110	100	96	96	100
211	230	230	211	191	156	128	109	99	95	95	99
215	237	237	215	192	157	127	108	98	94	94	98
219	244	244	219	193	158	127	107	97	93	93	97
224	251	251	224	195	158	126	106	96	92	92	96
229	259	259	229	196	159	126	105	95	91	91	95
234	268	268	234	197	160	126	105	94	90	90	94
240	278	278	240	199	161	125	104	93	90	90	93
246	287	287	246	201	161	125	103	93	89	89	93
253	296	296	253	203	162	124	102	92	88	88	92
260	305	305	260	205	163	124	101	91	88	88	91
268	316	316	268	207	164	123	101	91	87	87	91
276	329	329	276	210	165	123	100	90	87	87	90
284	343	343	284	212	165	123	99	89	86	86	89
291	359	359	291	215	166	122	98	89	86	86	89
299	377	377	299	218	167	122	98	88	86	86	88
307	396	396	307	221	168	121	97	88	85	85	88
317	418	418	317	224	169	121	96	87	85	85	87
328	443	443	328	228	170	121	96	87	85	85	87
339	470	470	339	231	171	120	95	87	85	85	87
352	501	501	352	235	171	120	95	86	84	84	86
367	535	535	367	239	172	120	94	86	84	84	86
383	572	572	383	243	173	119	94	86	84	84	86
400	614	614	400	248	174	119	93	85	84	84	85
419	665	665	419	252	175	118	93	85	84	84	85
440	727	727	440	257	176	118	92	85	84	84	85
463	787	787	463	262	177	118	92	85	84	84	85
489	851	851	489	267	178	117	91	85	84	84	85

VESSEL DISP.		RESTORING FORCE ON VESSEL	INCREMENT STIFFNESS	YAW MOMENT	VERTICAL FORCE	OVERTURN MOMENT	MAX.LINE LOAD	LINE ON BOTTOM	HOR.FORCE ON ANCHOR	LINE LOAD (KIPS)												
										LINE NUMBER												
3	14 15	16								1	2	3	4	5	6	7	8	9	10	11	12	
(FT)	(% WD)	(KIPS)	(KIPS/FT)	(FT-KIP)	(KIPS)	(FT-KIP)	(KIPS)	(FT)	(KIPS)													
153.0	10.2	2491.	62.46	0.	1265.	164334.	967.	1000.	874.	516	925	925	516	273	179	117	91	84	84	84	84	91 117 179 273
156.0	10.4	2693.	67.18	0.	1347.	178694.	1046.	1000.	948.	547	1004	1004	547	278	180	117	90	84	84	84	84	90 117 180 278
159.0	10.6	2899.	68.70	0.	1431.	193337.	1125.	1000.	1022.	580	1084	1084	580	284	181	116	90	84	84	84	84	90 116 181 284
162.0	10.8	3115.	72.08	0.	1519.	208825.	1207.	1000.	1099.	616	1166	1166	616	289	182	116	90	84	84	84	84	90 116 182 289
165.0	11.0	3350.	78.22	0.	1615.	225806.	1294.	1000.	1180.	659	1252	1252	659	294	183	116	89	84	84	84	84	89 116 183 294
168.0	11.2	3606.	85.29	0.	1720.	244497.	1384.	1000.	1264.	712	1342	1342	712	300	184	115	89	84	84	84	84	89 115 184 300
171.0	11.4	3867.	87.14	-1.	1828.	263514.	1476.	1000.	1351.	764	1435	1435	764	305	185	115	89	84	84	84	84	89 115 185 305
174.0	11.6	4133.	88.52	0.	1937.	282725.	1571.	1000.	1440.	816	1530	1530	816	312	186	115	88	84	84	84	84	88 115 186 312
177.0	11.8	4417.	94.86	0.	2054.	303421.	1670.	1000.	1533.	875	1629	1629	875	318	187	114	88	84	85	85	84	88 114 187 318
180.0	12.0	4714.	99.02	-0.	2177.	325083.	1771.	1000.	1627.	940	1730	1730	940	326	188	114	88	84	85	85	84	88 114 188 326
183.0	12.2	5005.	96.84	1.	2298.	346169.	1864.	1000.	1715.	1008	1824	1824	1008	334	189	114	87	84	85	85	84	87 114 189 334
186.0	12.4	5297.	97.40	0.	2419.	367270.	1958.	1000.	1803.	1076	1918	1918	1076	342	190	113	87	84	85	85	84	87 113 190 342
189.0	12.6	5613.	105.35	0.	2550.	390188.	2063.	1000.	1902.	1146	2023	2023	1146	351	191	113	87	84	85	85	84	87 113 191 351
192.0	12.8	5935.	107.20	0.	2683.	413489.	2169.	1000.	2000.	1219	2128	2128	1219	361	192	113	87	84	85	85	84	87 113 192 361
195.0	13.0	6250.	105.01	1.	2814.	436216.	2267.	1000.	2093.	1296	2227	2227	1296	372	192	113	86	84	85	85	84	86 113 192 372
198.0	13.2	6569.	106.60	-1.	2947.	459260.	2366.	1000.	2185.	1374	2326	2326	1374	383	193	112	86	84	85	85	84	86 112 193 383
201.0	13.4	6896.	108.97	0.	3083.	482796.	2467.	1000.	2280.	1454	2427	2427	1454	395	193	112	86	84	85	85	84	86 112 193 395
204.0	13.6	7221.	108.31	-1.	3218.	506071.	2564.	1000.	2371.	1536	2524	2524	1536	408	194	112	86	84	86	86	84	86 112 194 408
207.0	13.8	7548.	109.06	-0.	3354.	529445.	2659.	1000.	2460.	1622	2619	2619	1622	421	194	111	86	84	86	86	84	86 111 194 421
210.0	14.0	7890.	113.81	1.	3497.	553859.	2760.	1000.	2555.	1708	2720	2720	1708	436	195	111	85	85	86	86	85	85 111 195 436
213.0	14.2	8233.	114.21	1.	3639.	578157.	2865.	1000.	2654.	1791	2825	2825	1791	451	195	111	85	85	86	86	85	85 111 195 451
216.0	14.4	8556.	107.79	0.	3773.	600675.	2961.	1000.	2743.	1871	2921	2921	1871	468	196	111	85	85	86	86	85	85 111 196 468
219.0	14.6	8885.	109.59	-0.	3910.	623583.	3054.	1000.	2832.	1955	3015	3015	1955	486	196	110	85	85	86	86	85	85 110 196 486
222.0	14.8	9247.	120.63	0.	4062.	649199.	3160.	1000.	2930.	2047	3120	3120	2047	505	197	110	85	85	86	86	85	85 110 197 505
225.0	15.0	9610.	121.09	-1.	4215.	674746.	3266.	1000.	3030.	2137	3227	3227	2137	525	198	110	85	85	86	86	85	85 110 198 525
228.0	15.2	9948.	112.66	1.	4356.	697970.	3362.	1000.	3121.	2222	3323	3323	2222	546	198	109	85	85	86	86	85	85 109 198 546
231.0	15.4	10285.	112.39	0.	4496.	720966.	3457.	1000.	3210.	2306	3418	3418	2306	569	199	109	85	85	86	86	85	85 109 199 569
234.0	15.6	10637.	117.30	0.	4643.	745001.	3557.	1000.	3304.	2393	3518	3518	2393	593	200	109	84	85	86	86	85	84 109 200 593
237.0	15.8	10989.	117.46	0.	4791.	768816.	3657.	1000.	3398.	2480	3617	3617	2480	619	201	109	84	85	86	86	85	84 109 201 619
240.0	16.0	11334.	114.77	1.	4936.	791633.	3754.	1000.	3489.	2561	3714	3714	2561	649	201	108	84	85	85	85	85	84 108 201 649
243.0	16.2	11688.	118.07	0.	5086.	814696.	3852.	1000.	3581.	2644	3812	3812	2644	684	202	108	84	86	85	85	86	84 108 202 684
246.0	16.4	12059.	123.81	0.	5244.	839028.	3952.	1000.	3675.	2733	3913	3913	2733	722	203	108	84	86	85	85	86	84 108 203 722
249.0	16.6	12432.	124.15	0.	5403.	863509.	4053.	1000.	3770.	2823	4013	4013	2823	759	204	108	84	86	85	85	86	84 108 204 759
252.0	16.8	12791.	119.72	0.	5554.	886789.	4152.	1000.	3863.	2906	4113	4113	2906	795	205	107	84	86	84	84	86	84 107 205 795
255.0	17.0	13154.	121.10	1.	5707.	910137.	4255.	1000.	3960.	2986	4216	4216	2986	832	206	107	84	86	84	84	86	84 107 206 832
258.0	17.2	13536.	127.17	1.	5869.	934582.	4359.	1000.	4058.	3073	4320	4320	3073	875	207	107	84	86	84	84	86	84 107 207 875
261.0	17.4	13918.	127.55	1.	6033.	959000.	4457.	1000.	4150.	3166	4418	4418	3166	920	208	107	84	86	83	83	86	84 107 208 920
264.0	17.6	14289.	123.71	0.	6191.	982160.	4551.	1000.	4238.	3255	4512	4512	3255	967	209	106	84	86	83	83	86	84 106 209 967
267.0	17.8	14652.	121.03	0.	6345.	1004348.	4645.	1000.	4327.	3337	4606	4606	3337	1015	210	106	84	86	83	83	86	84 106 210 1015
270.0	18.0	15020.	122.37	0.	6501.	1026869.	4741.	1000.	4418.	3420	4702	4702	3420	1063	211	106	84	86	82	82	86	84 106 211 1063
273.0	18.2	15407.	129.27	0.	6665.	1051047.	4844.	1000.	4515.	3506	4805	4805	3506	1112	212	106	84	86	82	82	86	84 106 212 1112
276.0	18.4	15800.	130.92	-1.	6833.	1075519.	4949.	1000.	4614.	3593	4910	4910	3593	1162	213	106	84	86	81	81	86	84 106 213 1162
279.0	18.6	16176.	125.30	0.	6992.	1098417.	5047.	1000.	4705.	3676	5007	5007	3676	1214	215	105	84	86	80	80	86	84 105 215 1214
282.0	18.8	16551.	124.99	0.	7152.	1121028.	5142.	1000.	4795.	3760	5103	5103	3760	1268	216	105	84	86	80	80	86	84 105 216 1268
285.0	19.0	16939.	129.45	0.	7317.	1144552.	5242.	1000.	4889.	3846	5203	5203	3846	1322	217	105	84	85	79	79	85	84 105 217 1322
288.0	19.2	17329.	129.73	0.	7482.	1167995.	5340.	1000.	4982.	3933	5301	5301	3933	1378	219	105	84	85	78	78	85	84 105 219 1378
291.0	19.4	17703.	124.65	0.	7640.	1190079.	5430.	1000.	5067.	4020	5391	5391	4020	1434	220	104	84	85	77	77	85	84 104 220 1434
294.0	19.6	18082.	126.45	0.	7801.	1212523.	5523.	1000.	5155.	4106	5484	5484	4106	1492	221	104	84	85	76	76	85	84 104 221 1492
297.0	19.8	18492.	136.88	0.	7977.	1237543.	5630.	1000.	5255.	4194	5591	5591	4194	1550	223	104	84	85	75	75	85	84 104 223 1550

DEEPWATER, ARAMID MOORING LINE JIP
CASE t1a16n
1500 ft 10% 100 kip buoy

PROBLEM NUMBER - 2

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG

CATENARY OPTIMIZATION - NO

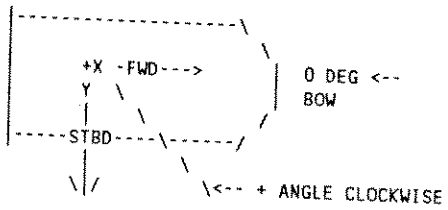
INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO



VESSEL DISP.		RESTORING FORCE ON VESSEL	INCREMENT STIFFNESS	YAW MOMENT	VERTICAL FORCE	OVERTURN MOMENT	MAX.LINE LOAD	LINE ON BOTTOM	HOR.FORCE ON ANCHOR	LINE LOAD (KIPS) LINE NUMBER												
3	14 15	16								1	2	3	4	5	6	7	8	9	10	11	12	
(FT)	(% WD)	(KIPS)	(KIPS/FT)	(FT-KIP)	(KIPS)	(FT-KIP)	(KIPS)	(FT)	(KIPS)													
.0	.0	-0.	.00	1.	426.	2632.	216.	1000.	159.	163	0	161	154	150	141	132	126	125	123	123	126	134	141	148	154
3.0	.2	20.	6.75	119.	427.	3829.	219.	1000.	162.	166	0	164	157	152	141	132	125	123	120	121	124	133	140	149	156
6.0	.4	40.	6.74	240.	427.	5023.	222.	1000.	165.	169	0	168	160	154	142	131	123	121	118	119	122	131	140	149	158
9.0	.6	60.	6.73	362.	429.	6215.	225.	1000.	168.	172	0	172	163	156	143	131	122	119	116	117	120	130	139	150	160
12.0	.8	80.	6.70	492.	430.	7401.	229.	1000.	171.	176	0	176	166	157	143	130	121	117	114	115	118	129	139	151	163
15.0	1.0	101.	6.73	618.	432.	8590.	232.	1000.	175.	180	0	180	169	159	143	130	119	115	112	113	117	127	138	152	165
18.0	1.2	121.	6.71	752.	434.	9773.	236.	1000.	179.	183	0	184	172	161	144	129	118	113	110	111	115	126	138	153	167
21.0	1.4	141.	6.74	883.	436.	10961.	240.	1000.	183.	187	0	188	176	163	144	128	117	112	109	109	113	125	138	153	170
24.0	1.6	161.	6.55	994.	438.	12101.	244.	1000.	186.	191	0	192	179	165	145	128	116	110	107	107	112	123	137	154	172
27.0	1.8	177.	5.47	1231.	439.	12968.	245.	1000.	188.	193	0	194	183	167	146	127	114	109	105	106	110	122	137	155	174
30.0	2.0	193.	5.43	1532.	440.	13821.	248.	1000.	190.	195	0	196	186	169	146	127	113	107	104	104	109	121	136	156	177
33.0	2.2	210.	5.65	1797.	441.	14727.	250.	1000.	193.	197	0	199	190	171	147	126	112	106	102	103	107	120	136	157	179
36.0	2.4	227.	5.46	1963.	443.	15574.	253.	1000.	196.	199	0	202	192	173	147	125	111	104	101	101	106	119	136	158	182
39.0	2.6	243.	5.42	1999.	445.	16401.	256.	1000.	199.	202	0	206	194	175	148	125	110	103	99	100	105	118	135	159	184
42.0	2.8	260.	5.66	2043.	447.	17286.	260.	1000.	203.	205	0	210	196	178	148	125	109	102	98	99	104	116	135	159	187
45.0	3.0	278.	5.91	2098.	449.	18229.	264.	1000.	207.	208	0	214	198	180	149	124	108	101	97	97	102	115	134	160	189
48.0	3.2	296.	6.14	2141.	453.	19233.	269.	1000.	212.	212	0	219	201	183	150	124	107	100	96	96	101	114	134	161	192
51.0	3.4	315.	6.17	2063.	456.	20299.	275.	1000.	217.	216	0	225	204	185	150	123	106	99	95	95	100	113	133	162	193
54.0	3.6	334.	6.41	1995.	460.	21427.	280.	1000.	223.	221	0	231	207	187	151	122	105	97	94	94	99	112	133	163	194
57.0	3.8	354.	6.72	1944.	464.	22620.	286.	1000.	229.	226	0	237	210	189	151	122	104	96	93	93	98	111	133	164	196
60.0	4.0	375.	7.10	1931.	470.	23884.	293.	1000.	236.	232	0	244	214	192	152	121	103	95	92	92	97	110	132	165	197
63.0	4.2	397.	7.17	2091.	475.	25218.	301.	1000.	243.	237	0	252	218	193	152	121	102	95	91	92	96	109	132	166	199
66.0	4.4	419.	7.54	2263.	481.	26625.	309.	1000.	251.	243	0	260	223	194	153	121	102	94	90	91	95	108	131	167	201
69.0	4.6	443.	7.92	2450.	488.	28105.	317.	1000.	259.	250	0	269	228	195	154	120	101	93	90	90	94	108	131	167	202
72.0	4.8	468.	8.28	2602.	495.	29653.	326.	1000.	268.	257	0	278	232	196	154	120	100	92	89	89	94	107	131	169	205
75.0	5.0	494.	8.54	2798.	503.	31247.	336.	1000.	277.	265	0	288	238	198	155	119	99	91	88	89	93	106	130	169	207
78.0	5.2	519.	8.42	2956.	511.	32800.	344.	1000.	285.	272	0	296	244	199	156	119	99	91	88	88	92	105	130	170	210
81.0	5.4	546.	9.03	3146.	520.	34477.	353.	1000.	294.	281	0	306	251	201	156	118	98	90	87	88	91	104	129	171	212
84.0	5.6	574.	9.40	3415.	530.	36210.	364.	1000.	304.	289	0	317	257	203	157	118	97	90	87	87	91	104	129	173	215
87.0	5.8	604.	9.88	3868.	541.	38030.	376.	1000.	316.	296	0	329	265	205	157	117	96	89	86	87	90	103	129	173	218
90.0	6.0	636.	10.68	4279.	552.	40014.	389.	1000.	329.	305	0	343	272	207	158	117	96	88	86	86	90	102	129	175	222
93.0	6.2	671.	11.69	4732.	566.	42221.	405.	1000.	344.	314	0	359	280	209	159	116	95	88	86	86	89	101	128	176	225
96.0	6.4	708.	12.51	5077.	580.	44593.	422.	1000.	360.	326	0	376	287	211	159	116	94	87	85	86	89	101	128	177	229
99.0	6.6	748.	13.16	5316.	595.	47093.	441.	1000.	378.	337	0	396	295	214	160	115	94	87	85	85	88	100	128	178	233
102.0	6.8	791.	14.48	5586.	613.	49882.	463.	1000.	399.	350	0	418	303	217	161	115	93	87	85	85	88	99	127	179	237
105.0	7.0	839.	15.93	5896.	632.	52992.	487.	1000.	422.	364	0	442	312	220	161	115	93	86	85	85	87	99	127	180	241
108.0	7.2	891.	17.44	6163.	653.	56433.	514.	1000.	447.	381	0	469	321	223	162	114	92	86	84	85	87	98	127	181	246
111.0	7.4	949.	19.06	6583.	677.	60231.	544.	1000.	475.	398	0	499	332	226	163	114	92	86	84	84	86	97	126	182	251
114.0	7.6	1012.	20.99	7054.	703.	64459.	578.	1000.	507.	417	0	533	344	230	163	113	91	85	84	84	86	97	126	183	255
117.0	7.8	1080.	22.85	7410.	732.	69096.	614.	1000.	541.	440	0	570	357	233	164	113	91	85	84	84	86	96	126	185	261
120.0	8.0	1155.	25.10	7943.	763.	74231.	655.	1000.	580.	463	0	611	372	237	165	113	90	85	84	84	86	96	125	186	266
123.0	8.2	1241.	28.64	8460.	799.	80162.	703.	1000.	626.	490	0	660	387	240	165	112	90	85	84	84	85	95	125	187	273
126.0	8.4	1341.	33.13	9157.	841.	87113.	763.	1000.	682.	520	0	720	403	244	165	111	90	85	84	84	85	95	125	189	279
129.0	8.6	1444.	34.40	9813.	885.	94331.	823.	1000.	738.	552	0	780	421	248	166	111	89	84	84	84	85	94	125	190	286
132.0	8.8	1551.	35.78	10356.	930.	101897.	885.	1000.	796.	587	0	842	442	252	167	111	89	84	84	84	85	94	125	191	291
135.0	9.0	1673.	40.57	10710.	981.	110586.	955.	1000.	863.	628	0	913	463	256	167	110	88	84	84	84	85	93	125	192	297
138.0	9.2	1809.	45.32	10495.	1038.	120407.	1032.	1000.	934.	678	0	990	486	260	168	110	88	84	84	84	84	93	124	193	304
141.0	9.4	1954.	48.32	10370.	1100.	130900.	1111.	1000.	1009.	731	0	1069	514	265	168	109	88	84	84	84	84	92	124	193	310
144.0	9.6	2102.	49.31	10511.	1162.	141546.	1192.	1000.	1084.	785	0	1150	543	270	169	109	87	84	84	84	84	92	124	194	317
147.0	9.8	2257.	51.76	10775.	1228.	152709.	1276.	1000.	1164.	841	0	1235	574	275	170	108	87	84	84	84	84	92	124	194	325
150.0	10.0	2426.	56.13	10961.	1299.	164902.	1366.	1000.	1247.	903	0	1324	610	281	171	108	87	84	84	84	84	91	123	195	333

VESSEL DISP. (FT) 13	(% WD) 14	RESTORING FORCE ON VESSEL 15	INCREMENT STIFFNESS 16 (KIPS)	YAW MOMENT (KIPS/FT)	VERTICAL FORCE (FT-KIP)	OVERTURN MOMENT (KIPS)	MAX.LINE LOAD (FT-KIP)	LINE ON BOTTOM (KIPS)	HOR.FORCE ON ANCHOR (FT)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
153.0	10.2	2605.	59.79	11414.	1376.	177970.	1457.	1000.	1334.	969	0 1416	651	286	172	108	87	84	84	84	84	91	123	195	341
156.0	10.4	2795.	63.38	12277.	1457.	191946.	1550.	1000.	1420.	1042	0 1509	700	291	172	108	86	84	85	84	84	90	123	196	351
159.0	10.6	2991.	65.48	13394.	1541.	206327.	1647.	1000.	1511.	1115	0 1606	750	295	173	107	86	84	85	85	84	90	123	197	362
162.0	10.8	3192.	66.73	14394.	1627.	220899.	1746.	1000.	1604.	1189	0 1706	800	300	173	107	86	84	85	85	84	90	122	198	374
165.0	11.0	3394.	67.46	15702.	1714.	235622.	1842.	1000.	1694.	1264	0 1801	856	306	174	106	86	84	85	85	84	89	122	199	385
168.0	11.2	3603.	69.53	16977.	1803.	250815.	1934.	1000.	1780.	1345	0 1893	917	312	175	106	85	84	85	85	84	89	122	200	398
171.0	11.4	3824.	73.80	18304.	1899.	266954.	2034.	1000.	1874.	1430	0 1993	979	317	176	106	85	84	85	85	84	89	122	201	413
174.0	11.6	4053.	76.47	20176.	1998.	283656.	2139.	1000.	1973.	1515	0 2099	1044	324	176	105	85	84	85	85	84	89	121	202	428
177.0	11.8	4281.	75.78	21659.	2096.	300111.	2238.	1000.	2065.	1602	0 2197	1111	331	177	105	85	84	85	85	84	88	121	203	445
180.0	12.0	4511.	76.82	23575.	2196.	316748.	2336.	1000.	2157.	1689	0 2295	1183	340	178	105	85	84	86	85	84	88	121	204	461
183.0	12.2	4745.	77.96	25604.	2297.	333510.	2435.	1000.	2250.	1777	0 2395	1253	347	179	104	85	85	86	85	84	88	121	205	480
186.0	12.4	4977.	77.45	28264.	2397.	350004.	2533.	1000.	2342.	1862	0 2492	1326	356	179	104	85	85	86	86	84	87	121	206	501
189.0	12.6	5212.	78.17	30842.	2499.	366608.	2626.	1000.	2430.	1949	0 2586	1402	365	180	104	84	85	86	86	84	87	120	207	523
192.0	12.8	5458.	82.05	33202.	2606.	384120.	2724.	1000.	2521.	2042	0 2684	1481	375	181	103	84	85	86	86	84	87	120	208	545
195.0	13.0	5712.	84.61	35973.	2717.	402138.	2828.	1000.	2618.	2135	0 2788	1561	386	182	103	84	85	86	86	84	87	120	210	570
198.0	13.2	5961.	82.99	39497.	2825.	419598.	2926.	1000.	2711.	2223	0 2886	1644	397	182	103	84	85	86	86	84	87	120	211	595
201.0	13.4	6206.	81.75	43070.	2932.	436537.	3018.	1000.	2798.	2311	0 2978	1728	409	183	102	84	85	86	86	85	86	120	212	624
204.0	13.6	6458.	84.06	46609.	3043.	453801.	3118.	1000.	2891.	2400	0 3078	1807	422	184	102	84	85	86	86	85	86	119	214	656
207.0	13.8	6720.	87.20	51132.	3157.	471576.	3226.	1000.	2993.	2484	0 3187	1889	437	185	102	84	85	86	86	85	86	119	215	690
210.0	14.0	6978.	85.86	56229.	3271.	488812.	3326.	1000.	3086.	2567	0 3286	1975	452	186	102	84	85	86	86	85	86	119	216	729
213.0	14.2	7235.	85.77	61183.	3384.	506013.	3419.	1000.	3174.	2653	0 3379	2063	468	187	101	84	86	86	86	85	86	118	218	769
216.0	14.4	7500.	88.32	65434.	3500.	523849.	3518.	1000.	3267.	2742	0 3478	2152	486	188	101	84	86	85	86	85	85	118	219	805
219.0	14.6	7766.	88.71	69411.	3617.	541553.	3618.	1000.	3361.	2832	0 3578	2237	505	189	101	84	86	85	86	85	85	118	220	843
222.0	14.8	8027.	86.96	74433.	3732.	558485.	3716.	1000.	3453.	2914	0 3676	2322	525	190	101	84	86	85	85	85	85	117	221	886
225.0	15.0	8290.	87.69	79835.	3848.	575384.	3812.	1000.	3544.	2995	0 3773	2409	546	191	101	84	86	85	85	85	85	117	223	933
228.0	15.2	8562.	90.58	84649.	3968.	592927.	3913.	1000.	3638.	3082	0 3873	2495	570	192	100	84	86	85	85	85	85	117	224	979
231.0	15.4	8836.	91.56	88651.	4089.	610673.	4015.	1000.	3734.	3171	0 3975	2580	596	193	100	84	86	84	85	86	85	116	225	1023
234.0	15.6	9109.	90.88	92800.	4209.	628033.	4114.	1000.	3827.	3258	0 4075	2664	623	193	100	84	86	84	85	86	85	116	227	1069
237.0	15.8	9387.	92.55	97972.	4332.	645500.	4214.	1000.	3922.	3343	0 4175	2752	652	193	100	84	86	84	84	86	85	116	229	1121
240.0	16.0	9672.	95.12	102771.	4459.	663201.	4318.	1000.	4019.	3428	0 4279	2839	684	194	100	84	86	83	84	86	84	116	230	1176
243.0	16.2	9953.	93.59	106253.	4583.	680291.	4419.	1000.	4114.	3515	0 4380	2921	722	194	99	84	86	83	84	86	84	115	232	1227
246.0	16.4	10228.	91.69	109716.	4705.	696838.	4514.	1000.	4204.	3601	0 4475	3001	759	195	99	84	86	82	83	86	84	115	234	1281
249.0	16.6	10506.	92.88	114349.	4828.	713692.	4607.	1000.	4291.	3686	0 4568	3088	794	195	99	84	86	82	83	86	84	115	236	1338
252.0	16.8	10792.	95.12	119398.	4955.	731023.	4702.	1000.	4381.	3771	0 4662	3180	830	196	99	84	86	81	82	86	84	115	238	1396
255.0	17.0	11082.	96.84	123433.	5085.	748468.	4801.	1000.	4474.	3859	0 4762	3266	871	197	99	84	86	81	82	86	84	115	240	1454
258.0	17.2	11376.	98.00	126922.	5216.	765971.	4906.	1000.	4573.	3948	0 4867	3347	914	197	98	84	85	81	82	86	84	114	242	1514
261.0	17.4	11668.	97.21	130421.	5346.	783084.	5006.	1000.	4667.	4035	0 4967	3428	959	198	98	84	85	80	81	86	84	114	244	1576
264.0	17.6	11960.	97.49	134145.	5476.	800080.	5101.	1000.	4757.	4123	0 5062	3513	1006	198	98	84	85	79	80	86	84	114	246	1639
267.0	17.8	12258.	99.08	137611.	5608.	817458.	5199.	1000.	4849.	4213	0 5160	3599	1053	199	98	84	85	78	80	86	84	114	248	1701
270.0	18.0	12555.	99.14	140504.	5740.	834860.	5298.	1000.	4942.	4304	0 5259	3682	1101	200	98	84	85	78	79	86	84	113	250	1762
273.0	18.2	12842.	95.72	143397.	5866.	851403.	5390.	1000.	5030.	4393	0 5352	3763	1147	201	97	84	85	77	78	86	84	113	252	1823
276.0	18.4	13126.	94.76	146753.	5991.	867563.	5480.	1000.	5114.	4478	0 5441	3846	1194	201	97	84	84	76	77	85	84	113	255	1884
279.0	18.6	13423.	98.73	150722.	6122.	884470.	5579.	1000.	5208.	4562	0 5541	3930	1243	202	97	85	84	75	76	85	84	113	258	1949
282.0	18.8	13730.	102.53	155113.	6259.	902062.	5687.	1000.	5309.	4647	0 5648	4013	1293	203	97	85	84	74	76	85	84	113	260	2019
285.0	19.0	14033.	100.92	158710.	6393.	919175.	5786.	1000.	5402.	4733	0 5747	4098	1346	203	97	85	83	72	75	85	84	113	263	2087
288.0	19.2	14335.	100.70	161406.	6526.	936359.	5877.	1000.	5489.	4827	0 5839	4183	1399	204	96	85	83	71	73	85	84	113	266	2152
291.0	19.4	14640.	101.66	164232.	6661.	953793.	5971.	1000.	5577.	4920	0 5932	4271	1452	205	96	85	83	70	72	85	84	113	269	2217
294.0	19.6	14941.	100.23	167530.	6792.	970705.	6067.	1000.	5668.	5008	0 6028	4356	1504	206	96	85	82	69	71	84	84	112	272	2283
297.0	19.8	15238.	99.00	170444.	6922.	987080.	6162.	1000.	5758.	5093	0 6124	4436	1558	206	96	85	81	66	69	84	84	112	275	2349

STARTING DISPLACEMENTS : SURGE(FT) = -16.875 SWAY(FT) = -11.250 YAW(DEG) = .738

```
DEEPWATER, ARAMID MOORING LINE JIP
CASE T1S16N   tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE
        1          1          1          1          1          0          1
  1500.00
   140.00
    45.00
        1         99       0.20        .07        .07          0
     33.0       50.0       50.0       50.0       71.4       71.4
      3.0        6.0       90.0
     90.0        0.0        2.0        .87        .82
 WAVE 45°                     1         16          1          5          0      -62.0
    11.25      33.75      56.25      78.75     101.25     123.75     146.25     168.75
   -168.75    -146.25    -123.75    -101.25     -78.75     -56.25     -33.75     -11.25
      0.0
    132.0      132.0      132.0      132.0     -132.0     -132.0     -132.0     -132.0
   -132.0     -132.0     -132.0     -132.0      132.0      132.0      132.0      132.0
    132.0      132.0      132.0      132.0      132.0      132.0      132.0      132.0
   -132.0     -132.0     -132.0     -132.0     -132.0     -132.0     -132.0     -132.0
    1    1     1    1     1    1     1    1     1    1     1    1     1    1     1    1
     50.      1000.0        0.0        0.0        0.0                    1
WIRE      6.000"          300.0      65.14      28.27     4134.0     9804.0        0.0
WIRE      6.000"         1050.0      65.14      28.27     4134.0     9804.0     -106.0
WIRE      6.000"         1260.0      65.14      28.27     4134.0     9804.0        0.0
CHAIN     5.675"          750.0     266.18      25.29     4098.0    15279.0     5800.0
WIRE      6.000"         1000.0      65.14      28.27     4134.0     9804.0        0.0
```

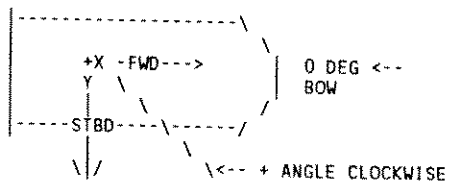
(1) T1S16N

DEEPWATER, ARAMID MOORING LINE JIP
CASE T1S16T tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	11.3	33.8	56.3	78.8	101.3	123.8	146.3	168.8	-168.8	-146.3	-123.8	-101.3	-78.8	-56.3	-33.8	-11.3
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0
INITIAL VESSEL YAW ANGLES (DEG)		.00														

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	1500.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	1500.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	300.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	1050.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-106.0

LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	1260.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.675"
LINE LENGTH (FT)	750.0
WEIGHT IN WATER (LB/FT)	266.18
LINE B.S. (KIPS)	4098.0
AREA (SQ IN)	25.29
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	5800.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

VESSEL DISP. 13 (FT)	14 (% WD)	15	RESTORING FORCE ON VESSEL 16 (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)
.0	.0		0.	.00	0.	1659.	0.	145.	1600.	102.
3.0	.2		24.	7.90	0.	1660.	2210.	149.	1594.	105.
6.0	.4		47.	7.91	0.	1661.	4422.	152.	1587.	108.
9.0	.6		71.	7.94	0.	1663.	6641.	156.	1581.	111.
12.0	.8		95.	7.97	0.	1666.	8870.	160.	1573.	115.
15.0	1.0		119.	8.03	0.	1670.	11111.	164.	1566.	118.
18.0	1.2		143.	8.09	0.	1674.	13368.	168.	1558.	122.
21.0	1.4		168.	8.17	0.	1679.	15644.	172.	1549.	126.
24.0	1.6		193.	8.26	0.	1686.	17943.	177.	1541.	131.
27.0	1.8		218.	8.33	0.	1692.	20259.	182.	1531.	135.
30.0	2.0		243.	8.30	0.	1700.	22568.	187.	1522.	140.
33.0	2.2		268.	8.38	0.	1708.	24894.	193.	1512.	144.
36.0	2.4		293.	8.51	0.	1717.	27251.	198.	1501.	149.
39.0	2.6		320.	8.72	0.	1727.	29663.	204.	1490.	155.
42.0	2.8		346.	8.95	0.	1738.	32132.	210.	1478.	160.
45.0	3.0		374.	9.19	0.	1750.	34666.	217.	1466.	166.
48.0	3.2		402.	9.42	0.	1762.	37267.	224.	1453.	173.
51.0	3.4		431.	9.68	0.	1776.	39942.	232.	1440.	179.
54.0	3.6		462.	10.21	0.	1789.	42774.	239.	1426.	186.
57.0	3.8		495.	10.89	0.	1804.	45819.	248.	1411.	194.
60.0	4.0		528.	11.26	0.	1819.	48967.	256.	1395.	201.
63.0	4.2		563.	11.71	0.	1834.	52244.	266.	1379.	210.
66.0	4.4		601.	12.42	0.	1850.	55761.	275.	1361.	218.
69.0	4.6		639.	12.83	0.	1867.	59383.	285.	1344.	227.
72.0	4.8		679.	13.26	0.	1885.	63118.	296.	1325.	237.
75.0	5.0		720.	13.68	0.	1904.	66953.	307.	1306.	247.
78.0	5.2		762.	14.12	0.	1924.	70890.	318.	1286.	257.
81.0	5.4		806.	14.62	0.	1944.	74948.	330.	1265.	268.
84.0	5.6		851.	15.09	0.	1966.	79116.	343.	1244.	279.
87.0	5.8		898.	15.53	0.	1988.	83375.	356.	1222.	291.
90.0	6.0		946.	15.97	0.	2012.	87722.	369.	1199.	303.
93.0	6.2		995.	16.40	0.	2036.	92152.	383.	1176.	315.
96.0	6.4		1046.	16.96	0.	2061.	96687.	397.	1152.	328.
99.0	6.6		1097.	17.15	0.	2085.	101186.	411.	1124.	341.
02.0	6.8		1150.	17.62	0.	2110.	105769.	425.	1097.	354.
05.0	7.0		1205.	18.17	0.	2137.	110456.	440.	1071.	368.
08.0	7.2		1261.	18.78	0.	2164.	115263.	456.	1047.	382.
11.0	7.4		1320.	19.45	0.	2192.	120207.	473.	1027.	397.
14.0	7.6		1378.	19.38	0.	2221.	125069.	489.	1016.	412.
17.0	7.8		1438.	20.16	0.	2250.	130080.	507.	1008.	428.
20.0	8.0		1503.	21.64	0.	2282.	135457.	526.	1004.	446.
23.0	8.2		1574.	23.49	0.	2316.	141300.	549.	1002.	467.
26.0	8.4		1651.	25.73	0.	2354.	147729.	574.	1001.	490.
29.0	8.6		1736.	28.29	0.	2396.	154821.	604.	1001.	517.
32.0	8.8		1828.	30.91	0.	2442.	162574.	637.	1002.	547.
35.0	9.0		1929.	33.62	0.	2491.	171003.	675.	1002.	582.
38.0	9.2		2042.	37.63	0.	2547.	180491.	719.	1002.	622.
41.0	9.4		2162.	39.83	0.	2606.	190528.	764.	1002.	664.
44.0	9.6		2305.	47.82	0.	2677.	202740.	822.	1003.	716.
47.0	9.8		2489.	61.36	0.	2768.	218677.	900.	1003.	787.
50.0	10.0		2719.	76.73	0.	2882.	238835.	1002.	1003.	879.

LINE LOAD (KIPS)

LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12					
145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145
148	149	149	148	147	146	145	144	143	142	142	143	144	145	146	147	
151	152	152	151	149	147	144	142	140	140	140	140	142	144	147	149	
154	156	156	154	151	147	144	140	138	137	137	138	140	144	147	151	
157	160	160	157	153	148	143	139	136	134	134	136	139	143	148	153	
160	164	164	160	155	149	142	137	134	132	132	134	137	142	149	155	
164	168	168	164	157	149	142	136	132	130	130	132	136	142	149	157	
168	172	172	168	159	150	141	134	130	128	128	130	134	141	150	159	
171	177	177	171	162	151	141	133	128	126	126	128	133	141	151	162	
175	182	182	175	164	151	140	132	127	124	124	127	132	140	151	164	
180	187	187	180	167	152	140	131	125	123	123	125	131	140	152	167	
184	193	193	184	169	153	139	130	124	121	121	124	130	139	153	169	
188	198	198	188	172	154	139	128	123	120	120	123	128	139	154	172	
193	204	204	193	174	154	138	127	121	119	119	121	127	138	154	174	
198	210	210	198	177	155	138	126	120	118	118	120	126	138	155	177	
203	217	217	203	180	156	137	125	119	117	117	119	125	137	156	180	
208	224	224	208	183	157	137	124	118	116	116	118	124	137	157	183	
213	232	232	213	186	158	136	124	118	115	115	118	124	136	158	186	
219	239	239	219	189	158	136	123	117	114	114	117	123	136	158	189	
225	248	248	225	192	159	135	122	116	113	113	116	122	135	159	192	
232	256	256	232	195	160	135	121	115	111	111	115	121	135	160	195	
238	266	266	238	198	161	134	120	115	110	110	115	120	134	161	198	
245	275	275	245	202	162	134	120	113	108	108	113	120	134	162	202	
253	285	285	253	205	163	133	119	112	107	107	112	119	133	163	205	
260	296	296	260	209	164	133	119	111	106	106	111	119	133	164	209	
268	307	307	268	213	164	133	118	109	104	104	109	118	133	164	213	
276	318	318	276	217	165	132	117	108	103	103	108	117	132	165	217	
285	330	330	285	221	166	132	117	107	102	102	107	117	132	166	221	
294	343	343	294	225	167	131	116	106	101	101	106	116	131	167	225	
303	356	356	303	229	168	131	116	105	100	100	105	116	131	168	229	
313	369	369	313	233	169	131	116	104	99	99	104	116	131	169	233	
323	383	383	323	238	170	130	115	103	98	98	103	115	130	170	238	
333	397	397	333	243	171	130	115	102	97	97	102	115	130	171	243	
344	411	411	344	248	172	130	114	101	96	96	101	114	130	172	248	
355	425	425	355	253	173	129	113	100	95	95	100	113	129	173	253	
366	440	440	366	258	174	129	112	99	94	94	99	112	129	174	258	
378	456	456	378	263	176	129	111	98	94	94	98	111	129	176	263	
390	473	473	390	269	177	128	110	98	93	93	98	110	128	177	269	
402	489	489	402	274	178	128	109	97	92	92	97	109	128	178	274	
414	507	507	414	280	179	128	109	96	92	92	96	109	128	179	280	
427	526	526	427	286	180	127	108	95	91	91	95	108	127	180	286	
439	549	549	439	292	181	127	107	95	91	91	95	107	127	181	292	
453	574	574	453	299	182	127	106	94	90	90	94	106	127	182	299	
467	604	604	467	305	183	126	106	93	90	90	93	106	126	183	305	
481	637	637	481	312	185	126	105	93	89	89	93	105	126	185	312	
495	675	675	495	318	186	126	104	92	89	89	92	104	126	186	318	
511	719	719	511	325	187	126	104	92	88	88	92	104	126	187	325	
528	764	764	528	333	188	125	103	91	88	88	91	103	125	188	333	
547	822	822	547	340	189	125	102	91	88	88	91	102	125	189	340	
569	900	900	569	348	191	125	102	90	88	88	90	102	125	191	348	
593	1002	1002	593	355	192	124	101	90	87	87	90	101	124	192	355	

VESSEL DISP. 13 (FT)	14 (% WD)	15	RESTORING FORCE ON VESSEL 16 (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
153.0	10.2		2939.	73.38	0.	2991.	258025.	1095.	1003.	964.	620	1095	1095	620	363	193	124	101	90	87	87	90
156.0	10.4		3182.	80.95	0.	3111.	279250.	1199.	1004.	1058.	651	1199	1199	651	371	195	124	100	89	87	87	89
159.0	10.6		3512.	109.77	0.	3274.	308348.	1348.	1004.	1193.	685	1348	1348	685	379	196	124	99	89	87	87	89
162.0	10.8		3809.	99.24	0.	3422.	334548.	1475.	1005.	1309.	722	1475	1475	722	388	197	123	99	89	87	87	89
165.0	11.0		4112.	100.75	0.	3570.	360912.	1604.	1005.	1426.	762	1604	1604	762	396	199	123	98	88	87	87	88
168.0	11.2		4500.	129.47	1.	3763.	395505.	1774.	1006.	1580.	810	1774	1774	810	404	200	123	98	88	86	86	88
171.0	11.4		4907.	135.65	0.	3964.	431951.	1944.	1006.	1734.	870	1944	1944	870	413	201	123	97	88	86	86	88
174.0	11.6		5327.	140.03	0.	4174.	469935.	2101.	1007.	1876.	953	2101	2101	953	421	203	123	97	88	85	85	88
177.0	11.8		5766.	146.45	0.	4394.	509718.	2263.	1007.	2024.	1041	2263	2263	1041	430	204	122	96	87	85	85	87
180.0	12.0		6256.	163.11	1.	4638.	553860.	2465.	1008.	2206.	1118	2465	2465	1118	439	206	122	96	87	84	84	87
183.0	12.2		6694.	146.14	0.	4857.	593368.	2620.	1009.	2347.	1214	2620	2620	1214	448	207	122	96	87	84	84	87
186.0	12.4		7165.	156.86	0.	5095.	636324.	2765.	1009.	2479.	1343	2765	2765	1343	458	209	122	95	87	83	83	87
189.0	12.6		7728.	187.80	0.	5378.	687758.	2977.	1010.	2672.	1454	2977	2977	1454	468	211	121	95	87	83	83	87
192.0	12.8		8191.	154.15	0.	5609.	729239.	3135.	1010.	2815.	1562	3135	3135	1562	478	212	121	94	87	82	82	87
195.0	13.0		8700.	169.73	1.	5864.	775437.	3303.	1011.	2968.	1689	3303	3303	1689	488	214	121	94	87	82	82	87
198.0	13.2		9347.	215.58	0.	6194.	835403.	3518.	1012.	3163.	1851	3518	3518	1851	498	215	121	93	87	81	81	87
201.0	13.4		9862.	171.88	1.	6452.	882005.	3683.	1012.	3313.	1985	3683	3683	1985	509	217	121	93	86	81	81	86
204.0	13.6		10399.	178.97	-1.	6721.	930610.	3855.	1013.	3469.	2123	3855	3855	2123	520	219	120	93	86	81	81	86
207.0	13.8		10949.	183.19	1.	6997.	980186.	4031.	1013.	3630.	2263	4031	4031	2263	533	221	120	92	85	80	80	85
210.0	14.0		11551.	200.73	0.	7303.	1035263.	4210.	1014.	3792.	2435	4210	4210	2435	547	222	120	92	85	80	80	85
213.0	14.2		12120.	189.64	1.	7589.	1086547.	4390.	1014.	3957.	2581	4390	4390	2581	561	224	120	92	85	79	79	85
216.0	14.4		12653.	177.86	1.	7854.	1133530.	4574.	1015.	4123.	2701	4574	4574	2701	578	226	120	91	84	79	79	84
219.0	14.6		13184.	176.86	1.	8120.	1180535.	4725.	1016.	4261.	2854	4724	4725	2854	595	228	120	91	84	78	78	84
222.0	14.8		13871.	228.94	1.	8471.	1243100.	4943.	1016.	4459.	3031	4943	4943	3031	614	230	119	91	83	78	78	83
225.0	15.0		14381.	170.02	0.	8724.	1287243.	5100.	1017.	4602.	3161	5100	5100	3161	635	232	119	91	83	78	78	83
228.0	15.2		15029.	216.15	1.	9053.	1345190.	5317.	1018.	4799.	3312	5317	5317	3312	657	234	119	90	83	77	77	83
231.0	15.4		15626.	199.00	0.	9358.	1398303.	5470.	1018.	4939.	3501	5470	5470	3501	681	236	119	90	82	77	77	82
234.0	15.6		16159.	177.56	0.	9624.	1443848.	5625.	1019.	5082.	3642	5625	5625	3642	707	238	119	90	82	77	77	82
237.0	15.8		16762.	200.94	1.	9928.	1496421.	5816.	1019.	5255.	3790	5816	5816	3790	734	240	119	90	81	76	76	81
240.0	16.0		17393.	210.28	0.	10247.	1551524.	6018.	1020.	5439.	3941	6018	6018	3941	762	242	118	89	81	76	76	81
243.0	16.2		17958.	188.40	0.	10532.	1599525.	6177.	1021.	5585.	4095	6177	6177	4095	795	244	118	89	81	76	76	81
246.0	16.4		18545.	195.84	0.	10830.	1649003.	6345.	1021.	5738.	4249	6345	6345	4249	834	246	118	89	80	75	75	80
249.0	16.6		19138.	197.72	0.	11133.	1698373.	6510.	1022.	5889.	4406	6510	6510	4406	879	248	118	89	80	75	75	80
252.0	16.8		19852.	237.91	1.	11506.	1758347.	6733.	1022.	6091.	4565	6733	6733	4565	939	251	118	89	80	75	75	80
255.0	17.0		20440.	196.05	1.	11807.	1804551.	6906.	1023.	6250.	4695	6906	6906	4695	1002	253	118	88	79	74	74	79
258.0	17.2		21099.	219.63	0.	12150.	1859172.	7080.	1024.	6408.	4874	7080	7080	4874	1061	255	118	88	79	74	74	79
261.0	17.4		21712.	204.09	1.	12463.	1908798.	7255.	1024.	6568.	5024	7255	7255	5024	1116	258	118	88	79	74	74	79
264.0	17.6		22372.	220.25	1.	12807.	1962999.	7431.	1025.	6729.	5199	7431	7431	5199	1179	260	117	88	78	73	73	78
267.0	17.8		23038.	222.00	0.	13158.	2014900.	7608.	1026.	6890.	5360	7608	7608	5360	1264	262	117	88	78	73	73	78
270.0	18.0		23670.	210.66	0.	13489.	2061921.	7786.	1026.	7053.	5492	7786	7786	5492	1356	265	117	88	78	73	73	78
273.0	18.2		24291.	206.97	1.	13810.	2109279.	7963.	1027.	7216.	5627	7963	7963	5627	1434	267	117	88	77	73	73	77
276.0	18.4		24944.	217.46	-4.	14149.	2160482.	8140.	1027.	7377.	5785	8140	8140	5785	1510	270	117	87	77	72	72	77
279.0	18.6		25655.	237.30	0.	14524.	2217935.	8320.	1028.	7542.	5975	8320	8320	5975	1589	272	117	87	77	72	72	77
282.0	18.8		26302.	215.41	-1.	14861.	2266241.	8501.	1029.	7707.	6113	8501	8501	6113	1680	275	117	87	76	72	72	76
285.0	19.0		26987.	228.50	1.	15227.	2315788.	8684.	1029.	7874.	6256	8684	8684	6256	1797	278	117	87	76	72	72	76
288.0	19.2		27630.	214.12	0.	15564.	2361800.	8844.	1030.	8022.	6403	8844	8844	6403	1903	280	116	87	76	71	71	76
291.0	19.4		28267.	212.39	1.	15895.	2408611.	9012.	1030.	8176.	6547	9012	9012	6547	1996	283	116	87	76	71	71	76
294.0	19.6		29025.	252.69	0.	16300.	2468580.	9197.	1031.	8344.	6749	9197	9197	6749	2095	286	116	87	75	71	71	75
297.0	19.8		29706.	227.15	0.	16657.	2519343.	9382.	1032.	8514.	6897	9382	9382	6897	2194	289	116	87	75	71	71	75

LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
620	1095	1095	620	363	193	124	101	90	87	87	90	101	124	193	363
651	1199	1199	651	371	195	124	100	89	87	87	89	100	124	195	371
685	1348	1348	685	379	196	124	99	89	87	87	89	99	124	196	379
722	1475	1475	722	388	197	123	99	89	87	87	89	99	123	197	388
762	1604	1604	762	396	199	123	98	88	87	87	88	98	123	199	396
810	1774	1774	810	404	200	123	98	88	86	86	88	98	123	200	404
870	1944	1944	870	413	201	123	97	88	86	86	88	97	123	201	413
953	2101	2101	953	421	203	123	97	88	85	85	88	97	123	203	421
1041	2263	2263	1041	430	204	122	96	87	85	85	87	96	122	204	430
1118	2465	2465	1118	439	206	122	96	87	84	84	87	96	122	206	439
1214	2620	2620	1214	448	207	122	96	87	84	84	87	96	122	207	448
1343	2765	2765	1343	458	209	122	95	87	83	83	87	95	122	209	458
1454	2977	2977	1454	468	211	121	95	87	83	83	87	95	121	211	468
1562	3135	3135	1562	478	212	121	94	87	82	82	87	94	121	212	478
1689	3303	3303	1689	488	214	121	94	87	82	82	87	94	121	214	488
1851	3518	3518	1851	498	215	121	93	87	81	81	87	93	121	215	498
1985	3683	3683	1985	509	217	121	93	86	81	81	86	93	121	217	509
2123	3855	3855	2123	520	219	120	93	86	81	81	86	93	120	219	520
2263	4031	4031	2263	533	221	120	92	85	80	80	85	92	120	221	533
2435	4210	4210	2435	547	222	120	92	85	80	80	85	92	120	222	547
2581	4390	4390	2581	561	224	120	92	85	79	79	85	92	120	224	561
2701	4574	4574	2701	578	226	120	91	84	79	79	84	91	120	226	578
2854	4724	4725	2854	595	228	120	91	84	78	78	84	91	120	228	595
3031	4943	4943	3031	614	230	119	91	83	78	78	83	91	119	230	614
3161	5100	5100	3161	635	232	119	91	83	78	78	83	91	119	232	635
3312	5317	5317	3312	657	234	119	90	83	77	77	83	90	119	234	657
3501	5470	5470	3501	681	236	119	90	82	77	77	82	90	119	236	681
3642	5625	5625	3642	707	238	119	90	82	77	77	82	90	119	238	707
3790	5816	5816	3790	734	240	119	90	81	76	76	81	90	119	240	734
3941	6018	6018	3941	762	242	118	89	81	76	76	81	89	118	242	762
4095	6177	6177	4095	795	244	118	89	81	76	76	81	89	118	244	795
4249	6345	6345	4249	834	246	118	89	80	75	75	80	89	118	246	834
4406	6510	6510	4406	879	248	118	89	80	75	75	80	89	118	248	879
4565	6733	6733	4565	939	251	118	89	80	75	75	80	89	118	251	939
4695	6906	6906	4695	1002	253	118	88	79	74	74	79	88	118	253	1002
4874	7080	7080	4874	1061	255	118	88	79	74	74	79	88	118	255	1061
5024	7255	7255	5024	1116	258	118	88	79	74	74	79	88	118	258	1116
5199	7431	7431	5199	1179	260	117	88	78	73	73	78	88	117	260	1179
5360	7608	7608	5360	1264	262	117	88	78	73	73	78	88	117	262	1264
5492	7786	7786	5492	1356	265	117	88	78	73	73	78	88	117	265	1356
5627	7963	7963	5627	1434	267	117	88	77	73	73	77	88	117	267	1434
5785	8140	8140	5785	1510	270	117	87	77	72	72	77	87	117	270	1510
5975	8320	8320	5975	1589	272	117	87	77	72	72	77	87	117	272	1589
6113	8501	8501	6113	1680	275	117	87	76	72	72	76	87	117	275	1680
6256	8684	8684	6256	1797	278	117	87	76	72	72	76	87	117	278	1797
6403	8844	8844	6403	1903	280	116	87	76	71	71	76	87	116	280	1903
6547	9012	9012	6547	1996	283	116	87	76	71	71	76	87	116	283	1996
6749	9197	9197	6749	2095	286	116	87	75	71	71	75	87	116	286	2095
6897	9382	9382	6897	2194	289	116	87	75	71	71	75	87	116	289	2194

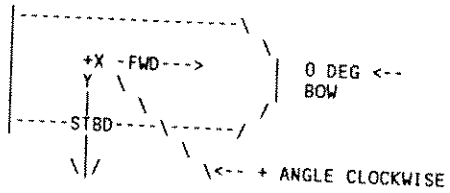
STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE T1S16T tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. 3 (FT)	14 (% WD)	15	RESTORING FORCE ON VESSEL 16 (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0		-1.	.00	-1.	1556.	49865.	164.	1565.	119.	164	0	162	156	153	146	139	134	134	132	133	134	141	146	151	156
3.0	.2		20.	6.80	131.	1558.	51492.	168.	1557.	123.	168	0	165	158	154	145	138	132	132	130	131	133	140	147	153	160
6.0	.4		40.	6.81	267.	1561.	53132.	173.	1549.	127.	173	0	169	161	155	145	136	131	129	128	129	132	140	147	155	163
9.0	.6		60.	6.80	409.	1565.	54866.	178.	1540.	131.	178	0	173	163	156	144	135	129	128	126	127	130	139	147	157	166
12.0	.8		81.	6.83	561.	1569.	56530.	183.	1531.	135.	183	0	177	166	157	144	134	127	126	125	126	129	138	148	159	170
15.0	1.0		101.	6.81	739.	1574.	58197.	188.	1521.	140.	188	0	181	168	158	143	133	126	124	123	124	128	138	149	162	174
18.0	1.2		122.	6.77	910.	1580.	59948.	193.	1511.	145.	193	0	186	171	159	143	132	125	123	122	123	127	137	149	164	178
21.0	1.4		142.	6.88	1079.	1586.	61649.	198.	1501.	150.	198	0	190	174	160	143	130	123	121	120	122	126	137	150	166	182
24.0	1.6		163.	6.93	1228.	1593.	63377.	204.	1490.	155.	204	0	195	177	161	142	129	122	120	119	121	125	136	150	169	186
27.0	1.8		184.	7.05	1382.	1600.	65141.	211.	1478.	161.	211	0	200	180	161	141	128	121	119	118	119	124	136	151	171	191
30.0	2.0		206.	7.13	1533.	1608.	67011.	217.	1466.	166.	217	0	206	183	163	141	127	120	118	117	118	123	135	151	173	195
33.0	2.2		228.	7.31	1679.	1617.	68845.	224.	1453.	173.	224	0	211	186	164	141	126	119	117	116	118	122	134	152	176	200
36.0	2.4		250.	7.43	1832.	1627.	70798.	232.	1440.	179.	232	0	217	190	165	141	125	118	116	115	117	121	134	153	178	205
39.0	2.6		273.	7.77	2003.	1637.	72766.	240.	1425.	186.	240	0	223	193	166	140	125	117	115	114	116	121	133	153	181	210
42.0	2.8		298.	8.26	2243.	1647.	74892.	248.	1411.	194.	248	0	229	196	167	140	124	117	114	113	115	120	133	154	184	216
45.0	3.0		324.	8.67	2525.	1658.	77145.	256.	1395.	201.	256	0	236	199	168	139	123	116	112	111	115	119	132	155	187	222
48.0	3.2		351.	9.08	2795.	1669.	79528.	266.	1379.	210.	266	0	243	203	169	139	122	115	111	110	113	119	132	156	190	228
51.0	3.4		379.	9.39	3042.	1680.	82040.	275.	1362.	218.	275	0	251	207	170	138	121	114	109	108	112	118	131	156	193	234
54.0	3.6		409.	9.80	3258.	1692.	84528.	285.	1344.	227.	285	0	258	211	171	138	121	113	108	107	111	117	131	157	196	241
57.0	3.8		439.	10.07	3483.	1705.	87082.	296.	1326.	236.	296	0	266	214	172	137	120	112	107	106	109	117	131	158	199	248
60.0	4.0		470.	10.31	3727.	1719.	89788.	306.	1307.	246.	306	0	275	219	174	137	119	110	105	104	108	116	130	158	202	254
63.0	4.2		502.	10.66	3973.	1733.	92479.	318.	1287.	256.	318	0	283	223	175	137	119	109	104	103	107	116	130	159	206	262
66.0	4.4		535.	10.98	4220.	1748.	95246.	330.	1266.	267.	330	0	292	227	176	136	118	108	103	102	106	115	129	160	209	270
69.0	4.6		569.	11.25	4480.	1763.	98170.	342.	1245.	278.	342	0	302	233	178	136	118	107	102	101	105	115	129	160	212	278
72.0	4.8		604.	11.68	4698.	1779.	101124.	355.	1223.	290.	355	0	312	237	179	136	117	106	101	100	104	114	128	161	216	286
75.0	5.0		640.	11.99	4929.	1796.	104144.	368.	1201.	302.	368	0	322	242	180	135	117	105	100	99	103	113	128	162	220	295
78.0	5.2		676.	12.28	5185.	1814.	107335.	381.	1178.	314.	381	0	333	247	182	135	116	104	99	98	102	112	127	162	224	304
81.0	5.4		714.	12.62	5465.	1832.	110486.	396.	1154.	327.	396	0	344	252	183	135	116	103	98	97	101	111	127	163	228	314
84.0	5.6		753.	12.78	5817.	1850.	113652.	410.	1127.	340.	410	0	355	258	184	134	116	102	97	96	100	110	127	164	232	324
87.0	5.8		792.	13.11	6199.	1869.	116876.	424.	1099.	353.	424	0	366	263	185	134	115	101	96	95	99	110	126	165	237	334
90.0	6.0		832.	13.44	6580.	1889.	120266.	439.	1074.	366.	439	0	379	269	187	134	115	100	95	94	98	109	126	165	241	344
93.0	6.2		874.	13.94	6937.	1909.	123613.	454.	1050.	380.	454	0	391	275	188	133	114	99	94	94	97	108	126	166	246	355
96.0	6.4		917.	14.30	7264.	1930.	127021.	471.	1029.	395.	471	0	403	281	189	133	113	98	94	93	96	107	125	167	251	367
99.0	6.6		960.	14.30	7656.	1951.	130527.	487.	1017.	410.	487	0	416	288	191	133	112	98	93	92	96	106	125	168	255	377
02.0	6.8		1004.	14.87	8008.	1973.	134030.	504.	1009.	426.	504	0	428	294	192	133	111	97	92	92	95	106	124	169	260	389
05.0	7.0		1051.	15.56	8230.	1997.	137822.	523.	1005.	443.	523	0	442	302	194	133	111	96	92	91	94	105	124	169	265	400
08.0	7.2		1101.	16.56	8224.	2021.	141730.	545.	1002.	463.	545	0	456	308	195	132	110	96	91	90	94	104	124	170	270	412
11.0	7.4		1154.	17.67	8021.	2048.	146032.	569.	1001.	485.	569	0	471	316	197	132	109	95	91	90	93	103	123	171	275	424
14.0	7.6		1211.	18.89	7523.	2076.	150546.	597.	1001.	511.	597	0	486	324	199	132	109	94	90	90	92	103	123	172	280	436
17.0	7.8		1272.	20.42	6738.	2107.	155425.	630.	1002.	541.	630	0	501	331	201	132	108	94	90	89	92	102	123	172	286	449
20.0	8.0		1338.	22.15	5697.	2141.	160793.	666.	1002.	574.	666	0	518	340	203	132	107	93	89	89	91	101	122	173	291	461
23.0	8.2		1411.	24.40	4297.	2178.	166712.	707.	1002.	611.	707	0	538	349	205	131	107	93	89	88	91	100	122	173	296	475
26.0	8.4		1489.	25.76	2673.	2218.	172912.	751.	1002.	651.	751	0	559	357	207	131	106	92	89	88	90	100	121	174	302	488
29.0	8.6		1577.	29.34	409.	2262.	179996.	804.	1003.	700.	804	0	583	366	209	131	105	92	88	88	90	99	121	175	308	502
32.0	8.8		1682.	35.04	-3035.	2316.	188570.	872.	1003.	761.	872	0	611	375	211	131	105	91	88	88	90	99	121	176	313	517
35.0	9.0		1815.	44.21	-8628.	2384.	199605.	965.	1003.	846.	965	0	646	386	214	131	105	91	88	87	89	98	120	176	318	532
38.0	9.2		1954.	46.51	-14226.	2455.	210998.	1062.	1003.	934.	1062	0	682	396	217	131	104	90	87	87	89	97	120	176	323	550
41.0	9.4		2094.	46.70	-19046.	2527.	222346.	1154.	1004.	1017.	1154	0	723	406	219	131	103	90	87	87	88	97	120	177	329	570
44.0	9.6		2270.	58.65	-26900.	2616.	236799.	1280.	1004.	1132.	1280	0	769	417	223	131	103	90	87	87	88	96	119	177	334	591
47.0	9.8		2464.	64.57	-34974.	2715.	252668.	1416.	1005.	1255.	1416	0	825	428	226	131	103	89	87	87	88	95	119	177	340	615
50.0	10.0		2660.	65.53	-41247.	2816.	268481.	1541.	1005.	1368.	1541	0	891	437	228	131	102	89	87	87	88	95	119	178	347	644

VESSEL DISP. (FT) 13	(% WD) 14	RESTORING FORCE ON VESSEL (KIPS) 15	INCREMENT STIFFNESS (KIPS/FT) 16	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)
153.0	10.2	2892.	77.14	-48291.	2934.	287266.	1683.	1005.	1498.
156.0	10.4	3163.	90.33	-58804.	3073.	309459.	1867.	1006.	1664.
159.0	10.6	3405.	80.71	-66393.	3196.	328956.	2020.	1007.	1803.
162.0	10.8	3681.	91.94	-73417.	3337.	351073.	2183.	1007.	1951.
165.0	11.0	3993.	104.10	-80367.	3497.	375980.	2363.	1008.	2114.
168.0	11.2	4317.	107.97	-86683.	3664.	401618.	2548.	1008.	2282.
171.0	11.4	4609.	97.39	-87256.	3815.	423843.	2685.	1009.	2407.
174.0	11.6	4952.	114.39	-91196.	3993.	450667.	2863.	1009.	2568.
177.0	11.8	5326.	124.60	-95945.	4186.	480066.	3060.	1010.	2747.
180.0	12.0	5672.	115.40	-93631.	4366.	506091.	3208.	1010.	2881.
183.0	12.2	6069.	132.10	-96146.	4572.	536830.	3407.	1011.	3062.
186.0	12.4	6450.	127.20	-97396.	4770.	566278.	3590.	1012.	3228.
189.0	12.6	6839.	129.74	-95876.	4972.	595898.	3760.	1012.	3383.
192.0	12.8	7217.	126.00	-93213.	5170.	624282.	3926.	1013.	3534.
195.0	13.0	7615.	132.37	-89807.	5377.	654000.	4097.	1013.	3690.
198.0	13.2	8044.	143.19	-86669.	5601.	686629.	4278.	1014.	3854.
201.0	13.4	8439.	131.57	-84437.	5807.	716402.	4456.	1015.	4016.
204.0	13.6	8837.	132.80	-80823.	6013.	746135.	4626.	1015.	4171.
207.0	13.8	9296.	152.94	-71559.	6256.	780098.	4790.	1016.	4321.
210.0	14.0	9721.	141.79	-70561.	6477.	812506.	4991.	1017.	4503.
213.0	14.2	10126.	134.98	-68876.	6687.	843207.	5177.	1017.	4673.
216.0	14.4	10576.	149.91	-62519.	6925.	877125.	5365.	1018.	4844.
219.0	14.6	11009.	144.41	-51093.	7155.	908920.	5520.	1018.	4985.
222.0	14.8	11414.	134.95	-43897.	7367.	938986.	5678.	1019.	5130.
225.0	15.0	11901.	162.31	-39095.	7625.	976281.	5896.	1020.	5327.
228.0	15.2	12364.	154.13	-28328.	7871.	1010419.	6067.	1020.	5483.
231.0	15.4	12773.	136.59	-20613.	8086.	1040659.	6231.	1021.	5633.
234.0	15.6	13233.	153.38	-10532.	8331.	1075195.	6404.	1021.	5792.
237.0	15.8	13697.	154.45	82.	8579.	1109859.	6579.	1022.	5952.
240.0	16.0	14199.	167.52	5629.	8847.	1148591.	6804.	1023.	6156.
243.0	16.2	14669.	156.69	16452.	9098.	1183650.	6974.	1023.	6311.
246.0	16.4	15114.	148.15	26272.	9333.	1216428.	7148.	1024.	6470.
249.0	16.6	15566.	150.80	36219.	9574.	1250040.	7324.	1025.	6631.
252.0	16.8	16020.	151.36	45844.	9817.	1284185.	7503.	1025.	6795.
255.0	17.0	16577.	185.51	63912.	10125.	1326362.	7683.	1026.	6959.
258.0	17.2	17049.	157.35	74283.	10380.	1362255.	7862.	1026.	7123.
261.0	17.4	17559.	170.05	91089.	10660.	1400162.	8034.	1027.	7280.
264.0	17.6	18029.	156.76	101227.	10913.	1435514.	8214.	1028.	7445.
267.0	17.8	18502.	157.63	111578.	11167.	1471107.	8396.	1028.	7611.
270.0	18.0	19014.	170.62	123672.	11447.	1510208.	8579.	1029.	7778.
273.0	18.2	19592.	192.47	144704.	11772.	1554199.	8758.	1029.	7942.
276.0	18.4	20070.	159.50	160761.	12032.	1589503.	8908.	1030.	8080.
279.0	18.6	20555.	161.65	171267.	12292.	1625832.	9087.	1031.	8244.
282.0	18.8	21052.	165.66	182811.	12560.	1663064.	9270.	1031.	8411.
285.0	19.0	21566.	171.48	197271.	12842.	1701995.	9450.	1032.	8576.
288.0	19.2	22088.	174.03	217008.	13131.	1740860.	9606.	1032.	8720.
291.0	19.4	22639.	183.63	234301.	13435.	1782144.	9787.	1033.	8885.
294.0	19.6	23153.	171.09	248012.	13716.	1820727.	9964.	1034.	9047.
297.0	19.8	23667.	171.39	265891.	13998.	1859108.	10124.	1034.	9195.

LINE LOAD (KIPS)

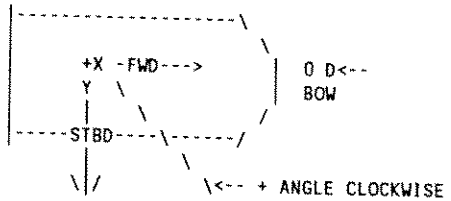
LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12				
1683	0	977	446	230	131	101	89	87	86	87	95	118	179	355	678	
1867	0	1065	457	232	130	101	89	87	86	87	94	118	180	362	714	
2020	0	1148	467	234	130	100	88	86	85	87	94	118	181	370	751	
2183	0	1253	476	236	130	100	88	86	85	87	93	118	183	379	798	
2363	0	1375	485	237	129	99	88	85	84	87	93	118	184	388	857	
2548	0	1493	497	240	129	99	88	85	84	87	93	117	185	394	928	
2685	0	1612	510	243	129	98	87	84	83	87	92	117	185	402	1012	
2863	0	1751	520	244	129	98	87	84	83	87	92	117	187	411	1094	
3060	0	1901	532	246	128	97	87	83	82	86	92	117	188	420	1183	
3208	0	2044	548	249	128	97	87	83	82	86	91	117	189	427	1297	
3407	0	2197	566	253	128	97	87	82	81	85	91	116	189	434	1406	
3590	0	2352	584	255	128	96	87	82	81	85	91	116	191	443	1512	
3760	0	2518	600	257	128	96	87	81	80	84	90	116	192	453	1631	
3926	0	2660	626	261	128	95	87	81	80	84	90	116	192	460	1758	
4097	0	2811	653	265	128	95	86	80	79	84	90	116	193	467	1894	
4278	0	2994	675	267	128	95	86	80	79	83	89	116	194	478	2031	
4456	0	3140	706	271	128	94	86	80	79	83	89	115	195	486	2158	
4626	0	3291	736	274	128	94	85	79	78	82	89	115	196	494	2293	
4790	0	3487	766	277	127	94	85	79	78	82	89	115	197	505	2468	
4991	0	3637	804	281	127	93	84	78	77	81	89	115	198	515	2597	
5177	0	3782	841	283	127	93	84	78	77	81	88	115	200	527	2719	
5365	0	3938	895	286	127	93	83	78	77	81	88	114	201	540	2875	
5520	0	4090	954	289	127	92	83	77	76	80	88	114	203	554	3048	
5678	0	4233	1007	290	126	92	83	77	76	80	88	114	205	572	3187	
5896	0	4394	1068	293	126	92	82	76	76	80	88	114	206	588	3345	
6067	0	4557	1127	297	126	91	82	76	75	79	88	114	207	606	3522	
6231	0	4687	1190	299	126	91	82	76	75	79	87	113	209	626	3665	
6404	0	4845	1262	301	125	91	81	75	75	79	87	113	212	652	3825	
6579	0	4996	1339	302	125	90	81	75	74	78	87	113	214	680	3989	
6804	0	5150	1418	305	124	90	80	75	74	78	87	113	216	707	4145	
6974	0	5320	1484	307	124	90	80	74	74	78	87	113	218	737	4309	
7148	0	5453	1562	310	124	90	80	74	73	77	87	113	220	766	4466	
7324	0	5589	1645	313	124	89	79	74	73	77	87	113	222	800	4619	
7503	0	5718	1739	315	123	89	79	74	73	77	87	113	225	845	4760	
7683	0	5910	1843	317	123	89	79	73	73	77	87	113	227	902	4961	
7862	0	6056	1940	320	123	89	78	73	72	76	87	112	229	963	5095	
8034	0	6206	2048	325	123	89	78	73	72	76	87	112	230	1018	5281	
8214	0	6348	2142	327	123	88	78	72	72	76	87	112	233	1077	5418	
8396	0	6489	2240	330	122	88	77	72	72	75	87	112	235	1135	5557	
8579	0	6661	2338	333	122	88	77	72	71	75	87	112	238	1213	5700	
8758	0	6840	2472	336	122	88	77	72	71	75	86	111	240	1302	5893	
8908	0	6990	2580	341	122	88	76	71	71	75	86	111	241	1382	6041	
9087	0	7147	2671	345	122	88	76	71	71	74	86	111	243	1453	6174	
9270	0	7303	2769	349	122	88	76	71	71	74	85	110	245	1525	6316	
9450	0	7452	2891	352	121	87	76	71	70	74	85	110	247	1611	6462	
9606	0	7608	3021	356	121	87	75	71	70	74	85	110	249	1706	6627	
9787	0	7780	3137	362	121	87	75	70	70	73	85	110	250	1795	6798	
9964	0	7943	3246	367	121	87	75	70	70	73	84	109	252	1891	6935	
10124	0	8094	3376	371	121	87	75	70	70	73	84	109	254	1986	7086	

STARTING DISPLACEMENTS : SURGE(FT) = -12.375 SWAY(FT) = -8.250 YAW(DEG) = .686

DEEPWATER, ARAMID MOORING LINE JIP
CASE T3A16N
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT	-	.00
LINE ATTACHMENT W.R.T. WATER LINE	-	-62.0 FT
ALLOWABLE LINE LENGTH ON BOTTOM	-	90.0 FT
DIRECTION OF VESSEL TRANSLATION	-	45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	11.3	33.8	56.3	78.8	101.3	123.8	146.3	168.8	-168.8	-146.3	-123.8	-101.3	-78.8	-56.3	-33.8	-11.3
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	97.1	97.1	97.1	97.1	97.1	97.1	97.1	97.1	97.1	97.1	97.1	97.1	97.1	97.1	97.1	97.1
INITIAL VESSEL YAW ANGLES (DEG)	.00															

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	3000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	3000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	500.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3540.0
AREA (SQ IN)	23.75
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	ARAMID
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	1350.0
WEIGHT IN WATER (LB/FT)	2.17
LINE B.S. (KIPS)	3561.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	142000.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	150.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3540.0
AREA (SQ IN)	23.75
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-100.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	150.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3540.0
AREA (SQ IN)	23.75
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	ARAMID
LINE SIZE (IN)	5.940"
LINE LENGTH (FT)	2610.0
WEIGHT IN WATER (LB/FT)	2.17
LINE B.S. (KIPS)	3561.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	142000.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.5"
LINE LENGTH (FT)	250.0
WEIGHT IN WATER (LB/FT)	250.00
LINE B.S. (KIPS)	3038.0
AREA (SQ IN)	23.75
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	1800.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.25 "
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	.01
LINE B.S. (KIPS)	9999.0
AREA (SQ IN)	1000.00
APP.MOD. OF ELAS.(KSI)	99999.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

VESSEL DISP. (FT)	(% WD)	RESTORING VEGBEE ON (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)
13	14	15	16						
.0	.0	0.	.00	0.	837.	0.	97.	1000.	82.
6.0	.2	9.	1.55	0.	837.	845.	98.	1000.	83.
12.0	.4	19.	1.55	0.	838.	1692.	99.	1000.	84.
18.0	.6	28.	1.56	0.	838.	2542.	101.	1000.	85.
24.0	.8	37.	1.57	0.	839.	3398.	102.	1000.	86.
30.0	1.0	47.	1.60	0.	840.	4281.	104.	1000.	87.
36.0	1.2	57.	1.65	0.	841.	5209.	105.	1000.	89.
42.0	1.4	67.	1.67	0.	843.	6151.	107.	1000.	90.
48.0	1.6	77.	1.69	0.	844.	7109.	109.	1000.	92.
54.0	1.8	87.	1.72	0.	846.	8081.	110.	1000.	93.
60.0	2.0	98.	1.75	0.	848.	9070.	112.	1000.	95.
66.0	2.2	109.	1.77	0.	850.	10076.	114.	1000.	96.
72.0	2.4	119.	1.76	0.	853.	11068.	116.	1000.	98.
78.0	2.6	130.	1.79	0.	855.	12082.	118.	1000.	99.
84.0	2.8	141.	1.80	0.	858.	13097.	120.	1000.	101.
90.0	3.0	152.	1.84	0.	861.	14146.	122.	1000.	103.
96.0	3.2	163.	1.89	0.	864.	15233.	124.	1000.	105.
102.0	3.4	175.	1.94	0.	868.	16361.	127.	1000.	107.
108.0	3.6	187.	2.00	0.	872.	17534.	130.	1000.	109.
114.0	3.8	199.	2.05	0.	877.	18756.	132.	1000.	112.
120.0	4.0	212.	2.10	0.	882.	20028.	135.	1000.	114.
126.0	4.2	224.	2.14	0.	887.	21343.	138.	1000.	117.
132.0	4.4	238.	2.22	0.	892.	22722.	142.	1000.	119.
138.0	4.6	252.	2.31	0.	899.	24171.	145.	1000.	122.
144.0	4.8	266.	2.40	0.	905.	25688.	149.	1000.	125.
150.0	5.0	281.	2.50	0.	913.	27284.	153.	1000.	129.
156.0	5.2	297.	2.60	0.	920.	28957.	157.	1000.	132.
162.0	5.4	313.	2.72	0.	929.	30716.	162.	1000.	136.
168.0	5.6	330.	2.88	0.	938.	32603.	167.	1000.	140.
174.0	5.8	349.	3.06	0.	948.	34635.	172.	1000.	145.
180.0	6.0	368.	3.25	0.	959.	36826.	178.	1000.	150.
186.0	6.2	389.	3.44	0.	972.	39167.	185.	1000.	155.
192.0	6.4	411.	3.72	0.	985.	41724.	192.	1000.	161.
198.0	6.6	435.	4.04	0.	1000.	44514.	200.	1000.	168.
204.0	6.8	462.	4.40	0.	1016.	47589.	209.	1000.	176.
210.0	7.0	490.	4.77	0.	1035.	51015.	220.	1000.	184.
216.0	7.2	522.	5.23	0.	1055.	54866.	231.	1000.	194.
222.0	7.4	557.	5.90	0.	1079.	59221.	245.	1000.	205.
228.0	7.6	597.	6.74	0.	1106.	64228.	261.	1000.	218.
234.0	7.8	644.	7.77	0.	1138.	70053.	280.	1000.	234.
240.0	8.0	698.	9.01	0.	1176.	76915.	304.	1000.	253.
246.0	8.2	760.	10.34	0.	1219.	84884.	331.	1000.	276.
252.0	8.4	836.	12.70	0.	1274.	94853.	367.	1000.	305.
258.0	8.6	930.	15.55	0.	1341.	107138.	412.	1000.	341.
264.0	8.8	1046.	19.30	0.	1424.	122499.	469.	1000.	388.
270.0	9.0	1187.	23.56	0.	1527.	141406.	540.	1000.	446.
276.0	9.2	1355.	28.09	0.	1650.	163973.	626.	1000.	516.
282.0	9.4	1552.	32.83	0.	1794.	190551.	727.	1000.	598.
288.0	9.6	1769.	36.08	0.	1952.	219628.	837.	1000.	688.
294.0	9.8	2023.	42.34	0.	2139.	254147.	965.	1000.	793.
300.0	10.0	2294.	45.12	0.	2339.	290917.	1097.	1000.	900.

1 LINE NUMBER	LINE LOAD (KIPS) 4	5	6	7	8	9	10	11	12
97	97	97	97	97	97	97	97	97	97
98	98	98	98	98	97	97	96	96	96
99	99	99	99	98	97	96	96	95	95
100	101	101	100	99	98	96	95	94	94
101	102	102	101	100	98	96	94	93	93
103	104	104	103	101	98	96	94	92	91
104	105	105	104	101	98	96	93	91	90
105	107	107	105	102	99	95	93	90	89
107	109	109	107	103	99	95	92	90	88
108	110	110	108	104	99	95	91	89	87
109	112	112	109	105	100	95	91	88	86
111	114	114	111	106	100	95	90	87	85
112	116	116	112	107	100	94	90	86	84
114	118	118	114	108	100	94	89	85	83
116	120	120	116	109	101	94	88	85	83
117	122	122	117	110	101	94	88	84	82
119	124	124	119	111	101	94	87	83	81
121	127	127	121	112	102	93	87	82	80
123	130	130	123	113	102	93	86	82	79
125	132	132	125	114	102	93	86	81	79
127	135	135	127	115	103	93	85	80	78
129	138	138	129	116	103	93	85	80	77
132	142	142	132	117	103	92	84	79	76
134	145	145	134	118	104	92	84	78	76
137	149	149	137	120	104	92	83	78	75
139	153	153	139	121	104	92	83	77	75
142	157	157	142	122	105	92	82	77	74
145	162	162	145	123	105	92	82	76	73
148	167	167	148	125	105	91	81	75	73
152	172	172	152	126	106	91	81	75	72
155	178	178	155	128	106	91	80	74	72
159	185	185	159	129	106	91	80	74	71
163	192	192	163	131	107	91	80	73	70
167	200	200	167	133	107	90	79	73	70
172	209	209	172	134	108	90	79	72	69
177	220	220	177	136	108	90	78	72	69
183	231	231	183	138	108	90	78	71	68
189	245	245	189	140	109	90	78	71	68
196	261	261	196	142	109	90	77	70	67
203	280	280	203	144	110	89	77	70	67
211	304	304	211	146	110	89	77	70	66
220	331	331	220	148	111	89	76	69	66
230	367	367	230	151	111	89	76	69	65
242	412	412	242	153	112	89	75	68	65
255	469	469	255	156	112	89	75	68	64
270	540	540	270	159	112	89	75	67	64
288	626	626	288	161	113	88	74	67	63
309	727	727	309	164	113	88	74	67	63
334	837	837	334	167	114	88	74	66	63
365	965	965	365	171	114	88	73	66	62
403	1097	1097	403	174	115	88	73	65	62

1 LINE NUMBER	LINE LOAD (KIPS) 4	5	6	7	8	9	10	11	12
97	97	97	97	97	97	97	97	97	97
97	97	97	97	97	97	97	97	97	97
96	96	96	96	96	96	96	96	96	96
95	95	95	95	95	95	96	96	97	97
94	94	94	94	95	96	97	97	98	98
93	93	93	93	94	96	97	98	98	99
92	91	91	92	94	96	98	98	99	100
90	90	91	93	96	98	98	99	100	101
89	89	90	93	95	99	100	101	102	103
88	88	90	92	95	99	101	102	103	104
87	87	89	91	95	99	101	103	104	105
86	86	88	91	95	100	102	104	105	106
85	85	87	90	95	100	102	104	106	107
84	84	86	90	94	100	102	105	107	108
83	83	85	89	94	100	103	105	108	109
83	83	85	88	94	101	103	106	109	110
82	82	84	88	94	101	104	107	110	111
81	81	83	87	94	101	104	107	111	112
80	80	82	87	93	102	105	108	112	113
79	79	82	86	93	102	105	109	113	114
79	79	81	86	93	102	106	110	114	115
78	78	80	85	93	103	106	110	115	116
77	77	80	85	93	103	107	111	116	117
76	76	79	84	92	103	107	112	117	118
76	76	78	84	92	104	108	113	118	120
75	75	78	83	92	104	108	113	119	121
75	75	77	83	92	104	109	114	120	122
74	74	77	82	92	105	109	115	121	123
73	73	76	82	92	105	110	116	122	124
73	73	75	81	91	105	111	117	123	125
72	72	75	81	91	106	111	118	124	126
72	72	74	80	91	106	112	118	125	128
71	71	74	80	91	106	112	119	126	129
70	70	73	80	91	107	113	120	127	131
70	70	73	79	90	107	114	121	128	133
69	69	72	79	90	108	114	122	129	134
69	69	72	78	90	108	115	123	130	136
68	68	71	78	90	108	116	124	131	138
68	68	71	78	90	109	116	125	133	140
67	67	70	77	90	109	117	126	134	142
67	67	70	77	89	110	118	127	136	144
66	66	70	77	89	110	119	128	137	146
66	66	69	76	89	111	120	130	139	148
65	65	69	76	89	111	121	131	141	151
65	65	68	75	89	112	122	132	143	153
64	64	68	75	89	112	123	134	145	156
64	64	67	75	89	112	124	135	147	159
63	63	67	74	88	113	125	137	149	161
63	63	67	74	88	113	126	138	151	164
63	63	66	74	88	114	127	140	153	167
62	62	66	73	88	114	128	141	155	171
62	62	65	73	88	115	129	143	157	174

VESSEL DISP. (FT) 3	(% WD) 14	RESTORING FORCE ON VESSEL (KIPS) 15	INCREMENT STIFFNESS (KIPS/FT) 16	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
306.0	10.2	2573.	46.56	0.	2545.	328958.	1227.	1000.	1006.	449	1227	1227	449	178	115	88	73	65	61	61	65
312.0	10.4	2880.	51.18	0.	2774.	371068.	1365.	1000.	1119.	506	1365	1365	506	182	116	88	73	65	61	61	65
318.0	10.6	3209.	54.74	0.	3020.	416220.	1506.	1000.	1235.	573	1506	1506	573	186	116	87	72	64	60	60	64
324.0	10.8	3552.	57.19	0.	3277.	463498.	1647.	1000.	1350.	652	1647	1647	652	190	117	87	72	64	60	60	64
330.0	11.0	3914.	60.33	0.	3549.	513565.	1789.	1000.	1466.	743	1789	1789	743	195	117	87	72	63	60	60	63
336.0	11.2	4287.	62.23	0.	3830.	565096.	1933.	1000.	1585.	838	1933	1933	838	200	118	87	71	63	59	59	63
342.0	11.4	4683.	65.89	0.	4129.	619882.	2079.	1000.	1704.	947	2079	2079	947	206	118	87	71	63	59	59	63
348.0	11.6	5089.	67.79	0.	4435.	676046.	2229.	1000.	1827.	1059	2229	2229	1059	212	119	87	71	62	59	59	62
354.0	11.8	5501.	68.66	0.	4747.	733064.	2373.	1000.	1946.	1180	2373	2373	1180	218	120	87	71	62	58	58	62
360.0	12.0	5889.	64.58	0.	5038.	786117.	2507.	1000.	2057.	1295	2507	2507	1295	225	120	87	70	62	58	58	62
366.0	12.2	6298.	68.20	0.	5346.	842086.	2653.	1000.	2177.	1411	2653	2653	1411	232	121	86	70	61	57	57	61
372.0	12.4	6720.	70.43	0.	5664.	899920.	2798.	1000.	2296.	1537	2798	2798	1537	241	121	86	70	61	57	57	61
378.0	12.6	7138.	69.62	0.	5977.	956579.	2942.	1000.	2415.	1659	2942	2942	1659	250	122	86	69	61	57	57	61
384.0	12.8	7563.	70.79	0.	6295.	1013950.	3090.	1000.	2537.	1781	3090	3090	1781	260	123	86	69	60	56	56	60
390.0	13.0	7956.	65.51	0.	6589.	1066516.	3213.	0.	2639.	1908	3213	3213	1908	271	123	86	69	60	56	56	60
396.0	13.2	8178.	36.95	0.	6753.	1094471.	3231.	0.	2657.	2029	3231	3231	2029	284	124	86	69	60	56	56	60
402.0	13.4	8445.	44.55	0.	6952.	1128696.	3268.	0.	2691.	2160	3268	3268	2160	299	124	86	68	59	55	55	59
408.0	13.6	8717.	45.27	0.	7153.	1162780.	3309.	0.	2728.	2286	3309	3309	2286	315	125	86	68	59	55	55	59
414.0	13.8	8984.	44.51	0.	7349.	1195830.	3350.	0.	2765.	2409	3350	3350	2409	333	126	85	68	59	55	55	59

LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
73	88	115	178								
73	88	116	182								
72	87	116	186								
72	87	117	190								
72	87	117	195								
71	87	118	200								
71	87	118	206								
71	87	119	212								
71	87	120	218								
70	87	120	225								
70	86	121	232								
70	86	121	241								
69	86	122	250								
69	86	123	260								
69	86	123	271								
69	86	124	284								
68	86	124	299								
68	86	125	315								
68	85	126	333								

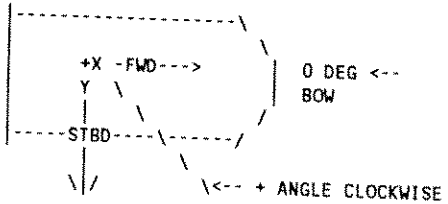
EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT 5218. FT

STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE T3A16N
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 2

SOIL FRICTION COEFFICIENT	-	.00
LINE ATTACHMENT W.R.T. WATER LINE	-	-62.0 FT
ALLOWABLE LINE LENGTH ON BOTTOM	-	90.0 FT
DIRECTION OF VESSEL TRANSLATION	-	45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP.		RESTORING FORCE ON VESSEL	INCREMENT STIFFNESS	YAW MOMENT	VERTICAL FORCE	OVERTURN MOMENT	MAX.LINE LOAD	LINE ON BOTTOM	HOR.FORCE ON ANCHOR	LINE LOAD (KIPS) LINE NUMBER												
3	14 15	16								1	2	3	4	5	6	7	8	9	10	11	12	
(FT)	(% WD)	(KIPS)	(KIPS/FT)	(FT-KIP)	(KIPS)	(FT-KIP)	(KIPS)	(FT)	(KIPS)													
.0	.0	1.	.00	2.	787.	-2600.	111.	1000.	94.	111	0	110	107	103	97	93	89	87	86	87	89	93	97	102	106
6.0	.2	9.	1.49	43.	788.	-1788.	113.	1000.	95.	113	0	112	108	103	98	93	89	87	85	86	88	92	97	102	107
12.0	.4	18.	1.50	90.	790.	-970.	114.	1000.	96.	114	0	114	110	104	98	92	88	86	85	85	87	92	97	102	108
18.0	.6	27.	1.49	147.	791.	-169.	116.	1000.	98.	116	0	116	111	105	98	92	87	85	84	84	86	91	96	103	109
24.0	.8	36.	1.50	211.	793.	639.	118.	1000.	100.	118	0	118	112	106	98	92	87	84	83	83	86	91	96	103	111
30.0	1.0	46.	1.54	268.	795.	1474.	120.	1000.	101.	119	0	120	114	107	98	92	86	83	82	82	85	90	96	104	112
36.0	1.2	55.	1.55	316.	797.	2314.	122.	1000.	103.	121	0	122	116	108	99	91	86	83	81	82	84	90	96	104	113
42.0	1.4	64.	1.58	365.	799.	3179.	125.	1000.	105.	123	0	125	117	109	99	91	85	82	80	81	83	89	96	104	114
48.0	1.6	74.	1.61	410.	801.	4070.	127.	1000.	107.	125	0	127	119	110	99	91	85	81	79	80	83	88	96	105	115
54.0	1.8	84.	1.63	462.	804.	4983.	130.	1000.	109.	128	0	130	121	110	99	91	84	80	79	79	82	88	96	105	116
60.0	2.0	94.	1.68	511.	807.	5936.	132.	1000.	112.	130	0	132	122	111	99	90	83	80	78	78	81	88	95	106	118
66.0	2.2	104.	1.72	562.	811.	6921.	135.	1000.	114.	132	0	135	124	112	100	90	83	79	77	78	81	87	95	106	119
72.0	2.4	115.	1.75	614.	814.	7938.	138.	1000.	117.	135	0	138	127	114	100	90	82	78	77	77	80	86	95	106	120
78.0	2.6	126.	1.79	683.	818.	8989.	142.	1000.	119.	137	0	142	129	115	100	90	82	78	76	76	79	86	95	107	121
84.0	2.8	137.	1.85	758.	823.	10089.	145.	1000.	122.	140	0	145	131	116	101	90	82	77	75	76	79	85	95	107	123
90.0	3.0	148.	1.92	836.	828.	11240.	149.	1000.	126.	143	0	149	134	117	101	89	81	77	75	75	78	85	94	108	124
96.0	3.2	160.	1.98	912.	833.	12445.	153.	1000.	129.	146	0	153	136	118	101	89	81	76	74	74	78	84	94	108	125
102.0	3.4	172.	2.05	986.	839.	13700.	157.	1000.	132.	149	0	157	139	119	102	89	80	76	73	74	77	84	94	108	127
108.0	3.6	185.	2.13	1063.	845.	15015.	162.	1000.	136.	153	0	162	141	121	102	89	80	75	73	73	76	83	94	109	128
114.0	3.8	198.	2.23	1149.	852.	16409.	167.	1000.	140.	156	0	167	144	122	102	89	79	74	72	73	76	83	94	109	130
120.0	4.0	213.	2.34	1249.	859.	17888.	172.	1000.	145.	160	0	172	148	123	103	89	79	74	72	72	75	82	94	109	132
126.0	4.2	227.	2.47	1353.	867.	19474.	178.	1000.	150.	164	0	178	151	125	103	88	79	73	71	71	75	82	93	110	133
132.0	4.4	243.	2.62	1462.	876.	21184.	185.	1000.	155.	169	0	185	155	126	103	88	78	73	71	71	74	82	93	110	135
138.0	4.6	260.	2.78	1565.	885.	23024.	192.	1000.	161.	174	0	192	158	128	104	88	78	72	70	70	74	81	93	111	137
144.0	4.8	278.	2.96	1652.	896.	24995.	200.	1000.	168.	180	0	200	162	129	104	88	77	72	69	70	73	81	93	112	139
150.0	5.0	297.	3.21	1778.	908.	27169.	209.	1000.	176.	185	0	209	166	130	104	87	77	71	69	69	73	80	93	112	141
156.0	5.2	318.	3.47	1912.	921.	29572.	219.	1000.	184.	192	0	219	170	132	104	87	76	71	68	69	72	80	93	113	143
162.0	5.4	340.	3.79	2058.	935.	32245.	231.	1000.	194.	199	0	231	175	134	105	87	76	70	68	68	72	80	93	113	145
168.0	5.6	366.	4.19	2223.	952.	35227.	245.	1000.	205.	206	0	245	181	135	105	87	76	70	67	68	71	79	93	113	147
174.0	5.8	393.	4.65	2341.	970.	38583.	260.	1000.	217.	216	0	260	186	137	105	87	75	70	67	67	71	79	93	114	151
180.0	6.0	425.	5.28	2599.	992.	42483.	279.	1000.	233.	226	0	279	192	138	106	86	75	69	66	67	71	79	92	115	153
186.0	6.2	461.	6.03	2902.	1017.	47007.	302.	1000.	252.	237	0	302	199	140	106	86	75	69	66	66	70	78	92	115	156
192.0	6.4	502.	6.85	3151.	1046.	52183.	329.	1000.	274.	250	0	329	206	142	106	86	74	68	65	66	70	78	92	116	159
198.0	6.6	552.	8.18	3444.	1081.	58485.	363.	1000.	301.	266	0	363	214	144	106	86	74	68	65	65	69	78	92	117	162
204.0	6.8	611.	9.84	3789.	1123.	66203.	406.	1000.	336.	285	0	406	223	146	107	86	73	67	64	65	69	77	92	117	165
210.0	7.0	682.	11.86	4211.	1176.	75607.	460.	1000.	380.	307	0	460	233	147	107	85	73	67	64	64	69	77	92	118	169
216.0	7.2	767.	14.28	4779.	1239.	87034.	527.	1000.	436.	333	0	527	243	149	107	85	73	66	63	64	68	77	92	119	173
222.0	7.4	870.	17.15	5236.	1315.	100855.	609.	1000.	502.	366	0	609	256	151	107	85	72	66	63	63	68	76	92	120	177
228.0	7.6	992.	20.23	5531.	1406.	117342.	704.	1000.	580.	407	0	704	270	154	107	85	72	65	62	63	67	76	92	121	182
234.0	7.8	1130.	23.05	5434.	1509.	136191.	810.	1000.	666.	459	0	810	287	156	108	84	72	65	62	63	67	76	92	121	187
240.0	8.0	1290.	26.67	5434.	1630.	158230.	933.	1000.	766.	518	0	933	308	158	108	84	71	65	62	62	67	76	92	122	191
246.0	8.2	1467.	29.47	5371.	1763.	182553.	1066.	1000.	874.	584	0	1066	333	161	109	84	71	64	61	62	66	75	92	122	195
252.0	8.4	1659.	32.04	5098.	1909.	209218.	1203.	1000.	986.	661	0	1203	365	165	109	84	71	64	61	61	66	75	92	123	200
258.0	8.6	1863.	34.05	4914.	2065.	237675.	1340.	1000.	1099.	745	0	1340	406	168	110	84	71	63	60	61	65	74	91	123	205
264.0	8.8	2082.	36.38	4427.	2232.	268094.	1479.	1000.	1212.	840	0	1479	454	172	110	84	70	63	60	61	65	74	91	124	210
270.0	9.0	2320.	39.68	4360.	2415.	301494.	1623.	1000.	1330.	943	0	1623	514	176	111	84	70	63	60	60	64	74	91	124	216
276.0	9.2	2569.	41.56	4361.	2608.	336482.	1767.	1000.	1448.	1055	0	1767	584	179	111	84	70	62	59	60	64	73	91	125	223
282.0	9.4	2834.	44.18	4397.	2813.	373822.	1910.	1000.	1566.	1177	0	1910	664	183	112	84	69	62	59	59	64	73	91	126	230
288.0	9.6	3101.	44.42	4792.	3020.	411166.	2049.	1000.	1680.	1300	0	2049	750	187	112	83	69	62	58	59	63	73	91	127	239
294.0	9.8	3379.	46.43	5423.	3235.	450048.	2197.	1000.	1801.	1425	0	2197	837	191	112	83	69	61	58	59	63	73	91	127	250
300.0	10.0	3669.	48.32	6502.	3461.	490634.	2340.	1000.	1919.	1558	0	2340	940	195	113	83	69	61	58	58	63	72	91	128	261

VESSEL DISP. 13 (FT)	14 (% WD)	15	RESTORING FORCE ON VESSEL 16 (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)
306.0	10.2		3956.	47.85	8040.	3683.	530529.	2477.	1000.	2031.
312.0	10.4		4254.	49.68	9577.	3915.	571804.	2616.	1000.	2146.
318.0	10.6		4547.	48.74	11859.	4142.	611843.	2757.	1000.	2262.
324.0	10.8		4851.	50.66	13714.	4378.	653381.	2899.	1000.	2379.
330.0	11.0		5165.	52.43	16629.	4622.	696177.	3046.	1000.	2501.
336.0	11.2		5475.	51.55	20194.	4863.	737623.	3185.	0.	2616.
342.0	11.4		5705.	38.40	23052.	5043.	767667.	3231.	0.	2656.
348.0	11.6		5923.	36.37	26482.	5213.	795585.	3256.	0.	2680.
354.0	11.8		6165.	40.32	29076.	5402.	826590.	3297.	0.	2717.
360.0	12.0		6407.	40.23	33464.	5591.	856786.	3340.	0.	2756.

	LINE LOAD (KIPS) LINE NUMBER															
	1	2	3	4	5	6	7	8	9	10	11	12				
1688	0	2477	1045	200	113	83	68	61	57	58	62	72	91	129	274	
1825	0	2616	1155	204	113	83	68	60	57	58	62	72	91	131	290	
1952	0	2757	1262	209	114	82	68	60	57	57	62	72	91	132	307	
2089	0	2899	1372	214	114	82	67	60	56	57	61	71	91	133	326	
2224	0	3046	1490	220	114	82	67	59	56	57	61	71	91	134	348	
2356	0	3185	1610	227	115	82	67	59	56	56	61	71	91	135	375	
2472	0	3231	1736	235	115	82	66	59	55	56	60	71	90	135	400	
2584	0	3256	1869	244	116	82	66	58	55	56	60	70	90	136	429	
2710	0	3297	2001	256	117	82	66	58	55	55	60	70	90	136	458	
2823	0	3340	2137	269	118	82	66	58	54	55	59	70	90	137	493	

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 3 AT 5219. FT

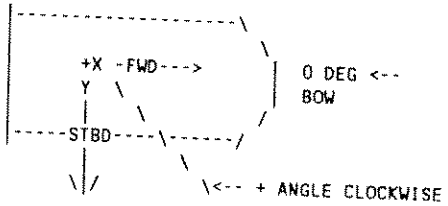
STARTING DISPLACEMENTS : SURGE(FT) = -48.000 SWAY(FT) = -33.000 YAW(DEG) = .849

DEEPWATER, ARAMID MOORING LINE JIP
CASE T3S16N.MM3
STEEL TAUT LEG IN 3000 FT

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	11.3	33.8	56.3	78.8	101.3	123.8	146.3	168.8	-168.8	-146.3	-123.8	-101.3	-78.8	-56.3	-33.8	-11.3
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	260.4	260.4	260.4	260.4	260.4	260.4	260.4	260.4	260.4	260.4	260.4	260.4	260.4	260.4	260.4	260.4
INITIAL VESSEL YAW ANGLES (DEG)		.00														

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	3000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	3000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.00 "
LINE LENGTH (FT)	500.0
WEIGHT IN WATER (LB/FT)	53.94
LINE B.S. (KIPS)	2941.0
AREA (SQ IN)	19.63
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.00 "
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	53.94
LINE B.S. (KIPS)	2941.0
AREA (SQ IN)	19.63
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-400.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.00 "
LINE LENGTH (FT)	2850.0
WEIGHT IN WATER (LB/FT)	53.94
LINE B.S. (KIPS)	2941.0
AREA (SQ IN)	19.63
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	1800.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.00 "
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	.01
LINE B.S. (KIPS)	9999.0
AREA (SQ IN)	1000.00
APP.MOD. OF ELAS.(KSI)	99999.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

VESSEL DISP.		RESTORING FORCE ON VESSEL	INCREMENT STIFFNESS	YAW MOMENT	VERTICAL FORCE	OVERTURN MOMENT	MAX.LINE LOAD	LINE ON BOTTOM	HOR.FORCE ON ANCHOR
3 14 15 16 (FT)	(% WD)	(KIPS)	(KIPS/FT)	(FT-KIP)	(KIPS)	(FT-KIP)	(KIPS)	(FT)	(KIPS)
.0	.0	0.	.00	0.	2012.	0.	260.	1000.	228.
4.5	.2	19.	4.25	0.	2012.	1947.	263.	1000.	230.
9.0	.3	38.	4.24	0.	2013.	3893.	265.	1000.	232.
13.5	.4	57.	4.23	0.	2014.	5838.	268.	1000.	234.
18.0	.6	76.	4.23	0.	2015.	7782.	271.	1000.	237.
22.5	.8	95.	4.23	0.	2016.	9726.	274.	1000.	239.
27.0	.9	114.	4.22	0.	2018.	11668.	276.	1000.	241.
31.5	1.0	133.	4.22	0.	2019.	13609.	279.	1000.	244.
36.0	1.2	152.	4.18	0.	2021.	15534.	282.	1000.	246.
40.5	1.4	171.	4.16	0.	2024.	17449.	285.	1000.	248.
45.0	1.5	189.	4.16	0.	2026.	19358.	288.	1000.	251.
49.5	1.6	208.	4.17	0.	2029.	21271.	291.	1000.	253.
54.0	1.8	227.	4.19	0.	2032.	23189.	294.	1000.	255.
58.5	2.0	246.	4.20	0.	2036.	25121.	297.	1000.	258.
63.0	2.1	265.	4.23	0.	2039.	27060.	300.	1000.	261.
67.5	2.3	284.	4.27	0.	2044.	29010.	303.	1000.	263.
72.0	2.4	304.	4.31	0.	2048.	30992.	307.	1000.	266.
76.5	2.5	323.	4.36	0.	2053.	32995.	310.	1000.	269.
81.0	2.7	343.	4.42	0.	2058.	35049.	314.	1000.	272.
85.5	2.8	363.	4.49	0.	2064.	37169.	318.	1000.	275.
90.0	3.0	384.	4.59	0.	2071.	39389.	322.	1000.	279.
94.5	3.2	405.	4.66	0.	2078.	41674.	326.	1000.	282.
99.0	3.3	426.	4.74	0.	2085.	44030.	331.	1000.	285.
03.5	3.5	448.	4.82	0.	2093.	46473.	335.	1000.	289.
08.0	3.6	470.	4.86	0.	2102.	48929.	340.	1000.	293.
12.5	3.8	492.	4.92	0.	2110.	51423.	345.	1000.	297.
17.0	3.9	514.	4.98	0.	2119.	53960.	349.	1000.	300.
21.5	4.1	537.	5.04	0.	2129.	56529.	354.	1000.	304.
26.0	4.2	560.	5.08	0.	2138.	59093.	359.	1000.	308.
30.5	4.3	583.	5.13	0.	2148.	61683.	364.	1000.	312.
35.0	4.5	606.	5.18	0.	2158.	64301.	369.	1000.	316.
39.5	4.7	630.	5.18	0.	2168.	66906.	374.	1000.	320.
44.0	4.8	653.	5.19	0.	2179.	69511.	379.	1000.	324.
48.5	4.9	677.	5.28	0.	2190.	72170.	385.	1000.	329.
53.0	5.1	701.	5.39	0.	2201.	74895.	390.	1000.	333.
57.5	5.3	726.	5.50	0.	2214.	77699.	396.	1000.	338.
62.0	5.4	751.	5.61	0.	2226.	80576.	402.	1000.	342.
66.5	5.6	777.	5.69	0.	2240.	83506.	408.	1000.	348.
71.0	5.7	803.	5.76	0.	2253.	86460.	415.	1000.	353.
75.5	5.8	830.	6.00	0.	2268.	89599.	422.	1000.	358.
80.0	6.0	858.	6.27	0.	2284.	92964.	430.	1000.	364.
84.5	6.2	887.	6.60	0.	2301.	96598.	438.	1000.	371.
89.0	6.3	920.	7.13	0.	2321.	100679.	448.	1000.	379.
93.5	6.4	954.	7.62	0.	2343.	105174.	460.	1000.	388.
98.0	6.6	989.	7.70	0.	2366.	109703.	471.	1000.	397.
02.5	6.8	1022.	7.45	0.	2387.	113976.	482.	1000.	405.
07.0	6.9	1054.	7.11	0.	2407.	117928.	490.	1000.	412.
11.5	7.1	1087.	7.36	0.	2428.	122079.	500.	1000.	419.
16.0	7.2	1122.	7.84	0.	2451.	126641.	510.	1000.	427.
20.5	7.3	1163.	8.97	0.	2480.	132190.	522.	1000.	437.
25.0	7.5	1207.	9.80	0.	2513.	138466.	537.	1000.	448.

LINE LOAD (KIPS)

LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
260	260	260	260	260	260	260	260	260	260	260	260
263	263	263	263	262	261	260	259	258	258	258	258
265	265	265	265	263	261	259	258	256	255	255	256
267	268	268	267	265	262	259	256	254	253	253	254
269	271	271	269	266	262	258	255	252	251	251	252
271	274	274	271	268	263	258	254	250	249	249	250
274	276	276	274	269	263	257	252	248	246	246	248
276	279	279	276	271	264	257	251	247	244	244	247
279	282	282	279	272	265	257	250	245	242	242	245
281	285	285	281	274	265	256	248	243	240	240	243
283	288	288	283	276	266	256	247	241	238	238	241
286	291	291	286	277	266	255	246	239	236	236	239
288	294	294	288	279	267	255	245	238	234	234	238
291	297	297	291	280	267	254	244	236	232	232	236
293	300	300	293	282	268	254	242	234	230	230	234
296	303	303	296	284	268	253	241	233	229	229	233
299	307	307	299	285	269	253	240	231	227	227	231
301	310	310	301	287	270	253	239	230	225	225	230
304	314	314	304	289	270	252	238	228	223	223	228
307	318	318	307	290	271	252	237	227	222	222	227
310	322	322	310	292	271	251	236	225	220	220	225
313	326	326	313	294	272	251	235	224	218	218	224
317	331	331	317	296	273	251	234	222	217	217	222
320	335	335	320	297	273	250	233	221	215	215	221
324	340	340	324	299	274	250	232	220	213	213	220
328	345	345	328	301	274	249	231	218	212	212	218
331	349	349	331	303	275	249	230	217	210	210	217
335	354	354	335	305	276	249	229	215	209	209	215
339	359	359	339	307	276	248	228	214	207	207	214
343	364	364	343	309	277	248	227	213	206	206	213
347	369	369	347	311	278	248	226	211	204	204	211
351	374	374	351	314	278	247	225	210	203	203	210
356	379	379	356	316	279	247	224	209	201	201	209
360	385	385	360	318	280	246	223	208	200	200	208
364	390	390	364	321	280	246	222	206	198	198	206
369	396	396	369	323	281	246	221	205	197	197	205
373	402	402	373	326	282	245	220	204	196	196	204
377	408	408	377	328	282	245	219	203	194	194	203
382	415	415	382	331	283	245	218	201	193	193	201
386	422	422	386	334	284	244	218	200	192	192	200
391	430	430	391	337	284	244	217	199	190	190	199
396	438	438	396	339	285	244	216	198	189	189	198
401	448	448	401	342	286	243	215	197	188	188	197
407	460	460	407	345	286	243	214	195	186	186	195
412	471	471	412	348	287	243	213	194	185	185	194
418	482	482	418	351	288	243	212	193	184	184	193
424	490	490	424	354	289	242	212	192	183	183	192
431	500	500	431	356	289	242	211	191	181	181	191
439	510	510	439	359	290	242	210	190	180	180	190
447	522	522	447	362	291	241	209	189	179	179	189
457	537	537	457	366	292	241	208	188	178	178	188

11	12
260	260
258	259
256	258
254	256
252	255
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248	252
247	251
245	250
243	248
241	247
239	246
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236	244
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204	220
203	219
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199	217
198	216
197	215
195	214
194	213
193	212
192	212
191	211
190	210
189	209
188	208

VESSEL DISP. (FT) 13	(% WD) 14	RESTORING FORCE ON VESSEL (KIPS) 15	INCREMENT STIFFNESS (KIPS/FT) 16	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
229.5	7.7	1252.	10.11	0.	2547.	144955.	552.	1000.	459.	467	552	552	467	369	292	241	208	187	177	177	187
234.0	7.8	1299.	10.25	0.	2581.	151492.	567.	1000.	471.	477	567	567	477	372	293	240	207	186	176	176	186
238.5	7.9	1343.	9.89	0.	2613.	157632.	583.	1000.	483.	485	583	583	485	375	294	240	206	185	174	174	185
243.0	8.1	1388.	10.04	0.	2646.	163857.	600.	1000.	496.	493	600	600	493	378	295	240	205	184	173	173	184
247.5	8.3	1435.	10.38	0.	2680.	170316.	617.	1000.	510.	501	617	617	501	381	296	240	204	182	172	172	182
252.0	8.4	1484.	10.89	0.	2716.	177122.	636.	1000.	524.	509	636	636	509	384	296	239	204	181	171	171	181
256.5	8.6	1535.	11.30	0.	2755.	184330.	653.	1000.	537.	520	653	653	520	387	297	239	203	180	170	170	180
261.0	8.7	1588.	11.78	0.	2796.	191972.	671.	1000.	551.	532	671	671	532	391	298	239	202	180	169	169	180
265.5	8.9	1665.	17.07	0.	2860.	203818.	705.	1000.	577.	545	705	705	545	394	299	239	201	179	168	168	179
270.0	9.0	1737.	16.14	0.	2919.	214793.	735.	1000.	600.	558	735	735	558	398	300	238	201	178	167	167	178
274.5	9.1	1794.	12.71	0.	2964.	222975.	755.	1000.	615.	572	755	755	572	402	301	238	200	177	166	166	177
279.0	9.3	1857.	14.00	0.	3015.	232242.	777.	1000.	632.	586	777	777	586	406	301	238	199	176	165	165	176
283.5	9.4	1957.	22.05	0.	3100.	247814.	825.	1000.	668.	600	825	825	600	409	302	237	198	175	164	164	175
288.0	9.6	2048.	20.26	0.	3177.	261915.	866.	1000.	699.	615	866	866	615	413	303	237	198	174	163	163	174
292.5	9.8	2133.	19.04	0.	3248.	274991.	902.	1000.	726.	631	902	902	631	418	304	237	197	173	162	162	173
297.0	9.9	2223.	19.83	0.	3323.	288528.	940.	1000.	756.	647	940	940	647	422	305	237	196	172	161	161	172
301.5	10.1	2333.	24.55	0.	3418.	305769.	995.	1000.	797.	661	995	995	661	427	306	237	196	171	160	160	171
306.0	10.2	2469.	30.19	0.	3537.	327458.	1062.	1000.	847.	681	1062	1062	681	432	307	236	195	170	159	159	170
310.5	10.4	2592.	27.22	0.	3647.	347189.	1108.	1000.	882.	714	1108	1108	714	437	308	236	194	169	158	158	169
315.0	10.5	2758.	36.98	0.	3795.	374080.	1192.	1000.	945.	738	1192	1192	738	443	309	236	193	168	157	157	168
319.5	10.6	2870.	25.01	0.	3892.	390949.	1244.	1000.	985.	754	1244	1244	754	450	310	236	193	167	156	156	167
324.0	10.8	3056.	41.32	0.	4058.	420813.	1345.	1000.	1060.	772	1345	1345	772	457	311	235	192	167	155	155	167
328.5	10.9	3168.	24.82	0.	4157.	438020.	1379.	1000.	1086.	809	1379	1379	809	464	312	235	191	166	154	154	166
333.0	11.1	3387.	48.68	0.	4358.	474309.	1479.	1000.	1161.	854	1479	1479	854	471	313	235	191	165	153	153	165
337.5	11.3	3614.	50.51	0.	4562.	511103.	1604.	1000.	1255.	877	1604	1604	877	478	314	235	190	164	152	152	164
342.0	11.4	3760.	32.34	0.	4691.	534475.	1655.	1000.	1294.	921	1655	1655	921	484	315	234	189	163	151	151	163
346.5	11.6	4000.	53.29	0.	4905.	573514.	1787.	1000.	1393.	946	1787	1787	946	489	316	234	189	162	150	150	162
351.0	11.7	4224.	49.76	0.	5109.	610779.	1884.	1000.	1466.	999	1884	1884	999	495	317	234	188	162	150	150	162
355.5	11.9	4497.	60.63	0.	5359.	656488.	2007.	1000.	1559.	1060	2007	2007	1060	501	318	234	187	161	149	149	161
360.0	12.0	4722.	50.12	0.	5559.	692882.	2123.	1000.	1646.	1092	2123	2123	1092	507	320	234	187	160	148	148	160
364.5	12.1	5038.	70.20	0.	5851.	746084.	2264.	1000.	1752.	1165	2264	2264	1165	514	321	233	186	159	147	147	159
369.0	12.3	5253.	47.86	0.	6044.	780435.	2358.	1000.	1824.	1212	2358	2358	1212	522	322	233	186	158	146	146	158
373.5	12.4	5518.	58.75	-1.	6287.	824082.	2462.	1078.	1903.	1285	2462	2462	1285	531	323	233	185	158	145	145	158
378.0	12.6	5891.	83.06	0.	6634.	886815.	2634.	0.	2032.	1365	2634	2634	1365	540	325	233	184	157	145	145	157
382.5	12.8	5979.	19.48	0.	6701.	897386.	2661.	0.	2055.	1386	2661	2661	1386	550	326	233	184	156	144	144	156
387.0	12.9	6058.	17.63	0.	6773.	908906.	2616.	0.	2024.	1482	2616	2616	1482	559	327	232	183	155	143	143	155
391.5	13.1	6249.	42.24	0.	6950.	939818.	2635.	0.	2041.	1591	2635	2635	1591	569	328	232	183	155	142	142	155
396.0	13.2	6373.	27.71	0.	7057.	957554.	2655.	0.	2058.	1648	2655	2655	1648	579	330	232	182	154	141	141	154
400.5	13.4	6536.	36.17	0.	7204.	982911.	2674.	0.	2075.	1736	2674	2674	1736	590	331	232	181	153	141	141	153
405.0	13.5	6751.	47.85	0.	7408.	1018618.	2693.	0.	2092.	1864	2693	2693	1864	600	332	232	181	152	140	140	152
409.5	13.6	6859.	23.95	0.	7496.	1032603.	2713.	0.	2109.	1907	2713	2713	1907	611	334	232	180	152	139	139	152
414.0	13.8	7100.	53.47	0.	7725.	1072778.	2733.	0.	2127.	2052	2733	2733	2052	622	335	231	180	151	138	138	151

13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
187	177	177	187	208	241	292	369	467	552	552	467	369	292	241	208	187	177	177	187	208	241
186	176	176	186	207	240	293	372	477	567	567	477	372	293	240	207	186	176	176	186	207	240
185	174	174	185	206	240	294	375	485	583	583	485	375	294	240	206	185	174	174	185	206	240
184	173	173	184	205	240	295	378	493	600	600	493	378	295	240	205	184	173	173	184	205	240
182	172	172	182	204	240	296	381	501	617	617	501	381	296	240	204	182	172	172	182	204	240
181	171	171	181	204	239	296	384	509	636	636	509	384	296	239	204	181	171	171	181	204	239
180	170	170	180	203	239	297	387	520	653	653	520	387	297	239	203	180	170	170	180	203	239
180	169	169	180	202	239	298	391	532	671	671	532	391	298	239	202	180	169	169	180	202	239
179	168	168	179	201	239	299	394	545	705	705	545	394	299	239	201	179	168	168	179	201	239
178	167	167	178	201	238	300	398	558	735	735	558	398	300	238	201	178	167	167	178	201	238
177	166	166	177	200	238	301	402	572	755	755	572	402	301	238	200	177	166	166	177	200	238
176	165	165	176	199	238	301	406	586	777	777	586	406	301	238	199	176	165	165	176	199	238
175	164	164	175	198	237	302	409	600	825	825	600	409	302	237	198	175	164	164	175	198	237
174	163	163	174	198	237	303	413	615	866	866	615	413	303	237	198	174	163	163	174	198	237
173	162	162	173	197	237	304	418	631	902	902	631	418	304	237	197	173	162	162	173	197	237
172	161	161	172	196	237	305	422	647	940	940	647	422	305	237	196	172	161	161	172	196	237
171	160	160	171	196	237	306	427	661	995	995	661	427	306	237	196	171	160	160	171	196	237
170	159	159	170	195	236	307	432	681	1062	1062	681	432	307	236	195	170	159	159	170	195	236
169	158	158	169	194	236	308	437	714	1108	1108	714	437	308	236	194	169	158	158	169	194	236
168	157	157	168	193	236	309	443	738	1192	1192	738	443	309	236	193	168	157	157	168	193	236
167	156	156	167	193	236	310	450	754	1244	1244	754	450	310	236	193	167	156	156	167	193	236
167	155	155	167	192	235	311	457	772	1345	1345	772	457	311	235	192	167	155	155	167	192	235
166	154	154	166	191	235	312	464	809	1379	1379	809	464	312	235	191	166	154	154	166	191	235
165	153	153	165	191	235	313	471	854	1479	1479	854	471	313	235	191	165	153	153	165	191	235
164	152	152	164	190	235	314	478	877	1604	1604	877	478	314	235	190	164	152	152	164	190	235
163	151	151	163	189	234	315	484	921	1655	1655	921	484	315	234	189	163	151	151	163	189	234
162	150	150	162	189	234	316	489	946	1787	1787	946	489	316	234	189	162	150	150	162	189	234
162	150	150	162	188	234	317	495	999	1884	1884	999	495	317	234	188	162	150	150	162	188	234
161	149	149	161	187	234	318	501	1060	2007	2007	1060	501	318	234	187	161	149	149	161	187	234
160	148	148	160	187	234	320	507	1092	2123	2123	1092	507	320	234	187	160	148	148	160	187	234
159	147	147	159	186	233	321	514	1165	2264	2264	1165	514	321	233	186	159	147	147	159	186	233
158	146	146	158	186	233	322	522	1212	2358	2358	1212	522	322	233	186	158	146	146	158	186	233
158	145	145	158	185	233	323	531	1285	2462	2462	1285	531	323	233	185	158	145	145	158	185	233
157	145	145	157	184	233	325	540	1365	2634	2634	1365	540	325	233	184	157	145	145	157	184	233
156	144	144	156	184	233	326	550	1386	2661	2661	1386	550	326	233	184	156	144	144	156	184	233
155	143	143	155	183	232	327	559	1482	2616	2616	1482	559	327	232	183	155	143	143	155	183	232
155	142	142	155	183	232	328	569	1591	2635	2635	1591	569	328	232	183	155	142	142	155	183	232
154	141	141	154	182	232	330	579	1648	2655	2655	1648	579	330	232	182	154	141	141	154	182	232
153	141	141	153	181	232	331	590	1736	2674	2674	1736	590	331	232	181	153	141	141	153	181	232
152	140	140	152	181	232	332	600	1864	2693	2693	1864	600	332	232	181	152	140	140	152	181	232
152	139	139	152	180	232	334	611	1907	2713	2713	1907	611	334	232	180	152	139	139	152	180	232
151	138	138	151	180	231	335	622	2052	2733	2733	2052	622	335	231	180	151	138	138	151	180	231

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT 4328. FT

STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

AL = 1629
VLL = 87198
HLB = 1191

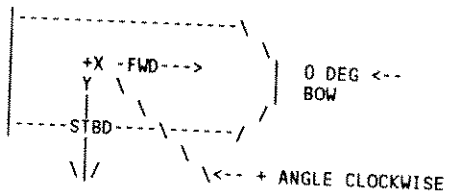
RF = 22963
LL = 976.606
DLL = 1412.33

HLA = 11.0

DEEPWATER, ARAMID MOORING LINE JIP
CASE T3S16N.MM3
STEEL TAUT LEG IN 3000 FT

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT	-	.00
LINE ATTACHMENT W.R.T. WATER LINE	-	-62.0 FT
ALLOWABLE LINE LENGTH ON BOTTOM	-	90.0 FT
DIRECTION OF VESSEL TRANSLATION	-	22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. 3 (FT)	14 (% WD)	15	RESTORING FORCE ON VESSEL 16 (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0		0.	.00	0.	1890.	70863.	298.	1000.	259.	298	0	296	287	276	261	248	238	233	230	232	238	249	261	275	287
4.5	.2		17.	3.67	90.	1892.	72268.	301.	1000.	262.	301	0	299	288	276	260	246	236	231	229	230	236	248	262	276	289
9.0	.3		34.	3.69	179.	1894.	73682.	305.	1000.	264.	305	0	302	290	277	260	245	234	229	227	229	235	248	262	278	292
13.5	.4		50.	3.71	267.	1897.	75119.	308.	1000.	267.	308	0	305	292	278	260	244	233	227	225	227	234	247	263	279	294
18.0	.6		67.	3.74	353.	1900.	76582.	312.	1000.	270.	312	0	308	294	278	259	243	231	226	223	226	233	247	263	281	297
22.5	.8		84.	3.77	434.	1903.	78151.	315.	1000.	273.	315	0	311	296	279	259	242	230	224	222	224	232	246	263	282	300
27.0	.9		101.	3.83	517.	1907.	79692.	319.	1000.	276.	319	0	314	298	280	259	241	228	222	220	223	231	246	264	284	302
31.5	1.0		119.	3.87	596.	1911.	81357.	323.	1000.	280.	323	0	318	300	281	258	240	227	221	218	221	230	245	264	284	305
36.0	1.2		136.	3.94	682.	1916.	83005.	328.	1000.	283.	328	0	321	302	281	258	239	225	219	217	220	229	245	265	287	308
40.5	1.4		154.	3.99	775.	1921.	84694.	332.	1000.	287.	332	0	325	304	282	258	238	224	217	215	219	228	245	265	289	311
45.0	1.5		172.	4.03	875.	1926.	86417.	337.	1000.	290.	337	0	329	306	283	257	237	223	216	213	217	227	244	266	291	314
49.5	1.6		191.	4.06	988.	1932.	88157.	341.	1000.	294.	341	0	333	308	283	257	236	221	214	212	216	226	244	267	292	318
54.0	1.8		209.	4.11	1113.	1938.	89925.	346.	1000.	298.	346	0	337	310	284	256	235	220	213	210	214	225	244	267	294	321
58.5	2.0		228.	4.15	1244.	1944.	91706.	351.	1000.	302.	351	0	341	312	285	256	234	218	211	209	213	224	243	268	296	325
63.0	2.1		247.	4.19	1380.	1950.	93510.	356.	1000.	306.	356	0	345	314	285	256	232	217	209	207	212	223	243	268	298	329
67.5	2.3		266.	4.23	1522.	1957.	95338.	361.	1000.	310.	361	0	349	316	286	255	231	216	208	206	210	222	242	269	300	332
72.0	2.4		285.	4.26	1670.	1964.	97196.	366.	1000.	314.	366	0	353	319	287	255	230	214	206	204	209	221	242	270	302	336
76.5	2.5		304.	4.29	1820.	1971.	99160.	371.	1000.	318.	371	0	357	321	288	255	230	213	205	203	208	220	241	270	303	340
81.0	2.7		324.	4.29	1997.	1979.	101039.	376.	1000.	322.	376	0	362	324	288	254	229	212	203	201	206	219	241	271	305	344
85.5	2.8		343.	4.33	2177.	1986.	102945.	381.	1000.	326.	381	0	366	327	289	254	228	210	202	200	205	218	241	271	307	348
90.0	3.0		363.	4.37	2353.	1994.	104975.	386.	1000.	330.	386	0	371	330	290	254	227	209	201	198	204	217	240	272	309	352
94.5	3.2		383.	4.41	2516.	2002.	106940.	392.	1000.	334.	392	0	375	332	291	253	226	208	199	197	203	216	240	272	311	356
99.0	3.3		403.	4.48	2668.	2011.	108951.	398.	1000.	339.	398	0	379	335	291	253	225	207	198	196	201	216	240	273	313	360
03.5	3.5		423.	4.56	2805.	2020.	111013.	404.	1000.	344.	404	0	384	338	292	253	224	205	196	194	200	215	239	273	316	365
08.0	3.6		444.	4.64	2934.	2029.	113129.	410.	1000.	349.	410	0	388	340	293	252	223	204	195	193	199	214	239	274	318	369
12.5	3.8		465.	4.71	3052.	2039.	115292.	417.	1000.	354.	417	0	393	343	294	252	222	203	194	191	198	213	239	275	320	374
17.0	3.9		487.	4.83	3124.	2050.	117556.	424.	1000.	360.	424	0	398	346	294	252	222	202	192	190	197	212	238	275	323	378
21.5	4.1		509.	4.99	3161.	2061.	120030.	432.	1000.	366.	432	0	404	349	296	252	221	201	191	189	195	211	238	276	325	382
26.0	4.2		533.	5.20	3150.	2074.	122562.	441.	1000.	373.	441	0	410	352	296	251	220	199	190	187	194	210	237	276	328	386
30.5	4.3		558.	5.49	3034.	2087.	125408.	451.	1000.	381.	451	0	416	356	297	251	219	198	188	186	193	209	237	277	330	391
35.0	4.5		583.	5.75	2877.	2103.	128350.	463.	1000.	390.	463	0	422	359	298	251	218	197	187	185	192	208	237	278	333	396
39.5	4.7		610.	5.87	2747.	2118.	131371.	474.	1000.	399.	474	0	428	362	299	251	218	196	186	184	191	208	236	278	335	401
44.0	4.8		636.	5.72	2783.	2133.	134245.	484.	1000.	406.	484	0	436	365	300	250	217	195	185	182	190	207	236	279	338	407
48.5	4.9		661.	5.69	2909.	2148.	137088.	493.	1000.	413.	493	0	443	368	301	250	216	194	183	181	189	206	236	280	341	412
53.0	5.1		688.	6.03	3061.	2165.	140205.	502.	1000.	421.	502	0	453	371	301	250	215	193	182	180	188	205	235	280	344	418
57.5	5.3		717.	6.32	3163.	2183.	143504.	513.	1000.	429.	513	0	463	374	302	249	214	192	181	179	186	204	235	281	347	424
62.0	5.4		748.	6.87	3087.	2204.	147197.	526.	1000.	439.	526	0	473	377	303	249	213	190	180	178	185	204	235	282	350	431
66.5	5.6		779.	6.94	2953.	2225.	150979.	540.	1000.	450.	540	0	482	380	304	249	213	189	178	176	184	203	234	282	352	438
71.0	5.7		810.	7.02	2825.	2246.	154722.	555.	1000.	462.	555	0	491	384	306	249	212	188	177	175	183	202	234	282	354	446
75.5	5.8		844.	7.37	2775.	2269.	158542.	571.	1000.	474.	571	0	498	387	307	249	211	187	176	174	182	201	234	283	357	456
80.0	6.0		878.	7.55	2709.	2293.	162607.	586.	1000.	486.	586	0	508	391	308	249	210	186	175	173	181	200	233	284	360	465
84.5	6.2		913.	7.93	2647.	2318.	167002.	603.	1000.	499.	603	0	519	395	309	249	210	185	174	172	180	199	233	284	363	474
89.0	6.3		950.	8.17	2473.	2345.	171535.	621.	1000.	512.	621	0	531	399	310	248	209	184	173	171	179	198	232	285	366	483
93.5	6.4		987.	8.30	2190.	2372.	176190.	639.	1000.	526.	639	0	544	403	311	248	208	183	172	170	178	198	232	285	369	490
98.0	6.6		1024.	8.19	2033.	2399.	180750.	656.	1000.	539.	656	0	557	407	312	248	207	182	171	169	177	197	232	286	372	498
02.5	6.8		1064.	8.73	1738.	2428.	185676.	676.	1000.	554.	676	0	570	411	313	247	207	181	170	168	176	196	232	287	375	507
07.0	6.9		1116.	11.64	333.	2470.	192804.	711.	1000.	581.	711	0	585	415	315	247	206	181	169	166	175	195	231	287	378	516
11.5	7.1		1164.	10.66	-259.	2508.	198961.	739.	1000.	602.	739	0	600	420	316	247	205	180	167	165	174	195	231	288	381	528
16.0	7.2		1206.	9.45	-80.	2541.	204189.	757.	1000.	617.	757	0	615	424	317	247	205	179	166	164	173	194	231	289	384	540
20.5	7.3		1254.	10.67	-318.	2579.	210451.	782.	1000.	636.	782	0	632	430	318	247	204	178	165	163	172	193	230	289	387	553
25.0	7.5		1321.	14.78	-2341.	2635.	219680.	831.	1000.	672.	831	0	649	436	320	247	203	177	164	162	171	192	230	290	389	565

VESSEL DISP. (FT) 14	(% WD) 15	RESTORING FORCE ON VESSEL 16 (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)
29.5	7.7	1378.	12.62	-3453.	2681.	227276.	868.	1000.	700.
34.0	7.8	1442.	14.32	-4512.	2736.	236117.	908.	1000.	731.
38.5	7.9	1511.	15.36	-4939.	2796.	245643.	944.	1000.	758.
43.0	8.1	1591.	17.64	-7259.	2865.	256973.	1002.	1000.	802.
47.5	8.3	1670.	17.67	-10015.	2934.	268109.	1065.	1000.	849.
52.0	8.4	1742.	15.97	-11490.	2995.	278073.	1112.	1000.	885.
56.5	8.6	1850.	23.99	-15467.	3091.	293890.	1195.	1000.	947.
61.0	8.7	1944.	20.85	-16597.	3175.	306843.	1250.	1000.	989.
65.5	8.9	2064.	26.74	-20502.	3283.	324126.	1345.	1000.	1060.
70.0	9.0	2142.	17.20	-20220.	3350.	334350.	1379.	1000.	1087.
74.5	9.1	2260.	26.29	-25246.	3455.	351722.	1477.	1000.	1160.
79.0	9.3	2418.	35.11	-31612.	3600.	375436.	1604.	1000.	1255.
83.5	9.4	2521.	23.01	-30996.	3694.	389235.	1654.	1000.	1294.
88.0	9.6	2696.	38.74	-35322.	3857.	414640.	1780.	1000.	1388.
92.5	9.8	2841.	32.38	-39417.	3990.	436090.	1883.	1000.	1466.
97.0	9.9	3004.	36.19	-42909.	4141.	459462.	1997.	1000.	1551.
01.5	10.1	3185.	40.16	-48375.	4309.	486187.	2128.	1000.	1650.
06.0	10.2	3340.	34.35	-52259.	4450.	508145.	2244.	1000.	1737.
10.5	10.4	3520.	40.11	-51819.	4620.	533106.	2337.	1000.	1808.
15.0	10.5	3701.	40.27	-55092.	4787.	559357.	2449.	1047.	1893.
19.5	10.6	3942.	53.52	-60739.	5013.	594381.	2623.	0.	2024.
24.0	10.8	4066.	27.54	-57266.	5126.	609932.	2663.	0.	2056.
28.5	10.9	4164.	21.72	-44685.	5218.	619741.	2615.	0.	2023.
33.0	11.1	4297.	29.61	-37829.	5341.	635807.	2635.	0.	2041.
37.5	11.3	4402.	23.32	-34253.	5434.	648710.	2656.	0.	2059.
42.0	11.4	4596.	43.13	-23344.	5623.	673119.	2675.	0.	2076.
46.5	11.6	4738.	31.48	-14616.	5756.	689517.	2694.	0.	2092.
51.0	11.7	4885.	32.76	-8808.	5893.	708467.	2715.	0.	2111.
55.5	11.9	5058.	38.46	2493.	6060.	729304.	2735.	0.	2129.

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT 4329. FT

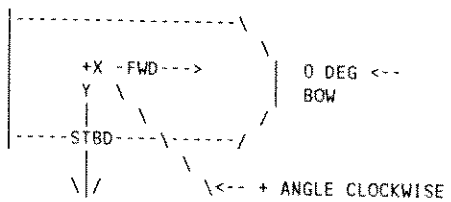
STARTING DISPLACEMENTS : SURGE(FT) = -51.750 SWAY(FT) = -34.500 YAW(DEG) = .845

	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12				
868	0	664	442	321	247	203	176	163	161	170	191	229	290	392	578
908	0	685	449	323	247	202	175	162	160	169	191	229	291	396	592
944	0	717	455	323	246	201	174	161	159	168	190	229	292	400	608
1002	0	741	463	325	246	201	173	160	158	168	189	229	293	403	622
1065	0	758	471	327	246	200	172	159	157	167	189	228	293	407	637
1112	0	781	479	328	246	199	172	159	156	166	188	228	294	410	652
1195	0	821	484	329	246	199	171	158	155	165	187	228	295	415	667
1250	0	861	490	331	245	198	170	157	155	164	187	227	295	419	691
1345	0	895	498	334	246	198	169	156	154	163	185	227	295	421	718
1379	0	933	503	335	246	197	168	155	153	162	185	226	296	426	740
1477	0	970	511	336	246	196	167	154	152	161	184	226	297	430	755
1604	0	1030	518	337	245	196	166	153	151	160	184	226	298	436	776
1654	0	1074	527	339	245	195	166	152	150	160	183	226	299	441	813
1780	0	1137	538	341	245	195	165	151	149	159	182	225	299	446	854
1883	0	1200	547	342	245	194	164	150	148	158	182	225	300	454	877
1997	0	1259	559	344	245	193	163	150	147	157	181	224	300	459	917
2128	0	1337	566	345	244	192	162	149	147	156	180	225	302	468	947
2244	0	1380	582	348	245	192	162	148	146	155	179	224	301	472	985
2337	0	1465	592	350	245	192	161	147	145	155	179	223	302	479	1049
2449	0	1556	599	350	244	191	160	146	144	154	178	224	304	486	1088
2623	0	1646	614	352	245	190	159	145	143	153	177	223	304	490	1149
2663	0	1709	624	353	244	190	159	145	142	152	177	223	306	496	1206
2615	0	1803	629	353	243	188	158	144	142	152	177	224	308	505	1292
2635	0	1883	640	354	243	188	157	143	141	151	176	224	309	513	1369
2656	0	1951	647	354	242	187	156	142	140	151	176	224	311	524	1410
2675	0	2087	655	355	241	186	155	141	139	150	176	224	313	535	1525
2694	0	2159	670	357	242	186	154	141	139	149	175	223	313	541	1620
2715	0	2271	675	356	240	184	153	140	138	149	175	224	316	558	1681
2735	0	2360	702	359	241	184	153	139	137	148	174	224	317	565	1797

DEEPWATER, ARAMID MOORING LINE JIP
CASE t6a16n
6000 ft 10% 100 kip buoy

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT	-	.00
LINE ATTACHMENT W.R.T. WATER LINE	-	-62.0 FT
ALLOWABLE LINE LENGTH ON BOTTOM	-	90.0 FT
DIRECTION OF VESSEL TRANSLATION	-	45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

(3) T6A16J

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	11.3	33.8	56.3	78.8	101.3	123.8	146.3	168.8	-168.8	-146.3	-123.8	-101.3	-78.8	-56.3	-33.8	-11.3
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	166.5	166.5	166.5	166.5	166.5	166.5	166.5	166.5	166.5	166.5	166.5	166.5	166.5	166.5	166.5	166.5
INITIAL VESSEL YAW ANGLES (DEG)		.00														

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	6000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	6000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.250"
LINE LENGTH (FT)	1500.0
WEIGHT IN WATER (LB/FT)	59.44
LINE B.S. (KIPS)	3226.0
AREA (SQ IN)	21.65
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.250"
LINE LENGTH (FT)	1500.0
WEIGHT IN WATER (LB/FT)	59.44
LINE B.S. (KIPS)	3226.0
AREA (SQ IN)	21.65
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-70.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.250"
LINE LENGTH (FT)	150.0
WEIGHT IN WATER (LB/FT)	59.44
LINE B.S. (KIPS)	3226.0
AREA (SQ IN)	21.65
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	ARAMID
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	5610.0
WEIGHT IN WATER (LB/FT)	2.00
LINE B.S. (KIPS)	3000.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	120000.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.5 "
LINE LENGTH (FT)	250.0
WEIGHT IN WATER (LB/FT)	250.01
LINE B.S. (KIPS)	3038.0
AREA (SQ IN)	23.75
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	1800.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.25 "
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	.01
LINE B.S. (KIPS)	9999.0
AREA (SQ IN)	1000.00
APP.MOD. OF ELAS.(KSI)	99999.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)
.0	.0	0.	.00	0.	2552.	0.	165.	1077.	41.
9.0	.2	6.	.63	0.	2553.	709.	165.	1078.	42.
18.0	.3	11.	.63	0.	2553.	1420.	166.	1079.	43.
27.0	.4	17.	.63	0.	2553.	2131.	167.	1079.	43.
36.0	.6	23.	.63	0.	2554.	2843.	168.	1080.	44.
45.0	.8	28.	.63	0.	2555.	3558.	168.	1080.	45.
54.0	.9	34.	.63	0.	2556.	4275.	169.	1080.	46.
63.0	1.0	40.	.64	0.	2557.	4995.	170.	1080.	46.
72.0	1.2	45.	.64	0.	2559.	5719.	171.	1080.	47.
81.0	1.4	51.	.64	0.	2560.	6447.	172.	1079.	48.
90.0	1.5	57.	.65	0.	2562.	7180.	173.	1079.	49.
99.0	1.6	63.	.65	0.	2564.	7917.	174.	1078.	50.
08.0	1.8	69.	.66	0.	2567.	8660.	175.	1077.	51.
17.0	2.0	75.	.66	0.	2569.	9410.	176.	1075.	52.
26.0	2.1	81.	.67	0.	2572.	10166.	177.	1074.	53.
35.0	2.3	87.	.68	0.	2575.	10929.	179.	1072.	54.
4.0	2.4	93.	.68	0.	2578.	11699.	180.	1071.	55.
3.0	2.5	99.	.69	0.	2581.	12478.	181.	1068.	57.
2.0	2.7	106.	.70	0.	2584.	13266.	182.	1066.	58.
1.0	2.8	112.	.71	0.	2588.	14062.	184.	1064.	59.
0.0	3.0	118.	.72	0.	2592.	14868.	185.	1061.	60.
9.0	3.2	125.	.73	0.	2596.	15684.	186.	1058.	62.
8.0	3.3	132.	.74	0.	2600.	16511.	188.	1055.	63.
7.0	3.5	138.	.75	0.	2604.	17349.	189.	1051.	64.
6.0	3.6	145.	.71	0.	2608.	18127.	191.	1045.	66.
5.0	3.8	151.	.72	0.	2613.	18913.	192.	1038.	67.
4.0	3.9	158.	.75	0.	2617.	19730.	194.	1031.	68.
3.0	4.1	165.	.77	0.	2622.	20579.	195.	1025.	70.
2.0	4.2	172.	.76	0.	2627.	21402.	197.	1020.	71.
1.0	4.3	179.	.79	0.	2632.	22252.	199.	1015.	73.
0.0	4.5	186.	.82	0.	2638.	23153.	201.	1010.	75.
9.0	4.7	194.	.85	0.	2644.	24104.	203.	1006.	76.
8.0	4.8	202.	.89	0.	2650.	25110.	205.	1003.	78.
7.0	4.9	211.	.99	0.	2656.	26269.	207.	1000.	81.
5.0	5.1	220.	1.00	0.	2662.	27442.	210.	999.	83.
5.0	5.3	229.	1.04	0.	2669.	28678.	212.	999.	85.
4.0	5.4	239.	1.09	0.	2676.	29991.	215.	999.	87.
3.0	5.6	249.	1.15	0.	2684.	31386.	218.	999.	90.
2.0	5.7	260.	1.21	0.	2692.	32870.	221.	999.	93.
1.0	5.8	272.	1.31	0.	2700.	34516.	225.	1000.	96.
1.0	6.0	284.	1.34	0.	2709.	36207.	228.	1000.	99.
.0	6.2	296.	1.40	0.	2718.	38010.	232.	1000.	102.
.0	6.3	310.	1.50	0.	2728.	39967.	237.	1000.	106.
.0	6.4	325.	1.62	0.	2739.	42098.	242.	1000.	110.
.0	6.6	340.	1.75	0.	2751.	44418.	247.	1000.	115.
.0	6.8	357.	1.90	0.	2764.	46950.	254.	1000.	120.
.0	6.9	376.	2.07	0.	2779.	49728.	261.	1000.	126.
.0	7.1	396.	2.22	0.	2795.	52706.	268.	1000.	132.
.0	7.2	418.	2.45	0.	2813.	56019.	277.	1000.	139.
.0	7.3	443.	2.74	0.	2833.	59775.	287.	1000.	148.
.0	7.5	470.	3.07	0.	2856.	64039.	299.	1000.	157.

LINE LOAD (KIPS)

LINE NUMBER

1	2	3	4	5	6	7	8	9	10	11	12	3	14	15	16
165	165	165	165	165	165	165	165	165	165	165	165	165	165	165	165
165	165	165	165	165	165	165	164	164	164	4	164	164	165	165	165
166	166	166	166	166	165	165	164	164	164	164	164	164	165	165	166
167	167	167	167	166	165	164	164	163	163	163	163	164	164	165	166
167	168	168	167	166	165	164	163	163	162	162	163	163	164	165	166
168	168	168	168	167	165	164	163	162	162	162	162	163	164	165	167
169	169	169	169	167	166	164	163	162	161	161	162	163	164	166	167
169	170	170	169	168	166	164	162	161	161	161	161	162	164	166	168
170	171	171	170	168	166	164	162	161	160	160	161	162	164	166	168
171	172	172	171	169	166	164	162	161	160	160	161	162	164	166	169
172	173	173	172	169	166	164	162	160	160	160	160	162	164	166	169
172	174	174	172	170	166	163	161	160	159	159	160	161	163	166	170
173	175	175	173	170	167	163	161	160	159	159	160	161	163	167	170
174	176	176	174	171	167	163	161	159	159	159	159	161	163	167	171
175	177	177	175	171	167	163	161	159	158	158	159	161	163	167	171
176	179	179	176	172	167	163	160	159	158	158	159	160	163	167	172
177	180	180	177	172	167	163	160	158	158	158	158	160	163	167	172
178	181	181	178	173	167	163	160	158	157	157	158	160	163	167	173
179	182	182	179	173	167	163	160	158	157	157	158	160	163	167	173
180	184	184	180	174	168	163	159	158	157	157	158	159	163	168	174
181	185	185	181	175	168	163	159	157	157	157	157	159	163	168	175
182	186	186	182	175	168	162	159	157	157	157	157	159	162	168	175
183	188	188	183	176	168	162	159	157	156	156	157	159	162	168	176
184	189	189	184	176	168	162	159	157	156	156	157	159	162	168	176
186	191	191	186	177	169	162	158	157	156	156	157	158	162	169	177
187	192	192	187	178	169	162	158	157	156	156	157	158	162	169	178
188	194	194	188	179	169	162	158	156	156	156	156	158	162	169	179
189	195	195	189	179	169	162	158	156	156	156	156	158	162	169	179
191	197	197	191	180	169	162	158	156	156	156	156	158	162	169	180
192	199	199	192	181	170	162	158	156	156	156	156	158	162	170	181
193	201	201	193	181	170	162	158	156	156	156	156	158	162	170	181
194	203	203	194	182	170	162	157	156	156	156	156	157	162	170	182
196	205	205	196	183	170	161	157	156	156	156	156	157	161	170	183
197	207	207	197	184	170	161	157	156	155	155	156	157	161	170	184
199	210	210	199	185	171	161	157	156	155	155	156	157	161	171	185
200	212	212	200	186	171	161	157	156	154	154	156	157	161	171	186
202	215	215	202	186	171	161	157	156	154	154	156	157	161	171	186
204	218	218	204	187	171	161	157	156	154	154	156	157	161	171	187
206	221	221	206	188	171	161	157	156	153	153	156	157	161	171	188
208	225	225	208	189	172	161	157	155	153	153	155	157	161	172	189
210	228	228	210	190	172	161	156	155	153	153	155	156	161	172	190
212	232	232	212	191	172	161	156	155	153	153	155	156	161	172	191
215	237	237	215	191	172	161	156	154	152	152	154	156	161	172	191
217	242	242	217	192	173	161	156	154	152	152	154	156	161	173	192
220	247	247	220	193	173	161	156	154	152	152	154	156	161	173	193
223	254	254	223	194	173	161	156	154	151	151	154	156	161	173	194
226	261	261	226	195	173	161	156	153	151	151	153	156	161	173	195
229	268	268	229	196	174	160	156	153	151	151	153	156	160	174	196
233	277	277	233	197	174	160	156	153	151	151	153	156	160	174	197
237	287	287	237	198	174	160	156	153	150	150	153	156	160	174	198
241	299	299	241	199	174	160	156	152	150	150	152	156	160	174	199

VESSEL DISP. 13 (FT)	14 (% WD)	RESTORING FORCE ON VESSEL 15 (KIPS)	INCREMENT STIFFNESS 16 (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
59.0	7.7	501.	3.44	0.	2882.	68828.	313.	1000.	168.	246	313	313	246	201	175	160	156	152	150	150	152
68.0	7.8	536.	3.90	0.	2912.	74317.	329.	1000.	181.	251	329	329	251	202	175	160	156	152	150	150	152
77.0	7.9	577.	4.48	0.	2947.	80683.	348.	1000.	196.	256	348	348	256	203	175	160	156	152	150	150	152
86.0	8.1	624.	5.19	0.	2988.	88113.	370.	1000.	213.	263	370	370	263	205	176	160	156	151	149	149	151
95.0	8.3	678.	6.06	0.	3035.	96792.	397.	1000.	235.	269	397	397	269	206	176	160	156	151	149	149	151
04.0	8.4	745.	7.39	0.	3093.	107449.	432.	1000.	261.	277	432	432	277	207	176	160	156	151	149	149	151
13.0	8.6	824.	8.82	0.	3163.	120242.	474.	1000.	294.	286	474	474	286	209	176	160	156	151	149	149	151
22.0	8.7	914.	9.98	0.	3242.	134843.	522.	1000.	331.	296	522	522	296	210	177	160	156	151	148	148	151
31.0	8.9	1027.	12.55	0.	3342.	153262.	585.	1000.	379.	307	585	585	307	212	177	160	156	150	148	148	150
40.0	9.0	1145.	13.18	0.	3446.	172561.	650.	1000.	429.	320	650	650	320	214	177	160	155	150	148	148	150
49.0	9.1	1282.	15.16	0.	3567.	194827.	725.	1000.	486.	335	725	725	335	215	178	160	155	150	148	148	150
58.0	9.3	1437.	17.21	0.	3704.	220156.	810.	1000.	552.	352	810	810	352	217	178	160	155	150	148	148	150
67.0	9.4	1606.	18.78	0.	3854.	247864.	902.	1000.	622.	372	902	902	372	219	178	160	155	150	148	148	150
76.0	9.6	1780.	19.39	0.	4009.	276519.	995.	1000.	693.	396	995	995	396	221	179	160	155	149	147	147	149
85.0	9.8	1960.	20.02	0.	4170.	306169.	1087.	1000.	763.	424	1087	1087	424	223	179	159	154	149	147	147	149
94.0	9.9	2162.	22.45	0.	4351.	339487.	1188.	1000.	840.	460	1188	1188	460	225	179	159	154	149	147	147	149
03.0	10.1	2370.	23.09	0.	4537.	373871.	1288.	1000.	917.	499	1288	1288	499	228	180	159	154	149	147	147	149
12.0	10.2	2588.	24.20	0.	4734.	410098.	1389.	1000.	994.	547	1389	1389	547	230	180	159	154	149	147	147	149
21.0	10.4	2825.	26.39	0.	4948.	449646.	1496.	1000.	1075.	602	1496	1496	602	233	180	159	154	149	147	147	149
30.0	10.5	3048.	24.71	0.	5150.	486714.	1590.	1000.	1147.	660	1590	1590	660	235	181	159	154	148	146	146	148
39.0	10.6	3291.	26.99	0.	5370.	527229.	1690.	1000.	1224.	726	1690	1690	726	238	181	159	154	148	146	146	148
48.0	10.8	3553.	29.14	0.	5609.	571047.	1797.	1000.	1306.	800	1797	1797	800	241	181	159	153	148	146	146	148
57.0	10.9	3827.	30.46	0.	5859.	616999.	1904.	1000.	1388.	882	1904	1904	882	245	182	159	153	148	146	146	148
66.0	11.1	4089.	29.05	0.	6097.	660596.	2004.	1000.	1465.	962	2004	2004	962	248	182	159	153	148	146	146	148
75.0	11.3	4355.	29.64	0.	6338.	704793.	2109.	1000.	1546.	1040	2109	2109	1040	252	183	159	153	148	146	146	148
84.0	11.4	4624.	29.87	0.	6582.	749413.	2210.	1000.	1624.	1123	2210	2210	1123	256	183	159	153	148	146	146	148
93.0	11.6	4910.	31.72	0.	6841.	796787.	2316.	1000.	1705.	1214	2316	2316	1214	261	183	159	153	147	146	146	147
02.0	11.7	5195.	31.70	0.	7100.	843941.	2423.	1000.	1788.	1302	2423	2423	1302	266	184	159	152	147	145	145	147
11.0	11.9	5464.	29.85	0.	7343.	888022.	2521.	1000.	1864.	1388	2521	2521	1388	271	184	159	152	147	145	145	147
20.0	12.0	5747.	31.44	0.	7599.	934490.	2622.	1000.	1941.	1481	2622	2622	1481	276	185	159	152	147	145	145	147
29.0	12.1	6025.	30.97	0.	7849.	979813.	2728.	1000.	2023.	1564	2728	2728	1564	282	185	159	152	147	145	145	147
38.0	12.3	6308.	31.38	0.	8103.	1025542.	2833.	1000.	2104.	1650	2833	2833	1650	289	185	159	152	147	145	145	147
47.0	12.4	6600.	32.46	0.	8366.	1072830.	2940.	1014.	2187.	1741	2940	2940	1741	297	186	159	152	147	145	145	147
56.0	12.6	6856.	28.46	0.	8597.	1113971.	3018.	0.	2249.	1836	3018	3018	1836	305	186	159	152	146	145	145	146
65.0	12.8	7010.	17.05	0.	8734.	1137303.	3031.	0.	2261.	1925	3031	3031	1925	314	187	159	152	146	145	145	146
74.0	12.9	7191.	20.20	0.	8897.	1165374.	3060.	0.	2286.	2016	3060	3060	2016	324	187	159	151	146	144	144	146
83.0	13.1	7379.	20.87	0.	9065.	1193989.	3092.	0.	2313.	2107	3092	3092	2107	335	188	159	151	146	144	144	146
92.0	13.2	7569.	21.06	0.	9234.	1222437.	3128.	0.	2343.	2196	3128	3128	2196	347	188	159	151	146	144	144	146
01.0	13.4	7761.	21.36	0.	9406.	1251176.	3161.	0.	2371.	2287	3161	3161	2287	361	189	159	151	146	144	144	146

LINE LOAD (KIPS) LINE NUMBER 13	14	15	16	17	18	19	20	21	22	23	24
151	150	150	152	156	160	175	201	246	313	313	246
151	150	150	152	156	160	175	202	251	329	329	251
152	150	150	152	156	160	175	203	256	348	348	256
151	149	149	151	156	160	176	205	263	370	370	263
151	149	149	151	156	160	176	206	269	397	397	269
151	149	149	151	156	160	176	207	277	432	432	277
151	149	149	151	156	160	176	209	286	474	474	286
151	148	148	151	156	160	177	210	296	522	522	296
150	148	148	150	156	160	177	212	307	585	585	307
150	148	148	150	155	160	177	214	320	650	650	320
150	148	148	150	155	160	178	215	335	725	725	335
150	148	148	150	155	160	178	217	352	810	810	352
150	148	148	150	155	160	178	219	372	902	902	372
149	147	147	149	155	160	179	221	396	995	995	396
149	147	147	149	154	159	179	223	424	1087	1087	424
149	147	147	149	154	159	179	225	460	1188	1188	460
149	147	147	149	154	159	180	228	499	1288	1288	499
149	147	147	149	154	159	180	230	547	1389	1389	547
149	147	147	149	154	159	180	233	602	1496	1496	602
148	146	146	148	154	159	181	235	660	1590	1590	660
148	146	146	148	154	159	181	238	726	1690	1690	726
148	146	146	148	153	159	181	241	800	1797	1797	800
148	146	146	148	153	159	182	245	882	1904	1904	882
148	146	146	148	153	159	182	248	962	2004	2004	962
148	146	146	148	153	159	183	252	1040	2109	2109	1040
148	146	146	148	153	159	183	256	1123	2210	2210	1123
147	146	146	147	153	159	183	261	1214	2316	2316	1214
147	145	145	147	152	159	184	266	1302	2423	2423	1302
147	145	145	147	152	159	184	271	1388	2521	2521	1388
147	145	145	147	152	159	185	276	1481	2622	2622	1481
147	145	145	147	152	159	185	282	1564	2728	2728	1564
147	145	145	147	152	159	185	289	1650	2833	2833	1650
147	145	145	147	152	159	186	297	1741	2940	2940	1741
146	145	145	146	152	159	186	305	1836	3018	3018	1836
146	145	145	146	152	159	187	314	1925	3031	3031	1925
146	144	144	146	151	159	187	324	2016	3060	3060	2016
146	144	144	146	151	159	188	335	2107	3092	3092	2107
146	144	144	146	151	159	188	347	2196	3128	3128	2196
146	144	144	146	151	159	189	361	2287	3161	3161	2287

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT 8078. FT

STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

HF = 2300.6

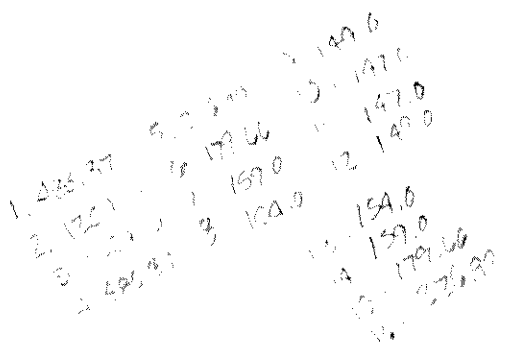
VF = 1209.6

LL = 1500.0 VLL = 1101.1

HAF = 1147

VAF = 921.36 Kips

AL = 1516.97

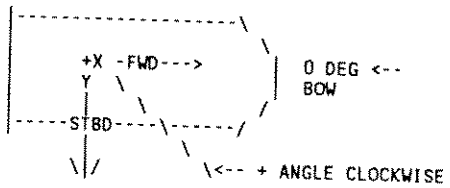


DEEPWATER, ARAMID MOORING LINE JIP
CASE t6a16n
6000 ft 10% 100 kip buoy

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

SSEL DISP.		RESTORING FORCE ON VESSEL	INCREMENT STIFFNESS	YAW MOMENT	VERTICAL FORCE	OVERTURN MOMENT	MAX.LINE LOAD	LINE ON BOTTOM	HOR.FORCE ON ANCHOR	LINE LOAD (KIPS) LINE NUMBER												
14	15	16								1	2	3	4	5	6	7	8	9	10	11	12	
T)	(% WD)	(KIPS)	(KIPS/FT)	(FT-KIP)	(KIPS)	(FT-KIP)	(KIPS)	(FT)	(KIPS)													
.0	.0	-2.	.00	2.	2394.	68167.	171.	1080.	47.	171	0	171	169	167	165	163	161	161	160	161	161	163	165	167	169
9.0	.2	3.	.54	34.	2395.	68691.	172.	1079.	48.	172	0	172	170	167	165	163	161	160	160	160	161	163	165	167	170
8.0	.3	8.	.55	66.	2396.	69218.	173.	1079.	49.	173	0	172	170	168	165	162	161	160	160	160	161	163	165	168	170
7.0	.4	13.	.55	100.	2398.	69749.	174.	1078.	50.	174	0	173	171	168	165	162	160	159	159	159	161	163	165	168	171
6.0	.6	18.	.55	134.	2399.	70284.	175.	1077.	51.	175	0	174	171	168	164	162	160	159	159	159	160	162	165	169	172
5.0	.8	23.	.55	169.	2401.	70823.	176.	1076.	52.	176	0	175	172	168	164	161	160	159	158	159	160	162	165	169	173
4.0	.9	28.	.55	204.	2402.	71367.	177.	1074.	53.	177	0	176	172	168	164	161	159	158	158	159	160	162	166	170	174
3.0	1.0	33.	.56	241.	2404.	71915.	178.	1073.	54.	178	0	177	173	169	164	161	159	158	158	158	160	162	166	170	175
2.0	1.2	38.	.56	279.	2407.	72469.	179.	1071.	55.	179	0	178	173	169	164	161	159	158	158	158	159	162	166	171	176
1.0	1.4	43.	.56	317.	2409.	73029.	181.	1069.	56.	181	0	179	174	169	164	160	158	158	157	158	159	162	166	171	176
0.0	1.5	48.	.57	357.	2411.	73595.	182.	1067.	57.	182	0	180	175	169	164	160	158	157	157	158	159	162	166	172	177
9.0	1.6	53.	.57	397.	2414.	74167.	183.	1064.	59.	183	0	181	175	169	164	160	158	157	157	157	159	162	166	172	178
8.0	1.8	58.	.57	438.	2417.	74746.	185.	1061.	60.	185	0	182	176	169	164	160	158	157	157	157	159	162	167	173	180
7.0	2.0	64.	.58	481.	2419.	75332.	186.	1058.	61.	186	0	183	177	170	163	160	157	157	157	158	162	167	174	181
6.0	2.1	69.	.59	524.	2422.	75925.	188.	1055.	63.	188	0	184	177	170	163	159	157	157	156	157	158	162	167	174	182
5.0	2.3	74.	.59	569.	2426.	76526.	189.	1052.	64.	189	0	186	178	170	163	159	157	156	156	157	158	161	167	175	183
4.0	2.4	79.	.57	626.	2429.	77209.	190.	1047.	65.	190	0	187	179	171	163	159	157	156	156	157	158	161	167	175	184
3.0	2.5	85.	.58	696.	2432.	77789.	192.	1040.	66.	192	0	189	180	171	163	159	157	156	156	156	158	161	167	176	185
2.0	2.7	90.	.59	761.	2436.	78382.	193.	1033.	68.	193	0	190	181	171	163	159	157	156	156	156	158	161	167	176	186
1.0	2.8	95.	.59	817.	2439.	78962.	195.	1027.	69.	195	0	191	181	171	163	159	157	156	156	156	157	161	167	177	187
0.0	3.0	101.	.60	870.	2443.	79566.	196.	1021.	71.	196	0	192	182	172	163	158	156	156	156	156	157	161	168	178	189
9.0	3.2	106.	.62	918.	2447.	80196.	198.	1016.	72.	198	0	193	183	172	163	158	156	156	156	156	157	161	168	178	190
8.0	3.3	112.	.62	942.	2451.	80838.	200.	1012.	74.	200	0	195	184	172	163	158	156	156	156	156	157	161	168	179	191
7.0	3.5	118.	.64	965.	2455.	81511.	202.	1007.	76.	202	0	196	185	172	163	158	156	156	156	156	157	161	168	180	192
6.0	3.6	124.	.68	992.	2460.	82230.	204.	1004.	78.	204	0	198	185	172	163	158	156	156	155	156	157	161	168	180	193
5.0	3.8	130.	.73	1034.	2464.	83026.	207.	1001.	80.	207	0	199	186	173	163	158	156	155	155	156	157	160	168	181	195
4.0	3.9	137.	.77	1104.	2469.	83873.	209.	1000.	82.	209	0	201	187	173	163	157	156	155	155	156	157	160	169	182	196
3.0	4.1	144.	.78	1177.	2474.	84844.	211.	999.	84.	211	0	203	189	174	163	157	156	155	154	156	156	160	168	182	197
2.0	4.2	152.	.82	1246.	2479.	85762.	214.	999.	86.	214	0	205	189	174	163	157	156	154	154	156	156	160	169	183	199
1.0	4.3	159.	.87	1292.	2484.	86742.	217.	999.	89.	217	0	207	190	174	163	157	156	154	154	155	156	160	169	184	200
0.0	4.5	168.	.90	1322.	2490.	87749.	220.	999.	92.	220	0	209	191	174	162	157	156	154	153	155	156	160	169	185	202
9.0	4.7	176.	.94	1346.	2495.	88812.	223.	1000.	94.	223	0	212	192	175	162	157	156	153	153	155	156	160	169	186	204
8.0	4.8	185.	.98	1362.	2502.	89928.	227.	1000.	98.	227	0	214	193	175	162	157	155	153	153	154	156	160	170	186	206
7.0	4.9	194.	1.03	1357.	2508.	91081.	231.	1000.	101.	231	0	216	194	175	162	157	155	153	152	154	156	160	170	187	208
6.0	5.1	204.	1.09	1324.	2515.	92310.	235.	1000.	104.	235	0	219	195	175	162	157	155	153	152	154	156	160	170	188	210
5.0	5.3	214.	1.16	1271.	2522.	93632.	240.	1000.	108.	240	0	222	196	176	162	157	155	152	152	154	156	160	170	189	212
4.0	5.4	225.	1.23	1193.	2530.	95054.	245.	1000.	113.	245	0	225	197	176	162	156	154	152	152	153	156	160	170	190	215
3.0	5.6	237.	1.30	1081.	2539.	96565.	251.	1000.	118.	251	0	228	198	176	162	156	154	152	151	153	156	159	171	191	217
2.0	5.7	250.	1.40	934.	2549.	98202.	258.	1000.	123.	258	0	231	199	177	162	156	154	151	151	153	156	159	171	192	220
1.0	5.8	263.	1.48	784.	2560.	100108.	265.	1000.	129.	265	0	236	201	177	162	156	154	151	151	152	156	159	171	192	222
0.0	6.0	278.	1.63	566.	2571.	102048.	273.	1000.	136.	273	0	241	202	178	162	156	153	151	151	152	156	159	171	193	225
9.0	6.2	294.	1.78	272.	2584.	104197.	282.	1000.	143.	282	0	245	203	178	162	156	153	151	150	152	156	159	171	194	228
8.0	6.3	311.	1.96	-108.	2599.	106600.	293.	1000.	152.	293	0	250	205	178	162	156	153	150	150	152	156	159	171	195	232
7.0	6.4	331.	2.18	-578.	2615.	109278.	306.	1000.	163.	306	0	256	206	179	162	156	153	150	150	152	156	159	172	196	235
6.0	6.6	353.	2.43	-1159.	2633.	112278.	321.	1000.	174.	321	0	262	208	179	162	156	152	150	150	151	156	159	172	197	240
5.0	6.8	377.	2.65	-1808.	2654.	115790.	336.	1000.	187.	336	0	271	210	180	162	156	152	150	149	151	155	159	172	197	243
4.0	6.9	404.	3.08	-2739.	2678.	119696.	357.	1000.	203.	357	0	279	211	180	162	156	152	150	149	151	155	159	172	198	248
3.0	7.1	436.	3.55	-3926.	2706.	124237.	381.	1000.	222.	381	0	288	213	181	162	156	152	149	149	151	155	159	172	199	253
2.0	7.2	473.	4.08	-5356.	2738.	129609.	410.	1000.	244.	410	0	300	215	181	162	156	152	149	149	150	155	159	172	200	258
1.0	7.3	517.	4.88	-7291.	2776.	136078.	446.	1000.	272.	446	0	314	218	182	162	156	151	149	149	150	155	158	172	201	263
0.0	7.5	568.	5.69	-9770.	2822.	143499.	490.	1000.	306.	490	0	327	220	182	162	156	151	149	148	150	154	158	172	202	270

ESSEL DISP. 14 FT)	15 (% WD)	RESTORING FORCE ON VESSEL 16 (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)
59.0	7.7	626.	6.44	-12525.	2874.	152171.	539.	1000.	344.
68.0	7.8	696.	7.74	-16039.	2936.	162604.	600.	1000.	391.
77.0	7.9	771.	8.39	-19610.	3004.	173925.	664.	1000.	440.
86.0	8.1	860.	9.79	-23970.	3084.	186963.	742.	1000.	499.
95.0	8.3	960.	11.18	-28698.	3175.	202058.	827.	1000.	565.
04.0	8.4	1067.	11.89	-33520.	3273.	217929.	917.	1000.	633.
13.0	8.6	1184.	12.97	-38317.	3380.	235317.	1011.	1000.	705.
22.0	8.7	1307.	13.73	-42896.	3493.	253446.	1108.	1000.	779.
31.0	8.9	1442.	14.93	-47640.	3616.	273210.	1210.	1000.	857.
40.0	9.0	1584.	15.80	-51985.	3747.	293799.	1316.	1000.	938.
49.0	9.1	1733.	16.54	-55183.	3884.	315144.	1416.	1000.	1014.
58.0	9.3	1893.	17.77	-58062.	4033.	338018.	1519.	1000.	1093.
67.0	9.4	2050.	17.50	-60009.	4179.	360069.	1617.	1000.	1168.
76.0	9.6	2222.	19.14	-61389.	4340.	384155.	1718.	1000.	1246.
85.0	9.8	2401.	19.82	-63086.	4506.	408937.	1826.	1000.	1328.
94.0	9.9	2585.	20.42	-63558.	4677.	434346.	1927.	1000.	1406.
03.0	10.1	2776.	21.23	-63787.	4856.	460688.	2032.	1000.	1486.
12.0	10.2	2967.	21.25	-62966.	5035.	486638.	2131.	1000.	1563.
21.0	10.4	3162.	21.66	-62240.	5217.	513132.	2231.	1000.	1640.
30.0	10.5	3357.	21.71	-61413.	5400.	539646.	2334.	1000.	1719.
39.0	10.6	3555.	21.98	-60661.	5584.	566416.	2437.	1000.	1799.
48.0	10.8	3757.	22.37	-58821.	5772.	593529.	2535.	1000.	1875.
57.0	10.9	3967.	23.38	-56418.	5969.	621530.	2636.	1000.	1952.
66.0	11.1	4174.	22.96	-54497.	6162.	649275.	2738.	1000.	2031.
75.0	11.3	4383.	23.24	-52623.	6357.	677325.	2842.	1000.	2112.
84.0	11.4	4594.	23.50	-50446.	6554.	705459.	2948.	895.	2194.
93.0	11.6	4777.	20.32	-46123.	6725.	729175.	3020.	0.	2251.
02.0	11.7	4923.	16.22	-36427.	6862.	746155.	3034.	0.	2264.
11.0	11.9	5086.	18.16	-27447.	7017.	766050.	3064.	0.	2289.
11.0	12.0	5253.	18.54	-18391.	7174.	786236.	3097.	0.	2318.
11.0	12.1	5421.	18.61	-9935.	7331.	806529.	3133.	0.	2348.

	LINE LOAD (KIPS) LINE NUMBER																
	1	2	3	4	5	6	7	8	9	10	11	12					
539	0	346	222	183	162	156	151	149	148	150	154	158	172	203	277		
600	0	368	225	184	162	156	151	148	148	150	154	158	172	204	284		
664	0	395	228	184	162	156	151	148	148	149	154	158	172	205	292		
742	0	423	231	185	162	156	150	148	148	149	153	158	173	206	303		
827	0	461	234	185	162	156	150	148	147	149	153	158	173	208	315		
917	0	501	236	186	162	156	150	148	147	149	153	158	173	209	329		
1011	0	548	239	186	162	156	150	147	147	149	153	158	173	210	345		
1108	0	599	242	186	162	156	150	147	147	148	153	158	174	212	365		
1210	0	657	245	187	162	156	150	147	147	148	153	158	174	214	388		
1316	0	717	248	187	162	155	149	147	147	148	153	158	175	216	417		
1416	0	787	252	187	161	155	149	147	146	148	152	158	175	218	453		
1519	0	864	256	187	161	155	149	147	146	148	152	158	175	220	493		
1617	0	937	260	188	161	155	149	146	146	148	152	158	176	223	541		
1718	0	1022	265	188	161	155	149	146	146	148	152	158	176	225	595		
1826	0	1104	270	189	161	155	148	146	146	147	152	158	176	227	652		
1927	0	1196	276	189	161	154	148	146	146	147	152	158	176	229	715		
2032	0	1290	283	190	161	154	148	146	146	147	152	158	177	231	782		
2131	0	1383	290	190	161	154	148	146	146	147	151	158	177	233	856		
2231	0	1479	299	191	161	154	148	146	145	147	151	158	177	236	930		
2334	0	1572	309	191	161	154	148	146	145	147	151	157	177	238	1004		
2437	0	1665	320	192	161	154	148	145	145	147	151	157	177	241	1079		
2535	0	1763	332	193	161	154	148	145	145	146	151	157	178	244	1160		
2636	0	1862	345	193	161	154	147	145	145	146	151	157	178	247	1249		
2738	0	1959	360	194	161	153	147	145	145	146	151	157	178	250	1331		
2842	0	2055	377	194	161	153	147	145	145	146	150	157	178	254	1414		
2948	0	2145	396	195	161	153	147	145	145	146	150	157	179	258	1502		
3020	0	2232	416	195	161	153	147	145	144	146	150	157	179	263	1585		
3034	0	2314	434	196	161	153	147	145	144	146	150	157	180	269	1683		
3064	0	2400	456	196	161	153	147	145	144	146	150	157	180	275	1781		
3097	0	2482	482	196	161	152	146	144	144	146	150	157	181	281	1881		
3133	0	2565	506	197	161	152	146	144	144	145	150	157	181	290	1978		

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT 8077. FT

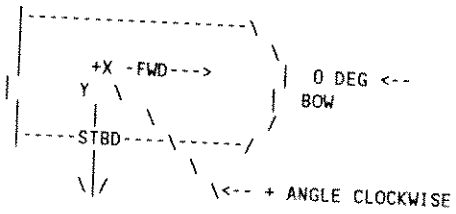
STARTING DISPLACEMENTS : SURGE(FT) = -60.000 SWAY(FT) = -42.000 YAW(DEG) = .871

DEEPWATER, ARAMID MOORING LINE JIP
CASE t6S16n
6000 ft 10% 400 kip buoy

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

b) T6S16n

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	11.3	33.8	56.3	78.8	101.3	123.8	146.3	168.8	-168.8	-146.3	-123.8	-101.3	-78.8	-56.3	-33.8	-11.3
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-12.0	-132.0	-132.0
INITIAL TENSION (KIPS)	234.4	234.4	234.4	234.4	234.4	234.4	234.4	234.4	234.4	234.4	234.4	234.4	234.4	234.4	234.4	234.4

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	6000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	6000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.000"
LINE LENGTH (FT)	1500.0
WEIGHT IN WATER (LB/FT)	53.94
LINE B.S. (KIPS)	2941.0
AREA (SQ IN)	19.63
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE MATERIAL	WIRE
LINE SIZE (IN)	5.000"
LINE LENGTH (FT)	1500.0
WEIGHT IN WATER (LB/FT)	53.94
LINE B.S. (KIPS)	2941.0
AREA (SQ IN)	19.63
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-400.0

LINE MATERIAL	WIRE
LINE SIZE (IN)	5.000"
LINE LENGTH (FT)	150.0
WEIGHT IN WATER (LB/FT)	53.94
LINE B.S. (KIPS)	2941.0
AREA (SQ IN)	19.63
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.000"
LINE LENGTH (FT)	5610.0
WEIGHT IN WATER (LB/FT)	53.94
LINE B.S. (KIPS)	2941.0
AREA (SQ IN)	19.63
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.5 "
LINE LENGTH (FT)	250.0
WEIGHT IN WATER (LB/FT)	250.01
LINE B.S. (KIPS)	3038.0
AREA (SQ IN)	23.75
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	1800.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.25 "
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	.01
LINE B.S. (KIPS)	9999.0
AREA (SQ IN)	1000.00
APP.MOD. OF ELAS.(KSI)	99999.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

VESSEL DISP.		RESTORING FORCE ON VESSEL	INCREMENT STIFFNESS	YAW MOMENT	VERTICAL FORCE	OVERTURN MOMENT	MAX.LINE LOAD	LINE ON BOTTOM	HOR.FORCE ON ANCHOR	LINE LOAD (KIPS) LINE NUMBER											
3	14 15	16								1	2	3	4	5	6	7	8	9	10	11	12
(FT)	(% WD)	(KIPS)	(KIPS/FT)	(FT-KIP)	(KIPS)	(FT-KIP)	(KIPS)	(FT)	(KIPS)												
.0	.0	0.	.00	0.	2653.	0.	234.	1000.	166.	234	234	234	234	234	234	234	234	234	234	234	234
9.0	.2	15.	1.68	0.	2653.	1536.	236.	1000.	167.	236	236	236	236	235	235	234	233	233	232	32	233
18.0	.3	30.	1.68	0.	2653.	3073.	238.	1000.	169.	238	238	238	238	237	235	234	232	231	231	231	231
27.0	.4	45.	1.69	0.	2654.	4613.	240.	1000.	171.	239	240	240	239	238	236	233	231	230	229	229	230
36.0	.6	61.	1.69	0.	2655.	6165.	243.	1000.	173.	241	243	243	241	239	236	233	230	228	227	227	228
45.0	.8	76.	1.71	0.	2656.	7742.	245.	1000.	174.	243	245	245	243	240	236	232	229	226	225	225	226
54.0	.9	92.	1.72	0.	2657.	9333.	247.	1000.	176.	245	247	247	245	241	237	232	228	225	223	223	225
63.0	1.0	107.	1.72	0.	2658.	10934.	249.	1000.	178.	247	249	249	247	243	237	232	227	223	221	221	223
72.0	1.2	123.	1.73	0.	2660.	12546.	252.	1000.	180.	249	252	252	249	244	238	231	226	222	220	220	222
81.0	1.4	138.	1.74	0.	2662.	14171.	254.	1000.	182.	251	254	254	251	245	238	231	225	220	218	218	220
90.0	1.5	154.	1.75	0.	2664.	15811.	257.	1000.	184.	253	257	257	253	246	238	231	224	219	216	216	219
99.0	1.6	170.	1.76	0.	2667.	17467.	259.	1000.	186.	255	259	259	255	248	239	230	223	218	215	215	218
108.0	1.8	186.	1.77	0.	2670.	19141.	262.	1000.	188.	257	262	262	257	249	239	230	222	216	213	213	216
117.0	2.0	202.	1.79	0.	2673.	20834.	264.	1000.	191.	259	264	264	259	250	240	230	221	215	212	212	215
126.0	2.1	218.	1.80	0.	2676.	22547.	267.	1000.	193.	262	267	267	262	252	240	229	220	213	210	210	213
135.0	2.3	235.	1.82	0.	2680.	24281.	270.	1000.	195.	264	270	270	264	253	241	229	219	212	209	209	212
144.0	2.4	251.	1.84	0.	2684.	26037.	273.	1000.	198.	266	273	273	266	255	241	229	218	211	207	207	211
153.0	2.5	268.	1.85	0.	2688.	27817.	276.	1000.	200.	269	276	276	269	256	242	228	217	210	206	206	210
162.0	2.7	285.	1.87	0.	2692.	29622.	279.	1000.	203.	271	279	279	271	257	242	228	216	208	204	204	208
171.0	2.8	302.	1.89	0.	2697.	31455.	283.	1000.	206.	274	283	283	274	259	243	228	215	207	203	203	207
180.0	3.0	319.	1.92	0.	2702.	33317.	286.	1000.	208.	276	286	286	276	260	243	227	215	206	201	201	206
189.0	3.2	336.	1.94	0.	2708.	35206.	289.	1000.	211.	279	289	289	279	262	244	227	214	205	200	200	205
198.0	3.3	354.	1.96	0.	2714.	37126.	293.	1000.	214.	282	293	293	282	264	244	227	213	203	199	199	203
207.0	3.5	372.	1.99	0.	2720.	39081.	297.	1000.	217.	285	297	297	285	265	245	226	212	202	197	197	202
216.0	3.6	390.	2.02	0.	2727.	41076.	300.	1000.	220.	287	300	300	287	267	245	226	211	201	196	196	201
225.0	3.8	408.	2.05	0.	2733.	43112.	304.	1000.	223.	290	304	304	290	269	246	226	210	200	195	195	200
234.0	3.9	427.	2.08	0.	2741.	45199.	308.	1000.	226.	294	308	308	294	270	246	225	209	199	194	194	199
243.0	4.1	446.	2.12	0.	2748.	47334.	313.	1000.	230.	297	313	313	297	272	247	225	209	198	192	192	198
252.0	4.2	466.	2.15	0.	2757.	49522.	317.	1000.	233.	300	317	317	300	274	247	225	208	197	191	191	197
261.0	4.3	485.	2.19	0.	2765.	51765.	322.	1000.	237.	303	322	322	303	276	248	225	207	196	190	190	196
270.0	4.5	505.	2.24	0.	2774.	54074.	326.	1000.	241.	307	326	326	307	277	248	224	206	195	189	189	195
279.0	4.7	526.	2.28	0.	2784.	56441.	331.	1000.	245.	310	331	331	310	279	249	224	205	194	188	188	194
288.0	4.8	547.	2.32	0.	2794.	58875.	336.	1000.	249.	314	336	336	314	281	249	224	205	192	187	187	192
297.0	4.9	568.	2.37	0.	2804.	61382.	342.	1000.	253.	318	342	342	318	283	250	223	204	191	185	185	191
306.0	5.1	590.	2.43	0.	2815.	63969.	347.	1000.	257.	322	347	347	322	285	250	223	203	190	184	184	190
315.0	5.3	612.	2.48	0.	2827.	66640.	353.	1000.	262.	326	353	353	326	287	251	223	202	189	183	183	189
324.0	5.4	635.	2.54	0.	2839.	69395.	359.	1000.	267.	330	359	359	330	289	252	223	202	189	182	182	189
333.0	5.6	659.	2.61	0.	2852.	72242.	365.	1000.	272.	334	365	365	334	291	252	222	201	188	181	181	188
342.0	5.7	683.	2.69	0.	2866.	75180.	372.	1000.	277.	339	372	372	339	293	253	222	200	187	180	180	187
351.0	5.8	708.	2.77	0.	2880.	78236.	379.	1000.	283.	343	379	379	343	296	253	222	199	186	179	179	186
360.0	6.0	734.	2.87	0.	2896.	81434.	386.	1000.	289.	348	386	386	348	298	254	222	199	185	178	178	185
369.0	6.2	760.	2.97	0.	2912.	84795.	394.	1000.	295.	353	394	394	353	300	255	221	198	184	177	177	184
378.0	6.3	788.	3.07	0.	2929.	88307.	403.	1000.	301.	358	403	403	358	303	255	221	197	183	176	176	183
387.0	6.4	817.	3.18	0.	2948.	91973.	412.	1000.	308.	364	412	412	364	305	256	221	197	182	175	175	182
396.0	6.6	846.	3.30	0.	2967.	95788.	421.	1000.	315.	370	421	421	370	307	256	221	196	181	175	175	181
405.0	6.8	877.	3.39	0.	2987.	99715.	430.	1000.	323.	375	430	430	375	310	257	220	195	180	174	174	180
414.0	6.9	909.	3.54	0.	3008.	103843.	441.	1000.	331.	382	441	441	382	312	258	220	195	180	173	173	180
423.0	7.1	942.	3.70	0.	3031.	108220.	451.	1000.	339.	388	451	451	388	315	258	220	194	179	172	172	179
432.0	7.2	977.	3.88	0.	3055.	112863.	463.	1000.	348.	395	463	463	395	318	259	220	193	178	171	171	178
441.0	7.3	1014.	4.07	0.	3081.	117792.	475.	1000.	358.	402	475	475	402	321	260	219	193	177	170	170	177
450.0	7.5	1052.	4.29	0.	3109.	123045.	489.	1000.	369.	410	489	489	410	323	260	219	192	176	170	170	176

234	234	234	234	234	234	234	234	234	234	234
236	236	236	236	235	235	234	233	233	232	32
238	238	238	238	237	235	234	232	231	231	231
239	240	240	239	238	236	233	231	230	229	229
241	243	243	241	239	236	233	230	228	227	227
243	245	245	243	240	236	232	229	226	225	225
245	247	247	245	241	237	232	228	225	223	223
247	249	249	247	243	237	232	227	223	221	221
249	252	252	249	244	238	231	226	222	220	220
251	254	254	251	245	238	231	225	220	218	218
253	257	257	253	246	238	231	224	219	216	216
255	259	259	255	248	239	230	223	218	215	215
257	262	262	257	249	239	230	222	216	213	213
259	264	264	259	250	240	230	221	215	212	212
262	267	267	262	252	240	229	220	213	210	210
264	270	270	264	253	241	229	219	212	209	209
266	273	273	266	255	241	229	218	211	207	207
269	276	276	269	256	242	228	217	210	206	206
271	279	279	271	257	242	228	216	208	204	204
274	283	283	274	259	243	228	215	207	203	203
276	286	286	276	260	243	227	215	206	201	201
279	289	289	279	262	244	227	214	205	200	200
282	293	293	282	264	244	227	213	203	199	199
285	297	297	285	265	245	226	212	202	197	197
287	300	300	287	267	245	226	211	201	196	196
290	304	304	290	269	246	226	210	200	195	195
294	308	308	294	270	246	225	209	199	194	194
297	313	313	297	272	247	225	209	198	192	192
300	317	317	300	274	247	225	208	197	191	191
303	322	322	303	276	248	225	207	196	190	190
307	326	326	307	277	248	224	206	195	189	189
310	331	331	310	279	249	224	205	194	188	188
314	336	336	314	281	249	224	205	192	187	187
318	342	342	318	283	250	223	204	191	185	185
322	347	347	322	285	250	223	203	190	184	184
326	353	353	326	287	251	223	202	189	183	183
330	359	359	330	289	252	223	202	189	182	182
334	365	365	334	291	252	222	201	188	181	181
339	372	372	339	293	253	222	200	187	180	180
343	379	379	343	296	253	222	199	186	179	179
348	386	386	348	298	254	222	199	185	178	178
353	394	394	353	300	255	221	198	184	177	177
358	403	403	358	303	255	221	197	183	176	176
364	412	412	364	305	256	221	197	182	175	175
370	421	421	370	307	256	221	196	181	175	175
375	430	430	375	310	257	220	195	180	174	174
382	441	441	382	312	258	220	195	180	173	173
388	451	451	388	315	258	220	194	179	172	172
395	463	463	395	318	259	220	193	178	171	171
402	475	475	402	321	260	219	193	177	170	170
410	489	489	410	323	260	219	192	176	170	170

234	234	234	234	234	234	234	234	234	234	234
233	233	234	235	235						
231	232	234	235	237						
230	231	233	236	238						
228	230	233	236	239						
226	229	232	236	240						
225	228	232	237	241						
223	227	232	237	243						
222	226	231	238	244						
220	225	231	238	245						
219	224	231	238	246						
218	223	230	239	248						
216	222	230	239	249						
215	221	230	240	250						
213	220	229	240	252						
212	219	229	241	253						
211	218	229	241	255						
210	217	228	242	256						
208	216	228	242	257						
207	215	228	243	259						
206	215	227	243	260						
205	214	227	244	262						
203	213	227	244	264						
202	212	226	245	265						
201	211	226	245	267						
200	210	226	246	269						
199	209	225	246	270						
198	209	225	247	272						
197	208	225	247	274						
196	207	225	248	276						
195	206	224	248	277						
194	205	224	249	279						
192	205	224	249	281						
191	204	223	250	283						
190	203	223	250	285						
189	202	223	251	287						
189	202	223	252	289						
188	201	222	252	291						
187	200	222	253	293						
186	199	222	253	296						
185	199	222	254	298						
184	198	221	255	300						
183	197	221	255	303						
182	197	221	256	305						
181	196	221	256	307						
180	195	220	257	310						
180	195	220	258	312						
179	194	220	258	315						
178	193	220	259	318						
177	193	219	260	321						
176	192	219	260	323						

VESSEL DISP. (FT) 3	(% WD) 14	RESTORING FORCE ON VESSEL (KIPS) 15	INCREMENT STIFFNESS (KIPS/FT) 16	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
459.0	7.7	1093.	4.54	0.	3139.	128679.	504.	1000.	380.	418	504	504	418	326	261	219	192	176	169	169	176	192	219	261	326
468.0	7.8	1136.	4.77	0.	3172.	134657.	520.	1000.	392.	426	520	520	426	329	262	219	191	175	168	168	175	191	219	262	329
477.0	7.9	1181.	4.98	0.	3206.	140915.	536.	1000.	405.	434	536	536	434	332	262	218	190	174	167	167	174	190	218	262	332
486.0	8.1	1228.	5.21	0.	3241.	147472.	554.	1000.	419.	443	554	554	443	335	263	218	190	174	166	166	174	190	218	263	335
495.0	8.3	1279.	5.71	0.	3281.	154777.	574.	1000.	435.	453	574	574	453	339	264	218	189	173	166	166	173	189	218	264	339
504.0	8.4	1336.	6.32	0.	3326.	162990.	597.	1000.	452.	463	597	597	463	342	265	218	188	172	165	165	172	188	218	265	342
513.0	8.6	1393.	6.37	0.	3371.	171253.	620.	1000.	470.	474	620	620	474	345	265	218	188	171	164	164	171	188	218	265	345
522.0	8.7	1455.	6.81	0.	3420.	180161.	645.	1000.	489.	485	645	645	485	349	266	217	187	171	164	164	171	187	217	266	349
531.0	8.9	1525.	7.85	0.	3478.	190619.	676.	1000.	513.	498	676	676	498	352	267	217	187	170	163	163	170	187	217	267	352
540.0	9.0	1600.	8.32	0.	3540.	201893.	708.	1000.	538.	511	708	708	511	356	268	217	186	169	162	162	169	186	217	268	356
549.0	9.1	1679.	8.80	0.	3606.	213755.	743.	1000.	564.	525	743	743	525	360	268	217	186	169	162	162	169	186	217	268	360
558.0	9.3	1769.	9.94	0.	3681.	227350.	784.	1000.	595.	540	784	784	540	363	269	216	185	168	161	161	168	185	216	269	363
567.0	9.4	1866.	10.75	0.	3762.	242060.	829.	1000.	630.	555	829	829	555	367	270	216	184	167	160	160	167	184	216	270	367
576.0	9.6	1970.	11.65	0.	3850.	258035.	877.	1000.	667.	573	877	877	573	372	271	216	184	167	160	160	167	184	216	271	372
585.0	9.8	2084.	12.67	0.	3947.	275637.	929.	1000.	707.	593	929	929	593	376	272	216	183	166	159	159	166	183	216	272	376
594.0	9.9	2209.	13.80	0.	4053.	294905.	988.	1000.	752.	613	988	988	613	380	272	216	183	166	159	159	166	183	216	272	380
603.0	10.1	2346.	15.25	0.	4171.	316249.	1056.	1000.	803.	633	1056	1056	633	385	273	216	182	165	158	158	165	182	216	273	385
612.0	10.2	2502.	17.33	0.	4306.	340671.	1132.	1000.	862.	658	1132	1132	658	390	274	215	182	165	157	157	165	182	215	274	390
621.0	10.4	2671.	18.75	0.	4453.	367356.	1215.	1000.	925.	685	1215	1215	685	395	275	215	181	164	157	157	164	181	215	275	395
630.0	10.5	2849.	19.84	0.	4608.	395527.	1302.	1000.	991.	714	1302	1302	714	400	276	215	181	163	156	156	163	181	215	276	400
639.0	10.6	3040.	21.22	0.	4774.	425710.	1396.	1000.	1063.	744	1396	1396	744	405	277	215	180	163	156	156	163	180	215	277	405
648.0	10.8	3249.	23.18	0.	4957.	458884.	1497.	1000.	1140.	779	1497	1497	779	411	278	215	180	162	155	155	162	180	215	278	411
657.0	10.9	3472.	24.73	0.	5152.	494406.	1605.	1000.	1223.	818	1605	1605	818	416	278	214	179	162	155	155	162	179	214	278	416
666.0	11.1	3703.	25.72	0.	5355.	531163.	1716.	1000.	1307.	859	1716	1716	859	422	279	214	179	161	154	154	161	179	214	279	422
675.0	11.3	3944.	26.79	0.	5566.	569564.	1831.	1000.	1395.	903	1831	1831	903	428	280	214	178	161	154	154	161	178	214	280	428
684.0	11.4	4196.	27.96	0.	5788.	609751.	1950.	1000.	1487.	950	1950	1950	950	434	281	214	178	160	153	153	160	178	214	281	434
693.0	11.6	4470.	30.50	0.	6030.	653845.	2077.	1000.	1583.	1006	2077	2077	1006	441	282	214	177	160	153	153	160	177	214	282	441
702.0	11.7	4744.	30.45	0.	6272.	697692.	2201.	1000.	1678.	1064	2201	2201	1064	448	283	214	177	159	152	152	159	177	214	283	448
711.0	11.9	5044.	33.27	0.	6538.	745939.	2332.	1000.	1779.	1132	2332	2332	1132	455	284	213	176	159	152	152	159	176	213	284	455
720.0	12.0	5346.	33.58	0.	6807.	794634.	2461.	1000.	1878.	1206	2461	2461	1206	462	285	213	176	158	151	151	158	176	213	285	462
729.0	12.1	5657.	34.59	0.	7083.	844607.	2597.	1000.	1982.	1277	2597	2597	1277	470	286	213	176	158	151	151	158	176	213	286	470
738.0	12.3	5969.	34.63	0.	7360.	894800.	2720.	1000.	2077.	1362	2720	2720	1362	478	287	213	175	157	150	150	157	175	213	287	478
747.0	12.4	6285.	35.11	0.	7639.	945243.	2852.	1000.	2178.	1441	2852	2852	1441	486	288	213	175	157	150	150	157	175	213	288	486
756.0	12.6	6632.	38.57	0.	7948.	1001084.	2994.	248.	2288.	1531	2994	2994	1531	495	289	213	174	156	149	149	156	174	213	289	495
765.0	12.8	6849.	24.09	0.	8141.	1035014.	3040.	0.	2325.	1629	3040	3040	1629	505	290	213	174	156	149	149	156	174	213	290	505
774.0	12.9	7042.	21.46	0.	8313.	1064992.	3065.	0.	2347.	1732	3065	3065	1732	515	291	212	173	156	148	148	156	173	212	291	515
783.0	13.1	7243.	22.38	0.	8490.	1095935.	3100.	0.	2376.	1830	3100	3100	1830	525	292	212	173	155	148	148	155	173	212	292	525
792.0	13.2	7456.	23.61	0.	8679.	1128769.	3136.	0.	2406.	1934	3136	3136	1934	536	293	212	173	155	147	147	155	173	212	293	536

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT 8003. FT

STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DF = 2200.2
DLL = 1027.3
DLL = 1302 VLL = 849.46 VLB = 1082
HAL = 991
VAL = 709.45
LB = 1968 SF =

DEEPWATER, ARAMID MOORING LINE JIP
CASE T6S16N.MM3
STEEL TAUT LEG IN 3000 FT

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT	-	.00
LINE ATTACHMENT W.R.T. WATER LINE	-	-62.0 FT
ALLOWABLE LINE LENGTH ON BOTTOM	-	90.0 FT
DIRECTION OF VESSEL TRANSLATION	-	22.5 DEG

CATENARY OPTIMIZATION - NO

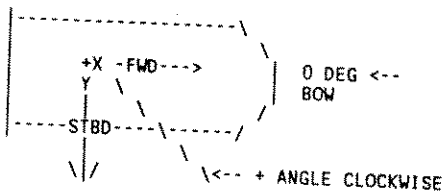
INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO



VESSEL DISP.		RESTORING FORCE ON VESSEL	INCREMENT STIFFNESS	YAW MOMENT	VERTICAL FORCE	OVERTURN MOMENT	MAX.LINE LOAD	LINE ON BOTTOM	HOR.FORCE ON ANCHOR
13 14 15		16							
(FT)	(% WD)	(KIPS)	(KIPS/FT)	(FT-KIP)	(KIPS)	(FT-KIP)	(KIPS)	(FT)	(KIPS)
.0	.0	-0.	.00	0.	2484.	81123.	260.	1000.	187.
9.0	.2	14.	1.54	80.	2486.	82339.	263.	1000.	190.
18.0	.3	28.	1.54	161.	2487.	83569.	266.	1000.	192.
27.0	.4	42.	1.55	243.	2489.	84812.	269.	1000.	194.
36.0	.6	56.	1.56	326.	2491.	86070.	272.	1000.	197.
45.0	.8	70.	1.57	409.	2494.	87343.	275.	1000.	199.
54.0	.9	84.	1.58	494.	2496.	88634.	278.	1000.	202.
63.0	1.0	98.	1.59	579.	2499.	89942.	281.	1000.	204.
72.0	1.2	113.	1.61	665.	2502.	91269.	284.	1000.	207.
81.0	1.4	127.	1.61	748.	2506.	92744.	288.	1000.	210.
90.0	1.5	142.	1.63	837.	2510.	94109.	291.	1000.	212.
99.0	1.6	157.	1.65	927.	2514.	95496.	295.	1000.	215.
108.0	1.8	172.	1.67	1018.	2518.	96907.	298.	1000.	218.
117.0	2.0	187.	1.69	1109.	2522.	98348.	302.	1000.	221.
126.0	2.1	202.	1.71	1202.	2527.	99822.	306.	1000.	225.
135.0	2.3	218.	1.73	1294.	2532.	101326.	310.	1000.	228.
144.0	2.4	234.	1.75	1385.	2537.	102866.	315.	1000.	232.
153.0	2.5	250.	1.78	1477.	2543.	104441.	319.	1000.	235.
162.0	2.7	266.	1.80	1568.	2549.	106051.	324.	1000.	239.
171.0	2.8	282.	1.83	1660.	2556.	107698.	329.	1000.	243.
180.0	3.0	299.	1.85	1750.	2562.	109516.	333.	1000.	247.
189.0	3.2	316.	1.89	1840.	2570.	111243.	339.	1000.	251.
198.0	3.3	333.	1.93	1929.	2577.	113015.	344.	1000.	255.
207.0	3.5	351.	1.96	2017.	2585.	114837.	350.	1000.	259.
216.0	3.6	369.	2.00	2101.	2594.	116713.	356.	1000.	264.
225.0	3.8	387.	2.04	2180.	2603.	118645.	362.	1000.	269.
234.0	3.9	406.	2.09	2251.	2612.	120632.	368.	1000.	274.
243.0	4.1	426.	2.14	2313.	2622.	122684.	375.	1000.	279.
252.0	4.2	445.	2.20	2364.	2632.	124810.	382.	1000.	285.
261.0	4.3	466.	2.25	2405.	2644.	127099.	390.	1000.	291.
270.0	4.5	486.	2.32	2436.	2656.	129476.	398.	1000.	297.
279.0	4.7	508.	2.40	2453.	2668.	131870.	406.	1000.	304.
288.0	4.8	530.	2.47	2462.	2681.	134359.	415.	1000.	311.
297.0	4.9	553.	2.54	2467.	2695.	136943.	424.	1000.	318.
306.0	5.1	577.	2.62	2472.	2710.	139626.	434.	1000.	326.
315.0	5.3	601.	2.72	2460.	2726.	142433.	445.	1000.	334.
324.0	5.4	627.	2.83	2426.	2742.	145377.	456.	1000.	343.
333.0	5.6	653.	2.93	2374.	2760.	148550.	468.	1000.	352.
342.0	5.7	681.	3.05	2291.	2779.	151882.	480.	1000.	362.
351.0	5.8	709.	3.20	2161.	2799.	155306.	494.	1000.	373.
360.0	6.0	740.	3.37	1980.	2820.	158957.	509.	1000.	384.
369.0	6.2	771.	3.53	1758.	2843.	162818.	525.	1000.	397.
378.0	6.3	804.	3.64	1540.	2868.	166925.	542.	1000.	410.
387.0	6.4	839.	3.83	1257.	2893.	171275.	560.	1000.	423.
396.0	6.6	876.	4.19	777.	2922.	176007.	581.	1000.	440.
405.0	6.8	917.	4.49	179.	2953.	181136.	605.	1000.	458.
414.0	6.9	957.	4.53	-272.	2985.	186304.	628.	1000.	476.
423.0	7.1	1002.	4.94	-927.	3021.	192134.	654.	1000.	496.
432.0	7.2	1051.	5.40	-1851.	3060.	198573.	684.	1000.	519.
441.0	7.3	1102.	5.71	-2850.	3102.	205313.	717.	1000.	545.
450.0	7.5	1157.	6.15	-3891.	3147.	212718.	752.	1000.	571.

	LINE LOAD (KIPS)															
	LINE NUMBER															
	1	2	3	4	5	6	7	8	9	10	11	12				
260	0	260	253	244	234	225	218	214	212	213	218	225	234	244	253	
263	0	262	254	245	234	224	216	212	211	212	217	225	235	245	255	
266	0	264	256	245	234	223	215	211	209	211	216	225	235	246	257	
269	0	267	257	246	233	222	214	209	208	210	215	224	235	248	259	
272	0	269	259	246	233	221	212	208	206	208	214	224	236	249	261	
275	0	272	260	247	233	220	211	206	205	207	213	224	236	250	264	
278	0	274	262	247	232	219	210	205	203	206	212	224	237	252	266	
281	0	277	263	248	232	218	208	203	202	205	211	223	237	253	269	
284	0	280	265	248	232	218	207	202	201	203	211	223	238	255	271	
288	0	283	267	250	232	217	206	201	199	202	209	222	238	256	273	
291	0	286	269	250	231	216	205	199	198	201	209	222	238	257	276	
295	0	289	270	251	231	215	204	198	197	200	208	222	239	259	279	
298	0	292	272	251	231	214	203	197	195	199	207	221	239	260	281	
302	0	295	274	252	230	213	202	196	194	198	206	221	240	262	284	
306	0	298	276	252	230	213	200	194	193	196	205	221	240	263	287	
310	0	301	278	253	230	212	199	193	192	195	205	220	240	265	290	
315	0	305	279	253	230	211	198	192	190	194	204	220	241	266	293	
319	0	308	281	254	229	210	197	191	189	193	203	220	241	268	296	
324	0	312	283	254	229	209	196	189	188	192	202	220	242	270	299	
329	0	316	285	255	229	208	195	188	187	191	202	219	242	272	303	
333	0	320	288	256	229	208	194	187	186	190	201	219	242	273	306	
339	0	324	290	257	229	207	193	186	185	189	200	218	243	275	309	
344	0	328	292	257	228	206	192	185	184	188	199	218	243	276	313	
350	0	332	294	258	228	206	191	184	183	187	198	218	244	278	317	
356	0	337	297	259	228	205	190	183	182	186	198	217	245	280	321	
362	0	341	299	259	227	204	189	182	180	185	197	217	245	282	325	
368	0	346	301	260	227	203	188	181	179	184	196	217	246	284	329	
375	0	351	303	261	227	203	187	180	179	184	196	217	246	286	333	
382	0	356	306	261	227	202	186	179	178	183	195	216	247	288	338	
390	0	362	309	262	227	201	185	178	177	182	194	216	247	290	342	
398	0	368	312	263	227	201	185	177	176	181	193	216	247	292	346	
406	0	374	314	264	226	200	184	176	175	180	193	215	248	294	351	
415	0	380	317	265	226	199	183	175	174	179	192	215	248	296	356	
424	0	386	320	265	226	199	182	174	173	178	191	215	249	298	362	
434	0	393	322	266	225	198	181	173	172	178	191	215	250	301	367	
445	0	400	325	267	225	197	180	173	171	177	190	214	250	303	373	
456	0	407	328	267	225	197	180	172	170	176	190	214	251	305	379	
468	0	416	332	269	225	196	179	171	170	175	189	214	251	308	385	
480	0	425	335	270	225	196	178	170	169	174	188	213	251	310	391	
494	0	433	338	270	225	195	177	169	168	174	188	213	252	312	398	
509	0	442	342	271	224	194	176	169	167	173	187	213	253	315	406	
525	0	451	345	272	224	194	176	168	167	172	186	213	253	318	413	
542	0	462	349	273	224	193	175	167	166	171	186	212	254	320	421	
560	0	474	353	274	224	193	174	166	165	171	185	212	254	322	428	
581	0	485	357	275	224	192	174	166	164	170	184	212	255	325	437	
605	0	497	361	276	224	191	173	165	164	169	184	211	255	328	446	
628	0	511	365	277	224	191	172	164	163	169	183	211	256	331	456	
654	0	526	369	278	224	190	172	164	162	168	183	211	256	334	465	
684	0	542	374	279	224	190	171	163	162	167	182	210	257	336	476	
717	0	557	378	280	223	189	170	162	161	167	182	210	257	340	487	
752	0	577	384	281	223	189	170	162	160	166	181	210	258	343	499	

VESSEL DISP. (FT)	14 (% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)
459.0	7.7	1220.	6.95	-5312.	3200.	221280.	794.	1000.	603.
468.0	7.8	1286.	7.29	-6976.	3255.	230061.	839.	1000.	638.
477.0	7.9	1355.	7.69	-8777.	3314.	239503.	887.	1000.	675.
486.0	8.1	1430.	8.42	-10676.	3378.	249997.	939.	1000.	714.
495.0	8.3	1516.	9.45	-13134.	3452.	261713.	1001.	1000.	761.
504.0	8.4	1607.	10.13	-15630.	3531.	274392.	1066.	1000.	811.
513.0	8.6	1709.	11.34	-18807.	3620.	288697.	1142.	1000.	869.
522.0	8.7	1818.	12.13	-22323.	3716.	304240.	1223.	1000.	931.
531.0	8.9	1935.	13.04	-26066.	3819.	320704.	1310.	1000.	998.
540.0	9.0	2062.	14.06	-29862.	3931.	338424.	1404.	1000.	1069.
549.0	9.1	2197.	15.02	-33993.	4051.	357538.	1504.	1000.	1146.
558.0	9.3	2343.	16.19	-38309.	4182.	378313.	1611.	1000.	1227.
567.0	9.4	2499.	17.35	-42821.	4321.	400260.	1725.	1000.	1314.
576.0	9.6	2663.	18.30	-46576.	4469.	423492.	1836.	1000.	1399.
585.0	9.8	2838.	19.42	-50600.	4627.	448057.	1956.	1000.	1491.
594.0	9.9	3018.	19.95	-54923.	4788.	473213.	2082.	1000.	1587.
603.0	10.1	3208.	21.18	-58531.	4961.	499935.	2206.	1000.	1682.
612.0	10.2	3404.	21.76	-62525.	5138.	527144.	2338.	1000.	1783.
621.0	10.4	3613.	23.20	-65068.	5327.	556042.	2465.	1000.	1881.
630.0	10.5	3832.	24.30	-67932.	5527.	586338.	2601.	1000.	1985.
639.0	10.6	4051.	24.39	-69279.	5726.	616204.	2726.	1000.	2081.
648.0	10.8	4276.	24.98	-70896.	5931.	646670.	2857.	1000.	2182.
657.0	10.9	4517.	26.84	-72284.	6151.	679569.	2996.	151.	2289.
666.0	11.1	4693.	19.54	-65626.	6312.	701385.	3040.	0.	2325.
675.0	11.3	4863.	18.89	-56950.	6469.	721705.	3067.	0.	2348.
684.0	11.4	5042.	19.81	-48772.	6633.	743344.	3103.	0.	2378.
693.0	11.6	5221.	19.89	-40906.	6796.	764918.	3140.	0.	2409.

	LINE LOAD (KIPS) LINE NUMBER															
	1	2	3	4	5	6	7	8	9	10	11	12				
794	0	599	389	283	223	188	169	161	160	165	180	210	258	345	511	
839	0	618	394	284	223	188	169	160	159	165	180	209	259	349	525	
887	0	641	400	285	223	187	168	160	159	164	179	209	259	352	539	
939	0	669	406	286	223	187	167	159	158	164	179	209	260	355	553	
1001	0	697	412	287	223	186	167	159	157	163	178	208	261	359	570	
1066	0	728	418	289	223	186	166	158	157	162	177	208	261	362	589	
1142	0	763	425	290	223	185	166	157	156	162	177	208	261	365	608	
1223	0	804	432	291	223	185	165	157	156	161	176	207	262	369	626	
1310	0	845	439	293	223	185	165	156	155	161	176	207	262	373	648	
1404	0	890	446	294	223	184	164	156	155	160	175	207	263	377	674	
1504	0	939	454	295	223	184	164	155	154	160	175	206	263	380	700	
1611	0	996	463	297	223	183	163	155	154	159	174	206	264	384	727	
1725	0	1055	470	298	223	183	163	154	153	159	174	206	265	389	759	
1836	0	1125	479	299	223	182	162	154	153	158	173	206	265	394	796	
1956	0	1197	487	300	222	182	162	153	152	158	173	206	266	399	835	
2082	0	1268	497	302	222	181	161	153	152	157	172	205	267	404	876	
2206	0	1352	506	303	222	181	161	152	151	157	172	205	268	410	922	
2338	0	1431	516	304	222	180	160	152	151	156	172	205	268	415	971	
2465	0	1525	528	305	222	180	160	151	150	156	171	205	269	421	1029	
2601	0	1622	538	307	222	179	159	151	150	155	171	205	270	427	1089	
2726	0	1723	549	308	222	179	159	150	149	155	170	205	271	433	1158	
2857	0	1822	561	309	222	179	158	150	149	155	170	204	272	439	1229	
2996	0	1929	575	311	221	178	158	149	148	154	169	204	272	446	1306	
3040	0	2031	588	311	221	178	157	149	147	154	169	204	274	454	1394	
3067	0	2135	600	312	221	177	157	148	147	153	169	204	275	463	1492	
3103	0	2239	614	313	220	176	156	148	146	153	169	204	276	471	1590	
3140	0	2344	626	314	220	176	156	147	146	153	168	204	277	481	1686	

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT 8008. FT

STARTING DISPLACEMENTS : SURGE(FT) = -91.500 SWAY(FT) = -61.500 YAW(DEG) = .886

Appendix J.2 - Alternate Designs

DEEPWATER, ARAMID MOORING LINE JIP
CASE t1a16n
1500 ft 10% 100 kip buoy

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG

```
|-------------------\
|                    \
|     +X -FWD--->     |  0 DEG <--
|     Y  \            |  BOW
|     |   \          /
|-----STBD----\------/
      |        \
     \|/        \<-- + ANGLE CLOCKWISE
```

CATENARY OPTIMIZATION - NO

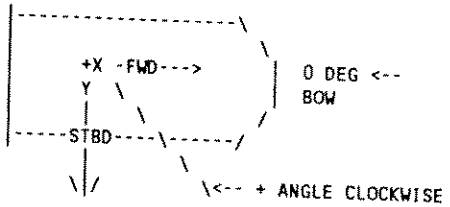
INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO



D T1A16N-1

+1A16N-1

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	11.3	33.8	56.3	78.8	101.3	123.8	146.3	168.8	-168.8	-146.3	-123.8	-101.3	-78.8	-56.3	-33.8	-11.3
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	273.0	273.0	273.0	273.0	273.0	273.0	273.0	273.0	273.0	273.0	273.0	273.0	273.0	273.0	273.0	273.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	1500.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	1500.0
LINE MATERIAL	ARAMID
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	500.0
WEIGHT IN WATER (LB/FT)	2.19
LINE B.S. (KIPS)	3641.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	146000.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	ARAMID
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	500.0
WEIGHT IN WATER (LB/FT)	2.19
LINE B.S. (KIPS)	3641.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	146000.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.625"
LINE LENGTH (FT)	150.0
WEIGHT IN WATER (LB/FT)	57.26
LINE B.S. (KIPS)	3634.0
AREA (SQ IN)	24.85
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-300.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.625"
LINE LENGTH (FT)	150.0
WEIGHT IN WATER (LB/FT)	57.26
LINE B.S. (KIPS)	3634.0
AREA (SQ IN)	24.85
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	ARAMID
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	1110.0
WEIGHT IN WATER (LB/FT)	2.19
LINE B.S. (KIPS)	3641.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	146000.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.5 "
LINE LENGTH (FT)	90.0
WEIGHT IN WATER (LB/FT)	250.01
LINE B.S. (KIPS)	3038.0
AREA (SQ IN)	23.75
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	5800.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.25 "
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	.01
LINE B.S. (KIPS)	9999.0
AREA (SQ IN)	1000.00
APP.MOD. OF ELAS.(KSI)	99999.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

NET −255.69 Kips

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
1	-27.0	.0	10.8	2062.00	1438.00	2062.0	.0	.0				
2	10.9	78.2	78.9	2494.50	1438.00	1000.0	78.2	.0	3.14	-300.00	4798.42	310.11
3	48.8	193.1	199.1	2805.29	1438.00	1000.0	193.1	.0	4.72	-300.00	5480.64	389.25
4	86.7	268.9	282.5	2900.34	1438.00	1000.0	268.9	.0	5.97	-300.00	3766.19	462.16
5	124.6	335.2	357.6	2947.48	1438.00	1000.0	335.2	.0	7.14	-300.00	3802.82	532.52
6	162.5	398.0	429.9	2976.39	1438.00	1000.0	398.0	.0	8.27	-300.00	6690.92	602.00
7	200.4	458.4	500.3	2995.31	1438.00	1000.0	458.4	.0	9.39	-300.00	7297.34	670.68
8	238.3	517.6	569.8	3008.97	1438.00	1000.0	517.6	.0	10.50	-300.00	6915.78	739.02
9	276.2	576.2	639.0	3019.51	1438.00	1000.0	576.2	.0	11.60	-300.00	9042.05	807.28
10	314.1	634.2	707.8	3027.76	1438.00	1000.0	634.2	.0	12.71	-300.00	6837.43	875.36
11	389.9	748.0	843.5	3038.89	1438.00	1000.0	748.0	.0	14.89	-300.00	8392.64	1010.26
12	465.7	861.7	979.4	3047.69	1438.00	1000.0	861.7	.0	17.08	-300.00	9378.07	1145.57
13	541.5	974.2	1114.6	3054.05	1438.00	1000.0	974.2	.0	19.26	-300.00	13552.26	1280.27
14	617.3	1086.7	1249.8	3059.48	1438.00	1000.0	1086.7	.0	21.45	-300.00	14840.89	1415.15
15	693.1	1199.2	1385.1	3064.22	1438.00	1000.0	1199.2	.0	23.65	-300.00	16129.52	1550.18
16	768.9	1311.7	1520.5	3068.50	1438.00	1000.0	1311.7	.0	25.85	-300.00	17418.16	1685.30
17	844.7	1424.2	1655.9	3072.35	1438.00	1000.0	1424.2	.0	28.05	-300.00	18706.78	1820.51
18	920.5	1536.8	1791.4	3075.96	1438.00	1000.0	1536.8	.0	30.26	-300.00	19995.42	1955.78
19	996.3	1650.5	1927.9	3079.82	1438.00	1000.0	1650.5	.0	32.49	-300.00	20032.04	2092.03
20	1072.1	1761.8	2062.4	3082.51	1438.00	1000.0	1761.8	.0	34.70	-300.00	30539.50	2226.46
21	1147.9	1875.5	2198.9	3085.90	1438.00	1000.0	1875.5	.0	36.94	-300.00	22457.69	2362.80
22	1223.7	1989.2	2335.5	3089.23	1438.00	1000.0	1989.2	.0	39.18	-300.00	23670.53	2499.18
23	1299.5	2102.9	2472.0	3092.42	1438.00	1000.0	2102.9	.0	41.43	-300.00	24883.35	2635.58
24	1375.3	2216.6	2608.6	3095.40	1438.00	1000.0	2216.6	.0	43.68	-300.00	26096.18	2772.01
25	1451.1	2330.3	2745.2	3098.23	1438.00	1000.0	2330.3	.0	45.94	-300.00	27309.00	2908.46
26	1526.9	2444.0	2881.8	3101.16	1438.00	1000.0	2444.0	.0	48.20	-300.00	28521.84	3044.92
27	1602.7	2557.7	3018.4	3103.83	1438.00	1000.0	2557.7	.0	50.47	-300.00	14867.33	3181.41
28	1678.5	2676.2	3159.0	3107.73	1438.00	1000.0	2676.2	.0	52.80	-300.00	34815.93	3321.72
29	1754.3	2789.9	3295.6	3110.25	1438.00	1000.0	2789.9	.0	55.08	-300.00	30150.29	3458.23
30	1830.1	2903.6	3432.2	3112.80	1438.00	1000.0	2903.6	.0	57.36	-300.00	33373.13	3594.76
31	1905.9	3022.0	3572.8	3116.39	1438.00	1000.0	3022.0	.0	59.71	-300.00	38909.22	3735.13
32	1981.7	3135.7	3709.4	3118.74	1438.00	1000.0	3135.7	.0	61.99	-300.00	33561.38	3871.67
33	2057.5	3254.1	3850.0	3122.17	1438.00	1000.0	3254.1	.0	64.35	-300.00	41638.08	4012.07
34	2133.3	3367.8	3986.7	3124.31	1438.00	1000.0	3367.8	.0	66.65	-300.00	28668.34	4148.63
35	2209.1	3486.3	4127.3	3127.58	1438.00	1000.0	3486.3	.0	69.02	-300.00	44366.94	4289.05
36	2284.9	3604.7	4267.9	3130.67	1438.00	1000.0	3604.7	.0	71.38	-300.00	45731.38	4429.48
37	2360.7	3718.4	4404.5	3132.90	1438.00	1000.0	3718.4	.0	73.69	-300.00	31397.20	4566.07
38	2436.5	3841.6	4549.1	3137.09	1438.00	1000.0	3841.6	.0	76.14	-300.00	61921.40	4710.38
39	2512.3	3955.3	4685.8	3139.07	1438.00	1000.0	3955.3	.0	78.47	-300.00	41520.56	4846.98
40	2588.1	4078.5	4830.4	3142.80	1438.00	1000.0	4078.5	.0	80.92	-300.00	65408.31	4991.32
41	2663.9	4192.2	4967.0	3144.88	1438.00	1000.0	4192.2	.0	83.25	-300.00	43794.61	5127.93
42	2739.7	4315.4	5111.6	3148.45	1438.00	1000.0	4315.4	.0	85.71	-300.00	47927.07	5272.29
43	2815.5	4433.8	5252.2	3151.14	1438.00	1000.0	4433.8	.0	88.11	-300.00	55282.38	5412.79
44	2891.3	4552.3	5392.9	3153.96	1438.00	1000.0	4552.3	.0	90.52	-300.00	56646.84	5553.29
45	2967.1	4675.4	5537.5	3157.38	1438.00	1000.0	4675.4	.0	93.00	-300.00	74125.48	5697.68

833.00

V_{Bottom} 1684.70

T_{Bottom} 1771 Kips

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
46	3042.9	4793.9	5678.1	3160.17	1438.00	1000.0	4793.9	.0	95.43	-300.00	59375.68	5838.20
47	3118.8	4917.0	5822.7	3163.57	1438.00	1000.0	4917.0	.0	97.92	-300.00	77612.40	5982.61
48	3194.6	5030.7	5959.3	3165.39	1438.00	1000.1	5030.7	.0	100.28	-300.00	41403.04	6119.24
49	3270.4	5153.9	6103.9	3168.52	1438.00	1000.1	5153.9	.0	102.77	-300.00	66995.04	6263.67
50	3346.2	5277.1	6248.6	3171.89	1438.00	1000.1	5277.1	.0	105.28	-300.00	57629.69	6408.10
51	3422.0	5400.3	6393.2	3175.13	1438.00	1000.1	5400.3	.0	107.79	-300.00	58842.52	6552.55
52	3497.8	5523.5	6537.8	3178.11	1438.00	1000.1	5523.5	.0	110.30	-300.00	60055.37	6697.00
53	3573.6	5646.6	6682.4	3181.22	1438.00	1000.1	5646.6	.0	112.83	-300.00	61268.19	6841.46
54	3649.4	5769.8	6827.1	3184.31	1438.00	1000.1	5769.8	.0	115.35	-300.00	62481.00	6985.93
55	3725.2	5893.0	6971.7	3187.53	1438.00	1000.1	5893.0	.0	117.90	-300.00	63693.86	7130.40
56	3801.0	6016.2	7116.3	3190.24	1438.00	1000.1	6016.2	.0	120.42	-300.00	64906.68	7274.89
57	3876.8	6139.3	7260.9	3193.32	1438.00	1000.1	6139.3	.0	122.97	-300.00	66119.51	7419.37
58	3952.6	6262.5	7405.5	3196.26	1438.00	1000.1	6262.5	.0	125.52	-300.00	67332.33	7563.86
59	4028.4	6385.7	7550.2	3198.95	1438.00	1000.1	6385.7	.0	128.05	-300.00	68545.17	7708.36
60	4104.2	6508.9	7694.8	3201.89	1438.00	1000.1	6508.9	.0	130.62	-300.00	69757.99	7852.86
61	4180.0	6641.5	7847.4	3205.73	1438.00	1000.1	6641.5	.0	133.30	-300.00	70970.82	8005.23
62	4255.8	6764.7	7992.1	3208.78	1438.00	1000.1	6764.7	.0	135.90	-300.00	72183.64	8149.75
63	4331.6	6887.9	8136.7	3211.45	1438.00	1000.1	6887.9	.0	138.46	-300.00	73396.48	8294.26
64	4407.4	7020.5	8289.3	3215.02	1438.00	1000.1	7020.5	.0	141.16	-300.00	74609.30	8446.66
65	4483.2	7143.7	8434.0	3217.82	1438.00	1000.1	7143.7	.0	143.76	-300.00	75822.13	8591.19
66	4559.0	7266.9	8578.6	3220.85	1438.00	1000.1	7266.9	.0	146.37	-300.00	77034.96	8735.73
67	4634.8	7399.6	8731.2	3224.77	1438.00	1000.1	7399.6	.0	149.09	-300.00	78247.79	8888.15
68	4710.6	7522.7	8875.9	3227.30	1438.00	1000.1	7522.7	.0	151.67	-300.00	79460.62	9032.69
69	4786.4	7655.4	9028.5	3230.97	1438.00	1000.1	7655.4	.0	154.44	-300.00	80673.45	9185.14
70	4862.2	7788.0	9181.2	3234.37	1438.00	1000.1	7788.0	.0	157.18	-300.00	71650.48	9337.59
71	4938.0	7911.2	9325.8	3237.14	1438.00	1000.1	7911.2	.0	159.80	-300.00	83099.11	9482.15
72	5013.8	8043.9	9478.5	3240.79	1438.00	1000.1	8043.9	.0	162.58	-300.00	84311.92	9634.61
73	5089.6	8176.5	9631.2	3243.93	1438.00	1000.1	8176.5	.0	165.34	-300.00	74834.16	9787.09
74	5165.4	8299.7	9775.8	3246.42	1438.00	1000.1	8299.7	.0	167.97	-300.00	86737.59	9931.66
75	5241.2	8432.4	9928.5	3250.06	1438.00	1000.1	8432.4	.0	170.77	-300.00	87950.41	10084.15
76	5317.0	8565.0	10081.2	3253.69	1438.00	1000.1	8565.0	.0	173.55	-300.00	89163.24	10236.65
77	5392.8	8697.7	10233.8	3257.06	1438.00	1000.1	8697.7	.0	176.35	-300.00	107321.60	10389.16
78	5468.6	8830.3	10386.5	3260.43	1438.00	1000.1	8830.3	.0	179.15	-300.00	80140.27	10541.68
79	5544.4	8963.0	10539.2	3264.04	1438.00	.0	8963.0	.1	181.98	-300.00	.00	10694.20
80	5620.2	9171.4	10756.5	3273.20	1438.00	.0	9171.4	75.9	185.94	-300.00	.00	10910.38
81	5696.0	9379.9	10973.9	3282.42	1438.00	.0	9379.9	151.7	189.93	-300.00	.00	11126.77
82	5771.8	9597.8	11199.6	3292.71	1438.00	.0	9597.8	227.5	194.16	-300.00	.00	11351.39
83	5847.6	9806.3	11417.4	3302.11	1438.00	.0	9806.3	303.3	198.24	-300.00	.00	11568.21

VESSEL DISP.		RESTORING FORCE ON VESSEL	INCREMENT STIFFNESS	YAW MOMENT	VERTICAL FORCE	OVERTURN MOMENT	MAX.LINE LOAD	LINE ON BOTTOM	HOR.FORCE ON ANCHOR	LINE LOAD (KIPS) LINE NUMBER											
3 14 15	16									1	2	3	4	5	6	7	8	9	10	11	12
(FT)	(% WD)	(KIPS)	(KIPS/FT)	(FT-KIP)	(KIPS)	(FT-KIP)	(KIPS)	(FT)	(KIPS)												
.0	.0	0.	.00	0.	1309.	0.	453.	1000.	260.	273	273	273	273	273	273	273	273	273	273	273	273
2.3	.2	21.	9.54	0.	1309.	1861.	456.	1000.	263.	275	275	275	275	274	273	272	271	270	270	270	270	271	272	273	274
4.5	.3	43.	9.54	0.	1309.	3723.	458.	1000.	265.	277	278	278	277	276	274	272	270	268	267	267	268	270	272	274	276
6.8	.4	64.	9.55	0.	1310.	5585.	461.	1000.	268.	280	281	281	280	277	274	271	268	266	265	265	266	268	271	274	277
9.0	.6	86.	9.44	0.	1310.	7409.	463.	1000.	270.	282	284	284	282	279	275	270	267	264	262	262	264	267	270	275	279
11.3	.8	106.	9.20	0.	1311.	9143.	466.	1000.	272.	284	286	286	284	281	275	270	265	262	260	260	262	265	270	275	281
13.5	.9	127.	9.20	0.	1311.	10877.	468.	1000.	275.	287	289	289	287	282	276	269	264	259	257	257	259	264	269	276	282
15.8	1.0	148.	9.17	0.	1312.	12622.	471.	1000.	277.	289	292	292	289	284	277	269	262	257	255	255	257	262	269	277	284
18.0	1.2	168.	9.20	0.	1313.	14377.	474.	1000.	280.	291	295	295	291	285	277	268	261	255	252	252	255	261	268	277	285
20.3	1.4	189.	9.24	0.	1314.	16145.	476.	1000.	283.	294	298	298	294	287	278	268	259	253	250	250	253	259	268	278	287
22.5	1.5	210.	9.29	0.	1316.	17927.	479.	1000.	285.	296	301	301	296	288	278	267	258	251	248	248	251	258	267	278	288
24.8	1.6	231.	9.33	0.	1318.	19722.	482.	1000.	288.	299	304	304	299	290	279	267	257	249	246	246	249	257	267	279	290
27.0	1.8	252.	9.39	0.	1320.	21533.	485.	1000.	291.	301	307	307	301	292	279	266	255	247	243	243	247	255	266	279	292
29.3	2.0	273.	9.44	0.	1323.	23359.	488.	1000.	294.	304	311	311	304	293	280	266	254	246	241	241	246	254	266	280	293
31.5	2.1	295.	9.50	0.	1326.	25203.	491.	1000.	297.	307	314	314	307	295	281	265	253	244	239	239	244	253	265	281	295
33.8	2.3	316.	9.57	0.	1329.	27064.	495.	1000.	300.	310	317	317	310	297	281	265	251	242	237	237	242	251	265	281	297
36.0	2.4	338.	9.64	0.	1333.	28944.	498.	1000.	303.	313	321	321	313	298	282	264	250	240	235	235	240	250	264	282	298
38.3	2.5	360.	9.71	0.	1336.	30844.	501.	1000.	306.	316	325	325	316	300	282	264	249	238	233	233	238	249	264	282	300
40.5	2.7	382.	9.78	0.	1341.	32764.	505.	1000.	310.	319	329	329	319	302	283	264	248	237	231	231	237	248	264	283	302
42.8	2.8	404.	9.86	0.	1345.	34706.	509.	1000.	313.	322	332	332	322	304	284	263	246	235	229	229	235	246	263	284	304
45.0	3.0	426.	9.94	0.	1350.	36670.	512.	1000.	317.	325	336	336	325	305	284	263	245	233	228	228	233	245	263	284	305
47.3	3.2	449.	10.03	0.	1355.	38657.	516.	1000.	320.	328	341	341	328	307	285	262	244	232	226	226	232	244	262	285	307
49.5	3.3	472.	10.12	0.	1361.	40668.	520.	1000.	324.	331	345	345	331	309	285	262	243	230	224	224	230	243	262	285	309
51.8	3.5	495.	10.22	0.	1367.	42705.	525.	1000.	328.	335	349	349	335	311	286	261	242	229	222	222	229	242	261	286	311
54.0	3.6	518.	10.32	0.	1373.	44767.	529.	1000.	332.	338	354	354	338	313	286	261	240	227	221	221	227	240	261	286	313
56.3	3.8	541.	10.39	0.	1380.	46845.	533.	1000.	336.	342	358	358	342	315	287	260	239	226	219	219	226	239	260	287	315
58.5	3.9	565.	10.32	0.	1387.	48890.	537.	1000.	340.	345	363	363	345	317	288	260	238	224	217	217	224	238	260	288	317
60.8	4.1	588.	10.45	0.	1394.	50971.	542.	1000.	344.	349	367	367	349	319	288	259	237	223	216	216	223	237	259	288	319
63.0	4.2	612.	10.59	0.	1401.	53089.	546.	1000.	348.	353	372	372	353	321	289	259	236	221	214	214	221	236	259	289	321
65.3	4.3	636.	10.74	0.	1410.	55247.	551.	1000.	352.	357	377	377	357	323	289	259	235	220	213	213	220	235	259	289	323
67.5	4.5	660.	10.77	0.	1418.	57399.	556.	1000.	356.	361	382	382	361	326	290	258	234	219	211	211	219	234	258	290	326
69.8	4.7	685.	10.91	0.	1426.	59586.	561.	1000.	361.	364	387	387	364	328	291	258	233	217	210	210	217	233	258	291	328
72.0	4.8	710.	11.10	0.	1436.	61825.	566.	1000.	366.	368	393	393	368	330	291	257	232	216	209	209	216	232	257	291	330
74.3	4.9	735.	11.30	0.	1445.	64121.	572.	1000.	371.	372	398	398	372	332	292	257	231	215	207	207	215	231	257	292	332
76.5	5.1	761.	11.52	0.	1455.	66476.	577.	1000.	376.	377	404	404	377	335	293	256	230	213	206	206	213	230	256	293	335
78.8	5.3	788.	11.74	0.	1466.	68893.	583.	1000.	381.	381	410	410	381	337	293	256	229	212	205	205	212	229	256	293	337
81.0	5.4	815.	11.97	0.	1478.	71375.	589.	1000.	387.	385	417	417	385	340	294	256	228	211	203	203	211	228	256	294	340
83.3	5.6	842.	12.22	0.	1490.	73927.	596.	1000.	392.	390	423	423	390	342	295	255	227	210	202	202	210	227	255	295	342
85.5	5.7	870.	12.47	0.	1502.	76549.	602.	1000.	398.	395	430	430	395	344	295	255	226	209	201	201	209	226	255	295	344
87.8	5.8	899.	12.64	0.	1515.	79216.	609.	1000.	404.	400	437	437	400	347	296	254	225	207	200	200	207	225	254	296	347
90.0	6.0	928.	13.07	0.	1529.	82018.	616.	1000.	411.	405	445	445	405	350	297	254	224	206	198	198	206	224	254	297	350
92.3	6.2	959.	13.58	0.	1542.	84987.	624.	1000.	417.	410	452	452	410	352	297	254	223	205	197	197	205	223	254	297	352
94.5	6.3	990.	13.92	0.	1557.	88055.	631.	1000.	424.	415	460	460	415	355	298	253	222	204	195	195	204	222	253	298	355
96.8	6.4	1022.	14.28	0.	1572.	91226.	639.	1000.	431.	421	468	468	421	358	299	253	221	203	194	194	203	221	253	299	358
99.0	6.6	1055.	14.58	0.	1587.	94504.	648.	1000.	438.	427	477	477	427	360	299	252	220	202	192	192	202	220	252	299	360
101.3	6.8	1088.	14.93	0.	1604.	97881.	657.	1000.	446.	433	486	486	433	363	300	252	219	201	191	191	201	219	252	300	363
103.5	6.9	1123.	15.31	0.	1621.	101363.	666.	1000.	454.	439	495	495	439	365	301	252	218	200	189	189	200	218	252	301	365
105.8	7.1	1158.	15.72	0.	1638.	104961.	675.	1000.	463.	445	505	505	445	368	301	251	217	199	188	188	199	217	251	301	368
108.0	7.2	1195.	16.38	0.	1657.	108790.	685.	1000.	471.	452	515	515	452	371	302	251	217	198	186	186	198	217	251	302	371
110.3	7.3	1233.	16.88	0.	1676.	112767.	696.	1000.	480.	458	526	526	458	374	303	250	216	197	185	185	197	216	250	303	374
112.5	7.5	1272.	17.42	0.	1696.	116898.	707.	1000.	490.	465	537	537	465	377	304	250	215	195	184	184	195	215	250	304	377

VESSEL DISP. 13 (FT)	14 (% WD)	15	RESTORING FORCE ON VESSEL 16 (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)
114.8	7.7		1313.	17.99	0.	1717.	121192.	718.	1000.	500.
117.0	7.8		1355.	18.58	0.	1739.	125658.	730.	1000.	510.
119.3	7.9		1398.	19.16	0.	1762.	130289.	743.	1000.	521.
121.5	8.1		1442.	19.75	0.	1786.	135086.	756.	1000.	532.
123.8	8.3		1488.	20.45	0.	1812.	140083.	770.	1000.	544.
126.0	8.4		1536.	21.21	0.	1838.	145301.	784.	1000.	557.
128.3	8.6		1585.	22.06	0.	1867.	150765.	800.	1000.	570.
130.5	8.7		1637.	22.79	0.	1896.	156436.	816.	1000.	584.
132.8	8.9		1690.	23.71	0.	1927.	162372.	833.	1000.	598.
135.0	9.0		1746.	24.96	0.	1960.	168677.	851.	1000.	614.
137.3	9.1		1806.	26.39	0.	1996.	175404.	871.	1000.	631.
139.5	9.3		1870.	28.53	0.	2035.	182776.	894.	1000.	650.
141.8	9.4		1938.	30.30	0.	2078.	190672.	919.	1000.	671.
144.0	9.6		2010.	31.99	0.	2123.	199061.	945.	1000.	693.
146.3	9.8		2086.	33.64	0.	2171.	207933.	973.	1000.	717.
148.5	9.9		2165.	35.23	0.	2221.	217277.	1003.	1000.	742.
150.8	10.1		2245.	35.76	0.	2272.	226751.	1033.	1000.	767.
153.0	10.2		2329.	37.31	0.	2326.	236657.	1065.	1000.	794.
155.3	10.4		2419.	39.81	0.	2384.	247306.	1100.	1000.	823.
157.5	10.5		2515.	42.85	0.	2447.	258865.	1137.	1000.	855.
159.8	10.6		2621.	47.09	0.	2518.	271709.	1180.	1000.	891.
162.0	10.8		2736.	50.90	0.	2594.	285717.	1227.	1000.	929.
164.3	10.9		2858.	54.51	0.	2677.	300808.	1276.	1000.	971.
166.5	11.1		2988.	57.39	0.	2764.	316737.	1329.	1000.	1014.
168.8	11.3		3124.	60.59	0.	2856.	333611.	1384.	1000.	1061.
171.0	11.4		3268.	64.02	0.	2954.	351489.	1443.	1000.	1110.
173.3	11.6		3420.	67.47	0.	3058.	370372.	1506.	1000.	1162.
175.5	11.7		3577.	69.98	0.	3165.	389936.	1572.	1000.	1217.
177.8	11.9		3741.	72.98	1.	3277.	410358.	1641.	1000.	1275.
180.0	12.0		3915.	77.34	0.	3397.	432079.	1714.	1000.	1336.
182.3	12.1		4100.	82.00	0.	3524.	455191.	1792.	1000.	1401.
184.5	12.3		4294.	86.47	1.	3658.	479669.	1874.	1000.	1469.
186.8	12.4		4496.	89.77	0.	3799.	505183.	1957.	1000.	1537.
189.0	12.6		4688.	85.32	0.	3932.	529267.	2031.	1000.	1599.
191.3	12.8		4910.	98.60	1.	4087.	557419.	2121.	1000.	1674.
193.5	12.9		5167.	114.27	1.	4268.	590350.	2231.	1000.	1766.
195.8	13.1		5396.	101.62	1.	4428.	619270.	2322.	1000.	1841.
198.0	13.2		5624.	101.53	1.	4588.	648132.	2409.	1000.	1914.
200.3	13.4		5863.	105.86	1.	4755.	678316.	2501.	1000.	1990.
202.5	13.5		6109.	109.36	1.	4928.	709546.	2594.	1000.	2069.
204.8	13.6		6366.	114.29	1.	5109.	742219.	2693.	1000.	2150.
207.0	13.8		6635.	119.67	1.	5299.	776455.	2796.	1000.	2237.
209.3	13.9		6915.	124.28	0.	5496.	812052.	2903.	1000.	2326.
211.5	14.1		7193.	123.54	1.	5694.	847502.	3005.	1000.	2411.
213.8	14.3		7489.	131.56	1.	5904.	885309.	3116.	1000.	2503.
216.0	14.4		7770.	124.86	1.	6103.	920917.	3215.	1000.	2586.
218.3	14.6		8012.	107.68	0.	6272.	950992.	3291.	1000.	2651.
220.5	14.7		8297.	126.52	1.	6472.	986654.	3398.	1000.	2740.
222.8	14.9		8626.	146.38	0.	6707.	1028778.	3521.	1000.	2842.

LINE LOAD (KIPS)

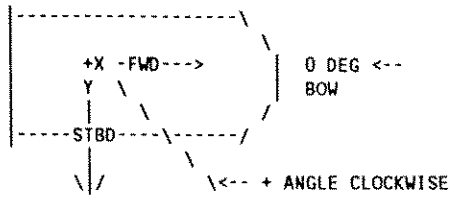
LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12					
473	549	549	473	380	304	250	214	194	182	182	194	214	250	304	380	
480	561	561	480	383	305	249	213	193	181	181	193	213	249	305	383	
488	574	574	488	386	306	249	212	191	179	179	191	212	249	306	386	
496	587	587	496	389	307	249	212	190	178	178	190	212	249	307	389	
505	601	601	505	392	308	248	211	189	177	177	189	211	248	308	392	
513	616	616	513	396	308	248	210	188	175	175	188	210	248	308	396	
522	632	632	522	399	309	248	209	187	174	174	187	209	248	309	399	
532	648	648	532	403	310	247	209	185	173	173	185	209	247	310	403	
542	665	665	542	406	311	247	208	184	171	171	184	208	247	311	406	
552	684	684	552	410	312	247	207	183	170	170	183	207	247	312	410	
562	704	704	562	414	312	246	207	182	169	169	182	207	246	312	414	
573	726	726	573	418	313	246	206	181	168	168	181	206	246	313	418	
585	751	751	585	422	314	246	205	179	166	166	179	205	246	314	422	
597	778	778	597	426	315	245	204	178	165	165	178	204	245	315	426	
609	806	806	609	430	316	245	204	177	164	164	177	204	245	316	430	
622	836	836	622	434	317	245	203	176	163	163	176	203	245	317	434	
636	867	867	636	438	318	244	203	175	161	161	175	203	244	318	438	
650	899	899	650	442	318	244	202	174	160	160	174	202	244	318	442	
665	933	933	665	447	319	244	201	173	159	159	173	201	244	319	447	
681	971	971	681	452	320	243	201	172	158	158	172	201	243	320	452	
698	1014	1014	698	456	321	243	200	171	157	157	171	200	243	321	456	
717	1061	1061	717	461	322	243	199	170	156	156	170	199	243	322	461	
737	1111	1111	737	466	323	242	199	169	155	155	169	199	242	323	466	
760	1163	1163	760	471	324	242	198	167	153	153	167	198	242	324	471	
783	1219	1219	783	476	325	242	197	166	152	152	166	197	242	325	476	
808	1278	1278	808	482	326	242	196	165	151	151	165	196	242	326	482	
834	1341	1341	834	487	327	241	195	164	150	150	164	195	241	327	487	
860	1407	1407	860	493	328	241	195	163	149	149	163	195	241	328	493	
887	1476	1476	887	499	329	241	194	162	148	148	162	194	241	329	499	
916	1550	1550	916	505	330	240	193	161	147	147	161	193	240	330	505	
947	1628	1628	947	511	331	240	192	160	146	146	160	192	240	331	511	
980	1709	1709	980	517	332	240	191	159	145	145	159	191	240	332	517	
1018	1792	1792	1018	524	333	240	191	158	144	144	158	191	240	333	524	
1059	1866	1866	1059	530	334	239	190	158	143	143	158	190	239	334	530	
1101	1957	1957	1101	537	335	239	189	157	142	142	157	189	239	335	537	
1146	2067	2067	1146	544	336	239	188	156	141	141	156	188	239	336	544	
1193	2158	2158	1193	552	337	238	188	155	140	140	155	188	238	337	552	
1243	2246	2246	1243	559	338	238	187	154	139	139	154	187	238	338	559	
1295	2337	2337	1295	567	339	238	186	153	138	138	153	186	238	339	567	
1350	2431	2431	1350	575	340	238	185	152	137	137	152	185	238	340	575	
1408	2529	2529	1408	583	341	237	185	151	136	136	151	185	237	341	583	
1468	2633	2633	1468	591	343	237	184	150	135	135	150	184	237	343	591	
1531	2739	2739	1531	600	344	237	183	149	134	134	149	183	237	344	600	
1597	2842	2842	1597	609	345	237	183	148	133	133	148	183	237	345	609	
1667	2953	2953	1667	618	346	236	182	148	133	133	148	182	236	346	618	
1738	3052	3052	1738	628	347	236	181	147	132	132	147	181	236	347	628	
1808	3129	3129	1808	638	348	236	180	146	131	131	146	180	236	348	638	
1873	3236	3236	1873	648	350	236	180	145	130	130	145	180	236	350	648	
1951	3358	3358	1951	658	351	235	179	144	129	129	144	179	235	351	658	

1659
1792

DEEPWATER, ARAMID MOORING LINE JIP
CASE t1a16n
1500 ft 10% 100 kip buoy

PROBLEM NUMBER - 2

SOIL FRICTION COEFFICIENT	-	.00
LINE ATTACHMENT W.R.T. WATER LINE	-	-62.0 FT
ALLOWABLE LINE LENGTH ON BOTTOM	-	90.0 FT
DIRECTION OF VESSEL TRANSLATION	-	45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP.		RESTORING FORCE ON VESSEL	INCREMENT STIFFNESS	YAW MOMENT	VERTICAL FORCE	OVERTURN MOMENT	MAX.LINE LOAD	LINE ON BOTTOM	HOR.FORCE ON ANCHOR
13 (FT)	14 (% WD)	15 (KIPS)	16 (KIPS/FT)	(FT-KIP)	(KIPS)	(FT-KIP)	(KIPS)	(FT)	(KIPS)
.0	.0	-0.	.00	-1.	1223.	5781.	491.	1000.	297.
2.3	.2	18.	8.19	89.	1224.	7305.	494.	1000.	300.
4.5	.3	37.	8.22	181.	1226.	8838.	497.	1000.	302.
6.8	.4	55.	8.26	274.	1228.	10379.	500.	1000.	305.
9.0	.6	74.	8.29	369.	1230.	11929.	503.	1000.	308.
11.3	.8	93.	8.34	465.	1233.	13489.	506.	1000.	311.
13.5	.9	112.	8.38	562.	1236.	15060.	509.	1000.	314.
15.8	1.0	130.	8.40	666.	1239.	16636.	513.	1000.	317.
18.0	1.2	150.	8.48	767.	1242.	18230.	517.	1000.	321.
20.3	1.4	169.	8.50	873.	1246.	19830.	521.	1000.	324.
22.5	1.5	188.	8.58	978.	1250.	21450.	525.	1000.	328.
24.8	1.6	207.	8.64	1084.	1254.	23083.	529.	1000.	332.
27.0	1.8	227.	8.68	1190.	1259.	24722.	534.	1000.	336.
29.3	2.0	246.	8.63	1303.	1263.	26336.	538.	1000.	340.
31.5	2.1	266.	8.66	1430.	1268.	27954.	542.	1000.	344.
33.8	2.3	286.	8.75	1558.	1274.	29595.	547.	1000.	348.
36.0	2.4	305.	8.81	1692.	1279.	31251.	551.	1000.	352.
38.3	2.5	326.	8.95	1824.	1285.	32943.	556.	1000.	357.
40.5	2.7	346.	9.06	1957.	1292.	34665.	561.	1000.	361.
42.8	2.8	366.	9.07	2077.	1298.	36382.	566.	1000.	366.
45.0	3.0	387.	9.22	2192.	1305.	38138.	572.	1000.	371.
47.3	3.2	408.	9.36	2309.	1313.	39931.	578.	1000.	376.
49.5	3.3	429.	9.50	2429.	1321.	41764.	584.	1000.	381.
51.8	3.5	451.	9.65	2551.	1329.	43639.	590.	1000.	387.
54.0	3.6	473.	9.82	2677.	1338.	45557.	596.	1000.	393.
56.3	3.8	496.	9.98	2805.	1347.	47521.	603.	1000.	399.
58.5	3.9	519.	10.18	2934.	1356.	49560.	609.	1000.	405.
60.8	4.1	542.	10.57	3055.	1366.	51730.	617.	1000.	411.
63.0	4.2	567.	10.80	3183.	1376.	53968.	624.	1000.	417.
65.3	4.3	591.	10.96	3319.	1386.	56251.	631.	1000.	424.
67.5	4.5	617.	11.24	3463.	1397.	58614.	640.	1000.	431.
69.8	4.7	643.	11.50	3612.	1408.	61051.	648.	1000.	439.
72.0	4.8	669.	11.84	3786.	1420.	63596.	657.	1000.	446.
74.3	4.9	697.	12.16	3981.	1432.	66244.	666.	1000.	454.
76.5	5.1	724.	12.39	4192.	1445.	68967.	676.	1000.	463.
78.8	5.3	753.	12.65	4389.	1458.	71765.	685.	1000.	471.
81.0	5.4	782.	13.12	4574.	1472.	74716.	696.	1000.	480.
83.3	5.6	813.	13.48	4765.	1486.	77771.	707.	1000.	490.
85.5	5.7	844.	13.80	4957.	1502.	80917.	718.	1000.	499.
87.8	5.8	876.	14.23	5170.	1517.	84188.	730.	1000.	510.
90.0	6.0	909.	14.63	5390.	1534.	87574.	743.	1000.	521.
92.3	6.2	942.	15.03	5615.	1551.	91076.	756.	1000.	532.
94.5	6.3	977.	15.52	5849.	1570.	94719.	770.	1000.	544.
96.8	6.4	1013.	15.99	6072.	1589.	98495.	784.	1000.	556.
99.0	6.6	1051.	16.59	6325.	1609.	102447.	799.	1000.	569.
01.3	6.8	1089.	17.05	6586.	1631.	106528.	815.	1000.	583.
03.5	6.9	1129.	17.57	6833.	1653.	110753.	832.	1000.	597.
05.8	7.1	1170.	18.40	7125.	1677.	115229.	850.	1000.	613.
08.0	7.2	1213.	19.28	7435.	1702.	119968.	870.	1000.	630.
10.3	7.3	1259.	20.44	7747.	1729.	125056.	892.	1000.	648.
12.5	7.5	1308.	21.66	8138.	1758.	130509.	916.	1000.	669.

LINE LOAD (KIPS)

LINE NUMBER																
1	2	3	4	5	6	7	8	9	10	11	12					
314	0	311	300	290	273	258	246	242	239	240	246	260	274	288	300	
317	0	314	302	291	274	257	245	240	237	238	244	259	273	288	302	
320	0	318	305	293	275	257	243	238	235	236	242	257	273	289	303	
323	0	322	308	295	275	256	242	237	233	234	241	256	272	289	305	
326	0	325	311	296	276	256	241	235	231	232	239	255	272	290	307	
330	0	329	314	298	276	256	240	233	229	230	237	253	271	291	309	
333	0	333	316	300	277	255	239	232	227	228	235	252	271	291	311	
337	0	337	319	301	277	254	237	230	225	227	234	251	270	292	313	
340	0	341	322	303	278	254	236	228	224	225	232	250	270	293	315	
344	0	345	325	305	278	253	235	227	222	223	231	249	270	294	318	
348	0	350	329	307	279	253	234	225	220	222	229	248	269	294	320	
352	0	354	332	308	279	252	233	224	219	220	228	246	269	295	322	
355	0	359	335	310	280	252	232	222	217	218	226	245	268	296	324	
359	0	363	339	312	281	252	231	221	215	217	225	244	268	296	326	
363	0	368	342	314	281	251	230	220	214	215	223	243	267	297	328	
367	0	372	346	316	282	251	229	218	212	214	222	242	267	298	331	
371	0	377	349	318	282	250	227	217	211	212	221	241	267	299	333	
375	0	382	353	320	283	250	227	215	210	211	219	239	266	299	336	
380	0	388	357	322	283	249	226	214	208	209	218	238	266	300	338	
385	0	393	361	324	284	249	224	213	207	208	217	237	266	301	341	
389	0	399	365	326	284	248	223	212	205	207	215	236	265	302	343	
394	0	405	368	329	285	248	222	210	204	205	214	235	265	302	346	
399	0	411	373	331	285	247	222	209	203	204	213	234	264	303	348	
404	0	417	377	333	286	247	221	208	202	203	212	233	264	304	351	
409	0	424	381	335	287	247	220	207	201	202	210	232	264	304	354	
414	0	431	386	338	287	246	219	206	199	200	209	231	263	305	356	
420	0	438	390	340	287	246	218	205	198	199	208	230	263	306	359	
426	0	445	395	342	288	245	217	204	196	198	207	229	263	307	362	
432	0	452	400	345	289	245	216	203	195	196	206	228	262	308	365	
438	0	460	404	347	289	244	215	201	193	195	205	227	262	309	368	
445	0	468	410	350	290	244	214	200	192	193	204	226	262	310	371	
451	0	477	415	352	290	244	213	199	190	192	203	226	261	311	373	
458	0	486	421	355	291	243	213	198	189	190	202	225	261	311	376	
465	0	496	426	358	292	243	212	197	187	189	201	224	260	312	379	
472	0	505	432	360	292	243	211	196	186	187	200	223	260	313	382	
480	0	515	438	362	293	242	210	194	184	186	199	222	260	314	386	
488	0	526	444	365	293	242	209	193	183	184	198	221	259	315	389	
496	0	537	451	368	294	241	209	192	182	183	196	220	259	316	392	
505	0	548	457	370	294	241	208	190	180	182	195	219	259	317	396	
514	0	561	464	373	295	240	207	189	179	180	194	219	259	318	400	
523	0	574	471	376	296	240	206	188	177	179	193	218	258	319	403	
532	0	587	478	379	296	240	206	187	176	178	191	217	258	320	407	
542	0	601	486	382	297	239	205	186	175	176	190	216	257	320	410	
553	0	615	494	385	298	239	204	184	173	175	189	215	257	322	415	
564	0	631	502	388	298	238	203	183	172	174	188	215	257	323	419	
575	0	647	511	391	299	238	203	182	171	172	187	214	257	324	423	
587	0	664	519	394	299	238	202	181	169	171	186	213	257	325	427	
599	0	682	528	397	300	237	201	179	168	170	184	212	256	326	431	
612	0	702	538	401	301	237	201	178	167	168	183	212	256	327	436	
626	0	724	547	404	301	236	200	177	166	167	182	211	256	328	441	
640	0	749	558	407	302	236	199	176	164	166	181	210	255	329	445	

VESSEL DISP. (FT) 14	(% WD) 15	RESTORING FORCE ON VESSEL 16 (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)
14.8	7.7	1359.	22.53	8515.	1789.	136198.	942.	1000.	691.
17.0	7.8	1412.	23.71	8932.	1822.	142233.	970.	1000.	714.
19.3	7.9	1468.	24.84	9345.	1857.	148602.	1000.	1000.	739.
21.5	8.1	1525.	25.47	9628.	1893.	155149.	1029.	1000.	764.
23.8	8.3	1586.	26.94	9894.	1931.	162159.	1061.	1000.	791.
26.0	8.4	1650.	28.62	10155.	1972.	169679.	1095.	1000.	819.
28.3	8.6	1719.	30.42	10440.	2017.	177743.	1133.	1000.	851.
30.5	8.7	1792.	32.66	10704.	2065.	186476.	1174.	1000.	885.
32.8	8.9	1871.	34.81	11028.	2117.	195855.	1220.	1000.	923.
35.0	9.0	1953.	36.73	11504.	2172.	205802.	1269.	1000.	965.
37.3	9.1	2039.	37.92	11995.	2230.	216067.	1320.	1000.	1007.
39.5	9.3	2129.	40.31	12632.	2291.	227070.	1374.	1000.	1052.
41.8	9.4	2226.	42.79	13294.	2357.	238830.	1432.	1000.	1100.
44.0	9.6	2327.	45.29	13818.	2427.	251349.	1492.	1000.	1151.
46.3	9.8	2436.	48.32	14444.	2502.	264814.	1558.	1000.	1205.
48.5	9.9	2551.	50.79	14866.	2581.	279031.	1625.	1000.	1262.
50.8	10.1	2671.	53.49	15268.	2666.	294056.	1697.	1000.	1321.
53.0	10.2	2797.	56.00	15764.	2754.	309795.	1774.	1000.	1385.
55.3	10.4	2928.	58.43	16111.	2846.	326244.	1854.	1000.	1452.
57.5	10.5	3065.	60.67	16439.	2942.	343367.	1936.	1000.	1520.
59.8	10.6	3199.	59.70	16703.	3036.	360172.	2011.	1000.	1583.
62.0	10.8	3343.	63.96	17145.	3138.	378280.	2094.	1000.	1652.
64.3	10.9	3514.	75.81	17936.	3260.	400054.	2202.	1000.	1742.
66.5	11.1	3677.	72.56	18580.	3377.	420782.	2297.	1000.	1821.
68.8	11.3	3837.	71.30	19182.	3491.	441095.	2384.	1000.	1893.
71.0	11.4	4005.	74.51	19474.	3611.	462395.	2474.	1000.	1968.
73.3	11.6	4178.	77.03	20039.	3736.	484447.	2567.	1000.	2045.
75.5	11.7	4358.	80.04	20375.	3865.	507406.	2662.	1000.	2125.
77.8	11.9	4543.	81.97	21293.	3998.	530816.	2763.	1000.	2209.
80.0	12.0	4730.	83.21	22576.	4132.	554432.	2867.	1000.	2296.
82.3	12.1	4930.	88.67	23261.	4277.	579954.	2971.	1000.	2383.
84.5	12.3	5144.	95.27	23210.	4434.	607654.	3079.	1000.	2472.
86.8	12.4	5352.	92.69	24318.	4585.	634138.	3188.	1000.	2563.
89.0	12.6	5535.	80.93	25556.	4717.	656781.	3265.	1000.	2628.
91.3	12.8	5734.	88.42	26995.	4861.	681691.	3356.	1000.	2705.
93.5	12.9	5959.	100.36	28948.	5026.	710209.	3476.	1000.	2804.
95.8	13.1	6185.	100.39	31010.	5191.	738702.	3592.	1000.	2901.
98.0	13.2	6384.	88.21	31914.	5335.	763218.	3678.	1000.	2974.
00.3	13.4	6604.	98.03	33245.	5496.	790733.	3781.	1000.	3061.
02.5	13.5	6853.	110.70	35709.	5680.	822311.	3898.	1000.	3158.
04.8	13.6	7075.	98.36	37906.	5843.	849971.	3983.	1000.	3230.
07.0	13.8	7326.	111.75	39858.	6026.	881528.	4113.	1000.	3338.
09.3	13.9	7561.	104.59	41562.	6198.	910649.	4224.	1000.	3431.
11.5	14.1	7762.	88.98	44753.	6342.	934326.	4311.	1000.	3505.
13.8	14.3	7983.	98.41	47485.	6503.	960930.	4410.	1000.	3588.
16.0	14.4	8251.	119.20	49532.	6700.	994400.	4542.	1000.	3698.
18.3	14.6	8485.	103.75	51085.	6873.	1022882.	4626.	1000.	3770.
20.5	14.7	8702.	96.52	54091.	7033.	1048415.	4702.	1000.	3835.
22.8	14.9	8971.	119.47	59262.	7230.	1080519.	4847.	1000.	3955.

LINE LOAD (KIPS)

LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12					
655	0	775	568	410	302	236	199	175	163	165	180	210	255	331	450	
671	0	803	579	414	303	235	198	174	162	164	179	209	255	331	455	
687	0	833	591	418	304	235	197	173	161	162	178	208	255	332	460	
706	0	863	602	421	304	234	196	171	160	161	177	208	255	334	465	
725	0	894	615	425	305	234	195	170	158	160	176	207	254	335	471	
747	0	929	628	430	306	234	194	169	157	159	174	206	254	336	476	
769	0	966	642	434	307	234	193	168	156	158	173	206	254	337	481	
794	0	1008	656	438	308	233	193	167	155	157	172	205	253	338	487	
820	0	1054	671	442	308	233	192	166	154	155	171	204	253	340	493	
846	0	1103	687	446	309	233	191	165	153	154	170	204	253	341	499	
875	0	1154	703	450	309	232	190	164	152	153	169	203	253	342	506	
904	0	1208	722	454	310	232	189	163	151	152	168	203	253	344	512	
935	0	1266	742	459	311	231	188	162	149	151	167	202	252	345	519	
970	0	1327	763	463	311	231	187	161	148	150	166	202	252	347	527	
1007	0	1392	786	468	312	230	187	160	147	149	165	201	252	348	534	
1048	0	1460	810	473	313	230	186	159	146	148	164	200	252	349	541	
1092	0	1532	835	478	313	230	185	158	145	147	163	200	252	350	549	
1136	0	1609	862	483	314	229	184	157	144	146	162	199	251	352	556	
1184	0	1689	888	488	315	229	183	156	143	145	161	199	251	353	564	
1235	0	1772	916	493	316	229	183	155	142	144	160	198	251	354	573	
1287	0	1847	947	499	317	228	182	154	141	143	159	197	251	356	581	
1341	0	1930	981	505	318	228	181	153	140	142	159	196	251	357	589	
1403	0	2038	1016	511	318	228	180	152	139	141	158	196	250	359	599	
1464	0	2133	1055	516	319	227	179	151	138	140	157	195	250	360	609	
1527	0	2220	1097	523	320	227	179	150	137	139	156	194	250	361	618	
1596	0	2310	1140	529	321	227	178	149	136	138	155	193	250	363	628	
1665	0	2403	1187	536	322	227	177	148	135	137	154	193	250	364	638	
1739	0	2499	1235	542	322	226	177	147	134	136	153	192	249	365	649	
1811	0	2600	1285	549	323	226	176	147	134	135	152	191	249	367	660	
1881	0	2704	1335	555	324	225	175	146	133	134	151	191	249	369	673	
1963	0	2808	1392	563	325	225	174	145	132	134	151	190	249	370	684	
2057	0	2916	1453	571	326	225	174	144	131	133	150	189	249	371	696	
2140	0	3025	1513	579	327	225	173	143	130	132	149	188	249	373	710	
2217	0	3102	1577	587	327	225	172	142	129	131	148	188	248	374	725	
2298	0	3193	1644	594	328	224	171	141	128	130	147	187	248	376	741	
2385	0	3313	1710	602	329	224	171	141	127	129	146	187	248	378	759	
2471	0	3430	1779	610	330	223	170	140	127	128	146	186	248	379	777	
2556	0	3515	1846	620	331	223	169	139	126	128	145	185	248	381	794	
2646	0	3619	1916	630	332	223	169	138	125	127	144	184	247	382	811	
2746	0	3735	2002	638	333	223	168	137	124	126	143	184	247	384	833	
2840	0	3821	2089	647	333	222	167	136	123	125	142	183	247	386	854	
2937	0	3951	2165	657	334	222	166	136	123	124	142	183	247	388	874	
3032	0	4062	2240	668	335	222	166	135	122	123	141	182	247	389	894	
3103	0	4149	2313	677	336	221	165	134	121	123	140	181	247	391	918	
3187	0	4248	2390	688	337	221	164	133	120	122	139	181	247	394	943	
3293	0	4380	2473	700	338	221	164	133	119	121	139	180	247	395	967	
3395	0	4465	2563	715	339	221	163	132	119	120	138	179	246	396	992	
3481	0	4541	2651	728	340	220	162	131	118	120	137	179	246	398	1021	
3565	0	4685	2733	740	341	220	162	130	117	119	136	178	247	401	1057	

FOUNDATION = 1.43 A1 0.967% SLL = 1475.0

S.F 1.42 DLL = 2567.0

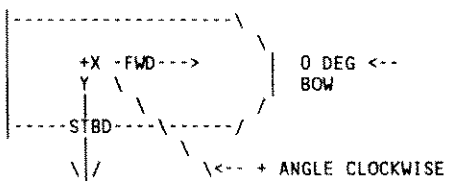
STARTING DISPLACEMENTS : SURGE(FT) = -26.625 SWAY(FT) = -17.625 YAW(DEG) = .777

DEEPWATER, ARAMID MOORING LINE JIP
CASE T3A16N
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

T3A16N

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	11.3	33.8	56.3	78.8	101.3	123.8	146.3	168.8	-168.8	-146.3	-123.8	-101.3	-78.8	-56.3	-33.8	-11.3
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	183.5	183.5	183.5	183.5	183.5	183.5	183.5	183.5	183.5	183.5	183.5	183.5	183.5	183.5	183.5	183.5
INITIAL VESSEL YAW ANGLES (DEG)		.00														

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	3000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	3000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	65.24
LINE B.S. (KIPS)	3540.0
AREA (SQ IN)	23.75
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	65.24
LINE B.S. (KIPS)	3540.0
AREA (SQ IN)	23.75
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-200.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	150.0
WEIGHT IN WATER (LB/FT)	65.24
LINE B.S. (KIPS)	3540.0
AREA (SQ IN)	23.75
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	ARAMID
LINE SIZE (IN)	5.940"
LINE LENGTH (FT)	2610.0
WEIGHT IN WATER (LB/FT)	2.17
LINE B.S. (KIPS)	3561.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	142000.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.5"
LINE LENGTH (FT)	250.0
WEIGHT IN WATER (LB/FT)	250.00
LINE B.S. (KIPS)	3038.0
AREA (SQ IN)	23.75
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	1800.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.25 "
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	.01
LINE B.S. (KIPS)	9999.0
AREA (SQ IN)	1000.00
APP.MOD. OF ELAS.(KSI)	99999.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

VESSEL DISP. 13 (FT)	14 (% WD)	15	RESTORING FORCE ON VESSEL 16 (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0		0.	.00	0.	1869.	0.	185.	1000.	146.	185	185	185	185	185	185	185	185	185	185	185	185
4.5	.2		13.	2.97	0.	1869.	1293.	187.	1000.	147.	187	187	187	187	186	186	185	184	184	184	184	184
9.0	.3		27.	2.97	0.	1869.	2586.	189.	1000.	149.	188	189	189	188	187	186	185	183	183	182	182	183
13.5	.4		40.	2.97	0.	1870.	3879.	191.	1000.	150.	190	191	191	190	188	187	184	183	181	180	180	181
18.0	.6		53.	2.97	0.	1870.	5174.	193.	1000.	152.	192	193	193	192	190	187	184	182	180	179	179	180
22.5	.8		67.	2.97	0.	1871.	6469.	195.	1000.	153.	193	195	195	193	191	187	184	181	178	177	177	178
27.0	.9		80.	2.97	0.	1872.	7766.	197.	1000.	154.	195	197	197	195	192	188	183	180	177	176	176	177
31.5	1.0		94.	2.98	0.	1873.	9065.	199.	1000.	156.	197	199	199	197	193	188	183	179	176	174	174	176
36.0	1.2		107.	2.98	0.	1875.	10365.	201.	1000.	158.	198	201	201	198	194	188	183	178	174	173	173	174
40.5	1.4		120.	2.99	0.	1876.	11668.	203.	1000.	159.	200	203	203	200	195	189	182	177	173	171	171	173
45.0	1.5		134.	2.99	0.	1878.	12973.	205.	1000.	161.	202	205	205	202	196	189	182	176	172	170	170	172
49.5	1.6		147.	3.00	0.	1880.	14281.	207.	1000.	163.	204	207	207	204	197	189	182	175	171	168	168	171
54.0	1.8		161.	3.00	0.	1882.	15593.	209.	1000.	164.	205	209	209	205	198	190	181	174	169	167	167	169
58.5	2.0		174.	3.00	0.	1884.	16902.	212.	1000.	166.	207	212	212	207	200	190	181	174	168	166	166	168
63.0	2.1		188.	2.98	0.	1887.	18206.	214.	1000.	168.	209	214	214	209	201	191	181	173	167	164	164	167
67.5	2.3		201.	3.00	0.	1889.	19516.	216.	1000.	170.	211	216	216	211	202	191	181	172	166	163	163	166
72.0	2.4		215.	2.99	0.	1892.	20822.	218.	1000.	172.	213	218	218	213	203	191	180	171	165	162	162	165
76.5	2.5		228.	3.01	0.	1895.	22138.	221.	1000.	174.	215	221	221	215	204	192	180	170	164	161	161	164
81.0	2.7		242.	3.03	0.	1898.	23466.	223.	1000.	176.	217	223	223	217	206	192	180	170	163	159	159	163
85.5	2.8		256.	3.06	0.	1901.	24806.	226.	1000.	178.	219	226	226	219	207	193	179	169	162	158	158	162
90.0	3.0		270.	3.08	0.	1905.	26159.	228.	1000.	181.	221	228	228	221	208	193	179	168	161	157	157	161
94.5	3.2		284.	3.11	0.	1909.	27524.	231.	1000.	183.	223	231	231	223	209	194	179	167	160	156	156	160
99.0	3.3		298.	3.12	0.	1913.	28894.	234.	1000.	185.	225	234	234	225	211	194	178	167	159	155	155	159
03.5	3.5		311.	3.09	0.	1917.	30241.	236.	1000.	187.	227	236	236	227	212	194	178	166	158	154	154	158
08.0	3.6		326.	3.12	0.	1921.	31610.	239.	1000.	190.	230	239	239	230	213	195	178	165	157	153	153	157
12.5	3.8		340.	3.17	0.	1926.	33006.	242.	1000.	192.	232	242	242	232	215	195	178	164	156	152	152	156
17.0	3.9		354.	3.21	0.	1931.	34419.	245.	1000.	195.	234	245	245	234	216	196	177	164	155	151	151	155
21.5	4.1		369.	3.24	0.	1936.	35845.	248.	1000.	197.	236	248	248	236	217	196	177	163	154	150	150	154
26.0	4.2		384.	3.32	0.	1941.	37317.	252.	1000.	200.	239	252	252	239	219	197	177	162	153	149	149	153
30.5	4.3		399.	3.41	0.	1947.	38844.	255.	1000.	203.	241	255	255	241	220	197	177	162	153	149	149	153
35.0	4.5		415.	3.54	0.	1953.	40465.	259.	1000.	206.	244	259	259	244	222	197	176	161	152	148	148	152
39.5	4.7		431.	3.65	0.	1960.	42154.	263.	1000.	210.	246	263	263	246	223	198	176	160	151	147	147	151
44.0	4.8		448.	3.74	0.	1968.	43901.	268.	1000.	213.	249	268	268	249	224	198	176	160	150	146	146	150
48.5	4.9		466.	3.84	0.	1976.	45709.	272.	1000.	217.	252	272	272	252	226	199	175	159	150	145	145	150
53.0	5.1		483.	3.94	0.	1984.	47577.	277.	1000.	221.	255	277	277	255	227	199	175	158	149	145	145	149
57.5	5.3		502.	4.06	0.	1993.	49518.	282.	1000.	225.	258	282	282	258	229	200	175	158	148	144	144	148
62.0	5.4		520.	4.17	0.	2003.	51524.	287.	1000.	229.	262	287	287	262	231	200	175	157	147	143	143	147
66.5	5.6		540.	4.28	0.	2013.	53593.	292.	1000.	233.	266	292	292	266	232	201	174	157	147	143	143	147
71.0	5.7		559.	4.38	0.	2023.	55725.	297.	1000.	238.	269	297	297	269	234	201	174	156	146	142	142	146
75.5	5.8		579.	4.49	0.	2034.	57921.	303.	1000.	243.	273	303	303	273	235	202	174	156	146	141	141	146
80.0	6.0		600.	4.61	0.	2045.	60184.	309.	1000.	248.	277	309	309	277	237	202	174	155	145	141	141	145
84.5	6.2		621.	4.72	0.	2057.	62504.	315.	1000.	253.	281	315	315	281	239	203	173	154	144	140	140	144
89.0	6.3		643.	4.86	0.	2069.	64898.	321.	1000.	258.	286	321	321	286	240	203	173	154	144	140	140	144
93.5	6.4		665.	4.76	0.	2081.	67229.	327.	1000.	263.	290	327	327	290	242	204	173	153	143	139	139	143
98.0	6.6		688.	5.06	0.	2094.	69740.	334.	1000.	269.	295	334	334	295	244	204	173	153	143	139	139	143
02.5	6.8		712.	5.54	0.	2109.	72547.	342.	1000.	275.	299	342	342	299	246	205	173	152	142	138	138	142
07.0	6.9		741.	6.34	0.	2127.	75854.	352.	1000.	283.	304	352	352	304	247	205	172	152	142	138	138	142
11.5	7.1		772.	6.87	0.	2147.	79483.	363.	1000.	293.	309	363	363	309	249	206	172	151	141	137	137	141
16.0	7.2		804.	7.24	0.	2168.	83325.	375.	1000.	303.	315	375	375	315	251	206	172	151	141	137	137	141
20.5	7.3		838.	7.39	0.	2189.	87243.	388.	1000.	313.	320	388	388	320	253	207	172	150	140	136	136	140
25.0	7.5		869.	6.86	0.	2209.	90794.	399.	1000.	322.	325	399	399	325	256	207	171	150	140	136	136	140

LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
185	185	185	185	185	185	185	185	185	185	185	185
187	187	187	187	186	186	185	184	184	184	184	184
188	189	189	188	187	186	185	183	183	182	182	183
190	191	191	190	188	187	184	183	181	180	180	181
192	193	193	192	190	187	184	182	180	179	179	180
193	195	195	193	191	187	184	181	178	177	177	178
195	197	197	195	192	188	183	180	177	176	176	177
197	199	199	197	193	188	183	179	176	174	174	176
198	201	201	198	194	188	183	178	174	173	173	174
200	203	203	200	195	189	182	177	173	171	171	173
202	205	205	202	196	189	182	176	172	170	170	172
204	207	207	204	197	189	182	175	171	168	168	171
205	209	209	205	198	190	181	174	169	167	167	169
207	212	212	207	200	190	181	174	168	166	166	168
209	214	214	209	201	191	181	173	167	164	164	167
211	216	216	211	202	191	181	172	166	163	163	166
213	218	218	213	203	191	180	171	165	162	162	165
215	221	221	215	204	192	180	170	164	161	161	164
217	223	223	217	206	192	180	170	163	159	159	163
219	226	226	219	207	193	179	169	162	158	158	162
221	228	228	221	208	193	179	168	161	157	157	161
223	231	231	223	209	194	179	167	160	156	156	160
225	234	234	225	211	194	178	167	159	155	155	159
227	236	236	227	212	194	178	166	158	154	154	158
230	239	239	230	213	195	178	165	157	153	153	157
232	242	242	232	215	195	178	164	156	152	152	156
234	245	245	234	216	196	177	164	155	151	151	155
236	248	248	236	217	196	177	163	154	150	150	154
239	252	252	239	219	197	177	162	153	149	149	153
241	255	255	241	220	197	177	162	153	149	149	153
244	259	259	244	222	197	176	161	152	148	148	152
246	263	263	246	223	198	176	160	151	147	147	151
249	268	268	249	224	198	176	160	150	146	146	150
252	272	272	252	226	199	175	159	150	145	145	150
255	277	277	255	227	199	175	158	149	145	145	149
258	282	282	258	229	200	175	158	148	144	144	148
262	287	287	262	231	200	175	157	147	143	143	147
266	292	292	266	232	201	174	157	147	143	143	147
269	297	297	269	234	201	174	156	146	142	142	146
273	303	303	273	235	202	174	156	146	141	141	146
277	309	309	277	237	202	174	155	145	141	141	145
281	315	315	281	239	203	173	154	144	140	140	144
286	321	321	286	240	203	173	154	144	140	140	144
290	327	327	290	242	204	173	153	143	139	139	143
295	334	334	295	244	204	173	153	143	139	139	143
299	342	342	299	246	205	173	152	142	138	138	142
304	352	352	304	247	205	172	152	142	138	138	142
309	363	363	309	249	206	172	151	141	137	137	141
315	375	375	315	251	206	172	151	141	137	137	141
320	388	388	320	253	207	172	150	140	136	136	140
325	399	399	325	256	207	171	150	140	136	136	140

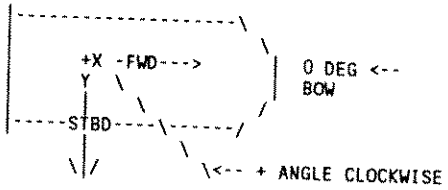
VESSEL DISP.		RESTORING FORCE ON VESSEL	INCREMENT STIFFNESS	YAW MOMENT	VERTICAL FORCE	OVERTURN MOMENT	MAX.LINE LOAD	LINE ON BOTTOM	HOR.FORCE ON ANCHOR	LINE LOAD (KIPS) LINE NUMBER													
5 14	15	16								1	2	3	4	5	6	7	8	9	10	11	12		
(FT)	(% WD)	(KIPS)	(KIPS/FT)	(FT-KIP)	(KIPS)	(FT-KIP)	(KIPS)	(FT)	(KIPS)														
229.5	7.7	900.	7.09	0.	2230.	94463.	410.	1000.	332.	331	410	410	331	258	208	171	149	139	136	136	139	149	171	208	258
234.0	7.8	935.	7.76	0.	2253.	98555.	423.	1000.	342.	337	423	423	337	260	208	171	149	139	135	135	139	149	171	208	260
238.5	7.9	976.	9.12	0.	2281.	103520.	439.	1000.	355.	344	439	439	344	263	209	171	148	138	135	135	138	148	171	209	263
243.0	8.1	1024.	10.58	0.	2315.	109432.	457.	1000.	370.	353	457	457	353	265	210	171	148	138	135	135	138	148	171	210	265
247.5	8.3	1074.	11.19	0.	2350.	115718.	476.	1000.	386.	363	476	476	363	268	210	170	148	138	134	134	138	148	170	210	268
252.0	8.4	1127.	11.68	0.	2387.	122293.	496.	1000.	402.	374	496	496	374	271	211	170	147	137	134	134	137	147	170	211	271
256.5	8.6	1194.	14.97	0.	2436.	130938.	525.	1000.	426.	385	525	525	385	273	211	170	147	137	134	134	137	147	170	211	273
261.0	8.7	1271.	16.93	0.	2491.	140756.	560.	1000.	455.	394	560	560	394	276	212	170	146	137	134	134	137	146	170	212	276
265.5	8.9	1333.	13.96	0.	2535.	148590.	587.	1000.	477.	404	587	587	404	279	212	169	146	136	133	133	136	146	169	212	279
270.0	9.0	1422.	19.71	0.	2598.	159989.	630.	1000.	512.	414	630	630	414	282	213	169	146	136	133	133	136	146	169	213	282
274.5	9.1	1534.	24.90	0.	2680.	174675.	686.	1000.	558.	426	686	686	426	285	213	169	145	136	133	133	136	145	169	213	285
279.0	9.3	1642.	23.95	0.	2758.	188817.	738.	1000.	600.	440	738	738	440	288	214	169	145	135	133	133	135	145	169	214	288
283.5	9.4	1734.	20.49	0.	2825.	200712.	778.	1000.	632.	455	778	778	455	291	215	169	144	135	132	132	135	144	169	215	291
288.0	9.6	1856.	27.20	0.	2914.	216719.	835.	1000.	680.	472	835	835	472	295	215	169	144	135	132	132	135	144	169	215	295
292.5	9.8	2002.	32.45	0.	3020.	235996.	909.	1000.	740.	488	909	909	488	298	216	168	144	135	132	132	135	144	168	216	298
297.0	9.9	2155.	33.87	0.	3132.	256208.	982.	1000.	799.	509	982	982	509	301	216	168	143	134	132	132	134	143	168	216	301
301.5	10.1	2375.	48.86	0.	3295.	286025.	1089.	1000.	887.	539	1089	1089	539	305	217	168	143	134	132	132	134	143	168	217	305
306.0	10.2	2552.	39.45	0.	3424.	309707.	1171.	1000.	954.	566	1171	1171	566	308	218	168	143	134	131	131	134	143	168	218	308
310.5	10.4	2748.	43.45	0.	3566.	335723.	1268.	1000.	1033.	590	1268	1268	590	312	218	168	142	134	130	130	134	142	168	218	312
315.0	10.5	2990.	53.89	0.	3745.	368528.	1382.	1000.	1126.	628	1382	1382	628	316	219	167	142	133	130	130	133	142	167	219	316
319.5	10.6	3196.	45.66	0.	3897.	396388.	1463.	1000.	1192.	677	1463	1463	677	320	219	167	142	133	129	129	133	142	167	219	320
324.0	10.8	3456.	57.80	0.	4091.	431959.	1578.	1000.	1287.	725	1578	1578	725	323	220	167	141	133	129	129	133	141	167	220	323
328.5	10.9	3677.	49.23	0.	4252.	461497.	1681.	1000.	1371.	761	1681	1681	761	327	221	167	141	133	128	128	133	141	167	221	327
333.0	11.1	3947.	59.96	0.	4449.	497621.	1812.	1000.	1478.	797	1812	1812	797	331	221	167	141	133	127	127	133	141	167	221	331
337.5	11.3	4215.	59.60	0.	4649.	534287.	1919.	1000.	1566.	860	1919	1919	860	336	222	167	140	133	127	127	133	140	167	222	336
342.0	11.4	4407.	42.54	0.	4790.	559669.	1983.	1000.	1619.	917	1983	1983	917	340	223	166	140	132	126	126	132	140	166	223	340
346.5	11.6	4830.	94.03	0.	5107.	617826.	2182.	1000.	1781.	985	2182	2182	985	346	223	166	140	132	126	126	132	140	166	223	346
351.0	11.7	5102.	60.37	0.	5313.	655065.	2263.	1000.	1848.	1079	2263	2263	1079	353	224	166	140	132	125	125	132	140	166	224	353
355.5	11.9	5408.	67.99	0.	5540.	696230.	2389.	1000.	1951.	1145	2389	2389	1145	359	225	166	139	132	125	125	132	139	166	225	359
360.0	12.0	5759.	78.05	0.	5805.	744365.	2518.	1000.	2057.	1240	2518	2518	1240	367	225	166	139	132	124	124	132	139	166	225	367
364.5	12.1	6068.	68.72	0.	6037.	786338.	2625.	1000.	2146.	1329	2625	2625	1329	374	226	166	139	131	123	123	131	139	166	226	374
369.0	12.3	6408.	75.47	1.	6290.	832134.	2758.	1000.	2255.	1409	2758	2758	1409	382	227	165	139	131	123	123	131	139	165	227	382
373.5	12.4	6698.	64.61	0.	6504.	870902.	2865.	1000.	2344.	1485	2865	2865	1485	389	227	165	138	130	122	122	130	138	165	227	389
378.0	12.6	7049.	77.91	0.	6768.	918930.	2983.	1000.	2441.	1591	2983	2983	1591	396	228	165	138	130	122	122	130	138	165	228	396
382.5	12.8	7372.	71.71	0.	7006.	962242.	3100.	1115.	2538.	1678	3100	3100	1678	403	229	165	138	129	121	121	129	138	165	229	403
387.0	12.9	7841.	104.24	-1.	7358.	1026694.	3287.	0.	2690.	1790	3287	3287	1790	410	230	165	138	129	121	121	129	138	165	230	410
391.5	13.1	7878.	8.16	0.	7382.	1029854.	3212.	0.	2633.	1889	3212	3212	1889	418	230	165	137	128	120	120	128	137	165	230	418
396.0	13.2	8048.	37.94	0.	7506.	1051518.	3226.	0.	2647.	1982	3226	3226	1982	426	231	164	137	128	120	120	128	137	164	231	426
400.5	13.4	8255.	45.82	0.	7657.	1077891.	3255.	0.	2673.	2082	3255	3255	2082	436	232	164	137	127	119	119	127	137	164	232	436
405.0	13.5	8461.	45.85	0.	7808.	1103950.	3286.	0.	2701.	2179	3286	3286	2179	447	233	164	137	127	119	119	127	137	164	233	447
409.5	13.6	8680.	48.76	0.	7970.	1131931.	3316.	0.	2728.	2286	3316	3316	2286	459	233	164	137	126	118	118	126	137	164	233	459
414.0	13.8	8903.	49.49	0.	8135.	1160487.	3345.	0.	2754.	2396	3345	3345	2396	471	234	164	136	126	118	118	126	136	164	234	471
418.5	13.9	9122.	48.63	0.	8299.	1188829.	3371.	0.	2778.	2507	3371	3371	2507	482	235	164	136	125	118	118	125	136	164	235	482
423.0	14.1	9320.	44.07	0.	8447.	1214072.	3393.	0.	2798.	2608	3393	3393	2608	495	236	164	136	125	117	117	125	136	164	236	495
427.5	14.3	9510.	42.27	0.	8593.	1238123.	3409.	0.	2812.	2708	3409	3409	2708	511	236	163	136	124	117	117	124	136	163	236	511
432.0	14.4	9711.	44.54	0.	8754.	1263591.	3418.	0.	2821.	2820	3418	3418	2820	533	237	163	136	124	116	116	124	136	163	237	533
436.5	14.6	9888.	39.37	0.	8900.	1286157.	3419.	0.	2821.	2925	3419	3419	2925	556	238	163	135	124	116	116	124	135	163	238	556
441.0	14.7	10033.	32.18	0.	9022.	1305547.	3410.	0.	2813.	3024	3410	3410	3024	573	239	163	135	123	115	115	123	135	163	239	573
445.5	14.9	10202.	37.53	0.	9171.	1329809.	3390.	0.	2795.	3153	3390	3390	3153	590	240	163	135	123	115	115	123	135	163	240	590

STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE T3A16N
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 2

SOIL FRICTION COEFFICIENT	-	.00
LINE ATTACHMENT W.R.T. WATER LINE	-	-62.0 FT
ALLOWABLE LINE LENGTH ON BOTTOM	-	90.0 FT
DIRECTION OF VESSEL TRANSLATION	-	45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP.		RESTORING FORCE ON VESSEL	INCREMENT STIFFNESS	YAW MOMENT	VERTICAL FORCE	OVERTURN MOMENT	MAX.LINE LOAD	LINE ON BOTTOM	HOR.FORCE ON ANCHOR	LINE LOAD (KIPS) LINE NUMBER												
14	15	16								1	2	3	4	5	6	7	8	9	10	11	12	
(FT)	(% WD)	(KIPS)	(KIPS/FT)	(FT-KIP)	(KIPS)	(FT-KIP)	(KIPS)	(FT)	(KIPS)													
.0	.0	2.	.00	-1.	1752.	-8449.	210.	1000.	165.	210	0	209	202	195	186	177	171	168	166	167	171	178	186	194	202
4.5	.2	13.	2.58	62.	1754.	-7367.	211.	1000.	166.	211	0	211	204	197	186	177	170	167	165	166	169	177	185	195	203
9.0	.3	25.	2.56	128.	1755.	-6297.	213.	1000.	168.	213	0	213	206	198	187	177	169	166	164	164	168	176	185	195	204
13.5	.4	36.	2.56	193.	1756.	-5226.	215.	1000.	169.	215	0	215	208	199	187	176	168	164	162	163	167	175	185	195	206
18.0	.6	48.	2.55	270.	1758.	-4162.	218.	1000.	171.	218	0	218	209	200	187	176	167	163	161	162	166	175	185	196	207
22.5	.8	59.	2.57	333.	1759.	-3086.	220.	1000.	173.	220	0	220	211	201	187	176	167	162	160	161	165	174	184	197	209
27.0	.9	71.	2.57	391.	1761.	-2011.	222.	1000.	175.	222	0	222	213	202	188	175	166	161	159	160	164	173	184	197	210
31.5	1.0	83.	2.58	448.	1763.	-931.	225.	1000.	178.	224	0	225	215	203	188	175	165	160	158	159	163	172	184	198	211
36.0	1.2	94.	2.59	504.	1765.	154.	227.	1000.	180.	226	0	227	217	204	189	175	164	159	157	157	162	171	184	198	213
40.5	1.4	106.	2.60	561.	1768.	1246.	230.	1000.	182.	228	0	230	219	206	189	174	164	158	155	156	161	171	183	198	214
45.0	1.5	118.	2.62	619.	1770.	2343.	233.	1000.	184.	230	0	233	221	207	189	174	163	157	154	155	160	170	183	199	215
49.5	1.6	129.	2.59	685.	1773.	3419.	235.	1000.	186.	233	0	235	223	208	189	174	162	156	153	154	159	169	183	200	217
54.0	1.8	141.	2.60	755.	1776.	4491.	238.	1000.	189.	235	0	238	225	209	190	173	161	155	152	153	158	169	183	200	218
58.5	2.0	153.	2.62	827.	1779.	5577.	241.	1000.	191.	238	0	241	227	210	190	173	161	154	151	152	157	168	182	201	220
63.0	2.1	165.	2.65	904.	1782.	6680.	244.	1000.	194.	240	0	244	230	212	191	173	160	154	151	151	156	167	182	201	221
67.5	2.3	177.	2.68	983.	1786.	7806.	247.	1000.	196.	242	0	247	232	213	191	172	159	153	150	150	155	166	182	202	223
72.0	2.4	189.	2.72	1057.	1789.	8951.	250.	1000.	199.	245	0	250	234	214	191	172	159	152	149	150	155	166	182	202	224
76.5	2.5	201.	2.75	1122.	1793.	10115.	254.	1000.	202.	248	0	254	236	216	192	172	158	151	148	149	154	165	181	203	226
81.0	2.7	214.	2.82	1190.	1798.	11324.	257.	1000.	205.	251	0	257	239	217	192	172	158	150	147	148	153	164	181	203	227
85.5	2.8	227.	2.90	1260.	1802.	12585.	262.	1000.	208.	254	0	262	241	218	193	171	157	150	146	147	152	164	181	204	229
90.0	3.0	241.	2.97	1327.	1808.	13890.	266.	1000.	212.	257	0	266	244	220	193	171	156	149	146	146	151	163	180	204	230
94.5	3.2	254.	3.04	1388.	1813.	15249.	270.	1000.	216.	260	0	270	246	221	194	171	156	148	145	146	151	162	180	205	232
99.0	3.3	268.	3.11	1451.	1819.	16647.	275.	1000.	219.	264	0	275	249	223	194	171	155	148	144	145	150	162	180	205	233
103.5	3.5	282.	3.14	1499.	1825.	18071.	279.	1000.	223.	268	0	279	252	224	194	170	155	147	143	144	149	161	180	206	235
108.0	3.6	297.	3.22	1557.	1832.	19537.	284.	1000.	227.	272	0	284	255	225	194	170	154	146	143	143	148	161	180	207	237
112.5	3.8	312.	3.31	1629.	1839.	21056.	289.	1000.	232.	276	0	289	258	227	195	170	153	146	142	143	148	160	179	207	239
117.0	3.9	327.	3.38	1713.	1846.	22619.	295.	1000.	236.	280	0	295	261	228	195	169	153	145	142	142	147	159	179	208	240
121.5	4.1	342.	3.46	1807.	1854.	24221.	300.	1000.	241.	284	0	300	265	230	196	169	152	144	141	142	146	159	179	208	242
126.0	4.2	358.	3.54	1908.	1862.	25866.	306.	1000.	245.	288	0	306	269	231	196	169	152	144	140	141	146	158	179	209	244
130.5	4.3	375.	3.60	1995.	1870.	27538.	312.	1000.	250.	294	0	312	272	232	196	168	151	143	140	140	145	158	179	210	246
135.0	4.5	391.	3.71	2112.	1879.	29279.	318.	1000.	255.	298	0	318	276	234	197	168	151	143	139	140	145	157	179	210	248
139.5	4.7	408.	3.73	2227.	1888.	31029.	324.	1000.	261.	303	0	324	280	236	197	168	150	142	139	139	144	157	178	211	250
144.0	4.8	425.	3.79	2340.	1898.	32810.	330.	1000.	266.	308	0	330	285	237	198	168	150	141	138	139	144	156	178	211	252
148.5	4.9	443.	4.02	2476.	1908.	34728.	338.	1000.	272.	313	0	338	289	239	198	168	149	141	138	138	143	155	178	212	254
153.0	5.1	463.	4.37	2655.	1920.	36862.	347.	1000.	279.	319	0	347	293	241	199	167	149	141	137	138	142	155	178	212	256
157.5	5.3	484.	4.72	2917.	1933.	39200.	357.	1000.	288.	324	0	357	298	242	199	167	148	140	137	137	142	154	177	213	259
162.0	5.4	506.	4.88	3183.	1946.	41617.	369.	1000.	297.	330	0	369	302	243	199	167	148	140	136	137	142	154	177	214	262
166.5	5.6	530.	5.21	3444.	1961.	44248.	381.	1000.	308.	337	0	381	307	245	200	166	147	139	136	137	141	153	177	215	264
171.0	5.7	553.	5.28	3617.	1976.	46926.	393.	1000.	317.	344	0	393	312	247	200	166	147	139	136	136	141	153	177	215	267
175.5	5.8	578.	5.48	3647.	1993.	49740.	404.	1000.	327.	353	0	404	318	249	201	166	146	138	135	136	140	152	177	216	270
180.0	6.0	604.	5.74	3623.	2010.	52712.	416.	1000.	336.	363	0	416	323	251	201	166	146	138	135	135	140	152	176	216	272
184.5	6.2	631.	6.13	3580.	2028.	55919.	430.	1000.	348.	373	0	430	329	253	202	166	146	137	135	135	139	151	176	217	275
189.0	6.3	663.	6.93	3645.	2050.	59626.	447.	1000.	362.	384	0	447	334	255	202	165	145	137	134	135	139	151	176	217	278
193.5	6.4	695.	7.28	3893.	2072.	63525.	466.	1000.	378.	394	0	466	341	258	203	165	145	137	134	134	138	150	176	218	281
198.0	6.6	729.	7.43	4280.	2096.	67515.	485.	1000.	393.	403	0	485	350	260	203	165	144	136	134	134	138	150	176	219	284
202.5	6.8	766.	8.27	4682.	2122.	72026.	507.	1000.	411.	415	0	507	358	262	203	165	144	136	134	134	138	150	176	220	288
207.0	6.9	813.	10.49	5271.	2156.	77948.	539.	1000.	437.	428	0	539	366	264	203	164	143	136	133	134	137	149	176	221	292
211.5	7.1	861.	10.74	5745.	2192.	84050.	570.	1000.	463.	443	0	570	377	266	204	164	143	135	133	133	137	149	176	222	295
216.0	7.2	910.	10.79	5973.	2227.	90146.	600.	1000.	487.	460	0	600	387	268	204	163	143	135	133	133	137	149	176	222	299
220.5	7.3	973.	14.10	6573.	2273.	98266.	648.	1000.	527.	478	0	648	396	271	204	163	142	135	133	133	136	148	176	223	303
225.0	7.5	1044.	15.60	7133.	2325.	107338.	703.	1000.	571.	498	0	703	404	272	204	163	142	134	132	133	136	148	176	225	308

VESSEL DISP. 13 (FT)	14 (% WD)	15	RESTORING FORCE ON VESSEL 16 (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)
229.5	7.7		1112.	15.13	7091.	2376.	116214.	750.	1000.	609.
234.0	7.8		1180.	15.23	6672.	2427.	125153.	791.	1000.	644.
238.5	7.9		1268.	19.60	7485.	2492.	136712.	860.	1000.	700.
243.0	8.1		1358.	19.94	7624.	2559.	148579.	923.	1000.	751.
247.5	8.3		1478.	26.58	7490.	2649.	164814.	1011.	1000.	823.
252.0	8.4		1612.	29.84	7255.	2749.	183047.	1112.	1000.	906.
256.5	8.6		1734.	27.09	7574.	2840.	199398.	1202.	1000.	979.
261.0	8.7		1858.	27.64	8676.	2933.	216007.	1291.	1000.	1052.
265.5	8.9		2013.	34.34	9200.	3050.	237029.	1397.	1000.	1139.
270.0	9.0		2150.	30.40	8638.	3152.	255443.	1485.	1000.	1210.
274.5	9.1		2321.	37.95	9304.	3282.	278644.	1604.	1000.	1308.
279.0	9.3		2506.	41.13	9012.	3424.	304314.	1707.	1000.	1392.
283.5	9.4		2708.	44.93	9661.	3579.	332122.	1838.	1000.	1499.
288.0	9.6		2889.	40.25	9170.	3717.	356975.	1946.	1000.	1588.
292.5	9.8		3034.	32.20	8919.	3825.	376322.	2022.	1000.	1651.
297.0	9.9		3280.	54.67	9239.	4014.	410674.	2175.	1000.	1776.
301.5	10.1		3476.	43.62	10292.	4162.	437418.	2292.	1000.	1872.
306.0	10.2		3699.	49.64	10466.	4333.	468349.	2420.	1000.	1977.
310.5	10.4		3940.	53.47	11675.	4518.	501787.	2545.	1000.	2080.
315.0	10.5		4159.	48.69	11984.	4686.	531987.	2646.	1000.	2163.
319.5	10.6		4419.	57.68	13211.	4887.	567792.	2785.	1000.	2277.
324.0	10.8		4637.	48.47	14054.	5054.	597344.	2891.	1000.	2365.
328.5	10.9		4886.	55.39	15732.	5246.	631384.	3005.	1000.	2459.
333.0	11.1		5131.	54.49	16579.	5432.	664345.	3148.	0.	2576.
337.5	11.3		5398.	59.17	17712.	5636.	700486.	3287.	0.	2691.
342.0	11.4		5493.	21.31	17011.	5712.	712756.	3203.	0.	2626.
346.5	11.6		5682.	41.87	18227.	5859.	737572.	3231.	0.	2652.
351.0	11.7		5878.	43.64	20408.	6012.	763354.	3261.	0.	2678.
355.5	11.9		6051.	38.42	22217.	6144.	785460.	3292.	0.	2706.
360.0	12.0		6228.	39.33	21438.	6277.	808465.	3324.	0.	2735.
364.5	12.1		6435.	46.04	24846.	6440.	835894.	3351.	0.	2760.
369.0	12.3		6613.	39.45	27253.	6577.	858140.	3377.	0.	2783.
373.5	12.4		6799.	41.27	30879.	6724.	881295.	3397.	0.	2802.
378.0	12.6		7050.	55.87	28750.	6928.	916033.	3413.	0.	2816.
382.5	12.8		7172.	27.19	35736.	7026.	928776.	3419.	0.	2822.
387.0	12.9		7206.	7.47	47790.	7050.	927480.	3418.	0.	2821.
391.5	13.1		7318.	24.84	55090.	7141.	939882.	3409.	0.	2812.
396.0	13.2		7416.	21.95	62148.	7228.	949845.	3387.	0.	2793.

	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12				
524	0	750	414	275	205	162	141	134	132	133	136	148	176	225	312	
553	0	791	427	279	206	162	141	134	132	132	135	147	175	226	315	
578	0	860	440	281	206	162	141	134	132	132	135	147	175	227	319	
611	0	923	454	284	206	162	141	134	132	132	135	146	175	228	323	
656	0	1011	471	287	207	162	140	133	131	132	135	146	175	228	327	
706	0	1112	487	290	208	161	140	133	130	131	134	146	175	229	331	
749	0	1202	506	292	208	161	140	133	130	131	134	145	175	230	336	
789	0	1291	530	295	208	161	139	133	129	130	134	145	175	231	343	
846	0	1397	561	298	208	161	139	133	128	130	134	145	175	232	349	
905	0	1485	585	302	209	161	139	132	128	129	134	144	174	232	354	
968	0	1604	617	305	210	160	138	132	127	128	133	144	174	234	363	
1052	0	1707	668	309	211	160	138	132	127	128	133	144	174	234	369	
1133	0	1838	714	312	211	160	138	132	126	127	133	143	174	235	378	
1213	0	1946	756	317	212	160	138	132	126	127	133	143	173	235	383	
1279	0	2022	796	322	213	160	138	132	125	126	133	142	173	235	389	
1382	0	2175	857	325	213	160	137	131	124	125	132	142	173	236	396	
1460	0	2292	910	328	214	160	137	130	124	125	132	142	173	237	405	
1558	0	2420	971	332	214	159	137	130	123	124	132	142	173	238	412	
1663	0	2545	1052	336	214	159	137	129	123	124	132	141	173	239	422	
1767	0	2646	1129	341	215	159	136	129	122	123	132	141	173	240	430	
1878	0	2785	1212	346	215	159	136	128	122	123	132	141	173	241	443	
1975	0	2891	1285	351	216	158	136	128	121	122	131	141	173	242	455	
2085	0	3005	1379	357	216	158	136	127	121	122	131	140	173	244	469	
2185	0	3148	1444	363	217	158	135	127	120	121	130	140	173	245	482	
2300	0	3287	1528	370	217	158	135	126	120	121	130	140	173	246	497	
2393	0	3203	1642	380	218	158	135	126	119	120	129	140	172	246	507	
2496	0	3231	1748	389	219	158	135	125	119	120	129	139	172	246	524	
2600	0	3261	1860	396	220	158	135	125	118	119	128	139	172	247	546	
2687	0	3292	1954	404	221	158	135	125	118	119	128	139	171	248	564	
2791	0	3324	2041	414	222	158	135	124	117	118	127	138	171	248	574	
2896	0	3351	2170	420	222	157	134	124	117	118	127	138	171	249	597	
2984	0	3377	2270	430	223	157	134	123	117	117	126	138	170	250	621	
3073	0	3397	2382	441	224	157	134	123	116	117	126	138	170	251	653	
3240	0	3413	2524	459	226	158	134	123	116	116	125	137	170	250	668	
3271	0	3419	2612	469	226	157	134	122	115	116	125	137	170	252	711	
3217	0	3418	2665	470	225	157	134	121	115	116	125	137	170	255	763	
3248	0	3409	2763	476	225	156	133	121	114	115	124	137	171	258	802	
3274	0	3387	2853	488	226	156	133	121	114	115	124	137	171	259	849	

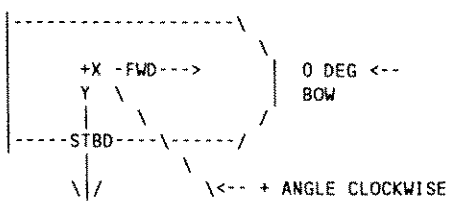
EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 3 AT 5238. FT

STARTING DISPLACEMENTS : SURGE(FT) = -46.500 SWAY(FT) = -31.500 YAW(DEG) = .847

DEEPWATER, ARAMID MOORING LINE JIP
CASE 6000 FT 10% 100 KIP BUOY
SPRING BUOY ANALYSIS

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT	-	.00
LINE ATTACHMENT W.R.T. WATER LINE	-	-62.0 FT
ALLOWABLE LINE LENGTH ON BOTTOM	-	90.0 FT
DIRECTION OF VESSEL TRANSLATION	-	45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

T6A12N

(11) Tool //

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	22.5	45.0	67.5	112.5	135.0	157.5	-157.5	-135.0	-112.5	-67.5	-45.0	-22.5
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	210.7	210.7	210.7	210.7	210.7	210.7	210.7	210.7	210.7	210.7	210.7	210.7
INITIAL VESSEL YAW ANGLES (DEG)	.00											

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	6000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	6000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.875"
LINE LENGTH (FT)	1500.0
WEIGHT IN WATER (LB/FT)	73.28
LINE B.S. (KIPS)	4075.0
AREA (SQ IN)	27.11
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE MATERIAL	WIRE
LINE SIZE (IN)	5.875"
LINE LENGTH (FT)	1500.0
WEIGHT IN WATER (LB/FT)	73.28
LINE B.S. (KIPS)	4075.0
AREA (SQ IN)	27.11
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-70.0

LINE MATERIAL	WIRE
LINE SIZE (IN)	5.875"
LINE LENGTH (FT)	150.0
WEIGHT IN WATER (LB/FT)	73.28
LINE B.S. (KIPS)	4075.0
AREA (SQ IN)	27.11
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

233.61 NET WT

LINE TYPE	1
LINE MATERIAL	ARAMID
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	5610.0
WEIGHT IN WATER (LB/FT)	2.19
LINE B.S. (KIPS)	3641.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	146000.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.5 "
LINE LENGTH (FT)	250.0
WEIGHT IN WATER (LB/FT)	250.01
LINE B.S. (KIPS)	3038.0
AREA (SQ IN)	23.75
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	1800.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.25 "
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	.01
LINE B.S. (KIPS)	9999.0
AREA (SQ IN)	1000.00
APP.MOD. OF ELAS.(KSI)	99999.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	2471.	0.	211.	1082.	48.	211	211	211	211	211	211	211	211	211	211	211	211
9.0	.2	5.	.58	0.	2471.	675.	212.	1080.	48.	212	212	212	212	211	211	211	211	211	211	211	212
18.0	.3	11.	.58	0.	2471.	1350.	213.	1078.	49.	213	213	213	212	211	211	210	210	210	211	211	212
27.0	.4	16.	.58	0.	2471.	2026.	214.	1077.	50.	214	214	214	212	211	210	209	209	209	210	211	212
36.0	.6	21.	.59	0.	2472.	2703.	215.	1075.	51.	215	215	215	213	211	210	209	208	209	210	211	213
45.0	.8	26.	.59	0.	2472.	3382.	216.	1074.	52.	215	216	215	213	211	210	208	208	208	210	211	213
54.0	.9	32.	.59	0.	2473.	4062.	217.	1072.	53.	216	217	216	213	211	210	207	207	207	210	211	213
63.0	1.0	37.	.59	0.	2474.	4745.	218.	1071.	54.	217	218	217	214	211	209	207	206	207	209	211	214
72.0	1.2	42.	.59	0.	2475.	5430.	219.	1070.	55.	218	219	218	214	211	209	206	206	206	209	211	214
81.0	1.4	48.	.59	0.	2476.	6118.	220.	1069.	56.	219	220	219	214	211	209	206	205	206	209	211	214
90.0	1.5	53.	.60	0.	2478.	6809.	221.	1068.	57.	220	221	220	215	211	209	205	205	205	209	211	215
99.0	1.6	58.	.60	0.	2479.	7504.	222.	1067.	58.	221	222	221	215	211	208	205	204	205	208	211	215
08.0	1.8	64.	.60	0.	2481.	8203.	223.	1066.	59.	222	223	222	215	211	208	204	204	204	208	211	215
17.0	2.0	69.	.61	0.	2482.	8907.	225.	1065.	61.	223	225	223	216	211	208	204	203	204	208	211	216
26.0	2.1	75.	.61	0.	2484.	9615.	226.	1064.	62.	224	226	224	216	211	208	203	203	203	208	211	216
35.0	2.3	80.	.62	0.	2486.	10328.	227.	1064.	63.	226	227	226	217	211	207	203	202	203	207	211	217
44.0	2.4	86.	.62	0.	2488.	11046.	228.	1063.	64.	227	228	227	217	211	207	202	202	202	207	211	217
53.0	2.5	91.	.61	0.	2491.	11757.	230.	1070.	66.	228	230	228	217	211	207	202	201	202	207	211	217
62.0	2.7	97.	.59	0.	2493.	12448.	231.	1090.	66.	229	231	229	218	211	207	202	201	202	207	211	218
71.0	2.8	101.	.52	0.	2495.	13078.	232.	1106.	68.	230	232	230	218	212	206	201	201	201	206	212	218
80.0	3.0	106.	.55	0.	2497.	13738.	233.	1117.	69.	231	233	231	219	212	206	201	200	201	206	212	219
89.0	3.2	112.	.59	0.	2500.	14433.	235.	1122.	70.	233	235	233	219	212	206	201	200	201	206	212	219
98.0	3.3	117.	.63	0.	2502.	15166.	236.	1121.	72.	234	236	234	219	212	206	200	200	200	206	212	219
07.0	3.5	123.	.67	0.	2506.	15938.	238.	1113.	73.	235	238	235	220	212	206	200	199	200	206	212	220
16.0	3.6	130.	.71	0.	2509.	16751.	240.	1099.	75.	237	240	237	220	212	205	200	199	200	205	212	220
25.0	3.8	136.	.75	0.	2513.	17605.	242.	1078.	77.	238	242	238	221	212	205	199	199	199	205	212	221
34.0	3.9	144.	.80	0.	2517.	18505.	244.	1048.	79.	240	244	240	221	212	205	199	199	199	205	212	221
43.0	4.1	151.	.85	0.	2521.	19445.	247.	1013.	82.	242	247	242	222	212	205	199	198	199	205	212	222
52.0	4.2	159.	.87	0.	2526.	20405.	249.	991.	84.	244	249	244	222	212	205	199	198	199	205	212	222
61.0	4.3	167.	.88	0.	2531.	21387.	251.	979.	86.	246	251	246	223	212	204	198	198	198	204	212	223
70.0	4.5	175.	.86	0.	2535.	22360.	254.	974.	88.	249	254	249	223	212	204	198	198	198	204	212	223
79.0	4.7	183.	.86	0.	2540.	23369.	256.	975.	90.	251	256	251	224	212	204	198	197	198	204	212	224
88.0	4.8	190.	.87	0.	2545.	24400.	258.	981.	93.	253	258	253	224	212	204	198	197	198	204	212	224
97.0	4.9	199.	.90	0.	2550.	25501.	261.	989.	95.	255	261	255	225	212	204	198	197	198	204	212	225
06.0	5.1	207.	.95	0.	2555.	26695.	264.	998.	98.	257	264	257	225	212	203	197	196	197	203	212	225
15.0	5.3	216.	1.00	0.	2560.	27968.	267.	1000.	101.	260	267	260	226	212	203	197	196	197	203	212	226
24.0	5.4	226.	1.06	0.	2566.	29327.	271.	1000.	104.	262	271	262	226	212	203	197	195	197	203	212	226
33.0	5.6	236.	1.13	0.	2573.	30784.	275.	1000.	107.	265	275	265	227	212	203	196	195	196	203	212	227
42.0	5.7	247.	1.22	0.	2580.	32366.	279.	1000.	111.	268	279	268	227	212	203	196	195	196	203	212	227
51.0	5.8	258.	1.30	0.	2589.	34064.	284.	1000.	115.	272	284	272	228	212	203	196	194	196	203	212	228
60.0	6.0	271.	1.39	0.	2597.	35892.	289.	1000.	120.	275	289	275	229	212	203	195	194	195	203	212	229
69.0	6.2	284.	1.47	0.	2607.	37841.	295.	1000.	124.	279	295	279	229	212	202	195	194	195	202	212	229
78.0	6.3	298.	1.54	0.	2617.	39915.	300.	1000.	129.	284	300	284	230	212	202	195	193	195	202	212	230
87.0	6.4	312.	1.57	0.	2627.	42029.	306.	1000.	134.	289	306	289	230	212	202	194	193	194	202	212	230
96.0	6.6	327.	1.69	0.	2639.	44318.	312.	1000.	139.	294	312	294	231	212	202	194	193	194	202	212	231
05.0	6.8	344.	1.88	0.	2651.	46881.	320.	1000.	146.	299	320	299	231	212	202	194	193	194	202	212	231
14.0	6.9	363.	2.08	0.	2666.	49719.	330.	1000.	154.	304	330	304	232	212	202	193	192	193	202	212	232
23.0	7.1	383.	2.22	0.	2681.	52761.	342.	1000.	164.	310	342	310	232	212	202	193	192	193	202	212	232
32.0	7.2	405.	2.47	0.	2699.	56197.	354.	1000.	174.	316	354	316	233	213	201	193	192	193	201	213	233
41.0	7.3	431.	2.89	0.	2720.	60259.	368.	1000.	185.	325	368	325	233	213	201	193	191	193	201	213	233
50.0	7.5	461.	3.24	0.	2744.	64843.	382.	1000.	196.	335	382	335	234	213	201	192	191	192	201	213	234

ESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
59.0	7.7	491.	3.43	0.	2770.	69736.	397.	1000.	208.	346	397	346	235	213	201	192	191	192	201	213	235
68.0	7.8	526.	3.87	0.	2800.	75284.	415.	1000.	223.	358	415	358	235	213	201	192	191	192	201	213	235
77.0	7.9	568.	4.61	0.	2835.	81867.	441.	1000.	244.	371	441	371	236	213	201	191	190	191	201	213	236
86.0	8.1	612.	4.94	0.	2872.	88924.	470.	1000.	267.	384	470	384	237	213	201	191	190	191	201	213	237
95.0	8.3	659.	5.22	0.	2912.	96414.	500.	1000.	290.	398	500	398	237	213	201	191	190	191	201	213	237
04.0	8.4	722.	6.97	0.	2966.	106537.	545.	1000.	325.	415	545	415	238	213	200	191	190	191	200	213	238
13.0	8.6	791.	7.70	0.	3026.	117731.	586.	1000.	357.	439	586	439	239	213	200	191	190	191	200	213	239
22.0	8.7	875.	9.30	0.	3099.	131332.	640.	1000.	399.	466	640	466	240	213	200	190	189	190	200	213	240
31.0	8.9	988.	12.59	0.	3198.	149764.	730.	1000.	468.	495	730	495	241	213	200	190	189	190	200	213	241
40.0	9.0	1081.	10.29	0.	3279.	164848.	784.	1000.	510.	528	784	528	242	213	200	190	189	190	200	213	242
49.0	9.1	1221.	15.61	0.	3403.	187956.	870.	1000.	576.	578	870	578	243	213	200	190	189	190	200	213	243
58.0	9.3	1360.	15.42	0.	3523.	210364.	993.	1000.	670.	607	993	607	244	213	200	190	189	190	200	213	244
67.0	9.4	1553.	21.43	0.	3696.	242435.	1088.	1000.	743.	689	1088	689	245	213	200	189	188	189	200	213	245
76.0	9.6	1727.	19.30	0.	3849.	270880.	1205.	1000.	832.	747	1205	747	246	213	200	189	188	189	200	213	246
85.0	9.8	1953.	25.16	0.	4050.	308385.	1335.	1000.	931.	834	1335	834	247	214	200	189	188	189	200	214	247
94.0	9.9	2128.	19.44	0.	4203.	336862.	1445.	1000.	1016.	895	1445	895	248	214	199	189	188	189	199	214	248
03.0	10.1	2390.	29.14	0.	4438.	380548.	1561.	1000.	1104.	1016	1561	1016	249	214	199	189	188	189	199	214	249
12.0	10.2	2562.	19.03	0.	4588.	408576.	1619.	1000.	1149.	1103	1619	1103	250	214	199	188	187	188	199	214	250
21.0	10.4	2876.	34.93	0.	4867.	460532.	1817.	1000.	1300.	1216	1817	1216	251	214	199	188	187	188	199	214	251
30.0	10.5	3147.	30.14	0.	5108.	505433.	1934.	1000.	1389.	1342	1934	1342	252	214	199	188	187	188	199	214	252
39.0	10.6	3399.	27.94	0.	5330.	546656.	2058.	1000.	1484.	1450	2058	1450	253	214	199	188	187	188	199	214	253
48.0	10.8	3652.	28.09	0.	5552.	587938.	2189.	1000.	1585.	1554	2189	1554	254	214	199	188	187	188	199	214	254
57.0	10.9	3787.	15.03	0.	5663.	608565.	2305.	1000.	1674.	1584	2305	1584	255	214	199	188	187	188	199	214	255
66.0	11.1	4187.	44.47	0.	6023.	675592.	2428.	1000.	1769.	1797	2428	1797	256	214	199	187	187	187	199	214	256
75.0	11.3	4455.	29.75	0.	6256.	718974.	2572.	1000.	1879.	1905	2572	1905	257	214	199	187	186	187	199	214	257
84.0	11.4	4717.	29.19	0.	6485.	761520.	2697.	1000.	1976.	2019	2697	2019	259	214	199	187	186	187	199	214	259
93.0	11.6	4986.	29.81	0.	6719.	805001.	2817.	1000.	2068.	2140	2817	2140	260	214	199	187	186	187	199	214	260
02.0	11.7	5268.	31.40	0.	6966.	850829.	2943.	845.	2165.	2268	2943	2268	261	215	199	187	186	187	199	215	261
11.0	11.9	5482.	23.70	0.	7147.	884450.	3056.	0.	2253.	2353	3056	2353	262	215	198	187	186	187	198	215	262
20.0	12.0	5688.	22.96	0.	7327.	917654.	3052.	173.	2253.	2495	3052	2495	264	215	198	187	186	187	198	215	264
29.0	12.1	5868.	20.01	0.	7479.	945799.	3082.	212.	2279.	2600	3082	2600	265	215	198	187	186	187	198	215	265

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT 8008. FT

STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

1934
1832

F... = 2302.6 KIPS
... 1922
... = 1934
... 1889
VLOA... 1178

SFS =

1832

DEEPWATER, ARAMID MOORING LINE JIP
CASE 6000 FT 10% 100 KIP BUOY
SPRING BUOY ANALYSIS

PROBLEM NUMBER - 2

SOIL FRICTION COEFFICIENT	-	.00
LINE ATTACHMENT W.R.T. WATER LINE	-	-62.0 FT
ALLOWABLE LINE LENGTH ON BOTTOM	-	90.0 FT
DIRECTION OF VESSEL TRANSLATION	-	45.0 DEG

CATENARY OPTIMIZATION - NO

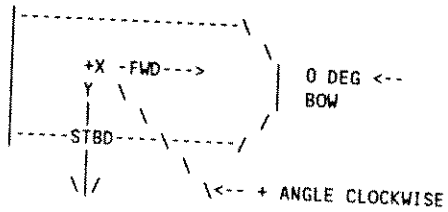
INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO



VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	-3.	.00	0.	2264.	-32834.	220.	1068.	57.	220	0	220	215	211	208	205	204	205	208	211	215
9.0	.2	2.	.48	0.	2265.	-32306.	222.	1067.	58.	222	0	222	215	211	208	204	204	204	208	211	215
18.0	.3	6.	48	0.	2266.	-31779.	223.	1066.	59.	223	0	223	216	211	208	204	203	204	208	211	216
27.0	.4	10.	.48	0.	2267.	-31252.	224.	1065.	60.	224	0	224	216	211	208	203	203	203	208	211	216
36.0	.6	15.	.48	0.	2268.	-30725.	225.	1065.	61.	225	0	225	216	211	207	203	203	203	207	211	216
45.0	.8	19.	.48	0.	2269.	-30198.	226.	1064.	62.	226	0	226	217	211	207	203	202	203	207	211	217
54.0	.9	23.	.48	0.	2270.	-29671.	227.	1064.	63.	227	0	227	217	211	207	202	202	202	207	211	217
63.0	1.0	28.	.48	0.	2271.	-29142.	229.	1063.	64.	229	0	229	218	211	207	202	201	202	207	211	218
72.0	1.2	32.	.45	0.	2272.	-28640.	230.	1070.	66.	230	0	230	218	211	206	201	201	201	206	211	218
81.0	1.4	35.	.41	0.	2273.	-28185.	231.	1089.	66.	231	0	231	218	212	206	201	201	201	206	212	218
90.0	1.5	39.	.42	0.	2275.	-27711.	232.	1104.	67.	232	0	232	219	212	206	201	200	201	206	212	219
99.0	1.6	43.	.44	0.	2276.	-27217.	233.	1115.	68.	233	0	233	219	212	206	200	200	200	206	212	219
108.0	1.8	47.	.47	0.	2278.	-26702.	234.	1121.	70.	234	0	234	220	212	206	200	200	200	206	212	220
117.0	2.0	52.	.49	0.	2280.	-26164.	236.	1122.	71.	236	0	236	220	212	205	200	199	200	205	212	220
126.0	2.1	56.	.51	0.	2282.	-25604.	237.	1117.	73.	237	0	237	221	212	205	200	199	200	205	212	221
135.0	2.3	61.	.54	0.	2284.	-25019.	239.	1107.	74.	239	0	239	221	212	205	199	199	199	205	212	221
144.0	2.4	66.	.57	0.	2287.	-24409.	241.	1091.	76.	241	0	241	221	212	205	199	199	199	205	212	221
153.0	2.5	72.	.60	0.	2289.	-23774.	243.	1069.	78.	243	0	243	222	212	205	199	198	199	205	212	222
162.0	2.7	77.	.63	0.	2292.	-23107.	245.	1038.	80.	245	0	245	222	212	204	199	198	199	204	212	222
171.0	2.8	83.	.64	0.	2296.	-22429.	247.	1007.	82.	247	0	247	223	212	204	198	198	198	204	212	223
180.0	3.0	89.	.62	0.	2299.	-21762.	249.	989.	84.	249	0	249	223	212	204	198	198	198	204	212	223
189.0	3.2	94.	.62	0.	2302.	-21076.	251.	978.	86.	251	0	251	224	212	204	198	197	198	204	212	224
198.0	3.3	100.	.61	0.	2305.	-20383.	254.	974.	88.	254	0	254	224	212	204	198	197	198	204	212	224
207.0	3.5	106.	.65	0.	2307.	-19616.	256.	975.	90.	256	0	256	225	212	204	197	196	197	204	212	225
216.0	3.6	112.	.66	0.	2311.	-18809.	258.	980.	92.	258	0	258	225	212	203	197	196	197	203	212	225
225.0	3.8	118.	.69	0.	2314.	-17964.	261.	987.	95.	261	0	261	226	212	203	197	196	197	203	212	226
234.0	3.9	124.	.72	0.	2317.	-17070.	263.	996.	97.	263	0	263	227	212	203	196	195	196	203	212	227
243.0	4.1	131.	.77	0.	2321.	-16110.	266.	1000.	100.	266	0	266	227	212	203	196	195	196	203	212	227
252.0	4.2	139.	.82	0.	2326.	-15075.	269.	1000.	102.	269	0	269	228	212	203	196	195	196	203	212	228
261.0	4.3	146.	.87	0.	2331.	-13974.	273.	1000.	106.	273	0	273	228	212	203	195	194	195	203	212	228
270.0	4.5	155.	.91	0.	2336.	-12801.	277.	1000.	109.	277	0	277	229	212	202	195	194	195	202	212	229
279.0	4.7	163.	.96	0.	2342.	-11551.	281.	1000.	113.	281	0	281	229	212	202	195	194	195	202	212	229
288.0	4.8	172.	1.01	0.	2348.	-10203.	285.	1000.	116.	285	0	285	230	212	202	194	193	194	202	212	230
297.0	4.9	182.	1.07	0.	2355.	-8762.	290.	1000.	121.	290	0	290	230	212	202	194	193	194	202	212	230
306.0	5.1	192.	1.12	0.	2362.	-7250.	296.	1000.	125.	296	0	296	231	212	202	194	193	194	202	212	231
315.0	5.3	203.	1.17	0.	2370.	-5671.	301.	1000.	130.	301	0	301	231	212	202	194	192	194	202	212	231
324.0	5.4	212.	1.09	0.	2377.	-4243.	306.	1000.	134.	306	0	306	232	212	202	193	192	193	202	212	232
333.0	5.6	223.	1.22	0.	2385.	-2617.	312.	1000.	139.	312	0	312	232	212	202	193	192	193	202	212	232
342.0	5.7	236.	1.44	0.	2394.	-643.	319.	1000.	145.	319	0	319	233	213	201	193	192	193	201	213	233
351.0	5.8	253.	1.83	0.	2408.	1937.	328.	1000.	153.	328	0	328	234	213	201	192	191	192	201	213	234
360.0	6.0	271.	2.04	0.	2423.	4839.	339.	1000.	162.	339	0	339	234	213	201	192	191	192	201	213	234
369.0	6.2	290.	2.12	0.	2439.	7899.	350.	1000.	171.	350	0	350	235	213	201	192	191	192	201	213	235
378.0	6.3	311.	2.26	0.	2456.	11140.	363.	1000.	181.	363	0	363	236	213	201	192	191	192	201	213	236
387.0	6.4	332.	2.41	0.	2474.	14575.	376.	1000.	191.	376	0	376	236	213	201	191	190	191	201	213	236
396.0	6.6	354.	2.40	0.	2492.	17996.	389.	1000.	202.	389	0	389	237	213	201	191	190	191	201	213	237
405.0	6.8	378.	2.74	0.	2513.	21959.	404.	1000.	214.	404	0	404	238	213	201	191	190	191	201	213	238
414.0	6.9	410.	3.52	0.	2541.	27127.	424.	1000.	230.	424	0	424	239	213	200	191	190	191	200	213	239
423.0	7.1	449.	4.34	0.	2575.	33555.	449.	1000.	250.	449	0	449	239	213	200	190	189	190	200	213	239
432.0	7.2	492.	4.75	0.	2613.	40604.	477.	1000.	272.	477	0	477	240	213	200	190	189	190	200	213	240
441.0	7.3	535.	4.82	0.	2652.	47758.	505.	1000.	294.	505	0	505	241	213	200	190	189	190	200	213	241
450.0	7.5	603.	7.54	0.	2713.	59198.	550.	1000.	329.	550	0	550	242	213	200	190	189	190	200	213	242

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)
459.0	7.7	658.	6.06	0.	2761.	68172.	586.	1000.	357.
468.0	7.8	732.	8.25	0.	2829.	80638.	636.	1000.	396.
477.0	7.9	859.	14.13	0.	2945.	102320.	723.	1000.	463.
486.0	8.1	921.	6.91	0.	3000.	112535.	765.	1000.	495.
495.0	8.3	1060.	15.40	0.	3127.	136120.	860.	1000.	568.
504.0	8.4	1185.	13.90	0.	3241.	157257.	946.	1000.	634.
513.0	8.6	1315.	14.43	0.	3359.	179156.	1035.	1000.	702.
522.0	8.7	1453.	15.33	0.	3484.	202420.	1130.	1000.	775.
531.0	8.9	1622.	18.82	0.	3639.	231133.	1247.	1000.	864.
540.0	9.0	1792.	18.85	0.	3793.	259833.	1365.	1000.	954.
549.0	9.1	1990.	22.03	0.	3974.	293478.	1502.	1000.	1059.
558.0	9.3	2197.	22.98	0.	4162.	328496.	1646.	1000.	1168.
567.0	9.4	2274.	8.56	0.	4228.	340659.	1697.	1000.	1208.
576.0	9.6	2475.	22.37	0.	4411.	374571.	1836.	1000.	1315.
585.0	9.8	2636.	17.84	0.	4554.	401154.	1947.	1000.	1399.
594.0	9.9	2806.	18.88	0.	4706.	429366.	2063.	1000.	1489.
603.0	10.1	2985.	19.90	0.	4867.	459114.	2186.	1000.	1583.
612.0	10.2	3150.	18.40	0.	5014.	486403.	2300.	1000.	1670.
621.0	10.4	3306.	17.31	0.	5152.	511888.	2406.	1000.	1752.
630.0	10.5	3515.	23.20	0.	5339.	546618.	2550.	1000.	1862.
639.0	10.6	3663.	16.42	0.	5469.	570415.	2650.	1000.	1940.
648.0	10.8	3859.	21.76	0.	5643.	602669.	2784.	1000.	2043.
657.0	10.9	4032.	19.30	0.	5796.	630943.	2902.	1062.	2134.
666.0	11.1	4218.	20.59	0.	5960.	661165.	3029.	0.	2231.
675.0	11.3	4268.	5.62	0.	5996.	667488.	3059.	0.	2257.
684.0	11.4	4267.	-.14	0.	5983.	664616.	3052.	378.	2254.

LINE NUMBER	LINE LOAD (KIPS)										
1	2	3	4	5	6	7	8	9	10	11	12
586	0	586	243	213	200	190	189	190	200	213	243
636	0	636	244	213	200	189	188	189	200	213	244
723	0	723	245	213	200	189	188	189	200	213	245
765	0	765	246	213	200	189	188	189	200	213	246
860	0	860	247	214	200	189	188	189	200	214	247
946	0	946	248	214	199	189	188	189	199	214	248
1035	0	1035	249	214	199	189	188	189	199	214	249
1130	0	1130	250	214	199	188	187	188	199	214	250
1247	0	1247	251	214	199	188	187	188	199	214	251
1365	0	1365	252	214	199	188	187	188	199	214	252
1502	0	1502	253	214	199	188	187	188	199	214	253
1646	0	1646	254	214	199	188	187	188	199	214	254
1697	0	1697	256	214	199	188	187	188	199	214	256
1836	0	1836	257	214	199	187	187	187	199	214	257
1947	0	1947	258	214	199	187	186	187	199	214	258
2063	0	2063	259	214	199	187	186	187	199	214	259
2186	0	2186	260	215	199	187	186	187	199	215	260
2300	0	2300	262	215	199	187	186	187	199	215	262
2406	0	2406	263	215	198	187	186	187	198	215	263
2550	0	2550	264	215	198	187	186	187	198	215	264
2650	0	2650	266	215	198	187	186	187	198	215	266
2784	0	2784	267	215	198	186	186	186	198	215	267
2902	0	2902	269	215	198	186	185	186	198	215	269
3029	0	3029	271	215	198	186	185	186	198	215	271
3059	0	3059	272	215	198	186	185	186	198	215	272
3052	0	3052	274	215	198	186	185	186	198	215	274

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT 8002. FT

STARTING DISPLACEMENTS : SURGE(FT) = -66.000 SWAY(FT) = -66.000 YAW(DEG) = .000

Excursion = 568 + 93.3 = 661.33 11.02%

T_{LL} = 2117.66

S.F = 1.92

DEEPWATER, ARAMID MOORING LINE JIP
CASE 1A3000S.MOR
TEST CASE FOR SPRING BUOY ANALYSIS

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT	-	.00
LINE ATTACHMENT W.R.T. WATER LINE	-	-62.0 FT
ALLOWABLE LINE LENGTH ON BOTTOM	-	90.0 FT
DIRECTION OF VESSEL TRANSLATION	-	45.0 DEG

CATENARY OPTIMIZATION - NO

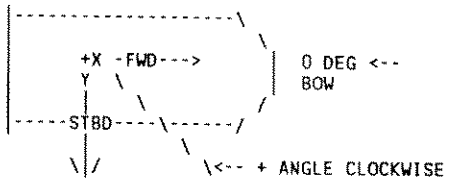
INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO



T6 AIL N-0

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	11.3	33.8	56.3	78.8	101.3	123.8	146.3	168.8	-168.8	-146.3	-123.8	-101.3	-78.8	-56.3	-33.8	-11.3
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	187.2	187.2	187.2	187.2	187.2	187.2	187.2	187.2	187.2	187.2	187.2	187.2	187.2	187.2	187.2	187.2
INITIAL VESSEL YAW ANGLES (DEG)		.00														

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	6000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	6000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.250"
LINE LENGTH (FT)	1500.0
WEIGHT IN WATER (LB/FT)	49.88
LINE B.S. (KIPS)	3165.0
AREA (SQ IN)	21.65
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.250"
LINE LENGTH (FT)	1500.0
WEIGHT IN WATER (LB/FT)	49.88
LINE B.S. (KIPS)	3165.0
AREA (SQ IN)	21.65
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	ARAMID
LINE SIZE (IN)	5.625"
LINE LENGTH (FT)	5850.0
WEIGHT IN WATER (LB/FT)	2.05
LINE B.S. (KIPS)	3160.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	126000.
+CLUMP WT / -BUOY (KIPS)	3800.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.25 "
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	.01
LINE B.S. (KIPS)	9999.0
AREA (SQ IN)	1000.00
APP.MOD. OF ELAS.(KSI)	99999.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
1	155.7	.0	155.7	3912.00	5938.00	3912.0	.0	.0				
2	182.8	40.7	187.3	7059.63	5938.00	1000.0	40.7	.0	3.93	.00	551.62	.00
3	210.0	76.0	223.3	7302.70	5938.00	1000.0	76.0	.0	6.56	.00	1210.04	.00
4	237.2	109.1	261.1	7406.58	5938.00	1000.0	109.1	.0	9.12	.00	1587.33	.00
5	264.4	141.2	299.8	7462.16	5938.00	1000.0	141.2	.0	11.66	.00	2466.54	.00
6	291.6	172.8	338.9	7496.59	5938.00	1000.0	172.8	.0	14.17	.00	3119.00	.00
7	318.8	204.0	378.5	7519.20	5938.00	1000.0	204.0	.0	16.68	.00	3300.02	.00
8	346.0	235.1	418.3	7536.84	5938.00	1000.0	235.1	.0	19.18	.00	5714.21	.00
9	373.1	266.0	458.3	7549.53	5938.00	1000.0	266.0	.0	21.68	.00	6768.48	.00
10	400.3	296.9	498.4	7560.62	5938.00	1000.0	296.9	.0	24.18	.00	7877.12	.00
11	454.7	358.5	579.1	7577.35	5938.00	1000.0	358.5	.0	29.18	.00	7619.87	.00
12	509.1	419.9	659.9	7589.52	5938.00	1000.0	419.9	.0	34.17	.00	11465.62	.00
13	563.4	481.4	741.1	7600.60	5938.00	1000.0	481.4	.0	39.18	.00	14063.50	.00
14	617.8	542.8	822.4	7609.66	5938.00	1000.0	542.8	.0	44.19	.00	15054.11	.00
15	672.2	604.4	903.9	7618.84	5938.00	1000.0	604.4	.0	49.22	.00	15827.25	.00
16	726.6	666.0	985.6	7627.10	5938.00	1000.0	666.0	.0	54.25	.00	17512.76	.00
17	780.9	727.8	1067.5	7635.57	5938.00	1000.0	727.8	.0	59.31	.00	20436.86	.00
18	835.3	789.4	1149.3	7642.54	5938.00	1000.0	789.4	.0	64.35	.00	20883.77	.00
19	889.7	851.4	1231.4	7650.55	5938.00	1000.0	851.4	.0	69.43	.00	17472.98	.00
20	944.0	913.4	1313.6	7658.04	5938.00	1000.0	913.4	.0	74.51	.00	18777.89	.00
21	998.4	975.4	1395.8	7665.09	5938.00	1000.0	975.4	.0	79.59	.00	20082.80	.00
22	1052.8	1037.9	1478.3	7672.98	5938.00	1000.0	1037.9	.0	84.70	.00	23170.01	.00
23	1107.2	1099.9	1560.6	7679.26	5938.00	1000.0	1099.9	.0	89.80	.00	22692.61	.00
24	1161.5	1162.3	1643.2	7686.44	5938.00	1000.0	1162.3	.0	94.92	.00	29996.89	.00
25	1215.9	1225.2	1726.1	7694.27	5938.00	1000.0	1225.2	.0	100.07	.00	27410.96	.00
26	1270.3	1287.6	1808.7	7700.74	5938.00	1000.0	1287.6	.0	105.21	.00	28824.61	.00
27	1324.6	1350.5	1891.7	7707.99	5938.00	1000.0	1350.5	.0	110.37	.00	30238.25	.00
28	1379.0	1413.4	1974.7	7714.89	5938.00	1000.0	1413.4	.0	115.54	.00	31651.90	.00
29	1433.4	1476.6	2057.9	7722.41	5938.00	1000.0	1476.6	.0	120.74	.00	36880.80	.00
30	1487.8	1539.9	2141.2	7729.69	5938.00	1000.0	1539.9	.0	125.94	.00	50392.70	.00
31	1542.1	1603.2	2224.5	7736.69	5938.00	1000.0	1603.2	.0	131.15	.00	41414.81	.00
32	1596.5	1666.5	2307.8	7743.51	5938.00	1000.0	1666.5	.0	136.36	.00	43045.97	.00
33	1650.9	1730.2	2391.5	7750.72	5938.00	1000.0	1730.2	.0	141.60	.00	40209.38	.00
34	1705.2	1794.0	2475.1	7757.89	5938.00	1000.0	1794.0	.0	146.85	.00	41677.41	.00
35	1759.6	1857.7	2558.7	7764.72	5938.00	1000.0	1857.7	.0	152.11	.00	43145.41	.00
36	1814.0	1921.4	2642.4	7771.41	5938.00	1000.0	1921.4	.0	157.37	.00	44613.45	.00
37	1868.4	1986.0	2726.7	7779.24	5938.00	1000.0	1986.0	.0	162.67	.00	39254.57	.00
38	1922.7	2049.7	2810.3	7785.55	5938.00	1000.0	2049.7	.0	167.95	.00	47549.50	.00
39	1977.1	2114.2	2894.6	7793.00	5938.00	1000.0	2114.2	.0	173.27	.00	39940.19	.00
40	2031.5	2178.8	2978.9	7800.26	5938.00	1000.0	2178.8	.0	178.60	.00	43006.20	.00
41	2085.8	2243.4	3063.2	7807.30	5938.00	1000.0	2243.4	.0	183.93	.00	44256.73	.00
42	2140.2	2307.9	3147.5	7814.10	5938.00	1000.0	2307.9	.0	189.27	.00	43528.69	.00
43	2194.6	2373.3	3232.5	7821.94	5938.00	1000.0	2373.3	.0	194.66	.00	52856.61	.00
44	2249.0	2437.9	3316.8	7828.58	5938.00	1000.0	2437.9	.0	200.01	.00	48008.34	.00
45	2303.3	2503.3	3401.8	7836.10	5938.00	1000.0	2503.3	.0	205.41	.00	55683.91	.00

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
46	2357.7	2568.7	3486.7	7843.35	5938.00	1000.0	2568.7	.0	210.82	.00	57097.59	.00
47	2412.1	2634.2	3571.7	7850.58	5938.00	1000.0	2634.2	.0	216.24	.00	58511.20	.00
48	2466.4	2699.6	3656.6	7857.55	5938.00	1000.0	2699.6	.0	221.66	.00	59924.89	.00
49	2520.8	2765.0	3741.6	7864.58	5938.00	1000.0	2765.0	.0	227.09	.00	61338.50	.00
50	2575.2	2831.3	3827.2	7872.09	5938.00	1000.0	2831.3	.0	232.56	.00	57925.09	.00
51	2629.5	2897.5	3912.8	7879.78	5938.00	1000.0	2897.5	.0	238.05	.00	81441.20	.00
52	2683.9	2963.8	3998.4	7887.16	5938.00	1000.0	2963.8	.0	243.54	.00	83235.52	.00
53	2738.3	3030.0	4084.0	7894.34	5938.00	1000.0	3030.0	.0	249.04	.00	85029.68	.00
54	2792.7	3096.3	4169.7	7901.59	5938.00	1000.0	3096.3	.0	254.54	.00	86824.01	.00
55	2847.0	3162.6	4255.3	7908.52	5938.00	1000.0	3162.6	.0	260.05	.00	64449.59	.00
56	2901.4	3228.8	4340.9	7915.53	5938.00	1000.0	3228.8	.0	265.57	.00	65754.54	.00
57	2955.8	3296.0	4427.2	7923.13	5938.00	1000.0	3296.0	.0	271.14	.00	75441.82	.00
58	3010.1	3363.1	4513.4	7930.67	5938.00	1000.0	3363.1	.0	276.72	.00	96849.51	.00
59	3064.5	3430.2	4599.7	7937.92	5938.00	1000.0	3430.2	.0	282.30	.00	98698.04	.00
60	3118.9	3497.3	4686.0	7945.35	5938.00	1000.0	3497.3	.0	287.89	.00	100546.70	.00
61	3173.3	3564.4	4772.3	7952.36	5938.00	1000.0	3564.4	.0	293.49	.00	108418.50	.00
62	3227.6	3632.4	4859.2	7960.19	5938.00	1000.0	3632.4	.0	299.13	.00	58253.98	.00
63	3282.0	3700.3	4946.1	7967.84	5938.00	1000.0	3700.3	.0	304.79	.00	87370.30	.00
64	3336.4	3768.3	5033.0	7975.45	5938.00	1000.0	3768.3	.0	310.45	.00	85718.02	.00
65	3390.7	3836.3	5120.0	7982.76	5938.00	1000.0	3836.3	.0	316.12	.00	132393.50	.00
66	3445.1	3904.2	5206.9	7990.16	5938.00	1000.0	3904.2	.0	321.79	.00	88654.05	.00
67	3499.5	3972.2	5293.8	7997.50	5938.00	1000.0	3972.2	.0	327.48	.00	76770.61	.00
68	3553.9	4040.2	5380.8	8004.69	5938.00	1000.0	4040.2	.0	333.17	.00	81413.41	.00
69	3608.2	4109.0	5468.4	8012.42	5938.00	1000.0	4109.0	.0	338.91	.00	103397.80	.00
70	3662.6	4176.9	5555.3	8019.42	5938.00	1000.0	4176.9	.0	344.62	.00	77021.29	.00
71	3717.0	4246.6	5643.5	8027.52	5938.00	1000.0	4246.6	.0	350.41	.00	110215.40	.00
72	3771.3	4315.4	5731.1	8035.01	5938.00	1000.0	4315.4	.0	356.18	.00	108291.30	.00
73	3825.7	4385.1	5819.4	8042.90	5938.00	1000.0	4385.1	.0	361.99	.00	117250.50	.00
74	3880.1	4453.0	5906.3	8049.50	5938.00	1000.0	4453.0	.0	367.73	.00	81805.95	.00
75	3934.5	4522.7	5994.6	8057.33	5938.00	1000.0	4522.7	.0	373.56	.00	116957.40	.00
76	3988.8	4600.9	6089.2	8070.71	5938.00	.0	4600.9	27.2	379.83	.00	.00	.00
77	4043.2	4687.5	6190.3	8089.54	5938.00	.0	4687.5	81.6	386.55	.00	.00	.00
78	4097.6	4772.5	6290.2	8106.70	5938.00	.0	4772.5	135.9	393.18	.00	.00	.00
79	4151.9	4859.1	6391.4	8124.73	5938.00	.0	4859.1	190.3	399.91	.00	.00	.00
80	4206.3	4945.8	6492.6	8142.10	5938.00	.0	4945.8	244.7	406.66	.00	.00	.00

VESSEL DISP. 13 (FT)	14 (% WD)	15	RESTORING FORCE ON VESSEL 16 (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)
.0	.0		0.		0.	2925.	0.	187.	1000.	41.
9.0	.2		7.	.00	0.	2925.	818.	188.	1000.	41.
18.0	.3		14.	.80	0.	2925.	1640.	189.	1000.	42.
27.0	.4		22.	.81	0.	2924.	2472.	190.	1000.	43.
36.0	.6		29.	.81	0.	2924.	3316.	190.	1000.	44.
45.0	.8		37.	.82	0.	2924.	4179.	191.	1000.	45.
54.0	.9		44.	.83	0.	2924.	5063.	192.	1000.	46.
63.0	1.0		52.	.84	0.	2924.	5974.	193.	1000.	47.
72.0	1.2		60.	.86	0.	2924.	6917.	194.	1000.	48.
81.0	1.4		68.	.87	0.	2924.	7894.	195.	1000.	49.
90.0	1.5		76.	.89	0.	2924.	8912.	196.	1000.	50.
99.0	1.6		85.	.92	0.	2924.	9975.	197.	1000.	51.
108.0	1.8		93.	.94	0.	2923.	11087.	198.	1000.	52.
117.0	2.0		102.	.97	0.	2923.	12252.	199.	1000.	53.
126.0	2.1		111.	1.00	0.	2923.	13476.	200.	1000.	54.
135.0	2.3		121.	1.03	0.	2922.	14762.	201.	1000.	55.
144.0	2.4		131.	1.06	0.	2922.	16116.	202.	1000.	56.
153.0	2.5		141.	1.10	0.	2922.	17542.	204.	1000.	58.
162.0	2.7		152.	1.14	0.	2921.	19045.	205.	1000.	59.
171.0	2.8		163.	1.18	0.	2921.	20629.	207.	1000.	60.
180.0	3.0		174.	1.23	0.	2920.	22300.	208.	1000.	62.
189.0	3.2		186.	1.27	0.	2919.	24063.	210.	1000.	64.
198.0	3.3		199.	1.32	0.	2919.	25922.	212.	1000.	65.
207.0	3.5		212.	1.38	0.	2918.	27883.	213.	1000.	67.
216.0	3.6		225.	1.43	0.	2917.	29951.	215.	1000.	69.
225.0	3.8		239.	1.49	0.	2916.	32131.	217.	1000.	71.
234.0	3.9		253.	1.55	0.	2915.	34429.	220.	1000.	73.
243.0	4.1		268.	1.61	0.	2913.	36852.	222.	1000.	75.
252.0	4.2		281.	1.67	0.	2912.	38855.	224.	1000.	77.
261.0	4.3		293.	1.44	0.	2913.	40464.	226.	1000.	78.
270.0	4.5		304.	1.23	0.	2915.	42179.	228.	1000.	80.
279.0	4.7		316.	1.29	0.	2918.	44006.	231.	1000.	83.
288.0	4.8		329.	1.36	0.	2921.	45951.	233.	1000.	85.
297.0	4.9		341.	1.43	0.	2924.	47648.	236.	1000.	88.
306.0	5.1		352.	1.33	0.	2928.	48958.	239.	1000.	90.
315.0	5.3		363.	1.17	0.	2935.	50380.	243.	1000.	93.
324.0	5.4		375.	1.24	0.	2943.	51920.	246.	1000.	97.
333.0	5.6		387.	1.32	0.	2951.	53584.	250.	1000.	100.
342.0	5.7		401.	1.41	0.	2960.	55377.	255.	1000.	104.
351.0	5.8		415.	1.49	0.	2970.	57305.	259.	1000.	108.
360.0	6.0		430.	1.58	0.	2981.	59280.	264.	1000.	111.
369.0	6.2		445.	1.62	0.	2991.	61372.	269.	1000.	116.
378.0	6.3		462.	1.70	0.	3003.	63659.	274.	1000.	120.
387.0	6.4		479.	1.83	0.	3015.	66160.	280.	1000.	125.
396.0	6.6		498.	1.97	0.	3029.	68890.	287.	1000.	131.
405.0	6.8		519.	2.13	0.	3043.	71867.	294.	1000.	137.
414.0	6.9		541.	2.29	0.	3059.	75052.	302.	1000.	143.
423.0	7.1		564.	2.43	0.	3077.	78322.	311.	1000.	150.
432.0	7.2		588.	2.52	0.	3094.	81999.	321.	1000.	158.
441.0	7.3		616.	2.75	0.	3114.	86148.	332.	1000.	167.
450.0	7.5		647.	3.05	0.	3136.	90848.	345.	1000.	178.
				3.42	0.	3160.				

LINE LOAD (KIPS)

LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
187	187	187	187	187	187	187	187	187	187	187	187
188	188	188	188	188	187	187	187	187	186	186	187
189	189	189	189	188	188	187	186	186	186	186	186
190	190	190	189	189	188	187	186	185	185	185	185
191	191	191	191	189	188	187	186	185	184	184	185
191	192	192	191	190	188	186	185	184	183	183	184
192	193	193	192	190	188	186	184	183	183	183	183
193	194	194	193	191	188	186	184	183	182	182	183
193	195	195	193	191	189	186	183	182	181	181	182
194	196	196	194	192	189	186	183	181	180	180	181
195	197	197	195	192	189	186	183	180	179	179	180
196	198	198	196	193	189	186	182	180	178	178	180
197	199	199	197	193	189	185	182	179	177	177	179
197	200	200	197	194	189	185	181	178	176	176	178
198	201	201	198	194	190	185	181	177	175	175	177
199	202	202	199	195	190	185	180	176	173	173	176
200	204	204	200	195	190	185	180	175	172	172	175
201	205	205	201	196	190	185	179	174	171	171	174
203	207	207	203	196	190	185	179	173	169	169	173
204	208	208	204	197	191	184	178	172	168	168	172
205	210	210	205	198	191	184	178	171	166	166	171
206	212	212	206	198	191	184	177	170	165	165	170
207	213	213	207	199	191	184	177	168	163	163	168
209	215	215	209	200	191	184	176	167	161	161	167
210	217	217	210	200	191	184	175	166	159	159	166
212	220	220	212	201	192	184	175	164	157	157	164
213	222	222	213	202	192	184	174	163	155	155	163
215	224	224	215	203	192	183	173	161	152	152	161
217	226	226	217	203	192	183	173	160	151	151	160
219	228	228	219	204	192	183	172	158	151	151	158
221	231	231	221	205	193	183	171	156	151	151	156
223	233	233	223	206	193	183	171	154	151	151	154
224	236	236	224	207	193	183	170	153	151	151	153
226	239	239	226	208	193	183	169	151	151	151	151
228	243	243	228	209	193	182	168	151	151	151	151
230	246	246	230	210	194	182	167	151	151	151	151
232	250	250	232	211	194	182	167	151	151	151	151
235	255	255	235	212	194	182	166	151	151	151	151
237	259	259	237	213	194	182	165	151	151	151	151
240	264	264	240	214	195	182	164	151	151	151	151
243	269	269	243	215	195	182	163	151	151	151	151
246	274	274	246	216	195	182	162	151	151	151	151
249	280	280	249	218	195	181	161	151	151	151	151
253	287	287	253	219	195	181	160	151	151	151	151
257	294	294	257	220	196	181	159	151	151	151	151
261	302	302	261	222	196	181	158	151	151	151	151
265	311	311	265	223	196	181	157	151	151	151	151
269	321	321	269	224	197	181	156	151	151	151	151
274	332	332	274	226	197	181	154	151	151	151	151
279	345	345	279	227	197	180	153	151	151	151	151

LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
							152	151	151	151	152
											180
											197
											227

ESSEL DISP. 14 FT)	15 (% WD)	RESTORING FORCE ON VESSEL 16 (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
59.0	7.7	680.	3.75	0.	3190.	96143.	360.	1000.	189.	285	360	360	285	228	197	180	151	151	151	151	151
68.0	7.8	717.	4.08	0.	3224.	102042.	377.	1000.	203.	291	377	377	291	230	198	180	151	151	151	151	151
77.0	7.9	756.	4.38	0.	3260.	108403.	395.	1000.	217.	298	395	395	298	231	198	180	151	151	151	151	151
86.0	8.1	801.	4.97	0.	3302.	115650.	416.	1000.	233.	305	416	416	305	233	198	180	151	151	151	151	151
95.0	8.3	855.	5.94	0.	3351.	124385.	442.	1000.	254.	312	442	442	312	234	198	180	151	151	151	151	151
04.0	8.4	914.	6.63	0.	3406.	134170.	472.	1000.	277.	321	472	472	321	236	199	180	151	151	151	151	151
13.0	8.6	981.	7.43	0.	3468.	145195.	506.	1000.	303.	331	506	506	331	238	199	180	151	151	151	151	151
22.0	8.7	1060.	8.74	0.	3541.	158231.	547.	1000.	334.	342	547	547	342	240	199	179	151	151	151	151	151
31.0	8.9	1154.	10.51	0.	3629.	174003.	597.	1000.	372.	354	597	597	354	242	200	179	151	151	151	151	151
40.0	9.0	1265.	12.31	0.	3732.	192536.	656.	1000.	417.	368	656	656	368	244	200	179	151	151	151	151	151
49.0	9.1	1383.	13.07	0.	3841.	212212.	720.	1000.	465.	383	720	720	383	247	200	179	151	151	151	151	151
58.0	9.3	1521.	15.30	0.	3968.	235294.	796.	1000.	523.	399	796	796	399	249	201	179	151	151	151	151	151
67.0	9.4	1667.	16.22	0.	4104.	259803.	874.	1000.	582.	418	874	874	418	252	201	179	151	151	151	151	151
76.0	9.6	1826.	17.76	-0.	4252.	286742.	959.	1000.	646.	441	959	959	441	255	201	179	151	151	151	151	151
85.0	9.8	1991.	18.27	0.	4405.	314434.	1044.	1000.	710.	467	1044	1044	467	257	202	179	151	151	151	151	151
94.0	9.9	2180.	21.07	-0.	4581.	346452.	1145.	1000.	786.	495	1145	1145	495	260	202	179	151	151	151	151	151
03.0	10.1	2363.	20.31	0.	4751.	377351.	1236.	1000.	855.	528	1236	1236	528	263	202	178	151	151	151	151	151
12.0	10.2	2564.	22.33	-0.	4938.	411469.	1335.	1000.	929.	567	1335	1335	567	266	203	178	151	151	151	151	151
21.0	10.4	2776.	23.49	-0.	5136.	447527.	1433.	1000.	1003.	614	1433	1433	614	269	203	178	151	151	151	151	151
30.0	10.5	3006.	25.55	0.	5352.	486819.	1538.	1000.	1083.	667	1538	1538	667	273	204	178	151	151	151	151	151
39.0	10.6	3238.	25.84	-0.	5570.	526496.	1643.	1000.	1162.	723	1643	1643	723	276	204	178	151	151	151	151	151
48.0	10.8	3471.	25.90	0.	5790.	566415.	1739.	1000.	1235.	789	1739	1739	789	280	204	178	151	151	151	151	151
57.0	10.9	3728.	28.58	0.	6032.	610433.	1848.	1000.	1317.	858	1848	1848	858	284	205	178	151	151	151	151	151
66.0	11.1	3981.	28.10	0.	6269.	653609.	1952.	1000.	1396.	929	1952	1952	929	288	205	178	151	151	151	151	151
75.0	11.3	4234.	28.08	0.	6507.	696699.	2052.	1000.	1472.	1005	2052	2052	1005	293	206	178	151	151	151	151	151
84.0	11.4	4493.	28.72	0.	6750.	740686.	2153.	1000.	1549.	1082	2153	2153	1082	298	206	177	151	151	151	151	151
93.0	11.6	4773.	31.11	0.	7014.	788567.	2259.	1000.	1630.	1171	2259	2259	1171	303	206	177	151	151	151	151	151
02.0	11.7	5040.	29.73	-0.	7265.	833822.	2365.	1000.	1710.	1250	2365	2365	1250	308	207	177	151	151	151	151	151
11.0	11.9	5314.	30.42	0.	7522.	880195.	2468.	1000.	1788.	1337	2468	2468	1337	314	207	177	151	151	151	151	151
20.0	12.0	5597.	31.43	-0.	7786.	927878.	2576.	1000.	1871.	1423	2576	2576	1423	321	208	177	151	151	151	151	151
29.0	12.1	5875.	30.97	0.	8047.	974670.	2680.	1000.	1950.	1511	2680	2680	1511	327	208	177	151	151	151	151	151
38.0	12.3	6171.	32.82	0.	8324.	1024378.	2788.	1000.	2032.	1608	2788	2788	1608	335	209	177	151	151	151	151	151
47.0	12.4	6445.	30.43	-0.	8579.	1069675.	2891.	1000.	2112.	1691	2891	2891	1691	343	209	177	151	151	151	151	151
56.0	12.6	6731.	31.81	-0.	8847.	1117165.	2994.	1000.	2190.	1783	2994	2994	1783	352	210	177	151	151	151	151	151
65.0	12.8	7025.	32.61	0.	9120.	1165600.	3102.	1000.	2273.	1875	3102	3102	1875	362	210	177	151	151	151	151	151
74.0	12.9	7310.	31.70	0.	9386.	1212370.	3203.	1000.	2351.	1967	3203	3203	1967	373	211	176	151	151	151	151	151
83.0	13.1	7599.	32.10	0.	9653.	1259395.	3311.	1000.	2434.	2053	3311	3311	2053	384	211	176	151	151	151	151	151
92.0	13.2	7881.	31.39	0.	9915.	1305105.	3412.	1000.	2511.	2142	3412	3412	2142	396	212	176	151	151	151	151	151
01.0	13.4	8175.	32.60	0.	10187.	1352446.	3516.	1000.	2591.	2234	3516	3516	2234	409	213	176	151	151	151	151	151
10.0	13.5	8476.	33.43	0.	10467.	1400665.	3622.	1000.	2673.	2328	3622	3622	2328	424	213	176	151	151	151	151	151
19.0	13.6	8776.	33.37	-0.	10746.	1448182.	3730.	1000.	2756.	2418	3730	3730	2418	441	214	176	151	151	151	151	151
28.0	13.8	9072.	32.90	0.	11021.	1494604.	3831.	1000.	2834.	2510	3831	3831	2510	460	214	176	151	151	151	151	151
37.0	13.9	9372.	33.33	-0.	11301.	1541647.	3930.	1000.	2911.	2607	3930	3930	2607	480	215	176	151	151	151	151	151
46.0	14.1	9669.	33.04	0.	11576.	1587411.	4034.	1000.	2991.	2695	4034	4034	2695	502	215	176	151	151	151	151	151
55.0	14.3	9983.	34.83	-0.	11869.	1635671.	4139.	1000.	3073.	2791	4139	4139	2791	527	216	176	151	151	151	151	151
64.0	14.4	10297.	34.96	0.	12162.	1683284.	4247.	1000.	3156.	2882	4247	4247	2882	554	217	175	151	151	151	151	151
73.0	14.6	10614.	35.13	-0.	12458.	1730347.	4355.	1000.	3240.	2972	4355	4355	2972	586	217	175	151	151	151	151	151
82.0	14.7	10929.	35.03	0.	12755.	1776373.	4455.	1000.	3318.	3065	4455	4455	3065	623	218	175	151	151	151	151	151
91.0	14.9	11254.	36.09	0.	13062.	1823499.	4559.	1000.	3398.	3160	4559	4559	3160	663	219	175	151	151	151	151	151

LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
151	151	151	151	151	151	180	197	228			
151	151	151	151	151	151	180	198	230			
151	151	151	151	151	151	180	198	231			
151	151	151	151	151	151	180	198	233			
151	151	151	151	151	151	180	198	234			
151	151	151	151	151	151	180	199	236			
151	151	151	151	151	151	180	199	238			
151	151	151	151	151	151	179	199	240			
151	151	151	151	151	151	179	200	242			
151	151	151	151	151	151	179	200	244			
151	151	151	151	151	151	179	200	247			
151	151	151	151	151	151	179	201	249			
151	151	151	151	151	151	179	201	252			
151	151	151	151	151	151	179	201	255			
151	151	151	151	151	151	179	202	257			
151	151	151	151	151	151	179	202	260			
151	151	151	151	151	151	178	202	263			
151	151	151	151	151	151	178	203	266			
151	151	151	151	151	151	178	203	269			
151	151	151	151	151	151	178	204	273			
151	151	151	151	151	151	178	204	276			
151	151	151	151	151	151	178	204	280			
151	151	151	151	151	151	178	205	284			
151	151	151	151	151	151	178	205	288			
151	151	151	151	151	151	178	206	293			
151	151	151	151	151	151	177	206	298			
151	151	151	151	151	151	177	206	303			
151	151	151	151	151	151	177	207	308			
151	151	151	151	151	151	177	207	314			
151	151	151	151	151	151	177	208	321			
151	151	151	151	151	151	177	208	327			
151	151	151	151	151	151	177	209	335			
151	151	151	151	151	151	177	209	343			
151	151	151	151	151	151	177	210	352			
151	151	151	151	151	151	177	210	362			
151	151	151	151	151	151	176	211	373			
151	151	151	151	151	151	176	211	384			
151	151	151	151	151	151	176	212	396			
151	151	151	151	151	151	176	213	409			
151	151	151	151	151	151	176	213	424			
151	151	151	151	151	151	176	214	441			
151	151	151	151	151	151	176	214	460			
151	151	151	151	151	151	176	215	480			
151	151	151	151	151	151	176	215	502			
151	151	151	151	151	151	176	216	527			
151	151	151	151	151	151	175	217	554			
151	151	151	151	151	151	175	217	586			
151	151	151	151	151	151	175	218	623			
151	151	151	151	151	151	175	219	663			

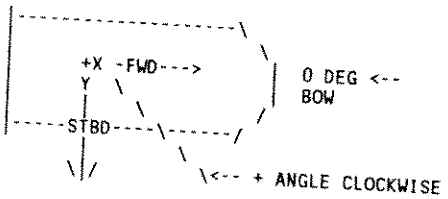
STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE 1A3000S.MOR
TEST CASE FOR SPRING BUOY ANALYSIS

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

SEL	DISP.	RESTORING FORCE ON VESSEL	INCREMENT STIFFNESS	YAW MOMENT	VERTICAL FORCE	OVERTURN MOMENT	MAX.LINE LOAD	LINE ON BOTTOM	HOR.FORCE ON ANCHOR	LINE LOAD (KIPS) LINE NUMBER												
										1	2	3	4	5	6	7	8	9	10	11	12	
14	15	16																				
)	(% WD)	(KIPS)	(KIPS/FT)	(FT-KIP)	(KIPS)	(FT-KIP)	(KIPS)	(FT)	(KIPS)													
.0	.0	0.	.00	1.	2737.	77048.	192.	1000.	46.	192	0	192	191	189	187	185	183	183	182	183	184	186	187	189	191
.0	.2	7.	.76	37.	2737.	77717.	193.	1000.	47.	193	0	192	191	189	187	185	183	182	181	182	183	186	188	190	191
.0	.3	14.	.77	74.	2736.	78409.	194.	1000.	48.	194	0	193	191	189	187	184	182	181	180	181	183	185	188	190	192
.0	.4	21.	.79	112.	2735.	79126.	195.	1000.	49.	195	0	194	192	190	187	184	181	180	180	180	182	185	188	191	193
.0	.6	29.	.81	152.	2734.	79871.	196.	1000.	50.	196	0	195	192	190	187	183	181	179	179	180	182	185	188	191	194
.0	.8	36.	.83	192.	2733.	80648.	197.	1000.	51.	197	0	196	193	190	186	183	180	178	178	179	181	185	188	192	194
.0	.9	44.	.86	234.	2732.	81458.	198.	1000.	52.	198	0	196	193	190	186	183	179	177	176	178	181	185	188	192	195
.0	1.0	52.	.88	276.	2731.	82486.	199.	1000.	53.	199	0	198	194	191	187	182	178	176	175	177	180	184	188	192	196
.0	1.2	60.	.91	322.	2729.	83381.	200.	1000.	54.	200	0	199	195	191	186	182	178	175	174	176	179	184	188	193	197
.0	1.4	68.	.94	369.	2728.	84320.	201.	1000.	55.	201	0	200	195	191	186	181	177	174	173	175	179	184	189	193	197
.0	1.5	77.	.97	419.	2727.	85306.	202.	1000.	56.	202	0	201	196	191	186	181	176	172	171	174	178	184	189	194	198
.0	1.6	86.	1.00	472.	2725.	86343.	204.	1000.	58.	204	0	202	197	191	186	180	175	171	170	173	178	184	189	194	199
.0	1.8	96.	1.04	526.	2723.	87433.	205.	1000.	59.	205	0	203	197	192	186	180	174	170	169	172	177	184	189	195	200
.0	2.0	105.	1.08	584.	2722.	88580.	207.	1000.	61.	207	0	204	198	192	186	179	173	168	167	170	177	183	189	195	201
.0	2.1	115.	1.12	644.	2720.	89787.	208.	1000.	62.	208	0	205	198	192	186	179	172	167	165	169	176	183	189	196	203
.0	2.3	126.	1.16	708.	2718.	91059.	210.	1000.	64.	210	0	206	199	192	185	178	170	165	164	168	175	183	190	196	204
.0	2.4	137.	1.20	775.	2715.	92397.	212.	1000.	65.	212	0	208	200	192	185	178	169	163	162	167	175	183	190	197	205
.0	2.5	148.	1.25	846.	2713.	93807.	214.	1000.	67.	214	0	209	200	193	185	177	168	161	160	165	174	183	190	198	206
.0	2.7	160.	1.30	920.	2711.	95292.	216.	1000.	69.	216	0	211	201	193	185	177	167	159	158	164	173	183	190	198	208
.0	2.8	172.	1.35	998.	2708.	96855.	218.	1000.	71.	218	0	212	202	193	185	176	165	157	156	162	173	183	190	199	209
.0	3.0	184.	1.40	1081.	2705.	98501.	220.	1000.	73.	220	0	214	203	193	185	175	164	155	154	161	172	182	190	200	210
.0	3.2	197.	1.45	1167.	2702.	100230.	222.	1000.	75.	222	0	215	203	193	185	175	162	153	151	159	171	182	191	200	212
.0	3.3	208.	1.19	1134.	2701.	101502.	224.	1000.	77.	224	0	217	204	194	185	174	161	151	151	157	171	182	191	201	213
.0	3.5	217.	1.03	942.	2702.	102492.	226.	1000.	79.	226	0	219	205	194	184	174	159	151	151	156	170	182	191	202	215
.0	3.6	227.	1.08	735.	2703.	103539.	228.	1000.	81.	228	0	221	206	194	184	173	157	151	151	154	169	182	191	203	217
.0	3.8	237.	1.13	511.	2704.	104645.	231.	1000.	83.	231	0	223	207	194	184	172	156	151	151	152	168	182	191	203	219
.0	3.9	246.	1.03	314.	2706.	105509.	233.	1000.	85.	233	0	225	208	194	184	171	154	151	151	151	167	182	192	204	221
.0	4.1	256.	1.02	116.	2710.	106325.	236.	1000.	88.	236	0	226	209	195	184	171	152	151	151	151	166	181	192	205	223
.0	4.2	264.	.93	-3.	2714.	107391.	239.	1000.	90.	239	0	229	210	195	184	170	151	151	151	151	165	181	192	206	224
.0	4.3	272.	.93	-86.	2719.	108449.	243.	1000.	93.	243	0	231	211	195	184	169	151	151	151	151	164	181	192	206	226
.0	4.5	281.	.98	-175.	2725.	109580.	246.	1000.	97.	246	0	233	212	196	184	169	151	151	151	151	163	181	192	207	228
.0	4.7	291.	1.03	-278.	2731.	110914.	250.	1000.	100.	250	0	236	214	196	184	168	151	151	151	151	162	180	192	208	229
.0	4.8	300.	1.10	-382.	2738.	112205.	255.	1000.	104.	255	0	238	215	196	184	167	151	151	151	151	161	180	192	209	232
.0	4.9	311.	1.16	-493.	2745.	113579.	259.	1000.	108.	259	0	241	216	196	184	167	151	151	151	151	160	180	193	210	234
.0	5.1	322.	1.20	-586.	2752.	114997.	264.	1000.	111.	264	0	244	217	197	183	166	151	151	151	151	159	180	193	211	236
.0	5.3	333.	1.25	-677.	2760.	116490.	269.	1000.	116.	269	0	247	219	197	183	165	151	151	151	151	158	180	193	212	239
.0	5.4	345.	1.34	-788.	2769.	118097.	274.	1000.	120.	274	0	251	220	197	183	164	151	151	151	151	157	180	193	213	242
.0	5.6	358.	1.43	-923.	2778.	119825.	280.	1000.	125.	280	0	255	221	198	183	163	151	151	151	151	156	180	193	214	245
.0	5.7	372.	1.53	-1085.	2788.	121683.	287.	1000.	131.	287	0	259	223	198	183	162	151	151	151	151	154	179	194	216	248
.0	5.8	386.	1.61	-1297.	2798.	123627.	294.	1000.	137.	294	0	263	224	198	183	161	151	151	151	151	153	179	194	217	252
.0	6.0	401.	1.68	-1541.	2810.	125648.	302.	1000.	143.	302	0	267	225	198	183	160	151	151	151	151	152	179	194	218	256
.0	6.2	416.	1.70	-1707.	2822.	127777.	311.	1000.	150.	311	0	272	227	199	183	159	151	151	151	151	151	179	194	219	259
.0	6.3	433.	1.81	-1872.	2837.	130010.	320.	1000.	157.	320	0	278	229	199	183	159	151	151	151	151	151	178	194	220	263
.0	6.4	451.	2.03	-2162.	2852.	132409.	331.	1000.	166.	331	0	283	230	200	183	158	151	151	151	151	151	178	194	221	267
.0	6.6	471.	2.19	-2480.	2870.	135178.	343.	1000.	176.	343	0	290	232	200	183	157	151	151	151	151	151	178	194	222	271
.0	6.8	492.	2.42	-2879.	2890.	138269.	357.	1000.	187.	357	0	298	234	201	183	156	151	151	151	151	151	177	194	223	275
.0	6.9	516.	2.66	-3442.	2911.	141532.	373.	1000.	200.	373	0	305	236	201	183	155	151	151	151	151	151	177	195	224	280
.0	7.1	542.	2.82	-3974.	2934.	145165.	390.	1000.	213.	390	0	314	239	202	183	155	151	151	151	151	151	177	195	225	285
.0	7.2	571.	3.22	-4719.	2960.	149180.	411.	1000.	229.	411	0	323	241	202	183	154	151	151	151	151	151	177	195	226	291
.0	7.3	604.	3.68	-5662.	2991.	154042.	435.	1000.	248.	435	0	334	244	203	183	153	151	151	151	151	151	176	195	227	296
.0	7.5	641.	4.15	-6821.	3026.	159575.	463.	1000.	269.	463	0	347	247	204	183	152	151	151	151	151	151	176	195	228	302

ESSEL DISP. 14 T)	15 (% WD)	RESTORING FORCE ON VESSEL 16 (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)
9.0	7.7	682.	4.59	-8240.	3064.	165564.	495.	1000.	294.
8.0	7.8	729.	5.16	-9848.	3108.	172617.	531.	1000.	322.
7.0	7.9	783.	6.01	-12095.	3159.	180677.	577.	1000.	357.
6.0	8.1	847.	7.09	-14840.	3220.	190432.	631.	1000.	398.
5.0	8.3	918.	7.94	-17845.	3288.	201283.	692.	1000.	444.
4.0	8.4	998.	8.89	-21268.	3364.	213440.	760.	1000.	496.
3.0	8.6	1088.	9.95	-25137.	3449.	227188.	836.	1000.	553.
2.0	8.7	1182.	10.51	-28932.	3539.	241615.	914.	1000.	612.
1.0	8.9	1287.	11.68	-33154.	3640.	257572.	1001.	1000.	678.
0.0	9.0	1402.	12.78	-37208.	3750.	275060.	1091.	1000.	746.
9.0	9.1	1530.	14.16	-41478.	3872.	294311.	1190.	1000.	820.
8.0	9.3	1657.	14.13	-45108.	3994.	313279.	1284.	1000.	891.
7.0	9.4	1799.	15.80	-48995.	4131.	334585.	1388.	1000.	969.
6.0	9.6	1941.	15.70	-51864.	4267.	355306.	1484.	1000.	1042.
.0	9.8	2101.	17.86	-55366.	4422.	379147.	1596.	1000.	1126.
.0	9.9	2258.	17.44	-56831.	4574.	401780.	1691.	1000.	1199.
.0	10.1	2428.	18.91	-58683.	4738.	426432.	1797.	1000.	1279.
.0	10.2	2605.	19.57	-59765.	4909.	451778.	1900.	1000.	1357.
.0	10.4	2784.	19.88	-60213.	5082.	477026.	2004.	1000.	1435.
.0	10.5	2965.	20.17	-59921.	5259.	502669.	2101.	1000.	1510.
.0	10.6	3151.	20.62	-59787.	5438.	528957.	2203.	1000.	1587.
.0	10.8	3348.	21.90	-59404.	5630.	556709.	2310.	1000.	1668.
.0	10.9	3544.	21.76	-58439.	5819.	583895.	2413.	1000.	1746.
.0	11.1	3741.	21.91	-56898.	6010.	611197.	2514.	1000.	1824.
.0	11.3	3947.	22.94	-56200.	6210.	640144.	2624.	1000.	1907.
.0	11.4	4144.	21.82	-54072.	6400.	667170.	2720.	1000.	1981.
0	11.6	4357.	23.69	-52617.	6606.	696679.	2831.	1000.	2066.
0	11.7	4554.	21.92	-50710.	6797.	723887.	2930.	1000.	2142.
0	11.9	4770.	23.97	-47460.	7006.	753396.	3033.	1000.	2220.
0	12.0	4985.	23.87	-45490.	7213.	782864.	3142.	1000.	2304.
0	12.1	5189.	22.75	-42628.	7411.	810877.	3239.	1000.	2378.
0	12.3	5411.	24.65	-39536.	7626.	841224.	3348.	1000.	2462.
0	12.4	5628.	24.13	-36052.	7836.	870749.	3449.	1000.	2540.
0	12.6	5849.	24.56	-32570.	8050.	900986.	3554.	1000.	2620.
0	12.8	6069.	24.41	-29423.	8263.	931081.	3662.	1000.	2704.
0	12.9	6300.	25.66	-25422.	8487.	962731.	3769.	1000.	2786.
0	13.1	6522.	24.70	-20756.	8703.	992705.	3869.	1000.	2864.
0	13.2	6747.	24.94	-16386.	8920.	1022976.	3972.	1000.	2943.
0	13.4	6981.	26.03	-11821.	9148.	1054901.	4079.	1000.	3026.
0	13.5	7218.	26.37	-6610.	9379.	1087094.	4185.	1000.	3109.
0	13.6	7455.	26.29	-2347.	9609.	1119349.	4296.	1000.	3194.
0	13.8	7696.	26.75	3150.	9844.	1151962.	4401.	1000.	3276.
0	13.9	7932.	26.22	8771.	10074.	1183915.	4503.	1000.	3355.
0	14.1	8171.	26.62	13845.	10307.	1216335.	4609.	1000.	3438.
0	14.3	8418.	27.44	19689.	10548.	1249744.	4715.	1000.	3520.
0	14.4	8671.	28.14	26147.	10797.	1284045.	4821.	1000.	3603.
0	14.6	8915.	27.05	32421.	11036.	1316987.	4921.	1000.	3681.
0	14.7	9164.	27.71	39342.	11281.	1350645.	5022.	1000.	3759.
0	14.9	9418.	28.18	45742.	11531.	1384959.	5127.	1000.	3842.

LINE LOAD (KIPS)

LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12				
495	0	360	249	204	183	151	151	151	151	151	151	176	195	230	310
531	0	377	253	205	183	151	151	151	151	151	151	175	195	231	317
577	0	393	255	205	183	151	151	151	151	151	151	175	195	231	317
631	0	413	259	206	183	151	151	151	151	151	151	175	196	232	326
692	0	438	262	207	183	151	151	151	151	151	151	175	196	233	335
760	0	465	266	207	183	151	151	151	151	151	151	174	196	235	345
836	0	497	270	208	183	151	151	151	151	151	151	174	196	236	357
914	0	533	274	209	183	151	151	151	151	151	151	174	196	238	369
1001	0	573	277	209	183	151	151	151	151	151	151	173	196	239	383
1091	0	621	281	210	183	151	151	151	151	151	151	173	196	242	399
1190	0	674	285	210	183	151	151	151	151	151	151	173	197	244	418
1284	0	729	289	210	183	151	151	151	151	151	151	173	197	246	442
1388	0	793	294	211	183	151	151	151	151	151	151	173	197	249	469
1484	0	856	298	211	183	151	151	151	151	151	151	173	198	251	498
1596	0	930	303	212	182	151	151	151	151	151	151	173	198	255	535
1691	0	1005	309	212	182	151	151	151	151	151	151	173	198	257	573
1797	0	1086	315	213	182	151	151	151	151	151	151	172	199	260	622
1900	0	1174	321	213	182	151	151	151	151	151	151	172	199	263	674
2004	0	1256	329	214	182	151	151	151	151	151	151	172	199	266	731
2101	0	1346	337	215	182	151	151	151	151	151	151	172	199	269	795
2203	0	1437	346	216	182	151	151	151	151	151	151	172	200	272	862
2310	0	1532	356	216	182	151	151	151	151	151	151	171	200	275	928
2413	0	1625	366	217	182	151	151	151	151	151	151	171	200	278	1002
2514	0	1716	380	218	182	151	151	151	151	151	151	171	201	282	1079
2624	0	1817	392	219	182	151	151	151	151	151	151	171	201	286	1159
2720	0	1911	406	220	182	151	151	151	151	151	151	170	201	290	1236
2831	0	2006	423	220	182	151	151	151	151	151	151	170	201	294	1316
2930	0	2095	441	221	182	151	151	151	151	151	151	170	202	299	1401
3033	0	2192	463	222	182	151	151	151	151	151	151	170	202	303	1480
3142	0	2286	482	223	182	151	151	151	151	151	151	169	202	308	1573
3239	0	2379	505	224	182	151	151	151	151	151	151	169	202	314	1660
3348	0	2472	532	224	182	151	151	151	151	151	151	169	203	320	1744
3449	0	2565	559	225	182	151	151	151	151	151	151	169	203	326	1838
3554	0	2658	590	225	182	151	151	151	151	151	151	169	204	334	1930
3662	0	2742	625	226	182	151	151	151	151	151	151	169	204	343	2021
3769	0	2837	661	226	182	151	151	151	151	151	151	169	205	352	2110
3869	0	2923	699	227	182	151	151	151	151	151	151	168	205	363	2205
3972	0	3009	737	228	181	151	151	151	151	151	151	168	206	374	2302
4079	0	3098	780	228	181	151	151	151	151	151	151	168	206	386	2397
4185	0	3185	828	229	181	151	151	151	151	151	151	168	207	400	2494
4296	0	3272	874	229	181	151	151	151	151	151	151	168	207	415	2594
4401	0	3362	923	230	181	151	151	151	151	151	151	168	208	433	2687
4503	0	3447	975	230	181	151	151	151	151	151	151	168	209	453	2786
4609	0	3535	1025	231	181	151	151	151	151	151	151	168	209	474	2881
4715	0	3625	1078	232	180	151	151	151	151	151	151	168	210	497	2974
4821	0	3714	1138	232	180	151	151	151	151	151	151	168	211	524	3071
4921	0	3803	1196	233	180	151	151	151	151	151	151	168	211	555	3170
5022	0	3891	1258	234	180	151	151	151	151	151	151	168	212	589	3260
5127	0	3980	1320	235	180	151	151	151	151	151	151	168	213	625	3354
												168	213	666	3444

STARTING DISPLACEMENTS : SURGE(FT) = -48.000 SWAY(FT) = -30.000 YAW(DEG) = .850

APPENDIX K - TIGHT WATCH CIRCLE DESIGNS

K.1 Preferred Designs

K.2 Alternate Designs

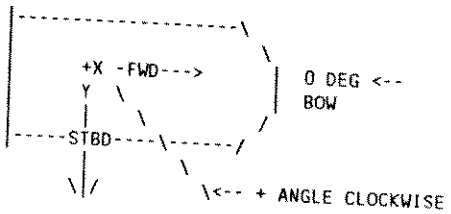
Appendix K.1 - Preferred Designs

DEEPWATER, ARAMID MOORING LINE JIP
CASE T1A16T
1500 ft 10% 300 kip buoy

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

T1A16T

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	11.3	33.8	56.3	78.8	101.3	123.8	146.3	168.8	-168.8	-146.3	-123.8	-101.3	-78.8	-56.3	-33.8	-11.3
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	355.5	355.5	355.5	355.5	355.5	355.5	355.5	355.5	355.5	355.5	355.5	355.5	355.5	355.5	355.5	355.5

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	1500.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	1500.0
LINE MATERIAL	ARAMID
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	2.19
LINE B.S. (KIPS)	3641.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	146000.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	ARAMID
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	1500.0
WEIGHT IN WATER (LB/FT)	2.19
LINE B.S. (KIPS)	3641.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	146000.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.625"
LINE LENGTH (FT)	150.0
WEIGHT IN WATER (LB/FT)	57.26
LINE B.S. (KIPS)	3634.0
AREA (SQ IN)	24.85
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-100.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.625"
LINE LENGTH (FT)	150.0
WEIGHT IN WATER (LB/FT)	57.26
LINE B.S. (KIPS)	3634.0
AREA (SQ IN)	24.85
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	ARAMID
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	1110.0
WEIGHT IN WATER (LB/FT)	2.19
LINE B.S. (KIPS)	3641.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	146000.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.5 "
LINE LENGTH (FT)	90.0
WEIGHT IN WATER (LB/FT)	250.01
LINE B.S. (KIPS)	3038.0
AREA (SQ IN)	23.75
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	5800.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.25 "
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	.01
LINE B.S. (KIPS)	9999.0
AREA (SQ IN)	1000.00
APP.MOD. OF ELAS.(KSI)	99999.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
1	-18.0	.0	14.1	3562.00	1438.00	3562.0	.0	.0				
2	14.2	73.5	74.8	4475.16	1438.00	1000.0	73.5	.0	2.31	-100.00	1198.42	124.18
3	46.4	171.1	177.3	4671.88	1438.00	1000.0	171.1	.0	4.92	-100.00	1284.27	216.31
4	78.6	257.7	269.4	4707.73	1438.00	1000.0	257.7	.0	7.33	-100.00	2096.02	305.73
5	110.8	344.3	361.6	4724.88	1438.00	1000.0	344.3	.0	9.74	-100.00	2611.39	396.50
6	143.0	428.8	452.0	4732.96	1438.00	1000.0	428.8	.0	12.12	-100.00	2735.91	486.10
7	175.2	513.4	542.4	4738.74	1438.00	1000.0	513.4	.0	14.50	-100.00	3186.87	575.97
8	207.4	597.9	632.9	4743.33	1438.00	1000.0	597.9	.0	16.89	-100.00	3637.82	666.01
9	239.6	682.5	723.3	4747.24	1438.00	1000.0	682.5	.0	19.28	-100.00	4088.77	756.15
10	271.9	771.0	817.6	4753.21	1438.00	1000.0	771.0	.0	21.77	-100.00	4215.46	850.01
11	336.3	940.2	998.5	4758.99	1438.00	1000.0	940.2	.0	26.57	-100.00	5441.63	1030.61
12	400.7	1109.3	1179.4	4764.25	1438.00	1000.0	1109.3	.0	31.39	-100.00	6343.53	1211.31
13	465.1	1278.4	1360.4	4769.27	1438.00	1000.0	1278.4	.0	36.21	-100.00	7245.44	1392.08
14	529.5	1447.5	1541.3	4774.17	1438.00	1000.0	1447.5	.0	41.05	-100.00	8147.34	1572.89
15	594.0	1624.6	1729.8	4781.51	1438.00	1000.0	1624.6	.0	46.10	-100.00	7756.49	1761.16
16	658.4	1793.7	1910.8	4786.09	1438.00	1000.0	1793.7	.0	50.96	-100.00	9951.14	1942.04
17	722.8	1970.9	2099.3	4792.82	1438.00	1000.0	1970.9	.0	56.04	-100.00	14729.14	2130.38
18	787.2	2140.0	2280.2	4797.22	1438.00	1000.0	2140.0	.0	60.92	-100.00	15953.15	2311.28
19	851.6	2317.2	2468.7	4803.47	1438.00	1000.0	2317.2	.0	66.02	-100.00	17177.16	2499.66
20	916.1	2494.3	2657.2	4809.53	1438.00	1000.0	2494.3	.0	71.14	-100.00	16464.21	2688.06
21	980.5	2655.4	2830.6	4812.13	1438.00	1000.0	2655.4	.0	75.85	-100.00	10329.05	2861.52
22	1044.9	2832.5	3019.1	4818.16	1438.00	1000.0	2832.5	.0	80.99	-100.00	13167.91	3049.93
23	1109.3	3009.7	3207.6	4823.95	1438.00	1000.0	3009.7	.0	86.15	-100.00	13940.98	3238.36
24	1173.8	3186.9	3396.1	4829.72	1438.00	1000.0	3186.9	.0	91.31	-100.00	14714.04	3426.79
25	1238.2	3364.0	3584.6	4835.36	1438.00	1000.0	3364.0	.0	96.49	-100.00	15487.10	3615.23
26	1302.6	3541.2	3773.2	4840.99	1438.00	1000.0	3541.2	.0	101.69	-100.00	16260.15	3803.68
27	1367.0	3718.3	3961.7	4846.54	1438.00	1000.0	3718.3	.0	106.90	-100.00	17033.21	3992.13
28	1431.4	3895.5	4150.2	4851.90	1438.00	1000.0	3895.5	.0	112.11	-100.00	17806.28	4180.59
29	1495.9	4072.7	4338.7	4857.44	1438.00	1000.0	4072.7	.0	117.35	-100.00	18579.33	4369.05
30	1560.3	4265.9	4542.3	4865.23	1438.00	1000.0	4265.9	.0	123.03	-100.00	22577.79	4572.54
31	1624.7	4427.0	4715.7	4868.24	1438.00	1000.0	4427.0	.0	127.86	-100.00	16771.21	4745.99
32	1689.1	4620.2	4919.3	4875.57	1438.00	1000.0	4620.2	.0	133.56	-100.00	13932.34	4949.50
33	1753.5	4797.4	5107.8	4881.03	1438.00	1000.0	4797.4	.0	138.85	-100.00	30701.40	5137.98
34	1818.0	4990.7	5311.5	4888.20	1438.00	1000.0	4990.7	.0	144.59	-100.00	35537.34	5341.50
35	1882.4	5151.7	5484.9	4891.54	1438.00	1000.1	5151.7	.0	149.47	-100.00	19348.08	5514.94
36	1946.8	5345.0	5688.5	4898.52	1438.00	1000.1	5345.0	.0	155.23	-100.00	15993.83	5718.48
37	2011.2	5538.3	5892.1	4905.73	1438.00	1000.1	5538.3	.0	161.01	-100.00	26827.46	5922.03
38	2075.7	5699.3	6065.5	4909.06	1438.00	1000.1	5699.3	.0	165.94	-100.00	21280.72	6095.46
39	2140.1	5892.6	6269.2	4915.96	1438.00	1000.1	5892.6	.0	171.75	-100.00	17539.95	6299.02
40	2204.5	6085.8	6472.8	4922.78	1438.00	1000.1	6085.8	.0	177.57	-100.00	29339.91	6502.58
41	2268.9	6246.9	6646.2	4926.18	1438.00	1000.1	6246.9	.0	182.54	-100.00	23213.37	6676.01
42	2333.3	6440.2	6849.8	4933.25	1438.00	1000.1	6440.2	.0	188.41	-100.00	28629.10	6879.58
43	2397.8	6633.4	7053.5	4939.93	1438.00	1000.1	6633.4	.0	194.28	-100.00	29402.16	7083.16
44	2462.2	6826.7	7257.1	4946.59	1438.00	1000.1	6826.7	.0	200.17	-100.00	30175.22	7286.75
45	2526.6	7020.0	7460.8	4953.26	1438.00	1000.1	7020.0	.0	206.07	-100.00	33527.31	7490.34

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
46	2591.0	7213.2	7664.5	4959.92	1438.00	1000.1	7213.2	.0	212.01	-100.00	34364.79	7693.94
47	2655.5	7374.3	7837.8	4963.45	1438.00	1000.1	7374.3	.0	217.04	-100.00	27078.67	7867.35
48	2719.9	7567.5	8041.5	4970.11	1438.00	1000.1	7567.5	.0	223.00	-100.00	33267.46	8070.95
49	2784.3	7760.8	8245.1	4976.64	1438.00	1000.1	7760.8	.0	228.98	-100.00	34040.53	8274.56
50	2848.7	7954.1	8448.8	4983.03	1438.00	1000.1	7954.1	.0	234.97	-100.00	34813.59	8478.18
51	2913.1	8147.3	8652.5	4989.80	1438.00	1000.1	8147.3	.0	240.98	-100.00	35586.64	8681.80
52	2977.6	8340.6	8856.2	4996.19	1438.00	1000.1	8340.6	.0	247.01	-100.00	36359.70	8885.42
53	3042.0	8533.9	9059.8	5002.57	1438.00	1000.1	8533.9	.0	253.03	-100.00	37132.76	9089.05
54	3106.4	8727.1	9263.5	5009.08	1438.00	1000.1	8727.1	.0	259.10	-100.00	37905.82	9292.68
55	3170.8	8920.4	9467.2	5015.58	1438.00	1000.1	8920.4	.0	265.18	-100.00	38678.88	9496.32
56	3235.2	9113.7	9670.9	5021.72	1438.00	1000.1	9113.7	.0	271.25	-100.00	39451.94	9699.96
57	3299.7	9306.9	9874.6	5028.21	1438.00	1000.1	9306.9	.0	277.39	-100.00	40225.00	9903.60
58	3364.1	9500.2	10078.2	5034.71	1438.00	1000.1	9500.2	.0	283.51	-100.00	40998.05	10107.25
59	3428.5	9693.5	10281.9	5040.95	1438.00	1000.1	9693.5	.0	289.66	-100.00	41771.11	10310.90
60	3492.9	9886.7	10485.6	5047.45	1438.00	1000.1	9886.7	.0	295.82	-100.00	42544.18	10514.55
61	3557.4	10080.0	10689.3	5053.81	1438.00	1000.1	10080.0	.0	302.02	-100.00	43317.24	10718.20
62	3621.8	10273.3	10893.0	5060.17	1438.00	1000.1	10273.3	.0	308.22	-100.00	44090.30	10921.86
63	3686.2	10466.5	11096.7	5066.55	1438.00	1000.1	10466.5	.0	314.44	-100.00	44863.36	11125.52
64	3750.6	10724.2	11361.2	5077.38	1438.00	1000.1	10724.2	.0	322.54	-100.00	76060.69	11389.82
65	3815.0	10917.5	11564.9	5083.61	1438.00	1000.1	10917.5	.0	328.79	-100.00	42542.02	11593.49
66	3879.5	11110.7	11768.6	5090.10	1438.00	1000.1	11110.7	.0	335.06	-100.00	47182.54	11797.16
67	3943.9	11304.0	11972.3	5096.46	1438.00	1000.1	11304.0	.0	341.40	-100.00	47955.60	12000.84
68	4008.3	11497.3	12176.0	5102.81	1438.00	1000.1	11497.3	.0	347.71	-100.00	48728.66	12204.52
69	4072.7	11690.5	12379.7	5108.91	1438.00	1000.1	11690.5	.0	354.04	-100.00	49501.73	12408.20
70	4137.1	11883.8	12583.4	5115.50	1438.00	1000.1	11883.8	.0	360.41	-100.00	50274.79	12611.88
71	4201.6	12141.5	12847.9	5125.93	1438.00	1000.1	12141.5	.0	368.69	-100.00	59555.82	12876.28
72	4266.0	12334.8	13051.6	5132.15	1438.00	1000.1	12334.8	.0	375.08	-100.00	47502.50	13079.97
73	4330.4	12528.0	13255.3	5138.38	1438.00	1000.1	12528.0	.0	381.49	-100.00	52593.97	13283.66
74	4394.8	12721.3	13459.0	5145.22	1438.00	1000.1	12721.3	.0	387.96	-100.00	53367.04	13487.35
75	4459.3	12914.6	13662.8	5151.33	1438.00	1000.1	12914.6	.0	394.39	-100.00	54140.10	13691.04
76	4523.7	13172.2	13927.4	5161.71	1438.00	1000.1	13172.2	.0	402.82	-100.00	64065.36	13955.52
77	4588.1	13365.5	14131.1	5168.57	1438.00	1000.1	13365.5	.0	409.37	-100.00	55686.22	14159.22
78	4652.5	13558.8	14334.8	5174.16	1438.00	1000.1	13558.8	.0	415.82	-100.00	56459.29	14362.92
79	4716.9	13752.0	14538.5	5180.75	1438.00	1000.1	13752.0	.0	422.37	-100.00	57232.35	14566.62
80	4781.4	14009.7	14803.2	5191.11	1438.00	1000.1	14009.7	.0	430.92	-100.00	67672.98	14831.16
81	4845.8	14203.0	15006.9	5197.73	1438.00	1000.1	14203.0	.0	437.52	-100.00	58778.47	15034.86
82	4910.2	14396.3	15210.6	5204.07	1438.00	1000.1	14396.3	.0	444.12	-100.00	59551.54	15238.57
83	4974.6	14654.0	15475.3	5214.44	1438.00	1000.1	14654.0	.0	452.75	-100.00	95513.93	15503.15
84	5039.1	14847.2	15679.0	5220.77	1438.00	1000.1	14847.2	.0	459.41	-100.00	61097.66	15706.86
85	5103.5	15040.5	15882.7	5226.86	1438.00	1000.2	15040.5	.0	466.04	-100.00	61870.72	15910.57
86	5167.9	15298.2	16147.5	5236.97	1438.00	1000.2	15298.2	.0	474.73	-100.00	73084.41	16175.19
87	5232.3	15491.4	16351.2	5243.81	1438.00	1000.2	15491.4	.0	481.48	-100.00	63416.85	16378.90
88	5296.7	15684.7	16554.9	5250.15	1438.00	1000.2	15684.7	.0	488.22	-100.00	64189.91	16582.61
89	5361.2	15942.4	16819.7	5260.25	1438.00	1000.2	15942.4	.0	497.06	-100.00	102858.00	16847.27
90	5425.6	16135.7	17023.4	5267.10	1438.00	1000.2	16135.7	.0	503.86	-100.00	65736.04	17050.99
91	5490.0	16393.3	17288.2	5276.93	1438.00	1000.2	16393.3	.0	512.67	-100.00	105306.10	17315.68
92	5554.4	16586.6	17491.9	5283.27	1438.00	1000.2	16586.6	.0	519.50	-100.00	67282.16	17519.39
93	5618.9	16844.3	17756.7	5294.37	1438.00	1000.2	16844.3	.0	528.51	-100.00	107754.10	17784.12
94	5683.3	17037.6	17960.5	5300.44	1438.00	1000.2	17037.6	.0	535.37	-100.00	68828.29	17987.83
95	5747.7	17295.2	18225.3	5310.78	1438.00	.0	17295.2	.1	544.35	-100.00	.00	18252.58
96	5812.1	17552.9	18490.2	5320.68	1438.00	.0	17552.9	64.5	553.39	-100.00	.00	18517.36
97	5876.5	17875.0	18816.2	5334.00	1438.00	.0	17875.0	128.9	564.45	-100.00	.00	18843.26

98	5941.0	18132.7	19081.2	5344.32	1438.00	.0	18132.7	193.4	573.63	-100.00	.00	19108.10
99	6005.4	18390.4	19346.1	5354.39	1438.00	.0	18390.4	257.8	582.76	-100.00	.00	19372.96

VESSEL DISP. 13 (FT)	14 (% WD)	RESTORING FORCE ON VESSEL 15 (KIPS)	INCREMENT STIFFNESS 16 (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	1735.	0.	390.	1000.	338.	355	355	355	355	355	355	355	355	355	355	355	355
1.5	.1	97.	64.64	0.	1737.	6160.	403.	1000.	350.	366	368	368	366	362	358	353	348	345	343	343	345
3.0	.2	194.	64.85	0.	1742.	12346.	417.	1000.	364.	378	382	382	378	370	360	350	341	335	332	332	335
4.5	.3	292.	65.30	0.	1750.	18577.	432.	1000.	378.	391	398	398	391	378	363	348	335	326	322	322	326
6.0	.4	391.	65.96	0.	1762.	24876.	449.	1000.	394.	404	415	415	404	386	365	345	329	318	313	313	318
7.5	.5	491.	66.85	0.	1776.	31266.	467.	1000.	411.	419	433	433	419	395	368	343	324	311	305	305	311
9.0	.6	593.	67.96	-1.	1794.	37771.	486.	1000.	429.	434	452	452	434	404	371	341	318	304	297	297	304
10.5	.7	697.	69.20	0.	1816.	44404.	507.	1000.	448.	451	473	473	451	414	374	339	313	298	290	290	298
12.0	.8	803.	70.74	0.	1840.	51194.	529.	1000.	469.	468	495	495	468	424	377	336	308	292	284	284	292
13.5	.9	912.	72.59	1.	1868.	58180.	552.	1000.	491.	487	519	519	487	435	380	334	304	287	279	279	287
15.0	1.0	1024.	74.73	0.	1899.	65391.	578.	1000.	515.	506	544	544	506	446	383	332	300	282	274	274	282
16.5	1.1	1140.	77.22	1.	1933.	72869.	605.	1000.	540.	527	571	571	527	457	386	330	296	277	270	270	277
18.0	1.2	1264.	82.44	-0.	1969.	80928.	634.	1000.	568.	549	600	600	549	469	389	328	292	273	264	264	273
19.5	1.3	1393.	85.89	-0.	2008.	89361.	664.	1000.	596.	572	631	631	572	481	392	326	288	270	258	258	270
21.0	1.4	1532.	92.82	0.	2050.	98609.	698.	1000.	628.	597	665	665	597	494	395	324	285	265	252	252	265
22.5	1.5	1673.	94.46	0.	2094.	108028.	733.	1000.	660.	623	700	700	623	507	398	322	282	260	246	246	260
24.0	1.6	1812.	92.25	1.	2137.	117185.	763.	1000.	689.	651	731	731	651	521	401	321	279	255	241	241	255
25.5	1.7	1937.	83.53	-0.	2176.	125303.	786.	1000.	711.	680	753	753	680	535	405	319	276	250	236	236	250
27.0	1.8	2060.	81.59	1.	2215.	133127.	807.	1000.	731.	709	775	775	709	550	408	317	274	245	231	231	245
28.5	1.9	2177.	78.55	1.	2252.	140445.	830.	1000.	752.	733	798	798	733	566	412	315	271	241	226	226	241
30.0	2.0	2298.	80.70	1.	2290.	147810.	859.	1000.	780.	753	827	827	753	582	415	314	268	236	222	222	236
31.5	2.1	2442.	95.82	0.	2337.	156762.	901.	1000.	819.	771	868	868	771	599	419	312	265	232	217	217	232
33.0	2.2	2595.	101.60	1.	2388.	166333.	947.	1000.	862.	790	914	914	790	616	423	310	261	228	213	213	228
34.5	2.3	2756.	107.63	1.	2444.	176578.	996.	1000.	907.	811	963	963	811	634	426	309	258	224	210	210	224
36.0	2.4	2935.	119.56	1.	2509.	188258.	1046.	1000.	954.	842	1013	1013	842	654	430	307	255	220	206	206	220
37.5	2.5	3123.	124.83	1.	2579.	200641.	1095.	1000.	1001.	878	1063	1063	878	673	434	306	252	217	202	202	217
39.0	2.6	3315.	128.55	1.	2652.	213505.	1146.	1000.	1048.	918	1114	1114	918	693	438	304	248	213	199	199	213
40.5	2.7	3512.	131.19	1.	2728.	226737.	1197.	1000.	1096.	959	1165	1165	959	712	442	303	245	210	196	196	210
42.0	2.8	3709.	131.28	1.	2803.	240187.	1249.	1000.	1145.	1002	1218	1218	1002	729	446	301	242	207	193	193	207
43.5	2.9	3901.	128.20	1.	2876.	253534.	1302.	1000.	1194.	1044	1270	1270	1044	743	450	300	239	204	191	191	204
45.0	3.0	4094.	128.74	1.	2949.	267013.	1356.	1000.	1244.	1087	1324	1324	1087	755	454	298	236	201	188	188	201
46.5	3.1	4290.	130.14	-0.	3024.	280689.	1410.	1000.	1295.	1130	1378	1378	1130	767	458	297	234	198	186	186	198
48.0	3.2	4488.	131.99	2.	3100.	294576.	1466.	1000.	1347.	1174	1434	1434	1174	780	463	296	231	196	184	184	196
49.5	3.3	4685.	131.24	2.	3177.	308322.	1520.	1000.	1398.	1219	1489	1489	1219	793	467	294	228	193	182	182	193
51.0	3.4	4879.	129.44	2.	3253.	321761.	1573.	1000.	1447.	1264	1541	1541	1264	807	471	293	226	191	180	180	191
52.5	3.5	5053.	115.88	1.	3323.	333295.	1612.	1000.	1484.	1309	1580	1580	1309	825	476	292	223	189	178	178	189
54.0	3.6	5228.	117.06	2.	3394.	344503.	1647.	1000.	1518.	1355	1616	1616	1355	848	481	291	221	187	176	176	187
55.5	3.7	5408.	119.95	2.	3467.	355943.	1683.	1000.	1551.	1402	1651	1651	1402	873	485	289	218	185	173	173	185
57.0	3.8	5592.	122.68	2.	3542.	367584.	1720.	1000.	1586.	1450	1689	1689	1450	899	490	288	216	183	170	170	183
58.5	3.9	5783.	127.32	2.	3621.	379650.	1761.	1000.	1625.	1496	1730	1730	1496	927	495	287	214	182	167	167	182
60.0	4.0	6001.	145.53	2.	3712.	393761.	1819.	1000.	1679.	1540	1788	1788	1540	955	500	286	212	180	164	164	180
61.5	4.1	6206.	136.49	-1.	3796.	406497.	1878.	1000.	1734.	1574	1846	1846	1574	984	505	285	209	179	161	161	179
63.0	4.2	6405.	132.44	1.	3877.	418700.	1936.	1000.	1788.	1605	1905	1905	1605	1013	510	284	207	177	158	158	177
64.5	4.3	6578.	115.78	-1.	3946.	428920.	1980.	1000.	1830.	1635	1949	1949	1635	1041	515	283	205	175	156	156	175
66.0	4.4	6745.	110.95	1.	4013.	438533.	2020.	1000.	1867.	1665	1989	1989	1665	1070	520	282	203	172	153	153	172
67.5	4.5	6913.	112.34	1.	4080.	448316.	2059.	1000.	1904.	1698	2028	2028	1698	1099	525	281	202	170	150	150	170
69.0	4.6	7093.	119.61	2.	4153.	459029.	2100.	1000.	1942.	1735	2069	2069	1735	1128	531	280	200	167	148	148	167
70.5	4.7	7306.	142.07	2.	4242.	472652.	2149.	1000.	1988.	1784	2118	2118	1784	1158	536	279	198	165	145	145	165
72.0	4.8	7541.	157.04	2.	4341.	488065.	2210.	1000.	2045.	1834	2179	2179	1834	1188	542	278	196	162	143	143	162
73.5	4.9	7778.	157.61	1.	4441.	503505.	2271.	1000.	2102.	1884	2240	2240	1884	1218	547	277	195	160	140	140	160
75.0	5.0	7996.	145.74	1.	4532.	517348.	2328.	1000.	2156.	1928	2297	2297	1928	1249	553	276	193	158	138	138	158

LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
355	355	355	355	355	355	355	355	355	355	355	355
366	368	368	366	362	358	353	348	345	343	343	345
378	382	382	378	370	360	350	341	335	332	332	335
391	398	398	391	378	363	348	335	326	322	322	326
404	415	415	404	386	365	345	329	318	313	313	318
419	433	433	419	395	368	343	324	311	305	305	311
434	452	452	434	404	371	341	318	304	297	297	304
451	473	473	451	414	374	339	313	298	290	290	298
468	495	495	468	424	377	336	308	292	284	284	292
487	519	519	487	435	380	334	304	287	279	279	287
506	544	544	506	446	383	332	300	282	274	274	282
527	571	571	527	457	386	330	296	277	270	270	277
549	600	600	549	469	389	328	292	273	264	264	273
572	631	631	572	481	392	326	288	270	258	258	270
597	665	665	597	494	395	324	285	265	252	252	265
623	700	700	623	507	398	322	282	260	246	246	260
651	731	731	651	521	401	321	279	255	241	241	255
680	753	753	680	535	405	319	276	250	236	236	250
709	775	775	709	550	408	317	274	245	231	231	245
733	798	798	733	566	412	315	271	241	226	226	241
753	827	827	753	582	415	314	268	236	222	222	236
771	868	868	771	599	419	312	265	232	217	217	232
790	914	914	790	616	423	310	261	228	213	213	228
811	963	963	811	634	426	309	258	224	210	210	224
842	1013	1013	842	654	430	307	255	220	206	206	220
878	1063	1063	878	673	434	306	252	217	202	202	217
918	1114	1114	918	693	438	304	248	213	199	199	213
959	1165	1165	959	712	442	303	245	210	196	196	210
1002	1218	1218	1002	729	446	301	242	207	193	193	207
1044	1270	1270	1044	743	450	300	239	204	191	191	204
1087	1324	1324	1087	755	454	298	236	201	188	188	201
1130	1378	1378	1130	767	458	297	234	198	186	186	198
1174	1434	1434	1174	780	463	296	231	196	184	184	196
1219	1489	1489	1219	793	467	294	228	193	182	182	193
1264	1541	1541	1264	807	471	293	226	191	180	180	191
1309	1580	1580	1309	825	476	292	223	189	178	178	189
1355	1616	1616	1355	848	481	291	221	187	176	176	187
1402	1651	1651	1402	873	485	289	218	185	173	173	185
1450	1689	1689	1450	899	490	288	216	183	170	170	183
1496	1730	1730	1496	927	495	287	214	182	167	167	182
1540	1788	1788	1540	955	500	286	212	180	164	164	180
1574	1846	1846	1574	984	505	285	209	179	161	161	179
1605	1905	1905	1605	1013	510	284	207	177	158	158	177
1635	1949	1949	1635	1041	515	283	205	175	156	156	175
1665	1989	1989	1665	1070	520	282	203	172	153	153	172
1698	2028	2028	1698	1099	525	281	202	170	150	150	170
1735	2069	2069	1735	1128	531	280	200	167	148	148	167
1784	2118	2118	1784	1158	536	279	198	165	145	145	165
1834	2179	2179	1834	1188	542	278	196	162	143	143	162
1884	2240	2240	1884	1218	547	277	195	160	140	140	160
1928	2297	2297	1928	1249	553	276	193	158	138	138	158

195	277	547	1218
193	276	553	1249

VESSEL DISP.		RESTORING FORCE ON VESSEL	INCREMENT STIFFNESS	YAW MOMENT	VERTICAL FORCE	OVERTURN MOMENT	MAX.LINE LOAD	LINE ON BOTTOM	HOR.FORCE ON ANCHOR
13	14 15	16							
(FT)	(% WD)	(KIPS)	(KIPS/FT)	(FT-KIP)	(KIPS)	(FT-KIP)	(KIPS)	(FT)	(KIPS)
76.5	5.1	8185.	125.93	1.	4610.	528596.	2375.	1000.	2200.
78.0	5.2	8366.	120.21	1.	4685.	539089.	2420.	1000.	2242.
79.5	5.3	8542.	117.73	1.	4757.	549255.	2462.	1000.	2282.
81.0	5.4	8719.	117.57	1.	4831.	559373.	2502.	1000.	2320.
82.5	5.5	8886.	111.55	-0.	4901.	568737.	2534.	1000.	2350.
84.0	5.6	9083.	131.21	2.	4985.	580754.	2571.	1000.	2385.
85.5	5.7	9301.	145.72	2.	5079.	594607.	2620.	1000.	2431.
87.0	5.8	9548.	164.71	1.	5185.	610843.	2686.	1000.	2492.
88.5	5.9	9843.	196.60	2.	5312.	630965.	2784.	1000.	2583.
90.0	6.0	10116.	181.70	0.	5427.	649531.	2877.	1000.	2669.
91.5	6.1	10325.	139.21	0.	5512.	663100.	2938.	1000.	2727.
93.0	6.2	10502.	118.29	1.	5584.	674137.	2985.	1000.	2771.
94.5	6.3	10660.	105.27	-0.	5646.	683583.	3021.	1000.	2805.
96.0	6.4	10805.	96.46	0.	5702.	691751.	3055.	1000.	2837.
97.5	6.5	10972.	111.90	1.	5768.	701692.	3103.	1000.	2882.
99.0	6.6	11150.	118.59	2.	5839.	712497.	3151.	1000.	2927.
100.5	6.7	11344.	128.83	2.	5918.	724637.	3199.	1000.	2972.
102.0	6.8	11558.	142.61	1.	6008.	738561.	3247.	1000.	3018.
103.5	6.9	11817.	173.22	3.	6124.	756098.	3295.	1000.	3063.
105.0	7.0	12086.	179.13	3.	6245.	774403.	3343.	1000.	3108.
106.5	7.1	12326.	159.97	1.	6351.	789895.	3391.	1000.	3153.
108.0	7.2	12539.	141.95	2.	6443.	802779.	3439.	1000.	3198.
109.5	7.3	12737.	131.78	-0.	6527.	814222.	3488.	1000.	3245.
111.0	7.4	12918.	121.06	1.	6602.	824695.	3537.	1000.	3291.
112.5	7.5	13091.	115.21	1.	6670.	834705.	3587.	1000.	3337.
114.0	7.6	13280.	126.32	1.	6747.	846460.	3636.	1000.	3384.
115.5	7.7	13471.	126.90	2.	6823.	858354.	3685.	1000.	3430.
117.0	7.8	13662.	127.14	2.	6900.	870281.	3735.	1000.	3476.
118.5	7.9	13853.	127.75	0.	6978.	882236.	3784.	1000.	3523.
120.0	8.0	14046.	128.48	1.	7056.	894187.	3834.	1000.	3569.
121.5	8.1	14240.	129.56	1.	7135.	906130.	3883.	1000.	3616.
123.0	8.2	14443.	135.24	2.	7221.	918116.	3933.	1000.	3663.
124.5	8.3	14649.	137.19	2.	7308.	930163.	3984.	1000.	3710.
126.0	8.4	14857.	138.97	-0.	7397.	942367.	4035.	1000.	3759.
127.5	8.5	15067.	139.83	0.	7486.	954670.	4087.	1000.	3808.
129.0	8.6	15277.	139.73	2.	7575.	967005.	4139.	1000.	3856.
130.5	8.7	15481.	136.52	2.	7661.	979345.	4191.	1000.	3905.
132.0	8.8	15683.	134.57	2.	7745.	991715.	4242.	1000.	3954.
133.5	8.9	15882.	132.44	1.	7827.	1003927.	4293.	1000.	4001.
135.0	9.0	16077.	129.75	2.	7908.	1015878.	4342.	1000.	4047.
136.5	9.1	16255.	118.73	2.	7980.	1026440.	4382.	1000.	4085.
138.0	9.2	16413.	105.34	2.	8043.	1035270.	4412.	1000.	4114.
139.5	9.3	16573.	106.94	0.	8108.	1044292.	4442.	1000.	4143.
141.0	9.4	16740.	111.55	1.	8176.	1054141.	4478.	1000.	4177.
142.5	9.5	16922.	121.14	2.	8250.	1065476.	4523.	1000.	4220.
144.0	9.6	17135.	141.76	2.	8339.	1079337.	4584.	1000.	4277.
145.5	9.7	17394.	172.72	2.	8451.	1096979.	4670.	1000.	4356.
147.0	9.8	17653.	172.88	2.	8564.	1114254.	4752.	1000.	4433.
148.5	9.9	17871.	145.51	1.	8659.	1127425.	4808.	1000.	4485.

LINE LOAD (KIPS)

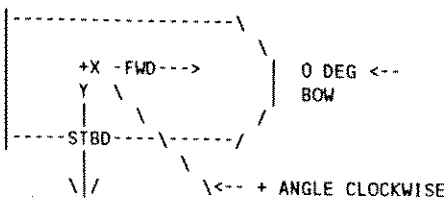
LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12					
1963	2344	2344	1963	1280	559	275	192	155	135	135	155	192	275	559	1280	
1997	2389	2389	1997	1310	565	275	190	153	133	133	153	190	275	565	1310	
2030	2431	2431	2030	1342	571	274	189	151	131	131	151	189	274	571	1342	
2065	2471	2471	2065	1373	577	273	187	149	129	129	149	187	273	577	1373	
2104	2503	2503	2104	1405	583	272	186	146	126	126	146	186	272	583	1405	
2155	2540	2540	2155	1438	589	271	185	144	124	124	144	185	271	589	1438	
2207	2589	2589	2208	1469	596	271	184	142	122	122	142	184	271	596	1469	
2259	2655	2655	2259	1500	602	270	183	140	120	120	140	183	270	602	1500	
2305	2753	2753	2305	1531	609	269	181	138	118	118	138	181	269	609	1531	
2346	2846	2846	2346	1556	615	268	180	136	116	116	136	180	268	615	1556	
2384	2907	2907	2384	1578	622	267	179	134	114	114	134	179	267	622	1578	
2420	2954	2954	2420	1600	629	266	179	132	112	112	132	179	266	629	1600	
2455	2990	2990	2455	1620	636	265	178	130	111	111	130	178	265	636	1620	
2485	3024	3024	2485	1641	643	263	176	128	109	109	128	176	263	643	1641	
2513	3072	3072	2513	1661	651	262	175	127	107	107	127	175	262	651	1661	
2547	3120	3120	2547	1683	659	261	173	125	105	105	125	173	261	659	1683	
2590	3168	3168	2590	1706	666	260	171	123	104	104	123	171	260	666	1706	
2644	3216	3216	2644	1731	674	259	170	121	102	102	121	170	259	674	1731	
2724	3264	3264	2724	1764	681	258	168	120	100	100	120	168	258	681	1764	
2808	3312	3312	2808	1798	689	257	167	118	99	99	118	167	257	689	1798	
2874	3360	3360	2874	1833	696	256	165	116	97	97	116	165	256	696	1833	
2921	3408	3408	2921	1867	704	255	163	115	96	96	115	163	255	704	1867	
2959	3458	3458	2959	1901	711	254	162	113	94	94	113	162	254	711	1901	
2990	3507	3507	2990	1928	719	253	160	111	93	93	111	160	253	719	1928	
3017	3556	3556	3017	1953	725	252	159	110	92	92	110	159	252	725	1953	
3057	3606	3606	3057	1976	731	251	157	108	90	90	108	157	251	731	1976	
3098	3655	3655	3098	1999	736	250	156	107	89	89	107	156	250	736	1999	
3139	3704	3704	3139	2021	741	249	154	106	88	88	106	154	249	741	2021	
3180	3754	3754	3180	2045	746	248	153	104	87	87	104	153	248	746	2045	
3221	3803	3803	3221	2069	751	247	151	103	85	85	103	151	247	751	2069	
3262	3853	3853	3262	2095	756	246	150	101	84	84	101	150	246	756	2095	
3303	3903	3903	3303	2129	761	245	148	100	83	83	100	148	245	761	2129	
3344	3953	3953	3344	2164	766	244	147	99	82	82	99	147	244	766	2164	
3385	4005	4005	3385	2200	770	243	146	98	81	81	98	146	243	770	2200	
3427	4057	4057	3427	2236	775	242	144	96	80	80	96	144	242	775	2236	
3469	4108	4108	3469	2271	780	241	143	95	79	79	95	143	241	780	2271	
3511	4160	4160	3511	2302	785	240	141	94	78	78	94	141	240	785	2302	
3554	4212	4212	3554	2330	790	240	140	93	77	77	93	140	240	790	2330	
3596	4263	4263	3596	2357	796	239	139	92	76	76	92	139	239	796	2357	
3638	4312	4312	3638	2383	801	238	138	90	76	76	90	138	238	801	2383	
3680	4352	4352	3680	2408	807	237	136	89	75	75	89	136	237	807	2408	
3722	4381	4381	3722	2432	813	236	135	88	74	74	88	135	236	813	2432	
3765	4412	4412	3765	2456	820	235	134	87	73	73	87	134	235	820	2456	
3807	4448	4448	3807	2477	829	234	132	86	72	72	86	132	234	829	2477	
3850	4493	4493	3850	2496	838	233	131	85	72	72	85	131	233	838	2496	
3892	4554	4554	3892	2516	848	233	130	84	71	71	84	130	233	848	2516	
3935	4639	4639	3936	2539	857	232	129	83	70	70	83	129	232	857	2539	
3979	4722	4722	3979	2566	867	231	128	83	70	70	83	128	231	867	2566	
4023	4778	4778	4023	2597	878	230	126	82	69	69	82	126	230	878	2597	

DEEPWATER, ARAMID MOORING LINE JIP
CASE T1A16T
1500 ft 10% 300 kip buoy

PROBLEM NUMBER - 2

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP.		RESTORING FORCE ON VESSEL	INCREMENT STIFFNESS	YAW MOMENT	VERTICAL FORCE	OVERTURN MOMENT	MAX.LINE LOAD	LINE ON BOTTOM	HOR.FORCE ON ANCHOR
13 (FT)	14 (% WD)	15 (KIPS)	16 (KIPS/FT)	(FT-KIP)	(KIPS)	(FT-KIP)	(KIPS)	(FT)	(KIPS)
.0	.0	-1.	.00	1.	1632.	341.	457.	1000.	402.
1.5	.1	83.	55.59	528.	1640.	5504.	473.	1000.	416.
3.0	.2	166.	55.72	1087.	1651.	10682.	490.	1000.	433.
4.5	.3	251.	56.26	1662.	1664.	15904.	508.	1000.	449.
6.0	.4	336.	56.76	2268.	1681.	21179.	527.	1000.	467.
7.5	.5	422.	57.68	2891.	1700.	26544.	547.	1000.	487.
9.0	.6	510.	58.75	3540.	1722.	32018.	569.	1000.	507.
10.5	.7	601.	60.12	4209.	1746.	37637.	593.	1000.	530.
12.0	.8	697.	64.26	4921.	1772.	43720.	621.	1000.	556.
13.5	.9	797.	66.45	5683.	1799.	50039.	651.	1000.	584.
15.0	1.0	903.	71.10	6528.	1829.	56916.	683.	1000.	614.
16.5	1.1	1015.	74.26	7284.	1861.	64161.	718.	1000.	646.
18.0	1.2	1126.	74.26	8133.	1894.	71373.	751.	1000.	678.
19.5	1.3	1230.	69.06	8931.	1924.	77921.	776.	1000.	701.
21.0	1.4	1326.	64.21	10602.	1952.	83744.	797.	1000.	721.
22.5	1.5	1421.	63.29	12509.	1979.	89384.	819.	1000.	741.
24.0	1.6	1518.	64.69	14385.	2009.	95130.	843.	1000.	764.
25.5	1.7	1622.	69.50	15865.	2041.	101329.	879.	1000.	798.
27.0	1.8	1737.	76.32	16474.	2079.	108299.	923.	1000.	839.
28.5	1.9	1861.	82.69	16354.	2122.	116003.	970.	1000.	884.
30.0	2.0	1991.	86.64	16256.	2168.	124118.	1020.	1000.	931.
31.5	2.1	2124.	89.13	15997.	2216.	132495.	1070.	1000.	977.
33.0	2.2	2268.	95.92	16709.	2270.	141802.	1120.	1000.	1024.
34.5	2.3	2412.	95.91	17462.	2324.	151281.	1170.	1000.	1071.
36.0	2.4	2556.	95.91	18129.	2379.	160937.	1221.	1000.	1118.
37.5	2.5	2702.	97.13	18891.	2434.	170783.	1272.	1000.	1166.
39.0	2.6	2847.	96.71	20047.	2490.	180736.	1324.	1000.	1215.
40.5	2.7	2991.	96.33	21345.	2545.	190667.	1377.	1000.	1265.
42.0	2.8	3138.	97.83	22891.	2602.	200756.	1432.	1000.	1316.
43.5	2.9	3287.	99.34	24866.	2661.	210898.	1487.	1000.	1367.
45.0	3.0	3438.	100.73	27381.	2722.	220949.	1540.	1000.	1417.
46.5	3.1	3586.	98.46	29679.	2783.	230692.	1588.	1000.	1462.
48.0	3.2	3727.	93.98	31760.	2840.	239785.	1626.	1000.	1497.
49.5	3.3	3869.	95.16	33603.	2898.	248757.	1661.	1000.	1531.
51.0	3.4	4014.	96.16	35376.	2958.	257572.	1697.	1000.	1564.
52.5	3.5	4154.	93.28	38456.	3017.	265836.	1735.	1000.	1600.
54.0	3.6	4299.	97.27	42023.	3078.	274505.	1782.	1000.	1644.
55.5	3.7	4453.	102.54	45935.	3143.	283741.	1838.	1000.	1697.
57.0	3.8	4609.	104.00	49643.	3209.	293100.	1896.	1000.	1751.
58.5	3.9	4759.	99.94	52247.	3272.	301882.	1951.	1000.	1802.
60.0	4.0	4902.	94.87	52636.	3331.	310053.	1992.	1000.	1841.
61.5	4.1	5046.	96.01	52005.	3391.	318431.	2032.	1000.	1878.
63.0	4.2	5190.	96.48	51310.	3451.	326847.	2071.	1000.	1915.
64.5	4.3	5338.	98.78	50901.	3513.	335514.	2114.	1000.	1955.
66.0	4.4	5492.	102.48	52388.	3578.	344519.	2168.	1000.	2006.
67.5	4.5	5656.	109.03	55873.	3647.	354331.	2228.	1000.	2062.
69.0	4.6	5821.	110.18	59887.	3718.	364276.	2287.	1000.	2118.
70.5	4.7	5981.	106.85	63605.	3787.	373790.	2340.	1000.	2167.
72.0	4.8	6137.	104.07	66785.	3855.	382929.	2386.	1000.	2210.
73.5	4.9	6291.	102.29	67413.	3921.	391856.	2430.	1000.	2251.
75.0	5.0	6443.	101.67	66941.	3987.	400724.	2472.	1000.	2291.

LINE LOAD (KIPS)

LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12					
423	0	408	387	385	358	334	317	320	313	312	317	344	358	374	388	
439	0	426	401	394	360	332	312	312	305	304	310	337	356	377	397	
456	0	444	414	402	362	329	307	305	297	297	303	332	354	380	407	
474	0	465	429	412	365	327	302	298	291	290	297	326	351	383	416	
493	0	486	445	421	367	325	298	292	285	284	291	321	350	387	428	
514	0	509	462	431	369	322	294	287	279	279	286	316	348	391	439	
535	0	534	479	441	371	320	290	282	274	274	282	311	346	395	450	
558	0	560	498	452	374	318	286	278	270	270	277	307	344	398	462	
583	0	588	518	463	376	316	283	274	264	264	273	303	342	402	475	
609	0	618	538	474	378	314	279	270	258	258	270	299	341	407	489	
636	0	650	561	486	381	312	277	265	252	252	265	295	339	410	502	
666	0	685	584	498	383	310	274	259	246	247	260	291	337	414	517	
696	0	718	609	511	386	308	271	254	241	241	255	288	335	419	532	
724	0	743	635	524	388	306	269	249	236	236	250	285	333	423	547	
745	0	765	663	537	391	304	265	244	231	231	246	282	332	428	564	
765	0	786	690	550	392	302	261	240	226	227	242	279	331	433	582	
784	0	810	718	564	395	300	257	235	221	222	237	277	330	438	601	
805	0	846	739	579	397	298	253	231	217	218	233	275	328	443	620	
833	0	890	758	596	400	297	250	227	213	214	229	272	326	447	638	
868	0	938	776	614	404	296	247	223	209	210	225	270	324	451	656	
906	0	988	796	632	408	294	244	219	206	206	221	266	322	455	676	
947	0	1038	818	651	411	293	241	216	202	203	218	263	320	459	695	
991	0	1088	851	670	414	292	238	212	199	199	214	260	319	464	716	
1035	0	1138	887	688	417	290	235	209	196	196	211	256	318	470	733	
1081	0	1189	924	704	418	288	232	206	193	194	208	254	317	477	748	
1127	0	1240	963	720	420	286	229	203	190	191	205	251	316	483	763	
1174	0	1293	1003	733	422	285	226	200	188	188	203	248	315	490	777	
1220	0	1346	1044	745	425	283	223	197	185	186	200	246	314	496	791	
1267	0	1400	1085	756	427	282	220	194	183	184	197	243	313	503	806	
1313	0	1455	1127	768	431	281	218	192	181	182	195	240	312	508	824	
1360	0	1509	1170	780	434	280	215	190	179	180	193	237	311	514	848	
1406	0	1557	1216	794	439	279	213	188	178	178	190	234	309	519	872	
1452	0	1594	1262	809	443	278	211	186	175	176	188	231	307	523	897	
1498	0	1630	1307	827	447	277	209	184	172	173	186	229	305	528	924	
1543	0	1665	1352	850	451	276	207	182	169	170	184	226	304	534	954	
1578	0	1703	1397	872	454	275	205	180	166	167	183	224	303	541	985	
1610	0	1750	1442	895	456	274	202	179	163	165	181	222	302	549	1018	
1643	0	1807	1484	917	458	272	200	177	160	162	180	220	302	559	1051	
1676	0	1865	1526	941	461	271	198	175	158	159	178	218	301	567	1084	
1711	0	1919	1562	967	463	270	196	172	155	156	177	216	301	575	1117	
1754	0	1961	1593	995	468	269	195	170	152	154	175	214	299	582	1147	
1802	0	2000	1624	1025	473	268	193	167	149	151	172	211	298	587	1176	
1852	0	2040	1655	1055	478	267	192	165	147	148	169	209	296	592	1204	
1900	0	2082	1688	1085	483	266	190	162	144	146	167	207	295	597	1233	
1940	0	2137	1722	1113	488	265	189	160	142	143	165	205	294	605	1265	
1977	0	2197	1765	1139	490	263	187	158	139	141	162	203	293	614	1300	
2012	0	2256	1811	1164	493	261	186	155	137	138	160	202	293	624	1336	
2048	0	2309	1859	1190	495	260	184	153	135	136	158	200	292	634	1372	
2087	0	2355	1905	1217	499	258	183	150	132	134	156	199	291	644	1407	
2133	0	2399	1943	1247	504	257	182	148	130	132	153	197	290	651	1440	
2184	0	2441	1978	1280	510	256	181	146	128	129	151	195	289	658	1470	

VESSEL DISP. 13 (FT)	14 (% WD)	RESTORING FORCE ON VESSEL 15 (KIPS)	INCREMENT STIFFNESS 16 (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)
76.5	5.1	6591.	98.53	66136.	4051.	409202.	2510.	1000.	2327.
78.0	5.2	6733.	94.58	65406.	4112.	417195.	2542.	1000.	2358.
79.5	5.3	6874.	94.12	65746.	4173.	425253.	2582.	1000.	2395.
81.0	5.4	7027.	102.04	67349.	4238.	434520.	2633.	1000.	2443.
82.5	5.5	7200.	115.23	70250.	4312.	445487.	2704.	1000.	2509.
84.0	5.6	7393.	128.82	74198.	4394.	458182.	2799.	1000.	2597.
85.5	5.7	7572.	118.99	78470.	4469.	469633.	2884.	1000.	2676.
87.0	5.8	7722.	100.40	81438.	4532.	478655.	2942.	1000.	2731.
88.5	5.9	7863.	93.60	82906.	4590.	486785.	2987.	1000.	2773.
90.0	6.0	8004.	94.32	83278.	4650.	494871.	3023.	1000.	2807.
91.5	6.1	8151.	97.69	82911.	4713.	503579.	3058.	1000.	2840.
93.0	6.2	8325.	115.90	80723.	4789.	514830.	3107.	1000.	2886.
94.5	6.3	8494.	112.82	77853.	4863.	525678.	3157.	1000.	2933.
96.0	6.4	8652.	105.32	76405.	4930.	535401.	3206.	1000.	2979.
97.5	6.5	8803.	100.60	77298.	4995.	544383.	3255.	1000.	3025.
99.0	6.6	8952.	99.43	79985.	5058.	553241.	3302.	1000.	3070.
100.5	6.7	9099.	97.98	84029.	5120.	562162.	3349.	1000.	3113.
102.0	6.8	9256.	104.71	90212.	5186.	572125.	3394.	1000.	3156.
103.5	6.9	9430.	116.34	94923.	5262.	583535.	3441.	1000.	3200.
105.0	7.0	9600.	113.39	98657.	5336.	594357.	3488.	1000.	3244.
106.5	7.1	9759.	105.77	100596.	5405.	603891.	3536.	1000.	3290.
108.0	7.2	9913.	102.74	101654.	5473.	612742.	3585.	1000.	3335.
109.5	7.3	10066.	102.02	102544.	5541.	621008.	3634.	1000.	3382.
111.0	7.4	10216.	99.59	103020.	5608.	628895.	3683.	1000.	3428.
112.5	7.5	10366.	100.13	104281.	5675.	637082.	3733.	1000.	3474.
114.0	7.6	10520.	102.64	106718.	5743.	645856.	3782.	1000.	3521.
115.5	7.7	10673.	102.36	109210.	5811.	654664.	3832.	1000.	3568.
117.0	7.8	10825.	100.97	111327.	5877.	663507.	3882.	1000.	3614.
118.5	7.9	10975.	100.43	113286.	5943.	672374.	3931.	1000.	3661.
120.0	8.0	11126.	100.30	115048.	6009.	681249.	3982.	1000.	3708.
121.5	8.1	11277.	100.90	116705.	6075.	690181.	4033.	1000.	3757.
123.0	8.2	11429.	101.30	118259.	6142.	699125.	4084.	1000.	3805.
124.5	8.3	11584.	103.01	119308.	6211.	708063.	4135.	1000.	3853.
126.0	8.4	11740.	104.16	120016.	6281.	717008.	4187.	1000.	3901.
127.5	8.5	11893.	101.84	120318.	6349.	725972.	4237.	1000.	3949.
129.0	8.6	12045.	101.74	120677.	6417.	734878.	4287.	1000.	3996.
130.5	8.7	12199.	102.32	121142.	6486.	743706.	4336.	1000.	4041.
132.0	8.8	12349.	100.11	121796.	6554.	752055.	4378.	1000.	4081.
133.5	8.9	12488.	92.57	122768.	6617.	759382.	4407.	1000.	4109.
135.0	9.0	12629.	94.29	124211.	6680.	766786.	4438.	1000.	4138.
136.5	9.1	12779.	99.85	126537.	6749.	774623.	4473.	1000.	4172.
138.0	9.2	12941.	107.74	129998.	6823.	783205.	4518.	1000.	4214.
139.5	9.3	13115.	116.39	134084.	6903.	792936.	4577.	1000.	4270.
141.0	9.4	13314.	132.58	139248.	6995.	804768.	4663.	1000.	4350.
142.5	9.5	13505.	127.55	143636.	7082.	816504.	4748.	1000.	4429.
144.0	9.6	13665.	106.58	146973.	7152.	826074.	4806.	1000.	4483.
145.5	9.7	13812.	97.75	149372.	7215.	834624.	4850.	1000.	4525.
147.0	9.8	13951.	92.42	151156.	7274.	842495.	4887.	1000.	4560.
148.5	9.9	14082.	87.33	152744.	7330.	849650.	4919.	1000.	4591.

LINE LOAD (KIPS)

LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12					
2236	0	2479	2012	1312	516	255	180	144	126	127	149	194	287	664	1499	
2285	0	2512	2047	1344	521	254	179	142	124	125	147	192	286	671	1529	
2328	0	2551	2082	1373	526	253	178	140	121	123	145	191	286	680	1556	
2370	0	2602	2123	1400	528	251	177	137	119	121	143	190	285	692	1582	
2410	0	2673	2169	1425	529	249	175	135	117	119	141	189	285	704	1608	
2451	0	2768	2215	1447	530	247	173	133	115	117	139	188	285	718	1634	
2485	0	2853	2259	1468	529	245	170	131	113	115	137	187	286	731	1662	
2517	0	2911	2301	1493	531	243	168	129	111	113	136	186	285	739	1689	
2555	0	2956	2338	1518	533	241	166	127	110	112	134	185	285	747	1717	
2601	0	2992	2376	1545	538	240	165	125	108	110	132	184	284	752	1747	
2654	0	3027	2414	1571	546	240	163	123	106	108	130	182	283	755	1776	
2729	0	3076	2453	1597	556	240	162	122	104	106	128	181	281	757	1803	
2804	0	3126	2486	1623	567	240	161	120	103	104	126	180	279	758	1829	
2867	0	3175	2517	1647	577	239	160	119	101	103	124	179	278	760	1857	
2914	0	3224	2554	1670	585	239	158	117	100	101	122	178	276	763	1887	
2954	0	3271	2598	1691	590	238	157	115	98	100	120	177	276	769	1920	
2988	0	3318	2648	1709	592	236	155	114	97	98	119	176	276	777	1950	
3021	0	3364	2715	1725	591	234	153	112	95	97	118	174	276	787	1981	
3067	0	3410	2788	1747	592	232	151	110	94	95	116	173	276	798	2011	
3114	0	3457	2853	1770	592	230	149	108	92	94	115	172	276	808	2041	
3158	0	3505	2901	1798	595	229	147	107	91	93	113	171	276	818	2070	
3202	0	3554	2941	1828	599	227	146	105	90	91	112	170	276	830	2099	
3243	0	3603	2974	1862	605	227	144	104	88	90	110	168	275	840	2134	
3284	0	3653	3003	1896	612	226	143	102	87	89	109	166	274	849	2170	
3324	0	3702	3036	1926	619	225	142	101	86	87	107	165	273	858	2205	
3365	0	3752	3078	1951	627	224	140	100	85	86	106	163	273	867	2239	
3406	0	3801	3119	1974	634	224	139	99	84	85	104	161	272	876	2274	
3448	0	3851	3160	1997	642	223	138	97	82	84	103	160	271	886	2304	
3490	0	3901	3201	2020	649	222	136	96	81	83	102	158	270	897	2332	
3533	0	3951	3242	2042	656	221	135	95	80	82	100	157	270	908	2360	
3576	0	4002	3282	2066	663	220	134	94	79	81	99	156	269	920	2386	
3620	0	4054	3322	2090	669	219	132	92	78	80	98	154	268	933	2413	
3663	0	4105	3361	2118	675	218	131	91	78	79	97	153	268	948	2439	
3707	0	4156	3401	2151	681	217	130	90	77	78	96	152	267	962	2466	
3752	0	4207	3440	2181	685	216	128	89	76	77	94	150	266	979	2487	
3798	0	4257	3479	2211	689	215	127	88	75	76	93	149	266	996	2509	
3842	0	4305	3519	2243	694	214	126	87	74	75	92	148	266	1011	2534	
3887	0	4348	3560	2275	700	213	124	86	73	75	91	147	265	1025	2562	
3930	0	4377	3602	2305	707	212	123	85	73	74	90	145	264	1037	2594	
3973	0	4407	3645	2334	715	212	122	84	72	73	89	144	263	1047	2629	
4015	0	4443	3689	2363	725	211	121	83	71	72	88	142	261	1055	2671	
4056	0	4487	3734	2393	733	211	120	82	71	72	87	141	260	1061	2719	
4098	0	4547	3779	2421	741	211	119	81	70	71	86	139	258	1067	2769	
4140	0	4633	3824	2449	748	211	118	80	69	70	85	138	256	1074	2820	
4183	0	4718	3868	2473	754	210	117	80	69	70	84	136	255	1084	2861	
4225	0	4775	3912	2492	759	210	116	79	68	69	83	135	254	1093	2895	
4267	0	4820	3957	2514	765	209	115	78	68	69	82	134	253	1102	2924	
4309	0	4857	4001	2536	770	209	114	77	67	68	81	132	252	1114	2950	
4347	0	4889	4045	2561	775	208	113	77	67	68	80	131	251	1127	2974	

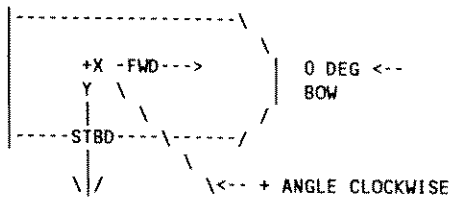
STARTING DISPLACEMENTS : SURGE(FT) = -5.109 SWAY(FT) = -3.375 YAW(DEG) = .499

DEEPWATER, ARAMID MOORING LINE JIP
CASE T3A16t tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	11.3	33.8	56.3	78.8	101.3	123.8	146.3	168.8	-168.8	-146.3	-123.8	-101.3	-78.8	-56.3	-33.8	-11.3
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	442.5	442.5	442.5	442.5	442.5	442.5	442.5	442.5	442.5	442.5	442.5	442.5	442.5	442.5	442.5	442.5

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	3000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	3000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	65.24
LINE B.S. (KIPS)	3540.0
AREA (SQ IN)	23.75
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	65.24
LINE B.S. (KIPS)	3540.0
AREA (SQ IN)	23.75
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-200.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	150.0
WEIGHT IN WATER (LB/FT)	65.24
LINE B.S. (KIPS)	3540.0
AREA (SQ IN)	23.75
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	ARAMID
LINE SIZE (IN)	5.940"
LINE LENGTH (FT)	2610.0
WEIGHT IN WATER (LB/FT)	2.17
LINE B.S. (KIPS)	3561.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	142000.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.5"
LINE LENGTH (FT)	250.0
WEIGHT IN WATER (LB/FT)	250.00
LINE B.S. (KIPS)	3038.0
AREA (SQ IN)	23.75
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	1800.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.25 "
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	.01
LINE B.S. (KIPS)	9999.0
AREA (SQ IN)	1000.00
APP.MOD. OF ELAS.(KSI)	99999.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

= 3.43 Kips

VESSEL DISP. 13 (FT)	14	15 (% WD)	RESTORING FORCE ON VESSEL 16 (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)
.0		.0	0.	.00	0.	4161.	0.	443.	1000.	359.
4.5		.2	121.	26.82	0.	4166.	13846.	462.	1000.	374.
9.0		.3	233.	24.97	0.	4181.	26498.	480.	1000.	389.
13.5		.4	345.	24.77	0.	4204.	39121.	502.	1000.	407.
18.0		.6	477.	29.38	0.	4247.	54932.	534.	1000.	433.
22.5		.8	625.	32.94	0.	4304.	73133.	567.	1000.	460.
27.0		.9	765.	31.09	0.	4352.	89650.	595.	1000.	483.
31.5		1.0	936.	38.04	0.	4427.	109739.	643.	1000.	522.
36.0		1.2	1141.	45.44	-1.	4533.	134842.	700.	1000.	569.
40.5		1.4	1333.	42.74	0.	4635.	159157.	748.	1000.	608.
45.0		1.5	1509.	39.20	0.	4730.	181002.	788.	1000.	641.
49.5		1.6	1714.	45.46	0.	4851.	205599.	855.	1000.	696.
54.0		1.8	1922.	46.36	0.	4981.	229682.	921.	1000.	749.
58.5		2.0	2201.	61.80	-1.	5172.	263824.	1006.	1000.	819.
63.0		2.1	2501.	66.79	0.	5380.	300642.	1109.	1000.	903.
67.5		2.3	2786.	63.42	-1.	5577.	335954.	1199.	1000.	976.
72.0		2.4	3110.	71.91	0.	5807.	378330.	1293.	1000.	1053.
76.5		2.5	3418.	68.36	0.	6021.	417535.	1398.	1000.	1139.
81.0		2.7	3731.	69.61	0.	6248.	457837.	1483.	1000.	1209.
85.5		2.8	4100.	82.00	0.	6524.	503499.	1605.	1000.	1309.
90.0		3.0	4445.	76.61	0.	6784.	544878.	1705.	1000.	1390.
94.5		3.2	4808.	80.83	0.	7047.	590636.	1838.	1000.	1500.
99.0		3.3	5176.	81.76	0.	7326.	636171.	1942.	1000.	1585.
103.5		3.5	5480.	67.58	0.	7560.	670017.	2006.	1000.	1638.
108.0		3.6	5961.	106.83	0.	7930.	728794.	2168.	1000.	1771.
112.5		3.8	6360.	88.56	-1.	8229.	778518.	2289.	1000.	1869.
117.0		3.9	6761.	89.24	0.	8537.	826116.	2416.	1000.	1974.
121.5		4.1	7109.	77.30	0.	8795.	864498.	2546.	1000.	2080.
126.0		4.2	7585.	105.81	1.	9175.	925105.	2646.	1000.	2163.
130.5		4.3	7998.	91.61	0.	9494.	971800.	2787.	1000.	2279.
135.0		4.5	8382.	85.35	0.	9789.	1018447.	2895.	1000.	2368.
139.5		4.7	8789.	90.60	0.	10104.	1067618.	3012.	1000.	2465.
144.0		4.8	9276.	108.15	0.	10488.	1125733.	3168.	0.	2593.
148.5		4.9	9668.	87.11	0.	10799.	1168531.	3285.	0.	2690.
153.0		5.1	9787.	26.38	0.	10902.	1176135.	3204.	0.	2627.
157.5		5.3	10040.	56.40	0.	11107.	1200083.	3232.	0.	2652.
162.0		5.4	10329.	64.09	0.	11346.	1227258.	3261.	0.	2678.
166.5		5.6	10594.	58.92	0.	11559.	1253020.	3291.	0.	2706.
171.0		5.7	10989.	87.80	-1.	11883.	1300538.	3322.	0.	2733.
175.5		5.8	11131.	31.59	0.	11981.	1308424.	3350.	0.	2759.
180.0		6.0	11166.	7.68	0.	11987.	1297981.	3375.	0.	2782.
184.5		6.2	11390.	49.90	0.	12195.	1306429.	3396.	0.	2801.
189.0		6.3	11492.	22.52	0.	12251.	1314000.	3411.	0.	2814.
193.5		6.4	11634.	31.52	0.	12368.	1320598.	3419.	0.	2821.
198.0		6.6	11760.	28.17	0.	12477.	1325738.	3418.	0.	2821.
202.5		6.8	11871.	24.57	0.	12580.	1329052.	3408.	0.	2811.
207.0		6.9	11958.	19.46	0.	12672.	1330167.	3386.	0.	2791.

LINE LOAD (KIPS)

VESSEL DISP. (FT)	LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12				
.0	443	443	443	443	443	443	443	443	443	443	443	443	443	443	443	443
4.5	459	462	462	459	453	447	440	433	429	427	427	429	433	440	447	453
9.0	475	480	480	475	464	450	436	425	417	413	413	417	425	436	450	464
13.5	491	502	502	491	475	454	433	417	407	402	402	407	417	433	454	475
18.0	512	534	534	512	486	458	430	410	397	391	391	397	410	430	458	486
22.5	543	567	567	543	498	462	427	404	388	379	379	388	404	427	462	498
27.0	569	595	595	569	513	466	424	397	378	366	366	378	397	424	466	513
31.5	593	643	643	593	533	470	421	391	367	355	355	367	391	421	470	533
36.0	632	700	700	632	554	474	419	385	357	344	344	357	385	419	474	554
40.5	679	748	748	679	570	477	416	378	348	336	336	348	378	416	477	570
45.0	726	788	788	726	585	481	414	371	340	329	329	340	371	414	481	585
49.5	761	855	855	761	606	485	412	364	333	323	323	333	364	412	485	606
54.0	797	921	921	797	634	489	410	357	328	316	316	328	357	410	489	634
58.5	859	1006	1006	859	666	494	407	351	323	310	310	323	351	407	494	666
63.0	915	1109	1109	915	700	499	405	345	317	304	304	317	345	405	499	700
67.5	980	1199	1199	980	730	504	403	340	312	299	299	312	340	403	504	730
72.0	1071	1293	1293	1071	753	510	401	336	307	293	293	307	336	401	510	753
76.5	1139	1398	1398	1139	776	516	399	332	302	288	288	302	332	399	516	776
81.0	1232	1483	1483	1232	802	524	397	328	297	283	283	297	328	397	524	802
85.5	1313	1605	1605	1313	844	532	395	325	293	278	278	293	325	395	532	844
90.0	1399	1705	1705	1399	892	540	393	322	288	273	273	288	322	393	540	892
94.5	1470	1838	1838	1470	922	548	391	318	284	269	269	284	318	391	548	922
99.0	1570	1942	1942	1570	967	556	389	314	280	264	264	280	314	389	556	967
103.5	1660	2006	2006	1660	1027	562	387	311	276	260	260	276	311	387	562	1027
108.0	1762	2168	2168	1762	1089	567	385	308	272	256	256	272	308	385	567	1089
112.5	1867	2289	2289	1867	1132	573	382	305	268	253	253	268	305	382	573	1132
117.0	1956	2416	2416	1956	1191	579	380	301	265	249	249	265	301	380	579	1191
121.5	2002	2546	2546	2002	1248	585	378	298	261	246	246	261	298	378	585	1248
126.0	2178	2646	2646	2178	1306	592	376	295	258	243	243	258	295	376	592	1306
130.5	2251	2787	2787	2251	1374	600	374	292	255	240	240	255	292	374	600	1374
135.0	2357	2895	2895	2357	1420	610	371	289	252	237	237	252	289	371	610	1420
139.5	2467	3012	3012	2467	1470	621	369	287	249	235	235	249	287	369	621	1470
144.0	2578	3168	3168	2578	1536	633	367	284	246	232	232	246	284	367	633	1536
148.5	2660	3285	3285	2660	1608	645	365	281	243	229	229	243	281	365	645	1608
153.0	2783	3204	3204	2783	1664	658	363	279	241	227	227	241	279	363	658	1664
157.5	2869	3232	3232	2869	1732	671	361	276	239	224	224	239	276	361	671	1732
162.0	2970	3261	3261	2970	1813	684	359	273	236	222	222	236	273	359	684	1813
166.5	3064	3291	3291	3064	1877	698	357	271	234	219	219	234	271	357	698	1877
171.0	3256	3322	3322	3256	1938	711	355	269	232	217	217	232	269	355	711	1938
175.5	3271	3350	3350	3271	1988	723	354	266	230	215	215	230	266	354	723	1988
180.0	3207	3375	3375	3207	2045	733	352	264	227	212	212	227	264	352	733	2045
184.5	3231	3396	3396	3231	2186	743	350	262	225	210	210	225	262	350	743	2186
189.0	3256	3411	3411	3256	2205	752	348	259	223	208	208	223	259	348	752	2205
193.5	3282	3419	3419	3282	2279	762	347	257	221	206	206	221	257	347	762	2279
198.0	3308	3418	3418	3308	2352	771	345	255	219	204	204	219	255	345	771	2352
202.5	3333	3408	3408	3333	2429	781	344	253	217	201	201	217	253	344	781	2429
207.0	3357	3386	3386	3357	2505	791	342	251	215	199	199	215	251	342	791	2505

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT 5236. FT

HF = 2301 HLOA = 1390
LL = 1040 VLOA
VLL = 987.38 DLL = 1705

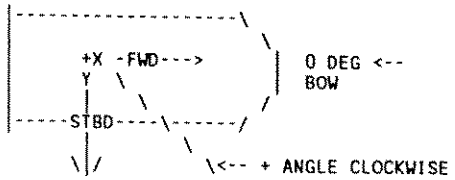
VLB = 1057
LB = 1746 2.04

DEEPWATER, ARAMID MOORING LINE JIP
CASE T3A16t tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. 13 (FT)	14 (% WD)	RESTORING FORCE ON VESSEL 15 16 (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	-1.	.00	-14.	3923.	140861.	523.	1000.	424.	523	0	510	487	475	445	420	403	400	395	396	403
4.5	.2	114.	25.57	195.	3956.	153168.	559.	1000.	453.	559	0	541	500	479	442	413	394	389	384	386	396
9.0	.3	230.	25.70	2119.	3986.	165102.	585.	1000.	475.	585	0	567	516	483	439	406	384	377	371	376	390
13.5	.4	359.	28.64	3114.	4027.	178948.	626.	1000.	509.	626	0	592	538	488	436	400	374	365	359	365	383
18.0	.6	504.	32.29	2676.	4085.	195230.	682.	1000.	554.	682	0	629	558	492	433	394	363	353	348	355	376
22.5	.8	657.	34.04	3244.	4156.	212100.	735.	1000.	597.	735	0	678	573	498	430	388	354	343	339	346	369
27.0	.9	804.	32.62	5744.	4230.	227846.	774.	1000.	629.	774	0	727	591	504	428	382	345	335	331	338	361
31.5	1.0	952.	32.99	7531.	4311.	243974.	827.	1000.	672.	827	0	763	618	512	426	376	338	328	325	332	354
36.0	1.2	1115.	36.19	7033.	4409.	262584.	903.	1000.	735.	903	0	800	649	519	424	369	332	322	319	326	348
40.5	1.4	1289.	38.59	8009.	4517.	282634.	972.	1000.	791.	972	0	860	678	524	421	361	326	316	313	321	343
45.0	1.5	1501.	47.19	7131.	4661.	307548.	1078.	1000.	877.	1078	0	918	713	534	419	356	321	310	306	316	338
49.5	1.6	1711.	46.60	9858.	4805.	331335.	1156.	1000.	941.	1156	0	990	743	545	418	350	316	304	301	310	333
54.0	1.8	1940.	50.93	9668.	4965.	358056.	1257.	1000.	1024.	1257	0	1082	766	553	415	345	311	298	295	305	329
58.5	2.0	2180.	53.35	10681.	5134.	385398.	1367.	1000.	1114.	1367	0	1156	796	564	415	341	307	293	290	300	325
63.0	2.1	2421.	53.44	16940.	5308.	412563.	1447.	1000.	1180.	1447	0	1247	836	570	413	336	302	288	284	295	322
67.5	2.3	2675.	56.60	19714.	5494.	442447.	1557.	1000.	1270.	1557	0	1337	881	574	410	332	297	283	280	291	318
72.0	2.4	2918.	54.02	22312.	5668.	470166.	1663.	1000.	1356.	1663	0	1416	919	582	409	329	293	278	275	286	315
76.5	2.5	3195.	61.47	25871.	5874.	501934.	1784.	1000.	1455.	1784	0	1498	967	592	408	326	289	273	270	282	311
81.0	2.7	3478.	62.94	30196.	6094.	535794.	1898.	1000.	1549.	1898	0	1601	1024	598	406	322	284	269	266	278	307
85.5	2.8	3731.	56.07	36816.	6288.	565044.	1986.	1000.	1621.	1986	0	1682	1084	606	403	319	280	264	261	274	304
90.0	3.0	4099.	81.76	34803.	6571.	608875.	2186.	1000.	1784.	2186	0	1801	1133	620	402	316	276	260	257	270	301
94.5	3.2	4337.	52.91	44998.	6761.	636041.	2237.	1000.	1827.	2237	0	1895	1192	631	400	312	272	256	254	266	298
99.0	3.3	4651.	69.85	51234.	7014.	672472.	2358.	1000.	1926.	2358	0	1993	1256	649	399	310	269	253	250	262	294
103.5	3.5	4990.	75.27	57360.	7289.	712570.	2487.	1000.	2032.	2487	0	2124	1319	661	397	306	265	249	247	259	291
108.0	3.6	5261.	60.20	61279.	7502.	743750.	2605.	1000.	2129.	2605	0	2189	1384	676	396	303	262	246	244	255	288
112.5	3.8	5550.	64.38	64742.	7733.	777621.	2719.	1000.	2223.	2719	0	2298	1434	693	395	300	258	243	241	252	285
117.0	3.9	5871.	71.35	72156.	7992.	814203.	2835.	1000.	2319.	2835	0	2412	1493	709	393	298	255	240	238	249	282
121.5	4.1	6197.	72.36	79666.	8257.	852191.	2956.	1000.	2419.	2956	0	2522	1565	722	392	295	252	238	235	247	280
126.0	4.2	6501.	67.58	88070.	8505.	887153.	3063.	1488.	2507.	3063	0	2619	1638	736	391	292	250	235	233	244	277
130.5	4.3	6885.	85.21	87711.	8806.	932354.	3268.	0.	2674.	3268	0	2733	1702	748	390	290	247	232	230	241	274
135.0	4.5	7094.	46.50	108124.	8980.	954006.	3247.	0.	2660.	3247	0	2829	1774	754	387	287	244	230	227	239	271
139.5	4.7	7292.	43.99	127449.	9147.	974919.	3218.	0.	2640.	3218	0	2932	1841	760	384	284	242	227	225	237	269
144.0	4.8	7549.	57.10	143738.	9360.	1002537.	3246.	0.	2665.	3246	0	3035	1908	772	383	281	239	224	222	234	267
148.5	4.9	7803.	56.45	157746.	9567.	1030575.	3277.	0.	2693.	3277	0	3161	1966	779	380	278	237	222	220	232	264
153.0	5.1	8036.	51.76	168248.	9749.	1054678.	3307.	0.	2720.	3307	0	3287	1989	793	379	276	235	219	217	230	262
157.5	5.3	8223.	41.61	187538.	9927.	1076619.	3336.	0.	2746.	3336	0	3217	2178	807	377	274	233	217	215	228	259
162.0	5.4	8421.	44.08	199647.	10089.	1093138.	3361.	0.	2769.	3361	0	3227	2219	858	381	273	231	215	213	225	256
166.5	5.6	8584.	36.25	208739.	10226.	1110552.	3385.	0.	2790.	3385	0	3252	2293	878	379	271	229	213	210	223	254
171.0	5.7	8652.	15.00	207067.	10278.	1120276.	3404.	0.	2808.	3404	0	3275	2347	882	374	267	226	210	208	221	253
175.5	5.8	8765.	25.09	213537.	10364.	1132661.	3416.	0.	2818.	3416	0	3299	2408	889	370	265	224	208	206	219	251
180.0	6.0	8943.	39.59	226724.	10540.	1153752.	3420.	0.	2822.	3420	0	3328	2509	915	371	263	222	206	204	217	249
184.5	6.2	9040.	21.58	235230.	10618.	1164561.	3415.	0.	2817.	3415	0	3350	2570	919	368	260	220	204	202	215	247
189.0	6.3	9142.	22.62	244802.	10710.	1175856.	3399.	0.	2803.	3399	0	3373	2628	936	366	258	218	202	200	213	245
193.5	6.4	9242.	22.24	256573.	10813.	1187895.	3391.	0.	2796.	3372	0	3391	2700	954	364	256	216	200	198	211	244

LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
523	0	510	487	475	445	420	403	400	395	396	403	425	445	468	487
559	0	541	500	479	442	413	394	389	384	386	396	422	448	478	506
585	0	567	516	483	439	406	384	377	371	376	390	419	452	489	534
626	0	592	538	488	436	400	374	365	359	365	383	416	455	501	563
682	0	629	558	492	433	394	363	353	348	355	376	414	459	517	585
735	0	678	573	498	430	388	354	343	339	346	369	411	462	537	618
774	0	727	591	504	428	382	345	335	331	338	361	408	465	556	662
827	0	763	618	512	426	376	338	328	325	332	354	405	468	570	709
903	0	800	649	519	424	369	332	322	319	326	348	403	472	585	747
972	0	860	678	524	421	361	326	316	313	321	343	401	477	608	783
1078	0	918	713	534	419	356	321	310	306	316	338	399	480	635	831
1156	0	990	743	545	418	350	316	304	301	310	333	396	482	663	896
1257	0	1082	766	553	415	345	311	298	295	305	329	394	486	696	944
1367	0	1156	796	564	415	341	307	293	290	300	325	390	487	720	1018
1447	0	1247	836	570	413	336	302	288	284	295	322	387	491	744	1107
1557	0	1337	881	574	410	332	297	283	280	291	318	386	497	769	1179
1663	0	1416	919	582	409	329	293	278	275	286	315	383	500	790	1258
1784	0	1498	967	592	408	326	289	273	270	282	311	379	503	818	1352
1898	0	1601	1024	598	406	322	284	269	266	278	307	377	509	868	1424
1986	0	1682	1084	606	403	319	280	264	261	274	304	375	517	909	1506
2186	0	1801	1133	620	402	316	276	260	257	270	301	372	522	937	1606
2237	0	1895	1192	631	400	312	272	256	254	266	298	370	530	991	1688
2358	0	1993	1256	649	399	310	269	253	250	262	294	366	534	1044	1794
2487	0	2124	1319	661	397	306	265	249	247	259	291	364	543	1105	1891
2605	0	2189	1384	676	396	303	262	246	244	255	288	362	550	1142	1980
2719	0	2298	1434	693	395	300	258	243	241	252	285	359	555	1201	2052
2835	0	2412	1493	709	393	298	255	240	238	249	282	356	560	1251	2167
2956	0	2522	1565	722	392	295	252	238	235	247	280	354	566	1310	2269
3063	0	2619	1638	736	391	292	250	235	233	244	277	352	569	1371	2370
3268	0	2733	1702	748	390	290	247	232	230	241	274	349	573	1411	2474
3247	0	2829	1774	754	387	287	244	230	227	239	271	348	581	1466	2589
3218	0	2932	1841	760	384	284	242	227	225	237	269	347	591	1540	2679
3246	0	3035	1908	772	383	281	239	224	222	234	267	344	595	1604	2795
3277	0	3161	1966	779	380	278	237	222	220	232	264	343	608	1666	2889
3307	0	3287	1989	793	379	276	235	219	217	230	262	341	614	1722	2978
3336	0	3217	2178	807	377	274	233	217	215	228	259	339	623	1801	3067
3361	0	3227	2219	858	381	273	231	215	213	225	256	335	615	1832	3227
3385	0	3252	2293	878	379	271	229	213	210	223	254	334	626	1893	3282
3404	0	3275	2347	882	374	267	226	210	208	221	253	334	648	1972	3205
3416	0	3299	2408	889	370	265	224	208	206	219	251	334	670	2002	3231
3420	0	3328	2509	915	371	263	222	206	204	217	249	331	670	2150	3252
3415	0	3350	2570	919	368	260	220	204	202	215	247	331	693	2179	3281
3399	0	3373	2628	936	366	258	218	202	200	213	245	329	703	2246	3306
3372	0	3391	2700	954	364	256	216	200	198	211	244	329	718	2322	3332

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT 5239. FT

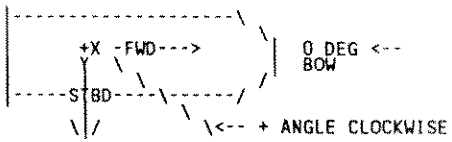
STARTING DISPLACEMENTS : SURGE(FT) = -13.500 SWAY(FT) = -9.188 YAW(DEG) = .692

DEEPWATER, ARAMID MOORING LINE JIP
CASE 6000 FT 10% 100 KIP BUOY
SPRING BUOY ANALYSIS

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT	-	.00
LINE ATTACHMENT W.R.T. WATER LINE	-	-62.0 FT
ALLOWABLE LINE LENGTH ON BOTTOM	-	90.0 FT
DIRECTION OF VESSEL TRANSLATION	-	45.0 DEG

CATENARY OPTIMIZATION - NO
INITIAL TENSION OPTIMIZATION - NO
SLACK TENSION OPTIMIZATION - NO
DAMAGED CONDITION - NO
CALCULATE ENVELOPES - NO
PLOT ENVELOPES - NO



T6A12

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	22.5	45.0	67.5	112.5	135.0	157.5	-157.5	-135.0	-112.5	-67.5	-45.0	-22.5
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	409.7	409.7	409.7	409.7	409.7	409.7	409.7	409.7	409.7	409.7	409.7	409.7

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	6000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	6000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.875"
LINE LENGTH (FT)	1500.0
WEIGHT IN WATER (LB/FT)	73.28
LINE B.S. (KIPS)	4075.0
AREA (SQ IN)	27.11
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE MATERIAL	WIRE
LINE SIZE (IN)	5.875"
LINE LENGTH (FT)	1500.0
WEIGHT IN WATER (LB/FT)	73.28
LINE B.S. (KIPS)	4075.0
AREA (SQ IN)	27.11
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-70.0

LINE MATERIAL	WIRE
LINE SIZE (IN)	5.875"
LINE LENGTH (FT)	150.0
WEIGHT IN WATER (LB/FT)	73.28
LINE B.S. (KIPS)	4075.0
AREA (SQ IN)	27.11
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	ARAMID
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	5610.0
WEIGHT IN WATER (LB/FT)	2.19
LINE B.S. (KIPS)	3641.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	146000.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.5 "
LINE LENGTH (FT)	550.0
WEIGHT IN WATER (LB/FT)	250.01
LINE B.S. (KIPS)	3038.0
AREA (SQ IN)	23.75
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	1800.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.55 "
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	.01
LINE B.S. (KIPS)	9999.0
AREA (SQ IN)	1000.00
APP.MOD. OF ELAS.(KSI)	99999.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	4152.	0.	409.	1000.	219.	409	409	409	409	409	409	409	409	409	409	409	409
9.0	.2	98.	11.04	0.	4165.	14756.	433.	1000.	237.	431	433	431	417	409	402	393	392	393	402	406	417
18.0	.3	202.		0.	4195.	29955.	461.	1000.	260.	457	461	457	427	409	396	380	378	380	396	409	427
27.0	.4	310.	11.96	0.	4233.	45978.	492.	1000.	284.	485	492	485	437	409	380	367	364	367	390	406	437
36.0	.6	419.	12.14	0.	4275.	62293.	524.	1000.	311.	514	527	514	448	409	382	355	351	355	389	406	448
45.0	.8	574.	17.22	0.	4327.	82208.	560.	1000.	352.	566	579	566	459	410	389	343	339	343	389	410	459
54.0	.9	678.	11.57	0.	4408.	101666.	615.	1000.	380.	582	615	582	471	410	397	333	329	333	389	410	459
63.0	1.0	874.	21.83	0.	4594.	132382.	706.	1000.	450.	652	706	652	483	410	414	326	322	326	389	410	470
72.0	1.2	1054.	20.07	0.	4673.	161227.	757.	1000.	489.	734	776	734	495	410	430	317	312	317	389	410	483
81.0	1.4	1238.	19.88	0.	4805.	188044.	858.	1000.	566.	787	828	787	506	410	438	308	304	308	389	410	495
90.0	1.5	1445.	23.41	0.	4973.	221955.	948.	1000.	638.	868	928	868	521	410	454	303	299	303	389	410	506
99.0	1.6	1701.	28.40	0.	5188.	262039.	1044.	1000.	709.	975	1044	975	543	411	469	298	293	298	389	411	521
108.0	1.8	1942.	26.80	0.	5392.	298859.	1157.	1000.	796.	1060	1157	1060	568	411	489	292	288	292	389	411	543
117.0	2.0	2211.	29.86	0.	5610.	338871.	1250.	1000.	877.	1162	1260	1162	580	411	500	288	283	288	389	411	557
126.0	2.1	2474.	29.27	0.	5825.	377971.	1330.	1000.	952.	1280	1388	1280	590	412	509	283	278	283	389	412	570
135.0	2.3	2743.	29.87	0.	6046.	419260.	1398.	1000.	1022.	1376	1530	1376	605	412	515	278	274	278	389	412	580
144.0	2.5	2985.	27.00	0.	6269.	463293.	1472.	1000.	1095.	1513	1677	1513	636	413	531	274	270	274	389	413	590
153.0	2.5	3300.	35.03	0.	6246.	510731.	1787.	1000.	1276.	1582	1747	1582	672	413	557	275	270	275	389	413	602
162.0	2.7	3599.	33.20	0.	6851.	561740.	1898.	1000.	1362.	1731	1889	1731	710	413	580	268	263	268	389	413	636
171.0	2.8	3923.	36.52	0.	7108.	606480.	2021.	1000.	1455.	1850	2021	1850	736	414	597	265	260	265	389	414	672
180.0	3.0	4227.	30.52	0.	7345.	649629.	5150.	1000.	1555.	1960	2150	1960	750	414	614	262	258	262	389	414	710
189.0	3.1	4494.	33.03	0.	7610.	694801.	5284.	1000.	1658.	2076	2284	2076	769	414	631	258	255	258	389	414	738
198.0	3.3	4785.	32.32	0.	7888.	737191.	5383.	1000.	1734.	2199	2383	2199	829	415	649	257	253	257	389	415	750
207.0	3.5	5084.	33.50	0.	8159.	781178.	5538.	1000.	1853.	2305	2538	2305	860	416	667	255	251	255	389	415	779
216.0	3.6	5350.	30.51	0.	8380.	822847.	2647.	1000.	1937.	2417	2627	2417	879	416	685	253	249	253	389	416	829
225.0	3.8	5701.	36.00	0.	8725.	874850.	2787.	1000.	2045.	2559	2787	2559	899	416	705	253	248	253	389	416	860
234.0	3.8	5989.	31.88	0.	9005.	914233.	2910.	1075.	2140.	2656	2910	2656	661	416	703	251	246	251	389	417	879
243.0	4.1	6302.	34.83	0.	9286.	961552.	3042.	0.	2242.	2788	3042	2788	1021	418	699	248	244	248	389	418	929
252.0	4.2	6616.	34.83	-1.	6488.	991537.	3056.	0.	2335.	2905	3056	2905	1061	419	697	246	242	246	389	419	1021
261.0	4.3	6742.	24.07	0.	9698.	1022446.	3061.	385.	2262.	3032	3061	3032	1103	420	695	242	238	242	395	420	1103

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT 8005. FT

STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

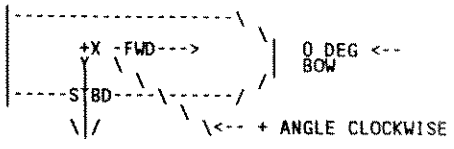
DEEPWATER, ARAMID MOORING LINE JIP
CASE 6000 FT 10% 100 KIP BUOY
SPRING BUOY ANALYSIS

PROBLEM NUMBER - 2

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG

CATENARY OPTIMIZATION - NO
INITIAL TENSION OPTIMIZATION - NO
SLACK TENSION OPTIMIZATION - NO
DAMAGED CONDITION - YES
CALCULATE ENVELOPES - NO
PLOT ENVELOPES - NO



VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
0	0	1.	.00	0.	3825.	-32617.	476.	1000.	272.	476	0	476	434	409	391	371	368	371	391	409	434
9.0	.2	83.	9.09	0.	3843.	-30724.	504.	1000.	282.	504	0	504	475	449	429	409	386	358	354	358	386
18.0	.3	186.	14.3	0.	3885.	-5037.	548.	1000.	328.	548	0	548	459	410	381	346	342	342	381	410	456
27.0	.4	277.	10.13	0.	3919.	8434.	585.	1000.	357.	585	0	585	467	410	375	335	330	335	375	410	467
36.0	.6	381.	11.53	0.	3966.	24098.	632.	1000.	393.	632	0	632	479	410	365	325	320	325	370	410	479
45.0	.8	533.	17.18	0.	4092.	48637.	718.	1000.	459.	718	0	718	492	410	360	316	312	316	365	410	492
54.0	.8	633.	9.68	0.	4076.	61403.	760.	1000.	492.	760	0	760	502	410	360	316	312	316	365	410	502
63.0	1.0	686.	18.07	0.	4162.	87247.	856.	1000.	565.	856	0	856	512	410	355	310	306	310	360	410	505
72.0	1.2	924.	15.25	0.	4253.	108228.	932.	1000.	625.	932	0	932	535	411	355	304	300	304	355	410	512
81.0	1.4	1092.	18.25	0.	4363.	133562.	1028.	1000.	697.	1028	0	1028	561	411	350	299	295	299	350	411	535
90.0	1.5	1215.	13.88	0.	4504.	154396.	1117.	1000.	762.	1117	0	1117	578	411	346	294	289	294	346	411	561
99.0	1.6	1431.	20.32	0.	4625.	174220.	1233.	1000.	852.	1233	0	1233	587	411	341	289	284	289	342	411	578
108.0	1.8	1629.	20.65	0.	4773.	197492.	1358.	1000.	945.	1358	0	1358	599	412	332	280	275	280	332	412	587
117.0	2.0	1827.	22.08	0.	4938.	216975.	1490.	1000.	1042.	1490	0	1490	626	412	328	278	271	278	328	412	599
126.0	2.1	2036.	24.19	0.	5139.	233414.	1638.	1000.	1162.	1638	0	1638	662	413	327	278	271	278	328	413	626
135.0	2.3	2270.	27.08	0.	5372.	253414.	1819.	1000.	1301.	1819	0	1819	699	413	327	276	267	272	324	413	662
144.0	2.5	2542.	6.52	0.	2360.	290869.	1927.	1000.	1384.	1927	0	1927	725	414	317	266	261	266	317	413	699
153.0	2.5	2417.	29.28	0.	5614.	295199.	2042.	1000.	1472.	2042	0	2042	760	414	313	263	258	263	313	414	725
162.0	2.5	2590.	19.26	0.	5665.	337107.	2163.	1000.	1565.	2163	0	2163	814	415	310	260	256	260	310	414	760
171.0	2.6	2777.	20.71	0.	5812.	364456.	2287.	1000.	1660.	2287	0	2287	852	415	307	258	253	257	307	415	814
180.0	2.8	2988.	23.71	0.	5979.	393038.	2376.	1000.	1728.	2376	0	2376	885	416	305	253	249	253	305	415	852
189.0	3.0	3198.	23.22	0.	6160.	423139.	2518.	1000.	1838.	2518	0	2518	913	416	303	251	247	251	303	416	885
198.0	3.2	3428.	25.44	0.	6396.	453887.	2616.	1000.	1914.	2616	0	2616	974	417	302	249	245	249	302	416	913
207.0	3.3	3589.	16.55	0.	6529.	472887.	2766.	1000.	2029.	2766	0	2766	1016	418	300	247	243	247	300	417	974
216.0	3.5	3782.	21.33	0.	6727.	476021.	2880.	1000.	2116.	2880	0	2880	1041	418	299	245	241	245	299	418	1016
225.0	3.8	4023.	26.97	0.	6926.	511335.	2997.	1000.	2207.	2997	0	2997	1096	420	297	243	238	243	297	418	1041
234.0	3.8	4212.	20.71	0.	7128.	535428.	3059.	1000.	2253.	3059	0	3059	1121	421	295	241	236	241	295	420	1096
243.0	3.9	4424.	23.97	0.	7369.	572325.	3051.	1000.	2247.	3051	0	3051	1167	421	293	239	235	239	293	421	1121
252.0	4.1	4541.	13.63	0.	7585.	600285.	3091.	1000.	2285.	3091	0	3091	1229	422	290	237	233	237	290	422	1229
261.0	4.3	4680.	15.59	-1.	7688.	629122.		157.	2207.												
			9.97	0.	7764.	642073.		0.	2256.												
				0.	7847.	650825.		270.	2553.												
								120.	2285.												

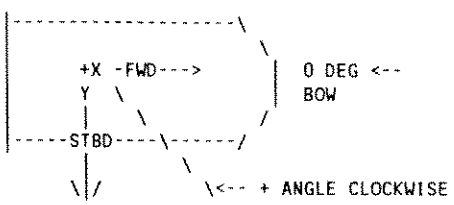
EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT 8008. FT

STARTING DISPLACEMENTS : SURGE(FT) = -17.250 SWAY(FT) = -17.250 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE t6S16+
6000 ft 10% 400 kip buoy

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT	-	.00
LINE ATTACHMENT W.R.T. WATER LINE	-	-62.0 FT
ALLOWABLE LINE LENGTH ON BOTTOM	-	90.0 FT
DIRECTION OF VESSEL TRANSLATION	-	45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

17 T6S16

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	11.3	33.8	56.3	78.8	101.3	123.8	146.3	168.8	-168.8	-146.3	-123.8	-101.3	-78.8	-56.3	-33.8	-11.3
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	584.3	584.3	584.3	584.3	584.3	584.3	584.3	584.3	584.3	584.3	584.3	584.3	584.3	584.3	584.3	584.3

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	6000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	6000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.250"
LINE LENGTH (FT)	1500.0
WEIGHT IN WATER (LB/FT)	59.44
LINE B.S. (KIPS)	3226.0
AREA (SQ IN)	21.65
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.250"
LINE LENGTH (FT)	1500.0
WEIGHT IN WATER (LB/FT)	59.44
LINE B.S. (KIPS)	3226.0
AREA (SQ IN)	21.65
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-400.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	150.0
WEIGHT IN WATER (LB/FT)	65.24
LINE B.S. (KIPS)	3540.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	5610.0
WEIGHT IN WATER (LB/FT)	65.24
LINE B.S. (KIPS)	3540.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.5 "
LINE LENGTH (FT)	250.0
WEIGHT IN WATER (LB/FT)	250.01
LINE B.S. (KIPS)	3038.0
AREA (SQ IN)	23.75
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	1800.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.25 "
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	.01
LINE B.S. (KIPS)	9999.0
AREA (SQ IN)	1000.00
APP.MOD. OF ELAS.(KSI)	99999.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

VESSEL DISP. (FT) 13	(% WD) 14	RESTORING FORCE ON VESSEL (KIPS) 15	INCREMENT STIFFNESS (KIPS/FT) 16	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	6446.	0.	584.	1000.	423.	584	584	584	584	584	584	584	584	584	584	584	584
9.0	.2	133.	14.77	0.	6450.	17917.	605.	1000.	439.	602	605	605	602	596	588	580	573	567	565	5	567
18.0	.3	264.	14.59	0.	6460.	35684.	627.	1000.	457.	621	627	627	621	608	593	576	562	552	546	546	552
27.0	.4	397.	14.79	0.	6480.	53796.	652.	1000.	476.	641	652	652	641	621	597	572	552	537	530	530	537
36.0	.6	535.	15.34	0.	6513.	72693.	680.	1000.	497.	663	680	680	663	634	601	569	542	524	514	514	524
45.0	.8	680.	16.03	0.	6560.	92597.	712.	1000.	522.	688	712	712	688	648	605	565	533	511	500	500	511
54.0	.9	829.	16.54	0.	6618.	113229.	747.	1000.	548.	715	747	747	715	663	610	561	524	499	488	488	499
63.0	1.0	988.	17.74	0.	6691.	135533.	787.	1000.	579.	744	787	787	744	680	614	558	515	488	475	475	488
72.0	1.2	1158.	18.84	0.	6778.	159438.	831.	1000.	613.	779	831	831	779	698	619	554	507	478	464	464	478
81.0	1.4	1334.	19.52	0.	6876.	184348.	878.	1000.	649.	815	878	878	815	716	624	551	500	468	453	453	468
90.0	1.5	1527.	21.53	0.	6995.	212314.	936.	1000.	693.	854	936	936	854	736	629	548	492	459	443	443	459
99.0	1.6	1735.	23.03	0.	7131.	242217.	1000.	1000.	742.	897	1000	1000	897	758	634	544	485	450	434	434	450
108.0	1.8	1964.	25.53	0.	7292.	275975.	1071.	1000.	796.	949	1071	1071	949	781	639	541	478	442	425	425	442
117.0	2.0	2210.	27.31	0.	7471.	312151.	1151.	1000.	857.	1002	1151	1151	1002	806	644	538	472	434	416	416	434
126.0	2.1	2480.	29.99	0.	7676.	352443.	1242.	1000.	926.	1063	1242	1242	1063	832	649	535	466	426	408	408	426
135.0	2.3	2768.	32.01	0.	7902.	395779.	1337.	1000.	999.	1133	1337	1337	1133	858	655	532	460	419	401	401	419
144.0	2.4	3070.	33.56	0.	8143.	440998.	1443.	1000.	1079.	1201	1443	1443	1201	887	661	529	454	412	394	394	412
153.0	2.5	3392.	35.72	0.	8408.	488928.	1551.	1000.	1162.	1278	1551	1551	1278	921	667	526	448	406	387	387	406
162.0	2.7	3749.	39.74	0.	8710.	542928.	1673.	1000.	1255.	1368	1673	1673	1368	957	673	524	443	400	381	381	400
171.0	2.8	4128.	42.06	0.	9033.	600103.	1803.	1000.	1354.	1463	1803	1803	1463	994	680	521	437	394	375	375	394
180.0	3.0	4496.	40.94	0.	9346.	655750.	1932.	1000.	1453.	1553	1932	1932	1553	1029	687	518	432	388	369	369	388
189.0	3.2	4922.	47.32	0.	9721.	719605.	2079.	1000.	1565.	1660	2079	2079	1660	1076	694	516	427	383	363	363	383
198.0	3.3	5331.	45.42	0.	10082.	780435.	2214.	1000.	1668.	1768	2214	2214	1768	1124	701	513	423	377	357	357	377
207.0	3.5	5776.	49.39	0.	10474.	847807.	2368.	1000.	1786.	1882	2368	2368	1882	1167	708	511	418	372	352	352	372
216.0	3.6	6228.	50.24	0.	10881.	914443.	2521.	1000.	1903.	1997	2521	2521	1997	1224	715	508	414	367	347	347	367
225.0	3.8	6666.	48.68	0.	11273.	979633.	2663.	1000.	2012.	2118	2663	2662	2118	1274	723	506	409	362	343	343	362
234.0	3.9	7162.	55.13	1.	11726.	1052681.	2833.	1000.	2142.	2242	2833	2833	2242	1337	731	503	405	358	338	338	358
243.0	4.1	7612.	50.01	1.	12132.	1118963.	2974.	1000.	2250.	2370	2974	2974	2370	1391	739	501	401	353	334	334	353
252.0	4.2	8071.	51.02	1.	12558.	1184287.	3108.	0.	2354.	2500	3108	3108	2500	1463	747	499	397	349	330	330	349
261.0	4.3	8357.	31.76	0.	12823.	1221363.	3130.	0.	2374.	2630	3130	3130	2630	1526	756	497	393	345	325	325	345
270.0	4.5	8670.	34.74	-1.	13114.	1262438.	3168.	0.	2405.	2760	3168	3168	2760	1592	766	495	390	341	322	322	341
279.0	4.7	8989.	35.42	0.	13414.	1302939.	3205.	0.	2436.	2890	3205	3205	2890	1667	775	492	386	338	318	318	338
288.0	4.8	9318.	36.55	0.	13725.	1345392.	3243.	0.	2468.	3027	3243	3243	3027	1740	785	490	383	334	314	314	334

LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
584	584	584	584	584	584	584	584	584	584	584	584
602	605	605	602	596	588	580	573	567	565	5	567
621	627	627	621	608	593	576	562	552	546	546	552
641	652	652	641	621	597	572	552	537	530	530	537
663	680	680	663	634	601	569	542	524	514	514	524
688	712	712	688	648	605	565	533	511	500	500	511
715	747	747	715	663	610	561	524	499	488	488	499
744	787	787	744	680	614	558	515	488	475	475	488
779	831	831	779	698	619	554	507	478	464	464	478
815	878	878	815	716	624	551	500	468	453	453	468
854	936	936	854	736	629	548	492	459	443	443	459
897	1000	1000	897	758	634	544	485	450	434	434	450
949	1071	1071	949	781	639	541	478	442	425	425	442
1002	1151	1151	1002	806	644	538	472	434	416	416	434
1063	1242	1242	1063	832	649	535	466	426	408	408	426
1133	1337	1337	1133	858	655	532	460	419	401	401	419
1201	1443	1443	1201	887	661	529	454	412	394	394	412
1278	1551	1551	1278	921	667	526	448	406	387	387	406
1368	1673	1673	1368	957	673	524	443	400	381	381	400
1463	1803	1803	1463	994	680	521	437	394	375	375	394
1553	1932	1932	1553	1029	687	518	432	388	369	369	388
1660	2079	2079	1660	1076	694	516	427	383	363	363	383
1768	2214	2214	1768	1124	701	513	423	377	357	357	377
1882	2368	2368	1882	1167	708	511	418	372	352	352	372
1997	2521	2521	1997	1224	715	508	414	367	347	347	367
2118	2663	2662	2118	1274	723	506	409	362	343	343	362
2242	2833	2833	2242	1337	731	503	405	358	338	338	358
2370	2974	2974	2370	1391	739	501	401	353	334	334	353
2500	3108	3108	2500	1463	747	499	397	349	330	330	349
2630	3130	3130	2630	1526	756	497	393	345	325	325	345
2760	3168	3168	2760	1592	766	495	390	341	322	322	341
2890	3205	3205	2890	1667	775	492	386	338	318	318	338
3027	3243	3243	3027	1740	785	490	383	334	314	314	334

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT 7982. FT

STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

NET W' = 215.3

RF = 2300.00
SCL = 1181.33
DLL = 1515 VLL = 1004.6
HAL = 1134.3
VAL = 788.89 KIPS 2.13

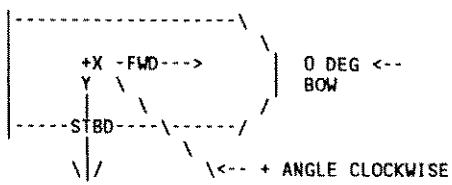
VLB = 1226.3
LB = 1670.4
SF = 2.11

DEEPWATER, ARAMID MOORING LINE JIP
CASE T6S16T.MM3
STEEL TAUT LEG IN 3000 FT

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. 13 (FT)	14 (% WD)	RESTORING FORCE ON VESSEL 15 16 (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12					
.0	.0	1.	.00	1.	6042.	212347.	670.	1000.	490.	670	0	664	640	619	586	555	532	525	519	521	532	559	586	614	640
9.0	.2	120.	13.20	621.	6064.	226469.	701.	1000.	513.	701	0	690	655	624	583	546	520	510	504	509	523	555	589	626	661
18.0	.3	241.	13.45	1449.	6095.	240938.	734.	1000.	538.	734	0	718	671	629	579	537	507	496	491	497	514	551	593	639	686
27.0	.4	368.	14.09	2174.	6138.	256442.	773.	1000.	568.	773	0	748	689	635	575	528	496	484	479	486	506	548	597	654	713
36.0	.6	500.	14.72	2937.	6192.	273009.	815.	1000.	601.	815	0	783	708	640	572	520	486	472	467	475	498	544	601	669	741
45.0	.8	638.	15.33	3957.	6256.	290321.	861.	1000.	636.	861	0	820	728	646	569	512	476	461	456	466	491	540	605	685	775
54.0	.9	784.	16.24	4780.	6332.	308996.	914.	1000.	676.	914	0	860	750	653	566	504	466	450	446	456	483	536	608	702	810
63.0	1.0	942.	17.48	5402.	6423.	329594.	976.	1000.	724.	976	0	906	774	659	563	497	457	440	436	447	476	533	612	720	848
72.0	1.2	1106.	18.21	6468.	6525.	351256.	1039.	1000.	772.	1039	0	959	799	666	560	490	449	431	427	439	469	529	616	739	889
81.0	1.4	1289.	20.36	6956.	6648.	375454.	1120.	1000.	833.	1120	0	1013	826	673	557	484	440	422	418	431	463	526	620	760	938
90.0	1.5	1482.	21.50	8078.	6786.	401463.	1201.	1000.	895.	1201	0	1079	854	681	555	477	433	414	410	423	457	522	624	782	991
99.0	1.6	1686.	22.68	8751.	6937.	429105.	1292.	1000.	964.	1292	0	1150	884	688	552	471	425	407	403	416	450	519	628	806	1045
108.0	1.8	1912.	25.03	10197.	7113.	459677.	1392.	1000.	1041.	1392	0	1227	919	696	550	465	418	399	395	409	445	516	633	831	1112
117.0	2.0	2145.	25.95	10977.	7299.	491725.	1503.	1000.	1126.	1503	0	1305	956	704	547	460	412	392	389	403	439	513	637	856	1177
126.0	2.1	2403.	28.64	12518.	7511.	527022.	1625.	1000.	1218.	1625	0	1393	996	713	545	454	406	386	382	397	433	510	642	883	1258
135.0	2.3	2667.	29.32	14525.	7733.	563252.	1744.	1000.	1309.	1744	0	1492	1034	722	543	449	400	379	376	390	428	506	645	913	1339
144.0	2.4	2952.	31.68	16496.	7978.	602915.	1879.	1000.	1413.	1879	0	1593	1083	730	540	444	394	373	370	385	423	503	650	947	1423
153.0	2.5	3248.	32.86	19964.	8238.	644039.	2010.	1000.	1512.	2010	0	1705	1135	739	538	439	388	367	364	379	418	501	655	982	1516
162.0	2.7	3550.	33.54	22443.	8501.	685474.	2151.	1000.	1620.	2151	0	1815	1181	749	536	434	383	362	358	374	413	498	660	1015	1616
171.0	2.8	3875.	36.16	26317.	8795.	730800.	2301.	1000.	1735.	2301	0	1929	1243	760	533	429	378	356	353	369	409	495	665	1057	1721
180.0	3.0	4201.	36.25	29713.	9089.	776005.	2449.	1000.	1847.	2449	0	2055	1295	771	531	425	373	351	348	364	404	492	671	1098	1825
189.0	3.2	4545.	38.16	34046.	9405.	824060.	2605.	1000.	1967.	2605	0	2178	1363	782	529	421	368	347	343	359	400	489	676	1146	1934
198.0	3.3	4888.	38.17	39825.	9721.	871351.	2750.	1000.	2078.	2750	0	2311	1425	793	527	416	363	342	339	355	396	487	682	1189	2054
207.0	3.5	5242.	39.32	45338.	10051.	920458.	2903.	1000.	2196.	2903	0	2443	1493	805	525	412	359	338	334	350	392	484	687	1245	2170
216.0	3.6	5608.	40.67	51291.	10392.	970963.	3062.	832.	2318.	3062	0	2580	1562	816	523	408	355	333	330	346	388	482	694	1291	2299
225.0	3.8	5906.	33.11	65678.	10678.	1010945.	3125.	0.	2368.	3125	0	2702	1643	827	521	404	350	329	326	342	384	479	701	1356	2424
234.0	3.9	6186.	31.06	83388.	10945.	1046883.	3149.	0.	2389.	3149	0	2840	1710	836	518	400	346	325	322	338	381	478	710	1417	2562
243.0	4.1	6461.	30.63	99059.	11210.	1082874.	3187.	0.	2421.	3187	0	2964	1784	846	515	396	342	321	318	335	378	476	718	1484	2683
252.0	4.2	6758.	32.90	117086.	11497.	1121296.	3225.	0.	2452.	3225	0	3092	1865	857	513	392	339	317	314	331	375	474	725	1549	2828

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT 7979. FT

STARTING DISPLACEMENTS : SURGE(FT) = -27.750 SWAY(FT) = -18.563 YAW(DEG) = .807

DEEPWATER, ARAMID MOORING LINE JIP
CASE C1A12T

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT	-	.00
LINE ATTACHMENT W.R.T. WATER LINE	-	-62.0 FT
ALLOWABLE LINE LENGTH ON BOTTOM	-	90.0 FT
DIRECTION OF VESSEL TRANSLATION	-	45.0 DEG

CATENARY OPTIMIZATION - NO

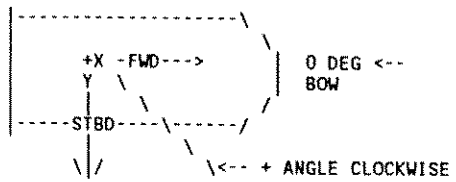
INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO



C1A12T

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	22.5	45.0	67.5	112.5	135.0	157.5	-157.5	-135.0	-112.5	-67.5	-45.0	-22.5
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	900.0	900.0	900.0	900.0	900.0	900.0	900.0	900.0	900.0	900.0	900.0	900.0

INITIAL VESSEL YAW ANG(DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	1500.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	1500.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.375"
LINE LENGTH (FT)	500.0
WEIGHT IN WATER (LB/FT)	52.28
LINE B.S. (KIPS)	3318.0
AREA (SQ IN)	22.69
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	ARAMID
LINE SIZE (IN)	5.750"
LINE LENGTH (FT)	3000.0
WEIGHT IN WATER (LB/FT)	2.10
LINE B.S. (KIPS)	3321.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	133000.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.375"
LINE LENGTH (FT)	800.0
WEIGHT IN WATER (LB/FT)	52.28
LINE B.S. (KIPS)	3318.0
AREA (SQ IN)	22.69
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.675"
LINE LENGTH (FT)	1250.0
WEIGHT IN WATER (LB/FT)	266.18
LINE B.S. (KIPS)	3387.0
AREA (SQ IN)	24.85
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.375"
LINE LENGTH (FT)	1700.0
WEIGHT IN WATER (LB/FT)	52.28
LINE B.S. (KIPS)	3318.0
AREA (SQ IN)	22.69
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.675"
LINE LENGTH (FT)	200.0
WEIGHT IN WATER (LB/FT)	266.18
LINE B.S. (KIPS)	3387.0
AREA (SQ IN)	24.85
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	50.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
1	28.1	.0	28.1	6012.00	1438.00	6012.0	.0	.0				
2	32.2	7.7	33.1	6925.94	1438.00	4070.0	7.7	.0	.35	.00	.00	.00
3	36.3	18.4	40.6	7065.1	1438.00	3877.1	18.4	.0	.79	.00	.00	.00
4	40.3	28.5	49.4	7106.21	1438.00	3799.2	28.5	.0	1.21	.00	.00	.00
5	44.4	38.5	58.8	7127.36	1438.00	3721.3	38.5	.0	1.63	.00	.00	.00
6	48.5	48.7	68.8	7141.05	1438.00	3643.4	48.7	.0	2.05	.00	.00	.00
7	52.6	59.1	79.1	7151.04	1438.00	3565.5	59.1	.0	2.49	.00	.00	.00
8	56.7	69.7	89.8	7159.27	1438.00	3487.6	69.7	.0	2.93	.00	.00	.00
9	60.7	80.4	100.8	7166.14	1438.00	3409.7	80.4	.0	3.38	.00	.00	.00
10	64.8	91.4	112.1	7172.34	1438.00	3331.8	91.4	.0	3.83	.00	.00	.00
11	73.0	114.2	135.5	7183.31	1438.00	3176.0	114.2	.0	4.78	.00	.00	.00
12	81.1	137.5	159.7	7192.03	1438.00	3125.8	137.5	.0	5.75	.00	.00	.00
13	89.3	161.0	184.1	7198.14	1438.00	3095.4	161.0	.0	6.72	.00	.00	.00
14	97.4	184.7	208.8	7202.98	1438.00	3065.0	184.7	.0	7.71	.00	.00	.00
15	105.6	208.5	233.7	7206.97	1438.00	3034.6	208.5	.0	8.70	.00	.00	.00
16	113.8	232.5	258.9	7210.50	1438.00	3004.2	232.5	.0	9.70	.00	.00	.00
17	121.9	256.7	284.2	7213.59	1438.00	2973.8	256.7	.0	10.70	.00	.00	.00
18	130.1	281.1	309.7	7216.59	1438.00	2943.4	281.1	.0	11.71	.00	.00	.00
19	138.2	305.7	335.5	7219.43	1438.00	2913.0	305.7	.0	12.73	.00	.00	.00
20	146.4	330.4	361.4	7222.06	1438.00	2882.6	330.4	.0	13.76	.00	.00	.00
21	154.5	355.4	387.6	7224.69	1438.00	2852.2	355.4	.0	14.80	.00	.00	.00
22	162.7	380.5	413.8	7227.17	1438.00	2821.8	380.5	.0	15.84	.00	.00	.00
23	170.9	405.9	440.4	7229.68	1438.00	2791.4	405.9	.0	16.89	.00	.00	.00
24	179.0	431.4	467.0	7232.07	1438.00	2761.0	431.4	.0	17.95	.00	.00	.00
25	187.2	457.1	493.9	7234.49	1438.00	2730.6	457.1	.0	19.02	.00	.00	.00
26	195.3	483.0	521.0	7236.83	1438.00	2700.1	483.0	.0	20.09	.00	.00	.00
27	203.5	509.1	548.3	7239.19	1438.00	2669.7	509.1	.0	21.18	.00	.00	.00
28	211.6	535.5	575.8	7241.59	1438.00	2639.3	535.5	.0	22.27	.00	.00	.00
29	219.8	561.9	603.4	7243.86	1438.00	2608.9	561.9	.0	23.37	.00	.00	.00
30	228.0	588.6	631.2	7246.12	1438.00	2578.5	588.6	.0	24.48	.00	.00	.00
31	236.1	615.6	659.3	7248.51	1438.00	2548.0	615.6	.0	25.60	.00	.00	.00
32	244.3	642.6	687.5	7250.74	1438.00	2517.6	642.6	.0	26.72	.00	.00	.00
33	252.4	669.9	715.9	7253.01	1438.00	2487.2	669.9	.0	27.85	.00	.00	.00
34	260.6	697.4	744.5	7255.30	1438.00	2456.8	697.4	.0	28.99	.00	.00	.00
35	268.7	725.1	773.3	7257.55	1438.00	2426.3	725.1	.0	30.14	.00	.00	.00
36	276.9	752.9	802.2	7259.75	1438.00	2395.9	752.9	.0	31.29	.00	.00	.00
37	285.1	781.0	831.4	7262.07	1438.00	2365.4	781.0	.0	32.46	.00	.00	.00
38	293.2	809.3	860.8	7264.33	1438.00	2335.0	809.3	.0	33.63	.00	.00	.00
39	301.4	837.8	890.3	7266.56	1438.00	2304.5	837.8	.0	34.81	.00	.00	.00
40	309.5	866.3	919.9	7268.73	1438.00	2274.1	866.3	.0	35.99	.00	.00	.00
41	317.7	895.2	949.9	7271.00	1438.00	2243.6	895.2	.0	37.19	.00	.00	.00
42	325.8	924.3	980.0	7273.25	1438.00	2213.2	924.3	.0	38.40	.00	.00	.00
43	334.0	953.6	1010.4	7275.50	1438.00	2182.7	953.6	.0	39.62	.00	.00	.00
44	342.2	982.9	1040.8	7277.69	1438.00	2152.3	982.9	.0	40.83	.00	.00	.00
45	350.3	1012.6	1071.5	7279.94	1438.00	2121.8	1012.6	.0	42.06	.00	.00	.00

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
46	358.5	1042.4	1102.4	7282.14	1438.00	2091.3	1042.4	.0	43.30	.00	.00	.00
47	366.6	1072.5	1133.5	7284.40	1438.00	2060.9	1072.5	.0	44.55	.00	.00	.00
48	374.8	1102.6	1164.6	7286.56	1438.00	2030.4	1102.6	.0	45.80	.00	.00	.00
49	382.9	1133.2	1196.1	7288.84	1438.00	1999.9	1133.2	.0	47.07	.00	.00	.00
50	391.1	1163.8	1227.7	7291.06	1438.00	1969.4	1163.8	.0	48.34	.00	.00	.00
51	399.3	1194.6	1259.6	7293.26	1438.00	1939.0	1194.6	.0	49.62	.00	.00	.00
52	407.4	1225.5	1291.4	7295.43	1438.00	1901.9	1225.5	.0	50.90	.00	.00	.00
53	415.6	1257.1	1324.0	7297.79	1438.00	1745.3	1257.1	.0	52.21	.00	.00	.00
54	423.7	1289.7	1357.5	7300.42	1438.00	1588.6	1289.7	.0	53.56	.00	.00	.00
55	431.9	1323.3	1392.0	7303.29	1438.00	1431.9	1323.3	.0	54.95	.00	.00	.00
56	440.0	1358.0	1427.5	7306.34	1438.00	1275.1	1358.0	.0	56.38	.00	.00	.00
57	448.2	1393.7	1464.0	7309.61	1438.00	1118.3	1393.7	.0	57.86	.00	.00	.00
58	456.4	1430.2	1501.2	7312.97	1438.00	961.4	1430.2	.0	59.36	.00	.00	.00
59	464.5	1467.6	1539.4	7316.49	1438.00	804.5	1467.6	.0	60.91	.00	.00	.00
60	472.7	1506.1	1578.5	7320.12	1438.00	647.5	1506.1	.0	62.50	.00	.00	.00
61	480.8	1545.4	1618.4	7323.85	1438.00	490.5	1545.4	.0	64.12	.00	.00	.00
62	489.0	1585.9	1659.6	7327.77	1438.00	333.5	1585.9	.0	65.79	.00	.00	.00
63	497.1	1627.2	1701.4	7331.69	1438.00	196.1	1627.2	.0	67.49	.00	.00	.00
64	505.3	1669.0	1743.8	7335.59	1438.00	165.3	1669.0	.0	69.21	.00	.00	.00
65	513.5	1711.1	1786.4	7339.39	1438.00	134.5	1711.1	.0	70.95	.00	.00	.00
66	521.6	1753.4	1829.3	7343.12	1438.00	103.8	1753.4	.0	72.70	.00	.00	.00
67	529.8	1795.7	1872.2	7346.70	1438.00	73.0	1795.7	.0	74.44	.00	.00	.00
68	537.9	1838.0	1915.1	7350.17	1438.00	42.2	1838.0	.0	76.19	.00	.00	.00
69	546.1	1880.8	1958.5	7353.65	1438.00	11.4	1880.8	.0	77.96	.00	.00	.00
70	554.2	1923.7	2001.9	7356.99	1438.00	.0	1923.7	-44.9	79.73	.00	.00	.00
71	562.4	1966.7	2045.6	7360.30	1438.00	.0	1966.7	-36.7	81.52	.00	.00	.00
72	570.6	2009.6	2089.0	7363.47	1438.00	.0	2009.6	-28.5	83.29	.00	.00	.00
73	578.7	2052.4	2132.4	7366.53	1438.00	.0	2052.4	-20.4	85.07	.00	.00	.00
74	586.9	2095.7	2176.3	7369.64	1438.00	.0	2095.7	-12.2	86.87	.00	.00	.00
75	595.0	2138.5	2219.8	7372.58	1438.00	.0	2138.5	-4.1	88.64	.00	.00	.00
76	603.2	2181.4	2263.2	7375.44	1438.00	.0	2181.4	4.1	90.42	.00	.00	.00
77	611.3	2224.2	2306.7	7378.26	1438.00	.0	2224.2	12.2	92.20	.00	.00	.00
78	619.5	2267.5	2350.6	7381.12	1438.00	.0	2267.5	20.4	94.01	.00	.00	.00
79	627.7	2310.3	2394.1	7383.81	1438.00	.0	2310.3	28.5	95.79	.00	.00	.00
80	635.8	2353.2	2437.6	7386.46	1438.00	.0	2353.2	36.7	97.57	.00	.00	.00

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	3649.	0.	900.	2295.	847.	900	900	900	900	900	900	900	900	900	900	900	900
2.3	.2	177.	78.68	0.	3649.	8871.	930.	2263.	876.	928	930	928	912	900	888	872	870	872	888	900	912
4.5	.3	350.	76.97	0.	3649.	17510.	960.	2233.	905.	956	960	956	923	900	877	845	840	845	877	900	923
6.8	.4	522.	76.33	0.	3649.	26075.	990.	2203.	934.	983	990	983	935	900	866	818	812	818	866	900	935
9.0	.6	695.	77.05	0.	3649.	34744.	1021.	2172.	964.	1012	1021	1012	946	900	854	792	783	792	854	900	946
11.3	.8	871.	78.26	0.	3649.	43601.	1052.	2141.	994.	1040	1052	1040	958	900	843	765	754	765	843	900	958
13.5	.9	1044.	76.88	0.	3650.	52246.	1083.	2110.	1024.	1069	1083	1069	969	900	832	738	725	738	832	900	969
15.8	1.0	1218.	77.06	0.	3651.	60921.	1114.	2079.	1054.	1098	1114	1098	981	900	821	712	697	712	821	900	981
18.0	1.2	1391.	76.98	0.	3651.	69599.	1146.	2049.	1085.	1127	1146	1127	992	900	810	686	669	686	810	900	992
20.3	1.4	1566.	77.66	0.	3652.	78363.	1178.	2017.	1116.	1156	1178	1156	1004	900	799	660	642	660	799	900	1004
22.5	1.5	1737.	75.92	0.	3654.	86836.	1209.	1987.	1146.	1185	1209	1185	1016	900	788	636	615	636	788	900	1016
24.8	1.6	1910.	77.14	0.	3654.	95487.	1242.	1957.	1177.	1215	1242	1215	1028	901	777	610	587	610	777	901	1028
27.0	1.8	2084.	77.46	0.	3655.	104188.	1274.	1928.	1209.	1244	1274	1244	1040	901	766	585	561	585	766	901	1040
29.3	2.0	2256.	76.41	0.	3657.	112750.	1307.	1837.	1240.	1275	1307	1275	1052	901	755	560	535	560	755	901	1052
31.5	2.1	2425.	74.76	0.	3658.	121084.	1337.	1685.	1270.	1305	1337	1305	1064	901	744	537	509	537	744	901	1064
33.8	2.3	2588.	72.46	1.	3657.	129084.	1365.	1555.	1297.	1333	1365	1333	1076	901	734	513	483	513	734	901	1076
36.0	2.4	2746.	70.20	0.	3655.	136748.	1392.	1433.	1323.	1359	1392	1359	1088	901	723	489	458	489	723	901	1088
38.3	2.5	2899.	68.35	1.	3651.	144131.	1418.	1316.	1349.	1384	1418	1384	1100	901	712	466	433	466	712	901	1100
40.5	2.7	3050.	67.13	0.	3647.	151345.	1444.	1206.	1374.	1409	1444	1409	1112	902	702	442	410	442	702	902	1112
42.8	2.8	3198.	65.57	0.	3643.	158322.	1469.	1099.	1398.	1433	1469	1433	1124	902	691	420	386	420	691	902	1124
45.0	3.0	3343.	64.52	0.	3639.	165130.	1493.	994.	1423.	1456	1493	1456	1136	902	680	398	363	398	680	902	1136
47.3	3.2	3487.	63.83	0.	3634.	171811.	1518.	892.	1447.	1479	1518	1479	1149	902	670	377	341	377	670	902	1149
49.5	3.3	3627.	62.47	0.	3631.	178287.	1542.	792.	1471.	1502	1542	1502	1162	902	659	356	320	356	659	902	1162
51.8	3.5	3765.	61.29	1.	3627.	184621.	1567.	695.	1494.	1524	1567	1524	1174	903	649	336	300	336	649	903	1174
54.0	3.6	3899.	59.71	0.	3624.	190717.	1591.	599.	1518.	1547	1591	1547	1186	903	639	317	281	317	639	903	1186
56.3	3.8	4031.	58.68	0.	3621.	196640.	1615.	504.	1542.	1569	1615	1569	1198	903	629	299	263	299	629	903	1198
58.5	3.9	4161.	57.49	1.	3619.	202355.	1639.	412.	1565.	1592	1639	1592	1211	903	619	281	246	281	619	903	1211
60.8	4.1	4288.	56.52	1.	3617.	207910.	1662.	323.	1589.	1614	1662	1614	1223	903	608	264	231	264	608	903	1223
63.0	4.2	4412.	54.91	0.	3616.	213195.	1686.	238.	1612.	1636	1686	1636	1236	904	598	249	216	249	598	904	1236
65.3	4.3	4532.	53.35	0.	3616.	218219.	1710.	184.	1636.	1658	1710	1658	1248	904	587	234	203	234	587	904	1248
67.5	4.5	4649.	52.40	0.	3618.	223069.	1735.	168.	1660.	1680	1735	1680	1261	904	577	221	192	221	577	904	1261
69.8	4.7	4765.	51.43	1.	3621.	227748.	1760.	154.	1685.	1702	1760	1702	1274	905	567	208	181	208	567	905	1274
72.0	4.8	4879.	50.40	0.	3625.	232248.	1785.	136.	1710.	1725	1785	1725	1287	905	558	197	172	197	558	905	1287
74.3	4.9	4990.	49.51	1.	3630.	236595.	1811.	117.	1735.	1748	1811	1748	1300	905	548	187	163	187	548	905	1300
76.5	5.1	5100.	48.92	0.	3635.	240825.	1837.	98.	1761.	1771	1837	1771	1312	906	538	177	156	177	538	906	1312
78.8	5.3	5209.	48.38	0.	3642.	244943.	1864.	79.	1788.	1794	1864	1794	1324	906	529	169	149	169	529	906	1324
81.0	5.4	5317.	47.92	0.	3649.	248968.	1891.	59.	1815.	1818	1891	1818	1335	906	519	161	143	161	519	906	1335
83.3	5.6	5424.	47.53	0.	3657.	252903.	1919.	39.	1842.	1843	1919	1843	1347	907	509	154	137	154	509	907	1347
85.5	5.7	5530.	47.26	0.	3665.	256775.	1947.	18.	1870.	1868	1947	1868	1358	907	500	148	132	148	500	907	1358
87.8	5.8	5637.	47.42	0.	3674.	260637.	1976.	5.	1898.	1893	1976	1893	1368	907	490	143	127	143	490	907	1368
90.0	6.0	5743.	47.34	0.	3684.	264460.	2006.	0.	1927.	1919	2006	1919	1379	908	481	138	122	138	481	908	1379
92.3	6.2	5849.	47.09	0.	3694.	268235.	2035.	0.	1956.	1945	2035	1945	1389	908	472	133	117	133	472	908	1389
94.5	6.3	5957.	47.74	0.	3704.	272059.	2065.	0.	1986.	1972	2065	1972	1400	908	462	128	113	128	462	908	1400
96.8	6.4	6066.	48.42	0.	3715.	275933.	2097.	0.	2017.	1999	2097	1999	1410	909	453	123	109	123	453	909	1410
99.0	6.6	6175.	48.53	0.	3726.	279796.	2129.	0.	2049.	2026	2129	2026	1421	909	444	119	105	119	444	909	1421
101.3	6.8	6284.	48.51	0.	3737.	283648.	2160.	0.	2080.	2054	2160	2054	1431	910	434	115	101	115	434	910	1431
103.5	6.9	6395.	49.19	0.	3749.	287572.	2193.	0.	2112.	2082	2193	2082	1441	910	426	111	97	111	426	910	1441
105.8	7.1	6507.	50.06	0.	3761.	291579.	2226.	0.	2145.	2112	2226	2112	1451	911	417	107	93	107	417	911	1451
108.0	7.2	6620.	50.32	0.	3774.	295581.	2261.	0.	2179.	2141	2261	2141	1460	911	408	103	90	103	408	911	1460
110.3	7.3	6734.	50.26	0.	3787.	299550.	2295.	0.	2213.	2171	2295	2171	1470	911	399	100	87	100	399	911	1470
112.5	7.5	6848.	50.75	0.	3800.	303561.	2330.	0.	2247.	2201	2330	2201	1480	912	390	96	84	96	390	912	1480

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
114.8	7.7	6964.	51.45	0.	3814.	307636.	2365.	0.	2282.	2232	2365	2232	1490	912	382	93	81	93	382	912	1490
117.0	7.8	7081.	52.24	0.	3829.	311777.	2402.	0.	2318.	2264	2402	2264	1500	913	374	90	78	90	374	913	1500

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT 7387. FT

STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE C1A12T

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT	-	.00
LINE ATTACHMENT W.R.T. WATER LINE	-	-62.0 FT
ALLOWABLE LINE LENGTH ON BOTTOM	-	90.0 FT
DIRECTION OF VESSEL TRANSLATION	-	22.5 DEG

CATENARY OPTIMIZATION - NO

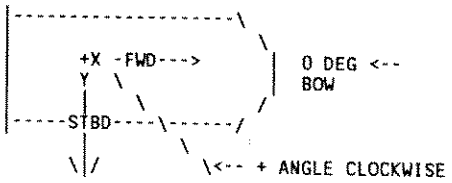
INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO



VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	1.	.00	0.	3297.	116760.	1065.	2128.	1006.	1065	0	1065	968	900	834	742	729	742	834	900	968
2.3	.2	148.	65.24	32.	3291.	123015.	1096.	2097.	1037.	1096	0	1089	970	890	815	714	703	721	832	910	988
4.5	.3	295.	65.26	89.	3283.	129280.	1127.	2067.	1067.	1127	0	1112	972	881	796	686	676	700	830	920	1008
6.8	.4	443.	65.80	54.	3276.	135583.	1160.	2035.	1098.	1160	0	1135	974	871	776	657	650	678	828	930	1029
9.0	.6	588.	64.49	46.	3270.	141752.	1191.	2005.	1128.	1191	0	1160	976	861	757	631	624	657	827	940	1049
11.3	.8	733.	64.65	133.	3262.	148000.	1223.	1974.	1159.	1223	0	1184	978	852	738	603	598	637	824	949	1069
13.5	.9	879.	64.89	176.	3256.	154250.	1255.	1943.	1190.	1255	0	1208	980	843	720	576	572	617	823	959	1090
15.8	1.0	1023.	64.11	76.	3250.	160468.	1288.	1909.	1222.	1288	0	1232	982	834	702	550	548	596	821	968	1111
18.0	1.2	1166.	63.58	119.	3243.	166574.	1320.	1770.	1253.	1320	0	1256	984	825	683	524	523	575	819	978	1131
20.3	1.4	1308.	62.78	462.	3236.	172562.	1349.	1629.	1281.	1349	0	1281	986	816	664	498	498	556	817	988	1153
22.5	1.5	1445.	60.86	859.	3228.	178351.	1376.	1503.	1308.	1376	0	1306	988	807	646	473	474	536	816	998	1174
24.8	1.6	1579.	59.73	1210.	3220.	184099.	1403.	1383.	1334.	1403	0	1329	991	798	629	448	450	516	813	1007	1194
27.0	1.8	1711.	58.85	1446.	3211.	189608.	1429.	1269.	1359.	1429	0	1351	994	789	612	423	427	496	811	1017	1215
29.3	2.0	1841.	57.68	1701.	3202.	194988.	1454.	1161.	1384.	1454	0	1373	997	781	594	400	404	477	809	1027	1236
31.5	2.1	1969.	56.81	1912.	3193.	200308.	1479.	1055.	1408.	1479	0	1394	1000	772	577	376	382	457	806	1036	1256
33.8	2.3	2095.	55.78	2142.	3184.	205482.	1504.	951.	1433.	1504	0	1414	1004	764	560	354	360	438	803	1045	1278
36.0	2.4	2218.	54.87	2388.	3175.	210539.	1528.	850.	1457.	1528	0	1434	1007	756	544	332	339	420	801	1054	1299
38.3	2.5	2338.	53.18	2434.	3166.	215415.	1553.	751.	1481.	1553	0	1454	1010	748	528	312	319	401	798	1063	1318
40.5	2.7	2454.	51.87	2369.	3158.	220120.	1577.	654.	1504.	1577	0	1473	1014	740	511	292	300	383	795	1072	1337
42.8	2.8	2569.	50.96	2280.	3150.	224665.	1601.	559.	1528.	1601	0	1493	1017	732	495	274	281	366	792	1081	1355
45.0	3.0	2681.	49.81	2125.	3141.	229144.	1625.	465.	1552.	1625	0	1512	1021	724	479	256	264	348	789	1091	1373
47.3	3.2	2789.	48.01	1869.	3134.	233375.	1649.	374.	1575.	1649	0	1531	1024	717	464	240	247	331	786	1100	1390
49.5	3.3	2894.	46.50	1556.	3127.	237408.	1672.	285.	1598.	1672	0	1551	1028	709	448	225	232	315	783	1108	1406
51.8	3.5	2996.	45.55	1200.	3121.	241229.	1696.	209.	1622.	1696	0	1570	1032	701	433	211	218	300	780	1118	1423
54.0	3.6	3095.	43.98	775.	3116.	244941.	1721.	175.	1646.	1721	0	1589	1036	694	418	199	206	285	777	1126	1439
56.3	3.8	3192.	43.03	234.	3112.	248503.	1745.	164.	1670.	1745	0	1608	1040	687	403	187	194	270	773	1135	1455
58.5	3.9	3287.	42.10	-369.	3108.	251908.	1770.	146.	1695.	1770	0	1627	1044	679	389	177	184	256	770	1144	1470
60.8	4.1	3378.	40.61	-952.	3106.	255195.	1796.	128.	1720.	1796	0	1647	1049	673	375	168	174	243	766	1152	1485
63.0	4.2	3468.	39.98	-1549.	3105.	258299.	1822.	109.	1746.	1822	0	1665	1053	665	362	160	165	231	762	1161	1501
65.3	4.3	3556.	39.02	-2210.	3104.	261318.	1848.	90.	1772.	1848	0	1685	1059	659	349	153	158	219	758	1169	1516
67.5	4.5	3643.	38.56	-2893.	3105.	264185.	1875.	71.	1799.	1875	0	1704	1063	652	335	146	151	208	755	1177	1531
69.8	4.7	3727.	37.57	-3545.	3106.	267005.	1903.	51.	1826.	1903	0	1724	1068	646	323	140	145	198	751	1185	1546
72.0	4.8	3810.	36.90	-4140.	3108.	269734.	1931.	30.	1854.	1931	0	1745	1073	640	311	135	139	189	747	1193	1560
74.3	4.9	3893.	36.80	-4675.	3111.	272407.	1959.	11.	1882.	1959	0	1765	1078	634	299	130	134	181	743	1201	1575
76.5	5.1	3976.	36.90	-5215.	3114.	275069.	1989.	2.	1910.	1989	0	1786	1083	627	288	125	129	173	739	1210	1590
78.8	5.3	4058.	36.53	-5728.	3118.	277695.	2018.	0.	1940.	2018	0	1807	1088	621	277	120	124	166	735	1218	1605
81.0	5.4	4140.	36.36	-6207.	3122.	280287.	2048.	0.	1969.	2048	0	1828	1093	615	266	115	119	159	731	1226	1619
83.3	5.6	4222.	36.35	-6662.	3127.	282877.	2079.	0.	1999.	2079	0	1850	1099	608	256	111	115	154	727	1234	1633
85.5	5.7	4304.	36.39	-7072.	3133.	285483.	2110.	0.	2030.	2110	0	1872	1104	602	246	107	111	148	723	1242	1648
87.8	5.8	4386.	36.42	-7415.	3139.	288063.	2142.	0.	2062.	2142	0	1895	1109	596	237	103	107	143	720	1251	1662
90.0	6.0	4467.	36.16	-7688.	3145.	290612.	2174.	0.	2093.	2174	0	1918	1113	589	228	99	103	139	716	1259	1677
92.3	6.2	4549.	36.24	-8005.	3152.	293201.	2207.	0.	2126.	2207	0	1940	1119	583	219	95	99	134	712	1268	1692
94.5	6.3	4631.	36.49	-8327.	3159.	295827.	2241.	0.	2159.	2241	0	1964	1124	577	211	92	95	130	708	1276	1706
96.8	6.4	4714.	36.87	-8617.	3167.	298449.	2275.	0.	2193.	2275	0	1987	1128	570	204	88	92	126	705	1285	1722
99.0	6.6	4796.	36.44	-8867.	3176.	301088.	2310.	0.	2227.	2310	0	2011	1134	564	197	85	89	122	701	1293	1736
101.3	6.8	4877.	36.33	-9064.	3185.	303662.	2345.	0.	2261.	2345	0	2035	1138	558	190	82	86	119	698	1302	1752
103.5	6.9	4960.	36.88	-9292.	3194.	306296.	2380.	0.	2297.	2380	0	2059	1143	551	183	80	83	115	695	1311	1768
105.8	7.1	5044.	37.23	-9510.	3204.	308969.	2417.	0.	2333.	2417	0	2084	1147	545	177	77	80	112	692	1320	1784

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT 7387. FT

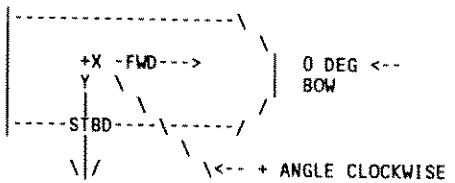
STARTING DISPLACEMENTS : SURGE(FT) = -9.328 SWAY(FT) = -9.328 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE ST1516 tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

C1516T

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	11.3	33.8	56.3	78.8	101.3	123.8	146.3	168.8	-168.8	-146.3	-123.8	-101.3	-78.8	-56.3	-33.8	-11.3
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	700.0	700.0	700.0	700.0	700.0	700.0	700.0	700.0	700.0	700.0	700.0	700.0	700.0	700.0	700.0	700.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	1500.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	1500.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.625"
LINE LENGTH (FT)	400.0
WEIGHT IN WATER (LB/FT)	38.71
LINE B.S. (KIPS)	2456.0
AREA (SQ IN)	16.80
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.625"
LINE LENGTH (FT)	300.0
WEIGHT IN WATER (LB/FT)	38.71
LINE B.S. (KIPS)	2456.0
AREA (SQ IN)	16.80
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-20.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.625"
LINE LENGTH (FT)	2200.0
WEIGHT IN WATER (LB/FT)	38.71
LINE B.S. (KIPS)	2456.0
AREA (SQ IN)	16.80
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-61.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.625"
LINE LENGTH (FT)	1300.0
WEIGHT IN WATER (LB/FT)	38.71
LINE B.S. (KIPS)	2456.0
AREA (SQ IN)	16.80
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.125"
LINE LENGTH (FT)	1100.0
WEIGHT IN WATER (LB/FT)	217.09
LINE B.S. (KIPS)	2700.0
AREA (SQ IN)	20.63
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.625"
LINE LENGTH (FT)	2500.0
WEIGHT IN WATER (LB/FT)	38.71
LINE B.S. (KIPS)	2456.0
AREA (SQ IN)	16.80
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.125"
LINE LENGTH (FT)	100.0
WEIGHT IN WATER (LB/FT)	217.90
LINE B.S. (KIPS)	2700.0
AREA (SQ IN)	20.63
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
1	90.4	.0	92.3	6462.00	1438.00	6462.0	.0	.0				
2	92.4	121.7	152.8	7584.41	1438.00	3652.6	121.7	.0	5.69	-81.00	.00	.00
3	94.3	127.6	158.6	7591.1	1438.00	3643.8	127.6	.0	5.96	-81.00	.00	.00
4	96.3	133.2	164.3	7596.24	1438.00	3634.9	133.2	.0	6.21	-81.00	.00	.00
5	98.2	139.0	170.2	7601.74	1438.00	3626.0	139.0	.0	6.48	-81.00	.00	.00
6	100.1	144.6	175.9	7605.86	1438.00	3617.2	144.6	.0	6.74	-81.00	.00	.00
7	102.1	150.5	181.8	7610.42	1438.00	3608.3	150.5	.0	7.00	-81.00	.00	.00
8	104.0	156.1	187.6	7613.81	1438.00	3599.4	156.1	.0	7.26	-81.00	.00	.00
9	106.0	161.7	193.3	7616.91	1438.00	3590.6	161.7	.0	7.52	-81.00	.00	.00
10	107.9	167.5	199.3	7620.49	1438.00	3581.7	167.5	.0	7.78	-81.00	.00	.00
11	111.8	178.7	210.8	7625.49	1438.00	3564.0	178.7	.0	8.30	-81.00	.00	.00
12	115.7	190.4	222.8	7631.05	1438.00	3546.2	190.4	.0	8.83	-81.00	.00	.00
13	119.6	201.6	234.4	7634.71	1438.00	3528.5	201.6	.0	9.35	-81.00	.00	.00
14	123.5	213.3	246.5	7639.03	1438.00	3510.7	213.3	.0	9.88	-81.00	.00	.00
15	127.4	224.7	258.3	7642.32	1438.00	3493.0	224.7	.0	10.41	-81.00	.00	.00
16	131.3	236.4	270.4	7645.76	1438.00	3475.2	236.4	.0	10.94	-81.00	.00	.00
17	135.2	248.1	282.5	7648.84	1438.00	3457.5	248.1	.0	11.48	-81.00	.00	.00
18	139.1	259.8	294.7	7651.60	1438.00	3439.8	259.8	.0	12.02	-81.00	.00	.00
19	143.0	271.5	306.8	7654.13	1438.00	3422.0	271.5	.0	12.55	-81.00	.00	.00
20	146.9	283.1	319.0	7656.44	1438.00	3404.3	283.1	.0	13.09	-81.00	.00	.00
21	150.8	294.8	331.2	7658.55	1438.00	3386.5	294.8	.0	13.63	-81.00	.00	.00
22	154.7	306.5	343.3	7660.49	1438.00	3368.8	306.5	.0	14.16	-81.00	.00	.00
23	158.6	318.7	356.0	7662.99	1438.00	3351.0	318.7	.0	14.72	-81.00	.00	.00
24	162.5	330.4	368.2	7664.65	1438.00	3333.3	330.4	.0	15.26	-81.00	.00	.00
25	166.4	342.5	380.8	7666.82	1438.00	3315.5	342.5	.0	15.82	-81.00	.00	.00
26	170.3	354.2	393.0	7668.24	1438.00	3297.8	354.2	.0	16.36	-81.00	.00	.00
27	174.2	366.4	405.7	7670.18	1438.00	3280.0	366.4	.0	16.92	-81.00	.00	.00
28	178.1	378.6	418.4	7671.99	1438.00	3262.3	378.6	.0	17.48	-81.00	.00	.00
29	182.0	390.8	431.0	7673.70	1438.00	3244.5	390.8	.0	18.04	-81.00	.00	.00
30	185.8	402.9	443.7	7675.31	1438.00	3226.8	402.9	.0	18.60	-81.00	.00	.00
31	189.7	415.1	456.4	7676.83	1438.00	3209.0	415.1	.0	19.16	-81.00	.00	.00
32	193.6	427.8	469.5	7678.80	1438.00	3191.3	427.8	.0	19.74	-81.00	.00	.00
33	197.5	439.9	482.2	7680.15	1438.00	3173.5	439.9	.0	20.30	-81.00	.00	.00
34	201.4	452.6	495.4	7681.93	1438.00	3155.8	452.6	.0	20.88	-81.00	.00	.00
35	205.3	464.8	508.1	7683.15	1438.00	3138.0	464.8	.0	21.44	-81.00	.00	.00
36	209.2	477.4	521.3	7684.78	1438.00	3120.3	477.4	.0	22.02	-81.00	.00	.00
37	213.1	490.1	534.4	7686.33	1438.00	3102.5	490.1	.0	22.60	-81.00	.00	.00
38	217.0	502.7	547.6	7687.82	1438.00	3084.7	502.7	.0	23.18	-81.00	.00	.00
39	220.9	515.4	560.8	7689.24	1438.00	3067.0	515.4	.0	23.77	-81.00	.00	.00
40	224.8	528.1	573.9	7690.61	1438.00	3049.2	528.1	.0	24.35	-81.00	.00	.00
41	228.7	540.7	587.1	7691.92	1438.00	3031.5	540.7	.0	24.93	-81.00	.00	.00
42	232.6	553.4	600.3	7693.18	1438.00	3013.7	553.4	.0	25.51	-81.00	.00	.00
43	236.5	566.5	613.9	7694.76	1438.00	2995.9	566.5	.0	26.12	-81.00	.00	.00
44	240.4	579.2	627.1	7695.94	1438.00	2978.2	579.2	.0	26.70	-81.00	.00	.00
45	244.3	592.8	641.2	7697.80	1438.00	2960.4	592.8	.0	27.32	-81.00	.00	.00

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
46	248.2	605.5	654.4	7698.88	1438.00	2942.7	605.5	.0	27.91	-81.00	.00	.00
47	252.1	618.1	667.6	7699.91	1438.00	2924.9	618.1	.0	28.49	-81.00	.00	.00
48	256.0	631.8	681.7	7701.61	1438.00	2907.2	631.8	.0	29.11	-81.00	.00	.00
49	259.9	645.4	695.8	7703.24	1438.00	2889.4	645.4	.0	29.74	-81.00	.00	.00
50	263.8	658.1	709.0	7704.16	1438.00	2871.6	658.1	.0	30.32	-81.00	.00	.00
51	267.7	671.7	723.1	7705.71	1438.00	2853.9	671.7	.0	30.95	-81.00	.00	.00
52	271.5	685.3	737.2	7707.20	1438.00	2836.1	685.3	.0	31.58	-81.00	.00	.00
53	275.4	698.0	750.4	7708.03	1438.00	2818.3	698.0	.0	32.16	-81.00	.00	.00
54	279.3	711.6	764.5	7709.44	1438.00	2800.6	711.6	.0	32.79	-81.00	.00	.00
55	283.2	725.3	778.6	7710.82	1438.00	2782.8	725.3	.0	33.41	-81.00	.00	.00
56	287.1	738.9	792.7	7712.15	1438.00	2765.0	738.9	.0	34.04	-81.00	.00	.00
57	291.0	752.5	806.8	7713.45	1438.00	2747.3	752.5	.0	34.67	-81.00	.00	.00
58	294.9	766.2	821.0	7714.72	1438.00	2729.5	766.2	.0	35.29	-81.00	.00	.00
59	298.8	779.8	835.1	7715.95	1438.00	2711.7	779.8	.0	35.92	-81.00	.00	.00
60	302.7	793.4	849.2	7717.15	1438.00	2694.0	793.4	.0	36.55	-81.00	.00	.00
61	306.6	808.0	864.3	7718.81	1438.00	2676.2	808.0	.0	37.22	-81.00	.00	.00
62	310.5	821.7	878.4	7719.98	1438.00	2658.4	821.7	.0	37.84	-81.00	.00	.00
63	314.4	835.3	892.5	7721.09	1438.00	2640.7	835.3	.0	38.47	-81.00	.00	.00
64	318.3	849.9	907.6	7722.64	1438.00	2622.9	849.9	.0	39.14	-81.00	.00	.00
65	322.2	863.6	921.7	7723.73	1438.00	2566.6	863.6	.0	39.77	-81.00	.00	.00
66	326.1	878.2	936.7	7725.24	1438.00	2465.7	878.2	.0	40.44	-81.00	.00	.00
67	330.0	892.8	951.8	7726.72	1438.00	2364.7	892.8	.0	41.11	-81.00	.00	.00
68	333.9	908.4	967.8	7728.58	1438.00	2263.7	908.4	.0	41.82	-81.00	.00	.00
69	337.8	923.0	982.8	7730.01	1438.00	2162.7	923.0	.0	42.49	-81.00	.00	.00
70	341.7	938.5	998.8	7731.82	1438.00	2061.7	938.5	.0	43.21	-81.00	.00	.00
71	345.6	954.1	1014.8	7733.57	1438.00	1960.7	954.1	.0	43.92	-81.00	.00	.00
72	349.5	970.7	1031.7	7735.71	1438.00	1859.7	970.7	.0	44.68	-81.00	.00	.00
73	353.3	987.2	1048.6	7737.73	1438.00	1758.6	987.2	.0	45.44	-81.00	.00	.00
74	357.2	1003.8	1065.5	7739.78	1438.00	1657.5	1003.8	.0	46.19	-81.00	.00	.00
75	361.1	1021.3	1083.3	7742.14	1438.00	1556.5	1021.3	.0	46.99	-81.00	.00	.00
76	365.0	1038.8	1101.1	7744.42	1438.00	1455.4	1038.8	.0	47.80	-81.00	.00	.00
77	368.9	1056.4	1118.9	7746.63	1438.00	1354.2	1056.4	.0	48.60	-81.00	.00	.00
78	372.8	1073.9	1136.8	7748.77	1438.00	1253.1	1073.9	.0	49.40	-81.00	.00	.00
79	376.7	1091.4	1154.6	7750.85	1438.00	1151.9	1091.4	.0	50.20	-81.00	.00	.00
80	380.6	1110.9	1174.3	7753.60	1438.00	1050.7	1110.9	.0	51.09	-81.00	.00	.00
81	384.5	1129.4	1193.1	7755.90	1438.00	949.5	1129.4	.0	51.93	-81.00	.00	.00
82	388.4	1148.9	1212.8	7758.49	1438.00	848.3	1148.9	.0	52.82	-81.00	.00	.00
83	392.3	1168.4	1232.5	7760.99	1438.00	747.0	1168.4	.0	53.71	-81.00	.00	.00
84	396.2	1187.8	1252.2	7763.42	1438.00	645.8	1187.8	.0	54.60	-81.00	.00	.00
85	400.1	1207.3	1271.9	7765.78	1438.00	544.5	1207.3	.0	55.49	-81.00	.00	.00
86	404.0	1228.7	1293.5	7768.71	1438.00	443.1	1228.7	.0	56.46	-81.00	.00	.00
87	407.9	1248.2	1313.2	7770.92	1438.00	341.8	1248.2	.0	57.35	-81.00	.00	.00
88	411.8	1269.6	1334.8	7773.69	1438.00	240.4	1269.6	.0	58.33	-81.00	.00	.00
89	415.7	1291.1	1356.3	7776.37	1438.00	139.0	1291.1	.0	59.31	-81.00	.00	.00
90	419.6	1312.5	1377.9	7778.97	1438.00	89.3	1312.5	.0	60.28	-81.00	.00	.00
91	423.5	1333.9	1399.5	7781.50	1438.00	71.4	1333.9	.0	61.26	-81.00	.00	.00
92	427.4	1355.3	1421.1	7783.96	1438.00	53.4	1355.3	.0	62.24	-81.00	.00	.00
93	431.3	1376.8	1442.7	7786.35	1438.00	35.5	1376.8	.0	63.22	-81.00	.00	.00
94	435.2	1398.2	1464.3	7788.68	1438.00	17.5	1398.2	.0	64.20	-81.00	.00	.00
95	439.0	1419.6	1486.0	7790.95	1438.00	.0	1419.6	.1	65.18	-81.00	.00	.00
96	442.9	1443.0	1509.4	7793.70	1438.00	.0	1443.0	4.0	66.24	-81.00	.00	.00
97	446.8	1464.4	1531.1	7795.85	1438.00	.0	1464.4	7.9	67.22	-81.00	.00	.00
98	450.7	1485.8	1552.7	7797.94	1438.00	.0	1485.8	11.8	68.21	-81.00	.00	.00
99	454.6	1507.3	1574.3	7800.00	1438.00	.0	1507.3	15.7	69.19	-81.00	.00	.00

VESSEL DISP.		RESTORING FORCE ON VESSEL	INCREMENT STIFFNESS	YAW MOMENT	VERTICAL FORCE	OVERTURN MOMENT	MAX.LINE LOAD	LINE ON BOTTOM	HOR.FORCE ON ANCHOR	LINE LOAD (KIPS) LINE NUMBER												
13	14	15	16							1	2	3	4	5	6	7	8	9	10	11	12	
(FT)	(% WD)	(KIPS)	(KIPS/FT)	(FT-KIP)	(KIPS)	(FT-KIP)	(KIPS)	(FT)	(KIPS)													
.0	.0	0.	.00	0.	4178.	0.	700.	2884.	650.	700	700	700	700	700	700	700	700	700	700	700	700	700
3.0	.2	228.	76.11	0.	4184.	10827.	730.	2846.	678.	726	730	730	726	719	709	693	684	678	674	674	678	684
6.0	.4	487.	86.12	0.	4187.	24458.	764.	2801.	712.	756	764	764	756	733	715	687	671	650	640	640	650	671
9.0	.6	722.	78.38	0.	4192.	35316.	795.	2762.	741.	781	795	795	781	756	720	683	650	628	614	614	628	650
12.0	.8	959.	78.92	1.	4194.	47126.	828.	2721.	773.	808	828	828	808	772	725	679	634	604	586	586	604	634
15.0	1.0	1198.	79.85	1.	4196.	59133.	859.	2682.	803.	836	859	859	836	790	730	674	619	579	557	557	579	619
18.0	1.2	1435.	78.93	0.	4200.	70750.	894.	2640.	836.	862	894	894	862	808	736	669	604	555	531	531	555	604
21.0	1.4	1673.	79.33	1.	4208.	82254.	926.	2540.	868.	892	926	926	892	827	745	662	587	532	506	506	532	587
24.0	1.6	1899.	75.22	0.	4212.	92803.	955.	2344.	896.	919	955	955	919	847	753	655	570	512	481	481	512	570
27.0	1.8	2114.	71.80	0.	4210.	103106.	983.	2162.	923.	945	983	983	945	862	759	647	555	489	458	458	489	555
30.0	2.0	2323.	69.55	0.	4208.	112660.	1009.	1994.	949.	967	1009	1009	967	882	765	641	540	468	434	434	468	540
33.0	2.2	2519.	65.51	0.	4210.	121545.	1033.	1849.	972.	992	1033	1033	992	901	771	636	525	451	413	413	451	525
36.0	2.4	2713.	64.53	0.	4212.	130246.	1058.	1702.	996.	1014	1058	1058	1014	920	777	632	512	431	393	393	431	512
39.0	2.6	2900.	62.40	0.	4206.	138428.	1081.	1571.	1019.	1034	1081	1081	1034	937	783	628	496	412	372	372	412	496
42.0	2.8	3079.	59.64	0.	4205.	146261.	1104.	1440.	1041.	1055	1104	1104	1055	954	790	622	483	396	353	353	396	483
45.0	3.0	3256.	59.19	0.	4200.	153997.	1128.	1304.	1065.	1075	1128	1128	1075	968	796	615	468	377	337	337	377	468
48.0	3.2	3431.	58.23	0.	4201.	161523.	1153.	1162.	1090.	1094	1153	1153	1094	986	803	610	457	361	319	319	361	457
51.0	3.4	3594.	54.20	0.	4200.	168234.	1174.	1052.	1111.	1114	1174	1174	1114	1000	809	605	444	347	304	304	347	444
54.0	3.6	3760.	55.29	0.	4201.	175122.	1198.	925.	1134.	1135	1198	1198	1135	1016	816	600	431	332	290	290	332	431
57.0	3.8	3919.	53.08	0.	4201.	181710.	1220.	809.	1156.	1156	1220	1220	1156	1029	823	595	419	318	278	278	318	419
60.0	4.0	4070.	50.31	0.	4201.	187636.	1244.	689.	1180.	1174	1244	1244	1174	1043	830	589	407	305	267	267	305	407
63.0	4.2	4223.	50.98	0.	4205.	193679.	1268.	562.	1204.	1194	1268	1268	1194	1057	837	583	396	293	256	256	293	396
66.0	4.4	4370.	48.98	0.	4205.	199149.	1290.	459.	1226.	1213	1290	1290	1213	1070	844	577	383	282	246	246	282	383
69.0	4.6	4515.	48.35	0.	4211.	204630.	1316.	329.	1251.	1233	1316	1316	1233	1083	851	572	373	272	238	238	272	373
72.0	4.8	4656.	47.17	0.	4214.	209845.	1339.	220.	1274.	1253	1339	1339	1253	1096	856	566	362	263	229	229	263	362
75.0	5.0	4799.	47.64	0.	4218.	215105.	1363.	120.	1297.	1274	1363	1363	1274	1110	862	561	351	255	220	220	255	351
78.0	5.2	4934.	44.89	0.	4226.	219830.	1387.	80.	1322.	1292	1387	1387	1292	1123	868	556	343	246	214	214	246	343
81.0	5.4	5077.	47.62	0.	4235.	224798.	1413.	60.	1347.	1314	1413	1413	1314	1137	876	551	333	239	208	208	239	333
84.0	5.6	5218.	47.18	0.	4244.	229626.	1439.	38.	1373.	1334	1439	1439	1334	1152	883	546	323	232	201	201	232	323
87.0	5.8	5358.	46.52	0.	4253.	234450.	1466.	16.	1400.	1354	1466	1466	1354	1165	891	541	314	224	195	195	224	314
90.0	6.0	5493.	45.22	0.	4263.	239013.	1494.	0.	1427.	1374	1494	1494	1374	1177	898	536	306	218	190	190	218	306
93.0	6.2	5629.	45.15	0.	4273.	243434.	1520.	0.	1454.	1396	1520	1520	1396	1191	904	531	298	213	185	185	213	298
96.0	6.4	5771.	47.33	0.	4287.	248221.	1550.	0.	1484.	1418	1550	1550	1418	1204	910	526	290	207	180	180	207	290

700	700	700	700	700	700	700	700	700	700	700	700	700
726	730	730	726	719	709	693	684	678	674	674	678	684	693	709	719
756	764	764	756	733	715	687	671	650	640	640	650	671	687	715	733
781	795	795	781	756	720	683	650	628	614	614	628	650	683	720	756
808	828	828	808	772	725	679	634	604	586	586	604	634	679	725	772
836	859	859	836	790	730	674	619	579	557	557	579	619	674	730	790
862	894	894	862	808	736	669	604	555	531	531	555	604	669	736	808
892	926	926	892	827	745	662	587	532	506	506	532	587	662	745	827
919	955	955	919	847	753	655	570	512	481	481	512	570	655	753	847
945	983	983	945	862	759	647	555	489	458	458	489	555	647	759	862
967	1009	1009	967	882	765	641	540	468	434	434	468	540	641	765	882
992	1033	1033	992	901	771	636	525	451	413	413	451	525	636	771	901
1014	1058	1058	1014	920	777	632	512	431	393	393	431	512	632	777	920
1034	1081	1081	1034	937	783	628	496	412	372	372	412	496	628	783	937
1055	1104	1104	1055	954	790	622	483	396	353	353	396	483	622	790	954
1075	1128	1128	1075	968	796	615	468	377	337	337	377	468	615	796	968
1094	1153	1153	1094	986	803	610	457	361	319	319	361	457	610	803	986
1114	1174	1174	1114	1000	809	605	444	347	304	304	347	444	605	809	1000
1135	1198	1198	1135	1016	816	600	431	332	290	290	332	431	600	816	1016
1156	1220	1220	1156	1029	823	595	419	318	278	278	318	419	595	823	1029
1174	1244	1244	1174	1043	830	589	407	305	267	267	305	407	589	830	1043
1194	1268	1268	1194	1057	837	583	396	293	256	256	293	396	583	837	1057
1213	1290	1290	1213	1070	844	577	383	282	246	246	282	383	577	844	1070
1233	1316	1316	1233	1083	851	572	373	272	238	238	272	373	572	851	1083
1253	1339	1339	1253	1096	856	566	362	263	229	229	263	362	566	856	1096
1274	1363	1363	1274	1110	862	561	351	255	220	220	255	351	561	862	1110
1292	1387	1387	1292	1123	868	556	343	246	214	214	246	343	556	868	1123
1314	1413	1413	1314	1137	876	551	333	239	208	208	239	333	551	876	1137
1334	1439	1439	1334	1152	883	546	323	232	201	201	232	323	546	883	1152
1354	1466	1466	1354	1165	891	541	314	224	195	195	224	314	541	891	1165
1374	1494	1494	1374	1177	898	536	306	218	190	190	218	306	536	898	1177
1396	1520	1520	1396	1191	904	531	298	213	185	185	213	298	531	904	1191
1418	1550	1550	1418	1204	910	526	290	207	180	180	207	290	526	910	1204

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT 7801. FT

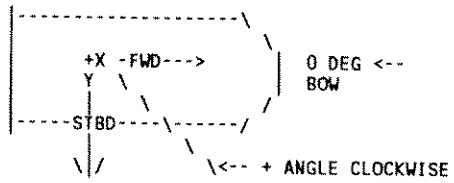
STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE ST1516 tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP.		RESTORING FORCE ON VESSEL	INCREMENT STIFFNESS	YAW MOMENT	VERTICAL FORCE	OVERTURN MOMENT	MAX.LINE LOAD	LINE ON BOTTOM	HOR.FORCE ON ANCHOR	LINE LOAD (KIPS) LINE NUMBER															
13 (FT)	14 15 (% WD)	16 (KIPS)	(KIPS/FT)	(FT-KIP)	(KIPS)	(FT-KIP)	(KIPS)	(FT)	(KIPS)	1	2	3	4	5	6	7	8	9	10	11	12				
.0	.0	0.	.00	0.	3904.	133172.	806.	2748.	752.	806	0	790	762	753	705	663	625	627	612	611	626	678	707	733	762
3.0	.2	214.	71.17	734.	3897.	142036.	839.	2707.	784.	839	0	818	780	761	699	644	602	598	583	587	607	671	712	754	787
6.0	.4	422.	69.61	2543.	3889.	150711.	869.	2670.	813.	869	0	848	798	766	693	631	577	569	554	562	591	665	717	770	813
9.0	.6	629.	68.84	3760.	3882.	159179.	903.	2633.	845.	903	0	873	817	773	688	615	554	542	528	539	574	656	721	787	842
12.0	.8	827.	66.02	4951.	3879.	167332.	935.	2476.	877.	935	0	902	836	779	683	600	531	517	503	518	558	649	726	805	867
15.0	1.0	1027.	66.62	7284.	3873.	175564.	963.	2294.	904.	963	0	930	855	786	680	583	511	490	478	495	542	642	731	823	896
18.0	1.2	1216.	63.04	8441.	3869.	183214.	991.	2109.	931.	991	0	955	873	794	677	568	489	466	456	474	527	635	735	841	923
21.0	1.4	1396.	60.12	9872.	3866.	190552.	1017.	1946.	956.	1017	0	980	895	802	673	553	469	445	432	455	513	631	743	857	948
24.0	1.6	1570.	57.88	11034.	3859.	197747.	1041.	1806.	980.	1041	0	1003	913	809	668	538	451	422	410	435	496	626	751	874	970
27.0	1.8	1742.	57.24	12752.	3854.	204470.	1065.	1661.	1003.	1065	0	1025	933	817	662	525	432	402	390	416	483	618	756	894	994
30.0	2.0	1905.	54.61	14295.	3845.	210915.	1087.	1535.	1025.	1087	0	1045	951	825	656	513	414	380	370	399	467	611	761	910	1016
33.0	2.2	2064.	52.88	15201.	3837.	217011.	1110.	1404.	1048.	1110	0	1067	966	833	651	498	398	362	350	379	455	605	765	929	1035
36.0	2.4	2218.	51.30	15601.	3831.	222794.	1134.	1267.	1071.	1134	0	1086	984	841	645	485	379	345	334	363	441	599	770	944	1055
39.0	2.6	2368.	50.16	16302.	3824.	228522.	1159.	1130.	1095.	1159	0	1106	1000	849	640	471	364	327	317	348	428	592	776	959	1075
42.0	2.8	2511.	47.35	17374.	3818.	233898.	1180.	1019.	1117.	1180	0	1127	1015	856	636	460	349	311	302	333	415	585	781	974	1093
45.0	3.0	2651.	46.78	18147.	3814.	239116.	1203.	896.	1140.	1203	0	1149	1029	862	633	448	335	297	288	318	403	579	786	990	1113
48.0	3.2	2786.	45.10	18561.	3809.	243896.	1226.	780.	1162.	1226	0	1168	1044	869	629	435	321	284	276	305	391	572	792	1004	1133
51.0	3.4	2920.	44.60	18750.	3807.	248724.	1250.	659.	1185.	1250	0	1188	1059	878	625	424	308	272	265	293	378	566	797	1018	1154
54.0	3.6	3045.	41.74	18804.	3805.	253058.	1274.	536.	1209.	1274	0	1207	1072	887	620	412	296	262	254	282	368	560	803	1031	1172
57.0	3.8	3169.	41.16	19218.	3803.	257383.	1296.	432.	1231.	1296	0	1227	1086	895	615	402	285	251	244	272	355	553	809	1044	1191
60.0	4.0	3289.	40.18	19663.	3804.	261435.	1321.	305.	1256.	1321	0	1248	1100	902	610	391	275	242	236	263	346	548	815	1058	1210
63.0	4.2	3409.	39.89	20166.	3804.	265465.	1344.	195.	1278.	1344	0	1269	1114	909	606	378	266	234	227	254	337	542	820	1070	1229
66.0	4.4	3526.	39.08	20554.	3806.	269598.	1368.	108.	1302.	1368	0	1288	1128	918	602	369	258	224	219	245	326	536	826	1083	1249
69.0	4.6	3643.	39.11	20969.	3809.	273432.	1392.	76.	1327.	1392	0	1310	1143	926	598	358	249	217	213	238	316	530	832	1095	1270
72.0	4.8	3755.	37.29	21252.	3812.	277151.	1418.	56.	1352.	1418	0	1330	1158	933	593	349	242	211	206	230	307	525	838	1108	1288
75.0	5.0	3869.	37.84	21729.	3816.	280965.	1444.	34.	1378.	1444	0	1351	1171	941	589	342	235	204	199	222	299	519	844	1121	1308
78.0	5.2	3982.	37.56	21970.	3821.	284530.	1471.	11.	1405.	1471	0	1372	1185	949	585	332	227	198	194	216	290	513	849	1133	1328
81.0	5.4	4091.	36.48	22531.	3826.	287870.	1498.	0.	1431.	1498	0	1394	1199	956	581	323	221	194	189	211	283	507	854	1147	1347
84.0	5.6	4201.	36.68	23408.	3831.	291267.	1525.	0.	1458.	1525	0	1417	1213	962	576	315	215	188	184	205	276	501	858	1160	1367
87.0	5.8	4312.	37.03	24023.	3837.	294724.	1555.	0.	1488.	1555	0	1440	1227	968	572	307	210	183	179	200	269	494	863	1171	1388

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT 7802. FT

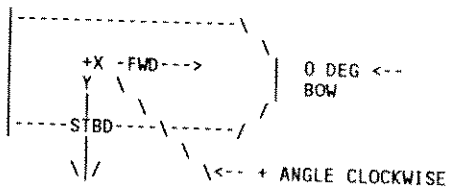
STARTING DISPLACEMENTS : SURGE(FT) = -7.875 SWAY(FT) = -5.203 YAW(DEG) = .599

DEEPWATER, ARAMID MOORING LINE JIP
CASE C3A16T

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

C3A16T

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	11.3	33.8	56.3	78.8	101.3	123.8	146.3	168.8	-168.8	-146.3	-123.8	-101.3	-78.8	-56.3	-33.8	-11.3
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	650.0	650.0	650.0	650.0	650.0	650.0	650.0	650.0	650.0	650.0	650.0	650.0	650.0	650.0	650.0	650.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	3000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	3000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.375"
LINE LENGTH (FT)	500.0
WEIGHT IN WATER (LB/FT)	34.64
LINE B.S. (KIPS)	2198.0
AREA (SQ IN)	15.03
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	ARAMID
LINE SIZE (IN)	4.750"
LINE LENGTH (FT)	6300.0
WEIGHT IN WATER (LB/FT)	1.67
LINE B.S. (KIPS)	2167.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	86700.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.375"
LINE LENGTH (FT)	1200.0
WEIGHT IN WATER (LB/FT)	34.64
LINE B.S. (KIPS)	2198.0
AREA (SQ IN)	15.03
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	CHAIN
LINE SIZE (IN)	4.500"
LINE LENGTH (FT)	1500.0
WEIGHT IN WATER (LB/FT)	167.37
LINE B.S. (KIPS)	2160.0
AREA (SQ IN)	15.90
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.375"
LINE LENGTH (FT)	1650.0
WEIGHT IN WATER (LB/FT)	34.64
LINE B.S. (KIPS)	2198.0
AREA (SQ IN)	15.03
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE SIZE (IN)	4.500"
LINE LENGTH (FT)	200.0
WEIGHT IN WATER (LB/FT)	167.37
LINE B.S. (KIPS)	2160.0
AREA (SQ IN)	15.90
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	50.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

LINE MATERIAL CHAIN

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
1	21.4	.0	21.4	8412.00	2938.00	8412.0	.0	.0				
2	24.5	4.3	24.9	9986.53	2938.00	6531.6	4.3	.0	.56	.00	.00	.00
3	27.7	10.7	29.7	10402.5	2938.00	4650.9	10.7	.0	1.24	.00	.00	.00
4	30.8	18.0	35.7	10564.72	2938.00	4464.6	18.0	.0	2.02	.00	.00	.00
5	34.0	25.1	42.2	10623.64	2938.00	4374.1	25.1	.0	2.79	.00	.00	.00
6	37.1	32.1	49.1	10654.88	2938.00	4283.6	32.1	.0	3.56	.00	.00	.00
7	40.2	39.2	56.2	10675.45	2938.00	4193.1	39.2	.0	4.34	.00	.00	.00
8	43.4	46.4	63.5	10690.77	2938.00	4102.6	46.4	.0	5.12	.00	.00	.00
9	46.5	53.7	71.0	10703.14	2938.00	4012.1	53.7	.0	5.92	.00	.00	.00
10	49.7	61.0	78.7	10713.82	2938.00	3921.5	61.0	.0	6.72	.00	.00	.00
11	55.9	76.0	94.4	10731.96	2938.00	3740.4	76.0	.0	8.36	.00	.00	.00
12	62.2	91.5	110.6	10747.75	2938.00	3559.3	91.5	.0	10.04	.00	.00	.00
13	68.5	107.3	127.3	10762.08	2938.00	3378.1	107.3	.0	11.76	.00	.00	.00
14	74.8	123.5	144.3	10774.43	2938.00	3320.1	123.5	.0	13.51	.00	.00	.00
15	81.1	139.7	161.5	10784.19	2938.00	3282.9	139.7	.0	15.28	.00	.00	.00
16	87.3	156.0	178.8	10792.01	2938.00	3245.6	156.0	.0	17.05	.00	.00	.00
17	93.6	172.4	196.2	10798.84	2938.00	3208.3	172.4	.0	18.83	.00	.00	.00
18	99.9	188.8	213.6	10804.72	2938.00	3171.1	188.8	.0	20.61	.00	.00	.00
19	106.2	205.4	231.2	10810.41	2938.00	3133.8	205.4	.0	22.42	.00	.00	.00
20	112.5	222.0	248.9	10815.52	2938.00	3096.5	222.0	.0	24.22	.00	.00	.00
21	118.8	238.7	266.6	10820.18	2938.00	3059.2	238.7	.0	26.04	.00	.00	.00
22	125.0	255.6	284.5	10824.89	2938.00	3022.0	255.6	.0	27.86	.00	.00	.00
23	131.3	272.5	302.5	10829.47	2938.00	2984.7	272.5	.0	29.70	.00	.00	.00
24	137.6	289.5	320.5	10833.75	2938.00	2947.4	289.5	.0	31.55	.00	.00	.00
25	143.9	306.6	338.6	10837.96	2938.00	2910.1	306.6	.0	33.40	.00	.00	.00
26	150.2	323.8	356.9	10842.27	2938.00	2872.8	323.8	.0	35.27	.00	.00	.00
27	156.4	341.1	375.2	10846.37	2938.00	2835.5	341.1	.0	37.15	.00	.00	.00
28	162.7	358.4	393.6	10850.44	2938.00	2798.2	358.4	.0	39.03	.00	.00	.00
29	169.0	375.9	412.1	10854.47	2938.00	2760.9	375.9	.0	40.93	.00	.00	.00
30	175.3	393.5	430.7	10858.47	2938.00	2723.6	393.5	.0	42.84	.00	.00	.00
31	181.6	411.1	449.4	10862.45	2938.00	2686.2	411.1	.0	44.76	.00	.00	.00
32	187.9	428.9	468.2	10866.41	2938.00	2648.9	428.9	.0	46.68	.00	.00	.00
33	194.1	446.8	487.1	10870.36	2938.00	2611.6	446.8	.0	48.62	.00	.00	.00
34	200.4	464.6	506.0	10874.07	2938.00	2574.3	464.6	.0	50.56	.00	.00	.00
35	206.7	482.7	525.1	10878.00	2938.00	2536.9	482.7	.0	52.52	.00	.00	.00
36	213.0	500.8	544.2	10881.91	2938.00	2499.6	500.8	.0	54.49	.00	.00	.00
37	219.3	519.1	563.5	10885.82	2938.00	2462.3	519.1	.0	56.47	.00	.00	.00
38	225.5	537.3	582.8	10889.53	2938.00	2424.9	537.3	.0	58.45	.00	.00	.00
39	231.8	555.8	602.2	10893.42	2938.00	2387.6	555.8	.0	60.46	.00	.00	.00
40	238.1	574.3	621.7	10897.31	2938.00	2350.2	574.3	.0	62.47	.00	.00	.00
41	244.4	593.0	641.4	10901.20	2938.00	2312.8	593.0	.0	64.49	.00	.00	.00
42	250.7	611.6	661.0	10904.92	2938.00	2275.5	611.6	.0	66.51	.00	.00	.00
43	256.9	630.5	680.8	10908.79	2938.00	2238.1	630.5	.0	68.56	.00	.00	.00
44	263.2	649.3	700.7	10912.50	2938.00	2200.7	649.3	.0	70.60	.00	.00	.00
45	269.5	668.4	720.7	10916.37	2938.00	2163.4	668.4	.0	72.67	.00	.00	.00

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
46	275.8	687.4	740.7	10920.08	2938.00	2126.0	687.4	.0	74.74	.00	.00	.00
47	282.1	706.7	760.9	10923.96	2938.00	2088.6	706.7	.0	76.82	.00	.00	.00
48	288.4	725.9	781.1	10927.67	2938.00	2051.2	725.9	.0	78.91	.00	.00	.00
49	294.6	745.2	801.4	10931.39	2938.00	2013.8	745.2	.0	81.01	.00	.00	.00
50	300.9	764.7	821.7	10935.13	2938.00	1976.4	764.7	.0	83.12	.00	.00	.00
51	307.2	784.3	842.3	10939.01	2938.00	1939.0	784.3	.0	85.25	.00	.00	.00
52	313.5	803.9	862.9	10942.74	2938.00	1901.6	803.9	.0	87.38	.00	.00	.00
53	319.8	823.7	883.6	10946.59	2938.00	1864.2	823.7	.0	89.53	.00	.00	.00
54	326.0	843.7	904.5	10950.44	2938.00	1698.2	843.7	.0	91.69	.00	.00	.00
55	332.3	864.1	925.8	10954.76	2938.00	1516.1	864.1	.0	93.90	.00	.00	.00
56	338.6	884.9	947.5	10959.34	2938.00	1333.8	884.9	.0	96.16	.00	.00	.00
57	344.9	906.3	969.7	10964.38	2938.00	1151.5	906.3	.0	98.47	.00	.00	.00
58	351.2	928.1	992.3	10969.66	2938.00	969.2	928.1	.0	100.82	.00	.00	.00
59	357.4	950.3	1015.3	10975.16	2938.00	786.8	950.3	.0	103.21	.00	.00	.00
60	363.7	972.8	1038.6	10980.82	2938.00	604.4	972.8	.0	105.65	.00	.00	.00
61	370.0	996.0	1062.5	10986.83	2938.00	421.9	996.0	.0	108.14	.00	.00	.00
62	376.3	1019.6	1086.8	10992.99	2938.00	239.4	1019.6	.0	110.68	.00	.00	.00
63	382.6	1043.5	1111.4	10999.27	2938.00	171.1	1043.5	.0	113.25	.00	.00	.00
64	388.9	1067.4	1136.1	11005.30	2938.00	133.4	1067.4	.0	115.83	.00	.00	.00
65	395.1	1091.4	1160.7	11011.13	2938.00	95.8	1091.4	.0	118.41	.00	.00	.00
66	401.4	1115.5	1185.6	11016.92	2938.00	58.1	1115.5	.0	121.01	.00	.00	.00
67	407.7	1139.9	1210.6	11022.66	2938.00	20.4	1139.9	.0	123.64	.00	.00	.00
68	414.0	1164.0	1235.4	11028.08	2938.00	.0	1164.0	-47.1	126.24	.00	.00	.00
69	420.3	1188.4	1260.5	11033.49	2938.00	.0	1188.4	-40.8	128.87	.00	.00	.00
70	426.5	1212.7	1285.5	11038.73	2938.00	.0	1212.7	-34.5	131.50	.00	.00	.00
71	432.8	1237.0	1310.6	11043.81	2938.00	.0	1237.0	-28.3	134.13	.00	.00	.00
72	439.1	1261.4	1335.6	11048.78	2938.00	.0	1261.4	-22.0	136.76	.00	.00	.00
73	445.4	1285.7	1360.7	11053.61	2938.00	.0	1285.7	-15.7	139.39	.00	.00	.00
74	451.7	1310.1	1385.7	11058.32	2938.00	.0	1310.1	-9.4	142.03	.00	.00	.00
75	458.0	1334.4	1410.8	11062.92	2938.00	.0	1334.4	-3.1	144.67	.00	.00	.00
76	464.2	1358.8	1435.9	11067.43	2938.00	.0	1358.8	3.1	147.30	.00	.00	.00
77	470.5	1383.1	1460.9	11071.81	2938.00	.0	1383.1	9.4	149.95	.00	.00	.00
78	476.8	1407.4	1486.0	11076.14	2938.00	.0	1407.4	15.7	152.59	.00	.00	.00
79	483.1	1431.8	1511.1	11080.38	2938.00	.0	1431.8	22.0	155.23	.00	.00	.00
80	489.4	1456.3	1536.3	11084.67	2938.00	.0	1456.3	28.3	157.90	.00	.00	.00

VESSEL DISP.		RESTORING FORCE ON VESSEL	INCREMENT STIFFNESS	YAW MOMENT	VERTICAL FORCE	OVERTURN MOMENT	MAX.LINE LOAD	LINE ON BOTTOM	HOR.FORCE ON ANCHOR	LINE LOAD (KIPS) LINE NUMBER													
13 (FT)	14 (% WD)	15 16 (KIPS)	(KIPS/FT)	(FT-KIP)	(KIPS)	(FT-KIP)	(KIPS)	(FT)	(KIPS)	1	2	3	4	5	6	7	8	9	10	11	12		
.0	.0	0.	.00	0.	3954.	0.	650.	2296.	601.	650	650	650	650	650	650	650	650	650	650	650	650	650	650
4.5	.2	179.	39.84	0.	3955.	10059.	673.	2253.	623.	669	673	673	669	663	655	645	637	631	627	627	631	637	645	655	663
9.0	.3	357.	39.45	0.	3955.	20034.	696.	2209.	645.	689	696	696	689	676	659	641	624	612	605	605	612	624	641	659	676
13.5	.4	534.	39.36	0.	3956.	29961.	719.	2166.	667.	709	719	719	709	689	664	636	612	593	583	583	593	612	636	664	689
18.0	.6	714.	40.07	0.	3957.	40120.	743.	2122.	689.	728	743	743	728	702	668	632	599	574	560	560	574	599	632	668	702
22.5	.8	891.	39.36	0.	3957.	50092.	766.	2079.	711.	748	766	766	748	715	673	628	587	555	539	539	555	587	628	673	715
27.0	.9	1069.	39.55	0.	3959.	60045.	790.	2035.	734.	768	790	790	768	729	677	623	574	537	517	517	537	574	623	677	729
31.5	1.0	1249.	40.00	0.	3960.	70141.	814.	1990.	757.	789	814	814	789	742	682	619	561	519	495	495	519	561	619	682	742
36.0	1.2	1427.	39.51	0.	3961.	80160.	838.	1947.	780.	809	838	838	809	755	687	614	549	500	474	474	500	549	614	687	755
40.5	1.4	1605.	39.53	1.	3962.	90164.	862.	1903.	803.	829	862	862	829	769	692	610	537	481	453	453	481	537	610	692	769
45.0	1.5	1781.	39.06	0.	3964.	99966.	886.	1851.	826.	849	886	886	849	782	696	606	525	464	432	432	464	525	606	696	782
49.5	1.6	1956.	38.92	0.	3965.	109741.	909.	1658.	848.	870	909	909	870	796	701	602	513	446	411	411	446	513	602	701	796
54.0	1.8	2127.	37.91	0.	3965.	119156.	931.	1473.	869.	890	931	931	890	810	706	597	500	428	391	391	428	500	597	706	810
58.5	2.0	2294.	37.25	0.	3964.	128329.	951.	1301.	889.	910	951	951	910	823	710	593	488	411	371	371	411	488	593	710	823
63.0	2.1	2455.	35.71	0.	3961.	137038.	971.	1143.	907.	928	971	971	928	837	715	589	476	394	352	352	394	476	589	715	837
67.5	2.3	2612.	34.98	0.	3958.	145480.	990.	990.	926.	946	990	990	946	850	720	584	464	377	333	333	377	464	584	720	850
72.0	2.4	2768.	34.58	1.	3954.	153750.	1008.	842.	943.	963	1008	1008	963	864	725	580	452	360	314	314	360	452	580	725	864
76.5	2.5	2919.	33.65	0.	3950.	161706.	1027.	698.	961.	979	1027	1027	979	878	730	576	440	344	296	296	344	440	576	730	878
81.0	2.7	3068.	32.99	0.	3946.	169433.	1045.	559.	979.	995	1045	1045	995	892	734	571	429	328	279	279	328	429	571	734	892
85.5	2.8	3214.	32.54	0.	3941.	177025.	1062.	426.	996.	1011	1062	1062	1011	905	739	567	417	312	262	262	312	417	567	739	905
90.0	3.0	3358.	31.89	0.	3936.	184472.	1079.	288.	1012.	1026	1079	1079	1026	918	744	563	406	297	246	246	297	406	563	744	918
94.5	3.2	3496.	30.75	0.	3932.	191552.	1097.	203.	1029.	1041	1097	1097	1041	930	749	558	394	283	230	230	283	394	558	749	930
99.0	3.3	3631.	29.92	0.	3929.	198355.	1114.	166.	1046.	1056	1114	1114	1056	942	754	554	383	268	217	217	268	383	554	754	942
103.5	3.5	3765.	29.89	0.	3925.	205180.	1132.	139.	1064.	1071	1132	1132	1071	953	758	550	372	254	203	203	254	372	550	758	953
108.0	3.6	3897.	29.36	0.	3923.	211829.	1151.	111.	1082.	1086	1151	1151	1086	965	763	546	361	241	191	191	241	361	546	763	965
112.5	3.8	4025.	28.40	0.	3922.	218157.	1170.	82.	1100.	1101	1170	1170	1101	976	768	542	350	228	180	180	228	350	542	768	976
117.0	3.9	4150.	27.81	0.	3923.	224276.	1189.	53.	1118.	1116	1189	1189	1116	986	773	538	340	217	170	170	217	340	538	773	986
121.5	4.1	4275.	27.62	0.	3925.	230306.	1208.	24.	1137.	1131	1208	1208	1131	997	778	534	329	205	161	161	205	329	534	778	997
126.0	4.2	4398.	27.48	1.	3928.	236263.	1228.	4.	1157.	1147	1228	1228	1147	1008	783	530	319	195	152	152	195	319	530	783	1008
130.5	4.3	4519.	26.92	0.	3933.	242004.	1248.	0.	1176.	1163	1248	1248	1163	1018	789	526	308	185	145	145	185	308	526	789	1018
135.0	4.5	4638.	26.47	0.	3940.	247582.	1269.	0.	1197.	1179	1269	1269	1179	1029	794	522	298	176	138	138	176	298	522	794	1029
139.5	4.7	4756.	26.21	0.	3947.	253067.	1290.	0.	1217.	1195	1290	1290	1195	1039	799	518	289	168	132	132	168	289	518	799	1039
144.0	4.8	4874.	26.03	0.	3956.	258480.	1312.	0.	1238.	1211	1312	1312	1211	1049	804	514	279	160	127	127	160	279	514	804	1049
148.5	4.9	4991.	26.05	0.	3966.	263883.	1334.	0.	1260.	1229	1334	1334	1229	1059	809	510	270	153	121	121	153	270	510	809	1059
153.0	5.1	5108.	26.05	0.	3977.	269233.	1357.	0.	1282.	1246	1357	1357	1246	1069	814	506	260	147	116	116	147	260	506	814	1069
157.5	5.3	5225.	26.06	0.	3988.	274545.	1381.	0.	1305.	1264	1381	1381	1264	1079	819	502	251	141	111	111	141	251	502	819	1079
162.0	5.4	5343.	26.13	0.	4001.	279881.	1404.	0.	1328.	1282	1404	1404	1282	1089	824	497	242	136	107	107	136	242	497	824	1089
166.5	5.6	5461.	26.18	0.	4015.	285236.	1429.	0.	1352.	1300	1429	1429	1300	1099	829	493	234	131	102	102	131	234	493	829	1099
171.0	5.7	5579.	26.33	0.	4029.	290630.	1454.	0.	1376.	1319	1454	1454	1319	1109	834	489	226	126	98	98	126	226	489	834	1109
175.5	5.8	5698.	26.44	0.	4045.	296051.	1479.	0.	1401.	1338	1479	1479	1338	1120	839	485	218	122	93	93	122	218	485	839	1120
180.0	6.0	5818.	26.72	0.	4062.	301522.	1505.	0.	1426.	1357	1505	1505	1357	1130	844	481	211	117	89	89	117	211	481	844	1130
184.5	6.2	5939.	26.81	0.	4080.	306981.	1532.	0.	1452.	1377	1532	1532	1377	1141	850	477	204	113	85	85	113	204	477	850	1141

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT11088. FT

STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

F.C. = 28.1do
Surge = 5%
Total = 10%

DEEPWATER, ARAMID MOORING LINE JIP
CASE C3A16T

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG

CATENARY OPTIMIZATION - NO

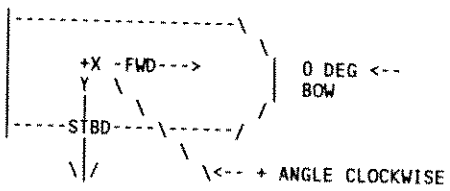
INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO



VESSEL DISP.		RESTORING FORCE ON VESSEL	INCREMENT STIFFNESS	YAW MOMENT	VERTICAL FORCE	OVERTURN MOMENT	MAX.LINE LOAD	LINE ON BOTTOM	HOR.FORCE ON ANCHOR	LINE LOAD (KIPS) LINE NUMBER														
13 (FT)	14 (% WD)	15 16 (KIPS)	(KIPS/FT)	(FT-KIP)	(KIPS)	(FT-KIP)	(KIPS)	(FT)	(KIPS)	1	2	3	4	5	6	7	8	9	10	11	12			
.0	.0	1.	.00	1.	3680.	128779.	742.	2124.	688.	742	0	732	708	692	652	614	581	575	564	566	581	623	653	683	708
4.5	.2	158.	34.73	797.	3673.	136157.	765.	2081.	710.	765	0	752	721	697	648	602	562	553	542	547	568	618	657	695	727
9.0	.3	313.	34.58	1647.	3667.	143568.	789.	2037.	733.	789	0	773	735	703	645	590	544	531	520	528	555	613	661	708	747
13.5	.4	469.	34.52	2486.	3661.	150890.	813.	1993.	756.	813	0	793	749	707	641	577	526	510	498	510	542	608	665	721	766
18.0	.6	626.	34.91	3524.	3654.	158371.	836.	1950.	778.	836	0	814	763	713	637	565	508	488	476	491	529	603	669	733	786
22.5	.8	781.	34.48	4372.	3648.	165695.	860.	1907.	801.	860	0	835	777	718	633	553	490	467	455	472	517	598	673	746	806
27.0	.9	934.	34.13	5276.	3642.	172955.	884.	1863.	824.	884	0	855	791	723	629	541	472	446	434	454	504	593	677	759	826
31.5	1.0	1087.	34.00	6133.	3637.	180277.	907.	1673.	847.	907	0	876	805	729	626	530	454	425	414	436	491	588	681	772	846
36.0	1.2	1238.	33.48	7292.	3631.	187375.	929.	1489.	867.	929	0	897	819	734	622	518	437	405	393	419	478	584	685	785	866
40.5	1.4	1386.	32.76	8462.	3624.	194294.	950.	1316.	887.	950	0	916	833	740	618	507	420	385	373	401	466	579	689	798	886
45.0	1.5	1530.	32.16	9729.	3616.	201003.	969.	1158.	906.	969	0	935	848	745	614	494	403	365	354	384	454	573	693	811	906
49.5	1.6	1671.	31.24	10823.	3607.	207461.	988.	1005.	924.	988	0	952	862	750	610	482	386	346	335	367	442	569	698	825	924
54.0	1.8	1809.	30.63	11876.	3598.	213829.	1006.	858.	942.	1006	0	969	876	756	607	471	370	327	316	350	429	563	702	837	942
58.5	2.0	1944.	30.09	12881.	3589.	220084.	1024.	714.	959.	1024	0	986	890	761	603	460	354	309	297	334	417	559	706	851	958
63.0	2.1	2076.	29.35	13741.	3581.	226136.	1042.	575.	977.	1042	0	1002	904	766	599	449	338	291	280	318	406	554	710	864	975
67.5	2.3	2205.	28.71	14405.	3572.	232003.	1060.	442.	993.	1060	0	1017	917	772	596	437	322	274	263	302	394	549	714	877	990
72.0	2.4	2333.	28.30	15065.	3562.	237751.	1077.	304.	1010.	1077	0	1033	930	778	592	426	307	257	247	287	382	544	718	890	1006
76.5	2.5	2456.	27.49	15670.	3554.	243306.	1094.	210.	1027.	1094	0	1049	943	783	589	415	292	241	231	272	370	540	722	903	1021
81.0	2.7	2576.	26.57	16044.	3546.	248621.	1112.	171.	1044.	1112	0	1064	955	789	585	405	278	227	217	258	359	535	726	915	1036
85.5	2.8	2693.	26.00	16211.	3538.	253760.	1130.	142.	1061.	1130	0	1079	966	795	582	394	264	213	204	244	348	530	731	927	1051
90.0	3.0	2808.	25.55	16277.	3532.	258788.	1148.	115.	1079.	1148	0	1094	978	801	579	383	251	200	191	230	336	525	734	938	1065
94.5	3.2	2919.	24.74	16212.	3526.	263585.	1167.	87.	1097.	1167	0	1109	989	807	575	373	238	188	180	219	325	520	739	949	1080
99.0	3.3	3028.	24.09	16078.	3521.	268253.	1185.	58.	1115.	1185	0	1125	1000	813	571	362	226	178	170	207	314	515	743	960	1094
103.5	3.5	3133.	23.53	15943.	3518.	272809.	1204.	29.	1134.	1204	0	1141	1011	818	568	352	214	168	161	196	303	511	747	971	1109
108.0	3.6	3237.	23.09	15750.	3516.	277199.	1224.	7.	1153.	1224	0	1157	1022	824	564	342	203	159	152	186	293	506	751	981	1123
112.5	3.8	3339.	22.60	15548.	3516.	281432.	1244.	0.	1173.	1244	0	1173	1033	830	561	332	193	151	145	177	283	501	755	991	1139
117.0	3.9	3438.	22.09	15361.	3516.	285543.	1265.	0.	1193.	1265	0	1190	1044	835	557	322	184	144	138	168	273	496	759	1002	1154
121.5	4.1	3536.	21.74	15110.	3518.	289575.	1286.	0.	1213.	1286	0	1206	1055	841	554	312	175	137	132	160	263	491	763	1012	1170
126.0	4.2	3633.	21.55	14814.	3521.	293580.	1308.	0.	1234.	1308	0	1224	1065	847	551	302	167	131	127	153	254	486	768	1022	1186
130.5	4.3	3729.	21.25	14563.	3525.	297548.	1330.	0.	1256.	1330	0	1241	1076	853	547	293	159	126	121	147	244	482	772	1032	1202
135.0	4.5	3824.	21.05	14408.	3530.	301476.	1352.	0.	1277.	1352	0	1259	1086	859	544	284	153	120	116	141	235	477	776	1042	1218
139.5	4.7	3918.	20.91	14338.	3537.	305437.	1375.	0.	1300.	1375	0	1278	1097	866	541	276	147	115	111	135	227	472	780	1051	1235
144.0	4.8	4012.	20.87	14321.	3544.	309322.	1399.	0.	1323.	1399	0	1297	1107	871	538	267	141	111	106	130	219	467	784	1061	1252
148.5	4.9	4106.	20.95	14365.	3551.	313229.	1423.	0.	1346.	1423	0	1316	1118	877	535	258	136	106	102	126	211	463	789	1070	1269
153.0	5.1	4201.	21.04	14442.	3560.	317177.	1448.	0.	1370.	1448	0	1335	1129	883	531	249	131	101	97	121	203	458	793	1080	1287
157.5	5.3	4295.	21.07	14587.	3569.	321181.	1473.	0.	1395.	1473	0	1355	1140	889	529	241	126	97	93	116	195	454	797	1089	1305
162.0	5.4	4390.	21.07	14804.	3579.	325179.	1499.	0.	1420.	1499	0	1375	1152	896	526	233	122	93	89	112	189	449	801	1098	1323
166.5	5.6	4485.	21.10	15099.	3590.	329154.	1525.	0.	1445.	1525	0	1396	1163	901	522	226	118	89	85	108	182	444	806	1108	1342

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT11088. FT

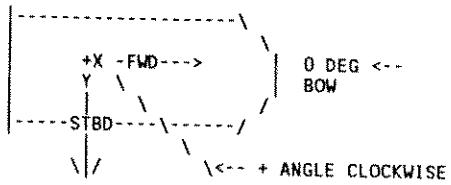
STARTING DISPLACEMENTS : SURGE(FT) = -14.531 SWAY(FT) = -9.656 YAW(DEG) = .722

DEEPWATER, ARAMID MOORING LINE JIP
CASE ST3016 tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	11.3	33.8	56.3	78.8	101.3	123.8	146.3	168.8	-168.8	-146.3	-123.8	-101.3	-78.8	-56.3	-33.8	-11.3
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	3000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	3000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.500"
LINE LENGTH (FT)	400.0
WEIGHT IN WATER (LB/FT)	36.64
LINE B.S. (KIPS)	2325.0
AREA (SQ IN)	15.90
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.500"
LINE LENGTH (FT)	300.0
WEIGHT IN WATER (LB/FT)	36.64
LINE B.S. (KIPS)	2325.0
AREA (SQ IN)	15.90
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-100.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.500"
LINE LENGTH (FT)	3700.0
WEIGHT IN WATER (LB/FT)	36.64
LINE B.S. (KIPS)	2325.0
AREA (SQ IN)	15.90
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-112.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.500"
LINE LENGTH (FT)	2800.0
WEIGHT IN WATER (LB/FT)	36.64
LINE B.S. (KIPS)	2325.0
AREA (SQ IN)	15.90
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	4.750"
LINE LENGTH (FT)	1500.0
WEIGHT IN WATER (LB/FT)	186.48
LINE B.S. (KIPS)	2372.0
AREA (SQ IN)	17.72
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.500"
LINE LENGTH (FT)	2600.0
WEIGHT IN WATER (LB/FT)	36.64
LINE B.S. (KIPS)	2325.0
AREA (SQ IN)	15.90
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	4.750"
LINE LENGTH (FT)	100.0
WEIGHT IN WATER (LB/FT)	186.48
LINE B.S. (KIPS)	2372.0
AREA (SQ IN)	17.72
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
1	59.2	.0	61.2	8462.00	2938.00	8462.0	.0	.0				
2	61.3	131.1	144.8	10617.59	2938.00	4151.9	131.1	.0	9.84	-212.00	.00	188.68
3	63.5	136.3	150.3	10628.72	2938.00	4140.5	136.3	.0	10.21	-212.00	.00	193.81
4	65.6	141.7	156.1	10641.18	2938.00	4129.0	141.7	.0	10.60	-212.00	.00	199.15
5	67.8	146.8	161.7	10650.47	2938.00	4117.6	146.8	.0	10.97	-212.00	.00	204.33
6	70.0	152.2	167.5	10661.14	2938.00	4106.1	152.2	.0	11.35	-212.00	.00	209.72
7	72.1	157.3	173.0	10669.00	2938.00	4094.6	157.3	.0	11.72	-212.00	.00	214.93
8	74.3	162.4	178.6	10676.30	2938.00	4083.2	162.4	.0	12.09	-212.00	.00	220.16
9	76.4	167.8	184.4	10684.97	2938.00	4071.7	167.8	.0	12.48	-212.00	.00	225.61
10	78.6	173.0	190.0	10691.24	2938.00	4060.2	173.0	.0	12.85	-212.00	.00	230.87
11	82.9	183.5	201.3	10704.28	2938.00	4037.3	183.5	.0	13.61	-212.00	.00	241.65
12	87.2	193.7	212.5	10714.19	2938.00	4014.4	193.7	.0	14.35	-212.00	.00	252.26
13	91.5	204.3	223.8	10724.46	2938.00	3991.4	204.3	.0	15.11	-212.00	.00	263.13
14	95.9	214.5	234.9	10732.21	2938.00	3968.5	214.5	.0	15.85	-212.00	.00	273.83
15	100.2	225.0	246.3	10740.51	2938.00	3945.5	225.0	.0	16.61	-212.00	.00	284.77
16	104.5	235.3	257.4	10746.71	2938.00	3922.6	235.3	.0	17.36	-212.00	.00	295.54
17	108.8	246.1	269.1	10754.80	2938.00	3899.6	246.1	.0	18.14	-212.00	.00	306.76
18	113.1	256.3	280.2	10759.81	2938.00	3876.7	256.3	.0	18.88	-212.00	.00	317.57
19	117.4	267.1	291.8	10766.64	2938.00	3853.8	267.1	.0	19.66	-212.00	.00	328.84
20	121.8	277.4	302.9	10770.75	2938.00	3830.8	277.4	.0	20.41	-212.00	.00	339.70
21	126.1	288.2	314.5	10776.61	2938.00	3807.9	288.2	.0	21.19	-212.00	.00	351.01
22	130.4	298.4	325.7	10780.02	2938.00	3784.9	298.4	.0	21.94	-212.00	.00	361.90
23	134.7	309.2	337.3	10785.12	2938.00	3761.9	309.2	.0	22.72	-212.00	.00	373.25
24	139.0	320.0	348.9	10789.85	2938.00	3739.0	320.0	.0	23.50	-212.00	.00	384.62
25	143.3	330.8	360.5	10794.26	2938.00	3716.0	330.8	.0	24.28	-212.00	.00	396.00
26	147.7	341.1	371.6	10796.65	2938.00	3693.1	341.1	.0	25.03	-212.00	.00	406.95
27	152.0	351.8	383.3	10800.56	2938.00	3670.1	351.8	.0	25.81	-212.00	.00	418.35
28	156.3	362.6	394.9	10804.24	2938.00	3647.2	362.6	.0	26.60	-212.00	.00	429.77
29	160.6	373.4	406.5	10807.69	2938.00	3624.2	373.4	.0	27.38	-212.00	.00	441.20
30	164.9	384.2	418.1	10810.95	2938.00	3601.2	384.2	.0	28.16	-212.00	.00	452.64
31	169.2	395.0	429.7	10814.02	2938.00	3578.3	395.0	.0	28.95	-212.00	.00	464.09
32	173.6	406.3	441.9	10818.37	2938.00	3555.3	406.3	.0	29.77	-212.00	.00	476.01
33	177.9	417.1	453.5	10821.08	2938.00	3532.4	417.1	.0	30.55	-212.00	.00	487.47
34	182.2	427.9	465.1	10823.65	2938.00	3509.4	427.9	.0	31.34	-212.00	.00	498.94
35	186.5	439.3	477.2	10827.43	2938.00	3486.4	439.3	.0	32.16	-212.00	.00	510.89
36	190.8	450.1	488.8	10829.72	2938.00	3463.5	450.1	.0	32.94	-212.00	.00	522.38
37	195.1	461.4	501.0	10833.17	2938.00	3440.5	461.4	.0	33.76	-212.00	.00	534.33
38	199.5	472.2	512.6	10835.24	2938.00	3417.5	472.2	.0	34.55	-212.00	.00	545.83
39	203.8	483.5	524.7	10838.40	2938.00	3394.5	483.5	.0	35.37	-212.00	.00	557.81
40	208.1	494.9	536.8	10841.43	2938.00	3371.6	494.9	.0	36.19	-212.00	.00	569.79
41	212.4	505.6	548.4	10843.19	2938.00	3348.6	505.6	.0	36.98	-212.00	.00	581.30
42	216.7	517.5	561.1	10847.10	2938.00	3325.6	517.5	.0	37.84	-212.00	.00	593.76
43	221.0	528.3	572.7	10848.67	2938.00	3302.6	528.3	.0	38.67	-212.00	.00	605.29
44	225.4	540.2	585.3	10852.32	2938.00	3279.7	540.2	.0	39.48	-212.00	.00	617.76
45	229.7	551.0	596.9	10853.73	2938.00	3256.7	551.0	.0	40.27	-212.00	.00	629.29

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
46	234.0	562.8	609.6	10857.13	2938.00	3233.7	562.8	.0	41.13	-212.00	.00	641.78
47	238.3	574.7	622.2	10860.37	2938.00	3210.7	574.7	.0	41.99	-212.00	.00	654.27
48	242.6	585.5	633.8	10861.60	2938.00	3187.8	585.5	.0	42.77	-212.00	.00	665.81
49	247.0	597.4	646.4	10864.67	2938.00	3164.8	597.4	.0	43.63	-212.00	.00	678.31
50	251.3	609.3	659.0	10867.63	2938.00	3141.8	609.3	.0	44.49	-212.00	.00	690.81
51	255.6	620.0	670.7	10868.65	2938.00	3118.8	620.0	.0	45.28	-212.00	.00	702.37
52	259.9	631.9	683.3	10871.44	2938.00	3095.8	631.9	.0	46.14	-212.00	.00	714.88
53	264.2	643.8	695.9	10874.14	2938.00	3072.8	643.8	.0	47.00	-212.00	.00	727.39
54	268.5	655.7	708.5	10876.75	2938.00	3049.8	655.7	.0	47.86	-212.00	.00	739.91
55	272.9	667.5	721.1	10879.27	2938.00	3026.9	667.5	.0	48.72	-212.00	.00	752.43
56	277.2	679.4	733.8	10881.72	2938.00	3003.9	679.4	.0	49.58	-212.00	.00	764.96
57	281.5	691.3	746.4	10884.09	2938.00	2980.9	691.3	.0	50.44	-212.00	.00	777.49
58	285.8	703.2	759.0	10886.38	2938.00	2957.9	703.2	.0	51.30	-212.00	.00	790.02
59	290.1	715.0	771.6	10888.61	2938.00	2934.9	715.0	.0	52.16	-212.00	.00	802.56
60	294.4	726.9	784.3	10890.78	2938.00	2911.9	726.9	.0	53.02	-212.00	.00	815.10
61	298.8	738.8	796.9	10892.88	2938.00	2888.9	738.8	.0	53.88	-212.00	.00	827.64
62	303.1	750.6	809.5	10894.93	2938.00	2865.9	750.6	.0	54.75	-212.00	.00	840.19
63	307.4	762.5	822.1	10896.92	2938.00	2842.9	762.5	.0	55.61	-212.00	.00	852.73
64	311.7	775.5	835.8	10900.30	2938.00	2819.9	775.5	.0	56.54	-212.00	.00	866.25
65	316.0	787.3	848.4	10902.17	2938.00	2796.9	787.3	.0	57.40	-212.00	.00	878.80
66	320.3	799.2	861.0	10903.99	2938.00	2773.9	799.2	.0	58.27	-212.00	.00	891.36
67	324.7	812.2	874.6	10907.14	2938.00	2750.9	812.2	.0	59.20	-212.00	.00	904.88
68	329.0	824.0	887.3	10908.85	2938.00	2727.8	824.0	.0	60.06	-212.00	.00	917.44
69	333.3	835.9	899.9	10910.51	2938.00	2665.8	835.9	.0	60.93	-212.00	.00	930.01
70	337.6	848.9	913.5	10913.46	2938.00	2547.6	848.9	.0	61.86	-212.00	.00	943.54
71	341.9	861.8	927.2	10916.33	2938.00	2429.3	861.8	.0	62.79	-212.00	.00	957.08
72	346.2	874.8	940.8	10919.11	2938.00	2311.0	874.8	.0	63.73	-212.00	.00	970.62
73	350.6	887.7	954.4	10921.82	2938.00	2192.7	887.7	.0	64.67	-212.00	.00	984.17
74	354.9	900.7	968.1	10924.45	2938.00	2074.4	900.7	.0	65.60	-212.00	.00	997.71
75	359.2	913.6	981.7	10927.01	2938.00	1956.0	913.6	.0	66.54	-212.00	.00	1011.26
76	363.5	927.6	996.3	10930.69	2938.00	1837.7	927.6	.0	67.54	-212.00	.00	1025.79
77	367.8	941.7	1011.0	10934.25	2938.00	1719.3	941.7	.0	68.55	-212.00	.00	1040.33
78	372.1	955.7	1025.6	10937.71	2938.00	1600.9	955.7	.0	69.56	-212.00	.00	1054.86
79	376.5	970.8	1041.3	10942.20	2938.00	1482.5	970.8	.0	70.64	-212.00	.00	1070.38
80	380.8	984.8	1055.9	10945.44	2938.00	1364.0	984.8	.0	71.65	-212.00	.00	1084.93
81	385.1	1000.0	1071.5	10949.67	2938.00	1245.6	1000.0	.0	72.73	-212.00	.00	1100.46
82	389.4	1014.0	1086.2	10952.70	2938.00	1127.1	1014.0	.0	73.74	-212.00	.00	1115.01
83	393.7	1029.1	1101.8	10956.70	2938.00	1008.6	1029.1	.0	74.83	-212.00	.00	1130.55
84	398.1	1044.2	1117.5	10960.57	2938.00	890.1	1044.2	.0	75.91	-212.00	.00	1146.09
85	402.4	1059.3	1133.2	10964.33	2938.00	771.5	1059.3	.0	76.99	-212.00	.00	1161.64
86	406.7	1075.5	1149.8	10968.98	2938.00	652.9	1075.5	.0	78.15	-212.00	.00	1178.18
87	411.0	1090.6	1165.5	10972.50	2938.00	534.4	1090.6	.0	79.23	-212.00	.00	1193.74
88	415.3	1107.9	1183.2	10977.85	2938.00	415.7	1107.9	.0	80.46	-212.00	.00	1211.28
89	419.6	1123.0	1198.8	10981.14	2938.00	297.1	1123.0	.0	81.54	-212.00	.00	1226.84
90	424.0	1140.3	1216.5	10986.19	2938.00	178.4	1140.3	.0	82.77	-212.00	.00	1244.39
91	428.3	1157.5	1234.2	10991.08	2938.00	92.5	1157.5	.0	84.00	-212.00	.00	1261.95
92	432.6	1172.6	1249.9	10994.06	2938.00	69.2	1172.6	.0	85.09	-212.00	.00	1277.53
93	436.9	1189.9	1267.6	10998.70	2938.00	46.0	1189.9	.0	86.32	-212.00	.00	1295.09
94	441.2	1207.2	1285.3	11003.21	2938.00	22.7	1207.2	.0	87.56	-212.00	.00	1312.67
95	445.5	1224.4	1303.0	11007.59	2938.00	.0	1224.4	.1	88.79	-212.00	.00	1330.25
96	449.9	1240.6	1319.7	11011.03	2938.00	.0	1240.6	4.4	89.95	-212.00	.00	1346.84
97	454.2	1257.9	1337.4	11015.18	2938.00	.0	1257.9	8.7	91.18	-212.00	.00	1364.43
98	458.5	1275.2	1355.1	11019.24	2938.00	.0	1275.2	13.1	92.42	-212.00	.00	1382.02
99	462.8	1290.3	1370.8	11021.60	2938.00	.0	1290.3	17.4	93.51	-212.00	.00	1397.63

VESSEL DISP. 13 (FT)	14 (% WD)	RESTORING FORCE ON VESSEL 15 16 (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	4524.	0.	781.	2974.	695.	750	750	750	750	750	750	750	750	750	750	750	750
6.0	.2	250.	41.63	0.	4527.	15176.	814.	2913.	726.	778	783	783	778	769	756	744	732	724	719	719	724
12.0	.4	501.	41.92	0.	4538.	30475.	850.	2847.	760.	808	820	820	808	788	763	737	715	699	690	690	699
18.0	.6	740.	39.86	0.	4538.	44586.	880.	2794.	789.	833	850	850	833	808	770	731	699	678	655	655	678
24.0	.8	988.	41.30	-1.	4544.	59953.	913.	2739.	820.	864	883	883	864	827	777	725	683	647	630	630	647
30.0	1.0	1233.	40.79	0.	4547.	74876.	947.	2518.	852.	894	917	917	894	843	783	719	665	619	605	605	619
36.0	1.2	1453.	36.69	0.	4553.	87132.	975.	2270.	879.	919	946	946	919	865	791	714	647	603	576	576	603
42.0	1.4	1676.	37.23	0.	4554.	100497.	1006.	2004.	908.	944	976	976	944	882	798	708	633	577	550	550	577
48.0	1.6	1904.	37.96	0.	4550.	113156.	1030.	1800.	932.	969	1001	1001	969	905	805	702	612	554	522	522	554
54.0	1.8	2106.	33.61	0.	4547.	125326.	1055.	1601.	956.	993	1026	1026	993	920	813	697	603	530	496	496	530
60.0	2.0	2299.	32.26	0.	4537.	135618.	1077.	1432.	977.	1013	1048	1048	1013	936	820	691	582	511	472	472	511
66.0	2.2	2488.	31.38	0.	4531.	146235.	1100.	1251.	999.	1032	1071	1071	1032	953	826	686	569	490	449	449	490
72.0	2.4	2676.	31.33	0.	4529.	156485.	1126.	1046.	1024.	1053	1097	1097	1053	971	830	682	554	469	430	430	469
78.0	2.6	2863.	31.14	0.	4521.	166731.	1149.	868.	1047.	1072	1120	1120	1072	987	835	678	538	449	408	408	449
84.0	2.8	3039.	29.44	0.	4518.	176339.	1172.	701.	1069.	1094	1143	1143	1094	1000	843	671	524	432	389	389	432
90.0	3.0	3216.	29.48	0.	4511.	185725.	1196.	522.	1092.	1114	1167	1167	1114	1014	852	658	511	415	371	371	415
96.0	3.2	3392.	29.40	0.	4502.	195091.	1216.	377.	1113.	1134	1188	1188	1134	1028	860	651	496	398	350	350	398
102.0	3.4	3550.	26.27	0.	4500.	203308.	1240.	206.	1136.	1153	1212	1212	1153	1040	866	648	482	382	336	336	382
108.0	3.6	3709.	26.57	0.	4497.	211623.	1260.	97.	1156.	1173	1233	1233	1173	1054	871	645	470	364	322	322	364
114.0	3.8	3876.	27.83	0.	4499.	220412.	1288.	56.	1183.	1192	1260	1260	1192	1067	878	642	457	350	307	307	350
120.0	4.0	4035.	26.42	1.	4501.	228004.	1310.	27.	1204.	1212	1282	1282	1212	1082	887	636	443	337	293	293	337
126.0	4.2	4180.	24.27	1.	4506.	234758.	1334.	0.	1228.	1229	1307	1307	1229	1096	896	627	433	326	282	282	326
132.0	4.4	4350.	28.28	0.	4509.	243589.	1361.	0.	1254.	1253	1333	1333	1253	1110	904	618	422	311	270	270	311
138.0	4.6	4498.	24.66	0.	4517.	250393.	1387.	0.	1280.	1272	1360	1360	1272	1124	910	613	410	302	261	261	302

LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
750	750	750	750	750	750	750	750	750	750	750	750
778	783	783	778	769	756	744	732	724	719	719	724
808	820	820	808	788	763	737	715	699	690	690	699
833	850	850	833	808	770	731	699	678	655	655	678
864	883	883	864	827	777	725	683	647	630	630	647
894	917	917	894	843	783	719	665	619	605	605	619
919	946	946	919	865	791	714	647	603	576	576	603
944	976	976	944	882	798	708	633	577	550	550	577
969	1001	1001	969	905	805	702	612	554	522	522	554
993	1026	1026	993	920	813	697	603	530	496	496	530
1013	1048	1048	1013	936	820	691	582	511	472	472	511
1032	1071	1071	1032	953	826	686	569	490	449	449	490
1053	1097	1097	1053	971	830	682	554	469	430	430	469
1072	1120	1120	1072	987	835	678	538	449	408	408	449
1094	1143	1143	1094	1000	843	671	524	432	389	389	432
1114	1167	1167	1114	1014	852	658	511	415	371	371	415
1134	1188	1188	1134	1028	860	651	496	398	350	350	398
1153	1212	1212	1153	1040	866	648	482	382	336	336	382
1173	1233	1233	1173	1054	871	645	470	364	322	322	364
1192	1260	1260	1192	1067	878	642	457	350	307	307	350
1212	1282	1282	1212	1082	887	636	443	337	293	293	337
1229	1307	1307	1229	1096	896	627	433	326	282	282	326
1253	1333	1333	1253	1110	904	618	422	311	270	270	311
1272	1360	1360	1272	1124	910	613	410	302	261	261	302

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT11026. FT

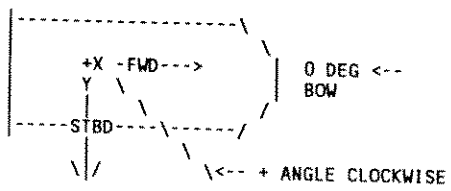
STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE ST3016 tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP.		RESTORING FORCE ON VESSEL	INCREMENT STIFFNESS	YAW MOMENT	VERTICAL FORCE	OVERTURN MOMENT	MAX.LINE LOAD	LINE ON BOTTOM	HOR.FORCE ON ANCHOR	LINE LOAD (KIPS) LINE NUMBER													
13 (FT)	14 (% WD)	15 16 (KIPS)	(KIPS/FT)	(FT-KIP)	(KIPS)	(FT-KIP)	(KIPS)	(FT)	(KIPS)	1	2	3	4	5	6	7	8	9	10	11	12		
.0	.0	2.	.00	0.	4223.	151048.	892.	2773.	800.	861	0	848	823	801	753	709	677	666	649	651	678	719	753	790	823
6.0	.2	214.	35.31	-1180.	4210.	161594.	926.	2691.	832.	896	0	875	837	809	747	694	647	639	620	631	651	712	759	810	847
12.0	.4	417.	33.86	1147.	4211.	171683.	954.	2452.	859.	925	0	909	861	818	741	681	619	608	599	607	641	706	765	827	874
18.0	.6	625.	34.68	2691.	4195.	182524.	983.	2202.	887.	953	0	932	877	825	737	657	603	579	569	580	616	699	770	842	907
24.0	.8	820.	32.50	4842.	4192.	192337.	1013.	1939.	916.	984	0	958	903	830	732	645	578	554	542	557	606	693	776	863	929
30.0	1.0	1008.	31.29	5869.	4177.	201583.	1036.	1751.	938.	1007	0	984	918	836	727	628	555	527	517	535	586	687	782	879	953
36.0	1.2	1190.	30.38	7375.	4169.	210370.	1060.	1565.	960.	1030	0	1005	937	848	724	612	533	501	491	515	572	681	786	900	978
42.0	1.4	1360.	28.28	8281.	4159.	219167.	1083.	1380.	983.	1054	0	1026	953	856	718	602	514	477	468	492	555	676	793	916	999
48.0	1.6	1533.	28.96	9271.	4141.	226957.	1106.	1199.	1005.	1077	0	1044	971	864	712	582	492	455	443	472	540	665	800	932	1019
54.0	1.8	1695.	26.85	10226.	4129.	234424.	1131.	1007.	1029.	1102	0	1065	988	868	707	570	471	434	425	452	525	655	808	949	1038
60.0	2.0	1857.	27.00	10886.	4119.	242067.	1154.	826.	1052.	1126	0	1088	1002	876	703	555	453	414	403	434	511	648	813	964	1058
66.0	2.2	2011.	25.81	10861.	4111.	249696.	1176.	669.	1073.	1148	0	1108	1017	887	699	542	435	394	384	416	495	645	819	981	1077
72.0	2.4	2166.	25.72	10860.	4101.	256990.	1200.	495.	1096.	1171	0	1129	1030	897	694	527	419	377	363	399	481	641	825	994	1099
78.0	2.6	2313.	24.49	11774.	4089.	263699.	1222.	334.	1118.	1194	0	1148	1043	905	690	515	402	354	347	383	468	634	829	1007	1118
84.0	2.8	2456.	23.94	12617.	4078.	269750.	1244.	182.	1140.	1216	0	1169	1058	911	684	498	386	340	333	366	455	623	833	1022	1138
90.0	3.0	2592.	22.69	12755.	4068.	275824.	1266.	85.	1162.	1238	0	1186	1070	916	681	487	370	327	316	350	441	616	840	1034	1158
96.0	3.2	2733.	23.47	12979.	4065.	282037.	1292.	50.	1186.	1264	0	1208	1088	924	678	473	353	310	304	337	431	611	846	1046	1175
102.0	3.4	2861.	21.30	13319.	4062.	288000.	1314.	21.	1208.	1286	0	1225	1102	931	674	464	341	298	289	326	418	608	852	1059	1195
108.0	3.6	2995.	22.33	13385.	4059.	294072.	1339.	0.	1233.	1312	0	1250	1117	939	666	450	331	285	279	311	405	603	859	1070	1213
114.0	3.8	3126.	21.78	13525.	4054.	299525.	1364.	0.	1258.	1337	0	1270	1132	947	658	439	317	275	267	300	393	596	864	1085	1230

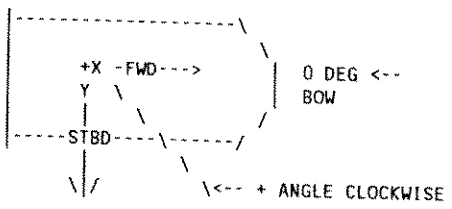
EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT11022. FT

STARTING DISPLACEMENTS : SURGE(FT) = -16.125 SWAY(FT) = -10.688 YAW(DEG) = .774

DEEPWATER, ARAMID MOORING LINE JIP
CASE C6A12T

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT	-	.00
LINE ATTACHMENT W.R.T. WATER LINE	-	-62.0 FT
ALLOWABLE LINE LENGTH ON BOTTOM	-	90.0 FT
DIRECTION OF VESSEL TRANSLATION	-	45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

(15) Case 7

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	22.5	45.0	67.5	112.5	135.0	157.5	-157.5	-135.0	-112.5	-67.5	-45.0	-22.5
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	6000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	6000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.375"
LINE LENGTH (FT)	500.0
WEIGHT IN WATER (LB/FT)	62.34
LINE B.S. (KIPS)	3338.0
AREA (SQ IN)	22.69
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	ARAMID
LINE SIZE (IN)	5.750"
LINE LENGTH (FT)	7500.0
WEIGHT IN WATER (LB/FT)	1.88
LINE B.S. (KIPS)	3320.0
AREA (SQ IN)	2.10
APP.MOD. OF ELAS.(KSI)	133000.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.250"
LINE LENGTH (FT)	3300.0
WEIGHT IN WATER (LB/FT)	62.34
LINE B.S. (KIPS)	3338.0
AREA (SQ IN)	22.69
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	4000.0
WEIGHT IN WATER (LB/FT)	250.00
LINE B.S. (KIPS)	3038.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.250"
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	62.34
LINE B.S. (KIPS)	3338.0
AREA (SQ IN)	22.69
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	400.0
WEIGHT IN WATER (LB/FT)	250.00
LINE B.S. (KIPS)	3038.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	50.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
1	41.4	.0	41.4	10762.00	5938.00	10762.0	.0	.0				
2	51.6	11.7	52.9	13882.89	5938.00	8599.6	11.7	.0	.93	.00	.00	.00
3	61.7	22.1	65.5	14062.05	5938.00	8437.0	22.1	.0	1.68	.00	.00	.00
4	71.9	32.6	78.9	14148.90	5938.00	8274.4	32.6	.0	2.44	.00	.00	.00
5	82.0	43.5	92.8	14214.39	5938.00	8111.7	43.5	.0	3.22	.00	.00	.00
6	92.2	54.8	107.2	14270.51	5938.00	7949.1	54.8	.0	4.02	.00	.00	.00
7	102.3	66.4	122.0	14321.16	5938.00	7786.5	66.4	.0	4.85	.00	.00	.00
8	112.5	78.5	137.2	14368.02	5938.00	7623.8	78.5	.0	5.70	.00	.00	.00
9	122.6	90.9	152.7	14412.10	5938.00	7461.2	90.9	.0	6.57	.00	.00	.00
10	132.8	103.8	168.6	14454.00	5938.00	7298.5	103.8	.0	7.46	.00	.00	.00
11	153.1	130.7	201.3	14531.95	5938.00	6973.2	130.7	.0	9.32	.00	.00	.00
12	173.4	159.1	235.3	14604.34	5938.00	6647.8	159.1	.0	11.27	.00	.00	.00
13	193.7	188.9	270.6	14670.66	5938.00	6322.3	188.9	.0	13.30	.00	.00	.00
14	214.1	220.2	307.1	14732.94	5938.00	5996.8	220.2	.0	15.42	.00	.00	.00
15	234.4	252.9	344.8	14791.06	5938.00	5671.2	252.9	.0	17.62	.00	.00	.00
16	254.7	287.0	383.7	14846.17	5938.00	5390.0	287.0	.0	19.90	.00	.00	.00
17	275.0	321.7	423.2	14891.59	5938.00	5309.2	321.7	.0	22.23	.00	.00	.00
18	295.3	356.5	462.9	14927.61	5938.00	5228.5	356.5	.0	24.56	.00	.00	.00
19	315.6	391.6	503.0	14957.62	5938.00	5147.7	391.6	.0	26.92	.00	.00	.00
20	335.9	426.8	543.2	14982.79	5938.00	5066.9	426.8	.0	29.29	.00	.00	.00
21	356.3	462.4	583.7	15005.30	5938.00	4986.1	462.4	.0	31.68	.00	.00	.00
22	376.6	498.2	624.5	15025.76	5938.00	4905.3	498.2	.0	34.08	.00	.00	.00
23	396.9	534.4	665.7	15044.67	5938.00	4824.5	534.4	.0	36.51	.00	.00	.00
24	417.2	570.8	707.0	15061.53	5938.00	4743.7	570.8	.0	38.95	.00	.00	.00
25	437.5	607.6	748.7	15078.17	5938.00	4662.8	607.6	.0	41.42	.00	.00	.00
26	457.8	644.6	790.6	15093.31	5938.00	4582.0	644.6	.0	43.90	.00	.00	.00
27	478.1	682.0	832.9	15108.42	5938.00	4501.1	682.0	.0	46.41	.00	.00	.00
28	498.4	719.8	875.5	15122.92	5938.00	4420.2	719.8	.0	48.94	.00	.00	.00
29	518.8	757.7	918.3	15136.36	5938.00	4339.3	757.7	.0	51.48	.00	.00	.00
30	539.1	796.1	961.5	15149.92	5938.00	4258.4	796.1	.0	54.04	.00	.00	.00
31	559.4	834.8	1004.9	15163.09	5938.00	4177.5	834.8	.0	56.63	.00	.00	.00
32	579.7	873.9	1048.7	15175.91	5938.00	4096.6	873.9	.0	59.24	.00	.00	.00
33	600.0	913.2	1092.7	15188.42	5938.00	4015.7	913.2	.0	61.86	.00	.00	.00
34	620.3	952.9	1137.0	15200.67	5938.00	3934.7	952.9	.0	64.50	.00	.00	.00
35	640.6	993.1	1181.8	15213.12	5938.00	3853.8	993.1	.0	67.18	.00	.00	.00
36	661.0	1033.4	1226.7	15224.86	5938.00	3772.8	1033.4	.0	69.86	.00	.00	.00
37	681.3	1074.3	1272.1	15237.21	5938.00	3691.8	1074.3	.0	72.58	.00	.00	.00
38	701.6	1115.3	1317.6	15248.56	5938.00	3610.8	1115.3	.0	75.30	.00	.00	.00
39	721.9	1156.5	1363.3	15259.79	5938.00	3529.8	1156.5	.0	78.05	.00	.00	.00
40	742.2	1198.4	1409.6	15271.47	5938.00	3448.7	1198.4	.0	80.83	.00	.00	.00
41	762.5	1240.6	1456.2	15283.04	5938.00	3367.7	1240.6	.0	83.62	.00	.00	.00
42	782.8	1282.8	1502.8	15293.75	5938.00	3286.6	1282.8	.0	86.43	.00	.00	.00
43	803.1	1325.7	1550.0	15304.99	5938.00	3205.5	1325.7	.0	89.26	.00	.00	.00
44	823.5	1368.9	1597.5	15316.09	5938.00	3124.4	1368.9	.0	92.12	.00	.00	.00
45	843.8	1412.3	1645.2	15327.00	5938.00	3043.3	1412.3	.0	95.00	.00	.00	.00

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
46	864.1	1456.1	1693.2	15337.86	5938.00	2962.2	1456.1	.0	97.90	.00	.00	.00
47	884.4	1500.3	1741.5	15348.55	5938.00	2881.0	1500.3	.0	100.81	.00	.00	.00
48	904.7	1544.7	1790.1	15359.12	5938.00	2799.8	1544.7	.0	103.75	.00	.00	.00
49	925.0	1589.4	1839.0	15369.61	5938.00	2718.7	1589.4	.0	106.71	.00	.00	.00
50	945.3	1634.5	1888.2	15380.00	5938.00	2637.5	1634.5	.0	109.68	.00	.00	.00
51	965.7	1679.9	1937.7	15390.26	5938.00	2556.2	1679.9	.0	112.68	.00	.00	.00
52	986.0	1725.6	1987.4	15400.49	5938.00	2475.0	1725.6	.0	115.70	.00	.00	.00
53	1006.3	1772.0	2037.7	15411.06	5938.00	2393.7	1772.0	.0	118.75	.00	.00	.00
54	1026.6	1818.3	2088.1	15421.06	5938.00	2312.5	1818.3	.0	121.80	.00	.00	.00
55	1046.9	1865.3	2139.0	15431.44	5938.00	2231.2	1865.3	.0	124.90	.00	.00	.00
56	1067.2	1912.2	2189.9	15441.32	5938.00	2149.9	1912.2	.0	127.99	.00	.00	.00
57	1087.5	1959.8	2241.4	15451.51	5938.00	2068.5	1959.8	.0	131.13	.00	.00	.00
58	1107.8	2007.5	2292.9	15461.23	5938.00	1987.2	2007.5	.0	134.26	.00	.00	.00
59	1128.2	2055.7	2344.9	15471.26	5938.00	1905.8	2055.7	.0	137.44	.00	.00	.00
60	1148.5	2104.6	2397.6	15481.64	5938.00	1824.4	2104.6	.0	140.65	.00	.00	.00
61	1168.8	2153.1	2449.9	15491.17	5938.00	1743.0	2153.1	.0	143.84	.00	.00	.00
62	1189.1	2202.3	2502.9	15501.00	5938.00	1661.6	2202.3	.0	147.08	.00	.00	.00
63	1209.4	2251.9	2556.1	15510.74	5938.00	1580.1	2251.9	.0	150.33	.00	.00	.00
64	1229.7	2301.7	2609.6	15520.38	5938.00	1498.6	2301.7	.0	153.61	.00	.00	.00
65	1250.0	2351.8	2663.4	15530.06	5938.00	1417.1	2351.8	.0	156.90	.00	.00	.00
66	1270.4	2402.6	2717.8	15539.96	5938.00	1099.6	2402.6	.0	160.24	.00	.00	.00
67	1290.7	2455.3	2773.9	15551.27	5938.00	770.3	2455.3	.0	163.68	.00	.00	.00
68	1311.0	2509.3	2831.1	15563.35	5938.00	440.9	2509.3	.0	167.20	.00	.00	.00
69	1331.3	2563.9	2888.9	15575.56	5938.00	330.5	2563.9	.0	170.76	.00	.00	.00
70	1351.6	2618.4	2946.7	15587.11	5938.00	248.7	2618.4	.0	174.32	.00	.00	.00
71	1371.9	2674.3	3005.7	15599.45	5938.00	166.9	2674.3	.0	177.95	.00	.00	.00
72	1392.2	2729.5	3064.1	15610.73	5938.00	85.0	2729.5	.0	181.56	.00	.00	.00
73	1412.5	2786.0	3123.7	15622.68	5938.00	3.2	2786.0	.0	185.24	.00	.00	.00
74	1432.9	2841.9	3182.7	15633.59	5938.00	.0	2841.9	-30.5	188.88	.00	.00	.00
75	1453.2	2897.8	3241.7	15644.13	5938.00	.0	2897.8	-10.2	192.53	.00	.00	.00
76	1473.5	2954.3	3301.3	15654.77	5938.00	.0	2954.3	10.2	196.22	.00	.00	.00
77	1493.8	3010.1	3360.4	15664.55	5938.00	.0	3010.1	30.5	199.88	.00	.00	.00
78	1514.1	3066.6	3420.0	15674.49	5938.00	.0	3066.6	50.8	203.57	.00	.00	.00
79	1534.4	3122.5	3479.1	15683.73	5938.00	.0	3122.5	71.1	207.23	.00	.00	.00
80	1554.7	3178.3	3538.2	15692.65	5938.00	.0	3178.3	91.4	210.90	.00	.00	.00

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	7185.	0.	1090.	4021.	911.	1090	1090	1090	1090	1090	1090	1090	1090	1090	1090	1090	1090
9.0	.2	176.	19.51	0.	7186.	15707.	1122.	3961.	940.	1120	1122	1120	1102	1090	1078	1061	1058	1061	1078	1090	1102
18.0	.3	349.	19.32	0.	7187.	31219.	1155.	3902.	969.	1150	1155	1150	1115	1090	1066	1032	1027	1032	1066	1090	1115
27.0	.4	522.	19.19	0.	7190.	46604.	1188.	3843.	998.	1180	1188	1180	1127	1090	1054	1004	997	1004	1054	1090	1127
36.0	.6	698.	19.49	0.	7195.	62282.	1222.	3781.	1029.	1212	1222	1212	1140	1090	1042	976	967	976	1042	1090	1140
45.0	.8	869.	19.02	0.	7199.	77510.	1255.	3722.	1059.	1243	1255	1243	1152	1090	1030	949	938	949	1030	1090	1152
54.0	.9	1040.	18.99	0.	7204.	92679.	1290.	3660.	1090.	1274	1290	1274	1165	1090	1018	923	910	923	1018	1090	1165
63.0	1.0	1217.	19.66	0.	7212.	108507.	1326.	3596.	1123.	1307	1326	1307	1177	1090	1007	896	881	896	1007	1090	1177
72.0	1.2	1393.	19.57	0.	7222.	124206.	1363.	3531.	1156.	1341	1363	1341	1190	1091	995	870	854	870	995	1091	1190
81.0	1.4	1564.	19.08	0.	7234.	139360.	1399.	3468.	1188.	1374	1399	1374	1204	1091	984	846	828	846	984	1091	1204
90.0	1.5	1733.	18.75	0.	7245.	154160.	1434.	3406.	1221.	1407	1434	1407	1217	1091	973	822	803	822	973	1091	1217
99.0	1.6	1903.	18.86	0.	7258.	169050.	1472.	3340.	1255.	1440	1472	1440	1230	1091	962	799	778	799	962	1091	1230
108.0	1.8	2076.	19.28	0.	7272.	184376.	1511.	3273.	1290.	1476	1511	1476	1243	1091	951	776	753	776	951	1091	1243
117.0	2.0	2248.	19.11	0.	7288.	199514.	1549.	3208.	1324.	1512	1549	1512	1256	1092	940	753	730	753	940	1092	1256
126.0	2.1	2416.	18.63	0.	7305.	214101.	1587.	3142.	1359.	1546	1587	1546	1269	1092	929	731	707	731	929	1092	1269
135.0	2.3	2584.	18.70	0.	7323.	228670.	1626.	3076.	1395.	1582	1626	1582	1282	1092	919	711	685	711	919	1092	1282
144.0	2.4	2754.	18.86	0.	7342.	243312.	1666.	3009.	1431.	1618	1666	1618	1296	1092	908	690	663	690	908	1092	1296
153.0	2.5	2923.	18.79	0.	7363.	257823.	1706.	2941.	1468.	1655	1706	1655	1311	1093	897	670	643	670	897	1093	1311
162.0	2.7	3091.	18.61	0.	7386.	272081.	1747.	2873.	1505.	1691	1747	1691	1325	1093	886	651	624	651	886	1093	1325
171.0	2.8	3258.	18.55	0.	7411.	286217.	1788.	2803.	1543.	1729	1788	1729	1339	1093	876	633	606	633	876	1093	1339
180.0	3.0	3424.	18.50	0.	7438.	300261.	1830.	2734.	1581.	1767	1830	1767	1354	1094	866	616	588	616	866	1094	1354
189.0	3.2	3590.	18.45	0.	7466.	314217.	1872.	2664.	1620.	1806	1872	1806	1368	1094	856	599	571	599	856	1094	1368
198.0	3.3	3756.	18.40	0.	7496.	328073.	1915.	2593.	1659.	1845	1915	1845	1382	1095	846	583	555	583	846	1095	1382
207.0	3.5	3921.	18.36	0.	7527.	341832.	1959.	2521.	1700.	1884	1959	1884	1396	1095	836	568	540	568	836	1095	1396
216.0	3.6	4085.	18.28	0.	7558.	355442.	2002.	2451.	1739.	1924	2002	1924	1410	1095	827	553	525	553	827	1095	1410
225.0	3.8	4249.	18.19	0.	7591.	368901.	2046.	2381.	1779.	1965	2046	1965	1424	1096	818	539	511	538	818	1096	1424
234.0	3.9	4413.	18.15	0.	7625.	382219.	2091.	2308.	1821.	2005	2091	2005	1439	1096	808	525	497	525	808	1096	1439
243.0	4.1	4573.	17.88	0.	7660.	395185.	2135.	2237.	1862.	2045	2135	2045	1453	1097	799	512	485	512	799	1097	1453
252.0	4.2	4738.	18.34	0.	7699.	408425.	2181.	2163.	1904.	2087	2181	2087	1468	1097	790	499	473	499	790	1097	1468
261.0	4.3	4900.	17.90	0.	7737.	421134.	2227.	2091.	1946.	2128	2227	2128	1484	1098	780	488	462	488	780	1098	1484
270.0	4.5	5063.	18.20	0.	7778.	434027.	2274.	2017.	1990.	2170	2274	2170	1500	1099	771	477	451	477	771	1099	1500
279.0	4.7	5226.	18.07	0.	7819.	446741.	2321.	1943.	2034.	2212	2321	2212	1515	1099	762	466	441	466	762	1099	1515
288.0	4.8	5387.	17.84	0.	7860.	459180.	2367.	1872.	2076.	2255	2367	2255	1530	1100	753	456	431	456	753	1100	1530
297.0	4.9	5549.	18.08	0.	7904.	471762.	2414.	1799.	2120.	2299	2414	2299	1545	1100	744	447	422	447	744	1100	1545
306.0	5.1	5712.	18.04	0.	7949.	484195.	2463.	1722.	2166.	2343	2463	2343	1560	1101	736	437	414	437	736	1101	1560
315.0	5.3	5870.	17.63	0.	7992.	496178.	2512.	1648.	2211.	2385	2512	2385	1575	1102	728	429	406	429	728	1102	1575
324.0	5.4	6033.	18.12	0.	8039.	508501.	2561.	1572.	2257.	2430	2561	2430	1591	1102	720	421	398	421	720	1102	1591
333.0	5.6	6197.	18.23	0.	8088.	520807.	2611.	1497.	2303.	2475	2611	2475	1607	1103	711	413	390	413	711	1103	1607
342.0	5.7	6360.	18.10	0.	8136.	532891.	2661.	1423.	2350.	2520	2661	2520	1622	1104	703	405	383	405	703	1104	1622
351.0	5.8	6524.	18.15	0.	8185.	544912.	2711.	1146.	2396.	2566	2711	2566	1638	1105	695	398	376	398	695	1105	1638
360.0	6.0	6684.	17.78	0.	8232.	556537.	2756.	872.	2439.	2612	2756	2612	1654	1105	687	391	370	391	687	1105	1654
369.0	6.2	6841.	17.49	0.	8279.	567842.	2800.	609.	2480.	2659	2800	2659	1670	1106	679	385	363	385	679	1106	1670
378.0	6.3	6997.	17.34	0.	8325.	578931.	2842.	409.	2520.	2705	2842	2705	1686	1107	671	378	357	378	671	1107	1686
387.0	6.4	7148.	16.73	0.	8369.	589389.	2885.	335.	2560.	2748	2885	2748	1702	1108	664	372	351	372	664	1108	1702
396.0	6.6	7296.	16.44	0.	8412.	599479.	2929.	272.	2602.	2788	2929	2788	1719	1109	656	366	345	366	656	1109	1719
405.0	6.8	7441.	16.15	0.	8453.	609256.	2973.	212.	2643.	2828	2973	2828	1735	1109	649	360	339	360	649	1109	1735
414.0	6.9	7586.	16.12	0.	8495.	618946.	3017.	151.	2685.	2867	3017	2867	1752	1110	642	355	333	355	642	1110	1752
423.0	7.1	7736.	16.67	0.	8539.	629002.	3064.	86.	2729.	2908	3064	2908	1769	1111	635	349	327	349	635	1111	1769
432.0	7.2	7886.	16.65	0.	8582.	638981.	3108.	19.	2772.	2949	3108	2949	1786	1112	628	344	321	344	628	1112	1786
441.0	7.3	8035.	16.55	1.	8625.	648799.	3156.	0.	2816.	2989	3156	2989	1803	1113	622	338	316	338	622	1113	1803
450.0	7.5	8190.	17.21	0.	8671.	659093.	3205.	0.	2863.	3031	3205	3031	1820	1114	615	333	310	333	615	1114	1820

VF = 7293.7

VF = 7356

RF = 2304 DLL = 1092.7 HAF = 1455.67

Sum = 1561 LOIS = 2963.7 HLL = 649.67

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
459.0	7.7	8347.	17.47	0.	8718.	669526.	3256.	0.	2911.	3074	3256	3074	1837	1115	609	327	304	327	609	1115	1837
468.0	7.8	8502.	17.25	0.	8764.	679691.	3307.	0.	2959.	3115	3307	3115	1854	1116	602	322	299	322	602	1116	1854
477.0	7.9	8665.	18.12	0.	8813.	690489.	3361.	0.	3011.	3160	3361	3160	1872	1117	596	317	294	317	596	1117	1872
486.0	8.1	8831.	18.43	0.	8864.	701473.	3415.	0.	3062.	3206	3415	3206	1889	1118	590	311	288	311	590	1118	1889
495.0	8.3	9001.	18.87	0.	8917.	712726.	3472.	0.	3116.	3253	3472	3253	1907	1119	584	306	283	306	584	1119	1907
504.0	8.4	9173.	19.13	0.	8970.	724088.	3532.	0.	3172.	3300	3532	3300	1925	1120	578	301	278	301	578	1120	1925

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT15701. FT

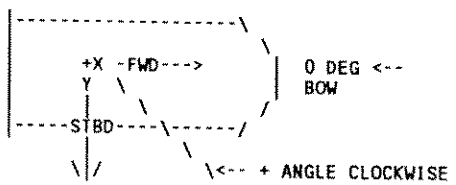
STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE C6A12T

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	15.0	45.0	75.0	105.0	135.0	165.0	-165.0	-135.0	-105.0	-75.0	-45.0	-15.0
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	1100.0	1100.0	1100.0	1100.0	1100.0	1100.0	1100.0	1100.0	1100.0	1100.0	1100.0	1100.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	6000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	6000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	400.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	400.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-200.0

LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	5000.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-332.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	5800.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	1700.0
WEIGHT IN WATER (LB/FT)	297.54
LINE B.S. (KIPS)	3504.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	3600.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	200.0
WEIGHT IN WATER (LB/FT)	297.54
LINE B.S. (KIPS)	3504.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
1	113.4	.0	117.5	11162.00	5938.00	11162.0	.0	.0				
2	117.6	222.2	251.4	15025.63	5938.00	5455.3	222.2	.0	18.31	-532.00	.00	399.56
3	121.8	230.6	260.8	15057.42	5938.00	5441.3	230.6	.0	18.93	-532.00	.00	407.75
4	126.0	238.4	269.7	15081.26	5938.00	5427.4	238.4	.0	19.51	-532.00	.00	415.69
5	130.2	246.3	278.6	15103.58	5938.00	5413.4	246.3	.0	20.10	-532.00	.00	423.67
6	134.4	254.7	288.0	15130.00	5938.00	5399.4	254.7	.0	20.72	-532.00	.00	431.99
7	138.6	262.6	296.9	15149.55	5938.00	5385.4	262.6	.0	21.31	-532.00	.00	440.05
8	142.8	270.5	305.9	15167.97	5938.00	5371.5	270.5	.0	21.91	-532.00	.00	448.14
9	147.0	278.4	314.8	15185.37	5938.00	5357.5	278.4	.0	22.50	-532.00	.00	456.26
10	151.2	286.2	323.7	15201.82	5938.00	5343.5	286.2	.0	23.09	-532.00	.00	464.41
11	159.6	302.0	341.6	15232.17	5938.00	5315.6	302.0	.0	24.27	-532.00	.00	480.79
12	168.0	317.7	359.4	15259.54	5938.00	5287.6	317.7	.0	25.46	-532.00	.00	497.28
13	176.4	333.5	377.3	15284.35	5938.00	5259.6	333.5	.0	26.65	-532.00	.00	513.85
14	184.8	349.3	395.1	15306.93	5938.00	5231.7	349.3	.0	27.84	-532.00	.00	530.51
15	193.2	365.0	413.0	15327.57	5938.00	5203.7	365.0	.0	29.04	-532.00	.00	547.24
16	201.6	380.8	430.9	15346.51	5938.00	5175.8	380.8	.0	30.23	-532.00	.00	564.05
17	210.0	396.0	448.2	15360.47	5938.00	5147.8	396.0	.0	31.39	-532.00	.00	580.56
18	218.4	411.8	466.1	15376.71	5938.00	5119.8	411.8	.0	32.59	-532.00	.00	597.48
19	226.8	427.5	484.0	15391.74	5938.00	5091.8	427.5	.0	33.79	-532.00	.00	614.45
20	235.2	443.3	501.8	15405.69	5938.00	5063.9	443.3	.0	34.98	-532.00	.00	631.47
21	243.6	459.0	519.7	15418.65	5938.00	5035.9	459.0	.0	36.18	-532.00	.00	648.54
22	252.0	474.3	537.1	15427.89	5938.00	5007.9	474.3	.0	37.35	-532.00	.00	665.27
23	260.4	490.0	554.9	15439.35	5938.00	4979.9	490.0	.0	38.55	-532.00	.00	682.42
24	268.8	505.8	572.8	15450.06	5938.00	4952.0	505.8	.0	39.75	-532.00	.00	699.59
25	277.3	521.5	590.6	15460.10	5938.00	4924.0	521.5	.0	40.95	-532.00	.00	716.81
26	285.7	537.3	608.5	15469.55	5938.00	4896.0	537.3	.0	42.16	-532.00	.00	734.05
27	294.1	553.0	626.4	15478.46	5938.00	4868.0	553.0	.0	43.36	-532.00	.00	751.32
28	302.5	568.8	644.2	15486.85	5938.00	4840.0	568.8	.0	44.56	-532.00	.00	768.62
29	310.9	584.5	662.1	15494.79	5938.00	4812.0	584.5	.0	45.77	-532.00	.00	785.95
30	319.3	600.3	679.9	15502.29	5938.00	4784.0	600.3	.0	46.97	-532.00	.00	803.29
31	327.7	616.1	697.8	15509.41	5938.00	4756.0	616.1	.0	48.18	-532.00	.00	820.66
32	336.1	631.8	715.6	15516.15	5938.00	4728.0	631.8	.0	49.38	-532.00	.00	838.05
33	344.5	648.6	734.4	15526.75	5938.00	4700.1	648.6	.0	50.66	-532.00	.00	856.25
34	352.9	664.4	752.3	15532.74	5938.00	4672.1	664.4	.0	51.86	-532.00	.00	873.68
35	361.3	680.1	770.1	15538.45	5938.00	4644.1	680.1	.0	53.07	-532.00	.00	891.13
36	369.7	696.9	788.9	15547.77	5938.00	4616.1	696.9	.0	54.34	-532.00	.00	909.40
37	378.1	712.7	806.8	15552.88	5938.00	4588.1	712.7	.0	55.55	-532.00	.00	926.88
38	386.5	728.5	824.6	15557.75	5938.00	4560.1	728.5	.0	56.76	-532.00	.00	944.37
39	394.9	745.3	843.4	15566.03	5938.00	4532.1	745.3	.0	58.04	-532.00	.00	962.69
40	403.3	761.0	861.3	15570.42	5938.00	4504.1	761.0	.0	59.25	-532.00	.00	980.22
41	411.7	777.8	880.1	15578.08	5938.00	4476.1	777.8	.0	60.52	-532.00	.00	998.57
42	420.1	793.6	897.9	15582.03	5938.00	4448.0	793.6	.0	61.73	-532.00	.00	1016.12
43	428.5	810.4	916.7	15589.14	5938.00	4420.0	810.4	.0	63.01	-532.00	.00	1034.50
44	436.9	827.2	935.5	15595.97	5938.00	4392.0	827.2	.0	64.29	-532.00	.00	1052.90
45	445.3	842.9	953.3	15599.35	5938.00	4364.0	842.9	.0	65.50	-532.00	.00	1070.48

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
46	453.7	859.8	972.1	15605.71	5938.00	4336.0	859.8	.0	66.78	-532.00	.00	1088.90
47	462.1	876.6	990.9	15611.83	5938.00	4308.0	876.6	.0	68.06	-532.00	.00	1107.33
48	470.5	893.4	1009.7	15617.73	5938.00	4280.0	893.4	.0	69.34	-532.00	.00	1125.77
49	478.9	910.2	1028.5	15623.42	5938.00	4252.0	910.2	.0	70.62	-532.00	.00	1144.23
50	487.3	925.9	1046.3	15626.01	5938.00	4223.9	925.9	.0	71.83	-532.00	.00	1161.86
51	495.7	942.7	1065.1	15631.34	5938.00	4195.9	942.7	.0	73.11	-532.00	.00	1180.33
52	504.1	959.5	1083.9	15636.49	5938.00	4167.9	959.5	.0	74.40	-532.00	.00	1198.82
53	512.5	976.3	1102.7	15641.47	5938.00	4139.9	976.3	.0	75.68	-532.00	.00	1217.31
54	520.9	993.2	1121.5	15646.28	5938.00	4111.9	993.2	.0	76.96	-532.00	.00	1235.81
55	529.3	1010.0	1140.3	15650.93	5938.00	4083.8	1010.0	.0	78.24	-532.00	.00	1254.33
56	537.8	1026.8	1159.1	15655.42	5938.00	4055.8	1026.8	.0	79.53	-532.00	.00	1272.85
57	546.2	1043.6	1177.8	15659.78	5938.00	4027.8	1043.6	.0	80.81	-532.00	.00	1291.37
58	554.6	1061.4	1197.6	15666.51	5938.00	3999.7	1061.4	.0	82.16	-532.00	.00	1310.76
59	563.0	1078.2	1216.4	15670.55	5938.00	3971.7	1078.2	.0	83.44	-532.00	.00	1329.30
60	571.4	1095.0	1235.1	15674.48	5938.00	3943.7	1095.0	.0	84.73	-532.00	.00	1347.85
61	579.8	1111.8	1253.9	15678.29	5938.00	3915.6	1111.8	.0	86.01	-532.00	.00	1366.41
62	588.2	1130.8	1274.6	15686.67	5938.00	3887.6	1130.8	.0	87.43	-532.00	.00	1386.68
63	596.6	1147.6	1293.4	15690.19	5938.00	3859.6	1147.6	.0	88.72	-532.00	.00	1405.26
64	605.0	1164.4	1312.2	15693.61	5938.00	3831.5	1164.4	.0	90.00	-532.00	.00	1423.83
65	613.4	1181.2	1330.9	15696.94	5938.00	3734.9	1181.2	.0	91.29	-532.00	.00	1442.42
66	621.8	1200.1	1351.6	15704.57	5938.00	3580.8	1200.1	.0	92.71	-532.00	.00	1462.73
67	630.2	1216.9	1370.4	15707.64	5938.00	3426.8	1216.9	.0	94.00	-532.00	.00	1481.32
68	638.6	1235.8	1391.0	15714.88	5938.00	3272.7	1235.8	.0	95.42	-532.00	.00	1501.65
69	647.0	1254.7	1411.7	15721.89	5938.00	3118.6	1254.7	.0	96.84	-532.00	.00	1521.99
70	655.4	1273.6	1432.3	15728.68	5938.00	2964.5	1273.6	.0	98.26	-532.00	.00	1542.34
71	663.8	1292.5	1453.0	15735.26	5938.00	2810.4	1292.5	.0	99.69	-532.00	.00	1562.70
72	672.2	1311.4	1473.7	15741.62	5938.00	2656.2	1311.4	.0	101.11	-532.00	.00	1583.06
73	680.6	1332.4	1496.2	15751.69	5938.00	2502.1	1332.4	.0	102.67	-532.00	.00	1605.18
74	689.0	1351.3	1516.9	15757.59	5938.00	2347.9	1351.3	.0	104.10	-532.00	.00	1625.56
75	697.4	1372.3	1539.4	15767.07	5938.00	2193.7	1372.3	.0	105.66	-532.00	.00	1647.70
76	705.8	1391.3	1560.1	15772.53	5938.00	2039.4	1391.3	.0	107.09	-532.00	.00	1668.11
77	714.2	1412.3	1582.6	15781.47	5938.00	1885.1	1412.3	.0	108.65	-532.00	.00	1690.27
78	722.6	1433.3	1605.1	15790.11	5938.00	1730.8	1433.3	.0	110.22	-532.00	.00	1712.45
79	731.0	1454.3	1627.7	15798.47	5938.00	1576.5	1454.3	.0	111.78	-532.00	.00	1734.63
80	739.4	1475.3	1650.2	15806.56	5938.00	1422.1	1475.3	.0	113.35	-532.00	.00	1756.83
81	747.8	1498.4	1674.6	15817.79	5938.00	1267.8	1498.4	.0	115.05	-532.00	.00	1780.81
82	756.2	1519.4	1697.2	15825.32	5938.00	1113.4	1519.4	.0	116.62	-532.00	.00	1803.03
83	764.6	1542.5	1721.6	15835.88	5938.00	958.9	1542.5	.0	118.32	-532.00	.00	1827.04
84	773.0	1565.6	1746.1	15846.10	5938.00	804.5	1565.6	.0	120.03	-532.00	.00	1851.06
85	781.4	1586.6	1768.6	15852.83	5938.00	650.0	1586.6	.0	121.60	-532.00	.00	1873.31
86	789.8	1611.8	1795.0	15865.56	5938.00	495.4	1611.8	.0	123.45	-532.00	.00	1899.14
87	798.2	1634.9	1819.4	15874.84	5938.00	340.9	1634.9	.0	125.16	-532.00	.00	1923.21
88	806.7	1658.1	1843.9	15883.80	5938.00	198.1	1658.1	.0	126.87	-532.00	.00	1947.28
89	815.1	1681.2	1868.3	15892.49	5938.00	169.8	1681.2	.0	128.58	-532.00	.00	1971.37
90	823.5	1706.4	1894.7	15903.82	5938.00	141.4	1706.4	.0	130.43	-532.00	.00	1997.27
91	831.9	1729.5	1919.1	15911.94	5938.00	113.1	1729.5	.0	132.14	-532.00	.00	2021.39
92	840.3	1752.6	1943.6	15919.83	5938.00	84.7	1752.6	.0	133.86	-532.00	.00	2045.51
93	848.7	1777.8	1970.0	15930.24	5938.00	56.4	1777.8	.0	135.71	-532.00	.00	2071.45
94	857.1	1800.9	1994.5	15937.64	5938.00	28.0	1800.9	.0	137.43	-532.00	.00	2095.60
95	865.5	1826.1	2020.8	15947.50	5938.00	.0	1826.1	.1	139.28	-532.00	.00	2121.57
96	873.9	1847.1	2043.4	15951.82	5938.00	.0	1847.1	8.5	140.86	-532.00	.00	2143.94
97	882.3	1872.3	2069.8	15961.21	5938.00	.0	1872.3	16.9	142.72	-532.00	.00	2169.93
98	890.7	1897.5	2096.2	15970.35	5938.00	.0	1897.5	25.3	144.58	-532.00	.00	2195.94
99	899.1	1920.7	2120.7	15976.75	5938.00	.0	1920.7	33.7	146.30	-532.00	.00	2220.14

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	6136.	0.	1215.	4144.	974.	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100
12.0	.2	248.	20.68	0.	6143.	20631.	1262.	4072.	1017.	1141	1148	1141	1123	1100	1078	1063	1058	1063	1078	1100	1123
24.0	.4	515.	22.27	0.	6137.	43699.	1305.	4008.	1056.	1183	1192	1183	1148	1100	1058	1015	1007	1015	1058	1100	1148
36.0	.6	764.	20.72	0.	6146.	63026.	1359.	3926.	1105.	1223	1247	1223	1174	1100	1025	984	970	984	1025	1100	1174
48.0	.8	989.	18.73	0.	6148.	81828.	1397.	3871.	1141.	1264	1285	1264	1192	1100	1007	953	925	953	1007	1100	1192
60.0	1.0	1237.	20.66	0.	6169.	102526.	1452.	3673.	1190.	1307	1341	1307	1218	1100	988	916	892	916	988	1100	1218
72.0	1.2	1473.	19.67	0.	6184.	121570.	1497.	3302.	1232.	1347	1387	1347	1247	1101	970	882	855	882	970	1101	1247
84.0	1.4	1682.	17.46	0.	6189.	138748.	1531.	3054.	1263.	1388	1420	1388	1265	1101	951	852	821	852	951	1101	1265
96.0	1.6	1887.	17.08	0.	6180.	154088.	1568.	2773.	1297.	1418	1458	1418	1287	1101	925	824	782	824	925	1101	1287
108.0	1.8	2097.	17.46	0.	6189.	170249.	1598.	2551.	1326.	1450	1489	1450	1320	1101	912	788	752	788	912	1101	1320
120.0	2.0	2278.	15.08	0.	6196.	183619.	1633.	2296.	1358.	1481	1524	1481	1342	1102	894	766	724	766	894	1102	1342
132.0	2.2	2475.	16.47	0.	6192.	198221.	1669.	2034.	1392.	1509	1561	1509	1368	1102	872	734	696	734	872	1102	1368
144.0	2.4	2638.	13.58	0.	6197.	209815.	1699.	1827.	1420.	1536	1591	1536	1388	1103	857	716	667	716	857	1103	1388
156.0	2.6	2825.	15.57	0.	6193.	224254.	1730.	1608.	1450.	1570	1623	1570	1404	1103	837	689	640	689	837	1103	1404
168.0	2.8	2990.	13.73	0.	6192.	236574.	1762.	1391.	1480.	1596	1655	1596	1422	1103	824	664	615	664	824	1103	1422
180.0	3.0	3158.	14.03	0.	6185.	248416.	1790.	1207.	1507.	1623	1683	1623	1441	1104	802	640	592	640	802	1104	1441
192.0	3.2	3324.	13.82	0.	6187.	260138.	1820.	1001.	1536.	1652	1715	1652	1461	1105	784	619	571	619	784	1105	1461
204.0	3.4	3466.	11.85	0.	6188.	270056.	1847.	829.	1562.	1675	1742	1675	1479	1105	773	599	551	599	773	1105	1479
216.0	3.6	3626.	13.29	0.	6190.	281617.	1882.	593.	1595.	1704	1778	1704	1492	1106	756	580	531	580	756	1106	1492
228.0	3.8	3771.	12.14	0.	6187.	290981.	1907.	444.	1620.	1728	1803	1728	1511	1106	738	562	511	562	738	1106	1511
240.0	4.0	3917.	12.16	0.	6198.	301050.	1939.	239.	1650.	1756	1835	1756	1527	1107	726	546	495	546	726	1107	1527
252.0	4.2	4063.	12.16	0.	6209.	311288.	1972.	169.	1682.	1783	1869	1783	1544	1108	716	528	480	528	716	1108	1544
264.0	4.4	4205.	11.79	0.	6213.	320031.	2000.	138.	1709.	1806	1897	1806	1566	1109	701	511	466	511	701	1109	1566
276.0	4.6	4350.	12.09	0.	6225.	329535.	2036.	95.	1744.	1834	1934	1834	1581	1109	686	497	453	497	686	1109	1581
288.0	4.8	4493.	11.91	0.	6235.	338830.	2068.	61.	1774.	1864	1966	1864	1596	1110	671	484	439	484	671	1110	1596
300.0	5.0	4630.	11.45	0.	6244.	347392.	2102.	16.	1808.	1888	2001	1888	1613	1111	658	472	425	472	658	1111	1613
312.0	5.2	4782.	12.64	0.	6266.	357181.	2148.	0.	1851.	1918	2047	1918	1629	1112	645	460	414	460	645	1112	1629
324.0	5.4	4923.	11.73	0.	6283.	365935.	2179.	0.	1882.	1950	2079	1950	1647	1113	632	449	403	449	632	1113	1647

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT15977. FT

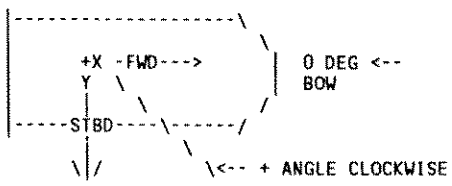
STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE WIRE2A tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	-1.	.00	0.	5547.	203944.	1406.	3859.	1149.	1294	0	1294	1211	1100	992	921	903	921	992	1100	1211
12.0	.2	203.	17.06	1740.	5555.	218631.	1455.	3646.	1193.	1344	0	1335	1222	1086	966	886	866	902	985	1116	1255
24.0	.4	395.	15.98	-513.	5536.	231510.	1500.	3284.	1234.	1389	0	1362	1234	1072	929	850	831	873	978	1131	1280
36.0	.6	580.	15.38	1482.	5535.	244660.	1533.	3032.	1265.	1423	0	1390	1247	1061	908	818	794	848	971	1146	1329
48.0	.8	749.	14.13	1115.	5521.	255573.	1570.	2755.	1299.	1460	0	1415	1259	1049	876	781	768	827	963	1160	1355
60.0	1.0	921.	14.30	2065.	5497.	266821.	1599.	2545.	1327.	1490	0	1441	1265	1029	852	751	733	798	952	1174	1389
72.0	1.2	1071.	12.53	2706.	5485.	276058.	1633.	2293.	1359.	1525	0	1467	1271	1014	828	723	712	778	940	1187	1415
84.0	1.4	1230.	13.22	1689.	5468.	285774.	1669.	2034.	1392.	1561	0	1487	1282	1004	797	696	682	758	930	1199	1443
96.0	1.6	1384.	12.87	1734.	5459.	296295.	1698.	1830.	1420.	1591	0	1510	1295	992	776	667	655	734	924	1217	1472
108.0	1.8	1525.	11.74	862.	5452.	305263.	1729.	1617.	1449.	1622	0	1531	1311	981	752	641	630	720	918	1235	1492
120.0	2.0	1674.	12.41	598.	5452.	315130.	1760.	1400.	1479.	1654	0	1558	1326	971	728	616	607	701	913	1254	1520
132.0	2.2	1802.	10.65	591.	5442.	323415.	1787.	1224.	1504.	1681	0	1578	1335	960	711	594	586	682	908	1264	1544
144.0	2.4	1939.	11.41	545.	5429.	331475.	1818.	1016.	1534.	1712	0	1600	1342	946	689	573	566	662	900	1272	1572
156.0	2.6	2067.	10.69	706.	5417.	338804.	1844.	851.	1559.	1739	0	1622	1350	931	668	553	547	643	888	1290	1594
168.0	2.8	2205.	11.46	-269.	5419.	347517.	1879.	613.	1592.	1774	0	1645	1366	921	648	535	528	626	878	1311	1618
180.0	3.0	2328.	10.26	-269.	5415.	355222.	1903.	473.	1615.	1798	0	1664	1379	914	629	514	509	610	872	1331	1642
192.0	3.2	2444.	9.66	-920.	5412.	362042.	1934.	272.	1645.	1830	0	1685	1386	905	611	498	494	594	867	1341	1663
204.0	3.4	2562.	9.90	-1090.	5410.	368867.	1966.	172.	1676.	1863	0	1708	1393	893	594	484	480	580	860	1352	1686
216.0	3.6	2677.	9.53	-850.	5407.	375155.	1993.	146.	1702.	1891	0	1727	1403	881	579	470	466	565	846	1370	1709
228.0	3.8	2790.	9.41	-1571.	5409.	381661.	2028.	106.	1735.	1925	0	1748	1412	872	564	457	453	552	839	1384	1729
240.0	4.0	2905.	9.63	-1366.	5413.	388585.	2060.	69.	1767.	1958	0	1773	1420	864	550	443	440	540	834	1393	1753
252.0	4.2	3022.	9.73	-2217.	5413.	395388.	2095.	29.	1800.	1994	0	1791	1430	853	537	429	426	524	828	1403	1778
264.0	4.4	3132.	9.18	-3613.	5412.	401232.	2130.	0.	1834.	2030	0	1811	1439	841	520	418	416	511	822	1414	1796
276.0	4.6	3245.	9.42	-4028.	5422.	407594.	2169.	0.	1872.	2069	0	1833	1448	833	508	407	405	501	813	1426	1819
288.0	4.8	3355.	9.11	-3890.	5432.	413650.	2204.	0.	1906.	2105	0	1856	1456	825	496	397	396	491	805	1438	1845

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT15988. FT

STARTING DISPLACEMENTS : SURGE(FT) = -40.500 SWAY(FT) = -40.500 YAW(DEG) = .000

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	2.	.00	0.	6512.	227881.	1285.	3668.	1086.	1285	0	1285	1169	1090	1014	913	899	913	1014	1090	1169
9.0	.2	150.	16.46	36.	6505.	239184.	1322.	3603.	1119.	1322	0	1313	1171	1080	994	884	872	892	1012	1101	1191
18.0	.3	296.	16.23	92.	6500.	250278.	1358.	3538.	1152.	1358	0	1340	1174	1070	975	857	847	870	1011	1112	1214
27.0	.4	438.	15.81	164.	6496.	260999.	1394.	3475.	1185.	1394	0	1368	1176	1060	955	831	823	850	1009	1122	1237
36.0	.6	577.	15.49	183.	6492.	271620.	1430.	3413.	1217.	1430	0	1395	1179	1051	937	806	799	830	1006	1132	1258
45.0	.8	719.	15.67	181.	6489.	282219.	1467.	3348.	1251.	1467	0	1422	1181	1041	918	781	775	811	1005	1143	1281
54.0	.9	861.	15.88	151.	6487.	293113.	1506.	3280.	1286.	1506	0	1450	1185	1032	900	756	751	792	1002	1153	1304
63.0	1.0	1002.	15.65	262.	6488.	303667.	1544.	3215.	1320.	1544	0	1480	1187	1022	881	732	729	773	1000	1163	1329
72.0	1.2	1141.	15.45	360.	6490.	314181.	1582.	3150.	1355.	1582	0	1509	1190	1013	863	710	708	754	998	1174	1353
81.0	1.4	1280.	15.35	425.	6492.	324622.	1621.	3084.	1391.	1621	0	1538	1193	1004	846	688	687	737	996	1184	1377
90.0	1.5	1416.	15.19	484.	6496.	335018.	1661.	3016.	1427.	1661	0	1568	1197	995	830	666	666	719	993	1195	1400
99.0	1.6	1551.	15.00	489.	6501.	345079.	1701.	2949.	1463.	1701	0	1597	1199	986	813	646	647	703	992	1206	1423
108.0	1.8	1685.	14.91	443.	6508.	355206.	1742.	2881.	1500.	1742	0	1628	1203	977	797	627	628	686	989	1217	1447
117.0	2.0	1820.	14.93	440.	6517.	365281.	1783.	2811.	1538.	1783	0	1658	1206	969	781	608	610	669	987	1227	1472
126.0	2.1	1953.	14.84	486.	6527.	375208.	1825.	2742.	1577.	1825	0	1689	1210	960	766	590	593	653	984	1238	1497
135.0	2.3	2085.	14.67	506.	6537.	384994.	1867.	2672.	1615.	1867	0	1721	1214	952	750	573	577	638	982	1248	1522
144.0	2.4	2216.	14.55	531.	6550.	394641.	1910.	2601.	1655.	1910	0	1752	1217	944	735	557	561	624	980	1258	1547
153.0	2.5	2347.	14.49	566.	6564.	404232.	1954.	2529.	1695.	1954	0	1784	1220	935	721	541	546	610	978	1269	1572
162.0	2.7	2476.	14.36	654.	6579.	413758.	1998.	2459.	1735.	1998	0	1817	1224	927	707	527	532	596	976	1280	1597
171.0	2.8	2604.	14.21	789.	6595.	423151.	2041.	2389.	1775.	2041	0	1850	1228	919	693	512	518	582	973	1290	1622
180.0	3.0	2733.	14.32	816.	6612.	432572.	2086.	2316.	1816.	2086	0	1884	1232	912	679	499	504	569	970	1301	1647
189.0	3.2	2859.	14.06	958.	6631.	441680.	2130.	2246.	1857.	2130	0	1917	1235	903	665	486	492	557	968	1312	1673
198.0	3.3	2986.	14.10	1050.	6652.	450819.	2176.	2172.	1899.	2176	0	1951	1239	895	653	474	480	545	966	1324	1699
207.0	3.5	3111.	13.88	1199.	6673.	459890.	2222.	2100.	1942.	2222	0	1986	1244	888	641	463	469	533	963	1334	1725
216.0	3.6	3236.	13.87	1270.	6696.	468751.	2268.	2026.	1985.	2268	0	2020	1247	880	629	452	458	522	960	1346	1752
225.0	3.8	3360.	13.84	1386.	6720.	477704.	2316.	1951.	2029.	2316	0	2055	1252	873	617	442	448	511	957	1356	1778
234.0	3.9	3484.	13.70	1686.	6745.	486393.	2362.	1880.	2071.	2362	0	2090	1256	866	606	433	439	500	955	1367	1805
243.0	4.1	3605.	13.48	1923.	6770.	494966.	2408.	1808.	2115.	2408	0	2126	1261	859	595	423	429	490	952	1378	1831
252.0	4.2	3729.	13.81	2075.	6798.	503642.	2458.	1731.	2161.	2458	0	2161	1264	852	584	415	421	481	950	1389	1859
261.0	4.3	3852.	13.62	2358.	6826.	512201.	2506.	1656.	2206.	2506	0	2198	1269	845	574	407	413	472	947	1400	1886
270.0	4.5	3974.	13.56	2585.	6856.	520646.	2556.	1581.	2251.	2556	0	2234	1273	838	564	399	405	463	945	1410	1914
279.0	4.7	4097.	13.66	2876.	6886.	529159.	2606.	1505.	2298.	2606	0	2271	1278	831	554	391	397	455	942	1421	1942
288.0	4.8	4220.	13.62	3206.	6918.	537604.	2656.	1438.	2345.	2656	0	2309	1282	825	544	384	390	447	940	1432	1970
297.0	4.9	4341.	13.48	3504.	6949.	545824.	2705.	1181.	2391.	2705	0	2345	1287	818	535	377	383	439	938	1443	1999
306.0	5.1	4457.	12.89	3965.	6978.	553667.	2752.	901.	2434.	2752	0	2382	1292	812	526	371	377	432	935	1454	2026
315.0	5.3	4572.	12.81	4827.	7008.	561373.	2795.	638.	2475.	2795	0	2420	1297	805	517	364	370	425	932	1466	2054
324.0	5.4	4688.	12.82	5904.	7039.	569061.	2837.	422.	2515.	2837	0	2459	1302	799	508	358	364	418	930	1478	2084
333.0	5.6	4801.	12.63	6889.	7070.	576636.	2880.	341.	2555.	2880	0	2498	1307	793	500	352	358	411	927	1489	2112
342.0	5.7	4917.	12.90	7811.	7101.	584260.	2925.	279.	2597.	2925	0	2536	1311	786	492	346	352	405	925	1502	2141
351.0	5.8	5033.	12.85	8923.	7133.	591925.	2968.	218.	2639.	2968	0	2576	1317	780	485	340	347	399	922	1513	2170
360.0	6.0	5149.	12.86	10115.	7165.	599467.	3012.	158.	2680.	3012	0	2616	1321	773	477	334	341	393	921	1525	2201
369.0	6.2	5266.	13.05	11081.	7198.	607257.	3059.	93.	2724.	3059	0	2656	1327	767	471	328	335	387	918	1536	2229
378.0	6.3	5383.	12.96	12262.	7231.	614815.	3104.	25.	2767.	3104	0	2695	1331	760	464	322	329	382	916	1548	2260
387.0	6.4	5500.	12.99	13246.	7264.	622412.	3150.	0.	2811.	3150	0	2733	1337	754	457	316	324	377	913	1559	2291
396.0	6.6	5617.	13.01	13870.	7297.	629936.	3200.	0.	2858.	3200	0	2769	1343	748	451	311	318	372	910	1571	2321
405.0	6.8	5733.	12.96	14361.	7330.	637386.	3250.	0.	2906.	3250	0	2804	1348	743	445	305	312	366	908	1582	2350
414.0	6.9	5849.	12.87	14788.	7362.	644741.	3301.	0.	2954.	3301	0	2838	1354	737	439	300	307	362	905	1594	2379
423.0	7.1	5969.	13.28	15060.	7397.	652394.	3355.	0.	3005.	3355	0	2873	1360	732	433	294	302	357	902	1605	2408
432.0	7.2	6090.	13.44	15565.	7432.	660115.	3409.	0.	3056.	3409	0	2909	1367	727	428	289	296	352	899	1616	2440
441.0	7.3	6214.	13.78	15941.	7469.	668030.	3466.	0.	3110.	3466	0	2945	1372	722	422	284	291	347	896	1627	2471
450.0	7.5	6339.	13.87	16030.	7506.	675951.	3525.	0.	3166.	3525	0	2980	1378	717	417	279	286	342	893	1639	2502

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT15700. FT

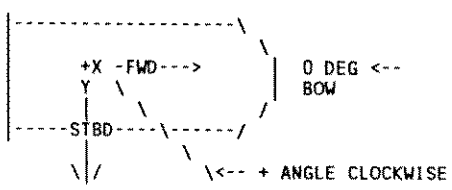
STARTING DISPLACEMENTS : SURGE(FT) = -40.500 SWAY(FT) = -40.500 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE WIRE2A tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

C6512T

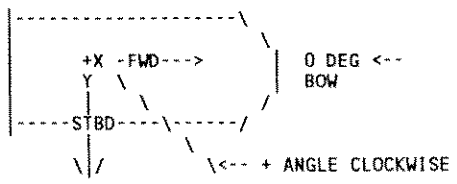
Appendix K.2 - Alternate Designs

DEEPWATER, ARAMID MOORING LINE JIP
CASE ST1512 tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

C1 S12T

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	15.0	45.0	75.0	105.0	135.0	165.0	-165.0	-135.0	-105.0	-75.0	-45.0	-15.0
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	1500.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	1500.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	400.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	300.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-50.0

LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	1600.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-86.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	1300.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	1350.0
WEIGHT IN WATER (LB/FT)	297.54
LINE B.S. (KIPS)	3504.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	2600.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	100.0
WEIGHT IN WATER (LB/FT)	297.54
LINE B.S. (KIPS)	3504.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
1	72.9	.0	75.9	6212.00	1438.00	6212.0	.0	.0				
2	76.0	107.0	131.2	7297.26	1438.00	4001.3	107.0	.0	3.40	-136.00	.00	138.30
3	79.1	114.6	139.3	7305.04	1438.00	3990.9	114.6	.0	3.64	-136.00	.00	146.23
4	82.3	122.3	147.4	7311.64	1438.00	3980.4	122.3	.0	3.87	-136.00	.00	154.20
5	85.4	130.1	155.6	7318.14	1438.00	3970.0	130.1	.0	4.12	-136.00	.00	162.35
6	88.6	137.8	163.8	7322.99	1438.00	3959.6	137.8	.0	4.35	-136.00	.00	170.38
7	91.7	145.4	171.9	7327.23	1438.00	3949.1	145.4	.0	4.59	-136.00	.00	178.43
8	94.8	153.1	180.1	7330.96	1438.00	3938.7	153.1	.0	4.83	-136.00	.00	186.49
9	98.0	160.7	188.2	7334.26	1438.00	3928.2	160.7	.0	5.07	-136.00	.00	194.58
10	101.1	168.6	196.6	7337.83	1438.00	3917.8	168.6	.0	5.31	-136.00	.00	202.84
11	107.4	183.9	213.0	7342.78	1438.00	3896.9	183.9	.0	5.79	-136.00	.00	219.08
12	113.7	199.6	229.7	7347.88	1438.00	3876.0	199.6	.0	6.28	-136.00	.00	235.69
13	120.0	215.3	246.5	7352.13	1438.00	3855.1	215.3	.0	6.77	-136.00	.00	252.35
14	126.2	231.0	263.2	7355.71	1438.00	3834.2	231.0	.0	7.26	-136.00	.00	269.03
15	132.5	246.7	280.0	7358.80	1438.00	3813.3	246.7	.0	7.75	-136.00	.00	285.74
16	138.8	262.4	296.8	7361.45	1438.00	3792.4	262.4	.0	8.24	-136.00	.00	302.48
17	145.1	278.5	314.0	7364.50	1438.00	3771.5	278.5	.0	8.74	-136.00	.00	319.57
18	151.4	294.2	330.8	7366.50	1438.00	3750.6	294.2	.0	9.23	-136.00	.00	336.34
19	157.6	310.7	348.4	7369.57	1438.00	3729.7	310.7	.0	9.74	-136.00	.00	353.81
20	163.9	326.8	365.6	7371.69	1438.00	3708.8	326.8	.0	10.25	-136.00	.00	370.95
21	170.2	343.2	383.1	7374.19	1438.00	3687.9	343.2	.0	10.76	-136.00	.00	388.45
22	176.5	359.7	400.7	7376.44	1438.00	3667.0	359.7	.0	11.27	-136.00	.00	405.97
23	182.8	376.2	418.3	7378.49	1438.00	3646.1	376.2	.0	11.79	-136.00	.00	423.49
24	189.0	392.7	435.8	7380.35	1438.00	3625.2	392.7	.0	12.30	-136.00	.00	441.02
25	195.3	409.2	453.4	7382.05	1438.00	3604.3	409.2	.0	12.81	-136.00	.00	458.56
26	201.6	426.5	471.7	7384.55	1438.00	3583.4	426.5	.0	13.35	-136.00	.00	476.81
27	207.9	442.9	489.3	7385.96	1438.00	3562.5	442.9	.0	13.87	-136.00	.00	494.37
28	214.2	460.2	507.6	7388.13	1438.00	3541.6	460.2	.0	14.40	-136.00	.00	512.63
29	220.4	477.5	525.9	7390.13	1438.00	3520.7	477.5	.0	14.94	-136.00	.00	530.91
30	226.7	494.7	544.2	7392.00	1438.00	3499.8	494.7	.0	15.48	-136.00	.00	549.19
31	233.0	512.0	562.5	7393.73	1438.00	3478.9	512.0	.0	16.02	-136.00	.00	567.48
32	239.3	529.3	580.9	7395.36	1438.00	3458.0	529.3	.0	16.55	-136.00	.00	585.77
33	245.6	546.6	599.2	7396.88	1438.00	3437.1	546.6	.0	17.09	-136.00	.00	604.07
34	251.8	564.6	618.2	7399.00	1438.00	3416.2	564.6	.0	17.65	-136.00	.00	623.08
35	258.1	581.9	636.6	7400.33	1438.00	3395.3	581.9	.0	18.19	-136.00	.00	641.39
36	264.4	599.9	655.6	7402.23	1438.00	3374.4	599.9	.0	18.75	-136.00	.00	660.41
37	270.7	618.0	674.7	7404.02	1438.00	3353.5	618.0	.0	19.31	-136.00	.00	679.44
38	277.0	636.0	693.7	7405.71	1438.00	3332.6	636.0	.0	19.87	-136.00	.00	698.48
39	283.2	654.1	712.8	7407.31	1438.00	3311.7	654.1	.0	20.43	-136.00	.00	717.51
40	289.5	672.2	731.9	7408.84	1438.00	3290.8	672.2	.0	21.00	-136.00	.00	736.56
41	295.8	691.0	751.6	7410.84	1438.00	3269.9	691.0	.0	21.58	-136.00	.00	756.32
42	302.1	709.0	770.7	7412.20	1438.00	3249.0	709.0	.0	22.14	-136.00	.00	775.37
43	308.4	727.9	790.5	7414.02	1438.00	3228.1	727.9	.0	22.73	-136.00	.00	795.14
44	314.6	746.7	810.3	7415.77	1438.00	3207.2	746.7	.0	23.31	-136.00	.00	814.92
45	320.9	765.6	830.1	7417.42	1438.00	3186.3	765.6	.0	23.90	-136.00	.00	834.70

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
46	327.2	784.4	849.9	7419.01	1438.00	3165.3	784.4	.0	24.48	-136.00	.00	854.48
47	333.5	803.2	869.7	7420.53	1438.00	3144.4	803.2	.0	25.07	-136.00	.00	874.27
48	339.8	822.1	889.5	7421.98	1438.00	3123.5	822.1	.0	25.65	-136.00	.00	894.06
49	346.0	840.9	909.3	7423.38	1438.00	3102.6	840.9	.0	26.24	-136.00	.00	913.85
50	352.3	860.6	929.9	7425.14	1438.00	3081.7	860.6	.0	26.85	-136.00	.00	934.37
51	358.6	879.4	949.7	7426.44	1438.00	3060.8	879.4	.0	27.43	-136.00	.00	954.17
52	364.9	899.8	971.0	7428.51	1438.00	3039.9	899.8	.0	28.07	-136.00	.00	975.42
53	371.2	918.6	990.8	7429.68	1438.00	3019.0	918.6	.0	28.65	-136.00	.00	995.23
54	377.4	939.1	1012.1	7431.61	1438.00	2998.1	939.1	.0	29.29	-136.00	.00	1016.48
55	383.7	957.9	1031.9	7432.69	1438.00	2977.1	957.9	.0	29.87	-136.00	.00	1036.29
56	390.0	978.3	1053.2	7434.49	1438.00	2956.2	978.3	.0	30.50	-136.00	.00	1057.56
57	396.3	998.7	1074.5	7436.23	1438.00	2935.3	998.7	.0	31.14	-136.00	.00	1078.82
58	402.6	1017.6	1094.3	7437.18	1438.00	2914.4	1017.6	.0	31.72	-136.00	.00	1098.64
59	408.8	1038.0	1115.6	7438.82	1438.00	2893.5	1038.0	.0	32.36	-136.00	.00	1119.91
60	415.1	1058.4	1136.9	7440.41	1438.00	2872.6	1058.4	.0	32.99	-136.00	.00	1141.19
61	421.4	1078.8	1158.2	7441.94	1438.00	2851.6	1078.8	.0	33.62	-136.00	.00	1162.47
62	427.7	1099.2	1179.5	7443.42	1438.00	2830.7	1099.2	.0	34.26	-136.00	.00	1183.75
63	434.0	1121.2	1202.2	7445.48	1438.00	2809.8	1121.2	.0	34.94	-136.00	.00	1206.49
64	440.2	1141.6	1223.5	7446.91	1438.00	2788.9	1141.6	.0	35.57	-136.00	.00	1227.78
65	446.5	1162.0	1244.8	7448.25	1438.00	2768.0	1162.0	.0	36.21	-136.00	.00	1249.07
66	452.8	1182.4	1266.1	7449.56	1438.00	2747.0	1182.4	.0	36.84	-136.00	.00	1270.36
67	459.1	1204.4	1288.9	7451.44	1438.00	2726.1	1204.4	.0	37.52	-136.00	.00	1293.12
68	465.4	1224.8	1310.2	7452.66	1438.00	2665.9	1224.8	.0	38.15	-136.00	.00	1314.42
69	471.6	1246.8	1333.0	7454.44	1438.00	2550.8	1246.8	.0	38.83	-136.00	.00	1337.18
70	477.9	1268.8	1355.8	7456.17	1438.00	2435.7	1268.8	.0	39.52	-136.00	.00	1359.94
71	484.2	1290.7	1378.6	7457.84	1438.00	2320.6	1290.7	.0	40.20	-136.00	.00	1382.71
72	490.5	1314.3	1402.8	7460.01	1438.00	2205.4	1314.3	.0	40.92	-136.00	.00	1406.95
73	496.8	1339.4	1428.6	7462.65	1438.00	2090.3	1339.4	.0	41.70	-136.00	.00	1432.66
74	503.0	1363.0	1452.8	7464.67	1438.00	1975.1	1363.0	.0	42.43	-136.00	.00	1456.91
75	509.3	1388.1	1478.6	7467.14	1438.00	1859.9	1388.1	.0	43.20	-136.00	.00	1482.63
76	515.6	1413.2	1504.3	7469.52	1438.00	1744.7	1413.2	.0	43.98	-136.00	.00	1508.36
77	521.9	1439.9	1531.5	7472.31	1438.00	1629.4	1439.9	.0	44.80	-136.00	.00	1535.56
78	528.2	1466.6	1558.8	7475.00	1438.00	1514.2	1466.6	.0	45.62	-136.00	.00	1562.78
79	534.4	1493.3	1586.0	7477.59	1438.00	1398.9	1493.3	.0	46.44	-136.00	.00	1590.00
80	540.7	1521.5	1614.8	7480.56	1438.00	1283.6	1521.5	.0	47.31	-136.00	.00	1618.70
81	547.0	1549.8	1643.5	7483.41	1438.00	1168.2	1549.8	.0	48.18	-136.00	.00	1647.41
82	553.3	1578.0	1672.2	7486.16	1438.00	1052.9	1578.0	.0	49.05	-136.00	.00	1676.13
83	559.6	1607.9	1702.5	7489.25	1438.00	937.5	1607.9	.0	49.96	-136.00	.00	1706.34
84	565.8	1637.7	1732.7	7492.22	1438.00	822.0	1637.7	.0	50.88	-136.00	.00	1736.55
85	572.1	1669.1	1764.4	7495.49	1438.00	706.6	1669.1	.0	51.84	-136.00	.00	1768.26
86	578.4	1700.5	1796.2	7498.60	1438.00	591.1	1700.5	.0	52.81	-136.00	.00	1799.98
87	584.7	1731.9	1827.9	7501.68	1438.00	475.6	1731.9	.0	53.77	-136.00	.00	1831.71
88	591.0	1763.3	1859.7	7504.62	1438.00	360.1	1763.3	.0	54.74	-136.00	.00	1863.45
89	597.2	1794.7	1891.5	7507.45	1438.00	244.5	1794.7	.0	55.70	-136.00	.00	1895.19
90	603.5	1829.2	1926.2	7510.91	1438.00	128.9	1829.2	.0	56.76	-136.00	.00	1929.93
91	609.8	1863.8	1961.0	7514.20	1438.00	84.5	1863.8	.0	57.82	-136.00	.00	1964.67
92	616.1	1895.2	1992.8	7516.79	1438.00	63.3	1895.2	.0	58.79	-136.00	.00	1996.45
93	622.4	1929.7	2027.6	7519.92	1438.00	42.1	1929.7	.0	59.85	-136.00	.00	2031.22
94	628.6	1964.3	2062.4	7522.94	1438.00	20.9	1964.3	.0	60.91	-136.00	.00	2066.00
95	634.9	1998.8	2097.2	7525.88	1438.00	.0	1998.8	.1	61.98	-136.00	.00	2100.79
96	641.2	2030.2	2129.1	7528.09	1438.00	.0	2030.2	6.4	62.95	-136.00	.00	2132.60
97	647.5	2064.7	2163.9	7530.87	1438.00	.0	2064.7	12.7	64.01	-136.00	.00	2167.41
98	653.8	2099.3	2198.7	7533.56	1438.00	.0	2099.3	18.9	65.07	-136.00	.00	2202.23
99	660.0	2133.8	2233.6	7536.18	1438.00	.0	2133.8	25.2	66.14	-136.00	.00	2237.06

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	4486.	0.	1004.	3010.	927.	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
3.0	.2	241.	80.23	0.	4488.	13173.	1047.	2966.	968.	1038	1043	1038	1020	1000	980	964	960	964	980	1000	1020
6.0	.4	456.	71.74	0.	4488.	24182.	1085.	2929.	1004.	1067	1080	1067	1043	1000	960	933	922	933	960	1000	1043
9.0	.6	694.	79.51	0.	4494.	37697.	1129.	2884.	1047.	1110	1125	1110	1059	1000	943	900	883	900	943	1000	1059
12.0	.8	931.	78.70	-1.	4491.	50299.	1171.	2843.	1087.	1144	1167	1144	1080	1000	923	864	844	864	923	1000	1080
15.0	1.0	1159.	76.24	-1.	4496.	62288.	1207.	2809.	1122.	1181	1203	1181	1106	1000	905	831	807	831	905	1000	1106
18.0	1.2	1378.	72.76	1.	4494.	73665.	1254.	2764.	1166.	1211	1249	1211	1125	1000	883	801	774	801	883	1000	1125
21.0	1.4	1607.	76.57	0.	4500.	85914.	1294.	2723.	1206.	1253	1290	1253	1146	1000	863	772	738	772	863	1000	1146
24.0	1.6	1834.	75.55	1.	4500.	97905.	1338.	2546.	1248.	1287	1334	1287	1167	1000	844	741	703	741	844	1000	1167
27.0	1.8	2058.	74.73	1.	4503.	109924.	1378.	2342.	1287.	1327	1374	1327	1187	1000	826	711	669	711	826	1000	1187
30.0	2.0	2261.	67.64	-1.	4499.	120602.	1412.	2183.	1319.	1361	1408	1361	1203	1000	808	681	639	681	808	1000	1203
33.0	2.2	2464.	67.55	1.	4497.	130865.	1443.	2041.	1349.	1393	1439	1393	1226	1001	791	653	605	653	791	1001	1226
36.0	2.4	2661.	65.80	0.	4491.	140693.	1476.	1888.	1382.	1419	1472	1419	1250	1001	775	623	571	623	775	1001	1250
39.0	2.6	2856.	64.97	0.	4486.	150119.	1508.	1745.	1413.	1449	1504	1449	1273	1001	755	598	539	598	755	1001	1273
42.0	2.8	3044.	62.63	-1.	4477.	159651.	1538.	1621.	1442.	1476	1534	1476	1292	1001	739	567	511	567	739	1001	1292
45.0	3.0	3233.	63.13	-1.	4473.	168785.	1568.	1491.	1472.	1504	1564	1504	1317	1001	723	540	484	540	723	1001	1317
48.0	3.2	3410.	59.06	0.	4464.	177215.	1599.	1362.	1502.	1530	1595	1530	1336	1001	705	515	457	515	705	1001	1336
51.0	3.4	3585.	58.04	0.	4457.	185367.	1628.	1245.	1531.	1556	1624	1556	1356	1002	687	493	428	493	687	1002	1356
54.0	3.6	3769.	61.64	0.	4448.	194440.	1659.	1121.	1561.	1583	1655	1583	1376	1002	671	465	401	465	671	1002	1376
57.0	3.8	3932.	54.34	0.	4442.	201961.	1689.	1001.	1591.	1609	1686	1609	1394	1002	655	445	378	445	655	1002	1394
60.0	4.0	4099.	55.61	0.	4431.	210126.	1719.	888.	1621.	1635	1715	1635	1409	1002	641	419	356	419	641	1002	1409
63.0	4.2	4264.	54.79	0.	4421.	217706.	1749.	776.	1650.	1662	1745	1662	1424	1003	621	397	337	397	621	1003	1424
66.0	4.4	4424.	53.30	0.	4415.	225041.	1779.	669.	1679.	1688	1775	1688	1442	1003	607	378	314	378	607	1003	1442
69.0	4.6	4579.	51.73	0.	4411.	231926.	1809.	557.	1710.	1714	1806	1714	1459	1003	592	359	297	359	592	1003	1459
72.0	4.8	4735.	52.11	0.	4403.	238787.	1841.	443.	1741.	1740	1837	1740	1475	1003	574	341	278	341	574	1003	1475
75.0	5.0	4888.	50.81	0.	4398.	245324.	1874.	323.	1773.	1765	1870	1765	1491	1004	558	324	262	324	558	1004	1491
78.0	5.2	5041.	51.15	0.	4394.	251995.	1906.	204.	1806.	1792	1902	1792	1507	1004	543	305	248	305	543	1004	1507
81.0	5.4	5183.	47.18	0.	4391.	257845.	1936.	117.	1835.	1819	1932	1819	1522	1004	528	291	236	291	528	1004	1522
84.0	5.6	5328.	48.43	1.	4390.	263968.	1968.	81.	1868.	1846	1965	1846	1537	1005	514	275	225	275	514	1005	1537
87.0	5.8	5474.	48.65	-1.	4394.	270024.	2005.	58.	1903.	1875	2001	1875	1553	1005	502	261	215	261	502	1005	1553
90.0	6.0	5614.	46.90	0.	4396.	275563.	2038.	38.	1937.	1903	2034	1903	1569	1005	489	249	205	249	489	1005	1569
93.0	6.2	5755.	46.77	0.	4394.	280631.	2072.	16.	1971.	1929	2069	1929	1585	1006	471	238	196	238	471	1006	1585
96.0	6.4	5889.	44.72	0.	4401.	285614.	2110.	0.	2008.	1957	2106	1957	1600	1006	460	228	189	228	460	1006	1600
99.0	6.6	6033.	47.95	0.	4410.	291130.	2151.	0.	2048.	1988	2147	1988	1614	1007	448	220	181	220	448	1007	1614
102.0	6.8	6173.	46.66	0.	4415.	296095.	2189.	0.	2086.	2018	2185	2018	1630	1007	433	211	175	211	433	1007	1630
105.0	7.0	6313.	46.87	0.	4421.	301104.	2228.	0.	2125.	2047	2225	2047	1645	1008	419	203	169	203	419	1008	1645

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT 7539. FT

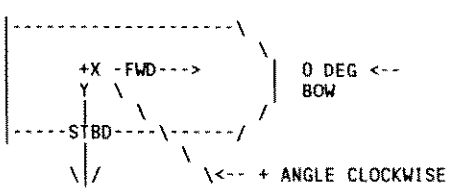
STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE ST1512 tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	-1.	4064.	141539.	1178.	2837.	1093.	1173	0	1173	1102	1000	909	838	815	838	909	1000	1102
3.0	.2	180.	60.06	-262.	4050.	149173.	1213.	2804.	1127.	1209	0	1196	1110	989	877	803	783	814	901	1011	1131
6.0	.4	377.	65.67	-663.	4042.	158059.	1259.	2758.	1172.	1255	0	1226	1118	975	848	771	747	790	891	1026	1162
9.0	.6	564.	62.30	-125.	4035.	166552.	1300.	2711.	1211.	1295	0	1258	1126	963	821	736	716	768	883	1041	1191
12.0	.8	750.	62.08	-277.	4024.	175086.	1342.	2529.	1251.	1337	0	1282	1133	953	794	700	683	744	876	1052	1221
15.0	1.0	935.	61.80	1085.	4018.	183399.	1381.	2328.	1289.	1377	0	1314	1141	939	769	667	653	724	869	1063	1258
18.0	1.2	1110.	58.33	1099.	4003.	191013.	1413.	2177.	1321.	1409	0	1339	1149	925	741	637	619	699	861	1078	1287
21.0	1.4	1285.	58.18	2507.	3995.	198910.	1444.	2036.	1350.	1440	0	1367	1159	916	717	604	591	676	852	1095	1322
24.0	1.6	1458.	57.84	2965.	3980.	206502.	1477.	1886.	1382.	1473	0	1392	1168	904	690	571	558	655	845	1109	1351
27.0	1.8	1622.	54.60	3297.	3965.	213482.	1508.	1746.	1413.	1504	0	1413	1178	891	665	540	529	634	837	1120	1380
30.0	2.0	1773.	50.41	3177.	3949.	219944.	1537.	1624.	1441.	1533	0	1433	1185	879	643	512	503	610	829	1133	1405
33.0	2.2	1929.	51.97	2762.	3931.	226357.	1567.	1497.	1471.	1563	0	1457	1192	866	615	486	474	590	822	1146	1427
36.0	2.4	2079.	49.86	2880.	3918.	232842.	1597.	1370.	1500.	1593	0	1478	1200	855	595	458	451	566	814	1158	1453
39.0	2.6	2234.	51.69	2539.	3899.	239374.	1626.	1255.	1529.	1622	0	1500	1208	843	569	430	423	545	807	1172	1477
42.0	2.8	2382.	49.32	2116.	3884.	245514.	1656.	1134.	1558.	1652	0	1521	1218	832	545	404	398	525	800	1184	1501
45.0	3.0	2519.	45.86	1450.	3871.	251032.	1686.	1015.	1588.	1682	0	1540	1227	821	523	381	377	507	794	1195	1524
48.0	3.2	2653.	44.54	1095.	3860.	256521.	1715.	904.	1617.	1711	0	1561	1237	810	503	360	355	491	787	1207	1546
51.0	3.4	2790.	45.67	-43.	3849.	262130.	1745.	792.	1646.	1741	0	1582	1247	799	481	340	337	468	782	1222	1569
54.0	3.6	2923.	44.33	-313.	3839.	267453.	1773.	688.	1674.	1770	0	1602	1259	789	461	319	316	454	775	1236	1592
57.0	3.8	3053.	43.17	-1290.	3829.	272699.	1804.	578.	1704.	1800	0	1622	1268	780	442	300	299	433	767	1252	1614
60.0	4.0	3184.	43.87	-1974.	3817.	277805.	1834.	468.	1734.	1830	0	1643	1277	770	420	283	281	415	758	1266	1636
63.0	4.2	3312.	42.64	-2503.	3807.	282633.	1866.	351.	1766.	1862	0	1664	1285	758	401	266	265	397	749	1277	1659
66.0	4.4	3434.	40.61	-3468.	3801.	287203.	1899.	232.	1798.	1895	0	1685	1295	747	384	252	251	382	743	1289	1682
69.0	4.6	3548.	37.89	-4328.	3799.	291520.	1928.	134.	1827.	1924	0	1705	1307	739	368	239	239	368	737	1305	1704
72.0	4.8	3663.	38.37	-5422.	3795.	295687.	1959.	89.	1858.	1955	0	1726	1318	730	351	228	228	352	731	1319	1727
75.0	5.0	3773.	36.84	-6213.	3793.	299566.	1994.	65.	1893.	1990	0	1747	1327	720	338	218	219	339	723	1330	1748
78.0	5.2	3884.	36.84	-7051.	3789.	303243.	2027.	45.	1925.	2023	0	1767	1336	709	323	209	209	326	715	1342	1770
81.0	5.4	3998.	38.12	-8101.	3785.	307203.	2060.	24.	1959.	2057	0	1788	1345	699	307	199	200	310	707	1354	1793
84.0	5.6	4104.	35.32	-8690.	3786.	310704.	2095.	2.	1993.	2091	0	1809	1354	689	295	192	192	299	699	1366	1816
87.0	5.8	4218.	37.81	-10182.	3788.	314577.	2136.	0.	2033.	2132	0	1831	1365	680	282	185	185	286	691	1378	1839
90.0	6.0	4327.	36.51	-10973.	3790.	318220.	2173.	0.	2070.	2169	0	1854	1375	671	269	178	178	274	684	1389	1863
93.0	6.2	4435.	36.08	-11527.	3793.	321759.	2211.	0.	2108.	2207	0	1877	1384	662	258	171	172	263	677	1399	1888

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT 7538. FT

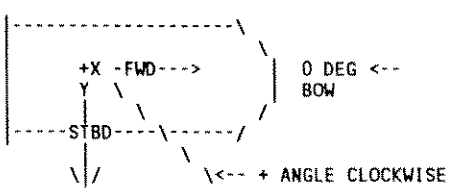
STARTING DISPLACEMENTS : SURGE(FT) = -10.172 SWAY(FT) = -10.172 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE ST15121 tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

C1 S12

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	15.0	45.0	75.0	105.0	135.0	165.0	-165.0	-135.0	-105.0	-75.0	-45.0	-15.0
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	1500.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	1500.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.625"
LINE LENGTH (FT)	700.0
WEIGHT IN WATER (LB/FT)	57.26
LINE B.S. (KIPS)	3634.0
AREA (SQ IN)	24.85
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.625"
LINE LENGTH (FT)	1700.0
WEIGHT IN WATER (LB/FT)	57.26
LINE B.S. (KIPS)	3634.0
AREA (SQ IN)	24.85
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-90.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.625"
LINE LENGTH (FT)	1300.0
WEIGHT IN WATER (LB/FT)	57.26
LINE B.S. (KIPS)	3634.0
AREA (SQ IN)	24.85
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	CHAIN
LINE SIZE (IN)	6.125"
LINE LENGTH (FT)	1450.0
WEIGHT IN WATER (LB/FT)	310.07
LINE B.S. (KIPS)	3623.0
AREA (SQ IN)	29.46
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.625"
LINE LENGTH (FT)	1950.0
WEIGHT IN WATER (LB/FT)	57.26
LINE B.S. (KIPS)	3634.0
AREA (SQ IN)	24.85
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	6.125"
LINE LENGTH (FT)	100.0
WEIGHT IN WATER (LB/FT)	310.07
LINE B.S. (KIPS)	3623.0
AREA (SQ IN)	29.46
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
1	134.3	.0	137.4	5762.00	1438.00	5762.0	.0	.0				
2	137.5	139.3	195.8	6831.59	1438.00	3451.1	139.3	.0	3.97	-90.00	.00	.00
3	140.8	147.8	204.1	6840.95	1438.00	3440.7	147.8	.0	4.20	-90.00	.00	.00
4	144.0	156.3	212.5	6849.17	1438.00	3430.4	156.3	.0	4.44	-90.00	.00	.00
5	147.2	164.6	220.9	6855.76	1438.00	3420.0	164.6	.0	4.67	-90.00	.00	.00
6	150.5	172.9	229.2	6861.62	1438.00	3409.6	172.9	.0	4.89	-90.00	.00	.00
7	153.7	181.4	237.8	6867.49	1438.00	3399.3	181.4	.0	5.13	-90.00	.00	.00
8	157.0	189.5	246.1	6871.59	1438.00	3388.9	189.5	.0	5.35	-90.00	.00	.00
9	160.2	198.0	254.7	6876.42	1438.00	3378.6	198.0	.0	5.59	-90.00	.00	.00
10	163.4	206.1	263.1	6879.73	1438.00	3368.2	206.1	.0	5.81	-90.00	.00	.00
11	169.9	223.1	280.5	6887.46	1438.00	3347.5	223.1	.0	6.28	-90.00	.00	.00
12	176.4	239.8	297.7	6893.07	1438.00	3326.8	239.8	.0	6.74	-90.00	.00	.00
13	182.9	256.8	315.2	6898.67	1438.00	3306.0	256.8	.0	7.21	-90.00	.00	.00
14	189.4	273.4	332.5	6902.74	1438.00	3285.3	273.4	.0	7.67	-90.00	.00	.00
15	195.8	290.4	350.2	6906.99	1438.00	3264.6	290.4	.0	8.14	-90.00	.00	.00
16	202.3	307.4	368.0	6910.71	1438.00	3243.9	307.4	.0	8.61	-90.00	.00	.00
17	208.8	324.4	385.8	6914.00	1438.00	3223.1	324.4	.0	9.08	-90.00	.00	.00
18	215.3	341.4	403.6	6916.93	1438.00	3202.4	341.4	.0	9.56	-90.00	.00	.00
19	221.8	358.8	421.8	6920.12	1438.00	3181.7	358.8	.0	10.04	-90.00	.00	.00
20	228.2	375.8	439.7	6922.44	1438.00	3160.9	375.8	.0	10.51	-90.00	.00	.00
21	234.7	393.6	458.3	6925.58	1438.00	3140.2	393.6	.0	11.00	-90.00	.00	.00
22	241.2	411.1	476.6	6927.94	1438.00	3119.5	411.1	.0	11.49	-90.00	.00	.00
23	247.7	428.9	495.3	6930.57	1438.00	3098.8	428.9	.0	11.98	-90.00	.00	.00
24	254.2	446.7	513.9	6932.96	1438.00	3078.0	446.7	.0	12.47	-90.00	.00	.00
25	260.6	464.5	532.6	6935.17	1438.00	3057.3	464.5	.0	12.97	-90.00	.00	.00
26	267.1	482.3	551.4	6937.22	1438.00	3036.6	482.3	.0	13.46	-90.00	.00	.00
27	273.6	500.2	570.1	6939.10	1438.00	3015.8	500.2	.0	13.95	-90.00	.00	.00
28	280.1	518.0	588.9	6940.85	1438.00	2995.1	518.0	.0	14.45	-90.00	.00	.00
29	286.6	536.6	608.3	6943.23	1438.00	2974.4	536.6	.0	14.96	-90.00	.00	.00
30	293.0	554.4	627.1	6944.72	1438.00	2953.6	554.4	.0	15.46	-90.00	.00	.00
31	299.5	573.1	646.6	6946.81	1438.00	2932.9	573.1	.0	15.97	-90.00	.00	.00
32	306.0	591.7	666.1	6948.77	1438.00	2912.2	591.7	.0	16.49	-90.00	.00	.00
33	312.5	610.3	685.7	6950.61	1438.00	2891.4	610.3	.0	17.00	-90.00	.00	.00
34	319.0	628.9	705.2	6952.34	1438.00	2870.7	628.9	.0	17.52	-90.00	.00	.00
35	325.4	647.6	724.8	6953.97	1438.00	2849.9	647.6	.0	18.04	-90.00	.00	.00
36	331.9	667.0	745.0	6956.09	1438.00	2829.2	667.0	.0	18.57	-90.00	.00	.00
37	338.4	685.6	764.6	6957.55	1438.00	2808.5	685.6	.0	19.09	-90.00	.00	.00
38	344.9	705.1	784.9	6959.47	1438.00	2787.7	705.1	.0	19.63	-90.00	.00	.00
39	351.4	723.7	804.5	6960.75	1438.00	2767.0	723.7	.0	20.14	-90.00	.00	.00
40	357.8	743.2	824.8	6962.50	1438.00	2746.2	743.2	.0	20.68	-90.00	.00	.00
41	364.3	762.6	845.1	6964.16	1438.00	2725.5	762.6	.0	21.22	-90.00	.00	.00
42	370.8	782.0	865.5	6965.74	1438.00	2704.8	782.0	.0	21.76	-90.00	.00	.00
43	377.3	801.5	885.8	6967.25	1438.00	2684.0	801.5	.0	22.29	-90.00	.00	.00
44	383.8	820.9	906.2	6968.69	1438.00	2663.3	820.9	.0	22.83	-90.00	.00	.00
45	390.2	841.2	927.3	6970.53	1438.00	2642.5	841.2	.0	23.39	-90.00	.00	.00

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
46	396.7	860.6	947.6	6971.84	1438.00	2621.8	860.6	.0	23.93	-90.00	.00	.00
47	403.2	881.7	969.5	6973.97	1438.00	2601.0	881.7	.0	24.51	-90.00	.00	.00
48	409.7	901.1	989.9	6975.16	1438.00	2580.3	901.1	.0	25.05	-90.00	.00	.00
49	416.2	922.2	1011.7	6977.13	1438.00	2559.5	922.2	.0	25.63	-90.00	.00	.00
50	422.6	941.6	1032.1	6978.21	1438.00	2538.8	941.6	.0	26.17	-90.00	.00	.00
51	429.1	962.7	1054.0	6980.05	1438.00	2518.0	962.7	.0	26.75	-90.00	.00	.00
52	435.6	982.9	1075.1	6981.40	1438.00	2497.3	982.9	.0	27.31	-90.00	.00	.00
53	442.1	1004.0	1097.0	6983.13	1438.00	2476.5	1004.0	.0	27.89	-90.00	.00	.00
54	448.6	1025.0	1118.9	6984.77	1438.00	2455.8	1025.0	.0	28.47	-90.00	.00	.00
55	455.0	1044.5	1139.3	6985.63	1438.00	2435.0	1044.5	.0	29.01	-90.00	.00	.00
56	461.5	1065.5	1161.2	6987.18	1438.00	2414.2	1065.5	.0	29.59	-90.00	.00	.00
57	468.0	1086.6	1183.1	6988.67	1438.00	2393.5	1086.6	.0	30.17	-90.00	.00	.00
58	474.5	1109.3	1206.5	6990.75	1438.00	2372.7	1109.3	.0	30.80	-90.00	.00	.00
59	481.0	1130.3	1228.4	6992.13	1438.00	2352.0	1130.3	.0	31.38	-90.00	.00	.00
60	487.4	1151.4	1250.3	6993.51	1438.00	2331.2	1151.4	.0	31.96	-90.00	.00	.00
61	493.9	1172.4	1272.2	6994.81	1438.00	2310.5	1172.4	.0	32.55	-90.00	.00	.00
62	500.4	1193.5	1294.2	6996.06	1438.00	2289.7	1193.5	.0	33.13	-90.00	.00	.00
63	506.9	1216.2	1317.6	6997.90	1438.00	2268.9	1216.2	.0	33.75	-90.00	.00	.00
64	513.4	1237.2	1339.5	6999.08	1438.00	2248.2	1237.2	.0	34.34	-90.00	.00	.00
65	519.8	1259.9	1362.9	7000.81	1438.00	2227.4	1259.9	.0	34.96	-90.00	.00	.00
66	526.3	1281.0	1384.9	7001.92	1438.00	2206.6	1281.0	.0	35.54	-90.00	.00	.00
67	532.8	1303.7	1408.3	7003.56	1438.00	2185.9	1303.7	.0	36.17	-90.00	.00	.00
68	539.3	1326.3	1431.8	7005.16	1438.00	2165.1	1326.3	.0	36.79	-90.00	.00	.00
69	545.8	1349.0	1455.2	7006.71	1438.00	2144.3	1349.0	.0	37.42	-90.00	.00	.00
70	552.2	1370.1	1477.2	7007.68	1438.00	2123.5	1370.1	.0	38.00	-90.00	.00	.00
71	558.7	1392.8	1500.6	7009.16	1438.00	2102.8	1392.8	.0	38.63	-90.00	.00	.00
72	565.2	1415.4	1524.1	7010.60	1438.00	2082.0	1415.4	.0	39.26	-90.00	.00	.00
73	571.7	1438.1	1547.6	7012.01	1438.00	2058.2	1438.1	.0	39.88	-90.00	.00	.00
74	578.2	1460.8	1571.0	7013.37	1438.00	1944.6	1460.8	.0	40.51	-90.00	.00	.00
75	584.6	1485.1	1596.0	7015.20	1438.00	1830.9	1485.1	.0	41.18	-90.00	.00	.00
76	591.1	1509.4	1621.0	7016.98	1438.00	1717.2	1509.4	.0	41.85	-90.00	.00	.00
77	597.6	1535.3	1647.5	7019.14	1438.00	1603.5	1535.3	.0	42.56	-90.00	.00	.00
78	604.1	1559.6	1672.5	7020.85	1438.00	1489.8	1559.6	.0	43.23	-90.00	.00	.00
79	610.6	1585.5	1699.0	7022.93	1438.00	1376.0	1585.5	.0	43.94	-90.00	.00	.00
80	617.0	1611.5	1725.5	7024.94	1438.00	1262.3	1611.5	.0	44.65	-90.00	.00	.00
81	623.5	1639.0	1753.6	7027.34	1438.00	1148.5	1639.0	.0	45.41	-90.00	.00	.00
82	630.0	1666.5	1781.6	7029.65	1438.00	1034.6	1666.5	.0	46.16	-90.00	.00	.00
83	636.5	1695.7	1811.2	7032.32	1438.00	920.8	1695.7	.0	46.96	-90.00	.00	.00
84	642.9	1724.8	1840.8	7034.86	1438.00	806.9	1724.8	.0	47.76	-90.00	.00	.00
85	649.4	1754.0	1870.4	7037.39	1438.00	693.0	1754.0	.0	48.56	-90.00	.00	.00
86	655.9	1783.2	1900.0	7039.80	1438.00	579.1	1783.2	.0	49.36	-90.00	.00	.00
87	662.4	1812.3	1929.6	7042.14	1438.00	465.2	1812.3	.0	50.16	-90.00	.00	.00
88	668.9	1844.7	1962.2	7045.16	1438.00	351.2	1844.7	.0	51.04	-90.00	.00	.00
89	675.3	1877.1	1994.9	7048.04	1438.00	237.2	1877.1	.0	51.93	-90.00	.00	.00
90	681.8	1907.9	2026.1	7050.50	1438.00	123.2	1907.9	.0	52.77	-90.00	.00	.00
91	688.3	1940.3	2058.8	7053.28	1438.00	83.6	1940.3	.0	53.66	-90.00	.00	.00
92	694.8	1972.7	2091.5	7055.93	1438.00	62.6	1972.7	.0	54.54	-90.00	.00	.00
93	701.3	2005.1	2124.2	7058.50	1438.00	41.7	2005.1	.0	55.43	-90.00	.00	.00
94	707.7	2037.5	2156.9	7060.99	1438.00	20.7	2037.5	.0	56.32	-90.00	.00	.00
95	714.2	2069.9	2189.7	7063.41	1438.00	.0	2069.9	.1	57.21	-90.00	.00	.00
96	720.7	2105.5	2225.5	7066.41	1438.00	.0	2105.5	6.6	58.18	-90.00	.00	.00
97	727.2	2137.9	2258.2	7068.68	1438.00	.0	2137.9	13.1	59.07	-90.00	.00	.00
98	733.7	2170.3	2291.0	7070.90	1438.00	.0	2170.3	19.5	59.96	-90.00	.00	.00
99	740.1	2202.7	2323.8	7073.05	1438.00	.0	2202.7	26.0	60.85	-90.00	.00	.00

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	4951.	0.	1000.	2571.	911.	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
3.0	.2	244.	81.44	0.	4954.	13385.	1043.	2528.	952.	1038	1043	1038	1020	1000	980	964	960	964	980	1000	1020
6.0	.4	473.	76.30	0.	4958.	25338.	1084.	2489.	991.	1073	1084	1073	1043	1000	960	933	922	933	960	1000	1043
9.0	.6	693.	73.41	1.	4960.	37181.	1126.	2448.	1032.	1105	1126	1105	1062	1000	944	901	883	901	944	1000	1062
12.0	.8	959.	88.66	0.	4968.	51968.	1175.	2401.	1078.	1152	1175	1152	1084	1000	922	865	844	865	922	1000	1084
15.0	1.0	1178.	72.84	1.	4966.	63760.	1211.	2368.	1114.	1188	1211	1188	1102	1000	905	832	809	832	905	1000	1102
18.0	1.2	1415.	78.91	0.	4968.	76044.	1260.	2322.	1160.	1221	1260	1221	1126	1000	884	801	770	801	884	1000	1126
21.0	1.4	1665.	83.47	-1.	4979.	89305.	1307.	2279.	1206.	1263	1307	1263	1154	1000	864	768	735	768	864	1000	1154
24.0	1.6	1902.	78.90	0.	4985.	102047.	1353.	2237.	1250.	1304	1353	1304	1175	1000	845	737	702	737	845	1000	1175
27.0	1.8	2132.	76.64	1.	4993.	114410.	1402.	2191.	1297.	1345	1402	1345	1194	1000	826	710	669	710	826	1000	1194
30.0	2.0	2357.	75.08	1.	4999.	126580.	1445.	2154.	1339.	1387	1445	1387	1212	1000	809	680	640	680	809	1000	1212
33.0	2.2	2594.	79.09	0.	5006.	138746.	1499.	2104.	1392.	1425	1499	1425	1236	1001	787	654	607	654	787	1001	1236
36.0	2.4	2822.	75.81	-1.	5024.	150506.	1549.	2054.	1439.	1468	1549	1468	1261	1001	771	629	581	629	771	1001	1261
39.0	2.6	3062.	79.97	0.	5034.	163067.	1594.	1838.	1483.	1512	1594	1512	1287	1001	753	600	550	600	753	1001	1287
42.0	2.8	3276.	71.55	0.	5044.	174163.	1634.	1660.	1522.	1556	1634	1556	1308	1001	736	577	523	577	736	1001	1308
45.0	3.0	3487.	70.38	-1.	5053.	184908.	1676.	1477.	1563.	1594	1676	1594	1332	1001	721	551	499	551	721	1001	1332
48.0	3.2	3685.	65.75	1.	5058.	194457.	1714.	1310.	1600.	1630	1714	1630	1354	1001	704	527	478	527	704	1001	1354
51.0	3.4	3879.	64.96	0.	5065.	203540.	1751.	1161.	1636.	1664	1751	1664	1381	1002	687	506	455	506	687	1002	1381
54.0	3.6	4062.	60.77	0.	5073.	211925.	1786.	1016.	1671.	1699	1786	1699	1404	1002	671	487	437	487	671	1002	1404
57.0	3.8	4242.	60.13	-1.	5078.	220314.	1820.	887.	1704.	1732	1820	1732	1426	1002	656	467	415	467	656	1002	1426
60.0	4.0	4411.	56.29	0.	5084.	227809.	1855.	753.	1739.	1763	1855	1763	1448	1002	642	450	398	450	642	1002	1448
63.0	4.2	4590.	59.57	1.	5097.	235299.	1891.	614.	1774.	1793	1891	1793	1479	1003	628	433	381	433	628	1003	1479
66.0	4.4	4765.	58.53	-1.	5100.	242749.	1929.	468.	1812.	1823	1929	1823	1503	1003	609	415	365	415	609	1003	1503
69.0	4.6	4926.	53.60	-1.	5109.	249346.	1961.	354.	1844.	1853	1961	1853	1528	1003	597	400	351	400	597	1003	1528
72.0	4.8	5091.	54.92	0.	5119.	256140.	1995.	235.	1878.	1884	1995	1884	1554	1004	584	385	338	385	584	1004	1554
75.0	5.0	5261.	56.79	0.	5129.	263078.	2033.	110.	1915.	1917	2033	1917	1578	1004	568	371	325	371	568	1004	1578
78.0	5.2	5418.	52.16	0.	5135.	269332.	2068.	76.	1950.	1947	2068	1947	1599	1004	553	358	313	358	553	1004	1599
81.0	5.4	5569.	50.28	1.	5144.	275018.	2106.	53.	1987.	1975	2106	1975	1620	1005	539	346	304	346	539	1005	1620
84.0	5.6	5720.	50.50	0.	5153.	280887.	2145.	28.	2025.	2006	2145	2006	1639	1005	526	335	294	335	526	1005	1639
87.0	5.8	5878.	52.48	0.	5165.	287045.	2185.	2.	2065.	2039	2185	2039	1660	1005	514	324	285	324	514	1005	1660
90.0	6.0	6027.	49.75	0.	5176.	292597.	2221.	0.	2101.	2070	2221	2070	1681	1006	502	314	277	314	502	1006	1681
93.0	6.2	6178.	50.34	0.	5190.	298198.	2264.	0.	2144.	2102	2264	2102	1700	1006	492	305	270	305	492	1006	1700
96.0	6.4	6331.	51.21	-1.	5207.	303838.	2309.	0.	2188.	2136	2309	2136	1721	1007	481	298	264	298	481	1007	1721

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT 7075. FT

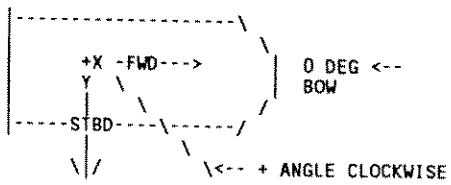
STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE ST15121 tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	-1.	4495.	150791.	1175.	2401.	1079.	1175	0	1175	1096	1000	911	843	821	843	911	1000	1096
3.0	.2	190.	63.50	400.	4482.	159144.	1211.	2368.	1114.	1211	0	1199	1103	990	881	809	783	819	904	1010	1131
6.0	.4	399.	69.42	428.	4474.	168747.	1259.	2323.	1159.	1259	0	1230	1112	976	852	771	749	792	894	1026	1166
9.0	.6	593.	64.59	51.	4470.	177588.	1305.	2280.	1204.	1305	0	1262	1123	962	824	736	720	769	886	1041	1195
12.0	.8	789.	65.40	-399.	4465.	186577.	1351.	2238.	1248.	1351	0	1293	1132	951	794	704	688	746	881	1054	1229
15.0	1.0	982.	64.29	-656.	4464.	195254.	1399.	2194.	1295.	1399	0	1321	1146	939	768	671	658	726	872	1068	1265
18.0	1.2	1168.	62.26	-244.	4459.	203443.	1441.	2157.	1335.	1441	0	1353	1155	925	740	642	631	703	864	1082	1301
21.0	1.4	1367.	66.34	23.	4459.	212996.	1495.	2108.	1387.	1495	0	1387	1162	914	718	610	600	681	857	1094	1336
24.0	1.6	1548.	60.18	-708.	4456.	220873.	1543.	2068.	1434.	1543	0	1415	1171	903	691	585	573	660	849	1105	1370
27.0	1.8	1734.	62.07	-189.	4453.	229313.	1589.	1863.	1478.	1589	0	1446	1182	891	668	554	544	640	841	1118	1406
30.0	2.0	1914.	59.93	1274.	4454.	237682.	1629.	1684.	1517.	1629	0	1486	1189	879	646	527	519	619	833	1140	1438
33.0	2.2	2087.	57.79	2861.	4454.	245349.	1668.	1510.	1555.	1668	0	1519	1197	867	625	503	496	598	825	1154	1479
36.0	2.4	2252.	54.92	3758.	4453.	252290.	1706.	1345.	1593.	1706	0	1553	1205	856	600	482	476	580	817	1165	1514
39.0	2.6	2416.	54.60	4869.	4453.	259527.	1743.	1191.	1629.	1743	0	1585	1215	845	581	460	455	559	811	1180	1552
42.0	2.8	2567.	50.37	4971.	4451.	265506.	1778.	1048.	1663.	1778	0	1613	1225	833	558	442	437	540	803	1191	1587
45.0	3.0	2716.	49.65	5574.	4443.	271526.	1811.	921.	1696.	1811	0	1638	1235	822	537	420	417	523	794	1202	1618
48.0	3.2	2855.	46.47	5751.	4442.	277054.	1846.	788.	1730.	1846	0	1665	1244	811	517	404	401	507	786	1216	1646
51.0	3.4	2999.	47.74	6297.	4442.	282975.	1880.	655.	1764.	1880	0	1693	1256	800	500	386	383	491	778	1230	1678
54.0	3.6	3137.	46.10	6277.	4443.	288542.	1917.	513.	1800.	1917	0	1720	1268	787	484	370	368	477	771	1244	1706
57.0	3.8	3268.	43.88	5983.	4443.	293763.	1951.	390.	1833.	1951	0	1745	1280	777	468	355	354	461	765	1260	1735
60.0	4.0	3391.	41.00	6063.	4445.	298411.	1983.	279.	1865.	1983	0	1769	1293	768	453	343	341	448	756	1275	1761
63.0	4.2	3516.	41.55	6121.	4447.	303146.	2019.	145.	1901.	2019	0	1793	1302	758	440	330	329	435	747	1291	1787
66.0	4.4	3641.	41.61	5452.	4443.	307740.	2054.	86.	1936.	2054	0	1817	1311	747	423	318	317	420	740	1303	1811
69.0	4.6	3759.	39.32	5108.	4446.	312064.	2090.	63.	1972.	2090	0	1841	1322	738	410	308	307	408	734	1315	1837
72.0	4.8	3877.	39.35	4261.	4454.	316479.	2128.	39.	2009.	2128	0	1865	1335	730	397	299	299	396	728	1331	1863
75.0	5.0	3999.	40.52	3696.	4459.	320978.	2167.	14.	2047.	2167	0	1891	1346	722	384	290	290	384	721	1345	1890
78.0	5.2	4118.	39.75	3879.	4463.	325160.	2204.	0.	2084.	2204	0	1917	1355	711	372	281	281	373	713	1357	1918
81.0	5.4	4232.	38.00	3492.	4470.	329062.	2242.	0.	2122.	2242	0	1942	1367	702	361	274	274	362	705	1373	1944
84.0	5.6	4347.	38.29	1988.	4479.	333055.	2285.	0.	2165.	2285	0	1964	1383	693	351	268	268	353	697	1389	1967

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT 7074. FT

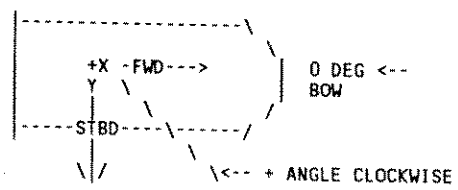
STARTING DISPLACEMENTS : SURGE(FT) = -9.844 SWAY(FT) = -9.844 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE ST15161 tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

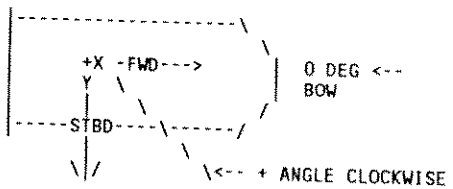
PLOT ENVELOPES - NO

DEEPWATER, ARAMID MOORING LINE JIP
CASE C3A16T

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

C3A16T

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	11.3	33.8	56.3	78.8	101.3	123.8	146.3	168.8	-168.8	-146.3	-123.8	-101.3	-78.8	-56.3	-33.8	-11.3
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	650.0	650.0	650.0	650.0	650.0	650.0	650.0	650.0	650.0	650.0	650.0	650.0	650.0	650.0	650.0	650.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	3000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	3000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.375"
LINE LENGTH (FT)	500.0
WEIGHT IN WATER (LB/FT)	34.64
LINE B.S. (KIPS)	2198.0
AREA (SQ IN)	15.03
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	ARAMID
LINE SIZE (IN)	4.750"
LINE LENGTH (FT)	6300.0
WEIGHT IN WATER (LB/FT)	1.67
LINE B.S. (KIPS)	2167.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	86700.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.375"
LINE LENGTH (FT)	1200.0
WEIGHT IN WATER (LB/FT)	34.64
LINE B.S. (KIPS)	2198.0
AREA (SQ IN)	15.03
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	CHAIN
LINE SIZE (IN)	4.500"
LINE LENGTH (FT)	1500.0
WEIGHT IN WATER (LB/FT)	167.37
LINE B.S. (KIPS)	2160.0
AREA (SQ IN)	15.90
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.375"
LINE LENGTH (FT)	1650.0
WEIGHT IN WATER (LB/FT)	34.64
LINE B.S. (KIPS)	2198.0
AREA (SQ IN)	15.03
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE SIZE (IN)	4.500"
LINE LENGTH (FT)	200.0
WEIGHT IN WATER (LB/FT)	167.37
LINE B.S. (KIPS)	2160.0
AREA (SQ IN)	15.90
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	50.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

LINE MATERIAL CHAIN

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
1	21.4	.0	21.4	8412.00	2938.00	8412.0	.0	.0				
2	24.5	4.3	24.9	9986.53	2938.00	6531.6	4.3	.0	.56	.00	.00	.00
3	27.7	10.7	29.7	10402.5	2938.00	4650.9	10.7	.0	1.24	.00	.00	.00
4	30.8	18.0	35.7	10564.72	2938.00	4464.6	18.0	.0	2.02	.00	.00	.00
5	34.0	25.1	42.2	10623.64	2938.00	4374.1	25.1	.0	2.79	.00	.00	.00
6	37.1	32.1	49.1	10654.88	2938.00	4283.6	32.1	.0	3.56	.00	.00	.00
7	40.2	39.2	56.2	10675.45	2938.00	4193.1	39.2	.0	4.34	.00	.00	.00
8	43.4	46.4	63.5	10690.77	2938.00	4102.6	46.4	.0	5.12	.00	.00	.00
9	46.5	53.7	71.0	10703.14	2938.00	4012.1	53.7	.0	5.92	.00	.00	.00
10	49.7	61.0	78.7	10713.82	2938.00	3921.5	61.0	.0	6.72	.00	.00	.00
11	55.9	76.0	94.4	10731.96	2938.00	3740.4	76.0	.0	8.36	.00	.00	.00
12	62.2	91.5	110.6	10747.75	2938.00	3559.3	91.5	.0	10.04	.00	.00	.00
13	68.5	107.3	127.3	10762.08	2938.00	3378.1	107.3	.0	11.76	.00	.00	.00
14	74.8	123.5	144.3	10774.43	2938.00	3320.1	123.5	.0	13.51	.00	.00	.00
15	81.1	139.7	161.5	10784.19	2938.00	3282.9	139.7	.0	15.28	.00	.00	.00
16	87.3	156.0	178.8	10792.01	2938.00	3245.6	156.0	.0	17.05	.00	.00	.00
17	93.6	172.4	196.2	10798.84	2938.00	3208.3	172.4	.0	18.83	.00	.00	.00
18	99.9	188.8	213.6	10804.72	2938.00	3171.1	188.8	.0	20.61	.00	.00	.00
19	106.2	205.4	231.2	10810.41	2938.00	3133.8	205.4	.0	22.42	.00	.00	.00
20	112.5	222.0	248.9	10815.52	2938.00	3096.5	222.0	.0	24.22	.00	.00	.00
21	118.8	238.7	266.6	10820.18	2938.00	3059.2	238.7	.0	26.04	.00	.00	.00
22	125.0	255.6	284.5	10824.89	2938.00	3022.0	255.6	.0	27.86	.00	.00	.00
23	131.3	272.5	302.5	10829.47	2938.00	2984.7	272.5	.0	29.70	.00	.00	.00
24	137.6	289.5	320.5	10833.75	2938.00	2947.4	289.5	.0	31.55	.00	.00	.00
25	143.9	306.6	338.6	10837.96	2938.00	2910.1	306.6	.0	33.40	.00	.00	.00
26	150.2	323.8	356.9	10842.27	2938.00	2872.8	323.8	.0	35.27	.00	.00	.00
27	156.4	341.1	375.2	10846.37	2938.00	2835.5	341.1	.0	37.15	.00	.00	.00
28	162.7	358.4	393.6	10850.44	2938.00	2798.2	358.4	.0	39.03	.00	.00	.00
29	169.0	375.9	412.1	10854.47	2938.00	2760.9	375.9	.0	40.93	.00	.00	.00
30	175.3	393.5	430.7	10858.47	2938.00	2723.6	393.5	.0	42.84	.00	.00	.00
31	181.6	411.1	449.4	10862.45	2938.00	2686.2	411.1	.0	44.76	.00	.00	.00
32	187.9	428.9	468.2	10866.41	2938.00	2648.9	428.9	.0	46.68	.00	.00	.00
33	194.1	446.8	487.1	10870.36	2938.00	2611.6	446.8	.0	48.62	.00	.00	.00
34	200.4	464.6	506.0	10874.07	2938.00	2574.3	464.6	.0	50.56	.00	.00	.00
35	206.7	482.7	525.1	10878.00	2938.00	2536.9	482.7	.0	52.52	.00	.00	.00
36	213.0	500.8	544.2	10881.91	2938.00	2499.6	500.8	.0	54.49	.00	.00	.00
37	219.3	519.1	563.5	10885.82	2938.00	2462.3	519.1	.0	56.47	.00	.00	.00
38	225.5	537.3	582.8	10889.53	2938.00	2424.9	537.3	.0	58.45	.00	.00	.00
39	231.8	555.8	602.2	10893.42	2938.00	2387.6	555.8	.0	60.46	.00	.00	.00
40	238.1	574.3	621.7	10897.31	2938.00	2350.2	574.3	.0	62.47	.00	.00	.00
41	244.4	593.0	641.4	10901.20	2938.00	2312.8	593.0	.0	64.49	.00	.00	.00
42	250.7	611.6	661.0	10904.92	2938.00	2275.5	611.6	.0	66.51	.00	.00	.00
43	256.9	630.5	680.8	10908.79	2938.00	2238.1	630.5	.0	68.56	.00	.00	.00
44	263.2	649.3	700.7	10912.50	2938.00	2200.7	649.3	.0	70.60	.00	.00	.00
45	269.5	668.4	720.7	10916.37	2938.00	2163.4	668.4	.0	72.67	.00	.00	.00

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
46	275.8	687.4	740.7	10920.08	2938.00	2126.0	687.4	.0	74.74	.00	.00	.00
47	282.1	706.7	760.9	10923.96	2938.00	2088.6	706.7	.0	76.82	.00	.00	.00
48	288.4	725.9	781.1	10927.67	2938.00	2051.2	725.9	.0	78.91	.00	.00	.00
49	294.6	745.2	801.4	10931.39	2938.00	2013.8	745.2	.0	81.01	.00	.00	.00
50	300.9	764.7	821.7	10935.13	2938.00	1976.4	764.7	.0	83.12	.00	.00	.00
51	307.2	784.3	842.3	10939.01	2938.00	1939.0	784.3	.0	85.25	.00	.00	.00
52	313.5	803.9	862.9	10942.74	2938.00	1901.6	803.9	.0	87.38	.00	.00	.00
53	319.8	823.7	883.6	10946.59	2938.00	1864.2	823.7	.0	89.53	.00	.00	.00
54	326.0	843.7	904.5	10950.44	2938.00	1698.2	843.7	.0	91.69	.00	.00	.00
55	332.3	864.1	925.8	10954.76	2938.00	1516.1	864.1	.0	93.90	.00	.00	.00
56	338.6	884.9	947.5	10959.34	2938.00	1333.8	884.9	.0	96.16	.00	.00	.00
57	344.9	906.3	969.7	10964.38	2938.00	1151.5	906.3	.0	98.47	.00	.00	.00
58	351.2	928.1	992.3	10969.66	2938.00	969.2	928.1	.0	100.82	.00	.00	.00
59	357.4	950.3	1015.3	10975.16	2938.00	786.8	950.3	.0	103.21	.00	.00	.00
60	363.7	972.8	1038.6	10980.82	2938.00	604.4	972.8	.0	105.65	.00	.00	.00
61	370.0	996.0	1062.5	10986.83	2938.00	421.9	996.0	.0	108.14	.00	.00	.00
62	376.3	1019.6	1086.8	10992.99	2938.00	239.4	1019.6	.0	110.68	.00	.00	.00
63	382.6	1043.5	1111.4	10999.27	2938.00	171.1	1043.5	.0	113.25	.00	.00	.00
64	388.9	1067.4	1136.1	11005.30	2938.00	133.4	1067.4	.0	115.83	.00	.00	.00
65	395.1	1091.4	1160.7	11011.13	2938.00	95.8	1091.4	.0	118.41	.00	.00	.00
66	401.4	1115.5	1185.6	11016.92	2938.00	58.1	1115.5	.0	121.01	.00	.00	.00
67	407.7	1139.9	1210.6	11022.66	2938.00	20.4	1139.9	.0	123.64	.00	.00	.00
68	414.0	1164.0	1235.4	11028.08	2938.00	.0	1164.0	-47.1	126.24	.00	.00	.00
69	420.3	1188.4	1260.5	11033.49	2938.00	.0	1188.4	-40.8	128.87	.00	.00	.00
70	426.5	1212.7	1285.5	11038.73	2938.00	.0	1212.7	-34.5	131.50	.00	.00	.00
71	432.8	1237.0	1310.6	11043.81	2938.00	.0	1237.0	-28.3	134.13	.00	.00	.00
72	439.1	1261.4	1335.6	11048.78	2938.00	.0	1261.4	-22.0	136.76	.00	.00	.00
73	445.4	1285.7	1360.7	11053.61	2938.00	.0	1285.7	-15.7	139.39	.00	.00	.00
74	451.7	1310.1	1385.7	11058.32	2938.00	.0	1310.1	-9.4	142.03	.00	.00	.00
75	458.0	1334.4	1410.8	11062.92	2938.00	.0	1334.4	-3.1	144.67	.00	.00	.00
76	464.2	1358.8	1435.9	11067.43	2938.00	.0	1358.8	3.1	147.30	.00	.00	.00
77	470.5	1383.1	1460.9	11071.81	2938.00	.0	1383.1	9.4	149.95	.00	.00	.00
78	476.8	1407.4	1486.0	11076.14	2938.00	.0	1407.4	15.7	152.59	.00	.00	.00
79	483.1	1431.8	1511.1	11080.38	2938.00	.0	1431.8	22.0	155.23	.00	.00	.00
80	489.4	1456.3	1536.3	11084.67	2938.00	.0	1456.3	28.3	157.90	.00	.00	.00

VESSEL DISP.		RESTORING FORCE ON VESSEL	INCREMENT STIFFNESS	YAW MOMENT	VERTICAL FORCE	OVERTURN MOMENT	MAX.LINE LOAD	LINE ON BOTTOM	HOR.FORCE ON ANCHOR	LINE LOAD (KIPS) LINE NUMBER													
13 (FT)	14 (% WD)	15 16 (KIPS)	(KIPS/FT)	(FT-KIP)	(KIPS)	(FT-KIP)	(KIPS)	(FT)	(KIPS)	1	2	3	4	5	6	7	8	9	10	11	12		
.0	.0	0.	.00	0.	3954.	0.	650.	2296.	601.	650	650	650	650	650	650	650	650	650	650	650	650	650	650
4.5	.2	179.	39.84	0.	3955.	10059.	673.	2253.	623.	669	673	673	669	663	655	645	637	631	627	627	631	637	645	655	663
9.0	.3	357.	39.45	0.	3955.	20034.	696.	2209.	645.	689	696	696	689	676	659	641	624	612	605	605	612	624	641	659	676
13.5	.4	534.	39.36	0.	3956.	29961.	719.	2166.	667.	709	719	719	709	689	664	636	612	593	583	583	593	612	636	664	689
18.0	.6	714.	40.07	0.	3957.	40120.	743.	2122.	689.	728	743	743	728	702	668	632	599	574	560	560	574	599	632	668	702
22.5	.8	891.	39.36	0.	3957.	50092.	766.	2079.	711.	748	766	766	748	715	673	628	587	555	539	539	555	587	628	673	715
27.0	.9	1069.	39.55	0.	3959.	60045.	790.	2035.	734.	768	790	790	768	729	677	623	574	537	517	517	537	574	623	677	729
31.5	1.0	1249.	40.00	0.	3960.	70141.	814.	1990.	757.	789	814	814	789	742	682	619	561	519	495	495	519	561	619	682	742
36.0	1.2	1427.	39.51	0.	3961.	80160.	838.	1947.	780.	809	838	838	809	755	687	614	549	500	474	474	500	549	614	687	755
40.5	1.4	1605.	39.53	1.	3962.	90164.	862.	1903.	803.	829	862	862	829	769	692	610	537	481	453	453	481	537	610	692	769
45.0	1.5	1781.	39.06	0.	3964.	99966.	886.	1851.	826.	849	886	886	849	782	696	606	525	464	432	432	464	525	606	696	782
49.5	1.6	1956.	38.92	0.	3965.	109741.	909.	1658.	848.	870	909	909	870	796	701	602	513	446	411	411	446	513	602	701	796
54.0	1.8	2127.	37.91	0.	3965.	119156.	931.	1473.	869.	890	931	931	890	810	706	597	500	428	391	391	428	500	597	706	810
58.5	2.0	2294.	37.25	0.	3964.	128329.	951.	1301.	889.	910	951	951	910	823	710	593	488	411	371	371	411	488	593	710	823
63.0	2.1	2455.	35.71	0.	3961.	137038.	971.	1143.	907.	928	971	971	928	837	715	589	476	394	352	352	394	476	589	715	837
67.5	2.3	2612.	34.98	0.	3958.	145480.	990.	990.	926.	946	990	990	946	850	720	584	464	377	333	333	377	464	584	720	850
72.0	2.4	2768.	34.58	1.	3954.	153750.	1008.	842.	943.	963	1008	1008	963	864	725	580	452	360	314	314	360	452	580	725	864
76.5	2.5	2919.	33.65	0.	3950.	161706.	1027.	698.	961.	979	1027	1027	979	878	730	576	440	344	296	296	344	440	576	730	878
81.0	2.7	3068.	32.99	0.	3946.	169433.	1045.	559.	979.	995	1045	1045	995	892	734	571	429	328	279	279	328	429	571	734	892
85.5	2.8	3214.	32.54	0.	3941.	177025.	1062.	426.	996.	1011	1062	1062	1011	905	739	567	417	312	262	262	312	417	567	739	905
90.0	3.0	3358.	31.89	0.	3936.	184472.	1079.	288.	1012.	1026	1079	1079	1026	918	744	563	406	297	246	246	297	406	563	744	918
94.5	3.2	3496.	30.75	0.	3932.	191552.	1097.	203.	1029.	1041	1097	1097	1041	930	749	558	394	283	230	230	283	394	558	749	930
99.0	3.3	3631.	29.92	0.	3929.	198355.	1114.	166.	1046.	1056	1114	1114	1056	942	754	554	383	268	217	217	268	383	554	754	942
103.5	3.5	3765.	29.89	0.	3925.	205180.	1132.	139.	1064.	1071	1132	1132	1071	953	758	550	372	254	203	203	254	372	550	758	953
108.0	3.6	3897.	29.36	0.	3923.	211829.	1151.	111.	1082.	1086	1151	1151	1086	965	763	546	361	241	191	191	241	361	546	763	965
112.5	3.8	4025.	28.40	0.	3922.	218157.	1170.	82.	1100.	1101	1170	1170	1101	976	768	542	350	228	180	180	228	350	542	768	976
117.0	3.9	4150.	27.81	0.	3923.	224276.	1189.	53.	1118.	1116	1189	1189	1116	986	773	538	340	217	170	170	217	340	538	773	986
121.5	4.1	4275.	27.62	0.	3925.	230306.	1208.	24.	1137.	1131	1208	1208	1131	997	778	534	329	205	161	161	205	329	534	778	997
126.0	4.2	4398.	27.48	1.	3928.	236263.	1228.	4.	1157.	1147	1228	1228	1147	1008	783	530	319	195	152	152	195	319	530	783	1008
130.5	4.3	4519.	26.92	0.	3933.	242004.	1248.	0.	1176.	1163	1248	1248	1163	1018	789	526	308	185	145	145	185	308	526	789	1018
135.0	4.5	4638.	26.47	0.	3940.	247582.	1269.	0.	1197.	1179	1269	1269	1179	1029	794	522	298	176	138	138	176	298	522	794	1029
139.5	4.7	4756.	26.21	0.	3947.	253067.	1290.	0.	1217.	1195	1290	1290	1195	1039	799	518	289	168	132	132	168	289	518	799	1039
144.0	4.8	4874.	26.03	0.	3956.	258480.	1312.	0.	1238.	1211	1312	1312	1211	1049	804	514	279	160	127	127	160	279	514	804	1049
148.5	4.9	4991.	26.05	0.	3966.	263883.	1334.	0.	1260.	1229	1334	1334	1229	1059	809	510	270	153	121	121	153	270	510	809	1059
153.0	5.1	5108.	26.05	0.	3977.	269233.	1357.	0.	1282.	1246	1357	1357	1246	1069	814	506	260	147	116	116	147	260	506	814	1069
157.5	5.3	5225.	26.06	0.	3988.	274545.	1381.	0.	1305.	1264	1381	1381	1264	1079	819	502	251	141	111	111	141	251	502	819	1079
162.0	5.4	5343.	26.13	0.	4001.	279881.	1404.	0.	1328.	1282	1404	1404	1282	1089	824	497	242	136	107	107	136	242	497	824	1089
166.5	5.6	5461.	26.18	0.	4015.	285236.	1429.	0.	1352.	1300	1429	1429	1300	1099	829	493	234	131	102	102	131	234	493	829	1099
171.0	5.7	5579.	26.33	0.	4029.	290630.	1454.	0.	1376.	1319	1454	1454	1319	1109	834	489	226	126	98	98	126	226	489	834	1109
175.5	5.8	5698.	26.44	0.	4045.	296051.	1479.	0.	1401.	1338	1479	1479	1338	1120	839	485	218	122	93	93	122	218	485	839	1120
180.0	6.0	5818.	26.72	0.	4062.	301522.	1505.	0.	1426.	1357	1505	1505	1357	1130	844	481	211	117	89	89	117	211	481	844	1130
184.5	6.2	5939.	26.81	0.	4080.	306981.	1532.	0.	1452.	1377	1532	1532	1377	1141	850	477	204	113	85	85	113	204	477	850	1141

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT11088. FT

STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

F.C. = 28.1do
Surge = 5%
Total = 10%

DEEPWATER, ARAMID MOORING LINE JIP
CASE C3A16T

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG

CATENARY OPTIMIZATION - NO

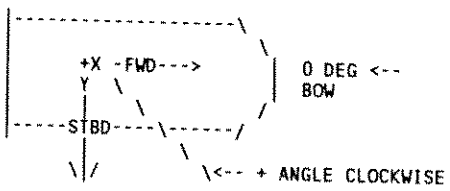
INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO



VESSEL DISP.		RESTORING FORCE ON VESSEL	INCREMENT STIFFNESS	YAW MOMENT	VERTICAL FORCE	OVERTURN MOMENT	MAX.LINE LOAD	LINE ON BOTTOM	HOR.FORCE ON ANCHOR	LINE LOAD (KIPS) LINE NUMBER														
13 (FT)	14 (% WD)	15 16 (KIPS)	(KIPS/FT)	(FT-KIP)	(KIPS)	(FT-KIP)	(KIPS)	(FT)	(KIPS)	1	2	3	4	5	6	7	8	9	10	11	12			
.0	.0	1.	.00	1.	3680.	128779.	742.	2124.	688.	742	0	732	708	692	652	614	581	575	564	566	581	623	653	683	708
4.5	.2	158.	34.73	797.	3673.	136157.	765.	2081.	710.	765	0	752	721	697	648	602	562	553	542	547	568	618	657	695	727
9.0	.3	313.	34.58	1647.	3667.	143568.	789.	2037.	733.	789	0	773	735	703	645	590	544	531	520	528	555	613	661	708	747
13.5	.4	469.	34.52	2486.	3661.	150890.	813.	1993.	756.	813	0	793	749	707	641	577	526	510	498	510	542	608	665	721	766
18.0	.6	626.	34.91	3524.	3654.	158371.	836.	1950.	778.	836	0	814	763	713	637	565	508	488	476	491	529	603	669	733	786
22.5	.8	781.	34.48	4372.	3648.	165695.	860.	1907.	801.	860	0	835	777	718	633	553	490	467	455	472	517	598	673	746	806
27.0	.9	934.	34.13	5276.	3642.	172955.	884.	1863.	824.	884	0	855	791	723	629	541	472	446	434	454	504	593	677	759	826
31.5	1.0	1087.	34.00	6133.	3637.	180277.	907.	1673.	847.	907	0	876	805	729	626	530	454	425	414	436	491	588	681	772	846
36.0	1.2	1238.	33.48	7292.	3631.	187375.	929.	1489.	867.	929	0	897	819	734	622	518	437	405	393	419	478	584	685	785	866
40.5	1.4	1386.	32.76	8462.	3624.	194294.	950.	1316.	887.	950	0	916	833	740	618	507	420	385	373	401	466	579	689	798	886
45.0	1.5	1530.	32.16	9729.	3616.	201003.	969.	1158.	906.	969	0	935	848	745	614	494	403	365	354	384	454	573	693	811	906
49.5	1.6	1671.	31.24	10823.	3607.	207461.	988.	1005.	924.	988	0	952	862	750	610	482	386	346	335	367	442	569	698	825	924
54.0	1.8	1809.	30.63	11876.	3598.	213829.	1006.	858.	942.	1006	0	969	876	756	607	471	370	327	316	350	429	563	702	837	942
58.5	2.0	1944.	30.09	12881.	3589.	220084.	1024.	714.	959.	1024	0	986	890	761	603	460	354	309	297	334	417	559	706	851	958
63.0	2.1	2076.	29.35	13741.	3581.	226136.	1042.	575.	977.	1042	0	1002	904	766	599	449	338	291	280	318	406	554	710	864	975
67.5	2.3	2205.	28.71	14405.	3572.	232003.	1060.	442.	993.	1060	0	1017	917	772	596	437	322	274	263	302	394	549	714	877	990
72.0	2.4	2333.	28.30	15065.	3562.	237751.	1077.	304.	1010.	1077	0	1033	930	778	592	426	307	257	247	287	382	544	718	890	1006
76.5	2.5	2456.	27.49	15670.	3554.	243306.	1094.	210.	1027.	1094	0	1049	943	783	589	415	292	241	231	272	370	540	722	903	1021
81.0	2.7	2576.	26.57	16044.	3546.	248621.	1112.	171.	1044.	1112	0	1064	955	789	585	405	278	227	217	258	359	535	726	915	1036
85.5	2.8	2693.	26.00	16211.	3538.	253760.	1130.	142.	1061.	1130	0	1079	966	795	582	394	264	213	204	244	348	530	731	927	1051
90.0	3.0	2808.	25.55	16277.	3532.	258788.	1148.	115.	1079.	1148	0	1094	978	801	579	383	251	200	191	230	336	525	734	938	1065
94.5	3.2	2919.	24.74	16212.	3526.	263585.	1167.	87.	1097.	1167	0	1109	989	807	575	373	238	188	180	219	325	520	739	949	1080
99.0	3.3	3028.	24.09	16078.	3521.	268253.	1185.	58.	1115.	1185	0	1125	1000	813	571	362	226	178	170	207	314	515	743	960	1094
103.5	3.5	3133.	23.53	15943.	3518.	272809.	1204.	29.	1134.	1204	0	1141	1011	818	568	352	214	168	161	196	303	511	747	971	1109
108.0	3.6	3237.	23.09	15750.	3516.	277199.	1224.	7.	1153.	1224	0	1157	1022	824	564	342	203	159	152	186	293	506	751	981	1123
112.5	3.8	3339.	22.60	15548.	3516.	281432.	1244.	0.	1173.	1244	0	1173	1033	830	561	332	193	151	145	177	283	501	755	991	1139
117.0	3.9	3438.	22.09	15361.	3516.	285543.	1265.	0.	1193.	1265	0	1190	1044	835	557	322	184	144	138	168	273	496	759	1002	1154
121.5	4.1	3536.	21.74	15110.	3518.	289575.	1286.	0.	1213.	1286	0	1206	1055	841	554	312	175	137	132	160	263	491	763	1012	1170
126.0	4.2	3633.	21.55	14814.	3521.	293580.	1308.	0.	1234.	1308	0	1224	1065	847	551	302	167	131	127	153	254	486	768	1022	1186
130.5	4.3	3729.	21.25	14563.	3525.	297548.	1330.	0.	1256.	1330	0	1241	1076	853	547	293	159	126	121	147	244	482	772	1032	1202
135.0	4.5	3824.	21.05	14408.	3530.	301476.	1352.	0.	1277.	1352	0	1259	1086	859	544	284	153	120	116	141	235	477	776	1042	1218
139.5	4.7	3918.	20.91	14338.	3537.	305437.	1375.	0.	1300.	1375	0	1278	1097	866	541	276	147	115	111	135	227	472	780	1051	1235
144.0	4.8	4012.	20.87	14321.	3544.	309322.	1399.	0.	1323.	1399	0	1297	1107	871	538	267	141	111	106	130	219	467	784	1061	1252
148.5	4.9	4106.	20.95	14365.	3551.	313229.	1423.	0.	1346.	1423	0	1316	1118	877	535	258	136	106	102	126	211	463	789	1070	1269
153.0	5.1	4201.	21.04	14442.	3560.	317177.	1448.	0.	1370.	1448	0	1335	1129	883	531	249	131	101	97	121	203	458	793	1080	1287
157.5	5.3	4295.	21.07	14587.	3569.	321181.	1473.	0.	1395.	1473	0	1355	1140	889	529	241	126	97	93	116	195	454	797	1089	1305
162.0	5.4	4390.	21.07	14804.	3579.	325179.	1499.	0.	1420.	1499	0	1375	1152	896	526	233	122	93	89	112	189	449	801	1098	1323
166.5	5.6	4485.	21.10	15099.	3590.	329154.	1525.	0.	1445.	1525	0	1396	1163	901	522	226	118	89	85	108	182	444	806	1108	1342

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT11088. FT

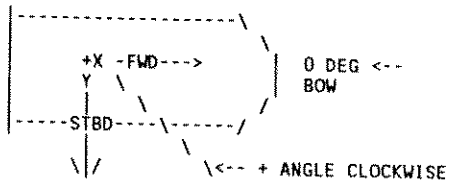
STARTING DISPLACEMENTS : SURGE(FT) = -14.531 SWAY(FT) = -9.656 YAW(DEG) = .722

DEEPWATER, ARAMID MOORING LINE JIP
CASE ST3016 tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	11.3	33.8	56.3	78.8	101.3	123.8	146.3	168.8	-168.8	-146.3	-123.8	-101.3	-78.8	-56.3	-33.8	-11.3
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	3000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	3000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.500"
LINE LENGTH (FT)	400.0
WEIGHT IN WATER (LB/FT)	36.64
LINE B.S. (KIPS)	2325.0
AREA (SQ IN)	15.90
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.500"
LINE LENGTH (FT)	300.0
WEIGHT IN WATER (LB/FT)	36.64
LINE B.S. (KIPS)	2325.0
AREA (SQ IN)	15.90
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-100.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.500"
LINE LENGTH (FT)	3700.0
WEIGHT IN WATER (LB/FT)	36.64
LINE B.S. (KIPS)	2325.0
AREA (SQ IN)	15.90
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-112.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.500"
LINE LENGTH (FT)	2800.0
WEIGHT IN WATER (LB/FT)	36.64
LINE B.S. (KIPS)	2325.0
AREA (SQ IN)	15.90
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	4.750"
LINE LENGTH (FT)	1500.0
WEIGHT IN WATER (LB/FT)	186.48
LINE B.S. (KIPS)	2372.0
AREA (SQ IN)	17.72
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.500"
LINE LENGTH (FT)	2600.0
WEIGHT IN WATER (LB/FT)	36.64
LINE B.S. (KIPS)	2325.0
AREA (SQ IN)	15.90
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	4.750"
LINE LENGTH (FT)	100.0
WEIGHT IN WATER (LB/FT)	186.48
LINE B.S. (KIPS)	2372.0
AREA (SQ IN)	17.72
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
1	59.2	.0	61.2	8462.00	2938.00	8462.0	.0	.0				
2	61.3	131.1	144.8	10617.59	2938.00	4151.9	131.1	.0	9.84	-212.00	.00	188.68
3	63.5	136.3	150.3	10628.72	2938.00	4140.5	136.3	.0	10.21	-212.00	.00	193.81
4	65.6	141.7	156.1	10641.18	2938.00	4129.0	141.7	.0	10.60	-212.00	.00	199.15
5	67.8	146.8	161.7	10650.47	2938.00	4117.6	146.8	.0	10.97	-212.00	.00	204.33
6	70.0	152.2	167.5	10661.14	2938.00	4106.1	152.2	.0	11.35	-212.00	.00	209.72
7	72.1	157.3	173.0	10669.00	2938.00	4094.6	157.3	.0	11.72	-212.00	.00	214.93
8	74.3	162.4	178.6	10676.30	2938.00	4083.2	162.4	.0	12.09	-212.00	.00	220.16
9	76.4	167.8	184.4	10684.97	2938.00	4071.7	167.8	.0	12.48	-212.00	.00	225.61
10	78.6	173.0	190.0	10691.24	2938.00	4060.2	173.0	.0	12.85	-212.00	.00	230.87
11	82.9	183.5	201.3	10704.28	2938.00	4037.3	183.5	.0	13.61	-212.00	.00	241.65
12	87.2	193.7	212.5	10714.19	2938.00	4014.4	193.7	.0	14.35	-212.00	.00	252.26
13	91.5	204.3	223.8	10724.46	2938.00	3991.4	204.3	.0	15.11	-212.00	.00	263.13
14	95.9	214.5	234.9	10732.21	2938.00	3968.5	214.5	.0	15.85	-212.00	.00	273.83
15	100.2	225.0	246.3	10740.51	2938.00	3945.5	225.0	.0	16.61	-212.00	.00	284.77
16	104.5	235.3	257.4	10746.71	2938.00	3922.6	235.3	.0	17.36	-212.00	.00	295.54
17	108.8	246.1	269.1	10754.80	2938.00	3899.6	246.1	.0	18.14	-212.00	.00	306.76
18	113.1	256.3	280.2	10759.81	2938.00	3876.7	256.3	.0	18.88	-212.00	.00	317.57
19	117.4	267.1	291.8	10766.64	2938.00	3853.8	267.1	.0	19.66	-212.00	.00	328.84
20	121.8	277.4	302.9	10770.75	2938.00	3830.8	277.4	.0	20.41	-212.00	.00	339.70
21	126.1	288.2	314.5	10776.61	2938.00	3807.9	288.2	.0	21.19	-212.00	.00	351.01
22	130.4	298.4	325.7	10780.02	2938.00	3784.9	298.4	.0	21.94	-212.00	.00	361.90
23	134.7	309.2	337.3	10785.12	2938.00	3761.9	309.2	.0	22.72	-212.00	.00	373.25
24	139.0	320.0	348.9	10789.85	2938.00	3739.0	320.0	.0	23.50	-212.00	.00	384.62
25	143.3	330.8	360.5	10794.26	2938.00	3716.0	330.8	.0	24.28	-212.00	.00	396.00
26	147.7	341.1	371.6	10796.65	2938.00	3693.1	341.1	.0	25.03	-212.00	.00	406.95
27	152.0	351.8	383.3	10800.56	2938.00	3670.1	351.8	.0	25.81	-212.00	.00	418.35
28	156.3	362.6	394.9	10804.24	2938.00	3647.2	362.6	.0	26.60	-212.00	.00	429.77
29	160.6	373.4	406.5	10807.69	2938.00	3624.2	373.4	.0	27.38	-212.00	.00	441.20
30	164.9	384.2	418.1	10810.95	2938.00	3601.2	384.2	.0	28.16	-212.00	.00	452.64
31	169.2	395.0	429.7	10814.02	2938.00	3578.3	395.0	.0	28.95	-212.00	.00	464.09
32	173.6	406.3	441.9	10818.37	2938.00	3555.3	406.3	.0	29.77	-212.00	.00	476.01
33	177.9	417.1	453.5	10821.08	2938.00	3532.4	417.1	.0	30.55	-212.00	.00	487.47
34	182.2	427.9	465.1	10823.65	2938.00	3509.4	427.9	.0	31.34	-212.00	.00	498.94
35	186.5	439.3	477.2	10827.43	2938.00	3486.4	439.3	.0	32.16	-212.00	.00	510.89
36	190.8	450.1	488.8	10829.72	2938.00	3463.5	450.1	.0	32.94	-212.00	.00	522.38
37	195.1	461.4	501.0	10833.17	2938.00	3440.5	461.4	.0	33.76	-212.00	.00	534.33
38	199.5	472.2	512.6	10835.24	2938.00	3417.5	472.2	.0	34.55	-212.00	.00	545.83
39	203.8	483.5	524.7	10838.40	2938.00	3394.5	483.5	.0	35.37	-212.00	.00	557.81
40	208.1	494.9	536.8	10841.43	2938.00	3371.6	494.9	.0	36.19	-212.00	.00	569.79
41	212.4	505.6	548.4	10843.19	2938.00	3348.6	505.6	.0	36.98	-212.00	.00	581.30
42	216.7	517.5	561.1	10847.10	2938.00	3325.6	517.5	.0	37.84	-212.00	.00	593.76
43	221.0	528.3	572.7	10848.67	2938.00	3302.6	528.3	.0	38.67	-212.00	.00	605.29
44	225.4	540.2	585.3	10852.32	2938.00	3279.7	540.2	.0	39.48	-212.00	.00	617.76
45	229.7	551.0	596.9	10853.73	2938.00	3256.7	551.0	.0	40.27	-212.00	.00	629.29

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
46	234.0	562.8	609.6	10857.13	2938.00	3233.7	562.8	.0	41.13	-212.00	.00	641.78
47	238.3	574.7	622.2	10860.37	2938.00	3210.7	574.7	.0	41.99	-212.00	.00	654.27
48	242.6	585.5	633.8	10861.60	2938.00	3187.8	585.5	.0	42.77	-212.00	.00	665.81
49	247.0	597.4	646.4	10864.67	2938.00	3164.8	597.4	.0	43.63	-212.00	.00	678.31
50	251.3	609.3	659.0	10867.63	2938.00	3141.8	609.3	.0	44.49	-212.00	.00	690.81
51	255.6	620.0	670.7	10868.65	2938.00	3118.8	620.0	.0	45.28	-212.00	.00	702.37
52	259.9	631.9	683.3	10871.44	2938.00	3095.8	631.9	.0	46.14	-212.00	.00	714.88
53	264.2	643.8	695.9	10874.14	2938.00	3072.8	643.8	.0	47.00	-212.00	.00	727.39
54	268.5	655.7	708.5	10876.75	2938.00	3049.8	655.7	.0	47.86	-212.00	.00	739.91
55	272.9	667.5	721.1	10879.27	2938.00	3026.9	667.5	.0	48.72	-212.00	.00	752.43
56	277.2	679.4	733.8	10881.72	2938.00	3003.9	679.4	.0	49.58	-212.00	.00	764.96
57	281.5	691.3	746.4	10884.09	2938.00	2980.9	691.3	.0	50.44	-212.00	.00	777.49
58	285.8	703.2	759.0	10886.38	2938.00	2957.9	703.2	.0	51.30	-212.00	.00	790.02
59	290.1	715.0	771.6	10888.61	2938.00	2934.9	715.0	.0	52.16	-212.00	.00	802.56
60	294.4	726.9	784.3	10890.78	2938.00	2911.9	726.9	.0	53.02	-212.00	.00	815.10
61	298.8	738.8	796.9	10892.88	2938.00	2888.9	738.8	.0	53.88	-212.00	.00	827.64
62	303.1	750.6	809.5	10894.93	2938.00	2865.9	750.6	.0	54.75	-212.00	.00	840.19
63	307.4	762.5	822.1	10896.92	2938.00	2842.9	762.5	.0	55.61	-212.00	.00	852.73
64	311.7	775.5	835.8	10900.30	2938.00	2819.9	775.5	.0	56.54	-212.00	.00	866.25
65	316.0	787.3	848.4	10902.17	2938.00	2796.9	787.3	.0	57.40	-212.00	.00	878.80
66	320.3	799.2	861.0	10903.99	2938.00	2773.9	799.2	.0	58.27	-212.00	.00	891.36
67	324.7	812.2	874.6	10907.14	2938.00	2750.9	812.2	.0	59.20	-212.00	.00	904.88
68	329.0	824.0	887.3	10908.85	2938.00	2727.8	824.0	.0	60.06	-212.00	.00	917.44
69	333.3	835.9	899.9	10910.51	2938.00	2665.8	835.9	.0	60.93	-212.00	.00	930.01
70	337.6	848.9	913.5	10913.46	2938.00	2547.6	848.9	.0	61.86	-212.00	.00	943.54
71	341.9	861.8	927.2	10916.33	2938.00	2429.3	861.8	.0	62.79	-212.00	.00	957.08
72	346.2	874.8	940.8	10919.11	2938.00	2311.0	874.8	.0	63.73	-212.00	.00	970.62
73	350.6	887.7	954.4	10921.82	2938.00	2192.7	887.7	.0	64.67	-212.00	.00	984.17
74	354.9	900.7	968.1	10924.45	2938.00	2074.4	900.7	.0	65.60	-212.00	.00	997.71
75	359.2	913.6	981.7	10927.01	2938.00	1956.0	913.6	.0	66.54	-212.00	.00	1011.26
76	363.5	927.6	996.3	10930.69	2938.00	1837.7	927.6	.0	67.54	-212.00	.00	1025.79
77	367.8	941.7	1011.0	10934.25	2938.00	1719.3	941.7	.0	68.55	-212.00	.00	1040.33
78	372.1	955.7	1025.6	10937.71	2938.00	1600.9	955.7	.0	69.56	-212.00	.00	1054.86
79	376.5	970.8	1041.3	10942.20	2938.00	1482.5	970.8	.0	70.64	-212.00	.00	1070.38
80	380.8	984.8	1055.9	10945.44	2938.00	1364.0	984.8	.0	71.65	-212.00	.00	1084.93
81	385.1	1000.0	1071.5	10949.67	2938.00	1245.6	1000.0	.0	72.73	-212.00	.00	1100.46
82	389.4	1014.0	1086.2	10952.70	2938.00	1127.1	1014.0	.0	73.74	-212.00	.00	1115.01
83	393.7	1029.1	1101.8	10956.70	2938.00	1008.6	1029.1	.0	74.83	-212.00	.00	1130.55
84	398.1	1044.2	1117.5	10960.57	2938.00	890.1	1044.2	.0	75.91	-212.00	.00	1146.09
85	402.4	1059.3	1133.2	10964.33	2938.00	771.5	1059.3	.0	76.99	-212.00	.00	1161.64
86	406.7	1075.5	1149.8	10968.98	2938.00	652.9	1075.5	.0	78.15	-212.00	.00	1178.18
87	411.0	1090.6	1165.5	10972.50	2938.00	534.4	1090.6	.0	79.23	-212.00	.00	1193.74
88	415.3	1107.9	1183.2	10977.85	2938.00	415.7	1107.9	.0	80.46	-212.00	.00	1211.28
89	419.6	1123.0	1198.8	10981.14	2938.00	297.1	1123.0	.0	81.54	-212.00	.00	1226.84
90	424.0	1140.3	1216.5	10986.19	2938.00	178.4	1140.3	.0	82.77	-212.00	.00	1244.39
91	428.3	1157.5	1234.2	10991.08	2938.00	92.5	1157.5	.0	84.00	-212.00	.00	1261.95
92	432.6	1172.6	1249.9	10994.06	2938.00	69.2	1172.6	.0	85.09	-212.00	.00	1277.53
93	436.9	1189.9	1267.6	10998.70	2938.00	46.0	1189.9	.0	86.32	-212.00	.00	1295.09
94	441.2	1207.2	1285.3	11003.21	2938.00	22.7	1207.2	.0	87.56	-212.00	.00	1312.67
95	445.5	1224.4	1303.0	11007.59	2938.00	.0	1224.4	.1	88.79	-212.00	.00	1330.25
96	449.9	1240.6	1319.7	11011.03	2938.00	.0	1240.6	4.4	89.95	-212.00	.00	1346.84
97	454.2	1257.9	1337.4	11015.18	2938.00	.0	1257.9	8.7	91.18	-212.00	.00	1364.43
98	458.5	1275.2	1355.1	11019.24	2938.00	.0	1275.2	13.1	92.42	-212.00	.00	1382.02
99	462.8	1290.3	1370.8	11021.60	2938.00	.0	1290.3	17.4	93.51	-212.00	.00	1397.63

VESSEL DISP. 13 (FT)	14 (% WD)	RESTORING FORCE ON VESSEL 15 16 (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	4524.	0.	781.	2974.	695.	750	750	750	750	750	750	750	750	750	750	750	750
6.0	.2	250.	41.63	0.	4527.	15176.	814.	2913.	726.	778	783	783	778	769	756	744	732	724	719	719	724
12.0	.4	501.	41.92	0.	4538.	30475.	850.	2847.	760.	808	820	820	808	788	763	737	715	699	690	690	699
18.0	.6	740.	39.86	0.	4538.	44586.	880.	2794.	789.	833	850	850	833	808	770	731	699	678	655	655	678
24.0	.8	988.	41.30	-1.	4544.	59953.	913.	2739.	820.	864	883	883	864	827	777	725	683	647	630	630	647
30.0	1.0	1233.	40.79	0.	4547.	74876.	947.	2518.	852.	894	917	917	894	843	783	719	665	619	605	605	619
36.0	1.2	1453.	36.69	0.	4553.	87132.	975.	2270.	879.	919	946	946	919	865	791	714	647	603	576	576	603
42.0	1.4	1676.	37.23	0.	4554.	100497.	1006.	2004.	908.	944	976	976	944	882	798	708	633	577	550	550	577
48.0	1.6	1904.	37.96	0.	4550.	113156.	1030.	1800.	932.	969	1001	1001	969	905	805	702	612	554	522	522	554
54.0	1.8	2106.	33.61	0.	4547.	125326.	1055.	1601.	956.	993	1026	1026	993	920	813	697	603	530	496	496	530
60.0	2.0	2299.	32.26	0.	4537.	135618.	1077.	1432.	977.	1013	1048	1048	1013	936	820	691	582	511	472	472	511
66.0	2.2	2488.	31.38	0.	4531.	146235.	1100.	1251.	999.	1032	1071	1071	1032	953	826	686	569	490	449	449	490
72.0	2.4	2676.	31.33	0.	4529.	156485.	1126.	1046.	1024.	1053	1097	1097	1053	971	830	682	554	469	430	430	469
78.0	2.6	2863.	31.14	0.	4521.	166731.	1149.	868.	1047.	1072	1120	1120	1072	987	835	678	538	449	408	408	449
84.0	2.8	3039.	29.44	0.	4518.	176339.	1172.	701.	1069.	1094	1143	1143	1094	1000	843	671	524	432	389	389	432
90.0	3.0	3216.	29.48	0.	4511.	185725.	1196.	522.	1092.	1114	1167	1167	1114	1014	852	658	511	415	371	371	415
96.0	3.2	3392.	29.40	0.	4502.	195091.	1216.	377.	1113.	1134	1188	1188	1134	1028	860	651	496	398	350	350	398
102.0	3.4	3550.	26.27	0.	4500.	203308.	1240.	206.	1136.	1153	1212	1212	1153	1040	866	648	482	382	336	336	382
108.0	3.6	3709.	26.57	0.	4497.	211623.	1260.	97.	1156.	1173	1233	1233	1173	1054	871	645	470	364	322	322	364
114.0	3.8	3876.	27.83	0.	4499.	220412.	1288.	56.	1183.	1192	1260	1260	1192	1067	878	642	457	350	307	307	350
120.0	4.0	4035.	26.42	1.	4501.	228004.	1310.	27.	1204.	1212	1282	1282	1212	1082	887	636	443	337	293	293	337
126.0	4.2	4180.	24.27	1.	4506.	234758.	1334.	0.	1228.	1229	1307	1307	1229	1096	896	627	433	326	282	282	326
132.0	4.4	4350.	28.28	0.	4509.	243589.	1361.	0.	1254.	1253	1333	1333	1253	1110	904	618	422	311	270	270	311
138.0	4.6	4498.	24.66	0.	4517.	250393.	1387.	0.	1280.	1272	1360	1360	1272	1124	910	613	410	302	261	261	302

LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
750	750	750	750	750	750	750	750	750	750	750	750
778	783	783	778	769	756	744	732	724	719	719	724
808	820	820	808	788	763	737	715	699	690	690	699
833	850	850	833	808	770	731	699	678	655	655	678
864	883	883	864	827	777	725	683	647	630	630	647
894	917	917	894	843	783	719	665	619	605	605	619
919	946	946	919	865	791	714	647	603	576	576	603
944	976	976	944	882	798	708	633	577	550	550	577
969	1001	1001	969	905	805	702	612	554	522	522	554
993	1026	1026	993	920	813	697	603	530	496	496	530
1013	1048	1048	1013	936	820	691	582	511	472	472	511
1032	1071	1071	1032	953	826	686	569	490	449	449	490
1053	1097	1097	1053	971	830	682	554	469	430	430	469
1072	1120	1120	1072	987	835	678	538	449	408	408	449
1094	1143	1143	1094	1000	843	671	524	432	389	389	432
1114	1167	1167	1114	1014	852	658	511	415	371	371	415
1134	1188	1188	1134	1028	860	651	496	398	350	350	398
1153	1212	1212	1153	1040	866	648	482	382	336	336	382
1173	1233	1233	1173	1054	871	645	470	364	322	322	364
1192	1260	1260	1192	1067	878	642	457	350	307	307	350
1212	1282	1282	1212	1082	887	636	443	337	293	293	337
1229	1307	1307	1229	1096	896	627	433	326	282	282	326
1253	1333	1333	1253	1110	904	618	422	311	270	270	311
1272	1360	1360	1272	1124	910	613	410	302	261	261	302

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT11026. FT

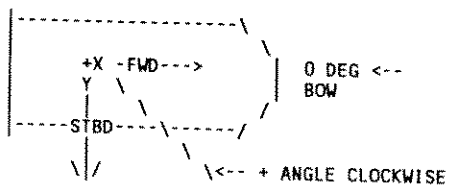
STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE ST3016 tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP.		RESTORING FORCE ON VESSEL	INCREMENT STIFFNESS	YAW MOMENT	VERTICAL FORCE	OVERTURN MOMENT	MAX.LINE LOAD	LINE ON BOTTOM	HOR.FORCE ON ANCHOR	LINE LOAD (KIPS) LINE NUMBER													
13 (FT)	14 (% WD)	15 16 (KIPS)	(KIPS/FT)	(FT-KIP)	(KIPS)	(FT-KIP)	(KIPS)	(FT)	(KIPS)	1	2	3	4	5	6	7	8	9	10	11	12		
.0	.0	2.	.00	0.	4223.	151048.	892.	2773.	800.	861	0	848	823	801	753	709	677	666	649	651	678	719	753	790	823
6.0	.2	214.	35.31	-1180.	4210.	161594.	926.	2691.	832.	896	0	875	837	809	747	694	647	639	620	631	651	712	759	810	847
12.0	.4	417.	33.86	1147.	4211.	171683.	954.	2452.	859.	925	0	909	861	818	741	681	619	608	599	607	641	706	765	827	874
18.0	.6	625.	34.68	2691.	4195.	182524.	983.	2202.	887.	953	0	932	877	825	737	657	603	579	569	580	616	699	770	842	907
24.0	.8	820.	32.50	4842.	4192.	192337.	1013.	1939.	916.	984	0	958	903	830	732	645	578	554	542	557	606	693	776	863	929
30.0	1.0	1008.	31.29	5869.	4177.	201583.	1036.	1751.	938.	1007	0	984	918	836	727	628	555	527	517	535	586	687	782	879	953
36.0	1.2	1190.	30.38	7375.	4169.	210370.	1060.	1565.	960.	1030	0	1005	937	848	724	612	533	501	491	515	572	681	786	900	978
42.0	1.4	1360.	28.28	8281.	4159.	219167.	1083.	1380.	983.	1054	0	1026	953	856	718	602	514	477	468	492	555	676	793	916	999
48.0	1.6	1533.	28.96	9271.	4141.	226957.	1106.	1199.	1005.	1077	0	1044	971	864	712	582	492	455	443	472	540	665	800	932	1019
54.0	1.8	1695.	26.85	10226.	4129.	234424.	1131.	1007.	1029.	1102	0	1065	988	868	707	570	471	434	425	452	525	655	808	949	1038
60.0	2.0	1857.	27.00	10886.	4119.	242067.	1154.	826.	1052.	1126	0	1088	1002	876	703	555	453	414	403	434	511	648	813	964	1058
66.0	2.2	2011.	25.81	10861.	4111.	249696.	1176.	669.	1073.	1148	0	1108	1017	887	699	542	435	394	384	416	495	645	819	981	1077
72.0	2.4	2166.	25.72	10860.	4101.	256990.	1200.	495.	1096.	1171	0	1129	1030	897	694	527	419	377	363	399	481	641	825	994	1099
78.0	2.6	2313.	24.49	11774.	4089.	263699.	1222.	334.	1118.	1194	0	1148	1043	905	690	515	402	354	347	383	468	634	829	1007	1118
84.0	2.8	2456.	23.94	12617.	4078.	269750.	1244.	182.	1140.	1216	0	1169	1058	911	684	498	386	340	333	366	455	623	833	1022	1138
90.0	3.0	2592.	22.69	12755.	4068.	275824.	1266.	85.	1162.	1238	0	1186	1070	916	681	487	370	327	316	350	441	616	840	1034	1158
96.0	3.2	2733.	23.47	12979.	4065.	282037.	1292.	50.	1186.	1264	0	1208	1088	924	678	473	353	310	304	337	431	611	846	1046	1175
102.0	3.4	2861.	21.30	13319.	4062.	288000.	1314.	21.	1208.	1286	0	1225	1102	931	674	464	341	298	289	326	418	608	852	1059	1195
108.0	3.6	2995.	22.33	13385.	4059.	294072.	1339.	0.	1233.	1312	0	1250	1117	939	666	450	331	285	279	311	405	603	859	1070	1213
114.0	3.8	3126.	21.78	13525.	4054.	299525.	1364.	0.	1258.	1337	0	1270	1132	947	658	439	317	275	267	300	393	596	864	1085	1230

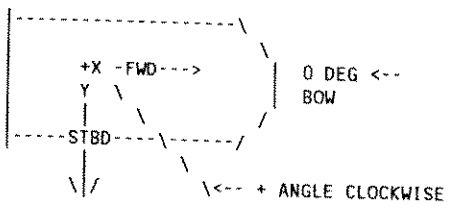
EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT11022. FT

STARTING DISPLACEMENTS : SURGE(FT) = -16.125 SWAY(FT) = -10.688 YAW(DEG) = .774

DEEPWATER, ARAMID MOORING LINE JIP
CASE C6A12T

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT	-	.00
LINE ATTACHMENT W.R.T. WATER LINE	-	-62.0 FT
ALLOWABLE LINE LENGTH ON BOTTOM	-	90.0 FT
DIRECTION OF VESSEL TRANSLATION	-	45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

(15) Case 7

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	22.5	45.0	67.5	112.5	135.0	157.5	-157.5	-135.0	-112.5	-67.5	-45.0	-22.5
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	6000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	6000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.375"
LINE LENGTH (FT)	500.0
WEIGHT IN WATER (LB/FT)	62.34
LINE B.S. (KIPS)	3338.0
AREA (SQ IN)	22.69
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	ARAMID
LINE SIZE (IN)	5.750"
LINE LENGTH (FT)	7500.0
WEIGHT IN WATER (LB/FT)	1.88
LINE B.S. (KIPS)	3320.0
AREA (SQ IN)	2.10
APP.MOD. OF ELAS.(KSI)	133000.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.250"
LINE LENGTH (FT)	3300.0
WEIGHT IN WATER (LB/FT)	62.34
LINE B.S. (KIPS)	3338.0
AREA (SQ IN)	22.69
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	4000.0
WEIGHT IN WATER (LB/FT)	250.00
LINE B.S. (KIPS)	3038.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.250"
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	62.34
LINE B.S. (KIPS)	3338.0
AREA (SQ IN)	22.69
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	400.0
WEIGHT IN WATER (LB/FT)	250.00
LINE B.S. (KIPS)	3038.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	50.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
1	41.4	.0	41.4	10762.00	5938.00	10762.0	.0	.0				
2	51.6	11.7	52.9	13882.89	5938.00	8599.6	11.7	.0	.93	.00	.00	.00
3	61.7	22.1	65.5	14062.05	5938.00	8437.0	22.1	.0	1.68	.00	.00	.00
4	71.9	32.6	78.9	14148.90	5938.00	8274.4	32.6	.0	2.44	.00	.00	.00
5	82.0	43.5	92.8	14214.39	5938.00	8111.7	43.5	.0	3.22	.00	.00	.00
6	92.2	54.8	107.2	14270.51	5938.00	7949.1	54.8	.0	4.02	.00	.00	.00
7	102.3	66.4	122.0	14321.16	5938.00	7786.5	66.4	.0	4.85	.00	.00	.00
8	112.5	78.5	137.2	14368.02	5938.00	7623.8	78.5	.0	5.70	.00	.00	.00
9	122.6	90.9	152.7	14412.10	5938.00	7461.2	90.9	.0	6.57	.00	.00	.00
10	132.8	103.8	168.6	14454.00	5938.00	7298.5	103.8	.0	7.46	.00	.00	.00
11	153.1	130.7	201.3	14531.95	5938.00	6973.2	130.7	.0	9.32	.00	.00	.00
12	173.4	159.1	235.3	14604.34	5938.00	6647.8	159.1	.0	11.27	.00	.00	.00
13	193.7	188.9	270.6	14670.66	5938.00	6322.3	188.9	.0	13.30	.00	.00	.00
14	214.1	220.2	307.1	14732.94	5938.00	5996.8	220.2	.0	15.42	.00	.00	.00
15	234.4	252.9	344.8	14791.06	5938.00	5671.2	252.9	.0	17.62	.00	.00	.00
16	254.7	287.0	383.7	14846.17	5938.00	5390.0	287.0	.0	19.90	.00	.00	.00
17	275.0	321.7	423.2	14891.59	5938.00	5309.2	321.7	.0	22.23	.00	.00	.00
18	295.3	356.5	462.9	14927.61	5938.00	5228.5	356.5	.0	24.56	.00	.00	.00
19	315.6	391.6	503.0	14957.62	5938.00	5147.7	391.6	.0	26.92	.00	.00	.00
20	335.9	426.8	543.2	14982.79	5938.00	5066.9	426.8	.0	29.29	.00	.00	.00
21	356.3	462.4	583.7	15005.30	5938.00	4986.1	462.4	.0	31.68	.00	.00	.00
22	376.6	498.2	624.5	15025.76	5938.00	4905.3	498.2	.0	34.08	.00	.00	.00
23	396.9	534.4	665.7	15044.67	5938.00	4824.5	534.4	.0	36.51	.00	.00	.00
24	417.2	570.8	707.0	15061.53	5938.00	4743.7	570.8	.0	38.95	.00	.00	.00
25	437.5	607.6	748.7	15078.17	5938.00	4662.8	607.6	.0	41.42	.00	.00	.00
26	457.8	644.6	790.6	15093.31	5938.00	4582.0	644.6	.0	43.90	.00	.00	.00
27	478.1	682.0	832.9	15108.42	5938.00	4501.1	682.0	.0	46.41	.00	.00	.00
28	498.4	719.8	875.5	15122.92	5938.00	4420.2	719.8	.0	48.94	.00	.00	.00
29	518.8	757.7	918.3	15136.36	5938.00	4339.3	757.7	.0	51.48	.00	.00	.00
30	539.1	796.1	961.5	15149.92	5938.00	4258.4	796.1	.0	54.04	.00	.00	.00
31	559.4	834.8	1004.9	15163.09	5938.00	4177.5	834.8	.0	56.63	.00	.00	.00
32	579.7	873.9	1048.7	15175.91	5938.00	4096.6	873.9	.0	59.24	.00	.00	.00
33	600.0	913.2	1092.7	15188.42	5938.00	4015.7	913.2	.0	61.86	.00	.00	.00
34	620.3	952.9	1137.0	15200.67	5938.00	3934.7	952.9	.0	64.50	.00	.00	.00
35	640.6	993.1	1181.8	15213.12	5938.00	3853.8	993.1	.0	67.18	.00	.00	.00
36	661.0	1033.4	1226.7	15224.86	5938.00	3772.8	1033.4	.0	69.86	.00	.00	.00
37	681.3	1074.3	1272.1	15237.21	5938.00	3691.8	1074.3	.0	72.58	.00	.00	.00
38	701.6	1115.3	1317.6	15248.56	5938.00	3610.8	1115.3	.0	75.30	.00	.00	.00
39	721.9	1156.5	1363.3	15259.79	5938.00	3529.8	1156.5	.0	78.05	.00	.00	.00
40	742.2	1198.4	1409.6	15271.47	5938.00	3448.7	1198.4	.0	80.83	.00	.00	.00
41	762.5	1240.6	1456.2	15283.04	5938.00	3367.7	1240.6	.0	83.62	.00	.00	.00
42	782.8	1282.8	1502.8	15293.75	5938.00	3286.6	1282.8	.0	86.43	.00	.00	.00
43	803.1	1325.7	1550.0	15304.99	5938.00	3205.5	1325.7	.0	89.26	.00	.00	.00
44	823.5	1368.9	1597.5	15316.09	5938.00	3124.4	1368.9	.0	92.12	.00	.00	.00
45	843.8	1412.3	1645.2	15327.00	5938.00	3043.3	1412.3	.0	95.00	.00	.00	.00

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
46	864.1	1456.1	1693.2	15337.86	5938.00	2962.2	1456.1	.0	97.90	.00	.00	.00
47	884.4	1500.3	1741.5	15348.55	5938.00	2881.0	1500.3	.0	100.81	.00	.00	.00
48	904.7	1544.7	1790.1	15359.12	5938.00	2799.8	1544.7	.0	103.75	.00	.00	.00
49	925.0	1589.4	1839.0	15369.61	5938.00	2718.7	1589.4	.0	106.71	.00	.00	.00
50	945.3	1634.5	1888.2	15380.00	5938.00	2637.5	1634.5	.0	109.68	.00	.00	.00
51	965.7	1679.9	1937.7	15390.26	5938.00	2556.2	1679.9	.0	112.68	.00	.00	.00
52	986.0	1725.6	1987.4	15400.49	5938.00	2475.0	1725.6	.0	115.70	.00	.00	.00
53	1006.3	1772.0	2037.7	15411.06	5938.00	2393.7	1772.0	.0	118.75	.00	.00	.00
54	1026.6	1818.3	2088.1	15421.06	5938.00	2312.5	1818.3	.0	121.80	.00	.00	.00
55	1046.9	1865.3	2139.0	15431.44	5938.00	2231.2	1865.3	.0	124.90	.00	.00	.00
56	1067.2	1912.2	2189.9	15441.32	5938.00	2149.9	1912.2	.0	127.99	.00	.00	.00
57	1087.5	1959.8	2241.4	15451.51	5938.00	2068.5	1959.8	.0	131.13	.00	.00	.00
58	1107.8	2007.5	2292.9	15461.23	5938.00	1987.2	2007.5	.0	134.26	.00	.00	.00
59	1128.2	2055.7	2344.9	15471.26	5938.00	1905.8	2055.7	.0	137.44	.00	.00	.00
60	1148.5	2104.6	2397.6	15481.64	5938.00	1824.4	2104.6	.0	140.65	.00	.00	.00
61	1168.8	2153.1	2449.9	15491.17	5938.00	1743.0	2153.1	.0	143.84	.00	.00	.00
62	1189.1	2202.3	2502.9	15501.00	5938.00	1661.6	2202.3	.0	147.08	.00	.00	.00
63	1209.4	2251.9	2556.1	15510.74	5938.00	1580.1	2251.9	.0	150.33	.00	.00	.00
64	1229.7	2301.7	2609.6	15520.38	5938.00	1498.6	2301.7	.0	153.61	.00	.00	.00
65	1250.0	2351.8	2663.4	15530.06	5938.00	1417.1	2351.8	.0	156.90	.00	.00	.00
66	1270.4	2402.6	2717.8	15539.96	5938.00	1099.6	2402.6	.0	160.24	.00	.00	.00
67	1290.7	2455.3	2773.9	15551.27	5938.00	770.3	2455.3	.0	163.68	.00	.00	.00
68	1311.0	2509.3	2831.1	15563.35	5938.00	440.9	2509.3	.0	167.20	.00	.00	.00
69	1331.3	2563.9	2888.9	15575.56	5938.00	330.5	2563.9	.0	170.76	.00	.00	.00
70	1351.6	2618.4	2946.7	15587.11	5938.00	248.7	2618.4	.0	174.32	.00	.00	.00
71	1371.9	2674.3	3005.7	15599.45	5938.00	166.9	2674.3	.0	177.95	.00	.00	.00
72	1392.2	2729.5	3064.1	15610.73	5938.00	85.0	2729.5	.0	181.56	.00	.00	.00
73	1412.5	2786.0	3123.7	15622.68	5938.00	3.2	2786.0	.0	185.24	.00	.00	.00
74	1432.9	2841.9	3182.7	15633.59	5938.00	.0	2841.9	-30.5	188.88	.00	.00	.00
75	1453.2	2897.8	3241.7	15644.13	5938.00	.0	2897.8	-10.2	192.53	.00	.00	.00
76	1473.5	2954.3	3301.3	15654.77	5938.00	.0	2954.3	10.2	196.22	.00	.00	.00
77	1493.8	3010.1	3360.4	15664.55	5938.00	.0	3010.1	30.5	199.88	.00	.00	.00
78	1514.1	3066.6	3420.0	15674.49	5938.00	.0	3066.6	50.8	203.57	.00	.00	.00
79	1534.4	3122.5	3479.1	15683.73	5938.00	.0	3122.5	71.1	207.23	.00	.00	.00
80	1554.7	3178.3	3538.2	15692.65	5938.00	.0	3178.3	91.4	210.90	.00	.00	.00

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	7185.	0.	1090.	4021.	911.	1090	1090	1090	1090	1090	1090	1090	1090	1090	1090	1090	1090
9.0	.2	176.	19.51	0.	7186.	15707.	1122.	3961.	940.	1120	1122	1120	1102	1090	1078	1061	1058	1061	1078	1090	1102
18.0	.3	349.	19.32	0.	7187.	31219.	1155.	3902.	969.	1150	1155	1150	1115	1090	1066	1032	1027	1032	1066	1090	1115
27.0	.4	522.	19.19	0.	7190.	46604.	1188.	3843.	998.	1180	1188	1180	1127	1090	1054	1004	997	1004	1054	1090	1127
36.0	.6	698.	19.49	0.	7195.	62282.	1222.	3781.	1029.	1212	1222	1212	1140	1090	1042	976	967	976	1042	1090	1140
45.0	.8	869.	19.02	0.	7199.	77510.	1255.	3722.	1059.	1243	1255	1243	1152	1090	1030	949	938	949	1030	1090	1152
54.0	.9	1040.	18.99	0.	7204.	92679.	1290.	3660.	1090.	1274	1290	1274	1165	1090	1018	923	910	923	1018	1090	1165
63.0	1.0	1217.	19.66	0.	7212.	108507.	1326.	3596.	1123.	1307	1326	1307	1177	1090	1007	896	881	896	1007	1090	1177
72.0	1.2	1393.	19.57	0.	7222.	124206.	1363.	3531.	1156.	1341	1363	1341	1190	1091	995	870	854	870	995	1091	1190
81.0	1.4	1564.	19.08	0.	7234.	139360.	1399.	3468.	1188.	1374	1399	1374	1204	1091	984	846	828	846	984	1091	1204
90.0	1.5	1733.	18.75	0.	7245.	154160.	1434.	3406.	1221.	1407	1434	1407	1217	1091	973	822	803	822	973	1091	1217
99.0	1.6	1903.	18.86	0.	7258.	169050.	1472.	3340.	1255.	1440	1472	1440	1230	1091	962	799	778	799	962	1091	1230
108.0	1.8	2076.	19.28	0.	7272.	184376.	1511.	3273.	1290.	1476	1511	1476	1243	1091	951	776	753	776	951	1091	1243
117.0	2.0	2248.	19.11	0.	7288.	199514.	1549.	3208.	1324.	1512	1549	1512	1256	1092	940	753	730	753	940	1092	1256
126.0	2.1	2416.	18.63	0.	7305.	214101.	1587.	3142.	1359.	1546	1587	1546	1269	1092	929	731	707	731	929	1092	1269
135.0	2.3	2584.	18.70	0.	7323.	228670.	1626.	3076.	1395.	1582	1626	1582	1282	1092	919	711	685	711	919	1092	1282
144.0	2.4	2754.	18.86	0.	7342.	243312.	1666.	3009.	1431.	1618	1666	1618	1296	1092	908	690	663	690	908	1092	1296
153.0	2.5	2923.	18.79	0.	7363.	257823.	1706.	2941.	1468.	1655	1706	1655	1311	1093	897	670	643	670	897	1093	1311
162.0	2.7	3091.	18.61	0.	7386.	272081.	1747.	2873.	1505.	1691	1747	1691	1325	1093	886	651	624	651	886	1093	1325
171.0	2.8	3258.	18.55	0.	7411.	286217.	1788.	2803.	1543.	1729	1788	1729	1339	1093	876	633	606	633	876	1093	1339
180.0	3.0	3424.	18.50	0.	7438.	300261.	1830.	2734.	1581.	1767	1830	1767	1354	1094	866	616	588	616	866	1094	1354
189.0	3.2	3590.	18.45	0.	7466.	314217.	1872.	2664.	1620.	1806	1872	1806	1368	1094	856	599	571	599	856	1094	1368
198.0	3.3	3756.	18.40	0.	7496.	328073.	1915.	2593.	1659.	1845	1915	1845	1382	1095	846	583	555	583	846	1095	1382
207.0	3.5	3921.	18.36	0.	7527.	341832.	1959.	2521.	1700.	1884	1959	1884	1396	1095	836	568	540	568	836	1095	1396
216.0	3.6	4085.	18.28	0.	7558.	355442.	2002.	2451.	1739.	1924	2002	1924	1410	1095	827	553	525	553	827	1095	1410
225.0	3.8	4249.	18.19	0.	7591.	368901.	2046.	2381.	1779.	1965	2046	1965	1424	1096	818	539	511	538	818	1096	1424
234.0	3.9	4413.	18.15	0.	7625.	382219.	2091.	2308.	1821.	2005	2091	2005	1439	1096	808	525	497	525	808	1096	1439
243.0	4.1	4573.	17.88	0.	7660.	395185.	2135.	2237.	1862.	2045	2135	2045	1453	1097	799	512	485	512	799	1097	1453
252.0	4.2	4738.	18.34	0.	7699.	408425.	2181.	2163.	1904.	2087	2181	2087	1468	1097	790	499	473	499	790	1097	1468
261.0	4.3	4900.	17.90	0.	7737.	421134.	2227.	2091.	1946.	2128	2227	2128	1484	1098	780	488	462	488	780	1098	1484
270.0	4.5	5063.	18.20	0.	7778.	434027.	2274.	2017.	1990.	2170	2274	2170	1500	1099	771	477	451	477	771	1099	1500
279.0	4.7	5226.	18.07	0.	7819.	446741.	2321.	1943.	2034.	2212	2321	2212	1515	1099	762	466	441	466	762	1099	1515
288.0	4.8	5387.	17.84	0.	7860.	459180.	2367.	1872.	2076.	2255	2367	2255	1530	1100	753	456	431	456	753	1100	1530
297.0	4.9	5549.	18.08	0.	7904.	471762.	2414.	1799.	2120.	2299	2414	2299	1545	1100	744	447	422	447	744	1100	1545
306.0	5.1	5712.	18.04	0.	7949.	484195.	2463.	1722.	2166.	2343	2463	2343	1560	1101	736	437	414	437	736	1101	1560
315.0	5.3	5870.	17.63	0.	7992.	496178.	2512.	1648.	2211.	2385	2512	2385	1575	1102	728	429	406	429	728	1102	1575
324.0	5.4	6033.	18.12	0.	8039.	508501.	2561.	1572.	2257.	2430	2561	2430	1591	1102	720	421	398	421	720	1102	1591
333.0	5.6	6197.	18.23	0.	8088.	520807.	2611.	1497.	2303.	2475	2611	2475	1607	1103	711	413	390	413	711	1103	1607
342.0	5.7	6360.	18.10	0.	8136.	532891.	2661.	1423.	2350.	2520	2661	2520	1622	1104	703	405	383	405	703	1104	1622
351.0	5.8	6524.	18.15	0.	8185.	544912.	2711.	1146.	2396.	2566	2711	2566	1638	1105	695	398	376	398	695	1105	1638
360.0	6.0	6684.	17.78	0.	8232.	556537.	2756.	872.	2439.	2612	2756	2612	1654	1105	687	391	370	391	687	1105	1654
369.0	6.2	6841.	17.49	0.	8279.	567842.	2800.	609.	2480.	2659	2800	2659	1670	1106	679	385	363	385	679	1106	1670
378.0	6.3	6997.	17.34	0.	8325.	578931.	2842.	409.	2520.	2705	2842	2705	1686	1107	671	378	357	378	671	1107	1686
387.0	6.4	7148.	16.73	0.	8369.	589389.	2885.	335.	2560.	2748	2885	2748	1702	1108	664	372	351	372	664	1108	1702
396.0	6.6	7296.	16.44	0.	8412.	599479.	2929.	272.	2602.	2788	2929	2788	1719	1109	656	366	345	366	656	1109	1719
405.0	6.8	7441.	16.15	0.	8453.	609256.	2973.	212.	2643.	2828	2973	2828	1735	1109	649	360	339	360	649	1109	1735
414.0	6.9	7586.	16.12	0.	8495.	618946.	3017.	151.	2685.	2867	3017	2867	1752	1110	642	355	333	355	642	1110	1752
423.0	7.1	7736.	16.67	0.	8539.	629002.	3064.	86.	2729.	2908	3064	2908	1769	1111	635	349	327	349	635	1111	1769
432.0	7.2	7886.	16.65	0.	8582.	638981.	3108.	19.	2772.	2949	3108	2949	1786	1112	628	344	321	344	628	1112	1786
441.0	7.3	8035.	16.55	1.	8625.	648799.	3156.	0.	2816.	2989	3156	2989	1803	1113	622	338	316	338	622	1113	1803
450.0	7.5	8190.	17.21	0.	8671.	659093.	3205.	0.	2863.	3031	3205	3031	1820	1114	615	333	310	333	615	1114	1820

VF = 7293.7

VF = 7356

RF = 2304 DLL = 1092.7 HAF = 1455.67

Sum = 1561 LOIS = 2963.7 HLL = 649.67

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
459.0	7.7	8347.	17.47	0.	8718.	669526.	3256.	0.	2911.	3074	3256	3074	1837	1115	609	327	304	327	609	1115	1837
468.0	7.8	8502.	17.25	0.	8764.	679691.	3307.	0.	2959.	3115	3307	3115	1854	1116	602	322	299	322	602	1116	1854
477.0	7.9	8665.	18.12	0.	8813.	690489.	3361.	0.	3011.	3160	3361	3160	1872	1117	596	317	294	317	596	1117	1872
486.0	8.1	8831.	18.43	0.	8864.	701473.	3415.	0.	3062.	3206	3415	3206	1889	1118	590	311	288	311	590	1118	1889
495.0	8.3	9001.	18.87	0.	8917.	712726.	3472.	0.	3116.	3253	3472	3253	1907	1119	584	306	283	306	584	1119	1907
504.0	8.4	9173.	19.13	0.	8970.	724088.	3532.	0.	3172.	3300	3532	3300	1925	1120	578	301	278	301	578	1120	1925

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT15701. FT

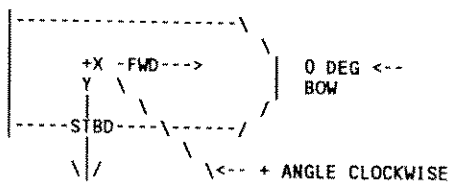
STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE C6A12T

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	15.0	45.0	75.0	105.0	135.0	165.0	-165.0	-135.0	-105.0	-75.0	-45.0	-15.0
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	1100.0	1100.0	1100.0	1100.0	1100.0	1100.0	1100.0	1100.0	1100.0	1100.0	1100.0	1100.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	6000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	6000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	400.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	400.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-200.0

LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	5000.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-332.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	5800.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	1700.0
WEIGHT IN WATER (LB/FT)	297.54
LINE B.S. (KIPS)	3504.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	3600.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	200.0
WEIGHT IN WATER (LB/FT)	297.54
LINE B.S. (KIPS)	3504.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
1	113.4	.0	117.5	11162.00	5938.00	11162.0	.0	.0				
2	117.6	222.2	251.4	15025.63	5938.00	5455.3	222.2	.0	18.31	-532.00	.00	399.56
3	121.8	230.6	260.8	15057.42	5938.00	5441.3	230.6	.0	18.93	-532.00	.00	407.75
4	126.0	238.4	269.7	15081.26	5938.00	5427.4	238.4	.0	19.51	-532.00	.00	415.69
5	130.2	246.3	278.6	15103.58	5938.00	5413.4	246.3	.0	20.10	-532.00	.00	423.67
6	134.4	254.7	288.0	15130.00	5938.00	5399.4	254.7	.0	20.72	-532.00	.00	431.99
7	138.6	262.6	296.9	15149.55	5938.00	5385.4	262.6	.0	21.31	-532.00	.00	440.05
8	142.8	270.5	305.9	15167.97	5938.00	5371.5	270.5	.0	21.91	-532.00	.00	448.14
9	147.0	278.4	314.8	15185.37	5938.00	5357.5	278.4	.0	22.50	-532.00	.00	456.26
10	151.2	286.2	323.7	15201.82	5938.00	5343.5	286.2	.0	23.09	-532.00	.00	464.41
11	159.6	302.0	341.6	15232.17	5938.00	5315.6	302.0	.0	24.27	-532.00	.00	480.79
12	168.0	317.7	359.4	15259.54	5938.00	5287.6	317.7	.0	25.46	-532.00	.00	497.28
13	176.4	333.5	377.3	15284.35	5938.00	5259.6	333.5	.0	26.65	-532.00	.00	513.85
14	184.8	349.3	395.1	15306.93	5938.00	5231.7	349.3	.0	27.84	-532.00	.00	530.51
15	193.2	365.0	413.0	15327.57	5938.00	5203.7	365.0	.0	29.04	-532.00	.00	547.24
16	201.6	380.8	430.9	15346.51	5938.00	5175.8	380.8	.0	30.23	-532.00	.00	564.05
17	210.0	396.0	448.2	15360.47	5938.00	5147.8	396.0	.0	31.39	-532.00	.00	580.56
18	218.4	411.8	466.1	15376.71	5938.00	5119.8	411.8	.0	32.59	-532.00	.00	597.48
19	226.8	427.5	484.0	15391.74	5938.00	5091.8	427.5	.0	33.79	-532.00	.00	614.45
20	235.2	443.3	501.8	15405.69	5938.00	5063.9	443.3	.0	34.98	-532.00	.00	631.47
21	243.6	459.0	519.7	15418.65	5938.00	5035.9	459.0	.0	36.18	-532.00	.00	648.54
22	252.0	474.3	537.1	15427.89	5938.00	5007.9	474.3	.0	37.35	-532.00	.00	665.27
23	260.4	490.0	554.9	15439.35	5938.00	4979.9	490.0	.0	38.55	-532.00	.00	682.42
24	268.8	505.8	572.8	15450.06	5938.00	4952.0	505.8	.0	39.75	-532.00	.00	699.59
25	277.3	521.5	590.6	15460.10	5938.00	4924.0	521.5	.0	40.95	-532.00	.00	716.81
26	285.7	537.3	608.5	15469.55	5938.00	4896.0	537.3	.0	42.16	-532.00	.00	734.05
27	294.1	553.0	626.4	15478.46	5938.00	4868.0	553.0	.0	43.36	-532.00	.00	751.32
28	302.5	568.8	644.2	15486.85	5938.00	4840.0	568.8	.0	44.56	-532.00	.00	768.62
29	310.9	584.5	662.1	15494.79	5938.00	4812.0	584.5	.0	45.77	-532.00	.00	785.95
30	319.3	600.3	679.9	15502.29	5938.00	4784.0	600.3	.0	46.97	-532.00	.00	803.29
31	327.7	616.1	697.8	15509.41	5938.00	4756.0	616.1	.0	48.18	-532.00	.00	820.66
32	336.1	631.8	715.6	15516.15	5938.00	4728.0	631.8	.0	49.38	-532.00	.00	838.05
33	344.5	648.6	734.4	15526.75	5938.00	4700.1	648.6	.0	50.66	-532.00	.00	856.25
34	352.9	664.4	752.3	15532.74	5938.00	4672.1	664.4	.0	51.86	-532.00	.00	873.68
35	361.3	680.1	770.1	15538.45	5938.00	4644.1	680.1	.0	53.07	-532.00	.00	891.13
36	369.7	696.9	788.9	15547.77	5938.00	4616.1	696.9	.0	54.34	-532.00	.00	909.40
37	378.1	712.7	806.8	15552.88	5938.00	4588.1	712.7	.0	55.55	-532.00	.00	926.88
38	386.5	728.5	824.6	15557.75	5938.00	4560.1	728.5	.0	56.76	-532.00	.00	944.37
39	394.9	745.3	843.4	15566.03	5938.00	4532.1	745.3	.0	58.04	-532.00	.00	962.69
40	403.3	761.0	861.3	15570.42	5938.00	4504.1	761.0	.0	59.25	-532.00	.00	980.22
41	411.7	777.8	880.1	15578.08	5938.00	4476.1	777.8	.0	60.52	-532.00	.00	998.57
42	420.1	793.6	897.9	15582.03	5938.00	4448.0	793.6	.0	61.73	-532.00	.00	1016.12
43	428.5	810.4	916.7	15589.14	5938.00	4420.0	810.4	.0	63.01	-532.00	.00	1034.50
44	436.9	827.2	935.5	15595.97	5938.00	4392.0	827.2	.0	64.29	-532.00	.00	1052.90
45	445.3	842.9	953.3	15599.35	5938.00	4364.0	842.9	.0	65.50	-532.00	.00	1070.48

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
46	453.7	859.8	972.1	15605.71	5938.00	4336.0	859.8	.0	66.78	-532.00	.00	1088.90
47	462.1	876.6	990.9	15611.83	5938.00	4308.0	876.6	.0	68.06	-532.00	.00	1107.33
48	470.5	893.4	1009.7	15617.73	5938.00	4280.0	893.4	.0	69.34	-532.00	.00	1125.77
49	478.9	910.2	1028.5	15623.42	5938.00	4252.0	910.2	.0	70.62	-532.00	.00	1144.23
50	487.3	925.9	1046.3	15626.01	5938.00	4223.9	925.9	.0	71.83	-532.00	.00	1161.86
51	495.7	942.7	1065.1	15631.34	5938.00	4195.9	942.7	.0	73.11	-532.00	.00	1180.33
52	504.1	959.5	1083.9	15636.49	5938.00	4167.9	959.5	.0	74.40	-532.00	.00	1198.82
53	512.5	976.3	1102.7	15641.47	5938.00	4139.9	976.3	.0	75.68	-532.00	.00	1217.31
54	520.9	993.2	1121.5	15646.28	5938.00	4111.9	993.2	.0	76.96	-532.00	.00	1235.81
55	529.3	1010.0	1140.3	15650.93	5938.00	4083.8	1010.0	.0	78.24	-532.00	.00	1254.33
56	537.8	1026.8	1159.1	15655.42	5938.00	4055.8	1026.8	.0	79.53	-532.00	.00	1272.85
57	546.2	1043.6	1177.8	15659.78	5938.00	4027.8	1043.6	.0	80.81	-532.00	.00	1291.37
58	554.6	1061.4	1197.6	15666.51	5938.00	3999.7	1061.4	.0	82.16	-532.00	.00	1310.76
59	563.0	1078.2	1216.4	15670.55	5938.00	3971.7	1078.2	.0	83.44	-532.00	.00	1329.30
60	571.4	1095.0	1235.1	15674.48	5938.00	3943.7	1095.0	.0	84.73	-532.00	.00	1347.85
61	579.8	1111.8	1253.9	15678.29	5938.00	3915.6	1111.8	.0	86.01	-532.00	.00	1366.41
62	588.2	1130.8	1274.6	15686.67	5938.00	3887.6	1130.8	.0	87.43	-532.00	.00	1386.68
63	596.6	1147.6	1293.4	15690.19	5938.00	3859.6	1147.6	.0	88.72	-532.00	.00	1405.26
64	605.0	1164.4	1312.2	15693.61	5938.00	3831.5	1164.4	.0	90.00	-532.00	.00	1423.83
65	613.4	1181.2	1330.9	15696.94	5938.00	3734.9	1181.2	.0	91.29	-532.00	.00	1442.42
66	621.8	1200.1	1351.6	15704.57	5938.00	3580.8	1200.1	.0	92.71	-532.00	.00	1462.73
67	630.2	1216.9	1370.4	15707.64	5938.00	3426.8	1216.9	.0	94.00	-532.00	.00	1481.32
68	638.6	1235.8	1391.0	15714.88	5938.00	3272.7	1235.8	.0	95.42	-532.00	.00	1501.65
69	647.0	1254.7	1411.7	15721.89	5938.00	3118.6	1254.7	.0	96.84	-532.00	.00	1521.99
70	655.4	1273.6	1432.3	15728.68	5938.00	2964.5	1273.6	.0	98.26	-532.00	.00	1542.34
71	663.8	1292.5	1453.0	15735.26	5938.00	2810.4	1292.5	.0	99.69	-532.00	.00	1562.70
72	672.2	1311.4	1473.7	15741.62	5938.00	2656.2	1311.4	.0	101.11	-532.00	.00	1583.06
73	680.6	1332.4	1496.2	15751.69	5938.00	2502.1	1332.4	.0	102.67	-532.00	.00	1605.18
74	689.0	1351.3	1516.9	15757.59	5938.00	2347.9	1351.3	.0	104.10	-532.00	.00	1625.56
75	697.4	1372.3	1539.4	15767.07	5938.00	2193.7	1372.3	.0	105.66	-532.00	.00	1647.70
76	705.8	1391.3	1560.1	15772.53	5938.00	2039.4	1391.3	.0	107.09	-532.00	.00	1668.11
77	714.2	1412.3	1582.6	15781.47	5938.00	1885.1	1412.3	.0	108.65	-532.00	.00	1690.27
78	722.6	1433.3	1605.1	15790.11	5938.00	1730.8	1433.3	.0	110.22	-532.00	.00	1712.45
79	731.0	1454.3	1627.7	15798.47	5938.00	1576.5	1454.3	.0	111.78	-532.00	.00	1734.63
80	739.4	1475.3	1650.2	15806.56	5938.00	1422.1	1475.3	.0	113.35	-532.00	.00	1756.83
81	747.8	1498.4	1674.6	15817.79	5938.00	1267.8	1498.4	.0	115.05	-532.00	.00	1780.81
82	756.2	1519.4	1697.2	15825.32	5938.00	1113.4	1519.4	.0	116.62	-532.00	.00	1803.03
83	764.6	1542.5	1721.6	15835.88	5938.00	958.9	1542.5	.0	118.32	-532.00	.00	1827.04
84	773.0	1565.6	1746.1	15846.10	5938.00	804.5	1565.6	.0	120.03	-532.00	.00	1851.06
85	781.4	1586.6	1768.6	15852.83	5938.00	650.0	1586.6	.0	121.60	-532.00	.00	1873.31
86	789.8	1611.8	1795.0	15865.56	5938.00	495.4	1611.8	.0	123.45	-532.00	.00	1899.14
87	798.2	1634.9	1819.4	15874.84	5938.00	340.9	1634.9	.0	125.16	-532.00	.00	1923.21
88	806.7	1658.1	1843.9	15883.80	5938.00	198.1	1658.1	.0	126.87	-532.00	.00	1947.28
89	815.1	1681.2	1868.3	15892.49	5938.00	169.8	1681.2	.0	128.58	-532.00	.00	1971.37
90	823.5	1706.4	1894.7	15903.82	5938.00	141.4	1706.4	.0	130.43	-532.00	.00	1997.27
91	831.9	1729.5	1919.1	15911.94	5938.00	113.1	1729.5	.0	132.14	-532.00	.00	2021.39
92	840.3	1752.6	1943.6	15919.83	5938.00	84.7	1752.6	.0	133.86	-532.00	.00	2045.51
93	848.7	1777.8	1970.0	15930.24	5938.00	56.4	1777.8	.0	135.71	-532.00	.00	2071.45
94	857.1	1800.9	1994.5	15937.64	5938.00	28.0	1800.9	.0	137.43	-532.00	.00	2095.60
95	865.5	1826.1	2020.8	15947.50	5938.00	.0	1826.1	.1	139.28	-532.00	.00	2121.57
96	873.9	1847.1	2043.4	15951.82	5938.00	.0	1847.1	8.5	140.86	-532.00	.00	2143.94
97	882.3	1872.3	2069.8	15961.21	5938.00	.0	1872.3	16.9	142.72	-532.00	.00	2169.93
98	890.7	1897.5	2096.2	15970.35	5938.00	.0	1897.5	25.3	144.58	-532.00	.00	2195.94
99	899.1	1920.7	2120.7	15976.75	5938.00	.0	1920.7	33.7	146.30	-532.00	.00	2220.14

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	6136.	0.	1215.	4144.	974.	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100	1100
12.0	.2	248.	20.68	0.	6143.	20631.	1262.	4072.	1017.	1141	1148	1141	1123	1100	1078	1063	1058	1063	1078	1100	1123
24.0	.4	515.	22.27	0.	6137.	43699.	1305.	4008.	1056.	1183	1192	1183	1148	1100	1058	1015	1007	1015	1058	1100	1148
36.0	.6	764.	20.72	0.	6146.	63026.	1359.	3926.	1105.	1223	1247	1223	1174	1100	1025	984	970	984	1025	1100	1174
48.0	.8	989.	18.73	0.	6148.	81828.	1397.	3871.	1141.	1264	1285	1264	1192	1100	1007	953	925	953	1007	1100	1192
60.0	1.0	1237.	20.66	0.	6169.	102526.	1452.	3673.	1190.	1307	1341	1307	1218	1100	988	916	892	916	988	1100	1218
72.0	1.2	1473.	19.67	0.	6184.	121570.	1497.	3302.	1232.	1347	1387	1347	1247	1101	970	882	855	882	970	1101	1247
84.0	1.4	1682.	17.46	0.	6189.	138748.	1531.	3054.	1263.	1388	1420	1388	1265	1101	951	852	821	852	951	1101	1265
96.0	1.6	1887.	17.08	0.	6180.	154088.	1568.	2773.	1297.	1418	1458	1418	1287	1101	925	824	782	824	925	1101	1287
108.0	1.8	2097.	17.46	0.	6189.	170249.	1598.	2551.	1326.	1450	1489	1450	1320	1101	912	788	752	788	912	1101	1320
120.0	2.0	2278.	15.08	0.	6196.	183619.	1633.	2296.	1358.	1481	1524	1481	1342	1102	894	766	724	766	894	1102	1342
132.0	2.2	2475.	16.47	0.	6192.	198221.	1669.	2034.	1392.	1509	1561	1509	1368	1102	872	734	696	734	872	1102	1368
144.0	2.4	2638.	13.58	0.	6197.	209815.	1699.	1827.	1420.	1536	1591	1536	1388	1103	857	716	667	716	857	1103	1388
156.0	2.6	2825.	15.57	0.	6193.	224254.	1730.	1608.	1450.	1570	1623	1570	1404	1103	837	689	640	689	837	1103	1404
168.0	2.8	2990.	13.73	0.	6192.	236574.	1762.	1391.	1480.	1596	1655	1596	1422	1103	824	664	615	664	824	1103	1422
180.0	3.0	3158.	14.03	0.	6185.	248416.	1790.	1207.	1507.	1623	1683	1623	1441	1104	802	640	592	640	802	1104	1441
192.0	3.2	3324.	13.82	0.	6187.	260138.	1820.	1001.	1536.	1652	1715	1652	1461	1105	784	619	571	619	784	1105	1461
204.0	3.4	3466.	11.85	0.	6188.	270056.	1847.	829.	1562.	1675	1742	1675	1479	1105	773	599	551	599	773	1105	1479
216.0	3.6	3626.	13.29	0.	6190.	281617.	1882.	593.	1595.	1704	1778	1704	1492	1106	756	580	531	580	756	1106	1492
228.0	3.8	3771.	12.14	0.	6187.	290981.	1907.	444.	1620.	1728	1803	1728	1511	1106	738	562	511	562	738	1106	1511
240.0	4.0	3917.	12.16	0.	6198.	301050.	1939.	239.	1650.	1756	1835	1756	1527	1107	726	546	495	546	726	1107	1527
252.0	4.2	4063.	12.16	0.	6209.	311288.	1972.	169.	1682.	1783	1869	1783	1544	1108	716	528	480	528	716	1108	1544
264.0	4.4	4205.	11.79	0.	6213.	320031.	2000.	138.	1709.	1806	1897	1806	1566	1109	701	511	466	511	701	1109	1566
276.0	4.6	4350.	12.09	0.	6225.	329535.	2036.	95.	1744.	1834	1934	1834	1581	1109	686	497	453	497	686	1109	1581
288.0	4.8	4493.	11.91	0.	6235.	338830.	2068.	61.	1774.	1864	1966	1864	1596	1110	671	484	439	484	671	1110	1596
300.0	5.0	4630.	11.45	0.	6244.	347392.	2102.	16.	1808.	1888	2001	1888	1613	1111	658	472	425	472	658	1111	1613
312.0	5.2	4782.	12.64	0.	6266.	357181.	2148.	0.	1851.	1918	2047	1918	1629	1112	645	460	414	460	645	1112	1629
324.0	5.4	4923.	11.73	0.	6283.	365935.	2179.	0.	1882.	1950	2079	1950	1647	1113	632	449	403	449	632	1113	1647

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT15977. FT

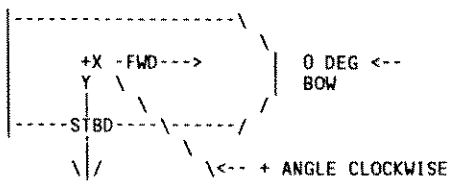
STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE WIRE2A tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	-1.	.00	0.	5547.	203944.	1406.	3859.	1149.	1294	0	1294	1211	1100	992	921	903	921	992	1100	1211
12.0	.2	203.	17.06	1740.	5555.	218631.	1455.	3646.	1193.	1344	0	1335	1222	1086	966	886	866	902	985	1116	1255
24.0	.4	395.	15.98	-513.	5536.	231510.	1500.	3284.	1234.	1389	0	1362	1234	1072	929	850	831	873	978	1131	1280
36.0	.6	580.	15.38	1482.	5535.	244660.	1533.	3032.	1265.	1423	0	1390	1247	1061	908	818	794	848	971	1146	1329
48.0	.8	749.	14.13	1115.	5521.	255573.	1570.	2755.	1299.	1460	0	1415	1259	1049	876	781	768	827	963	1160	1355
60.0	1.0	921.	14.30	2065.	5497.	266821.	1599.	2545.	1327.	1490	0	1441	1265	1029	852	751	733	798	952	1174	1389
72.0	1.2	1071.	12.53	2706.	5485.	276058.	1633.	2293.	1359.	1525	0	1467	1271	1014	828	723	712	778	940	1187	1415
84.0	1.4	1230.	13.22	1689.	5468.	285774.	1669.	2034.	1392.	1561	0	1487	1282	1004	797	696	682	758	930	1199	1443
96.0	1.6	1384.	12.87	1734.	5459.	296295.	1698.	1830.	1420.	1591	0	1510	1295	992	776	667	655	734	924	1217	1472
108.0	1.8	1525.	11.74	862.	5452.	305263.	1729.	1617.	1449.	1622	0	1531	1311	981	752	641	630	720	918	1235	1492
120.0	2.0	1674.	12.41	598.	5452.	315130.	1760.	1400.	1479.	1654	0	1558	1326	971	728	616	607	701	913	1254	1520
132.0	2.2	1802.	10.65	591.	5442.	323415.	1787.	1224.	1504.	1681	0	1578	1335	960	711	594	586	682	908	1264	1544
144.0	2.4	1939.	11.41	545.	5429.	331475.	1818.	1016.	1534.	1712	0	1600	1342	946	689	573	566	662	900	1272	1572
156.0	2.6	2067.	10.69	706.	5417.	338804.	1844.	851.	1559.	1739	0	1622	1350	931	668	553	547	643	888	1290	1594
168.0	2.8	2205.	11.46	-269.	5419.	347517.	1879.	613.	1592.	1774	0	1645	1366	921	648	535	528	626	878	1311	1618
180.0	3.0	2328.	10.26	-269.	5415.	355222.	1903.	473.	1615.	1798	0	1664	1379	914	629	514	509	610	872	1331	1642
192.0	3.2	2444.	9.66	-920.	5412.	362042.	1934.	272.	1645.	1830	0	1685	1386	905	611	498	494	594	867	1341	1663
204.0	3.4	2562.	9.90	-1090.	5410.	368867.	1966.	172.	1676.	1863	0	1708	1393	893	594	484	480	580	860	1352	1686
216.0	3.6	2677.	9.53	-850.	5407.	375155.	1993.	146.	1702.	1891	0	1727	1403	881	579	470	466	565	846	1370	1709
228.0	3.8	2790.	9.41	-1571.	5409.	381661.	2028.	106.	1735.	1925	0	1748	1412	872	564	457	453	552	839	1384	1729
240.0	4.0	2905.	9.63	-1366.	5413.	388585.	2060.	69.	1767.	1958	0	1773	1420	864	550	443	440	540	834	1393	1753
252.0	4.2	3022.	9.73	-2217.	5413.	395388.	2095.	29.	1800.	1994	0	1791	1430	853	537	429	426	524	828	1403	1778
264.0	4.4	3132.	9.18	-3613.	5412.	401232.	2130.	0.	1834.	2030	0	1811	1439	841	520	418	416	511	822	1414	1796
276.0	4.6	3245.	9.42	-4028.	5422.	407594.	2169.	0.	1872.	2069	0	1833	1448	833	508	407	405	501	813	1426	1819
288.0	4.8	3355.	9.11	-3890.	5432.	413650.	2204.	0.	1906.	2105	0	1856	1456	825	496	397	396	491	805	1438	1845

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT15988. FT

STARTING DISPLACEMENTS : SURGE(FT) = -40.500 SWAY(FT) = -40.500 YAW(DEG) = .000

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	2.	.00	0.	6512.	227881.	1285.	3668.	1086.	1285	0	1285	1169	1090	1014	913	899	913	1014	1090	1169
9.0	.2	150.	16.46	36.	6505.	239184.	1322.	3603.	1119.	1322	0	1313	1171	1080	994	884	872	892	1012	1101	1191
18.0	.3	296.	16.23	92.	6500.	250278.	1358.	3538.	1152.	1358	0	1340	1174	1070	975	857	847	870	1011	1112	1214
27.0	.4	438.	15.81	164.	6496.	260999.	1394.	3475.	1185.	1394	0	1368	1176	1060	955	831	823	850	1009	1122	1237
36.0	.6	577.	15.49	183.	6492.	271620.	1430.	3413.	1217.	1430	0	1395	1179	1051	937	806	799	830	1006	1132	1258
45.0	.8	719.	15.67	181.	6489.	282219.	1467.	3348.	1251.	1467	0	1422	1181	1041	918	781	775	811	1005	1143	1281
54.0	.9	861.	15.88	151.	6487.	293113.	1506.	3280.	1286.	1506	0	1450	1185	1032	900	756	751	792	1002	1153	1304
63.0	1.0	1002.	15.65	262.	6488.	303667.	1544.	3215.	1320.	1544	0	1480	1187	1022	881	732	729	773	1000	1163	1329
72.0	1.2	1141.	15.45	360.	6490.	314181.	1582.	3150.	1355.	1582	0	1509	1190	1013	863	710	708	754	998	1174	1353
81.0	1.4	1280.	15.35	425.	6492.	324622.	1621.	3084.	1391.	1621	0	1538	1193	1004	846	688	687	737	996	1184	1377
90.0	1.5	1416.	15.19	484.	6496.	335018.	1661.	3016.	1427.	1661	0	1568	1197	995	830	666	666	719	993	1195	1400
99.0	1.6	1551.	15.00	489.	6501.	345079.	1701.	2949.	1463.	1701	0	1597	1199	986	813	646	647	703	992	1206	1423
108.0	1.8	1685.	14.91	443.	6508.	355206.	1742.	2881.	1500.	1742	0	1628	1203	977	797	627	628	686	989	1217	1447
117.0	2.0	1820.	14.93	440.	6517.	365281.	1783.	2811.	1538.	1783	0	1658	1206	969	781	608	610	669	987	1227	1472
126.0	2.1	1953.	14.84	486.	6527.	375208.	1825.	2742.	1577.	1825	0	1689	1210	960	766	590	593	653	984	1238	1497
135.0	2.3	2085.	14.67	506.	6537.	384994.	1867.	2672.	1615.	1867	0	1721	1214	952	750	573	577	638	982	1248	1522
144.0	2.4	2216.	14.55	531.	6550.	394641.	1910.	2601.	1655.	1910	0	1752	1217	944	735	557	561	624	980	1258	1547
153.0	2.5	2347.	14.49	566.	6564.	404232.	1954.	2529.	1695.	1954	0	1784	1220	935	721	541	546	610	978	1269	1572
162.0	2.7	2476.	14.36	654.	6579.	413758.	1998.	2459.	1735.	1998	0	1817	1224	927	707	527	532	596	976	1280	1597
171.0	2.8	2604.	14.21	789.	6595.	423151.	2041.	2389.	1775.	2041	0	1850	1228	919	693	512	518	582	973	1290	1622
180.0	3.0	2733.	14.32	816.	6612.	432572.	2086.	2316.	1816.	2086	0	1884	1232	912	679	499	504	569	970	1301	1647
189.0	3.2	2859.	14.06	958.	6631.	441680.	2130.	2246.	1857.	2130	0	1917	1235	903	665	486	492	557	968	1312	1673
198.0	3.3	2986.	14.10	1050.	6652.	450819.	2176.	2172.	1899.	2176	0	1951	1239	895	653	474	480	545	966	1324	1699
207.0	3.5	3111.	13.88	1199.	6673.	459890.	2222.	2100.	1942.	2222	0	1986	1244	888	641	463	469	533	963	1334	1725
216.0	3.6	3236.	13.87	1270.	6696.	468751.	2268.	2026.	1985.	2268	0	2020	1247	880	629	452	458	522	960	1346	1752
225.0	3.8	3360.	13.84	1386.	6720.	477704.	2316.	1951.	2029.	2316	0	2055	1252	873	617	442	448	511	957	1356	1778
234.0	3.9	3484.	13.70	1686.	6745.	486393.	2362.	1880.	2071.	2362	0	2090	1256	866	606	433	439	500	955	1367	1805
243.0	4.1	3605.	13.48	1923.	6770.	494966.	2408.	1808.	2115.	2408	0	2126	1261	859	595	423	429	490	952	1378	1831
252.0	4.2	3729.	13.81	2075.	6798.	503642.	2458.	1731.	2161.	2458	0	2161	1264	852	584	415	421	481	950	1389	1859
261.0	4.3	3852.	13.62	2358.	6826.	512201.	2506.	1656.	2206.	2506	0	2198	1269	845	574	407	413	472	947	1400	1886
270.0	4.5	3974.	13.56	2585.	6856.	520646.	2556.	1581.	2251.	2556	0	2234	1273	838	564	399	405	463	945	1410	1914
279.0	4.7	4097.	13.66	2876.	6886.	529159.	2606.	1505.	2298.	2606	0	2271	1278	831	554	391	397	455	942	1421	1942
288.0	4.8	4220.	13.62	3206.	6918.	537604.	2656.	1438.	2345.	2656	0	2309	1282	825	544	384	390	447	940	1432	1970
297.0	4.9	4341.	13.48	3504.	6949.	545824.	2705.	1181.	2391.	2705	0	2345	1287	818	535	377	383	439	938	1443	1999
306.0	5.1	4457.	12.89	3965.	6978.	553667.	2752.	901.	2434.	2752	0	2382	1292	812	526	371	377	432	935	1454	2026
315.0	5.3	4572.	12.81	4827.	7008.	561373.	2795.	638.	2475.	2795	0	2420	1297	805	517	364	370	425	932	1466	2054
324.0	5.4	4688.	12.82	5904.	7039.	569061.	2837.	422.	2515.	2837	0	2459	1302	799	508	358	364	418	930	1478	2084
333.0	5.6	4801.	12.63	6889.	7070.	576636.	2880.	341.	2555.	2880	0	2498	1307	793	500	352	358	411	927	1489	2112
342.0	5.7	4917.	12.90	7811.	7101.	584260.	2925.	279.	2597.	2925	0	2536	1311	786	492	346	352	405	925	1502	2141
351.0	5.8	5033.	12.85	8923.	7133.	591925.	2968.	218.	2639.	2968	0	2576	1317	780	485	340	347	399	922	1513	2170
360.0	6.0	5149.	12.86	10115.	7165.	599467.	3012.	158.	2680.	3012	0	2616	1321	773	477	334	341	393	921	1525	2201
369.0	6.2	5266.	13.05	11081.	7198.	607257.	3059.	93.	2724.	3059	0	2656	1327	767	471	328	335	387	918	1536	2229
378.0	6.3	5383.	12.96	12262.	7231.	614815.	3104.	25.	2767.	3104	0	2695	1331	760	464	322	329	382	916	1548	2260
387.0	6.4	5500.	12.99	13246.	7264.	622412.	3150.	0.	2811.	3150	0	2733	1337	754	457	316	324	377	913	1559	2291
396.0	6.6	5617.	13.01	13870.	7297.	629936.	3200.	0.	2858.	3200	0	2769	1343	748	451	311	318	372	910	1571	2321
405.0	6.8	5733.	12.96	14361.	7330.	637386.	3250.	0.	2906.	3250	0	2804	1348	743	445	305	312	366	908	1582	2350
414.0	6.9	5849.	12.87	14788.	7362.	644741.	3301.	0.	2954.	3301	0	2838	1354	737	439	300	307	362	905	1594	2379
423.0	7.1	5969.	13.28	15060.	7397.	652394.	3355.	0.	3005.	3355	0	2873	1360	732	433	294	302	357	902	1605	2408
432.0	7.2	6090.	13.44	15565.	7432.	660115.	3409.	0.	3056.	3409	0	2909	1367	727	428	289	296	352	899	1616	2440
441.0	7.3	6214.	13.78	15941.	7469.	668030.	3466.	0.	3110.	3466	0	2945	1372	722	422	284	291	347	896	1627	2471
450.0	7.5	6339.	13.87	16030.	7506.	675951.	3525.	0.	3166.	3525	0	2980	1378	717	417	279	286	342	893	1639	2502

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT15700. FT

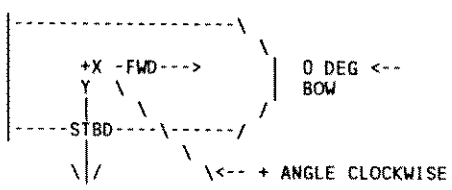
STARTING DISPLACEMENTS : SURGE(FT) = -40.500 SWAY(FT) = -40.500 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE WIRE2A tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

C6512T

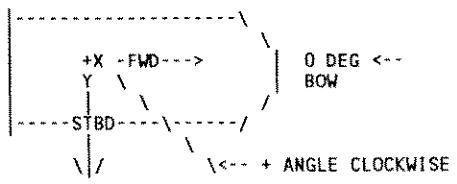
Appendix K.2 - Alternate Designs

DEEPWATER, ARAMID MOORING LINE JIP
CASE ST1512 tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

C1 S12T

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	15.0	45.0	75.0	105.0	135.0	165.0	-165.0	-135.0	-105.0	-75.0	-45.0	-15.0
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	1500.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	1500.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	400.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	300.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-50.0

LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	1600.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-86.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	1300.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	1350.0
WEIGHT IN WATER (LB/FT)	297.54
LINE B.S. (KIPS)	3504.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	2600.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	100.0
WEIGHT IN WATER (LB/FT)	297.54
LINE B.S. (KIPS)	3504.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
1	72.9	.0	75.9	6212.00	1438.00	6212.0	.0	.0				
2	76.0	107.0	131.2	7297.26	1438.00	4001.3	107.0	.0	3.40	-136.00	.00	138.30
3	79.1	114.6	139.3	7305.04	1438.00	3990.9	114.6	.0	3.64	-136.00	.00	146.23
4	82.3	122.3	147.4	7311.64	1438.00	3980.4	122.3	.0	3.87	-136.00	.00	154.20
5	85.4	130.1	155.6	7318.14	1438.00	3970.0	130.1	.0	4.12	-136.00	.00	162.35
6	88.6	137.8	163.8	7322.99	1438.00	3959.6	137.8	.0	4.35	-136.00	.00	170.38
7	91.7	145.4	171.9	7327.23	1438.00	3949.1	145.4	.0	4.59	-136.00	.00	178.43
8	94.8	153.1	180.1	7330.96	1438.00	3938.7	153.1	.0	4.83	-136.00	.00	186.49
9	98.0	160.7	188.2	7334.26	1438.00	3928.2	160.7	.0	5.07	-136.00	.00	194.58
10	101.1	168.6	196.6	7337.83	1438.00	3917.8	168.6	.0	5.31	-136.00	.00	202.84
11	107.4	183.9	213.0	7342.78	1438.00	3896.9	183.9	.0	5.79	-136.00	.00	219.08
12	113.7	199.6	229.7	7347.88	1438.00	3876.0	199.6	.0	6.28	-136.00	.00	235.69
13	120.0	215.3	246.5	7352.13	1438.00	3855.1	215.3	.0	6.77	-136.00	.00	252.35
14	126.2	231.0	263.2	7355.71	1438.00	3834.2	231.0	.0	7.26	-136.00	.00	269.03
15	132.5	246.7	280.0	7358.80	1438.00	3813.3	246.7	.0	7.75	-136.00	.00	285.74
16	138.8	262.4	296.8	7361.45	1438.00	3792.4	262.4	.0	8.24	-136.00	.00	302.48
17	145.1	278.5	314.0	7364.50	1438.00	3771.5	278.5	.0	8.74	-136.00	.00	319.57
18	151.4	294.2	330.8	7366.50	1438.00	3750.6	294.2	.0	9.23	-136.00	.00	336.34
19	157.6	310.7	348.4	7369.57	1438.00	3729.7	310.7	.0	9.74	-136.00	.00	353.81
20	163.9	326.8	365.6	7371.69	1438.00	3708.8	326.8	.0	10.25	-136.00	.00	370.95
21	170.2	343.2	383.1	7374.19	1438.00	3687.9	343.2	.0	10.76	-136.00	.00	388.45
22	176.5	359.7	400.7	7376.44	1438.00	3667.0	359.7	.0	11.27	-136.00	.00	405.97
23	182.8	376.2	418.3	7378.49	1438.00	3646.1	376.2	.0	11.79	-136.00	.00	423.49
24	189.0	392.7	435.8	7380.35	1438.00	3625.2	392.7	.0	12.30	-136.00	.00	441.02
25	195.3	409.2	453.4	7382.05	1438.00	3604.3	409.2	.0	12.81	-136.00	.00	458.56
26	201.6	426.5	471.7	7384.55	1438.00	3583.4	426.5	.0	13.35	-136.00	.00	476.81
27	207.9	442.9	489.3	7385.96	1438.00	3562.5	442.9	.0	13.87	-136.00	.00	494.37
28	214.2	460.2	507.6	7388.13	1438.00	3541.6	460.2	.0	14.40	-136.00	.00	512.63
29	220.4	477.5	525.9	7390.13	1438.00	3520.7	477.5	.0	14.94	-136.00	.00	530.91
30	226.7	494.7	544.2	7392.00	1438.00	3499.8	494.7	.0	15.48	-136.00	.00	549.19
31	233.0	512.0	562.5	7393.73	1438.00	3478.9	512.0	.0	16.02	-136.00	.00	567.48
32	239.3	529.3	580.9	7395.36	1438.00	3458.0	529.3	.0	16.55	-136.00	.00	585.77
33	245.6	546.6	599.2	7396.88	1438.00	3437.1	546.6	.0	17.09	-136.00	.00	604.07
34	251.8	564.6	618.2	7399.00	1438.00	3416.2	564.6	.0	17.65	-136.00	.00	623.08
35	258.1	581.9	636.6	7400.33	1438.00	3395.3	581.9	.0	18.19	-136.00	.00	641.39
36	264.4	599.9	655.6	7402.23	1438.00	3374.4	599.9	.0	18.75	-136.00	.00	660.41
37	270.7	618.0	674.7	7404.02	1438.00	3353.5	618.0	.0	19.31	-136.00	.00	679.44
38	277.0	636.0	693.7	7405.71	1438.00	3332.6	636.0	.0	19.87	-136.00	.00	698.48
39	283.2	654.1	712.8	7407.31	1438.00	3311.7	654.1	.0	20.43	-136.00	.00	717.51
40	289.5	672.2	731.9	7408.84	1438.00	3290.8	672.2	.0	21.00	-136.00	.00	736.56
41	295.8	691.0	751.6	7410.84	1438.00	3269.9	691.0	.0	21.58	-136.00	.00	756.32
42	302.1	709.0	770.7	7412.20	1438.00	3249.0	709.0	.0	22.14	-136.00	.00	775.37
43	308.4	727.9	790.5	7414.02	1438.00	3228.1	727.9	.0	22.73	-136.00	.00	795.14
44	314.6	746.7	810.3	7415.77	1438.00	3207.2	746.7	.0	23.31	-136.00	.00	814.92
45	320.9	765.6	830.1	7417.42	1438.00	3186.3	765.6	.0	23.90	-136.00	.00	834.70

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
46	327.2	784.4	849.9	7419.01	1438.00	3165.3	784.4	.0	24.48	-136.00	.00	854.48
47	333.5	803.2	869.7	7420.53	1438.00	3144.4	803.2	.0	25.07	-136.00	.00	874.27
48	339.8	822.1	889.5	7421.98	1438.00	3123.5	822.1	.0	25.65	-136.00	.00	894.06
49	346.0	840.9	909.3	7423.38	1438.00	3102.6	840.9	.0	26.24	-136.00	.00	913.85
50	352.3	860.6	929.9	7425.14	1438.00	3081.7	860.6	.0	26.85	-136.00	.00	934.37
51	358.6	879.4	949.7	7426.44	1438.00	3060.8	879.4	.0	27.43	-136.00	.00	954.17
52	364.9	899.8	971.0	7428.51	1438.00	3039.9	899.8	.0	28.07	-136.00	.00	975.42
53	371.2	918.6	990.8	7429.68	1438.00	3019.0	918.6	.0	28.65	-136.00	.00	995.23
54	377.4	939.1	1012.1	7431.61	1438.00	2998.1	939.1	.0	29.29	-136.00	.00	1016.48
55	383.7	957.9	1031.9	7432.69	1438.00	2977.1	957.9	.0	29.87	-136.00	.00	1036.29
56	390.0	978.3	1053.2	7434.49	1438.00	2956.2	978.3	.0	30.50	-136.00	.00	1057.56
57	396.3	998.7	1074.5	7436.23	1438.00	2935.3	998.7	.0	31.14	-136.00	.00	1078.82
58	402.6	1017.6	1094.3	7437.18	1438.00	2914.4	1017.6	.0	31.72	-136.00	.00	1098.64
59	408.8	1038.0	1115.6	7438.82	1438.00	2893.5	1038.0	.0	32.36	-136.00	.00	1119.91
60	415.1	1058.4	1136.9	7440.41	1438.00	2872.6	1058.4	.0	32.99	-136.00	.00	1141.19
61	421.4	1078.8	1158.2	7441.94	1438.00	2851.6	1078.8	.0	33.62	-136.00	.00	1162.47
62	427.7	1099.2	1179.5	7443.42	1438.00	2830.7	1099.2	.0	34.26	-136.00	.00	1183.75
63	434.0	1121.2	1202.2	7445.48	1438.00	2809.8	1121.2	.0	34.94	-136.00	.00	1206.49
64	440.2	1141.6	1223.5	7446.91	1438.00	2788.9	1141.6	.0	35.57	-136.00	.00	1227.78
65	446.5	1162.0	1244.8	7448.25	1438.00	2768.0	1162.0	.0	36.21	-136.00	.00	1249.07
66	452.8	1182.4	1266.1	7449.56	1438.00	2747.0	1182.4	.0	36.84	-136.00	.00	1270.36
67	459.1	1204.4	1288.9	7451.44	1438.00	2726.1	1204.4	.0	37.52	-136.00	.00	1293.12
68	465.4	1224.8	1310.2	7452.66	1438.00	2665.9	1224.8	.0	38.15	-136.00	.00	1314.42
69	471.6	1246.8	1333.0	7454.44	1438.00	2550.8	1246.8	.0	38.83	-136.00	.00	1337.18
70	477.9	1268.8	1355.8	7456.17	1438.00	2435.7	1268.8	.0	39.52	-136.00	.00	1359.94
71	484.2	1290.7	1378.6	7457.84	1438.00	2320.6	1290.7	.0	40.20	-136.00	.00	1382.71
72	490.5	1314.3	1402.8	7460.01	1438.00	2205.4	1314.3	.0	40.92	-136.00	.00	1406.95
73	496.8	1339.4	1428.6	7462.65	1438.00	2090.3	1339.4	.0	41.70	-136.00	.00	1432.66
74	503.0	1363.0	1452.8	7464.67	1438.00	1975.1	1363.0	.0	42.43	-136.00	.00	1456.91
75	509.3	1388.1	1478.6	7467.14	1438.00	1859.9	1388.1	.0	43.20	-136.00	.00	1482.63
76	515.6	1413.2	1504.3	7469.52	1438.00	1744.7	1413.2	.0	43.98	-136.00	.00	1508.36
77	521.9	1439.9	1531.5	7472.31	1438.00	1629.4	1439.9	.0	44.80	-136.00	.00	1535.56
78	528.2	1466.6	1558.8	7475.00	1438.00	1514.2	1466.6	.0	45.62	-136.00	.00	1562.78
79	534.4	1493.3	1586.0	7477.59	1438.00	1398.9	1493.3	.0	46.44	-136.00	.00	1590.00
80	540.7	1521.5	1614.8	7480.56	1438.00	1283.6	1521.5	.0	47.31	-136.00	.00	1618.70
81	547.0	1549.8	1643.5	7483.41	1438.00	1168.2	1549.8	.0	48.18	-136.00	.00	1647.41
82	553.3	1578.0	1672.2	7486.16	1438.00	1052.9	1578.0	.0	49.05	-136.00	.00	1676.13
83	559.6	1607.9	1702.5	7489.25	1438.00	937.5	1607.9	.0	49.96	-136.00	.00	1706.34
84	565.8	1637.7	1732.7	7492.22	1438.00	822.0	1637.7	.0	50.88	-136.00	.00	1736.55
85	572.1	1669.1	1764.4	7495.49	1438.00	706.6	1669.1	.0	51.84	-136.00	.00	1768.26
86	578.4	1700.5	1796.2	7498.60	1438.00	591.1	1700.5	.0	52.81	-136.00	.00	1799.98
87	584.7	1731.9	1827.9	7501.68	1438.00	475.6	1731.9	.0	53.77	-136.00	.00	1831.71
88	591.0	1763.3	1859.7	7504.62	1438.00	360.1	1763.3	.0	54.74	-136.00	.00	1863.45
89	597.2	1794.7	1891.5	7507.45	1438.00	244.5	1794.7	.0	55.70	-136.00	.00	1895.19
90	603.5	1829.2	1926.2	7510.91	1438.00	128.9	1829.2	.0	56.76	-136.00	.00	1929.93
91	609.8	1863.8	1961.0	7514.20	1438.00	84.5	1863.8	.0	57.82	-136.00	.00	1964.67
92	616.1	1895.2	1992.8	7516.79	1438.00	63.3	1895.2	.0	58.79	-136.00	.00	1996.45
93	622.4	1929.7	2027.6	7519.92	1438.00	42.1	1929.7	.0	59.85	-136.00	.00	2031.22
94	628.6	1964.3	2062.4	7522.94	1438.00	20.9	1964.3	.0	60.91	-136.00	.00	2066.00
95	634.9	1998.8	2097.2	7525.88	1438.00	.0	1998.8	.1	61.98	-136.00	.00	2100.79
96	641.2	2030.2	2129.1	7528.09	1438.00	.0	2030.2	6.4	62.95	-136.00	.00	2132.60
97	647.5	2064.7	2163.9	7530.87	1438.00	.0	2064.7	12.7	64.01	-136.00	.00	2167.41
98	653.8	2099.3	2198.7	7533.56	1438.00	.0	2099.3	18.9	65.07	-136.00	.00	2202.23
99	660.0	2133.8	2233.6	7536.18	1438.00	.0	2133.8	25.2	66.14	-136.00	.00	2237.06

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	4486.	0.	1004.	3010.	927.	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
3.0	.2	241.	80.23	0.	4488.	13173.	1047.	2966.	968.	1038	1043	1038	1020	1000	980	964	960	964	980	1000	1020
6.0	.4	456.	71.74	0.	4488.	24182.	1085.	2929.	1004.	1067	1080	1067	1043	1000	960	933	922	933	960	1000	1043
9.0	.6	694.	79.51	0.	4494.	37697.	1129.	2884.	1047.	1110	1125	1110	1059	1000	943	900	883	900	943	1000	1059
12.0	.8	931.	78.70	-1.	4491.	50299.	1171.	2843.	1087.	1144	1167	1144	1080	1000	923	864	844	864	923	1000	1080
15.0	1.0	1159.	76.24	-1.	4496.	62288.	1207.	2809.	1122.	1181	1203	1181	1106	1000	905	831	807	831	905	1000	1106
18.0	1.2	1378.	72.76	1.	4494.	73665.	1254.	2764.	1166.	1211	1249	1211	1125	1000	883	801	774	801	883	1000	1125
21.0	1.4	1607.	76.57	0.	4500.	85914.	1294.	2723.	1206.	1253	1290	1253	1146	1000	863	772	738	772	863	1000	1146
24.0	1.6	1834.	75.55	1.	4500.	97905.	1338.	2546.	1248.	1287	1334	1287	1167	1000	844	741	703	741	844	1000	1167
27.0	1.8	2058.	74.73	1.	4503.	109924.	1378.	2342.	1287.	1327	1374	1327	1187	1000	826	711	669	711	826	1000	1187
30.0	2.0	2261.	67.64	-1.	4499.	120602.	1412.	2183.	1319.	1361	1408	1361	1203	1000	808	681	639	681	808	1000	1203
33.0	2.2	2464.	67.55	1.	4497.	130865.	1443.	2041.	1349.	1393	1439	1393	1226	1001	791	653	605	653	791	1001	1226
36.0	2.4	2661.	65.80	0.	4491.	140693.	1476.	1888.	1382.	1419	1472	1419	1250	1001	775	623	571	623	775	1001	1250
39.0	2.6	2856.	64.97	0.	4486.	150119.	1508.	1745.	1413.	1449	1504	1449	1273	1001	755	598	539	598	755	1001	1273
42.0	2.8	3044.	62.63	-1.	4477.	159651.	1538.	1621.	1442.	1476	1534	1476	1292	1001	739	567	511	567	739	1001	1292
45.0	3.0	3233.	63.13	-1.	4473.	168785.	1568.	1491.	1472.	1504	1564	1504	1317	1001	723	540	484	540	723	1001	1317
48.0	3.2	3410.	59.06	0.	4464.	177215.	1599.	1362.	1502.	1530	1595	1530	1336	1001	705	515	457	515	705	1001	1336
51.0	3.4	3585.	58.04	0.	4457.	185367.	1628.	1245.	1531.	1556	1624	1556	1356	1002	687	493	428	493	687	1002	1356
54.0	3.6	3769.	61.64	0.	4448.	194440.	1659.	1121.	1561.	1583	1655	1583	1376	1002	671	465	401	465	671	1002	1376
57.0	3.8	3932.	54.34	0.	4442.	201961.	1689.	1001.	1591.	1609	1686	1609	1394	1002	655	445	378	445	655	1002	1394
60.0	4.0	4099.	55.61	0.	4431.	210126.	1719.	888.	1621.	1635	1715	1635	1409	1002	641	419	356	419	641	1002	1409
63.0	4.2	4264.	54.79	0.	4421.	217706.	1749.	776.	1650.	1662	1745	1662	1424	1003	621	397	337	397	621	1003	1424
66.0	4.4	4424.	53.30	0.	4415.	225041.	1779.	669.	1679.	1688	1775	1688	1442	1003	607	378	314	378	607	1003	1442
69.0	4.6	4579.	51.73	0.	4411.	231926.	1809.	557.	1710.	1714	1806	1714	1459	1003	592	359	297	359	592	1003	1459
72.0	4.8	4735.	52.11	0.	4403.	238787.	1841.	443.	1741.	1740	1837	1740	1475	1003	574	341	278	341	574	1003	1475
75.0	5.0	4888.	50.81	0.	4398.	245324.	1874.	323.	1773.	1765	1870	1765	1491	1004	558	324	262	324	558	1004	1491
78.0	5.2	5041.	51.15	0.	4394.	251995.	1906.	204.	1806.	1792	1902	1792	1507	1004	543	305	248	305	543	1004	1507
81.0	5.4	5183.	47.18	0.	4391.	257845.	1936.	117.	1835.	1819	1932	1819	1522	1004	528	291	236	291	528	1004	1522
84.0	5.6	5328.	48.43	1.	4390.	263968.	1968.	81.	1868.	1846	1965	1846	1537	1005	514	275	225	275	514	1005	1537
87.0	5.8	5474.	48.65	-1.	4394.	270024.	2005.	58.	1903.	1875	2001	1875	1553	1005	502	261	215	261	502	1005	1553
90.0	6.0	5614.	46.90	0.	4396.	275563.	2038.	38.	1937.	1903	2034	1903	1569	1005	489	249	205	249	489	1005	1569
93.0	6.2	5755.	46.77	0.	4394.	280631.	2072.	16.	1971.	1929	2069	1929	1585	1006	471	238	196	238	471	1006	1585
96.0	6.4	5889.	44.72	0.	4401.	285614.	2110.	0.	2008.	1957	2106	1957	1600	1006	460	228	189	228	460	1006	1600
99.0	6.6	6033.	47.95	0.	4410.	291130.	2151.	0.	2048.	1988	2147	1988	1614	1007	448	220	181	220	448	1007	1614
102.0	6.8	6173.	46.66	0.	4415.	296095.	2189.	0.	2086.	2018	2185	2018	1630	1007	433	211	175	211	433	1007	1630
105.0	7.0	6313.	46.87	0.	4421.	301104.	2228.	0.	2125.	2047	2225	2047	1645	1008	419	203	169	203	419	1008	1645

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT 7539. FT

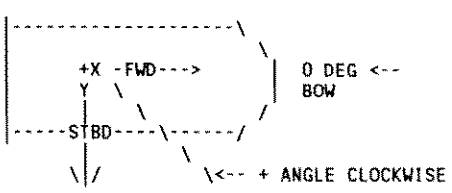
STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE ST1512 tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	-1.	4064.	141539.	1178.	2837.	1093.	1173	0	1173	1102	1000	909	838	815	838	909	1000	1102
3.0	.2	180.	60.06	-262.	4050.	149173.	1213.	2804.	1127.	1209	0	1196	1110	989	877	803	783	814	901	1011	1131
6.0	.4	377.	65.67	-663.	4042.	158059.	1259.	2758.	1172.	1255	0	1226	1118	975	848	771	747	790	891	1026	1162
9.0	.6	564.	62.30	-125.	4035.	166552.	1300.	2711.	1211.	1295	0	1258	1126	963	821	736	716	768	883	1041	1191
12.0	.8	750.	62.08	-277.	4024.	175086.	1342.	2529.	1251.	1337	0	1282	1133	953	794	700	683	744	876	1052	1221
15.0	1.0	935.	61.80	1085.	4018.	183399.	1381.	2328.	1289.	1377	0	1314	1141	939	769	667	653	724	869	1063	1258
18.0	1.2	1110.	58.33	1099.	4003.	191013.	1413.	2177.	1321.	1409	0	1339	1149	925	741	637	619	699	861	1078	1287
21.0	1.4	1285.	58.18	2507.	3995.	198910.	1444.	2036.	1350.	1440	0	1367	1159	916	717	604	591	676	852	1095	1322
24.0	1.6	1458.	57.84	2965.	3980.	206502.	1477.	1886.	1382.	1473	0	1392	1168	904	690	571	558	655	845	1109	1351
27.0	1.8	1622.	54.60	3297.	3965.	213482.	1508.	1746.	1413.	1504	0	1413	1178	891	665	540	529	634	837	1120	1380
30.0	2.0	1773.	50.41	3177.	3949.	219944.	1537.	1624.	1441.	1533	0	1433	1185	879	643	512	503	610	829	1133	1405
33.0	2.2	1929.	51.97	2762.	3931.	226357.	1567.	1497.	1471.	1563	0	1457	1192	866	615	486	474	590	822	1146	1427
36.0	2.4	2079.	49.86	2880.	3918.	232842.	1597.	1370.	1500.	1593	0	1478	1200	855	595	458	451	566	814	1158	1453
39.0	2.6	2234.	51.69	2539.	3899.	239374.	1626.	1255.	1529.	1622	0	1500	1208	843	569	430	423	545	807	1172	1477
42.0	2.8	2382.	49.32	2116.	3884.	245514.	1656.	1134.	1558.	1652	0	1521	1218	832	545	404	398	525	800	1184	1501
45.0	3.0	2519.	45.86	1450.	3871.	251032.	1686.	1015.	1588.	1682	0	1540	1227	821	523	381	377	507	794	1195	1524
48.0	3.2	2653.	44.54	1095.	3860.	256521.	1715.	904.	1617.	1711	0	1561	1237	810	503	360	355	491	787	1207	1546
51.0	3.4	2790.	45.67	-43.	3849.	262130.	1745.	792.	1646.	1741	0	1582	1247	799	481	340	337	468	782	1222	1569
54.0	3.6	2923.	44.33	-313.	3839.	267453.	1773.	688.	1674.	1770	0	1602	1259	789	461	319	316	454	775	1236	1592
57.0	3.8	3053.	43.17	-1290.	3829.	272699.	1804.	578.	1704.	1800	0	1622	1268	780	442	300	299	433	767	1252	1614
60.0	4.0	3184.	43.87	-1974.	3817.	277805.	1834.	468.	1734.	1830	0	1643	1277	770	420	283	281	415	758	1266	1636
63.0	4.2	3312.	42.64	-2503.	3807.	282633.	1866.	351.	1766.	1862	0	1664	1285	758	401	266	265	397	749	1277	1659
66.0	4.4	3434.	40.61	-3468.	3801.	287203.	1899.	232.	1798.	1895	0	1685	1295	747	384	252	251	382	743	1289	1682
69.0	4.6	3548.	37.89	-4328.	3799.	291520.	1928.	134.	1827.	1924	0	1705	1307	739	368	239	239	368	737	1305	1704
72.0	4.8	3663.	38.37	-5422.	3795.	295687.	1959.	89.	1858.	1955	0	1726	1318	730	351	228	228	352	731	1319	1727
75.0	5.0	3773.	36.84	-6213.	3793.	299566.	1994.	65.	1893.	1990	0	1747	1327	720	338	218	219	339	723	1330	1748
78.0	5.2	3884.	36.84	-7051.	3789.	303243.	2027.	45.	1925.	2023	0	1767	1336	709	323	209	209	326	715	1342	1770
81.0	5.4	3998.	38.12	-8101.	3785.	307203.	2060.	24.	1959.	2057	0	1788	1345	699	307	199	200	310	707	1354	1793
84.0	5.6	4104.	35.32	-8690.	3786.	310704.	2095.	2.	1993.	2091	0	1809	1354	689	295	192	192	299	699	1366	1816
87.0	5.8	4218.	37.81	-10182.	3788.	314577.	2136.	0.	2033.	2132	0	1831	1365	680	282	185	185	286	691	1378	1839
90.0	6.0	4327.	36.51	-10973.	3790.	318220.	2173.	0.	2070.	2169	0	1854	1375	671	269	178	178	274	684	1389	1863
93.0	6.2	4435.	36.08	-11527.	3793.	321759.	2211.	0.	2108.	2207	0	1877	1384	662	258	171	172	263	677	1399	1888

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT 7538. FT

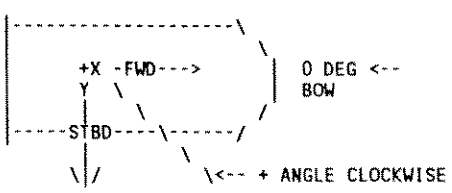
STARTING DISPLACEMENTS : SURGE(FT) = -10.172 SWAY(FT) = -10.172 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE ST15121 tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

C1 S12

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	15.0	45.0	75.0	105.0	135.0	165.0	-165.0	-135.0	-105.0	-75.0	-45.0	-15.0
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	1500.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	1500.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.625"
LINE LENGTH (FT)	700.0
WEIGHT IN WATER (LB/FT)	57.26
LINE B.S. (KIPS)	3634.0
AREA (SQ IN)	24.85
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.625"
LINE LENGTH (FT)	1700.0
WEIGHT IN WATER (LB/FT)	57.26
LINE B.S. (KIPS)	3634.0
AREA (SQ IN)	24.85
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-90.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.625"
LINE LENGTH (FT)	1300.0
WEIGHT IN WATER (LB/FT)	57.26
LINE B.S. (KIPS)	3634.0
AREA (SQ IN)	24.85
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	CHAIN
LINE SIZE (IN)	6.125"
LINE LENGTH (FT)	1450.0
WEIGHT IN WATER (LB/FT)	310.07
LINE B.S. (KIPS)	3623.0
AREA (SQ IN)	29.46
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.625"
LINE LENGTH (FT)	1950.0
WEIGHT IN WATER (LB/FT)	57.26
LINE B.S. (KIPS)	3634.0
AREA (SQ IN)	24.85
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	6.125"
LINE LENGTH (FT)	100.0
WEIGHT IN WATER (LB/FT)	310.07
LINE B.S. (KIPS)	3623.0
AREA (SQ IN)	29.46
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
1	134.3	.0	137.4	5762.00	1438.00	5762.0	.0	.0				
2	137.5	139.3	195.8	6831.59	1438.00	3451.1	139.3	.0	3.97	-90.00	.00	.00
3	140.8	147.8	204.1	6840.95	1438.00	3440.7	147.8	.0	4.20	-90.00	.00	.00
4	144.0	156.3	212.5	6849.17	1438.00	3430.4	156.3	.0	4.44	-90.00	.00	.00
5	147.2	164.6	220.9	6855.76	1438.00	3420.0	164.6	.0	4.67	-90.00	.00	.00
6	150.5	172.9	229.2	6861.62	1438.00	3409.6	172.9	.0	4.89	-90.00	.00	.00
7	153.7	181.4	237.8	6867.49	1438.00	3399.3	181.4	.0	5.13	-90.00	.00	.00
8	157.0	189.5	246.1	6871.59	1438.00	3388.9	189.5	.0	5.35	-90.00	.00	.00
9	160.2	198.0	254.7	6876.42	1438.00	3378.6	198.0	.0	5.59	-90.00	.00	.00
10	163.4	206.1	263.1	6879.73	1438.00	3368.2	206.1	.0	5.81	-90.00	.00	.00
11	169.9	223.1	280.5	6887.46	1438.00	3347.5	223.1	.0	6.28	-90.00	.00	.00
12	176.4	239.8	297.7	6893.07	1438.00	3326.8	239.8	.0	6.74	-90.00	.00	.00
13	182.9	256.8	315.2	6898.67	1438.00	3306.0	256.8	.0	7.21	-90.00	.00	.00
14	189.4	273.4	332.5	6902.74	1438.00	3285.3	273.4	.0	7.67	-90.00	.00	.00
15	195.8	290.4	350.2	6906.99	1438.00	3264.6	290.4	.0	8.14	-90.00	.00	.00
16	202.3	307.4	368.0	6910.71	1438.00	3243.9	307.4	.0	8.61	-90.00	.00	.00
17	208.8	324.4	385.8	6914.00	1438.00	3223.1	324.4	.0	9.08	-90.00	.00	.00
18	215.3	341.4	403.6	6916.93	1438.00	3202.4	341.4	.0	9.56	-90.00	.00	.00
19	221.8	358.8	421.8	6920.12	1438.00	3181.7	358.8	.0	10.04	-90.00	.00	.00
20	228.2	375.8	439.7	6922.44	1438.00	3160.9	375.8	.0	10.51	-90.00	.00	.00
21	234.7	393.6	458.3	6925.58	1438.00	3140.2	393.6	.0	11.00	-90.00	.00	.00
22	241.2	411.1	476.6	6927.94	1438.00	3119.5	411.1	.0	11.49	-90.00	.00	.00
23	247.7	428.9	495.3	6930.57	1438.00	3098.8	428.9	.0	11.98	-90.00	.00	.00
24	254.2	446.7	513.9	6932.96	1438.00	3078.0	446.7	.0	12.47	-90.00	.00	.00
25	260.6	464.5	532.6	6935.17	1438.00	3057.3	464.5	.0	12.97	-90.00	.00	.00
26	267.1	482.3	551.4	6937.22	1438.00	3036.6	482.3	.0	13.46	-90.00	.00	.00
27	273.6	500.2	570.1	6939.10	1438.00	3015.8	500.2	.0	13.95	-90.00	.00	.00
28	280.1	518.0	588.9	6940.85	1438.00	2995.1	518.0	.0	14.45	-90.00	.00	.00
29	286.6	536.6	608.3	6943.23	1438.00	2974.4	536.6	.0	14.96	-90.00	.00	.00
30	293.0	554.4	627.1	6944.72	1438.00	2953.6	554.4	.0	15.46	-90.00	.00	.00
31	299.5	573.1	646.6	6946.81	1438.00	2932.9	573.1	.0	15.97	-90.00	.00	.00
32	306.0	591.7	666.1	6948.77	1438.00	2912.2	591.7	.0	16.49	-90.00	.00	.00
33	312.5	610.3	685.7	6950.61	1438.00	2891.4	610.3	.0	17.00	-90.00	.00	.00
34	319.0	628.9	705.2	6952.34	1438.00	2870.7	628.9	.0	17.52	-90.00	.00	.00
35	325.4	647.6	724.8	6953.97	1438.00	2849.9	647.6	.0	18.04	-90.00	.00	.00
36	331.9	667.0	745.0	6956.09	1438.00	2829.2	667.0	.0	18.57	-90.00	.00	.00
37	338.4	685.6	764.6	6957.55	1438.00	2808.5	685.6	.0	19.09	-90.00	.00	.00
38	344.9	705.1	784.9	6959.47	1438.00	2787.7	705.1	.0	19.63	-90.00	.00	.00
39	351.4	723.7	804.5	6960.75	1438.00	2767.0	723.7	.0	20.14	-90.00	.00	.00
40	357.8	743.2	824.8	6962.50	1438.00	2746.2	743.2	.0	20.68	-90.00	.00	.00
41	364.3	762.6	845.1	6964.16	1438.00	2725.5	762.6	.0	21.22	-90.00	.00	.00
42	370.8	782.0	865.5	6965.74	1438.00	2704.8	782.0	.0	21.76	-90.00	.00	.00
43	377.3	801.5	885.8	6967.25	1438.00	2684.0	801.5	.0	22.29	-90.00	.00	.00
44	383.8	820.9	906.2	6968.69	1438.00	2663.3	820.9	.0	22.83	-90.00	.00	.00
45	390.2	841.2	927.3	6970.53	1438.00	2642.5	841.2	.0	23.39	-90.00	.00	.00

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
46	396.7	860.6	947.6	6971.84	1438.00	2621.8	860.6	.0	23.93	-90.00	.00	.00
47	403.2	881.7	969.5	6973.97	1438.00	2601.0	881.7	.0	24.51	-90.00	.00	.00
48	409.7	901.1	989.9	6975.16	1438.00	2580.3	901.1	.0	25.05	-90.00	.00	.00
49	416.2	922.2	1011.7	6977.13	1438.00	2559.5	922.2	.0	25.63	-90.00	.00	.00
50	422.6	941.6	1032.1	6978.21	1438.00	2538.8	941.6	.0	26.17	-90.00	.00	.00
51	429.1	962.7	1054.0	6980.05	1438.00	2518.0	962.7	.0	26.75	-90.00	.00	.00
52	435.6	982.9	1075.1	6981.40	1438.00	2497.3	982.9	.0	27.31	-90.00	.00	.00
53	442.1	1004.0	1097.0	6983.13	1438.00	2476.5	1004.0	.0	27.89	-90.00	.00	.00
54	448.6	1025.0	1118.9	6984.77	1438.00	2455.8	1025.0	.0	28.47	-90.00	.00	.00
55	455.0	1044.5	1139.3	6985.63	1438.00	2435.0	1044.5	.0	29.01	-90.00	.00	.00
56	461.5	1065.5	1161.2	6987.18	1438.00	2414.2	1065.5	.0	29.59	-90.00	.00	.00
57	468.0	1086.6	1183.1	6988.67	1438.00	2393.5	1086.6	.0	30.17	-90.00	.00	.00
58	474.5	1109.3	1206.5	6990.75	1438.00	2372.7	1109.3	.0	30.80	-90.00	.00	.00
59	481.0	1130.3	1228.4	6992.13	1438.00	2352.0	1130.3	.0	31.38	-90.00	.00	.00
60	487.4	1151.4	1250.3	6993.51	1438.00	2331.2	1151.4	.0	31.96	-90.00	.00	.00
61	493.9	1172.4	1272.2	6994.81	1438.00	2310.5	1172.4	.0	32.55	-90.00	.00	.00
62	500.4	1193.5	1294.2	6996.06	1438.00	2289.7	1193.5	.0	33.13	-90.00	.00	.00
63	506.9	1216.2	1317.6	6997.90	1438.00	2268.9	1216.2	.0	33.75	-90.00	.00	.00
64	513.4	1237.2	1339.5	6999.08	1438.00	2248.2	1237.2	.0	34.34	-90.00	.00	.00
65	519.8	1259.9	1362.9	7000.81	1438.00	2227.4	1259.9	.0	34.96	-90.00	.00	.00
66	526.3	1281.0	1384.9	7001.92	1438.00	2206.6	1281.0	.0	35.54	-90.00	.00	.00
67	532.8	1303.7	1408.3	7003.56	1438.00	2185.9	1303.7	.0	36.17	-90.00	.00	.00
68	539.3	1326.3	1431.8	7005.16	1438.00	2165.1	1326.3	.0	36.79	-90.00	.00	.00
69	545.8	1349.0	1455.2	7006.71	1438.00	2144.3	1349.0	.0	37.42	-90.00	.00	.00
70	552.2	1370.1	1477.2	7007.68	1438.00	2123.5	1370.1	.0	38.00	-90.00	.00	.00
71	558.7	1392.8	1500.6	7009.16	1438.00	2102.8	1392.8	.0	38.63	-90.00	.00	.00
72	565.2	1415.4	1524.1	7010.60	1438.00	2082.0	1415.4	.0	39.26	-90.00	.00	.00
73	571.7	1438.1	1547.6	7012.01	1438.00	2058.2	1438.1	.0	39.88	-90.00	.00	.00
74	578.2	1460.8	1571.0	7013.37	1438.00	1944.6	1460.8	.0	40.51	-90.00	.00	.00
75	584.6	1485.1	1596.0	7015.20	1438.00	1830.9	1485.1	.0	41.18	-90.00	.00	.00
76	591.1	1509.4	1621.0	7016.98	1438.00	1717.2	1509.4	.0	41.85	-90.00	.00	.00
77	597.6	1535.3	1647.5	7019.14	1438.00	1603.5	1535.3	.0	42.56	-90.00	.00	.00
78	604.1	1559.6	1672.5	7020.85	1438.00	1489.8	1559.6	.0	43.23	-90.00	.00	.00
79	610.6	1585.5	1699.0	7022.93	1438.00	1376.0	1585.5	.0	43.94	-90.00	.00	.00
80	617.0	1611.5	1725.5	7024.94	1438.00	1262.3	1611.5	.0	44.65	-90.00	.00	.00
81	623.5	1639.0	1753.6	7027.34	1438.00	1148.5	1639.0	.0	45.41	-90.00	.00	.00
82	630.0	1666.5	1781.6	7029.65	1438.00	1034.6	1666.5	.0	46.16	-90.00	.00	.00
83	636.5	1695.7	1811.2	7032.32	1438.00	920.8	1695.7	.0	46.96	-90.00	.00	.00
84	642.9	1724.8	1840.8	7034.86	1438.00	806.9	1724.8	.0	47.76	-90.00	.00	.00
85	649.4	1754.0	1870.4	7037.39	1438.00	693.0	1754.0	.0	48.56	-90.00	.00	.00
86	655.9	1783.2	1900.0	7039.80	1438.00	579.1	1783.2	.0	49.36	-90.00	.00	.00
87	662.4	1812.3	1929.6	7042.14	1438.00	465.2	1812.3	.0	50.16	-90.00	.00	.00
88	668.9	1844.7	1962.2	7045.16	1438.00	351.2	1844.7	.0	51.04	-90.00	.00	.00
89	675.3	1877.1	1994.9	7048.04	1438.00	237.2	1877.1	.0	51.93	-90.00	.00	.00
90	681.8	1907.9	2026.1	7050.50	1438.00	123.2	1907.9	.0	52.77	-90.00	.00	.00
91	688.3	1940.3	2058.8	7053.28	1438.00	83.6	1940.3	.0	53.66	-90.00	.00	.00
92	694.8	1972.7	2091.5	7055.93	1438.00	62.6	1972.7	.0	54.54	-90.00	.00	.00
93	701.3	2005.1	2124.2	7058.50	1438.00	41.7	2005.1	.0	55.43	-90.00	.00	.00
94	707.7	2037.5	2156.9	7060.99	1438.00	20.7	2037.5	.0	56.32	-90.00	.00	.00
95	714.2	2069.9	2189.7	7063.41	1438.00	.0	2069.9	.1	57.21	-90.00	.00	.00
96	720.7	2105.5	2225.5	7066.41	1438.00	.0	2105.5	6.6	58.18	-90.00	.00	.00
97	727.2	2137.9	2258.2	7068.68	1438.00	.0	2137.9	13.1	59.07	-90.00	.00	.00
98	733.7	2170.3	2291.0	7070.90	1438.00	.0	2170.3	19.5	59.96	-90.00	.00	.00
99	740.1	2202.7	2323.8	7073.05	1438.00	.0	2202.7	26.0	60.85	-90.00	.00	.00

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	4951.	0.	1000.	2571.	911.	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
3.0	.2	244.	81.44	0.	4954.	13385.	1043.	2528.	952.	1038	1043	1038	1020	1000	980	964	960	964	980	1000	1020
6.0	.4	473.	76.30	0.	4958.	25338.	1084.	2489.	991.	1073	1084	1073	1043	1000	960	933	922	933	960	1000	1043
9.0	.6	693.	73.41	1.	4960.	37181.	1126.	2448.	1032.	1105	1126	1105	1062	1000	944	901	883	901	944	1000	1062
12.0	.8	959.	88.66	0.	4968.	51968.	1175.	2401.	1078.	1152	1175	1152	1084	1000	922	865	844	865	922	1000	1084
15.0	1.0	1178.	72.84	1.	4966.	63760.	1211.	2368.	1114.	1188	1211	1188	1102	1000	905	832	809	832	905	1000	1102
18.0	1.2	1415.	78.91	0.	4968.	76044.	1260.	2322.	1160.	1221	1260	1221	1126	1000	884	801	770	801	884	1000	1126
21.0	1.4	1665.	83.47	-1.	4979.	89305.	1307.	2279.	1206.	1263	1307	1263	1154	1000	864	768	735	768	864	1000	1154
24.0	1.6	1902.	78.90	0.	4985.	102047.	1353.	2237.	1250.	1304	1353	1304	1175	1000	845	737	702	737	845	1000	1175
27.0	1.8	2132.	76.64	1.	4993.	114410.	1402.	2191.	1297.	1345	1402	1345	1194	1000	826	710	669	710	826	1000	1194
30.0	2.0	2357.	75.08	1.	4999.	126580.	1445.	2154.	1339.	1387	1445	1387	1212	1000	809	680	640	680	809	1000	1212
33.0	2.2	2594.	79.09	0.	5006.	138746.	1499.	2104.	1392.	1425	1499	1425	1236	1001	787	654	607	654	787	1001	1236
36.0	2.4	2822.	75.81	-1.	5024.	150506.	1549.	2054.	1439.	1468	1549	1468	1261	1001	771	629	581	629	771	1001	1261
39.0	2.6	3062.	79.97	0.	5034.	163067.	1594.	1838.	1483.	1512	1594	1512	1287	1001	753	600	550	600	753	1001	1287
42.0	2.8	3276.	71.55	0.	5044.	174163.	1634.	1660.	1522.	1556	1634	1556	1308	1001	736	577	523	577	736	1001	1308
45.0	3.0	3487.	70.38	-1.	5053.	184908.	1676.	1477.	1563.	1594	1676	1594	1332	1001	721	551	499	551	721	1001	1332
48.0	3.2	3685.	65.75	1.	5058.	194457.	1714.	1310.	1600.	1630	1714	1630	1354	1001	704	527	478	527	704	1001	1354
51.0	3.4	3879.	64.96	0.	5065.	203540.	1751.	1161.	1636.	1664	1751	1664	1381	1002	687	506	455	506	687	1002	1381
54.0	3.6	4062.	60.77	0.	5073.	211925.	1786.	1016.	1671.	1699	1786	1699	1404	1002	671	487	437	487	671	1002	1404
57.0	3.8	4242.	60.13	-1.	5078.	220314.	1820.	887.	1704.	1732	1820	1732	1426	1002	656	467	415	467	656	1002	1426
60.0	4.0	4411.	56.29	0.	5084.	227809.	1855.	753.	1739.	1763	1855	1763	1448	1002	642	450	398	450	642	1002	1448
63.0	4.2	4590.	59.57	1.	5097.	235299.	1891.	614.	1774.	1793	1891	1793	1479	1003	628	433	381	433	628	1003	1479
66.0	4.4	4765.	58.53	-1.	5100.	242749.	1929.	468.	1812.	1823	1929	1823	1503	1003	609	415	365	415	609	1003	1503
69.0	4.6	4926.	53.60	-1.	5109.	249346.	1961.	354.	1844.	1853	1961	1853	1528	1003	597	400	351	400	597	1003	1528
72.0	4.8	5091.	54.92	0.	5119.	256140.	1995.	235.	1878.	1884	1995	1884	1554	1004	584	385	338	385	584	1004	1554
75.0	5.0	5261.	56.79	0.	5129.	263078.	2033.	110.	1915.	1917	2033	1917	1578	1004	568	371	325	371	568	1004	1578
78.0	5.2	5418.	52.16	0.	5135.	269332.	2068.	76.	1950.	1947	2068	1947	1599	1004	553	358	313	358	553	1004	1599
81.0	5.4	5569.	50.28	1.	5144.	275018.	2106.	53.	1987.	1975	2106	1975	1620	1005	539	346	304	346	539	1005	1620
84.0	5.6	5720.	50.50	0.	5153.	280887.	2145.	28.	2025.	2006	2145	2006	1639	1005	526	335	294	335	526	1005	1639
87.0	5.8	5878.	52.48	0.	5165.	287045.	2185.	2.	2065.	2039	2185	2039	1660	1005	514	324	285	324	514	1005	1660
90.0	6.0	6027.	49.75	0.	5176.	292597.	2221.	0.	2101.	2070	2221	2070	1681	1006	502	314	277	314	502	1006	1681
93.0	6.2	6178.	50.34	0.	5190.	298198.	2264.	0.	2144.	2102	2264	2102	1700	1006	492	305	270	305	492	1006	1700
96.0	6.4	6331.	51.21	-1.	5207.	303838.	2309.	0.	2188.	2136	2309	2136	1721	1007	481	298	264	298	481	1007	1721

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT 7075. FT

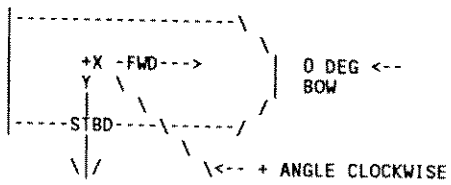
STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE ST15121 tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	-1.	4495.	150791.	1175.	2401.	1079.	1175	0	1175	1096	1000	911	843	821	843	911	1000	1096
3.0	.2	190.	63.50	400.	4482.	159144.	1211.	2368.	1114.	1211	0	1199	1103	990	881	809	783	819	904	1010	1131
6.0	.4	399.	69.42	428.	4474.	168747.	1259.	2323.	1159.	1259	0	1230	1112	976	852	771	749	792	894	1026	1166
9.0	.6	593.	64.59	51.	4470.	177588.	1305.	2280.	1204.	1305	0	1262	1123	962	824	736	720	769	886	1041	1195
12.0	.8	789.	65.40	-399.	4465.	186577.	1351.	2238.	1248.	1351	0	1293	1132	951	794	704	688	746	881	1054	1229
15.0	1.0	982.	64.29	-656.	4464.	195254.	1399.	2194.	1295.	1399	0	1321	1146	939	768	671	658	726	872	1068	1265
18.0	1.2	1168.	62.26	-244.	4459.	203443.	1441.	2157.	1335.	1441	0	1353	1155	925	740	642	631	703	864	1082	1301
21.0	1.4	1367.	66.34	23.	4459.	212996.	1495.	2108.	1387.	1495	0	1387	1162	914	718	610	600	681	857	1094	1336
24.0	1.6	1548.	60.18	-708.	4456.	220873.	1543.	2068.	1434.	1543	0	1415	1171	903	691	585	573	660	849	1105	1370
27.0	1.8	1734.	62.07	-189.	4453.	229313.	1589.	1863.	1478.	1589	0	1446	1182	891	668	554	544	640	841	1118	1406
30.0	2.0	1914.	59.93	1274.	4454.	237682.	1629.	1684.	1517.	1629	0	1486	1189	879	646	527	519	619	833	1140	1438
33.0	2.2	2087.	57.79	2861.	4454.	245349.	1668.	1510.	1555.	1668	0	1519	1197	867	625	503	496	598	825	1154	1479
36.0	2.4	2252.	54.92	3758.	4453.	252290.	1706.	1345.	1593.	1706	0	1553	1205	856	600	482	476	580	817	1165	1514
39.0	2.6	2416.	54.60	4869.	4453.	259527.	1743.	1191.	1629.	1743	0	1585	1215	845	581	460	455	559	811	1180	1552
42.0	2.8	2567.	50.37	4971.	4451.	265506.	1778.	1048.	1663.	1778	0	1613	1225	833	558	442	437	540	803	1191	1587
45.0	3.0	2716.	49.65	5574.	4443.	271526.	1811.	921.	1696.	1811	0	1638	1235	822	537	420	417	523	794	1202	1618
48.0	3.2	2855.	46.47	5751.	4442.	277054.	1846.	788.	1730.	1846	0	1665	1244	811	517	404	401	507	786	1216	1646
51.0	3.4	2999.	47.74	6297.	4442.	282975.	1880.	655.	1764.	1880	0	1693	1256	800	500	386	383	491	778	1230	1678
54.0	3.6	3137.	46.10	6277.	4443.	288542.	1917.	513.	1800.	1917	0	1720	1268	787	484	370	368	477	771	1244	1706
57.0	3.8	3268.	43.88	5983.	4443.	293763.	1951.	390.	1833.	1951	0	1745	1280	777	468	355	354	461	765	1260	1735
60.0	4.0	3391.	41.00	6063.	4445.	298411.	1983.	279.	1865.	1983	0	1769	1293	768	453	343	341	448	756	1275	1761
63.0	4.2	3516.	41.55	6121.	4447.	303146.	2019.	145.	1901.	2019	0	1793	1302	758	440	330	329	435	747	1291	1787
66.0	4.4	3641.	41.61	5452.	4443.	307740.	2054.	86.	1936.	2054	0	1817	1311	747	423	318	317	420	740	1303	1811
69.0	4.6	3759.	39.32	5108.	4446.	312064.	2090.	63.	1972.	2090	0	1841	1322	738	410	308	307	408	734	1315	1837
72.0	4.8	3877.	39.35	4261.	4454.	316479.	2128.	39.	2009.	2128	0	1865	1335	730	397	299	299	396	728	1331	1863
75.0	5.0	3999.	40.52	3696.	4459.	320978.	2167.	14.	2047.	2167	0	1891	1346	722	384	290	290	384	721	1345	1890
78.0	5.2	4118.	39.75	3879.	4463.	325160.	2204.	0.	2084.	2204	0	1917	1355	711	372	281	281	373	713	1357	1918
81.0	5.4	4232.	38.00	3492.	4470.	329062.	2242.	0.	2122.	2242	0	1942	1367	702	361	274	274	362	705	1373	1944
84.0	5.6	4347.	38.29	1988.	4479.	333055.	2285.	0.	2165.	2285	0	1964	1383	693	351	268	268	353	697	1389	1967

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT 7074. FT

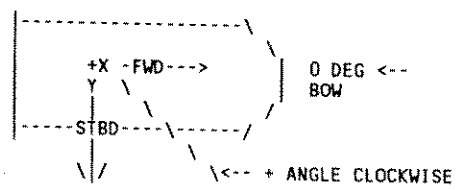
STARTING DISPLACEMENTS : SURGE(FT) = -9.844 SWAY(FT) = -9.844 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE ST15161 tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	11.3	33.8	56.3	78.8	101.3	123.8	146.3	168.8	-168.8	-146.3	-123.8	-101.3	-78.8	-56.3	-33.8	-11.3
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	1500.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	1500.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.750"
LINE LENGTH (FT)	700.0
WEIGHT IN WATER (LB/FT)	40.83
LINE B.S. (KIPS)	2591.0
AREA (SQ IN)	17.72
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.750"
LINE LENGTH (FT)	2200.0
WEIGHT IN WATER (LB/FT)	40.83
LINE B.S. (KIPS)	2591.0
AREA (SQ IN)	17.72
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-64.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.750"
LINE LENGTH (FT)	1300.0
WEIGHT IN WATER (LB/FT)	40.83
LINE B.S. (KIPS)	2591.0
AREA (SQ IN)	17.72
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.125"
LINE LENGTH (FT)	1100.0
WEIGHT IN WATER (LB/FT)	217.09
LINE B.S. (KIPS)	2700.0
AREA (SQ IN)	20.63
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.750"
LINE LENGTH (FT)	2600.0
WEIGHT IN WATER (LB/FT)	40.83
LINE B.S. (KIPS)	2591.0
AREA (SQ IN)	17.72
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.125"
LINE LENGTH (FT)	100.0
WEIGHT IN WATER (LB/FT)	217.09
LINE B.S. (KIPS)	2700.0
AREA (SQ IN)	20.63
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
1	116.5	.0	118.4	6562.00	1438.00	6562.0	.0	.0				
2	118.5	135.2	179.8	7670.14	1438.00	3751.7	135.2	.0	6.12	-64.00	.00	.00
3	120.5	141.1	185.6	7677.07	1438.00	3742.7	141.1	.0	6.38	-64.00	.00	.00
4	122.5	147.1	191.5	7683.35	1438.00	3733.6	147.1	.0	6.64	-64.00	.00	.00
5	124.5	153.1	197.4	7689.06	1438.00	3724.5	153.1	.0	6.91	-64.00	.00	.00
6	126.5	158.9	203.1	7693.47	1438.00	3715.3	158.9	.0	7.16	-64.00	.00	.00
7	128.5	164.9	209.0	7698.31	1438.00	3706.2	164.9	.0	7.42	-64.00	.00	.00
8	130.5	170.9	215.0	7702.76	1438.00	3697.1	170.9	.0	7.69	-64.00	.00	.00
9	132.5	176.6	220.8	7706.14	1438.00	3688.0	176.6	.0	7.94	-64.00	.00	.00
10	134.5	182.6	226.8	7709.97	1438.00	3678.9	182.6	.0	8.21	-64.00	.00	.00
11	138.5	194.6	238.9	7716.83	1438.00	3660.7	194.6	.0	8.73	-64.00	.00	.00
12	142.5	206.4	250.8	7722.20	1438.00	3642.5	206.4	.0	9.25	-64.00	.00	.00
13	146.5	218.3	262.9	7727.47	1438.00	3624.3	218.3	.0	9.78	-64.00	.00	.00
14	150.5	230.1	274.9	7731.60	1438.00	3606.1	230.1	.0	10.30	-64.00	.00	.00
15	154.5	242.1	287.2	7735.79	1438.00	3587.9	242.1	.0	10.83	-64.00	.00	.00
16	158.5	254.1	299.4	7739.53	1438.00	3569.7	254.1	.0	11.36	-64.00	.00	.00
17	162.5	266.1	311.7	7742.91	1438.00	3551.5	266.1	.0	11.89	-64.00	.00	.00
18	166.5	278.1	324.1	7745.97	1438.00	3533.3	278.1	.0	12.42	-64.00	.00	.00
19	170.5	290.0	336.4	7748.76	1438.00	3515.1	290.0	.0	12.96	-64.00	.00	.00
20	174.5	302.0	348.8	7751.30	1438.00	3496.8	302.0	.0	13.49	-64.00	.00	.00
21	178.5	314.5	361.6	7754.40	1438.00	3478.6	314.5	.0	14.04	-64.00	.00	.00
22	182.5	326.5	374.0	7756.53	1438.00	3460.4	326.5	.0	14.57	-64.00	.00	.00
23	186.5	339.0	386.9	7759.20	1438.00	3442.2	339.0	.0	15.12	-64.00	.00	.00
24	190.5	351.0	399.3	7761.00	1438.00	3424.0	351.0	.0	15.66	-64.00	.00	.00
25	194.5	363.5	412.2	7763.33	1438.00	3405.8	363.5	.0	16.21	-64.00	.00	.00
26	198.4	376.0	425.1	7765.50	1438.00	3387.6	376.0	.0	16.76	-64.00	.00	.00
27	202.4	388.5	438.1	7767.54	1438.00	3369.3	388.5	.0	17.32	-64.00	.00	.00
28	206.4	401.0	451.0	7769.45	1438.00	3351.1	401.0	.0	17.87	-64.00	.00	.00
29	210.4	413.5	463.9	7771.25	1438.00	3332.9	413.5	.0	18.42	-64.00	.00	.00
30	214.4	425.9	476.9	7772.94	1438.00	3314.7	425.9	.0	18.98	-64.00	.00	.00
31	218.4	438.9	490.3	7775.07	1438.00	3296.5	438.9	.0	19.55	-64.00	.00	.00
32	222.4	451.4	503.3	7776.58	1438.00	3278.3	451.4	.0	20.11	-64.00	.00	.00
33	226.4	464.4	516.7	7778.50	1438.00	3260.0	464.4	.0	20.68	-64.00	.00	.00
34	230.4	476.9	529.7	7779.85	1438.00	3241.8	476.9	.0	21.24	-64.00	.00	.00
35	234.4	489.9	543.1	7781.60	1438.00	3223.6	489.9	.0	21.81	-64.00	.00	.00
36	238.4	502.9	556.5	7783.27	1438.00	3205.4	502.9	.0	22.39	-64.00	.00	.00
37	242.4	515.9	570.0	7784.86	1438.00	3187.1	515.9	.0	22.96	-64.00	.00	.00
38	246.4	528.9	583.5	7786.39	1438.00	3168.9	528.9	.0	23.54	-64.00	.00	.00
39	250.4	541.9	596.9	7787.85	1438.00	3150.7	541.9	.0	24.12	-64.00	.00	.00
40	254.4	554.9	610.4	7789.24	1438.00	3132.5	554.9	.0	24.69	-64.00	.00	.00
41	258.4	567.8	623.9	7790.59	1438.00	3114.2	567.8	.0	25.27	-64.00	.00	.00
42	262.4	581.8	638.3	7792.66	1438.00	3096.0	581.8	.0	25.89	-64.00	.00	.00
43	266.4	594.8	651.8	7793.88	1438.00	3077.8	594.8	.0	26.46	-64.00	.00	.00
44	270.4	607.8	665.2	7795.07	1438.00	3059.6	607.8	.0	27.04	-64.00	.00	.00
45	274.4	621.8	679.7	7796.93	1438.00	3041.3	621.8	.0	27.66	-64.00	.00	.00

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
46	278.4	634.8	693.2	7798.02	1438.00	3023.1	634.8	.0	28.24	-64.00	.00	.00
47	282.4	648.8	707.6	7799.77	1438.00	3004.9	648.8	.0	28.86	-64.00	.00	.00
48	286.4	661.8	721.1	7800.77	1438.00	2986.7	661.8	.0	29.43	-64.00	.00	.00
49	290.4	675.8	735.5	7802.42	1438.00	2968.4	675.8	.0	30.05	-64.00	.00	.00
50	294.4	689.8	749.9	7804.00	1438.00	2950.2	689.8	.0	30.67	-64.00	.00	.00
51	298.4	703.7	764.4	7805.49	1438.00	2932.0	703.7	.0	31.29	-64.00	.00	.00
52	302.4	716.7	777.9	7806.40	1438.00	2913.7	716.7	.0	31.87	-64.00	.00	.00
53	306.4	730.7	792.4	7807.85	1438.00	2895.5	730.7	.0	32.49	-64.00	.00	.00
54	310.4	744.7	806.8	7809.26	1438.00	2877.3	744.7	.0	33.11	-64.00	.00	.00
55	314.4	758.7	821.3	7810.62	1438.00	2859.0	758.7	.0	33.73	-64.00	.00	.00
56	318.4	772.7	835.7	7811.95	1438.00	2840.8	772.7	.0	34.35	-64.00	.00	.00
57	322.4	786.7	850.2	7813.24	1438.00	2822.6	786.7	.0	34.97	-64.00	.00	.00
58	326.4	800.7	864.6	7814.50	1438.00	2804.3	800.7	.0	35.59	-64.00	.00	.00
59	330.4	814.7	879.1	7815.72	1438.00	2786.1	814.7	.0	36.21	-64.00	.00	.00
60	334.4	829.7	894.5	7817.45	1438.00	2767.9	829.7	.0	36.88	-64.00	.00	.00
61	338.3	843.6	909.0	7818.60	1438.00	2749.6	843.6	.0	37.50	-64.00	.00	.00
62	342.3	857.6	923.4	7819.73	1438.00	2731.4	857.6	.0	38.12	-64.00	.00	.00
63	346.3	872.6	938.8	7821.34	1438.00	2712.0	872.6	.0	38.78	-64.00	.00	.00
64	350.3	886.6	953.3	7822.41	1438.00	2613.8	886.6	.0	39.40	-64.00	.00	.00
65	354.3	902.6	969.7	7824.42	1438.00	2515.6	902.6	.0	40.11	-64.00	.00	.00
66	358.3	917.6	985.1	7825.86	1438.00	2417.4	917.6	.0	40.77	-64.00	.00	.00
67	362.3	932.6	1000.5	7827.34	1438.00	2319.2	932.6	.0	41.44	-64.00	.00	.00
68	366.3	948.6	1016.8	7829.21	1438.00	2221.0	948.6	.0	42.15	-64.00	.00	.00
69	370.3	964.6	1033.2	7831.01	1438.00	2122.7	964.6	.0	42.85	-64.00	.00	.00
70	374.3	980.5	1049.6	7832.76	1438.00	2024.5	980.5	.0	43.56	-64.00	.00	.00
71	378.3	998.5	1067.8	7835.29	1438.00	1926.2	998.5	.0	44.35	-64.00	.00	.00
72	382.3	1014.5	1084.2	7836.97	1438.00	1827.9	1014.5	.0	45.06	-64.00	.00	.00
73	386.3	1032.5	1102.4	7839.39	1438.00	1729.6	1032.5	.0	45.85	-64.00	.00	.00
74	390.3	1050.5	1120.7	7841.69	1438.00	1631.3	1050.5	.0	46.64	-64.00	.00	.00
75	394.3	1067.5	1138.0	7843.60	1438.00	1532.9	1067.5	.0	47.39	-64.00	.00	.00
76	398.3	1085.5	1156.2	7845.81	1438.00	1434.6	1085.5	.0	48.19	-64.00	.00	.00
77	402.3	1103.5	1174.5	7847.95	1438.00	1336.2	1103.5	.0	48.98	-64.00	.00	.00
78	406.3	1123.4	1194.7	7850.77	1438.00	1237.8	1123.4	.0	49.86	-64.00	.00	.00
79	410.3	1141.4	1212.9	7852.77	1438.00	1139.4	1141.4	.0	50.65	-64.00	.00	.00
80	414.3	1161.4	1233.1	7855.43	1438.00	1041.0	1161.4	.0	51.53	-64.00	.00	.00
81	418.3	1181.4	1253.3	7858.00	1438.00	942.5	1181.4	.0	52.41	-64.00	.00	.00
82	422.3	1201.4	1273.4	7860.49	1438.00	844.1	1201.4	.0	53.29	-64.00	.00	.00
83	426.3	1221.4	1293.6	7862.91	1438.00	745.6	1221.4	.0	54.17	-64.00	.00	.00
84	430.3	1241.4	1313.8	7865.26	1438.00	647.0	1241.4	.0	55.05	-64.00	.00	.00
85	434.3	1263.3	1335.9	7868.18	1438.00	548.5	1263.3	.0	56.02	-64.00	.00	.00
86	438.3	1283.3	1356.1	7870.38	1438.00	449.9	1283.3	.0	56.90	-64.00	.00	.00
87	442.3	1305.3	1378.2	7873.13	1438.00	351.3	1305.3	.0	57.87	-64.00	.00	.00
88	446.3	1327.3	1400.3	7875.80	1438.00	252.7	1327.3	.0	58.83	-64.00	.00	.00
89	450.3	1349.3	1422.4	7878.39	1438.00	154.1	1349.3	.0	59.80	-64.00	.00	.00
90	454.3	1371.3	1444.6	7880.91	1438.00	92.0	1371.3	.0	60.77	-64.00	.00	.00
91	458.3	1393.3	1466.7	7883.36	1438.00	73.5	1393.3	.0	61.74	-64.00	.00	.00
92	462.3	1415.2	1488.8	7885.74	1438.00	55.0	1415.2	.0	62.71	-64.00	.00	.00
93	466.3	1439.2	1512.9	7888.60	1438.00	36.5	1439.2	.0	63.76	-64.00	.00	.00
94	470.3	1461.2	1535.0	7890.85	1438.00	18.0	1461.2	.0	64.73	-64.00	.00	.00
95	474.3	1483.2	1557.2	7893.04	1438.00	.0	1483.2	.1	65.70	-64.00	.00	.00
96	478.2	1505.2	1579.3	7895.18	1438.00	.0	1505.2	4.1	66.67	-64.00	.00	.00
97	482.2	1529.2	1603.4	7897.78	1438.00	.0	1529.2	8.1	67.73	-64.00	.00	.00
98	486.2	1551.1	1625.6	7899.81	1438.00	.0	1551.1	12.1	68.70	-64.00	.00	.00
99	490.2	1573.1	1647.7	7901.80	1438.00	.0	1573.1	16.1	69.68	-64.00	.00	.00

VESSEL DISP. 13 (FT)	14 (% WD)	15	RESTORING FORCE ON VESSEL 16 (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)
.0	.0		0.	.00	0.	4710.	0.	750.	2950.	690.
3.0	.2		236.	78.73	0.	4721.	11644.	784.	2906.	723.
6.0	.4		478.	80.45	1.	4722.	23367.	813.	2869.	751.
9.0	.6		719.	80.44	0.	4724.	35087.	846.	2828.	782.
12.0	.8		968.	82.93	1.	4730.	47339.	880.	2786.	815.
15.0	1.0		1195.	75.86	0.	4737.	58281.	910.	2748.	845.
18.0	1.2		1435.	80.06	0.	4740.	69854.	943.	2685.	877.
21.0	1.4		1666.	76.74	0.	4739.	80657.	972.	2504.	904.
24.0	1.6		1880.	71.30	0.	4743.	91104.	1002.	2308.	934.
27.0	1.8		2096.	72.32	0.	4745.	100983.	1028.	2151.	960.
30.0	2.0		2303.	68.84	0.	4744.	110389.	1054.	1998.	985.
33.0	2.2		2499.	65.48	0.	4744.	118901.	1078.	1863.	1009.
36.0	2.4		2687.	62.60	0.	4737.	127320.	1102.	1732.	1032.
39.0	2.6		2871.	61.35	-1.	4736.	135293.	1126.	1602.	1056.
42.0	2.8		3054.	60.82	0.	4738.	143200.	1151.	1461.	1081.
45.0	3.0		3232.	59.30	0.	4735.	150799.	1176.	1329.	1105.
48.0	3.2		3401.	56.59	0.	4735.	157903.	1197.	1223.	1126.
51.0	3.4		3576.	58.06	0.	4736.	165146.	1223.	1090.	1151.
54.0	3.6		3735.	53.24	0.	4733.	171715.	1245.	982.	1173.
57.0	3.8		3893.	52.47	0.	4734.	178027.	1269.	867.	1197.
60.0	4.0		4059.	55.58	0.	4735.	184753.	1293.	748.	1221.
63.0	4.2		4209.	49.99	0.	4737.	190534.	1318.	628.	1245.
66.0	4.4		4358.	49.59	0.	4739.	196284.	1341.	523.	1268.
69.0	4.6		4512.	51.36	0.	4745.	202194.	1367.	401.	1294.
72.0	4.8		4661.	49.72	0.	4751.	207692.	1391.	296.	1318.
75.0	5.0		4808.	48.75	0.	4757.	213004.	1415.	183.	1342.
78.0	5.2		4955.	49.16	0.	4764.	218280.	1441.	99.	1368.
81.0	5.4		5103.	49.18	-1.	4770.	223519.	1468.	73.	1394.
84.0	5.6		5242.	46.54	0.	4777.	228360.	1494.	51.	1421.
87.0	5.8		5384.	47.33	0.	4786.	233103.	1520.	31.	1446.
90.0	6.0		5533.	49.68	-1.	4797.	238218.	1550.	5.	1476.
93.0	6.2		5679.	48.59	0.	4809.	243254.	1580.	0.	1506.
96.0	6.4		5819.	46.49	0.	4820.	247862.	1608.	0.	1533.
99.0	6.6		5967.	49.42	0.	4833.	252789.	1640.	0.	1566.

LINE LOAD (KIPS)

LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12					
750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750
779	784	784	779	767	755	745	735	728	724	724	728	735	745	755	767	
804	813	813	804	788	761	739	720	701	694	694	701	720	739	761	788	
831	846	846	831	804	768	734	701	676	666	666	676	701	734	768	804	
859	880	880	859	822	777	730	685	653	635	635	653	685	730	777	822	
886	910	910	886	840	784	724	670	630	611	611	630	670	724	784	840	
914	943	943	914	859	790	718	653	608	583	583	608	653	718	790	859	
941	972	972	941	879	795	710	636	585	558	558	585	636	710	795	879	
966	1002	1002	966	894	801	704	625	563	535	535	563	625	704	801	894	
992	1028	1028	992	915	807	699	608	543	510	510	543	608	699	807	915	
1015	1054	1054	1015	933	814	695	593	522	487	487	522	593	695	814	933	
1038	1078	1078	1038	953	820	688	578	503	467	467	503	578	688	820	953	
1058	1102	1102	1058	967	826	681	563	484	446	446	484	563	681	826	967	
1079	1126	1126	1079	984	833	676	549	467	427	427	467	549	676	833	984	
1099	1151	1151	1099	1001	840	672	537	449	409	409	449	537	672	840	1001	
1119	1176	1176	1119	1016	846	668	522	432	392	392	432	522	668	846	1016	
1141	1197	1197	1141	1031	853	662	509	417	376	376	417	509	662	853	1031	
1162	1223	1223	1162	1047	860	656	496	403	360	360	403	496	656	860	1047	
1182	1245	1245	1182	1059	867	649	484	387	348	348	387	484	649	867	1059	
1201	1269	1269	1201	1073	875	643	473	375	333	333	375	473	643	875	1073	
1222	1293	1293	1222	1088	881	637	461	361	321	321	361	461	637	881	1088	
1241	1318	1318	1241	1101	886	633	449	350	309	309	350	449	633	886	1101	
1261	1341	1341	1261	1114	892	629	438	339	299	299	339	438	629	892	1114	
1282	1367	1367	1282	1128	898	626	427	327	289	289	327	427	626	898	1128	
1303	1391	1391	1303	1143	906	621	418	317	280	280	317	418	621	906	1143	
1323	1415	1415	1323	1157	914	615	408	307	272	272	307	408	615	914	1157	
1343	1441	1441	1343	1172	922	610	399	299	263	263	299	399	610	922	1172	
1365	1468	1468	1365	1184	928	604	388	290	256	256	290	388	604	928	1184	
1385	1494	1494	1385	1197	934	599	379	283	249	249	283	379	599	934	1197	
1406	1520	1520	1406	1212	940	594	371	276	243	243	276	371	594	940	1212	
1428	1550	1550	1428	1225	949	589	361	268	237	237	268	361	589	949	1225	
1450	1580	1580	1450	1238	956	584	354	261	231	231	261	354	584	956	1238	
1473	1608	1608	1473	1251	961	579	348	256	227	227	256	348	579	961	1251	
1495	1640	1640	1495	1265	966	574	340	250	222	222	250	340	574	966	1265	

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT 7904. FT

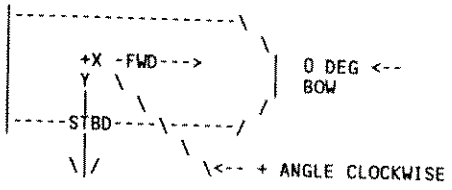
STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE ST15161 tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16																		
.0	.0	1.	.00	-2.	4401.	147788.	863.	2807.	799.	863	0	846	815	804	754	708	671	672	658	658	671	726	753	789	814
3.0	.2	211.	70.10	1634.	4394.	156530.	893.	2770.	828.	893	0	875	833	811	749	695	646	641	630	632	655	719	758	805	841
6.0	.4	413.	67.47	2569.	4391.	164776.	928.	2732.	862.	928	0	900	852	817	744	677	626	618	603	611	636	711	764	822	869
9.0	.6	618.	68.38	4400.	4388.	173426.	960.	2572.	893.	960	0	930	873	825	740	665	603	590	576	587	625	704	771	839	893
12.0	.8	821.	67.36	5807.	4383.	181584.	987.	2404.	920.	987	0	959	890	833	736	647	581	564	551	565	607	698	778	857	924
15.0	1.0	1010.	63.10	7214.	4379.	189337.	1015.	2233.	947.	1015	0	982	911	841	732	633	560	541	527	544	590	692	783	875	950
18.0	1.2	1192.	60.86	8824.	4372.	196763.	1042.	2070.	973.	1042	0	1007	929	846	727	620	540	515	504	524	576	686	790	892	973
21.0	1.4	1373.	60.13	10784.	4365.	203682.	1064.	1945.	995.	1064	0	1030	949	854	722	604	518	493	482	504	561	678	795	911	999
24.0	1.6	1544.	57.07	11435.	4359.	210497.	1091.	1793.	1021.	1091	0	1053	966	863	717	590	501	473	460	484	546	672	799	929	1020
27.0	1.8	1709.	54.87	12852.	4351.	216795.	1112.	1676.	1042.	1112	0	1073	984	872	711	576	483	452	440	466	533	667	803	945	1043
30.0	2.0	1873.	54.91	13448.	4344.	223292.	1138.	1533.	1068.	1138	0	1095	1001	879	705	562	465	432	421	448	517	661	809	962	1062
33.0	2.2	2027.	51.17	14398.	4337.	228875.	1163.	1401.	1092.	1163	0	1114	1017	885	701	549	448	414	404	431	505	653	815	976	1084
36.0	2.4	2180.	51.06	15376.	4330.	234753.	1185.	1285.	1114.	1185	0	1136	1033	892	698	537	432	398	385	416	490	646	820	994	1102
39.0	2.6	2328.	49.35	16464.	4326.	240198.	1209.	1158.	1138.	1209	0	1158	1049	899	694	524	417	380	371	401	479	639	826	1009	1122
42.0	2.8	2474.	48.56	16915.	4320.	245590.	1232.	1045.	1161.	1232	0	1179	1062	908	688	511	403	365	355	385	466	634	831	1023	1144
45.0	3.0	2612.	46.04	16950.	4317.	250545.	1255.	934.	1183.	1255	0	1198	1078	918	683	500	388	352	342	372	453	629	836	1037	1164
48.0	3.2	2752.	46.62	17464.	4314.	255768.	1279.	818.	1207.	1279	0	1220	1093	926	678	487	376	338	329	358	441	624	841	1051	1183
51.0	3.4	2882.	43.49	17734.	4310.	260286.	1304.	696.	1231.	1304	0	1239	1106	933	674	477	362	325	316	348	430	618	847	1063	1202
54.0	3.6	3013.	43.55	18631.	4308.	264908.	1327.	590.	1254.	1327	0	1260	1120	940	671	465	352	313	305	336	420	611	853	1077	1223
57.0	3.8	3143.	43.38	18915.	4308.	269477.	1352.	470.	1279.	1352	0	1280	1135	949	667	454	340	302	295	325	410	605	860	1091	1241
60.0	4.0	3269.	41.97	19361.	4308.	273701.	1376.	361.	1303.	1376	0	1302	1150	956	662	443	329	292	285	314	400	599	866	1103	1261
63.0	4.2	3392.	41.18	19942.	4307.	277905.	1400.	254.	1327.	1400	0	1323	1165	963	658	433	319	283	277	305	388	593	872	1116	1281
66.0	4.4	3514.	40.52	20867.	4307.	281925.	1425.	145.	1352.	1425	0	1344	1180	969	653	423	309	275	268	296	379	586	877	1129	1301
69.0	4.6	3635.	40.27	21442.	4309.	285896.	1451.	84.	1377.	1451	0	1366	1192	976	648	414	301	266	260	287	370	580	882	1143	1321
72.0	4.8	3753.	39.40	21879.	4312.	289813.	1478.	64.	1404.	1478	0	1387	1208	984	643	406	292	259	253	280	360	574	886	1156	1340
75.0	5.0	3870.	38.92	22820.	4316.	293446.	1503.	44.	1429.	1503	0	1408	1223	991	638	396	285	252	247	272	353	568	891	1170	1362
78.0	5.2	3985.	38.45	23132.	4319.	297075.	1530.	22.	1456.	1530	0	1430	1236	999	635	386	278	246	240	265	346	562	895	1182	1382
81.0	5.4	4101.	38.77	23303.	4324.	300872.	1560.	0.	1486.	1560	0	1453	1250	1006	632	378	271	239	234	259	337	557	902	1193	1402
84.0	5.6	4218.	38.81	23750.	4331.	304581.	1589.	0.	1515.	1589	0	1477	1264	1012	629	371	264	234	229	253	329	551	908	1207	1423
87.0	5.8	4332.	38.16	24252.	4338.	308152.	1618.	0.	1543.	1618	0	1500	1280	1019	627	362	258	229	225	247	322	545	914	1220	1444

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT 7903. FT

STARTING DISPLACEMENTS : SURGE(FT) = -8.297 SWAY(FT) = -5.578 YAW(DEG) = .610

DEEPWATER, ARAMID MOORING LINE JIP
CASE C3A12T

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT	-	.00
LINE ATTACHMENT W.R.T. WATER LINE	-	-62.0 FT
ALLOWABLE LINE LENGTH ON BOTTOM	-	90.0 FT
DIRECTION OF VESSEL TRANSLATION	-	45.0 DEG

CATENARY OPTIMIZATION - NO

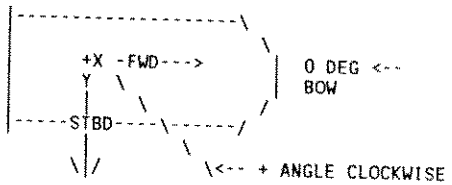
INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO



C 3 A12T

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	22.5	45.0	67.5	112.5	135.0	157.5	-157.5	-135.0	-112.5	-67.5	-45.0	-22.5
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	950.0	950.0	950.0	950.0	950.0	950.0	950.0	950.0	950.0	950.0	950.0	950.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	3000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	3000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.250"
LINE LENGTH (FT)	500.0
WEIGHT IN WATER (LB/FT)	49.88
LINE B.S. (KIPS)	3165.0
AREA (SQ IN)	21.65
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	ARAMID
LINE SIZE (IN)	5.625"
LINE LENGTH (FT)	5200.0
WEIGHT IN WATER (LB/FT)	2.05
LINE B.S. (KIPS)	3160.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	126000.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.250"
LINE LENGTH (FT)	1200.0
WEIGHT IN WATER (LB/FT)	49.88
LINE B.S. (KIPS)	3165.0
AREA (SQ IN)	21.65
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.625"
LINE LENGTH (FT)	1700.0
WEIGHT IN WATER (LB/FT)	261.51
LINE B.S. (KIPS)	3154.0
AREA (SQ IN)	24.85
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.250"
LINE LENGTH (FT)	1800.0
WEIGHT IN WATER (LB/FT)	49.88
LINE B.S. (KIPS)	3165.0
AREA (SQ IN)	21.65
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.625"
LINE LENGTH (FT)	200.0
WEIGHT IN WATER (LB/FT)	261.51
LINE B.S. (KIPS)	3154.0
AREA (SQ IN)	24.85
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	50.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
1	29.9	.0	29.9	7662.00	2938.00	7662.0	.0	.0				
2	35.0	7.4	35.7	9388.73	2938.00	5215.6	7.4	.0	.57	.00	.00	.00
3	40.0	17.0	43.4	9668.7	2938.00	4812.7	17.0	.0	1.22	.00	.00	.00
4	45.0	26.1	52.0	9738.62	2938.00	4712.3	26.1	.0	1.84	.00	.00	.00
5	50.0	35.3	61.2	9773.96	2938.00	4611.9	35.3	.0	2.47	.00	.00	.00
6	55.0	44.6	70.8	9797.45	2938.00	4511.5	44.6	.0	3.11	.00	.00	.00
7	60.0	54.0	80.7	9815.92	2938.00	4411.1	54.0	.0	3.76	.00	.00	.00
8	65.0	63.6	91.0	9831.29	2938.00	4310.7	63.6	.0	4.41	.00	.00	.00
9	70.1	73.4	101.5	9845.11	2938.00	4210.3	73.4	.0	5.08	.00	.00	.00
10	75.1	83.4	112.2	9857.52	2938.00	4109.8	83.4	.0	5.76	.00	.00	.00
11	85.1	103.9	134.3	9880.17	2938.00	3909.0	103.9	.0	7.16	.00	.00	.00
12	95.1	125.2	157.2	9900.80	2938.00	3708.0	125.2	.0	8.60	.00	.00	.00
13	105.2	147.0	180.7	9917.62	2938.00	3664.8	147.0	.0	10.08	.00	.00	.00
14	115.2	168.9	204.4	9929.75	2938.00	3626.7	168.9	.0	11.56	.00	.00	.00
15	125.2	190.8	228.3	9939.34	2938.00	3588.7	190.8	.0	13.05	.00	.00	.00
16	135.3	213.0	252.3	9947.51	2938.00	3550.6	213.0	.0	14.54	.00	.00	.00
17	145.3	235.2	276.5	9954.55	2938.00	3512.5	235.2	.0	16.05	.00	.00	.00
18	155.3	257.6	300.8	9960.97	2938.00	3474.4	257.6	.0	17.57	.00	.00	.00
19	165.4	280.1	325.3	9966.64	2938.00	3436.3	280.1	.0	19.09	.00	.00	.00
20	175.4	302.9	350.0	9972.29	2938.00	3398.2	302.9	.0	20.63	.00	.00	.00
21	185.4	325.7	374.8	9977.44	2938.00	3360.1	325.7	.0	22.17	.00	.00	.00
22	195.4	348.7	399.7	9982.68	2938.00	3322.0	348.7	.0	23.73	.00	.00	.00
23	205.5	371.8	424.8	9987.50	2938.00	3283.9	371.8	.0	25.29	.00	.00	.00
24	215.5	395.1	450.1	9992.22	2938.00	3245.8	395.1	.0	26.86	.00	.00	.00
25	225.5	418.5	475.4	9996.86	2938.00	3207.7	418.5	.0	28.44	.00	.00	.00
26	235.6	442.2	501.0	10001.63	2938.00	3169.6	442.2	.0	30.04	.00	.00	.00
27	245.6	465.9	526.6	10005.94	2938.00	3131.4	465.9	.0	31.64	.00	.00	.00
28	255.6	489.8	552.5	10010.59	2938.00	3093.3	489.8	.0	33.25	.00	.00	.00
29	265.7	513.8	578.4	10014.81	2938.00	3055.2	513.8	.0	34.87	.00	.00	.00
30	275.7	538.1	604.6	10019.35	2938.00	3017.1	538.1	.0	36.51	.00	.00	.00
31	285.7	562.5	630.9	10023.70	2938.00	2978.9	562.5	.0	38.15	.00	.00	.00
32	295.8	587.1	657.4	10028.14	2938.00	2940.8	587.1	.0	39.80	.00	.00	.00
33	305.8	611.7	683.9	10032.27	2938.00	2902.7	611.7	.0	41.46	.00	.00	.00
34	315.8	636.6	710.7	10036.65	2938.00	2864.5	636.6	.0	43.14	.00	.00	.00
35	325.9	661.5	737.4	10040.76	2938.00	2826.4	661.5	.0	44.82	.00	.00	.00
36	335.9	686.8	764.5	10045.10	2938.00	2788.3	686.8	.0	46.51	.00	.00	.00
37	345.9	712.0	791.6	10049.17	2938.00	2750.1	712.0	.0	48.21	.00	.00	.00
38	355.9	737.6	819.0	10053.45	2938.00	2712.0	737.6	.0	49.93	.00	.00	.00
39	366.0	763.1	846.3	10057.51	2938.00	2673.8	763.1	.0	51.64	.00	.00	.00
40	376.0	789.0	874.0	10061.75	2938.00	2635.6	789.0	.0	53.38	.00	.00	.00
41	386.0	815.0	901.8	10065.98	2938.00	2597.5	815.0	.0	55.13	.00	.00	.00
42	396.1	841.0	929.6	10070.02	2938.00	2559.3	841.0	.0	56.88	.00	.00	.00
43	406.1	867.3	957.7	10074.23	2938.00	2521.1	867.3	.0	58.65	.00	.00	.00
44	416.1	893.7	985.8	10078.21	2938.00	2483.0	893.7	.0	60.41	.00	.00	.00
45	426.2	920.3	1014.2	10082.38	2938.00	2444.8	920.3	.0	62.20	.00	.00	.00

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
46	436.2	947.0	1042.6	10086.38	2938.00	2406.6	947.0	.0	63.99	.00	.00	.00
47	446.2	973.9	1071.3	10090.52	2938.00	2368.4	973.9	.0	65.80	.00	.00	.00
48	456.3	1000.9	1100.0	10094.51	2938.00	2330.2	1000.9	.0	67.61	.00	.00	.00
49	466.3	1028.1	1128.9	10098.64	2938.00	2292.0	1028.1	.0	69.44	.00	.00	.00
50	476.3	1055.4	1157.9	10102.59	2938.00	2253.8	1055.4	.0	71.27	.00	.00	.00
51	486.3	1083.0	1187.2	10106.72	2938.00	2215.6	1083.0	.0	73.12	.00	.00	.00
52	496.4	1110.6	1216.5	10110.66	2938.00	2177.4	1110.6	.0	74.97	.00	.00	.00
53	506.4	1138.5	1246.0	10114.76	2938.00	2139.2	1138.5	.0	76.84	.00	.00	.00
54	516.4	1166.4	1275.6	10118.70	2938.00	2101.0	1166.4	.0	78.71	.00	.00	.00
55	526.5	1194.6	1305.5	10122.77	2938.00	2062.8	1194.6	.0	80.60	.00	.00	.00
56	536.5	1222.8	1335.3	10126.72	2938.00	2024.6	1222.8	.0	82.49	.00	.00	.00
57	546.5	1251.3	1365.5	10130.78	2938.00	1880.0	1251.3	.0	84.40	.00	.00	.00
58	556.6	1280.8	1396.5	10135.49	2938.00	1677.9	1280.8	.0	86.37	.00	.00	.00
59	566.6	1310.9	1428.1	10140.49	2938.00	1475.8	1310.9	.0	88.38	.00	.00	.00
60	576.6	1341.9	1460.6	10146.08	2938.00	1273.6	1341.9	.0	90.45	.00	.00	.00
61	586.7	1373.6	1493.6	10151.87	2938.00	1071.4	1373.6	.0	92.55	.00	.00	.00
62	596.7	1406.2	1527.6	10158.13	2938.00	869.1	1406.2	.0	94.72	.00	.00	.00
63	606.7	1439.4	1562.1	10164.60	2938.00	666.8	1439.4	.0	96.92	.00	.00	.00
64	616.8	1473.6	1597.4	10171.43	2938.00	464.3	1473.6	.0	99.18	.00	.00	.00
65	626.8	1508.7	1633.7	10178.60	2938.00	261.9	1508.7	.0	101.50	.00	.00	.00
66	636.8	1544.1	1670.3	10185.67	2938.00	173.9	1544.1	.0	103.84	.00	.00	.00
67	646.8	1579.9	1707.1	10192.62	2938.00	135.4	1579.9	.0	106.21	.00	.00	.00
68	656.9	1615.9	1744.3	10199.53	2938.00	96.9	1615.9	.0	108.59	.00	.00	.00
69	666.9	1652.0	1781.5	10206.08	2938.00	58.4	1652.0	.0	110.97	.00	.00	.00
70	676.9	1688.0	1818.7	10212.46	2938.00	19.9	1688.0	.0	113.36	.00	.00	.00
71	687.0	1724.4	1856.2	10218.76	2938.00	.0	1724.4	-45.1	115.77	.00	.00	.00
72	697.0	1760.7	1893.7	10224.81	2938.00	.0	1760.7	-35.1	118.18	.00	.00	.00
73	707.0	1797.1	1931.2	10230.65	2938.00	.0	1797.1	-25.1	120.59	.00	.00	.00
74	717.1	1833.5	1968.7	10236.32	2938.00	.0	1833.5	-15.0	123.01	.00	.00	.00
75	727.1	1869.5	2005.9	10241.63	2938.00	.0	1869.5	-5.0	125.41	.00	.00	.00
76	737.1	1905.9	2043.4	10246.96	2938.00	.0	1905.9	5.0	127.82	.00	.00	.00
77	747.2	1942.2	2081.0	10252.13	2938.00	.0	1942.2	15.0	130.24	.00	.00	.00
78	757.2	1978.6	2118.5	10257.18	2938.00	.0	1978.6	25.1	132.66	.00	.00	.00
79	767.2	2014.9	2156.1	10262.04	2938.00	.0	2014.9	35.1	135.09	.00	.00	.00
80	777.2	2051.0	2193.3	10266.67	2938.00	.0	2051.0	45.1	137.49	.00	.00	.00

VESSEL DISP.		RESTORING FORCE ON VESSEL	INCREMENT STIFFNESS	YAW MOMENT	VERTICAL FORCE	OVERTURN MOMENT	MAX.LINE LOAD	LINE ON BOTTOM	HOR.FORCE ON ANCHOR	LINE LOAD (KIPS) LINE NUMBER											
(FT)	(% WD)	(KIPS)	(KIPS/FT)	(FT-KIP)	(KIPS)	(FT-KIP)	(KIPS)	(FT)	(KIPS)	1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	4840.	0.	950.	2532.	860.	950	950	950	950	950	950	950	950	950	950	950	950
4.5	.2	175.	38.94	-1.	4842.	11712.	981.	2489.	890.	979	981	979	962	950	939	922	920	922	939	950	962
9.0	.3	350.	38.92	0.	4842.	23387.	1012.	2448.	918.	1007	1012	1007	974	950	927	894	889	894	927	950	974
13.5	.4	525.	38.77	0.	4844.	34978.	1044.	2405.	948.	1037	1044	1037	986	950	915	867	860	867	915	950	986
18.0	.6	699.	38.68	0.	4844.	46561.	1075.	2363.	978.	1066	1075	1066	998	950	903	839	830	839	903	950	998
22.5	.8	875.	39.11	0.	4845.	58339.	1107.	2320.	1008.	1095	1107	1095	1010	950	892	812	801	812	892	950	1010
27.0	.9	1049.	38.62	0.	4846.	69910.	1140.	2278.	1038.	1125	1140	1125	1022	950	881	785	771	785	881	950	1022
31.5	1.0	1225.	39.07	0.	4848.	81650.	1172.	2235.	1069.	1155	1172	1155	1034	950	870	758	743	758	870	950	1034
36.0	1.2	1398.	38.57	0.	4850.	93193.	1205.	2193.	1100.	1185	1205	1185	1046	950	858	731	713	731	858	950	1046
40.5	1.4	1573.	38.92	1.	4852.	104886.	1237.	2150.	1130.	1215	1237	1215	1058	951	847	705	686	705	847	951	1058
45.0	1.5	1747.	38.61	0.	4854.	116421.	1271.	2107.	1162.	1245	1271	1245	1070	951	836	679	657	679	836	951	1070
49.5	1.6	1922.	38.99	0.	4857.	128081.	1304.	2065.	1193.	1277	1304	1277	1083	951	824	653	630	653	824	951	1083
54.0	1.8	2095.	38.34	0.	4860.	139483.	1338.	2015.	1225.	1307	1338	1307	1095	951	813	628	603	628	813	951	1095
58.5	2.0	2267.	38.25	0.	4864.	150899.	1371.	1847.	1257.	1339	1371	1339	1108	951	802	603	577	603	802	951	1108
63.0	2.1	2434.	37.01	0.	4865.	161849.	1400.	1653.	1284.	1369	1400	1369	1120	951	791	579	550	579	791	951	1120
67.5	2.3	2595.	35.78	0.	4863.	172309.	1429.	1472.	1311.	1396	1429	1396	1132	951	780	554	525	554	780	952	1132
72.0	2.4	2750.	34.54	1.	4860.	182259.	1455.	1309.	1337.	1423	1455	1423	1145	952	769	530	498	530	769	952	1145
76.5	2.5	2902.	33.71	0.	4856.	191938.	1481.	1150.	1361.	1448	1481	1448	1158	952	758	506	474	506	758	952	1158
81.0	2.7	3049.	32.61	0.	4851.	201219.	1506.	998.	1385.	1471	1506	1471	1170	952	747	483	449	483	747	952	1170
85.5	2.8	3193.	32.10	0.	4846.	210301.	1530.	855.	1409.	1495	1530	1495	1183	952	737	461	425	461	737	952	1183
90.0	3.0	3336.	31.74	0.	4840.	219199.	1554.	713.	1432.	1518	1554	1518	1196	953	726	438	402	438	726	953	1196
94.5	3.2	3475.	31.01	0.	4834.	227800.	1578.	577.	1454.	1540	1578	1540	1209	953	715	416	380	416	715	953	1209
99.0	3.3	3612.	30.43	1.	4829.	236202.	1601.	444.	1477.	1562	1601	1562	1222	953	704	395	358	395	704	953	1222
103.5	3.5	3744.	29.32	0.	4825.	244191.	1623.	312.	1499.	1584	1623	1584	1234	954	694	375	338	375	694	954	1234
108.0	3.6	3875.	29.17	0.	4820.	252113.	1646.	222.	1521.	1605	1646	1605	1247	954	684	355	318	355	684	954	1247
112.5	3.8	4005.	28.73	1.	4816.	259779.	1670.	175.	1544.	1626	1670	1626	1260	954	673	336	299	336	673	954	1260
117.0	3.9	4132.	28.28	1.	4814.	267236.	1694.	147.	1567.	1647	1694	1647	1274	955	662	318	282	318	662	955	1274
121.5	4.1	4258.	28.04	0.	4812.	274630.	1718.	125.	1590.	1669	1718	1669	1287	955	652	301	266	301	652	955	1287
126.0	4.2	4381.	27.33	0.	4812.	281722.	1742.	99.	1614.	1691	1742	1691	1300	955	642	285	251	285	642	955	1300
130.5	4.3	4503.	26.97	0.	4815.	288617.	1767.	73.	1638.	1713	1767	1713	1313	956	632	270	237	270	632	956	1313
135.0	4.5	4623.	26.68	0.	4819.	295341.	1793.	45.	1663.	1736	1793	1736	1326	956	622	255	225	255	622	956	1326
139.5	4.7	4742.	26.45	1.	4824.	301914.	1819.	19.	1689.	1759	1819	1759	1340	956	612	243	213	243	612	956	1340
144.0	4.8	4859.	26.15	0.	4831.	308330.	1846.	3.	1715.	1783	1846	1783	1353	957	602	231	203	231	602	957	1353
148.5	4.9	4975.	25.81	0.	4840.	314612.	1873.	0.	1741.	1807	1873	1807	1366	957	592	220	194	220	592	957	1366
153.0	5.1	5090.	25.46	0.	4849.	320755.	1902.	0.	1769.	1831	1902	1831	1378	958	583	209	185	209	583	958	1378
157.5	5.3	5204.	25.26	0.	4860.	326761.	1931.	0.	1797.	1856	1931	1856	1390	958	573	200	177	200	573	958	1390
162.0	5.4	5317.	25.22	0.	4871.	332679.	1960.	0.	1825.	1882	1960	1882	1401	959	562	192	171	192	562	959	1401
166.5	5.6	5431.	25.36	0.	4884.	338579.	1991.	0.	1855.	1908	1991	1908	1412	959	552	184	164	184	552	959	1412
171.0	5.7	5545.	25.19	1.	4899.	344409.	2023.	0.	1886.	1935	2023	1935	1424	960	543	177	159	177	543	960	1424
175.5	5.8	5658.	25.13	0.	4915.	350191.	2055.	0.	1917.	1963	2055	1963	1434	960	534	171	153	171	534	960	1434
180.0	6.0	5773.	25.54	0.	4931.	356067.	2088.	0.	1949.	1992	2088	1992	1445	961	525	165	148	165	525	961	1445
184.5	6.2	5888.	25.72	0.	4948.	361932.	2122.	0.	1982.	2021	2122	2021	1455	962	515	160	143	160	515	962	1455
189.0	6.3	6005.	25.96	0.	4966.	367822.	2156.	0.	2015.	2051	2156	2051	1465	962	505	155	138	155	505	962	1465
193.5	6.4	6124.	26.40	0.	4985.	373847.	2193.	0.	2050.	2081	2193	2081	1476	963	496	150	134	150	496	963	1476

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT10271. FT

STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE C3A12T

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT	-	.00
LINE ATTACHMENT W.R.T. WATER LINE	-	-62.0 FT
ALLOWABLE LINE LENGTH ON BOTTOM	-	90.0 FT
DIRECTION OF VESSEL TRANSLATION	-	22.5 DEG

CATENARY OPTIMIZATION - NO

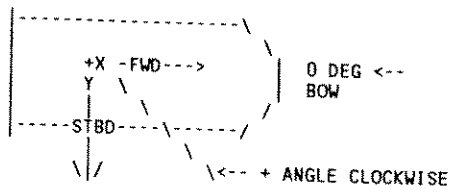
INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO



VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	-1.	.00	0.	4377.	155819.	1122.	2301.	1022.	1122	0	1122	1021	950	882	787	773	787	882	950	1021
4.5	.2	148.	33.10	62.	4368.	164341.	1155.	2258.	1053.	1155	0	1147	1023	941	862	757	746	764	880	960	1042
9.0	.3	295.	32.55	121.	4359.	172654.	1187.	2216.	1083.	1187	0	1171	1025	931	843	729	719	743	878	971	1063
13.5	.4	443.	32.98	69.	4351.	181054.	1220.	2172.	1114.	1220	0	1196	1027	921	823	700	692	722	876	981	1084
18.0	.6	590.	32.72	166.	4342.	189442.	1253.	2130.	1145.	1253	0	1221	1029	911	803	672	665	700	875	991	1105
22.5	.8	736.	32.45	155.	4334.	197720.	1287.	2087.	1177.	1287	0	1245	1031	901	784	644	639	680	873	1001	1126
27.0	.9	883.	32.55	121.	4326.	206105.	1320.	2050.	1208.	1320	0	1271	1034	892	765	617	613	658	871	1011	1148
31.5	1.0	1027.	31.93	147.	4320.	214337.	1354.	1944.	1241.	1354	0	1296	1037	883	747	591	588	637	869	1021	1169
36.0	1.2	1169.	31.72	375.	4311.	222441.	1385.	1756.	1270.	1385	0	1322	1039	874	728	564	563	617	867	1032	1191
40.5	1.4	1309.	31.08	783.	4303.	230291.	1414.	1566.	1297.	1414	0	1347	1041	864	708	538	538	597	865	1042	1213
45.0	1.5	1445.	30.17	1266.	4293.	237974.	1441.	1393.	1323.	1441	0	1372	1044	855	691	512	513	577	863	1052	1234
49.5	1.6	1578.	29.63	1550.	4281.	245409.	1467.	1233.	1348.	1467	0	1395	1046	846	672	487	489	556	861	1062	1256
54.0	1.8	1708.	28.87	1885.	4271.	252559.	1493.	1077.	1373.	1493	0	1417	1050	838	654	462	466	536	859	1071	1278
58.5	2.0	1836.	28.41	2248.	4259.	259655.	1517.	930.	1396.	1517	0	1438	1053	829	637	438	442	516	856	1081	1299
63.0	2.1	1962.	28.08	2537.	4247.	266612.	1541.	787.	1420.	1541	0	1458	1056	820	620	414	419	496	854	1091	1321
67.5	2.3	2085.	27.27	2880.	4236.	273387.	1565.	648.	1443.	1565	0	1479	1060	813	603	391	397	477	850	1100	1342
72.0	2.4	2204.	26.52	3151.	4226.	279847.	1589.	514.	1465.	1589	0	1499	1063	804	587	370	376	458	848	1110	1364
76.5	2.5	2322.	26.13	3257.	4214.	286226.	1612.	379.	1487.	1612	0	1518	1067	797	570	349	355	439	845	1119	1383
81.0	2.7	2436.	25.32	3174.	4202.	292276.	1634.	260.	1509.	1634	0	1537	1071	789	553	329	336	421	842	1128	1401
85.5	2.8	2548.	24.98	3153.	4191.	298308.	1657.	196.	1532.	1657	0	1556	1075	781	537	309	317	402	839	1138	1420
90.0	3.0	2658.	24.42	3014.	4181.	304109.	1681.	160.	1555.	1681	0	1574	1078	772	521	291	299	385	836	1147	1437
94.5	3.2	2765.	23.67	2636.	4171.	309631.	1705.	137.	1578.	1705	0	1593	1083	765	505	274	282	368	832	1156	1453
99.0	3.3	2869.	23.15	2237.	4162.	314961.	1729.	113.	1601.	1729	0	1611	1086	757	489	259	266	352	830	1166	1470
103.5	3.5	2970.	22.41	1813.	4156.	320150.	1754.	87.	1625.	1754	0	1629	1091	750	475	244	252	336	826	1175	1486
108.0	3.6	3069.	22.09	1230.	4150.	325159.	1779.	61.	1650.	1779	0	1647	1095	742	460	231	239	321	823	1184	1502
112.5	3.8	3167.	21.77	550.	4145.	330053.	1806.	32.	1675.	1806	0	1666	1100	735	445	219	226	305	820	1193	1517
117.0	3.9	3263.	21.32	-115.	4141.	334755.	1832.	11.	1701.	1832	0	1685	1104	728	430	208	215	291	816	1203	1532
121.5	4.1	3357.	20.89	-787.	4139.	339269.	1859.	0.	1727.	1859	0	1704	1109	720	415	198	205	278	813	1212	1547
126.0	4.2	3450.	20.52	-1530.	4138.	343642.	1887.	0.	1754.	1887	0	1723	1113	713	401	189	195	265	810	1221	1562
130.5	4.3	3539.	19.97	-2275.	4139.	347967.	1915.	0.	1782.	1915	0	1743	1118	707	388	181	187	253	806	1230	1577
135.0	4.5	3629.	19.81	-3000.	4141.	352120.	1945.	0.	1810.	1945	0	1764	1123	700	376	174	179	242	803	1239	1591
139.5	4.7	3717.	19.71	-3792.	4145.	356167.	1975.	0.	1840.	1975	0	1784	1127	693	362	168	172	232	800	1248	1606
144.0	4.8	3805.	19.54	-4643.	4149.	360231.	2007.	0.	1870.	2007	0	1806	1133	687	350	162	166	222	796	1256	1619
148.5	4.9	3892.	19.36	-5413.	4155.	364151.	2038.	0.	1901.	2038	0	1827	1138	680	338	156	161	213	793	1266	1634
153.0	5.1	3979.	19.32	-6140.	4162.	368078.	2071.	0.	1932.	2071	0	1849	1143	673	326	151	155	204	789	1275	1648
157.5	5.3	4067.	19.42	-6853.	4169.	371975.	2104.	0.	1964.	2104	0	1871	1148	666	314	146	150	197	785	1284	1663
162.0	5.4	4154.	19.51	-7540.	4177.	375877.	2138.	0.	1998.	2138	0	1894	1153	659	303	141	145	190	782	1293	1677
166.5	5.6	4243.	19.61	-8190.	4186.	379836.	2174.	0.	2032.	2174	0	1917	1158	653	292	136	140	183	778	1302	1692

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT10269. FT

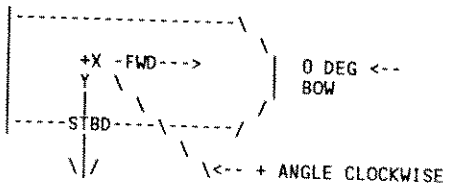
STARTING DISPLACEMENTS : SURGE(FT) = -18.844 SWAY(FT) = -18.844 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE ST3012 tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

C 3 3127

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	15.0	45.0	75.0	105.0	135.0	165.0	-165.0	-135.0	-105.0	-75.0	-45.0	-15.0
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	3000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	3000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	400.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	300.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-175.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	2900.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-168.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	2800.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	1600.0
WEIGHT IN WATER (LB/FT)	297.54
LINE B.S. (KIPS)	3504.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	2600.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	100.0
WEIGHT IN WATER (LB/FT)	297.54
LINE B.S. (KIPS)	3504.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
1	35.0	.0	38.3	7762.00	2938.00	7762.0	.0	.0				
2	38.4	163.0	167.4	9806.41	2938.00	4198.0	163.0	.0	7.76	-343.00	.00	246.05
3	41.9	170.3	175.4	9821.18	2938.00	4186.4	170.3	.0	8.09	-343.00	.00	253.55
4	45.4	178.1	183.8	9837.64	2938.00	4174.9	178.1	.0	8.43	-343.00	.00	261.38
5	48.8	185.5	191.8	9849.75	2938.00	4163.3	185.5	.0	8.76	-343.00	.00	268.96
6	52.3	192.9	199.8	9860.83	2938.00	4151.8	192.9	.0	9.09	-343.00	.00	276.57
7	55.8	200.4	208.1	9872.37	2938.00	4140.2	200.4	.0	9.43	-343.00	.00	284.36
8	59.2	207.8	216.1	9881.70	2938.00	4128.7	207.8	.0	9.76	-343.00	.00	292.02
9	62.7	215.2	224.1	9890.34	2938.00	4117.1	215.2	.0	10.10	-343.00	.00	299.71
10	66.2	223.0	232.6	9900.74	2938.00	4105.6	223.0	.0	10.45	-343.00	.00	307.74
11	73.1	237.7	248.7	9914.95	2938.00	4082.5	237.7	.0	11.11	-343.00	.00	323.24
12	80.0	252.5	264.8	9927.33	2938.00	4059.4	252.5	.0	11.78	-343.00	.00	338.81
13	87.0	267.2	281.0	9938.20	2938.00	4036.3	267.2	.0	12.44	-343.00	.00	354.44
14	93.9	281.9	297.2	9947.82	2938.00	4013.2	281.9	.0	13.11	-343.00	.00	370.14
15	100.8	297.1	313.7	9958.13	2938.00	3990.1	297.1	.0	13.80	-343.00	.00	386.21
16	107.8	311.8	329.9	9965.72	2938.00	3967.0	311.8	.0	14.46	-343.00	.00	402.00
17	114.7	326.6	346.1	9972.54	2938.00	3943.8	326.6	.0	15.13	-343.00	.00	417.82
18	121.6	341.7	362.7	9980.22	2938.00	3920.7	341.7	.0	15.82	-343.00	.00	434.02
19	128.6	356.5	378.9	9985.75	2938.00	3897.6	356.5	.0	16.49	-343.00	.00	449.91
20	135.5	371.6	395.6	9992.18	2938.00	3874.5	371.6	.0	17.18	-343.00	.00	466.18
21	142.4	386.4	411.8	9996.73	2938.00	3851.4	386.4	.0	17.85	-343.00	.00	482.12
22	149.4	402.0	428.8	10003.47	2938.00	3828.3	402.0	.0	18.55	-343.00	.00	498.79
23	156.3	416.7	445.1	10007.21	2938.00	3805.2	416.7	.0	19.22	-343.00	.00	514.78
24	163.2	432.3	462.1	10013.05	2938.00	3782.1	432.3	.0	19.93	-343.00	.00	531.49
25	170.2	447.1	478.3	10016.17	2938.00	3758.9	447.1	.0	20.60	-343.00	.00	547.52
26	177.1	462.7	495.4	10021.27	2938.00	3735.8	462.7	.0	21.31	-343.00	.00	564.27
27	184.0	478.3	512.4	10026.02	2938.00	3712.7	478.3	.0	22.01	-343.00	.00	581.04
28	191.0	493.0	528.7	10028.39	2938.00	3689.6	493.0	.0	22.69	-343.00	.00	597.12
29	197.9	508.6	545.7	10032.60	2938.00	3666.5	508.6	.0	23.39	-343.00	.00	613.92
30	204.8	524.2	562.8	10036.54	2938.00	3643.3	524.2	.0	24.10	-343.00	.00	630.74
31	211.8	539.8	579.9	10040.25	2938.00	3620.2	539.8	.0	24.81	-343.00	.00	647.57
32	218.7	555.4	596.9	10043.73	2938.00	3597.1	555.4	.0	25.52	-343.00	.00	664.41
33	225.6	571.0	614.0	10047.02	2938.00	3574.0	571.0	.0	26.22	-343.00	.00	681.26
34	232.6	586.6	631.0	10050.11	2938.00	3550.8	586.6	.0	26.93	-343.00	.00	698.13
35	239.5	603.1	648.9	10054.67	2938.00	3527.7	603.1	.0	27.68	-343.00	.00	715.73
36	246.4	618.7	666.0	10057.43	2938.00	3504.6	618.7	.0	28.39	-343.00	.00	732.62
37	253.4	634.3	683.0	10060.02	2938.00	3481.5	634.3	.0	29.09	-343.00	.00	749.51
38	260.3	650.7	700.9	10063.97	2938.00	3458.3	650.7	.0	29.84	-343.00	.00	767.15
39	267.3	666.4	717.9	10066.29	2938.00	3435.2	666.4	.0	30.55	-343.00	.00	784.06
40	274.2	682.8	735.8	10069.93	2938.00	3412.1	682.8	.0	31.29	-343.00	.00	801.71
41	281.1	698.4	752.9	10071.98	2938.00	3388.9	698.4	.0	32.00	-343.00	.00	818.64
42	288.1	714.9	770.7	10075.32	2938.00	3365.8	714.9	.0	32.75	-343.00	.00	836.31
43	295.0	731.4	788.6	10078.50	2938.00	3342.7	731.4	.0	33.49	-343.00	.00	853.99
44	301.9	747.8	806.5	10081.51	2938.00	3319.5	747.8	.0	34.24	-343.00	.00	871.68
45	308.9	763.4	823.5	10083.16	2938.00	3296.4	763.4	.0	34.95	-343.00	.00	888.63

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
46	315.8	780.8	842.2	10087.24	2938.00	3273.3	780.8	.0	35.73	-343.00	.00	907.08
47	322.7	797.2	860.1	10089.88	2938.00	3250.1	797.2	.0	36.48	-343.00	.00	924.79
48	329.7	813.7	877.9	10092.47	2938.00	3227.0	813.7	.0	37.22	-343.00	.00	942.50
49	336.6	830.2	895.8	10094.93	2938.00	3203.8	830.2	.0	37.97	-343.00	.00	960.22
50	343.5	847.5	914.5	10098.45	2938.00	3180.7	847.5	.0	38.75	-343.00	.00	978.70
51	350.5	863.1	931.6	10099.56	2938.00	3157.6	863.1	.0	39.46	-343.00	.00	995.68
52	357.4	880.4	950.2	10102.85	2938.00	3134.4	880.4	.0	40.24	-343.00	.00	1014.17
53	364.3	897.8	968.9	10106.03	2938.00	3111.3	897.8	.0	41.02	-343.00	.00	1032.66
54	371.3	915.1	987.6	10109.08	2938.00	3088.1	915.1	.0	41.81	-343.00	.00	1051.17
55	378.2	931.6	1005.4	10110.95	2938.00	3065.0	931.6	.0	42.55	-343.00	.00	1068.92
56	385.1	948.9	1024.1	10113.84	2938.00	3041.8	948.9	.0	43.34	-343.00	.00	1087.43
57	392.1	966.3	1042.8	10116.60	2938.00	3018.7	966.3	.0	44.12	-343.00	.00	1105.95
58	399.0	983.6	1061.4	10119.26	2938.00	2995.6	983.6	.0	44.90	-343.00	.00	1124.47
59	405.9	1000.9	1080.1	10121.83	2938.00	2972.4	1000.9	.0	45.69	-343.00	.00	1142.99
60	412.9	1018.3	1098.8	10124.32	2938.00	2949.3	1018.3	.0	46.47	-343.00	.00	1161.53
61	419.8	1035.6	1117.5	10126.73	2938.00	2926.1	1035.6	.0	47.25	-343.00	.00	1180.06
62	426.7	1052.9	1136.1	10129.06	2938.00	2902.9	1052.9	.0	48.04	-343.00	.00	1198.60
63	433.7	1070.3	1154.8	10131.32	2938.00	2879.8	1070.3	.0	48.82	-343.00	.00	1217.15
64	440.6	1087.6	1173.5	10133.51	2938.00	2856.6	1087.6	.0	49.61	-343.00	.00	1235.70
65	447.5	1104.9	1192.1	10135.63	2938.00	2833.5	1104.9	.0	50.39	-343.00	.00	1254.25
66	454.5	1122.3	1210.8	10137.69	2938.00	2810.3	1122.3	.0	51.17	-343.00	.00	1272.80
67	461.4	1141.4	1231.1	10141.38	2938.00	2787.2	1141.4	.0	52.03	-343.00	.00	1292.89
68	468.3	1158.7	1249.8	10143.30	2938.00	2764.0	1158.7	.0	52.81	-343.00	.00	1311.45
69	475.3	1176.0	1268.4	10145.16	2938.00	2740.8	1176.0	.0	53.60	-343.00	.00	1330.02
70	482.2	1195.1	1288.7	10148.58	2938.00	2717.7	1195.1	.0	54.45	-343.00	.00	1350.12
71	489.2	1212.4	1307.4	10150.32	2938.00	2608.2	1212.4	.0	55.24	-343.00	.00	1368.70
72	496.1	1231.5	1327.7	10153.56	2938.00	2481.1	1231.5	.0	56.10	-343.00	.00	1388.81
73	503.0	1250.6	1347.9	10156.71	2938.00	2353.9	1250.6	.0	56.95	-343.00	.00	1408.93
74	510.0	1269.6	1368.2	10159.76	2938.00	2226.8	1269.6	.0	57.81	-343.00	.00	1429.05
75	516.9	1288.7	1388.5	10162.71	2938.00	2099.5	1288.7	.0	58.67	-343.00	.00	1449.18
76	523.8	1309.5	1410.4	10167.02	2938.00	1972.3	1309.5	.0	59.59	-343.00	.00	1470.85
77	530.8	1328.6	1430.7	10169.76	2938.00	1845.1	1328.6	.0	60.45	-343.00	.00	1490.99
78	537.7	1349.4	1452.6	10173.82	2938.00	1717.8	1349.4	.0	61.38	-343.00	.00	1512.68
79	544.6	1370.2	1474.5	10177.74	2938.00	1590.6	1370.2	.0	62.31	-343.00	.00	1534.37
80	551.6	1391.0	1496.4	10181.53	2938.00	1463.3	1391.0	.0	63.24	-343.00	.00	1556.07
81	558.5	1413.5	1519.9	10186.52	2938.00	1335.9	1413.5	.0	64.24	-343.00	.00	1579.33
82	565.4	1436.1	1543.4	10191.33	2938.00	1208.6	1436.1	.0	65.24	-343.00	.00	1602.60
83	572.4	1456.9	1565.3	10194.72	2938.00	1081.2	1456.9	.0	66.17	-343.00	.00	1624.32
84	579.3	1481.1	1590.4	10200.48	2938.00	953.9	1481.1	.0	67.24	-343.00	.00	1649.16
85	586.2	1503.7	1613.9	10204.83	2938.00	826.4	1503.7	.0	68.24	-343.00	.00	1672.46
86	593.2	1527.9	1639.0	10210.23	2938.00	699.0	1527.9	.0	69.32	-343.00	.00	1697.32
87	600.1	1550.5	1662.6	10214.27	2938.00	571.5	1550.5	.0	70.32	-343.00	.00	1720.63
88	607.0	1574.7	1687.7	10219.33	2938.00	444.1	1574.7	.0	71.40	-343.00	.00	1745.51
89	614.0	1599.0	1712.8	10224.23	2938.00	316.5	1599.0	.0	72.47	-343.00	.00	1770.40
90	620.9	1623.3	1738.0	10228.96	2938.00	189.0	1623.3	.0	73.55	-343.00	.00	1795.30
91	627.8	1649.3	1764.8	10234.62	2938.00	93.2	1649.3	.0	74.69	-343.00	.00	1821.79
92	634.8	1673.6	1789.9	10239.03	2938.00	69.9	1673.6	.0	75.77	-343.00	.00	1846.71
93	641.7	1699.6	1816.7	10244.34	2938.00	46.5	1699.6	.0	76.92	-343.00	.00	1873.21
94	648.6	1723.8	1841.8	10248.46	2938.00	23.1	1723.8	.0	78.00	-343.00	.00	1898.15
95	655.6	1749.8	1868.6	10253.46	2938.00	.0	1749.8	.1	79.15	-343.00	.00	1924.67
96	662.5	1774.1	1893.8	10257.32	2938.00	.0	1774.1	7.0	80.23	-343.00	.00	1949.63
97	669.4	1801.8	1922.2	10263.00	2938.00	.0	1801.8	14.0	81.45	-343.00	.00	1977.75
98	676.4	1826.1	1947.4	10266.62	2938.00	.0	1826.1	20.9	82.53	-343.00	.00	2002.73
99	683.3	1850.4	1972.5	10270.14	2938.00	.0	1850.4	27.8	83.61	-343.00	.00	2027.71

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	4513.	0.	1064.	3072.	927.	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
6.0	.2	237.	39.46	1.	4510.	15835.	1104.	3021.	965.	1036	1041	1036	1021	1000	976	964	959	964	976	1000	1021
12.0	.4	460.	37.14	1.	4518.	30943.	1147.	2967.	1005.	1072	1084	1072	1041	1000	959	936	914	936	959	1000	1041
18.0	.6	701.	40.20	0.	4524.	48161.	1193.	2910.	1048.	1111	1131	1111	1062	1000	945	895	877	895	945	1000	1062
24.0	.8	962.	43.53	0.	4522.	65579.	1243.	2847.	1095.	1154	1181	1154	1084	1000	914	858	839	858	914	1000	1084
30.0	1.0	1196.	39.08	0.	4540.	81595.	1287.	2794.	1136.	1199	1225	1199	1107	1000	897	831	798	831	897	1000	1107
36.0	1.2	1434.	39.61	0.	4542.	97625.	1337.	2744.	1183.	1233	1276	1233	1131	1001	878	792	766	792	878	1001	1131
42.0	1.4	1674.	40.01	0.	4557.	113607.	1383.	2522.	1226.	1278	1321	1278	1156	1001	857	765	728	765	857	1001	1156
48.0	1.6	1907.	38.80	0.	4564.	129225.	1420.	2285.	1261.	1319	1359	1319	1182	1001	839	730	693	730	839	1001	1182
54.0	1.8	2116.	34.84	0.	4571.	142762.	1457.	2051.	1297.	1351	1397	1351	1209	1001	826	699	659	699	826	1001	1209
60.0	2.0	2319.	33.84	-1.	4566.	155457.	1495.	1823.	1332.	1386	1434	1386	1226	1002	799	673	632	673	799	1002	1226
66.0	2.2	2516.	32.78	0.	4565.	167680.	1527.	1635.	1363.	1415	1467	1415	1252	1002	783	643	600	643	783	1002	1252
72.0	2.4	2706.	31.69	0.	4573.	179330.	1560.	1440.	1395.	1447	1501	1447	1277	1002	767	620	571	620	767	1002	1277
78.0	2.6	2888.	30.27	0.	4570.	190325.	1588.	1291.	1422.	1476	1528	1476	1300	1003	750	593	545	593	750	1003	1300
84.0	2.8	3079.	31.83	0.	4566.	201747.	1622.	1094.	1455.	1505	1563	1505	1323	1003	729	568	515	568	729	1003	1323
90.0	3.0	3235.	26.10	0.	4560.	210853.	1649.	956.	1481.	1529	1590	1529	1341	1004	713	546	493	546	713	1004	1341
96.0	3.2	3413.	29.62	0.	4557.	221477.	1680.	790.	1511.	1558	1621	1558	1361	1004	695	522	469	522	695	1004	1361
102.0	3.4	3576.	27.20	0.	4556.	231100.	1710.	632.	1540.	1584	1651	1584	1382	1005	681	498	448	498	681	1005	1382
108.0	3.6	3734.	26.26	1.	4553.	239820.	1741.	467.	1570.	1610	1683	1610	1399	1005	662	482	426	482	662	1005	1399
114.0	3.8	3891.	26.19	0.	4548.	248849.	1771.	312.	1600.	1634	1714	1634	1416	1006	645	458	411	458	645	1006	1416
120.0	4.0	4045.	25.77	0.	4558.	257530.	1802.	159.	1630.	1664	1745	1664	1437	1007	634	443	391	443	634	1007	1437
126.0	4.2	4195.	24.94	0.	4556.	265979.	1832.	81.	1659.	1689	1775	1689	1453	1007	619	423	375	423	619	1007	1453
132.0	4.4	4341.	24.25	-1.	4560.	273609.	1863.	55.	1690.	1716	1807	1716	1470	1008	603	410	358	410	603	1008	1470
138.0	4.6	4493.	25.35	0.	4563.	281917.	1898.	24.	1723.	1743	1841	1743	1488	1008	589	393	346	393	589	1008	1488
144.0	4.8	4633.	23.39	0.	4567.	289193.	1931.	0.	1756.	1769	1875	1769	1504	1009	575	379	331	379	575	1009	1504
150.0	5.0	4780.	24.43	0.	4571.	297256.	1964.	0.	1789.	1798	1909	1798	1518	1009	561	364	318	364	561	1009	1518
156.0	5.2	4919.	23.31	0.	4579.	304528.	2001.	0.	1824.	1825	1946	1825	1533	1010	549	352	307	352	549	1010	1533

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT10272. FT

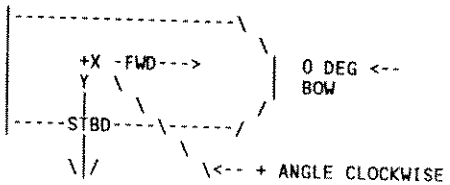
STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE ST3012 tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	1.	.00	0.	4078.	153458.	1246.	2843.	1097.	1184	0	1184	1100	1000	900	838	814	838	900	1000	1100
6.0	.2	203.	33.59	663.	4069.	165550.	1288.	2793.	1137.	1226	0	1217	1110	984	874	797	777	811	896	1014	1135
12.0	.4	401.	33.02	-210.	4064.	176673.	1338.	2744.	1184.	1276	0	1245	1120	973	843	766	743	786	888	1026	1173
18.0	.6	596.	32.60	1636.	4063.	188366.	1383.	2521.	1226.	1322	0	1278	1129	962	821	728	709	765	880	1040	1213
24.0	.8	781.	30.84	1532.	4051.	198596.	1420.	2287.	1261.	1359	0	1309	1137	950	787	694	680	739	873	1055	1243
30.0	1.0	960.	29.69	2481.	4043.	208831.	1457.	2055.	1296.	1396	0	1334	1147	942	763	660	645	718	866	1069	1280
36.0	1.2	1136.	29.35	2181.	4034.	217860.	1493.	1833.	1331.	1433	0	1361	1159	925	733	633	620	692	856	1081	1317
42.0	1.4	1303.	27.81	2646.	4017.	226834.	1525.	1648.	1361.	1465	0	1389	1171	905	709	602	590	671	847	1095	1343
48.0	1.6	1461.	26.39	2239.	4008.	235721.	1558.	1453.	1393.	1498	0	1409	1181	898	685	574	563	647	841	1110	1374
54.0	1.8	1609.	24.73	2476.	4001.	243385.	1585.	1306.	1419.	1525	0	1438	1193	887	657	548	540	631	836	1125	1400
60.0	2.0	1768.	26.49	2157.	3989.	252375.	1618.	1121.	1450.	1558	0	1459	1205	874	637	520	508	609	831	1140	1429
66.0	2.2	1907.	23.18	2316.	3979.	259576.	1645.	974.	1477.	1586	0	1482	1215	862	615	495	490	588	823	1155	1453
72.0	2.4	2050.	23.83	2599.	3964.	266658.	1675.	813.	1506.	1617	0	1505	1222	850	593	475	465	569	809	1171	1478
78.0	2.6	2183.	22.10	2778.	3953.	273208.	1703.	667.	1534.	1645	0	1524	1231	841	572	452	447	551	799	1186	1503
84.0	2.8	2317.	22.32	2013.	3948.	280361.	1735.	496.	1565.	1677	0	1544	1242	834	552	430	425	536	793	1204	1524
90.0	3.0	2444.	21.14	1003.	3945.	286931.	1765.	346.	1593.	1707	0	1568	1253	821	534	414	411	513	788	1219	1548
96.0	3.2	2580.	22.68	-330.	3931.	293028.	1795.	189.	1623.	1738	0	1586	1269	805	508	395	391	497	780	1227	1573
102.0	3.4	2692.	18.65	-279.	3928.	298455.	1823.	91.	1650.	1766	0	1608	1277	795	494	380	377	485	772	1242	1592
108.0	3.6	2817.	20.93	-780.	3925.	305171.	1855.	63.	1682.	1798	0	1628	1286	786	480	363	360	465	766	1260	1615
114.0	3.8	2936.	19.72	-2278.	3924.	310537.	1887.	34.	1713.	1830	0	1650	1300	777	459	350	348	452	759	1275	1636
120.0	4.0	3053.	19.58	-2364.	3927.	316307.	1919.	3.	1745.	1863	0	1672	1311	767	446	336	335	439	753	1287	1662
126.0	4.2	3176.	20.56	-3241.	3925.	322083.	1955.	0.	1779.	1899	0	1692	1321	758	428	323	322	424	742	1305	1684
132.0	4.4	3285.	18.04	-2728.	3926.	326901.	1986.	0.	1810.	1930	0	1714	1329	747	417	311	310	414	732	1318	1707

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT10272. FT

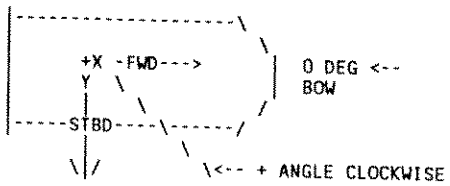
STARTING DISPLACEMENTS : SURGE(FT) = -19.875 SWAY(FT) = -19.875 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE ST3012 tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

C 3512T-3

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	15.0	45.0	75.0	105.0	135.0	165.0	-165.0	-135.0	-105.0	-75.0	-45.0	-15.0
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	3000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	3000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	400.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	300.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-175.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	3000.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-112.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	500.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-56.0

LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	2300.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE MATERIAL	CHAIN
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	1500.0
WEIGHT IN WATER (LB/FT)	297.54
LINE B.S. (KIPS)	3504.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0

LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	2800.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	CHAIN
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	100.0
WEIGHT IN WATER (LB/FT)	297.54
LINE B.S. (KIPS)	3504.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
1	35.0	.0	38.3	7962.00	2938.00	7962.0	.0	.0				
2	38.4	152.7	157.4	10022.07	2938.00	4316.3	152.7	.0	7.40	-343.00	.00	232.30
3	41.8	159.9	165.2	10036.66	2938.00	4305.0	159.9	.0	7.73	-343.00	.00	239.61
4	45.2	167.5	173.5	10053.00	2938.00	4293.7	167.5	.0	8.08	-343.00	.00	247.26
5	48.6	174.9	181.5	10066.29	2938.00	4282.4	174.9	.0	8.42	-343.00	.00	254.80
6	52.0	182.3	189.6	10078.38	2938.00	4271.1	182.3	.0	8.76	-343.00	.00	262.38
7	55.4	189.5	197.5	10088.07	2938.00	4259.8	189.5	.0	9.10	-343.00	.00	269.84
8	58.8	197.2	205.7	10099.60	2938.00	4248.6	197.2	.0	9.44	-343.00	.00	277.63
9	62.2	204.4	213.6	10107.66	2938.00	4237.3	204.4	.0	9.78	-343.00	.00	285.15
10	65.6	211.6	221.5	10115.10	2938.00	4226.0	211.6	.0	10.11	-343.00	.00	292.70
11	72.3	226.4	237.7	10130.65	2938.00	4203.4	226.4	.0	10.79	-343.00	.00	308.16
12	79.1	240.9	253.5	10141.98	2938.00	4180.8	240.9	.0	11.46	-343.00	.00	323.39
13	85.9	255.7	269.7	10153.87	2938.00	4158.2	255.7	.0	12.15	-343.00	.00	339.01
14	92.7	270.5	286.0	10164.32	2938.00	4135.6	270.5	.0	12.83	-343.00	.00	354.69
15	99.5	285.0	301.8	10171.83	2938.00	4113.0	285.0	.0	13.50	-343.00	.00	370.09
16	106.3	299.8	318.1	10180.19	2938.00	4090.4	299.8	.0	14.19	-343.00	.00	385.87
17	113.0	314.2	333.9	10186.09	2938.00	4067.8	314.2	.0	14.86	-343.00	.00	401.37
18	119.8	329.5	350.6	10194.44	2938.00	4045.2	329.5	.0	15.57	-343.00	.00	417.56
19	126.6	343.9	366.5	10199.12	2938.00	4022.6	343.9	.0	16.24	-343.00	.00	433.12
20	133.4	358.7	382.7	10204.76	2938.00	4000.0	358.7	.0	16.93	-343.00	.00	449.04
21	140.2	374.0	399.4	10211.22	2938.00	3977.4	374.0	.0	17.63	-343.00	.00	465.33
22	147.0	388.4	415.3	10214.62	2938.00	3954.8	388.4	.0	18.31	-343.00	.00	480.96
23	153.8	403.7	432.0	10220.18	2938.00	3932.2	403.7	.0	19.01	-343.00	.00	497.31
24	160.5	418.9	448.7	10225.31	2938.00	3909.6	418.9	.0	19.72	-343.00	.00	513.67
25	167.3	433.4	464.5	10227.79	2938.00	3887.0	433.4	.0	20.39	-343.00	.00	529.36
26	174.1	448.6	481.2	10232.28	2938.00	3864.4	448.6	.0	21.10	-343.00	.00	545.77
27	180.9	463.9	497.9	10236.46	2938.00	3841.8	463.9	.0	21.81	-343.00	.00	562.19
28	187.7	479.2	514.6	10240.35	2938.00	3819.2	479.2	.0	22.52	-343.00	.00	578.62
29	194.5	494.4	531.3	10243.99	2938.00	3796.6	494.4	.0	23.23	-343.00	.00	595.08
30	201.2	509.7	548.0	10247.40	2938.00	3774.0	509.7	.0	23.94	-343.00	.00	611.54
31	208.0	525.0	564.7	10250.60	2938.00	3751.4	525.0	.0	24.65	-343.00	.00	628.02
32	214.8	540.2	581.4	10253.60	2938.00	3728.7	540.2	.0	25.36	-343.00	.00	644.51
33	221.6	556.3	598.8	10258.19	2938.00	3706.1	556.3	.0	26.10	-343.00	.00	661.72
34	228.4	571.6	615.5	10260.80	2938.00	3683.5	571.6	.0	26.81	-343.00	.00	678.24
35	235.2	586.9	632.2	10263.28	2938.00	3660.9	586.9	.0	27.52	-343.00	.00	694.76
36	242.0	603.0	649.7	10267.24	2938.00	3638.3	603.0	.0	28.27	-343.00	.00	712.01
37	248.7	618.2	666.4	10269.41	2938.00	3615.7	618.2	.0	28.98	-343.00	.00	728.54
38	255.5	634.4	683.9	10273.01	2938.00	3593.1	634.4	.0	29.72	-343.00	.00	745.81
39	262.3	649.6	700.6	10274.93	2938.00	3570.4	649.6	.0	30.43	-343.00	.00	762.37
40	269.1	666.6	718.9	10279.63	2938.00	3547.8	666.6	.0	31.22	-343.00	.00	780.38
41	275.9	681.9	735.5	10281.34	2938.00	3525.2	681.9	.0	31.93	-343.00	.00	796.95
42	282.7	698.0	753.0	10284.33	2938.00	3502.6	698.0	.0	32.67	-343.00	.00	814.25
43	289.4	714.1	770.5	10287.17	2938.00	3480.0	714.1	.0	33.42	-343.00	.00	831.56
44	296.2	730.2	788.0	10289.89	2938.00	3457.4	730.2	.0	34.17	-343.00	.00	848.88
45	303.0	746.3	805.5	10292.49	2938.00	3434.7	746.3	.0	34.91	-343.00	.00	866.20

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
46	309.8	763.3	823.7	10296.21	2938.00	3412.1	763.3	.0	35.70	-343.00	.00	884.26
47	316.6	778.5	840.4	10297.37	2938.00	3389.5	778.5	.0	36.41	-343.00	.00	900.87
48	323.4	795.5	858.7	10300.86	2938.00	3366.9	795.5	.0	37.19	-343.00	.00	918.94
49	330.2	811.6	876.2	10303.04	2938.00	3344.2	811.6	.0	37.94	-343.00	.00	936.29
50	336.9	828.6	894.5	10306.28	2938.00	3321.6	828.6	.0	38.72	-343.00	.00	954.38
51	343.7	844.7	911.9	10308.26	2938.00	3299.0	844.7	.0	39.47	-343.00	.00	971.74
52	350.5	861.6	930.2	10311.28	2938.00	3276.4	861.6	.0	40.25	-343.00	.00	989.84
53	357.3	878.6	948.5	10314.18	2938.00	3253.7	878.6	.0	41.04	-343.00	.00	1007.95
54	364.1	894.7	966.0	10315.92	2938.00	3231.1	894.7	.0	41.79	-343.00	.00	1025.32
55	370.9	911.7	984.2	10318.64	2938.00	3208.5	911.7	.0	42.57	-343.00	.00	1043.44
56	377.6	928.6	1002.5	10321.26	2938.00	3185.8	928.6	.0	43.36	-343.00	.00	1061.56
57	384.4	945.6	1020.8	10323.79	2938.00	3163.2	945.6	.0	44.14	-343.00	.00	1079.69
58	391.2	962.6	1039.0	10326.23	2938.00	3140.6	962.6	.0	44.92	-343.00	.00	1097.82
59	398.0	979.5	1057.3	10328.59	2938.00	3117.9	979.5	.0	45.71	-343.00	.00	1115.96
60	404.8	996.5	1075.6	10330.88	2938.00	3095.3	996.5	.0	46.49	-343.00	.00	1134.10
61	411.6	1013.4	1093.8	10333.09	2938.00	3072.7	1013.4	.0	47.28	-343.00	.00	1152.24
62	418.4	1030.4	1112.1	10335.23	2938.00	3050.0	1030.4	.0	48.07	-343.00	.00	1170.39
63	425.1	1047.4	1130.4	10337.31	2938.00	3027.4	1047.4	.0	48.85	-343.00	.00	1188.54
64	431.9	1066.0	1150.2	10341.08	2938.00	3004.8	1066.0	.0	49.71	-343.00	.00	1208.19
65	438.7	1083.0	1168.5	10343.01	2938.00	2982.1	1083.0	.0	50.49	-343.00	.00	1226.35
66	445.5	1100.0	1186.7	10344.88	2938.00	2959.5	1100.0	.0	51.28	-343.00	.00	1244.52
67	452.3	1116.9	1205.0	10346.70	2938.00	2936.8	1116.9	.0	52.07	-343.00	.00	1262.68
68	459.1	1135.6	1224.9	10350.11	2938.00	2914.2	1135.6	.0	52.92	-343.00	.00	1282.35
69	465.8	1152.5	1243.1	10351.80	2938.00	2790.7	1152.5	.0	53.71	-343.00	.00	1300.53
70	472.6	1171.2	1263.0	10355.04	2938.00	2666.3	1171.2	.0	54.57	-343.00	.00	1320.21
71	479.4	1189.8	1282.8	10358.17	2938.00	2542.0	1189.8	.0	55.42	-343.00	.00	1339.89
72	486.2	1208.5	1302.6	10361.21	2938.00	2417.6	1208.5	.0	56.28	-343.00	.00	1359.58
73	493.0	1227.2	1322.5	10364.14	2938.00	2293.2	1227.2	.0	57.14	-343.00	.00	1379.28
74	499.8	1247.5	1343.9	10368.47	2938.00	2168.8	1247.5	.0	58.07	-343.00	.00	1400.49
75	506.6	1267.9	1365.3	10372.65	2938.00	2044.3	1267.9	.0	59.00	-343.00	.00	1421.71
76	513.3	1286.5	1385.2	10375.25	2938.00	1919.9	1286.5	.0	59.86	-343.00	.00	1441.42
77	520.1	1306.9	1406.6	10379.18	2938.00	1795.4	1306.9	.0	60.79	-343.00	.00	1462.64
78	526.9	1327.2	1428.0	10382.97	2938.00	1670.9	1327.2	.0	61.72	-343.00	.00	1483.88
79	533.7	1349.3	1451.0	10387.98	2938.00	1546.4	1349.3	.0	62.72	-343.00	.00	1506.64
80	540.5	1371.3	1474.0	10392.82	2938.00	1421.9	1371.3	.0	63.72	-343.00	.00	1529.41
81	547.3	1391.7	1495.4	10396.19	2938.00	1297.3	1391.7	.0	64.66	-343.00	.00	1550.67
82	554.0	1415.4	1520.0	10401.99	2938.00	1172.7	1415.4	.0	65.73	-343.00	.00	1574.98
83	560.8	1437.5	1543.0	10406.35	2938.00	1048.1	1437.5	.0	66.74	-343.00	.00	1597.77
84	567.6	1461.2	1567.6	10411.78	2938.00	923.5	1461.2	.0	67.81	-343.00	.00	1622.11
85	574.4	1483.3	1590.6	10415.82	2938.00	798.8	1483.3	.0	68.82	-343.00	.00	1644.92
86	581.2	1507.0	1615.2	10420.90	2938.00	674.2	1507.0	.0	69.89	-343.00	.00	1669.27
87	588.0	1530.8	1639.8	10425.81	2938.00	549.5	1530.8	.0	70.97	-343.00	.00	1693.63
88	594.8	1554.5	1664.4	10430.55	2938.00	424.7	1554.5	.0	72.05	-343.00	.00	1718.00
89	601.5	1578.3	1689.0	10435.13	2938.00	300.0	1578.3	.0	73.13	-343.00	.00	1742.38
90	608.3	1603.7	1715.2	10440.65	2938.00	175.2	1603.7	.0	74.28	-343.00	.00	1768.30
91	615.1	1627.5	1739.8	10444.92	2938.00	91.2	1627.5	.0	75.36	-343.00	.00	1792.70
92	621.9	1654.6	1767.6	10451.12	2938.00	68.3	1654.6	.0	76.58	-343.00	.00	1820.19
93	628.7	1678.3	1792.2	10455.09	2938.00	45.4	1678.3	.0	77.66	-343.00	.00	1844.61
94	635.5	1703.8	1818.4	10459.93	2938.00	22.6	1703.8	.0	78.81	-343.00	.00	1870.58
95	642.2	1729.2	1844.6	10464.62	2938.00	.0	1729.2	.1	79.97	-343.00	.00	1896.56
96	649.0	1754.7	1870.8	10469.17	2938.00	.0	1754.7	6.9	81.12	-343.00	.00	1922.54
97	655.8	1780.1	1897.1	10473.59	2938.00	.0	1780.1	13.7	82.28	-343.00	.00	1948.54
98	662.6	1803.8	1921.7	10476.95	2938.00	.0	1803.8	20.5	83.36	-343.00	.00	1973.00
99	669.4	1831.0	1949.5	10482.04	2938.00	.0	1831.0	27.2	84.59	-343.00	.00	2000.56

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)
.0	.0	0.	.00	0.	4521.	0.	1059.	3189.	926.
6.0	.2	243.	40.57	-1.	4523.	16463.	1103.	3134.	967.
12.0	.4	498.	42.36	0.	4526.	33561.	1151.	3075.	1012.
18.0	.6	756.	43.02	0.	4533.	51112.	1197.	3018.	1055.
24.0	.8	986.	38.33	1.	4539.	66222.	1245.	2959.	1100.
30.0	1.0	1264.	46.30	1.	4546.	85313.	1291.	2858.	1144.
36.0	1.2	1482.	36.39	0.	4555.	99747.	1332.	2593.	1182.
42.0	1.4	1701.	36.56	0.	4547.	114120.	1371.	2344.	1219.
48.0	1.6	1925.	37.28	0.	4546.	128203.	1402.	2158.	1249.
54.0	1.8	2126.	33.51	0.	4543.	139874.	1439.	1936.	1284.
60.0	2.0	2318.	31.94	0.	4540.	151987.	1472.	1738.	1316.
66.0	2.2	2518.	33.34	1.	4538.	164331.	1502.	1572.	1345.
72.0	2.4	2710.	31.99	0.	4523.	176573.	1530.	1419.	1372.
78.0	2.6	2878.	28.04	0.	4519.	186334.	1563.	1234.	1403.
84.0	2.8	3062.	30.79	1.	4504.	197045.	1590.	1089.	1430.
90.0	3.0	3226.	27.27	0.	4503.	207250.	1618.	945.	1457.
96.0	3.2	3396.	28.30	0.	4487.	217361.	1650.	771.	1489.
102.0	3.4	3548.	25.34	0.	4483.	226077.	1679.	624.	1517.
108.0	3.6	3717.	28.13	-1.	4482.	235256.	1709.	469.	1546.
114.0	3.8	3882.	27.50	-1.	4476.	245234.	1741.	306.	1577.
120.0	4.0	4024.	23.71	0.	4478.	252507.	1770.	169.	1605.
126.0	4.2	4187.	27.12	0.	4470.	261715.	1801.	77.	1636.
132.0	4.4	4327.	23.32	0.	4474.	269408.	1831.	58.	1665.
138.0	4.6	4463.	22.76	0.	4477.	276609.	1865.	27.	1698.
144.0	4.8	4617.	25.66	0.	4479.	284906.	1898.	0.	1731.
150.0	5.0	4757.	23.32	0.	4483.	291710.	1932.	0.	1764.
156.0	5.2	4905.	24.69	0.	4494.	299448.	1973.	0.	1804.

LINE LOAD (KIPS)

LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
1038	1044	1038	1022	1000	980	964	956	964	980	1000	1022
1079	1092	1079	1044	1000	956	926	916	926	956	1000	1044
1123	1139	1123	1068	1000	934	889	875	889	934	1000	1068
1156	1187	1156	1092	1000	917	856	834	856	917	1000	1092
1206	1233	1206	1118	1000	892	814	795	814	892	1000	1118
1246	1275	1246	1139	1000	876	787	757	787	876	1000	1139
1277	1314	1277	1158	1001	855	754	715	754	855	1001	1158
1312	1346	1312	1188	1001	835	717	683	717	835	1001	1188
1340	1383	1340	1213	1001	810	694	648	694	810	1001	1213
1367	1416	1367	1235	1001	796	663	616	663	796	1001	1235
1401	1446	1401	1258	1001	776	635	586	635	776	1001	1258
1430	1475	1430	1276	1002	758	601	556	601	758	1002	1276
1453	1508	1453	1295	1002	741	580	526	580	741	1002	1295
1480	1535	1480	1316	1002	716	552	500	552	716	1002	1316
1508	1563	1508	1333	1003	706	527	477	527	706	1003	1333
1531	1596	1531	1347	1003	686	504	447	504	686	1003	1347
1556	1625	1556	1363	1004	671	483	429	483	671	1004	1363
1584	1656	1584	1386	1004	650	463	407	463	650	1004	1386
1610	1688	1610	1403	1004	637	437	387	437	637	1004	1403
1636	1717	1636	1419	1005	620	424	372	424	620	1005	1419
1663	1749	1663	1435	1005	601	403	352	403	601	1005	1435
1690	1779	1690	1449	1006	589	387	339	387	588	1006	1449
1715	1813	1715	1463	1007	576	374	325	374	576	1007	1463
1744	1846	1744	1479	1007	560	357	311	357	560	1007	1479
1767	1881	1767	1498	1008	545	344	300	344	545	1008	1498
1799	1921	1799	1511	1008	530	334	287	334	530	1008	1511

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT10483. FT

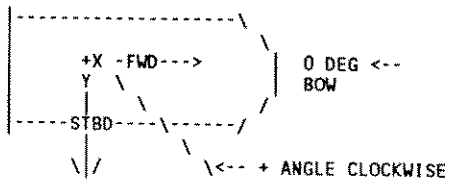
STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE ST3012 tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	-2.	4092.	153311.	1240.	2965.	1096.	1182	0	1182	1106	1000	904	841	809	841	904	1000	1106
6.0	.2	208.	34.57	1.	4080.	165233.	1285.	2899.	1138.	1227	0	1213	1114	985	873	799	777	809	896	1016	1140
12.0	.4	402.	32.44	1041.	4076.	176463.	1328.	2619.	1178.	1271	0	1246	1124	973	847	761	743	787	889	1031	1175
18.0	.6	605.	33.79	924.	4056.	187218.	1366.	2379.	1214.	1309	0	1272	1135	960	810	720	707	760	880	1042	1213
24.0	.8	779.	28.99	2006.	4043.	196627.	1398.	2182.	1245.	1342	0	1299	1142	945	786	692	673	735	871	1055	1248
30.0	1.0	956.	29.50	2482.	4023.	206348.	1431.	1987.	1276.	1374	0	1325	1149	933	758	655	640	709	861	1071	1275
36.0	1.2	1127.	28.50	1409.	4009.	215656.	1466.	1777.	1310.	1410	0	1345	1161	923	729	625	606	686	855	1086	1304
42.0	1.4	1284.	26.23	1447.	3999.	224298.	1496.	1603.	1339.	1440	0	1367	1174	912	706	591	582	665	850	1101	1331
48.0	1.6	1445.	26.82	958.	3979.	232632.	1523.	1459.	1365.	1467	0	1394	1185	895	677	563	551	641	842	1119	1353
54.0	1.8	1610.	27.51	1119.	3963.	240970.	1557.	1266.	1397.	1501	0	1415	1197	883	649	533	524	620	829	1135	1383
60.0	2.0	1755.	24.12	1397.	3944.	248306.	1582.	1134.	1422.	1527	0	1435	1205	869	627	507	499	597	819	1146	1410
66.0	2.2	1894.	23.19	903.	3929.	254766.	1610.	984.	1450.	1556	0	1455	1215	858	600	483	477	580	810	1157	1433
72.0	2.4	2036.	23.55	189.	3918.	263000.	1641.	821.	1479.	1587	0	1474	1222	851	582	458	448	559	807	1177	1453
78.0	2.6	2178.	23.69	-519.	3908.	270254.	1670.	672.	1507.	1616	0	1499	1236	837	558	434	430	538	800	1195	1475
84.0	2.8	2312.	22.32	-1667.	3896.	276328.	1699.	523.	1536.	1645	0	1517	1251	819	537	417	410	518	789	1209	1500
90.0	3.0	2444.	22.02	-2144.	3882.	282976.	1730.	364.	1566.	1676	0	1537	1257	809	516	393	390	501	783	1220	1519
96.0	3.2	2561.	19.58	-2628.	3878.	288608.	1758.	219.	1594.	1705	0	1557	1266	803	498	379	375	484	773	1235	1542
102.0	3.4	2687.	20.99	-2998.	3872.	294789.	1790.	98.	1625.	1737	0	1578	1275	792	480	361	357	470	765	1251	1562
108.0	3.6	2810.	20.52	-3307.	3861.	300817.	1817.	70.	1651.	1764	0	1599	1283	779	463	344	342	448	759	1262	1587
114.0	3.8	2929.	19.80	-4895.	3858.	305771.	1851.	40.	1685.	1799	0	1620	1293	770	440	333	331	434	751	1273	1609
120.0	4.0	3043.	19.05	-4714.	3856.	311325.	1883.	11.	1716.	1831	0	1641	1302	759	428	317	316	423	744	1284	1631
126.0	4.2	3158.	19.11	-5384.	3856.	316633.	1916.	0.	1748.	1864	0	1662	1311	749	414	306	305	407	737	1298	1654
132.0	4.4	3280.	20.30	-6038.	3852.	321935.	1951.	0.	1782.	1899	0	1684	1320	739	395	294	293	392	725	1310	1678
138.0	4.6	3395.	19.17	-6392.	3854.	326988.	1991.	0.	1821.	1940	0	1705	1330	725	385	282	282	382	714	1322	1700

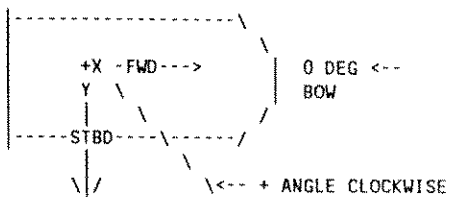
EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT10487. FT

STARTING DISPLACEMENTS : SURGE(FT) = -19.172 SWAY(FT) = -19.219 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE C6A16T

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT	-	.00
LINE ATTACHMENT W.R.T. WATER LINE	-	-62.0 FT
ALLOWABLE LINE LENGTH ON BOTTOM	-	90.0 FT
DIRECTION OF VESSEL TRANSLATION	-	45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

46) C6A16T

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	11.3	33.8	56.3	78.8	101.3	123.8	146.3	168.8	-168.8	-146.3	-123.8	-101.3	-78.8	-56.3	-33.8	-11.3
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	790.0	790.0	790.0	790.0	790.0	790.0	790.0	790.0	790.0	790.0	790.0	790.0	790.0	790.0	790.0	790.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	6000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	6000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.875"
LINE LENGTH (FT)	500.0
WEIGHT IN WATER (LB/FT)	43.01
LINE B.S. (KIPS)	2729.0
AREA (SQ IN)	18.67
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	ARAMID
LINE SIZE (IN)	5.250"
LINE LENGTH (FT)	7500.0
WEIGHT IN WATER (LB/FT)	1.88
LINE B.S. (KIPS)	2709.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	108000.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.875"
LINE LENGTH (FT)	3300.0
WEIGHT IN WATER (LB/FT)	43.01
LINE B.S. (KIPS)	2729.0
AREA (SQ IN)	18.67
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.000"
LINE LENGTH (FT)	4000.0
WEIGHT IN WATER (LB/FT)	234.32
LINE B.S. (KIPS)	2407.0
AREA (SQ IN)	19.63
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.875"
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	43.01
LINE B.S. (KIPS)	2729.0
AREA (SQ IN)	18.67
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.000"
LINE LENGTH (FT)	400.0
WEIGHT IN WATER (LB/FT)	206.62
LINE B.S. (KIPS)	2407.0
AREA (SQ IN)	19.63
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	50.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
1	31.7	.0	31.7	10762.00	5938.00	10762.0	.0	.0				
2	40.7	10.5	42.0	13860.27	5938.00	8581.5	10.5	.0	1.62	.00	.00	.00
3	49.7	19.9	53.5	14073.65	5938.00	8372.8	19.9	.0	2.91	.00	.00	.00
4	58.7	29.5	65.7	14177.96	5938.00	8164.0	29.5	.0	4.22	.00	.00	.00
5	67.7	39.5	78.4	14257.32	5938.00	7955.3	39.5	.0	5.58	.00	.00	.00
6	76.7	49.9	91.5	14324.36	5938.00	7746.6	49.9	.0	6.98	.00	.00	.00
7	85.7	60.7	105.0	14385.50	5938.00	7537.8	60.7	.0	8.42	.00	.00	.00
8	94.7	72.0	119.0	14441.71	5938.00	7329.1	72.0	.0	9.91	.00	.00	.00
9	103.7	83.8	133.3	14494.92	5938.00	7120.3	83.8	.0	11.44	.00	.00	.00
10	112.6	96.0	148.0	14544.09	5938.00	6911.5	96.0	.0	13.02	.00	.00	.00
11	130.6	121.6	178.5	14635.89	5938.00	6493.8	121.6	.0	16.29	.00	.00	.00
12	148.6	148.9	210.4	14719.99	5938.00	6076.1	148.9	.0	19.74	.00	.00	.00
13	166.6	177.8	243.7	14796.60	5938.00	5658.3	177.8	.0	23.36	.00	.00	.00
14	184.6	208.3	278.3	14866.66	5938.00	5374.1	208.3	.0	27.13	.00	.00	.00
15	202.6	239.0	313.3	14918.56	5938.00	5298.0	239.0	.0	30.94	.00	.00	.00
16	220.5	269.8	348.5	14958.10	5938.00	5221.8	269.8	.0	34.77	.00	.00	.00
17	238.5	300.8	383.9	14990.23	5938.00	5145.5	300.8	.0	38.64	.00	.00	.00
18	256.5	332.0	419.6	15016.77	5938.00	5069.3	332.0	.0	42.52	.00	.00	.00
19	274.5	363.4	455.4	15039.83	5938.00	4993.1	363.4	.0	46.43	.00	.00	.00
20	292.5	395.1	491.6	15060.81	5938.00	4916.8	395.1	.0	50.37	.00	.00	.00
21	310.5	427.0	527.9	15079.78	5938.00	4840.6	427.0	.0	54.33	.00	.00	.00
22	328.4	459.3	564.7	15098.39	5938.00	4764.3	459.3	.0	58.35	.00	.00	.00
23	346.4	491.8	601.5	15115.25	5938.00	4688.0	491.8	.0	62.38	.00	.00	.00
24	364.4	524.5	638.7	15131.34	5938.00	4611.8	524.5	.0	66.44	.00	.00	.00
25	382.4	557.5	676.0	15146.85	5938.00	4535.5	557.5	.0	70.53	.00	.00	.00
26	400.4	590.8	713.7	15161.85	5938.00	4459.1	590.8	.0	74.66	.00	.00	.00
27	418.3	624.5	751.7	15177.02	5938.00	4382.8	624.5	.0	78.83	.00	.00	.00
28	436.3	658.4	789.8	15191.23	5938.00	4306.5	658.4	.0	83.02	.00	.00	.00
29	454.3	692.7	828.4	15205.64	5938.00	4230.1	692.7	.0	87.25	.00	.00	.00
30	472.3	727.1	867.0	15219.25	5938.00	4153.8	727.1	.0	91.50	.00	.00	.00
31	490.3	761.9	906.0	15233.11	5938.00	4077.4	761.9	.0	95.80	.00	.00	.00
32	508.3	797.0	945.3	15246.70	5938.00	4001.0	797.0	.0	100.13	.00	.00	.00
33	526.2	832.4	984.8	15260.09	5938.00	3924.6	832.4	.0	104.49	.00	.00	.00
34	544.2	868.1	1024.6	15273.26	5938.00	3848.2	868.1	.0	108.88	.00	.00	.00
35	562.2	904.1	1064.6	15286.29	5938.00	3771.8	904.1	.0	113.31	.00	.00	.00
36	580.2	940.3	1104.9	15299.14	5938.00	3695.3	940.3	.0	117.77	.00	.00	.00
37	598.2	976.9	1145.5	15311.82	5938.00	3618.9	976.9	.0	122.26	.00	.00	.00
38	616.1	1013.7	1186.2	15324.44	5938.00	3542.4	1013.7	.0	126.78	.00	.00	.00
39	634.1	1051.0	1227.5	15337.59	5938.00	3465.9	1051.0	.0	131.36	.00	.00	.00
40	652.1	1088.4	1268.8	15349.92	5938.00	3389.4	1088.4	.0	135.95	.00	.00	.00
41	670.1	1126.3	1310.6	15362.79	5938.00	3312.9	1126.3	.0	140.60	.00	.00	.00
42	688.1	1164.3	1352.4	15374.95	5938.00	3236.4	1164.3	.0	145.25	.00	.00	.00
43	706.1	1202.8	1394.7	15387.55	5938.00	3159.8	1202.8	.0	149.96	.00	.00	.00
44	724.0	1241.3	1437.0	15399.53	5938.00	3083.3	1241.3	.0	154.68	.00	.00	.00
45	742.0	1280.3	1479.8	15411.97	5938.00	3006.7	1280.3	.0	159.46	.00	.00	.00

@ 44 = 463

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
46	760.0	1319.6	1522.8	15424.29	5938.00	2930.1	1319.6	.0	164.27	.00	.00	.00
47	778.0	1359.0	1565.9	15436.05	5938.00	2853.5	1359.0	.0	169.09	.00	.00	.00
48	796.0	1398.9	1609.5	15448.21	5938.00	2776.8	1398.9	.0	173.96	.00	.00	.00
49	814.0	1439.1	1653.3	15460.27	5938.00	2700.2	1439.1	.0	178.87	.00	.00	.00
50	831.9	1479.5	1697.4	15472.30	5938.00	2623.5	1479.5	.0	183.82	.00	.00	.00
51	849.9	1520.5	1741.9	15484.75	5938.00	2546.8	1520.5	.0	188.82	.00	.00	.00
52	867.9	1561.6	1786.5	15496.63	5938.00	2470.1	1561.6	.0	193.83	.00	.00	.00
53	885.9	1602.9	1831.4	15508.42	5938.00	2393.4	1602.9	.0	198.88	.00	.00	.00
54	903.9	1644.4	1876.5	15520.16	5938.00	2316.7	1644.4	.0	203.96	.00	.00	.00
55	921.8	1686.6	1922.1	15532.32	5938.00	2239.9	1686.6	.0	209.10	.00	.00	.00
56	939.8	1728.7	1967.7	15543.96	5938.00	2163.1	1728.7	.0	214.24	.00	.00	.00
57	957.8	1771.2	2013.6	15555.55	5938.00	2086.3	1771.2	.0	219.42	.00	.00	.00
58	975.8	1813.9	2059.7	15567.08	5938.00	2009.5	1813.9	.0	224.63	.00	.00	.00
59	993.8	1857.1	2106.3	15578.98	5938.00	1932.6	1857.1	.0	229.91	.00	.00	.00
60	1011.8	1900.4	2152.9	15590.40	5938.00	1855.8	1900.4	.0	235.19	.00	.00	.00
61	1029.7	1944.2	2200.1	15602.24	5938.00	1778.9	1944.2	.0	240.53	.00	.00	.00
62	1047.7	1988.6	2247.7	15614.27	5938.00	1702.0	1988.6	.0	245.94	.00	.00	.00
63	1065.7	2032.7	2295.2	15625.63	5938.00	1625.1	2032.7	.0	251.32	.00	.00	.00
64	1083.7	2077.1	2342.8	15636.96	5938.00	1548.1	2077.1	.0	256.74	.00	.00	.00
65	1101.7	2122.1	2391.0	15648.57	5938.00	1471.1	2122.1	.0	262.22	.00	.00	.00
66	1119.6	2167.6	2439.7	15660.40	5938.00	1301.3	2167.6	.0	267.77	.00	.00	.00
67	1137.6	2214.3	2489.4	15673.22	5938.00	878.4	2214.3	.0	273.44	.00	.00	.00
68	1155.6	2262.0	2540.1	15686.75	5938.00	455.3	2262.0	.0	279.23	.00	.00	.00
69	1173.6	2311.5	2592.3	15701.61	5938.00	326.2	2311.5	.0	285.21	.00	.00	.00
70	1191.6	2360.9	2644.6	15715.92	5938.00	238.6	2360.9	.0	291.19	.00	.00	.00
71	1209.6	2410.9	2697.3	15730.34	5938.00	150.9	2410.9	.0	297.24	.00	.00	.00
72	1227.5	2460.9	2750.1	15744.30	5938.00	63.1	2460.9	.0	303.29	.00	.00	.00
73	1245.5	2511.5	2803.4	15758.37	5938.00	.0	2511.5	-45.0	309.42	.00	.00	.00
74	1263.5	2562.1	2856.7	15771.99	5938.00	.0	2562.1	-27.0	315.54	.00	.00	.00
75	1281.5	2612.7	2910.0	15785.23	5938.00	.0	2612.7	-9.0	321.68	.00	.00	.00
76	1299.5	2663.8	2963.9	15798.55	5938.00	.0	2663.8	9.0	327.89	.00	.00	.00
77	1317.4	2714.4	3017.2	15810.99	5938.00	.0	2714.4	27.0	334.04	.00	.00	.00
78	1335.4	2765.0	3070.6	15823.16	5938.00	.0	2765.0	45.0	340.19	.00	.00	.00
79	1353.4	2815.5	3123.9	15835.05	5938.00	.0	2815.5	62.9	346.36	.00	.00	.00
80	1371.4	2866.1	3177.3	15846.61	5938.00	.0	2866.1	80.9	352.53	.00	.00	.00

V... = 1091
V... = 7154.7
V... = 7082

PAGE 6

VESSEL DISP. 13 (FT)	14 (% WD)	RESTORING FORCE ON VESSEL 15 16 (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)
.0	.0	0.	.00	0.	6982.	0.	790.	4306.	659.
9.0	.2	175.	19.39	0.	6981.	15304.	813.	4260.	679.
18.0	.3	349.	19.39	0.	6982.	30605.	838.	4212.	701.
27.0	.4	523.	19.37	0.	6986.	45879.	863.	4162.	723.
36.0	.6	697.	19.31	0.	6992.	61080.	888.	4113.	746.
45.0	.8	871.	19.33	0.	6996.	76296.	913.	4064.	768.
54.0	.9	1045.	19.31	0.	7002.	91496.	938.	4015.	791.
63.0	1.0	1218.	19.27	0.	7009.	106638.	964.	3965.	814.
72.0	1.2	1391.	19.23	0.	7018.	121725.	990.	3914.	837.
81.0	1.4	1564.	19.21	0.	7027.	136764.	1017.	3863.	861.
90.0	1.5	1737.	19.14	0.	7039.	151721.	1044.	3811.	885.
99.0	1.6	1908.	19.01	0.	7052.	166518.	1071.	3759.	910.
108.0	1.8	2077.	18.86	0.	7068.	181126.	1099.	3707.	935.
117.0	2.0	2247.	18.80	0.	7085.	195633.	1127.	3654.	960.
126.0	2.1	2416.	18.79	0.	7103.	210094.	1155.	3600.	986.
135.0	2.3	2584.	18.70	0.	7123.	224429.	1184.	3547.	1012.
144.0	2.4	2750.	18.42	0.	7142.	238475.	1212.	3495.	1037.
153.0	2.5	2916.	18.44	0.	7164.	252513.	1240.	3442.	1062.
162.0	2.7	3081.	18.41	0.	7187.	266464.	1270.	3388.	1089.
171.0	2.8	3243.	17.90	0.	7210.	279860.	1298.	3335.	1115.
180.0	3.0	3405.	18.04	0.	7237.	293370.	1328.	3281.	1142.
189.0	3.2	3568.	18.11	0.	7266.	306918.	1358.	3226.	1170.
198.0	3.3	3727.	17.67	0.	7294.	319953.	1388.	3172.	1197.
207.0	3.5	3887.	17.77	0.	7325.	333007.	1419.	3116.	1225.
216.0	3.6	4047.	17.81	0.	7358.	346039.	1450.	3061.	1253.
225.0	3.8	4204.	17.47	0.	7392.	358661.	1480.	3006.	1281.
234.0	3.9	4360.	17.31	0.	7426.	371062.	1511.	2952.	1309.
243.0	4.1	4518.	17.50	0.	7463.	383656.	1543.	2895.	1338.
252.0	4.2	4674.	17.40	0.	7501.	396123.	1575.	2838.	1367.
261.0	4.3	4828.	17.04	0.	7540.	408156.	1606.	2782.	1396.
270.0	4.5	4981.	17.08	0.	7580.	420075.	1638.	2726.	1425.
279.0	4.7	5135.	17.10	0.	7622.	431949.	1671.	2670.	1455.
288.0	4.8	5289.	17.08	0.	7665.	443817.	1703.	2614.	1485.
297.0	4.9	5440.	16.80	0.	7707.	455385.	1735.	2560.	1514.
306.0	5.1	5592.	16.86	0.	7751.	466905.	1767.	2503.	1544.
315.0	5.3	5745.	17.02	0.	7797.	478436.	1801.	2446.	1575.
324.0	5.4	5898.	17.02	0.	7845.	489900.	1834.	2388.	1606.
333.0	5.6	6051.	16.96	0.	7893.	501293.	1868.	2330.	1637.
342.0	5.7	6201.	16.63	0.	7940.	512329.	1902.	2274.	1668.
351.0	5.8	6350.	16.64	0.	7988.	523276.	1935.	2218.	1699.
360.0	6.0	6504.	17.03	0.	8039.	534480.	1970.	2159.	1731.
369.0	6.2	6657.	17.07	0.	8091.	545670.	2005.	2101.	1763.
378.0	6.3	6811.	17.05	0.	8144.	556833.	2040.	2042.	1796.
387.0	6.4	6963.	16.96	0.	8196.	567874.	2075.	1984.	1828.
396.0	6.6	7115.	16.85	0.	8249.	578750.	2110.	1927.	1861.
405.0	6.8	7268.	17.02	0.	8302.	589681.	2146.	1867.	1894.
414.0	6.9	7422.	17.05	0.	8356.	600595.	2182.	1809.	1927.
423.0	7.1	7576.	17.09	0.	8411.	611446.	2216.	1753.	1959.
432.0	7.2	7730.	17.17	0.	8466.	622293.	2252.	1696.	1992.
441.0	7.3	7887.	17.45	0.	8523.	633391.	2289.	1636.	2027.
450.0	7.5	8045.	17.49	0.	8580.	644476.	2326.	1576.	2061.

LINE LOAD (KIPS)

VESSEL DISP. (FT)	LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12				
.0	790	790	790	790	790	790	790	790	790	790	790	790	790	790	790	790
9.0	810	813	813	810	803	795	785	776	770	766	766	770	776	785	795	803
18.0	830	838	838	830	817	799	781	763	750	743	743	750	763	781	799	817
27.0	851	863	863	851	830	804	776	750	731	721	721	731	750	776	804	830
36.0	873	888	888	873	844	809	771	737	712	699	699	712	737	771	809	844
45.0	894	913	913	894	859	813	766	725	694	677	677	694	725	766	813	859
54.0	915	938	938	915	873	818	762	712	675	655	655	675	712	762	818	873
63.0	937	964	964	937	887	823	757	700	657	634	634	657	700	757	823	887
72.0	959	990	990	959	901	828	753	687	639	614	614	639	687	753	828	901
81.0	981	1017	1017	981	916	833	748	675	622	594	594	622	675	748	833	916
90.0	1003	1044	1044	1003	930	838	744	663	604	575	575	604	663	744	838	930
99.0	1026	1071	1071	1026	945	843	740	651	588	556	556	588	651	740	843	945
108.0	1049	1099	1099	1049	960	848	735	639	571	539	539	571	639	735	848	960
117.0	1072	1127	1127	1072	974	854	731	628	556	522	522	556	628	731	854	974
126.0	1096	1155	1155	1096	990	859	727	616	541	505	505	541	616	727	859	990
135.0	1120	1184	1184	1119	1005	864	723	605	527	488	488	527	605	723	864	1005
144.0	1144	1212	1212	1144	1020	869	719	594	512	473	473	512	594	719	869	1020
153.0	1168	1240	1240	1168	1035	874	715	583	498	458	458	498	583	715	874	1035
162.0	1192	1270	1270	1192	1051	880	710	572	484	443	443	484	572	710	880	1051
171.0	1215	1298	1298	1215	1067	885	706	562	471	430	430	471	562	706	885	1067
180.0	1240	1328	1328	1240	1083	890	702	552	459	417	417	459	552	702	890	1083
189.0	1265	1358	1358	1265	1098	895	698	542	447	404	404	447	542	698	895	1098
198.0	1289	1388	1388	1289	1115	901	694	533	435	393	393	435	533	694	901	1115
207.0	1314	1419	1419	1314	1131	906	690	523	424	382	382	424	523	690	906	1131
216.0	1340	1450	1450	1340	1147	911	685	513	413	371	371	413	513	685	911	1147
225.0	1366	1480	1480	1366	1164	917	681	504	403	361	361	403	504	681	917	1164
234.0	1391	1511	1511	1391	1180	922	677	495	393	352	352	393	495	677	922	1180
243.0	1417	1543	1543	1417	1196	927	673	486	383	343	343	383	486	673	927	1196
252.0	1444	1575	1575	1444	1212	933	669	477	375	335	335	375	477	669	933	1212
261.0	1470	1606	1606	1470	1228	938	665	469	366	327	327	366	469	665	938	1228
270.0	1496	1638	1638	1496	1245	944	662	461	358	320	320	358	461	662	944	1245
279.0	1522	1671	1671	1522	1263	950	658	453	350	313	313	350	453	658	950	1263
288.0	1550	1703	1703	1550	1279	955	654	445	343	306	306	343	445	654	955	1279
297.0	1577	1735	1735	1577	1296	961	650	437	336	300	300	336	437	650	961	1296
306.0	1604	1767	1767	1604	1313	967	646	430	329	294	294	329	430	646	967	1313
315.0	1631	1801	1801	1631	1330	972	643	422	323	288	288	323	422	643	972	1330
324.0	1659	1834	1834	1659	1348	978	639	415	317	282	282	317	415	639	978	1348
333.0	1686	1868	1868	1686	1365	984	635	408	311	277	277	311	408	635	984	1365
342.0	1714	1902	1902	1714	1382	990	631	402	305	272	272	305	402	631	990	1382
351.0	1741	1935	1935	1741	1400	996	628	395	300	268	268	300	395	628	996	1400
360.0	1769	1970	1970	1769	1418	1001	624	389	295	263	263	295	389	624	1001	1418
369.0	1797	2005	2005	1797	1436	1007	621	383	290	259	259	290	383	621	1007	1436
378.0	1826	2040	2040	1826	1454	1013	617	377	285	255	255	285	377	617	1013	1454
387.0	1855	2075	2075	1855	1472	1019	614	372	281	251	251	281	372	614	1019	1472
396.0	1884	2110	2110	1884	1490	1025	610	366	277	247	247	277	366	610	1025	1490
405.0	1912	2146	2146	1912	1508	1031	607	361	272	243	243	272	361	607	1031	1508
414.0	1941	2182	2182	1941	1526	1037	603	356	268	239	239	268	356	603	1037	1526
423.0	1971	2216	2216	1971	1545	1044	600	351	265	235	235	265	351	600	1044	1545
432.0	2001	2252	2252	2001	1564	1050	596	346	261	231	231	261	346	596	1050	1564
441.0	2031	2289	2289	2031	1582	1056	593	341	257	227	227	257	341	593	1056	1582
450.0	2061	2326	2326	2061	1601	1062	590	337	254	223	223	254	337	590	1062	1601

HF = 2300
... = 1230.67
HCA = 1053.67
LOB = 960
MLL = 462
LINE ON B @ ... = 4077.08 Ft

VESSEL DISP. (FT) 13	(% WD) 14	RESTORING FORCE ON VESSEL (KIPS) 15	INCREMENT STIFFNESS (KIPS/FT) 16	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
459.0	7.7	8200.	17.33	0.	8636.	655335.	2363.	1521.	2096.	2091	2363	2363	2091	1620	1068	586	332	250	219	219	250
468.0	7.8	8357.	17.38	0.	8692.	666183.	2399.	1452.	2130.	2121	2399	2399	2121	1638	1075	583	328	247	216	216	247
477.0	7.9	8514.	17.45	0.	8749.	677034.	2436.	1322.	2164.	2152	2436	2436	2152	1657	1081	580	324	244	212	212	244
486.0	8.1	8667.	17.03	0.	8804.	687473.	2470.	1056.	2196.	2182	2470	2470	2182	1676	1087	577	320	240	208	208	240
495.0	8.3	8818.	16.77	0.	8858.	697621.	2504.	744.	2228.	2212	2504	2504	2212	1695	1094	573	316	237	205	205	237
504.0	8.4	8967.	16.58	0.	8910.	707584.	2537.	476.	2259.	2242	2537	2537	2242	1714	1100	570	312	234	201	201	234
513.0	8.6	9115.	16.44	0.	8962.	717413.	2568.	362.	2289.	2273	2568	2568	2273	1733	1107	567	309	231	198	198	231
522.0	8.7	9264.	16.56	0.	9015.	727271.	2600.	313.	2318.	2305	2600	2600	2305	1752	1113	564	305	227	195	195	227
531.0	8.9	9416.	16.83	0.	9069.	737254.	2632.	259.	2349.	2337	2632	2632	2337	1771	1120	561	301	224	191	191	224
540.0	9.0	9567.	16.80	0.	9123.	747125.	2664.	206.	2379.	2369	2664	2664	2369	1791	1126	558	298	221	188	188	221
549.0	9.1	9718.	16.80	0.	9177.	756929.	2696.	152.	2410.	2400	2696	2696	2400	1811	1133	555	295	218	185	185	218
558.0	9.3	9871.	16.95	0.	9231.	766790.	2730.	95.	2442.	2431	2730	2730	2431	1831	1139	552	292	215	182	182	215
567.0	9.4	10022.	16.80	0.	9285.	776423.	2763.	44.	2473.	2461	2763	2763	2461	1851	1146	550	289	212	178	178	212
576.0	9.6	10172.	16.63	0.	9338.	785834.	2797.	5.	2505.	2490	2797	2797	2490	1871	1153	547	286	209	175	175	209
585.0	9.8	10322	16.67	0.	9390.	795240.	2831.	0.	2538.	2519	2831	2831	2519	1891	1160	544	283	206	172	172	206
594.0	9.9			0.	9442.	804556.	2866.	0.	2571.	2547	2866	2866	2547	1910	1166	541	280	203	169	169	203
603.0	10.1	10[illegible]		0.	9494.	813725.	2902.	0.	2605.	2574	2902	2902	2574	1930	1173	538	277	200	166	166	200
612.0	10.2	10771.	16.68	0.	9546.	822842.	2937.	0.	2638.	2600	2937	2937	2600	1951	1180	536	275	197	163	163	197
621.0	10.4	10924.	17.01	0.	9600.	832178.	2973.	0.	2673.	2628	2973	2973	2628	1971	1187	533	272	194	160	160	194
630.0	10.5	11080.	17.34	0.	9655.	841735.	3011.	0.	2709.	2656	3011	3011	2656	1992	1193	530	269	192	157	157	192
639.0	10.6	11237.	17.46	0.	9710.	851332.	3050.	0.	2745.	2684	3050	3050	2684	2013	1200	528	267	189	155	155	189
648.0	10.8	11397.	17.69	0.	9767.	861062.	3089.	0.	2783.	2712	3089	3089	2712	2034	1206	525	264	186	152	152	186
657.0	10.9	11558.	17.92	0.	9824.	870938.	3129.	0.	2820.	2741	3129	3129	2741	2055	1213	522	262	183	149	149	183
666.0	11.1	11720.	18.04	0.	9881.	880883.	3170.	0.	2859.	2769	3170	3170	2769	2076	1220	520	260	181	146	146	181

LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
262	183	149	149	183	262	522	1213	2055
260	181	146	146	181	260	520	1220	2076

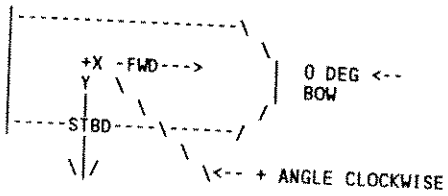
EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT15854. FT

STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE C6A16T

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT	-	.00
LINE ATTACHMENT W.R.T. WATER LINE	-	-62.0 FT
ALLOWABLE LINE LENGTH ON BOTTOM	-	90.0 FT
DIRECTION OF VESSEL TRANSLATION	-	22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP.		RESTORING FORCE ON VESSEL	INCREMENT STIFFNESS	YAW MOMENT	VERTICAL FORCE	OVERTURN MOMENT	MAX.LINE LOAD	LINE ON BOTTOM	HOR.FORCE ON ANCHOR	LINE LOAD (KIPS)												
										LINE NUMBER												
13	14	15	16							1	2	3	4	5	6	7	8	9	10	11	12	
(FT)	(% WD)	(KIPS)	(KIPS/FT)	(FT-KIP)	(KIPS)	(FT-KIP)	(KIPS)	(FT)	(KIPS)													
.0	.0	-1.	.00	2.	6506.	225516.	894.	4101.	751.	894	0	888	862	835	792	749	715	701	691	696	714	754	791	829	862
9.0	.2	151.	16.88	917.	6500.	236726.	919.	4052.	774.	919	0	910	876	840	788	737	696	679	669	677	702	749	796	842	883
18.0	.3	302.	16.79	1750.	6494.	247878.	945.	4002.	796.	945	0	932	891	845	783	725	678	657	648	658	689	744	800	856	904
27.0	.4	453.	16.70	2590.	6490.	259064.	970.	3952.	820.	970	0	954	906	851	779	713	660	636	627	640	676	739	804	870	925
36.0	.6	602.	16.63	3433.	6487.	270193.	997.	3902.	843.	997	0	977	921	857	775	701	642	616	606	622	663	734	808	883	946
45.0	.8	751.	16.55	4271.	6485.	281277.	1023.	3851.	867.	1023	0	1000	936	863	772	689	625	596	586	605	651	729	812	897	967
54.0	.9	899.	16.44	5119.	6485.	292288.	1050.	3799.	891.	1050	0	1023	951	869	768	677	608	577	567	588	638	724	816	911	989
63.0	1.0	1046.	16.25	5932.	6486.	303142.	1077.	3748.	915.	1077	0	1046	967	875	764	666	592	558	549	571	626	719	820	924	1011
72.0	1.2	1190.	16.06	6716.	6489.	313845.	1105.	3695.	940.	1105	0	1070	983	881	760	654	576	541	532	555	614	715	825	938	1034
81.0	1.4	1334.	16.00	7570.	6494.	324536.	1133.	3642.	966.	1133	0	1094	998	887	756	643	560	524	515	540	602	710	829	952	1056
90.0	1.5	1478.	15.96	8523.	6499.	335271.	1161.	3589.	991.	1161	0	1118	1014	893	753	632	546	507	498	526	591	705	833	967	1079
99.0	1.6	1620.	15.84	9508.	6506.	345927.	1189.	3536.	1017.	1189	0	1143	1031	899	749	621	532	491	481	511	579	700	838	981	1102
108.0	1.8	1761.	15.62	10529.	6514.	356278.	1217.	3485.	1042.	1217	0	1167	1046	904	745	610	517	475	466	496	568	695	842	996	1126
117.0	2.0	1901.	15.52	11454.	6524.	366662.	1246.	3432.	1067.	1246	0	1192	1063	911	742	599	503	460	451	482	557	690	846	1010	1149
126.0	2.1	2039.	15.36	12356.	6534.	376825.	1275.	3378.	1094.	1275	0	1216	1080	917	738	589	490	446	437	469	547	685	851	1025	1173
135.0	2.3	2175.	15.11	13358.	6546.	386847.	1303.	3326.	1120.	1303	0	1241	1096	923	735	579	477	432	424	456	537	680	855	1039	1197
144.0	2.4	2311.	15.09	14233.	6560.	396907.	1333.	3272.	1147.	1333	0	1267	1113	929	732	569	464	419	411	444	527	675	860	1054	1220
153.0	2.5	2445.	14.94	15134.	6576.	406828.	1363.	3217.	1174.	1363	0	1291	1130	935	728	559	452	407	399	432	517	671	864	1069	1244
162.0	2.7	2578.	14.78	16138.	6592.	416609.	1393.	3164.	1201.	1393	0	1317	1147	941	725	550	441	395	387	421	507	666	869	1084	1269
171.0	2.8	2711.	14.73	16969.	6611.	426411.	1423.	3108.	1229.	1423	0	1343	1164	948	721	540	429	384	377	410	497	661	873	1100	1292
180.0	3.0	2841.	14.50	17847.	6631.	435980.	1454.	3053.	1257.	1454	0	1369	1181	954	718	531	419	373	366	400	488	657	878	1115	1317
189.0	3.2	2970.	14.33	18835.	6652.	445325.	1484.	2999.	1284.	1484	0	1395	1198	960	715	522	408	364	357	390	479	652	883	1131	1342
198.0	3.3	3098.	14.25	19782.	6674.	454681.	1515.	2945.	1312.	1515	0	1422	1215	967	712	513	399	354	348	380	470	647	887	1146	1367
207.0	3.5	3226.	14.20	20650.	6698.	464007.	1546.	2888.	1341.	1546	0	1449	1233	974	709	505	389	346	339	371	461	642	891	1161	1391
216.0	3.6	3353.	14.15	21671.	6724.	473211.	1578.	2831.	1370.	1578	0	1476	1250	980	705	496	380	337	331	363	452	638	895	1177	1417
225.0	3.8	3479.	13.95	22772.	6750.	482264.	1610.	2776.	1399.	1610	0	1502	1268	987	702	487	372	329	323	355	444	633	900	1193	1443
234.0	3.9	3603.	13.80	23748.	6777.	491201.	1642.	2720.	1428.	1642	0	1530	1286	993	699	479	364	322	316	347	436	629	905	1208	1469
243.0	4.1	3727.	13.77	24749.	6805.	500185.	1674.	2664.	1458.	1674	0	1558	1303	1000	696	471	356	314	309	340	428	624	909	1223	1494
252.0	4.2	3850.	13.69	25883.	6835.	509026.	1706.	2609.	1487.	1706	0	1586	1321	1007	692	463	349	308	302	333	420	620	914	1239	1520
261.0	4.3	3973.	13.62	27217.	6866.	517826.	1737.	2555.	1516.	1737	0	1614	1340	1014	689	456	342	301	296	326	413	615	918	1255	1546
270.0	4.5	4096.	13.66	28450.	6898.	526572.	1770.	2499.	1546.	1770	0	1642	1358	1021	686	448	335	295	290	319	406	611	923	1271	1573
279.0	4.7	4218.	13.54	29549.	6930.	535210.	1803.	2442.	1577.	1803	0	1670	1376	1028	683	441	328	289	285	313	399	607	927	1287	1600
288.0	4.8	4339.	13.47	30678.	6963.	543833.	1836.	2385.	1607.	1836	0	1698	1395	1035	680	434	322	284	279	307	392	602	932	1303	1626
297.0	4.9	4460.	13.43	31894.	6998.	552413.	1870.	2328.	1638.	1870	0	1726	1414	1042	677	427	316	279	274	302	385	598	936	1319	1653
306.0	5.1	4580.	13.38	33266.	7033.	560869.	1903.	2272.	1669.	1903	0	1754	1433	1049	674	420	310	274	269	296	379	594	941	1336	1680
315.0	5.3	4701.	13.36	34580.	7069.	569360.	1936.	2216.	1700.	1936	0	1783	1452	1056	671	414	305	269	265	291	373	589	946	1352	1706
324.0	5.4	4821.	13.33	35754.	7106.	577822.	1971.	2158.	1732.	1971	0	1813	1471	1063	669	408	300	265	260	286	367	585	950	1368	1733
333.0	5.6	4941.	13.38	37016.	7143.	586229.	2006.	2100.	1764.	2006	0	1842	1489	1070	665	401	295	260	256	282	362	581	955	1385	1760
342.0	5.7	5062.	13.46	38365.	7182.	594658.	2041.	2041.	1796.	2041	0	1872	1508	1077	662	395	290	256	252	277	356	577	960	1402	1788
351.0	5.8	5182.	13.34	39815.	7222.	603084.	2075.	1984.	1828.	2075	0	1901	1528	1085	660	390	286	252	248	273	351	573	964	1418	1815
360.0	6.0	5303.	13.38	41378.	7262.	611432.	2110.	1927.	1860.	2110	0	1930	1548	1092	657	384	281	248	244	269	346	569	969	1436	1844
369.0	6.2	5425.	13.56	42871.	7302.	619924.	2146.	1868.	1894.	2146	0	1961	1568	1099	654	378	277	244	240	265	341	565	974	1453	1872
378.0	6.3	5545.	13.40	44362.	7343.	628346.	2181.	1810.	1926.	2181	0	1991	1587	1107	651	373	273	240	236	261	336	561	979	1469	1900
387.0	6.4	5665.	13.35	45949.	7383.	636700.	2215.	1754.	1959.	2215	0	2022	1607	1115	649	368	269	236	232	258	331	557	984	1486	1927
396.0	6.6	5787.	13.48	47645.	7425.	645053.	2250.	1698.	1991.	2250	0	2053	1627	1122	646	363	265	232	228	254	327	553	989	1503	1956
405.0	6.8	5909.	13.59	49236.	7467.	653472.	2287.	1638.	2025.	2287	0	2083	1646	1129	643	358	262	228	224	250	322	550	994	1520	1986
414.0	6.9	6032.	13.66	50855.	7510.	662019.	2324.	1579.	2059.	2324	0	2115	1667	1137	641	354	258	225	220	247	318	546	999	1538	2014
423.0	7.1	6156.	13.75	52576.	7554.	670513.	2361.	1524.	2094.	2361	0	2146	1687	1145	638	349	255	221	217	244	314	542	1004	1556	2044
432.0	7.2	6278.	13.60	54250.	7597.	678911.	2397.	1458.	2128.	2397	0	2177	1707	1153	635	345	252	217	213	240	310	539	1009	1573	2073
441.0	7.3	6399.	13.48	55886.	7639.	687172.	2433.	1335.	2161.	2433	0	2208	1726	1160	633	340	248	214	209	237	306	535	1014	1591	2102
450.0	7.5	6520.	13.42	57807.	7681.	695283.	2468.	1080.	2194.	2468	0	2239	1746	1168	630	336	245	210	206	233	302	532	1019	1609	2132

VESSEL DISP. 13 (FT)	14 (% WD)	15	RESTORING FORCE ON VESSEL 16 (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)
459.0	7.7		6641.	13.45	59931.	7724.	703456.	2501.	771.	2225.
468.0	7.8		6762.	13.42	62118.	7766.	711544.	2534.	497.	2256.
477.0	7.9		6881.	13.23	64466.	7808.	719457.	2565.	368.	2286.
486.0	8.1		7000.	13.20	66905.	7849.	727292.	2596.	319.	2315.
495.0	8.3		7120.	13.38	69367.	7891.	735252.	2628.	264.	2345.
504.0	8.4		7241.	13.38	71841.	7934.	743118.	2660.	213.	2376.
513.0	8.6		7360.	13.25	74243.	7975.	750827.	2692.	159.	2406.
522.0	8.7		7479.	13.21	76503.	8017.	758553.	2725.	103.	2437.
531.0	8.9		7598.	13.27	78757.	8059.	766211.	2758.	50.	2469.
540.0	9.0		7717.	13.16	81010.	8100.	773854.	2792.	10.	2500.
549.0	9.1		7834.	13.07	83079.	8141.	781331.	2825.	0.	2532.
558.0	9.3		7952.	13.09	85014.	8182.	788912.	2860.	0.	2565.
567.0	9.4		8071.	13.22	86900.	8224.	796497.	2895.	0.	2599.
576.0	9.6		8189.	13.14	88740.	8265.	804012.	2931.	0.	2632.
585.0	9.8		8307.	13.06	90421.	8305.	811546.	2966.	0.	2666.
594.0	9.9		8426.	13.27	91928.	8346.	819121.	3004.	0.	2702.
603.0	10.1		8548.	13.46	93481.	8389.	826794.	3042.	0.	2738.
612.0	10.2		8670.	13.59	95066.	8432.	834543.	3081.	0.	2775.
621.0	10.4		8793.	13.68	96578.	8475.	842427.	3120.	0.	2812.

LINE LOAD (KIPS)

LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12				
2501	0	2271	1767	1176	628	332	242	207	202	230	299	528	1024	1626	2162
2534	0	2303	1787	1183	625	328	239	203	199	227	295	525	1029	1644	2192
2565	0	2336	1808	1191	622	324	235	200	195	223	292	521	1035	1662	2221
2596	0	2368	1828	1198	619	320	232	196	192	220	289	518	1040	1681	2250
2628	0	2400	1850	1206	617	317	229	193	189	217	285	514	1045	1699	2281
2660	0	2432	1871	1213	614	313	226	190	185	214	282	511	1051	1716	2312
2692	0	2463	1891	1220	612	309	223	186	182	211	279	507	1056	1734	2344
2725	0	2493	1912	1229	610	306	220	183	179	208	276	504	1061	1752	2374
2758	0	2522	1933	1236	607	303	217	180	176	205	274	500	1067	1770	2405
2792	0	2551	1956	1245	605	300	214	177	173	202	271	497	1071	1789	2435
2825	0	2578	1977	1253	602	297	211	174	170	199	268	494	1077	1808	2464
2860	0	2606	2000	1262	601	294	208	171	167	196	265	490	1082	1826	2492
2895	0	2634	2021	1270	598	291	205	168	164	193	263	487	1088	1845	2520
2931	0	2662	2043	1277	595	288	202	165	161	190	260	484	1093	1864	2547
2966	0	2691	2066	1286	594	285	200	162	158	187	258	480	1098	1883	2573
3004	0	2720	2087	1294	591	283	197	159	155	184	255	477	1104	1901	2599
3042	0	2750	2109	1301	589	280	194	156	152	182	253	475	1110	1920	2626
3081	0	2779	2131	1309	586	277	191	154	149	179	251	472	1116	1940	2654
3120	0	2809	2154	1318	584	275	189	151	147	176	248	468	1121	1959	2680

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT15847. FT

STARTING DISPLACEMENTS : SURGE(FT) = -32.438 SWAY(FT) = -21.750 YAW(DEG) = .835

DEEPWATER, ARAMID MOORING LINE JIP
CASE t6a16t
6000 ft 2% 70 kip buoy

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT	-	.00
LINE ATTACHMENT W.R.T. WATER LINE	-	-62.0 FT
ALLOWABLE LINE LENGTH ON BOTTOM	-	90.0 FT
DIRECTION OF VESSEL TRANSLATION	-	45.0 DEG

CATENARY OPTIMIZATION - NO

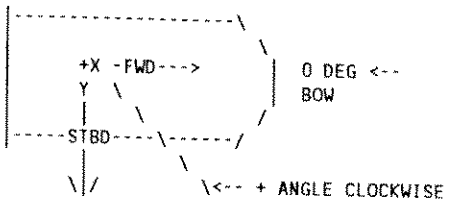
INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO



(15) T6A16T

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	11.3	33.8	56.3	78.8	101.3	123.8	146.3	168.8	-168.8	-146.3	-123.8	-101.3	-78.8	-56.3	-33.8	-11.3
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	311.0	311.0	311.0	311.0	311.0	311.0	311.0	311.0	311.0	311.0	311.0	311.0	311.0	311.0	311.0	311.0
INITIAL VESSEL YAW ANGLES (DEG)	.00															

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	6000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	6000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.250"
LINE LENGTH (FT)	1500.0
WEIGHT IN WATER (LB/FT)	59.44
LINE B.S. (KIPS)	3226.0
AREA (SQ IN)	21.65
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE MATERIAL	WIRE
LINE SIZE (IN)	5.250"
LINE LENGTH (FT)	1500.0
WEIGHT IN WATER (LB/FT)	59.44
LINE B.S. (KIPS)	3226.0
AREA (SQ IN)	21.65
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-70.0

LINE MATERIAL	WIRE
LINE SIZE (IN)	5.250"
LINE LENGTH (FT)	150.0
WEIGHT IN WATER (LB/FT)	59.44
LINE B.S. (KIPS)	3226.0
AREA (SQ IN)	21.65
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	ARAMID
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	5610.0
WEIGHT IN WATER (LB/FT)	2.00
LINE B.S. (KIPS)	3000.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	120000.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.5 "
LINE LENGTH (FT)	250.0
WEIGHT IN WATER (LB/FT)	250.01
LINE B.S. (KIPS)	3038.0
AREA (SQ IN)	23.75
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	1800.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.25 "
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	.01
LINE B.S. (KIPS)	9999.0
AREA (SQ IN)	1000.00
APP.MOD. OF ELAS.(KSI)	99999.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16																		
.0	.0	0.	.00	0.	4202.	0.	311.	1000.	167.	311	311	311	311	311	311	311	311	311	311	311	311
9.0	.2	96.	10.63	0.	4208.	13467.	327.	1000.	179.	324	327	327	324	319	314	308	303	300	298	300	303
18.0	.3	194.	10.93	0.	4227.	27461.	345.	1000.	194.	339	345	345	339	329	317	305	296	289	286	286	289
27.0	.4	297.	11.46	0.	4260.	42210.	367.	1000.	211.	356	367	367	356	339	320	303	289	280	276	276	280
36.0	.6	408.	12.31	0.	4308.	58160.	394.	1000.	232.	377	394	394	377	351	323	300	283	273	267	267	273
45.0	.8	531.	13.70	0.	4375.	76117.	427.	1000.	257.	401	427	427	401	363	327	298	278	266	260	260	266
54.0	.9	672.	15.68	0.	4464.	97041.	468.	1000.	289.	430	468	468	430	377	330	296	273	259	253	253	259
63.0	1.0	828.	17.34	0.	4573.	120464.	515.	1000.	326.	465	515	515	465	393	334	293	268	253	247	247	253
72.0	1.2	1010.	20.22	0.	4711.	148068.	576.	1000.	372.	505	576	576	505	411	338	291	263	248	241	241	248
81.0	1.4	1208.	21.95	0.	4870.	178113.	640.	1000.	421.	553	640	640	553	432	342	289	259	243	236	236	243
90.0	1.5	1428.	24.49	0.	5054.	211676.	713.	1000.	478.	606	713	713	606	455	346	287	255	239	232	232	239
99.0	1.6	1669.	26.71	0.	5259.	248321.	797.	1000.	541.	664	797	797	664	480	350	285	252	235	228	228	235
108.0	1.8	1934.	29.46	0.	5492.	289056.	890.	1000.	613.	729	890	890	729	508	355	283	248	231	224	224	231
117.0	2.0	2208.	30.45	0.	5738.	330877.	982.	1000.	683.	801	982	982	801	539	360	281	245	228	221	221	228
126.0	2.1	2494.	31.85	0.	6001.	374051.	1072.	1000.	751.	881	1072	1072	881	576	365	279	242	225	218	218	225
135.0	2.3	2789.	32.70	0.	6271.	418530.	1171.	1000.	827.	958	1171	1171	958	612	370	277	239	222	215	215	222
144.0	2.4	3088.	33.29	0.	6547.	463295.	1273.	1000.	905.	1035	1273	1273	1035	651	375	276	237	219	212	212	219
153.0	2.5	3390.	33.49	0.	6829.	507910.	1369.	1000.	979.	1116	1369	1369	1116	693	381	274	234	217	210	210	217
162.0	2.7	3718.	36.52	0.	7139.	556620.	1477.	1000.	1061.	1204	1477	1477	1204	739	387	273	232	214	207	207	214
171.0	2.8	4029.	34.47	0.	7435.	601638.	1573.	1000.	1135.	1289	1573	1573	1289	788	393	271	230	212	205	205	212
180.0	3.0	4345.	35.13	0.	7738.	646845.	1673.	1000.	1211.	1372	1673	1673	1372	841	400	269	227	210	203	203	210
189.0	3.2	4680.	37.22	-1.	8060.	694955.	1778.	1000.	1292.	1461	1778	1778	1461	896	407	268	225	208	201	201	208
198.0	3.3	5014.	37.12	0.	8380.	743136.	1888.	1000.	1376.	1547	1888	1888	1547	947	414	267	223	206	199	199	206
207.0	3.5	5335.	35.64	0.	8689.	788373.	1988.	1000.	1453.	1631	1988	1988	1631	1002	422	265	222	204	197	197	204
216.0	3.6	5664.	36.59	0.	9005.	835185.	2092.	1000.	1533.	1718	2092	2092	1718	1055	430	264	220	202	195	195	202
225.0	3.8	5997.	37.01	0.	9329.	882221.	2192.	1000.	1610.	1810	2192	2192	1810	1111	439	263	218	200	194	194	200
234.0	3.9	6338.	37.82	0.	9661.	929895.	2296.	1000.	1690.	1902	2296	2296	1902	1171	449	261	216	199	192	192	199
243.0	4.1	6679.	37.92	0.	9994.	976871.	2402.	1000.	1772.	1989	2402	2402	1989	1233	458	260	215	197	191	191	197
252.0	4.2	7008.	36.54	0.	10314.	1022542.	2500.	1000.	1847.	2079	2500	2500	2079	1289	468	259	213	196	189	189	196
261.0	4.3	7338.	36.65	0.	10634.	1067789.	2601.	1000.	1926.	2164	2601	2601	2164	1348	479	258	212	194	188	188	194
270.0	4.5	7683.	38.36	0.	10970.	1115036.	2709.	1000.	2008.	2252	2709	2709	2252	1410	490	257	210	193	186	186	193
279.0	4.7	8022.	37.69	0.	11300.	1161509.	2812.	1000.	2089.	2341	2812	2812	2341	1470	501	255	209	192	185	185	192
288.0	4.8	8370.	38.70	0.	11638.	1209641.	2919.	1060.	2171.	2434	2919	2919	2434	1528	512	254	208	191	184	184	191
297.0	4.9	8683.	34.80	0.	11942.	1251554.	3010.	0.	2242.	2517	3010	3010	2517	1585	524	253	207	190	182	182	190
306.0	5.1	8896.	23.60	0.	12156.	1275972.	3029.	0.	2259.	2602	3029	3029	2602	1644	538	252	205	188	181	181	188
315.0	5.3	9129.	25.93	0.	12393.	1303856.	3054.	0.	2281.	2695	3054	3054	2695	1704	553	251	204	187	180	180	187
324.0	5.4	9369.	26.59	0.	12635.	1331970.	3085.	0.	2308.	2784	3085	3085	2784	1767	569	250	203	186	178	178	186
333.0	5.6	9618.	27.74	0.	12887.	1361397.	3120.	0.	2337.	2874	3120	3120	2874	1832	584	249	202	185	177	177	185
342.0	5.7	9869.	27.87	0.	13138.	1391180.	3154.	0.	2366.	2968	3154	3154	2968	1896	599	248	201	184	176	176	184

203	303	300	298	300	303	308	314	319			
296	289	286	286	289	296	305	317	329			
289	280	276	276	280	289	303	320	339			
283	273	267	267	273	283	300	323	351			
278	266	260	260	266	278	298	327	363			
273	259	253	253	259	273	296	330	377			
268	253	247	247	253	268	293	334	393			
263	248	241	241	248	263	291	338	411			
259	243	236	236	243	259	289	342	432			
255	239	232	232	239	255	287	346	455			
252	235	228	228	235	252	285	350	480			
248	231	224	224	231	248	283	355	508			
245	228	221	221	228	245	281	360	539			
242	225	218	218	225	242	279	365	576			
239	222	215	215	222	239	277	370	612			
237	219	212	212	219	237	276	375	651			
234	217	210	210	217	234	274	381	693			
232	214	207	207	214	232	273	387	739			
230	212	205	205	212	230	271	393	788			
227	210	203	203	210	227	269	400	841			
225	208	201	201	208	225	268	407	896			
223	206	199	199	206	223	267	414	947			
222	204	197	197	204	222	265	422	1002			
220	202	195	195	202	220	264	430	1055			
218	200	194	194	200	218	263	439	1111			
216	199	192	192	199	216	261	449	1171			
215	197	191	191	197	215	260	458	1233			
213	196	189	189	196	213	259	468	1289			
212	194	188	188	194	212	258	479	1348			
210	193	186	186	193	210	257	490	1410			
209	192	185	185	192	209	255	501	1470			
208	191	184	184	191	208	254	512	1528			
207	190	182	182	190	207	253	524	1585			
205	188	181	181	188	205	252	538	1644			
204	187	180	180	187	204	251	553	1704			
203	186	178	178	186	203	250	569	1767			
202	185	177	177	185	202	249	584	1832			
201	184	176	176	184	201	248	599	1896			

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT 8076. FT

STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

RF = 2303.3
SLL = 1012
DLL = 1337.0 VLL = 936.4
HAL = 954.3
VAL = 745.44

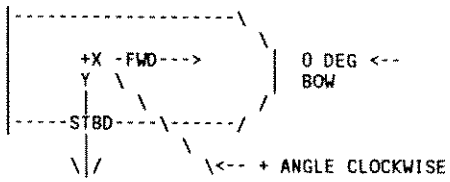
WETWEIGHT = 190.95

VLO = 828
LB = 1263 SF = 2.37

DEEPWATER, ARAMID MOORING LINE JIP
CASE t6a16t
6000 ft 2% 70 kip buoy

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT	-	.00
LINE ATTACHMENT W.R.T. WATER LINE	-	-62.0 FT
ALLOWABLE LINE LENGTH ON BOTTOM	-	90.0 FT
DIRECTION OF VESSEL TRANSLATION	-	22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. (FT) 13	(% WD) 14	RESTORING FORCE ON VESSEL (KIPS) 15	INCREMENT STIFFNESS (KIPS/FT) 16	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	-0.	.00	-0.	3941.	126043.	346.	1000.	194.	346	0	342	332	326	312	300	291	289	286	287	290
9.0	.2	86.	9.54	507.	3958.	136607.	368.	1000.	212.	368	0	360	343	329	309	293	282	279	276	278	284
18.0	.3	175.	9.97	1042.	3988.	148172.	394.	1000.	232.	394	0	382	356	334	307	287	274	270	267	270	278
27.0	.4	273.	10.82	1503.	4032.	160718.	428.	1000.	258.	428	0	407	369	338	305	281	267	262	260	263	273
36.0	.6	381.	12.05	1980.	4093.	175336.	469.	1000.	290.	469	0	439	385	343	303	276	261	255	253	257	268
45.0	.8	500.	13.25	2768.	4169.	191421.	515.	1000.	326.	515	0	476	402	348	301	272	255	249	247	251	263
54.0	.9	636.	15.01	3155.	4266.	210021.	576.	1000.	373.	576	0	517	423	353	299	267	249	243	241	246	259
63.0	1.0	783.	16.39	4230.	4380.	230709.	639.	1000.	421.	639	0	571	446	358	297	263	245	238	236	241	255
72.0	1.2	947.	18.18	5711.	4514.	253360.	712.	1000.	477.	712	0	625	472	363	295	259	240	233	232	237	251
81.0	1.4	1123.	19.55	6808.	4664.	278294.	795.	1000.	540.	795	0	688	501	370	294	256	236	229	228	233	247
90.0	1.5	1316.	21.52	8029.	4835.	305832.	888.	1000.	611.	888	0	758	533	376	292	252	233	226	224	230	244
99.0	1.6	1521.	22.75	10819.	5020.	334996.	979.	1000.	681.	979	0	834	571	382	290	249	229	222	221	226	241
108.0	1.8	1729.	23.15	14278.	5212.	364453.	1068.	1000.	748.	1068	0	913	609	390	288	246	226	219	217	223	238
117.0	2.0	1954.	24.96	17867.	5423.	396348.	1166.	1000.	823.	1166	0	997	651	398	287	243	223	216	215	220	235
126.0	2.1	2181.	25.18	21362.	5638.	428635.	1267.	1000.	900.	1267	0	1078	697	406	286	240	221	213	212	217	232
135.0	2.3	2406.	25.05	25447.	5854.	460781.	1362.	1000.	973.	1362	0	1163	744	414	284	238	218	210	209	215	230
144.0	2.4	2649.	27.04	29728.	6091.	495607.	1468.	1000.	1054.	1468	0	1254	796	423	283	235	215	208	207	213	228
153.0	2.5	2891.	26.83	35375.	6328.	529881.	1565.	1000.	1129.	1565	0	1340	852	433	281	233	213	206	205	210	226
162.0	2.7	3131.	26.68	40577.	6566.	564196.	1663.	1000.	1204.	1663	0	1428	909	444	280	231	211	204	202	208	224
171.0	2.8	3381.	27.80	45713.	6815.	599939.	1768.	1000.	1284.	1768	0	1518	967	454	278	229	209	201	200	206	222
180.0	3.0	3632.	27.82	50285.	7064.	635666.	1876.	1000.	1367.	1876	0	1605	1025	467	278	227	207	199	198	204	220
189.0	3.2	3880.	27.56	55614.	7312.	670873.	1977.	1000.	1444.	1977	0	1693	1083	480	276	225	205	198	197	202	218
198.0	3.3	4132.	28.04	60929.	7565.	706793.	2080.	1000.	1523.	2080	0	1786	1143	492	275	223	203	196	195	201	216
207.0	3.5	4388.	28.48	67197.	7824.	743124.	2179.	1000.	1600.	2179	0	1881	1205	503	274	222	202	194	193	199	214
216.0	3.6	4644.	28.37	73120.	8081.	779216.	2281.	1000.	1678.	2281	0	1971	1268	517	273	220	200	193	192	197	213
225.0	3.8	4903.	28.86	79517.	8346.	815749.	2382.	1000.	1756.	2382	0	2063	1332	531	272	218	198	191	190	196	211
234.0	3.9	5156.	28.09	84707.	8603.	851374.	2484.	1000.	1835.	2484	0	2150	1394	549	271	217	197	190	189	194	210
243.0	4.1	5415.	28.81	90405.	8869.	887702.	2585.	1000.	1913.	2585	0	2240	1456	567	270	215	196	189	188	193	208
252.0	4.2	5677.	29.09	95633.	9135.	924696.	2692.	1000.	1996.	2692	0	2332	1520	583	268	214	194	187	186	192	207
261.0	4.3	5937.	28.88	101067.	9399.	961201.	2793.	1000.	2074.	2793	0	2427	1580	601	268	212	193	186	185	191	206
270.0	4.5	6194.	28.54	106327.	9660.	996961.	2898.	1000.	2155.	2898	0	2512	1643	619	267	211	192	184	183	189	204
279.0	4.7	6454.	28.86	112231.	9924.	1033080.	2999.	0.	2233.	2999	0	2600	1707	637	266	210	191	183	182	188	203
288.0	4.8	6664.	23.31	123495.	10145.	1061344.	3028.	0.	2258.	3028	0	2692	1769	653	264	209	190	182	181	187	202
297.0	4.9	6864.	22.28	135694.	10355.	1087782.	3048.	0.	2276.	3048	0	2778	1830	667	263	207	188	180	179	186	201
306.0	5.1	7079.	23.90	147474.	10580.	1116377.	3079.	0.	2302.	3079	0	2869	1894	685	262	206	187	179	178	185	200
315.0	5.3	7294.	23.92	158198.	10803.	1144817.	3114.	0.	2332.	3114	0	2961	1953	702	261	205	186	178	177	183	199
324.0	5.4	7490.	21.69	168176.	11007.	1170093.	3148.	0.	2360.	3148	0	3020	2018	726	260	204	185	177	176	182	198

LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
346	0	342	332	326	312	300	291	289	286	287	290	302	312	322	332
368	0	360	343	329	309	293	282	279	276	278	284	300	315	332	348
394	0	382	356	334	307	287	274	270	267	270	278	296	317	341	366
428	0	407	369	338	305	281	267	262	260	263	273	294	320	353	388
469	0	439	385	343	303	276	261	255	253	257	268	291	322	365	413
515	0	476	402	348	301	272	255	249	247	251	263	289	325	378	445
576	0	517	423	353	299	267	249	243	241	246	259	286	328	393	481
639	0	571	446	358	297	263	245	238	236	241	255	284	331	410	521
712	0	625	472	363	295	259	240	233	232	237	251	282	334	430	573
795	0	688	501	370	294	256	236	229	228	233	247	279	337	451	624
888	0	758	533	376	292	252	233	226	224	230	244	277	340	474	682
979	0	834	571	382	290	249	229	222	221	226	241	275	344	501	748
1068	0	913	609	390	288	246	226	219	217	223	238	273	347	528	821
1166	0	997	651	398	287	243	223	216	215	220	235	271	351	561	897
1267	0	1078	697	406	286	240	221	213	212	217	232	269	354	594	973
1362	0	1163	744	414	284	238	218	210	209	215	230	267	358	630	1048
1468	0	1254	796	423	283	235	215	208	207	213	228	266	363	669	1128
1565	0	1340	852	433	281	233	213	206	205	210	226	264	367	711	1216
1663	0	1428	909	444	280	231	211	204	202	208	224	262	371	754	1297
1768	0	1518	967	454	278	229	209	201	200	206	222	261	376	803	1380
1876	0	1605	1025	467	278	227	207	199	198	204	220	259	380	850	1463
1977	0	1693	1083	480	276	225	205	198	197	202	218	257	384	900	1546
2080	0	1786	1143	492	275	223	203	196	195	201	216	256	390	951	1628
2179	0	1881	1205	503	274	222	202	194	193	199	214	254	396	1004	1715
2281	0	1971	1268	517	273	220	200	193	192	197	213	253	401	1053	1804
2382	0	2063	1332	531	272	218	198	191	190	196	211	252	408	1107	1895
2484	0	2150	1394	549	271	217	197	190	189	194	210	250	413	1161	1979
2585	0	2240	1456	567	270	215	196	189	188	193	208	249	420	1219	2066
2692	0	2332	1520	583	268	214	194	187	186	192	207	248	428	1276	2150
2793	0	2427	1580	601	268	212	193	186	185	191	206	247	434	1333	2234
2898	0	2512	1643	619	267	211	192	184	183	189	204	245	442	1384	2322
2999	0	2600	1707	637	266	210	191	183	182	188	203	244	450	1439	2411
3028	0	2692	1769	653	264	209	190	182	181	187	202	243	460	1507	2493
3048	0	2778	1830	667	263	207	188	180	179	186	201	243	472	1564	2583
3079	0	2869	1894	685	262	206	187	179	178	185	200	242	483	1622	2677
3114	0	2961	1953	702	261	205	186	178	177	183	199	241	495	1684	2764
3148	0	3020	2018	726	260	204	185	177	176	182	198	240	504	1741	2851

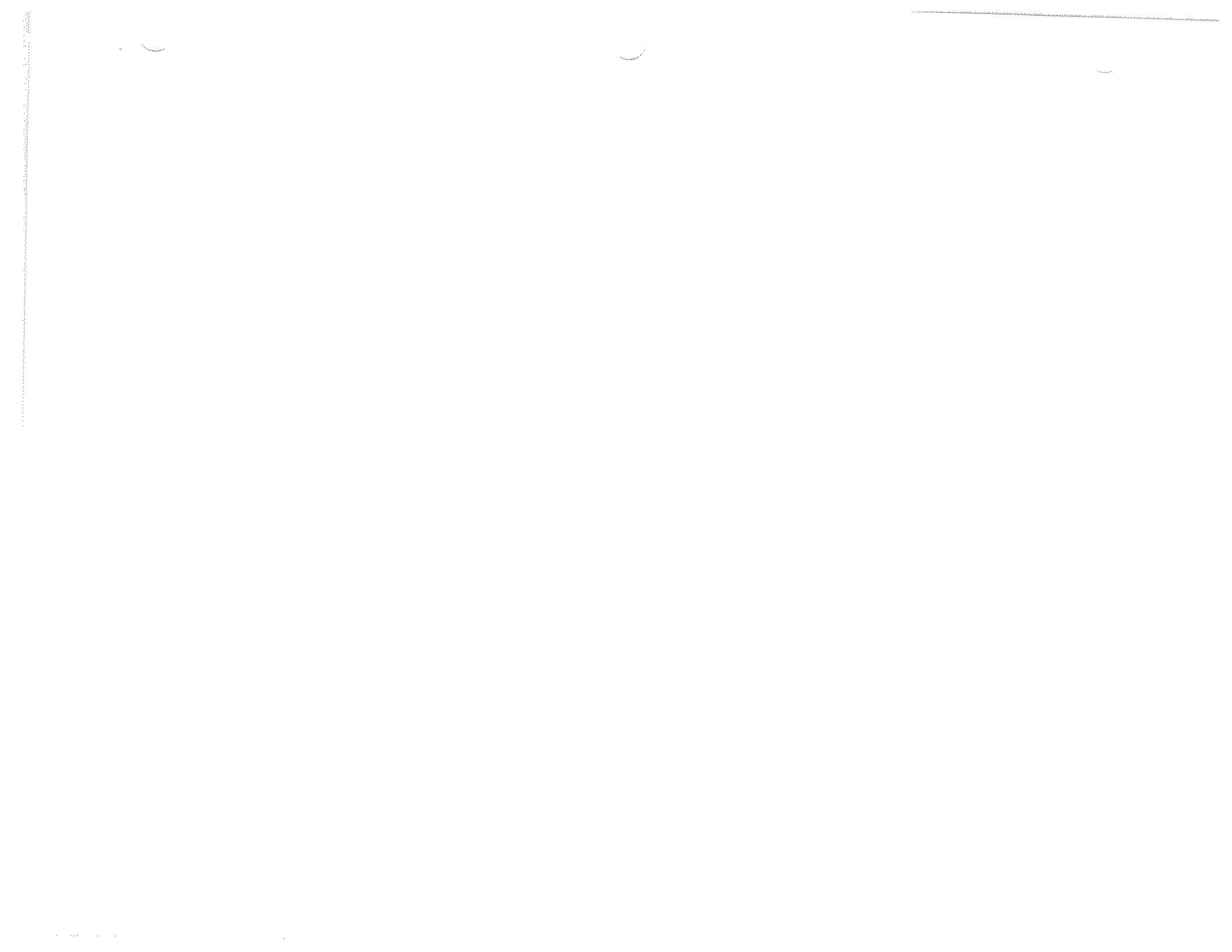
EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT 8077. FT

STARTING DISPLACEMENTS : SURGE(FT) = -15.000 SWAY(FT) = -10.125 YAW(DEG) = .727

APPENDIX L - DEPTH EXTENSION DESIGNS

L.1 Preferred Designs

L.2 Alternate Designs



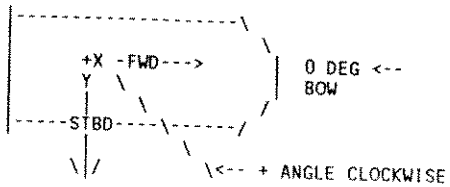
Appendix L.1 - Preferred Designs

DEEPWATER, ARAMID MOORING LINE JIP
CASE T8A12T tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

T8A12T

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	15.0	45.0	75.0	105.0	135.0	165.0	-165.0	-135.0	-105.0	-75.0	-45.0	-15.0
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0	330.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	8000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	8000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.625"
LINE LENGTH (FT)	300.0
WEIGHT IN WATER (LB/FT)	57.26
LINE B.S. (KIPS)	3634.0
AREA (SQ IN)	24.85
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.625"
LINE LENGTH (FT)	1500.0
WEIGHT IN WATER (LB/FT)	57.26
LINE B.S. (KIPS)	3634.0
AREA (SQ IN)	24.85
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.625"
LINE LENGTH (FT)	150.0
WEIGHT IN WATER (LB/FT)	57.26
LINE B.S. (KIPS)	3634.0
AREA (SQ IN)	24.85
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	ARAMID
LINE SIZE (IN)	5.938"
LINE LENGTH (FT)	7450.0
WEIGHT IN WATER (LB/FT)	2.17
LINE B.S. (KIPS)	3561.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	142000.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	6.250"
LINE LENGTH (FT)	250.0
WEIGHT IN WATER (LB/FT)	322.85
LINE B.S. (KIPS)	3623.0
AREA (SQ IN)	30.68
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	10800.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.625"
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	57.26
LINE B.S. (KIPS)	3634.0
AREA (SQ IN)	24.85
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
1	124.7	.0	124.7	2712.00	7938.00	2712.0	.0	.0				
2	134.7	9.8	135.0	5792.50	7938.00	1228.9	9.8	.0	1.63	.00	.00	.00
3	144.7	17.5	145.7	6012.00	7938.00	1198.0	17.5	.0	2.41	.00	.00	.00
4	154.7	24.9	156.6	6114.45	7938.00	1167.0	24.9	.0	3.19	.00	.00	.00
5	164.7	32.2	167.8	6183.83	7938.00	1136.1	32.2	.0	3.97	.00	.00	.00
6	174.7	39.4	179.0	6236.75	7938.00	1105.1	39.4	.0	4.74	.00	.00	.00
7	184.7	46.7	190.5	6279.21	7938.00	1074.2	46.7	.0	5.52	.00	.00	.00
8	194.7	54.0	202.0	6316.31	7938.00	1043.2	54.0	.0	6.30	.00	.00	.00
9	204.7	61.4	213.7	6351.22	7938.00	1012.3	61.4	.0	7.09	.00	.00	.00
10	214.7	68.8	225.4	6380.04	7938.00	1000.3	68.8	.0	7.87	.00	122.30	.00
11	234.7	83.4	249.0	6418.68	7938.00	1000.3	83.4	.0	9.44	.00	496.19	.00
12	254.7	97.8	272.8	6443.10	7938.00	1000.4	97.8	.0	11.01	.00	783.96	.00
13	274.7	112.1	296.7	6458.31	7938.00	1000.5	112.1	.0	12.56	.00	1256.19	.00
14	294.7	126.4	320.6	6471.56	7938.00	1000.5	126.4	.0	14.12	.00	1636.19	.00
15	314.7	140.6	344.6	6481.13	7938.00	1000.6	140.6	.0	15.68	.00	2016.19	.00
16	334.7	154.8	368.7	6489.74	7938.00	1000.6	154.8	.0	17.24	.00	2143.96	.00
17	354.7	169.0	392.9	6495.79	7938.00	1000.7	169.0	.0	18.80	.00	2630.07	.00
18	374.7	183.1	417.0	6501.37	7938.00	1000.8	183.1	.0	20.35	.00	2990.07	.00
19	394.7	197.3	441.2	6506.51	7938.00	1000.8	197.3	.0	21.91	.00	3350.07	.00
20	414.7	211.5	465.5	6512.65	7938.00	1000.9	211.5	.0	23.47	.00	3503.96	.00
21	434.7	225.6	489.7	6515.71	7938.00	1000.9	225.6	.0	25.03	.00	4070.07	.00
22	454.7	239.8	514.0	6521.06	7938.00	1001.0	239.8	.0	26.59	.00	6399.00	.00
23	474.7	253.8	538.3	6523.70	7938.00	1001.0	253.8	.0	28.15	.00	6652.88	.00
24	494.7	268.1	562.6	6528.41	7938.00	1001.1	268.1	.0	29.71	.00	7439.00	.00
25	514.7	282.1	586.9	6530.76	7938.00	1001.2	282.1	.0	31.27	.00	4897.84	.00
26	534.7	296.3	611.3	6534.96	7938.00	1001.2	296.3	.0	32.84	.00	8479.00	.00
27	554.7	310.6	635.7	6538.91	7938.00	1001.3	310.6	.0	34.40	.00	8999.00	.00
28	574.7	324.6	660.0	6540.84	7938.00	1001.3	324.6	.0	35.96	.00	5857.84	.00
29	594.7	339.0	684.5	6546.15	7938.00	1001.4	339.0	.0	37.53	.00	8494.54	.00
30	614.7	353.1	708.8	6547.84	7938.00	1001.5	353.1	.0	39.09	.00	10152.88	.00
31	634.7	367.3	733.3	6551.07	7938.00	1001.5	367.3	.0	40.66	.00	11079.00	.00
32	654.7	381.6	757.8	6555.70	7938.00	1001.6	381.6	.0	42.24	.00	9814.54	.00
33	674.7	395.7	782.1	6557.12	7938.00	1001.6	395.7	.0	43.80	.00	11652.88	.00
34	694.7	410.1	806.7	6561.37	7938.00	1001.7	410.1	.0	45.37	.00	10694.54	.00
35	714.7	424.1	831.0	6562.63	7938.00	1001.7	424.1	.0	46.94	.00	8097.84	.00
36	734.7	438.5	855.6	6566.58	7938.00	1001.8	438.5	.0	48.51	.00	11574.54	.00
37	754.7	452.9	880.1	6570.35	7938.00	1001.9	452.9	.0	50.09	.00	12014.54	.00
38	774.7	467.0	904.5	6571.42	7938.00	1001.9	467.0	.0	51.66	.00	9057.84	.00
39	794.7	481.3	929.1	6574.95	7938.00	1002.0	481.3	.0	53.23	.00	12894.54	.00
40	814.7	495.7	953.6	6578.33	7938.00	1002.0	495.7	.0	54.81	.00	13334.54	.00
41	834.7	510.1	978.2	6581.59	7938.00	1002.1	510.1	.0	56.39	.00	13774.54	.00
42	854.7	524.5	1002.7	6584.70	7938.00	1002.2	524.5	.0	57.97	.00	14214.54	.00
43	874.7	538.8	1027.3	6587.72	7938.00	1002.2	538.8	.0	59.55	.00	14654.54	.00
44	894.7	553.2	1051.9	6590.65	7938.00	1002.3	553.2	.0	61.13	.00	15094.54	.00
45	914.7	567.6	1076.4	6593.47	7938.00	1002.3	567.6	.0	62.71	.00	15534.54	.00

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
46	934.7	582.0	1101.0	6596.19	7938.00	1002.4	582.0	.0	64.29	.00	15974.54	.00
47	954.7	596.3	1125.6	6598.86	7938.00	1002.5	596.3	.0	65.88	.00	16414.54	.00
48	974.7	610.7	1150.2	6601.44	7938.00	1002.5	610.7	.0	67.46	.00	16854.54	.00
49	994.7	625.1	1174.8	6603.93	7938.00	1002.6	625.1	.0	69.04	.00	17294.54	.00
50	1014.7	639.5	1199.3	6606.37	7938.00	1002.6	639.5	.0	70.62	.00	17734.54	.00
51	1034.7	653.8	1223.9	6608.74	7938.00	1002.7	653.8	.0	72.21	.00	18174.54	.00
52	1054.7	668.2	1248.5	6611.07	7938.00	1002.8	668.2	.0	73.79	.00	17768.42	.00
53	1074.7	682.9	1273.3	6615.05	7938.00	1002.8	682.9	.0	75.39	.00	19920.65	.00
54	1094.7	697.3	1297.9	6617.23	7938.00	1002.9	697.3	.0	76.98	.00	19494.54	.00
55	1114.7	711.6	1322.5	6619.34	7938.00	1002.9	711.6	.0	78.56	.00	19028.42	.00
56	1134.7	726.3	1347.2	6623.06	7938.00	1003.0	726.3	.0	80.16	.00	21300.65	.00
57	1154.7	740.7	1371.8	6625.07	7938.00	1003.0	740.7	.0	81.75	.00	19868.42	.00
58	1174.7	755.4	1396.6	6628.62	7938.00	1003.1	755.4	.0	83.35	.00	22220.65	.00
59	1194.7	769.8	1421.2	6630.53	7938.00	1003.2	769.8	.0	84.94	.00	20708.42	.00
60	1214.7	784.8	1446.1	6635.37	7938.00	1003.2	784.8	.0	86.55	.00	15091.73	.00
61	1234.7	799.1	1470.7	6637.15	7938.00	1003.3	799.1	.0	88.14	.00	22574.54	.00
62	1254.7	813.5	1495.3	6638.95	7938.00	1003.4	813.5	.0	89.73	.00	21968.42	.00
63	1274.7	828.5	1520.3	6643.52	7938.00	1003.4	828.5	.0	91.35	.00	15991.73	.00
64	1294.7	842.9	1544.9	6645.16	7938.00	1003.5	842.9	.0	92.94	.00	23894.54	.00
65	1314.7	857.6	1569.6	6648.19	7938.00	1003.5	857.6	.0	94.54	.00	25440.65	.00
66	1334.7	872.3	1594.4	6651.13	7938.00	1003.6	872.3	.0	96.14	.00	33783.46	.00
67	1354.7	886.6	1619.0	6652.67	7938.00	1003.7	886.6	.0	97.74	.00	24068.42	.00
68	1374.7	901.6	1644.0	6656.82	7938.00	1003.7	901.6	.0	99.36	.00	17491.73	.00
69	1394.7	916.0	1668.6	6658.32	7938.00	1003.8	916.0	.0	100.95	.00	24908.42	.00
70	1414.7	931.0	1693.5	6662.30	7938.00	1003.8	931.0	.0	102.57	.00	18091.73	.00
71	1434.7	945.4	1718.1	6663.70	7938.00	1003.9	945.4	.0	104.16	.00	25748.42	.00
72	1454.7	960.4	1743.1	6667.59	7938.00	1004.0	960.4	.0	105.78	.00	18691.73	.00
73	1474.7	975.1	1767.9	6670.14	7938.00	1004.0	975.1	.0	107.39	.00	29120.65	.00
74	1494.7	990.1	1792.8	6673.78	7938.00	1004.1	990.1	.0	109.01	.00	19291.73	.00
75	1514.7	1004.5	1817.4	6675.14	7938.00	1004.1	1004.5	.0	110.61	.00	28734.54	.00
76	1534.7	1019.5	1842.4	6678.68	7938.00	1004.2	1019.5	.0	112.23	.00	19891.73	.00
77	1554.7	1034.5	1867.4	6682.25	7938.00	1004.3	1034.5	.0	113.85	.00	20191.73	.00
78	1574.7	1048.8	1892.0	6683.42	7938.00	1004.3	1048.8	.0	115.45	.00	27322.30	.00
79	1594.7	1063.8	1916.9	6686.83	7938.00	1004.4	1063.8	.0	117.08	.00	20791.73	.00
80	1614.7	1078.8	1941.9	6690.21	7938.00	1004.4	1078.8	.0	118.70	.00	21091.73	.00
81	1634.7	1093.2	1966.5	6691.27	7938.00	1004.5	1093.2	.0	120.30	.00	29948.42	.00
82	1654.7	1108.2	1991.5	6694.56	7938.00	1004.6	1108.2	.0	121.93	.00	21691.73	.00
83	1674.7	1123.2	2016.4	6697.70	7938.00	1004.6	1123.2	.0	123.55	.00	21991.73	.00
84	1694.7	1138.2	2041.4	6700.82	7938.00	1004.7	1138.2	.0	125.18	.00	22291.73	.00
85	1714.7	1153.2	2066.4	6703.93	7938.00	1004.8	1153.2	.0	126.80	.00	22591.73	.00
86	1734.7	1168.2	2091.3	6706.96	7938.00	1004.8	1168.2	.0	128.43	.00	22891.73	.00
87	1754.7	1182.6	2116.0	6707.95	7938.00	1004.9	1182.6	.0	130.04	.00	30922.30	.00
88	1774.7	1197.6	2140.9	6710.94	7938.00	1004.9	1197.6	.0	131.67	.00	23491.73	.00
89	1794.7	1212.6	2165.9	6713.80	7938.00	1005.0	1212.6	.0	133.29	.00	23791.73	.00
90	1814.7	1227.6	2190.9	6716.70	7938.00	1005.1	1227.6	.0	134.92	.00	24091.73	.00
91	1834.7	1242.6	2215.8	6719.46	7938.00	1005.1	1242.6	.0	136.55	.00	24391.73	.00
92	1854.7	1257.6	2240.8	6722.34	7938.00	1005.2	1257.6	.0	138.19	.00	24691.73	.00
93	1874.7	1272.6	2265.8	6725.07	7938.00	1005.3	1272.6	.0	139.82	.00	24991.73	.00
94	1894.7	1287.6	2290.8	6727.73	7938.00	1005.3	1287.6	.0	141.45	.00	25291.73	.00
95	1914.7	1302.6	2315.7	6730.38	7938.00	1005.4	1302.6	.0	143.08	.00	25591.73	.00
96	1934.7	1317.6	2340.7	6733.07	7938.00	1005.4	1317.6	.0	144.71	.00	25891.73	.00
97	1954.7	1332.6	2365.7	6735.63	7938.00	1005.5	1332.6	.0	146.35	.00	20953.38	.00
98	1974.7	1347.6	2390.7	6738.17	7938.00	1005.6	1347.6	.0	147.98	.00	21193.38	.00
99	1994.7	1363.2	2416.0	6742.41	7938.00	1005.6	1363.2	.0	149.64	.00	32150.07	.00

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	3632.	0.	330.	1001.	132.	330	330	330	330	330	330	330	330	330	330	330	330
4.0	.1	36.	8.93	0.	3634.	8419.	341.	1001.	138.	339	341	339	335	330	325	322	321	322	325	330	335
8.0	.1	70.	8.47	0.	3639.	16309.	351.	1001.	144.	348	351	348	341	330	321	315	313	315	321	330	341
12.0	.2	103.	8.26	0.	3649.	24027.	362.	1001.	151.	357	362	357	346	330	317	308	305	308	317	330	346
16.0	.2	137.	8.71	0.	3664.	32331.	376.	1001.	159.	368	376	368	351	330	313	302	299	302	313	330	351
20.0	.3	176.	9.65	0.	3687.	41715.	392.	1001.	168.	381	392	381	356	330	309	297	292	297	309	330	356
24.0	.3	217.	10.16	0.	3714.	51666.	409.	1001.	178.	395	409	395	362	330	305	291	285	291	305	330	362
28.0	.3	258.	10.44	0.	3744.	61861.	428.	1001.	189.	410	428	410	368	330	302	285	279	285	302	330	368
32.0	.4	301.	10.55	0.	3778.	72036.	445.	1001.	199.	426	445	426	376	330	299	280	273	280	299	330	376
36.0	.4	341.	10.10	0.	3812.	81621.	460.	1001.	208.	442	460	442	384	330	296	275	268	275	296	330	384
40.0	.5	385.	10.95	0.	3852.	91845.	489.	1001.	225.	454	489	454	392	331	292	270	264	270	292	331	392
44.0	.6	430.	11.18	0.	3898.	102629.	506.	1001.	235.	474	506	474	401	331	289	266	260	266	289	331	401
48.0	.6	484.	13.64	0.	3961.	116100.	537.	1001.	253.	496	537	496	410	331	286	262	256	262	286	331	410
52.0	.6	525.	10.15	0.	4004.	125455.	557.	1001.	265.	512	557	512	419	331	283	259	253	259	283	331	419
56.0	.7	588.	15.82	0.	4084.	141382.	593.	1001.	286.	541	593	541	428	331	280	256	250	256	280	331	428
60.0	.8	630.	10.52	0.	4132.	151109.	614.	1001.	298.	558	614	558	438	331	277	253	247	253	277	331	438
64.0	.8	691.	15.25	0.	4210.	166854.	644.	1001.	315.	589	644	589	445	331	274	250	244	250	274	331	445
68.0	.9	738.	11.67	0.	4265.	178368.	671.	1001.	331.	609	671	609	452	331	271	248	241	248	271	331	452
72.0	.9	788.	12.65	0.	4328.	190588.	705.	1001.	351.	628	705	628	461	331	269	245	238	245	269	331	461
76.0	.9	856.	17.00	0.	4425.	207332.	735.	1002.	368.	664	735	664	475	331	266	242	236	242	266	331	475
80.0	1.0	896.	9.99	0.	4478.	215376.	756.	1002.	381.	676	756	676	491	331	264	240	233	240	264	331	491
84.0	1.0	969.	18.05	0.	4579.	234243.	794.	1002.	403.	715	794	715	500	332	262	238	231	238	262	332	500
88.0	1.1	1027.	14.71	0.	4657.	248734.	842.	1002.	431.	736	842	736	508	332	260	236	229	236	260	332	508
92.0	1.1	1069.	10.48	-0.	4716.	257621.	857.	1002.	439.	754	857	754	523	332	258	234	227	234	258	332	523
96.0	1.2	1152.	20.66	0.	4841.	277826.	907.	1002.	469.	792	907	792	541	332	257	232	225	232	257	332	541
100.0	1.3	1212.	15.07	0.	4926.	293085.	934.	1002.	484.	826	934	826	550	332	255	230	223	230	255	332	550
104.0	1.3	1269.	14.09	-0.	5006.	306823.	963.	1002.	501.	854	963	854	561	332	253	228	222	228	253	332	561
108.0	1.4	1316.	11.92	0.	5079.	316089.	994.	1002.	519.	866	994	866	582	332	252	226	220	226	252	332	582
112.0	1.4	1404.	21.96	0.	5215.	338546.	1026.	1002.	538.	921	1026	921	598	333	250	225	218	225	250	333	598
116.0	1.5	1453.	12.10	0.	5282.	349720.	1060.	1002.	558.	939	1060	939	608	333	249	223	217	223	249	333	608
120.0	1.5	1509.	14.22	0.	5363.	363647.	1096.	1002.	579.	964	1096	964	618	333	247	222	215	222	247	333	618
124.0	1.5	1571.	15.32	0.	5453.	378132.	1132.	1002.	600.	991	1132	991	632	333	246	220	214	220	246	333	632
128.0	1.6	1641.	17.45	0.	5565.	393226.	1171.	1003.	623.	1019	1171	1019	656	333	244	219	212	219	244	333	656
132.0	1.6	1705.	16.16	0.	5660.	408854.	1212.	1003.	647.	1048	1212	1048	669	334	243	218	211	218	243	334	669
136.0	1.7	1767.	15.51	0.	5746.	424815.	1252.	1003.	670.	1079	1252	1079	675	334	242	216	210	216	242	334	675
140.0	1.8	1830.	15.66	-0.	5844.	439088.	1279.	1003.	686.	1110	1279	1110	693	334	240	215	208	215	240	334	693
144.0	1.8	1909.	19.72	0.	5971.	456523.	1324.	1003.	713.	1143	1324	1143	718	334	239	214	207	214	239	334	718
148.0	1.9	1973.	16.06	0.	6068.	471944.	1354.	1003.	730.	1177	1354	1177	732	334	238	212	206	212	238	334	732
152.0	1.9	2037.	16.03	0.	6159.	488601.	1389.	1003.	751.	1213	1389	1213	738	335	237	211	204	211	237	335	738
156.0	2.0	2108.	17.72	-0.	6265.	506189.	1428.	1003.	774.	1249	1428	1249	750	335	235	210	203	210	235	335	750
160.0	2.0	2165.	14.17	-0.	6362.	516270.	1449.	1003.	786.	1270	1449	1270	781	335	234	209	202	209	234	335	781
164.0	2.0	2245.	19.96	0.	6481.	536253.	1500.	1003.	816.	1309	1500	1309	793	335	233	208	200	208	233	335	793
168.0	2.1	2297.	13.20	0.	6559.	548625.	1521.	1003.	829.	1337	1521	1337	805	336	232	207	199	207	232	336	805
172.0	2.2	2384.	21.55	0.	6704.	566530.	1566.	1004.	855.	1372	1566	1372	839	336	231	205	198	205	231	336	839
176.0	2.2	2441.	14.48	0.	6790.	579817.	1602.	1004.	876.	1396	1602	1396	853	336	230	204	197	204	230	336	853
180.0	2.3	2502.	15.06	0.	6873.	595549.	1635.	1004.	896.	1430	1635	1430	857	337	229	203	195	203	229	337	857
184.0	2.3	2557.	13.85	-0.	6953.	608150.	1677.	1004.	921.	1449	1677	1449	868	337	228	202	194	202	228	337	868
188.0	2.3	2656.	24.64	0.	7122.	628990.	1716.	1004.	944.	1496	1716	1496	908	337	227	201	193	201	227	337	908
192.0	2.4	2704.	12.07	0.	7196.	638530.	1743.	1004.	960.	1513	1743	1513	926	337	226	200	192	200	226	337	926
196.0	2.5	2774.	17.49	-0.	7299.	656256.	1775.	1004.	979.	1554	1775	1554	935	338	225	199	191	199	225	338	935
200.0	2.5	2841.	16.77	0.	7399.	671586.	1823.	1004.	1008.	1579	1823	1579	950	338	224	198	189	198	224	338	950

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
204.0	2.5	2912.	17.69	0.	7508.	688528.	1845.	1004.	1021.	1622	1845	1622	966	338	224	197	188	197	224	338	966
208.0	2.6	2974.	15.59	0.	7601.	702180.	1895.	1004.	1050.	1641	1895	1641	982	339	223	196	187	196	223	339	982
212.0	2.7	3042.	16.85	-0.	7705.	717826.	1919.	1004.	1065.	1679	1919	1679	998	339	222	195	186	195	222	339	998
216.0	2.7	3123.	20.45	-0.	7830.	737122.	1972.	1005.	1096.	1715	1972	1715	1015	339	221	194	185	194	221	339	1015
220.0	2.8	3181.	14.31	0.	7917.	749414.	2000.	1005.	1113.	1740	2000	1740	1032	340	220	192	184	192	220	340	1032
224.0	2.8	3244.	15.96	-0.	8016.	763505.	2031.	1005.	1132.	1770	2031	1770	1050	340	219	191	183	191	219	340	1050
228.0	2.8	3307.	15.55	0.	8111.	776985.	2064.	1005.	1152.	1797	2064	1797	1068	341	219	190	182	190	219	341	1068
232.0	2.9	3389.	20.62	-0.	8239.	796268.	2107.	1005.	1177.	1838	2107	1838	1087	341	218	189	181	189	218	341	1087
236.0	3.0	3444.	13.67	-0.	8322.	807074.	2147.	1005.	1201.	1853	2147	1853	1106	341	217	188	180	188	217	341	1106
240.0	3.0	3534.	22.60	0.	8464.	828736.	2181.	1005.	1222.	1905	2181	1905	1126	342	217	188	179	188	217	342	1126
244.0	3.0	3587.	13.26	-0.	8546.	838904.	2217.	1005.	1243.	1920	2217	1920	1146	342	216	187	178	187	216	342	1146
248.0	3.1	3676.	22.19	0.	8686.	859791.	2252.	1005.	1264.	1970	2252	1970	1166	342	215	186	177	186	215	342	1166
252.0	3.2	3740.	16.12	0.	8787.	873163.	2289.	1005.	1287.	1995	2289	1995	1187	343	214	185	176	185	214	343	1187
256.0	3.2	3809.	17.08	-0.	8893.	887561.	2327.	1005.	1309.	2023	2327	2023	1209	343	214	184	175	184	214	343	1209
260.0	3.3	3878.	17.37	0.	9003.	902117.	2365.	1005.	1332.	2051	2365	2051	1231	344	213	183	174	183	213	344	1231
264.0	3.3	3940.	15.45	0.	9098.	914714.	2402.	1006.	1355.	2073	2402	2073	1252	344	212	182	173	182	212	344	1252

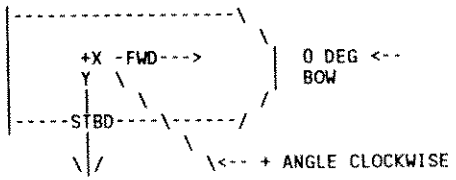
EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT 6744. FT

STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE T8A12T tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT	-	.00
LINE ATTACHMENT W.R.T. WATER LINE	-	-62.0 FT
ALLOWABLE LINE LENGTH ON BOTTOM	-	90.0 FT
DIRECTION OF VESSEL TRANSLATION	-	22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	1.	.00	0.	3331.	106253.	378.	1001.	160.	378	0	378	355	330	310	298	294	298	310	330	355
4.0	.1	32.	7.80	-30.	3342.	112687.	394.	1001.	170.	394	0	388	356	327	304	291	287	294	309	334	364
8.0	.1	64.	7.97	28.	3357.	119670.	411.	1001.	180.	411	0	400	359	324	299	285	281	289	307	337	374
12.0	.2	97.	8.30	101.	3375.	126730.	429.	1001.	190.	429	0	411	362	321	294	279	276	285	306	340	386
16.0	.2	129.	8.02	323.	3394.	133511.	446.	1001.	200.	446	0	423	364	318	289	273	271	281	304	344	399
20.0	.3	160.	7.65	612.	3415.	140145.	461.	1001.	209.	461	0	437	367	316	285	268	266	277	303	347	412
24.0	.3	197.	9.27	32.	3446.	148230.	489.	1001.	225.	489	0	447	371	314	280	264	262	273	301	349	425
28.0	.3	227.	7.43	128.	3469.	154495.	506.	1001.	235.	506	0	458	375	312	276	260	258	269	299	352	438
32.0	.4	264.	9.50	-344.	3507.	163058.	537.	1001.	253.	537	0	473	377	309	272	256	255	266	299	356	450
36.0	.4	298.	8.37	64.	3542.	170575.	557.	1001.	265.	557	0	492	379	307	268	253	252	264	298	361	463
40.0	.5	340.	10.45	-367.	3591.	179990.	591.	1001.	285.	591	0	505	386	306	265	250	249	260	295	363	483
44.0	.6	374.	8.56	20.	3629.	187478.	613.	1001.	297.	613	0	521	388	303	262	247	246	258	295	368	500
48.0	.6	413.	9.72	317.	3676.	196465.	640.	1001.	313.	640	0	542	390	301	259	244	243	256	294	374	516
52.0	.6	454.	10.22	482.	3728.	205623.	670.	1001.	330.	670	0	557	397	300	256	241	240	253	291	376	539
56.0	.7	493.	9.75	788.	3778.	214798.	698.	1001.	347.	698	0	579	399	297	254	239	238	251	290	382	554
60.0	.8	539.	11.52	1144.	3841.	225402.	733.	1002.	367.	733	0	601	404	296	251	236	235	249	289	387	579
64.0	.8	571.	7.96	1949.	3882.	232146.	749.	1002.	377.	749	0	614	408	294	249	234	233	247	287	392	601
68.0	.9	615.	11.14	1098.	3941.	242719.	792.	1002.	401.	792	0	632	413	292	247	232	231	245	286	396	615
72.0	.9	666.	12.74	1398.	4014.	254914.	833.	1002.	425.	833	0	661	416	290	245	230	229	243	285	403	636
76.0	.9	703.	9.16	1947.	4064.	262728.	856.	1002.	439.	856	0	674	424	289	243	228	227	241	282	405	664
80.0	1.0	739.	9.14	1836.	4112.	271274.	885.	1002.	456.	885	0	693	426	286	241	226	225	239	282	413	675
84.0	1.0	796.	14.17	2625.	4198.	284688.	928.	1002.	481.	928	0	725	431	285	239	224	224	237	281	418	706
88.0	1.1	832.	9.05	2854.	4249.	292598.	954.	1002.	496.	954	0	738	438	284	237	222	222	235	278	421	729
92.0	1.1	867.	8.77	2561.	4296.	300900.	983.	1002.	513.	983	0	756	442	282	235	221	220	234	277	428	739
96.0	1.2	918.	12.55	4119.	4373.	312791.	1015.	1002.	532.	1015	0	790	444	280	234	219	219	232	276	434	769
100.0	1.3	959.	10.29	4343.	4431.	321833.	1047.	1002.	550.	1047	0	805	449	279	232	217	217	231	275	438	793
104.0	1.3	1013.	13.59	6105.	4516.	334774.	1082.	1002.	571.	1082	0	844	451	277	230	216	216	230	274	444	825
108.0	1.4	1055.	10.40	5982.	4576.	343859.	1116.	1002.	591.	1116	0	856	458	276	229	214	214	228	272	446	850
112.0	1.4	1091.	9.05	4942.	4624.	352347.	1154.	1003.	613.	1154	0	870	461	274	228	213	213	227	271	451	858
116.0	1.5	1155.	15.95	7240.	4728.	367532.	1193.	1003.	636.	1193	0	915	464	272	226	212	211	226	271	458	899
120.0	1.5	1203.	12.04	6922.	4802.	378347.	1234.	1003.	660.	1234	0	931	475	271	225	210	210	224	269	462	927
124.0	1.5	1242.	9.75	6925.	4863.	387502.	1264.	1003.	677.	1264	0	950	482	270	223	209	209	223	268	471	944
128.0	1.6	1288.	11.61	6799.	4937.	398440.	1301.	1003.	699.	1301	0	972	490	269	222	208	208	222	267	481	965
132.0	1.6	1333.	11.28	7116.	5007.	408923.	1336.	1003.	720.	1336	0	994	495	267	221	206	206	221	266	490	988
136.0	1.7	1380.	11.69	7370.	5078.	419763.	1374.	1003.	742.	1374	0	1018	500	266	220	205	205	219	265	495	1011
140.0	1.8	1423.	10.70	8096.	5143.	429612.	1404.	1003.	760.	1404	0	1041	504	265	219	204	204	218	264	500	1035
144.0	1.8	1466.	10.75	8930.	5209.	439533.	1434.	1003.	777.	1434	0	1066	509	264	218	203	203	217	263	504	1060
148.0	1.9	1514.	12.00	9505.	5284.	450484.	1470.	1003.	798.	1470	0	1090	514	263	216	201	201	216	262	511	1087
152.0	1.9	1564.	12.52	9878.	5367.	462326.	1506.	1003.	820.	1506	0	1116	524	262	215	200	200	215	261	520	1113
156.0	2.0	1614.	12.54	10436.	5452.	474171.	1541.	1003.	841.	1541	0	1143	535	261	214	199	199	214	261	531	1141
160.0	2.0	1664.	12.39	11404.	5532.	485504.	1574.	1004.	860.	1574	0	1170	541	260	213	198	198	213	260	542	1171
164.0	2.0	1720.	14.10	11832.	5621.	498677.	1620.	1004.	887.	1620	0	1199	546	259	212	196	196	212	259	547	1200
168.0	2.1	1764.	11.02	13664.	5692.	508754.	1642.	1004.	901.	1642	0	1229	551	258	211	195	195	211	258	553	1231
172.0	2.2	1815.	12.58	14116.	5770.	520300.	1682.	1004.	924.	1682	0	1254	556	257	210	194	194	210	258	560	1257
176.0	2.2	1862.	11.99	13247.	5845.	531612.	1726.	1004.	950.	1726	0	1273	565	256	209	193	193	209	256	569	1275
180.0	2.3	1913.	12.59	15037.	5934.	543094.	1751.	1004.	965.	1751	0	1303	575	255	208	192	192	209	256	584	1311
184.0	2.3	1958.	11.27	15809.	6010.	553635.	1779.	1004.	982.	1779	0	1330	584	254	207	190	191	208	255	595	1336
188.0	2.3	2013.	13.80	15169.	6098.	566541.	1829.	1004.	1011.	1829	0	1352	595	254	206	189	189	207	254	601	1361
192.0	2.4	2052.	9.75	16839.	6160.	575248.	1847.	1004.	1023.	1847	0	1379	599	252	205	188	188	206	254	609	1387
196.0	2.5	2111.	14.74	16511.	6252.	588758.	1901.	1004.	1054.	1901	0	1402	606	252	205	187	187	205	253	613	1417
200.0	2.5	2147.	8.87	17624.	6307.	596982.	1920.	1004.	1066.	1920	0	1428	609	251	204	186	186	204	253	622	1435

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)
204.0	2.5	2199.	13.16	16244.	6385.	608915.	1976.	1005.	1099.
208.0	2.6	2254.	13.61	18769.	6478.	621302.	2001.	1005.	1114.
212.0	2.7	2296.	10.65	18814.	6550.	631683.	2032.	1005.	1133.
216.0	2.7	2343.	11.65	18989.	6630.	641945.	2064.	1005.	1152.
220.0	2.8	2400.	14.20	19588.	6721.	655144.	2107.	1005.	1177.
224.0	2.8	2449.	12.24	19577.	6796.	665783.	2146.	1005.	1201.
228.0	2.8	2500.	12.92	20804.	6880.	677623.	2180.	1005.	1221.
232.0	2.9	2548.	11.84	21339.	6956.	688699.	2215.	1005.	1242.
236.0	3.0	2600.	13.07	22588.	7042.	700712.	2248.	1005.	1262.
240.0	3.0	2647.	11.80	22485.	7120.	711457.	2285.	1005.	1284.
244.0	3.0	2705.	14.44	23433.	7219.	724789.	2322.	1005.	1306.
248.0	3.1	2752.	11.75	23402.	7291.	735171.	2360.	1005.	1329.
252.0	3.2	2796.	11.04	22865.	7360.	745034.	2398.	1006.	1352.

	LINE LOAD (KIPS)										
LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
1976	0	1442	617	250	203	185	185	203	252	626	1455	
2001	0	1479	623	250	202	184	184	202	251	637	1496	
2032	0	1505	631	249	201	183	183	201	250	652	1510	
2064	0	1522	646	248	200	182	182	201	250	663	1540	
2107	0	1554	653	247	199	181	181	200	249	670	1569	
2146	0	1572	661	246	198	180	180	199	249	675	1598	
2180	0	1603	668	246	197	179	179	198	248	681	1629	
2215	0	1631	671	245	196	178	178	197	248	696	1648	
2248	0	1662	677	245	196	177	177	196	246	707	1678	
2285	0	1683	687	244	195	176	176	195	246	719	1700	
2322	0	1715	700	243	194	175	176	195	245	729	1735	
2360	0	1735	706	242	193	174	175	194	245	736	1758	
2398	0	1753	717	241	192	174	174	193	245	741	1778	

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT 6746. FT

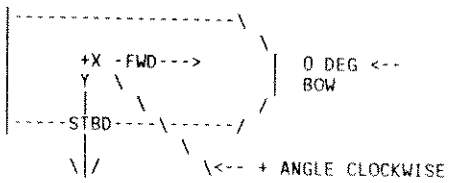
STARTING DISPLACEMENTS : SURGE(FT) = -13.500 SWAY(FT) = -13.500 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE T8S12T tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

T8S12T-2

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	15.0	45.0	75.0	105.0	135.0	165.0	-165.0	-135.0	-105.0	-75.0	-45.0	-15.0
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	760.0	760.0	760.0	760.0	760.0	760.0	760.0	760.0	760.0	760.0	760.0	760.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	8000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	8000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	300.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	2000.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-422.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	2000.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-100.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	5800.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.750"
LINE LENGTH (FT)	100.0
WEIGHT IN WATER (LB/FT)	273.26
LINE B.S. (KIPS)	4249.0
AREA (SQ IN)	25.97
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	1850.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.750"
LINE LENGTH (FT)	150.0
WEIGHT IN WATER (LB/FT)	273.26
LINE B.S. (KIPS)	4249.0
AREA (SQ IN)	25.97
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	35800.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
1	119.9	.0	149.8	5262.00	7938.00	5262.0	.0	.0				
2	149.9	94.2	177.1	8288.39	7938.00	3049.7	94.2	.0	9.57	-522.00	.00	432.49
3	179.9	131.7	223.0	8694.08	7938.00	2745.2	131.7	.0	11.57	-522.00	.00	470.90
4	209.9	169.7	269.9	8996.56	7938.00	2284.7	169.7	.0	13.63	-522.00	.00	511.09
5	239.9	209.1	318.2	9244.53	7938.00	1824.2	209.1	.0	15.78	-522.00	.00	553.13
6	269.9	250.3	368.1	9458.72	7938.00	1363.5	250.3	.0	18.02	-522.00	.00	597.10
7	299.9	292.5	418.9	9634.94	7938.00	1091.9	292.5	.0	20.32	-522.00	.00	642.54
8	329.9	334.7	470.0	9773.79	7938.00	1001.2	334.7	.0	22.65	-522.00	72.57	688.87
9	359.9	375.0	519.8	9868.11	7938.00	1001.4	375.0	.0	24.93	-522.00	562.94	734.97
10	389.9	414.4	569.0	9938.37	7938.00	1001.5	414.4	.0	27.19	-522.00	912.57	781.08
11	449.9	493.1	667.5	10050.05	7938.00	1001.8	493.1	.0	31.73	-522.00	2002.94	874.41
12	509.9	568.1	763.4	10110.65	7938.00	1002.1	568.1	.0	36.16	-522.00	1851.84	966.67
13	569.9	643.1	859.3	10159.44	7938.00	1002.3	643.1	.0	40.61	-522.00	2451.84	1059.60
14	629.9	718.1	955.3	10199.86	7938.00	1002.6	718.1	.0	45.08	-522.00	5493.30	1153.03
15	689.9	791.3	1049.8	10224.90	7938.00	1002.9	791.3	.0	49.48	-522.00	5842.94	1245.68
16	749.9	864.4	1144.3	10246.72	7938.00	1003.1	864.4	.0	53.89	-522.00	6802.94	1338.59
17	809.9	937.5	1238.9	10266.01	7938.00	1003.4	937.5	.0	58.31	-522.00	11159.22	1431.73
18	869.9	1008.8	1332.0	10275.97	7938.00	1003.7	1008.8	.0	62.66	-522.00	7632.57	1523.80
19	929.9	1083.8	1428.0	10298.79	7938.00	1003.9	1083.8	.0	67.16	-522.00	10893.30	1618.51
20	989.9	1155.0	1521.2	10306.59	7938.00	1004.2	1155.0	.0	71.52	-522.00	9312.57	1710.82
21	1049.9	1226.3	1614.3	10313.98	7938.00	1004.4	1226.3	.0	75.89	-522.00	10152.57	1803.23
22	1109.9	1301.3	1710.3	10332.36	7938.00	1004.7	1301.3	.0	80.41	-522.00	14133.30	1898.28
23	1169.9	1372.5	1803.5	10338.47	7938.00	1005.0	1372.5	.0	84.78	-522.00	11832.57	1990.83
24	1229.9	1443.8	1896.6	10344.38	7938.00	1005.2	1443.8	.0	89.16	-522.00	12672.57	2083.44
25	1289.9	1518.8	1992.6	10359.85	7938.00	1005.5	1518.8	.0	93.69	-522.00	16408.12	2178.71
26	1349.9	1590.0	2085.8	10364.94	7938.00	1005.8	1590.0	.0	98.08	-522.00	14352.57	2271.41
27	1409.9	1661.3	2178.9	10369.93	7938.00	1006.0	1661.3	.0	102.47	-522.00	15192.57	2364.15
28	1469.9	1736.3	2274.9	10383.38	7938.00	1006.3	1736.3	.0	107.00	-522.00	19468.12	2459.57
29	1529.9	1807.5	2368.1	10387.82	7938.00	1006.6	1807.5	.0	111.40	-522.00	16872.57	2552.38
30	1589.9	1878.8	2461.2	10392.22	7938.00	1006.8	1878.8	.0	115.81	-522.00	17712.57	2645.21
31	1649.9	1953.8	2557.2	10404.17	7938.00	1007.1	1953.8	.0	120.35	-522.00	13251.84	2740.73
32	1709.9	2025.0	2650.4	10408.20	7938.00	1007.4	2025.0	.0	124.76	-522.00	19392.57	2833.61
33	1769.9	2100.0	2746.4	10419.32	7938.00	1007.6	2100.0	.0	129.31	-522.00	24568.12	2929.19
34	1829.9	2171.3	2839.5	10423.08	7938.00	1007.9	2171.3	.0	133.73	-522.00	30103.67	3022.11
35	1889.9	2246.3	2935.5	10433.44	7938.00	1008.2	2246.3	.0	138.29	-522.00	26608.12	3117.74
36	1949.9	2317.5	3028.7	10436.98	7938.00	1008.4	2317.5	.0	142.71	-522.00	32503.67	3210.69
37	2009.9	2392.5	3124.7	10446.75	7938.00	1008.7	2392.5	.0	147.28	-522.00	28648.12	3306.36
38	2069.9	2463.8	3217.9	10450.12	7938.00	1009.0	2463.8	.0	151.71	-522.00	34903.67	3399.34
39	2129.9	2538.8	3313.9	10459.38	7938.00	1009.2	2538.8	.0	156.28	-522.00	30688.12	3495.04
40	2189.9	2610.0	3407.0	10462.61	7938.00	1009.5	2610.0	.0	160.72	-522.00	37303.67	3588.04
41	2249.9	2685.0	3503.1	10471.43	7938.00	1009.8	2685.0	.0	165.30	-522.00	32728.12	3683.78
42	2309.9	2756.3	3596.2	10474.55	7938.00	1010.0	2756.3	.0	169.74	-522.00	39703.67	3776.79
43	2369.9	2831.3	3692.2	10482.95	7938.00	1010.3	2831.3	.0	174.32	-522.00	20451.84	3872.55
44	2429.9	2906.3	3788.2	10491.17	7938.00	1010.6	2906.3	.0	178.91	-522.00	33682.94	3968.33
45	2489.9	2973.8	3878.5	10489.06	7938.00	1010.8	2973.8	.0	183.22	-522.00	25982.20	4058.62

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
46	2549.9	3048.8	3974.5	10497.06	7938.00	1011.1	3048.8	.0	187.82	-522.00	22251.84	4154.41
47	2609.9	3123.8	4070.6	10504.88	7938.00	1011.4	3123.8	.0	192.42	-522.00	22851.84	4250.21
48	2669.9	3198.8	4166.6	10512.49	7938.00	1011.7	3198.8	.0	197.02	-522.00	23451.84	4346.03
49	2729.9	3273.8	4262.6	10519.93	7938.00	1011.9	3273.8	.0	201.63	-522.00	24051.84	4441.85
50	2789.9	3348.8	4358.6	10527.27	7938.00	1012.2	3348.8	.0	206.24	-522.00	39442.94	4537.68
51	2849.9	3423.8	4454.7	10534.39	7938.00	1012.5	3423.8	.0	210.85	-522.00	40402.94	4633.53
52	2909.9	3491.3	4544.9	10532.73	7938.00	1012.8	3491.3	.0	215.18	-522.00	31022.20	4723.83
53	2969.9	3566.3	4641.0	10539.81	7938.00	1013.0	3566.3	.0	219.80	-522.00	39677.75	4819.68
54	3029.9	3641.3	4737.0	10546.69	7938.00	1013.3	3641.3	.0	224.42	-522.00	40577.75	4915.54
55	3089.9	3716.3	4833.0	10553.48	7938.00	1013.6	3716.3	.0	229.05	-522.00	41477.75	5011.41
56	3149.9	3791.3	4929.1	10560.12	7938.00	1013.9	3791.3	.0	233.67	-522.00	42377.75	5107.28
57	3209.9	3866.3	5025.1	10566.65	7938.00	1014.1	3866.3	.0	238.31	-522.00	43277.75	5203.16
58	3269.9	3941.3	5121.1	10573.09	7938.00	1014.4	3941.3	.0	242.94	-522.00	44177.75	5299.05
59	3329.9	4016.3	5217.1	10579.42	7938.00	1014.7	4016.3	.0	247.58	-522.00	45077.75	5394.94
60	3389.9	4091.3	5313.2	10585.67	7938.00	1015.0	4091.3	.0	252.22	-522.00	45977.75	5490.84
61	3449.9	4166.3	5409.2	10591.82	7938.00	1015.3	4166.3	.0	256.87	-522.00	46877.75	5586.74
62	3509.9	4241.3	5505.2	10597.88	7938.00	1015.5	4241.3	.0	261.52	-522.00	47777.75	5682.65
63	3569.9	4316.3	5601.3	10603.87	7938.00	1015.8	4316.3	.0	266.17	-522.00	48677.75	5778.56
64	3629.9	4391.3	5697.3	10609.79	7938.00	1016.1	4391.3	.0	270.83	-522.00	49577.75	5874.48
65	3689.9	4466.3	5793.4	10615.63	7938.00	1016.4	4466.3	.0	275.49	-522.00	50477.75	5970.40
66	3749.9	4541.3	5889.4	10621.41	7938.00	1016.7	4541.3	.0	280.15	-522.00	51377.75	6066.32
67	3809.9	4616.3	5985.4	10627.11	7938.00	1016.9	4616.3	.0	284.81	-522.00	52277.75	6162.25
68	3869.9	4691.3	6081.5	10632.77	7938.00	1017.2	4691.3	.0	289.48	-522.00	53177.75	6258.18
69	3929.9	4766.3	6177.5	10638.36	7938.00	1017.5	4766.3	.0	294.15	-522.00	54077.75	6354.12
70	3989.9	4841.3	6273.5	10643.90	7938.00	1017.8	4841.3	.0	298.83	-522.00	54977.75	6450.05
71	4049.9	4916.3	6369.6	10649.38	7938.00	1018.1	4916.3	.0	303.51	-522.00	55877.75	6546.00
72	4109.9	4991.3	6465.6	10654.82	7938.00	1018.3	4991.3	.0	308.19	-522.00	56777.75	6641.94
73	4169.9	5066.3	6561.6	10660.21	7938.00	1018.6	5066.3	.0	312.87	-522.00	57677.75	6737.89
74	4229.9	5148.8	6663.5	10671.46	7938.00	1018.9	5148.8	.0	317.86	-522.00	66388.13	6839.48
75	4289.9	5223.8	6759.5	10676.67	7938.00	1019.2	5223.8	.0	322.55	-522.00	59477.75	6935.44
76	4349.9	5298.8	6855.6	10681.86	7938.00	1019.5	5298.8	.0	327.24	-522.00	60377.75	7031.40
77	4409.9	5373.8	6951.6	10687.00	7938.00	1019.8	5373.8	.0	331.94	-522.00	61277.75	7127.36
78	4469.9	5448.8	7047.6	10692.11	7938.00	1020.1	5448.8	.0	336.64	-522.00	62177.75	7223.32
79	4529.9	5523.8	7143.7	10697.18	7938.00	1020.3	5523.8	.0	341.35	-522.00	63077.75	7319.29
80	4589.9	5606.3	7245.5	10707.65	7938.00	1020.6	5606.3	.0	346.35	-522.00	72508.13	7420.92
81	4649.9	5681.3	7341.6	10712.59	7938.00	1020.9	5681.3	.0	351.07	-522.00	64877.75	7516.89
82	4709.9	5756.3	7437.6	10717.50	7938.00	1021.2	5756.3	.0	355.78	-522.00	65777.75	7612.87
83	4769.9	5831.3	7533.6	10722.39	7938.00	1021.5	5831.3	.0	360.50	-522.00	66677.75	7708.84
84	4829.9	5913.8	7635.5	10732.41	7938.00	1021.8	5913.8	.0	365.52	-522.00	76588.13	7810.50
85	4889.9	5988.8	7731.5	10737.19	7938.00	1022.1	5988.8	.0	370.24	-522.00	68477.75	7906.48
86	4949.9	6063.8	7827.6	10741.92	7938.00	1022.4	6063.8	.0	374.97	-522.00	69377.75	8002.46
87	5009.9	6138.8	7923.6	10746.67	7938.00	1022.7	6138.8	.0	379.70	-522.00	70277.75	8098.45
88	5069.9	6228.8	8031.3	10761.20	7938.00	1023.0	6228.8	.0	385.04	-522.00	61687.39	8205.81
89	5129.9	6303.8	8127.3	10765.79	7938.00	1023.3	6303.8	.0	389.78	-522.00	76882.94	8301.80
90	5189.9	6378.8	8223.4	10770.33	7938.00	1023.6	6378.8	.0	394.52	-522.00	72977.75	8397.80
91	5249.9	6453.8	8319.4	10774.90	7938.00	1023.8	6453.8	.0	399.26	-522.00	73877.75	8493.79
92	5309.9	6528.8	8415.5	10779.42	7938.00	1024.1	6528.8	.0	404.01	-522.00	74777.75	8589.79
93	5369.9	6603.8	8511.5	10783.95	7938.00	1024.4	6603.8	.0	408.77	-522.00	75677.77	8685.78
94	5429.9	6693.8	8619.2	10797.62	7938.00	1024.7	6693.8	.0	414.12	-522.00	66367.39	8793.19
95	5489.9	6768.8	8715.2	10802.03	7938.00	1025.0	6768.8	.0	418.88	-522.00	77477.77	8889.19
96	5549.9	6843.8	8811.3	10806.40	7938.00	1025.3	6843.8	.0	423.65	-522.00	78377.77	8985.20
97	5609.9	6918.8	8907.3	10810.77	7938.00	1025.6	6918.8	.0	428.41	-522.00	79277.77	9081.20
98	5669.9	6993.8	9003.4	10815.15	7938.00	1025.9	6993.8	.0	433.18	-522.00	80177.77	9177.21
99	5729.9	7083.8	9111.1	10828.20	7938.00	1026.2	7083.8	.0	438.56	-522.00	70267.39	9284.65

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	6096.	0.	964.	1002.	566.	760	760	760	760	760	760	760	760	760	760	760	760
4.0	.1	35.	8.70	0.	6096.	4555.	971.	1002.	571.	766	767	766	764	760	757	754	753	754	757	760	764
8.0	.1	69.	8.67	0.	6096.	9092.	978.	1002.	577.	773	775	773	767	760	753	748	746	748	753	760	767
12.0	.2	104.	8.67	0.	6097.	13630.	985.	1002.	583.	779	782	779	771	760	750	742	739	742	750	760	771
16.0	.2	139.	8.67	0.	6098.	18170.	992.	1002.	588.	785	789	785	775	760	746	736	733	736	746	760	775
20.0	.3	174.	8.68	0.	6100.	22713.	999.	1002.	594.	792	797	792	778	760	743	730	726	730	743	760	778
24.0	.3	208.	8.68	0.	6102.	27258.	1007.	1002.	600.	799	805	799	782	760	739	725	719	725	739	760	782
28.0	.3	243.	8.69	0.	6105.	31806.	1014.	1002.	607.	805	813	805	786	760	736	719	713	719	736	760	786
32.0	.4	278.	8.70	0.	6108.	36358.	1022.	1002.	613.	812	821	812	790	760	733	713	707	713	733	760	790
36.0	.4	313.	8.71	0.	6111.	40914.	1030.	1002.	619.	819	829	819	793	760	729	708	700	708	729	760	793
40.0	.5	348.	8.72	0.	6116.	45474.	1038.	1002.	626.	826	837	826	797	760	726	703	694	703	726	760	797
44.0	.6	382.	8.73	0.	6120.	50039.	1046.	1002.	632.	833	845	833	801	760	723	697	688	697	723	760	801
48.0	.6	417.	8.74	0.	6125.	54609.	1054.	1002.	639.	840	854	840	805	760	720	692	683	692	720	760	805
52.0	.6	452.	8.67	0.	6131.	59135.	1062.	1002.	645.	848	862	848	809	761	716	687	677	687	716	761	809
56.0	.7	486.	8.56	-0.	6136.	63587.	1070.	1002.	651.	855	870	855	813	761	713	682	671	682	713	761	813
60.0	.8	520.	8.45	0.	6142.	67945.	1078.	1002.	658.	862	878	862	817	761	710	677	666	677	710	761	817
64.0	.8	553.	8.27	0.	6147.	72164.	1086.	1002.	664.	869	886	869	821	761	707	672	661	672	707	761	821
68.0	.9	587.	8.35	0.	6154.	76435.	1094.	1002.	671.	876	895	876	825	761	704	668	656	668	704	761	825
72.0	.9	620.	8.34	0.	6162.	80682.	1103.	1002.	678.	883	904	883	829	761	701	663	652	663	701	761	829
76.0	.9	654.	8.46	0.	6171.	85009.	1113.	1002.	686.	890	914	890	833	761	698	659	647	659	698	761	833
80.0	1.0	688.	8.61	0.	6181.	89434.	1123.	1003.	694.	898	924	898	837	761	695	655	643	655	695	761	837
84.0	1.0	723.	8.78	0.	6192.	93974.	1133.	1003.	702.	906	935	906	842	761	692	651	639	651	692	761	842
88.0	1.1	759.	8.97	-0.	6204.	98647.	1144.	1003.	711.	915	946	915	846	761	689	647	635	647	689	761	846
92.0	1.1	796.	9.25	0.	6218.	103503.	1156.	1003.	721.	923	959	923	850	761	686	644	631	644	686	761	850
96.0	1.2	835.	9.61	0.	6233.	108607.	1170.	1003.	732.	933	973	933	855	761	683	640	627	640	683	761	855
100.0	1.3	874.	9.84	0.	6250.	113865.	1184.	1003.	743.	943	987	943	859	761	680	636	623	636	680	761	859
104.0	1.3	914.	9.97	0.	6268.	119283.	1199.	1003.	754.	953	1002	953	863	761	678	633	620	633	678	761	863
108.0	1.4	956.	10.42	0.	6287.	125031.	1214.	1003.	766.	964	1018	964	867	761	675	629	616	629	675	761	867
112.0	1.4	998.	10.69	0.	6309.	130964.	1230.	1003.	779.	977	1033	977	871	761	672	626	612	626	672	761	871
116.0	1.5	1042.	10.88	0.	6331.	137019.	1246.	1003.	791.	989	1050	989	875	761	669	623	609	623	669	761	875
120.0	1.5	1086.	10.99	0.	6354.	143151.	1262.	1003.	804.	1002	1066	1002	879	762	667	620	606	620	667	762	879
124.0	1.5	1130.	11.14	0.	6378.	149393.	1278.	1003.	817.	1016	1083	1016	883	762	664	617	603	617	664	762	883
128.0	1.6	1176.	11.31	0.	6404.	155741.	1295.	1003.	830.	1030	1100	1030	888	762	662	614	599	614	662	762	888
132.0	1.6	1221.	11.47	0.	6430.	162192.	1313.	1003.	844.	1044	1118	1044	892	762	660	611	596	611	660	762	892
136.0	1.7	1268.	11.59	-0.	6457.	168703.	1330.	1003.	858.	1058	1136	1058	897	762	657	608	593	608	657	762	897
140.0	1.8	1313.	11.27	0.	6484.	174995.	1346.	1003.	870.	1072	1152	1072	901	762	655	605	590	605	655	762	901
144.0	1.8	1358.	11.21	0.	6510.	181235.	1361.	1003.	882.	1087	1167	1087	906	762	653	602	587	602	653	762	906
148.0	1.9	1405.	11.74	0.	6539.	187807.	1379.	1003.	896.	1102	1185	1102	911	762	651	599	585	599	651	762	911
152.0	1.9	1455.	12.47	0.	6571.	194841.	1399.	1003.	912.	1118	1206	1118	916	762	648	597	582	597	648	762	916
156.0	2.0	1508.	13.40	0.	6606.	202469.	1424.	1003.	931.	1133	1231	1133	921	762	646	594	579	594	646	762	921
160.0	2.0	1568.	14.89	0.	6646.	211011.	1458.	1003.	958.	1148	1266	1148	927	763	644	592	576	592	644	763	927
164.0	2.0	1627.	14.87	0.	6687.	219452.	1496.	1004.	987.	1161	1303	1161	932	763	642	589	573	589	642	763	932
168.0	2.1	1685.	14.52	0.	6726.	227682.	1529.	1004.	1013.	1175	1337	1175	938	763	640	587	571	587	640	763	938
172.0	2.2	1733.	12.04	0.	6758.	234335.	1545.	1004.	1025.	1191	1353	1191	944	763	638	584	568	584	638	763	944
176.0	2.2	1782.	12.19	0.	6790.	241144.	1557.	1004.	1035.	1210	1365	1210	950	763	636	582	565	582	636	763	950
180.0	2.3	1835.	13.26	0.	6827.	248719.	1568.	1004.	1044.	1233	1377	1233	956	763	634	579	562	579	634	763	956
184.0	2.3	1902.	16.57	1.	6877.	258606.	1583.	1004.	1056.	1263	1392	1263	963	763	632	577	559	577	632	763	963
188.0	2.3	1977.	18.82	0.	6936.	270005.	1605.	1004.	1073.	1296	1414	1296	970	763	630	575	556	575	630	763	970
192.0	2.4	2064.	21.71	0.	7004.	283249.	1642.	1004.	1102.	1329	1452	1329	977	764	628	572	553	572	628	764	977
196.0	2.5	2139.	18.83	0.	7061.	294116.	1690.	1004.	1139.	1347	1500	1347	985	764	626	570	550	570	626	764	985
200.0	2.5	2209.	17.51	0.	7111.	303920.	1740.	1004.	1178.	1359	1551	1359	993	764	625	567	547	567	625	764	993

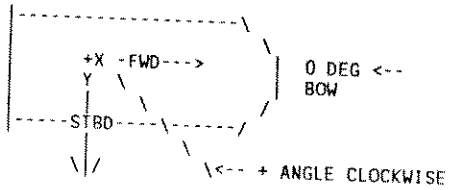
VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
204.0	2.5	2276.	16.79	0.	7159.	313168.	1790.	1004.	1216.	1369	1601	1369	1000	764	623	565	544	565	623	764	1000
208.0	2.6	2329.	13.30	0.	7194.	320135.	1821.	1004.	1240.	1379	1632	1379	1008	764	621	562	541	562	621	764	1008
212.0	2.7	2375.	11.49	0.	7224.	326003.	1837.	1005.	1253.	1393	1648	1393	1016	764	619	559	539	559	619	764	1016
216.0	2.7	2427.	12.91	0.	7260.	332936.	1851.	1005.	1264.	1412	1662	1412	1024	764	617	557	536	557	617	764	1024
220.0	2.8	2498.	17.74	0.	7315.	343333.	1870.	1005.	1279.	1442	1682	1442	1033	765	616	554	533	554	616	765	1033
224.0	2.8	2596.	24.43	0.	7395.	358387.	1906.	1005.	1307.	1483	1718	1483	1041	765	614	552	531	552	614	765	1041
228.0	2.8	2715.	29.83	0.	7495.	376993.	1966.	1005.	1354.	1526	1779	1526	1049	765	612	549	528	549	612	765	1049
232.0	2.9	2839.	30.93	0.	7598.	396342.	2030.	1005.	1403.	1571	1843	1571	1058	765	611	547	525	547	611	765	1058
236.0	3.0	2956.	29.31	0.	7696.	414557.	2088.	1005.	1447.	1614	1901	1614	1066	765	609	545	523	545	609	765	1066
240.0	3.0	3019.	15.75	0.	7742.	423264.	2113.	1005.	1467.	1635	1927	1635	1075	765	608	542	520	542	608	765	1075
244.0	3.0	3065.	11.58	1.	7774.	429010.	2129.	1005.	1480.	1649	1943	1649	1084	766	606	540	518	540	606	766	1084
248.0	3.1	3114.	12.12	0.	7807.	435019.	2150.	1005.	1497.	1660	1964	1660	1093	766	604	537	515	537	604	766	1093
252.0	3.2	3186.	18.13	0.	7862.	445009.	2197.	1006.	1533.	1676	2011	1676	1102	766	603	535	513	535	603	766	1102
256.0	3.2	3292.	26.43	0.	7947.	460638.	2271.	1006.	1590.	1701	2085	1701	1111	766	601	533	511	533	601	766	1111
260.0	3.3	3427.	33.74	0.	8061.	481645.	2346.	1006.	1647.	1747	2161	1747	1120	766	600	530	508	530	600	766	1120
264.0	3.3	3549.	30.44	0.	8165.	500742.	2389.	1006.	1681.	1802	2204	1802	1129	766	598	528	506	528	598	766	1129
268.0	3.3	3654.	26.36	1.	8256.	517217.	2409.	1006.	1696.	1858	2224	1858	1139	767	597	526	504	526	597	767	1139
272.0	3.4	3750.	24.05	0.	8336.	532009.	2432.	1006.	1715.	1905	2248	1905	1147	767	595	524	501	524	595	767	1147
276.0	3.5	3837.	21.76	0.	8404.	544626.	2490.	1006.	1760.	1926	2306	1926	1155	767	594	522	499	522	594	767	1155
280.0	3.5	3936.	24.75	0.	8481.	558886.	2576.	1007.	1826.	1940	2392	1940	1163	767	592	519	497	519	592	767	1163
284.0	3.5	4033.	24.17	0.	8557.	572773.	2654.	1007.	1885.	1957	2470	1957	1171	767	591	517	495	517	591	767	1171
288.0	3.6	4111.	19.51	0.	8619.	583936.	2683.	1007.	1909.	1986	2500	1986	1180	768	590	515	493	515	590	768	1180
292.0	3.7	4223.	28.02	0.	8716.	601408.	2706.	1007.	1926.	2046	2522	2046	1190	768	588	513	491	513	588	768	1190
296.0	3.7	4368.	36.19	0.	8844.	624244.	2758.	1007.	1967.	2112	2574	2112	1201	768	587	511	489	511	587	768	1201
300.0	3.8	4537.	42.17	0.	8992.	650741.	2843.	1007.	2032.	2177	2660	2177	1213	768	586	509	487	509	586	768	1213
304.0	3.8	4620.	20.85	0.	9062.	662193.	2874.	1007.	2057.	2207	2691	2207	1227	768	584	507	485	507	584	768	1227
308.0	3.8	4682.	15.57	0.	9113.	669528.	2900.	1008.	2077.	2223	2717	2223	1242	769	583	505	483	505	583	769	1242
312.0	3.9	4784.	25.53	0.	9201.	682883.	2968.	1008.	2130.	2243	2786	2243	1261	769	581	503	481	503	581	769	1261
316.0	4.0	4920.	33.81	0.	9321.	702156.	3045.	1008.	2189.	2283	2862	2283	1281	769	580	501	479	501	580	769	1281
320.0	4.0	5062.	35.60	1.	9453.	723578.	3072.	1008.	2210.	2356	2889	2356	1301	769	579	499	477	499	579	769	1301
324.0	4.1	5215.	38.19	0.	9595.	746747.	3109.	1008.	2240.	2432	2927	2432	1321	770	577	497	475	497	577	770	1321
328.0	4.1	5379.	41.16	0.	9740.	771546.	3209.	1008.	2316.	2483	3027	2483	1337	770	576	496	473	496	576	770	1337
332.0	4.2	5456.	19.20	0.	9800.	782012.	3251.	1009.	2349.	2504	3069	2504	1346	770	575	494	471	494	575	770	1346
336.0	4.2	5521.	16.22	0.	9849.	790733.	3280.	1009.	2372.	2525	3099	2525	1354	770	574	492	470	492	574	770	1354
340.0	4.3	5661.	34.94	0.	9966.	812480.	3366.	1009.	2438.	2570	3184	2570	1360	771	572	490	468	490	572	771	1360
344.0	4.3	5832.	42.77	1.	10115.	840424.	3433.	1009.	2490.	2651	3251	2651	1366	771	571	488	466	488	571	771	1366
348.0	4.3	5912.	20.08	0.	10178.	852227.	3462.	1009.	2513.	2685	3281	2685	1372	771	570	487	464	487	570	771	1372
352.0	4.4	6011.	24.67	0.	10255.	866478.	3539.	1009.	2572.	2704	3358	2704	1379	771	568	485	463	485	568	771	1379
356.0	4.4	6130.	29.85	0.	10352.	884335.	3619.	1010.	2634.	2737	3438	2737	1386	772	567	483	461	483	567	772	1386
360.0	4.5	6278.	36.90	0.	10483.	907998.	3649.	1010.	2658.	2819	3469	2819	1395	772	565	482	459	482	565	772	1395
364.0	4.6	6422.	36.10	0.	10607.	929904.	3728.	1010.	2719.	2869	3547	2869	1407	772	564	480	458	480	564	772	1407
368.0	4.6	6541.	29.78	0.	10706.	946466.	3820.	1010.	2790.	2891	3639	2891	1421	772	563	478	456	478	563	772	1421
372.0	4.7	6641.	24.87	1.	10794.	959369.	3860.	1010.	2821.	2924	3680	2924	1441	773	561	477	454	477	561	773	1441
376.0	4.7	6867.	56.60	0.	11004.	993854.	3973.	1011.	2908.	3009	3793	3009	1465	773	560	475	453	475	560	773	1465
380.0	4.8	7032.	41.10	1.	11154.	1017129.	4061.	1011.	2975.	3061	3881	3061	1491	773	558	474	451	474	558	773	1491
384.0	4.8	7028.	-1.00	1.	11154.	1012115.	3975.	1011.	2912.	3084	3795	3084	1517	773	557	472	450	472	557	773	1517
388.0	4.8	7241.	53.40	2.	11347.	1042785.	4146.	1011.	3042.	3124	3966	3124	1544	774	556	470	448	470	556	774	1544
392.0	4.9	7441.	49.82	1.	11535.	1072768.	4201.	1011.	3085.	3220	4021	3220	1571	774	554	469	447	469	554	774	1571
396.0	4.9	7559.	29.54	1.	11644.	1087924.	4251.	1011.	3124.	3258	4071	3258	1598	774	553	467	445	467	553	774	1598

STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE T8S12T tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT	-	.00
LINE ATTACHMENT W.R.T. WATER LINE	-	-62.0 FT
ALLOWABLE LINE LENGTH ON BOTTOM	-	90.0 FT
DIRECTION OF VESSEL TRANSLATION	-	22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	-1.	.00	0.	5676.	199989.	1092.	1002.	681.	915	0	915	838	760	699	662	650	662	699	760	838
4.0	.1	34.	8.68	5.	5685.	204083.	1105.	1002.	691.	929	0	924	840	758	694	657	645	659	698	763	846
8.0	.1	69.	8.79	31.	5694.	208248.	1118.	1003.	702.	942	0	933	843	756	690	652	641	655	697	765	855
12.0	.2	104.	8.84	77.	5705.	212441.	1132.	1003.	713.	956	0	943	845	753	685	647	636	652	695	768	864
16.0	.2	140.	8.89	122.	5716.	216661.	1146.	1003.	724.	971	0	952	847	751	681	642	632	649	694	771	873
20.0	.3	176.	8.96	169.	5727.	220923.	1160.	1003.	735.	985	0	962	849	748	677	637	627	645	693	773	883
24.0	.3	212.	9.02	212.	5740.	225234.	1175.	1003.	747.	1000	0	971	851	746	672	633	623	642	692	776	892
28.0	.3	248.	9.05	250.	5753.	229696.	1190.	1003.	758.	1015	0	982	854	744	668	628	619	639	691	778	902
32.0	.4	285.	9.21	301.	5767.	234005.	1206.	1003.	771.	1031	0	991	856	741	664	624	615	636	690	782	912
36.0	.4	322.	9.20	339.	5782.	238566.	1221.	1003.	783.	1047	0	1002	859	739	660	620	611	633	688	784	922
40.0	.5	359.	9.37	385.	5797.	242978.	1238.	1003.	796.	1064	0	1011	861	736	656	615	607	630	688	787	933
44.0	.6	397.	9.37	411.	5814.	247643.	1254.	1003.	809.	1081	0	1023	864	734	653	611	603	627	686	790	943
48.0	.6	435.	9.49	434.	5831.	252262.	1271.	1003.	822.	1098	0	1033	866	732	649	607	599	624	685	793	954
52.0	.6	473.	9.58	451.	5849.	256940.	1289.	1003.	836.	1116	0	1044	869	730	645	603	596	621	684	796	965
56.0	.7	511.	9.58	478.	5867.	261751.	1307.	1003.	850.	1134	0	1056	872	728	642	599	592	618	683	798	975
60.0	.8	547.	8.97	817.	5883.	265937.	1321.	1003.	861.	1148	0	1067	874	725	638	596	589	615	682	802	987
64.0	.8	584.	9.26	1036.	5901.	270560.	1336.	1003.	873.	1164	0	1079	877	724	634	592	585	612	681	804	998
68.0	.9	624.	9.94	1086.	5922.	275342.	1355.	1003.	888.	1183	0	1090	879	721	631	588	582	610	680	808	1011
72.0	.9	666.	10.65	864.	5946.	280810.	1378.	1003.	906.	1206	0	1102	882	719	627	585	579	607	678	811	1022
76.0	.9	714.	11.95	197.	5974.	287072.	1408.	1003.	929.	1236	0	1115	885	718	624	581	575	604	677	813	1034
80.0	1.0	769.	13.61	-1045.	6009.	294338.	1446.	1003.	959.	1275	0	1128	889	716	621	578	572	601	676	816	1046
84.0	1.0	822.	13.35	-2406.	6043.	301354.	1484.	1004.	988.	1313	0	1140	892	714	618	575	569	599	674	819	1058
88.0	1.1	866.	10.96	-2922.	6069.	306890.	1510.	1004.	1008.	1339	0	1150	896	713	615	572	566	596	673	822	1070
92.0	1.1	906.	10.06	-2957.	6092.	311915.	1530.	1004.	1024.	1360	0	1162	899	711	612	568	563	593	672	825	1083
96.0	1.2	948.	10.51	-2934.	6117.	317136.	1551.	1004.	1041.	1382	0	1174	902	709	609	565	560	591	671	828	1096
100.0	1.3	995.	11.77	-3162.	6147.	323181.	1578.	1004.	1062.	1409	0	1188	905	707	606	562	557	588	670	831	1110
104.0	1.3	1056.	15.18	-4387.	6190.	331508.	1622.	1004.	1096.	1453	0	1205	908	705	603	559	554	586	668	834	1123
108.0	1.4	1120.	16.02	-5802.	6236.	340199.	1669.	1004.	1132.	1501	0	1222	910	703	600	556	551	584	668	839	1137
112.0	1.4	1173.	13.14	-5809.	6272.	347468.	1700.	1004.	1156.	1532	0	1245	912	701	597	553	548	582	667	843	1149
116.0	1.5	1221.	12.18	-5222.	6305.	353845.	1725.	1004.	1175.	1556	0	1265	912	697	594	550	546	580	667	848	1163
120.0	1.5	1274.	13.28	-4592.	6344.	361148.	1752.	1004.	1197.	1584	0	1290	914	695	591	547	543	578	667	853	1178
124.0	1.5	1342.	16.77	-4984.	6396.	370421.	1796.	1004.	1231.	1629	0	1314	916	693	588	544	540	576	666	858	1196
128.0	1.6	1415.	18.46	-6454.	6453.	380595.	1852.	1005.	1273.	1684	0	1334	920	691	585	541	538	574	665	861	1214
132.0	1.6	1472.	14.09	-6283.	6495.	387888.	1884.	1005.	1298.	1716	0	1351	925	690	583	538	535	571	663	864	1237
136.0	1.7	1518.	11.68	-4664.	6529.	393481.	1899.	1005.	1311.	1732	0	1366	929	689	581	536	532	569	662	866	1264
140.0	1.8	1565.	11.53	-2785.	6563.	399027.	1913.	1005.	1322.	1746	0	1384	934	688	578	533	529	566	660	869	1291
144.0	1.8	1618.	13.40	-1280.	6604.	405880.	1935.	1005.	1339.	1768	0	1405	939	687	576	530	527	564	659	872	1318
148.0	1.9	1688.	17.53	-1618.	6660.	415490.	1981.	1005.	1375.	1815	0	1430	941	685	574	528	524	562	658	877	1338
152.0	1.9	1775.	21.68	-3303.	6731.	427974.	2049.	1005.	1427.	1883	0	1460	943	683	571	525	522	560	657	882	1355
156.0	2.0	1862.	21.79	-5024.	6802.	440525.	2117.	1005.	1479.	1952	0	1490	945	681	568	523	520	558	657	887	1372
160.0	2.0	1951.	22.14	-7071.	6874.	452982.	2188.	1006.	1534.	2023	0	1515	947	678	566	520	517	556	656	892	1392
164.0	2.0	2028.	19.33	-8665.	6936.	463638.	2247.	1006.	1580.	2082	0	1536	952	677	564	518	515	554	655	895	1412
168.0	2.1	2084.	13.97	-7199.	6981.	470664.	2271.	1006.	1598.	2106	0	1556	958	677	562	515	512	552	653	897	1442
172.0	2.2	2137.	13.33	-4867.	7024.	477097.	2288.	1006.	1612.	2123	0	1576	962	676	560	513	510	549	651	900	1476
176.0	2.2	2201.	16.00	-3017.	7077.	485413.	2316.	1006.	1634.	2151	0	1602	967	675	558	511	508	547	650	903	1509
180.0	2.3	2293.	22.94	-4095.	7154.	498318.	2384.	1006.	1686.	2220	0	1634	969	672	555	508	506	545	650	909	1532
184.0	2.3	2395.	25.58	-6285.	7241.	513212.	2467.	1006.	1750.	2303	0	1670	971	670	553	506	504	544	649	915	1552
188.0	2.3	2484.	22.14	-7497.	7316.	525791.	2534.	1007.	1801.	2370	0	1701	973	668	550	504	501	542	649	920	1573
192.0	2.4	2536.	13.00	-6613.	7356.	532259.	2558.	1007.	1821.	2394	0	1719	977	667	548	502	499	540	647	924	1597
196.0	2.5	2586.	12.47	-5433.	7395.	538219.	2578.	1007.	1837.	2415	0	1733	985	667	547	499	497	537	645	925	1626
200.0	2.5	2657.	17.82	-5871.	7453.	547175.	2625.	1007.	1873.	2461	0	1746	993	667	545	497	495	535	643	926	1659

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
204.0	2.5	2760.	25.77	-8429.	7540.	561229.	2709.	1007.	1937.	2546	0	1767	1001	667	543	495	492	533	640	927	1692
208.0	2.6	2822.	15.49	-7726.	7591.	569466.	2743.	1007.	1964.	2580	0	1792	1004	665	541	493	490	531	639	932	1715
212.0	2.7	2874.	13.04	-6162.	7632.	576581.	2765.	1007.	1982.	2602	0	1822	1004	662	539	491	489	530	640	940	1731
216.0	2.7	2950.	18.91	-6936.	7695.	587419.	2820.	1007.	2024.	2657	0	1855	1004	660	536	489	487	528	640	948	1743
220.0	2.8	3065.	28.86	-10173.	7795.	604487.	2920.	1008.	2101.	2758	0	1895	1005	657	534	487	485	527	640	955	1760
224.0	2.8	3176.	27.59	-11459.	7891.	620246.	3004.	1008.	2166.	2842	0	1935	1007	655	532	485	483	526	640	961	1788
228.0	2.8	3260.	21.11	-6994.	7971.	631602.	3033.	1008.	2188.	2871	0	1982	1010	654	530	483	481	524	639	966	1837
232.0	2.9	3350.	22.42	-2189.	8055.	643451.	3064.	1008.	2213.	2902	0	2029	1013	652	528	481	479	522	638	972	1891
236.0	3.0	3478.	32.13	-1727.	8173.	661512.	3151.	1008.	2279.	2989	0	2077	1018	651	526	479	477	521	637	976	1941
240.0	3.0	3568.	22.54	-1515.	8252.	673393.	3209.	1008.	2324.	3047	0	2103	1026	651	524	477	475	518	635	977	1982
244.0	3.0	3630.	15.49	420.	8305.	680532.	3233.	1009.	2344.	3072	0	2119	1035	651	523	475	473	516	633	978	2025
248.0	3.1	3716.	21.48	623.	8380.	691602.	3287.	1009.	2386.	3126	0	2141	1044	651	522	474	471	514	630	979	2066
252.0	3.2	3831.	28.61	-1904.	8480.	707860.	3382.	1009.	2458.	3220	0	2175	1048	650	520	472	470	512	629	983	2094
256.0	3.2	3896.	16.40	-392.	8536.	717094.	3415.	1009.	2484.	3254	0	2213	1048	647	518	470	468	511	630	992	2112
260.0	3.3	3970.	18.41	178.	8598.	727387.	3460.	1009.	2519.	3299	0	2249	1046	644	515	468	466	510	631	1002	2130
264.0	3.3	4102.	32.93	-1881.	8717.	746607.	3566.	1009.	2601.	3405	0	2298	1048	642	513	466	465	509	630	1009	2159
268.0	3.3	4200.	24.67	3156.	8812.	759968.	3602.	1010.	2629.	3441	0	2352	1052	641	512	464	463	507	630	1015	2216
272.0	3.4	4288.	21.91	5797.	8892.	771100.	3643.	1010.	2661.	3482	0	2384	1060	640	510	463	461	506	628	1017	2268
276.0	3.5	4413.	31.13	2395.	9001.	787868.	3748.	1010.	2742.	3587	0	2405	1071	641	509	461	459	503	625	1016	2311
280.0	3.5	4508.	23.79	3053.	9086.	800345.	3806.	1010.	2787.	3646	0	2433	1080	641	508	459	457	501	623	1017	2357
284.0	3.5	4577.	17.28	5443.	9146.	809486.	3836.	1010.	2811.	3676	0	2469	1081	639	506	457	456	500	623	1026	2386
288.0	3.6	4749.	42.91	-1501.	9299.	835445.	4003.	1011.	2938.	3843	0	2522	1083	637	504	455	454	499	623	1033	2403
292.0	3.7	4766.	4.38	5106.	9312.	836541.	3967.	1011.	2912.	3807	0	2553	1081	634	502	454	453	498	624	1044	2431
296.0	3.7	4834.	16.99	7825.	9373.	844910.	3992.	1011.	2933.	3832	0	2581	1089	634	500	452	451	496	622	1046	2473
300.0	3.8	4988.	38.52	2135.	9509.	866274.	4134.	1011.	3041.	3974	0	2605	1102	634	500	450	449	494	619	1044	2517
304.0	3.8	5080.	22.91	4277.	9593.	878404.	4181.	1011.	3078.	4021	0	2643	1108	634	498	449	447	492	618	1048	2562
308.0	3.8	5165.	21.25	5368.	9667.	890254.	4232.	1011.	3118.	4072	0	2684	1107	631	496	447	445	492	618	1059	2587
312.0	3.9	5252.	21.78	6673.	9745.	902658.	4283.	1012.	3157.	4123	0	2731	1106	628	494	445	444	491	619	1069	2611
316.0	4.0	5363.	27.81	10967.	9851.	917943.	4334.	1012.	3197.	4174	0	2790	1108	627	492	443	443	490	619	1078	2665
320.0	4.0	5481.	29.48	16056.	9966.	933605.	4384.	1012.	3236.	4224	0	2846	1114	626	491	442	441	488	618	1082	2736
324.0	4.1	5575.	23.42	17989.	10051.	945231.	4432.	1012.	3274.	4273	0	2873	1125	626	490	440	439	486	615	1082	2792
328.0	4.1	5665.	22.60	19468.	10132.	956715.	4482.	1012.	3313.	4323	0	2901	1134	626	489	439	437	484	613	1084	2839
332.0	4.2	5834.	42.23	13722.	10283.	981616.	4639.	1013.	3433.	4480	0	2951	1137	624	487	437	436	483	613	1091	2866
336.0	4.2	5892.	14.46	17881.	10336.	989463.	4650.	1013.	3443.	4491	0	2997	1136	622	485	435	434	482	614	1103	2891
340.0	4.3	5963.	17.70	23525.	10402.	998095.	4660.	1013.	3452.	4501	0	3039	1138	620	484	434	433	481	613	1110	2942
344.0	4.3	6126.	40.86	18493.	10547.	1020710.	4807.	1013.	3564.	4648	0	3070	1149	621	483	432	431	479	610	1108	2991
348.0	4.3	6223.	24.23	20330.	10635.	1033439.	4860.	1013.	3606.	4702	0	3107	1156	621	482	431	429	477	609	1111	3037
352.0	4.4	6318.	23.81	21589.	10721.	1046952.	4918.	1013.	3651.	4759	0	3156	1155	618	480	429	428	477	610	1123	3064
356.0	4.4	6420.	25.44	23623.	10815.	1061288.	4975.	1014.	3696.	4816	0	3209	1156	616	478	427	427	476	610	1133	3099
360.0	4.5	6526.	26.59	26340.	10913.	1074710.	5030.	1014.	3739.	4871	0	3245	1164	616	477	426	425	474	608	1135	3160
364.0	4.6	6625.	24.64	27965.	11003.	1087219.	5084.	1014.	3781.	4926	0	3275	1175	616	476	425	423	472	606	1135	3214
368.0	4.6	6721.	23.90	28957.	11088.	1100284.	5143.	1014.	3827.	4985	0	3317	1176	615	474	423	422	471	606	1142	3247
372.0	4.7	6822.	25.29	30515.	11180.	1114460.	5204.	1014.	3875.	5045	0	3368	1175	612	473	421	421	471	607	1152	3279
376.0	4.7	6942.	30.06	34476.	11294.	1130412.	5262.	1014.	3920.	5104	0	3422	1181	611	471	420	419	469	606	1157	3344
380.0	4.8	7045.	25.71	36044.	11390.	1143347.	5319.	1015.	3965.	5161	0	3452	1195	612	470	419	418	468	604	1157	3402
384.0	4.8	7138.	23.29	36215.	11472.	1155768.	5379.	1015.	4012.	5221	0	3485	1200	610	469	417	416	467	603	1164	3434
388.0	4.8	7243.	26.22	37812.	11568.	1170566.	5442.	1015.	4061.	5284	0	3539	1199	608	467	416	415	466	604	1175	3467
392.0	4.9	7379.	33.95	43220.	11702.	1189028.	5503.	1015.	4108.	5345	0	3608	1205	607	466	414	414	465	603	1183	3540
396.0	4.9	7498.	29.75	46246.	11816.	1204359.	5563.	1015.	4156.	5405	0	3651	1216	606	465	413	412	463	602	1187	3607

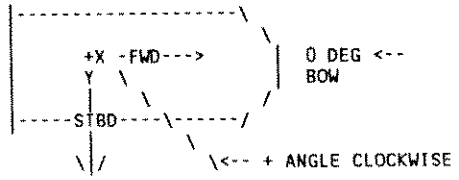
STARTING DISPLACEMENTS : SURGE(FT) = -49.000 SWAY(FT) = -49.000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE T10A12T tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

T 10 A12T

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	15.0	45.0	75.0	105.0	135.0	165.0	-165.0	-135.0	-105.0	-75.0	-45.0	-15.0
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	440.0	440.0	440.0	440.0	440.0	440.0	440.0	440.0	440.0	440.0	440.0	440.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	10000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	10000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	300.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	2500.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	150.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	ARAMID
LINE SIZE (IN)	5.875"
LINE LENGTH (FT)	9450.0
WEIGHT IN WATER (LB/FT)	2.14
LINE B.S. (KIPS)	3481.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	139000.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	6.250"
LINE LENGTH (FT)	250.0
WEIGHT IN WATER (LB/FT)	322.85
LINE B.S. (KIPS)	3623.0
AREA (SQ IN)	30.68
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	10800.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
1	176.4	.0	176.4	3712.00	9938.00	3712.0	.0	.0				
2	186.4	11.5	186.8	7670.31	9938.00	1235.4	11.5	.0	2.71	.00	.00	.00
3	196.4	21.1	197.6	8065.81	9938.00	1204.5	21.1	.0	3.83	.00	.00	.00
4	206.4	30.0	208.6	8237.63	9938.00	1173.5	30.0	.0	4.93	.00	.00	.00
5	216.4	38.8	219.9	8345.53	9938.00	1142.6	38.8	.0	6.03	.00	.00	.00
6	226.4	47.4	231.3	8426.16	9938.00	1111.7	47.4	.0	7.12	.00	.00	.00
7	236.4	56.0	243.0	8488.46	9938.00	1080.7	56.0	.0	8.21	.00	.00	.00
8	246.4	64.5	254.7	8542.26	9938.00	1049.8	64.5	.0	9.31	.00	.00	.00
9	256.4	73.0	266.6	8586.42	9938.00	1018.8	73.0	.0	10.40	.00	.00	.00
10	266.4	81.5	278.6	8625.02	9938.00	1000.4	81.5	.0	11.50	.00	80.37	.00
11	286.4	98.4	302.9	8682.06	9938.00	1000.4	98.4	.0	13.69	.00	432.33	.00
12	306.4	115.1	327.3	8719.43	9938.00	1000.5	115.1	.0	15.86	.00	924.39	.00
13	326.4	131.6	352.0	8748.82	9938.00	1000.6	131.6	.0	18.04	.00	1152.33	.00
14	346.4	148.0	376.7	8769.59	9938.00	1000.6	148.0	.0	20.21	.00	1596.35	.00
15	366.4	164.4	401.6	8786.01	9938.00	1000.7	164.4	.0	22.38	.00	1664.30	.00
16	386.4	180.7	426.6	8800.95	9938.00	1000.8	180.7	.0	24.55	.00	1984.30	.00
17	406.4	196.9	451.6	8812.67	9938.00	1000.8	196.9	.0	26.71	.00	2304.30	.00
18	426.4	213.2	476.8	8823.49	9938.00	1000.9	213.2	.0	28.88	.00	2624.30	.00
19	446.4	229.4	501.9	8833.48	9938.00	1001.0	229.4	.0	31.05	.00	3864.39	.00
20	466.4	245.5	527.1	8839.67	9938.00	1001.1	245.5	.0	33.21	.00	3672.33	.00
21	486.4	261.8	552.4	8848.43	9938.00	1001.1	261.8	.0	35.38	.00	4704.39	.00
22	506.4	277.9	577.7	8853.87	9938.00	1001.2	277.9	.0	37.54	.00	4392.33	.00
23	526.4	294.1	603.0	8861.63	9938.00	1001.3	294.1	.0	39.72	.00	5544.39	.00
24	546.4	310.2	628.4	8866.44	9938.00	1001.3	310.2	.0	41.88	.00	5112.33	.00
25	566.4	326.5	653.8	8873.36	9938.00	1001.4	326.5	.0	44.05	.00	6384.39	.00
26	586.4	342.6	679.2	8877.66	9938.00	1001.5	342.6	.0	46.22	.00	8424.48	.00
27	606.4	358.8	704.6	8883.90	9938.00	1001.5	358.8	.0	48.40	.00	7224.39	.00
28	626.4	375.1	730.1	8889.78	9938.00	1001.6	375.1	.0	50.57	.00	7280.37	.00
29	646.4	391.2	755.6	8893.44	9938.00	1001.7	391.2	.0	52.74	.00	9984.48	.00
30	666.4	407.4	781.1	8898.81	9938.00	1001.8	407.4	.0	54.92	.00	8080.37	.00
31	686.4	423.5	806.6	8902.16	9938.00	1001.8	423.5	.0	57.09	.00	11024.48	.00
32	706.4	439.7	832.1	8907.11	9938.00	1001.9	439.7	.0	59.27	.00	9324.39	.00
33	726.4	456.0	857.7	8911.87	9938.00	1002.0	456.0	.0	61.46	.00	9280.37	.00
34	746.4	472.2	883.3	8916.41	9938.00	1002.0	472.2	.0	63.64	.00	9680.37	.00
35	766.4	488.5	908.9	8920.77	9938.00	1002.1	488.5	.0	65.82	.00	10080.37	.00
36	786.4	504.7	934.5	8924.97	9938.00	1002.2	504.7	.0	68.00	.00	10480.37	.00
37	806.4	521.0	960.1	8929.00	9938.00	1002.2	521.0	.0	70.19	.00	10880.37	.00
38	826.4	537.2	985.7	8932.91	9938.00	1002.3	537.2	.0	72.37	.00	11280.37	.00
39	846.4	553.5	1011.3	8936.70	9938.00	1002.4	553.5	.0	74.56	.00	11680.37	.00
40	866.4	569.7	1037.0	8940.36	9938.00	1002.5	569.7	.0	76.75	.00	12080.37	.00
41	886.4	586.0	1062.6	8943.89	9938.00	1002.5	586.0	.0	78.93	.00	12480.37	.00
42	906.4	602.2	1088.3	8947.33	9938.00	1002.6	602.2	.0	81.12	.00	12880.37	.00
43	926.4	618.5	1113.9	8950.66	9938.00	1002.7	618.5	.0	83.31	.00	11952.33	.00
44	946.4	635.1	1139.8	8956.31	9938.00	1002.7	635.1	.0	85.52	.00	15048.41	.00
45	966.4	651.3	1165.4	8959.43	9938.00	1002.8	651.3	.0	87.71	.00	14080.37	.00

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
46	986.4	667.6	1191.1	8962.47	9938.00	1002.9	667.6	.0	89.90	.00	14480.37	.00
47	1006.4	684.1	1216.9	8967.69	9938.00	1002.9	684.1	.0	92.11	.00	16368.41	.00
48	1026.4	700.4	1242.6	8970.51	9938.00	1003.0	700.4	.0	94.30	.00	15280.37	.00
49	1046.4	716.6	1268.3	8973.34	9938.00	1003.1	716.6	.0	96.50	.00	14112.33	.00
50	1066.4	733.2	1294.2	8978.17	9938.00	1003.2	733.2	.0	98.71	.00	17688.41	.00
51	1086.4	749.4	1319.8	8980.78	9938.00	1003.2	749.4	.0	100.90	.00	14832.33	.00
52	1106.4	766.0	1345.7	8985.35	9938.00	1003.3	766.0	.0	103.12	.00	18568.41	.00
53	1126.4	782.2	1371.4	8987.87	9938.00	1003.4	782.2	.0	105.31	.00	15552.33	.00
54	1146.4	798.8	1397.3	8992.25	9938.00	1003.4	798.8	.0	107.53	.00	19448.41	.00
55	1166.4	815.4	1423.2	8996.51	9938.00	1003.5	815.4	.0	109.75	.00	19888.41	.00
56	1186.4	831.6	1448.9	8998.85	9938.00	1003.6	831.6	.0	111.94	.00	16632.33	.00
57	1206.4	848.5	1474.9	9004.74	9938.00	1003.7	848.5	.0	114.18	.00	18880.37	.00
58	1226.4	864.7	1500.6	9006.92	9938.00	1003.7	864.7	.0	116.38	.00	19280.38	.00
59	1246.4	881.3	1526.5	9010.81	9938.00	1003.8	881.3	.0	118.60	.00	21648.41	.00
60	1266.4	897.9	1552.4	9014.64	9938.00	1003.9	897.9	.0	120.82	.00	22088.41	.00
61	1286.4	914.4	1578.3	9018.38	9938.00	1003.9	914.4	.0	123.04	.00	22528.41	.00
62	1306.4	931.0	1604.2	9022.03	9938.00	1004.0	931.0	.0	125.26	.00	22968.41	.00
63	1326.4	947.6	1630.1	9025.62	9938.00	1004.1	947.6	.0	127.48	.00	23408.41	.00
64	1346.4	964.1	1656.0	9029.10	9938.00	1004.2	964.1	.0	129.71	.00	23848.41	.00
65	1366.4	980.7	1681.9	9032.57	9938.00	1004.2	980.7	.0	131.93	.00	24288.41	.00
66	1386.4	997.2	1707.8	9035.92	9938.00	1004.3	997.2	.0	134.15	.00	24728.41	.00
67	1406.4	1014.1	1733.9	9040.75	9938.00	1004.4	1014.1	.0	136.40	.00	22880.38	.00
68	1426.4	1030.4	1759.7	9042.54	9938.00	1004.4	1030.4	.0	138.61	.00	23280.38	.00
69	1446.4	1047.2	1785.8	9047.20	9938.00	1004.5	1047.2	.0	140.85	.00	23680.38	.00
70	1466.4	1064.1	1811.8	9051.75	9938.00	1004.6	1064.1	.0	143.10	.00	24080.38	.00
71	1486.4	1080.4	1837.6	9053.38	9938.00	1004.7	1080.4	.0	145.31	.00	24480.38	.00
72	1506.4	1097.2	1863.7	9057.85	9938.00	1004.7	1097.2	.0	147.55	.00	24880.38	.00
73	1526.4	1114.1	1889.8	9062.12	9938.00	1004.8	1114.1	.0	149.80	.00	25280.38	.00
74	1546.4	1130.4	1915.5	9063.73	9938.00	1004.9	1130.4	.0	152.01	.00	23112.34	.00
75	1566.4	1147.2	1941.6	9067.93	9938.00	1004.9	1147.2	.0	154.26	.00	26080.38	.00
76	1586.4	1164.1	1967.7	9072.15	9938.00	1005.0	1164.1	.0	156.51	.00	26480.38	.00
77	1606.4	1181.0	1993.8	9076.21	9938.00	1005.1	1181.0	.0	158.77	.00	26880.38	.00
78	1626.4	1197.9	2019.9	9080.17	9938.00	1005.2	1197.9	.0	161.02	.00	27280.38	.00
79	1646.4	1214.1	2045.7	9081.58	9938.00	1005.2	1214.1	.0	163.23	.00	24912.34	.00
80	1666.4	1231.0	2071.8	9085.48	9938.00	1005.3	1231.0	.0	165.49	.00	29484.40	.00
81	1686.4	1247.9	2097.9	9089.29	9938.00	1005.4	1247.9	.0	167.74	.00	28480.38	.00
82	1706.4	1264.7	2124.0	9093.13	9938.00	1005.5	1264.7	.0	170.00	.00	28880.38	.00
83	1726.4	1281.6	2150.1	9096.82	9938.00	1005.5	1281.6	.0	172.25	.00	29280.38	.00
84	1746.4	1298.5	2176.3	9100.41	9938.00	1005.6	1298.5	.0	174.51	.00	29680.38	.00
85	1766.4	1315.4	2202.4	9104.04	9938.00	1005.7	1315.4	.0	176.77	.00	30080.38	.00
86	1786.4	1332.2	2228.5	9107.65	9938.00	1005.8	1332.2	.0	179.02	.00	30480.38	.00
87	1806.4	1349.1	2254.6	9111.16	9938.00	1005.8	1349.1	.0	181.28	.00	30880.38	.00
88	1826.4	1366.0	2280.7	9114.65	9938.00	1005.9	1366.0	.0	183.54	.00	31280.38	.00
89	1846.4	1382.9	2306.9	9118.00	9938.00	1006.0	1382.9	.0	185.80	.00	31680.38	.00
90	1866.4	1399.7	2333.0	9121.32	9938.00	1006.0	1399.7	.0	188.06	.00	32080.38	.00
91	1886.4	1417.2	2359.5	9126.85	9938.00	1006.1	1417.2	.0	190.36	.00	37352.44	.00
92	1906.4	1434.1	2385.6	9130.12	9938.00	1006.2	1434.1	.0	192.63	.00	42744.50	.00
93	1926.4	1451.0	2411.8	9133.31	9938.00	1006.3	1451.0	.0	194.89	.00	33280.38	.00
94	1946.4	1467.9	2437.9	9136.54	9938.00	1006.3	1467.9	.0	197.15	.00	33680.38	.00
95	1966.4	1484.7	2464.0	9139.63	9938.00	1006.4	1484.7	.0	199.42	.00	34080.38	.00
96	1986.4	1501.6	2490.1	9142.76	9938.00	1006.5	1501.6	.0	201.68	.00	34480.38	.00
97	2006.4	1519.1	2516.6	9147.82	9938.00	1006.6	1519.1	.0	203.99	.00	27904.30	.00
98	2026.4	1536.0	2542.8	9150.85	9938.00	1006.6	1536.0	.0	206.26	.00	35280.38	.00
99	2046.4	1552.9	2568.9	9153.86	9938.00	1006.7	1552.9	.0	208.52	.00	35680.38	.00

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	4767.	0.	440.	1001.	189.	440	440	440	440	440	440	440	440	440	440	440	440
4.0	.0	34.	8.53	0.	4768.	7033.	449.	1001.	195.	448	449	448	445	440	436	433	432	433	436	440	445
8.0	.1	68.	8.40	0.	4771.	13935.	458.	1001.	201.	456	458	456	449	440	432	426	424	426	432	440	449
12.0	.1	100.	8.15	0.	4776.	20591.	467.	1001.	207.	463	467	463	453	440	428	420	417	420	428	440	453
16.0	.2	133.	8.05	0.	4783.	27180.	477.	1001.	213.	472	477	472	458	440	424	414	410	414	424	440	458
20.0	.2	163.	7.72	0.	4790.	33447.	485.	1001.	219.	480	485	480	463	440	420	408	404	408	420	440	463
24.0	.2	195.	7.87	0.	4799.	39856.	496.	1001.	225.	487	496	487	467	440	417	403	398	403	417	440	467
28.0	.3	230.	8.88	-0.	4813.	47278.	510.	1001.	235.	497	510	497	472	440	413	397	391	397	413	440	472
32.0	.3	270.	10.01	0.	4835.	55901.	526.	1001.	245.	509	526	509	477	440	410	392	385	392	410	440	477
36.0	.4	309.	9.57	0.	4855.	64265.	538.	1001.	252.	523	538	523	481	440	407	386	379	386	407	440	481
40.0	.4	343.	8.63	0.	4871.	71574.	549.	1001.	260.	534	549	534	486	440	404	381	374	381	404	440	486
44.0	.4	380.	9.08	0.	4890.	79175.	567.	1001.	271.	544	567	544	491	440	401	376	369	376	401	440	491
48.0	.5	418.	9.55	0.	4914.	87197.	583.	1001.	281.	555	583	555	496	440	398	372	364	372	398	440	496
52.0	.5	458.	10.17	0.	4944.	95849.	595.	1001.	289.	572	595	572	502	440	395	367	359	367	395	440	502
56.0	.6	500.	10.26	0.	4976.	104183.	613.	1001.	300.	585	613	585	511	441	392	363	355	363	392	441	511
60.0	.6	539.	9.91	0.	5007.	112060.	632.	1001.	313.	595	632	595	519	441	388	359	351	359	388	441	519
64.0	.6	579.	9.96	0.	5040.	120152.	646.	1001.	322.	610	646	610	527	441	385	355	347	355	385	441	527
68.0	.7	625.	11.47	0.	5081.	130172.	666.	1001.	334.	628	666	628	533	441	383	352	343	352	383	441	533
72.0	.7	664.	9.82	0.	5113.	138450.	687.	1001.	348.	641	687	641	538	441	380	348	340	348	380	441	538
76.0	.8	701.	9.16	0.	5142.	146114.	703.	1002.	358.	654	703	654	544	441	377	345	336	345	377	441	544
80.0	.8	745.	11.16	0.	5185.	155866.	719.	1002.	368.	674	719	674	550	441	374	342	333	342	374	441	550
84.0	.8	792.	11.52	0.	5231.	165448.	742.	1002.	383.	691	742	691	559	441	372	339	330	339	372	441	559
88.0	.9	835.	10.78	0.	5275.	174051.	765.	1002.	397.	704	765	704	568	441	369	336	327	336	369	441	568
92.0	.9	876.	10.44	0.	5316.	182351.	786.	1002.	411.	718	786	718	578	441	367	334	324	334	367	441	578
96.0	1.0	927.	12.54	0.	5369.	193272.	814.	1002.	428.	737	814	737	584	441	364	331	322	331	364	441	584
100.0	1.0	975.	12.12	0.	5419.	204000.	834.	1002.	441.	759	834	759	590	441	362	328	319	328	362	441	590
104.0	1.0	1017.	10.57	0.	5461.	212944.	856.	1002.	455.	775	856	775	597	441	360	326	316	326	360	441	597
108.0	1.1	1070.	13.11	0.	5519.	224389.	878.	1002.	469.	799	878	799	605	442	357	323	313	323	357	442	605
112.0	1.1	1121.	12.93	0.	5578.	235131.	901.	1002.	484.	820	901	820	616	442	355	321	311	321	355	442	616
116.0	1.2	1169.	11.93	0.	5632.	244762.	925.	1002.	499.	838	925	838	626	442	353	319	308	319	353	442	626
120.0	1.2	1217.	12.04	0.	5685.	254973.	950.	1002.	515.	856	950	856	634	442	351	316	306	316	351	442	634
124.0	1.2	1266.	12.15	0.	5738.	265468.	976.	1002.	531.	876	976	876	641	442	349	314	304	314	349	442	641
128.0	1.3	1316.	12.49	0.	5793.	276242.	1003.	1002.	548.	896	1003	896	649	442	347	312	301	312	347	442	649
132.0	1.3	1369.	13.17	0.	5855.	287304.	1031.	1002.	566.	917	1031	917	659	442	346	310	299	310	346	442	659
136.0	1.4	1424.	13.87	0.	5923.	298697.	1060.	1003.	584.	938	1060	938	671	442	344	307	297	307	344	442	671
140.0	1.4	1480.	14.05	0.	5991.	310426.	1089.	1003.	603.	960	1089	960	682	443	342	305	295	305	342	443	682
144.0	1.4	1535.	13.57	0.	6055.	322093.	1118.	1003.	621.	983	1118	983	691	443	340	303	294	303	340	443	691
148.0	1.5	1582.	11.85	0.	6110.	332275.	1135.	1003.	632.	1006	1135	1006	699	443	339	302	292	302	339	443	699
152.0	1.5	1638.	14.02	0.	6177.	344571.	1166.	1003.	652.	1030	1166	1030	707	443	337	300	290	300	337	443	707
156.0	1.6	1695.	14.27	0.	6246.	357100.	1196.	1003.	671.	1056	1196	1056	715	443	336	298	288	298	336	443	715
160.0	1.6	1747.	12.89	0.	6309.	368147.	1216.	1003.	683.	1081	1216	1081	724	443	334	296	287	296	334	443	724
164.0	1.6	1812.	16.30	0.	6392.	381998.	1252.	1003.	706.	1108	1252	1108	736	443	333	295	285	295	333	443	736
168.0	1.7	1863.	12.86	0.	6458.	391895.	1280.	1003.	724.	1126	1280	1126	750	444	331	293	284	293	331	444	750
172.0	1.7	1913.	12.35	1.	6519.	401755.	1307.	1003.	741.	1144	1307	1144	762	444	330	292	282	292	330	444	762
176.0	1.8	1973.	15.08	0.	6595.	414971.	1335.	1003.	759.	1173	1335	1173	771	444	328	290	281	290	328	444	771
180.0	1.8	2032.	14.84	0.	6670.	427575.	1368.	1003.	780.	1198	1368	1198	781	444	327	289	279	289	327	444	781
184.0	1.8	2082.	12.40	0.	6735.	436746.	1394.	1003.	796.	1215	1394	1215	797	444	325	287	278	287	325	444	797
188.0	1.9	2143.	15.34	0.	6817.	449421.	1415.	1003.	810.	1245	1415	1245	811	445	324	286	277	286	324	445	811
192.0	1.9	2210.	16.60	0.	6902.	463715.	1453.	1004.	834.	1274	1453	1274	822	445	323	285	275	285	323	445	822
196.0	2.0	2250.	10.02	0.	6951.	471551.	1467.	1004.	844.	1291	1467	1291	832	445	321	283	274	283	321	445	832
200.0	2.0	2320.	17.52	1.	7041.	486774.	1506.	1004.	868.	1323	1506	1323	843	445	320	282	273	282	320	445	843

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)
204.0	2.0	2368.	12.16	1.	7102.	496430.	1531.	1004.	884.
208.0	2.1	2433.	16.18	0.	7187.	510347.	1558.	1004.	902.
212.0	2.1	2485.	13.07	0.	7254.	520836.	1586.	1004.	919.
216.0	2.2	2536.	12.70	0.	7319.	530857.	1615.	1004.	938.
220.0	2.2	2604.	16.97	0.	7408.	545421.	1644.	1004.	956.
224.0	2.2	2652.	12.09	0.	7470.	554658.	1674.	1004.	975.
228.0	2.3	2710.	14.48	0.	7545.	566397.	1705.	1004.	995.
232.0	2.3	2769.	14.75	0.	7624.	578626.	1723.	1004.	1007.
236.0	2.4	2835.	16.32	0.	7708.	591919.	1769.	1004.	1036.
240.0	2.4	2885.	12.71	0.	7776.	601851.	1786.	1005.	1048.
244.0	2.4	2940.	13.56	0.	7848.	612563.	1809.	1005.	1062.
248.0	2.5	3010.	17.46	0.	7940.	626908.	1855.	1005.	1092.
252.0	2.5	3060.	12.68	0.	8008.	636723.	1869.	1005.	1101.
256.0	2.6	3129.	17.25	0.	8099.	650809.	1912.	1005.	1128.
260.0	2.6	3190.	15.30	0.	8181.	663038.	1940.	1005.	1146.
264.0	2.6	3244.	13.36	1.	8253.	673212.	1964.	1005.	1161.
268.0	2.7	3297.	13.16	1.	8324.	683057.	1989.	1005.	1178.
272.0	2.7	3370.	18.31	0.	8425.	698459.	2012.	1005.	1193.
276.0	2.8	3433.	15.79	0.	8508.	710377.	2064.	1005.	1226.
280.0	2.8	3481.	12.00	0.	8572.	718980.	2086.	1005.	1240.
284.0	2.8	3558.	19.15	0.	8674.	736215.	2113.	1005.	1257.
288.0	2.9	3602.	11.17	0.	8729.	744967.	2141.	1006.	1275.
292.0	2.9	3654.	13.02	0.	8796.	754967.	2170.	1006.	1294.
296.0	3.0	3737.	20.80	0.	8912.	772496.	2198.	1006.	1313.
300.0	3.0	3791.	13.38	0.	8986.	781923.	2227.	1006.	1331.
304.0	3.0	3848.	14.15	0.	9061.	792767.	2257.	1006.	1351.
308.0	3.1	3902.	13.59	0.	9130.	803889.	2287.	1006.	1370.
312.0	3.1	3953.	12.84	0.	9196.	813908.	2319.	1006.	1391.
316.0	3.2	4039.	21.50	0.	9317.	832024.	2344.	1006.	1407.
320.0	3.2	4091.	12.88	0.	9389.	840724.	2364.	1006.	1420.
324.0	3.2	4153.	15.65	0.	9475.	852612.	2397.	1006.	1441.
328.0	3.3	4211.	14.50	0.	9549.	864435.	2429.	1006.	1462.
332.0	3.3	4272.	15.14	0.	9628.	876670.	2463.	1006.	1484.
336.0	3.4	4338.	16.47	1.	9721.	888789.	2494.	1006.	1504.
340.0	3.4	4393.	13.68	0.	9795.	899218.	2515.	1007.	1518.
344.0	3.4	4454.	15.24	0.	9874.	911653.	2549.	1007.	1540.

LINE LOAD (KIPS)

LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
1342	1531	1342	854	445	319	281	272	281	319	445	854
1374	1558	1374	866	446	317	280	270	280	317	446	866
1395	1586	1395	877	446	316	278	269	278	316	446	877
1413	1615	1413	889	446	315	277	268	277	315	446	889
1447	1644	1447	901	446	313	276	267	276	313	446	901
1462	1674	1462	914	446	312	275	266	275	312	446	914
1486	1705	1486	926	447	311	274	265	274	311	447	926
1517	1723	1517	939	447	310	273	264	273	310	447	939
1539	1769	1539	953	447	309	272	262	272	309	447	953
1563	1786	1563	966	447	307	271	261	271	307	447	966
1587	1809	1587	980	448	306	270	260	270	306	448	980
1612	1855	1612	993	448	305	269	259	269	305	448	993
1637	1869	1637	1008	448	304	268	258	268	304	448	1008
1663	1912	1663	1022	448	303	267	257	267	303	448	1022
1690	1940	1690	1037	449	302	266	256	266	302	449	1037
1712	1964	1712	1052	449	301	265	255	265	301	449	1052
1732	1989	1732	1067	449	300	264	254	264	300	449	1067
1773	2012	1773	1083	449	299	263	253	263	299	449	1083
1787	2064	1787	1099	450	298	262	252	262	298	450	1099
1804	2086	1804	1115	450	297	261	251	261	297	450	1115
1849	2113	1849	1124	450	296	260	250	260	296	450	1124
1864	2141	1864	1133	451	295	259	249	259	295	451	1133
1883	2170	1883	1146	451	294	258	249	258	294	451	1146
1928	2198	1928	1163	451	294	257	248	257	294	451	1163
1945	2227	1945	1181	451	293	256	247	256	293	451	1181
1967	2257	1967	1196	452	292	256	246	256	292	452	1196
1989	2287	1989	1205	452	291	255	245	255	291	452	1205
2007	2319	2007	1216	452	290	254	244	254	290	452	1216
2057	2344	2057	1235	453	289	253	244	253	289	453	1235
2076	2364	2076	1254	453	289	252	243	252	289	453	1254
2099	2397	2099	1271	453	288	251	242	251	288	453	1271
2123	2429	2123	1282	454	287	251	241	251	287	454	1282
2148	2463	2148	1294	454	286	250	240	250	286	454	1294
2173	2494	2173	1314	454	286	249	240	249	286	454	1314
2199	2515	2199	1329	455	285	248	239	248	285	455	1329
2224	2549	2224	1340	455	284	248	238	248	284	455	1340

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT 9155. FT

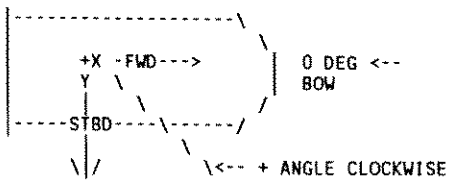
STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE T10A12T tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	-2.	.00	0.	4361.	136833.	497.	1001.	226.	497	0	497	472	440	413	397	391	397	413	440	472
4.0	.0	28.	7.54	-86.	4369.	142613.	512.	1001.	236.	512	0	507	475	438	409	391	385	392	412	443	479
8.0	.1	59.	7.82	-199.	4380.	148431.	528.	1001.	246.	528	0	517	476	435	404	385	380	389	411	446	486
12.0	.1	88.	7.06	32.	4388.	153509.	539.	1001.	253.	539	0	527	477	432	399	379	374	385	410	449	494
16.0	.2	115.	6.88	141.	4395.	158469.	550.	1001.	260.	550	0	535	480	429	394	374	369	381	408	452	503
20.0	.2	147.	8.00	41.	4410.	164268.	567.	1001.	271.	567	0	543	482	427	390	369	365	377	407	454	515
24.0	.2	178.	7.77	88.	4426.	169939.	583.	1001.	281.	583	0	552	484	425	385	364	360	373	405	457	527
28.0	.3	206.	7.06	345.	4439.	175090.	595.	1001.	289.	595	0	563	485	423	381	359	356	370	404	460	536
32.0	.3	237.	7.68	352.	4458.	181173.	612.	1001.	300.	612	0	576	488	421	377	355	352	366	403	463	544
36.0	.4	268.	7.82	93.	4477.	186992.	632.	1001.	312.	632	0	585	490	418	373	351	348	363	402	466	553
40.0	.4	297.	7.13	335.	4495.	192260.	645.	1001.	321.	645	0	594	493	417	369	347	344	360	400	468	566
44.0	.4	329.	8.07	371.	4519.	198357.	664.	1001.	333.	664	0	605	496	415	366	343	341	357	398	471	579
48.0	.5	363.	8.32	240.	4546.	204802.	686.	1001.	347.	686	0	618	498	413	362	340	338	354	397	474	589
52.0	.5	392.	7.29	423.	4567.	210300.	701.	1002.	357.	701	0	630	499	410	358	337	335	351	397	478	599
56.0	.6	421.	7.24	658.	4590.	215652.	716.	1002.	366.	716	0	640	503	409	355	334	332	349	395	480	613
60.0	.6	454.	8.40	628.	4621.	222000.	738.	1002.	380.	738	0	651	507	407	352	331	329	346	394	483	628
64.0	.6	489.	8.73	406.	4653.	228852.	762.	1002.	395.	762	0	664	510	405	349	328	326	344	393	486	640
68.0	.7	521.	7.99	638.	4682.	235122.	781.	1002.	407.	781	0	679	512	402	346	325	324	342	392	490	651
72.0	.7	561.	9.85	364.	4722.	242859.	810.	1002.	426.	810	0	691	516	401	343	322	321	339	391	493	668
76.0	.8	593.	8.19	471.	4754.	249221.	830.	1002.	438.	830	0	703	522	400	341	319	318	337	389	495	683
80.0	.8	625.	7.87	364.	4783.	255194.	850.	1002.	451.	850	0	713	525	398	339	317	316	335	388	500	695
84.0	.8	657.	8.01	260.	4814.	261602.	872.	1002.	465.	872	0	726	529	396	336	314	313	333	386	503	706
88.0	.9	692.	8.77	487.	4851.	268763.	894.	1002.	479.	894	0	743	531	394	334	312	311	331	385	509	718
92.0	.9	729.	9.36	901.	4892.	276185.	918.	1002.	494.	918	0	760	533	392	332	309	308	329	384	514	735
96.0	1.0	766.	9.25	1230.	4932.	283502.	942.	1002.	509.	942	0	775	537	391	330	307	306	326	382	517	753
100.0	1.0	804.	9.44	1484.	4974.	291117.	967.	1002.	525.	967	0	792	540	389	328	305	304	324	381	523	768
104.0	1.0	843.	9.81	1838.	5018.	299085.	993.	1002.	542.	993	0	811	542	387	325	302	302	323	380	528	784
108.0	1.1	883.	9.91	2196.	5064.	306983.	1019.	1002.	558.	1019	0	828	546	387	324	300	299	320	378	530	804
112.0	1.1	921.	9.58	2205.	5106.	314538.	1047.	1002.	576.	1047	0	842	550	385	321	298	298	318	376	533	820
116.0	1.2	959.	9.53	2026.	5148.	322084.	1076.	1003.	594.	1076	0	857	553	383	319	296	296	317	375	537	835
120.0	1.2	999.	9.96	1823.	5194.	329987.	1106.	1003.	614.	1106	0	872	556	381	317	295	294	315	374	540	852
124.0	1.2	1033.	8.50	2201.	5234.	336786.	1127.	1003.	627.	1127	0	888	562	380	315	293	292	313	373	543	868
128.0	1.3	1069.	8.92	2597.	5275.	343586.	1149.	1003.	641.	1149	0	902	564	378	313	291	291	312	373	548	886
132.0	1.3	1112.	10.68	2336.	5326.	352293.	1182.	1003.	662.	1182	0	920	569	377	312	289	289	310	371	552	903
136.0	1.4	1148.	9.12	2772.	5372.	359641.	1205.	1003.	676.	1205	0	937	574	375	310	288	287	308	370	557	920
140.0	1.4	1187.	9.75	3104.	5420.	367522.	1230.	1003.	693.	1230	0	956	579	374	308	286	286	306	369	562	938
144.0	1.4	1233.	11.42	2957.	5477.	376821.	1266.	1003.	715.	1266	0	974	583	373	306	285	284	305	368	568	957
148.0	1.5	1269.	9.13	3751.	5523.	384103.	1287.	1003.	729.	1287	0	993	586	371	305	283	283	303	367	573	976
152.0	1.5	1314.	11.19	3868.	5579.	393188.	1321.	1003.	750.	1321	0	1013	589	370	303	282	282	302	365	578	995
156.0	1.6	1351.	9.30	4744.	5626.	400620.	1342.	1003.	764.	1342	0	1033	593	369	302	280	280	300	364	582	1015
160.0	1.6	1398.	11.59	4863.	5685.	410072.	1378.	1003.	786.	1378	0	1053	596	367	300	279	279	299	363	585	1035
164.0	1.6	1436.	9.57	5863.	5733.	417564.	1399.	1003.	800.	1399	0	1073	599	366	299	278	278	298	362	590	1058
168.0	1.7	1477.	10.23	6730.	5786.	425643.	1424.	1004.	816.	1424	0	1094	602	364	297	276	276	296	362	594	1080
172.0	1.7	1523.	11.58	7070.	5847.	435071.	1457.	1004.	837.	1457	0	1115	608	363	296	275	275	295	361	598	1103
176.0	1.8	1553.	7.44	7616.	5884.	440679.	1473.	1004.	847.	1473	0	1128	614	362	294	274	274	294	359	602	1121
180.0	1.8	1596.	10.68	6572.	5938.	449532.	1512.	1004.	872.	1512	0	1142	619	361	293	273	273	292	358	607	1133
184.0	1.8	1637.	10.28	7383.	5994.	457895.	1536.	1004.	888.	1536	0	1164	624	360	292	272	271	291	358	615	1154
188.0	1.9	1682.	11.42	8438.	6057.	466990.	1563.	1004.	905.	1563	0	1187	628	358	291	270	270	290	357	622	1180
192.0	1.9	1721.	9.53	8605.	6107.	474723.	1590.	1004.	922.	1590	0	1204	634	358	289	269	269	289	355	626	1198
196.0	2.0	1757.	9.14	8486.	6153.	482003.	1618.	1004.	940.	1618	0	1219	637	356	288	268	268	288	355	632	1212
200.0	2.0	1803.	11.50	9524.	6214.	491273.	1647.	1004.	958.	1647	0	1244	640	355	287	267	267	287	354	637	1237

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
204.0	2.0	1851.	11.85	10697.	6279.	500835.	1676.	1004.	977.	1676	0	1269	644	354	286	266	266	286	353	641	1264
208.0	2.1	1889.	9.68	10575.	6328.	508481.	1706.	1004.	996.	1706	0	1284	648	353	285	265	265	285	352	645	1281
212.0	2.1	1924.	8.68	11588.	6374.	515304.	1725.	1004.	1008.	1725	0	1303	652	352	284	264	264	284	351	650	1300
216.0	2.2	1980.	13.99	11558.	6450.	526792.	1769.	1004.	1036.	1769	0	1327	658	351	283	262	262	283	350	655	1326
220.0	2.2	2011.	7.81	11994.	6493.	533006.	1786.	1005.	1048.	1786	0	1343	664	350	282	261	261	282	350	662	1341
224.0	2.2	2056.	11.25	13636.	6558.	541973.	1808.	1005.	1062.	1808	0	1368	670	349	281	260	260	281	349	671	1370
228.0	2.3	2109.	13.18	12902.	6630.	552890.	1854.	1005.	1091.	1854	0	1388	676	348	280	259	259	280	348	678	1389
232.0	2.3	2137.	7.03	13455.	6667.	558376.	1868.	1005.	1100.	1868	0	1403	682	347	279	258	258	279	347	683	1404
236.0	2.4	2184.	11.62	13183.	6729.	567783.	1906.	1005.	1125.	1906	0	1421	687	346	278	257	257	278	346	689	1423
240.0	2.4	2236.	13.10	14502.	6803.	578507.	1939.	1005.	1145.	1939	0	1451	692	345	277	256	256	277	345	693	1452
244.0	2.4	2266.	7.43	14351.	6838.	584114.	1961.	1005.	1160.	1961	0	1461	694	344	276	255	255	276	345	700	1464
248.0	2.5	2301.	8.93	14587.	6886.	591234.	1985.	1005.	1175.	1985	0	1477	700	343	275	254	254	275	344	702	1481
252.0	2.5	2347.	11.45	16729.	6950.	600157.	2006.	1005.	1189.	2006	0	1505	703	342	274	253	254	274	343	708	1513
256.0	2.6	2402.	13.67	15604.	7022.	611416.	2059.	1005.	1222.	2059	0	1524	707	341	273	252	253	273	343	713	1531
260.0	2.6	2438.	9.14	16407.	7071.	618592.	2080.	1005.	1236.	2080	0	1543	711	340	272	252	252	273	342	718	1551
264.0	2.6	2479.	10.15	16963.	7126.	626683.	2107.	1005.	1253.	2107	0	1563	716	340	271	251	251	272	341	724	1571
268.0	2.7	2520.	10.32	17528.	7183.	634934.	2134.	1005.	1271.	2134	0	1583	721	339	271	250	250	271	340	730	1591
272.0	2.7	2563.	10.71	18038.	7243.	643541.	2162.	1006.	1289.	2162	0	1603	727	338	270	249	249	270	340	738	1612
276.0	2.8	2607.	10.87	18495.	7305.	652317.	2190.	1006.	1307.	2190	0	1624	734	337	269	248	248	269	339	746	1634
280.0	2.8	2651.	11.00	18955.	7369.	661233.	2218.	1006.	1325.	2218	0	1646	742	337	268	247	247	268	338	755	1656
284.0	2.8	2695.	11.05	19445.	7431.	669994.	2247.	1006.	1344.	2247	0	1666	748	336	267	246	247	268	338	762	1679
288.0	2.9	2740.	11.21	19997.	7494.	678848.	2276.	1006.	1363.	2276	0	1686	754	335	266	246	246	267	337	768	1703
292.0	2.9	2780.	10.21	19994.	7550.	687298.	2307.	1006.	1383.	2307	0	1707	759	334	265	245	245	266	337	775	1717
296.0	3.0	2821.	10.05	20038.	7604.	694883.	2336.	1006.	1402.	2336	0	1720	765	333	265	244	244	265	336	780	1739
300.0	3.0	2867.	11.69	22487.	7674.	704278.	2354.	1006.	1414.	2354	0	1752	772	333	264	243	243	265	335	786	1771
304.0	3.0	2909.	10.48	22827.	7733.	713013.	2383.	1006.	1432.	2383	0	1776	775	332	263	242	243	264	334	799	1785
308.0	3.1	2946.	9.07	21850.	7782.	720325.	2414.	1006.	1453.	2414	0	1787	783	331	262	242	242	263	334	807	1796
312.0	3.1	2994.	12.00	22151.	7851.	729325.	2446.	1006.	1473.	2446	0	1802	793	331	262	241	241	262	333	812	1827
316.0	3.2	3050.	14.20	23640.	7934.	740997.	2480.	1006.	1495.	2480	0	1836	799	330	261	240	240	262	332	821	1857
320.0	3.2	3086.	8.92	23849.	7983.	748298.	2504.	1007.	1511.	2504	0	1855	802	328	260	239	240	261	332	830	1869
324.0	3.2	3122.	9.06	23639.	8033.	755194.	2529.	1007.	1527.	2529	0	1867	813	328	259	239	239	260	331	834	1888

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT 9157. FT

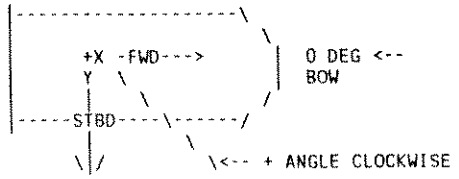
STARTING DISPLACEMENTS : SURGE(FT) = -20.000 SWAY(FT) = -20.000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE T10S12T tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

T10S12T-2

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	15.0	45.0	75.0	105.0	135.0	165.0	-165.0	-135.0	-105.0	-75.0	-45.0	-15.0
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	960.0	960.0	960.0	960.0	960.0	960.0	960.0	960.0	960.0	960.0	960.0	960.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	10000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	10000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	300.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	2400.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-452.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	2300.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-200.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	7500.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.750"
LINE LENGTH (FT)	100.0
WEIGHT IN WATER (LB/FT)	273.26
LINE B.S. (KIPS)	4249.0
AREA (SQ IN)	25.97
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	2950.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.750"
LINE LENGTH (FT)	250.0
WEIGHT IN WATER (LB/FT)	273.26
LINE B.S. (KIPS)	4249.0
AREA (SQ IN)	25.97
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	35800.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
1	146.0	.0	175.9	6862.00	9938.00	6862.0	.0	.0				
2	176.0	108.8	206.9	10571.64	9938.00	4251.4	108.8	.0	14.14	-652.00	.00	513.92
3	206.0	145.3	252.1	11009.87	9938.00	3950.2	145.3	.0	16.63	-652.00	.00	551.76
4	236.0	182.3	298.2	11352.66	9938.00	3489.9	182.3	.0	19.18	-652.00	.00	591.11
5	266.0	219.8	345.1	11627.38	9938.00	3029.5	219.8	.0	21.80	-652.00	.00	631.76
6	296.0	259.2	393.4	11875.10	9938.00	2568.9	259.2	.0	24.54	-652.00	.00	674.11
7	326.0	300.5	443.3	12099.94	9938.00	2108.2	300.5	.0	27.39	-652.00	.00	718.16
8	356.0	341.7	493.4	12280.81	9938.00	1647.4	341.7	.0	30.26	-652.00	.00	763.07
9	386.0	385.8	545.7	12461.05	9938.00	1236.1	385.8	.0	33.29	-652.00	.00	810.04
10	416.0	428.9	597.5	12599.18	9938.00	1126.4	428.9	.0	36.31	-652.00	.00	857.28
11	476.0	515.2	701.4	12812.96	9938.00	1001.9	515.2	.0	42.39	-652.00	414.81	953.43
12	536.0	597.7	802.8	12942.46	9938.00	1002.2	597.7	.0	48.36	-652.00	1031.11	1049.15
13	596.0	680.2	904.3	13043.69	9938.00	1002.5	680.2	.0	54.36	-652.00	2918.52	1145.95
14	656.0	758.9	1003.1	13102.20	9938.00	1002.7	758.9	.0	60.21	-652.00	2882.96	1241.29
15	716.0	839.5	1103.4	13161.85	9938.00	1003.0	839.5	.0	66.17	-652.00	6116.29	1338.34
16	776.0	918.3	1202.2	13202.80	9938.00	1003.3	918.3	.0	72.05	-652.00	7170.37	1434.66
17	836.0	997.0	1301.1	13238.40	9938.00	1003.6	997.0	.0	77.95	-652.00	8490.37	1531.33
18	896.0	1073.9	1398.6	13261.38	9938.00	1003.9	1073.9	.0	83.77	-652.00	9364.44	1627.03
19	956.0	1152.7	1497.5	13289.92	9938.00	1004.2	1152.7	.0	89.68	-652.00	11130.37	1724.20
20	1016.0	1227.7	1593.5	13300.83	9938.00	1004.4	1227.7	.0	95.43	-652.00	5659.26	1819.02
21	1076.0	1306.4	1692.5	13325.04	9938.00	1004.7	1306.4	.0	101.36	-652.00	8762.96	1916.53
22	1136.0	1383.3	1789.9	13340.63	9938.00	1005.0	1383.3	.0	107.21	-652.00	14404.44	2012.89
23	1196.0	1462.0	1888.9	13361.35	9938.00	1005.3	1462.0	.0	113.16	-652.00	14172.59	2110.66
24	1256.0	1537.0	1984.9	13368.64	9938.00	1005.6	1537.0	.0	118.93	-652.00	8059.24	2205.92
25	1316.0	1615.8	2083.9	13387.11	9938.00	1005.9	1615.8	.0	124.88	-652.00	16452.52	2303.87
26	1376.0	1690.8	2179.9	13393.49	9938.00	1006.1	1690.8	.0	130.67	-652.00	9259.22	2399.27
27	1436.0	1769.5	2278.9	13410.15	9938.00	1006.4	1769.5	.0	136.64	-652.00	13802.96	2497.37
28	1496.0	1844.5	2374.9	13415.91	9938.00	1006.7	1844.5	.0	142.43	-652.00	10459.24	2592.87
29	1556.0	1923.3	2473.9	13431.16	9938.00	1007.0	1923.3	.0	148.41	-652.00	15482.93	2691.09
30	1616.0	1998.3	2569.9	13436.44	9938.00	1007.3	1998.3	.0	154.21	-652.00	11659.26	2786.68
31	1676.0	2077.0	2668.9	13450.55	9938.00	1007.5	2077.0	.0	160.20	-652.00	17162.96	2884.99
32	1736.0	2155.8	2767.9	13464.06	9938.00	1007.8	2155.8	.0	166.20	-652.00	24432.54	2983.35
33	1796.0	2230.8	2863.9	13468.65	9938.00	1008.1	2230.8	.0	172.01	-652.00	13459.26	3079.03
34	1856.0	2309.5	2962.9	13481.33	9938.00	1008.4	2309.5	.0	178.02	-652.00	26712.59	3177.46
35	1916.0	2384.5	3058.9	13485.68	9938.00	1008.7	2384.5	.0	183.84	-652.00	14659.26	3273.19
36	1976.0	2463.3	3157.9	13497.62	9938.00	1009.0	2463.3	.0	189.86	-652.00	21362.96	3371.68
37	2036.0	2542.0	3256.9	13509.17	9938.00	1009.3	2542.0	.0	195.88	-652.00	30132.59	3470.20
38	2096.0	2617.0	3352.9	13513.20	9938.00	1009.5	2617.0	.0	201.72	-652.00	16459.26	3565.99
39	2156.0	2699.5	3454.8	13531.07	9938.00	1009.8	2699.5	.0	207.93	-652.00	29000.74	3667.31
40	2216.0	2774.5	3550.9	13534.86	9938.00	1010.1	2774.5	.0	213.78	-652.00	26488.89	3763.14
41	2276.0	2849.5	3646.9	13538.70	9938.00	1010.4	2849.5	.0	219.63	-652.00	27388.89	3858.97
42	2336.0	2932.0	3748.8	13555.24	9938.00	1010.7	2932.0	.0	225.86	-652.00	35832.59	3960.37
43	2396.0	3007.0	3844.9	13558.87	9938.00	1011.0	3007.0	.0	231.72	-652.00	29188.89	4056.23
44	2456.0	3085.8	3943.8	13568.56	9938.00	1011.3	3085.8	.0	237.77	-652.00	38112.59	4154.89
45	2516.0	3160.8	4039.9	13572.17	9938.00	1011.5	3160.8	.0	243.64	-652.00	30988.89	4250.77

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
46	2576.0	3243.3	4141.8	13587.29	9938.00	1011.8	3243.3	.0	249.89	-652.00	38266.66	4352.25
47	2636.0	3318.3	4237.8	13590.75	9938.00	1012.1	3318.3	.0	255.77	-652.00	32788.89	4448.15
48	2696.0	3400.8	4339.8	13605.21	9938.00	1012.4	3400.8	.0	262.02	-652.00	38180.74	4549.67
49	2756.0	3475.8	4435.8	13608.56	9938.00	1012.7	3475.8	.0	267.91	-652.00	34588.89	4645.59
50	2816.0	3558.3	4537.7	13622.44	9938.00	1013.0	3558.3	.0	274.17	-652.00	40220.74	4747.13
51	2876.0	3633.3	4633.8	13625.71	9938.00	1013.3	3633.3	.0	280.07	-652.00	36388.89	4843.07
52	2936.0	3708.3	4729.8	13629.04	9938.00	1013.6	3708.3	.0	285.97	-652.00	37288.89	4939.01
53	2996.0	3790.8	4831.8	13642.26	9938.00	1013.9	3790.8	.0	292.25	-652.00	45826.66	5040.59
54	3056.0	3865.8	4927.8	13645.52	9938.00	1014.1	3865.8	.0	298.16	-652.00	39088.89	5136.54
55	3116.0	3948.3	5029.7	13658.30	9938.00	1014.5	3948.3	.0	304.45	-652.00	47986.66	5238.15
56	3176.0	4023.3	5125.8	13661.50	9938.00	1014.7	4023.3	.0	310.37	-652.00	40888.89	5334.11
57	3236.0	4105.8	5227.7	13673.89	9938.00	1015.0	4105.8	.0	316.66	-652.00	50146.66	5435.74
58	3296.0	4180.8	5323.8	13677.05	9938.00	1015.3	4180.8	.0	322.59	-652.00	42688.89	5531.71
59	3356.0	4263.3	5425.7	13689.07	9938.00	1015.6	4263.3	.0	328.90	-652.00	52306.66	5633.36
60	3416.0	4345.8	5527.6	13700.82	9938.00	1015.9	4345.8	.0	335.21	-652.00	50420.74	5735.02
61	3476.0	4420.8	5623.7	13703.89	9938.00	1016.2	4420.8	.0	341.15	-652.00	45388.89	5831.01
62	3536.0	4503.3	5725.6	13715.33	9938.00	1016.5	4503.3	.0	347.47	-652.00	52460.70	5932.68
63	3596.0	4578.3	5821.7	13718.38	9938.00	1016.8	4578.3	.0	353.42	-652.00	47188.85	6028.68
64	3656.0	4660.8	5923.6	13729.55	9938.00	1017.1	4660.8	.0	359.75	-652.00	57706.62	6130.37
65	3716.0	4743.3	6025.5	13740.51	9938.00	1017.4	4743.3	.0	366.08	-652.00	55520.70	6232.07
66	3776.0	4818.3	6121.6	13743.50	9938.00	1017.7	4818.3	.0	372.04	-652.00	49888.85	6328.07
67	3836.0	4900.8	6223.5	13754.22	9938.00	1018.0	4900.8	.0	378.39	-652.00	57560.70	6429.79
68	3896.0	4975.8	6319.6	13757.21	9938.00	1018.3	4975.8	.0	384.36	-652.00	51688.85	6525.80
69	3956.0	5065.8	6427.4	13775.15	9938.00	1018.6	5065.8	.0	391.09	-652.00	49082.93	6633.25
70	4016.0	5140.8	6523.5	13778.04	9938.00	1018.9	5140.8	.0	397.07	-652.00	53488.85	6729.27
71	4076.0	5223.3	6625.4	13788.20	9938.00	1019.2	5223.3	.0	403.44	-652.00	61640.70	6831.01
72	4136.0	5298.3	6721.5	13791.13	9938.00	1019.5	5298.3	.0	409.42	-652.00	55288.84	6927.03
73	4196.0	5388.3	6829.3	13808.12	9938.00	1019.8	5388.3	.0	416.18	-652.00	52442.92	7034.53
74	4256.0	5463.3	6925.4	13810.98	9938.00	1020.1	5463.3	.0	422.17	-652.00	57088.84	7130.55
75	4316.0	5538.3	7021.4	13813.88	9938.00	1020.4	5538.3	.0	428.18	-652.00	57988.84	7226.57
76	4376.0	5628.3	7129.3	13830.28	9938.00	1020.7	5628.3	.0	434.94	-652.00	54962.92	7334.10
77	4436.0	5703.3	7225.3	13833.14	9938.00	1021.0	5703.3	.0	440.95	-652.00	59788.84	7430.12
78	4496.0	5785.8	7327.3	13842.58	9938.00	1021.3	5785.8	.0	447.35	-652.00	68780.69	7531.91
79	4556.0	5860.8	7423.3	13845.47	9938.00	1021.6	5860.8	.0	453.37	-652.00	61588.84	7627.94
80	4616.0	5950.8	7531.2	13861.14	9938.00	1021.9	5950.8	.0	460.16	-652.00	49991.08	7735.50
81	4676.0	6025.8	7627.2	13863.97	9938.00	1022.2	6025.8	.0	466.19	-652.00	63388.84	7831.53
82	4736.0	6115.8	7735.1	13879.26	9938.00	1022.6	6115.8	.0	472.99	-652.00	55717.00	7939.11
83	4796.0	6190.8	7831.2	13882.10	9938.00	1022.8	6190.8	.0	479.02	-652.00	65188.84	8035.14
84	4856.0	6280.8	7939.1	13897.04	9938.00	1023.2	6280.8	.0	485.83	-652.00	83712.53	8142.74
85	4916.0	6355.8	8035.1	13899.82	9938.00	1023.5	6355.8	.0	491.88	-652.00	66988.84	8238.78
86	4976.0	6430.8	8131.1	13902.64	9938.00	1023.8	6430.8	.0	497.93	-652.00	67888.84	8334.81
87	5036.0	6520.8	8239.0	13917.21	9938.00	1024.1	6520.8	.0	504.76	-652.00	55031.08	8442.43
88	5096.0	6595.8	8335.1	13920.02	9938.00	1024.4	6595.8	.0	510.81	-652.00	69688.84	8538.47
89	5156.0	6685.8	8443.0	13934.26	9938.00	1024.7	6685.8	.0	517.65	-652.00	56471.08	8646.10
90	5216.0	6760.8	8539.0	13937.06	9938.00	1025.0	6760.8	.0	523.72	-652.00	71488.84	8742.14
91	5276.0	6850.8	8646.9	13951.00	9938.00	1025.3	6850.8	.0	530.56	-652.00	62737.00	8849.79
92	5336.0	6925.8	8742.9	13953.81	9938.00	1025.6	6925.8	.0	536.64	-652.00	73288.84	8945.83
93	5396.0	7015.8	8850.9	13967.52	9938.00	1026.0	7015.8	.0	543.50	-652.00	64297.00	9053.49
94	5456.0	7090.8	8946.9	13970.29	9938.00	1026.3	7090.8	.0	549.59	-652.00	75088.84	9149.53
95	5516.0	7180.8	9054.8	13983.76	9938.00	1026.6	7180.8	.0	556.45	-652.00	65857.00	9257.20
96	5576.0	7255.8	9150.8	13986.53	9938.00	1026.9	7255.8	.0	562.55	-652.00	76888.84	9353.25
97	5636.0	7345.8	9258.8	13999.76	9938.00	1027.2	7345.8	.0	569.43	-652.00	67417.00	9460.93
98	5696.0	7420.8	9354.8	14002.54	9938.00	1027.5	7420.8	.0	575.53	-652.00	78688.84	9556.98
99	5756.0	7510.8	9462.7	14015.56	9938.00	1027.9	7510.8	.0	582.42	-652.00	63671.08	9664.67

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	7577.	0.	1202.	1003.	727.	963	963	963	963	963	963	963	963	963	963	963	963
5.0	.1	43.	8.57	0.	7577.	5340.	1210.	1003.	733.	970	971	970	967	963	958	955	954	955	958	963	967
10.0	.1	86.	8.56	0.	7577.	10672.	1219.	1003.	740.	978	980	978	971	963	954	948	945	948	954	963	971
15.0	.2	128.	8.54	0.	7578.	15987.	1227.	1003.	747.	985	989	985	976	963	950	940	937	940	950	963	976
20.0	.2	171.	8.51	0.	7579.	21276.	1236.	1003.	754.	993	997	993	980	963	946	933	929	933	946	963	980
25.0	.3	213.	8.41	0.	7579.	26483.	1244.	1003.	761.	1000	1006	1000	984	963	941	926	921	926	941	963	984
30.0	.3	253.	8.08	0.	7579.	31405.	1251.	1003.	767.	1007	1013	1007	989	963	937	919	913	919	937	963	989
35.0	.3	293.	7.94	0.	7579.	36201.	1259.	1003.	773.	1014	1021	1014	993	963	933	912	905	912	933	963	993
40.0	.4	332.	7.76	0.	7579.	40853.	1266.	1003.	780.	1021	1029	1021	998	963	929	905	898	905	929	963	998
45.0	.4	370.	7.53	0.	7581.	45294.	1274.	1003.	786.	1027	1037	1027	1002	963	925	899	891	899	925	963	1002
50.0	.5	407.	7.39	0.	7584.	49671.	1281.	1003.	792.	1034	1045	1034	1006	963	921	894	885	894	921	963	1006
55.0	.6	443.	7.34	0.	7586.	54027.	1289.	1003.	799.	1041	1053	1041	1010	963	917	888	879	888	917	963	1010
60.0	.6	480.	7.33	0.	7589.	58372.	1297.	1003.	806.	1048	1061	1048	1014	963	913	883	873	883	913	963	1014
65.0	.6	517.	7.33	0.	7593.	62719.	1306.	1003.	813.	1055	1070	1055	1017	963	909	878	868	878	909	963	1017
70.0	.7	553.	7.35	0.	7598.	67080.	1314.	1003.	820.	1062	1079	1062	1021	963	905	873	862	873	905	963	1021
75.0	.8	590.	7.32	0.	7604.	71466.	1323.	1003.	827.	1070	1088	1070	1025	963	902	868	857	868	902	963	1025
80.0	.8	627.	7.36	0.	7611.	75891.	1333.	1003.	835.	1078	1098	1078	1029	963	898	863	852	863	898	963	1029
85.0	.9	664.	7.47	0.	7620.	80405.	1343.	1003.	843.	1086	1108	1086	1033	963	895	858	847	858	895	963	1033
90.0	.9	702.	7.60	0.	7629.	85027.	1354.	1003.	852.	1094	1119	1094	1037	963	892	854	842	854	892	963	1037
95.0	.9	740.	7.67	0.	7640.	89708.	1365.	1003.	861.	1102	1131	1102	1041	963	889	849	837	849	889	963	1041
100.0	1.0	780.	7.90	0.	7652.	94594.	1376.	1003.	871.	1112	1142	1112	1045	963	886	845	833	845	886	963	1045
105.0	1.0	820.	7.99	0.	7665.	99553.	1388.	1003.	880.	1121	1154	1121	1049	963	882	841	828	841	882	963	1049
110.0	1.1	860.	8.05	0.	7679.	104562.	1400.	1003.	890.	1131	1167	1131	1053	963	879	837	824	837	879	963	1053
115.0	1.1	901.	8.12	0.	7693.	109621.	1412.	1003.	900.	1142	1179	1142	1058	963	877	833	820	833	877	963	1058
120.0	1.2	942.	8.18	0.	7709.	114728.	1425.	1003.	910.	1152	1192	1152	1062	964	874	829	816	829	874	964	1062
125.0	1.3	983.	8.19	0.	7725.	119837.	1437.	1003.	920.	1163	1205	1163	1066	964	871	826	812	826	871	964	1066
130.0	1.3	1023.	8.07	0.	7740.	124852.	1449.	1003.	930.	1174	1217	1174	1071	964	868	822	808	822	868	964	1071
135.0	1.4	1064.	8.17	0.	7757.	129942.	1461.	1003.	940.	1185	1229	1185	1075	964	865	818	804	818	865	964	1075
140.0	1.4	1106.	8.38	0.	7774.	135188.	1473.	1003.	950.	1196	1242	1196	1080	964	863	815	800	815	863	964	1080
145.0	1.5	1148.	8.40	0.	7792.	140426.	1487.	1003.	961.	1207	1256	1207	1085	964	860	811	795	811	860	964	1085
150.0	1.5	1190.	8.40	0.	7809.	145628.	1501.	1004.	973.	1217	1270	1217	1089	964	857	808	791	808	857	964	1089
155.0	1.5	1233.	8.65	0.	7828.	151025.	1517.	1004.	985.	1228	1286	1228	1094	964	855	805	786	805	855	964	1094
160.0	1.6	1278.	9.07	0.	7849.	156762.	1534.	1004.	999.	1239	1303	1239	1099	964	852	801	782	801	852	964	1099
165.0	1.6	1328.	9.86	0.	7872.	163119.	1554.	1004.	1015.	1251	1324	1251	1104	964	850	797	778	797	850	964	1104
170.0	1.7	1379.	10.17	0.	7897.	169686.	1575.	1004.	1032.	1263	1345	1263	1110	964	847	793	774	793	847	964	1110
175.0	1.8	1431.	10.41	0.	7924.	176446.	1596.	1004.	1049.	1276	1367	1276	1115	965	845	790	769	790	845	965	1115
180.0	1.8	1484.	10.62	0.	7951.	183382.	1617.	1004.	1066.	1290	1388	1290	1121	965	843	786	765	786	843	965	1121
185.0	1.9	1535.	10.21	0.	7978.	190031.	1633.	1004.	1079.	1306	1404	1306	1127	965	840	782	761	782	840	965	1127
190.0	1.9	1585.	10.12	0.	8004.	196674.	1644.	1004.	1088.	1324	1416	1324	1133	965	838	778	757	778	838	965	1133
195.0	2.0	1637.	10.43	0.	8033.	203562.	1656.	1004.	1098.	1342	1428	1342	1139	965	836	775	753	775	836	965	1139
200.0	2.0	1692.	10.97	0.	8064.	210854.	1671.	1004.	1110.	1361	1444	1361	1145	965	834	771	749	771	834	965	1145
205.0	2.0	1751.	11.72	0.	8098.	218712.	1691.	1004.	1126.	1380	1464	1380	1151	965	831	768	745	768	831	965	1151
210.0	2.1	1814.	12.69	0.	8136.	227298.	1718.	1004.	1148.	1398	1491	1398	1157	965	829	764	741	764	829	965	1157
215.0	2.2	1878.	12.66	0.	8173.	235582.	1759.	1004.	1180.	1408	1533	1408	1164	966	827	761	738	761	827	966	1164
220.0	2.2	1943.	13.00	0.	8211.	244107.	1803.	1004.	1215.	1418	1577	1418	1170	966	825	757	734	757	825	966	1170
225.0	2.3	2002.	11.79	0.	8245.	251715.	1837.	1004.	1242.	1429	1612	1429	1177	966	823	754	730	754	823	966	1177
230.0	2.3	2055.	10.76	0.	8275.	258583.	1860.	1005.	1260.	1442	1635	1442	1183	966	821	750	726	750	821	966	1183
235.0	2.3	2110.	11.01	0.	8307.	265747.	1878.	1005.	1275.	1460	1654	1460	1190	966	819	747	723	747	819	966	1190
240.0	2.4	2171.	12.02	0.	8344.	273823.	1895.	1005.	1289.	1482	1670	1482	1196	966	817	744	719	744	817	966	1196
245.0	2.5	2244.	14.64	0.	8394.	284207.	1912.	1005.	1303.	1513	1688	1513	1203	967	815	740	716	740	815	967	1203
250.0	2.5	2334.	18.14	1.	8459.	297598.	1940.	1005.	1325.	1552	1716	1552	1209	967	813	737	712	737	813	967	1209

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
255.0	2.5	2427.	18.48	0.	8525.	311214.	1972.	1005.	1350.	1590	1748	1590	1215	967	811	734	709	734	811	967	1215
260.0	2.6	2503.	15.23	0.	8577.	321905.	2003.	1005.	1375.	1616	1780	1616	1221	967	809	731	705	731	809	967	1221
265.0	2.7	2562.	11.80	0.	8613.	329737.	2022.	1005.	1391.	1636	1800	1636	1228	967	807	727	702	727	807	967	1228
270.0	2.7	2613.	10.10	0.	8642.	336113.	2037.	1005.	1403.	1652	1815	1652	1234	967	806	724	699	724	806	967	1234
275.0	2.8	2665.	10.56	0.	8673.	342758.	2058.	1005.	1420.	1667	1835	1667	1241	968	804	721	696	721	804	968	1241
280.0	2.8	2728.	12.46	0.	8711.	350809.	2090.	1005.	1445.	1682	1868	1682	1248	968	802	718	693	718	802	968	1248
285.0	2.8	2815.	17.44	0.	8771.	362789.	2145.	1005.	1489.	1702	1923	1702	1255	968	800	715	690	715	800	968	1255
290.0	2.9	2918.	20.73	0.	8846.	377493.	2208.	1006.	1539.	1729	1987	1729	1263	968	797	712	687	712	797	968	1263
295.0	3.0	2995.	15.36	0.	8899.	388030.	2236.	1006.	1561.	1756	2016	1756	1270	968	795	709	684	709	795	968	1270
300.0	3.0	3064.	13.77	0.	8946.	397291.	2254.	1006.	1576.	1784	2034	1784	1278	969	793	706	681	706	793	969	1278
305.0	3.0	3123.	11.71	0.	8982.	404560.	2278.	1006.	1595.	1800	2058	1800	1287	969	791	703	678	703	791	969	1287
310.0	3.1	3200.	15.41	0.	9034.	414520.	2331.	1006.	1637.	1813	2112	1813	1295	969	789	700	675	700	789	969	1295
315.0	3.2	3297.	19.45	0.	9104.	427584.	2403.	1006.	1694.	1829	2184	1829	1305	969	787	698	672	698	787	969	1305
320.0	3.2	3373.	15.21	0.	9158.	437466.	2434.	1006.	1718.	1854	2215	1854	1315	969	785	695	669	695	785	969	1315
325.0	3.3	3457.	16.77	1.	9221.	448865.	2453.	1006.	1734.	1890	2235	1890	1326	970	783	692	667	692	783	970	1326
330.0	3.3	3580.	24.53	0.	9320.	466862.	2485.	1006.	1760.	1947	2267	1947	1337	970	780	690	664	690	780	970	1337
335.0	3.3	3723.	28.74	-0.	9434.	487777.	2561.	1007.	1819.	1996	2343	1996	1348	970	778	687	661	687	778	970	1348
340.0	3.4	3817.	18.73	0.	9503.	500167.	2617.	1007.	1864.	2018	2400	2018	1359	970	776	685	659	685	776	970	1359
345.0	3.5	3876.	11.87	0.	9543.	507076.	2641.	1007.	1883.	2033	2423	2033	1371	970	774	682	656	682	774	970	1371
350.0	3.5	3945.	13.83	1.	9592.	515617.	2669.	1007.	1906.	2053	2452	2053	1382	971	772	680	654	680	772	971	1382
355.0	3.5	4072.	25.31	0.	9690.	533500.	2742.	1007.	1963.	2091	2525	2091	1393	971	770	677	651	677	770	971	1393
360.0	3.6	4237.	33.01	0.	9824.	558464.	2817.	1007.	2022.	2157	2600	2157	1401	971	768	675	649	675	768	971	1401
365.0	3.7	4343.	21.15	0.	9903.	573972.	2856.	1007.	2054.	2201	2640	2201	1407	971	766	672	646	672	766	971	1407
370.0	3.7	4403.	12.14	0.	9942.	581817.	2879.	1008.	2072.	2221	2663	2221	1413	972	764	670	644	670	764	972	1413
375.0	3.8	4457.	10.65	0.	9974.	588413.	2896.	1008.	2086.	2240	2680	2240	1419	972	762	668	642	668	762	972	1419
380.0	3.8	4537.	16.01	0.	10031.	599448.	2924.	1008.	2108.	2271	2708	2271	1426	972	761	665	639	665	761	972	1426
385.0	3.8	4691.	30.78	0.	10155.	622830.	2982.	1008.	2154.	2339	2766	2339	1433	972	759	663	637	663	759	972	1433
390.0	3.9	4860.	33.95	0.	10291.	648094.	3083.	1008.	2234.	2394	2868	2394	1441	973	757	661	635	661	757	973	1441
395.0	4.0	4940.	15.88	0.	10348.	658349.	3121.	1008.	2265.	2417	2907	2417	1451	973	755	659	632	659	755	973	1451
400.0	4.0	5010.	13.96	0.	10397.	666838.	3151.	1008.	2288.	2437	2936	2437	1462	973	753	656	630	656	753	973	1462
405.0	4.1	5147.	27.54	0.	10507.	686050.	3235.	1009.	2355.	2475	3021	2475	1475	973	751	654	628	654	751	973	1475
410.0	4.1	5341.	38.78	0.	10670.	714887.	3317.	1009.	2419.	2555	3103	2555	1490	974	749	652	626	652	749	974	1490
415.0	4.2	5472.	26.19	1.	10781.	732690.	3355.	1009.	2450.	2610	3141	2610	1510	974	747	650	624	650	747	974	1510
420.0	4.2	5561.	17.77	1.	10856.	742892.	3377.	1009.	2467.	2642	3163	2642	1533	974	745	648	622	648	745	974	1533
425.0	4.3	5639.	15.55	1.	10919.	750996.	3404.	1009.	2490.	2662	3190	2662	1556	975	744	646	619	646	744	975	1556
430.0	4.3	5736.	19.44	0.	10998.	761956.	3466.	1009.	2539.	2676	3253	2676	1579	975	742	644	617	644	742	975	1579
435.0	4.3	5876.	28.01	0.	11111.	780010.	3577.	1010.	2626.	2697	3364	2697	1599	975	740	642	615	642	740	975	1599
440.0	4.4	5978.	20.36	0.	11192.	793423.	3610.	1010.	2653.	2736	3398	2736	1614	975	738	640	613	640	738	975	1614
445.0	4.4	6104.	25.28	0.	11298.	811927.	3614.	1010.	2657.	2812	3401	2812	1627	976	736	638	611	638	736	976	1627
450.0	4.5	6240.	27.24	0.	11410.	832001.	3638.	1010.	2677.	2884	3426	2884	1638	976	735	636	609	636	735	976	1638
455.0	4.6	6374.	26.65	0.	11513.	850406.	3740.	1010.	2756.	2911	3527	2911	1648	976	733	634	607	634	733	976	1648
460.0	4.6	6525.	30.21	1.	11629.	871667.	3863.	1010.	2853.	2939	3651	2939	1657	977	731	632	605	632	731	977	1657
465.0	4.7	6675.	30.09	0.	11752.	894257.	3903.	1011.	2885.	3015	3691	3015	1666	977	729	630	603	630	729	977	1666
470.0	4.7	6803.	25.62	1.	11858.	913470.	3908.	1011.	2890.	3093	3697	3093	1675	977	728	628	601	628	728	977	1675
475.0	4.8	6900.	19.32	0.	11931.	926621.	3941.	1011.	2916.	3132	3729	3132	1684	978	726	626	599	626	726	978	1684
480.0	4.8	7040.	28.01	0.	12039.	945722.	4058.	1011.	3008.	3154	3846	3154	1695	978	724	624	597	624	724	978	1695
485.0	4.8	7126.	17.29	0.	12104.	955798.	4107.	1011.	3048.	3172	3896	3172	1711	978	722	623	595	623	722	978	1711
490.0	4.9	7240.	22.65	0.	12194.	970372.	4165.	1011.	3093.	3205	3954	3205	1728	978	721	621	593	621	721	978	1728
495.0	4.9	7442.	40.48	0.	12364.	999671.	4275.	1012.	3180.	3274	4064	3274	1744	979	719	619	591	619	719	979	1744

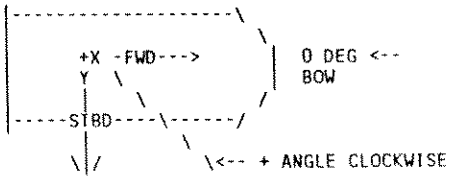
STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE T10S12T tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	6931.	241225.	1375.	1003.	870.	1141	0	1141	1058	963	877	833	820	833	877	963	1058
5.0	.1	32.	6.30	-40.	6938.	244625.	1387.	1003.	879.	1153	0	1150	1060	961	872	829	816	830	875	966	1064
10.0	.1	64.	6.40	-94.	6946.	247888.	1399.	1003.	889.	1165	0	1157	1061	958	868	825	812	827	874	969	1071
15.0	.2	95.	6.36	-127.	6955.	251347.	1411.	1003.	899.	1178	0	1166	1063	956	864	820	808	824	873	972	1077
20.0	.2	128.	6.43	-163.	6964.	254755.	1423.	1003.	909.	1190	0	1175	1065	953	860	816	805	822	872	975	1084
25.0	.3	160.	6.49	-182.	6973.	258218.	1435.	1003.	919.	1203	0	1183	1067	950	856	813	801	819	871	977	1091
30.0	.3	192.	6.33	-84.	6982.	261686.	1447.	1003.	928.	1215	0	1192	1069	948	852	809	796	816	870	980	1098
35.0	.3	224.	6.50	13.	6991.	265050.	1458.	1003.	938.	1227	0	1200	1070	945	849	805	792	814	869	983	1106
40.0	.4	257.	6.53	90.	7001.	268612.	1471.	1003.	948.	1239	0	1209	1073	943	845	801	788	811	868	986	1114
45.0	.4	290.	6.69	156.	7011.	272290.	1484.	1003.	958.	1252	0	1217	1075	941	842	797	784	808	866	988	1123
50.0	.5	325.	6.85	195.	7022.	276089.	1497.	1004.	969.	1266	0	1226	1077	939	838	792	780	805	865	991	1131
55.0	.6	360.	7.07	199.	7034.	279953.	1512.	1004.	982.	1282	0	1234	1079	936	835	788	776	803	864	994	1140
60.0	.6	397.	7.32	123.	7047.	284031.	1528.	1004.	995.	1298	0	1243	1081	933	831	784	772	800	863	997	1149
65.0	.6	436.	7.81	-149.	7062.	288596.	1547.	1004.	1010.	1317	0	1253	1083	931	828	779	768	797	862	999	1158
70.0	.7	476.	8.03	-458.	7079.	293336.	1568.	1004.	1026.	1338	0	1263	1086	929	825	775	764	794	860	1001	1167
75.0	.8	517.	8.20	-751.	7097.	297984.	1589.	1004.	1043.	1359	0	1272	1087	926	822	771	760	791	860	1005	1177
80.0	.8	558.	8.16	-992.	7114.	302855.	1609.	1004.	1060.	1380	0	1283	1090	924	819	767	756	788	858	1007	1186
85.0	.9	598.	8.01	-1077.	7132.	307524.	1628.	1004.	1075.	1400	0	1294	1092	922	816	763	752	785	857	1009	1196
90.0	.9	631.	6.76	-475.	7144.	311357.	1639.	1004.	1084.	1411	0	1307	1094	919	813	759	749	782	856	1012	1206
95.0	.9	666.	6.89	112.	7157.	315122.	1651.	1004.	1093.	1423	0	1319	1095	916	810	755	745	780	856	1015	1215
100.0	1.0	702.	7.29	589.	7172.	319307.	1664.	1004.	1105.	1437	0	1332	1096	913	807	751	741	777	856	1018	1225
105.0	1.0	742.	7.97	813.	7190.	323972.	1682.	1004.	1119.	1455	0	1345	1097	910	804	747	738	775	855	1022	1235
110.0	1.1	787.	8.94	656.	7213.	329403.	1706.	1004.	1138.	1479	0	1359	1099	907	801	743	734	772	854	1024	1245
115.0	1.1	840.	10.70	-279.	7242.	335928.	1740.	1004.	1165.	1513	0	1372	1101	904	797	740	731	770	853	1027	1257
120.0	1.2	901.	12.06	-1778.	7278.	343689.	1783.	1004.	1199.	1557	0	1388	1104	903	794	736	727	767	852	1029	1267
125.0	1.3	958.	11.52	-3212.	7312.	350952.	1823.	1004.	1231.	1598	0	1401	1106	901	791	732	724	764	851	1032	1278
130.0	1.3	1002.	8.83	-3924.	7334.	356027.	1849.	1005.	1252.	1624	0	1409	1109	899	788	729	720	761	850	1034	1290
135.0	1.4	1043.	8.05	-4151.	7353.	360505.	1869.	1005.	1268.	1644	0	1417	1112	898	785	725	717	758	849	1036	1303
140.0	1.4	1081.	7.75	-3999.	7371.	364946.	1885.	1005.	1281.	1661	0	1427	1117	897	782	722	713	755	847	1038	1316
145.0	1.5	1121.	8.00	-3590.	7391.	369376.	1902.	1005.	1294.	1677	0	1438	1120	895	779	718	710	752	846	1040	1331
150.0	1.5	1165.	8.77	-3263.	7415.	374441.	1921.	1005.	1310.	1697	0	1450	1123	894	776	715	707	749	845	1042	1347
155.0	1.5	1219.	10.67	-3465.	7447.	380840.	1952.	1005.	1334.	1728	0	1465	1125	892	773	711	703	747	844	1045	1363
160.0	1.6	1274.	11.04	-3505.	7481.	387630.	1982.	1005.	1359.	1759	0	1482	1128	890	770	708	700	744	843	1048	1380
165.0	1.6	1331.	11.37	-3221.	7518.	394695.	2013.	1005.	1383.	1790	0	1503	1130	887	766	705	697	742	842	1051	1397
170.0	1.7	1372.	8.21	-2111.	7540.	399587.	2027.	1005.	1395.	1805	0	1524	1129	884	763	701	695	740	843	1056	1408
175.0	1.8	1414.	8.54	-1085.	7565.	404922.	2044.	1005.	1409.	1821	0	1547	1129	881	759	698	692	739	843	1060	1418
180.0	1.8	1463.	9.81	-636.	7594.	410939.	2068.	1005.	1428.	1846	0	1568	1129	878	756	695	689	737	843	1065	1430
185.0	1.9	1525.	12.36	-848.	7636.	418985.	2106.	1005.	1458.	1884	0	1593	1130	875	752	692	687	735	843	1069	1443
190.0	1.9	1605.	15.90	-3148.	7692.	429387.	2169.	1005.	1508.	1948	0	1612	1133	874	749	689	684	732	842	1072	1458
195.0	2.0	1676.	14.16	-4622.	7741.	438383.	2220.	1006.	1548.	1999	0	1630	1136	872	747	686	681	730	841	1075	1475
200.0	2.0	1725.	9.82	-3977.	7773.	444125.	2242.	1006.	1566.	2022	0	1645	1140	871	744	683	678	727	840	1077	1496
205.0	2.0	1774.	9.90	-2525.	7805.	449597.	2259.	1006.	1580.	2039	0	1659	1145	871	742	680	675	724	838	1078	1524
210.0	2.1	1830.	11.26	-1816.	7844.	456124.	2286.	1006.	1602.	2066	0	1674	1150	870	739	678	673	721	836	1079	1552
215.0	2.2	1911.	16.03	-3395.	7903.	466281.	2344.	1006.	1648.	2125	0	1690	1157	870	737	675	670	718	834	1080	1577
220.0	2.2	1999.	17.67	-4911.	7969.	477677.	2409.	1006.	1699.	2190	0	1713	1161	869	735	672	667	715	833	1082	1603
225.0	2.3	2054.	11.07	-4180.	8007.	484431.	2436.	1006.	1720.	2217	0	1734	1163	867	732	670	664	713	832	1085	1623
230.0	2.3	2102.	9.50	-3208.	8038.	490071.	2456.	1006.	1737.	2237	0	1754	1165	865	729	667	662	711	831	1089	1640
235.0	2.3	2159.	11.43	-3478.	8076.	497193.	2491.	1006.	1764.	2272	0	1773	1167	863	726	664	660	709	831	1093	1655
240.0	2.4	2247.	17.65	-7068.	8141.	508959.	2568.	1007.	1825.	2350	0	1793	1171	862	724	662	657	707	830	1096	1667
245.0	2.5	2311.	12.77	-9416.	8183.	516842.	2619.	1007.	1866.	2402	0	1803	1174	861	721	659	655	704	829	1099	1680
250.0	2.5	2354.	8.58	-9525.	8208.	521679.	2642.	1007.	1884.	2424	0	1814	1178	860	719	657	652	702	828	1101	1694

VESSEL DISP.		RESTORING FORCE ON VESSEL	INCREMENT STIFFNESS	YAW MOMENT	VERTICAL FORCE	OVERTURN MOMENT	MAX.LINE LOAD	LINE ON BOTTOM	HOR.FORCE ON ANCHOR	LINE LOAD (KIPS) LINE NUMBER												
(FT)	(% WD)	(KIPS)	(KIPS/FT)	(FT-KIP)	(KIPS)	(FT-KIP)	(KIPS)	(FT)	(KIPS)	1	2	3	4	5	6	7	8	9	10	11	12
255.0	2.5	2407.	10.58	-9306.	8244.	527992.	2669.	1007.	1906.	2452	0	1830	1183	859	716	654	650	699	826	1103	1714
260.0	2.6	2496.	17.85	-11571.	8312.	539583.	2739.	1007.	1961.	2522	0	1851	1187	858	714	652	647	697	825	1106	1736
265.0	2.7	2593.	19.42	-13626.	8387.	552258.	2815.	1007.	2020.	2598	0	1877	1190	856	712	649	645	695	824	1110	1760
270.0	2.7	2669.	15.09	-12407.	8446.	562042.	2855.	1007.	2052.	2639	0	1911	1192	854	709	647	643	693	824	1115	1786
275.0	2.8	2723.	10.96	-10937.	8486.	568988.	2879.	1008.	2072.	2662	0	1941	1191	851	706	645	641	692	825	1121	1802
280.0	2.8	2772.	9.65	-9180.	8519.	574944.	2896.	1008.	2086.	2680	0	1970	1190	849	703	642	639	691	825	1129	1816
285.0	2.8	2829.	11.51	-8164.	8561.	582219.	2923.	1008.	2108.	2708	0	1997	1191	847	700	640	637	689	825	1134	1834
290.0	2.9	2905.	15.21	-9632.	8618.	591893.	2979.	1008.	2152.	2764	0	2017	1196	846	698	638	635	687	824	1137	1854
295.0	3.0	3013.	21.56	-14208.	8701.	606017.	3077.	1008.	2229.	2861	0	2033	1203	846	696	635	632	684	822	1138	1877
300.0	3.0	3087.	14.70	-13606.	8758.	614937.	3118.	1008.	2262.	2903	0	2054	1209	846	694	633	630	682	820	1138	1910
305.0	3.0	3162.	15.05	-10168.	8820.	623806.	3144.	1008.	2283.	2929	0	2086	1213	845	692	631	628	679	819	1141	1957
310.0	3.1	3277.	23.09	-9109.	8918.	639127.	3216.	1009.	2340.	3001	0	2133	1215	843	690	629	626	678	818	1146	1998
315.0	3.2	3392.	23.01	-11472.	9012.	654876.	3308.	1009.	2412.	3094	0	2173	1215	841	687	627	624	676	818	1153	2019
320.0	3.2	3459.	13.30	-11788.	9061.	663423.	3351.	1009.	2446.	3137	0	2199	1216	839	685	625	622	675	818	1158	2034
325.0	3.3	3507.	9.55	-11169.	9094.	669050.	3373.	1009.	2464.	3159	0	2217	1220	838	683	622	620	673	817	1162	2051
330.0	3.3	3558.	10.31	-10214.	9130.	674770.	3396.	1009.	2483.	3182	0	2232	1224	837	681	620	618	671	816	1165	2076
335.0	3.3	3645.	17.30	-9241.	9200.	685194.	3445.	1009.	2522.	3231	0	2256	1230	837	679	618	615	669	815	1167	2118
340.0	3.4	3790.	29.04	-9684.	9325.	704661.	3547.	1009.	2602.	3334	0	2307	1235	836	678	616	613	666	813	1169	2168
345.0	3.5	3892.	20.35	-8095.	9411.	717951.	3606.	1010.	2649.	3393	0	2351	1236	834	675	614	612	665	813	1176	2206
350.0	3.5	3937.	9.17	-4984.	9445.	723506.	3613.	1010.	2656.	3400	0	2384	1235	832	673	612	610	664	814	1183	2225
355.0	3.5	3981.	8.69	-3313.	9475.	728450.	3626.	1010.	2667.	3414	0	2406	1238	830	671	610	608	662	813	1188	2243
360.0	3.6	4071.	18.03	-5743.	9545.	739850.	3698.	1010.	2724.	3486	0	2424	1243	830	669	608	606	660	812	1191	2268
365.0	3.7	4211.	28.01	-9909.	9660.	758281.	3818.	1010.	2817.	3606	0	2452	1251	830	667	607	604	658	810	1191	2306
370.0	3.7	4342.	26.25	-7621.	9776.	775377.	3894.	1010.	2877.	3682	0	2504	1256	829	666	605	602	656	809	1194	2365
375.0	3.8	4411.	13.66	-2558.	9834.	783660.	3906.	1011.	2888.	3694	0	2549	1256	827	663	603	600	655	809	1202	2405
380.0	3.8	4464.	10.75	307.	9875.	790332.	3921.	1011.	2901.	3710	0	2584	1255	824	661	601	599	654	810	1209	2426
385.0	3.8	4573.	21.64	-2084.	9962.	804805.	4008.	1011.	2969.	3796	0	2618	1258	823	659	599	597	652	809	1214	2448
390.0	3.9	4683.	22.06	-3881.	10052.	819064.	4091.	1011.	3035.	3880	0	2646	1265	823	657	597	595	650	807	1215	2483
395.0	4.0	4763.	15.99	-1772.	10118.	828018.	4127.	1011.	3064.	3916	0	2667	1274	823	656	595	592	648	805	1215	2534
400.0	4.0	4881.	23.59	-4742.	10214.	842844.	4221.	1011.	3138.	4011	0	2685	1285	824	655	593	590	645	803	1214	2575
405.0	4.1	4981.	19.98	-5445.	10295.	855370.	4290.	1012.	3192.	4079	0	2712	1292	823	654	591	588	644	801	1217	2612
410.0	4.1	5035.	10.83	-1948.	10337.	861567.	4301.	1012.	3202.	4090	0	2743	1294	822	652	589	586	642	801	1222	2642
415.0	4.2	5103.	13.64	48.	10392.	870447.	4332.	1012.	3227.	4121	0	2783	1294	820	649	587	585	641	802	1230	2663
420.0	4.2	5242.	27.75	-4310.	10505.	889851.	4454.	1012.	3323.	4244	0	2829	1292	817	647	585	583	640	802	1238	2679
425.0	4.3	5321.	15.89	-2447.	10570.	900107.	4494.	1012.	3356.	4284	0	2870	1291	815	645	583	581	640	803	1247	2705
430.0	4.3	5379.	11.45	1341.	10616.	906510.	4505.	1012.	3365.	4294	0	2900	1296	814	643	581	579	638	802	1251	2742
435.0	4.3	5481.	20.52	1669.	10701.	918800.	4568.	1012.	3415.	4358	0	2925	1306	814	642	579	577	636	800	1252	2791
440.0	4.4	5639.	31.63	1780.	10841.	939466.	4674.	1013.	3499.	4465	0	2975	1316	814	641	577	575	634	798	1253	2855
445.0	4.4	5721.	16.43	7217.	10913.	949612.	4695.	1013.	3516.	4486	0	3027	1315	812	638	575	574	633	799	1262	2901
450.0	4.5	5792.	14.04	10252.	10970.	958614.	4722.	1013.	3538.	4512	0	3070	1314	809	636	574	572	632	799	1272	2927
455.0	4.6	5942.	30.04	7118.	11098.	978820.	4843.	1013.	3633.	4634	0	3114	1320	809	635	572	570	631	799	1277	2965
460.0	4.6	6095.	30.58	4628.	11229.	998429.	4960.	1014.	3725.	4751	0	3147	1334	809	634	570	568	628	796	1276	3022
465.0	4.7	6171.	15.25	7309.	11294.	1006592.	4988.	1014.	3748.	4779	0	3167	1347	809	633	568	566	626	794	1276	3076
470.0	4.7	6235.	12.78	9978.	11345.	1013508.	5008.	1014.	3765.	4799	0	3190	1355	809	631	566	564	625	792	1280	3116
475.0	4.8	6365.	26.05	6388.	11453.	1031025.	5117.	1014.	3850.	4908	0	3227	1360	808	630	565	563	623	792	1286	3142
480.0	4.8	6461.	19.07	6191.	11531.	1043840.	5181.	1014.	3901.	4972	0	3269	1359	806	628	563	561	623	792	1296	3162
485.0	4.8	6527.	13.29	10253.	11587.	1052224.	5198.	1014.	3916.	4990	0	3316	1357	803	625	561	560	622	793	1310	3189
490.0	4.9	6668.	28.21	10884.	11711.	1071193.	5290.	1015.	3989.	5082	0	3374	1360	802	624	559	558	621	793	1319	3234
495.0	4.9	6789.	24.11	9958.	11814.	1085899.	5373.	1015.	4055.	5165	0	3399	1374	802	623	558	556	619	790	1319	3288

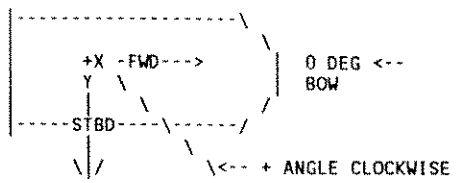
STARTING DISPLACEMENTS : SURGE(FT) = -81.250 SWAY(FT) = -81.250 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE C8A12N tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

C 2 A12N

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	15.0	45.0	75.0	105.0	135.0	165.0	-165.0	-135.0	-105.0	-75.0	-45.0	-15.0
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	420.0	420.0	420.0	420.0	420.0	420.0	420.0	420.0	420.0	420.0	420.0	420.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	8000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	8000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.250"
LINE LENGTH (FT)	500.0
WEIGHT IN WATER (LB/FT)	32.69
LINE B.S. (KIPS)	2074.0
AREA (SQ IN)	14.19
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	ARAMID
LINE SIZE (IN)	4.625"
LINE LENGTH (FT)	7000.0
WEIGHT IN WATER (LB/FT)	1.62
LINE B.S. (KIPS)	2036.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	81500.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.250"
LINE LENGTH (FT)	3300.0
WEIGHT IN WATER (LB/FT)	32.69
LINE B.S. (KIPS)	2074.0
AREA (SQ IN)	14.19
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.000"
LINE LENGTH (FT)	1700.0
WEIGHT IN WATER (LB/FT)	206.63
LINE B.S. (KIPS)	2457.0
AREA (SQ IN)	19.63
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.250"
LINE LENGTH (FT)	7200.0
WEIGHT IN WATER (LB/FT)	32.69
LINE B.S. (KIPS)	2074.0
AREA (SQ IN)	14.19
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.000"
LINE LENGTH (FT)	200.0
WEIGHT IN WATER (LB/FT)	206.63
LINE B.S. (KIPS)	2457.0
AREA (SQ IN)	19.63
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
1	42.0	.0	42.0	11962.00	7938.00	11962.0	.0	.0				
2	46.1	2.8	46.1	12917.04	7938.00	11838.2	2.8	.0	2.47	.00	.00	.00
3	50.1	4.9	50.4	13337.11	7938.00	11714.4	4.9	.0	3.05	.00	.00	.00
4	54.2	7.2	54.6	13661.89	7938.00	11590.6	7.2	.0	3.64	.00	.00	.00
5	58.2	9.6	59.0	13925.48	7938.00	11466.8	9.6	.0	4.25	.00	.00	.00
6	62.3	12.2	63.4	14147.24	7938.00	11343.0	12.2	.0	4.88	.00	.00	.00
7	66.3	14.7	67.9	14317.98	7938.00	11219.1	14.7	.0	5.52	.00	.00	.00
8	70.4	17.5	72.5	14489.72	7938.00	11095.3	17.5	.0	6.19	.00	.00	.00
9	74.4	20.4	77.2	14644.06	7938.00	10971.5	20.4	.0	6.88	.00	.00	.00
10	78.5	23.4	81.9	14784.73	7938.00	10847.7	23.4	.0	7.58	.00	.00	.00
11	86.6	29.8	91.6	15022.03	7938.00	10600.2	29.8	.0	9.03	.00	.00	.00
12	94.7	36.5	101.5	15221.55	7938.00	10352.6	36.5	.0	10.54	.00	.00	.00
13	102.8	43.7	111.7	15404.55	7938.00	10105.0	43.7	.0	12.12	.00	.00	.00
14	110.9	51.3	122.2	15566.12	7938.00	9857.4	51.3	.0	13.76	.00	.00	.00
15	119.0	59.4	133.0	15719.02	7938.00	9609.7	59.4	.0	15.47	.00	.00	.00
16	127.1	67.8	144.1	15851.00	7938.00	9362.1	67.8	.0	17.23	.00	.00	.00
17	135.2	76.4	155.3	15966.94	7938.00	9114.5	76.4	.0	19.02	.00	.00	.00
18	143.3	85.3	166.8	16070.59	7938.00	9067.3	85.3	.0	20.86	.00	.00	.00
19	151.4	93.9	178.2	16145.46	7938.00	9028.6	93.9	.0	22.68	.00	.00	.00
20	159.6	102.5	189.6	16208.05	7938.00	8989.8	102.5	.0	24.49	.00	.00	.00
21	167.7	111.1	201.1	16261.25	7938.00	8951.1	111.1	.0	26.32	.00	.00	.00
22	175.8	119.7	212.7	16307.06	7938.00	8912.3	119.7	.0	28.14	.00	.00	.00
23	183.9	128.3	224.2	16346.93	7938.00	8873.5	128.3	.0	29.97	.00	.00	.00
24	192.0	136.9	235.8	16381.91	7938.00	8834.8	136.9	.0	31.81	.00	.00	.00
25	200.1	145.5	247.4	16412.84	7938.00	8796.0	145.5	.0	33.64	.00	.00	.00
26	208.2	154.2	259.1	16440.34	7938.00	8757.3	154.2	.0	35.48	.00	.00	.00
27	216.3	162.8	270.7	16464.91	7938.00	8718.5	162.8	.0	37.32	.00	.00	.00
28	224.4	171.4	282.4	16486.98	7938.00	8679.7	171.4	.0	39.16	.00	.00	.00
29	232.5	180.0	294.0	16506.85	7938.00	8641.0	180.0	.0	41.00	.00	.00	.00
30	240.6	188.6	305.7	16524.85	7938.00	8602.2	188.6	.0	42.84	.00	.00	.00
31	248.7	197.7	317.8	16551.20	7938.00	8563.5	197.7	.0	44.76	.00	.00	.00
32	256.8	206.3	329.5	16565.64	7938.00	8524.7	206.3	.0	46.60	.00	.00	.00
33	264.9	215.5	341.5	16588.01	7938.00	8485.9	215.5	.0	48.52	.00	.00	.00
34	273.1	224.6	353.6	16608.54	7938.00	8447.2	224.6	.0	50.44	.00	.00	.00
35	281.2	233.2	365.3	16618.91	7938.00	8408.4	233.2	.0	52.29	.00	.00	.00
36	289.3	242.3	377.4	16636.63	7938.00	8369.7	242.3	.0	54.21	.00	.00	.00
37	297.4	251.4	389.4	16652.97	7938.00	8330.9	251.4	.0	56.13	.00	.00	.00
38	305.5	260.6	401.5	16668.12	7938.00	8292.1	260.6	.0	58.05	.00	.00	.00
39	313.6	269.7	413.6	16682.16	7938.00	8253.4	269.7	.0	59.98	.00	.00	.00
40	321.7	279.3	426.0	16702.33	7938.00	8214.6	279.3	.0	61.97	.00	.00	.00
41	329.8	288.4	438.1	16714.21	7938.00	8175.9	288.4	.0	63.90	.00	.00	.00
42	337.9	298.1	450.6	16731.98	7938.00	8137.1	298.1	.0	65.89	.00	.00	.00
43	346.0	307.2	462.7	16742.10	7938.00	8098.4	307.2	.0	67.82	.00	.00	.00
44	354.1	317.3	475.5	16764.13	7938.00	8059.6	317.3	.0	69.89	.00	.00	.00
45	362.2	326.4	487.6	16772.62	7938.00	8020.9	326.4	.0	71.82	.00	.00	.00

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
46	370.3	336.6	500.4	16792.40	7938.00	7982.1	336.6	.0	73.89	.00	.00	.00
47	378.4	345.7	512.6	16799.51	7938.00	7943.4	345.7	.0	75.83	.00	.00	.00
48	386.6	355.8	525.4	16817.37	7938.00	7904.6	355.8	.0	77.90	.00	.00	.00
49	394.7	366.0	538.2	16834.23	7938.00	7865.9	366.0	.0	79.98	.00	.00	.00
50	402.8	376.1	551.1	16850.16	7938.00	7827.2	376.1	.0	82.05	.00	.00	.00
51	410.9	385.2	563.2	16854.87	7938.00	7788.4	385.2	.0	83.99	.00	.00	.00
52	419.0	395.3	576.1	16869.38	7938.00	7749.6	395.3	.0	86.07	.00	.00	.00
53	427.1	405.5	588.9	16883.14	7938.00	7710.9	405.5	.0	88.15	.00	.00	.00
54	435.2	415.6	601.8	16896.16	7938.00	7672.1	415.6	.0	90.23	.00	.00	.00
55	443.3	425.7	614.6	16908.54	7938.00	7633.4	425.7	.0	92.31	.00	.00	.00
56	451.4	435.9	627.5	16920.30	7938.00	7594.6	435.9	.0	94.40	.00	.00	.00
57	459.5	447.0	641.1	16940.42	7938.00	7555.9	447.0	.0	96.63	.00	.00	.00
58	467.6	457.2	654.0	16950.86	7938.00	7517.2	457.2	.0	98.71	.00	.00	.00
59	475.7	467.3	666.8	16960.80	7938.00	7478.4	467.3	.0	100.80	.00	.00	.00
60	483.8	477.4	679.7	16970.27	7938.00	7439.6	477.4	.0	102.89	.00	.00	.00
61	491.9	488.6	693.3	16987.47	7938.00	7268.9	488.6	.0	105.12	.00	.00	.00
62	500.0	499.7	706.9	17003.89	7938.00	7020.6	499.7	.0	107.35	.00	.00	.00
63	508.2	510.9	720.6	17019.47	7938.00	6772.2	510.9	.0	109.59	.00	.00	.00
64	516.3	523.0	734.9	17041.88	7938.00	6523.9	523.0	.0	111.97	.00	.00	.00
65	524.4	535.2	749.3	17063.12	7938.00	6275.5	535.2	.0	114.36	.00	.00	.00
66	532.5	548.4	764.4	17090.51	7938.00	6027.1	548.4	.0	116.89	.00	.00	.00
67	540.6	561.5	779.5	17116.47	7938.00	5778.6	561.5	.0	119.42	.00	.00	.00
68	548.7	574.7	794.6	17141.08	7938.00	5530.2	574.7	.0	121.96	.00	.00	.00
69	556.8	588.9	810.4	17171.05	7938.00	5281.7	588.9	.0	124.65	.00	.00	.00
70	564.9	603.1	826.3	17199.50	7938.00	5033.1	603.1	.0	127.34	.00	.00	.00
71	573.0	617.3	842.2	17226.44	7938.00	4784.5	617.3	.0	130.04	.00	.00	.00
72	581.1	633.5	859.7	17264.25	7938.00	4536.0	633.5	.0	133.03	.00	.00	.00
73	589.2	648.7	876.3	17294.16	7938.00	4287.3	648.7	.0	135.88	.00	.00	.00
74	597.3	664.9	893.8	17328.28	7938.00	4038.6	664.9	.0	138.89	.00	.00	.00
75	605.4	681.1	911.3	17360.69	7938.00	3789.8	681.1	.0	141.90	.00	.00	.00
76	613.5	697.3	928.8	17391.37	7938.00	3541.0	697.3	.0	144.91	.00	.00	.00
77	621.7	713.5	946.4	17420.57	7938.00	3292.2	713.5	.0	147.93	.00	.00	.00
78	629.8	730.8	964.7	17453.46	7938.00	3043.3	730.8	.0	151.11	.00	.00	.00
79	637.9	749.0	983.8	17489.76	7938.00	2794.3	749.0	.0	154.44	.00	.00	.00
80	646.0	766.2	1002.2	17519.35	7938.00	2545.3	766.2	.0	157.62	.00	.00	.00
81	654.1	784.5	1021.4	17552.22	7938.00	2296.2	784.5	.0	160.97	.00	.00	.00
82	662.2	802.7	1040.6	17583.49	7938.00	2047.1	802.7	.0	164.31	.00	.00	.00
83	670.3	821.0	1059.8	17613.28	7938.00	1797.8	821.0	.0	167.67	.00	.00	.00
84	678.4	841.2	1080.7	17650.46	7938.00	1548.6	841.2	.0	171.33	.00	.00	.00
85	686.5	859.5	1100.0	17677.21	7938.00	1299.2	859.5	.0	174.70	.00	.00	.00
86	694.6	879.7	1120.9	17711.07	7938.00	1049.8	879.7	.0	178.37	.00	.00	.00
87	702.7	900.0	1141.9	17743.28	7938.00	800.3	900.0	.0	182.06	.00	.00	.00
88	710.8	920.3	1162.8	17774.05	7938.00	550.8	920.3	.0	185.74	.00	.00	.00
89	718.9	940.5	1183.8	17803.34	7938.00	301.1	940.5	.0	189.44	.00	.00	.00
90	727.0	960.8	1204.9	17831.36	7938.00	177.1	960.8	.0	193.14	.00	.00	.00
91	735.2	981.1	1225.9	17858.14	7938.00	137.8	981.1	.0	196.85	.00	.00	.00
92	743.3	1003.4	1248.7	17890.83	7938.00	98.4	1003.4	.0	200.88	.00	.00	.00
93	751.4	1023.6	1269.8	17915.17	7938.00	59.1	1023.6	.0	204.60	.00	.00	.00
94	759.5	1043.9	1290.9	17938.51	7938.00	19.7	1043.9	.0	208.32	.00	.00	.00
95	767.6	1064.2	1312.1	17960.94	7938.00	.0	1064.2	4.1	212.05	.00	.00	.00
96	775.7	1086.5	1335.0	17988.95	7938.00	.0	1086.5	12.2	216.10	.00	.00	.00
97	783.8	1106.7	1356.2	18009.50	7938.00	.0	1106.7	20.3	219.84	.00	.00	.00
98	791.9	1127.0	1377.4	18029.35	7938.00	.0	1127.0	28.4	223.59	.00	.00	.00
99	800.0	1147.3	1398.7	18048.46	7938.00	.0	1147.3	36.5	227.34	.00	.00	.00

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	3811.	0.	420.	8234.	274.	420	420	420	420	420	420	420	420	420	420	420	420
16.0	.2	53.	3.31	0.	3815.	7681.	433.	8194.	284.	430	433	430	425	420	415	411	409	411	415	420	425
32.0	.4	116.	3.96	0.	3817.	16881.	445.	8154.	294.	442	445	442	433	420	409	399	395	399	409	420	433
48.0	.6	179.	3.92	0.	3819.	25815.	461.	8104.	306.	453	461	453	440	420	402	388	383	388	402	420	440
64.0	.8	235.	3.52	0.	3819.	33975.	470.	8076.	313.	466	470	466	445	420	396	378	373	378	396	420	445
80.0	1.0	292.	3.56	0.	3819.	41894.	488.	8021.	326.	474	488	474	452	420	389	369	358	369	389	420	452
96.0	1.2	362.	4.38	-0.	3823.	52317.	497.	7993.	334.	490	497	490	461	420	383	355	345	355	383	420	461
112.0	1.4	418.	3.46	0.	3828.	60142.	518.	7926.	350.	498	518	498	467	420	378	345	338	345	378	420	467
128.0	1.6	475.	3.57	0.	3843.	68844.	528.	7897.	358.	517	528	517	470	420	373	339	329	339	373	420	470
144.0	1.8	525.	3.13	0.	3842.	75522.	539.	7865.	366.	526	539	526	477	420	367	331	316	331	367	420	477
160.0	2.0	589.	4.03	0.	3852.	83985.	558.	7806.	381.	536	558	536	488	420	359	320	309	320	359	420	488
176.0	2.2	642.	3.29	0.	3851.	91016.	576.	7750.	395.	544	576	544	493	420	351	312	301	312	351	420	493
192.0	2.4	712.	4.40	0.	3880.	101968.	590.	7706.	407.	570	590	570	498	420	346	307	290	307	346	420	498
208.0	2.6	770.	3.58	-0.	3894.	109453.	606.	7658.	419.	579	606	579	509	421	342	298	281	298	342	421	509
224.0	2.8	831.	3.81	0.	3912.	117950.	624.	7606.	433.	593	624	593	519	421	338	289	273	289	338	421	519
240.0	3.0	884.	3.32	0.	3921.	125634.	635.	7572.	442.	607	635	607	524	421	334	281	265	281	334	421	524
256.0	3.2	941.	3.57	0.	3934.	133858.	651.	7526.	455.	622	651	622	529	421	330	274	257	274	330	421	529
272.0	3.4	998.	3.59	0.	3946.	141613.	672.	7464.	472.	633	672	633	535	421	324	267	251	267	324	421	535
288.0	3.6	1049.	3.17	0.	3952.	148430.	689.	7350.	485.	644	689	644	539	421	317	261	244	261	317	421	539
304.0	3.8	1105.	3.50	0.	3972.	156285.	701.	7135.	495.	661	701	661	545	421	313	255	238	255	313	421	545
320.0	4.0	1171.	4.15	-0.	4011.	164442.	715.	6878.	506.	680	715	680	563	422	310	249	233	249	310	422	563
336.0	4.2	1220.	3.06	0.	4029.	170391.	727.	6662.	516.	691	727	691	573	422	307	243	227	243	307	422	573
352.0	4.4	1264.	2.71	0.	4037.	175856.	737.	6491.	525.	702	737	702	578	422	302	238	222	238	302	422	578
368.0	4.6	1311.	2.98	-0.	4050.	181592.	748.	6303.	534.	714	748	714	586	422	297	233	218	233	297	422	586
384.0	4.8	1356.	2.79	0.	4062.	186695.	757.	6148.	542.	725	757	725	594	422	292	229	213	229	292	422	594
400.0	5.0	1397.	2.55	0.	4071.	191062.	766.	6007.	549.	734	766	734	602	423	288	224	209	224	288	423	602
416.0	5.2	1439.	2.63	0.	4083.	195597.	775.	5855.	558.	743	775	743	610	423	283	220	205	220	283	423	610
432.0	5.4	1481.	2.61	0.	4096.	199961.	785.	5695.	566.	752	785	752	619	423	279	216	201	216	279	423	619
448.0	5.6	1520.	2.47	0.	4107.	203951.	794.	5534.	575.	760	794	760	628	423	275	212	197	212	275	423	628
464.0	5.8	1556.	2.23	0.	4113.	207716.	803.	5398.	582.	768	803	768	633	424	271	209	194	209	271	424	633
480.0	6.0	1592.	2.24	0.	4121.	211482.	811.	5268.	590.	776	811	776	639	424	267	205	191	205	267	424	639
496.0	6.2	1631.	2.45	0.	4134.	215319.	820.	5129.	598.	784	820	784	648	424	264	202	187	202	264	424	648
512.0	6.4	1672.	2.54	0.	4150.	219156.	829.	4984.	606.	793	829	793	659	425	260	199	184	199	260	425	659
528.0	6.6	1711.	2.49	0.	4167.	222753.	839.	4835.	614.	800	839	800	670	425	257	196	181	196	257	425	670
544.0	6.8	1749.	2.37	-0.	4182.	226021.	847.	4713.	622.	808	847	808	681	425	253	193	179	193	253	425	681
560.0	7.0	1784.	2.14	0.	4192.	229166.	854.	4611.	629.	815	854	815	688	426	250	190	176	190	250	426	688
576.0	7.2	1817.	2.11	-0.	4201.	232386.	862.	4500.	636.	823	862	823	694	426	247	187	173	187	247	426	694
592.0	7.4	1853.	2.25	0.	4213.	235782.	871.	4366.	644.	831	871	831	701	427	244	185	171	185	244	427	701
608.0	7.6	1889.	2.24	0.	4226.	239104.	880.	4238.	652.	840	880	840	708	427	241	182	169	182	241	427	708
624.0	7.8	1923.	2.12	0.	4237.	242033.	888.	4122.	659.	847	888	847	715	428	239	180	167	180	239	428	715
640.0	8.0	1955.	2.01	0.	4247.	244714.	896.	4006.	667.	853	896	853	722	429	236	178	165	178	236	429	722
656.0	8.2	1987.	1.96	0.	4256.	247402.	905.	3884.	675.	859	905	859	728	429	233	175	163	175	233	429	728
672.0	8.4	2020.	2.06	0.	4267.	250376.	914.	3758.	683.	867	914	867	733	430	231	173	161	173	231	430	733
688.0	8.6	2053.	2.09	0.	4278.	253370.	923.	3629.	692.	875	923	875	738	431	228	171	159	171	228	431	738
704.0	8.8	2086.	2.07	0.	4289.	256221.	932.	3496.	700.	882	932	882	744	431	226	169	157	169	226	431	744
720.0	9.0	2119.	2.04	0.	4301.	259003.	942.	3358.	709.	890	942	890	750	432	223	167	156	167	223	432	750
736.0	9.2	2151.	2.00	0.	4311.	261728.	951.	3228.	718.	897	951	897	755	433	221	165	154	165	221	433	755
752.0	9.4	2183.	1.98	0.	4321.	264424.	960.	3107.	726.	904	960	904	759	433	219	164	153	164	219	433	759
768.0	9.6	2214.	1.97	0.	4331.	267075.	968.	2994.	734.	912	968	912	764	434	217	162	151	162	217	434	764
784.0	9.8	2246.	1.99	0.	4342.	269709.	977.	2887.	742.	920	977	920	769	435	215	161	149	161	215	435	769
800.0	10.0	2279.	2.04	0.	4354.	272408.	986.	2770.	751.	928	986	928	774	436	213	159	148	159	213	436	774

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
816.0	10.2	2312.	2.12	0.	4367.	275264.	996.	2636.	760.	937	996	937	779	437	211	158	146	158	211	437	779
832.0	10.4	2346.	2.13	0.	4380.	278077.	1005.	2504.	769.	945	1005	945	784	437	209	156	145	156	209	437	784
848.0	10.6	2380.	2.07	0.	4392.	280723.	1015.	2383.	778.	953	1015	953	789	438	207	155	143	155	207	438	789
864.0	10.8	2412.	2.05	0.	4404.	283310.	1024.	2261.	787.	961	1024	961	795	439	205	154	142	154	205	439	795
880.0	11.0	2445.	2.01	0.	4414.	285837.	1034.	2135.	796.	968	1034	968	799	439	203	152	141	152	203	439	799
896.0	11.2	2477.	2.01	0.	4425.	288334.	1044.	2003.	806.	976	1044	976	804	440	202	151	139	151	202	440	804
912.0	11.4	2509.	2.04	0.	4436.	290894.	1054.	1868.	816.	983	1054	983	808	440	200	150	138	150	200	440	808
928.0	11.6	2543.	2.09	0.	4447.	293560.	1064.	1748.	825.	992	1064	992	813	441	198	148	137	148	198	441	813
944.0	11.8	2576.	2.08	0.	4459.	296168.	1073.	1645.	833.	1000	1073	1000	818	442	197	147	135	147	197	442	818
960.0	12.0	2610.	2.09	0.	4471.	298731.	1082.	1528.	843.	1009	1082	1009	823	442	195	146	134	146	195	442	823
976.0	12.2	2645.	2.19	0.	4483.	301436.	1094.	1379.	854.	1017	1094	1017	828	443	193	144	133	144	193	443	828
992.0	12.4	2679.	2.18	0.	4496.	304084.	1105.	1241.	864.	1025	1105	1025	833	443	192	143	132	143	192	443	833
1008.0	12.6	2714.	2.15	0.	4509.	306646.	1115.	1123.	874.	1034	1115	1034	838	444	190	142	130	142	190	444	838
1024.0	12.8	2748.	2.16	0.	4521.	309239.	1124.	1007.	883.	1043	1124	1043	843	445	189	141	129	141	189	445	843
1040.0	13.0	2783.	2.17	0.	4533.	311916.	1135.	884.	893.	1052	1135	1052	847	445	188	140	128	140	188	445	847
1056.0	13.2	2817.	2.15	0.	4544.	314527.	1145.	757.	903.	1061	1145	1061	851	446	186	138	127	138	186	446	851
1072.0	13.4	2850.	2.06	0.	4555.	316892.	1156.	628.	914.	1069	1156	1069	855	447	185	137	126	137	185	447	855
1088.0	13.6	2884.	2.09	0.	4565.	319289.	1168.	490.	925.	1076	1168	1076	859	447	184	136	125	136	184	447	859
1104.0	13.8	2920.	2.27	-0.	4579.	321970.	1179.	352.	936.	1086	1179	1086	863	448	182	135	124	135	182	448	863
1120.0	14.0	2958.	2.40	0.	4593.	324878.	1191.	249.	947.	1096	1191	1096	868	449	181	134	123	134	181	449	868
1136.0	14.2	2996.	2.35	0.	4608.	327630.	1203.	185.	959.	1105	1203	1105	873	450	180	133	122	133	180	450	873
1152.0	14.4	3033.	2.29	0.	4621.	330232.	1215.	152.	971.	1114	1215	1114	878	451	179	132	120	132	179	451	878
1168.0	14.6	3069.	2.26	0.	4634.	332766.	1228.	135.	983.	1123	1228	1123	883	452	177	131	119	131	177	452	883
1184.0	14.8	3105.	2.23	0.	4647.	335230.	1239.	116.	993.	1132	1239	1132	887	454	176	130	118	130	176	454	887
1200.0	15.0	3141.	2.29	0.	4661.	337779.	1250.	96.	1005.	1141	1250	1141	892	455	175	129	117	129	175	455	892
1216.0	15.2	3180.	2.43	0.	4676.	340554.	1264.	70.	1018.	1151	1264	1151	896	456	174	128	116	128	174	456	896
1232.0	15.4	3220.	2.49	-0.	4691.	343397.	1278.	42.	1032.	1160	1278	1160	901	458	173	127	115	127	173	458	901
1248.0	15.6	3261.	2.54	0.	4707.	346295.	1293.	17.	1046.	1170	1293	1170	906	459	172	126	114	126	172	459	906
1264.0	15.8	3303.	2.60	0.	4723.	349256.	1308.	2.	1060.	1180	1308	1180	911	461	171	125	113	125	171	461	910
1280.0	16.0	3343.	2.53	-0.	4739.	352061.	1322.	0.	1073.	1191	1322	1191	915	462	170	124	112	124	170	462	915
1296.0	16.2	3384.	2.55	0.	4755.	354867.	1335.	0.	1086.	1201	1335	1201	920	463	169	123	111	123	169	463	920
1312.0	16.4	3428.	2.77	0.	4772.	358022.	1351.	0.	1102.	1212	1351	1212	926	464	168	122	110	122	168	464	926
1328.0	16.6	3473.	2.82	0.	4789.	361228.	1368.	0.	1118.	1224	1368	1224	931	465	167	122	109	122	167	465	931
1344.0	16.8	3517.	2.74	0.	4805.	364210.	1385.	0.	1135.	1234	1385	1234	936	466	166	121	108	121	166	466	936

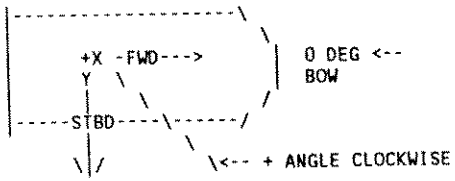
EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT18053. FT

STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE C8A12N tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT	-	.00
LINE ATTACHMENT W.R.T. WATER LINE	-	-62.0 FT
ALLOWABLE LINE LENGTH ON BOTTOM	-	90.0 FT
DIRECTION OF VESSEL TRANSLATION	-	22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	2.	.00	0.	3457.	117771.	484.	8033.	324.	484	0	484	457	420	386	362	350	362	386	420	457
16.0	.2	51.	3.06	93.	3449.	123854.	495.	7999.	332.	495	0	492	460	416	377	347	342	351	384	424	467
32.0	.4	97.	2.84	-896.	3452.	129365.	515.	7936.	348.	515	0	498	463	413	369	340	334	345	382	428	474
48.0	.6	149.	3.28	-19.	3455.	135273.	525.	7905.	356.	525	0	514	465	409	357	331	324	340	380	434	489
64.0	.8	195.	2.87	47.	3446.	140652.	537.	7869.	365.	537	0	523	467	405	347	319	313	334	377	438	495
80.0	1.0	236.	2.58	436.	3447.	145576.	548.	7837.	374.	548	0	531	469	403	342	311	307	326	374	441	508
96.0	1.2	291.	3.42	-362.	3455.	152629.	574.	7756.	393.	574	0	538	471	398	336	304	297	318	372	444	521
112.0	1.4	332.	2.58	-418.	3448.	157590.	586.	7721.	403.	586	0	545	474	395	330	293	288	312	370	447	528
128.0	1.6	386.	3.32	225.	3458.	164274.	601.	7674.	415.	601	0	566	477	390	320	284	279	308	368	453	538
144.0	1.8	431.	2.85	-141.	3462.	169834.	618.	7623.	428.	618	0	575	480	386	313	275	272	303	367	460	545
160.0	2.0	483.	3.21	682.	3475.	176050.	632.	7582.	440.	632	0	584	486	383	308	268	264	296	363	464	568
176.0	2.2	524.	2.57	750.	3474.	180738.	644.	7547.	449.	644	0	593	489	379	301	260	257	290	361	467	577
192.0	2.4	572.	3.03	524.	3480.	186426.	664.	7487.	465.	664	0	604	491	375	293	253	251	284	358	470	589
208.0	2.6	620.	3.00	466.	3488.	192074.	684.	7409.	481.	684	0	615	492	372	286	247	245	278	355	473	601
224.0	2.8	662.	2.64	1063.	3494.	197014.	695.	7233.	490.	695	0	627	495	370	279	241	239	272	351	479	613
240.0	3.0	703.	2.54	1153.	3501.	201631.	708.	6993.	501.	708	0	635	498	367	274	235	233	266	348	484	625
256.0	3.2	743.	2.48	946.	3507.	206056.	722.	6748.	512.	722	0	644	503	363	268	230	228	261	346	490	634
272.0	3.4	781.	2.41	1277.	3513.	210217.	732.	6572.	521.	732	0	657	507	356	262	225	224	257	345	493	644
288.0	3.6	823.	2.61	2012.	3525.	214980.	742.	6392.	529.	742	0	671	513	351	257	220	219	253	344	496	659
304.0	3.8	864.	2.57	2896.	3540.	219604.	753.	6221.	538.	753	0	684	516	348	251	215	215	248	343	501	676
320.0	4.0	899.	2.16	3289.	3548.	223495.	761.	6082.	545.	761	0	693	521	346	247	211	210	244	341	508	687
336.0	4.2	931.	2.03	3629.	3555.	227192.	770.	5941.	553.	770	0	703	524	345	243	207	206	239	338	514	695
352.0	4.4	964.	2.08	4093.	3563.	230737.	779.	5788.	561.	779	0	712	525	342	239	203	203	236	337	519	705
368.0	4.6	998.	2.07	4494.	3571.	234230.	789.	5628.	569.	789	0	721	528	340	234	200	199	232	336	523	716
384.0	4.8	1028.	1.89	4688.	3576.	237347.	798.	5480.	578.	798	0	729	531	338	230	196	196	228	334	525	725
400.0	5.0	1056.	1.78	4814.	3580.	240128.	806.	5350.	585.	806	0	736	534	336	227	193	192	225	332	529	733
416.0	5.2	1086.	1.82	5032.	3585.	242985.	814.	5219.	592.	814	0	743	537	333	223	190	189	222	330	533	741
432.0	5.4	1114.	1.80	5341.	3590.	245781.	823.	5082.	600.	823	0	751	539	331	220	187	186	219	328	537	749
448.0	5.6	1142.	1.71	5515.	3592.	248280.	832.	4938.	608.	832	0	757	540	329	216	184	183	215	325	539	755
464.0	5.8	1169.	1.72	5524.	3594.	250591.	842.	4793.	617.	842	0	762	542	324	213	181	181	213	324	542	762
480.0	6.0	1196.	1.69	5556.	3600.	253139.	849.	4684.	624.	849	0	769	548	321	210	178	178	210	321	548	769
496.0	6.2	1225.	1.81	5332.	3613.	256149.	856.	4585.	630.	856	0	776	559	318	207	176	176	207	318	559	776
512.0	6.4	1255.	1.83	5183.	3626.	259138.	864.	4468.	638.	864	0	782	566	315	204	173	173	204	316	569	783
528.0	6.6	1282.	1.73	5199.	3635.	261775.	873.	4336.	646.	873	0	789	571	313	201	171	171	202	315	574	791
544.0	6.8	1308.	1.61	5318.	3640.	264111.	881.	4213.	653.	881	0	795	574	311	199	168	169	200	314	577	798
560.0	7.0	1333.	1.58	5467.	3646.	266338.	889.	4100.	661.	889	0	801	575	309	196	166	167	197	313	582	804
576.0	7.2	1358.	1.55	5501.	3653.	268590.	898.	3985.	668.	898	0	807	579	308	194	164	165	195	311	587	811
592.0	7.4	1383.	1.59	5472.	3661.	270919.	906.	3865.	676.	906	0	814	583	306	191	163	163	193	310	591	817
608.0	7.6	1409.	1.61	5457.	3669.	273249.	915.	3742.	684.	915	0	820	587	304	189	161	161	190	308	596	824
624.0	7.8	1435.	1.64	5460.	3678.	275600.	924.	3615.	692.	924	0	827	592	301	187	159	159	188	307	601	831
640.0	8.0	1462.	1.67	5482.	3688.	277990.	933.	3484.	701.	933	0	834	597	299	185	158	158	186	305	606	838
656.0	8.2	1489.	1.67	5489.	3697.	280267.	942.	3349.	710.	942	0	840	600	296	183	156	156	184	304	612	844
672.0	8.4	1514.	1.58	5366.	3705.	282427.	951.	3222.	718.	951	0	846	605	294	181	154	155	182	302	618	850
688.0	8.6	1539.	1.55	5248.	3712.	284435.	960.	3103.	727.	960	0	851	609	291	179	153	153	180	300	624	855
704.0	8.8	1563.	1.51	5147.	3719.	286394.	969.	2993.	734.	969	0	856	614	289	177	151	152	179	298	629	861
720.0	9.0	1588.	1.53	5170.	3726.	288294.	977.	2887.	742.	977	0	862	618	286	175	150	150	177	296	633	868
736.0	9.2	1613.	1.57	5216.	3733.	290307.	985.	2773.	750.	985	0	868	623	284	173	148	149	175	295	636	875
752.0	9.4	1639.	1.62	5169.	3741.	292434.	995.	2640.	760.	995	0	874	627	281	171	147	147	174	293	640	882
768.0	9.6	1665.	1.61	5185.	3750.	294579.	1005.	2511.	769.	1005	0	880	630	279	170	145	146	172	291	646	888
784.0	9.8	1689.	1.56	5280.	3758.	296626.	1014.	2393.	777.	1014	0	886	634	278	168	144	144	170	289	651	893
800.0	10.0	1715.	1.60	5388.	3766.	298671.	1023.	2275.	786.	1023	0	892	637	276	167	142	143	169	287	658	900

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)
816.0	10.2	1741.	1.63	5453.	3776.	300800.	1033.	2151.	795.
832.0	10.4	1768.	1.67	5385.	3787.	303065.	1042.	2023.	804.
848.0	10.6	1795.	1.70	5269.	3800.	305392.	1053.	1891.	814.
864.0	10.8	1822.	1.67	5253.	3811.	307542.	1062.	1768.	823.
880.0	11.0	1847.	1.59	5337.	3821.	309523.	1071.	1666.	832.
896.0	11.2	1873.	1.61	5391.	3831.	311528.	1080.	1558.	841.
912.0	11.4	1901.	1.74	5271.	3843.	313790.	1091.	1413.	851.
928.0	11.6	1929.	1.73	5143.	3854.	316013.	1102.	1271.	862.
944.0	11.8	1955.	1.64	5176.	3864.	318012.	1112.	1153.	871.
960.0	12.0	1980.	1.59	5229.	3874.	319932.	1122.	1041.	880.
976.0	12.2	2006.	1.60	5270.	3882.	321836.	1132.	921.	890.
992.0	12.4	2032.	1.61	5290.	3891.	323712.	1142.	798.	900.
1008.0	12.6	2058.	1.67	5339.	3900.	325552.	1153.	671.	911.
1024.0	12.8	2085.	1.67	5356.	3909.	327495.	1164.	541.	921.
1040.0	13.0	2113.	1.71	5377.	3919.	329507.	1175.	401.	932.
1056.0	13.2	2141.	1.75	5413.	3929.	331489.	1186.	281.	943.
1072.0	13.4	2169.	1.75	5375.	3939.	333595.	1198.	207.	954.
1088.0	13.6	2197.	1.77	5292.	3950.	335688.	1210.	163.	966.
1104.0	13.8	2226.	1.81	5263.	3960.	337704.	1223.	142.	978.
1120.0	14.0	2253.	1.71	5337.	3969.	339630.	1234.	124.	989.
1136.0	14.2	2281.	1.72	5506.	3978.	341528.	1245.	106.	999.
1152.0	14.4	2310.	1.82	5563.	3988.	343537.	1257.	83.	1012.
1168.0	14.6	2340.	1.86	5464.	3998.	345628.	1271.	56.	1025.
1184.0	14.8	2369.	1.86	5332.	4008.	347763.	1285.	29.	1039.
1200.0	15.0	2400.	1.92	5147.	4019.	349929.	1300.	9.	1053.
1216.0	15.2	2431.	1.94	5061.	4029.	352028.	1315.	0.	1067.
1232.0	15.4	2460.	1.84	5123.	4039.	353964.	1327.	0.	1079.
1248.0	15.6	2491.	1.92	5028.	4050.	356029.	1341.	0.	1093.
1264.0	15.8	2524.	2.04	4794.	4062.	358345.	1358.	0.	1108.
1280.0	16.0	2557.	2.08	4601.	4074.	360731.	1375.	0.	1124.

LINE LOAD (KIPS)

LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
1033	0	899	641	274	165	141	142	167	285	664	906
1042	0	905	646	272	164	140	140	166	283	671	913
1053	0	911	652	271	163	138	139	164	281	678	919
1062	0	918	657	269	161	137	138	163	280	684	926
1071	0	924	662	266	160	136	136	162	279	689	934
1080	0	930	668	264	159	135	135	161	278	693	941
1091	0	937	673	262	158	133	134	160	277	698	949
1102	0	944	679	260	156	132	133	159	276	703	956
1112	0	950	683	258	155	131	132	158	274	708	963
1122	0	957	687	257	154	130	131	157	273	713	969
1132	0	963	691	256	153	129	129	156	271	717	975
1142	0	969	694	254	152	128	128	155	270	722	982
1153	0	975	697	252	151	127	127	154	269	726	989
1164	0	981	701	251	150	125	126	152	268	730	997
1175	0	988	705	249	149	124	125	151	266	733	1004
1186	0	994	708	247	147	123	124	151	266	737	1012
1198	0	1002	712	246	146	122	123	149	264	741	1019
1210	0	1009	717	245	145	121	122	148	263	745	1026
1223	0	1015	719	243	144	120	121	148	262	749	1034
1234	0	1022	723	242	143	119	120	147	261	752	1042
1245	0	1029	727	240	142	118	119	146	260	755	1049
1257	0	1036	729	239	141	117	118	145	259	759	1057
1271	0	1043	732	237	140	116	117	144	258	762	1065
1285	0	1051	735	236	139	115	116	143	257	765	1071
1300	0	1058	738	235	138	114	115	142	256	769	1078
1315	0	1064	741	233	137	113	114	141	255	772	1087
1327	0	1071	744	232	137	112	113	140	254	775	1096
1341	0	1077	748	231	136	111	112	139	253	779	1104
1358	0	1085	751	230	135	110	111	138	252	782	1111
1375	0	1094	754	229	134	109	110	138	250	785	1119

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT18056. FT

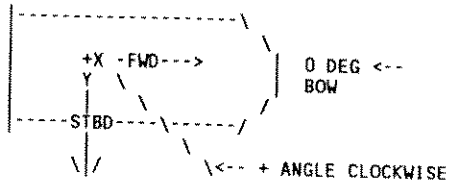
STARTING DISPLACEMENTS : SURGE(FT) = -63.000 SWAY(FT) = -63.000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE C8S12N tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

C8S12N

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	15.0	45.0	75.0	105.0	135.0	165.0	-165.0	-135.0	-105.0	-75.0	-45.0	-15.0
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	285.0	285.0	285.0	285.0	285.0	285.0	285.0	285.0	285.0	285.0	285.0	285.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	8000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	8000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.675"
LINE LENGTH (FT)	400.0
WEIGHT IN WATER (LB/FT)	38.71
LINE B.S. (KIPS)	2456.0
AREA (SQ IN)	16.80
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.675"
LINE LENGTH (FT)	400.0
WEIGHT IN WATER (LB/FT)	38.71
LINE B.S. (KIPS)	2456.0
AREA (SQ IN)	16.80
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-120.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.675"
LINE LENGTH (FT)	3000.0
WEIGHT IN WATER (LB/FT)	38.71
LINE B.S. (KIPS)	2456.0
AREA (SQ IN)	16.80
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-312.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.675"
LINE LENGTH (FT)	7800.0
WEIGHT IN WATER (LB/FT)	38.71
LINE B.S. (KIPS)	2456.0
AREA (SQ IN)	16.80
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	4.875"
LINE LENGTH (FT)	2100.0
WEIGHT IN WATER (LB/FT)	196.42
LINE B.S. (KIPS)	2479.0
AREA (SQ IN)	18.67
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.675"
LINE LENGTH (FT)	5350.0
WEIGHT IN WATER (LB/FT)	38.71
LINE B.S. (KIPS)	2456.0
AREA (SQ IN)	16.80
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	4.875"
LINE LENGTH (FT)	200.0
WEIGHT IN WATER (LB/FT)	196.42
LINE B.S. (KIPS)	2479.0
AREA (SQ IN)	18.67
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
1	27.4	.0	31.0	11312.00	7938.00	11312.0	.0	.0				
2	31.1	86.5	91.9	14992.76	7938.00	7582.0	86.5	.0	15.06	-432.00	.00	327.60
3	34.7	92.4	98.7	15086.54	7938.00	7563.8	92.4	.0	15.74	-432.00	.00	332.68
4	38.3	97.8	105.1	15158.75	7938.00	7545.6	97.8	.0	16.38	-432.00	.00	337.70
5	41.9	103.5	111.7	15233.27	7938.00	7527.4	103.5	.0	17.04	-432.00	.00	342.83
6	45.6	108.9	118.1	15296.26	7938.00	7509.1	108.9	.0	17.69	-432.00	.00	347.95
7	49.2	114.4	124.5	15355.51	7938.00	7490.9	114.4	.0	18.34	-432.00	.00	353.12
8	52.8	119.3	130.5	15398.77	7938.00	7472.6	119.3	.0	18.95	-432.00	.00	358.18
9	56.4	124.8	136.9	15452.03	7938.00	7454.4	124.8	.0	19.60	-432.00	.00	363.42
10	60.1	129.8	143.0	15490.66	7938.00	7436.2	129.8	.0	20.21	-432.00	.00	368.55
11	67.3	140.2	155.5	15573.64	7938.00	7399.7	140.2	.0	21.49	-432.00	.00	379.07
12	74.5	150.1	167.6	15638.52	7938.00	7363.1	150.1	.0	22.72	-432.00	.00	389.54
13	81.8	160.1	179.8	15697.94	7938.00	7326.6	160.1	.0	23.96	-432.00	.00	400.12
14	89.0	169.6	191.6	15743.09	7938.00	7290.1	169.6	.0	25.16	-432.00	.00	410.61
15	96.3	179.6	203.8	15793.94	7938.00	7253.6	179.6	.0	26.41	-432.00	.00	421.37
16	103.5	189.1	215.6	15832.34	7938.00	7217.0	189.1	.0	27.61	-432.00	.00	432.01
17	110.8	198.6	227.4	15868.06	7938.00	7180.5	198.6	.0	28.82	-432.00	.00	442.72
18	118.0	208.6	239.6	15909.32	7938.00	7144.0	208.6	.0	30.07	-432.00	.00	453.70
19	125.3	218.1	251.5	15940.08	7938.00	7107.4	218.1	.0	31.29	-432.00	.00	464.54
20	132.5	227.6	263.4	15968.94	7938.00	7070.8	227.6	.0	32.50	-432.00	.00	475.43
21	139.8	237.1	275.2	15995.96	7938.00	7034.3	237.1	.0	33.72	-432.00	.00	486.37
22	147.0	246.6	287.1	16021.32	7938.00	6997.7	246.6	.0	34.93	-432.00	.00	497.36
23	154.3	256.1	299.0	16045.16	7938.00	6961.2	256.1	.0	36.15	-432.00	.00	508.39
24	161.5	266.1	311.3	16073.96	7938.00	6924.6	266.1	.0	37.41	-432.00	.00	519.69
25	168.8	275.1	322.8	16088.74	7938.00	6888.1	275.1	.0	38.59	-432.00	.00	530.57
26	176.0	285.1	335.0	16114.66	7938.00	6851.5	285.1	.0	39.86	-432.00	.00	541.95
27	183.2	294.6	347.0	16133.32	7938.00	6814.9	294.6	.0	41.08	-432.00	.00	553.13
28	190.5	304.6	359.2	16156.58	7938.00	6778.4	304.6	.0	42.35	-432.00	.00	564.59
29	197.7	313.6	370.8	16167.67	7938.00	6741.8	313.6	.0	43.53	-432.00	.00	575.59
30	205.0	323.6	383.1	16188.78	7938.00	6705.2	323.6	.0	44.80	-432.00	.00	587.11
31	212.2	333.6	395.4	16208.79	7938.00	6668.7	333.6	.0	46.07	-432.00	.00	598.67
32	219.5	343.1	407.3	16222.71	7938.00	6632.1	343.1	.0	47.30	-432.00	.00	610.00
33	226.7	353.0	419.6	16240.88	7938.00	6595.5	353.0	.0	48.57	-432.00	.00	621.61
34	234.0	363.0	431.9	16258.10	7938.00	6558.9	363.0	.0	49.84	-432.00	.00	633.24
35	241.2	372.1	443.4	16265.23	7938.00	6522.3	372.1	.0	51.03	-432.00	.00	644.38
36	248.5	382.0	455.7	16281.04	7938.00	6485.8	382.0	.0	52.31	-432.00	.00	656.06
37	255.7	392.0	468.0	16296.10	7938.00	6449.2	392.0	.0	53.58	-432.00	.00	667.77
38	263.0	402.0	480.3	16310.45	7938.00	6412.6	402.0	.0	54.86	-432.00	.00	679.49
39	270.2	411.9	492.6	16324.13	7938.00	6376.0	411.9	.0	56.13	-432.00	.00	691.24
40	277.4	421.9	504.9	16337.19	7938.00	6339.4	421.9	.0	57.41	-432.00	.00	703.01
41	284.7	432.7	518.0	16357.65	7938.00	6302.9	432.7	.0	58.77	-432.00	.00	715.34
42	291.9	442.7	530.3	16369.39	7938.00	6266.3	442.7	.0	60.05	-432.00	.00	727.14
43	299.2	452.7	542.6	16380.61	7938.00	6229.7	452.7	.0	61.33	-432.00	.00	738.97
44	306.4	462.6	554.9	16391.34	7938.00	6193.1	462.6	.0	62.61	-432.00	.00	750.81
45	313.7	472.6	567.2	16401.62	7938.00	6156.5	472.6	.0	63.89	-432.00	.00	762.66

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
46	320.9	483.5	580.3	16418.62	7938.00	6119.9	483.5	.0	65.26	-432.00	.00	775.10
47	328.2	493.4	592.6	16427.90	7938.00	6083.3	493.4	.0	66.54	-432.00	.00	786.98
48	335.4	503.4	604.9	16436.81	7938.00	6046.7	503.4	.0	67.82	-432.00	.00	798.88
49	342.7	514.3	618.0	16452.08	7938.00	6010.1	514.3	.0	69.19	-432.00	.00	811.37
50	349.9	524.2	630.3	16460.14	7938.00	5973.5	524.2	.0	70.48	-432.00	.00	823.29
51	357.2	535.1	643.3	16474.36	7938.00	5936.9	535.1	.0	71.85	-432.00	.00	835.81
52	364.4	546.0	656.4	16488.01	7938.00	5900.4	546.0	.0	73.22	-432.00	.00	848.34
53	371.7	555.9	668.7	16494.93	7938.00	5863.7	555.9	.0	74.50	-432.00	.00	860.31
54	378.9	566.8	681.8	16507.68	7938.00	5827.1	566.8	.0	75.88	-432.00	.00	872.87
55	386.1	577.7	694.9	16519.96	7938.00	5790.5	577.7	.0	77.25	-432.00	.00	885.44
56	393.4	587.6	707.2	16525.89	7938.00	5753.9	587.6	.0	78.54	-432.00	.00	897.44
57	400.6	598.5	720.2	16537.39	7938.00	5717.3	598.5	.0	79.91	-432.00	.00	910.04
58	407.9	609.4	733.3	16548.46	7938.00	5680.7	609.4	.0	81.29	-432.00	.00	922.66
59	415.1	620.2	746.4	16559.14	7938.00	5644.1	620.2	.0	82.66	-432.00	.00	935.28
60	422.4	631.1	759.4	16569.44	7938.00	5607.5	631.1	.0	84.04	-432.00	.00	947.92
61	429.6	642.0	772.5	16579.39	7938.00	5568.7	642.0	.0	85.42	-432.00	.00	960.57
62	436.9	652.9	785.5	16588.98	7938.00	5381.1	652.9	.0	86.79	-432.00	.00	973.23
63	444.1	663.7	798.6	16598.24	7938.00	5193.5	663.7	.0	88.17	-432.00	.00	985.90
64	451.4	675.5	812.4	16612.25	7938.00	5005.9	675.5	.0	89.64	-432.00	.00	999.19
65	458.6	687.3	826.2	16625.72	7938.00	4818.3	687.3	.0	91.10	-432.00	.00	1012.50
66	465.9	700.0	840.8	16643.60	7938.00	4630.7	700.0	.0	92.66	-432.00	.00	1026.44
67	473.1	711.7	854.6	16655.99	7938.00	4443.0	711.7	.0	94.13	-432.00	.00	1039.78
68	480.3	724.4	869.2	16672.61	7938.00	4255.3	724.4	.0	95.68	-432.00	.00	1053.75
69	487.6	737.1	883.8	16688.60	7938.00	4067.6	737.1	.0	97.24	-432.00	.00	1067.74
70	494.8	749.8	898.4	16703.96	7938.00	3879.8	749.8	.0	98.80	-432.00	.00	1081.74
71	502.1	764.3	914.4	16727.63	7938.00	3692.1	764.3	.0	100.54	-432.00	.00	1097.02
72	509.3	777.0	929.0	16741.64	7938.00	3504.3	777.0	.0	102.10	-432.00	.00	1111.07
73	516.6	791.4	945.1	16763.66	7938.00	3316.5	791.4	.0	103.84	-432.00	.00	1126.39
74	523.8	804.1	959.7	16776.45	7938.00	3128.6	804.1	.0	105.40	-432.00	.00	1140.47
75	531.1	818.6	975.8	16796.96	7938.00	2940.8	818.6	.0	107.15	-432.00	.00	1155.83
76	538.3	833.1	991.9	16816.67	7938.00	2752.9	833.1	.0	108.89	-432.00	.00	1171.23
77	545.6	847.6	1008.0	16835.61	7938.00	2564.9	847.6	.0	110.64	-432.00	.00	1186.64
78	552.8	863.9	1025.6	16861.55	7938.00	2377.0	863.9	.0	112.56	-432.00	.00	1203.37
79	560.1	878.4	1041.8	16878.92	7938.00	2189.0	878.4	.0	114.31	-432.00	.00	1218.83
80	567.3	894.7	1059.4	16903.04	7938.00	2001.0	894.7	.0	116.24	-432.00	.00	1235.62
81	574.6	909.2	1075.5	16918.96	7938.00	1812.9	909.2	.0	117.99	-432.00	.00	1251.12
82	581.8	925.5	1093.2	16941.40	7938.00	1624.8	925.5	.0	119.93	-432.00	.00	1267.96
83	589.0	941.8	1110.8	16962.99	7938.00	1436.7	941.8	.0	121.86	-432.00	.00	1284.83
84	596.3	958.1	1128.5	16983.76	7938.00	1248.6	958.1	.0	123.80	-432.00	.00	1301.72
85	603.5	974.4	1146.2	17003.75	7938.00	1060.4	974.4	.0	125.74	-432.00	.00	1318.64
86	610.8	990.7	1163.9	17023.00	7938.00	872.1	990.7	.0	127.68	-432.00	.00	1335.58
87	618.0	1008.8	1183.1	17047.95	7938.00	683.9	1008.8	.0	129.81	-432.00	.00	1353.90
88	625.3	1025.1	1200.8	17065.69	7938.00	495.5	1025.1	.0	131.75	-432.00	.00	1370.89
89	632.5	1043.3	1220.0	17088.94	7938.00	307.2	1043.3	.0	133.88	-432.00	.00	1389.27
90	639.8	1059.6	1237.7	17105.29	7938.00	184.6	1059.6	.0	135.83	-432.00	.00	1406.31
91	647.0	1077.7	1257.0	17126.98	7938.00	147.6	1077.7	.0	137.97	-432.00	.00	1424.73
92	654.3	1095.8	1276.3	17147.90	7938.00	110.6	1095.8	.0	140.10	-432.00	.00	1443.19
93	661.5	1112.1	1294.0	17162.40	7938.00	73.6	1112.1	.0	142.06	-432.00	.00	1460.30
94	668.8	1130.2	1313.3	17181.99	7938.00	36.5	1130.2	.0	144.20	-432.00	.00	1478.80
95	676.0	1148.3	1332.5	17200.93	7938.00	.0	1148.3	.1	146.34	-432.00	.00	1497.33
96	683.2	1164.6	1350.3	17213.86	7938.00	.0	1164.6	7.3	148.30	-432.00	.00	1514.50
97	690.5	1182.8	1369.6	17231.66	7938.00	.0	1182.8	14.6	150.45	-432.00	.00	1533.07
98	697.7	1200.9	1388.9	17248.88	7938.00	.0	1200.9	21.8	152.60	-432.00	.00	1551.67
99	705.0	1217.2	1406.6	17260.48	7938.00	.0	1217.2	29.1	154.57	-432.00	.00	1568.88

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	1749.	0.	495.	7004.	245.	285	285	285	285	285	285	285	285	285	285	285	285
16.0	.2	39.	2.41	0.	1750.	4811.	503.	6980.	251.	292	293	292	289	285	281	278	278	278	281	285	289
32.0	.4	76.	2.35	0.	1751.	9462.	510.	6957.	257.	299	300	299	293	285	278	272	270	272	278	285	293
48.0	.6	110.	2.12	0.	1749.	13423.	515.	6939.	262.	304	307	304	297	285	274	266	263	266	274	285	297
64.0	.8	148.	2.36	0.	1752.	18135.	525.	6907.	270.	310	317	310	300	285	270	260	257	260	270	285	300
80.0	1.0	190.	2.65	0.	1760.	23844.	535.	6875.	279.	321	327	321	303	285	267	255	250	255	267	285	303
96.0	1.2	226.	2.26	0.	1762.	28352.	541.	6854.	284.	329	334	329	307	285	263	249	244	249	263	285	307
112.0	1.4	263.	2.26	0.	1767.	32694.	551.	6823.	292.	335	344	335	311	285	260	244	238	244	260	285	311
128.0	1.6	301.	2.40	0.	1777.	37208.	558.	6800.	299.	344	352	344	317	285	257	239	233	239	257	285	317
144.0	1.8	339.	2.37	0.	1789.	41553.	569.	6764.	308.	351	364	351	323	285	254	234	229	234	254	285	323
160.0	2.0	378.	2.43	0.	1800.	46296.	582.	6723.	319.	359	377	359	327	285	250	230	224	230	250	285	327
176.0	2.2	420.	2.66	0.	1814.	51921.	589.	6698.	325.	372	385	372	331	285	247	226	218	226	247	285	331
192.0	2.4	458.	2.33	0.	1821.	56499.	599.	6668.	334.	381	395	381	335	286	244	222	213	222	244	286	335
208.0	2.6	497.	2.47	0.	1832.	61251.	612.	6627.	344.	388	409	388	340	286	241	217	208	217	241	286	340
224.0	2.8	537.	2.50	0.	1845.	66110.	622.	6595.	353.	397	420	397	345	286	239	213	203	213	239	286	345
240.0	3.0	578.	2.57	0.	1860.	71369.	632.	6563.	362.	409	430	409	349	286	236	208	199	208	236	286	349
256.0	3.2	623.	2.78	0.	1878.	77113.	651.	6500.	378.	418	451	418	353	286	234	204	196	204	234	286	353
272.0	3.4	659.	2.27	0.	1891.	81306.	662.	6467.	387.	427	462	427	358	286	232	201	192	201	232	286	358
288.0	3.6	714.	3.41	0.	1923.	88367.	675.	6427.	398.	445	476	445	366	286	229	197	188	197	229	286	366
304.0	3.8	757.	2.70	0.	1944.	93334.	688.	6385.	410.	456	490	456	373	286	227	194	184	194	227	286	373
320.0	4.0	801.	2.73	0.	1963.	98673.	703.	6340.	422.	467	505	467	378	287	225	191	180	191	225	287	378
336.0	4.2	841.	2.50	0.	1977.	103542.	712.	6312.	430.	479	515	479	382	287	222	187	176	187	222	287	382
352.0	4.4	886.	2.82	0.	1997.	109137.	727.	6268.	442.	491	530	491	387	287	219	184	173	184	219	287	387
368.0	4.6	934.	3.01	0.	2019.	115128.	744.	6215.	457.	504	548	504	392	287	217	180	170	180	217	287	392
384.0	4.8	977.	2.72	0.	2039.	120048.	762.	6159.	472.	513	566	513	398	287	214	177	167	177	214	287	398
400.0	5.0	1021.	2.70	0.	2060.	124874.	774.	6124.	482.	525	579	525	406	287	212	174	163	174	212	287	406
416.0	5.2	1074.	3.34	0.	2090.	131475.	794.	6062.	499.	540	600	540	412	288	209	171	160	171	209	288	412
432.0	5.4	1123.	3.08	0.	2117.	137504.	808.	6019.	512.	556	615	556	417	288	207	169	157	169	207	288	417
448.0	5.6	1174.	3.18	0.	2143.	143799.	828.	5959.	529.	571	635	571	422	288	205	166	155	166	205	288	422
464.0	5.8	1216.	2.59	0.	2163.	148403.	841.	5923.	539.	583	649	583	427	288	203	163	152	163	203	288	427
480.0	6.0	1280.	3.99	0.	2206.	155934.	863.	5856.	558.	602	671	602	439	289	201	161	150	161	201	289	439
496.0	6.2	1327.	2.99	0.	2235.	160903.	877.	5815.	571.	614	686	614	449	289	199	158	147	158	199	289	449
512.0	6.4	1388.	3.76	0.	2272.	168440.	902.	5741.	591.	633	712	633	455	289	197	156	145	156	197	289	455
528.0	6.6	1433.	2.85	0.	2296.	173439.	919.	5692.	606.	645	729	645	461	289	195	154	143	154	195	289	461
544.0	6.8	1486.	3.31	0.	2327.	179518.	937.	5638.	622.	660	749	660	468	290	194	152	140	152	194	290	468
560.0	7.0	1544.	3.60	0.	2362.	186308.	957.	5587.	639.	679	769	679	475	290	192	149	138	149	192	290	475
576.0	7.2	1596.	3.26	0.	2392.	192006.	979.	5299.	658.	692	791	692	482	290	190	147	136	147	190	290	482
592.0	7.4	1658.	3.90	0.	2432.	199445.	996.	5046.	673.	715	809	715	490	290	188	145	134	145	188	290	490
608.0	7.6	1709.	3.16	0.	2461.	204786.	1012.	4828.	687.	731	825	731	498	291	186	143	132	143	186	291	498
624.0	7.8	1760.	3.17	0.	2490.	210240.	1024.	4661.	698.	748	838	748	505	291	184	141	130	141	184	291	505
640.0	8.0	1813.	3.34	0.	2518.	216354.	1041.	4431.	713.	766	856	766	511	291	182	139	127	139	182	291	511
656.0	8.2	1865.	3.27	0.	2546.	222266.	1054.	4251.	725.	785	870	785	516	292	180	137	125	137	180	292	516
672.0	8.4	1919.	3.36	0.	2578.	228009.	1068.	4063.	737.	803	884	803	524	292	178	135	123	135	178	292	524
688.0	8.6	1967.	3.01	0.	2606.	232574.	1082.	3871.	750.	817	899	817	533	292	177	134	121	134	177	292	533
704.0	8.8	2012.	2.77	0.	2631.	236524.	1092.	3750.	760.	830	910	830	542	293	175	132	120	132	175	293	542
720.0	9.0	2057.	2.85	0.	2657.	240531.	1106.	3567.	773.	842	924	842	552	293	174	130	118	130	174	293	552
736.0	9.2	2107.	3.14	0.	2687.	245233.	1119.	3411.	784.	857	937	857	562	293	172	128	116	128	172	293	562
752.0	9.4	2153.	2.83	0.	2711.	249322.	1132.	3239.	797.	869	951	869	571	294	171	127	115	127	171	294	571
768.0	9.6	2199.	2.86	0.	2733.	253708.	1147.	3041.	811.	882	967	882	577	294	169	125	113	125	169	294	577
784.0	9.8	2245.	2.87	0.	2759.	257712.	1159.	2903.	822.	895	979	895	586	295	168	123	112	123	168	295	586
800.0	10.0	2289.	2.78	0.	2784.	261050.	1171.	2750.	833.	905	992	905	598	295	166	121	110	121	166	295	598

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
816.0	10.2	2332.	2.70	0.	2808.	264356.	1185.	2590.	846.	915	1006	915	608	295	165	120	109	120	165	295	608
832.0	10.4	2377.	2.78	0.	2830.	268305.	1195.	2471.	856.	930	1017	930	615	296	164	119	107	119	164	296	615
848.0	10.6	2419.	2.66	0.	2854.	271313.	1206.	2341.	867.	940	1029	940	626	296	162	117	106	117	162	296	626
864.0	10.8	2469.	3.09	0.	2882.	275406.	1220.	2173.	880.	953	1043	953	636	297	161	116	105	116	161	297	636
880.0	11.0	2513.	2.77	0.	2904.	279166.	1231.	2052.	890.	967	1055	967	644	297	159	114	103	114	159	297	644
896.0	11.2	2556.	2.67	0.	2924.	282538.	1245.	1884.	904.	977	1069	977	651	297	158	113	102	113	158	297	651
912.0	11.4	2604.	3.02	0.	2952.	286050.	1259.	1723.	917.	989	1084	989	663	298	157	112	100	112	157	298	663
928.0	11.6	2651.	2.94	0.	2978.	289407.	1271.	1594.	928.	1001	1096	1001	675	298	156	110	99	110	156	298	675
944.0	11.8	2693.	2.64	0.	2998.	292568.	1283.	1455.	940.	1012	1109	1012	683	299	154	109	98	109	154	299	683
960.0	12.0	2735.	2.58	0.	3018.	295380.	1296.	1311.	953.	1021	1123	1021	692	299	153	108	96	108	153	299	692
976.0	12.2	2786.	3.23	0.	3051.	298713.	1309.	1163.	966.	1033	1137	1033	708	300	152	107	95	107	152	300	708
992.0	12.4	2834.	2.97	0.	3076.	302190.	1323.	1008.	979.	1045	1151	1045	718	300	151	106	94	106	151	300	718
1008.0	12.6	2878.	2.75	0.	3098.	305156.	1337.	857.	992.	1055	1165	1055	728	300	150	104	93	104	150	300	728
1024.0	12.8	2925.	2.95	0.	3123.	308490.	1349.	740.	1004.	1068	1177	1068	738	301	149	103	92	103	149	301	738
1040.0	13.0	2975.	3.12	0.	3149.	312090.	1362.	589.	1017.	1081	1192	1081	749	301	148	102	91	102	148	301	749
1056.0	13.2	3022.	2.94	0.	3173.	315179.	1377.	432.	1031.	1092	1207	1092	760	301	147	101	90	101	147	301	760
1072.0	13.4	3069.	2.94	0.	3198.	318208.	1389.	307.	1043.	1103	1220	1103	772	302	146	100	89	100	146	302	772
1088.0	13.6	3120.	3.21	0.	3225.	321686.	1406.	187.	1059.	1115	1237	1115	784	302	145	99	87	99	145	302	784
1104.0	13.8	3170.	3.12	0.	3252.	324891.	1420.	151.	1073.	1127	1252	1127	796	303	144	97	86	97	144	303	796
1120.0	14.0	3218.	2.97	0.	3275.	328051.	1433.	131.	1086.	1139	1266	1139	806	303	142	96	85	96	142	303	806
1136.0	14.2	3266.	3.05	0.	3299.	331449.	1449.	98.	1101.	1152	1282	1152	814	303	141	95	85	95	141	303	814
1152.0	14.4	3317.	3.17	0.	3324.	334939.	1467.	60.	1118.	1165	1301	1165	823	304	140	95	85	95	140	304	823
1168.0	14.6	3361.	2.74	0.	3343.	337669.	1481.	30.	1133.	1176	1316	1176	831	304	139	94	85	94	139	304	831
1184.0	14.8	3407.	2.91	0.	3364.	340785.	1497.	0.	1148.	1188	1333	1188	838	305	138	93	85	93	138	305	838
1200.0	15.0	3463.	3.46	0.	3392.	344714.	1518.	0.	1168.	1202	1354	1202	847	305	137	92	85	92	137	305	847
1216.0	15.2	3511.	3.02	0.	3416.	347677.	1534.	0.	1184.	1213	1371	1213	857	306	136	91	85	91	136	306	857
1232.0	15.4	3562.	3.18	0.	3439.	351108.	1552.	0.	1201.	1227	1389	1227	865	306	135	90	85	90	135	306	865

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT17265. FT

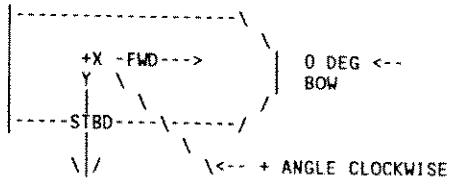
STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE C8S12N tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	1.	.00	0.	1590.	64901.	550.	6827.	292.	343	0	343	317	285	257	239	234	239	257	285	317
16.0	.2	30.	1.86	107.	1595.	67897.	557.	6803.	298.	351	0	349	320	283	252	234	229	235	255	287	325
32.0	.4	60.	1.86	-153.	1598.	70762.	567.	6771.	306.	362	0	354	322	280	247	230	225	233	255	291	331
48.0	.6	94.	2.13	-394.	1605.	74673.	580.	6727.	317.	376	0	363	324	279	243	225	219	229	253	293	336
64.0	.8	126.	2.01	127.	1611.	78124.	588.	6703.	324.	384	0	372	326	276	238	219	215	226	252	296	345
80.0	1.0	156.	1.87	196.	1614.	81250.	597.	6674.	332.	394	0	379	327	273	235	214	210	223	251	299	351
96.0	1.2	188.	1.97	-23.	1619.	84726.	609.	6634.	342.	406	0	384	329	271	231	209	205	219	250	301	357
112.0	1.4	221.	2.05	327.	1627.	88198.	619.	6602.	351.	417	0	391	331	270	228	205	201	216	248	302	369
128.0	1.6	251.	1.90	637.	1633.	91328.	628.	6575.	359.	427	0	399	332	267	224	201	197	212	247	304	378
144.0	1.8	289.	2.35	-1.	1647.	95676.	648.	6510.	375.	447	0	408	333	265	220	197	194	209	246	307	384
160.0	2.0	319.	1.90	-20.	1654.	98795.	659.	6477.	384.	459	0	415	335	263	216	193	190	206	245	309	391
176.0	2.2	352.	2.04	-122.	1663.	102245.	671.	6439.	395.	472	0	422	338	261	213	189	186	203	244	312	400
192.0	2.4	387.	2.19	9.	1675.	106121.	684.	6398.	406.	485	0	431	341	260	209	185	182	200	242	316	409
208.0	2.6	425.	2.39	444.	1692.	110629.	698.	6354.	418.	500	0	446	342	257	205	181	178	198	241	321	418
224.0	2.8	455.	1.88	506.	1701.	113808.	709.	6322.	427.	511	0	454	344	255	202	177	175	195	240	324	425
240.0	3.0	490.	2.15	1016.	1716.	117390.	721.	6286.	437.	524	0	462	347	254	199	174	172	193	239	327	439
256.0	3.2	527.	2.35	1216.	1734.	121506.	737.	6236.	451.	541	0	472	349	252	197	171	169	190	238	329	451
272.0	3.4	563.	2.22	984.	1748.	125545.	754.	6182.	466.	559	0	482	351	251	194	168	166	187	237	331	459
288.0	3.6	597.	2.17	1134.	1762.	129174.	769.	6139.	478.	574	0	491	352	248	191	165	163	185	236	334	470
304.0	3.8	634.	2.27	1214.	1778.	133191.	784.	6091.	491.	590	0	502	354	247	188	162	160	182	235	336	480
320.0	4.0	671.	2.34	892.	1795.	137229.	803.	6035.	507.	609	0	510	357	245	185	159	157	179	234	339	491
336.0	4.2	707.	2.23	673.	1811.	140930.	819.	5987.	521.	626	0	517	361	244	182	156	155	176	233	342	502
352.0	4.4	742.	2.21	542.	1829.	144799.	835.	5940.	534.	642	0	528	365	242	179	154	152	174	232	346	510
368.0	4.6	776.	2.14	540.	1846.	148443.	850.	5896.	547.	658	0	539	367	240	176	151	150	172	232	349	519
384.0	4.8	818.	2.60	494.	1870.	153065.	870.	5834.	565.	679	0	552	371	238	174	149	148	170	231	352	532
400.0	5.0	857.	2.41	968.	1891.	157228.	886.	5788.	578.	696	0	565	374	237	172	147	146	168	230	354	546
416.0	5.2	899.	2.62	699.	1915.	161814.	909.	5721.	597.	719	0	575	377	236	170	144	143	166	229	357	559
432.0	5.4	937.	2.42	895.	1936.	166002.	926.	5670.	612.	737	0	586	380	235	167	142	141	164	228	361	571
448.0	5.6	978.	2.57	1064.	1959.	170583.	945.	5615.	629.	757	0	600	381	233	165	139	139	162	228	368	581
464.0	5.8	1020.	2.63	1338.	1983.	175161.	965.	5511.	646.	777	0	613	384	233	163	137	136	160	226	371	595
480.0	6.0	1064.	2.71	1572.	2009.	179907.	986.	5190.	664.	799	0	627	387	232	161	135	134	158	225	374	609
496.0	6.2	1100.	2.28	1980.	2028.	183513.	1001.	4976.	677.	815	0	638	388	230	159	133	133	156	224	378	622
512.0	6.4	1136.	2.24	2412.	2047.	186975.	1016.	4775.	690.	830	0	648	392	229	157	131	131	154	223	380	636
528.0	6.6	1170.	2.14	2937.	2064.	190415.	1029.	4599.	702.	843	0	661	394	228	155	129	129	153	222	384	647
544.0	6.8	1211.	2.57	3762.	2088.	194728.	1045.	4376.	716.	860	0	676	396	226	153	127	127	151	221	387	662
560.0	7.0	1248.	2.28	4415.	2108.	198194.	1058.	4203.	728.	873	0	686	400	225	151	125	124	150	220	390	678
576.0	7.2	1285.	2.34	5091.	2129.	202050.	1072.	4012.	741.	888	0	702	403	223	149	123	123	148	220	394	689
592.0	7.4	1328.	2.66	6540.	2156.	206317.	1085.	3841.	753.	902	0	718	407	222	148	121	121	147	219	398	710
608.0	7.6	1361.	2.10	7455.	2175.	209426.	1095.	3721.	762.	912	0	730	410	221	146	120	119	145	218	403	723
624.0	7.8	1400.	2.44	8175.	2197.	213196.	1110.	3523.	776.	928	0	743	412	219	144	118	118	144	217	408	738
640.0	8.0	1437.	2.27	9263.	2218.	216693.	1121.	3388.	786.	939	0	758	415	218	143	116	116	142	216	412	753
656.0	8.2	1477.	2.51	10180.	2240.	220524.	1135.	3199.	799.	954	0	772	418	216	141	115	115	140	215	416	769
672.0	8.4	1517.	2.53	11263.	2263.	224367.	1149.	3019.	812.	969	0	787	420	215	139	113	113	139	214	419	786
688.0	8.6	1554.	2.33	12524.	2283.	227831.	1161.	2884.	823.	981	0	803	422	214	137	112	112	137	213	422	802
704.0	8.8	1588.	2.09	13047.	2300.	230717.	1173.	2731.	835.	994	0	813	425	212	136	110	110	136	213	425	814
720.0	9.0	1623.	2.21	13626.	2319.	233872.	1186.	2575.	847.	1007	0	824	428	211	134	109	109	134	212	431	826
736.0	9.2	1654.	1.95	13886.	2338.	236656.	1196.	2462.	857.	1018	0	834	434	210	133	107	108	133	211	439	836
752.0	9.4	1689.	2.14	14146.	2360.	239809.	1207.	2331.	867.	1030	0	845	442	209	132	106	106	132	210	446	848
768.0	9.6	1725.	2.29	14626.	2380.	243018.	1221.	2166.	880.	1044	0	856	446	207	130	105	105	131	209	452	861
784.0	9.8	1756.	1.94	15002.	2395.	245626.	1231.	2048.	891.	1055	0	866	450	206	129	103	104	129	209	455	871
800.0	10.0	1791.	2.18	15284.	2411.	248534.	1246.	1881.	904.	1070	0	876	453	205	127	102	102	128	208	459	882

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
816.0	10.2	1826.	2.18	15723.	2428.	251494.	1259.	1724.	917.	1084	0	887	456	204	125	101	101	126	207	464	894
832.0	10.4	1858.	2.01	16083.	2443.	254162.	1270.	1597.	928.	1096	0	898	459	203	124	99	100	125	206	469	904
848.0	10.6	1888.	1.88	16043.	2456.	256551.	1283.	1460.	940.	1109	0	906	463	202	123	98	98	124	205	473	911
864.0	10.8	1921.	2.03	16258.	2472.	259083.	1295.	1320.	952.	1122	0	914	467	201	121	97	97	122	204	477	923
880.0	11.0	1955.	2.16	16685.	2490.	261956.	1308.	1174.	965.	1135	0	925	470	200	120	96	96	121	204	483	934
896.0	11.2	1988.	2.03	16750.	2506.	264556.	1322.	1023.	978.	1150	0	934	474	199	119	95	95	120	203	488	942
912.0	11.4	2023.	2.16	17007.	2524.	267228.	1336.	871.	991.	1164	0	943	478	198	118	93	94	119	202	493	955
928.0	11.6	2057.	2.13	17638.	2542.	270029.	1347.	755.	1002.	1176	0	955	483	197	117	92	93	118	202	498	967
944.0	11.8	2090.	2.10	17851.	2559.	272719.	1360.	614.	1015.	1190	0	966	486	196	116	91	92	117	201	504	976
960.0	12.0	2124.	2.09	17867.	2575.	275229.	1375.	454.	1029.	1205	0	974	490	195	114	90	91	116	201	508	986
976.0	12.2	2156.	2.00	18057.	2589.	277623.	1387.	329.	1041.	1217	0	983	495	195	113	89	90	115	200	511	996
992.0	12.4	2192.	2.24	18078.	2606.	280293.	1403.	205.	1056.	1234	0	992	498	194	112	88	89	114	200	516	1007
1008.0	12.6	2225.	2.09	18035.	2622.	282918.	1417.	155.	1070.	1249	0	1002	502	193	111	87	87	113	199	520	1015
1024.0	12.8	2258.	2.03	18118.	2637.	285308.	1430.	137.	1083.	1262	0	1011	506	192	110	86	86	112	198	526	1024
1040.0	13.0	2291.	2.09	18162.	2652.	287722.	1444.	108.	1097.	1278	0	1019	510	191	109	85	85	111	198	531	1034
1056.0	13.2	2327.	2.25	17987.	2671.	290405.	1462.	69.	1114.	1296	0	1029	513	191	108	85	85	110	197	536	1044
1072.0	13.4	2361.	2.10	18058.	2689.	292848.	1477.	40.	1129.	1312	0	1039	516	190	107	85	85	109	196	543	1053
1088.0	13.6	2394.	2.07	17968.	2707.	295243.	1492.	7.	1143.	1327	0	1049	521	189	106	85	85	108	195	548	1062
1104.0	13.8	2433.	2.43	17569.	2729.	298160.	1511.	0.	1162.	1347	0	1058	528	189	105	85	85	107	194	553	1074
1120.0	14.0	2471.	2.38	17484.	2751.	301004.	1529.	0.	1178.	1365	0	1069	533	187	104	85	85	106	194	561	1085
1136.0	14.2	2506.	2.24	17379.	2770.	303602.	1545.	0.	1194.	1382	0	1080	537	186	103	85	85	105	194	568	1094

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT17271. FT

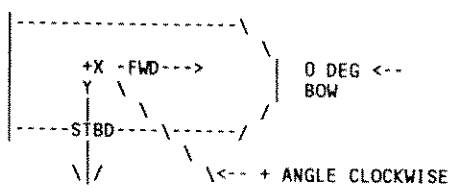
STARTING DISPLACEMENTS : SURGE(FT) = -90.000 SWAY(FT) = -90.000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE C10A12N tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

C 10 A12N

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	15.0	45.0	75.0	105.0	135.0	165.0	-165.0	-135.0	-105.0	-75.0	-45.0	-15.0
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	445.0	445.0	445.0	445.0	445.0	445.0	445.0	445.0	445.0	445.0	445.0	445.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	10000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	10000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.250"
LINE LENGTH (FT)	500.0
WEIGHT IN WATER (LB/FT)	32.69
LINE B.S. (KIPS)	2074.0
AREA (SQ IN)	14.19
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	ARAMID
LINE SIZE (IN)	4.688"
LINE LENGTH (FT)	9100.0
WEIGHT IN WATER (LB/FT)	1.64
LINE B.S. (KIPS)	2102.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	84100.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.250"
LINE LENGTH (FT)	3300.0
WEIGHT IN WATER (LB/FT)	32.69
LINE B.S. (KIPS)	2074.0
AREA (SQ IN)	14.19
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.000"
LINE LENGTH (FT)	1900.0
WEIGHT IN WATER (LB/FT)	206.63
LINE B.S. (KIPS)	2457.0
AREA (SQ IN)	19.63
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.250"
LINE LENGTH (FT)	7700.0
WEIGHT IN WATER (LB/FT)	32.69
LINE B.S. (KIPS)	2074.0
AREA (SQ IN)	14.19
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.000"
LINE LENGTH (FT)	200.0
WEIGHT IN WATER (LB/FT)	206.63
LINE B.S. (KIPS)	2457.0
AREA (SQ IN)	19.63
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
1	42.3	.0	42.3	12762.00	9938.00	12762.0	.0	.0				
2	46.7	2.6	46.8	13927.96	9938.00	12627.8	2.6	.0	2.88	.00	.00	.00
3	51.1	4.7	51.3	14427.77	9938.00	12493.5	4.7	.0	3.59	.00	.00	.00
4	55.5	6.9	55.9	14806.80	9938.00	12359.2	6.9	.0	4.32	.00	.00	.00
5	59.9	9.2	60.6	15112.27	9938.00	12224.9	9.2	.0	5.07	.00	.00	.00
6	64.3	11.7	65.3	15369.27	9938.00	12090.6	11.7	.0	5.84	.00	.00	.00
7	68.7	14.3	70.2	15592.49	9938.00	11956.3	14.3	.0	6.64	.00	.00	.00
8	73.1	17.0	75.0	15791.11	9938.00	11822.1	17.0	.0	7.46	.00	.00	.00
9	77.5	19.9	80.0	15971.18	9938.00	11687.8	19.9	.0	8.30	.00	.00	.00
10	81.9	22.9	85.0	16136.80	9938.00	11553.6	22.9	.0	9.16	.00	.00	.00
11	90.7	29.3	95.3	16418.16	9938.00	11285.0	29.3	.0	10.93	.00	.00	.00
12	99.5	36.1	105.8	16672.88	9938.00	11016.5	36.1	.0	12.78	.00	.00	.00
13	108.3	43.3	116.6	16882.07	9938.00	10748.0	43.3	.0	14.69	.00	.00	.00
14	117.0	51.0	127.7	17082.22	9938.00	10479.5	51.0	.0	16.68	.00	.00	.00
15	125.8	58.9	139.0	17254.19	9938.00	10210.9	58.9	.0	18.73	.00	.00	.00
16	134.6	67.4	150.6	17423.17	9938.00	9942.4	67.4	.0	20.86	.00	.00	.00
17	143.4	76.2	162.4	17572.50	9938.00	9784.1	76.2	.0	23.05	.00	.00	.00
18	152.2	84.8	174.2	17678.14	9938.00	9742.0	84.8	.0	25.20	.00	.00	.00
19	161.0	93.3	186.1	17765.40	9938.00	9700.0	93.3	.0	27.37	.00	.00	.00
20	169.8	101.5	197.8	17826.35	9938.00	9657.9	101.5	.0	29.50	.00	.00	.00
21	178.6	110.0	209.8	17890.14	9938.00	9615.9	110.0	.0	31.67	.00	.00	.00
22	187.4	118.3	221.6	17934.42	9938.00	9573.9	118.3	.0	33.81	.00	.00	.00
23	196.2	126.5	233.4	17973.08	9938.00	9531.8	126.5	.0	35.95	.00	.00	.00
24	205.0	135.0	245.4	18016.79	9938.00	9489.8	135.0	.0	38.13	.00	.00	.00
25	213.8	143.3	257.3	18046.39	9938.00	9447.7	143.3	.0	40.28	.00	.00	.00
26	222.5	152.1	269.5	18090.05	9938.00	9405.6	152.1	.0	42.51	.00	.00	.00
27	231.3	160.3	281.5	18112.79	9938.00	9363.6	160.3	.0	44.66	.00	.00	.00
28	240.1	168.6	293.4	18133.15	9938.00	9321.5	168.6	.0	46.81	.00	.00	.00
29	248.9	177.3	305.6	18166.48	9938.00	9279.5	177.3	.0	49.04	.00	.00	.00
30	257.7	186.1	317.9	18196.70	9938.00	9237.5	186.1	.0	51.28	.00	.00	.00
31	266.5	194.4	329.9	18210.50	9938.00	9195.4	194.4	.0	53.44	.00	.00	.00
32	275.3	203.2	342.2	18236.16	9938.00	9153.3	203.2	.0	55.68	.00	.00	.00
33	284.1	212.0	354.5	18259.63	9938.00	9111.3	212.0	.0	57.92	.00	.00	.00
34	292.9	220.8	366.8	18281.16	9938.00	9069.2	220.8	.0	60.17	.00	.00	.00
35	301.7	229.5	379.1	18300.92	9938.00	9027.2	229.5	.0	62.41	.00	.00	.00
36	310.5	238.3	391.4	18319.14	9938.00	8985.1	238.3	.0	64.66	.00	.00	.00
37	319.3	247.7	404.1	18346.82	9938.00	8943.1	247.7	.0	66.99	.00	.00	.00
38	328.0	256.5	416.4	18361.97	9938.00	8901.1	256.5	.0	69.24	.00	.00	.00
39	336.8	265.8	429.1	18386.14	9938.00	8859.0	265.8	.0	71.58	.00	.00	.00
40	345.6	274.6	441.4	18398.82	9938.00	8817.0	274.6	.0	73.83	.00	.00	.00
41	354.4	284.5	454.5	18429.57	9938.00	8775.0	284.5	.0	76.25	.00	.00	.00
42	363.2	293.3	466.8	18439.93	9938.00	8732.9	293.3	.0	78.51	.00	.00	.00
43	372.0	303.2	479.9	18467.39	9938.00	8690.9	303.2	.0	80.93	.00	.00	.00
44	380.8	312.0	492.3	18475.83	9938.00	8648.8	312.0	.0	83.19	.00	.00	.00
45	389.6	321.9	505.3	18500.51	9938.00	8606.8	321.9	.0	85.62	.00	.00	.00

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
46	398.4	331.8	518.4	18523.71	9938.00	8564.8	331.8	.0	88.05	.00	.00	.00
47	407.2	340.5	530.8	18529.65	9938.00	8522.7	340.5	.0	90.31	.00	.00	.00
48	416.0	350.4	543.9	18550.63	9938.00	8480.7	350.4	.0	92.74	.00	.00	.00
49	424.8	360.3	557.0	18570.46	9938.00	8438.7	360.3	.0	95.17	.00	.00	.00
50	433.5	370.2	570.1	18589.16	9938.00	8396.6	370.2	.0	97.61	.00	.00	.00
51	442.3	380.1	583.2	18606.85	9938.00	8354.6	380.1	.0	100.05	.00	.00	.00
52	451.1	390.0	596.3	18623.59	9938.00	8312.6	390.0	.0	102.48	.00	.00	.00
53	459.9	399.9	609.5	18639.41	9938.00	8270.5	399.9	.0	104.92	.00	.00	.00
54	468.7	409.8	622.6	18654.44	9938.00	8228.5	409.8	.0	107.36	.00	.00	.00
55	477.5	419.7	635.7	18668.70	9938.00	8186.4	419.7	.0	109.81	.00	.00	.00
56	486.3	429.6	648.9	18682.24	9938.00	8144.4	429.6	.0	112.25	.00	.00	.00
57	495.1	440.5	662.7	18707.44	9938.00	8102.4	440.5	.0	114.87	.00	.00	.00
58	503.9	450.4	675.9	18719.41	9938.00	8060.4	450.4	.0	117.31	.00	.00	.00
59	512.7	460.3	689.0	18730.78	9938.00	8018.3	460.3	.0	119.76	.00	.00	.00
60	521.5	471.3	702.9	18753.17	9938.00	7976.3	471.3	.0	122.38	.00	.00	.00
61	530.3	481.2	716.1	18763.27	9938.00	7934.2	481.2	.0	124.83	.00	.00	.00
62	539.1	492.2	730.0	18783.97	9938.00	7703.3	492.2	.0	127.46	.00	.00	.00
63	547.8	503.2	743.9	18803.65	9938.00	7434.0	503.2	.0	130.08	.00	.00	.00
64	556.6	514.2	757.8	18822.39	9938.00	7164.7	514.2	.0	132.71	.00	.00	.00
65	565.4	527.4	773.2	18860.81	9938.00	6895.4	527.4	.0	135.69	.00	.00	.00
66	574.2	539.5	787.9	18887.28	9938.00	6626.0	539.5	.0	138.50	.00	.00	.00
67	583.0	552.6	803.3	18922.16	9938.00	6356.6	552.6	.0	141.49	.00	.00	.00
68	591.8	565.8	818.8	18955.30	9938.00	6087.1	565.8	.0	144.48	.00	.00	.00
69	600.6	579.0	834.3	18986.71	9938.00	5817.6	579.0	.0	147.48	.00	.00	.00
70	609.4	592.2	849.7	19016.50	9938.00	5548.1	592.2	.0	150.48	.00	.00	.00
71	618.2	607.6	866.8	19062.42	9938.00	5278.6	607.6	.0	153.84	.00	.00	.00
72	627.0	621.9	883.1	19097.44	9938.00	5009.0	621.9	.0	157.03	.00	.00	.00
73	635.8	637.3	900.2	19139.06	9938.00	4739.3	637.3	.0	160.40	.00	.00	.00
74	644.6	652.6	917.3	19178.54	9938.00	4469.6	652.6	.0	163.78	.00	.00	.00
75	653.3	668.0	934.4	19216.06	9938.00	4199.9	668.0	.0	167.16	.00	.00	.00
76	662.1	684.5	952.4	19259.42	9938.00	3930.1	684.5	.0	170.73	.00	.00	.00
77	670.9	701.0	970.3	19300.63	9938.00	3660.3	701.0	.0	174.31	.00	.00	.00
78	679.7	718.6	989.1	19347.06	9938.00	3390.4	718.6	.0	178.08	.00	.00	.00
79	688.5	735.1	1007.2	19384.14	9938.00	3120.4	735.1	.0	181.67	.00	.00	.00
80	697.3	752.7	1026.0	19426.31	9938.00	2850.4	752.7	.0	185.45	.00	.00	.00
81	706.1	770.2	1044.9	19466.47	9938.00	2580.3	770.2	.0	189.23	.00	.00	.00
82	714.9	787.8	1063.8	19504.71	9938.00	2310.1	787.8	.0	193.03	.00	.00	.00
83	723.7	807.6	1084.4	19553.96	9938.00	2039.9	807.6	.0	197.19	.00	.00	.00
84	732.5	825.2	1103.4	19588.34	9938.00	1769.6	825.2	.0	201.00	.00	.00	.00
85	741.3	845.0	1124.0	19633.22	9938.00	1499.3	845.0	.0	205.19	.00	.00	.00
86	750.1	864.7	1144.7	19676.09	9938.00	1228.9	864.7	.0	209.38	.00	.00	.00
87	758.8	883.4	1164.6	19711.19	9938.00	958.3	883.4	.0	213.40	.00	.00	.00
88	767.6	903.2	1185.4	19750.31	9938.00	687.7	903.2	.0	217.60	.00	.00	.00
89	776.4	923.0	1206.1	19787.64	9938.00	417.1	923.0	.0	221.82	.00	.00	.00
90	785.2	943.9	1227.8	19828.65	9938.00	192.1	943.9	.0	226.23	.00	.00	.00
91	794.0	963.7	1248.6	19862.61	9938.00	149.4	963.7	.0	230.47	.00	.00	.00
92	802.8	985.6	1271.2	19905.35	9938.00	106.7	985.6	.0	235.09	.00	.00	.00
93	811.6	1005.4	1292.1	19936.24	9938.00	64.0	1005.4	.0	239.33	.00	.00	.00
94	820.4	1025.2	1313.0	19965.93	9938.00	21.3	1025.2	.0	243.59	.00	.00	.00
95	829.2	1045.0	1334.0	19994.42	9938.00	.0	1045.0	4.4	247.85	.00	.00	.00
96	838.0	1067.0	1356.7	20031.03	9938.00	.0	1067.0	13.2	252.49	.00	.00	.00
97	846.8	1086.7	1377.7	20057.19	9938.00	.0	1086.7	22.0	256.77	.00	.00	.00
98	855.6	1106.5	1398.7	20082.40	9938.00	.0	1106.5	30.8	261.05	.00	.00	.00
99	864.3	1126.3	1419.7	20106.73	9938.00	.0	1126.3	39.6	265.33	.00	.00	.00

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	4177.	0.	445.	8805.	277.	445	445	445	445	445	445	445	445	445	445	445	445
20.0	.2	48.	2.42	0.	4158.	7678.	453.	8781.	283.	451	453	451	448	445	440	433	430	433	440	445	448
40.0	.4	117.	3.40	-0.	4164.	18771.	470.	8721.	296.	468	470	468	453	445	430	422	419	422	430	445	453
60.0	.6	170.	2.68	-0.	4160.	26213.	480.	8692.	303.	474	480	474	464	445	424	411	404	411	424	445	464
80.0	.8	240.	3.51	0.	4182.	38143.	501.	8620.	318.	493	501	493	470	445	419	399	395	399	419	445	470
100.0	1.0	285.	2.23	0.	4175.	44822.	506.	8606.	322.	504	506	504	474	445	413	392	383	392	413	445	474
120.0	1.2	340.	2.74	-0.	4164.	52800.	525.	8541.	337.	507	525	507	480	445	404	381	370	381	404	445	480
140.0	1.4	418.	3.90	0.	4195.	65246.	543.	8482.	350.	528	543	528	494	445	399	370	359	370	399	445	494
160.0	1.6	476.	2.91	0.	4205.	74602.	555.	8446.	359.	543	555	543	501	445	395	359	348	359	395	445	501
180.0	1.8	525.	2.44	0.	4204.	82305.	569.	8402.	369.	552	569	552	505	445	390	350	338	350	390	445	505
200.0	2.0	578.	2.66	0.	4201.	91004.	583.	8354.	380.	564	583	564	506	445	384	341	327	341	384	445	506
220.0	2.2	636.	2.92	0.	4205.	100119.	599.	8304.	392.	576	599	576	511	445	377	334	313	334	377	445	511
240.0	2.4	705.	3.46	0.	4225.	110071.	616.	8249.	405.	590	616	590	528	446	371	320	306	320	371	446	528
260.0	2.6	769.	3.20	0.	4245.	119420.	634.	8191.	418.	604	634	604	540	446	365	311	299	311	365	446	540
280.0	2.8	824.	2.73	0.	4259.	127970.	652.	8136.	432.	619	652	619	544	446	359	305	290	305	359	446	544
300.0	3.0	879.	2.74	0.	4270.	136357.	662.	8103.	440.	635	662	635	549	446	354	299	278	299	354	446	549
320.0	3.2	943.	3.22	0.	4290.	146472.	685.	8032.	457.	650	685	650	556	446	349	292	268	292	349	446	556
340.0	3.4	993.	2.50	-0.	4293.	153731.	698.	7990.	468.	659	698	659	563	446	344	282	263	282	344	446	563
360.0	3.6	1057.	3.18	0.	4316.	163783.	720.	7904.	484.	676	720	676	570	446	340	273	258	273	340	446	570
380.0	3.8	1113.	2.84	-0.	4335.	172343.	732.	7664.	494.	693	732	693	578	446	335	266	250	266	335	446	578
400.0	4.0	1163.	2.48	0.	4349.	178983.	746.	7384.	505.	705	746	705	586	446	330	261	242	261	330	446	586
420.0	4.2	1222.	2.95	0.	4371.	187163.	760.	7120.	516.	723	760	723	594	446	321	257	237	257	321	446	594
440.0	4.4	1269.	2.33	0.	4375.	193127.	768.	6979.	523.	734	768	734	602	447	314	250	232	250	314	447	602
460.0	4.6	1317.	2.40	-0.	4388.	199574.	777.	6833.	530.	746	777	746	611	447	310	243	225	243	310	447	611
480.0	4.8	1364.	2.38	0.	4407.	205905.	788.	6628.	539.	759	788	759	620	447	307	239	219	239	307	447	620
500.0	5.0	1403.	1.96	0.	4419.	210482.	797.	6468.	547.	766	797	766	630	447	304	234	214	234	304	447	630
520.0	5.2	1442.	1.92	0.	4429.	214782.	806.	6318.	555.	773	806	773	639	447	301	229	209	229	301	447	639
540.0	5.4	1485.	2.13	0.	4443.	219885.	815.	6156.	562.	782	815	782	649	447	298	224	205	224	298	447	649
560.0	5.6	1524.	1.96	0.	4450.	224820.	824.	5988.	571.	791	824	791	655	447	294	219	201	219	294	447	655
580.0	5.8	1562.	1.90	0.	4454.	229282.	834.	5815.	579.	799	834	799	660	448	288	214	198	214	288	448	660
600.0	6.0	1604.	2.09	0.	4464.	233760.	845.	5631.	588.	806	845	806	670	448	282	210	194	210	282	448	670
620.0	6.2	1646.	2.10	0.	4479.	237936.	854.	5479.	596.	815	854	815	682	448	277	206	190	206	277	448	682
640.0	6.4	1684.	1.93	0.	4491.	241815.	861.	5366.	603.	823	861	823	692	448	272	203	186	203	272	448	692
660.0	6.6	1720.	1.76	0.	4499.	245657.	869.	5244.	609.	832	869	832	698	449	268	200	183	200	268	449	698
680.0	6.8	1759.	1.95	-0.	4516.	249789.	878.	5089.	618.	841	878	841	707	449	265	197	180	197	265	449	707
700.0	7.0	1800.	2.04	0.	4537.	253874.	887.	4944.	625.	850	887	850	719	449	263	193	178	193	263	449	719
720.0	7.2	1833.	1.66	0.	4548.	257264.	895.	4816.	633.	857	895	857	726	449	260	190	175	190	260	449	726
740.0	7.4	1865.	1.60	0.	4557.	260470.	904.	4686.	640.	863	904	863	733	450	258	187	173	187	258	450	733
760.0	7.6	1899.	1.72	0.	4567.	263784.	912.	4550.	648.	870	912	870	740	450	254	184	170	184	254	450	740
780.0	7.8	1936.	1.82	0.	4580.	267321.	921.	4408.	656.	878	921	878	748	451	251	182	168	182	251	451	748
800.0	8.0	1972.	1.80	0.	4593.	270725.	930.	4264.	664.	886	930	886	756	451	247	179	166	179	247	451	756
820.0	8.2	2004.	1.63	0.	4603.	273822.	939.	4130.	672.	893	939	893	762	452	244	177	164	177	244	452	762
840.0	8.4	2035.	1.53	0.	4612.	276771.	947.	4006.	680.	900	947	900	766	452	241	175	162	175	241	452	766
860.0	8.6	2065.	1.53	0.	4620.	279798.	956.	3880.	688.	908	956	908	770	453	238	173	160	173	238	453	770
880.0	8.8	2097.	1.57	0.	4630.	282879.	964.	3748.	696.	915	964	915	774	453	236	171	158	171	236	453	774
900.0	9.0	2130.	1.64	0.	4643.	285949.	973.	3623.	703.	923	973	923	780	454	234	169	157	169	234	454	780
920.0	9.2	2162.	1.64	0.	4655.	288924.	981.	3510.	711.	931	981	931	786	455	231	167	155	167	231	455	786
940.0	9.4	2194.	1.60	0.	4667.	291786.	989.	3391.	719.	939	989	939	791	456	228	165	154	165	228	456	791
960.0	9.6	2226.	1.60	0.	4678.	294677.	999.	3246.	727.	946	999	946	796	457	225	163	152	163	225	457	796
980.0	9.8	2258.	1.60	0.	4689.	297533.	1008.	3101.	736.	953	1008	953	801	459	222	162	151	162	222	459	801
1000.0	10.0	2290.	1.60	0.	4701.	300355.	1017.	2972.	745.	961	1017	961	805	460	220	160	149	160	220	460	805

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
1020.0	10.2	2322.	1.60	0.	4713.	303128.	1026.	2846.	753.	969	1026	969	810	461	217	159	148	159	217	461	810
1040.0	10.4	2354.	1.58	0.	4725.	305775.	1036.	2713.	762.	976	1036	976	816	463	215	157	147	157	215	463	816
1060.0	10.6	2385.	1.58	0.	4737.	308395.	1045.	2576.	771.	983	1045	983	821	464	212	156	145	156	212	464	821
1080.0	10.8	2418.	1.63	0.	4750.	311146.	1055.	2433.	780.	990	1055	990	826	465	210	155	144	155	210	465	826
1100.0	11.0	2452.	1.69	0.	4765.	314065.	1065.	2297.	789.	999	1065	999	831	467	208	153	142	153	208	467	831
1120.0	11.2	2484.	1.64	0.	4779.	316800.	1073.	2191.	797.	1008	1073	1008	837	468	206	152	141	152	206	468	837
1140.0	11.4	2516.	1.60	0.	4792.	319371.	1081.	2082.	805.	1016	1081	1016	843	468	205	151	140	151	205	468	843
1160.0	11.6	2550.	1.67	0.	4806.	322126.	1092.	1938.	814.	1023	1092	1023	848	469	203	150	138	150	203	469	848
1180.0	11.8	2584.	1.68	0.	4819.	325020.	1103.	1780.	825.	1031	1103	1031	853	470	201	149	137	149	201	470	853
1200.0	12.0	2616.	1.62	0.	4831.	327772.	1112.	1651.	834.	1040	1112	1040	857	470	200	147	136	147	200	470	857
1220.0	12.2	2648.	1.61	0.	4842.	330500.	1121.	1535.	842.	1048	1121	1048	861	471	198	146	134	146	198	471	861
1240.0	12.4	2681.	1.64	0.	4854.	333273.	1130.	1416.	851.	1057	1130	1057	865	471	196	145	133	145	196	471	865
1260.0	12.6	2714.	1.66	0.	4865.	335976.	1140.	1290.	860.	1065	1140	1065	869	471	195	144	132	144	195	471	869
1280.0	12.8	2747.	1.64	0.	4877.	338502.	1151.	1146.	870.	1073	1151	1073	875	472	193	143	130	143	193	472	875
1300.0	13.0	2780.	1.68	0.	4889.	341108.	1162.	990.	881.	1080	1162	1080	880	472	191	142	129	142	191	472	880
1320.0	13.2	2815.	1.74	0.	4902.	343911.	1173.	847.	891.	1088	1173	1088	885	473	189	140	128	140	189	473	885
1340.0	13.4	2851.	1.80	0.	4915.	346941.	1184.	710.	902.	1098	1184	1098	889	473	188	139	127	139	188	473	889
1360.0	13.6	2887.	1.78	0.	4928.	349863.	1195.	564.	912.	1107	1195	1107	894	474	186	138	126	138	186	474	894
1380.0	13.8	2921.	1.71	0.	4941.	352539.	1206.	421.	923.	1116	1206	1116	898	474	185	137	124	137	185	474	898
1400.0	14.0	2954.	1.67	0.	4952.	355059.	1216.	294.	933.	1123	1216	1123	903	475	183	136	123	136	183	475	903
1420.0	14.2	2988.	1.71	0.	4965.	357650.	1227.	198.	943.	1132	1227	1132	908	476	182	135	122	135	182	476	908
1440.0	14.4	3024.	1.80	0.	4979.	360461.	1239.	160.	955.	1140	1239	1140	912	477	181	134	121	134	181	477	912
1460.0	14.6	3062.	1.86	0.	4995.	363402.	1251.	145.	966.	1150	1251	1150	917	478	180	133	120	133	180	478	917
1480.0	14.8	3099.	1.85	0.	5010.	366292.	1261.	126.	976.	1160	1261	1160	922	479	179	131	119	131	179	479	922
1500.0	15.0	3136.	1.86	0.	5027.	369162.	1272.	105.	987.	1170	1272	1170	928	481	177	130	118	130	177	481	928
1520.0	15.2	3174.	1.93	0.	5045.	372161.	1286.	77.	999.	1179	1286	1179	933	483	176	129	117	129	176	483	933
1540.0	15.4	3214.	1.96	0.	5063.	375229.	1300.	47.	1013.	1188	1300	1188	937	486	175	128	116	128	175	486	937
1560.0	15.6	3254.	2.00	0.	5082.	378374.	1314.	20.	1026.	1198	1314	1198	942	488	174	127	115	127	174	488	942
1580.0	15.8	3294.	2.01	0.	5100.	381509.	1329.	4.	1040.	1208	1329	1208	947	491	173	126	114	126	173	491	947
1600.0	16.0	3332.	1.90	0.	5116.	384318.	1342.	0.	1052.	1217	1342	1217	951	493	172	125	113	125	172	493	951
1620.0	16.2	3370.	1.90	0.	5132.	387084.	1354.	0.	1064.	1227	1354	1227	956	495	171	124	112	124	171	495	956
1640.0	16.4	3412.	2.12	0.	5151.	390388.	1369.	0.	1079.	1237	1369	1237	961	496	170	123	111	123	170	496	961
1660.0	16.6	3456.	2.19	0.	5170.	393827.	1386.	0.	1094.	1248	1386	1248	966	498	169	122	109	122	169	498	966
1680.0	16.8	3498.	2.08	0.	5187.	396918.	1403.	0.	1110.	1258	1403	1258	971	499	168	121	108	121	168	499	971

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT20107. FT

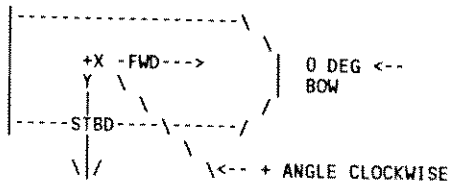
STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE C10A12N tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	-1.	.00	-0.	3762.	127305.	506.	8605.	323.	506	0	506	479	445	405	382	371	382	405	445	479
20.0	.2	60.	3.05	-53.	3773.	136156.	530.	8525.	340.	530	0	517	484	443	397	369	360	373	403	447	498
40.0	.4	110.	2.50	569.	3771.	143076.	544.	8481.	350.	544	0	536	485	434	389	357	350	367	403	451	505
60.0	.6	154.	2.18	-184.	3762.	148499.	556.	8441.	360.	556	0	543	490	428	379	347	341	360	401	457	509
80.0	.8	205.	2.54	-34.	3770.	155098.	570.	8398.	370.	570	0	551	497	425	370	338	332	351	398	462	528
100.0	1.0	259.	2.71	221.	3768.	162640.	584.	8351.	381.	584	0	560	500	423	362	326	316	344	396	468	542
120.0	1.2	305.	2.29	235.	3763.	169011.	600.	8302.	393.	600	0	570	503	420	354	312	308	338	394	471	549
140.0	1.4	348.	2.14	-31.	3768.	174237.	617.	8248.	405.	617	0	579	503	416	345	306	302	332	393	473	559
160.0	1.6	394.	2.32	-439.	3769.	180508.	634.	8191.	419.	634	0	589	505	411	339	299	295	322	392	476	570
180.0	1.8	444.	2.50	-409.	3768.	187466.	652.	8136.	432.	652	0	601	505	407	332	290	285	312	389	480	581
200.0	2.0	492.	2.43	377.	3762.	193518.	662.	8105.	440.	662	0	614	506	404	321	279	274	307	385	487	591
220.0	2.2	545.	2.64	454.	3773.	200523.	683.	8036.	456.	683	0	626	509	401	312	269	266	303	382	495	603
240.0	2.4	587.	2.09	925.	3787.	205994.	697.	7993.	467.	697	0	639	512	399	307	263	261	298	379	500	616
260.0	2.6	633.	2.29	813.	3805.	212100.	718.	7919.	483.	718	0	650	516	395	302	258	255	293	378	503	631
280.0	2.8	675.	2.13	760.	3809.	217649.	731.	7690.	493.	731	0	657	523	393	296	251	248	286	376	505	646
300.0	3.0	717.	2.07	284.	3809.	222657.	745.	7415.	504.	745	0	665	528	388	288	243	242	279	375	506	656
320.0	3.2	761.	2.22	148.	3817.	228118.	759.	7140.	515.	759	0	679	533	383	279	238	237	273	374	510	667
340.0	3.4	804.	2.15	998.	3830.	233277.	767.	6995.	522.	767	0	692	539	379	271	233	232	267	371	518	684
360.0	3.6	840.	1.78	1645.	3835.	237637.	775.	6867.	529.	775	0	701	543	377	266	227	225	263	367	526	694
380.0	3.8	880.	2.02	2771.	3849.	243133.	786.	6666.	538.	786	0	719	544	374	262	221	220	260	364	536	704
400.0	4.0	919.	1.91	3768.	3859.	247735.	795.	6500.	545.	795	0	728	547	371	259	215	214	255	362	541	721
420.0	4.2	952.	1.65	4037.	3859.	251374.	804.	6353.	553.	804	0	736	549	367	254	210	210	250	361	543	731
440.0	4.4	986.	1.70	4349.	3863.	255293.	813.	6195.	561.	813	0	747	552	364	248	206	206	245	358	546	741
460.0	4.6	1020.	1.71	4806.	3871.	259044.	822.	6032.	569.	822	0	757	555	361	243	203	202	241	356	550	753
480.0	4.8	1051.	1.54	4948.	3878.	262291.	832.	5863.	577.	832	0	763	558	357	239	199	199	238	354	555	762
500.0	5.0	1079.	1.42	4726.	3881.	265370.	842.	5684.	585.	842	0	769	562	355	235	195	195	234	352	559	768
520.0	5.2	1107.	1.42	4481.	3883.	268491.	851.	5520.	594.	851	0	774	566	352	231	192	191	230	350	563	773
540.0	5.4	1137.	1.49	4710.	3886.	271651.	859.	5402.	600.	859	0	782	570	349	226	188	188	226	348	568	781
560.0	5.6	1166.	1.45	4922.	3890.	274650.	866.	5292.	607.	866	0	789	573	346	222	185	185	222	346	573	790
580.0	5.8	1194.	1.40	4819.	3895.	277608.	875.	5147.	615.	875	0	796	577	344	218	182	182	218	344	578	796
600.0	6.0	1222.	1.38	4678.	3900.	280406.	884.	4996.	623.	884	0	802	581	341	214	179	179	215	342	583	803
620.0	6.2	1249.	1.34	4652.	3907.	283112.	892.	4867.	630.	892	0	808	584	339	210	176	177	211	341	589	810
640.0	6.4	1275.	1.31	4675.	3914.	285848.	900.	4742.	637.	900	0	815	589	337	207	174	174	208	339	593	817
660.0	6.6	1302.	1.34	4739.	3923.	288629.	908.	4611.	645.	908	0	822	593	334	205	172	172	206	338	598	824
680.0	6.8	1329.	1.37	4864.	3931.	291330.	917.	4475.	652.	917	0	828	597	331	202	169	170	203	336	604	831
700.0	7.0	1357.	1.39	4995.	3940.	294101.	926.	4333.	660.	926	0	836	602	328	199	167	168	201	334	610	839
720.0	7.2	1385.	1.40	5163.	3949.	296820.	935.	4194.	668.	935	0	843	607	324	197	165	165	198	332	615	847
740.0	7.4	1412.	1.35	5264.	3956.	299258.	943.	4070.	676.	943	0	850	611	319	194	163	164	196	330	621	854
760.0	7.6	1437.	1.25	5200.	3961.	301497.	951.	3950.	683.	951	0	856	616	316	191	161	162	193	326	627	859
780.0	7.8	1462.	1.24	5058.	3967.	303722.	960.	3822.	691.	960	0	861	621	314	189	160	160	191	323	633	864
800.0	8.0	1487.	1.28	4993.	3975.	305995.	968.	3693.	699.	968	0	866	625	311	186	158	158	188	320	640	871
820.0	8.2	1513.	1.29	5112.	3985.	308389.	976.	3577.	706.	976	0	872	630	309	184	156	157	186	318	647	878
840.0	8.4	1538.	1.24	5208.	3994.	310680.	984.	3464.	714.	984	0	879	634	307	182	155	155	184	316	652	885
860.0	8.6	1563.	1.22	5161.	4003.	312934.	993.	3337.	722.	993	0	885	639	306	180	153	154	182	314	656	892
880.0	8.8	1587.	1.25	5046.	4012.	315146.	1002.	3191.	731.	1002	0	890	642	304	178	152	153	180	314	660	898
900.0	9.0	1613.	1.25	4911.	4023.	317508.	1012.	3055.	739.	1012	0	896	648	302	176	151	151	179	312	665	904
920.0	9.2	1638.	1.25	4992.	4034.	319819.	1020.	2931.	747.	1020	0	902	652	301	174	149	150	177	310	672	911
940.0	9.4	1663.	1.27	5143.	4045.	322143.	1029.	2805.	756.	1029	0	908	655	299	173	148	148	175	309	680	917
960.0	9.6	1688.	1.25	5237.	4056.	324560.	1038.	2676.	764.	1038	0	916	659	299	171	146	147	173	307	685	924
980.0	9.8	1714.	1.31	5245.	4068.	327008.	1048.	2540.	773.	1048	0	922	664	297	169	145	146	172	306	691	930
1000.0	10.0	1740.	1.30	5190.	4078.	329243.	1058.	2398.	782.	1058	0	928	668	294	168	144	144	170	305	696	938

VESSEL DISP. (FT)	(% MD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
1020.0	10.2	1766.	1.27	5081.	4088.	331444.	1067.	2272.	791.	1067	0	935	674	291	166	142	143	169	304	700	944
1040.0	10.4	1791.	1.25	4954.	4100.	333694.	1075.	2169.	798.	1075	0	941	681	289	165	141	142	167	303	707	950
1060.0	10.6	1817.	1.30	4845.	4113.	336050.	1083.	2060.	806.	1083	0	947	688	286	163	140	140	166	302	715	957
1080.0	10.8	1843.	1.33	4784.	4124.	338358.	1093.	1912.	816.	1093	0	953	693	284	162	139	139	165	301	721	963
1100.0	11.0	1869.	1.32	4804.	4134.	340591.	1104.	1759.	826.	1104	0	959	696	282	161	137	138	163	299	726	970
1120.0	11.2	1894.	1.24	4895.	4141.	342543.	1113.	1636.	835.	1113	0	965	699	279	159	136	137	162	298	730	976
1140.0	11.4	1919.	1.23	4889.	4150.	344592.	1122.	1522.	843.	1122	0	972	704	276	158	135	135	161	297	734	982
1160.0	11.6	1944.	1.27	4715.	4161.	346703.	1131.	1405.	852.	1131	0	977	711	274	157	133	134	160	296	740	988
1180.0	11.8	1971.	1.32	4615.	4173.	348893.	1141.	1279.	861.	1141	0	983	717	271	156	132	133	159	295	745	996
1200.0	12.0	1998.	1.35	4602.	4185.	351162.	1152.	1136.	871.	1152	0	989	722	269	155	131	132	157	293	750	1003
1220.0	12.2	2025.	1.38	4697.	4196.	353494.	1163.	984.	882.	1163	0	996	726	268	154	130	130	156	291	755	1010
1240.0	12.4	2052.	1.35	4845.	4207.	355636.	1173.	843.	892.	1173	0	1002	728	266	153	128	129	156	290	760	1018
1260.0	12.6	2078.	1.30	4960.	4216.	357732.	1184.	709.	902.	1184	0	1010	732	265	152	127	128	155	288	763	1024
1280.0	12.8	2105.	1.32	4999.	4226.	359759.	1195.	563.	912.	1195	0	1015	735	263	151	126	127	154	287	767	1032
1300.0	13.0	2131.	1.32	5026.	4235.	361799.	1206.	422.	923.	1206	0	1022	739	262	150	125	126	153	286	770	1039
1320.0	13.2	2157.	1.30	5123.	4245.	363776.	1216.	297.	932.	1216	0	1028	743	261	149	124	125	152	284	772	1047
1340.0	13.4	2184.	1.36	5253.	4256.	365832.	1227.	200.	943.	1227	0	1034	746	259	148	123	124	151	284	777	1055
1360.0	13.6	2212.	1.41	5237.	4268.	368095.	1238.	162.	954.	1238	0	1041	751	258	147	122	123	150	282	781	1063
1380.0	13.8	2240.	1.39	5180.	4278.	370263.	1250.	146.	965.	1250	0	1048	755	256	146	120	122	149	280	785	1069
1400.0	14.0	2266.	1.31	5259.	4288.	372211.	1260.	127.	975.	1260	0	1055	758	254	145	119	120	148	279	789	1076
1420.0	14.2	2293.	1.34	5380.	4296.	374094.	1271.	107.	986.	1271	0	1061	760	252	144	118	119	148	279	794	1083
1440.0	14.4	2322.	1.44	5427.	4306.	376214.	1284.	80.	998.	1284	0	1068	763	250	143	117	118	147	277	797	1091
1460.0	14.6	2351.	1.47	5463.	4316.	378328.	1298.	51.	1011.	1298	0	1074	766	249	142	116	117	146	275	800	1099
1480.0	14.8	2380.	1.45	5477.	4325.	380456.	1312.	24.	1024.	1312	0	1080	769	248	141	115	116	145	273	802	1106
1500.0	15.0	2411.	1.51	5411.	4336.	382669.	1326.	6.	1038.	1326	0	1087	771	246	140	114	115	144	271	806	1114
1520.0	15.2	2440.	1.47	5498.	4346.	384898.	1340.	0.	1050.	1340	0	1095	773	245	139	113	114	143	270	809	1121
1540.0	15.4	2469.	1.44	5589.	4356.	387027.	1352.	0.	1062.	1352	0	1103	776	243	138	112	113	142	269	813	1128
1560.0	15.6	2499.	1.52	5444.	4368.	389283.	1366.	0.	1076.	1366	0	1110	779	242	137	111	112	141	268	816	1135
1580.0	15.8	2531.	1.59	5149.	4380.	391715.	1382.	0.	1091.	1382	0	1117	783	241	136	110	111	141	267	820	1143
1600.0	16.0	2564.	1.63	4888.	4393.	394183.	1398.	0.	1106.	1398	0	1124	787	240	135	109	110	140	266	823	1151

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT20118. FT

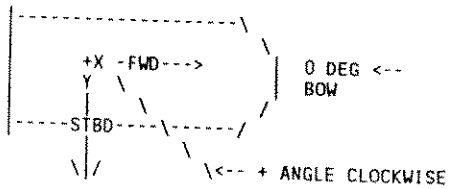
STARTING DISPLACEMENTS : SURGE(FT) = -83.750 SWAY(FT) = -83.750 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE C10S12N tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

C10S12N

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	15.0	45.0	75.0	105.0	135.0	165.0	-165.0	-135.0	-105.0	-75.0	-45.0	-15.0
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	290.0	290.0	290.0	290.0	290.0	290.0	290.0	290.0	290.0	290.0	290.0	290.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	10000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	10000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.750"
LINE LENGTH (FT)	400.0
WEIGHT IN WATER (LB/FT)	40.83
LINE B.S. (KIPS)	2591.0
AREA (SQ IN)	17.72
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.250"
LINE LENGTH (FT)	400.0
WEIGHT IN WATER (LB/FT)	40.83
LINE B.S. (KIPS)	2074.0
AREA (SQ IN)	17.72
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-150.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.250"
LINE LENGTH (FT)	3700.0
WEIGHT IN WATER (LB/FT)	40.83
LINE B.S. (KIPS)	2074.0
AREA (SQ IN)	17.72
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-411.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.250"
LINE LENGTH (FT)	9800.0
WEIGHT IN WATER (LB/FT)	40.83
LINE B.S. (KIPS)	2074.0
AREA (SQ IN)	17.72
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.125"
LINE LENGTH (FT)	2100.0
WEIGHT IN WATER (LB/FT)	217.08
LINE B.S. (KIPS)	2700.0
AREA (SQ IN)	20.63
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	4.250"
LINE LENGTH (FT)	5000.0
WEIGHT IN WATER (LB/FT)	40.83
LINE B.S. (KIPS)	2074.0
AREA (SQ IN)	17.72
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	4.500"
LINE LENGTH (FT)	200.0
WEIGHT IN WATER (LB/FT)	217.08
LINE B.S. (KIPS)	3504.0
AREA (SQ IN)	20.63
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
1	29.9	.0	33.7	11662.00	9938.00	11662.0	.0	.0				
2	33.8	103.1	108.5	16079.81	9938.00	7253.2	103.1	.0	20.75	-561.00	.00	423.83
3	37.7	109.4	115.8	16188.16	9938.00	7235.5	109.4	.0	21.52	-561.00	.00	429.18
4	41.6	115.8	123.0	16289.52	9938.00	7217.8	115.8	.0	22.30	-561.00	.00	434.58
5	45.5	121.6	129.8	16369.05	9938.00	7200.1	121.6	.0	23.03	-561.00	.00	439.91
6	49.4	127.4	136.7	16444.18	9938.00	7182.3	127.4	.0	23.77	-561.00	.00	445.28
7	53.3	133.3	143.5	16515.36	9938.00	7164.6	133.3	.0	24.52	-561.00	.00	450.71
8	57.2	139.1	150.4	16582.95	9938.00	7146.9	139.1	.0	25.26	-561.00	.00	456.17
9	61.1	144.4	156.8	16633.48	9938.00	7129.2	144.4	.0	25.96	-561.00	.00	461.52
10	65.0	149.8	163.3	16681.78	9938.00	7111.4	149.8	.0	26.67	-561.00	.00	466.91
11	72.7	161.0	176.7	16785.05	9938.00	7075.9	161.0	.0	28.12	-561.00	.00	477.94
12	80.5	171.7	189.6	16867.85	9938.00	7040.5	171.7	.0	29.54	-561.00	.00	488.92
13	88.3	182.4	202.6	16944.43	9938.00	7005.0	182.4	.0	30.97	-561.00	.00	500.02
14	96.1	192.6	215.2	17004.53	9938.00	6969.5	192.6	.0	32.35	-561.00	.00	511.03
15	103.9	202.8	227.9	17060.65	9938.00	6934.0	202.8	.0	33.74	-561.00	.00	522.13
16	111.7	213.0	240.5	17113.18	9938.00	6898.4	213.0	.0	35.13	-561.00	.00	533.31
17	119.4	223.2	253.2	17162.45	9938.00	6862.9	223.2	.0	36.52	-561.00	.00	544.56
18	127.2	233.4	265.9	17208.74	9938.00	6827.4	233.4	.0	37.92	-561.00	.00	555.88
19	135.0	243.7	278.6	17252.32	9938.00	6791.9	243.7	.0	39.32	-561.00	.00	567.26
20	142.8	253.4	290.8	17284.68	9938.00	6756.3	253.4	.0	40.67	-561.00	.00	578.49
21	150.6	263.6	303.6	17323.75	9938.00	6720.8	263.6	.0	42.07	-561.00	.00	589.99
22	158.3	273.3	315.9	17352.53	9938.00	6685.3	273.3	.0	43.43	-561.00	.00	601.32
23	166.1	284.0	329.0	17395.64	9938.00	6649.8	284.0	.0	44.88	-561.00	.00	613.14
24	173.9	293.8	341.4	17421.12	9938.00	6614.2	293.8	.0	46.25	-561.00	.00	624.57
25	181.7	303.5	353.7	17445.34	9938.00	6578.7	303.5	.0	47.61	-561.00	.00	636.03
26	189.5	313.7	366.5	17475.60	9938.00	6543.1	313.7	.0	49.02	-561.00	.00	647.76
27	197.2	323.4	378.8	17497.36	9938.00	6507.6	323.4	.0	50.39	-561.00	.00	659.30
28	205.0	334.1	392.0	17531.69	9938.00	6472.0	334.1	.0	51.85	-561.00	.00	671.35
29	212.8	343.9	404.4	17551.16	9938.00	6436.5	343.9	.0	53.22	-561.00	.00	682.95
30	220.6	353.6	416.8	17569.71	9938.00	6400.9	353.6	.0	54.59	-561.00	.00	694.59
31	228.4	363.3	429.1	17587.42	9938.00	6365.4	363.3	.0	55.96	-561.00	.00	706.25
32	236.2	374.0	442.3	17616.65	9938.00	6329.8	374.0	.0	57.43	-561.00	.00	718.45
33	243.9	383.7	454.7	17632.55	9938.00	6294.3	383.7	.0	58.80	-561.00	.00	730.17
34	251.7	393.5	467.1	17647.78	9938.00	6258.7	393.5	.0	60.17	-561.00	.00	741.91
35	259.5	404.2	480.3	17673.78	9938.00	6223.2	404.2	.0	61.64	-561.00	.00	754.20
36	267.3	413.9	492.7	17687.50	9938.00	6187.6	413.9	.0	63.02	-561.00	.00	765.99
37	275.1	424.6	505.9	17711.55	9938.00	6152.1	424.6	.0	64.49	-561.00	.00	778.34
38	282.8	434.3	518.3	17723.94	9938.00	6116.5	434.3	.0	65.87	-561.00	.00	790.18
39	290.6	445.0	531.5	17746.24	9938.00	6080.9	445.0	.0	67.34	-561.00	.00	802.57
40	298.4	454.7	543.9	17757.44	9938.00	6045.3	454.7	.0	68.72	-561.00	.00	814.45
41	306.2	465.4	557.1	17778.17	9938.00	6009.8	465.4	.0	70.20	-561.00	.00	826.89
42	314.0	475.2	569.5	17788.31	9938.00	5974.2	475.2	.0	71.58	-561.00	.00	838.81
43	321.8	485.9	582.7	17807.64	9938.00	5938.6	485.9	.0	73.06	-561.00	.00	851.29
44	329.5	495.6	595.2	17816.83	9938.00	5903.0	495.6	.0	74.44	-561.00	.00	863.24
45	337.3	506.3	608.4	17834.87	9938.00	5867.5	506.3	.0	75.92	-561.00	.00	875.77

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
46	345.1	517.0	621.6	17852.23	9938.00	5831.9	517.0	.0	77.40	-561.00	.00	888.31
47	352.9	526.7	634.0	17860.10	9938.00	5796.3	526.7	.0	78.79	-561.00	.00	900.31
48	360.7	538.4	648.0	17885.02	9938.00	5760.8	538.4	.0	80.36	-561.00	.00	913.46
49	368.4	548.1	660.4	17892.02	9938.00	5725.2	548.1	.0	81.75	-561.00	.00	925.49
50	376.2	558.8	673.7	17907.11	9938.00	5689.6	558.8	.0	83.23	-561.00	.00	938.10
51	384.0	569.5	686.9	17921.68	9938.00	5654.0	569.5	.0	84.72	-561.00	.00	950.73
52	391.8	579.2	699.3	17927.66	9938.00	5618.4	579.2	.0	86.11	-561.00	.00	962.80
53	399.6	590.9	713.3	17949.27	9938.00	5582.8	590.9	.0	87.69	-561.00	.00	976.05
54	407.4	600.6	725.8	17954.59	9938.00	5547.2	600.6	.0	89.08	-561.00	.00	988.13
55	415.1	612.3	739.8	17975.00	9938.00	5511.7	612.3	.0	90.66	-561.00	.00	1001.42
56	422.9	622.0	752.2	17979.71	9938.00	5476.0	622.0	.0	92.05	-561.00	.00	1013.53
57	430.7	633.7	766.2	17999.02	9938.00	5440.5	633.7	.0	93.63	-561.00	.00	1026.84
58	438.5	643.4	778.6	18003.19	9938.00	5404.8	643.4	.0	95.03	-561.00	.00	1038.97
59	446.3	655.1	792.7	18021.49	9938.00	5369.3	655.1	.0	96.61	-561.00	.00	1052.32
60	454.0	665.8	805.9	18032.18	9938.00	5333.7	665.8	.0	98.10	-561.00	.00	1065.08
61	461.8	676.5	819.1	18042.53	9938.00	5298.1	676.5	.0	99.59	-561.00	.00	1077.85
62	469.6	688.2	833.2	18059.35	9938.00	5262.5	688.2	.0	101.18	-561.00	.00	1091.24
63	477.4	697.9	845.6	18062.26	9938.00	5226.8	697.9	.0	102.58	-561.00	.00	1103.42
64	485.2	709.6	859.6	18078.25	9938.00	5062.7	709.6	.0	104.17	-561.00	.00	1116.83
65	493.0	721.3	873.6	18093.74	9938.00	4871.7	721.3	.0	105.76	-561.00	.00	1130.27
66	500.7	732.9	887.7	18108.72	9938.00	4680.6	732.9	.0	107.35	-561.00	.00	1143.71
67	508.5	744.6	901.7	18123.20	9938.00	4489.5	744.6	.0	108.94	-561.00	.00	1157.17
68	516.3	756.3	915.7	18137.18	9938.00	4298.4	756.3	.0	110.53	-561.00	.00	1170.65
69	524.1	768.0	929.7	18150.68	9938.00	4107.2	768.0	.0	112.12	-561.00	.00	1184.14
70	531.9	781.6	945.4	18175.63	9938.00	3916.1	781.6	.0	113.91	-561.00	.00	1198.90
71	539.6	793.2	959.4	18188.00	9938.00	3724.9	793.2	.0	115.51	-561.00	.00	1212.42
72	547.4	806.9	975.0	18211.44	9938.00	3533.7	806.9	.0	117.30	-561.00	.00	1227.22
73	555.2	820.5	990.7	18234.05	9938.00	3342.5	820.5	.0	119.09	-561.00	.00	1242.05
74	563.0	834.1	1006.3	18255.86	9938.00	3151.2	834.1	.0	120.89	-561.00	.00	1256.90
75	570.8	847.7	1022.0	18276.90	9938.00	2960.0	847.7	.0	122.68	-561.00	.00	1271.77
76	578.6	861.3	1037.6	18297.21	9938.00	2768.6	861.3	.0	124.48	-561.00	.00	1286.66
77	586.3	875.0	1053.2	18316.78	9938.00	2577.3	875.0	.0	126.28	-561.00	.00	1301.56
78	594.1	888.6	1068.9	18335.67	9938.00	2385.9	888.6	.0	128.09	-561.00	.00	1316.49
79	601.9	904.1	1086.2	18364.04	9938.00	2194.6	904.1	.0	130.08	-561.00	.00	1332.75
80	609.7	917.8	1101.8	18381.45	9938.00	2003.1	917.8	.0	131.89	-561.00	.00	1347.71
81	617.5	933.3	1119.1	18408.03	9938.00	1811.7	933.3	.0	133.89	-561.00	.00	1364.02
82	625.2	948.9	1136.4	18433.67	9938.00	1620.2	948.9	.0	135.90	-561.00	.00	1380.36
83	633.0	964.4	1153.6	18458.42	9938.00	1428.7	964.4	.0	137.91	-561.00	.00	1396.72
84	640.8	980.0	1170.9	18482.30	9938.00	1237.1	980.0	.0	139.92	-561.00	.00	1413.11
85	648.6	995.6	1188.2	18505.35	9938.00	1045.6	995.6	.0	141.93	-561.00	.00	1429.52
86	656.4	1011.1	1205.5	18527.61	9938.00	853.9	1011.1	.0	143.95	-561.00	.00	1445.95
87	664.2	1026.7	1222.8	18549.11	9938.00	662.3	1026.7	.0	145.97	-561.00	.00	1462.41
88	671.9	1042.3	1240.1	18569.88	9938.00	470.6	1042.3	.0	147.99	-561.00	.00	1478.89
89	679.7	1059.8	1259.0	18598.38	9938.00	278.9	1059.8	.0	150.21	-561.00	.00	1496.77
90	687.5	1075.3	1276.3	18617.63	9938.00	179.4	1075.3	.0	152.23	-561.00	.00	1513.29
91	695.3	1092.8	1295.3	18644.38	9938.00	143.4	1092.8	.0	154.46	-561.00	.00	1531.22
92	703.1	1108.4	1312.6	18662.25	9938.00	107.5	1108.4	.0	156.49	-561.00	.00	1547.79
93	710.8	1125.9	1331.5	18687.40	9938.00	71.5	1125.9	.0	158.72	-561.00	.00	1565.77
94	718.6	1143.4	1350.5	18711.75	9938.00	35.5	1143.4	.0	160.95	-561.00	.00	1583.78
95	726.4	1159.0	1367.8	18727.73	9938.00	.0	1159.0	.1	162.99	-561.00	.00	1600.41
96	734.2	1176.5	1386.8	18750.69	9938.00	.0	1176.5	7.9	165.23	-561.00	.00	1618.47
97	742.0	1192.1	1404.1	18765.62	9938.00	.0	1192.1	15.7	167.27	-561.00	.00	1635.14
98	749.7	1209.6	1423.1	18787.34	9938.00	.0	1209.6	23.4	169.51	-561.00	.00	1653.24
99	757.5	1225.1	1440.4	18801.30	9938.00	.0	1225.1	31.2	171.55	-561.00	.00	1669.94

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	1707.	0.	578.	6759.	253.	290	290	290	290	290	290	290	290	290	290	290	290
20.0	.2	36.	1.78	0.	1704.	4510.	584.	6741.	258.	296	296	296	293	290	286	283	282	283	286	290	293
40.0	.4	70.	1.73	0.	1702.	8834.	590.	6722.	263.	301	303	301	297	290	282	277	275	277	282	290	297
60.0	.6	106.	1.77	0.	1705.	13318.	597.	6698.	270.	308	312	308	300	290	279	272	270	272	279	290	300
80.0	.8	140.	1.71	0.	1710.	17625.	604.	6677.	276.	316	319	316	303	290	275	267	264	267	275	290	303
100.0	1.0	171.	1.54	0.	1712.	21141.	609.	6662.	280.	321	325	321	307	290	272	262	259	262	272	290	307
120.0	1.2	202.	1.58	0.	1715.	24814.	616.	6641.	286.	326	332	326	312	290	270	258	253	258	270	290	312
140.0	1.4	238.	1.77	0.	1723.	29231.	625.	6612.	294.	333	342	333	316	290	267	253	248	253	267	290	316
160.0	1.6	274.	1.84	0.	1732.	34093.	635.	6583.	302.	341	352	341	319	290	264	248	243	248	264	290	319
180.0	1.8	310.	1.77	0.	1740.	38750.	642.	6559.	309.	350	361	350	322	290	262	244	238	244	262	290	322
200.0	2.0	344.	1.73	0.	1748.	43197.	651.	6532.	317.	358	370	358	325	290	259	240	233	240	259	290	325
220.0	2.2	379.	1.74	0.	1756.	47599.	661.	6502.	325.	365	381	365	328	291	256	235	228	235	256	291	328
240.0	2.4	415.	1.80	0.	1767.	52139.	668.	6483.	331.	375	388	375	333	291	254	231	224	231	254	291	333
260.0	2.6	452.	1.82	0.	1779.	56581.	678.	6453.	339.	383	399	383	338	291	251	227	219	227	251	291	338
280.0	2.8	488.	1.82	0.	1790.	60940.	690.	6415.	350.	389	412	389	343	291	248	223	215	223	248	291	343
300.0	3.0	529.	2.06	0.	1807.	66203.	703.	6375.	361.	399	426	399	348	291	246	219	210	219	246	291	348
320.0	3.2	570.	2.01	0.	1824.	71365.	712.	6348.	369.	410	436	410	353	291	243	216	206	216	243	291	353
340.0	3.4	611.	2.05	0.	1841.	76769.	723.	6318.	377.	422	447	422	358	291	241	212	202	212	241	291	358
360.0	3.6	653.	2.10	0.	1860.	82271.	738.	6271.	390.	433	463	433	362	291	239	208	199	208	239	291	362
380.0	3.8	688.	1.74	0.	1872.	86371.	749.	6240.	399.	440	474	440	366	291	236	205	195	205	236	291	366
400.0	4.0	732.	2.20	0.	1895.	91992.	762.	6201.	410.	453	488	453	372	292	234	201	192	201	234	292	372
420.0	4.2	776.	2.24	0.	1919.	97759.	773.	6167.	420.	467	500	467	378	292	232	198	189	198	232	292	378
440.0	4.4	815.	1.95	0.	1936.	102528.	789.	6121.	433.	475	517	475	382	292	229	195	185	195	229	292	382
460.0	4.6	856.	2.03	0.	1955.	107744.	800.	6088.	443.	488	529	488	386	292	227	192	182	192	227	292	386
480.0	4.8	899.	2.17	0.	1977.	113328.	818.	6036.	457.	499	547	499	390	292	225	190	179	190	225	292	390
500.0	5.0	943.	2.20	0.	2001.	118800.	832.	5995.	470.	512	562	512	396	292	223	187	176	187	223	292	396
520.0	5.2	989.	2.31	0.	2027.	124463.	847.	5950.	483.	524	579	524	402	293	220	184	174	184	220	293	402
540.0	5.4	1041.	2.57	0.	2059.	130944.	868.	5889.	500.	538	600	538	409	293	218	181	171	181	218	293	409
560.0	5.6	1084.	2.19	0.	2084.	136106.	880.	5856.	510.	551	613	551	416	293	216	179	168	179	216	293	416
580.0	5.8	1142.	2.85	0.	2121.	143484.	902.	5791.	528.	568	636	568	424	293	214	176	166	176	214	293	424
600.0	6.0	1181.	1.97	0.	2142.	147852.	911.	5768.	536.	580	645	580	430	293	212	174	163	174	212	293	430
620.0	6.2	1241.	3.01	0.	2181.	156112.	935.	5697.	556.	600	671	600	435	294	210	172	161	172	210	294	435
640.0	6.4	1284.	2.14	0.	2203.	161179.	952.	5650.	571.	611	688	611	439	294	208	170	158	170	208	294	439
660.0	6.6	1338.	2.73	0.	2238.	168113.	970.	5600.	586.	629	707	629	446	294	206	167	155	167	206	294	446
680.0	6.8	1391.	2.61	0.	2271.	174167.	994.	5533.	605.	641	731	641	454	294	204	165	153	165	204	294	454
700.0	7.0	1453.	3.13	0.	2314.	182058.	1017.	5466.	625.	661	756	661	463	295	202	163	150	163	202	295	463
720.0	7.2	1505.	2.58	0.	2346.	188237.	1037.	5411.	642.	675	776	675	470	295	201	161	148	161	201	295	470
740.0	7.4	1564.	2.95	0.	2384.	196053.	1053.	5366.	656.	698	794	698	475	295	199	158	146	158	199	295	475
760.0	7.6	1612.	2.42	0.	2411.	201553.	1078.	5298.	676.	708	819	708	481	295	197	156	144	156	197	295	481
780.0	7.8	1683.	3.53	0.	2462.	210499.	1104.	5225.	698.	731	846	731	491	296	196	154	142	154	196	296	491
800.0	8.0	1740.	2.86	0.	2499.	217592.	1120.	5013.	713.	752	863	752	497	296	194	152	140	152	194	296	497
820.0	8.2	1784.	2.19	0.	2522.	222338.	1138.	4761.	728.	763	882	763	503	296	193	150	138	150	193	296	503
840.0	8.4	1854.	3.50	0.	2573.	231213.	1156.	4500.	744.	791	901	791	512	297	191	148	137	148	191	297	512
860.0	8.6	1908.	2.70	0.	2609.	237072.	1176.	4222.	761.	806	921	806	521	297	190	146	135	146	190	297	521
880.0	8.8	1952.	2.19	0.	2633.	241669.	1191.	4020.	774.	819	937	819	527	297	188	145	133	145	188	297	527
900.0	9.0	2035.	4.15	0.	2695.	252736.	1206.	3810.	788.	858	953	858	535	298	187	143	131	143	187	298	535
920.0	9.2	2078.	2.15	0.	2721.	256298.	1222.	3593.	802.	866	970	866	546	298	185	141	129	141	185	298	546
940.0	9.4	2125.	2.37	0.	2748.	261339.	1234.	3441.	813.	882	983	882	552	298	184	140	127	140	184	298	552
960.0	9.6	2177.	2.61	0.	2781.	266663.	1248.	3270.	826.	899	997	899	562	299	182	138	126	138	182	299	562
980.0	9.8	2232.	2.74	0.	2817.	272177.	1261.	3092.	838.	916	1011	916	573	299	181	136	124	136	181	299	573
1000.0	10.0	2282.	2.51	0.	2847.	277443.	1276.	2908.	851.	933	1026	933	579	299	180	135	122	135	180	299	579

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
1020.0	10.2	2329.	2.36	0.	2876.	281285.	1291.	2718.	865.	943	1042	943	592	300	178	133	121	133	178	300	592
1040.0	10.4	2386.	2.85	0.	2914.	287016.	1306.	2518.	879.	962	1058	962	602	300	177	132	119	132	177	300	602
1060.0	10.6	2430.	2.18	0.	2937.	290985.	1320.	2339.	892.	973	1073	973	609	301	176	130	118	130	176	301	609
1080.0	10.8	2472.	2.08	0.	2958.	294594.	1332.	2207.	903.	985	1085	985	616	301	174	129	117	129	174	301	616
1100.0	11.0	2525.	2.66	0.	2994.	298968.	1348.	1994.	918.	997	1103	997	630	301	173	127	115	127	173	301	630
1120.0	11.2	2570.	2.28	0.	3020.	302903.	1361.	1848.	930.	1010	1116	1010	639	302	172	126	114	126	172	302	639
1140.0	11.4	2613.	2.11	0.	3039.	306872.	1373.	1705.	942.	1023	1129	1023	645	302	171	124	113	124	171	302	643
1160.0	11.6	2665.	2.62	0.	3074.	310973.	1386.	1553.	954.	1037	1142	1037	658	303	170	123	111	123	170	303	658
1180.0	11.8	2716.	2.54	0.	3106.	315163.	1399.	1397.	967.	1051	1157	1051	670	303	169	122	110	122	169	303	670
1200.0	12.0	2764.	2.41	0.	3132.	319504.	1413.	1236.	980.	1066	1171	1066	677	304	167	120	109	120	167	304	677
1220.0	12.2	2814.	2.48	0.	3164.	323098.	1427.	1070.	994.	1077	1186	1077	691	304	166	119	107	119	166	304	691
1240.0	12.4	2864.	2.52	0.	3196.	326772.	1442.	899.	1007.	1089	1201	1089	705	305	165	118	106	118	165	305	705
1260.0	12.6	2913.	2.42	0.	3220.	331323.	1457.	722.	1022.	1104	1217	1104	709	305	164	117	105	117	164	305	709
1280.0	12.8	2969.	2.81	0.	3259.	335024.	1473.	537.	1037.	1116	1234	1116	728	306	163	116	103	116	163	306	728
1300.0	13.0	3011.	2.08	0.	3277.	338426.	1487.	378.	1050.	1127	1248	1127	733	307	162	114	102	114	162	307	733
1320.0	13.2	3064.	2.65	0.	3313.	341879.	1500.	254.	1063.	1139	1263	1139	750	307	161	113	101	113	161	307	750
1340.0	13.4	3112.	2.39	0.	3339.	345599.	1517.	168.	1079.	1151	1280	1151	758	308	159	112	101	112	159	308	758
1360.0	13.6	3162.	2.52	0.	3371.	349021.	1530.	145.	1091.	1164	1294	1164	772	309	158	111	101	111	158	309	772
1380.0	13.8	3221.	2.93	0.	3411.	353017.	1548.	107.	1109.	1177	1313	1177	790	309	157	110	101	110	157	309	790
1400.0	14.0	3266.	2.25	0.	3432.	356664.	1562.	78.	1123.	1190	1328	1190	795	310	156	109	101	109	156	310	795
1420.0	14.2	3319.	2.66	0.	3465.	360292.	1576.	51.	1136.	1204	1343	1204	809	311	155	108	101	108	155	311	809
1440.0	14.4	3373.	2.72	0.	3496.	364493.	1595.	10.	1154.	1218	1362	1218	819	312	154	107	101	107	154	312	819
1460.0	14.6	3425.	2.57	0.	3522.	368596.	1612.	0.	1170.	1233	1380	1233	826	312	153	106	101	106	153	312	826
1480.0	14.8	3498.	3.68	0.	3581.	372621.	1632.	0.	1189.	1246	1400	1246	858	313	151	104	101	104	151	313	858
1500.0	15.0	3541.	2.16	0.	3598.	376040.	1649.	0.	1205.	1258	1419	1258	860	314	150	103	101	103	150	314	860

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT18802. FT

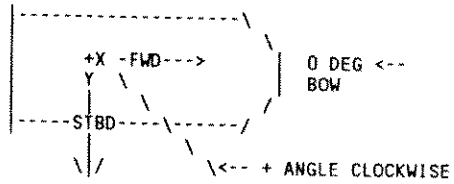
STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE C10S12N tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)
.0	.0	1.	.00	0.	1555.	65063.	633.	6588.	301.
20.0	.2	29.	1.39	-30.	1556.	67923.	641.	6563.	308.
40.0	.4	57.	1.40	12.	1558.	70907.	649.	6539.	315.
60.0	.6	88.	1.54	36.	1564.	74318.	659.	6507.	324.
80.0	.8	116.	1.44	437.	1568.	77248.	666.	6488.	329.
100.0	1.0	145.	1.43	561.	1572.	80316.	674.	6463.	337.
120.0	1.2	175.	1.50	224.	1578.	83627.	686.	6426.	347.
140.0	1.4	206.	1.57	-22.	1587.	87221.	699.	6388.	357.
160.0	1.6	239.	1.62	176.	1597.	90786.	710.	6355.	366.
180.0	1.8	267.	1.43	400.	1605.	93875.	718.	6331.	374.
200.0	2.0	300.	1.63	123.	1617.	97759.	733.	6287.	386.
220.0	2.2	333.	1.63	143.	1630.	101517.	745.	6248.	397.
240.0	2.4	362.	1.46	269.	1639.	104582.	755.	6221.	405.
260.0	2.6	395.	1.65	62.	1653.	108217.	770.	6177.	417.
280.0	2.8	427.	1.64	438.	1666.	111741.	781.	6145.	427.
300.0	3.0	461.	1.67	373.	1680.	115587.	796.	6101.	439.
320.0	3.2	494.	1.66	227.	1695.	119293.	811.	6056.	452.
340.0	3.4	526.	1.60	314.	1709.	122762.	823.	6020.	463.
360.0	3.6	565.	1.94	384.	1731.	127242.	842.	5965.	478.
380.0	3.8	598.	1.65	243.	1747.	131085.	858.	5920.	491.
400.0	4.0	632.	1.68	8.	1764.	134816.	874.	5872.	505.
420.0	4.2	668.	1.81	616.	1784.	138974.	888.	5833.	517.
440.0	4.4	702.	1.72	207.	1802.	142810.	906.	5781.	532.
460.0	4.6	742.	1.98	442.	1825.	147405.	924.	5730.	547.
480.0	4.8	777.	1.78	465.	1844.	151581.	940.	5685.	560.
500.0	5.0	822.	2.21	-10.	1871.	156711.	965.	5611.	582.
520.0	5.2	857.	1.77	688.	1890.	160738.	978.	5578.	592.
540.0	5.4	895.	1.88	754.	1911.	164901.	995.	5528.	607.
560.0	5.6	941.	2.30	956.	1941.	170350.	1019.	5461.	627.
580.0	5.8	987.	2.31	426.	1970.	175668.	1048.	5380.	651.
600.0	6.0	1021.	1.73	1140.	1990.	179331.	1060.	5347.	662.
620.0	6.2	1060.	1.92	1604.	2014.	183731.	1077.	5302.	676.
640.0	6.4	1113.	2.64	212.	2048.	189818.	1115.	5171.	708.
660.0	6.6	1147.	1.72	1424.	2069.	193541.	1125.	4952.	716.
680.0	6.8	1187.	1.98	1821.	2093.	197726.	1142.	4701.	732.
700.0	7.0	1228.	2.06	2235.	2118.	202139.	1160.	4443.	747.
720.0	7.2	1272.	2.19	2787.	2147.	207184.	1180.	4163.	764.
740.0	7.4	1309.	1.86	3539.	2169.	210596.	1193.	3996.	776.
760.0	7.6	1353.	2.17	4350.	2198.	215545.	1210.	3756.	791.
780.0	7.8	1389.	1.81	4749.	2219.	219125.	1224.	3572.	804.
800.0	8.0	1432.	2.17	6368.	2248.	223646.	1236.	3419.	815.
820.0	8.2	1470.	1.88	7103.	2271.	227655.	1250.	3246.	827.
840.0	8.4	1516.	2.31	8773.	2304.	232361.	1263.	3073.	840.
860.0	8.6	1552.	1.80	9162.	2325.	236042.	1277.	2891.	853.
880.0	8.8	1594.	2.08	10176.	2353.	240151.	1292.	2703.	866.
900.0	9.0	1632.	1.93	10820.	2377.	244071.	1307.	2506.	880.
920.0	9.2	1686.	2.67	13692.	2417.	249822.	1321.	2333.	893.
940.0	9.4	1714.	1.43	13873.	2429.	252098.	1332.	2203.	904.
960.0	9.6	1754.	1.97	14453.	2452.	255897.	1349.	1993.	919.
980.0	9.8	1791.	1.86	15411.	2474.	259311.	1361.	1848.	930.
1000.0	10.0	1829.	1.91	16415.	2498.	262860.	1373.	1708.	942.

	LINE LOAD (KIPS) LINE NUMBER											
	1	2	3	4	5	6	7	8	9	10	11	12
350	0	350	322	290	261	244	238	244	261	290	322	
359	0	356	323	288	257	239	233	241	261	293	327	
368	0	362	324	286	253	234	229	237	259	295	333	
379	0	369	326	284	250	230	224	234	258	296	340	
386	0	376	327	281	246	225	220	231	257	299	348	
395	0	382	329	279	242	221	216	228	256	301	355	
408	0	387	331	277	238	216	212	225	255	303	361	
421	0	394	334	276	235	212	207	221	254	305	368	
433	0	402	335	273	231	208	204	219	253	309	377	
442	0	410	337	271	228	204	200	216	252	312	384	
457	0	419	339	270	224	200	197	213	252	315	389	
471	0	428	341	268	221	197	194	210	251	317	397	
481	0	435	344	267	218	193	191	207	249	319	407	
497	0	441	347	265	215	190	187	205	248	321	417	
509	0	451	348	263	211	187	184	202	248	323	428	
524	0	461	350	261	208	184	182	200	247	325	435	
540	0	470	351	259	205	181	179	198	247	328	443	
553	0	477	355	258	202	178	176	195	245	330	454	
573	0	487	356	257	199	175	173	193	244	333	467	
589	0	497	359	255	197	172	171	191	243	336	474	
607	0	505	361	254	195	170	168	189	242	339	483	
621	0	518	363	253	192	167	166	187	241	343	495	
640	0	526	365	251	190	165	164	185	240	347	503	
659	0	538	368	250	188	162	161	183	239	350	517	
676	0	549	371	249	185	160	158	180	238	353	526	
702	0	559	374	247	183	157	156	179	237	356	538	
715	0	573	376	246	181	155	153	177	237	359	550	
734	0	583	379	245	179	152	151	175	236	361	563	
758	0	599	381	243	176	150	149	173	235	365	576	
788	0	609	383	242	174	148	147	171	234	367	590	
801	0	621	386	241	173	146	145	169	233	370	604	
818	0	637	387	239	171	144	143	168	232	376	614	
858	0	644	390	239	169	142	141	166	231	377	628	
868	0	661	391	237	167	140	139	165	230	381	641	
886	0	673	394	236	165	138	138	163	230	384	655	
905	0	685	398	235	164	136	136	161	229	386	672	
926	0	704	400	233	161	135	134	160	228	390	685	
939	0	712	404	232	160	133	132	158	227	393	705	
957	0	731	407	230	158	131	131	156	227	398	718	
972	0	741	411	229	156	129	129	154	226	402	732	
984	0	758	415	228	154	128	127	153	225	406	754	
999	0	775	416	226	152	126	126	151	225	413	765	
1013	0	792	422	226	150	124	124	150	224	416	790	
1028	0	805	425	225	149	123	123	148	223	422	801	
1043	0	819	428	223	147	121	121	147	223	427	819	
1059	0	834	431	222	146	120	120	146	222	431	832	
1074	0	861	433	221	144	118	118	145	222	434	861	
1085	0	868	436	220	143	117	117	143	221	437	870	
1103	0	882	438	219	142	116	116	142	220	440	884	
1116	0	895	441	218	140	114	114	141	219	445	899	
1128	0	909	444	217	139	113	113	140	219	451	915	

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
1020.0	10.2	1868.	1.97	17370.	2524.	266680.	1386.	1559.	954.	1142	0	924	449	216	138	112	112	138	218	456	930
1040.0	10.4	1903.	1.72	17606.	2543.	269740.	1399.	1404.	966.	1156	0	934	452	214	136	110	111	137	218	464	940
1060.0	10.6	1938.	1.76	17817.	2564.	272833.	1412.	1248.	979.	1170	0	944	458	214	135	109	109	136	217	468	952
1080.0	10.8	1977.	1.97	18602.	2587.	276420.	1426.	1084.	992.	1185	0	958	462	213	134	108	108	135	216	472	967
1100.0	11.0	2012.	1.73	18689.	2605.	279462.	1441.	915.	1006.	1200	0	969	466	211	132	107	107	134	216	476	977
1120.0	11.2	2046.	1.73	18764.	2622.	282302.	1456.	742.	1020.	1216	0	977	469	210	131	105	106	133	215	480	988
1140.0	11.4	2082.	1.81	18954.	2641.	285483.	1471.	562.	1035.	1232	0	988	473	210	130	104	104	131	214	485	998
1160.0	11.6	2118.	1.78	19330.	2660.	288506.	1485.	399.	1048.	1246	0	998	476	209	129	103	103	130	213	491	1009
1180.0	11.8	2153.	1.72	19794.	2677.	291363.	1497.	276.	1060.	1259	0	1009	479	208	128	101	102	129	213	495	1020
1200.0	12.0	2189.	1.84	19826.	2698.	294368.	1514.	176.	1076.	1277	0	1019	482	207	126	101	101	128	212	500	1033
1220.0	12.2	2223.	1.68	20050.	2719.	297144.	1527.	149.	1089.	1291	0	1030	488	206	125	101	101	127	212	504	1044
1240.0	12.4	2262.	1.93	20126.	2744.	300395.	1544.	116.	1105.	1309	0	1041	493	205	124	101	101	126	211	510	1057
1260.0	12.6	2298.	1.83	20475.	2767.	303517.	1559.	85.	1119.	1324	0	1054	497	205	123	101	101	125	210	516	1069
1280.0	12.8	2331.	1.66	20745.	2785.	306090.	1573.	58.	1133.	1339	0	1065	499	203	122	101	101	124	210	522	1079
1300.0	13.0	2366.	1.75	20697.	2804.	308825.	1589.	23.	1149.	1356	0	1075	503	203	121	101	101	123	209	526	1089
1320.0	13.2	2405.	1.91	20610.	2827.	311799.	1607.	0.	1166.	1375	0	1084	508	202	120	101	101	122	208	530	1103
1340.0	13.4	2443.	1.93	20464.	2852.	315145.	1625.	0.	1182.	1393	0	1097	515	201	119	101	101	121	208	537	1113
1360.0	13.6	2482.	1.96	20185.	2876.	318412.	1644.	0.	1200.	1413	0	1108	519	200	118	101	101	120	207	545	1123

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT18809. FT

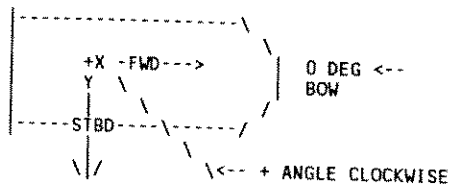
STARTING DISPLACEMENTS : SURGE(FT) =-127.500 SWAY(FT) =-127.500 YAW(DEG) = .000

Appendix L.2 - Alternate Designs

DEEPWATER, ARAMID MOORING LINE JIP
CASE T8A12n tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT	-	.00
LINE ATTACHMENT W.R.T. WATER LINE	-	-62.0 FT
ALLOWABLE LINE LENGTH ON BOTTOM	-	90.0 FT
DIRECTION OF VESSEL TRANSLATION	-	45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

T2A12N

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	15.0	45.0	75.0	105.0	135.0	165.0	-165.0	-135.0	-105.0	-75.0	-45.0	-15.0
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	8000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	8000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.625"
LINE LENGTH (FT)	300.0
WEIGHT IN WATER (LB/FT)	57.26
LINE B.S. (KIPS)	3634.0
AREA (SQ IN)	24.85
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.625"
LINE LENGTH (FT)	1500.0
WEIGHT IN WATER (LB/FT)	57.26
LINE B.S. (KIPS)	3634.0
AREA (SQ IN)	24.85
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.625"
LINE LENGTH (FT)	150.0
WEIGHT IN WATER (LB/FT)	57.26
LINE B.S. (KIPS)	3634.0
AREA (SQ IN)	24.85
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	ARAMID
LINE SIZE (IN)	5.938"
LINE LENGTH (FT)	7450.0
WEIGHT IN WATER (LB/FT)	2.17
LINE B.S. (KIPS)	3561.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	142000.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	6.250"
LINE LENGTH (FT)	250.0
WEIGHT IN WATER (LB/FT)	322.85
LINE B.S. (KIPS)	3623.0
AREA (SQ IN)	30.68
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	10800.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.625"
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	57.26
LINE B.S. (KIPS)	3634.0
AREA (SQ IN)	24.85
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
1	124.7	.0	124.7	2712.00	7938.00	2712.0	.0	.0				
2	134.7	9.8	135.0	5792.50	7938.00	1228.9	9.8	.0	1.63	.00	.00	.00
3	144.7	17.5	145.7	6012.00	7938.00	1198.0	17.5	.0	2.41	.00	.00	.00
4	154.7	24.9	156.6	6114.45	7938.00	1167.0	24.9	.0	3.19	.00	.00	.00
5	164.7	32.2	167.8	6183.83	7938.00	1136.1	32.2	.0	3.97	.00	.00	.00
6	174.7	39.4	179.0	6236.75	7938.00	1105.1	39.4	.0	4.74	.00	.00	.00
7	184.7	46.7	190.5	6279.21	7938.00	1074.2	46.7	.0	5.52	.00	.00	.00
8	194.7	54.0	202.0	6316.31	7938.00	1043.2	54.0	.0	6.30	.00	.00	.00
9	204.7	61.4	213.7	6351.22	7938.00	1012.3	61.4	.0	7.09	.00	.00	.00
10	214.7	68.8	225.4	6380.04	7938.00	1000.3	68.8	.0	7.87	.00	122.30	.00
11	234.7	83.4	249.0	6418.68	7938.00	1000.3	83.4	.0	9.44	.00	496.19	.00
12	254.7	97.8	272.8	6443.10	7938.00	1000.4	97.8	.0	11.01	.00	783.96	.00
13	274.7	112.1	296.7	6458.31	7938.00	1000.5	112.1	.0	12.56	.00	1256.19	.00
14	294.7	126.4	320.6	6471.56	7938.00	1000.5	126.4	.0	14.12	.00	1636.19	.00
15	314.7	140.6	344.6	6481.13	7938.00	1000.6	140.6	.0	15.68	.00	2016.19	.00
16	334.7	154.8	368.7	6489.74	7938.00	1000.6	154.8	.0	17.24	.00	2143.96	.00
17	354.7	169.0	392.9	6495.79	7938.00	1000.7	169.0	.0	18.80	.00	2630.07	.00
18	374.7	183.1	417.0	6501.37	7938.00	1000.8	183.1	.0	20.35	.00	2990.07	.00
19	394.7	197.3	441.2	6506.51	7938.00	1000.8	197.3	.0	21.91	.00	3350.07	.00
20	414.7	211.5	465.5	6512.65	7938.00	1000.9	211.5	.0	23.47	.00	3503.96	.00
21	434.7	225.6	489.7	6515.71	7938.00	1000.9	225.6	.0	25.03	.00	4070.07	.00
22	454.7	239.8	514.0	6521.06	7938.00	1001.0	239.8	.0	26.59	.00	6399.00	.00
23	474.7	253.8	538.3	6523.70	7938.00	1001.0	253.8	.0	28.15	.00	6652.88	.00
24	494.7	268.1	562.6	6528.41	7938.00	1001.1	268.1	.0	29.71	.00	7439.00	.00
25	514.7	282.1	586.9	6530.76	7938.00	1001.2	282.1	.0	31.27	.00	4897.84	.00
26	534.7	296.3	611.3	6534.96	7938.00	1001.2	296.3	.0	32.84	.00	8479.00	.00
27	554.7	310.6	635.7	6538.91	7938.00	1001.3	310.6	.0	34.40	.00	8999.00	.00
28	574.7	324.6	660.0	6540.84	7938.00	1001.3	324.6	.0	35.96	.00	5857.84	.00
29	594.7	339.0	684.5	6546.15	7938.00	1001.4	339.0	.0	37.53	.00	8494.54	.00
30	614.7	353.1	708.8	6547.84	7938.00	1001.5	353.1	.0	39.09	.00	10152.88	.00
31	634.7	367.3	733.3	6551.07	7938.00	1001.5	367.3	.0	40.66	.00	11079.00	.00
32	654.7	381.6	757.8	6555.70	7938.00	1001.6	381.6	.0	42.24	.00	9814.54	.00
33	674.7	395.7	782.1	6557.12	7938.00	1001.6	395.7	.0	43.80	.00	11652.88	.00
34	694.7	410.1	806.7	6561.37	7938.00	1001.7	410.1	.0	45.37	.00	10694.54	.00
35	714.7	424.1	831.0	6562.63	7938.00	1001.7	424.1	.0	46.94	.00	8097.84	.00
36	734.7	438.5	855.6	6566.58	7938.00	1001.8	438.5	.0	48.51	.00	11574.54	.00
37	754.7	452.9	880.1	6570.35	7938.00	1001.9	452.9	.0	50.09	.00	12014.54	.00
38	774.7	467.0	904.5	6571.42	7938.00	1001.9	467.0	.0	51.66	.00	9057.84	.00
39	794.7	481.3	929.1	6574.95	7938.00	1002.0	481.3	.0	53.23	.00	12894.54	.00
40	814.7	495.7	953.6	6578.33	7938.00	1002.0	495.7	.0	54.81	.00	13334.54	.00
41	834.7	510.1	978.2	6581.59	7938.00	1002.1	510.1	.0	56.39	.00	13774.54	.00
42	854.7	524.5	1002.7	6584.70	7938.00	1002.2	524.5	.0	57.97	.00	14214.54	.00
43	874.7	538.8	1027.3	6587.72	7938.00	1002.2	538.8	.0	59.55	.00	14654.54	.00
44	894.7	553.2	1051.9	6590.65	7938.00	1002.3	553.2	.0	61.13	.00	15094.54	.00
45	914.7	567.6	1076.4	6593.47	7938.00	1002.3	567.6	.0	62.71	.00	15534.54	.00

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
46	934.7	582.0	1101.0	6596.19	7938.00	1002.4	582.0	.0	64.29	.00	15974.54	.00
47	954.7	596.3	1125.6	6598.86	7938.00	1002.5	596.3	.0	65.88	.00	16414.54	.00
48	974.7	610.7	1150.2	6601.44	7938.00	1002.5	610.7	.0	67.46	.00	16854.54	.00
49	994.7	625.1	1174.8	6603.93	7938.00	1002.6	625.1	.0	69.04	.00	17294.54	.00
50	1014.7	639.5	1199.3	6606.37	7938.00	1002.6	639.5	.0	70.62	.00	17734.54	.00
51	1034.7	653.8	1223.9	6608.74	7938.00	1002.7	653.8	.0	72.21	.00	18174.54	.00
52	1054.7	668.2	1248.5	6611.07	7938.00	1002.8	668.2	.0	73.79	.00	17768.42	.00
53	1074.7	682.9	1273.3	6615.05	7938.00	1002.8	682.9	.0	75.39	.00	19920.65	.00
54	1094.7	697.3	1297.9	6617.23	7938.00	1002.9	697.3	.0	76.98	.00	19494.54	.00
55	1114.7	711.6	1322.5	6619.34	7938.00	1002.9	711.6	.0	78.56	.00	19028.42	.00
56	1134.7	726.3	1347.2	6623.06	7938.00	1003.0	726.3	.0	80.16	.00	21300.65	.00
57	1154.7	740.7	1371.8	6625.07	7938.00	1003.0	740.7	.0	81.75	.00	19868.42	.00
58	1174.7	755.4	1396.6	6628.62	7938.00	1003.1	755.4	.0	83.35	.00	22220.65	.00
59	1194.7	769.8	1421.2	6630.53	7938.00	1003.2	769.8	.0	84.94	.00	20708.42	.00
60	1214.7	784.8	1446.1	6635.37	7938.00	1003.2	784.8	.0	86.55	.00	15091.73	.00
61	1234.7	799.1	1470.7	6637.15	7938.00	1003.3	799.1	.0	88.14	.00	22574.54	.00
62	1254.7	813.5	1495.3	6638.95	7938.00	1003.4	813.5	.0	89.73	.00	21968.42	.00
63	1274.7	828.5	1520.3	6643.52	7938.00	1003.4	828.5	.0	91.35	.00	15991.73	.00
64	1294.7	842.9	1544.9	6645.16	7938.00	1003.5	842.9	.0	92.94	.00	23894.54	.00
65	1314.7	857.6	1569.6	6648.19	7938.00	1003.5	857.6	.0	94.54	.00	25440.65	.00
66	1334.7	872.3	1594.4	6651.13	7938.00	1003.6	872.3	.0	96.14	.00	33783.46	.00
67	1354.7	886.6	1619.0	6652.67	7938.00	1003.7	886.6	.0	97.74	.00	24068.42	.00
68	1374.7	901.6	1644.0	6656.82	7938.00	1003.7	901.6	.0	99.36	.00	17491.73	.00
69	1394.7	916.0	1668.6	6658.32	7938.00	1003.8	916.0	.0	100.95	.00	24908.42	.00
70	1414.7	931.0	1693.5	6662.30	7938.00	1003.8	931.0	.0	102.57	.00	18091.73	.00
71	1434.7	945.4	1718.1	6663.70	7938.00	1003.9	945.4	.0	104.16	.00	25748.42	.00
72	1454.7	960.4	1743.1	6667.59	7938.00	1004.0	960.4	.0	105.78	.00	18691.73	.00
73	1474.7	975.1	1767.9	6670.14	7938.00	1004.0	975.1	.0	107.39	.00	29120.65	.00
74	1494.7	990.1	1792.8	6673.78	7938.00	1004.1	990.1	.0	109.01	.00	19291.73	.00
75	1514.7	1004.5	1817.4	6675.14	7938.00	1004.1	1004.5	.0	110.61	.00	28734.54	.00
76	1534.7	1019.5	1842.4	6678.68	7938.00	1004.2	1019.5	.0	112.23	.00	19891.73	.00
77	1554.7	1034.5	1867.4	6682.25	7938.00	1004.3	1034.5	.0	113.85	.00	20191.73	.00
78	1574.7	1048.8	1892.0	6683.42	7938.00	1004.3	1048.8	.0	115.45	.00	27322.30	.00
79	1594.7	1063.8	1916.9	6686.83	7938.00	1004.4	1063.8	.0	117.08	.00	20791.73	.00
80	1614.7	1078.8	1941.9	6690.21	7938.00	1004.4	1078.8	.0	118.70	.00	21091.73	.00
81	1634.7	1093.2	1966.5	6691.27	7938.00	1004.5	1093.2	.0	120.30	.00	29948.42	.00
82	1654.7	1108.2	1991.5	6694.56	7938.00	1004.6	1108.2	.0	121.93	.00	21691.73	.00
83	1674.7	1123.2	2016.4	6697.70	7938.00	1004.6	1123.2	.0	123.55	.00	21991.73	.00
84	1694.7	1138.2	2041.4	6700.82	7938.00	1004.7	1138.2	.0	125.18	.00	22291.73	.00
85	1714.7	1153.2	2066.4	6703.93	7938.00	1004.8	1153.2	.0	126.80	.00	22591.73	.00
86	1734.7	1168.2	2091.3	6706.96	7938.00	1004.8	1168.2	.0	128.43	.00	22891.73	.00
87	1754.7	1182.6	2116.0	6707.95	7938.00	1004.9	1182.6	.0	130.04	.00	30922.30	.00
88	1774.7	1197.6	2140.9	6710.94	7938.00	1004.9	1197.6	.0	131.67	.00	23491.73	.00
89	1794.7	1212.6	2165.9	6713.80	7938.00	1005.0	1212.6	.0	133.29	.00	23791.73	.00
90	1814.7	1227.6	2190.9	6716.70	7938.00	1005.1	1227.6	.0	134.92	.00	24091.73	.00
91	1834.7	1242.6	2215.8	6719.46	7938.00	1005.1	1242.6	.0	136.55	.00	24391.73	.00
92	1854.7	1257.6	2240.8	6722.34	7938.00	1005.2	1257.6	.0	138.19	.00	24691.73	.00
93	1874.7	1272.6	2265.8	6725.07	7938.00	1005.3	1272.6	.0	139.82	.00	24991.73	.00
94	1894.7	1287.6	2290.8	6727.73	7938.00	1005.3	1287.6	.0	141.45	.00	25291.73	.00
95	1914.7	1302.6	2315.7	6730.38	7938.00	1005.4	1302.6	.0	143.08	.00	25591.73	.00
96	1934.7	1317.6	2340.7	6733.07	7938.00	1005.4	1317.6	.0	144.71	.00	25891.73	.00
97	1954.7	1332.6	2365.7	6735.63	7938.00	1005.5	1332.6	.0	146.35	.00	20953.38	.00
98	1974.7	1347.6	2390.7	6738.17	7938.00	1005.6	1347.6	.0	147.98	.00	21193.38	.00
99	1994.7	1363.2	2416.0	6742.41	7938.00	1005.6	1363.2	.0	149.64	.00	32150.07	.00

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	2315.	0.	200.	1049.	53.	200	200	200	200	200	200	200	200	200	200	200	200
16.0	.2	20.	1.26	0.	2315.	4471.	205.	1034.	56.	204	205	204	203	200	197	196	195	196	197	200	203
32.0	.4	40.	1.25	0.	2316.	8927.	210.	1019.	59.	209	210	209	205	200	195	191	190	191	195	200	205
48.0	.6	60.	1.27	0.	2319.	13440.	216.	1008.	63.	214	216	214	208	200	193	187	186	187	193	200	208
64.0	.8	81.	1.30	0.	2324.	18077.	223.	1002.	67.	219	223	219	211	200	190	184	181	184	190	200	211
80.0	1.0	103.	1.37	0.	2332.	23031.	230.	999.	72.	225	230	225	213	200	188	180	177	180	188	200	213
96.0	1.2	127.	1.47	0.	2344.	28427.	240.	1000.	78.	232	240	232	216	200	186	177	174	177	186	200	216
112.0	1.4	153.	1.63	0.	2362.	34543.	252.	1000.	85.	241	252	241	220	200	184	174	171	174	184	200	220
128.0	1.6	182.	1.86	0.	2387.	41636.	267.	1000.	94.	251	267	251	223	200	182	171	167	171	182	200	223
144.0	1.8	219.	2.28	0.	2424.	50550.	290.	1000.	108.	264	290	264	227	201	180	168	165	168	180	201	227
160.0	2.0	264.	2.82	0.	2475.	61918.	318.	1001.	125.	282	318	282	231	201	178	166	162	166	178	201	231
176.0	2.2	321.	3.55	0.	2545.	76489.	358.	1001.	148.	305	358	305	236	201	176	163	159	163	176	201	236
192.0	2.4	398.	4.81	0.	2647.	96551.	421.	1001.	185.	334	421	334	241	201	174	161	157	161	174	201	241
208.0	2.6	495.	6.06	0.	2780.	122170.	500.	1001.	232.	374	500	374	247	201	173	159	155	159	173	201	247
224.0	2.8	629.	8.39	0.	2972.	158426.	607.	1001.	294.	435	607	435	254	201	171	157	153	157	171	201	254
240.0	3.0	780.	9.46	0.	3192.	199188.	728.	1001.	364.	504	728	504	262	201	170	155	151	155	170	201	262
256.0	3.2	965.	11.54	0.	3466.	249489.	855.	1002.	438.	602	855	602	271	202	168	153	150	153	168	202	271
272.0	3.4	1151.	11.62	0.	3743.	299347.	983.	1002.	513.	699	983	699	284	202	167	152	148	152	167	202	284
288.0	3.6	1352.	12.57	0.	4043.	353019.	1119.	1002.	592.	804	1119	804	298	202	165	150	147	150	165	202	298
304.0	3.8	1582.	14.37	0.	4390.	414778.	1267.	1003.	679.	931	1267	931	312	202	164	149	145	149	164	202	312
320.0	4.0	1799.	13.53	0.	4715.	471229.	1416.	1003.	767.	1040	1416	1040	331	203	163	148	144	148	163	203	331
336.0	4.2	2031.	14.52	0.	5068.	531767.	1555.	1003.	849.	1168	1555	1168	354	203	162	146	143	146	162	203	354
352.0	4.4	2270.	14.93	0.	5434.	592664.	1692.	1004.	930.	1299	1692	1299	383	203	161	145	142	145	161	203	383
368.0	4.6	2518.	15.52	0.	5819.	654209.	1840.	1004.	1018.	1427	1840	1427	420	203	159	144	141	144	159	203	420
384.0	4.8	2761.	15.16	-0.	6191.	713907.	1990.	1005.	1107.	1548	1990	1548	455	204	158	143	140	143	158	204	455
400.0	5.0	3019.	16.15	0.	6596.	775389.	2138.	1005.	1196.	1677	2138	1677	505	204	157	142	139	142	157	204	505
416.0	5.2	3262.	15.14	0.	6978.	830653.	2276.	1005.	1279.	1791	2276	1791	560	204	156	142	139	142	156	204	560
432.0	5.4	3523.	16.32	0.	7391.	890330.	2415.	1006.	1363.	1919	2415	1919	620	205	155	141	138	141	155	205	620

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT 6758. FT

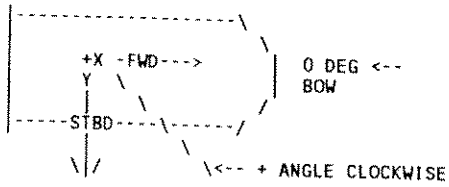
STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE T8A12n tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	2112.	60092.	215.	1010.	62.	215	0	215	208	200	192	187	185	187	192	200	208
16.0	.2	18.	1.08	-4.	2112.	63239.	221.	1003.	66.	221	0	218	209	198	188	182	181	184	192	202	213
32.0	.4	35.	1.10	-26.	2114.	66695.	228.	1000.	70.	228	0	223	210	197	185	179	177	181	190	203	217
48.0	.6	54.	1.15	-77.	2119.	70382.	237.	999.	76.	237	0	229	212	196	182	175	174	178	189	205	222
64.0	.8	74.	1.25	-181.	2128.	74301.	248.	1000.	83.	248	0	234	213	194	179	172	171	176	189	207	228
80.0	1.0	95.	1.36	-312.	2141.	78673.	261.	1000.	91.	261	0	240	214	192	176	168	168	174	188	209	234
96.0	1.2	121.	1.61	-618.	2162.	84495.	281.	1000.	103.	281	0	250	216	191	174	166	165	171	187	210	241
112.0	1.4	152.	1.91	-1159.	2191.	91016.	307.	1000.	118.	307	0	258	217	190	171	163	162	169	186	212	250
128.0	1.6	189.	2.31	-1936.	2232.	99464.	342.	1001.	139.	342	0	270	219	189	169	160	160	167	185	214	261
144.0	1.8	238.	3.07	-3110.	2293.	110960.	392.	1001.	169.	392	0	287	220	188	167	158	158	165	184	216	274
160.0	2.0	298.	3.79	-4713.	2373.	125176.	458.	1001.	207.	458	0	307	222	186	165	156	156	163	183	218	292
176.0	2.2	378.	5.00	-7436.	2484.	144536.	553.	1001.	263.	553	0	333	225	186	163	154	154	161	182	219	311
192.0	2.4	475.	6.03	-10452.	2622.	167950.	668.	1001.	329.	668	0	367	228	185	161	152	152	160	181	221	337
208.0	2.6	584.	6.81	-12759.	2784.	194288.	789.	1002.	400.	789	0	411	229	184	160	150	150	158	180	223	372
224.0	2.8	710.	7.90	-14708.	2975.	224707.	926.	1002.	479.	926	0	464	232	183	158	149	148	157	179	225	419
240.0	3.0	837.	7.92	-14121.	3172.	254860.	1042.	1002.	547.	1042	0	531	234	182	156	147	147	155	179	228	480
256.0	3.2	990.	9.53	-13952.	3411.	291150.	1187.	1003.	633.	1187	0	608	237	181	155	146	146	154	178	231	552
272.0	3.4	1145.	9.70	-13493.	3654.	327420.	1333.	1003.	718.	1333	0	682	240	180	154	145	145	153	177	234	632
288.0	3.6	1310.	10.32	-10028.	3920.	365742.	1463.	1003.	795.	1463	0	777	243	179	152	144	144	151	177	237	733
304.0	3.8	1478.	10.53	-8325.	4187.	405027.	1611.	1004.	882.	1611	0	866	247	178	151	143	142	150	176	240	824
320.0	4.0	1652.	10.85	-4537.	4467.	445097.	1747.	1004.	962.	1747	0	969	250	177	150	142	142	149	175	244	929
336.0	4.2	1825.	10.82	-2725.	4739.	484731.	1897.	1004.	1052.	1897	0	1058	253	176	149	141	141	148	175	249	1023
352.0	4.4	2002.	11.05	1427.	5022.	524742.	2031.	1005.	1132.	2031	0	1159	256	175	148	140	140	147	174	253	1134
368.0	4.6	2193.	11.92	5687.	5328.	567872.	2178.	1005.	1220.	2178	0	1267	261	174	147	139	139	146	174	258	1253
384.0	4.8	2377.	11.55	9495.	5622.	609717.	2321.	1005.	1306.	2321	0	1373	266	174	146	139	139	146	173	264	1362

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT 6751. FT

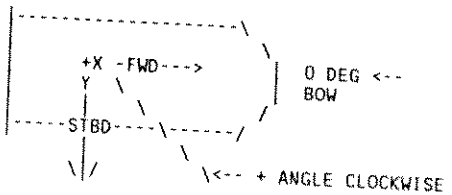
STARTING DISPLACEMENTS : SURGE(FT) = -36.000 SWAY(FT) = -36.000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE T8S12N tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

T 2 S 12 N-2

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	15.0	45.0	75.0	105.0	135.0	165.0	-165.0	-135.0	-105.0	-75.0	-45.0	-15.0
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	8000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	8000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	300.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	2000.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-322.0

LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	2000.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-200.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	5800.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.750"
LINE LENGTH (FT)	100.0
WEIGHT IN WATER (LB/FT)	273.26
LINE B.S. (KIPS)	4249.0
AREA (SQ IN)	25.97
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	1850.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.750"
LINE LENGTH (FT)	150.0
WEIGHT IN WATER (LB/FT)	273.26
LINE B.S. (KIPS)	4249.0
AREA (SQ IN)	25.97
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	35800.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
1	119.9	.0	149.8	5262.00	7938.00	5262.0	.0	.0				
2	149.9	91.4	175.6	8385.89	7938.00	3049.7	91.4	.0	8.79	-522.00	.00	402.34
3	179.9	127.5	220.5	8784.90	7938.00	2745.1	127.5	.0	10.76	-522.00	.00	440.67
4	209.9	164.1	266.4	9076.03	7938.00	2284.7	164.1	.0	12.79	-522.00	.00	480.68
5	239.9	202.5	314.0	9319.88	7938.00	1824.1	202.5	.0	14.92	-522.00	.00	522.64
6	269.9	241.9	362.4	9514.31	7938.00	1363.4	241.9	.0	17.11	-522.00	.00	566.09
7	299.9	284.1	413.1	9697.25	7938.00	1091.9	284.1	.0	19.42	-522.00	.00	611.77
8	329.9	324.4	462.7	9817.67	7938.00	1001.2	324.4	.0	21.69	-522.00	82.94	657.42
9	359.9	364.7	512.4	9914.12	7938.00	1001.3	364.7	.0	23.98	-522.00	562.94	703.69
10	389.9	404.1	561.5	9984.87	7938.00	1001.5	404.1	.0	26.24	-522.00	912.57	749.98
11	449.9	480.9	658.6	10080.92	7938.00	1001.7	480.9	.0	30.73	-522.00	2002.94	842.57
12	509.9	555.9	754.4	10140.82	7938.00	1002.0	555.9	.0	35.17	-522.00	1851.84	935.04
13	569.9	630.0	849.5	10182.71	7938.00	1002.3	630.0	.0	39.59	-522.00	4168.12	1027.60
14	629.9	703.1	944.0	10212.12	7938.00	1002.5	703.1	.0	43.99	-522.00	4882.94	1120.02
15	689.9	776.3	1038.5	10237.06	7938.00	1002.8	776.3	.0	48.39	-522.00	5842.94	1212.79
16	749.9	849.4	1133.1	10258.63	7938.00	1003.1	849.4	.0	52.81	-522.00	6802.94	1305.81
17	809.9	922.5	1227.6	10277.59	7938.00	1003.3	922.5	.0	57.23	-522.00	11159.22	1399.05
18	869.9	993.8	1320.7	10287.08	7938.00	1003.6	993.8	.0	61.58	-522.00	7632.57	1491.20
19	929.9	1066.9	1415.3	10302.77	7938.00	1003.9	1066.9	.0	66.02	-522.00	13919.22	1584.73
20	989.9	1138.1	1508.4	10310.53	7938.00	1004.1	1138.1	.0	70.38	-522.00	9312.57	1677.11
21	1049.9	1211.3	1603.0	10323.96	7938.00	1004.4	1211.3	.0	74.82	-522.00	16679.22	1770.85
22	1109.9	1282.5	1696.1	10330.55	7938.00	1004.6	1282.5	.0	79.19	-522.00	10992.57	1863.39
23	1169.9	1357.5	1792.1	10347.77	7938.00	1004.9	1357.5	.0	83.71	-522.00	14368.12	1958.58
24	1229.9	1428.8	1885.2	10353.28	7938.00	1005.2	1428.8	.0	88.09	-522.00	12672.57	2051.24
25	1289.9	1500.0	1978.4	10358.65	7938.00	1005.4	1500.0	.0	92.48	-522.00	13512.57	2143.94
26	1349.9	1571.3	2071.5	10363.86	7938.00	1005.7	1571.3	.0	96.87	-522.00	14352.57	2236.68
27	1409.9	1646.3	2167.5	10377.94	7938.00	1006.0	1646.3	.0	101.40	-522.00	10851.84	2332.09
28	1469.9	1717.5	2260.6	10382.53	7938.00	1006.2	1717.5	.0	105.80	-522.00	16032.57	2424.90
29	1529.9	1788.8	2353.8	10387.04	7938.00	1006.5	1788.8	.0	110.20	-522.00	16872.57	2517.73
30	1589.9	1863.8	2449.8	10399.46	7938.00	1006.8	1863.8	.0	114.74	-522.00	12651.84	2613.26
31	1649.9	1935.0	2542.9	10403.56	7938.00	1007.0	1935.0	.0	119.15	-522.00	18552.57	2706.14
32	1709.9	2010.0	2638.9	10415.04	7938.00	1007.3	2010.0	.0	123.70	-522.00	23548.12	2801.73
33	1769.9	2081.3	2732.1	10418.83	7938.00	1007.6	2081.3	.0	128.11	-522.00	28903.67	2894.65
34	1829.9	2152.5	2825.2	10422.56	7938.00	1007.8	2152.5	.0	132.52	-522.00	21072.57	2987.59
35	1889.9	2227.5	2921.2	10433.04	7938.00	1008.1	2227.5	.0	137.08	-522.00	26608.12	3083.25
36	1949.9	2298.8	3014.4	10436.58	7938.00	1008.4	2298.8	.0	141.51	-522.00	32503.67	3176.21
37	2009.9	2373.8	3110.4	10446.41	7938.00	1008.6	2373.8	.0	146.07	-522.00	28648.12	3271.91
38	2069.9	2445.0	3203.5	10449.77	7938.00	1008.9	2445.0	.0	150.50	-522.00	34903.67	3364.90
39	2129.9	2520.0	3299.5	10459.07	7938.00	1009.2	2520.0	.0	155.07	-522.00	30688.12	3460.63
40	2189.9	2591.3	3392.7	10462.31	7938.00	1009.4	2591.3	.0	159.51	-522.00	37303.67	3553.64
41	2249.9	2666.3	3488.7	10471.15	7938.00	1009.7	2666.3	.0	164.09	-522.00	32728.12	3649.39
42	2309.9	2737.5	3581.8	10474.27	7938.00	1010.0	2737.5	.0	168.53	-522.00	39703.67	3742.42
43	2369.9	2812.5	3677.9	10482.69	7938.00	1010.2	2812.5	.0	173.11	-522.00	20451.84	3838.20
44	2429.9	2887.5	3773.9	10490.96	7938.00	1010.5	2887.5	.0	177.70	-522.00	33682.94	3933.99
45	2489.9	2955.0	3864.2	10488.79	7938.00	1010.8	2955.0	.0	182.01	-522.00	25982.20	4024.28

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
46	2549.9	3030.0	3960.2	10496.82	7938.00	1011.1	3030.0	.0	186.61	-522.00	22251.84	4120.09
47	2609.9	3105.0	4056.2	10504.64	7938.00	1011.3	3105.0	.0	191.21	-522.00	22851.84	4215.91
48	2669.9	3180.0	4152.2	10512.28	7938.00	1011.6	3180.0	.0	195.81	-522.00	23451.84	4311.74
49	2729.9	3255.0	4248.2	10519.73	7938.00	1011.9	3255.0	.0	200.41	-522.00	24051.84	4407.58
50	2789.9	3330.0	4344.3	10527.08	7938.00	1012.2	3330.0	.0	205.02	-522.00	39442.94	4503.42
51	2849.9	3405.0	4440.3	10534.21	7938.00	1012.4	3405.0	.0	209.64	-522.00	40402.94	4599.28
52	2909.9	3472.5	4530.6	10532.51	7938.00	1012.7	3472.5	.0	213.96	-522.00	31022.20	4689.59
53	2969.9	3547.5	4626.6	10539.60	7938.00	1013.0	3547.5	.0	218.58	-522.00	39677.75	4785.45
54	3029.9	3622.5	4722.6	10546.50	7938.00	1013.2	3622.5	.0	223.21	-522.00	40577.75	4881.32
55	3089.9	3697.5	4818.6	10553.28	7938.00	1013.5	3697.5	.0	227.83	-522.00	41477.75	4977.20
56	3149.9	3772.5	4914.6	10559.93	7938.00	1013.8	3772.5	.0	232.46	-522.00	42377.75	5073.09
57	3209.9	3847.5	5010.7	10566.47	7938.00	1014.1	3847.5	.0	237.09	-522.00	43277.75	5168.98
58	3269.9	3922.5	5106.7	10572.91	7938.00	1014.4	3922.5	.0	241.73	-522.00	44177.75	5264.87
59	3329.9	3997.5	5202.7	10579.24	7938.00	1014.6	3997.5	.0	246.36	-522.00	45077.75	5360.77
60	3389.9	4072.5	5298.8	10585.48	7938.00	1014.9	4072.5	.0	251.01	-522.00	45977.75	5456.68
61	3449.9	4147.5	5394.8	10591.64	7938.00	1015.2	4147.5	.0	255.65	-522.00	46877.75	5552.59
62	3509.9	4222.5	5490.8	10597.70	7938.00	1015.5	4222.5	.0	260.30	-522.00	47777.75	5648.51
63	3569.9	4297.5	5586.8	10603.69	7938.00	1015.7	4297.5	.0	264.95	-522.00	48677.75	5744.43
64	3629.9	4372.5	5682.9	10609.61	7938.00	1016.0	4372.5	.0	269.61	-522.00	49577.75	5840.35
65	3689.9	4447.5	5778.9	10615.46	7938.00	1016.3	4447.5	.0	274.26	-522.00	50477.75	5936.28
66	3749.9	4522.5	5874.9	10621.23	7938.00	1016.6	4522.5	.0	278.93	-522.00	51377.75	6032.22
67	3809.9	4597.5	5971.0	10626.94	7938.00	1016.9	4597.5	.0	283.59	-522.00	52277.75	6128.15
68	3869.9	4672.5	6067.0	10632.58	7938.00	1017.1	4672.5	.0	288.26	-522.00	53177.75	6224.09
69	3929.9	4747.5	6163.0	10638.18	7938.00	1017.4	4747.5	.0	292.93	-522.00	54077.75	6320.03
70	3989.9	4822.5	6259.1	10643.71	7938.00	1017.7	4822.5	.0	297.60	-522.00	54977.75	6415.98
71	4049.9	4897.5	6355.1	10649.19	7938.00	1018.0	4897.5	.0	302.28	-522.00	55877.75	6511.93
72	4109.9	4972.5	6451.1	10654.62	7938.00	1018.3	4972.5	.0	306.96	-522.00	56777.75	6607.88
73	4169.9	5047.5	6547.2	10660.01	7938.00	1018.5	5047.5	.0	311.65	-522.00	57677.75	6703.84
74	4229.9	5122.5	6643.2	10665.35	7938.00	1018.8	5122.5	.0	316.33	-522.00	58577.75	6799.79
75	4289.9	5205.0	6745.0	10676.49	7938.00	1019.1	5205.0	.0	321.32	-522.00	67408.13	6901.41
76	4349.9	5280.0	6841.1	10681.67	7938.00	1019.4	5280.0	.0	326.01	-522.00	60377.75	6997.37
77	4409.9	5355.0	6937.1	10686.81	7938.00	1019.7	5355.0	.0	330.71	-522.00	61277.75	7093.34
78	4469.9	5430.0	7033.1	10691.91	7938.00	1020.0	5430.0	.0	335.41	-522.00	62177.75	7189.31
79	4529.9	5505.0	7129.2	10696.97	7938.00	1020.3	5505.0	.0	340.12	-522.00	63077.75	7285.28
80	4589.9	5580.0	7225.2	10702.00	7938.00	1020.5	5580.0	.0	344.83	-522.00	63977.75	7381.25
81	4649.9	5662.5	7327.1	10712.38	7938.00	1020.9	5662.5	.0	349.83	-522.00	73528.13	7482.90
82	4709.9	5737.5	7423.1	10717.30	7938.00	1021.1	5737.5	.0	354.55	-522.00	65777.75	7578.88
83	4769.9	5812.5	7519.1	10722.17	7938.00	1021.4	5812.5	.0	359.27	-522.00	66677.75	7674.86
84	4829.9	5887.5	7615.2	10727.04	7938.00	1021.7	5887.5	.0	363.99	-522.00	67577.75	7770.84
85	4889.9	5970.0	7717.0	10736.98	7938.00	1022.0	5970.0	.0	369.01	-522.00	77608.13	7872.51
86	4949.9	6045.0	7813.1	10741.73	7938.00	1022.3	6045.0	.0	373.74	-522.00	69377.75	7968.50
87	5009.9	6120.0	7909.1	10746.45	7938.00	1022.6	6120.0	.0	378.47	-522.00	70277.75	8064.49
88	5069.9	6195.0	8005.1	10751.15	7938.00	1022.9	6195.0	.0	383.20	-522.00	71177.75	8160.48
89	5129.9	6285.0	8112.8	10765.58	7938.00	1023.2	6285.0	.0	388.54	-522.00	62467.39	8267.87
90	5189.9	6360.0	8208.8	10770.15	7938.00	1023.5	6360.0	.0	393.28	-522.00	72977.75	8363.87
91	5249.9	6435.0	8304.9	10774.69	7938.00	1023.8	6435.0	.0	398.02	-522.00	73877.75	8459.87
92	5309.9	6510.0	8400.9	10779.21	7938.00	1024.1	6510.0	.0	402.77	-522.00	74777.75	8555.86
93	5369.9	6585.0	8497.0	10783.73	7938.00	1024.3	6585.0	.0	407.53	-522.00	75677.77	8651.86
94	5429.9	6675.0	8604.6	10797.42	7938.00	1024.7	6675.0	.0	412.88	-522.00	66367.39	8759.29
95	5489.9	6750.0	8700.7	10801.81	7938.00	1025.0	6750.0	.0	417.64	-522.00	61982.20	8855.30
96	5549.9	6825.0	8796.7	10806.19	7938.00	1025.2	6825.0	.0	422.40	-522.00	78377.77	8951.30
97	5609.9	6900.0	8892.8	10810.56	7938.00	1025.5	6900.0	.0	427.17	-522.00	79277.77	9047.31
98	5669.9	6975.0	8988.8	10814.91	7938.00	1025.8	6975.0	.0	431.94	-522.00	80177.77	9143.32
99	5729.9	7065.0	9096.5	10827.99	7938.00	1026.2	7065.0	.0	437.31	-522.00	70267.39	9250.78

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	3222.	0.	564.	1383.	240.	360	360	360	360	360	360	360	360	360	360	360	360
16.0	.2	23.	1.43	0.	3221.	2570.	568.	1350.	243.	364	364	364	362	360	358	356	356	356	358	360	362
32.0	.4	45.	1.39	0.	3220.	5036.	571.	1321.	246.	367	368	367	364	360	356	353	352	353	356	360	364
48.0	.6	68.	1.40	0.	3219.	7510.	574.	1292.	250.	370	372	370	366	360	354	349	347	349	354	360	366
64.0	.8	90.	1.40	0.	3219.	9996.	578.	1265.	253.	374	376	374	368	360	352	346	343	346	352	360	368
80.0	1.0	113.	1.41	0.	3218.	12498.	582.	1239.	257.	377	380	377	370	360	350	342	339	342	350	360	370
96.0	1.2	135.	1.41	0.	3218.	15021.	586.	1214.	260.	381	384	381	372	360	348	339	335	339	348	360	372
112.0	1.4	158.	1.42	0.	3218.	17570.	589.	1191.	264.	384	389	384	374	360	346	335	331	335	346	360	374
128.0	1.6	181.	1.44	0.	3219.	20149.	594.	1169.	267.	388	393	388	376	360	344	332	327	332	344	360	376
144.0	1.8	204.	1.45	0.	3220.	22764.	598.	1148.	271.	392	398	392	378	360	342	328	324	328	342	360	378
160.0	2.0	228.	1.46	0.	3221.	25419.	602.	1128.	275.	396	403	396	380	360	340	325	320	325	340	360	380
176.0	2.2	251.	1.48	0.	3223.	28118.	607.	1109.	280.	400	408	400	382	360	338	322	316	322	338	360	382
192.0	2.4	275.	1.50	0.	3225.	30860.	612.	1092.	284.	405	413	405	385	361	336	319	313	319	336	361	385
208.0	2.6	300.	1.52	0.	3228.	33676.	617.	1075.	289.	409	419	409	387	361	334	315	309	315	334	361	387
224.0	2.8	324.	1.54	0.	3232.	36540.	623.	1059.	294.	414	425	414	389	361	332	312	306	312	332	361	389
240.0	3.0	349.	1.57	0.	3236.	39491.	628.	1045.	299.	419	431	419	391	361	330	309	302	309	330	361	391
256.0	3.2	375.	1.60	0.	3242.	42493.	634.	1033.	304.	424	438	424	394	361	328	306	299	306	328	361	394
272.0	3.4	401.	1.62	0.	3247.	45548.	641.	1022.	310.	430	445	430	396	361	326	303	296	303	326	361	396
288.0	3.6	427.	1.64	0.	3254.	48657.	647.	1012.	315.	436	452	436	399	361	324	301	292	301	324	361	399
304.0	3.8	454.	1.67	0.	3261.	51819.	654.	1004.	321.	441	459	441	401	361	323	298	289	298	323	361	401
320.0	4.0	481.	1.68	0.	3268.	55015.	661.	1000.	327.	447	466	447	404	361	321	295	286	295	321	361	404
336.0	4.2	508.	1.70	0.	3276.	58247.	667.	998.	333.	454	474	454	407	362	319	292	283	292	319	362	407
352.0	4.4	536.	1.73	0.	3284.	61547.	675.	998.	340.	460	481	460	409	362	317	290	280	290	317	362	409
368.0	4.6	564.	1.75	0.	3293.	64876.	682.	998.	346.	466	489	466	412	362	316	287	277	287	316	362	412
384.0	4.8	592.	1.78	0.	3302.	68262.	690.	999.	353.	473	498	473	415	362	314	284	274	284	314	362	415
400.0	5.0	621.	1.83	0.	3313.	71754.	699.	1001.	360.	480	507	480	418	362	312	282	272	282	312	362	418
416.0	5.2	651.	1.87	0.	3324.	75362.	708.	1001.	368.	487	517	487	421	362	311	279	269	279	311	362	421
432.0	5.4	682.	1.93	0.	3336.	79104.	717.	1001.	376.	494	527	494	425	363	309	277	266	277	309	363	425
448.0	5.6	714.	1.99	0.	3349.	83013.	728.	1001.	385.	502	538	502	428	363	307	274	263	274	307	363	428
464.0	5.8	747.	2.07	0.	3364.	87099.	738.	1001.	394.	510	549	510	431	363	306	272	260	272	306	363	431
480.0	6.0	781.	2.14	0.	3379.	91360.	750.	1001.	404.	518	562	518	435	363	304	269	258	269	304	363	435
496.0	6.2	816.	2.19	0.	3396.	95764.	762.	1001.	415.	527	575	527	438	363	303	267	255	267	303	363	438
512.0	6.4	853.	2.29	0.	3414.	100429.	776.	1002.	426.	537	589	537	442	364	301	265	252	265	301	364	442
528.0	6.6	892.	2.41	0.	3434.	105383.	790.	1002.	438.	547	604	547	446	364	300	262	250	262	300	364	446
544.0	6.8	932.	2.53	0.	3456.	110659.	806.	1002.	451.	558	620	558	449	364	298	260	247	260	298	364	449
560.0	7.0	975.	2.65	0.	3479.	116212.	824.	1002.	465.	569	639	569	453	364	297	257	244	257	297	364	453
576.0	7.2	1019.	2.79	0.	3505.	122122.	843.	1002.	481.	581	659	581	457	364	295	255	242	255	295	364	457
592.0	7.4	1066.	2.94	0.	3533.	128433.	864.	1002.	498.	593	681	593	461	365	294	253	239	253	294	365	461
608.0	7.6	1117.	3.15	0.	3563.	135290.	888.	1002.	518.	607	705	607	465	365	292	251	237	251	292	365	465
624.0	7.8	1171.	3.39	0.	3598.	142769.	914.	1002.	539.	622	733	622	469	365	291	248	234	248	291	365	469
640.0	8.0	1229.	3.64	0.	3636.	150897.	943.	1002.	563.	638	763	638	473	365	289	246	232	246	289	365	473
656.0	8.2	1292.	3.92	0.	3678.	159738.	976.	1002.	589.	656	796	656	478	366	288	244	230	244	288	366	478
672.0	8.4	1360.	4.28	0.	3726.	169519.	1013.	1002.	619.	675	835	675	482	366	287	242	227	242	287	366	482
688.0	8.6	1437.	4.80	0.	3781.	180636.	1059.	1002.	655.	695	881	695	486	366	285	240	225	240	285	366	486
704.0	8.8	1522.	5.31	0.	3843.	193063.	1110.	1003.	695.	718	934	718	491	366	284	238	223	238	284	366	491
720.0	9.0	1614.	5.77	0.	3912.	206663.	1167.	1003.	740.	744	992	744	496	367	283	236	221	236	283	367	496
736.0	9.2	1714.	6.22	0.	3987.	221404.	1230.	1003.	790.	771	1056	771	501	367	281	234	218	234	281	367	501
752.0	9.4	1823.	6.81	0.	4071.	237657.	1300.	1003.	845.	801	1127	801	506	367	280	232	216	232	280	367	506
768.0	9.6	1938.	7.22	0.	4161.	254996.	1370.	1003.	900.	836	1198	836	511	368	279	230	214	230	279	368	511
784.0	9.8	2111.	10.80	0.	4302.	281677.	1505.	1004.	1004.	877	1334	877	516	368	278	228	212	228	278	368	516
800.0	10.0	2273.	10.10	0.	4433.	306529.	1615.	1004.	1090.	923	1445	923	522	368	276	226	210	226	276	368	522

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
816.0	10.2	2458.	11.57	0.	4584.	335140.	1748.	1004.	1193.	973	1580	973	528	369	275	224	209	224	275	369	528
832.0	10.4	2663.	12.80	0.	4753.	366871.	1899.	1005.	1310.	1027	1732	1027	534	369	274	222	207	222	274	369	534
848.0	10.6	2876.	13.36	0.	4929.	399976.	2051.	1005.	1429.	1087	1885	1087	540	369	273	220	205	220	273	369	540
864.0	10.8	3144.	16.73	0.	5152.	441622.	2273.	1006.	1600.	1147	2108	1147	546	370	271	218	203	218	271	370	546
880.0	11.0	3422.	17.35	0.	5385.	485024.	2483.	1006.	1762.	1222	2319	1222	553	370	270	217	201	217	270	370	553
896.0	11.2	3735.	19.59	0.	5655.	535340.	2655.	1007.	1896.	1344	2492	1344	560	370	269	215	199	215	269	370	560
912.0	11.4	4043.	19.21	0.	5916.	583806.	2856.	1007.	2052.	1444	2693	1444	568	371	268	213	197	213	268	371	568
928.0	11.6	4404.	22.61	1.	6225.	641369.	3090.	1008.	2233.	1566	2928	1566	575	371	267	212	196	212	267	371	575
944.0	11.8	4827.	26.39	0.	6590.	709207.	3352.	1009.	2435.	1717	3191	1717	583	372	265	210	194	210	265	372	583
960.0	12.0	5132.	19.10	0.	6843.	755828.	3590.	1010.	2620.	1793	3429	1793	591	372	264	208	192	208	264	372	591
976.0	12.2	5670.	33.60	1.	7319.	844274.	3830.	1010.	2806.	2040	3670	2040	600	372	263	207	191	207	263	372	600
992.0	12.4	6064.	24.64	0.	7651.	905435.	4126.	1011.	3035.	2148	3966	2148	609	373	262	205	189	205	262	373	609
1008.0	12.6	6559.	30.91	0.	8086.	985892.	4325.	1012.	3190.	2384	4165	2384	618	373	261	204	187	204	261	373	618
1024.0	12.8	7052.	30.81	0.	8511.	1064071.	4633.	1013.	3429.	2557	4474	2557	628	374	260	202	185	202	260	374	628
1040.0	13.0	7495.	27.70	0.	8891.	1133939.	4864.	1013.	3609.	2735	4706	2735	639	374	258	201	184	201	258	374	639
1056.0	13.2	7953.	28.65	0.	9285.	1206200.	5093.	1014.	3788.	2925	4935	2925	651	374	257	199	182	199	257	374	651
1072.0	13.4	8452.	31.19	0.	9717.	1285290.	5331.	1015.	3974.	3139	5173	3139	663	375	256	198	180	198	256	375	663
1088.0	13.6	8990.	33.63	0.	10184.	1370940.	5579.	1015.	4168.	3375	5421	3375	675	375	255	196	179	196	255	375	675
1104.0	13.8	9541.	34.39	0.	10662.	1458253.	5835.	1016.	4368.	3614	5678	3614	689	376	254	195	177	195	254	376	689
1120.0	14.0	10053.	32.01	-3.	11100.	1538051.	6100.	1017.	4576.	3819	5943	3819	703	376	253	193	176	193	253	376	703
1136.0	14.2	10613.	35.03	0.	11584.	1626044.	6374.	1018.	4790.	4054	6217	4054	719	377	252	192	174	192	252	377	719
1152.0	14.4	11109.	31.00	0.	12003.	1701747.	6655.	1018.	5010.	4235	6499	4235	735	377	251	190	172	190	251	377	735
1168.0	14.6	11688.	36.15	0.	12507.	1792894.	6869.	1019.	5179.	4514	6712	4514	753	378	250	189	171	189	250	378	753
1184.0	14.8	12231.	33.94	1.	12970.	1876418.	7140.	1020.	5391.	4734	6984	4734	771	378	249	187	169	187	249	378	771
1200.0	15.0	12759.	33.05	1.	13418.	1956765.	7416.	1021.	5608.	4939	7260	4939	790	379	248	186	167	186	248	379	790
1216.0	15.2	13276.	32.28	1.	13856.	2034703.	7658.	1021.	5799.	5151	7502	5151	812	379	247	185	166	185	247	379	812
1232.0	15.4	13790.	32.10	0.	14292.	2111766.	7878.	1022.	5975.	5372	7723	5372	835	380	246	183	164	183	246	380	835
1248.0	15.6	14380.	36.88	0.	14796.	2200914.	8184.	1023.	6214.	5599	8028	5599	861	380	245	182	162	182	245	380	861
1264.0	15.8	14875.	30.94	0.	15217.	2273853.	8345.	1023.	6346.	5834	8190	5834	890	381	244	181	161	181	244	381	890
1280.0	16.0	15505.	39.38	0.	15757.	2368615.	8670.	1024.	6600.	6076	8516	6076	922	381	243	179	159	179	243	381	922
1296.0	16.2	16032.	32.97	0.	16207.	2446040.	8844.	1025.	6741.	6324	8689	6324	955	382	242	178	157	178	242	382	955
1312.0	16.4	16701.	41.81	1.	16783.	2546483.	9190.	1026.	7011.	6579	9035	6579	990	383	241	177	155	177	241	383	990

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT10833. FT

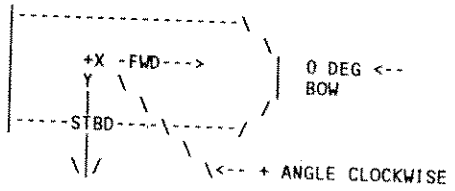
STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE T8S12N tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	-1.	.00	0.	2925.	92590.	606.	1114.	279.	406	0	406	385	361	335	317	311	317	335	361	385
16.0	.2	19.	1.26	12.	2925.	94468.	610.	1096.	283.	412	0	410	386	359	332	314	308	315	335	362	389
32.0	.4	39.	1.26	4.	2925.	96472.	616.	1080.	287.	417	0	414	387	358	329	310	305	313	334	363	392
48.0	.6	59.	1.28	3.	2926.	98526.	621.	1064.	292.	423	0	418	388	357	326	307	301	310	333	365	396
64.0	.8	80.	1.30	2.	2927.	100509.	627.	1049.	297.	429	0	421	389	355	323	304	298	308	332	366	399
80.0	1.0	101.	1.31	1.	2929.	102522.	632.	1036.	302.	436	0	425	390	354	320	300	295	306	332	368	403
96.0	1.2	122.	1.32	1.	2931.	104567.	639.	1025.	308.	442	0	429	391	353	318	297	292	304	331	369	408
112.0	1.4	143.	1.33	1.	2933.	106748.	645.	1015.	313.	449	0	434	392	352	315	294	289	302	331	370	412
128.0	1.6	165.	1.35	14.	2936.	108870.	651.	1007.	319.	456	0	438	393	350	312	291	287	300	330	372	416
144.0	1.8	187.	1.36	36.	2940.	111128.	658.	1001.	325.	463	0	443	394	349	310	288	284	297	329	373	420
160.0	2.0	209.	1.37	81.	2944.	113285.	665.	999.	331.	471	0	447	395	348	307	285	281	296	329	375	425
176.0	2.2	231.	1.39	123.	2948.	115486.	672.	998.	337.	478	0	451	395	346	304	282	278	294	329	377	430
192.0	2.4	253.	1.40	155.	2953.	117839.	679.	998.	343.	486	0	457	397	345	302	279	275	291	328	378	435
208.0	2.6	276.	1.42	178.	2958.	120249.	687.	999.	350.	494	0	462	398	344	300	276	273	289	327	379	440
224.0	2.8	299.	1.45	179.	2963.	122597.	695.	1000.	357.	503	0	467	399	343	297	273	270	288	327	381	446
240.0	3.0	323.	1.48	162.	2970.	125012.	704.	1001.	365.	512	0	471	400	342	295	270	267	286	326	383	451
256.0	3.2	347.	1.50	133.	2977.	127600.	713.	1001.	372.	522	0	477	401	341	293	268	265	284	325	384	457
272.0	3.4	372.	1.54	86.	2984.	130288.	722.	1001.	381.	532	0	483	403	340	290	265	262	282	325	385	462
288.0	3.6	397.	1.59	1.	2992.	132969.	733.	1001.	390.	544	0	488	404	338	288	262	259	280	324	387	468
304.0	3.8	423.	1.64	-114.	3001.	135763.	744.	1001.	399.	555	0	493	405	337	286	259	257	278	324	389	474
320.0	4.0	450.	1.66	-236.	3011.	138750.	756.	1001.	409.	568	0	499	406	336	284	257	254	276	323	390	480
336.0	4.2	477.	1.71	-369.	3021.	141845.	768.	1002.	420.	581	0	506	408	335	282	254	252	274	322	392	486
352.0	4.4	506.	1.79	-547.	3033.	144997.	782.	1002.	431.	595	0	512	409	334	279	251	249	273	322	394	493
368.0	4.6	536.	1.87	-782.	3046.	148327.	797.	1002.	443.	611	0	518	410	333	277	249	247	271	322	396	500
384.0	4.8	567.	1.95	-1074.	3060.	151973.	813.	1002.	457.	628	0	526	411	332	275	246	244	269	321	397	507
400.0	5.0	600.	2.05	-1436.	3076.	155857.	831.	1002.	472.	647	0	534	413	331	273	244	242	267	320	399	514
416.0	5.2	634.	2.17	-1882.	3094.	159879.	851.	1002.	488.	667	0	541	414	330	271	241	240	266	320	401	522
432.0	5.4	670.	2.27	-2399.	3113.	164286.	873.	1002.	505.	690	0	550	416	329	269	239	237	264	319	403	530
448.0	5.6	709.	2.42	-3032.	3135.	169045.	897.	1002.	525.	715	0	559	418	328	267	237	235	262	319	404	538
464.0	5.8	750.	2.58	-3820.	3159.	174162.	924.	1002.	547.	743	0	568	420	327	265	234	233	260	318	406	547
480.0	6.0	794.	2.73	-4716.	3186.	179613.	953.	1002.	570.	773	0	578	421	327	263	232	230	258	317	408	556
496.0	6.2	842.	2.97	-5836.	3215.	185461.	987.	1002.	597.	808	0	587	423	325	261	230	228	257	317	410	566
512.0	6.4	894.	3.24	-7249.	3249.	192121.	1025.	1002.	628.	847	0	598	425	325	259	227	226	255	316	412	576
528.0	6.6	952.	3.65	-9089.	3289.	199754.	1072.	1002.	665.	895	0	610	427	324	257	225	224	253	316	414	586
544.0	6.8	1015.	3.95	-11162.	3334.	208253.	1123.	1003.	706.	947	0	624	429	324	256	223	221	251	315	415	596
560.0	7.0	1084.	4.27	-13491.	3383.	217311.	1180.	1003.	751.	1005	0	638	431	323	254	221	219	249	314	417	608
576.0	7.2	1157.	4.62	-16099.	3438.	227157.	1243.	1003.	800.	1069	0	652	434	322	252	219	217	247	313	419	621
592.0	7.4	1236.	4.92	-18911.	3496.	237665.	1311.	1003.	853.	1138	0	668	436	322	250	217	215	246	313	421	635
608.0	7.6	1321.	5.32	-22016.	3561.	249184.	1385.	1003.	912.	1214	0	686	438	321	249	215	213	244	312	423	649
624.0	7.8	1449.	7.99	-28639.	3664.	267358.	1514.	1004.	1012.	1344	0	708	442	321	247	213	211	242	311	424	663
640.0	8.0	1569.	7.51	-34239.	3760.	284068.	1631.	1004.	1102.	1462	0	730	444	321	246	211	209	240	310	426	678
656.0	8.2	1697.	8.00	-40134.	3863.	301902.	1755.	1004.	1199.	1587	0	754	447	320	244	209	207	238	309	428	696
672.0	8.4	1842.	9.08	-47198.	3981.	322365.	1900.	1005.	1311.	1733	0	780	450	320	243	207	206	236	308	429	713
688.0	8.6	1994.	9.47	-54239.	4106.	343731.	2049.	1005.	1427.	1883	0	810	454	320	241	206	204	234	307	431	733
704.0	8.8	2203.	13.07	-65746.	4281.	373723.	2271.	1006.	1598.	2106	0	845	457	319	240	204	202	233	306	432	753
720.0	9.0	2391.	11.75	-74587.	4438.	400618.	2459.	1006.	1744.	2295	0	885	460	319	238	202	200	231	305	434	775
736.0	9.2	2563.	10.74	-81367.	4581.	424650.	2622.	1007.	1870.	2459	0	924	463	319	237	200	198	229	304	436	801
752.0	9.4	2760.	12.33	-89623.	4747.	452328.	2814.	1007.	2019.	2651	0	967	465	318	235	199	197	228	304	438	831
768.0	9.6	3002.	15.09	-100695.	4952.	486875.	3057.	1008.	2207.	2895	0	1018	469	318	234	197	195	226	303	440	862
784.0	9.8	3232.	14.38	-109809.	5148.	519336.	3279.	1009.	2379.	3117	0	1071	472	317	232	195	193	224	302	442	898
800.0	10.0	3505.	17.11	-121861.	5383.	558239.	3552.	1009.	2590.	3392	0	1129	475	317	231	194	191	223	301	444	938

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)
816.0	10.2	3760.	15.94	-132078.	5601.	594224.	3800.	1010.	2782.
832.0	10.4	3979.	13.65	-135780.	5789.	623950.	3978.	1011.	2922.
848.0	10.6	4302.	20.23	-146477.	6073.	670214.	4281.	1012.	3156.
864.0	10.8	4540.	14.87	-151984.	6277.	702735.	4484.	1012.	3315.
880.0	11.0	4905.	22.80	-162266.	6601.	754538.	4815.	1013.	3571.
896.0	11.2	5205.	18.73	-162582.	6870.	794964.	5034.	1014.	3742.
912.0	11.4	5507.	18.88	-165885.	7137.	836326.	5272.	1014.	3928.
928.0	11.6	5820.	19.59	-166916.	7415.	878053.	5506.	1015.	4111.
944.0	11.8	6189.	23.05	-165449.	7752.	928287.	5764.	1016.	4313.
960.0	12.0	6537.	21.75	-168282.	8063.	976291.	6032.	1017.	4522.
976.0	12.2	6903.	22.84	-167373.	8391.	1024590.	6294.	1017.	4727.
992.0	12.4	7351.	28.01	-158924.	8809.	1084550.	6570.	1018.	4943.
1008.0	12.6	7703.	22.01	-160057.	9121.	1131496.	6830.	1019.	5147.
1024.0	12.8	8068.	22.85	-151030.	9454.	1178372.	7039.	1020.	5313.
1040.0	13.0	8536.	29.24	-145840.	9886.	1241721.	7347.	1020.	5553.
1056.0	13.2	8901.	22.81	-136563.	10217.	1288287.	7551.	1021.	5716.
1072.0	13.4	9303.	25.14	-132862.	10577.	1340854.	7819.	1022.	5926.
1088.0	13.6	9729.	26.61	-126333.	10963.	1396638.	8086.	1023.	6137.
1104.0	13.8	10083.	22.12	-111270.	11285.	1440098.	8243.	1023.	6265.
1120.0	14.0	10578.	30.94	-103717.	11738.	1505426.	8556.	1024.	6510.
1136.0	14.2	10971.	24.55	-86549.	12096.	1553448.	8731.	1025.	6652.
1152.0	14.4	11505.	33.34	-75815.	12588.	1623678.	9052.	1026.	6904.

	LINE LOAD (KIPS) LINE NUMBER											
	1	2	3	4	5	6	7	8	9	10	11	12
3640	0	1186	479	317	229	192	190	221	301	446	978	
3818	0	1254	479	315	227	190	188	220	301	450	1034	
4121	0	1343	481	314	226	189	187	219	301	454	1091	
4325	0	1411	484	314	224	187	185	218	301	457	1146	
4656	0	1515	484	312	222	185	184	217	301	461	1220	
4876	0	1617	488	312	221	184	182	215	300	463	1326	
5114	0	1719	489	311	219	182	180	215	300	467	1412	
5349	0	1817	494	311	218	180	179	213	299	468	1523	
5607	0	1959	495	309	217	179	177	212	300	473	1656	
5875	0	2086	495	308	215	177	176	211	300	478	1755	
6137	0	2205	500	308	214	176	174	210	299	480	1896	
6413	0	2389	502	307	212	174	173	209	299	484	2096	
6674	0	2509	505	306	211	172	171	208	299	488	2213	
6883	0	2655	509	306	210	171	170	206	298	490	2390	
7191	0	2847	510	305	208	169	168	206	299	495	2574	
7395	0	2998	513	304	207	167	167	205	299	499	2748	
7663	0	3145	516	303	206	166	165	203	298	503	2909	
7931	0	3313	520	303	204	164	163	202	298	507	3089	
8088	0	3478	522	302	203	162	162	201	298	511	3287	
8402	0	3673	525	301	202	161	160	200	298	516	3497	
8576	0	3850	530	301	201	159	159	199	297	519	3723	
8898	0	4070	533	300	199	158	157	198	297	524	3961	

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT10838. FT

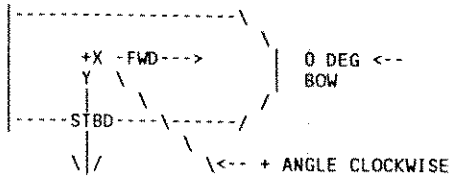
STARTING DISPLACEMENTS : SURGE(FT) =-140.000 SWAY(FT) =-140.000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE T8S12T tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

T2S12T

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	15.0	45.0	75.0	105.0	135.0	165.0	-165.0	-135.0	-105.0	-75.0	-45.0	-15.0
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0	750.0
INITIAL VESSEL YAW ANGLES (DEG)	.00											

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	8000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	8000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	300.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	3700.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-531.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	7750.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.675"
LINE LENGTH (FT)	250.0
WEIGHT IN WATER (LB/FT)	266.18
LINE B.S. (KIPS)	4098.0
AREA (SQ IN)	25.29
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	40800.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
1	30.9	.0	260.6	5062.00	7938.00	5062.0	.0	.0				
2	260.7	179.5	316.5	9049.17	7938.00	1152.0	179.5	.0	13.70	-531.00	.00	560.63
3	490.5	481.2	687.1	9839.88	7938.00	1001.7	481.2	.0	30.65	-531.00	189.53	900.27
4	720.3	755.8	1044.1	9971.51	7938.00	1002.7	755.8	.0	47.02	-531.00	419.33	1246.12
5	950.1	1026.9	1399.0	10034.59	7938.00	1003.7	1026.9	.0	63.37	-531.00	649.14	1595.08
6	1179.9	1296.3	1752.8	10073.61	7938.00	1004.7	1296.3	.0	79.72	-531.00	878.95	1945.18
7	1409.7	1565.6	2106.7	10104.54	7938.00	1005.7	1565.6	.0	96.13	-531.00	1108.75	2296.48
8	1639.5	1834.9	2460.6	10130.58	7938.00	1006.7	1834.9	.0	112.58	-531.00	1338.56	2648.50
9	1869.3	2107.8	2817.3	10160.28	7938.00	1007.7	2107.8	.0	129.21	-531.00	1568.36	3003.52
10	2099.1	2377.1	3171.2	10180.31	7938.00	1008.7	2377.1	.0	145.76	-531.00	1798.17	3356.36
11	2558.7	2922.8	3884.6	10226.52	7938.00	1010.7	2922.8	.0	179.25	-531.00	2257.78	4067.83
12	3018.3	3475.8	4603.4	10275.02	7938.00	1012.7	3475.8	.0	213.18	-531.00	2717.40	4785.12
13	3477.9	4028.8	5322.3	10317.73	7938.00	1014.7	4028.8	.0	247.30	-531.00	3177.01	5502.87
14	3937.6	4588.9	6046.7	10363.12	7938.00	1016.8	4588.9	.0	281.87	-531.00	3636.62	6226.21
15	4397.2	5149.1	6771.1	10404.74	7938.00	1018.9	5149.1	.0	316.62	-531.00	4096.23	6949.81
16	4856.8	5723.6	7506.5	10453.97	7938.00	1021.1	5723.6	.0	352.12	-531.00	4555.85	7684.28
17	5316.4	6298.1	8242.0	10499.57	7938.00	1023.2	6298.1	.0	387.80	-531.00	5015.46	8418.98
18	5776.0	6887.0	8988.5	10551.08	7938.00	1025.5	6887.0	.0	424.24	-531.00	5475.07	9164.63
19	6235.6	7461.5	9724.1	10591.29	7938.00	1027.7	7461.5	.0	460.32	-531.00	5934.68	9899.66
20	6695.2	8064.8	10481.7	10644.83	7938.00	1030.0	8064.8	.0	497.74	-531.00	6394.30	10656.50
21	7154.9	8668.0	11239.5	10695.32	7938.00	1032.3	8668.0	.0	535.36	-531.00	6853.91	11413.56
22	7614.5	9271.2	11997.3	10743.37	7938.00	1034.6	9271.2	.0	573.21	-531.00	7313.52	12170.77
23	8074.1	9874.5	12755.2	10789.50	7938.00	1036.9	9874.5	.0	611.27	-531.00	7773.14	12928.13
24	8533.7	10477.7	13513.2	10834.05	7938.00	1039.3	10477.7	.0	649.54	-531.00	8232.75	13685.60
25	8993.3	11109.7	14293.5	10888.26	7938.00	1041.8	11109.7	.0	689.22	-531.00	8692.36	14465.21
26	9452.9	11741.7	15074.0	10940.36	7938.00	1044.2	11741.7	.0	729.13	-531.00	9151.97	15245.01
27	9912.5	12373.6	15854.5	10990.69	7938.00	1046.7	12373.6	.0	769.29	-531.00	9611.59	16024.97
28	10372.1	13005.6	16635.1	11039.55	7938.00	1049.2	13005.6	.0	809.68	-531.00	10071.20	16805.06
29	10831.8	13637.6	17415.8	11087.16	7938.00	1051.8	13637.6	.0	850.32	-531.00	10530.81	17585.27
30	11291.4	14298.3	18219.1	11142.41	7938.00	1054.4	14298.3	.0	892.42	-531.00	10990.42	18387.92
31	11751.0	14959.0	19022.5	11196.14	7938.00	1057.1	14959.0	.0	934.79	-531.00	11450.04	19190.74
32	12210.6	15619.6	19826.0	11248.53	7938.00	1059.7	15619.6	.0	977.43	-531.00	11909.65	19993.73
33	12670.2	16309.1	20652.3	11307.57	7938.00	1062.5	16309.1	.0	1021.59	-531.00	12369.26	20819.36
34	13129.8	16969.8	21456.1	11357.57	7938.00	1065.2	16969.8	.0	1064.77	-531.00	12828.87	21622.66
35	13589.4	17659.2	22282.7	11414.01	7938.00	1068.0	17659.2	.0	1109.50	-531.00	13288.48	22448.66
36	14049.0	18348.6	23109.4	11469.27	7938.00	1070.9	18348.6	.0	1154.52	-531.00	13748.10	23274.85
37	14508.6	19038.0	23936.3	11523.55	7938.00	1073.8	19038.0	.0	1199.85	-531.00	14207.71	24101.20
38	14968.3	19784.9	24809.1	11590.25	7938.00	1076.9	19784.9	.0	1248.09	-531.00	14667.32	24973.18
39	15427.9	20474.3	25636.2	11642.45	7938.00	1079.8	20474.3	.0	1294.02	-531.00	15126.93	25799.89
40	15887.5	21221.2	26509.4	11706.66	7938.00	1082.9	21221.2	.0	1342.93	-531.00	15586.55	26672.40
41	16347.1	21910.6	27336.8	11757.40	7938.00	1085.8	21910.6	.0	1389.49	-531.00	16046.16	27499.40
42	16806.7	22657.5	28210.4	11819.73	7938.00	1089.0	22657.5	.0	1439.08	-531.00	16505.77	28372.35
43	17266.3	23404.3	29084.2	11880.94	7938.00	1092.2	23404.3	.0	1489.02	-531.00	16965.38	29245.54
44	17725.9	24151.2	29958.1	11941.40	7938.00	1095.5	24151.2	.0	1539.31	-531.00	17425.00	30118.94
45	18185.6	24955.5	30878.7	12012.03	7938.00	1098.9	24955.5	.0	1592.74	-531.00	17884.61	31038.72

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
46	18645.2	25702.4	31753.0	12070.94	7938.00	1102.2	25702.4	.0	1643.79	-531.00	18344.22	31912.60
47	19104.8	26506.7	32674.1	12139.72	7938.00	1105.7	26506.7	.0	1698.02	-531.00	18803.84	32833.00
48	19564.4	27311.1	33595.5	12207.64	7938.00	1109.3	27311.1	.0	1752.68	-531.00	19263.45	33753.73
49	20024.0	28115.4	34517.2	12274.72	7938.00	1112.9	28115.4	.0	1807.75	-531.00	19723.06	34674.76
50	20483.6	28919.7	35439.1	12341.15	7938.00	1116.5	28919.7	.0	1863.27	-531.00	20182.68	35596.07
51	20943.2	29724.0	36361.2	12407.01	7938.00	1120.1	29724.0	.0	1919.22	-531.00	20642.29	36517.63
52	21402.8	30528.4	37283.5	12472.30	7938.00	1123.8	30528.4	.0	1975.59	-531.00	21101.90	37439.44
53	21862.5	31390.1	38253.2	12546.56	7938.00	1127.7	31390.1	.0	2035.42	-531.00	21561.52	38408.40
54	22322.1	32251.9	39223.2	12620.02	7938.00	1131.7	32251.9	.0	2095.72	-531.00	22021.13	39377.74
55	22781.7	33113.7	40193.5	12692.88	7938.00	1135.7	33113.7	.0	2156.54	-531.00	22480.74	40347.44
56	23241.3	33975.5	41164.2	12765.27	7938.00	1139.7	33975.5	.0	2217.87	-531.00	22940.36	41317.47
57	23700.9	34894.7	42182.6	12845.79	7938.00	1144.0	34894.7	.0	2282.82	-531.00	23399.97	42335.14
58	24160.5	35756.5	43153.9	12917.17	7938.00	1148.1	35756.5	.0	2345.21	-531.00	23859.58	43305.84
59	24620.1	36675.7	44173.0	12996.75	7938.00	1152.5	36675.7	.0	2411.32	-531.00	24319.20	44324.33
60	25079.8	37594.9	45192.6	13075.80	7938.00	1156.9	37594.9	.0	2478.01	-531.00	24778.81	45343.24
61	25539.4	38514.1	46212.5	13154.42	7938.00	1161.4	38514.1	.0	2545.30	-531.00	25238.42	46362.53
62	25999.0	39490.8	47280.8	13240.85	7938.00	1166.2	39490.8	.0	2616.51	-531.00	25698.04	47430.02
63	26458.6	40410.0	48301.4	13318.82	7938.00	1170.7	40410.0	.0	2685.06	-531.00	26157.65	48450.10
64	26918.2	41444.2	49418.7	13412.39	7938.00	1175.8	41444.2	.0	2760.96	-531.00	26617.26	49566.54
65	27377.8	42420.8	50488.3	13497.65	7938.00	1180.7	42420.8	.0	2834.24	-531.00	27076.88	50635.50
66	27837.4	43455.0	51606.8	13590.34	7938.00	1185.9	43455.0	.0	2911.65	-531.00	27536.49	51753.13
67	28297.0	44489.1	52725.7	13682.73	7938.00	1191.2	44489.1	.0	2989.87	-531.00	27996.10	52871.36
68	28756.7	45523.2	53845.2	13774.90	7938.00	1196.5	45523.2	.0	3068.90	-531.00	28455.71	53990.16
69	29216.3	46557.4	54965.2	13866.89	7938.00	1201.9	46557.4	.0	3148.75	-531.00	28915.33	55109.47
70	29675.9	47591.5	56085.7	13958.80	7938.00	1207.3	47591.5	.0	3229.43	-531.00	29374.94	56229.28
71	30135.5	48740.5	57304.3	14065.30	7938.00	1213.4	48740.5	.0	3318.24	-531.00	29834.55	57447.02
72	30595.1	49774.7	58425.8	14157.06	7938.00	1218.9	49774.7	.0	3400.70	-531.00	30294.17	58567.89
73	31054.7	50923.7	59645.8	14263.23	7938.00	1225.1	50923.7	.0	3491.47	-531.00	30753.78	59787.02
74	31514.3	52072.7	60866.4	14369.55	7938.00	1231.3	52072.7	.0	3583.35	-531.00	31213.39	61006.88
75	31973.9	53336.7	62186.3	14489.94	7938.00	1238.3	53336.7	.0	3683.93	-531.00	31673.01	62325.75
76	32433.6	54485.7	63408.4	14596.25	7938.00	1244.7	54485.7	.0	3778.07	-531.00	32132.62	63547.16
77	32893.2	55749.6	64730.1	14716.62	7938.00	1251.8	55749.6	.0	3881.17	-531.00	32592.24	64867.91
78	33352.8	56898.7	65953.5	14823.26	7938.00	1258.3	56898.7	.0	3977.60	-531.00	33051.84	66090.68
79	33812.4	58162.6	67276.8	14944.13	7938.00	1265.6	58162.6	.0	4083.34	-531.00	33511.46	67413.11
80	34272.0	59541.4	68700.5	15079.10	7938.00	1273.6	59541.4	.0	4198.65	-531.00	33971.07	68835.77
81	34731.6	60805.4	70025.6	15200.75	7938.00	1281.0	60805.4	.0	4307.33	-531.00	34430.68	70160.09
82	35191.2	62184.2	71451.4	15336.56	7938.00	1289.3	62184.2	.0	4425.90	-531.00	34890.30	71584.96
83	35650.9	63563.1	72878.3	15472.80	7938.00	1297.6	63563.1	.0	4546.19	-531.00	35349.91	73010.96
84	36110.5	65056.8	74406.7	15623.35	7938.00	1306.7	65056.8	.0	4677.02	-531.00	35809.52	74538.29
85	36570.1	66550.5	75936.4	15774.46	7938.00	1316.0	66550.5	.0	4809.88	-531.00	36269.14	76067.05
86	37029.7	68044.3	77467.5	15926.62	7938.00	1325.4	68044.3	.0	4944.94	-531.00	36728.75	77597.18
87	37489.3	69538.0	78999.9	16079.56	7938.00	1334.9	69538.0	.0	5082.12	-531.00	37188.36	79128.58
88	37948.9	71146.6	80634.8	16247.11	7938.00	1345.3	71146.6	.0	5230.88	-531.00	37647.98	80762.38
89	38408.5	72755.3	82271.2	16416.01	7938.00	1355.9	72755.3	.0	5382.32	-531.00	38107.59	82397.77
90	38868.1	74478.8	84010.9	16600.16	7938.00	1367.5	74478.8	.0	5546.22	-531.00	38567.20	84136.32
91	39327.8	76317.2	85854.5	16799.55	7938.00	1380.0	76317.2	.0	5723.18	-531.00	39026.82	85978.70
92	39787.4	78155.7	87700.3	17000.91	7938.00	1392.7	78155.7	.0	5903.70	-531.00	39486.43	87823.33
93	40247.0	79994.1	89548.2	17204.38	7938.00	1405.7	79994.1	.0	6088.03	-531.00	39946.04	89670.05
94	40706.6	82062.4	91603.8	17438.25	7938.00	1420.6	82062.4	.0	6297.44	-531.00	40405.66	91724.30
95	41166.2	84130.6	93662.2	17675.08	7938.00	.0	84130.6	.1	6511.85	-531.00	.00	93781.41
96	41625.8	86428.6	95930.3	17943.80	7938.00	.0	86428.6	459.7	6753.82	-531.00	.00	96047.94
97	42085.4	89071.4	98513.4	18260.18	7938.00	.0	89071.4	919.4	7037.00	-531.00	.00	98629.27
98	42545.1	91829.0	101206.0	18597.32	7938.00	.0	91829.0	1379.0	7341.10	-531.00	.00	101320.00
99	43004.7	94816.5	104113.3	18971.45	7938.00	.0	94816.5	1838.6	7680.13	-531.00	.00	104225.30

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	6550.	0.	983.	1002.	549.	774	774	774	774	774	774	774	774	774	774	774	774
16.0	.2	176.	10.98	0.	6563.	24131.	1022.	1002.	579.	808	814	808	793	774	756	744	740	744	756	774	793
32.0	.4	353.	11.05	0.	6602.	48436.	1067.	1002.	616.	848	861	848	814	774	740	720	713	720	740	774	814
48.0	.6	532.	11.20	0.	6667.	73090.	1120.	1002.	657.	893	915	893	837	774	726	700	692	700	726	774	837
64.0	.8	731.	12.44	0.	6743.	101077.	1180.	1003.	704.	943	977	943	861	774	713	680	661	680	713	774	861
80.0	1.0	959.	14.29	0.	6820.	134293.	1248.	1003.	757.	999	1046	999	888	775	702	650	627	650	702	775	888
96.0	1.2	1192.	14.51	0.	6910.	168079.	1317.	1003.	811.	1059	1116	1059	916	775	692	621	595	621	692	775	916
112.0	1.4	1437.	15.34	0.	7012.	203417.	1398.	1003.	874.	1122	1199	1122	947	775	679	593	564	593	679	775	947
128.0	1.6	1708.	16.95	0.	7136.	242368.	1494.	1003.	948.	1194	1296	1194	979	776	662	567	536	567	662	776	979
144.0	1.8	2005.	18.55	0.	7291.	285534.	1606.	1004.	1035.	1276	1410	1276	1014	776	645	542	508	542	645	776	1014
160.0	2.0	2331.	20.40	0.	7480.	333678.	1738.	1004.	1137.	1371	1544	1371	1050	777	629	518	482	518	629	777	1050
176.0	2.2	2687.	22.24	0.	7701.	387181.	1888.	1005.	1253.	1482	1695	1482	1085	777	613	495	458	495	613	777	1085
192.0	2.4	3074.	24.17	0.	7959.	445687.	2055.	1005.	1381.	1606	1864	1606	1123	778	598	473	435	473	598	778	1123
208.0	2.6	3492.	26.12	0.	8253.	509143.	2240.	1006.	1523.	1743	2050	1743	1164	779	583	453	414	453	583	779	1164
224.0	2.8	3946.	28.39	0.	8588.	578300.	2450.	1006.	1683.	1893	2261	1893	1210	780	568	433	394	433	568	780	1210
240.0	3.0	4423.	29.79	0.	8951.	650865.	2664.	1007.	1847.	2057	2477	2057	1259	781	554	415	375	415	554	781	1259
256.0	3.2	4902.	29.95	1.	9326.	723653.	2845.	1007.	1986.	2241	2658	2241	1312	782	540	397	358	397	540	782	1312
272.0	3.4	5422.	32.47	0.	9744.	802488.	3065.	1008.	2155.	2432	2879	2432	1371	783	527	381	341	381	527	783	1371
288.0	3.6	5955.	33.34	0.	10176.	881695.	3350.	1009.	2373.	2594	3165	2594	1435	784	514	366	326	366	514	784	1435
304.0	3.8	6482.	32.96	-1.	10611.	959126.	3610.	1009.	2571.	2764	3425	2764	1504	785	501	351	313	351	501	785	1504
320.0	4.0	7075.	37.03	0.	11119.	1048230.	3854.	1010.	2758.	2990	3670	2990	1579	786	489	338	300	338	489	786	1579
336.0	4.2	7692.	38.54	0.	11658.	1141060.	4089.	1011.	2939.	3239	3906	3239	1658	787	477	325	289	325	477	787	1658
352.0	4.4	8277.	36.62	-1.	12171.	1227049.	4322.	1011.	3119.	3462	4140	3462	1742	789	465	313	279	313	465	789	1742
368.0	4.6	8854.	36.02	-1.	12679.	1310183.	4558.	1012.	3300.	3675	4376	3675	1831	790	454	303	270	303	454	790	1831
384.0	4.8	9431.	36.05	-1.	13192.	1392184.	4801.	1013.	3488.	3882	4619	3882	1926	792	443	293	261	293	443	792	1926
400.0	5.0	10026.	37.19	0.	13726.	1476115.	5067.	1014.	3693.	4087	4886	4087	2025	793	433	283	254	283	433	793	2025
416.0	5.2	10629.	37.74	0.	14275.	1560325.	5338.	1014.	3902.	4292	5157	4292	2132	795	423	275	248	275	423	795	2132
432.0	5.4	11240.	38.17	0.	14837.	1644304.	5603.	1015.	4106.	4502	5422	4502	2247	797	413	268	243	268	413	797	2247
448.0	5.6	11862.	38.84	0.	15414.	1729938.	5856.	1016.	4302.	4725	5676	4725	2363	798	403	261	238	261	403	798	2363
464.0	5.8	12497.	39.69	0.	16004.	1818389.	6111.	1017.	4499.	4961	5931	4961	2476	800	394	255	235	255	394	800	2476
480.0	6.0	13132.	39.70	0.	16586.	1908857.	6381.	1017.	4708.	5200	6201	5200	2572	802	385	249	232	249	385	802	2572
496.0	6.2	13767.	39.73	0.	17171.	1998413.	6661.	1018.	4925.	5431	6482	5431	2671	804	377	245	230	245	377	804	2671
512.0	6.4	14397.	39.34	0.	17756.	2084932.	6937.	1019.	5139.	5653	6758	5653	2781	807	368	241	229	241	368	807	2781
528.0	6.6	15027.	39.39	-1.	18361.	2167510.	7183.	1020.	5331.	5877	7004	5877	2918	809	361	237	229	237	361	809	2918
544.0	6.8	15674.	40.42	-1.	18992.	2250521.	7419.	1020.	5516.	6108	7241	6108	3072	811	353	234	229	234	353	811	3072
560.0	7.0	16339.	41.55	0.	19643.	2336736.	7655.	1021.	5701.	6355	7477	6355	3225	814	346	232	230	232	346	814	3225
576.0	7.2	17007.	41.79	1.	20290.	2424932.	7910.	1022.	5900.	6601	7733	6601	3365	816	338	231	232	231	338	816	3365
592.0	7.4	17661.	40.84	0.	20919.	2510471.	8169.	1023.	6103.	6836	7992	6836	3501	819	332	229	234	229	332	819	3501
608.0	7.6	18280.	38.73	0.	21513.	2589788.	8425.	1023.	6303.	7049	8248	7049	3634	821	325	229	236	229	325	821	3634
624.0	7.8	18870.	36.82	0.	22078.	2663772.	8651.	1024.	6482.	7257	8474	7257	3764	824	319	229	240	229	319	824	3764
640.0	8.0	19457.	36.74	-1.	22640.	2737427.	8878.	1025.	6661.	7465	8702	7465	3892	827	313	229	243	229	313	827	3892
656.0	8.2	20075.	38.58	-1.	23232.	2816185.	9116.	1025.	6849.	7688	8940	7688	4020	830	307	230	247	230	307	830	4020
672.0	8.4	20732.	41.09	-1.	23861.	2901549.	9399.	1026.	7070.	7917	9223	7917	4148	833	302	232	252	232	302	833	4148
688.0	8.6	21398.	41.64	1.	24499.	2987886.	9695.	1027.	7301.	8145	9519	8145	4277	836	296	233	257	233	296	836	4277
704.0	8.8	22032.	39.58	0.	25105.	3067540.	9972.	1028.	7519.	8356	9797	8356	4407	840	291	236	262	236	291	840	4407
720.0	9.0	22620.	36.76	0.	25670.	3138461.	10207.	1029.	7705.	855510032	8555	4541	843	287	238	268	238	287	843	4541	
736.0	9.2	23209.	36.86	-1.	26241.	3208312.	10428.	1029.	7882.	875710253	8757	4682	847	282	241	273	241	282	847	4682	
752.0	9.4	23816.	37.91	0.	26832.	3280031.	10645.	1030.	8056.	897110470	8971	4829	850	278	244	280	244	278	850	4829	
768.0	9.6	24492.	42.24	0.	27493.	3364083.	10879.	1031.	8242.	922510705	9225	4979	854	274	248	286	248	274	854	4979	
784.0	9.8	25182.	43.16	0.	28169.	3450341.	11119.	1031.	8433.	948710945	9487	5130	858	270	252	292	252	270	858	5130	
800.0	10.0	25867.	42.80	-1.	28838.	3535025.	11362.	1032.	8627.	974111188	9741	5281	862	266	256	299	256	266	862	5281	

MAX = 913

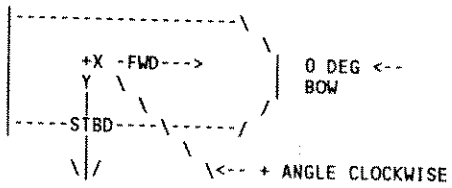
VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
816.0	10.2	26496.	39.31	0.	29445.	3609533.	11610.	1033.	8824.	995311436	9953	5426	866	262	260	305	260	262	866	5426	
832.0	10.4	27110.	38.34	0.	30033.	3681075.	11861.	1034.	9025.	101531168810153	5567	870	259	265	312	265	259	870	5567		
848.0	10.6	27718.	38.02	0.	30614.	3751201.	12116.	1034.	9228.	103461194310346	5709	875	256	269	319	269	256	875	5709		
864.0	10.8	28335.	38.59	-1.	31204.	3822494.	12375.	1035.	9434.	105431220210543	5852	879	253	274	325	274	253	879	5852		
880.0	11.0	28975.	39.98	0.	31815.	3897340.	12637.	1036.	9643.	107521246410752	5997	884	251	279	332	279	251	884	5997		
896.0	11.2	29629.	40.92	-1.	32445.	3973298.	12903.	1037.	9854.	109651273010965	6150	889	248	285	339	285	248	889	6150		
912.0	11.4	30300.	41.93	0.	33091.	4051100.	13178.	1038.	10073.	111811300511181	6308	894	246	290	345	290	246	894	6308		
928.0	11.6	30976.	42.24	-1.	33741.	4129416.	13451.	1039.	10291.	114011327911401	6467	899	243	295	351	295	243	899	6467		
944.0	11.8	31650.	42.08	-1.	34387.	4207174.	13715.	1039.	10501.	116231354311623	6625	904	241	301	357	301	241	904	6625		
960.0	12.0	32306.	41.02	-1.	35014.	4282170.	13952.	1040.	10693.	118491378011849	6779	910	240	306	363	306	240	910	6779		
976.0	12.2	32949.	40.18	-1.	35619.	4356686.	14180.	1041.	10878.	120771400812077	6919	915	238	312	369	312	238	915	6919		
992.0	12.4	33592.	40.17	-1.	36221.	4431387.	14405.	1042.	11061.	123081423312308	7056	921	236	318	374	318	236	921	7056		
1008.0	12.6	34244.	40.77	-1.	36828.	4507778.	14638.	1042.	11250.	125431446712543	7191	927	235	323	379	323	235	927	7191		
1024.0	12.8	34906.	41.36	-1.	37442.	4585643.	14877.	1043.	11443.	127801470512780	7325	933	234	329	384	329	234	933	7325		
1040.0	13.0	35581.	42.23	0.	38069.	4665727.	15118.	1044.	11639.	130251494713025	7460	939	233	334	388	334	233	939	7460		
1056.0	13.2	36266.	42.77	-1.	38706.	4745645.	15362.	1045.	11836.	132691519113269	7604	946	232	340	392	340	232	946	7604		
1072.0	13.4	36950.	42.80	0.	39343.	4824397.	15608.	1045.	12036.	135061543713506	7753	952	231	345	395	345	231	952	7753		
1088.0	13.6	37608.	41.10	1.	39948.	4897334.	15857.	1046.	12238.	137201568613720	7902	959	230	350	398	350	230	959	7902		
1104.0	13.8	38258.	40.63	0.	40543.	4968424.	16108.	1047.	12441.	139251593813925	8052	966	230	356	401	356	230	966	8052		
1120.0	14.0	38905.	40.44	0.	41131.	5038714.	16362.	1048.	12647.	141261619214126	8200	974	229	361	402	361	229	974	8200		
1136.0	14.2	39547.	40.10	-1.	41704.	5109511.	16618.	1049.	12854.	143281644814328	8336	981	229	365	404	365	229	981	8336		
1152.0	14.4	40200.	40.84	-1.	42284.	5183141.	16878.	1049.	13065.	145391670814539	8467	989	229	370	404	370	229	989	8467		
1168.0	14.6	40862.	41.39	1.	42870.	5257991.	17143.	1050.	13279.	147531697314753	8598	996	229	374	404	374	229	996	8598		
1184.0	14.8	41530.	41.71	0.	43459.	5333111.	17406.	1051.	13492.	149681723614968	8731	1004	229	379	403	379	229	1004	8731		
1200.0	15.0	42199.	41.81	0.	44049.	5407560.	17658.	1052.	13697.	151861748915186	8869	1013	229	383	401	383	229	1013	8869		
1216.0	15.2	42869.	41.90	0.	44643.	5480465.	17894.	1053.	13891.	154061772515406	9017	1021	229	386	399	386	229	1021	9017		
1232.0	15.4	43560.	43.18	-1.	45264.	5553272.	18124.	1054.	14081.	156281795515628	9187	1030	230	390	396	390	230	1030	9187		
1248.0	15.6	44257.	43.56	0.	45889.	5626429.	18353.	1054.	14270.	158521818415852	9360	1039	230	393	392	393	230	1039	9360		
1264.0	15.8	44964.	44.18	0.	46520.	5701048.	18589.	1055.	14463.	160781842016078	9533	1048	231	395	387	395	231	1048	9533		
1280.0	16.0	45675.	44.47	0.	47150.	5776642.	18827.	1056.	14660.	163061865916306	9704	1056	231	398	381	398	231	1056	9704		
1296.0	16.2	46373.	43.60	0.	47751.	5853076.	19068.	1057.	14858.	165361889916536	9851	1065	232	400	374	400	232	1065	9851		
1312.0	16.4	47074.	43.80	-1.	48346.	5931303.	19312.	1057.	15058.	167701914416770	9989	1074	233	402	366	402	233	1074	9989		
1328.0	16.6	47778.	44.00	0.	48939.	6010623.	19559.	1058.	15261.	170071939117007101 23	1083	234	403	358	403	234	10831	0122			
1344.0	16.8	48477.	43.71	0.	49521.	6089264.	19804.	1059.	15463.	172411963617241102 52	1092	235	404	348	404	235	10921	0252			
1360.0	17.0	49163.	42.86	-1.	50084.	6165171.	20042.	1060.	15660.	174681987517468103 81	1102	236	404	337	404	236	11021	0381			
1376.0	17.2	49823.	41.23	0.	50617.	6235319.	20264.	1061.	15846.	176812009717681105 12	1113	237	404	325	404	237	11131	0512			
1392.0	17.4	50486.	41.46	0.	51153.	6304273.	20486.	1061.	16030.	178882031817888106 52	1123	238	404	311	404	238	11231	0652			
1408.0	17.6	51153.	41.70	-1.	51689.	6373299.	20710.	1062.	16218.	180932054318093107 93	1134	240	403	297	403	240	11341	0793			
1424.0	17.8	51841.	42.97	-1.	52241.	6445461.	20953.	1063.	16419.	183012078618301109 37	1145	241	401	281	401	241	11451	0937			
1440.0	18.0	52550.	44.34	-1.	52811.	6521153.	21210.	1064.	16630.	185142104318514110 82	1157	242	399	264	399	242	11571	1082			
1456.0	18.2	53267.	44.81	-1.	53384.	6597686.	21469.	1065.	16843.	187292130218729112 28	1169	244	396	246	396	244	11691	1228			
1472.0	18.4	53984.	44.83	-1.	53954.	6673754.	21719.	1066.	17050.	189452155218945113 76	1182	245	393	227	393	245	11821	1376			
1488.0	18.6	54701.	44.80	-1.	54519.	6749321.	21955.	1066.	17247.	191652178919165115 26	1195	247	389	206	389	247	11951	1526			
1504.0	18.8	55422.	45.06	-1.	55083.	6825191.	22188.	1067.	17441.	193872202219387116 78	1208	248	385	183	385	248	12081	1678			
1520.0	19.0	56145.	45.18	-1.	55644.	6900957.	22419.	1068.	17635.	196072225319607118 31	1222	250	380	159	380	250	12221	1831			
1536.0	19.2	56872.	45.47	0.	56204.	6977138.	22656.	1069.	17832.	198252249019825119 86	1237	252	374	134	374	252	12371	1986			
1552.0	19.4	57584.	44.47	0.	56739.	7049869.	22895.	1070.	18031.	200262272920026121 42	1252	254	368	107	368	254	12521	2142			

DEEPWATER, ARAMID MOORING LINE JIP
CASE T8S12T tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP.		RESTORING FORCE ON VESSEL	INCREMENT STIFFNESS	YAW MOMENT	VERTICAL FORCE	OVERTURN MOMENT	MAX.LINE LOAD	LINE ON BOTTOM	HOR.FORCE ON ANCHOR	LINE LOAD (KIPS) LINE NUMBER												
(FT)	(% WD)	(KIPS)	(KIPS/FT)	(FT-KIP)	(KIPS)	(FT-KIP)	(KIPS)	(FT)	(KIPS)	1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	6062.	209517.	1139.	1002.	672.	935	0	935	857	774	715	685	666	685	715	774	857
16.0	.2	176.	11.03	635.	6091.	232272.	1201.	1003.	721.	998	0	975	866	762	698	650	634	662	711	788	899
32.0	.4	358.	11.38	1356.	6132.	255802.	1268.	1003.	773.	1066	0	1018	875	750	680	617	604	641	708	803	944
48.0	.6	550.	11.97	1379.	6178.	279699.	1339.	1003.	829.	1139	0	1064	885	740	654	586	575	619	704	817	993
64.0	.8	751.	12.57	886.	6240.	305259.	1423.	1003.	893.	1224	0	1112	897	732	629	557	546	598	699	831	1046
80.0	1.0	962.	13.22	-305.	6319.	332639.	1521.	1004.	970.	1324	0	1165	909	723	605	529	520	578	696	847	1098
96.0	1.2	1191.	14.29	-1815.	6422.	362884.	1636.	1004.	1059.	1441	0	1225	922	715	582	502	495	558	692	864	1157
112.0	1.4	1439.	15.50	-3625.	6551.	396143.	1770.	1004.	1162.	1576	0	1293	935	708	559	477	471	539	689	881	1224
128.0	1.6	1706.	16.69	-5353.	6705.	432208.	1921.	1005.	1278.	1729	0	1368	949	702	538	454	448	520	683	898	1299
144.0	1.8	1993.	17.95	-6806.	6885.	471294.	2089.	1005.	1406.	1898	0	1452	963	696	518	432	427	503	677	917	1383
160.0	2.0	2303.	19.35	-8029.	7094.	513692.	2274.	1006.	1548.	2084	0	1545	978	690	498	411	407	486	670	937	1480
176.0	2.2	2639.	21.00	-9642.	7333.	560185.	2483.	1006.	1708.	2294	0	1650	995	684	480	391	388	469	663	956	1584
192.0	2.4	2980.	21.34	-9654.	7583.	607103.	2688.	1007.	1865.	2500	0	1763	1012	675	462	373	370	453	656	976	1699
208.0	2.6	3311.	20.64	-6633.	7830.	652006.	2866.	1007.	2002.	2679	0	1883	1030	665	446	356	354	438	649	997	1824
224.0	2.8	3683.	23.25	-5351.	8122.	703334.	3090.	1008.	2174.	2904	0	2014	1048	656	430	341	339	423	642	1019	1958
240.0	3.0	4106.	26.49	-6272.	8468.	762832.	3369.	1009.	2387.	3184	0	2158	1066	648	415	326	325	409	634	1041	2100
256.0	3.2	4523.	26.05	-3399.	8816.	820759.	3622.	1009.	2580.	3437	0	2314	1085	639	400	313	312	395	628	1061	2260
272.0	3.4	4930.	25.40	505.	9159.	876794.	3860.	1010.	2763.	3676	0	2467	1104	631	386	301	300	382	621	1083	2422
288.0	3.6	5303.	23.34	1592.	9468.	927692.	4090.	1011.	2940.	3907	0	2597	1125	623	373	289	289	370	614	1105	2562
304.0	3.8	5678.	23.44	3268.	9783.	978882.	4319.	1011.	3116.	4136	0	2732	1146	614	361	279	279	358	607	1129	2701
320.0	4.0	6088.	25.63	9214.	10146.	1035254.	4550.	1012.	3294.	4368	0	2900	1168	606	349	270	270	347	601	1156	2873
336.0	4.2	6544.	28.50	19921.	10566.	1097838.	4787.	1013.	3478.	4606	0	3099	1190	598	338	262	262	337	596	1185	3088
352.0	4.4	7009.	29.07	28079.	10996.	1162013.	5048.	1013.	3678.	4867	0	3293	1214	590	327	255	255	327	590	1214	3294
368.0	4.6	7461.	28.21	33730.	11413.	1224229.	5313.	1014.	3883.	5133	0	3475	1240	582	317	249	249	318	584	1244	3483
384.0	4.8	7901.	27.51	38655.	11821.	1284628.	5574.	1015.	4084.	5394	0	3650	1268	575	308	244	244	309	578	1276	3665
400.0	5.0	8327.	26.60	43714.	12217.	1342659.	5822.	1016.	4276.	5642	0	3821	1296	568	300	239	239	301	572	1310	3842
416.0	5.2	8751.	26.52	48384.	12615.	1400331.	6072.	1016.	4469.	5892	0	3989	1327	561	292	236	236	293	566	1346	4018
432.0	5.4	9184.	27.05	52194.	13025.	1459182.	6333.	1017.	4671.	6153	0	4157	1359	554	284	233	233	286	560	1384	4193
448.0	5.6	9628.	27.80	55221.	13450.	1519894.	6607.	1018.	4884.	6428	0	4328	1393	547	277	231	231	279	555	1423	4369
464.0	5.8	10076.	27.98	58844.	13882.	1580721.	6879.	1019.	5094.	6700	0	4501	1429	541	271	230	230	273	549	1466	4550
480.0	6.0	10519.	27.67	65648.	14318.	1640501.	7127.	1019.	5287.	6948	0	4685	1468	534	265	229	229	267	544	1510	4744
496.0	6.2	10962.	27.70	74718.	14759.	1699799.	7360.	1020.	5470.	7182	0	4875	1505	528	259	229	229	262	539	1559	4949
512.0	6.4	11406.	27.74	84207.	15205.	1759202.	7591.	1021.	5650.	7413	0	5069	1545	521	254	230	230	257	534	1609	5155
528.0	6.6	11859.	28.34	92554.	15662.	1820079.	7836.	1022.	5842.	7658	0	5264	1587	515	250	231	231	252	529	1662	5358
544.0	6.8	12310.	28.18	98820.	16118.	1880686.	8090.	1022.	6040.	7912	0	5453	1631	509	246	233	232	248	524	1715	5550
560.0	7.0	12759.	28.01	104830.	16572.	1940556.	8342.	1023.	6238.	8165	0	5637	1677	503	243	235	235	245	519	1771	5741
576.0	7.2	13193.	27.17	112465.	17017.	1997908.	8573.	1024.	6420.	8397	0	5820	1724	497	239	238	237	242	514	1830	5936
592.0	7.4	13628.	27.19	121486.	17466.	2054940.	8795.	1024.	6595.	8618	0	6007	1773	491	237	241	241	239	510	1890	6138
608.0	7.6	14082.	28.38	131588.	17939.	2114658.	9023.	1025.	6775.	8847	0	6205	1823	486	235	245	244	236	505	1954	6352
624.0	7.8	14561.	29.92	139831.	18438.	2178452.	9281.	1026.	6978.	9105	0	6410	1876	480	233	249	248	234	501	2020	6564
640.0	8.0	15061.	31.26	145562.	18958.	2245563.	9570.	1027.	7204.	9395	0	6614	1931	475	231	254	253	233	496	2087	6772
656.0	8.2	15546.	30.28	149343.	19463.	2310601.	9858.	1028.	7429.	9682	0	6809	1987	470	230	259	257	231	492	2161	6960
672.0	8.4	15988.	27.62	154354.	19926.	2368423.	10102.	1028.	7622.	9926	0	6987	2045	464	229	264	262	230	488	2237	7141
688.0	8.6	16411.	26.46	160264.	20373.	2423071.	10324.	1029.	7799.	10149	0	7161	2107	459	229	269	268	229	484	2313	7320
704.0	8.8	16829.	26.16	166441.	20816.	2476579.	10538.	1030.	7970.	10363	0	7332	2171	454	229	275	273	229	480	2392	7501
720.0	9.0	17263.	27.09	173297.	21276.	2531666.	10758.	1030.	8146.	10583	0	7505	2239	450	229	281	279	229	476	2467	7697
736.0	9.2	17712.	28.08	180546.	21748.	2589149.	10991.	1031.	8332.	10817	0	7690	2302	444	230	287	285	229	472	2534	7899
752.0	9.4	18166.	28.35	187678.	22224.	2647035.	11229.	1032.	8521.	11055	0	7874	2364	439	231	293	291	229	469	2603	8101
768.0	9.6	18618.	28.30	193978.	22698.	2704947.	11471.	1032.	8714.	11297	0	8059	2426	434	232	300	297	230	466	2675	8294
784.0	9.8	19065.	27.88	199106.	23162.	2762186.	11716.	1033.	8909.	11542	0	8241	2484	429	233	306	303	231	463	2753	8471
800.0	10.0	19504.	27.47	203045.	23618.	2817973.	11964.	1034.	9107.	11790	0	8411	2543	425	235	313	310	232	459	2830	8642

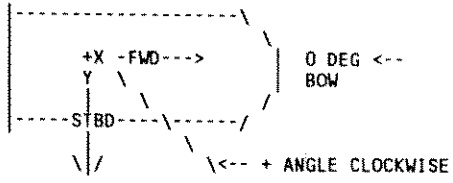
VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE NUMBER	LINE LOAD (KIPS) 1	2	3	4	5	6	7	8	9	10	11	12
816.0	10.2	19953.	28.07	207052.	24089.	2875097.	12215.	1035.	9306.	12041	0	8584	2608	421	237	319	316	234	455	2918	8815
832.0	10.4	20415.	28.86	211644.	24575.	2933805.	12469.	1036.	9509.	12296	0	8762	2677	418	239	326	323	235	450	3009	8997
848.0	10.6	20905.	30.64	218590.	25097.	2995897.	12726.	1036.	9713.	12553	0	8951	2754	415	241	332	330	238	445	3098	9210
864.0	10.8	21423.	32.37	227385.	25652.	3062390.	12989.	1037.	9923.	12816	0	9163	2831	412	244	338	336	240	441	3198	9435
880.0	11.0	21953.	33.08	235358.	26221.	3130649.	13260.	1038.	10138.	13087	0	9379	2914	408	246	345	342	242	438	3298	9662
896.0	11.2	22464.	31.97	241535.	26767.	3196595.	13528.	1039.	10352.	13356	0	9587	2993	403	249	351	348	244	436	3403	9866
912.0	11.4	22947.	30.18	246398.	27279.	3258083.	13781.	1040.	10555.	13609	0	9780	3073	398	253	357	354	247	434	350710051	
928.0	11.6	23397.	28.12	250147.	27754.	3313803.	14012.	1040.	10741.	13840	0	9950	3158	394	256	363	360	249	432	360610227	
944.0	11.8	23835.	27.37	254036.	28210.	3367220.	14236.	1041.	10923.	14064	010113	3239	390	260	368	365	252	430	370110398		
960.0	12.0	24273.	27.40	258442.	28664.	3419996.	14457.	1042.	11103.	14285	010273	3320	386	263	373	370	255	427	379410575		
976.0	12.2	24724.	28.19	262611.	29128.	3474317.	14689.	1042.	11291.	14517	010433	3403	382	267	378	375	258	424	388410759		
992.0	12.4	25186.	28.83	267642.	29600.	3530080.	14924.	1043.	11482.	14753	010601	3483	379	271	383	380	262	422	397510946		
1008.0	12.6	25655.	29.32	273212.	30079.	3586919.	15162.	1044.	11674.	14991	010775	3562	375	275	387	384	265	419	406611137		
1024.0	12.8	26130.	29.71	279099.	30561.	3644439.	15402.	1045.	11869.	15232	010952	3640	372	279	391	388	269	417	415811329		
1040.0	13.0	26612.	30.10	285289.	31048.	3702662.	15645.	1046.	12066.	15475	011131	3718	368	283	394	392	272	414	425011525		
1056.0	13.2	27099.	30.48	291675.	31539.	3761687.	15891.	1046.	12265.	15720	011314	3797	365	288	397	395	276	412	434111722		
1072.0	13.4	27594.	30.91	298448.	32034.	3821372.	16138.	1047.	12466.	15968	011497	3873	362	292	400	398	280	410	443611922		
1088.0	13.6	28095.	31.29	305366.	32533.	3881906.	16388.	1048.	12668.	16218	011685	3952	359	296	402	400	283	407	453112123		
1104.0	13.8	28603.	31.76	312610.	33039.	3943250.	16641.	1049.	12872.	16471	011874	4030	356	301	403	402	287	405	462912328		
1120.0	14.0	29120.	32.33	319939.	33553.	4005877.	16897.	1050.	13080.	16727	012066	4110	353	305	404	403	291	403	473212533		
1136.0	14.2	29645.	32.82	327310.	34074.	4069555.	17157.	1050.	13290.	16987	012262	4191	350	310	404	404	295	400	483612741		
1152.0	14.4	30176.	33.20	335559.	34599.	4133675.	17415.	1051.	13499.	17245	012459	4274	348	314	404	404	299	398	494112955		
1168.0	14.6	30704.	32.97	344591.	35118.	4197011.	17663.	1052.	13701.	17493	012659	4357	345	318	402	404	303	396	504713169		
1184.0	14.8	31224.	32.50	354893.	35626.	4258861.	17895.	1053.	13892.	17726	012860	4437	343	323	401	402	308	394	515713382		
1200.0	15.0	31738.	32.12	364943.	36125.	4320014.	18122.	1054.	14079.	17953	013063	4517	340	327	398	400	312	392	526913586		
1216.0	15.2	32242.	31.51	373972.	36607.	4379688.	18348.	1054.	14265.	18179	013260	4593	337	332	394	398	315	391	538313776		
1232.0	15.4	32748.	31.62	381565.	37087.	4439609.	18581.	1055.	14457.	18412	013453	4673	334	336	390	395	319	389	549513962		
1248.0	15.6	33249.	31.36	387728.	37557.	4498395.	18816.	1056.	14651.	18648	013633	4757	331	341	385	390	323	388	560514143		
1264.0	15.8	33751.	31.33	393218.	38022.	4556515.	19054.	1057.	14846.	18885	013804	4843	328	345	379	386	327	387	571514326		
1280.0	16.0	34260.	31.81	398637.	38491.	4615328.	19294.	1057.	15044.	19126	013973	4935	325	349	372	380	331	385	582114514		
1296.0	16.2	34774.	32.14	403912.	38962.	4674572.	19538.	1058.	15244.	19370	014140	5026	323	354	364	373	335	384	592914704		
1312.0	16.4	35292.	32.36	409515.	39433.	4734025.	19780.	1059.	15443.	19612	014307	5119	321	358	356	366	339	382	603914896		
1328.0	16.6	35816.	32.77	416123.	39910.	4794533.	20017.	1060.	15639.	19849	014484	5214	319	361	346	358	343	381	615415089		
1344.0	16.8	36333.	32.34	424339.	40377.	4853389.	20236.	1061.	15822.	20069	014661	5307	316	365	335	348	346	379	627315285		
1360.0	17.0	36853.	32.49	433211.	40840.	4912418.	20454.	1061.	16004.	20286	014841	5398	314	369	323	338	350	378	639115481		
1376.0	17.2	37380.	32.90	442299.	41305.	4972230.	20674.	1062.	16188.	20507	015023	5487	312	373	310	327	354	376	650915680		
1392.0	17.4	37921.	33.81	450871.	41779.	5034124.	20909.	1063.	16383.	20742	015206	5576	310	376	296	314	357	375	662715880		
1408.0	17.6	38479.	34.90	458529.	42265.	5098700.	21162.	1064.	16591.	20995	015391	5666	308	379	281	301	361	374	674416082		
1424.0	17.8	39041.	35.12	466207.	42747.	5163639.	21417.	1065.	16801.	21251	015576	5755	306	382	264	287	364	373	685416286		
1440.0	18.0	39603.	35.15	474594.	43222.	5228173.	21668.	1065.	17008.	21502	015760	5840	304	385	247	271	367	372	696316494		
1456.0	18.2	40159.	34.74	484328.	43686.	5291313.	21903.	1066.	17203.	21737	015945	5927	302	388	228	255	371	371	707016705		
1472.0	18.4	40718.	34.91	494682.	44147.	5354627.	22134.	1067.	17395.	21967	016132	6015	300	391	207	237	374	370	717616920		
1488.0	18.6	41280.	35.11	505097.	44606.	5418208.	22363.	1068.	17587.	22197	016318	6103	298	393	186	218	376	370	728517136		
1504.0	18.8	41847.	35.43	514957.	45065.	5482821.	22595.	1069.	17782.	22429	016505	6195	296	395	162	199	379	369	739417349		
1520.0	19.0	42414.	35.46	524114.	45516.	5547941.	22832.	1069.	17979.	22666	016691	6283	294	397	138	178	382	369	750717552		
1536.0	19.2	42986.	35.74	532972.	45966.	5614458.	23069.	1070.	18177.	22904	016881	6371	291	399	112	155	384	369	763117747		

DEEPWATER, ARAMID MOORING LINE JIP
CASE T10A12N tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

T10A12N

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	15.0	45.0	75.0	105.0	135.0	165.0	-165.0	-135.0	-105.0	-75.0	-45.0	-15.0
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	210.0	210.0	210.0	210.0	210.0	210.0	210.0	210.0	210.0	210.0	210.0	210.0

INITIAL VESSEL YAW ANGLES (DEG) .00

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	10000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	10000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	300.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	2500.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	150.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	ARAMID
LINE SIZE (IN)	5.875"
LINE LENGTH (FT)	9450.0
WEIGHT IN WATER (LB/FT)	2.14
LINE B.S. (KIPS)	3481.0
AREA (SQ IN)	1.00
APP.MOD. OF ELAS.(KSI)	139000.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	6.250"
LINE LENGTH (FT)	250.0
WEIGHT IN WATER (LB/FT)	322.85
LINE B.S. (KIPS)	3623.0
AREA (SQ IN)	30.68
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	10800.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	5.500"
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	54.74
LINE B.S. (KIPS)	3474.0
AREA (SQ IN)	23.76
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
1	176.4	.0	176.4	3712.00	9938.00	3712.0	.0	.0				
2	186.4	11.5	186.8	7670.31	9938.00	1235.4	11.5	.0	2.71	.00	.00	.00
3	196.4	21.1	197.6	8065.81	9938.00	1204.5	21.1	.0	3.83	.00	.00	.00
4	206.4	30.0	208.6	8237.63	9938.00	1173.5	30.0	.0	4.93	.00	.00	.00
5	216.4	38.8	219.9	8345.53	9938.00	1142.6	38.8	.0	6.03	.00	.00	.00
6	226.4	47.4	231.3	8426.16	9938.00	1111.7	47.4	.0	7.12	.00	.00	.00
7	236.4	56.0	243.0	8488.46	9938.00	1080.7	56.0	.0	8.21	.00	.00	.00
8	246.4	64.5	254.7	8542.26	9938.00	1049.8	64.5	.0	9.31	.00	.00	.00
9	256.4	73.0	266.6	8586.42	9938.00	1018.8	73.0	.0	10.40	.00	.00	.00
10	266.4	81.5	278.6	8625.02	9938.00	1000.4	81.5	.0	11.50	.00	.00	.00
11	286.4	98.4	302.9	8682.06	9938.00	1000.4	98.4	.0	13.69	.00	80.37	.00
12	306.4	115.1	327.3	8719.43	9938.00	1000.5	115.1	.0	15.86	.00	432.33	.00
13	326.4	131.6	352.0	8748.82	9938.00	1000.6	131.6	.0	18.04	.00	924.39	.00
14	346.4	148.0	376.7	8769.59	9938.00	1000.6	148.0	.0	20.21	.00	1152.33	.00
15	366.4	164.4	401.6	8786.01	9938.00	1000.7	164.4	.0	22.38	.00	1596.35	.00
16	386.4	180.7	426.6	8800.95	9938.00	1000.8	180.7	.0	24.55	.00	1664.30	.00
17	406.4	196.9	451.6	8812.67	9938.00	1000.8	196.9	.0	26.71	.00	1984.30	.00
18	426.4	213.2	476.8	8823.49	9938.00	1000.9	213.2	.0	28.88	.00	2304.30	.00
19	446.4	229.4	501.9	8833.48	9938.00	1001.0	229.4	.0	31.05	.00	2624.30	.00
20	466.4	245.5	527.1	8839.67	9938.00	1001.1	245.5	.0	33.21	.00	3864.39	.00
21	486.4	261.8	552.4	8848.43	9938.00	1001.1	261.8	.0	35.38	.00	3672.33	.00
22	506.4	277.9	577.7	8853.87	9938.00	1001.2	277.9	.0	37.54	.00	4704.39	.00
23	526.4	294.1	603.0	8861.63	9938.00	1001.3	294.1	.0	39.72	.00	4392.33	.00
24	546.4	310.2	628.4	8866.44	9938.00	1001.3	310.2	.0	41.88	.00	5544.39	.00
25	566.4	326.5	653.8	8873.36	9938.00	1001.4	326.5	.0	44.05	.00	5112.33	.00
26	586.4	342.6	679.2	8877.66	9938.00	1001.5	342.6	.0	46.22	.00	6384.39	.00
27	606.4	358.8	704.6	8883.90	9938.00	1001.5	358.8	.0	48.40	.00	8424.48	.00
28	626.4	375.1	730.1	8889.78	9938.00	1001.6	375.1	.0	50.57	.00	7224.39	.00
29	646.4	391.2	755.6	8893.44	9938.00	1001.7	391.2	.0	52.74	.00	7280.37	.00
30	666.4	407.4	781.1	8898.81	9938.00	1001.8	407.4	.0	54.92	.00	9984.48	.00
31	686.4	423.5	806.6	8902.16	9938.00	1001.8	423.5	.0	57.09	.00	8080.37	.00
32	706.4	439.7	832.1	8907.11	9938.00	1001.9	439.7	.0	59.27	.00	11024.48	.00
33	726.4	456.0	857.7	8911.87	9938.00	1002.0	456.0	.0	61.46	.00	9324.39	.00
34	746.4	472.2	883.3	8916.41	9938.00	1002.0	472.2	.0	63.64	.00	9280.37	.00
35	766.4	488.5	908.9	8920.77	9938.00	1002.1	488.5	.0	65.82	.00	9680.37	.00
36	786.4	504.7	934.5	8924.97	9938.00	1002.2	504.7	.0	68.00	.00	10080.37	.00
37	806.4	521.0	960.1	8929.00	9938.00	1002.2	521.0	.0	70.19	.00	10480.37	.00
38	826.4	537.2	985.7	8932.91	9938.00	1002.3	537.2	.0	72.37	.00	10880.37	.00
39	846.4	553.5	1011.3	8936.70	9938.00	1002.4	553.5	.0	74.56	.00	11280.37	.00
40	866.4	569.7	1037.0	8940.36	9938.00	1002.5	569.7	.0	76.75	.00	11680.37	.00
41	886.4	586.0	1062.6	8943.89	9938.00	1002.5	586.0	.0	78.93	.00	12080.37	.00
42	906.4	602.2	1088.3	8947.33	9938.00	1002.6	602.2	.0	81.12	.00	12480.37	.00
43	926.4	618.5	1113.9	8950.66	9938.00	1002.7	618.5	.0	83.31	.00	12880.37	.00
44	946.4	635.1	1139.8	8956.31	9938.00	1002.7	635.1	.0	85.52	.00	11952.33	.00
45	966.4	651.3	1165.4	8959.43	9938.00	1002.8	651.3	.0	87.71	.00	15048.41	.00
											14080.37	.00

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
46	986.4	667.6	1191.1	8962.47	9938.00	1002.9	667.6	.0	89.90	.00	14480.37	.00
47	1006.4	684.1	1216.9	8967.69	9938.00	1002.9	684.1	.0	92.11	.00	16368.41	.00
48	1026.4	700.4	1242.6	8970.51	9938.00	1003.0	700.4	.0	94.30	.00	15280.37	.00
49	1046.4	716.6	1268.3	8973.34	9938.00	1003.1	716.6	.0	96.50	.00	14112.33	.00
50	1066.4	733.2	1294.2	8978.17	9938.00	1003.2	733.2	.0	98.71	.00	17688.41	.00
51	1086.4	749.4	1319.8	8980.78	9938.00	1003.2	749.4	.0	100.90	.00	14832.33	.00
52	1106.4	766.0	1345.7	8985.35	9938.00	1003.3	766.0	.0	103.12	.00	18568.41	.00
53	1126.4	782.2	1371.4	8987.87	9938.00	1003.4	782.2	.0	105.31	.00	15552.33	.00
54	1146.4	798.8	1397.3	8992.25	9938.00	1003.4	798.8	.0	107.53	.00	19448.41	.00
55	1166.4	815.4	1423.2	8996.51	9938.00	1003.5	815.4	.0	109.75	.00	19888.41	.00
56	1186.4	831.6	1448.9	8998.85	9938.00	1003.6	831.6	.0	111.94	.00	16632.33	.00
57	1206.4	848.5	1474.9	9004.74	9938.00	1003.7	848.5	.0	114.18	.00	18880.37	.00
58	1226.4	864.7	1500.6	9006.92	9938.00	1003.7	864.7	.0	116.38	.00	19280.38	.00
59	1246.4	881.3	1526.5	9010.81	9938.00	1003.8	881.3	.0	118.60	.00	21648.41	.00
60	1266.4	897.9	1552.4	9014.64	9938.00	1003.9	897.9	.0	120.82	.00	22088.41	.00
61	1286.4	914.4	1578.3	9018.38	9938.00	1003.9	914.4	.0	123.04	.00	22528.41	.00
62	1306.4	931.0	1604.2	9022.03	9938.00	1004.0	931.0	.0	125.26	.00	22968.41	.00
63	1326.4	947.6	1630.1	9025.62	9938.00	1004.1	947.6	.0	127.48	.00	23408.41	.00
64	1346.4	964.1	1656.0	9029.10	9938.00	1004.2	964.1	.0	129.71	.00	23848.41	.00
65	1366.4	980.7	1681.9	9032.57	9938.00	1004.2	980.7	.0	131.93	.00	24288.41	.00
66	1386.4	997.2	1707.8	9035.92	9938.00	1004.3	997.2	.0	134.15	.00	24728.41	.00
67	1406.4	1014.1	1733.9	9040.75	9938.00	1004.4	1014.1	.0	136.40	.00	22880.38	.00
68	1426.4	1030.4	1759.7	9042.54	9938.00	1004.4	1030.4	.0	138.61	.00	23280.38	.00
69	1446.4	1047.2	1785.8	9047.20	9938.00	1004.5	1047.2	.0	140.85	.00	23680.38	.00
70	1466.4	1064.1	1811.8	9051.75	9938.00	1004.6	1064.1	.0	143.10	.00	24080.38	.00
71	1486.4	1080.4	1837.6	9053.38	9938.00	1004.7	1080.4	.0	145.31	.00	24480.38	.00
72	1506.4	1097.2	1863.7	9057.85	9938.00	1004.7	1097.2	.0	147.55	.00	24880.38	.00
73	1526.4	1114.1	1889.8	9062.12	9938.00	1004.8	1114.1	.0	149.80	.00	25280.38	.00
74	1546.4	1130.4	1915.5	9063.73	9938.00	1004.9	1130.4	.0	152.01	.00	23112.34	.00
75	1566.4	1147.2	1941.6	9067.93	9938.00	1004.9	1147.2	.0	154.26	.00	26080.38	.00
76	1586.4	1164.1	1967.7	9072.15	9938.00	1005.0	1164.1	.0	156.51	.00	26480.38	.00
77	1606.4	1181.0	1993.8	9076.21	9938.00	1005.1	1181.0	.0	158.77	.00	26880.38	.00
78	1626.4	1197.9	2019.9	9080.17	9938.00	1005.2	1197.9	.0	161.02	.00	27280.38	.00
79	1646.4	1214.1	2045.7	9081.58	9938.00	1005.2	1214.1	.0	163.23	.00	24912.34	.00
80	1666.4	1231.0	2071.8	9085.48	9938.00	1005.3	1231.0	.0	165.49	.00	29484.40	.00
81	1686.4	1247.9	2097.9	9089.29	9938.00	1005.4	1247.9	.0	167.74	.00	28480.38	.00
82	1706.4	1264.7	2124.0	9093.13	9938.00	1005.5	1264.7	.0	170.00	.00	28880.38	.00
83	1726.4	1281.6	2150.1	9096.82	9938.00	1005.5	1281.6	.0	172.25	.00	29280.38	.00
84	1746.4	1298.5	2176.3	9100.41	9938.00	1005.6	1298.5	.0	174.51	.00	29680.38	.00
85	1766.4	1315.4	2202.4	9104.04	9938.00	1005.7	1315.4	.0	176.77	.00	30080.38	.00
86	1786.4	1332.2	2228.5	9107.65	9938.00	1005.8	1332.2	.0	179.02	.00	30480.38	.00
87	1806.4	1349.1	2254.6	9111.16	9938.00	1005.8	1349.1	.0	181.28	.00	30880.38	.00
88	1826.4	1366.0	2280.7	9114.65	9938.00	1005.9	1366.0	.0	183.54	.00	31280.38	.00
89	1846.4	1382.9	2306.9	9118.00	9938.00	1006.0	1382.9	.0	185.80	.00	31680.38	.00
90	1866.4	1399.7	2333.0	9121.32	9938.00	1006.0	1399.7	.0	188.06	.00	32080.38	.00
91	1886.4	1417.2	2359.5	9126.85	9938.00	1006.1	1417.2	.0	190.36	.00	37352.44	.00
92	1906.4	1434.1	2385.6	9130.12	9938.00	1006.2	1434.1	.0	192.63	.00	42744.50	.00
93	1926.4	1451.0	2411.8	9133.31	9938.00	1006.3	1451.0	.0	194.89	.00	33280.38	.00
94	1946.4	1467.9	2437.9	9136.54	9938.00	1006.3	1467.9	.0	197.15	.00	33680.38	.00
95	1966.4	1484.7	2464.0	9139.63	9938.00	1006.4	1484.7	.0	199.42	.00	34080.38	.00
96	1986.4	1501.6	2490.1	9142.76	9938.00	1006.5	1501.6	.0	201.68	.00	34480.38	.00
97	2006.4	1519.1	2516.6	9147.82	9938.00	1006.6	1519.1	.0	203.99	.00	27904.30	.00
98	2026.4	1536.0	2542.8	9150.85	9938.00	1006.6	1536.0	.0	206.26	.00	35280.38	.00
99	2046.4	1552.9	2568.9	9153.86	9938.00	1006.7	1552.9	.0	208.52	.00	35680.38	.00

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	:0	0.	.00	0.	2493.	0.	210.	1170.	31.	210	210	210	210	210	210	210	210	210	210	210	210
20.0	.2	9.	.45	0.	2493.	1663.	212.	1164.	33.	212	212	212	211	210	209	209	208	209	209	210	211
40.0	.4	18.	.45	0.	2494.	3337.	214.	1159.	34.	213	214	213	212	210	208	207	207	207	208	210	212
60.0	.6	27.	.46	0.	2496.	5022.	216.	1153.	36.	215	216	215	213	210	207	206	205	206	207	210	213
80.0	.8	36.	.46	0.	2498.	6722.	218.	1147.	38.	217	218	217	214	210	207	204	204	204	207	210	214
100.0	1.0	46.	.46	0.	2501.	8437.	221.	1140.	40.	219	221	219	215	210	206	203	202	203	206	210	215
120.0	1.2	55.	.47	0.	2505.	10163.	224.	1133.	42.	221	224	221	216	210	205	202	201	202	205	210	216
140.0	1.4	65.	.48	0.	2509.	11921.	226.	1125.	44.	224	226	224	217	210	204	201	200	201	204	210	217
160.0	1.6	74.	.49	0.	2514.	13723.	229.	1117.	46.	226	229	226	219	210	204	200	199	200	204	210	219
180.0	1.8	84.	.50	0.	2520.	15583.	233.	1108.	48.	229	233	229	220	210	203	199	198	199	203	210	220
200.0	2.0	95.	.51	0.	2527.	17519.	236.	1099.	51.	232	236	232	221	210	202	198	197	198	202	210	221
220.0	2.2	105.	.53	0.	2534.	19540.	240.	1089.	54.	235	240	235	222	210	202	197	196	197	202	210	222
240.0	2.4	116.	.55	0.	2542.	21636.	244.	1078.	57.	238	244	238	224	210	201	197	195	197	201	210	224
260.0	2.6	127.	.56	0.	2551.	23786.	248.	1067.	60.	241	248	241	225	210	201	196	194	196	201	210	225
280.0	2.8	139.	.58	0.	2561.	25997.	253.	1055.	63.	245	253	245	227	210	200	195	194	195	200	210	227
300.0	3.0	151.	.60	0.	2572.	28296.	258.	1041.	67.	248	258	248	228	211	200	195	193	195	200	211	228
320.0	3.2	163.	.63	0.	2583.	30716.	263.	1027.	70.	252	263	252	230	211	199	194	192	194	199	211	230
340.0	3.4	177.	.66	0.	2596.	33265.	269.	1014.	75.	257	269	257	232	211	199	193	192	193	199	211	232
360.0	3.6	190.	.69	0.	2609.	35961.	275.	1005.	79.	261	275	261	234	211	198	193	191	193	198	211	234
380.0	3.8	205.	.73	0.	2625.	38832.	282.	999.	84.	266	282	266	236	211	198	192	191	192	198	211	236
400.0	4.0	220.	.77	0.	2641.	41880.	289.	998.	89.	271	289	271	238	211	197	192	190	192	197	211	238
420.0	4.2	237.	.85	0.	2659.	45274.	299.	1000.	95.	277	299	277	240	211	197	191	190	191	197	211	240
440.0	4.4	256.	.94	0.	2681.	49113.	310.	1000.	103.	283	310	283	242	211	196	191	189	191	196	211	242
460.0	4.6	277.	1.06	0.	2705.	53509.	323.	1000.	112.	290	323	290	244	211	196	190	189	190	196	211	244
480.0	4.8	301.	1.18	0.	2733.	58485.	338.	1001.	122.	298	338	298	246	211	196	190	189	190	196	211	246
500.0	5.0	329.	1.40	0.	2766.	64520.	357.	1001.	135.	308	357	308	248	211	195	190	188	190	195	211	248
520.0	5.2	363.	1.71	0.	2808.	72016.	383.	1001.	152.	319	383	319	251	212	195	189	188	189	195	212	251
540.0	5.4	402.	1.97	0.	2857.	80749.	414.	1001.	172.	332	414	332	253	212	195	189	188	189	195	212	253
560.0	5.6	450.	2.37	0.	2916.	91379.	454.	1001.	199.	347	454	347	256	212	194	189	187	189	194	212	256
580.0	5.8	508.	2.89	0.	2989.	104560.	503.	1001.	230.	366	503	366	259	212	194	188	187	188	194	212	259
600.0	6.0	587.	3.99	0.	3091.	123009.	577.	1001.	278.	390	577	390	262	212	194	188	187	188	194	212	262
620.0	6.2	675.	4.36	0.	3203.	143228.	656.	1001.	328.	418	656	418	265	212	193	188	186	188	193	212	265
640.0	6.4	785.	5.50	0.	3344.	169038.	757.	1002.	392.	454	757	454	268	212	193	187	186	187	193	212	268
660.0	6.6	907.	6.12	0.	3502.	197812.	869.	1002.	463.	496	869	496	271	213	193	187	185	187	193	213	271
680.0	6.8	1058.	7.54	0.	3698.	233712.	992.	1002.	541.	556	992	556	275	213	192	187	185	187	192	213	275
700.0	7.0	1233.	8.75	0.	3926.	275565.	1128.	1003.	627.	630	1128	630	279	213	192	187	185	187	192	213	279
720.0	7.2	1416.	9.15	0.	4165.	319169.	1271.	1003.	718.	707	1271	707	283	213	192	186	184	186	192	213	283
740.0	7.4	1619.	10.18	0.	4432.	368149.	1405.	1003.	804.	808	1405	808	287	213	192	186	184	186	192	213	287
760.0	7.6	1825.	10.27	0.	4700.	417125.	1547.	1004.	894.	905	1547	905	292	213	191	186	183	186	191	213	292
780.0	7.8	2052.	11.38	0.	4998.	471536.	1692.	1004.	987.	1019	1692	1019	297	214	191	185	183	185	191	214	297
800.0	8.0	2287.	11.73	0.	5304.	527307.	1842.	1005.	1083.	1136	1842	1136	303	214	191	185	183	185	191	214	303
820.0	8.2	2531.	12.22	0.	5624.	585483.	1978.	1005.	1171.	1268	1978	1268	309	214	191	185	182	185	191	214	309
840.0	8.4	2776.	12.23	0.	5942.	642983.	2129.	1005.	1268.	1392	2129	1392	317	214	191	184	181	184	191	214	317
860.0	8.6	3019.	12.17	0.	6257.	699812.	2274.	1006.	1362.	1515	2274	1515	325	214	190	184	181	184	190	214	325
880.0	8.8	3259.	12.01	0.	6566.	755472.	2416.	1006.	1454.	1638	2416	1638	333	215	190	184	180	184	190	215	333
900.0	9.0	3525.	13.27	0.	6909.	817075.	2569.	1007.	1553.	1775	2569	1775	342	215	190	183	179	183	190	215	342

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT 9174. FT

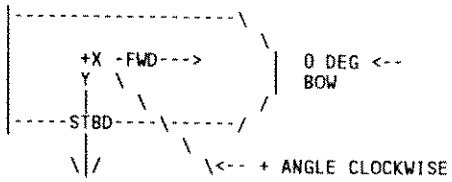
STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE T10A12N tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	1.	.00	0.	2283.	58509.	218.	1149.	37.	218	0	218	214	210	206	204	203	204	206	210	214
20.0	.2	8.	.38	7.	2284.	59670.	220.	1142.	39.	220	0	219	215	209	205	203	202	203	206	211	216
40.0	.4	16.	.38	16.	2285.	60835.	223.	1135.	41.	223	0	221	215	209	204	202	201	202	206	212	218
60.0	.6	24.	.38	23.	2287.	62018.	225.	1128.	43.	225	0	222	215	208	203	200	200	202	206	212	220
80.0	.8	31.	.38	23.	2290.	63331.	228.	1120.	45.	228	0	224	216	208	202	199	199	201	205	213	221
100.0	1.0	39.	.38	22.	2293.	64673.	231.	1112.	47.	231	0	227	217	208	201	198	198	200	205	213	223
120.0	1.2	47.	.40	22.	2297.	65956.	235.	1103.	50.	235	0	229	217	207	201	197	197	199	205	214	225
140.0	1.4	55.	.41	26.	2302.	67291.	238.	1093.	53.	238	0	231	218	207	200	197	196	199	205	215	228
160.0	1.6	63.	.42	34.	2307.	68669.	242.	1083.	55.	242	0	233	218	206	199	196	195	198	204	216	230
180.0	1.8	72.	.43	54.	2312.	70080.	246.	1072.	58.	246	0	235	218	205	198	195	195	198	204	217	233
200.0	2.0	81.	.43	69.	2318.	71652.	250.	1061.	61.	250	0	238	219	205	198	194	194	197	204	217	235
220.0	2.2	89.	.44	78.	2325.	73279.	255.	1049.	65.	255	0	241	220	205	197	193	193	196	203	217	238
240.0	2.4	99.	.47	78.	2333.	74871.	260.	1035.	68.	260	0	244	221	205	196	193	193	196	203	218	241
260.0	2.6	109.	.48	65.	2341.	76520.	266.	1021.	72.	266	0	246	221	204	196	192	192	195	203	219	244
280.0	2.8	118.	.50	50.	2350.	78221.	271.	1010.	76.	271	0	249	222	204	195	192	192	195	203	220	247
300.0	3.0	129.	.52	23.	2360.	80025.	278.	1001.	81.	278	0	252	222	203	194	191	191	194	203	221	251
320.0	3.2	140.	.54	-20.	2370.	82054.	285.	998.	86.	285	0	256	223	203	194	191	191	194	202	222	254
340.0	3.4	151.	.58	-95.	2382.	84285.	293.	999.	91.	293	0	260	224	203	193	190	190	193	202	223	257
360.0	3.6	164.	.66	-234.	2396.	86668.	302.	1000.	98.	302	0	264	225	202	193	190	190	193	202	224	262
380.0	3.8	179.	.74	-476.	2413.	89391.	314.	1000.	106.	314	0	267	225	202	192	189	189	192	202	225	266
400.0	4.0	195.	.79	-811.	2431.	92502.	328.	1000.	115.	328	0	272	227	202	192	189	189	192	201	225	270
420.0	4.2	212.	.86	-1199.	2451.	95911.	343.	1001.	126.	343	0	278	228	202	192	189	188	191	201	226	275
440.0	4.4	233.	1.05	-1835.	2476.	99962.	364.	1001.	139.	364	0	282	229	201	191	188	188	191	201	227	280
460.0	4.6	258.	1.25	-2760.	2506.	105078.	390.	1001.	157.	390	0	288	230	201	191	188	188	191	201	228	285
480.0	4.8	287.	1.44	-3859.	2542.	110998.	421.	1001.	177.	421	0	296	231	201	191	187	187	190	200	229	290
500.0	5.0	323.	1.79	-5403.	2587.	118483.	462.	1001.	204.	462	0	304	233	201	190	187	187	190	200	229	297
520.0	5.2	367.	2.21	-7452.	2643.	127812.	515.	1001.	238.	515	0	315	234	201	190	187	187	190	199	230	304
540.0	5.4	423.	2.81	-10303.	2715.	139713.	584.	1001.	282.	584	0	326	236	201	190	187	186	189	199	231	312
560.0	5.6	487.	3.20	-13642.	2797.	153274.	665.	1001.	334.	665	0	339	238	201	190	186	186	189	199	231	321
580.0	5.8	562.	3.77	-17623.	2894.	169368.	761.	1002.	395.	761	0	355	239	201	189	186	186	189	199	232	331
600.0	6.0	648.	4.26	-21957.	3005.	187704.	869.	1002.	463.	869	0	375	241	201	189	186	185	188	198	233	342
620.0	6.2	743.	4.77	-26477.	3130.	208286.	988.	1002.	539.	988	0	401	243	201	189	185	185	188	198	234	355
640.0	6.4	851.	5.42	-31503.	3272.	231581.	1123.	1003.	624.	1123	0	429	245	200	189	185	185	188	198	235	371
660.0	6.6	966.	5.71	-36005.	3422.	255854.	1259.	1003.	711.	1259	0	462	246	200	188	185	184	188	198	236	393
680.0	6.8	1083.	5.87	-40217.	3577.	280734.	1396.	1003.	798.	1396	0	498	248	200	188	184	184	187	197	237	418
700.0	7.0	1210.	6.35	-43429.	3746.	307430.	1533.	1004.	886.	1533	0	543	249	200	188	184	183	187	197	239	451
720.0	7.2	1344.	6.72	-46396.	3926.	335559.	1675.	1004.	976.	1675	0	592	250	199	188	183	183	187	197	241	490
740.0	7.4	1485.	7.02	-47455.	4117.	364457.	1808.	1005.	1062.	1808	0	650	251	199	187	183	182	187	197	243	542
760.0	7.6	1644.	7.98	-48933.	4334.	397317.	1962.	1005.	1160.	1962	0	715	252	199	187	182	182	187	197	244	601
780.0	7.8	1815.	8.55	-48294.	4569.	432064.	2110.	1005.	1255.	2110	0	793	253	199	187	182	181	186	197	246	678
800.0	8.0	1985.	8.48	-47226.	4802.	466158.	2252.	1006.	1348.	2252	0	870	255	198	187	181	181	186	197	248	757
820.0	8.2	2160.	8.77	-44810.	5045.	501133.	2390.	1006.	1437.	2390	0	955	256	198	186	180	180	186	197	250	846

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT 9161. FT

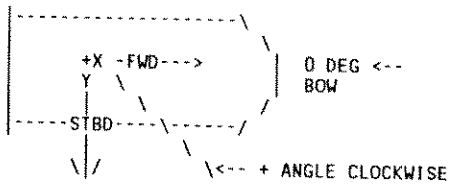
STARTING DISPLACEMENTS : SURGE(FT) = -60.000 SWAY(FT) = -60.000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE T10S12N tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

T10S12N-2

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	15.0	45.0	75.0	105.0	135.0	165.0	-165.0	-135.0	-105.0	-75.0	-45.0	-15.0
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0	480.0
INITIAL VESSEL YAW ANGLES (DEG)		.00										

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	10000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	10000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	300.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	2400.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-452.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	2300.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-200.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	7500.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.750"
LINE LENGTH (FT)	100.0
WEIGHT IN WATER (LB/FT)	273.26
LINE B.S. (KIPS)	4249.0
AREA (SQ IN)	25.97
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	2950.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.750"
LINE LENGTH (FT)	250.0
WEIGHT IN WATER (LB/FT)	273.26
LINE B.S. (KIPS)	4249.0
AREA (SQ IN)	25.97
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	35800.0

LINE TYPE	1
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
1	146.0	.0	175.9	6862.00	9938.00	6862.0	.0	.0				
2	176.0	108.8	206.9	10571.64	9938.00	4251.4	108.8	.0	14.14	-652.00	.00	513.92
3	206.0	145.3	252.1	11009.87	9938.00	3950.2	145.3	.0	16.63	-652.00	.00	551.76
4	236.0	182.3	298.2	11352.66	9938.00	3489.9	182.3	.0	19.18	-652.00	.00	591.11
5	266.0	219.8	345.1	11627.38	9938.00	3029.5	219.8	.0	21.80	-652.00	.00	631.76
6	296.0	259.2	393.4	11875.10	9938.00	2568.9	259.2	.0	24.54	-652.00	.00	674.11
7	326.0	300.5	443.3	12099.94	9938.00	2108.2	300.5	.0	27.39	-652.00	.00	718.16
8	356.0	341.7	493.4	12280.81	9938.00	1647.4	341.7	.0	30.26	-652.00	.00	763.07
9	386.0	385.8	545.7	12461.05	9938.00	1236.1	385.8	.0	33.29	-652.00	.00	810.04
10	416.0	428.9	597.5	12599.18	9938.00	1126.4	428.9	.0	36.31	-652.00	.00	857.28
11	476.0	515.2	701.4	12812.96	9938.00	1001.9	515.2	.0	42.39	-652.00	414.81	953.43
12	536.0	597.7	802.8	12942.46	9938.00	1002.2	597.7	.0	48.36	-652.00	1031.11	1049.15
13	596.0	680.2	904.3	13043.69	9938.00	1002.5	680.2	.0	54.36	-652.00	2918.52	1145.95
14	656.0	758.9	1003.1	13102.20	9938.00	1002.7	758.9	.0	60.21	-652.00	2882.96	1241.29
15	716.0	839.5	1103.4	13161.85	9938.00	1003.0	839.5	.0	66.17	-652.00	6116.29	1338.34
16	776.0	918.3	1202.2	13202.80	9938.00	1003.3	918.3	.0	72.05	-652.00	7170.37	1434.66
17	836.0	997.0	1301.1	13238.40	9938.00	1003.6	997.0	.0	77.95	-652.00	8490.37	1531.33
18	896.0	1073.9	1398.6	13261.38	9938.00	1003.9	1073.9	.0	83.77	-652.00	9364.44	1627.03
19	956.0	1152.7	1497.5	13289.92	9938.00	1004.2	1152.7	.0	89.68	-652.00	11130.37	1724.20
20	1016.0	1227.7	1593.5	13300.83	9938.00	1004.4	1227.7	.0	95.43	-652.00	5659.26	1819.02
21	1076.0	1306.4	1692.5	13325.04	9938.00	1004.7	1306.4	.0	101.36	-652.00	8762.96	1916.53
22	1136.0	1383.3	1789.9	13340.63	9938.00	1005.0	1383.3	.0	107.21	-652.00	14404.44	2012.89
23	1196.0	1462.0	1888.9	13361.35	9938.00	1005.3	1462.0	.0	113.16	-652.00	14172.59	2110.66
24	1256.0	1537.0	1984.9	13368.64	9938.00	1005.6	1537.0	.0	118.93	-652.00	8059.24	2205.92
25	1316.0	1615.8	2083.9	13387.11	9938.00	1005.9	1615.8	.0	124.88	-652.00	16452.52	2303.87
26	1376.0	1690.8	2179.9	13393.49	9938.00	1006.1	1690.8	.0	130.67	-652.00	9259.22	2399.27
27	1436.0	1769.5	2278.9	13410.15	9938.00	1006.4	1769.5	.0	136.64	-652.00	13802.96	2497.37
28	1496.0	1844.5	2374.9	13415.91	9938.00	1006.7	1844.5	.0	142.43	-652.00	10459.24	2592.87
29	1556.0	1923.3	2473.9	13431.16	9938.00	1007.0	1923.3	.0	148.41	-652.00	15482.93	2691.09
30	1616.0	1998.3	2569.9	13436.44	9938.00	1007.3	1998.3	.0	154.21	-652.00	11659.26	2786.68
31	1676.0	2077.0	2668.9	13450.55	9938.00	1007.5	2077.0	.0	160.20	-652.00	17162.96	2884.99
32	1736.0	2155.8	2767.9	13464.06	9938.00	1007.8	2155.8	.0	166.20	-652.00	24432.54	2983.35
33	1796.0	2230.8	2863.9	13468.65	9938.00	1008.1	2230.8	.0	172.01	-652.00	13459.26	3079.03
34	1856.0	2309.5	2962.9	13481.33	9938.00	1008.4	2309.5	.0	178.02	-652.00	26712.59	3177.46
35	1916.0	2384.5	3058.9	13485.68	9938.00	1008.7	2384.5	.0	183.84	-652.00	14659.26	3273.19
36	1976.0	2463.3	3157.9	13497.62	9938.00	1009.0	2463.3	.0	189.86	-652.00	21362.96	3371.68
37	2036.0	2542.0	3256.9	13509.17	9938.00	1009.3	2542.0	.0	195.88	-652.00	30132.59	3470.20
38	2096.0	2617.0	3352.9	13513.20	9938.00	1009.5	2617.0	.0	201.72	-652.00	16459.26	3565.99
39	2156.0	2699.5	3454.8	13531.07	9938.00	1009.8	2699.5	.0	207.93	-652.00	29000.74	3667.31
40	2216.0	2774.5	3550.9	13534.86	9938.00	1010.1	2774.5	.0	213.78	-652.00	26488.89	3763.14
41	2276.0	2849.5	3646.9	13538.70	9938.00	1010.4	2849.5	.0	219.63	-652.00	27388.89	3858.97
42	2336.0	2932.0	3748.8	13555.24	9938.00	1010.7	2932.0	.0	225.86	-652.00	35832.59	3960.37
43	2396.0	3007.0	3844.9	13558.87	9938.00	1011.0	3007.0	.0	231.72	-652.00	29188.89	4056.23
44	2456.0	3085.8	3943.8	13568.56	9938.00	1011.3	3085.8	.0	237.77	-652.00	38112.59	4154.89
45	2516.0	3160.8	4039.9	13572.17	9938.00	1011.5	3160.8	.0	243.64	-652.00	30988.89	4250.77

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY
46	2576.0	3243.3	4141.8	13587.29	9938.00	1011.8	3243.3	.0	249.89	-652.00	38266.66	4352.25
47	2636.0	3318.3	4237.8	13590.75	9938.00	1012.1	3318.3	.0	255.77	-652.00	32788.89	4448.15
48	2696.0	3400.8	4339.8	13605.21	9938.00	1012.4	3400.8	.0	262.02	-652.00	38180.74	4549.67
49	2756.0	3475.8	4435.8	13608.56	9938.00	1012.7	3475.8	.0	267.91	-652.00	34588.89	4645.59
50	2816.0	3558.3	4537.7	13622.44	9938.00	1013.0	3558.3	.0	274.17	-652.00	40220.74	4747.13
51	2876.0	3633.3	4633.8	13625.71	9938.00	1013.3	3633.3	.0	280.07	-652.00	36388.89	4843.07
52	2936.0	3708.3	4729.8	13629.04	9938.00	1013.6	3708.3	.0	285.97	-652.00	37288.89	4939.01
53	2996.0	3790.8	4831.8	13642.26	9938.00	1013.9	3790.8	.0	292.25	-652.00	45826.66	5040.59
54	3056.0	3865.8	4927.8	13645.52	9938.00	1014.1	3865.8	.0	298.16	-652.00	39088.89	5136.54
55	3116.0	3948.3	5029.7	13658.30	9938.00	1014.5	3948.3	.0	304.45	-652.00	47986.66	5238.15
56	3176.0	4023.3	5125.8	13661.50	9938.00	1014.7	4023.3	.0	310.37	-652.00	40888.89	5334.11
57	3236.0	4105.8	5227.7	13673.89	9938.00	1015.0	4105.8	.0	316.66	-652.00	50146.66	5435.74
58	3296.0	4180.8	5323.8	13677.05	9938.00	1015.3	4180.8	.0	322.59	-652.00	42688.89	5531.71
59	3356.0	4263.3	5425.7	13689.07	9938.00	1015.6	4263.3	.0	328.90	-652.00	52306.66	5633.36
60	3416.0	4345.8	5527.6	13700.82	9938.00	1015.9	4345.8	.0	335.21	-652.00	50420.74	5735.02
61	3476.0	4420.8	5623.7	13703.89	9938.00	1016.2	4420.8	.0	341.15	-652.00	45388.89	5831.01
62	3536.0	4503.3	5725.6	13715.33	9938.00	1016.5	4503.3	.0	347.47	-652.00	52460.70	5932.68
63	3596.0	4578.3	5821.7	13718.38	9938.00	1016.8	4578.3	.0	353.42	-652.00	47188.85	6028.68
64	3656.0	4660.8	5923.6	13729.55	9938.00	1017.1	4660.8	.0	359.75	-652.00	57706.62	6130.37
65	3716.0	4743.3	6025.5	13740.51	9938.00	1017.4	4743.3	.0	366.08	-652.00	55520.70	6232.07
66	3776.0	4818.3	6121.6	13743.50	9938.00	1017.7	4818.3	.0	372.04	-652.00	49888.85	6328.07
67	3836.0	4900.8	6223.5	13754.22	9938.00	1018.0	4900.8	.0	378.39	-652.00	57560.70	6429.79
68	3896.0	4975.8	6319.6	13757.21	9938.00	1018.3	4975.8	.0	384.36	-652.00	51688.85	6525.80
69	3956.0	5065.8	6427.4	13775.15	9938.00	1018.6	5065.8	.0	391.09	-652.00	49082.93	6633.25
70	4016.0	5140.8	6523.5	13778.04	9938.00	1018.9	5140.8	.0	397.07	-652.00	53488.85	6729.27
71	4076.0	5223.3	6625.4	13788.20	9938.00	1019.2	5223.3	.0	403.44	-652.00	61640.70	6831.01
72	4136.0	5298.3	6721.5	13791.13	9938.00	1019.5	5298.3	.0	409.42	-652.00	55288.84	6927.03
73	4196.0	5388.3	6829.3	13808.12	9938.00	1019.8	5388.3	.0	416.18	-652.00	52442.92	7034.53
74	4256.0	5463.3	6925.4	13810.98	9938.00	1020.1	5463.3	.0	422.17	-652.00	57088.84	7130.55
75	4316.0	5538.3	7021.4	13813.88	9938.00	1020.4	5538.3	.0	428.18	-652.00	57988.84	7226.57
76	4376.0	5628.3	7129.3	13830.28	9938.00	1020.7	5628.3	.0	434.94	-652.00	54962.92	7334.10
77	4436.0	5703.3	7225.3	13833.14	9938.00	1021.0	5703.3	.0	440.95	-652.00	59788.84	7430.12
78	4496.0	5785.8	7327.3	13842.58	9938.00	1021.3	5785.8	.0	447.35	-652.00	68780.69	7531.91
79	4556.0	5860.8	7423.3	13845.47	9938.00	1021.6	5860.8	.0	453.37	-652.00	61588.84	7627.94
80	4616.0	5950.8	7531.2	13861.14	9938.00	1021.9	5950.8	.0	460.16	-652.00	49991.08	7735.50
81	4676.0	6025.8	7627.2	13863.97	9938.00	1022.2	6025.8	.0	466.19	-652.00	63388.84	7831.53
82	4736.0	6115.8	7735.1	13879.26	9938.00	1022.6	6115.8	.0	472.99	-652.00	55717.00	7939.11
83	4796.0	6190.8	7831.2	13882.10	9938.00	1022.8	6190.8	.0	479.02	-652.00	65188.84	8035.14
84	4856.0	6280.8	7939.1	13897.04	9938.00	1023.2	6280.8	.0	485.83	-652.00	83712.53	8142.74
85	4916.0	6355.8	8035.1	13899.82	9938.00	1023.5	6355.8	.0	491.88	-652.00	66988.84	8238.78
86	4976.0	6430.8	8131.1	13902.64	9938.00	1023.8	6430.8	.0	497.93	-652.00	67888.84	8334.81
87	5036.0	6520.8	8239.0	13917.21	9938.00	1024.1	6520.8	.0	504.76	-652.00	55031.08	8442.43
88	5096.0	6595.8	8335.1	13920.02	9938.00	1024.4	6595.8	.0	510.81	-652.00	69688.84	8538.47
89	5156.0	6685.8	8443.0	13934.26	9938.00	1024.7	6685.8	.0	517.65	-652.00	56471.08	8646.10
90	5216.0	6760.8	8539.0	13937.06	9938.00	1025.0	6760.8	.0	523.72	-652.00	71488.84	8742.14
91	5276.0	6850.8	8646.9	13951.00	9938.00	1025.3	6850.8	.0	530.56	-652.00	62737.00	8849.79
92	5336.0	6925.8	8742.9	13953.81	9938.00	1025.6	6925.8	.0	536.64	-652.00	73288.84	8945.83
93	5396.0	7015.8	8850.9	13967.52	9938.00	1026.0	7015.8	.0	543.50	-652.00	64297.00	9053.49
94	5456.0	7090.8	8946.9	13970.29	9938.00	1026.3	7090.8	.0	549.59	-652.00	75088.84	9149.53
95	5516.0	7180.8	9054.8	13983.76	9938.00	1026.6	7180.8	.0	556.45	-652.00	65857.00	9257.20
96	5576.0	7255.8	9150.8	13986.53	9938.00	1026.9	7255.8	.0	562.55	-652.00	76888.84	9353.25
97	5636.0	7345.8	9258.8	13999.76	9938.00	1027.2	7345.8	.0	569.43	-652.00	67417.00	9460.93
98	5696.0	7420.8	9354.8	14002.54	9938.00	1027.5	7420.8	.0	575.53	-652.00	78688.84	9556.98
99	5756.0	7510.8	9462.7	14015.56	9938.00	1027.9	7510.8	.0	582.42	-652.00	63671.08	9664.67

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	4177.	0.	751.	1765.	331.	480	480	480	480	480	480	480	480	480	480	480	480
20.0	.2	31.	1.57	0.	4177.	3457.	756.	1714.	335.	485	486	485	483	480	477	475	475	475	477	480	483
40.0	.4	63.	1.57	0.	4178.	6910.	761.	1663.	340.	490	492	490	486	480	475	470	469	470	475	480	486
60.0	.6	94.	1.55	0.	4178.	10281.	766.	1611.	345.	495	497	495	489	480	472	466	463	466	472	480	489
80.0	.8	124.	1.53	0.	4177.	13561.	771.	1558.	349.	500	503	500	492	480	469	461	458	461	469	480	492
100.0	1.0	155.	1.53	0.	4177.	16832.	776.	1507.	354.	504	508	504	495	480	466	456	452	456	466	480	495
120.0	1.2	185.	1.52	0.	4177.	20099.	781.	1457.	359.	509	514	509	497	480	463	451	447	451	463	480	497
140.0	1.4	216.	1.52	0.	4177.	23358.	786.	1410.	364.	514	519	514	500	480	461	447	442	447	461	480	500
160.0	1.6	246.	1.51	0.	4178.	26583.	791.	1365.	368.	519	525	519	503	480	458	442	437	442	458	480	503
180.0	1.8	276.	1.51	0.	4179.	29771.	797.	1322.	373.	524	531	524	506	481	455	438	432	438	455	481	506
200.0	2.0	307.	1.51	0.	4181.	32974.	802.	1283.	379.	529	537	529	508	481	453	434	428	434	453	481	508
220.0	2.2	337.	1.52	0.	4183.	36201.	808.	1247.	384.	534	544	534	511	481	450	430	423	430	450	481	511
240.0	2.4	368.	1.54	0.	4186.	39475.	814.	1220.	390.	540	550	540	514	481	448	426	419	426	448	481	514
260.0	2.6	399.	1.55	0.	4190.	42795.	821.	1199.	395.	546	557	546	517	481	445	422	414	422	445	481	517
280.0	2.8	430.	1.57	0.	4194.	46199.	827.	1180.	401.	551	564	551	520	481	443	418	410	418	443	481	520
300.0	3.0	462.	1.59	0.	4199.	49646.	834.	1165.	408.	558	572	558	523	481	440	415	406	415	440	481	523
320.0	3.2	494.	1.60	0.	4205.	53138.	841.	1151.	414.	564	580	564	526	481	438	411	402	411	438	481	526
340.0	3.4	526.	1.62	0.	4211.	56678.	848.	1139.	421.	570	587	570	529	482	436	407	397	407	436	482	529
360.0	3.6	559.	1.64	0.	4218.	60269.	856.	1129.	427.	577	596	577	532	482	433	404	393	404	433	482	532
380.0	3.8	592.	1.64	0.	4224.	63867.	863.	1114.	434.	584	603	584	536	482	431	400	389	400	431	482	536
400.0	4.0	625.	1.65	0.	4232.	67499.	870.	1099.	441.	591	611	591	539	482	429	396	385	396	429	482	539
420.0	4.2	658.	1.67	0.	4239.	71188.	878.	1085.	448.	598	620	598	542	482	427	393	381	393	427	482	542
440.0	4.4	692.	1.67	0.	4247.	74838.	886.	1071.	455.	605	628	605	546	482	425	389	377	389	425	482	546
460.0	4.6	726.	1.70	0.	4255.	78559.	894.	1058.	462.	612	637	612	549	483	422	386	373	386	422	483	549
480.0	4.8	761.	1.73	0.	4264.	82368.	903.	1046.	470.	619	647	619	553	483	420	382	369	382	420	483	553
500.0	5.0	796.	1.77	0.	4274.	86280.	912.	1034.	478.	626	657	626	556	483	418	379	365	379	418	483	556
520.0	5.2	832.	1.81	0.	4284.	90311.	921.	1024.	487.	634	667	634	560	483	416	376	361	376	416	483	560
540.0	5.4	869.	1.85	0.	4296.	94476.	932.	1015.	496.	642	678	642	564	484	414	372	358	372	414	484	564
560.0	5.6	907.	1.90	0.	4308.	98790.	943.	1008.	506.	651	690	651	568	484	412	369	354	369	412	484	568
580.0	5.8	946.	1.96	0.	4322.	103275.	954.	1002.	516.	660	702	660	572	484	410	365	350	365	410	484	572
600.0	6.0	987.	2.04	0.	4337.	107997.	967.	1000.	527.	669	716	669	576	484	408	362	346	362	408	484	576
620.0	6.2	1029.	2.10	0.	4353.	112904.	981.	999.	539.	679	731	679	580	485	406	359	343	359	406	485	580
640.0	6.4	1072.	2.16	0.	4371.	118004.	995.	999.	551.	689	746	689	584	485	404	356	339	356	404	485	584
660.0	6.6	1117.	2.23	0.	4390.	123305.	1010.	1000.	564.	700	762	700	589	485	402	353	335	353	402	485	589
680.0	6.8	1163.	2.32	0.	4410.	128913.	1026.	1001.	578.	712	778	712	593	486	400	349	332	349	400	486	593
700.0	7.0	1211.	2.39	0.	4432.	134739.	1042.	1002.	592.	724	796	724	598	486	399	346	328	346	399	486	598
720.0	7.2	1259.	2.39	0.	4454.	140560.	1058.	1002.	605.	737	812	737	602	486	397	343	325	343	397	486	602
740.0	7.4	1308.	2.43	0.	4477.	146515.	1074.	1002.	619.	751	829	751	606	487	395	340	321	340	395	487	606
760.0	7.6	1359.	2.55	0.	4502.	152811.	1091.	1002.	634.	765	847	765	610	487	393	337	318	337	393	487	610
780.0	7.8	1412.	2.69	0.	4529.	159515.	1111.	1002.	651.	780	868	780	615	487	391	334	315	334	391	487	615
800.0	8.0	1469.	2.85	0.	4559.	166695.	1134.	1002.	670.	795	892	795	619	488	389	331	311	331	389	488	619
820.0	8.2	1530.	3.02	0.	4591.	174332.	1163.	1003.	694.	810	922	810	624	488	387	328	308	328	387	488	624
840.0	8.4	1593.	3.15	0.	4626.	182334.	1195.	1003.	721.	824	955	824	629	488	386	325	305	325	386	488	629
860.0	8.6	1659.	3.30	0.	4664.	190782.	1228.	1003.	748.	840	990	840	634	489	384	322	302	322	384	489	634
880.0	8.8	1726.	3.34	0.	4702.	199315.	1260.	1003.	774.	857	1022	857	639	489	382	319	299	319	382	489	639
900.0	9.0	1795.	3.47	0.	4743.	208259.	1290.	1003.	800.	877	1054	877	644	490	380	316	295	316	380	490	644
920.0	9.2	1871.	3.79	0.	4789.	218185.	1325.	1003.	828.	899	1089	899	649	490	378	313	292	313	378	490	649
940.0	9.4	1959.	4.42	0.	4847.	230192.	1366.	1003.	862.	926	1132	926	655	491	377	311	290	311	377	491	655
960.0	9.6	2056.	4.84	0.	4913.	243482.	1414.	1003.	901.	955	1181	955	660	491	375	308	287	308	375	491	660
980.0	9.8	2155.	4.95	0.	4980.	257049.	1462.	1003.	941.	986	1231	986	666	491	373	305	284	305	373	491	666
1000.0	10.0	2258.	5.17	0.	5050.	271131.	1519.	1004.	987.	1015	1288	1015	672	492	371	302	281	302	371	492	672

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
1020.0	10.2	2378.	6.01	0.	5134.	287636.	1599.	1004.	1051.	1043	1370	1043	679	492	370	300	278	300	370	492	679
1040.0	10.4	2485.	5.35	0.	5206.	302018.	1658.	1004.	1099.	1073	1430	1073	685	493	368	297	275	297	368	493	685
1060.0	10.6	2636.	7.52	0.	5316.	323113.	1765.	1004.	1185.	1107	1539	1107	692	493	366	295	273	295	366	493	692
1080.0	10.8	2802.	8.31	0.	5439.	346714.	1881.	1005.	1277.	1147	1656	1147	699	494	365	292	270	292	365	494	699
1100.0	11.0	2958.	7.81	0.	5554.	368660.	1976.	1005.	1354.	1192	1752	1192	706	494	363	290	268	290	363	494	706
1120.0	11.2	3107.	7.42	0.	5662.	389220.	2061.	1005.	1423.	1235	1839	1235	714	495	361	287	265	287	361	495	714
1140.0	11.4	3338.	11.55	0.	5839.	422516.	2239.	1006.	1564.	1287	2018	1287	722	495	360	285	262	285	360	495	722
1160.0	11.6	3590.	12.62	0.	6036.	459500.	2409.	1006.	1698.	1358	2190	1358	730	496	358	282	260	282	358	496	730
1180.0	11.8	3821.	11.54	0.	6212.	492596.	2572.	1007.	1828.	1417	2354	1417	739	496	357	280	257	280	357	496	739
1200.0	12.0	4075.	12.72	0.	6408.	529230.	2754.	1007.	1973.	1482	2537	1482	747	497	355	278	255	278	355	497	747
1220.0	12.2	4398.	16.12	0.	6670.	578097.	2898.	1008.	2088.	1618	2682	1618	756	497	353	275	253	275	353	497	756
1240.0	12.4	4690.	14.60	0.	6896.	620064.	3125.	1008.	2267.	1684	2910	1684	766	498	352	273	250	273	352	498	766
1260.0	12.6	5042.	17.62	0.	7176.	672138.	3359.	1009.	2453.	1790	3145	1790	775	498	350	271	248	271	350	498	775
1280.0	12.8	5346.	15.16	0.	7410.	715532.	3585.	1010.	2632.	1864	3372	1864	785	499	349	269	246	269	349	499	785
1300.0	13.0	5726.	19.05	0.	7720.	772911.	3757.	1010.	2770.	2024	3545	2024	795	500	347	267	244	267	347	500	795
1320.0	13.2	6125.	19.91	1.	8042.	832671.	3950.	1011.	2924.	2185	3739	2185	805	500	346	264	241	264	346	500	805
1340.0	13.4	6577.	22.60	0.	8401.	899597.	4282.	1012.	3185.	2307	4071	2307	814	501	344	262	239	262	344	501	814
1360.0	13.6	6973.	19.84	0.	8718.	958441.	4489.	1012.	3351.	2458	4279	2458	823	501	343	260	237	260	343	501	823
1380.0	13.8	7435.	23.09	0.	9094.	1028173.	4694.	1013.	3515.	2657	4484	2657	833	502	341	258	235	258	341	502	833
1400.0	14.0	7880.	22.25	0.	9446.	1093356.	4987.	1014.	3747.	2793	4778	2793	844	503	340	256	233	256	340	503	844
1420.0	14.2	8361.	24.06	0.	9838.	1165565.	5195.	1014.	3914.	3002	4987	3002	856	503	338	254	231	254	338	503	856
1440.0	14.4	8832.	23.52	0.	10214.	1234743.	5458.	1015.	4123.	3171	5250	3171	868	504	337	252	229	252	337	504	868
1460.0	14.6	9325.	24.64	0.	10616.	1308325.	5647.	1016.	4276.	3397	5439	3397	882	504	335	250	227	250	335	504	882
1480.0	14.8	9845.	26.03	2.	11036.	1385107.	5920.	1016.	4493.	3595	5713	3595	896	505	334	248	225	248	334	505	896
1500.0	15.0	10254.	20.44	0.	11356.	1442592.	6146.	1017.	4675.	3736	5939	3736	913	506	332	247	223	247	332	506	913
1520.0	15.2	10947.	34.67	0.	11933.	1547625.	6442.	1018.	4911.	4042	6236	4042	932	506	331	245	221	245	331	506	932
1540.0	15.4	11377.	21.49	2.	12274.	1608344.	6622.	1019.	5057.	4221	6416	4221	952	507	330	243	219	243	330	507	952
1560.0	15.6	11970.	29.64	2.	12752.	1694537.	6976.	1020.	5337.	4420	6770	4420	972	508	328	241	217	241	328	508	972
1580.0	15.8	12523.	27.66	2.	13198.	1774742.	7242.	1020.	5551.	4639	7037	4639	993	509	327	239	215	239	327	509	993
1600.0	16.0	13061.	26.87	2.	13631.	1852781.	7456.	1021.	5724.	4875	7251	4875	1012	509	326	238	213	238	326	509	1012
1620.0	16.2	13627.	28.32	0.	14088.	1935598.	7679.	1022.	5904.	5128	7474	5128	1030	510	324	236	211	236	324	510	1030
1640.0	16.4	14170.	27.13	0.	14523.	2014106.	7886.	1022.	6073.	5371	7682	5371	1049	511	323	234	209	234	323	511	1049
1660.0	16.6	14515.	17.25	0.	14773.	2057862.	8102.	1023.	6248.	5465	7898	5465	1069	511	321	232	207	232	321	511	1069
1680.0	16.8	15155.	32.03	0.	15291.	2151178.	8401.	1024.	6488.	5725	8198	5725	1091	512	320	231	205	231	320	512	1091
1700.0	17.0	15694.	26.93	0.	15717.	2226626.	8659.	1025.	6696.	5932	8456	5932	1115	513	319	229	203	229	319	513	1115
1720.0	17.2	16334.	31.98	0.	16233.	2318257.	8963.	1026.	6939.	6184	8760	6184	1143	514	318	227	201	227	318	514	1143
1740.0	17.4	16829.	24.79	0.	16620.	2385242.	9201.	1026.	7132.	6366	8998	6366	1172	515	316	226	199	226	316	515	1172
1760.0	17.6	17381.	27.57	1.	17059.	2461658.	9409.	1027.	7303.	6604	9206	6604	1202	515	315	224	197	224	315	515	1202
1780.0	17.8	17906.	26.26	0.	17466.	2532654.	9695.	1028.	7533.	6780	9493	6780	1231	516	314	222	195	222	314	516	1231

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 2 AT14035. FT

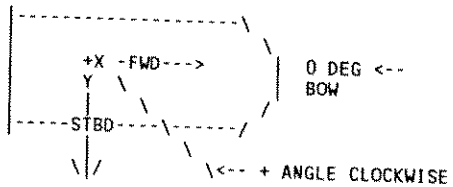
STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE T10S12N tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	1.	.00	0.	3797.	120918.	809.	1240.	385.	545	0	545	517	481	445	423	415	423	445	481	517
20.0	.2	27.	1.31	16.	3797.	123192.	815.	1215.	391.	552	0	549	518	479	441	418	411	420	445	483	521
40.0	.4	53.	1.30	33.	3798.	125615.	822.	1195.	397.	559	0	554	519	478	438	414	407	417	444	485	526
60.0	.6	79.	1.32	53.	3799.	127948.	828.	1178.	403.	566	0	558	520	475	434	410	403	414	443	487	530
80.0	.8	106.	1.31	67.	3801.	130427.	835.	1163.	409.	573	0	564	522	474	431	405	399	411	442	489	535
100.0	1.0	132.	1.33	88.	3803.	132818.	842.	1149.	415.	581	0	568	523	472	427	401	395	409	441	491	540
120.0	1.2	159.	1.33	105.	3805.	135369.	849.	1138.	421.	588	0	574	524	471	424	397	391	406	440	493	545
140.0	1.4	186.	1.36	137.	3807.	137840.	856.	1127.	428.	597	0	578	525	469	421	393	387	403	440	495	550
160.0	1.6	213.	1.34	212.	3810.	140418.	863.	1113.	435.	604	0	584	527	467	417	389	383	400	439	497	555
180.0	1.8	240.	1.36	302.	3813.	142900.	871.	1098.	441.	612	0	589	528	466	414	385	379	398	438	499	561
200.0	2.0	268.	1.38	392.	3816.	145423.	878.	1084.	448.	620	0	594	529	464	411	381	376	395	438	501	567
220.0	2.2	295.	1.38	455.	3820.	148095.	886.	1070.	455.	629	0	600	531	462	408	377	372	393	437	503	572
240.0	2.4	323.	1.40	502.	3824.	150678.	894.	1057.	463.	638	0	605	532	460	405	373	368	390	436	505	579
260.0	2.6	352.	1.41	523.	3828.	153438.	903.	1045.	470.	647	0	611	533	459	402	370	365	387	435	507	584
280.0	2.8	380.	1.44	544.	3833.	156145.	912.	1034.	478.	657	0	616	534	457	398	366	361	385	435	509	591
300.0	3.0	410.	1.46	536.	3839.	159044.	921.	1024.	487.	667	0	622	536	456	396	362	357	382	434	511	597
320.0	3.2	439.	1.49	485.	3845.	161883.	932.	1015.	496.	678	0	627	537	454	392	358	354	380	433	513	603
340.0	3.4	469.	1.50	397.	3851.	164927.	942.	1008.	506.	690	0	634	539	453	390	354	350	377	432	515	609
360.0	3.6	500.	1.55	292.	3858.	167949.	954.	1002.	516.	702	0	640	540	451	386	351	347	375	432	518	616
380.0	3.8	532.	1.59	129.	3867.	171258.	967.	1000.	527.	715	0	646	542	450	384	347	343	372	431	519	622
400.0	4.0	565.	1.64	-45.	3876.	174550.	980.	999.	538.	730	0	653	543	448	380	344	340	370	431	522	629
420.0	4.2	599.	1.67	-236.	3886.	178077.	994.	999.	550.	745	0	660	545	447	378	340	336	367	430	524	636
440.0	4.4	633.	1.72	-436.	3897.	181589.	1009.	1000.	563.	760	0	667	546	445	375	336	333	365	429	526	643
460.0	4.6	668.	1.75	-651.	3909.	185345.	1024.	1001.	576.	777	0	675	549	444	372	333	330	362	428	528	651
480.0	4.8	704.	1.81	-869.	3921.	189090.	1041.	1002.	590.	794	0	682	550	443	369	329	326	360	428	531	659
500.0	5.0	740.	1.79	-1000.	3934.	192937.	1056.	1002.	604.	810	0	691	552	442	366	326	323	357	427	533	667
520.0	5.2	776.	1.81	-1058.	3947.	196657.	1071.	1002.	617.	826	0	699	553	440	363	323	320	355	427	535	676
540.0	5.4	814.	1.90	-1171.	3962.	200793.	1088.	1002.	631.	844	0	709	555	439	361	319	317	353	426	537	684
560.0	5.6	855.	2.02	-1386.	3980.	205097.	1108.	1002.	648.	865	0	718	557	438	358	316	314	351	426	540	694
580.0	5.8	898.	2.14	-1730.	3999.	209911.	1130.	1002.	667.	887	0	728	559	437	355	313	310	348	425	542	704
600.0	6.0	944.	2.34	-2306.	4023.	215291.	1156.	1002.	689.	915	0	739	561	436	353	310	307	346	424	544	714
620.0	6.2	996.	2.57	-3175.	4050.	221136.	1188.	1003.	715.	948	0	749	563	434	350	306	304	344	424	547	726
640.0	6.4	1049.	2.63	-4075.	4078.	227315.	1220.	1003.	742.	982	0	761	565	433	347	303	301	341	423	550	737
660.0	6.6	1101.	2.62	-4841.	4107.	233409.	1252.	1003.	768.	1014	0	773	567	432	345	300	298	339	422	552	749
680.0	6.8	1152.	2.56	-5414.	4134.	239304.	1282.	1003.	793.	1045	0	786	570	431	342	297	295	336	421	554	761
700.0	7.0	1206.	2.71	-6131.	4165.	245471.	1314.	1003.	820.	1079	0	798	572	430	340	294	292	334	421	557	774
720.0	7.2	1264.	2.91	-7279.	4198.	252236.	1352.	1003.	851.	1118	0	811	574	429	337	291	290	332	420	559	787
740.0	7.4	1328.	3.18	-8882.	4236.	259844.	1397.	1003.	888.	1164	0	823	577	429	335	289	287	329	419	561	799
760.0	7.6	1394.	3.30	-10708.	4276.	267727.	1445.	1003.	927.	1213	0	836	580	428	333	286	284	327	418	564	811
780.0	7.8	1463.	3.43	-12607.	4318.	275976.	1496.	1004.	968.	1265	0	851	582	427	330	283	281	325	417	566	824
800.0	8.0	1547.	4.24	-15680.	4375.	286543.	1565.	1004.	1024.	1336	0	867	585	426	328	280	279	322	416	569	837
820.0	8.2	1636.	4.44	-18748.	4435.	297634.	1638.	1004.	1083.	1410	0	884	588	425	326	278	276	320	416	572	852
840.0	8.4	1720.	4.18	-20924.	4490.	307907.	1701.	1004.	1134.	1474	0	903	590	424	323	275	273	318	415	574	868
860.0	8.6	1869.	7.45	-28247.	4602.	327781.	1844.	1005.	1248.	1619	0	929	593	424	321	272	271	315	414	577	885
880.0	8.8	1965.	4.83	-30451.	4670.	339692.	1917.	1005.	1307.	1693	0	952	596	423	319	270	268	313	413	580	906
900.0	9.0	2092.	6.32	-34604.	4763.	355939.	2024.	1005.	1393.	1802	0	980	599	422	317	267	266	311	412	582	929
920.0	9.2	2230.	6.88	-39641.	4866.	373791.	2145.	1005.	1489.	1924	0	1009	603	422	315	265	263	309	411	584	952
940.0	9.4	2373.	7.17	-45362.	4972.	392225.	2275.	1006.	1592.	2054	0	1035	606	422	313	262	261	306	410	586	976
960.0	9.6	2551.	8.92	-53976.	5108.	415747.	2448.	1006.	1730.	2229	0	1064	610	422	311	260	258	303	409	587	999
980.0	9.8	2739.	9.38	-63378.	5251.	440537.	2632.	1007.	1876.	2415	0	1095	614	422	309	258	255	301	407	589	1021
1000.0	10.0	2946.	10.36	-73846.	5410.	468262.	2838.	1007.	2039.	2622	0	1132	618	421	307	256	253	299	406	591	1043

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)
1020.0	10.2	3078.	6.60	-77134.	5507.	484670.	2944.	1008.	2124.
1040.0	10.4	3304.	11.30	-88032.	5683.	514875.	3166.	1008.	2301.
1060.0	10.6	3526.	11.12	-97967.	5857.	544256.	3380.	1009.	2470.
1080.0	10.8	3769.	12.14	-108233.	6048.	576421.	3611.	1010.	2653.
1100.0	11.0	4039.	13.50	-118994.	6264.	612369.	3865.	1010.	2855.
1120.0	11.2	4252.	10.64	-126008.	6430.	639887.	4053.	1011.	3005.
1140.0	11.4	4511.	12.96	-136381.	6634.	673848.	4297.	1012.	3198.
1160.0	11.6	4774.	13.12	-139423.	6850.	707919.	4497.	1012.	3358.
1180.0	11.8	5031.	12.87	-143829.	7059.	741154.	4702.	1013.	3522.
1200.0	12.0	5333.	15.10	-156990.	7298.	781007.	4994.	1014.	3754.
1220.0	12.2	5645.	15.60	-158374.	7559.	820530.	5222.	1014.	3935.
1240.0	12.4	5985.	17.00	-167282.	7837.	864596.	5517.	1015.	4170.
1260.0	12.6	6233.	12.40	-164648.	8041.	895596.	5669.	1016.	4293.
1280.0	12.8	6581.	17.38	-174006.	8324.	940633.	5971.	1017.	4534.
1300.0	13.0	6897.	15.79	-170229.	8591.	980181.	6167.	1017.	4691.
1320.0	13.2	7303.	20.32	-176861.	8930.	1032861.	6497.	1018.	4953.
1340.0	13.4	7619.	15.83	-168120.	9200.	1070830.	6663.	1019.	5089.
1360.0	13.6	8054.	21.70	-170143.	9569.	1127159.	6982.	1020.	5343.
1380.0	13.8	8415.	18.09	-173271.	9865.	1171985.	7257.	1020.	5562.
1400.0	14.0	8826.	20.56	-160120.	10225.	1222238.	7465.	1021.	5731.
1420.0	14.2	9126.	14.99	-161632.	10464.	1259048.	7679.	1022.	5904.
1440.0	14.4	9537.	20.54	-148918.	10820.	1308644.	7889.	1022.	6075.
1460.0	14.6	9953.	20.81	-136338.	11179.	1358639.	8105.	1023.	6251.
1480.0	14.8	10319.	18.29	-142755.	11471.	1404067.	8400.	1024.	6487.
1500.0	15.0	10779.	22.98	-134478.	11866.	1461588.	8669.	1025.	6704.
1520.0	15.2	11282.	25.16	-121507.	12303.	1522117.	8951.	1026.	6930.
1540.0	15.4	11686.	20.20	-116489.	12639.	1571467.	9199.	1026.	7131.
1560.0	15.6	12109.	21.14	-102197.	12999.	1620635.	9408.	1027.	7302.

	LINE LOAD (KIPS) LINE NUMBER											
	1	2	3	4	5	6	7	8	9	10	11	12
2728	0	1166	620	420	305	253	251	297	406	595	1070	
2951	0	1209	624	420	303	251	249	295	405	597	1095	
3166	0	1252	629	420	301	249	246	292	403	599	1125	
3398	0	1302	632	419	299	247	244	290	403	601	1160	
3653	0	1362	635	419	297	244	242	289	402	605	1201	
3842	0	1413	638	418	295	242	240	287	402	607	1239	
4087	0	1466	642	418	294	240	238	285	401	610	1280	
4287	0	1554	644	416	291	238	236	283	401	614	1350	
4492	0	1634	645	414	289	236	234	282	401	619	1412	
4785	0	1694	650	414	287	234	232	280	400	621	1454	
5013	0	1791	653	414	285	232	230	278	399	624	1559	
5309	0	1872	659	414	284	230	228	276	398	626	1639	
5461	0	1979	659	411	281	228	226	275	399	632	1724	
5764	0	2064	663	411	280	226	224	273	398	635	1801	
5960	0	2192	664	409	277	224	223	272	399	641	1921	
6290	0	2308	669	409	276	222	221	270	398	644	2031	
6457	0	2438	673	408	274	220	219	269	398	648	2182	
6777	0	2591	674	407	272	218	217	268	398	654	2314	
7052	0	2689	680	407	270	216	215	266	397	656	2431	
7261	0	2871	683	406	268	215	213	264	397	662	2634	
7474	0	2973	685	404	266	213	212	263	398	668	2722	
7685	0	3148	688	403	265	211	210	262	398	673	2925	
7901	0	3319	694	403	263	209	208	260	397	677	3131	
8196	0	3416	699	403	262	207	206	258	396	681	3226	
8466	0	3613	699	401	259	205	205	258	397	690	3411	
8748	0	3799	708	401	258	203	202	256	396	691	3660	
8996	0	3957	710	400	256	201	201	255	396	699	3815	
9205	0	4126	717	400	255	199	199	253	395	702	4035	

EXCURSION-FORCE TABLE ENDED / DIST. TO ANCHOR EXCEEDED IN CATENARY TABLE FOR LINE # 1 AT14029. FT

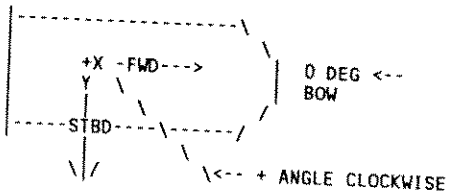
STARTING DISPLACEMENTS : SURGE(FT) =-182.500 SWAY(FT) =-182.500 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE T10S12T tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 45.0 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - NO

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

T10S12T

LINE NUMBER	1	2	3	4	5	6	7	8	9	10	11	12
LINE TYPE	1	1	1	1	1	1	1	1	1	1	1	1
DEGREES - CLOCKWISE FROM BOW	15.0	45.0	75.0	105.0	135.0	165.0	-165.0	-135.0	-105.0	-75.0	-45.0	-15.0
FAIRLEAD LOCATION X(FT)	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0	132.0	132.0	132.0
FAIRLEAD LOCATION Y(FT)	132.0	132.0	132.0	132.0	132.0	132.0	-132.0	-132.0	-132.0	-132.0	-132.0	-132.0
INITIAL TENSION (KIPS)	980.0	980.0	980.0	980.0	980.0	980.0	980.0	980.0	980.0	980.0	980.0	980.0
INITIAL VESSEL YAW ANGLES (DEG)		.00										

LINE TYPE	1
HORZ DIST TO MUDLINE (FT)	.0
VERT DIST TO MUDLINE (FT)	10000.0
SLOPE AT MUDLINE (DEG)	.0
WATER DEPTH (FT)	10000.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	300.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	5700.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	-662.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	9750.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0

LINE TYPE	1
LINE MATERIAL	CHAIN
LINE SIZE (IN)	5.750"
LINE LENGTH (FT)	350.0
WEIGHT IN WATER (LB/FT)	273.26
LINE B.S. (KIPS)	4249.0
AREA (SQ IN)	25.97
APP.MOD. OF ELAS.(KSI)	15279.
+CLUMP WT / -BUOY (KIPS)	35800.0
LINE MATERIAL	WIRE
LINE SIZE (IN)	6.000"
LINE LENGTH (FT)	1000.0
WEIGHT IN WATER (LB/FT)	65.14
LINE B.S. (KIPS)	4134.0
AREA (SQ IN)	28.27
APP.MOD. OF ELAS.(KSI)	9804.
+CLUMP WT / -BUOY (KIPS)	.0
ANCHOR WEIGHT (KIPS)	50.
ALLOWABLE ANCHOR HOLDING FORCE (KIPS)	1000.

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
1	189.1	.0	390.8	7162.00	9938.00	7162.0	.0	.0				
2	390.9	272.8	476.7	12582.43	9938.00	1252.4	272.8	.0	24.87	-662.00	.00	716.12
3	592.8	569.4	821.9	13387.61	9938.00	1002.1	569.4	.0	46.04	-662.00	133.22	1034.71
4	794.7	843.8	1159.1	13584.12	9938.00	1003.1	843.8	.0	66.59	-662.00	335.10	1359.41
5	996.6	1113.5	1494.3	13679.97	9938.00	1004.0	1113.5	.0	87.06	-662.00	536.97	1687.29
6	1198.4	1381.6	1828.9	13741.88	9938.00	1005.0	1381.6	.0	107.55	-662.00	738.85	2017.06
7	1400.3	1646.5	2161.5	13780.81	9938.00	1006.0	1646.5	.0	127.96	-662.00	940.72	2346.27
8	1602.2	1911.5	2494.2	13813.97	9938.00	1006.9	1911.5	.0	148.43	-662.00	1142.60	2676.44
9	1804.1	2182.8	2831.8	13857.48	9938.00	1007.9	2182.8	.0	169.27	-662.00	1344.47	3011.83
10	2005.9	2447.7	3164.7	13882.76	9938.00	1008.9	2447.7	.0	189.86	-662.00	1546.35	3343.15
11	2409.7	2984.0	3835.5	13939.40	9938.00	1010.9	2984.0	.0	231.51	-662.00	1950.10	4011.37
12	2813.5	3526.5	4511.3	13998.22	9938.00	1012.9	3526.5	.0	273.69	-662.00	2353.85	4685.21
13	3217.2	4069.1	5187.3	14050.75	9938.00	1014.9	4069.1	.0	316.08	-662.00	2757.61	5359.66
14	3621.0	4624.2	5873.2	14112.83	9938.00	1017.0	4624.2	.0	359.34	-662.00	3161.36	6044.17
15	4024.7	5179.4	6559.3	14169.46	9938.00	1019.0	5179.4	.0	402.83	-662.00	3565.11	6729.07
16	4428.5	5734.5	7245.4	14222.13	9938.00	1021.1	5734.5	.0	446.53	-662.00	3968.86	7414.26
17	4832.2	6289.7	7931.6	14272.06	9938.00	1023.2	6289.7	.0	490.46	-662.00	4372.61	8099.67
18	5236.0	6857.5	8627.9	14329.28	9938.00	1025.4	6857.5	.0	535.27	-662.00	4776.36	8795.07
19	5639.7	7437.9	9334.2	14392.16	9938.00	1027.6	7437.9	.0	581.00	-662.00	5180.12	9500.54
20	6043.5	8005.6	10030.6	14443.65	9938.00	1029.7	8005.6	.0	626.29	-662.00	5583.87	10196.31
21	6447.2	8586.0	10737.2	14500.97	9938.00	1032.0	8586.0	.0	672.49	-662.00	5987.62	10902.13
22	6851.0	9166.4	11443.7	14556.12	9938.00	1034.2	9166.4	.0	718.94	-662.00	6391.37	11608.10
23	7254.7	9772.0	12170.6	14622.83	9938.00	1036.5	9772.0	.0	767.02	-662.00	6795.12	12334.17
24	7658.5	10352.4	12877.3	14674.10	9938.00	1038.8	10352.4	.0	813.98	-662.00	7198.87	13040.40
25	8062.2	10958.1	13604.4	14736.27	9938.00	1041.2	10958.1	.0	862.58	-662.00	7602.62	13766.79
26	8466.0	11563.7	14331.5	14796.46	9938.00	1043.5	11563.7	.0	911.45	-662.00	8006.38	14493.33
27	8869.7	12169.3	15058.7	14855.00	9938.00	1045.9	12169.3	.0	960.60	-662.00	8410.13	15220.00
28	9273.5	12775.0	15786.0	14912.10	9938.00	1048.3	12775.0	.0	1010.02	-662.00	8813.88	15946.77
29	9677.2	13405.8	16533.7	14978.05	9938.00	1050.8	13405.8	.0	1061.15	-662.00	9217.63	16693.90
30	10081.0	14036.7	17281.6	15042.24	9938.00	1053.3	14036.7	.0	1112.58	-662.00	9621.38	17441.19
31	10484.7	14667.5	18029.6	15104.92	9938.00	1055.9	14667.5	.0	1164.31	-662.00	10025.14	18188.63
32	10888.5	15298.4	18777.7	15166.26	9938.00	1058.4	15298.4	.0	1216.33	-662.00	10428.89	18936.18
33	11292.2	15954.5	19546.4	15235.21	9938.00	1061.1	15954.5	.0	1270.15	-662.00	10832.64	19704.27
34	11696.0	16585.4	20294.6	15294.25	9938.00	1063.6	16585.4	.0	1322.79	-662.00	11236.39	20452.07
35	12099.7	17241.5	21063.5	15360.57	9938.00	1066.3	17241.5	.0	1377.24	-662.00	11640.14	21220.45
36	12503.5	17897.6	21832.5	15425.71	9938.00	1069.0	17897.6	.0	1432.02	-662.00	12043.90	21988.96
37	12907.2	18553.7	22601.7	15489.89	9938.00	1071.7	18553.7	.0	1487.14	-662.00	12447.65	22757.61
38	13311.0	19260.2	23412.4	15567.97	9938.00	1074.7	19260.2	.0	1545.66	-662.00	12851.40	23567.59
39	13714.7	19916.3	24181.7	15630.02	9938.00	1077.4	19916.3	.0	1601.46	-662.00	13255.15	24336.51
40	14118.5	20622.9	24992.7	15705.56	9938.00	1080.4	20622.9	.0	1660.74	-662.00	13658.90	25146.89
41	14522.3	21279.0	25762.2	15766.19	9938.00	1083.2	21279.0	.0	1717.25	-662.00	14062.66	25916.03
42	14926.0	21985.6	26573.5	15839.74	9938.00	1086.2	21985.6	.0	1777.28	-662.00	14466.41	26726.73
43	15329.8	22692.1	27384.9	15912.22	9938.00	1089.2	22692.1	.0	1837.70	-662.00	14870.16	27537.63
44	15733.5	23398.7	28196.5	15983.83	9938.00	1092.2	23398.7	.0	1898.51	-662.00	15273.91	28348.69
45	16137.3	24155.7	29050.1	16067.03	9938.00	1095.5	24155.7	.0	1962.97	-662.00	15677.66	29201.63

CATENARY TABLE - LINE TYPE 1

NO	LINE TENSION COMPONENTS VERTICAL (KIPS)	HORIZONTAL (KIPS)	TOTAL (KIPS)	HORIZONTAL DISTANCE TO ANCHOR (FT)	VERTICAL DISTANCE TO LIFT OFF (FT)	LINE ON BOTTOM (FT)	FORCES ON ANCHOR HORIZONTAL (KIPS)	VERTICAL (KIPS)	ELASTIC ELONGATION (FT)	USED BUOY FORCE (KIPS)	USED CLUMP WEIGHT (KIPS)	MAX TENSION ON BUOY (KIPS)
46	16541.0	24862.3	29862.0	16137.00	9938.00	1098.5	24862.3	.0	2024.62	-662.00	16081.41	30013.04
47	16944.8	25619.3	30716.0	16218.22	9938.00	1101.8	25619.3	.0	2089.96	-662.00	16485.16	30866.45
48	17348.5	26325.9	31528.1	16287.01	9938.00	1105.0	26325.9	.0	2152.46	-662.00	16888.92	31678.15
49	17752.3	27082.9	32382.5	16366.58	9938.00	1108.3	27082.9	.0	2218.70	-662.00	17292.67	32531.96
50	18156.0	27840.0	33237.1	16445.57	9938.00	1111.7	27840.0	.0	2285.43	-662.00	17696.42	33385.99
51	18559.8	28597.0	34091.8	16523.89	9938.00	1115.0	28597.0	.0	2352.63	-662.00	18100.17	34240.21
52	18963.5	29404.5	34989.1	16612.27	9938.00	1118.7	29404.5	.0	2423.74	-662.00	18503.92	35136.84
53	19367.3	30161.5	35844.2	16689.36	9938.00	1122.1	30161.5	.0	2491.95	-662.00	18907.68	35991.47
54	19771.0	30969.0	36742.0	16776.38	9938.00	1125.8	30969.0	.0	2564.12	-662.00	19311.43	36888.62
55	20174.8	31776.5	37640.0	16862.69	9938.00	1129.5	31776.5	.0	2636.85	-662.00	19715.18	37786.04
56	20578.5	32584.0	38538.2	16948.49	9938.00	1133.2	32584.0	.0	2710.13	-662.00	20118.93	38683.71
57	20982.3	33391.5	39436.7	17033.69	9938.00	1137.0	33391.5	.0	2783.98	-662.00	20522.68	39581.61
58	21386.0	34199.0	40335.3	17118.55	9938.00	1140.8	34199.0	.0	2858.40	-662.00	20926.44	40479.73
59	21789.8	35057.0	41277.0	17212.65	9938.00	1144.8	35057.0	.0	2937.05	-662.00	21330.19	41420.76
60	22193.5	35864.5	42176.0	17296.72	9938.00	1148.6	35864.5	.0	3012.65	-662.00	21733.94	42319.33
61	22597.3	36773.0	43161.2	17399.22	9938.00	1153.0	36773.0	.0	3096.28	-662.00	22137.69	43303.77
62	23001.0	37580.5	44060.6	17482.69	9938.00	1156.9	37580.5	.0	3173.13	-662.00	22541.44	44202.78
63	23404.8	38488.9	45046.4	17584.32	9938.00	1161.3	38488.9	.0	3258.15	-662.00	22945.20	45187.89
64	23808.5	39397.3	46032.6	17685.33	9938.00	1165.7	39397.3	.0	3343.91	-662.00	23348.95	46173.39
65	24212.3	40305.8	47019.0	17786.08	9938.00	1170.2	40305.8	.0	3430.45	-662.00	23752.70	47159.25
66	24616.0	41214.2	48005.8	17886.46	9938.00	1174.7	41214.2	.0	3517.73	-662.00	24156.45	48145.44
67	25019.8	42122.6	48992.9	17986.66	9938.00	1179.2	42122.6	.0	3605.80	-662.00	24560.20	49131.96
68	25423.6	43031.1	49980.3	18086.70	9938.00	1183.8	43031.1	.0	3694.64	-662.00	24963.96	50118.78
69	25827.3	44040.5	51055.0	18203.62	9938.00	1188.9	44040.5	.0	3792.33	-662.00	25367.71	51192.69
70	26231.1	44948.9	52043.0	18303.35	9938.00	1193.6	44948.9	.0	3882.83	-662.00	25771.46	52180.17
71	26634.8	45958.3	53118.5	18419.83	9938.00	1198.8	45958.3	.0	3982.38	-662.00	26175.21	53254.98
72	27038.6	46967.6	54194.5	18536.12	9938.00	1204.0	46967.6	.0	4082.91	-662.00	26578.96	54330.29
73	27442.3	47977.0	55270.9	18652.19	9938.00	1209.3	47977.0	.0	4184.43	-662.00	26982.71	55406.05
74	27846.1	48986.4	56347.8	18768.46	9938.00	1214.7	48986.4	.0	4287.00	-662.00	27386.47	56482.25
75	28249.8	49995.8	57425.0	18884.57	9938.00	1220.1	49995.8	.0	4390.56	-662.00	27790.22	57558.86
76	28653.6	51106.1	58590.6	19016.96	9938.00	1226.1	51106.1	.0	4503.89	-662.00	28193.97	58723.68
77	29057.3	52115.5	59668.7	19133.30	9938.00	1231.6	52115.5	.0	4609.67	-662.00	28597.72	59801.17
78	29461.1	53225.8	60835.3	19265.82	9938.00	1237.7	53225.8	.0	4725.45	-662.00	29001.47	60967.10
79	29864.8	54336.1	62002.6	19398.45	9938.00	1243.9	54336.1	.0	4842.48	-662.00	29405.23	62133.62
80	30268.6	55446.4	63170.3	19531.37	9938.00	1250.1	55446.4	.0	4960.85	-662.00	29808.98	63300.69
81	30672.3	56657.6	64427.3	19680.24	9938.00	1256.9	56657.6	.0	5089.82	-662.00	30212.73	64556.86
82	31076.1	57768.0	65596.2	19813.71	9938.00	1263.3	57768.0	.0	5210.98	-662.00	30616.48	65725.08
83	31479.8	58979.2	66854.5	19963.27	9938.00	1270.3	58979.2	.0	5343.05	-662.00	31020.23	66982.63
84	31883.6	60190.5	68113.5	20113.18	9938.00	1277.4	60190.5	.0	5476.72	-662.00	31423.99	68240.88
85	32287.3	61502.6	69462.6	20279.22	9938.00	1285.2	61502.6	.0	5621.83	-662.00	31827.74	69589.01
86	32691.1	62713.9	70723.0	20430.23	9938.00	1292.4	62713.9	.0	5759.03	-662.00	32231.49	70848.73
87	33094.8	64026.1	72073.6	20597.54	9938.00	1300.4	64026.1	.0	5907.99	-662.00	32635.24	72198.54
88	33498.6	65338.3	73425.1	20765.50	9938.00	1308.5	65338.3	.0	6058.98	-662.00	33039.00	73549.20
89	33902.3	66751.4	74867.3	20949.73	9938.00	1317.2	66751.4	.0	6222.40	-662.00	33442.75	74990.51
90	34306.1	68164.5	76310.6	21135.33	9938.00	1326.2	68164.5	.0	6388.35	-662.00	33846.50	76432.90
91	34709.8	69577.6	77754.9	21321.63	9938.00	1335.2	69577.6	.0	6556.68	-662.00	34250.25	77876.30
92	35113.6	70990.8	79200.1	21509.39	9938.00	1344.3	70990.8	.0	6727.59	-662.00	34654.00	79320.67
93	35517.3	72605.8	80827.5	21729.43	9938.00	1354.9	72605.8	.0	6923.19	-662.00	35057.75	80946.98
94	35921.1	74119.8	82365.5	21935.72	9938.00	1365.1	74119.8	.0	7110.98	-662.00	35461.50	82484.11
95	36324.8	75734.8	83995.6	22159.12	9938.00	.0	75734.8	.1	7313.25	-662.00	.00	84113.20
96	36728.6	77551.7	85809.4	22416.07	9938.00	.0	77551.7	403.9	7542.53	-662.00	.00	85925.83
97	37132.3	79368.6	87625.2	22675.51	9938.00	.0	79368.6	807.6	7776.49	-662.00	.00	87740.48
98	37536.1	81185.5	89442.9	22937.86	9938.00	.0	81185.5	1211.4	8015.17	-662.00	.00	89557.05
99	37939.8	83204.2	91446.0	23235.06	9938.00	.0	83204.2	1615.1	8283.61	-662.00	.00	91558.84

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	0.	.00	0.	8450.	0.	1213.	1002.	722.	1009	1009	1009	1009	1009	1009	1009	1009	1009	1009	1009	1009
20.0	.2	209.	10.43	0.	8459.	25470.	1256.	1002.	758.	1046	1053	1046	1030	1009	988	974	969	974	988	1009	1030
40.0	.4	418.	10.47	0.	8484.	51047.	1303.	1003.	797.	1088	1101	1088	1053	1009	969	943	934	943	969	1009	1053
60.0	.6	629.	10.55	0.	8526.	76838.	1355.	1003.	840.	1133	1155	1133	1076	1009	952	916	904	916	952	1009	1076
80.0	.8	837.	10.39	0.	8581.	102104.	1409.	1003.	885.	1180	1210	1180	1102	1009	935	891	877	891	935	1009	1102
100.0	1.0	1047.	10.50	0.	8652.	127612.	1469.	1003.	934.	1230	1271	1230	1128	1009	919	869	854	869	919	1009	1128
120.0	1.2	1264.	10.88	0.	8742.	154211.	1537.	1004.	990.	1285	1341	1285	1156	1010	904	850	834	850	904	1010	1156
140.0	1.4	1492.	11.39	0.	8849.	182514.	1613.	1004.	1053.	1346	1419	1346	1183	1010	891	833	815	833	891	1010	1183
160.0	1.6	1741.	12.43	0.	8968.	213915.	1698.	1004.	1122.	1414	1505	1414	1212	1011	878	817	789	817	878	1011	1212
180.0	1.8	2011.	13.54	0.	9094.	248793.	1787.	1004.	1195.	1489	1596	1489	1242	1011	866	795	765	795	866	1011	1242
200.0	2.0	2296.	14.24	0.	9238.	285497.	1893.	1005.	1282.	1565	1704	1565	1275	1012	855	773	741	773	855	1012	1275
220.0	2.2	2614.	15.87	0.	9415.	327064.	2022.	1005.	1386.	1652	1834	1652	1310	1012	845	753	719	753	845	1012	1310
240.0	2.4	2976.	18.12	0.	9636.	375409.	2183.	1005.	1515.	1755	1997	1755	1347	1013	836	733	698	733	836	1013	1347
260.0	2.6	3383.	20.32	0.	9901.	430518.	2364.	1006.	1661.	1879	2179	1879	1386	1014	827	714	679	714	827	1014	1386
280.0	2.8	3835.	22.63	0.	10208.	492506.	2565.	1007.	1822.	2024	2381	2024	1428	1015	818	696	660	696	818	1015	1428
300.0	3.0	4291.	22.81	0.	10517.	554500.	2738.	1007.	1962.	2185	2557	2185	1472	1016	805	680	643	680	805	1016	1472
320.0	3.2	4743.	22.58	0.	10828.	616012.	2882.	1008.	2078.	2362	2701	2362	1517	1017	793	663	626	663	793	1017	1517
340.0	3.4	5214.	23.57	0.	11156.	679652.	3075.	1008.	2233.	2525	2895	2525	1563	1018	781	648	611	648	781	1018	1563
360.0	3.6	5692.	23.89	0.	11488.	742301.	3341.	1009.	2446.	2648	3162	2648	1613	1019	769	634	597	634	769	1019	1613
380.0	3.8	6179.	24.35	0.	11835.	805986.	3586.	1010.	2642.	2789	3408	2789	1669	1020	757	620	584	620	757	1020	1669
400.0	4.0	6753.	28.69	0.	12267.	883656.	3820.	1010.	2830.	2997	3643	2997	1730	1021	746	608	571	608	746	1021	1730
420.0	4.2	7359.	30.32	0.	12735.	965828.	4048.	1011.	3013.	3229	3872	3229	1798	1022	736	595	560	595	736	1022	1798
440.0	4.4	7944.	29.22	0.	13189.	1042706.	4273.	1012.	3195.	3442	4098	3442	1875	1024	725	584	550	584	725	1024	1875
460.0	4.6	8525.	29.08	0.	13647.	1117678.	4502.	1012.	3379.	3646	4328	3646	1960	1025	715	574	540	574	715	1025	1960
480.0	4.8	9112.	29.36	0.	14113.	1192356.	4741.	1013.	3571.	3846	4567	3846	2052	1027	705	564	531	564	705	1027	2052
500.0	5.0	9716.	30.17	-1.	14597.	1268485.	4999.	1014.	3779.	4045	4826	4045	2148	1028	695	554	523	554	695	1028	2148
520.0	5.2	10327.	30.56	-1.	15093.	1344463.	5257.	1015.	3986.	4244	5084	4244	2253	1030	686	546	516	546	686	1030	2253
540.0	5.4	10929.	30.12	0.	15585.	1418698.	5494.	1015.	4178.	4448	5322	4448	2360	1032	677	538	509	538	677	1032	2360
560.0	5.6	11538.	30.45	0.	16085.	1494259.	5714.	1016.	4356.	4667	5543	4667	2466	1034	668	530	504	530	668	1034	2466
580.0	5.8	12137.	29.95	1.	16567.	1570935.	5932.	1017.	4533.	4894	5760	4894	2551	1035	660	524	498	524	660	1035	2551
600.0	6.0	12733.	29.77	-1.	17041.	1647908.	6158.	1017.	4717.	5120	5988	5120	2625	1037	651	517	494	517	651	1037	2625
620.0	6.2	13315.	29.09	0.	17504.	1721495.	6397.	1018.	4910.	5326	6227	5326	2704	1039	643	512	490	512	643	1039	2704
640.0	6.4	13894.	28.99	0.	17971.	1792644.	6643.	1019.	5110.	5520	6473	5520	2795	1041	636	506	486	506	636	1041	2795
660.0	6.6	14502.	30.39	0.	18479.	1863685.	6896.	1020.	5315.	5711	6726	5711	2918	1044	628	502	483	502	628	1044	2918
680.0	6.8	15136.	31.69	0.	19021.	1936015.	7155.	1020.	5525.	5905	6986	5905	3059	1046	621	497	481	497	621	1046	3059
700.0	7.0	15794.	32.91	0.	19585.	2011824.	7421.	1021.	5740.	6113	7252	6113	3203	1048	614	493	479	493	614	1048	3203
720.0	7.2	16459.	33.23	0.	20149.	2089923.	7697.	1022.	5963.	6326	7528	6326	3336	1051	607	490	477	490	607	1051	3336
740.0	7.4	17127.	33.41	0.	20716.	2168844.	7972.	1023.	6186.	6545	7804	6545	3465	1053	601	487	476	487	601	1053	3465
760.0	7.6	17791.	33.18	0.	21277.	2247227.	8234.	1024.	6399.	6768	8066	6768	3592	1056	594	484	475	484	594	1056	3592
780.0	7.8	18448.	32.85	0.	21833.	2324703.	8480.	1024.	6600.	6997	8313	6997	3717	1058	588	482	474	482	588	1058	3717
800.0	8.0	19103.	32.78	1.	22388.	2401977.	8717.	1025.	6794.	7231	8550	7231	3840	1061	583	480	474	480	583	1061	3840
820.0	8.2	19762.	32.92	0.	22946.	2479705.	8942.	1026.	6978.	7474	8775	7474	3963	1064	577	479	474	479	577	1064	3963
840.0	8.4	20418.	32.80	0.	23502.	2556753.	9162.	1027.	7160.	7717	8995	7717	4087	1067	571	477	474	477	571	1067	4087
860.0	8.6	21072.	32.73	-1.	24056.	2633043.	9388.	1027.	7345.	7955	9222	7955	4211	1070	566	476	475	476	566	1070	4211
880.0	8.8	21726.	32.68	-1.	24607.	2708262.	9639.	1028.	7551.	8177	9472	8177	4337	1073	561	475	475	475	561	1073	4337
900.0	9.0	22388.	33.07	0.	25164.	2783893.	9910.	1029.	7772.	8391	9744	8391	4465	1076	556	475	475	475	556	1076	4465
920.0	9.2	23049.	33.07	-1.	25725.	2857954.	10182.	1030.	7994.	859810016	8598	4602	1079	552	474	476	474	552	1079	4602
940.0	9.4	23684.	31.73	0.	26263.	2926553.	10433.	1030.	8200.	879410267	8794	4743	1083	547	474	477	474	547	1083	4743
960.0	9.6	24313.	31.45	1.	26796.	2993840.	10678.	1031.	8401.	898910513	8989	4886	1086	543	474	477	474	543	1086	4886
980.0	9.8	24949.	31.81	-1.	27334.	3062119.	10923.	1032.	8603.	918810758	9188	5029	1090	539	474	478	474	539	1090	5029
1000.0	10.0	25616.	33.36	-1.	27898.	3135555.	11182.	1033.	8816.	940211018	9402	5169	1093	535	474	479	474	535	1093	5169

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
1020.0	10.2	26303.	34.35	0.	28473.	3214104.	11439.	1034.	9027.	964011274	9640	5297	1097	531	475	479	475	531	1097	5297	
1040.0	10.4	26980.	33.84	-1.	29037.	3291438.	11679.	1034.	9226.	988111515	9881	5420	1101	528	475	479	475	528	1101	5420	
1060.0	10.6	27625.	32.26	-1.	29571.	3363612.	11893.	1035.	9404.	1011511729	10115	5542	1105	524	476	479	476	524	1105	5542	
1080.0	10.8	28251.	31.31	1.	30085.	3432277.	12107.	1036.	9582.	1033411943	10334	5663	1109	521	476	479	476	521	1109	5663	
1100.0	11.0	28883.	31.62	-1.	30603.	3501507.	12331.	1037.	9770.	1055012168	10550	5785	1113	518	477	479	477	518	1113	5785	
1120.0	11.2	29559.	33.78	0.	31157.	3576802.	12604.	1037.	9994.	1076812441	10768	5910	1118	515	477	478	477	515	1118	5910	
1140.0	11.4	30262.	35.13	-1.	31737.	3655437.	12882.	1038.	10222.	1099812719	10998	6041	1122	512	478	478	478	512	1122	6041	
1160.0	11.6	30953.	34.58	0.	32308.	3731705.	13145.	1039.	10439.	1122512982	11225	6175	1126	509	478	476	478	509	1126	6175	
1180.0	11.8	31621.	33.39	0.	32856.	3803461.	13382.	1040.	10636.	1144813219	11448	6312	1131	506	479	475	479	506	1131	6312	
1200.0	12.0	32245.	31.22	-1.	33363.	3867018.	13611.	1041.	10828.	1163913448	11639	6451	1136	504	479	473	479	504	1136	6451	
1220.0	12.2	32870.	31.22	-1.	33868.	3929868.	13842.	1041.	11021.	1182813680	11828	6592	1141	502	479	470	479	502	1141	6592	
1240.0	12.4	33510.	32.02	0.	34386.	3994738.	14082.	1042.	11221.	1202013920	12020	6736	1146	499	479	467	479	499	1146	6736	
1260.0	12.6	34182.	33.59	0.	34933.	4064458.	14324.	1043.	11423.	1223114162	12231	6881	1151	497	479	464	479	497	1151	6881	
1280.0	12.8	34903.	36.08	0.	35524.	4142280.	14569.	1044.	11626.	1247514407	12475	7030	1156	495	479	460	479	495	1156	7030	
1300.0	13.0	35635.	36.56	-1.	36122.	4221140.	14815.	1045.	11832.	1272314654	12723	7180	1161	494	479	455	479	494	1161	7180	
1320.0	13.2	36356.	36.08	0.	36709.	4297306.	15064.	1045.	12040.	1295714903	12957	7334	1166	492	478	450	478	492	1166	7334	
1340.0	13.4	37054.	34.90	-1.	37272.	4368495.	15318.	1046.	12251.	1316915156	13169	7492	1171	490	477	444	477	490	1171	7492	
1360.0	13.6	37748.	34.69	-1.	37828.	4438566.	15574.	1047.	12464.	1337415413	13374	7649	1177	489	476	438	476	489	1177	7649	
1380.0	13.8	38437.	34.45	0.	38376.	4507704.	15828.	1048.	12676.	1357715667	13577	7806	1182	487	475	430	475	487	1182	7806	
1400.0	14.0	39127.	34.49	-1.	38920.	4577366.	16069.	1049.	12878.	1378815909	13788	7959	1188	486	473	422	473	486	1188	7959	
1420.0	14.2	39806.	33.96	1.	39449.	4646283.	16298.	1049.	13071.	1400216137	14002	8104	1194	485	472	414	472	485	1194	8104	
1440.0	14.4	40483.	33.89	-1.	39972.	4715240.	16522.	1050.	13260.	1421816361	14218	8246	1200	483	469	404	469	483	1200	8246	
1460.0	14.6	41164.	34.02	0.	40492.	4784839.	16746.	1051.	13450.	1443616586	14436	8384	1206	482	467	394	467	482	1206	8384	
1480.0	14.8	41852.	34.39	-1.	41014.	4855790.	16977.	1052.	13645.	1465616817	14656	8521	1212	481	464	382	464	481	1212	8521	
1500.0	15.0	42543.	34.56	0.	41534.	4927540.	17211.	1053.	13842.	1487817051	14878	8654	1218	480	461	370	461	480	1218	8654	
1520.0	15.2	43237.	34.67	0.	42049.	5000306.	17445.	1053.	14040.	1510217286	15102	8781	1225	480	457	357	457	480	1225	8781	
1540.0	15.4	43940.	35.16	-1.	42570.	5074590.	17682.	1054.	14240.	1533217523	15332	8908	1232	479	453	343	453	479	1232	8908	
1560.0	15.6	44646.	35.30	-1.	43089.	5148913.	17920.	1055.	14441.	1555917761	15559	9036	1239	478	448	327	448	478	1239	9036	
1580.0	15.8	45353.	35.34	-1.	43606.	5222651.	18161.	1056.	14644.	1578318002	15783	9167	1246	477	443	311	443	477	1246	9167	
1600.0	16.0	46047.	34.74	-1.	44108.	5293238.	18406.	1057.	14850.	1599018247	15990	9302	1253	477	438	294	438	477	1253	9302	
1620.0	16.2	46751.	35.19	-1.	44619.	5362757.	18651.	1057.	15057.	1619318492	16193	9452	1261	476	432	275	432	476	1261	9452	
1640.0	16.4	47458.	35.33	0.	45132.	5431521.	18892.	1058.	15261.	1639218734	16392	9609	1268	476	426	256	426	476	1268	9609	
1660.0	16.6	48159.	35.05	0.	45636.	5498952.	19118.	1059.	15454.	1659318960	16593	9769	1276	476	419	235	419	476	1276	9769	
1680.0	16.8	48866.	35.38	-1.	46141.	5567411.	19338.	1060.	15642.	1680019180	16800	9928	1285	475	411	213	411	475	1285	9928	
1700.0	17.0	49576.	35.49	0.	46640.	5636956.	19561.	1061.	15832.	1700819403	17008	10083	1293	475	403	189	403	475	1293	10083	
1720.0	17.2	50293.	35.85	-1.	47134.	5709091.	19796.	1061.	16032.	1721719632	17217	10229	1301	475	394	165	394	475	1301	10229	
1740.0	17.4	50985.	34.60	0.	47635.	5784728.	20050.	1062.	16246.	1742819892	17428	10374	1310	474	385	139	385	474	1310	10374	
1760.0	17.6	51702.	35.83	0.	48156.	5857148.	20305.	1063.	16461.	1764120147	17641	10518	1319	474	375	132	375	474	1319	10518	
1780.0	17.8	52416.	35.71	-1.	48680.	5927596.	20551.	1064.	16670.	1785520394	17855	10662	1329	474	365	132	365	474	1329	10662	
1800.0	18.0	53129.	35.66	1.	49202.	5997044.	20785.	1065.	16869.	1807120627	18071	10810	1338	474	353	132	353	474	1338	10810	
1820.0	18.2	53851.	36.10	0.	49732.	6067100.	21015.	1066.	17065.	1829120858	18291	10963	1348	474	341	132	341	474	1348	10963	
1840.0	18.4	54574.	36.12	1.	50258.	6137027.	21244.	1066.	17262.	1851021087	18510	11116	1358	474	329	132	329	474	1358	11116	
1860.0	18.6	55297.	36.18	0.	50781.	6207108.	21479.	1067.	17462.	1872621322	18726	11268	1368	474	316	132	316	474	1368	11268	
1880.0	18.8	56003.	35.31	-1.	51283.	6274203.	21715.	1068.	17664.	1892921558	18929	11417	1379	474	302	132	302	474	1379	11417	
1900.0	19.0	56690.	34.34	0.	51755.	6340210.	21952.	1069.	17866.	1912721795	19127	11550	1390	474	287	132	287	474	1390	11550	
1920.0	19.2	57378.	34.41	1.	52222.	6407252.	22194.	1070.	18072.	1932522038	19325	11677	1401	474	271	132	271	474	1401	11677	
1940.0	19.4	58073.	34.75	0.	52691.	6475539.	22436.	1071.	18278.	1952822279	19528	11804	1413	474	255	132	255	474	1413	11804	
1960.0	19.6	58796.	36.15	0.	53185.	6548662.	22673.	1071.	18481.	1975122517	19751	11932	1424	475	238	132	238	475	1424	11932	
1980.0	19.8	59518.	36.07	-1.	53675.	6620946.	22891.	1072.	18670.	1998022735	19980	12064	1436	475	220	132	220	475	1436	12064	

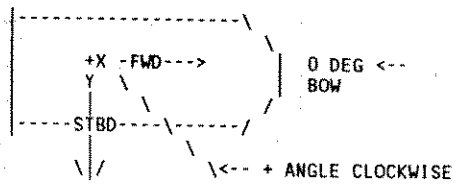
STARTING DISPLACEMENTS : SURGE(FT) = .000 SWAY(FT) = .000 YAW(DEG) = .000

DEEPWATER, ARAMID MOORING LINE JIP
CASE T10S12T tight watch circle
INSTALLED CONFIGURATION - CORRECTED CATENARY TABLE

PROBLEM NUMBER - 1

SOIL FRICTION COEFFICIENT - .00
LINE ATTACHMENT W.R.T. WATER LINE - -62.0 FT

ALLOWABLE LINE LENGTH ON BOTTOM - 90.0 FT
DIRECTION OF VESSEL TRANSLATION - 22.5 DEG



CATENARY OPTIMIZATION - NO

INITIAL TENSION OPTIMIZATION - NO

SLACK TENSION OPTIMIZATION - NO

DAMAGED CONDITION - YES

CALCULATE ENVELOPES - NO

PLOT ENVELOPES - NO

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
.0	.0	-2.	.00	0.	7764.	260714.	1393.	1003.	872.	1194	0	1194	1109	1009	930	884	870	884	930	1009	1109
20.0	.2	164.	8.31	135.	7801.	278249.	1450.	1003.	919.	1252	0	1234	1121	997	908	861	849	868	923	1022	1149
40.0	.4	331.	8.35	18.	7851.	296096.	1514.	1004.	972.	1318	0	1276	1133	985	887	840	831	853	917	1036	1190
60.0	.6	505.	8.69	-207.	7915.	315138.	1586.	1004.	1031.	1391	0	1323	1145	974	869	824	811	839	911	1050	1233
80.0	.8	699.	9.66	331.	7983.	337063.	1667.	1004.	1097.	1474	0	1373	1157	963	852	799	787	828	905	1065	1281
100.0	1.0	899.	10.00	1270.	8060.	360047.	1752.	1004.	1166.	1560	0	1426	1168	952	837	774	763	814	900	1082	1334
120.0	1.2	1113.	10.72	1703.	8152.	385345.	1850.	1005.	1246.	1659	0	1484	1179	941	825	751	741	797	895	1099	1392
140.0	1.4	1347.	11.69	616.	8259.	412669.	1966.	1005.	1341.	1778	0	1544	1192	932	807	728	720	780	889	1115	1454
160.0	1.6	1606.	12.96	-2017.	8390.	443578.	2111.	1005.	1457.	1924	0	1611	1206	923	789	708	700	763	884	1131	1518
180.0	1.8	1888.	14.13	-5538.	8546.	477617.	2280.	1006.	1593.	2095	0	1684	1219	914	770	688	681	748	879	1149	1587
200.0	2.0	2196.	15.40	-9184.	8730.	515346.	2470.	1006.	1746.	2287	0	1769	1234	906	753	669	663	732	874	1166	1664
220.0	2.2	2520.	16.19	-11348.	8934.	555307.	2666.	1007.	1903.	2483	0	1868	1249	898	736	651	646	718	869	1183	1753
240.0	2.4	2818.	14.90	-7492.	9126.	590939.	2808.	1007.	2018.	2627	0	1975	1261	890	720	635	631	704	865	1203	1861
260.0	2.6	3140.	16.07	-2473.	9345.	629785.	2962.	1008.	2143.	2782	0	2096	1276	882	704	619	616	691	861	1222	1985
280.0	2.8	3533.	19.69	-1504.	9631.	678810.	3195.	1008.	2329.	3016	0	2230	1293	875	690	605	602	678	857	1242	2119
300.0	3.0	3956.	21.13	-737.	9946.	731713.	3451.	1009.	2534.	3273	0	2374	1311	869	676	591	589	665	852	1261	2264
320.0	3.2	4359.	20.13	1287.	10248.	781463.	3685.	1010.	2722.	3508	0	2511	1331	863	663	579	576	653	847	1280	2412
340.0	3.4	4723.	18.22	-89.	10513.	825660.	3910.	1011.	2902.	3733	0	2617	1355	859	651	567	565	641	842	1298	2538
360.0	3.6	5072.	17.44	-2625.	10766.	868336.	4131.	1011.	3081.	3956	0	2724	1375	853	639	557	554	630	838	1320	2643
380.0	3.8	5441.	18.47	-2409.	11044.	913901.	4354.	1012.	3260.	4179	0	2853	1394	848	627	547	545	619	835	1345	2762
400.0	4.0	5867.	21.31	4496.	11387.	966721.	4581.	1013.	3443.	4407	0	3026	1412	842	616	537	536	610	833	1372	2932
420.0	4.2	6331.	23.20	13590.	11770.	1024160.	4823.	1013.	3637.	4650	0	3215	1434	837	605	529	528	600	829	1398	3134
440.0	4.4	6788.	22.83	19798.	12146.	1080538.	5077.	1014.	3841.	4904	0	3390	1457	833	595	521	521	591	826	1424	3321
460.0	4.6	7234.	22.30	25074.	12513.	1135357.	5328.	1015.	4043.	5155	0	3558	1481	828	586	515	514	583	823	1451	3501
480.0	4.8	7654.	21.00	31765.	12858.	1186398.	5552.	1015.	4225.	5380	0	3722	1504	824	577	508	508	574	818	1480	3676
500.0	5.0	8063.	20.45	38894.	13193.	1235526.	5767.	1016.	4399.	5595	0	3882	1526	819	568	503	502	567	813	1509	3848
520.0	5.2	8470.	20.35	45923.	13527.	1284263.	5981.	1017.	4573.	5809	0	4043	1550	812	560	498	498	559	808	1537	4019
540.0	5.4	8887.	20.87	52136.	13872.	1334360.	6206.	1017.	4756.	6036	0	4205	1576	806	553	493	493	552	803	1567	4190
560.0	5.6	9316.	21.41	57961.	14229.	1385826.	6442.	1018.	4947.	6272	0	4370	1603	799	546	489	489	546	799	1599	4364
580.0	5.8	9756.	22.04	64148.	14600.	1438873.	6685.	1019.	5143.	6515	0	4540	1631	793	539	486	486	539	794	1633	4544
600.0	6.0	10219.	23.10	71813.	14997.	1494813.	6933.	1020.	5345.	6764	0	4725	1662	787	533	483	483	533	789	1669	4737
620.0	6.2	10688.	23.48	79186.	15402.	1551539.	7189.	1020.	5552.	7019	0	4911	1693	781	527	481	481	528	784	1707	4933
640.0	6.4	11162.	23.69	85766.	15813.	1608759.	7450.	1021.	5764.	7281	0	5095	1727	775	522	479	479	523	780	1749	5127
660.0	6.6	11628.	23.31	89581.	16216.	1665201.	7721.	1022.	5983.	7553	0	5269	1763	770	517	477	477	518	775	1792	5304
680.0	6.8	12081.	22.64	91728.	16608.	1719750.	7990.	1023.	6201.	7822	0	5432	1803	764	512	476	476	513	771	1838	5470
700.0	7.0	12522.	22.06	94234.	16993.	1772554.	8246.	1024.	6408.	8078	0	5591	1846	759	508	475	475	509	766	1889	5634
720.0	7.2	12954.	21.60	97546.	17372.	1823806.	8487.	1024.	6605.	8319	0	5749	1892	754	504	475	475	505	762	1943	5798
740.0	7.4	13387.	21.65	102150.	17757.	1875002.	8719.	1025.	6795.	8552	0	5912	1941	749	500	474	474	501	757	1999	5969
760.0	7.6	13823.	21.77	108887.	18148.	1926122.	8940.	1026.	6976.	8773	0	6082	1990	743	497	474	474	498	753	2060	6150
780.0	7.8	14260.	21.87	116381.	18543.	1977472.	9155.	1026.	7154.	8989	0	6257	2042	738	493	474	474	495	749	2122	6334
800.0	8.0	14709.	22.42	124045.	18950.	2030038.	9377.	1027.	7336.	9210	0	6435	2094	733	491	474	474	492	745	2188	6523
820.0	8.2	15180.	23.58	130589.	19380.	2085858.	9620.	1028.	7536.	9454	0	6617	2150	729	488	475	475	490	741	2257	6715
840.0	8.4	15674.	24.71	135906.	19831.	2144744.	9886.	1029.	7752.	9720	0	6804	2209	724	486	475	475	487	737	2327	6911
860.0	8.6	16175.	25.03	141526.	20289.	2204344.	10153.	1030.	7970.	9988	0	6994	2271	719	484	476	476	485	733	2396	7111
880.0	8.8	16667.	24.62	149240.	20740.	2262165.	10402.	1030.	8175.	10237	0	7184	2329	714	482	477	476	483	730	2468	7318
900.0	9.0	17157.	24.49	158355.	21185.	2319316.	10644.	1031.	8373.	10478	0	7379	2386	709	480	477	477	482	727	2528	7532
920.0	9.2	17646.	24.42	167876.	21623.	2375797.	10884.	1032.	8571.	10719	0	7571	2438	704	479	478	478	480	724	2584	7749
940.0	9.4	18141.	24.79	176089.	22066.	2433352.	11139.	1033.	8781.	10974	0	7763	2490	699	478	478	478	479	721	2639	7961
960.0	9.6	18625.	24.20	183988.	22492.	2489618.	11392.	1034.	8989.	11228	0	7955	2533	694	477	479	479	478	718	2694	8156
980.0	9.8	19094.	23.42	191571.	22902.	2543496.	11635.	1034.	9189.	11471	0	8139	2576	690	476	479	479	477	715	2752	8343
000.0	10.0	19536.	22.09	200759.	23289.	2593323.	11846.	1035.	9365.	11682	0	8317	2619	686	475	479	479	476	712	2818	8525

VESSEL DISP. (FT)	(% WD)	RESTORING FORCE ON VESSEL (KIPS)	INCREMENT STIFFNESS (KIPS/FT)	YAW MOMENT (FT-KIP)	VERTICAL FORCE (KIPS)	OVERTURN MOMENT (FT-KIP)	MAX.LINE LOAD (KIPS)	LINE ON BOTTOM (FT)	HOR.FORCE ON ANCHOR (KIPS)	LINE LOAD (KIPS) LINE NUMBER 1	2	3	4	5	6	7	8	9	10	11	12
1020.0	10.2	19975.	21.98	209256.	23679.	2643187.	12055.	1036.	9539.	11891	0	8497	2667	682	475	479	479	476	708	2897	8696
1040.0	10.4	20418.	22.14	216135.	24073.	2693552.	12271.	1036.	9719.	12107	0	8672	2720	679	474	479	479	475	704	2982	8860
1060.0	10.6	20889.	23.58	219476.	24493.	2747812.	12525.	1037.	9929.	12362	0	8840	2781	676	474	479	479	475	700	3068	9024
1080.0	10.8	21381.	24.59	221150.	24934.	2804780.	12797.	1038.	10152.	12634	0	9009	2852	673	474	478	478	474	696	3158	9193
1100.0	11.0	21882.	25.03	223253.	25386.	2862280.	13065.	1039.	10373.	12902	0	9175	2933	669	474	477	478	474	693	3248	9376
1120.0	11.2	22377.	24.78	229509.	25838.	2918138.	13301.	1040.	10569.	13138	0	9350	3018	665	474	476	476	474	690	3336	9582
1140.0	11.4	22883.	25.27	238407.	26299.	2975349.	13529.	1040.	10759.	13366	0	9541	3098	661	474	474	475	474	687	3429	9795
1160.0	11.6	23389.	25.32	247923.	26758.	3032491.	13754.	1041.	10947.	13591	0	9735	3176	657	475	472	473	474	685	352310009	
1180.0	11.8	23895.	25.26	256183.	27209.	3089814.	13989.	1042.	11143.	13827	0	9929	3247	653	475	469	471	474	683	361610209	
1200.0	12.0	24396.	25.06	263378.	27653.	3146452.	14227.	1043.	11341.	14065	010116	3320	649	475	467	468	475	681	370610402		
1220.0	12.2	24894.	24.90	269697.	28089.	3202288.	14466.	1043.	11541.	14305	010296	3393	646	476	463	465	475	679	379510593		
1240.0	12.4	25396.	25.11	276109.	28525.	3258282.	14709.	1044.	11743.	14547	010474	3466	642	476	459	461	475	676	388310788		
1260.0	12.6	25906.	25.50	282948.	28967.	3315065.	14952.	1045.	11946.	14791	010653	3542	639	476	454	457	476	674	396910988		
1280.0	12.8	26422.	25.82	290175.	29412.	3372692.	15199.	1046.	12152.	15037	010838	3615	636	477	449	453	476	671	405611189		
1300.0	13.0	26946.	26.19	297223.	29861.	3431414.	15451.	1047.	12362.	15290	011026	3686	632	477	444	447	476	669	414511388		
1320.0	13.2	27459.	25.61	302886.	30294.	3488879.	15704.	1048.	12572.	15543	011210	3754	629	478	437	442	477	667	423811568		
1340.0	13.4	27961.	25.13	308004.	30713.	3544973.	15951.	1048.	12779.	15790	011390	3820	625	478	430	435	477	666	433411738		
1360.0	13.6	28442.	24.06	313111.	31109.	3597397.	16179.	1049.	12971.	16019	011555	3891	622	479	422	428	477	664	442711905		
1380.0	13.8	28920.	23.86	318332.	31498.	3648646.	16401.	1050.	13158.	16241	011713	3965	619	479	414	420	478	661	451912077		
1400.0	14.0	29412.	24.63	325285.	31903.	3701207.	16620.	1051.	13344.	16460	011875	4045	617	479	404	412	478	659	461212267		
1420.0	14.2	29925.	25.66	333677.	32325.	3756077.	16844.	1051.	13532.	16684	012043	4129	615	479	394	402	479	656	470312476		
1440.0	14.4	30456.	26.51	343381.	32762.	3813271.	17072.	1052.	13725.	16912	012224	4209	612	479	384	392	479	654	480012691		
1460.0	14.6	31001.	27.28	354511.	33212.	3873289.	17302.	1053.	13919.	17142	012426	4284	609	479	372	381	479	652	490212904		
1480.0	14.8	31539.	26.87	364138.	33647.	3932710.	17534.	1054.	14115.	17375	012626	4355	606	479	359	370	479	650	501013097		
1500.0	15.0	32075.	26.83	373137.	34077.	3991995.	17769.	1054.	14313.	17609	012824	4425	603	479	345	357	479	649	511913284		
1520.0	15.2	32602.	26.35	380378.	34491.	4049614.	18004.	1055.	14512.	17845	013008	4499	601	479	331	344	479	647	522013466		
1540.0	15.4	33128.	26.28	386614.	34897.	4106321.	18243.	1056.	14713.	18084	013178	4576	598	478	315	330	479	646	531713651		
1560.0	15.6	33661.	26.64	392568.	35305.	4163784.	18485.	1057.	14918.	18326	013346	4658	595	478	298	315	479	644	541013842		
1580.0	15.8	34195.	26.73	398753.	35709.	4221113.	18726.	1058.	15121.	18568	013511	4738	592	477	281	299	479	643	550314035		
1600.0	16.0	34731.	26.79	405656.	36110.	4278572.	18962.	1059.	15321.	18804	013680	4820	590	476	262	282	479	642	559514229		
1620.0	16.2	35261.	26.50	414316.	36501.	4335032.	19181.	1059.	15508.	19023	013852	4899	587	475	242	264	478	641	569014427		
1640.0	16.4	35794.	26.68	423372.	36890.	4391994.	19399.	1060.	15694.	19241	014026	4979	584	474	221	245	478	640	578414626		
1660.0	16.6	36336.	27.06	432536.	37280.	4450126.	19620.	1061.	15883.	19462	014201	5058	582	472	198	225	477	638	588114826		
1680.0	16.8	36897.	28.06	440784.	37683.	4511528.	19859.	1062.	16085.	19702	014379	5140	579	470	175	204	477	637	598115027		
1700.0	17.0	37442.	27.25	445940.	38089.	4575680.	20110.	1062.	16297.	19953	014558	5217	577	468	150	181	476	636	608315233		
1720.0	17.2	37976.	26.73	452582.	38498.	4639716.	20361.	1063.	16509.	20204	014744	5297	575	466	132	158	475	634	618015435		
1740.0	17.4	38509.	26.64	460063.	38915.	4699197.	20600.	1064.	16711.	20443	014931	5375	573	464	132	133	474	633	628015636		
1760.0	17.6	39034.	26.24	468044.	39348.	4753279.	20829.	1065.	16907.	20672	015119	5451	571	461	132	132	472	632	638215831		
1780.0	17.8	39553.	25.94	475644.	39773.	4806506.	21056.	1066.	17100.	20899	015309	5524	569	459	132	132	471	630	648916017		
1800.0	18.0	40071.	25.92	482874.	40197.	4859572.	21283.	1067.	17295.	21126	015497	5596	567	456	132	132	469	629	659716198		
1820.0	18.2	40593.	26.06	489515.	40621.	4912838.	21515.	1067.	17493.	21358	015684	5669	565	452	132	132	467	628	670616377		
1840.0	18.4	41112.	25.97	495465.	41041.	4965588.	21747.	1068.	17691.	21591	015865	5746	563	449	132	132	465	627	681416555		
1860.0	18.6	41633.	26.03	501108.	41461.	5017805.	21981.	1069.	17891.	21825	016039	5825	562	445	132	132	463	625	692116738		
1880.0	18.8	42158.	26.27	505998.	41884.	5070542.	22220.	1070.	18094.	22064	016211	5908	560	441	132	132	461	624	702816920		
1900.0	19.0	42685.	26.36	510809.	42309.	5123071.	22458.	1071.	18297.	22301	016380	5993	559	436	132	132	458	623	713817106		
1920.0	19.2	43212.	26.34	515947.	42732.	5175232.	22691.	1072.	18496.	22535	016550	6079	557	431	132	132	456	621	724917292		
1940.0	19.4	43730.	25.92	522793.	43149.	5225857.	22903.	1072.	18681.	22748	016725	6167	555	426	132	132	453	620	736417479		
1960.0	19.6	44244.	25.66	530447.	43559.	5275384.	23105.	1073.	18857.	22949	016901	6256	554	421	132	132	449	619	748017668		
1980.0	19.8	44760.	25.82	538296.	43971.	5324999.	23306.	1074.	19033.	23151	017077	6344	552	415	132	132	446	618	759817859		

STARTING DISPLACEMENTS : SURGE(FT) = -60.625 SWAY(FT) = -60.625 YAW(DEG) = .000