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ALASKA - THE SEARCH FOR A UNIFIED POLICY OF OFFSHORE OIL AND GAS DEVELOPMENT

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THIRD INTERNATIONAL CONFERENCE
ON PORT AND OCEAN ENGINEERING
UNDER ARCTIC CONDITIONS

UNIVERSITY OF ALASKA
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LADIES AND GENTLEMEN:

THANK YOU FOR THE OPPORTUNITY OF BEING HERE. ALTHOUGH I AM A NEWCOMER TO YOUR ASSOCIATION AND NOT OF THE SCIENTIFIC COMMUNITY WHICH DOMINATES YOUR PROGRAM, I BELIEVE WE HAVE MUCH TO SHARE. I AM CONSCIOUS OF THE BREADTH AND QUALITY OF EXPERIENCE IN ARCTIC ENGINEERING WHICH IS PRESENT HERE, AND IT GIVES ME TREMENDOUS HOPE AND ENCOURAGEMENT TO LOOK AT THE FORMIDABLE PROGRAM YOU FACE DURING THIS WEEK.

IT WOULD BE MOST USEFUL, I WOULD GUESS, IF I COULD FOCUS MY REMARKS ON SPECIFIC ASPECTS OF OFFSHORE OIL AND GAS DEVELOPMENT IN THE ARCTIC OCEAN AND THE BEAUFORT SEA. FOR REASONS I WILL EXPLAIN, THE PERSPECTIVE I MUST TAKE IS BROADER. AT PRESENT, ALASKA FINDS HERSELF POISED ON THE BRINK OF A SECOND GENERATION OF OFFSHORE OIL AND GAS DEVELOPMENT, THE FIRST GENERATION OCCURRING IN COOK INLET OVER THE PAST DECADE. THE BRINK WHICH WE APPROACH IS PRECIPITOUS, THE SIZE OF THE ABYSS IS INTIMIDATING, AND IT IS NOT YET CERTAIN WHETHER WE ARE MOVING VOLUNTARILY TOWARD THE EDGE OR BEING PUSHED.

ALLOW ME TO DESCRIBE AT LEAST SOME OF THE COMPONENT PARTS OF THE SITUATION THE STATE FACES IN THIS SECOND GENERATION. FOR THOSE MANY OF YOU FROM OTHER NATIONS, I ASK THAT YOU FORGIVE ME THE DOMESTIC POLITICS WHICH CANNOT BE ALTOGETHER SEPARATED FROM THE REPORT.

FIRST, ALASKA LEARNED IN OCTOBER OF LAST YEAR THAT THE FEDERAL GOVERNMENT HAD FIRM PLANS (DENIED THEN, BUT FIRM NOW) TO LEASE, FOR OIL AND GAS DEVELOPMENT, EVERY AREA ON ALASKA'S OUTER CONTINENTAL SHELF WHICH HAD OIL AND GAS POTENTIAL. NINE REGIONS WERE IDENTIFIED COVERING VIRTUALLY ALL OF ALASKA'S COASTLINE, FROM THE GULF OF ALASKA TO THE BERING, CHUKCHI, AND BEAUFORT SEAS. UNBELIEVABLY, THE ENTIRE LEASING PROGRAM--THE SELLING OF THE SHELF--IS TO BE COMPLETED IN JUST THREE YEARS.

NOT WITHOUT ITS OWN PROBLEMS, THE STATE OF ALASKA ADDED A COMPONENT IN THE FORM OF A REVENUE CRISIS BROUGHT ABOUT BY TRANS-ALASKA PIPELINE DELAYS AND THE RAPID DISSIPATION OF THE NOW FAMOUS $900 MILLION FROM THE NOW FAMOUS $900 MILLION PRUDHOE BAY OIL AND GAS LEASE SALE OF 1968. BY A LOGIC WHICH IS CURIOUSLY IRONIC, THE FIRST SOLUTION PROPOSED FOR THE CRISIS WAS ANOTHER OIL AND GAS LEASE SALE IN THE VERY SAME AREA. THIS IS, OF COURSE, THE BEAUFORT SEA, AND IT REPRESENTS TO THE STATE ONE OF THE PRINCIPAL MEANS OF RAISING SUBSTANTIAL SUMS OF REVENUE AT AN EARLY TIME, AS WELL AS BEING THE FIRST MAJOR STEP FOR ALASKA INTO THE ARCTIC WATERS THIS CONFERENCE KNOWS SO WELL.

FOR POLITICAL AND ENVIRONMENTAL FLAVOR, THERE IS A THIRD INGREDIENT IN THE FORM OF A SMALL BUT VOLATILE OIL AND GAS

LEASE SALE HELD IN THE CLOSING DAYS OF THE PRIOR STATE ADMINISTRATION IN THE MOUTH OF BEAUTIFUL KACHEMAK BAY AT THE SOUTH END OF THE KENAI PENINSULA ADJACENT TO THE COOK INLET OIL FIELDS. THIS SALE COMMITTED FOR OIL AND GAS OPERATIONS WHAT MANY BELIEVE TO BE ONE OF ALASKA'S ENVIRONMENTAL AND RECREATIONAL JEWELS, AS WELL AS AN IMPORTANT SHELLFISH HABITAT. IN RETURN, IT PRODUCED LESS THAN $30 MILLION IN BONUS REVENUES.

THERE IS MORE TO SAY, BUT IT IS SUFFICIENT TO CONCLUDE THAT THE SECOND OFFSHORE GENERATION WILL BE HUGE, WIDESPREAD, AND IMMEDIATE. INDUSTRY, GOVERNMENT AND OTHERS ARE PREPARED TO MOVE INTO THE WATER, (OR FOR THIS CONFERENCE, ONTO THE ICE) AT AN EARLY TIME IN A BIG WAY.

ONTO THIS STAGE CAME THE NEW STATE ADMINISTRATION OF GOVERNOR JAY HAMMOND, HAVING CAMPAIGNED ON A PLATFORM SUGGESTING THE NEED FOR GREATER CAUTION REGARDING MAJOR DEVELOPMENTAL DECISIONS, HAVING SECURED A NARROW VICTORY, AND HAVING LEFT THREE FORMER GOVERNORS OF ALASKA IN HIS ELECTIVE WAKE.

THIS ADMINISTRATION, DEPENDING ON YOUR PERSPECTIVE AND THE PAPERS YOU READ, ~~IS EITHER~~ THE DEVIL AS MANIFESTED IN A "NO-GROWTH" POLICY OF ECONOMIC STRANGULATION OR THE LAST CHANCE TO GET A GOVERNMENTAL HANDLE ON ECONOMIC AND

DEVELOPMENTAL FORCES WHICH THREATEN TO CHANGE FOREVER WHAT IS BEST ABOUT ALASKA. IT MAY EVEN BE SOMETHING IN-BETWEEN. FROM DAY NUMBER ONE A UNIFIED OFFSHORE OIL AND GAS DEVELOPMENT POLICY WAS AT THE TOP OF THE PRIORITY LIST FOR THIS ADMINISTRATION.

BECAUSE OF ITS IMMEDIACY AND ITS SCOPE, THE FEDERAL O.C.S. PROGRAM BECAME MORE A FOCUS FOR THE POLICY PROCESS THAN DID OUR OWN STATE ISSUES IN THE BEAUFORT SEA OR KACHEMAK BAY. IN RETROSPECT, THIS MAY NOT HAVE BEEN BAD, FOR IT FORCED THE STATE TO BROADEN ITS VIEW TO THE ENTIRE COASTAL AREA, AND TO SEE IF IT COULD ARTICULATE A POLICY FOR THE FEDERAL AREAS TO WHICH IT WOULD THEN SUBJECT ITSELF.

THAT POLICY PROCESS IS NOT COMPLETE, NOR IS IT LIKELY EVER TO BE FINALIZED AND LOCKED AWAY. YET, THERE IS A CLEAR RECOGNITION BY THE ADMINISTRATION THAT, IN ADDITION TO THE NEED FOR POLICY CONSISTENCY, THERE IS A NEED FOR FINALITY AND CERTAINTY. THE OIL INDUSTRY IS, TO USE ITS OWN CLICHE, A "HIGH RISK, HIGH YIELD" VENTURE WHICH, WHILE PURSUING ITS ADMITTED SELF-INTEREST, DESIRES CLEAR STANDARDS HAVING CONTINUITY IN EXCESS OF THE TERMS OF POLITICAL ADMINISTRATIONS. I BELIEVE THE GOAL OF THIS ADMINISTRATION IS TO ADDRESS THAT LEGITIMATE DESIRE AND TO PROVIDE A POLICY WHICH WILL HAVE CONTINUITY AND BE INTERNALLY UNIFIED AND CONSISTENT.

THE FORCE OF EVENTS, IN THE FORM OF THE FEDERAL O.C.S. PROGRAM, HAS BOTH ACCELERATED THE DEVELOPMENT OF THE POLICY AND SHAPED IT. ALTHOUGH THERE IS NOT TIME HERE TO SUMMARIZE ALL THE EMERGING POINTS, I BELIEVE IT WILL BE USEFUL TO DISCUSS AT LEAST THOSE CORNERSTONES OF SUCH A POLICY WHICH RELATE TO THE INTERESTS OF THOSE HERE, AND TO INDICATE THE WAY IN WHICH THESE POINTS COULD APPLY TO A CONSISTENT STATE POLICY FOR THE SPECIFIC AND DIVERSE OFFSHORE SITUATIONS I EARLIER DESCRIBED.

ONE OF THE EARLIEST LESSONS THE STATE LEARNED FROM THE FEDERAL O.C.S. PROGRAM WAS THAT ITS FIXED STRUCTURE AND SCHEDULE WAS FULLY DETERMINED BEFORE IT WAS EVER MADE PUBLIC. SUBSEQUENT EVENTS HAVE BORN THIS OUT HERE AND ELSEWHERE, IN THAT THE EFFECT OF A VIRTUAL CAVALCADE OF DISSAPPROVAL FOR MANY ASPECTS OF THE PROGRAM HAS RESULTED IN VIRTUALLY NO CHANGE IN IT. THUS, WHILE IT IS NOT POSSIBLE TO CHARGE THAT THE FEDERAL PROGRAM IS DEVOID OF PUBLIC INPUT, IT MAY AS WELL HAVE BEEN SO, FOR THERE IS NO RESPONSIVENESS TO THAT WHICH IS MADE. A SIMILAR HISTORY HAUNTS THE KACHEMAK BAY SALE, WHERE THE FILES ARE FULL WITH INCONSISTENT AND UNFULFILLED PROMISES TO THE PUBLIC.

AS A RESULT, THE STATE IS PLEDGED TO MAXIMIZE THE PUBLIC PROCESS AFFECTING OFFSHORE OIL AND GAS DECISIONS, AND TO MAXIMIZE THE BREADTH OF THE DECISION-MAKING BASE IN ITS OWN BUREAUCRACY. THIS POLICY HAS BEEN CARRIED OUT THUS FAR

REGARDING A BEAUFORT ISLAND SALE, EVEN THOUGH UNREQUIRED BY LAW, AND IT WOULD BE OUR INTENTION TO ENCOURAGE PUBLIC PARTICIPATION CONTINUING THROUGH THE STIPULATION PROCESS AT THE TIME A LEASE SALE IS ACTUALLY DECIDED. THE END RESULT, OF COURSE, SHOULD BE AN OFFSHORE LEASE SALE WHICH THE PUBLIC NOT ONLY PARTICIPATED IN, BUT AFFECTED.

SIMILARLY, WE LEARNED EARLY IN THE FEDERAL PROGRAM THAT THE PRE-EXISTING SCHEDULE AND STRUCTURE PRECEDED ENVIRONMENTAL STUDIES IN THE LEASE AREA RATHER THAN THE OTHER WAY AROUND. UNBELIEVABLY, THE FIRST YEAR BASELINE RESEARCH EFFORT IN THE NORTHEAST GULF OF ALASKA WILL JUST BE WINDING UP AS THE LEASE SALE IS HELD. THE FINE RESEARCHERS FROM NOAA WHO ARE COORDINATING THIS STUDY DO NOT BELIEVE, I THINK, THAT THEY HAVE ANY RELATION TO THE LEASE SCHEDULE AT ALL. AS ENGINEERS AND SCIENTISTS, I MUST BELIEVE THAT YOU WOULD WANT THIS INFORMATION BEFORE PROCEEDING, AND THE STATE WILL ADOPT A POLICY WHICH ATTEMPTS TO MAXIMIZE ENVIRONMENTAL INFORMATION PRIOR TO THE MAKING OF A LEASING DECISION. THIS IS THE PROCESS WE FOLLOWED WITH THE PREPARATION OF A BEAUFORT ISLANDS ENVIRONMENTAL ASSESSMENT, AGAIN UNREQUIRED BY LAW. NO SUCH STATE PROCESS EXISTED FOR APPLICATION TO THE KACHEMAK BAY SALE, NOR WAS SUCH A PROCESS EVIDENCED IN THE FUROR FOLLOWING THE SALE AND EXISTING NOW.

GOING ONE MORE STEP WITH THE FEDERAL O.C.S. PROGRAM, WE DISCOVERED THAT THERE EXISTED NO MECHANISM EXCEPT ADMINISTRATIVE DISCRETION FOR IDENTIFYING AREAS WHERE OFFSHORE OIL AND GAS DEVELOPMENT MAY BE WHOLLY INCONSISTENT WITH OTHER RESOURCE OR USE VALUES, BE THEY FISHERIES, RECREATION, WILDERNESS OR SIMPLY AESTHETIC. SURELY, EVEN IN OUR RUSH TO "SELL THE SHELF" IN ALASKA, WE CAN FIND AND AGREE ON THOSE SPECIAL AREAS WHERE EITHER WE SHOULD NOT PROCEED AT ALL, OR IF NECESSARY, DO SO ONLY AS A LAST PRIORITY.

IF THERE ARE SUCH AREAS, MUST WE NOT ASK FOR A WAY TO DEFINE THEM AND TO IDENTIFY THEM, AND A MECHANISM TO EXCLUDE THEM? THE STATE WILL ADOPT SUCH A POLICY WITH REGARD TO ITS OWN SALES, AND IS NOW DEFINING THE PRECISE AREAS OF CONCERN. INCLUDED IN THE EVALUATION PHASE ARE BOTH KACHEMAK BAY AND THE BEAUFORT SEA AREAS. THUS FAR, THERE HAS BEEN NO INDICATION THAT THERE IS EITHER ABILITY OR WILLINGNESS ON THE PART OF THE DEPARTMENT OF THE INTERIOR TO ESTABLISH SUCH A PROCESS TO AVOID EXTREME RESOURCE CONFLICTS AND PROTECT SPECIAL AREAS.

NEXT, INSOFAR AS POSSIBLE, IT HAS APPEARED DESIRABLE TO THE STATE THAT NEW OR "FRONTIER" OFFSHORE OPERATIONS OCCUR FIRST IN AREAS WHERE SUCH OPERATIONS ARE LIKELY TO COST THE LEAST, CREATE THE FEWEST RESOURCE CONFLICTS, AND REQUIRE THE LEAST AMOUNT OF MAJOR CHANGES IN THE AREA. REGARDING

THE FEDERAL PROGRAM, IT IS CLEAR THAT IT SHOULD BE RESISTED IN ITS INTENTION TO IMPOSE ITSELF FIRST ON THE NORTHEAST GULF OF ALASKA, WHERE THE COSTS WILL BE HIGH, THE RESOURCE CONFLICTS GREAT AND THE CHANGE IN THE NEARBY AREA EXTRAORDINARY. TO PLACE THE NORTHEAST GULF SO HIGH ON THE SCHEDULE, THE DEPARTMENT OF THE INTERIOR HAD TO LOOK BLINDLY PAST EAST COAST AREAS WHERE, ON EVERY COUNT, EARLIER LEASING WOULD HAVE BEEN MORE APPROPRIATE.

IN KACHEMAK BAY, RESOURCE CONFLICTS ARE EXTREMELY HIGH. CHANGE IN THE IMMEDIATE AREA WILL BE EXTREME, ALTHOUGH PRIOR KENAI PENINSULA OFFSHORE OPERATIONS PROVIDE SOME BASE AGAINST OVERALL MAJOR CHANGE AND PERHAPS AGAINST EXCESSIVE COSTS. IN THE BEAUFORT ISLAND AREA, PARTICULARLY NORTH OF PRUDHOE BAY, NEW OFFSHORE OPERATIONS WOULD BUILD ON EXISTING NORTH SLOPE OPERATIONS TO MODERATE BOTH CHANGE AND COSTS. RESOURCE CONFLICTS, ALTHOUGH PRESENT, WOULD APPEAR TO BE FAR LESS SEVERE THAN EITHER OF THE OTHER AREAS PROPOSED.

POTENTIAL COSTS, THOSE UNDEFINABLE RISKS FROM A MAJOR SPILL TO THE EXISTING RESOURCES OF AN AREA SUCH AS FISHERIES, OR SCENIC AND RECREATIONAL VALUE, MUST BE ALSO A FACTOR. NOT ONLY THE VALUE OF THESE RESOURCES, BUT ALSO THE DIFFICULTY AND RISKS OF OIL AND GAS OPERATIONS MUST BE BALANCED IN COMPARING AND PRIORITIZING OFFSHORE AREAS. SUCH AN EVALUATION MUST RESULT IN POTENTIAL COSTS FAR HIGHER IN THE NORTHEAST GULF AND IN KACHEMAK BAY THAN IN THE BEAUFORT ISLAND AREA OF THE BEAUFORT SEA.

A RELATED COMPONENT OF A UNIFIED POLICY MUST BE THE PLACE THAT ANY LEASE SALE, AND SUBSEQUENT OFFSHORE OPERATIONS, WILL PLAY IN A RATIONAL SCHEME OF OIL AND GAS DEVELOPMENT. SHOULD IT OCCUR FIRST IN AN AREA LIKE THE BEAUFORT SEA, WHERE ONSHORE SUPPORT FACILITIES EITHER EXIST OR WOULD BE COMPATIBLE, AND WHERE A PIPELINE TRANSPORTATION SYSTEM WILL EXIST WITH CARRYING CAPACITY ON A PROPER SCHEDULE?

SHOULD IT COME FIRST IN AN AREA LIKE THE EAST COAST, WHERE THE ENERGY DEMAND IS THE GREATEST, WHERE THE SUPPLY LINES WOULD BE THE SHORTEST, AND WHERE PROCESSING FACILITIES WILL BE AVAILABLE? OR SHOULD IT COME FIRST AND IMMEDIATELY WHERE NO SUCH FACILITIES EXIST AND TRANSPORTATION OF GAS OR CRUDE OIL WILL BE CONTINGENT ON A NEW, YET TO BE DESIGNED AND CONSTRUCTED SYSTEM, AND FED INTO A MARKET WHICH MAY WELL BE IN A SURPLUS POSITION WHEN DELIVERY IS MADE?

PERHAPS THE MAJOR EMERGING CORNERSTONE OF A UNIFIED STATE OFFSHORE POLICY IS THE CONCERN OF THE STATE FOR HER COMMUNITIES. THIS IS SO BECAUSE THE COMMUNITIES, WITH THEIR DISTINCT AND SPECIAL PERSONALITIES, HAVE SO MUCH TO DO WITH THE QUALITY OF LIFE IN ALASKA. NOT EVEN THE MOST ZEALOUS ADVOCATE OF OFFSHORE ~~DEVELOPMENT~~ DENIES THE TOLL THAT SUCH ACTIVITY WILL TAKE, IN TERMS OF CHANGE, ON THE COASTAL TOWNS OF ALASKA. THERE IS VIRTUAL UNANIMITY THAT "IT WILL NEVER BE THE SAME," ALTHOUGH THERE IS CERTAINLY LESS AGREEMENT WHETHER THIS RESULT IS GOOD OR BAD.

In the beautiful towns of Homer and Seldovia on Kachemak Bay, the verdict is "bad", and it is all the worse that their feelings were given so little public outlet prior to the sale of oil and gas lease sales in their own backyard. In the northeast Gulf of Alaska, the verdict respecting the merits of the change is different. There, the communities plead for time to plan, and for assistance in doing so, before the explosion takes place. In this area, towns like Yakutat, Cordova, Seward, and Kodiak, like the towns of Northern Scotland before them, are becoming aware of what they can do given time.

Let us give them the time they need and seek out those areas, whether they be in other sections of the United States, or on the already developed North Slope of Alaska, where the conflicts of community change will be less and the scale of the need, with fewer community conflicts, will afford us all the capability to get ready.

It is my belief that the State will continue in its policy to seek to avoid the sacrifice of its coastal communities, even to such an objective as energy supply, but rather will seek the time, the assistance or the conditions necessary to protect the people. I hope we never have to ask "how come nothing's like it was until its gone?" (Sammy Davis, Jr. as Will Martin in "Yes, I Can").

FINALLY, LET ME TOUCH ON THE POLICY THEMES RELATED TO TECHNOLOGY, AND ITS DARKER SIDE, INEVITABILITY. YOU KNOW AS ENGINEERS AND SCIENTISTS THAT MANY ALASKANS ARE GRIPPED BY THE NOTION OF INEVITABILITY--INEVITABILITY OF GROWTH, INEVITABILITY OF OFFSHORE OIL AND GAS DEVELOPMENT, INEVITABILITY OF THE LOSS OF "THE ALASKAN WAY OF LIFE"--HARD TO DESCRIBE BUT CERTAINLY REAL. INEVITABILITY TRANSLATES IN ENGINEERING TO ". . . SHOW US THE PROBLEM, WE'LL SOLVE IT."

THE ECONOMIST KENNETH BOULDING CAPTURED THE FEELING AS FOLLOWS:

> "I HAVE RECENTLY DISCOVERED THE NAME OF THE DEVIL, AND THAT IS SOMETHING TERRIBLY IMPORTANT TO KNOW. THE REAL NAME OF THE DEVIL IS <u>SUB-OPTIMIZATION</u>, FINDING OUT THE BEST WAY TO DO SOMETHING WHICH SHOULD NOT BE DONE AT ALL. . . . "

IS THIS "SUB-OPTIMIZATION" NOT THE TOOL, THE CONCEPT, WHICH GUARANTEES THAT EVEN THE MARGINALLY INEVITABLE CAN BE ACCOMPLISHED WITH HARD WORK, I.E., "THE DIFFICULT WE CAN DO TODAY, THE IMPOSSIBLE WILL TAKE UNTIL TOMORROW."

THIS CONCERN HAS TRANSLATED INTO EMERGING STATE POLICY ON OFFSHORE DEVELOPMENT NOT SO MUCH AS A REQUEST FOR STATUTORY STANDARDS, BUT AS A PLEA FOR THE ALASKA PUBLIC

AND ITS GOVERNMENT TO BE ABLE TO SAY "NO" TO CERTAIN ASPECTS AND METHODS OF OFFSHORE DEVELOPMENT. THIS CONCEPT CLEARLY MOTIVATES A POLICY WHICH SEEKS A RECOGNITION THAT SOME COASTAL AREAS ARE SO VALUABLE FOR OTHER RESOURCE PURPOSES THAT, EVEN IN THE FACE OF INEVITABILITY, AND EVEN WITH THE SKILL TO "DO THE BEST JOB POSSIBLE," WE SHOULD BE ABLE TO EITHER PRECLUDE OIL AND GAS OPERATIONS OR UNDERTAKE THEM ONLY AS A FINAL PRIORITY.

REGARDING TECHNOLOGY, THE NUTS AND BOLTS OF OFFSHORE OIL AND GAS EXPLORATION, THE STIPULATIONS, THE DESIGN OF EQUIPMENT, THE OPERATING ORDERS, THIS SAME CONCEPT HAS TRANSLATED INTO A REQUEST FOR CONSIDERATION OF A NEW TECHNOLOGICAL STANDARD. AGAIN, IT IS MORE A PLEA FOR A CHANGE OF PHILOSOPHY THAN FOR A STATUTORY REGIME.

UNDER PRESENT LAW, OFFSHORE OPERATIONS MUST MEET A STANDARD OF THE "BEST AVAILABLE TECHNOLOGY." THAT IS, IF WE DO IT AS WELL AS WE CAN, THEN WE CAN PROCEED. THIS IS THE STANDARD OF INEVITABILITY ARTICULATED IN LAW.

THE STATE HAS SUGGESTED THAT THIS STANDARD BE RESTATED TO REQUIRE "ENVIRONMENTALLY SAFE TECHNOLOGY". THIS HAS BEEN MET, AS I AM SURE SOME OF YOU ARE THINKING, WITH THE CHARGE THAT "IT CAN'T BE DEFINED" AND THAT "THERE WILL ALWAYS BE SOME RISKS." ON THE LATTER COUNT, I AGREE, BUT THE RISKS SHOULD

BE EVALUATED, AND TAKEN WHERE NECESSARY, ACCORDING TO A STANDARD WHICH MEASURES THE OVERALL ENVIRONMENTAL SAFETY OF A THING OR ACTION RATHER THAN MERELY WHETHER IT IS "THE BEST WE CAN DO."

ON THE LATTER--"IT CAN'T BE DEFINED"--LET ME AGREE THAT IT IS NO EASY TASK TO DEFINE ANYTHING WHICH IS SUBJECTIVE, FOR IT CONSISTS OF QUALITIES WHICH CAN'T BE ADDED OR SUBTRACTED. STILL, I WOULD BELIEVE THAT THERE IS AGREEMENT HERE THAT "ENVIRONMENTALLY SAFE TECHNOLOGY" IS RECOGNIZED NOT ONLY AS A CONCEPT OF VALUE WHICH <u>OUGHT</u> TO BE DEFINED, BUT AS A CHALLENGE FOR ENGINEERS WHICH FAR EXCEEDS THE LESSER BURDEN OF SIMPLY LOCATING THOSE THINGS AND PROCESSES WHICH ARE AT THE TOP OF THE PRESENT "STATE OF THE ART."

TO APPLY A STANDARD OF "ENVIRONMENTALLY SAFE TECHNOLOGY," REQUIRES NOT ONLY THAT, AS ENGINEERS, YOU DESIGN AND KNOW WHAT IS THE BEST POSSIBLE, BUT ALSO THAT IT IS SAFE. SHOULD WE NOT SEEK TO SET MINIMUM STANDARDS FOR OFFSHORE OPERATIONS RATHER THAN BEING SHAPED ONLY BY WHAT IS TECHNOLOGICALLY AVAILABLE?

THE TASK OF DEFINITION ~~NOT ONLY~~ ON THIS POLICY BUT ON THE OTHERS I HAVE DESCRIBED BELONGS TO US ALL, BUT FALLS MOST HEAVILY ON THE STATE. TO ADDRESS THE FEDERAL O.C.S. PROGRAM, THE ULTIMATE FATE OF A PRIOR LEASE SALE IN KACHEMAK BAY, AND THE

SALE OF STATE LEASES IN THE BEAUFORT SEA WITH INTEGRITY, CREDIBILITY AND CONSISTENCY IS NOT ONLY THE OBJECTIVE OF THE STATE, BUT THE ABSOLUTE PREREQUISITE FOR ALASKA TO DEAL FAIRLY AND SUCCESSFULLY WITH THE OIL INDUSTRY OVER THE COMING YEARS.

ALL OF THESE POINTS MUST COME TOGETHER FOR ALASKA UNDER THE GENERAL COMMITMENT TO MAKE A RESPONSIBLE AND MAJOR CONTRIBUTION TO THE NATION'S ENERGY SUPPLY FROM THE NATURAL BOUNTY WITH WHICH OUR STATE IS BLESSED. THEY MUST COME TOGETHER IN A POLICY WHICH NEITHER ACQUIESCES BLINDLY TO THE PREFERRED OR EVEN TRADITIONAL PEROGATIVES OF THE OIL INDUSTRY, NOR ARBITRARILY DENIES IT A STABLE, CONSISTENT AND FAIR STANDARD ON WHICH IT CAN DO THE WORK WE AGREE IS IMPORTANT.

STATE POLICY ON THE ISSUES I HAVE DISCUSSED, AND MANY OTHERS, HAS BEEN DEVELOPING FOR MONTHS, AND THERE CONTINUES TO BE A PRESS FOR PRACTICAL DECISIONS ON THE ELEMENTS OF ALASKA'S SECOND GENERATION OF OFFSHORE OIL AND GAS DEVELOPMENT. SOME OF THESE DECISIONS MUST AND WILL BE FORTHCOMING SHORTLY.

THE "SECOND GENERATION" OFFSHORE WILL BE MUCH BIGGER AND FAR LONGER THAN OUR MEAGER EXPERIENCE IN THE COOK INLET. THE RESULTS OF PRESENT DECISIONS ON THE BEAUFORT SEA, ON

KACHEMAK BAY AND ON THE FEDERAL O.C.S. PROGRAM WILL AFFECT THIS STATE LONG AFTER THEY ARE MADE, BUT THEY WILL SET THE PATTERN NOW.

ALSO SETTING THE PATTERN WILL BE THE QUALITY OF THE WORK THE MEMBERS OF THIS CONFERENCE WILL DO. AS I LOOK AT YOUR PROGRAM, I SEE POTENTIAL ANSWERS TO MANY OF THE QUESTIONS WE MUST ASK AS WE MOVE OFFSHORE IN THE ARCTIC. ON BEHALF OF GOVERNOR HAMMOND, I WANT TO EXTEND GRATITUDE FOR THE WORK YOU ARE UNDERTAKING, TO WISH YOU THE VERY BEST IN YOUR DELIBERATIONS THIS WEEK, AND TO WELCOME YOUR MANY DISTINGUISHED VISITORS HERE TO ALASKA. WE ARE HONORED TO HAVE YOU.

THANK YOU VERY MUCH.

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TESTIMONY TO THE HEARINGS -
GULF OF ALASKA OIL AND GAS LEASE SALE
BY WALTER J. HICKEL
AUGUST 12, 1975, ANCHORAGE WESTWARD HOTEL

THE VALUES THAT ARE ALASKA HAVE MANY MEANINGS TO MANY PEOPLE.

VALUES OF NATURAL BEAUTY, VALUES OF RECREATIONAL OPPORTUNITY, OPEN SPACES, WILDLIFE.

AND ALSO VALUES IN TERMS OF MEETING THE EVERYDAY NEEDS OF PEOPLE.

EACH OF THESE VALUES MUST BE RESPECTED.

ALASKA CANNOT BE A REFUGE FOR ONLY ONE DIMENSION OF LIVING.

GOD CREATED THIS GREAT LAND TO MEET MAN'S PHYSICAL NEEDS AS WELL AS HIS SPIRITUAL NEEDS.

OUR RESPONSIBILITY IS TO SEE THAT IT'S DONE RIGHT.

THE QUESTION IN FRONT OF US IS NOT IF, BUT WHEN, WE SHALL EXPLORE THE OUTER CONTINENTAL SHELF.

AND EXPLORE IS THE RIGHT WORD.

FOR UNTIL WE EXPLORE, WE'LL NEVER KNOW WHAT'S THERE.

WE'LL NEVER KNOW WHAT MIGHT BE ITS HIGHEST AND BEST USE.

ADJACENT TO THE PIECE OF GEOGRAPHY IN QUESTION ARE SOME OF THE GREAT SCENIC NATURAL WONDERS IN ALASKA, IF NOT ON EARTH.

IT IS A TRULY VAST AREA, AND YET NO ONE, INCLUDING THOSE WHO WOULD EXPLORE IT, WANTS TO ABUSE IT.

NO ONE WANTS TO SEE IT RUINED BY THE MESSINESS OF MAN.

FORTUNATELY, WE HAVE THE TECHNOLOGY, AND WE HAVE THE CONCERNED PEOPLE IN GOVERNMENT TO SEE THAT THE REGULATIONS REQUIRED TO DO THE JOB RIGHT ARE STRICTLY FOLLOWED.

I HAVE ADVISED PRESIDENT FORD THAT WE CAN SOLVE OUR ENERGY PROBLEMS WITHIN OUR OWN NATIONAL BORDERS.

I HAVE TOLD HIM THAT ONE OF THE GREAT SOLUTIONS . . . BY NO MEANS THE ONLY ONE, BUT ONE OF THE GREAT . . . IS RIGHT HERE IN ALASKA.

I COMMEND THE FEDERAL GOVERNMENT FOR INITIATING ACTION SUCH AS THESE PROPOSED LEASE SALES TO HELP MAKE AMERICA ENERGY SELF-SUFFICIENT.

NOW IS THE TIME TO ACT. IN ACTING WE WILL GAIN CONFIDENCE.

WITH CONFIDENCE WE WILL LEARN HOW TO MAKE MAN AND NATURE COMPATIBLE.

AND THAT'S WHAT A GOOD ENVIRONMENT IS ALL ABOUT.

I HAVE SOME KNOWLEDGE OF THE HAZARDS AND THE CONCERN ABOUT THE POLLUTION THAT CAN HAPPEN FROM OFF-SHORE DRILLING.

NO OTHER ONE ISSUE DOMINATED MORE OF MY TIME AS SECRETARY OF THE INTERIOR, FROM THE MOMENT I SAT IN THAT CHAIR.

THE SANTA BARBARA BLOWOUT, THE MOST PUBLICIZED OFF-SHORE OIL INCIDENT IN HISTORY, TOOK PLACE JUST FOUR DAYS AFTER MY CONFIRMATION AS SECRETARY.

THE PEOPLE OF SANTA BARBARA, LIKE THE PEOPLE OF ALASKA, DO NOT WANT THEIR ENVIRONMENT HARMED.

AND THE PUBLIC UPROAR FROM THAT CALIFORNIA DISASTER WAS PROBABLY THE MOST IMPORTANT SINGLE FACTOR IN AWAKENING AMERICA TO AN ACTIVE CONCERN ABOUT ENVIRONMENTAL ISSUES.

WHAT THE PUBLIC MAY NOT REALIZE IS THAT THE COMPANIES INVOLVED IN THAT BLOWOUT WERE OPERATING COMPLETELY WITHIN THE LAW.

THE PROBLEM WAS THAT DRILLING REGULATIONS HADN'T BEEN UPGRADED SINCE 1952.

I INSTRUCTED THE U.S. GEOLOGICAL SURVEY TO WRITE A WHOLE NEW SET OF REGULATIONS FOR DRILLING ON THE CONTINENTAL SHELF.

TO MEET THE CHALLENGES OF THESE STIFFER REGULATIONS, AND TO WORK IN MORE DIFFICULT AREAS SUCH AS THE NORTH SEA, THE INDUSTRY HAS DEVELOPED A NEW GENERATION OF TECHNOLOGY.

BUT, WHAT'S MORE IMPORTANT, THERE'S A NEW ATTITUDE.

OUR NORTH SLOPE OPERATION HERE IN ALASKA, IN FACT, THE ENTIRE PIPELINE PROJECT, IS A PERFECT EXAMPLE OF HOW THE OIL INDUSTRY HAS LEARNED TO OPERATE WITHIN SOUND ENVIRONMENTAL PARAMETERS.

I HAVE NO INTENTION OF MINIMIZING THE DIFFICULTIES OF EXPLORING THE GULF OF ALASKA.

THERE IS NO QUESTION IT WILL BE ONE OF THE GREAT CHALLENGES OF OUR TIME. THE GAMBLE IS THERE. AND SO IS THE RISK.

BUT I HAVE TOTAL CONFIDENCE IN THE INTENT, THE ATTITUDE AND THE KNOW-HOW OF THE MODERN EXPLORATION COMPANIES.

AND, THE PUBLIC SHOULD KNOW THAT WE'RE NOT TALKING ABOUT STARTING FROM SCRATCH.

THE REASON THE PRESS IS ON FOR THE SALE OF THE GULF OF ALASKA LANDS IS BECAUSE THERE IS MUCH MORE KNOWLEDGE OF THE GULF THAN THERE IS, FOR EXAMPLE, OF GEORGIA BANKS OR THE OTHER POTENTIAL AREAS OFF THE EAST COAST OF THE UNITED STATES.

WE HAVE GEOLOGICAL KNOWLEDGE FROM THE GULF GOING BACK OVER SEVENTY YEARS, INCLUDING A FLURRY OF ACTIVITY IN THE FIFTIES AND SIXTIES.

THE MAIN REASON FOR THE CONCERN OVER THIS PROPOSED DEVELOPMENT IS FEAR . . . FEAR OF THE UNKNOWN.

WHEN YOU DON'T UNDERSTAND SOMETHING, YOU FEAR IT.

IF YOU FEAR IT, YOU FIGHT IT.

THIS WAS THE SAME ISSUE AT THE HEART OF THE CONTROVERSY SURROUNDING THE TRANS-ALASKA PIPELINE PROJECT.

THE BATTLE WENT TOO LONG.

AND WHO WERE THE VICTIMS?

THE PEOPLE WERE . . . AND SO WAS THE ENVIRONMENT.

OIL WAS DISCOVERED AT PRUDHOE IN 1967. IT WILL BE TEN YEARS LATER, AT THE EARLIEST, BEFORE A DROP OF THAT OIL GETS TO MARKET.

BY THE SPRING AND EARLY SUMMER OF 1972, WE HAD THE ANSWERS TO THE VERY REAL ENVIRONMENTAL QUESTIONS THAT HAD BEEN RAISED.

IT WAS AT THAT POINT THAT A DECISION SHOULD HAVE BEEN MADE.

ALL OF US . . . ENVIRONMENTALISTS, GOVERNMENTAL LEADERS, AND BUSINESSMEN . . . SHOULD HAVE AGREED THAT IN A YEAR'S TIME THE PIPELINE WOULD START.

THEN WE COULD HAVE PLANNED FOR IT, AND PREPARED FOR THE IMPACT AND SOCIAL SERVICES NEEDED.

INSTEAD, WE HAD TO WADE THROUGH A LENGTHY COURT BATTLE UNTIL CONGRESS STEPPED IN.

WE'RE AT THAT SAME POINT WITH THE GULF OF ALASKA.

INSTEAD OF SPENDING OUR TIME AND RESOURCES FIGHTING EACH OTHER, LET'S PLAN NOW FOR WISE, CAREFUL DEVELOPMENT.

IT TAKES STRENGTH TO DO IT RIGHT, BUT ALASKA IS A COUNTRY OF STRENGTH.

OVER THE YEARS, I HAVE OBSERVED THAT THERE ARE TWO KINDS OF PEOPLE THAT COME TO THIS STATE . . . THE FRONTIERSMAN AND THE ESCAPIST.

THE FRONTIERSMAN WILL CHALLENGE ANYTHING, INCLUDING THE RAWNESS OF LIVING IN THE WILDS. TO HIM, NOTHING IS IMPOSSIBLE.

BUT THE ESCAPIST IS FEARFUL OF OTHER PEOPLE. HE DOESN'T WANT TO FACE THE REALITIES OF WHAT MAKES LIFE GO, SO HE RUNS AWAY FROM THEM.

THE ESCAPIST IS THE REAL EXPLOITER. HE DOESN'T CARE ABOUT PEOPLE. ALL HE CARES ABOUT IS HIMSELF.

HE IS LIKE THE RICH MAN WHO BUILDS A HIGH FENCE AROUND HIS HOUSE SO HE WON'T HAVE TO SEE THE POVERTY ACROSS THE STREET.

THE ESCAPIST OF TODAY SAYS, "LET SOMEONE ELSE PRODUCE THE THINGS MAN NEEDS. JUST DON'T DO IT HERE."

ALL HE WANTS IS REFINED GASOLINE PRODUCED SOMEWHERE ELSE AND DELIVERED TO HIS CORNER GAS STATION.

THIS IS THE INDIVIDUAL WHO DOESN'T UNDERSTAND THAT WE LIVE IN ONE WORLD, A CLOSED SYSTEM.

YOU CANNOT EXPORT POLLUTION.

THE TASK OF OUR TIMES IS NOT TO THRUST OUR PROBLEMS ON THE POOR AND UNDEVELOPED NATIONS, BUT TO SOLVE THEM OURSELVES.

I'M NOT SAYING IT'S TIME TO FACE THE ENERGY QUESTION HEAD-ON IN ALASKA BECAUSE I LIVE HERE.

I'M SAYING LET'S DO IT BECAUSE THE ENERGY IS NEEDED BY OTHER HUMAN BEINGS, AND BECAUSE GOD PUT IT HERE.

WHO WILL PAY FOR THE IMPACT ON THE LOCAL COMMUNITIES AND THE STATE AS A WHOLE?

THE BEST ANSWER IS REVENUE SHARING.

JUST AS FIRMLY AS I BELIEVE IN ALASKA'S RESPONSIBILITY TO THE REST OF THE COUNTRY . . .

. . . I BELIEVE IN THE RESPONSIBILITY OF THE REST OF THE COUNTRY TO ALASKA, OR ANY OTHER ENERGY-PRODUCING STATE IN THE UNION.

THE REVENUES FROM OFF-SHORE PRODUCTION MUST BE SHARED WITH THOSE MOST IMMEDIATELY IMPACTED.

THERE ARE BILLS BEFORE CONGRESS TODAY THAT WOULD ACCOMPLISH JUST THAT.

I'M MOST FAMILIAR WITH CONGRESSMAN YOUNG'S BILL, AND IT'S A GOOD ONE.

BUT THERE IS AN ADDITIONAL POINT.

THERE'S NO REVENUE SHARING FROM A DRY HOLE.

UNTIL EXPLORATION IS ATTEMPTED, OIL DISCOVERED, AND PRODUCTION BEGUN, REVENUE-SHARING IS "PIE IN THE SKY."

AS FAR BACK AS YOU CAN LOOK, IT WAS THE FRONTIER-TYPE SPIRIT THAT BROUGHT GREATNESS TO A CIVILIZATION.

THE DOERS OF THE WORLD WILL SOLVE THE WORLD'S PROBLEMS. NOT THE DOOMSDAYERS.

AND IT'S THE DOERS WHO WILL BE THE FIRST TO SAY, "JUST DO IT, BUT DO IT RIGHT."

BECAUSE THEY ARE PROUD OF THEIR DOING.

THEY ARE THE ONES WHO WILL HELP POLICE THOSE WHO WOULD EXPLOIT, DESECRATE AND ABUSE.

WE CANNOT IGNORE THE PLIGHT OF NEW YORK CITY, THE LINES OF UNEMPLOYED IN DETROIT AND LOS ANGELES, THE RETIRED AMERICANS AND THE MIDDLE CLASS FAMILIES WHOSE SAVINGS AND SALARIES ARE BEING DEVOURED BY INFLATION, THE COMMUNITIES WHERE THE SHORTAGE OF ENERGY IS BRINGING THEM TO THEIR KNEES.

THERE'S NOTHING HUMAN ABOUT CLOSING YOUR EYES TO THESE VERY REAL PROBLEMS.

IF YOU ONLY CARE ABOUT YOURSELF, YOU'LL SOON DIE . . . AND YOU'LL DIE AWFULLY LONELY.

THIS IS NOT ALASKA'S DESTINY.

OUR DESTINY IS TO REKINDLE THE FRONTIER SPIRIT.

AND TO DO IT WITHOUT DESTROYING THE OTHER PRICELESS VALUES OF THIS LAND.

I SAY, IT IS TIME TO ACT . . . NOT TIME TO STALL.

THANK YOU.

H. A. 'RED' BOUCHER & ASSOCIATES
805 WEST THIRD • ANCHORAGE, ALASKA 99501 • (907) 279-7602

MY NAME IS H.A. "RED" BOUCHER OF H.A. BOUCHER & ASSOCIATES, ANCHORAGE, ALASKA.

IN PREPARING FOR TESTIMONY BEFORE THIS COMMITTEE, I REVIEWED SOME OF THE SPEECHES THAT I MADE THROUGHOUT THE NATION IN 1972 AND 1973.

AT THAT TIME I WAS LT. GOVERNOR OF ALASKA AND WE WERE ATTEMPTING TO IMPROVE NATIONAL UNDERSTANDING OF THE ALYESKA PIPELINE PROJECT AND EXPRESS OUR DEEP CONCERN FOR THIS NATIONS GROWING DEPENDENCE ON FOREIGN OIL.

IN AN ADDRESS TO A JOINT SESSION OF THE MASSACHUSETTS LEGISLATURE I MADE SEVERAL OBSERVATIONS THAT I FEEL ARE APPLICABLE TODAY....

"THE MOST PROFOUND ISSUE THAT THIS NATION FACES TODAY IS OUR GROWING ENERGY DEFICIT. MOST OTHER ENVIRONMENTAL PROBLEMS ARE THEORETICALLY SOLVABLE: POLLUTION CAN BE LARGELY ABATED BY THE SAME SCIENCE THAT CREATED INDUSTRY, AND SUBSTANTIAL PERCENTAGES OF MATERIALS CAN BE RECYCLED, AND THEREBY HELD IN PERPETUITY. BUT ENERGY CANNOT BE RECYCLED. OUR ENERGY DEPLOYMENT CAPABILITIES AND THEIR CONSEQUENCES WILL SUPERSEDE ALL OTHER ENVIRONMENTAL, ECONOMIC, AND POLITICAL ISSUES BEFORE THIS DECADE HAS PASSED."

CLEARLY GENTLEMAN.....THERE ARE NO "QUICK FIX" SOLUTIONS.....

OUR NATION HAS GROWN AS A WORLD POWER IN DIRECT RELATION TO THE DEVELOPMENT OF OUR ENERGY RESOURCES....SOLAR POWER, FUSION AND OTHER MORE INFINITE SOURCES OF ENERGY ARE NOT WITHIN OUR IMMEDIATE TECHNOLOGICAL GRASP IN SUFFICIENT SUPPLY TO ALLOW THIS NATION TO SWITCH ITS ENERGY LIFELINE FROM FINITE TO INFINITE POWER.

FOR THE IMMEDIATE AND FORSEEABLE FUTURE WE MUST RELY ON THE

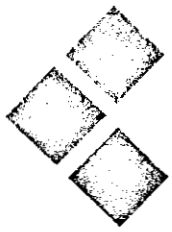
ECOLOGICAL REVOLUTION OF 300 MILLION YEARS AGO TO MOVE US IN TO THE AGE OF FINITE POWER.....

WHEN THE OPEC NATIONS MOVED THE BARREL OF OIL TO THE CENTER OF THE INTERNATIONAL CHESSBOARD OF POWER POLITICS IN THE WINTER OF 1973 THEY SENT SHOCK WAVES THROUGHOUT THE WORLDS ECONOMY THAT IS STILL HAVING A DOMINO EFFECT TODAY....THE CURRENT RECESSION THAT OUR NATION IS JUST BEGINNING TO PULL OUT OF IS MUCH MORE THAN A READJUSTMENT OR A COOLING OFF OF INFLATION.....CLEARLY AND UNMISTAKABLY THEY HAVE SQUEEZED OUR LIFELINE AND EFFECTED EVERYTHING FROM THE VALUE OF THE DOLLAR TO OUR FOREIGN POLICY....WITHOUT SO MUCH AS A SINGLE GUNBOAT THE "THIRD WORLD" BROUGHT THE INDUSTRIAL GIANTS OF THE WORLD TO THE NEGOTIATION TABLE.....

AND WHAT OF THE FUTURE? EVEN THE MOST OPTOMISTIC RECOGNIZE THAT THIS WINTER WILL SEE THE ENERGY GAP WIDEN EVEN FURTHER WITH THE PROSPECT OF RISING WORLD OIL PRICES REMAINING A CONSTANT THREAT. FOR A NATION THAT IS 96% DEPENDENT ON FOSSIL FUEL TO SUPPORT ITS INDUSTRIAL LIFE SYSTEMS....WHEN YOUR OUT OF ENERGY YOUR NOT OUT OF BREATH...YOUR OUT OF HEARTBEAT.....

IT IS IN THE FRAMEWORK OF THE LARGER PICTURE THAT I WOULD LIKE TO MAKE MY COMMENT ON THE DEVELOPMENT OF ALASKA'S OFFSHORE RESERVES. FOR WITHOUT THE INDUSTRY OF OUR SISTER STATES TO THE SOUTH, ALASKA, THE RESOURCE GIANT OF AMERICA HAS LITTLE LONG RANGE MEANING....

CLEARLY, ALASKA HAS A GREAT ROLE IN THE FUTURE OF OUR COUNTRY AND WITH THIS ROLE A GREAT RESPONSIBILITY...ACTION NOW CAN RESULT IN THE DEVELOPMENT OF A LONG RANGE ENERGY PLAN THAT CAN SEE AN



ORDERLY TRANSFER OF THIS NATIONS ENERGY BASE FROM FINITE TO INFINITE POWER BY THE YEAR 2000....FURTHER DELAY IN DEVELOPING INTRIEM RESOURCES COULD RESULT IN OUR BEING A THIRD RATE WORLD POWER BY 1985.....

RUSSIA RICH IN FINITE RESOURCES AND SECOND ONLY TO THE MIDDLE EAST IN OIL AND GAS RESERVES IS THE ONLY ENERGY SELF SUFFICIENT SUPER POWER TODAY....

DEVELOPMENT OF ALASKA'S OUTER CONTINENTAL SHELF IN HARMONY WITH ENVIRONMENTAL CONCERN CAN AND MUST BE ACCOMPLISHED AT THE EARLIEST DATE POSSIBLE, WE SIMPLY CANNOT BUILD A FENCE AROUND THE 49TH STATE AND CRINGE FROM THE FUTURE BECAUSE OF THE MISTAKES OF THE PAST.....

IN 1973 THE ARGUEMENT WAS BROUGHT FORTH THAT IT WAS IMPOSSIBLE TO BUILD A 48" PIPELINE ACROSS THE TUNDRA AND PERMAFROST.....

TODAY THIS PROJECT IS BEING CALLED A MODEL OF ENVIRONMENTAL CONCERN.....IT HAS ALSO BEEN STATED THAT ALASKA AND ALASKANS IN THE MAJORITY HAVE RECEIVED LITTLE

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NO BENEFIT FROM THE PIPELINE AND WERE OPPOSED TO RESOURCE DEVELOPMENT.

FOR A MOMENT LETS TAKE A LOOK AT ALASKA IN HER FIRST YEAR OF PIPELINE CONSTRUCTION:

1. INCOME TO THE STATE IN TAXES AND LICENSE FEES INCREASED 66.43 PER CENT OVER THE PREVIOUS YEAR.
2. CORPORATE TAXES WERE NEARLY DOUBLE THOSE WHICH HAD BEEN PROJECTED BY OUR DEPARTMENT OF REVENUE.
3. AT LEAST 50% OF THE FISCAL 1976 BUDGET WILL BE MET BY REVENUES FROM OIL AND GAS ACTIVITY.

AND WHAT OF THE INDIVIDUAL ALASKAN. IN A RECENTLY COMPLETED STATEWIDE SCIENTIFIC SURVEY CONDUCTED AS A JOINT VENTURE BETWEEN ROWAN GROUP INC AND MY FIRM, SOME INTERESTING FACTS WERE REVEALED.

1. ALASKA HAS BEEN UNDERGOING PERHAPS THE MOST RAPID INCREASE IN INCOME IN THE UNITED STATES. OUR SAMPLE TAKEN IN APRIL OF THIS YEARS TELLS US THAT 34 PERCENT OF THE POPULATION EARN OVER $25,000 A YEAR.
2. UNEMPLOYMENT IN THE URBAN AREAS INDICATED 3.6 UNEMPLOYMENT.
3. THE MEDIAN FAMILY INCOME IN ALASKA IS NOW OVER $24,000; UP FROM $16,000 IN ROWAN GROUP SURVEYS OF THE LATE SIXTIES.
4. A MAJORITY OF 57 PERCENT BELIEVE THAT OIL DEVELOPMENT, IN THE LONG RUN, WILL HAVE A POSITIVE EFFECT ON ALASKA. AMONG RESIDENTS HERE MORE THAN 10 YEARS, 65 PERCENT BELIEVE THIS, AS DOES 64 PERCENT OF UPPER-INCOME ALASKANS, 64 PERCENT OF HOUSEWIVES AND 61 PERCENT OF MEN. IN FAIRBANKS, WHERE

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PIPELINE IMPACT IS SUBSTANTIAL, WE WERE SURPRISED TO LEARN THAT 72 PERCENT OF THE RESIDENTS IN OUR SURVEY BELIEVED OIL AND GAS DEVELOPMENT WILL BE GOOD FOR ALASKA.

FINALLY I FEEL THAT IT IS ESSENTIAL THAT A PERCENTAGE OF REVENUES GENERATED BY DEVELOPMENT OF THE OUTER CONTINENTAL SHELF IN ALASKA BE SET ASIDE FOR THE STATE. THIS SHARING OF REVENUES SHOULD NOT BE TOKENISM, NOR SHOULD THE COMMITMENT TO MINIMIZE ENVIRONMENTAL DEGREDATION BE LIP SERVICE.

THANK YOU FOR THE OPPORTUNITY TO APPEAR BEFORE YOU.....

(3)

FIRST QUARTERLY REPORT

Alaska Industry Survey
Research Service

June, 1975

INTRODUCTION

This is the first quarterly report presented by H.A. Boucher & Associates and Rowan Group Inc. to the Alaska Industry Survey Research Service clients.

The information is intended for consumer and citizen feedback to corporations, and for internal policy, public affairs strategy, advertising, or public relations.

Alaska Industry Survey Research Service is a service provided to a very limited number of corporate clients under the agreement that no findings will be published outside the corporate house without the cooperation and assistance of Rowan Group, Inc. and H.A. Boucher and Associates.

SAMPLE DESIGN

and

METHODOLOGY

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SOME OBSERVATIONS ABOUT THIS SAMPLE

Note: The fieldtime for this study was April, 1975. The coding and editing operation; the interviewing fieldwork; the design of the questionnaire; the electronic data processing; and the report, were prepared by Rowan Group.

SAMPLE DESIGN AND STUDY METHODOLOGY

This study is based upon a sampling plan which distributes 335 personal interviews proportionately into the areas of the state based upon voting behavior. In other words, the sample is found where the votes are found, proportionately, in Alaska.

Methodologically, this is achieved by dividing the state into election districts, and then precincts, based upon statistics in the last three elections. This design permits a very accurate location sample to form. The interviewer is assigned to a certain cluster point at which a qualified respondent must be found.

The interviewer then conducts the interview, personally, in the home of the respondent. All Rowan Group interviewers are trained according to the techniques of communication outlined in our Interviewer's Manual ©. Briefly stated, the key elements of training involve objectivity, developing an encouraging (but neutral) interest, accurate recording of the exact words of the respondents, and working the interview with interviewers and respondents who are in cultural resonance. Some of these interviews, for example, were conducted by bilingual Eskimo interviewers, in the Yupik language.

Now the statistical validity of this sampling pattern has been proven to be within a few percent of accurately reflecting the attitude and opinion of all the people of the state. A statistical analysis of this sample has been performed by research and university sources beyond our control, producing this conclusion. Most recently, this same sampling plan was used by Rowan Group in preparation of the

citizen feedback for the Alaska Capital Site Selection Committee. There, we found a sample, statewide, which had voted 56% to 44% for the capital move; comparing this sample to the voters who actually cast ballots on the question in August, we found a 1% variance(the election produced 55% for and 45% against the capital referendum).

There are other ways to indicate statistical accuracy, basically by reference to other known facts about the universe of people being studied. References to the age, sex, household size, educational levels, employment characteristics, migration, length of time in a community, and so on -- all give further credence to the notion that this sample is an accurate reflection of the Alaska public.

Complications in the fieldwork led us to forego or eliminate 25 of the planned interviews, which were complicated by situations in Barrow, Bethel and Fairbanks. We decided to data-process so that we could maintain our schedule, at the loss of these interviews. This reduced the number of rural Alaska Natives in the sample. Throughout this report, the reader should be aware of the fact that the Alaska Native subsample should be about 11%, and not the 7.4% in the sample. In other words, the Alaska Native vote is underweighted in our sample. If the reader keeps this in mind, wherever Alaska Natives make a difference on a question, this weighting can be taken into account.

This situation has increased the variance, overall, of this survey; while normally the sample would yield results under $\pm$3% for the state,

the reflection is over ±4% because of the missing rural cases, when those missing are not taken into account by the reader. In summary, then, the reader can have the confidence that all figures are within a 4% variance if most of the cases are responding to the question; and an even greater accuracy if the reader takes into account a 4% increase among Alaska Native voters.

Now there are certain interesting findings in the demographics of this sample itself. These findings indicate what kind of state Alaska is now, and by comparison with previous surveys, what kind of a state it is becoming. We make the following observations:

AGE

The state is retaining its "young" features, even with the large migration from the lower '48. As in the past, 6% of the population is over 60 -- less than any state in the union; and 22% are between 18 and 25 -- extremely high.

FAMILY SIZE

The average family in Alaska is still 4 people; only among Alaska Natives is it significantly greater in size. This affects housing stock and all related services.

EDUCATION

Alaska is educated to levels which put half the population through high school, and the other half in some contact with university, community college or "beyond high school" training. In fact, 10% of the population is educated beyond college.

Even among Alaska Natives we find an increasing educational level, although the Native levels are the lowest in the state.

INCOME

Alaska has been undergoing perhaps the most rapid increase in income in the United States. Now, 34% of the sample tell us that they are earning over $25,000 a year, and the 11% who refused to give us income information for the family exhibit characteristics which are very close to the over-$25,000 group. In the Capital Site Selection survey (of April) we found that the median family income in Alaska was now over $24,000; up from $16,000 in Rowan Group surveys of the late sixties.

Perhaps more interesting is that the median income for Alaskan Natives in this survey is over $16,000 per annum, and in the April Site Selection survey, it was over $18,000. There is no question that the land claims settlement, and the employment possibilities with oil development, are changing the very nature of income distribution in the State. The increase in median family income among Natives is more rapid than among whites in the state, and is greater than that recorded for any minority group in U.S. history, as far as we know. In fact, we do not know of a similar situation in which a minority group had income increases by family, statewide, faster than the white majority population of the state. But that is the case with Alaska Natives today.

EMPLOYMENT

While the State of Alaska insists that unemployment is at 11% (or thereabouts) in Alaska today, we have no evidence that this is the case. We claim that the state is in full employment right now. Evidence for this comes from two good sources -- the Capital Site Selection survey, which so accurately reflected the voting behavior of the state, and which indicated 3.6% of the people were unemployed; and this survey, one month later, which shows 3.9% of the people unemployed.

The question was asked as in the Census -- "What were you doing most of the past 12 months -- working, or doing something else?" We found 69.0% of the sample employed, 3.9% unemployed, 20.3% classifying themselves as housewives, 3.5% as students, and 3.2% saying they were retired. The state is almost barren of retirees.

In Puerto Rico, where Rowan Group conducts the Citizen Feedback System for the Commonwealth Government of Puerto Rico, we have been tracking unemployment for two years -- every couple of months -- and with the same question (in Spanish). There, we have been consistently 4 to 6 months ahead of the Bureau of Labor Statistics in reflecting unemployment in Puerto Rico; right now it is pegged at 18.6% in the Feedback sample, and a couple of percent lower in the Bureau of Labor Statistics.

In this Alaska case, we feel that our unemployment data is better (more qualified) than the data yielded by the state.

PIPELINE IMPACT - MIGRATION

In three recent surveys, one for the Capital Site Committee, one for the Charter Commission, and this one, we asked the question: "Did you or did anyone else in this household come to Alaska as a result of work with, or hope of work with, the oil developments of recent years?" In the two earlier surveys (now published), we found 4% statewide who affirmed this statement, 3% in the Anchorage Commission study; and in this study, 5%.

However, in all these surveys we have found from five to ten times as many of the same people who admit being in Alaska for less than a few years. Given the migration we find, the population of the state would double -- if the migration holds up at the same rate of inclination -- between the 1972 and 1980 period.

We interpret this low response to being a "pipeline family" as a way in which the respondent can pretend to be part of the solution and not part of the problem of Alaska. No one in Alaska for 24 hours is unaware of how Alaskans feel about "new" people -- there is a basic problem with growth and population. One way to handle this is to immediately become (psychologically) an Alaskan, which is what we think is happening. It used to be a couple of years before people here called themselves "Alaskan" -- now it's a couple of weeks.

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THE

FINDINGS

THE FINDINGS

Two groups of questions were asked in this series of general, strategic questions. The first were contextual -- the situation in Alaska -- and the second sequence was directed right at the attitudes of the public toward industry, profits, and business practices. Here are the results from these two sequences:

THE SITUATION IN ALASKA

Every survey of recent years (since the approval by Congress of the pipeline) has found that the interrelated issues of growth, development, population increases, the dissembling or collapse of public services, and what is generally called "pipeline impact" -- by people -- form the context for the political situation Alaska faces today. It was not necessary to repeat these questions in this survey to prove again that this is the case. Instead, we probed directly into how this growth and development phenomenon is affecting industry here, and how it is affecting people.

(a) Population. There is a definite constituency in Alaska which feels that the state is too large -- by population -- right now. This group is at 27% statewide, but jumps to 37% in the Anchorage Borough (not in the City), and 37% in Fairbanks. We find that as the age of the respondent increases, the inclination to say "too large" about Alaska's present population decreases; such that 34% of those 18-25 say it, while only 5% of those over 60 say it.

Now when we reduced this question to the local community -- "Do you feel that the present population of this community is too large, just about right, or too small?" -- well, the responses changed pretty radically. Here we found 47% of the state's people -- a plurality -- claiming that their local community was too large by population.

The most extraordinary case was in Fairbanks, where 67% said that the town was too large, 24% that it was just about right, and 7% too small. Once again, young people were far more sensitive to population size and growth than older people -- and as a rule, the younger the respondent, the more sensitivity toward local population growth.

A fantastic finding here is that a clear majority which feels the local community is too large can be found only among those who are in Alaska 2 years or less! The common notion in Alaska is that the newcomers, here largely because of the pipeline development or its manifold side-effects, are for growth; while the old-timers are trying to maintain the kind of Alaska which was small, intimate, and historically remembered. This common notion -- at least on the population question -- is misleading.

In the section on Sample and Methodology, we make the interpretation that few people admit they are in Alaska as a result of the pipeline because they do not want to be part of the "pipeline impact" problem. Likewise, this finding would indicate that newcomers have adopted the anti-population position a couple of days after settlement here.

(b) Development

The feeling about oil development is that it will, in the long run, have a positive effect on Alaska. A majority of 57% believe this, including 65% of the residents here more than 10 years, 64% of the upper-income Alaskans, 64% of the housewives, 61% of men, and 72% of the residents of Fairbanks. To Alaskans, oil development may create a lot of hassles, but the benefits are clearly outweighing the liabilities at the moment.

We gave this sample the Governor's major problem over the last month -- choosing a source of new income to meet the anticipated shortfalls of the next two years. We supplied three options, and voters chose:

30% having a new oil lease sale in the Beaufort sea & elsewhere

28% taxing oil in the ground

13% borrowing the money from private sources

28% were undecided on the issue (like the Governor)

Among Alaska Natives, there was a large plurality (35%) for a new lease sale, and little support for the other alternatives.

As this report is being written, it does appear that the government will take the first two options, and not just one of them. But there is no clear constituency for either, and the matter at this juncture must be considered undecided by the public.

We also gave the public three major budget options -- a minimum service budget (under $300 million); a reduced, cutback budget(between $300 million and $500 million); and an extensive budget "such as the legislature is now proposing" (over $500 million).

The budgets now passed in the Legislature total over $500 million, but in this survey,

25% chose the minimum budget

44% chose the cutback budget, and

14% chose the over-$500 million budget

17% did not know

These over-$500 million budget people -- 14% of the state -- tend to be upper-income, upper-educated, men(in twice as many cases as women), from Southeastern, or Alaska Native: a hodgepodge constituency at best; no coherence there.

SUMMARY

The previous findings lay out the groundwork of the Alaska public affairs situation, as the people see it. Generally, we find that population and growth are big problems, but that industry (basically the oil industry) has not been found guilty on the issue yet. Meanwhile, the state is not in true resonance with the major fiscal matters facing the state and its people, and this could bring on severe problems for the State if it continues indefinitely.

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ALASKANS AND INDUSTRY

In this section we gathered some baseline data on the relationship of Alaskans to industry. This data will be of extreme value over time as we note major changes in the population toward industry, should they occur. We should be able to predict most changes by re-comparisons to this baseline data.

(a) The situation for free enterprise.

The public -- by a huge margin -- feels that free enterprise is worse off today than in the past. Only 22% feel it is better off today, while 56% feel it is worse off. We find that upper-educated respondents believe the free enterprise situation is worse in 66% of the cases. Men, in 64% of the cases, feel it is worse now, compared to 49% for women.

Altogether, this is evidence of widespread recognition that free enterprise is worse off today than in the past.

(b) Business profits.

By an extraordinary majority (62% to 9%), Alaskans believe that business profits are good. In oil-related industries, the notion of profits is crucial to oil depletion taxation, and other highly-charged issues, so this finding is significant.

(c) Competition.

Alaskans feel that there is substantial(42%), moderate(27%) or very little(25%) competition in American business today.

(d) Satisfaction with business and government "products".

In this sequence, we found that taxpayers/consumers are happier with the services they buy from business than the services they receive from the government. The question was asked, "How satisfied are you with products and services provided by business in general?" And, "How satisfied are you in general with services provided by government?" The results:

Satisfaction with...	GOVERNMENT	BUSINESS
Very satisfied	4%	8%
Somewhat satisfied	35%	56%
Dissatisfied	36%	24%
Very dissatisfied	21%	12%
Don't know	4%	0%

The comparison by net (that is, all satisfactory comments reduced by all unsatisfactory comments):

	GOVERNMENT	BUSINESS
SATISFIED	39%	64%
UNSATISFIED	57%	38%
NET + or -	-18%	+26%

This comes as fairly good news to business and disaster to the government. In comparison, there is a net 44% difference between business and government -- positively inclined toward business services.

One can only imagine how long an institution can maintain itself with such a tawdry rate of service delivery as the government gets here, at least without major change erupting from the electorate. (It could be that the consumer movement is just catching up to government -- business has known about it for years).

Also, all other survey research indicates that the major problems perceived by the Alaska electorate today deal with the deterioration of government services, institutions and capabilities. For the government, things are likely to get worse before they get better.

On the other hand, 38% dissatisfaction in business is nothing to be proud of; and steps to deal with that dissatisfaction at the consumer level ought to be taken, industry by industry.

(e) Government regulation of business.

An area where business and government mix directly is in government regulation of business activity. In this inquiry, we found that a majority (50%),exactly) would prefer that government regulate only when there is a problem. The rest of the people split 32% to 10% for less involvement rather than more involvement, suggesting that the government has already gone too far with regulations.

(f) Ownership of Alaska business.

Alaskans believe that their businesses in the state are owned by a small elite (20%), a small group of individuals (32%),.a large group of individuals (30%) or a very large group(9%).

Now it is true that in Alaska a high proportion of the population owns or manages small business; it is also true that for years there has existed a feeling that a few people controlled the business of the town -- this is a phenomenon in all small(by population) places. The intrustion of multinations with foreign financing and international schemes does not seem to affect this notion that Alaska business is owned by a small number of people; the multinationals are surely being seen, then, as non-Alaska businesses, even though they are operating here. At the same time, the favorable-unfavorable ratings of the major industries indicates that there is a negative factor in the "outside" image, which each industry and business must guage and handle for itself, directly with the people.

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DATA NARRATIVE

of

THE GENERAL QUESTIONS
Alaska Industry Survey Research Service

GENERAL QUESTIONS

DO YOU FEEL THAT THE PRESENT POPULATION OF ALASKA IS TOO LARGE, JUST ABOUT RIGHT OR TOO SMALL?

26.5%	Too large
45.8	Just about right
9.4	Too small
8.4	Don't know/no opinion

DO YOU FEEL THAT THE PRESENT POPULATION OF THIS COMMUNITY IS TOO LARGE, JUST ABOUT RIGHT, OR TOO SMALL?

46.8%	Too large
41.0	Just about right
8.4	Too small
3.9	Don't know

IF YOU HAD TO GUESS ABOUT HOW OIL DEVELOPMENT WOULD AFFECT THIS STATE OVERALL, DO YOU THINK IT'S GOING TO HAVE A POSITIVE OR NEGATIVE EFFECT ON ALASKA?

57.4%	Positive
34.2	Negative
8.4	Don't know

HERE ARE THREE BUDGETS WHICH THE STATE COULD APPROVE THIS YEAR. FIRST, IS A MINIMUM SERVICE BUDGET (UNDER 300 MILLION). SECOND IS A BUDGET WITH SOME CAPITAL IMPROVEMENTS, IMPACT SERVICES AND SOME CUTBACKS FROM LAST YEAR'S BUDGET (300 - 500 MILLION) AND LAST IS AN EXTENSIVE BUDGET WHICH THE LEGISLATURE IS NOW PROPOSING (OVER 500 MILLION). FROM WHAT YOU KNOW, WHICH BUDGET WOULD YOU LIKE TO HAVE APPROVED?

25.2%	Minimum service budget
43.9	Improve/impact budget
13.9	Extensive budget
17.1	Don't know

OVER THE NEXT YEAR OR TWO, BEFORE THE OIL BEGINS TO FLOW THROUGH THE PIPELINE THE STATE WILL PROBABLY HAVE TO FIND NEW INCOME TO MEET ITS OPERATING COSTS. WHICH OF THE FOLLOWING THREE METHODS OF RAISING THE INTERIM MONEY WOULD YOU PREFER?

30.0%	Having a new oil/gas lease sale in Beaufort Sea or other areas
28.1	Tax the known oil/gas reserves in the ground
13.2	Borrow the money from private sources and pay it back later when the oil is flowing
28.7	Don't know

HOW WOULD YOU DESCRIBE THE SITUATION THAT FREE ENTERPRISE IS IN TODAY -- WOULD YOU SAY THAT IT IS IN A BETTER SITUATION THAN IN THE PAST, OR A WORSE SITUATION THAN IN THE PAST?

21.9%	Better
56.1	Worse
8.1	No difference
13.9	No opinion

HOW MUCH COMPETITION EXISTS IN AMERICAN BUSINESS TODAY?

42.3%	Substantial amount
26.5	Moderate amount
25.5	Little
5.8	Don't know

HOW SATISFIED ARE YOU WITH PRODUCTS AND SERVICES PROVIDED BY BUSINESS IN GENERAL?

7.7%	Very satisfied
55.5	Somewhat satisfied
24.2	Dissatisfied
11.6	Very dissatisfied
1.0	Don't know

HOW SATISFIED ARE YOU IN GENERAL WITH SERVICES PROVIDED BY GOVERNMENT?

4.2%	Very satisfied
34.5	Somewhat satisfied
35.5	Dissatisfied
21.0	Very dissatisfied
4.8	Don't know .

IN GENERAL, WHAT DO YOU THINK THE GOVERNMENT'S ROLE SHOULD BE IN REGULATING BUSINESS. DO YOU FEEL . . .

10.0%	The government should be more involved in determining decisions of business
31.9	The government should be less involved
49.7	The government should be involved only when there is a problem
8.4	Don't know

DO YOU BELIEVE THAT THE ALASKA BUSINESSES ARE OWNED BY . . .

19.7%	A very small elite
31.6	A moderately small group of individuals
30.3	A large group of individuals
9.4	A very large group of individuals
9.0	Don't know

HOW DO YOU FEEL ABOUT BUSINESS PROFITS -- ARE THEY GOOD OR BAD FOR THE ECONOMY?

61.9%	Good
9.0	Bad
22.3	Depends on
6.8	No opinion

HOW MANY YEARS HAVE YOU LIVED IN ALASKA?

13.9%	Less than 2 years
29.7	3 - 10 years
56.5	Over 10 years

HOW LONG HAVE YOU LIVED IN THIS COMMUNITY?

13.5%	Less than 1 year
7.7	1 - 2 years
16.1	3 - 5 years
18.4	6 - 10 years
44.2	Over 10 years

WHERE DO YOU FEEL YOU WILL BE LIVING FIVE YEARS FROM NOW?

64.5%	Local community
12.3	Elsewhere in Alaska
12.9	Outside of state
10.3	Don't know

INTO WHICH OF THE FOLLOWING CATEGORIES DOES YOUR FAMILY INCOME FALL?

7.7%	Under $6,000
17.7	From $6,000 - $13,000
29.0	From $13,000 to $25,000
24.2	Over $25,000
11.3	Refused

WHAT WERE YOU DOING MOST THE PAST 12 MONTHS -- WORKING OR DOING SOMETHING ELSE?

69.0%	Employed
3.9	Unemployed
20.3	Housewife
3.5	Student
3.2	Retired

(IF EMPLOYED) Was the work performed in this community?

61.9%	This community
5.8	Another community
3.9	Both
28.4	Not applicable

DID YOU OR DID ANYONE ELSE IN THIS HOUSEHOLD COME TO ALASKA AS A RESULT OF WORK WITH, OR HOPE OF WORK WITH, THE OIL DEVELOPMENTS OF RECENT YEARS?

5.2%	Yes
94.2	No
.6	No opinion

WHAT WAS THE LAST GRADE YOU COMPLETED IN SCHOOL?

1.0%	Less than 7th grade
50.3	8th - high school
38.4	Part or all of college
10.3	Beyond college

HOW MAY PEOPLE LIVE IN THIS HOUSEHOLD?

7.4%	One
63.2	2 - 4
24.2	5 - 7
5.2	Over 7

SEX

48.4%	Male
51.6	Female

LOCATION

44.2%	Anchorage
18.7	Fairbanks
14.2	Palmer/Wasilla; Kenai/Soldatna; Cordova
21.0	Juneau; Ketchikan; Sitka; Haines
1.9	Kotzebue

AGE

21.6%	18 - 25
45.5	26 - 40
26.8	41 - 60
6.1	Over 60

RACE

90.0%	Caucasian
1.3	Black
7.4	Alaska Native
1.0	Oriental
.3	Other

(4)

STATEMENT

OF

LARRY E. POWELL, MAYOR

CITY OF YAKUTAT

AT THE

DEPARTMENT OF THE INTERIOR

PUBLIC HEARING

ON THE

GULF OF ALASKA OIL LEASE

DRAFT ENVIRONMENTAL IMPACT STATEMENT

12 AUGUST 1975

MR. CHAIRMAN, MY NAME IS LARRY POWELL AND I AM THE MAYOR OF THE CITY OF YAKUTAT. THE CITY OF YAKUTAT APPRECIATES THIS OPPORTUNITY TO PRESENT ITS TESTIMONY IN RESPONSE TO THE DRAFT ENVIRONMENTAL IMPACT STATEMENT OF THE OUTER CONTINENTAL SHELF PROPOSED OIL AND GAS LEASING IN THE NORTHERN GULF OF ALASKA.

AT TIMES, THE CITY OF YAKUTAT HAS RECEIVED HIGHLY CRITICAL COMMENT FROM AN ANCHORAGE NEWSPAPER FOR EXPRESSING WHAT YAKUTAT BELIEVES TO BE LEGITIMATE FEARS CONCERNING THE LOSS OF ITS UNIQUE CULTURE AND WAY OF LIFE AND FOR SEEKING TIME TO ALLAY THESE FEARS AND TO DEVELOP WHAT THE CITY OF YAKUTAT WOULD BELIEVE TO BE SOLUTIONS TO POTENTIAL PROBLEMS RESULTING FROM THE ONSHORE IMPACT OF OCS OIL AND GAS EXPLORATION AND DEVELOPMENT.

PLEASE ASK THE RESIDENTS OF ANCHORAGE, OR FOR THAT MATTER, FAIRBANKS OR VALDEZ, WHETHER A BETTER JOB COULD HAVE BEEN DONE TO ACCOMODATE THE TRANS ALASKA PIPELINE PROJECT. PLEASE ASK THEM ABOUT THE ADEQUACY OF THEIR STREET SYSTEMS WHICH FOR MANY HAVE RESULTED IN A STRUGGLING 30 TO 45 MINUTE DRIVE IN CONTRAST TO PREVIOUS HOME TO WORK JOURNEYS OF 10 TO 15 MINUTES. ASK THEM ABOUT THE PROVISION OF PARKING IN THE CENTRAL BUSINESS DISTRICT, OR THE CAPACITY OF THEIR TELEPHONE SYSTEMS OR OTHER PUBLIC FACILITIES OR SERVICES.

IS THERE NO VIRTUE IN LEARNING FROM EXPERIENCE? SHOULD WE NOT BE AFFORDED THE OPPORTUNITY TO PLAN AND ACT IN THE PUBLIC AREA AS WELL AS THE PRIVATE AREA PRIOR TO THE IMPACT?

THE CITY OF YAKUTAT IS NOT OPPOSED TO THE EXPLORATION, DEVELOPMENT AND PRODUCTION OF OIL AND GAS FROM THE NORTHERN GULF OF ALASKA. THE CITY OF YAKUTAT IS OPPOSED TO THE TIMING OF THIS DEVELOPMENT ONLY BECAUSE IT BELIEVES THAT NEITHER IT, THE INDUSTRY NOR THE GOVERNMENT HAS THE MEANS TO ACCOMODATE THE RESULTING IMPACT WHILE MINIMIZING SOCIAL AND ECONOMIC DISRUPTION.

THE CITY OF YAKUTAT BELIEVES THAT AT TIMES THE PETROLEUM INDUSTRY AND SOME IN GOVERNMENT CONCEIVE THE CITY AS BEING VEHEMENTLY OPPOSED TO THE EXTRACTION OF OIL AND GAS FROM THE GULF. THIS IS NOT TRUE. OUR DISAGREEMENTS ARE WITH THE FEDERAL GOVERNMENT AND HAVE ONLY TO DO WITH THE MEANS OF MINIMIZING ADVERSE ONSHORE IMPACT RESULTING FROM OFFSHORE EXPLORATION, DEVELOPMENT AND PRODUCTION.

TO YAKUTAT IT IS INCONCEIVABLE THAT THE GOVERNMENT WILL NOT SPEND A FEW HUNDRED THOUSAND DOLLARS TO ASSIST IMPACTED COMMUNITIES IN PROMOTING ORDERLY AND EFFICIENT DEVELOPMENT OF A RESOURCE WHICH HAS AN ESTIMATED VALUE IN THE BILLIONS OF DOLLARS.

FOR EXAMPLE, THE CITY OF YAKUTAT HAS EXPRESSED ITS CONCERN THAT THE TLINGIT CULTURE WHICH SIGNIFICANTLY SHAPES YAKUTAT'S OVERALL LIFE STYLE BE TO THE MAXIMUM DEGREE POSSIBLE PROTECTED IN THOSE AREAS THAT ARE CRITICAL TO THE SURVIVAL OF ANY DISTINCT RACE AND ENHANCED IN THOSE AREAS THAT ADD SUBSTANCE AND VALUE TO THE OVERALL ALASKAN LIFE STYLE. WITH A MODEST GRANT FROM THE BUREAU OF INDIAN AFFAIRS, AN EFFORT IS BEING MADE LOCALLY TO DEVELOP BASELINE INFORMATION ON THE EXISTING CULTURAL ATTRIBUTES OF THE YAKUTAT TLINGIT. WITH ANOTHER GRANT FROM THE ALASKA FEDERATION OF NATIVES, THE CITY HAS CONDUCTED A SOCIO-ECONOMIC SURVEY TO FURTHER DEVELOP BASELINE INFORMATION ON OVERALL LOCAL ATTITUDES AND ASPIRATIONS. THE CITY IS ESTABLISHING A PLANNING AND ZONING PROGRAM WHICH, HOPEFULLY, REFLECTS THESE ATTITUDES AND ASPIRATIONS. THESE ACTIONS ARE, HOWEVER, BUT INITIAL AND TENTATIVE STEPS IN A PROCESS THAT INVOLVES TIME, DOLLARS AND CAPABLE MANPOWER IF THE TASK OF MANAGING GROWTH AND DEVELOPMENT IS TO BE ACCOMPLISHED IN A MANNER THAT ACCOMODATES LOCAL CONCERNS AND ASPIRATIONS. AND THE CITY OF YAKUTAT, REGARDLESS OF THE POLITICAL ODDS AND THE VOICES RAISED AGAINST IT, IS DETERMINED THAT ANY DEVELOPMENT MEET ITS LEGITIMATE AND OFTEN STATED CONCERNS AND DESIRES. IN THIS REGARD, THE CITY OF YAKUTAT IS DISMAYED AT AND PUZZLED BY THE RESPONSE OF THE FEDERAL GOVERNMENT AND THE OIL INDUSTRY. THIS STATEMENT IS MEANT TO BE RECEIVED AS CONSTRUCTIVE CRITICISM, FOR WE FEEL THAT BOTH THE INDUSTRY AND

THE FEDERAL GOVERNMENT HAVE BEEN MAKING A GOOD FAITH ATTEMPT TO BE OF ASSISTANCE. WE ATTRIBUTE THE LACK OF RESPONSE ON SOME ISSUES AND THE MISDIRECTION OF THE RESPONSE ON OTHERS TO THE SEVERE TIME CONSTRAINTS WHICH HAVE PLAGUED THIS ENTIRE UNDERTAKING FROM ITS INCEPTION. THUS THERE IS NO QUESTION IN OUR MIND THAT THE ENVIRONMENTAL IMPACT STUDY IS TOTALLY INADEQUATE. WE CAN ONLY ASSUME THAT THE GLARING DEFICIENCIES IN THE ENVIRONMENTAL IMPACT STUDY ARE AS OBVIOUS TO YOU AS THEY ARE TO US. THROUGHOUT THE ENVIRONMENTAL IMPACT STUDY THE BUREAU OF LAND MANAGEMENT REVEALS THAT THE INFORMATION ON WHICH THEIR ASSUMPTIONS ARE BASED IS MATERIAL WHICH IS INCOMPLETE, NONEXISTENT OR NOT SPECIFIC TO THE GULF OF ALASKA. THIS ABSENCE OF AVAILABLE MATERIAL FORCES THE BUREAU OF LAND MANAGEMENT TO DRAW CONCLUSIONS THAT ARE AT BEST NAIVE AND AT THE WORST DANGEROUS. FOR INSTANCE, THE BUREAU OF LAND MANAGEMENT ASSUMES THAT BECAUSE THE ANCHORAGE CENSUS DISTRICT IN 1970 HAD 79% OF THE POPULATION OF CENSUS DISTRICTS WHICH MIGHT BE AFFECTED BY THIS SALE, ANCHORAGE WILL RECEIVE 79% OF THE POPULATION IMPACT RESULTING FROM THE SALE. THIS LINE OF REASONING SHOWS YAKUTAT AND ICY BAY WITH A MAXIMUM POPULATION IMPACT OF 115 PERSONS. WE ARE UNSURE WHETHER THIS ASSUMPTION IS INTENDED TO BE HUMOROUS, OR IS DESIGNED TO LULL YAKUTAT INTO A FALSE SENSE OF SECURITY.

IT WOULD BE A WASTE OF TIME TO ATTEMPT TO DEAL WITH THE MANY DEFICIENCIES IN THE ENVIRONMENTAL IMPACT STUDY ON AN ITEM BY ITEM BASIS. THE CITY OF YAKUTAT'S POSITION ON THE NEED FOR MORE TIME TO PREPARE FOR OCS IMPACT HAS BEEN MADE ABUNDANTLY CLEAR. OUR POSITION WOULD SEEM TO BE SUPPORTED ON PAGE 748 WHERE THE BUREAU OF LAND MANAGEMENT STATES THAT "A DELAY OF 1/2 TO 2 YEARS WOULD ALLOW FOR COMPLETION OF ALL PREOPERATIONAL PHASES OF THE ENVIRONMENTAL STUDIES PROGRAM ...". THE COMPLETION OF THESE STUDIES WOULD GIVE THE BUREAU OF LAND MANAGEMENT THE INFORMATION NECESSARY TO OVERCOME MANY OF THE INADEQUACIES OF THE ENVIRONMENTAL IMPACT STUDY.

THE CITY OF YAKUTAT WANTS YOU TO BE FULLY AWARE THAT WE ARE COGNIZANT OF THE MANY WEAKNESSES IN THE ENVIRONMENTAL IMPACT STUDY. IF THE BUREAU OF LAND MANAGEMENT CONTINUES TO IGNORE THE OBVIOUS NEED FOR MORE INFORMATION AND PROCEEDS WITH THE LEASE SALE, AND IF WE ARE NOT ABLE TO RESOLVE THESE ISSUES IN A MANNER SATISFACTORY TO THE CITIZENS OF YAKUTAT, THE CITY MAY WELL BE COMPELLED TO SEEK LEGAL RECOURSE TO SEE THAT OUR RIGHTS ARE RECOGNIZED AND TO ASSURE OUR SURVIVAL AS A DECENT COMMUNITY IN WHICH TO LIVE AND RAISE OUR CHILDREN.

THANK YOU.

8/12
(5)

Carl Brady - Statement

Good Morning Mr. Chairman:

My name is Carl Brady and I am Vice President of Rowan Companies, Inc. of Houston, Texas, and President of its subsidiary, Era Helicopters, Inc. of Anchorage, Alaska.

All of Rowan's work and a major portion of Era's is for the oil industry. Era Helicopters' contracts are naturally written to be beneficial to the company; however, not necessarily to me personally or any other ultimate consumer because we must all eventually pay the costs as consumers of petroleum products.

I believe environmental protection in some instances has been over emphasized at the expense of the consumer. I hope that I will not be misunderstood for I favor protection of the environment and establishment of truly unique wilderness areas. However, getting to the point I would like to make, I believe we should initiate the leasing and exploration of the areas in the Gulf of Alaska immediately. Addressing the argument of some people that activity in the Gulf of Alaska should be delayed until sufficient surveys have been completed, I doubt that those people would ever be satisfied regardless of how much research was done. A University of Alaska professor has made a summation of all the studies on the Gulf called "A Review of Oceanography and Renewable Resources of the Northern Gulf of Alaska". It runs to nearly 700 pages, including 56 pages of references to published reports of research projects averaging a dozen references to the page. But, his introduction to this report notes that the book is not to be considered a "definitive work" because all of the available data has not been cited in some sections.

It is my understanding that the BLM and NOAA are now doing another $15,000,000 or so worth of research in the Gulf of Alaska. How long are we going to support research in areas known to have possible oil producing structures, especially in these times of energy shortages and threats of Middle East oil embargos, before we initiate development of the region?

The oil conpanies have proved they have the technology and capability to produce oil offshore without destroying the environment. Exploration and production have been going on in the North Sea for 10 years. The weather and other conditions in the North Sea have been compared time and again with the conditions that exist in the Gulf of Alaska. Rowan Companies, for example, are presently operating two semi-submersibles in the North Sea, both are capable of the same activity in the Gulf of Alaska.

The techniques learned by the same oil companies who are operating in the North Sea and wish to operate in the Gulf of Alaska should be sufficient after this ten years of experience to operate safely in the Gulf of Alaska. Why can't we use the techniques developed in the North Sea and the experience learned in the area to develop the Gulf of Alaska rather than start all over in what could be compared to an attempt to redesign the wheel.

Both the Rowan Companies and Era Helicopters have done considerable work for the oil industry in the Gulf of Mexico, the Caribbean and Cook Inlet, here in Alaska, during the past many years. We have yet to see any signs of biological damage to the fish and marine life in those areas. The essence of my feeling is "keep up the research as long as you like, but get on with the leasing and exploration and use the experience gained by those who have developed production in offshore waters around the world." Failure to do so is to invite further U.S. energy shortages and increased costs to the consumer, followed by an international crisis over who will control the oil available to the industrial nations of the world.

August 12, 1975

Comments Concerning
Draft, EIS for OCS
Leasing in Gulf of Alaska
Anchorage, Alaska

COOD MORNING. MY NAME IS A.L. PORTER AND I AM PUBLISHER OF ALASKA INDUSTRY MAGAZINE. I FORMERLY WORKED IN THE OIL FIELDS IN MONTANA, MOVED TO ALASKA 17 YEARS AGO AND HAVE BEEN A CLOSE OBSERVER AND REPORTER OF THE ALASKA OIL INDUSTRY SINCE THAT TIME. I AM SPEAKING AS A PRIVATE CITIZEN.

I RECALL THAT IN THE FALL OF 1973, THE COUNCIL ON ENVIRONMENTAL QUALITY CONDUCTED A PUBLIC HEARING IN ANCHORAGE ON THE ENVIRONMENTAL IMPACT OF POTENTIAL OIL AND GAS DEVELOPMENT IN THE GULF OF ALASKA. AT THAT TIME THE OIL INDUSTRY, THROUGH ITS GULF OF ALASKA OPERATORS COMMITTEE, WAS ALREADY CONDUCTING INTENSIVE RESEARCH IN THE GULF. THAT WORK HAS BEEN AN ONGOING EFFORT. THOSE STUDIES REFLECT A POSITIVE ATTITUDE ON THE PART OF THE PETROLEUM INDUSTRY IN ALASKA. AND THOSE STUDIES HAVE REVEALED NOTHING THAT COULD BE TERMED AN INSURMOUNTABLE OBSTACLE TO PETROLEUM EXPLORATION IN MOST AREAS OF THE GULF.

THE DRAFT ENVIRONMENTAL IMPACT STATEMENT BEING DISCUSSED AT THIS HEARING REPRESENTS CONSIDERABLE EFFORT BY THE DEPARTMENT OF INTERIOR. IT REVEALS NOTHING THAT COULD BE TERMED AN INSURMOUNTABLE OBSTACLE TO PETROLEUM EXPLORATION IN MOST AREAS OF THE GULF.

THE STATEMENT APPEARS TO FILL THE REQUIREMENTS OF LAW, BUT IT SEEMS THAT ALL OF THESE ENVIRONMENTAL IMPACT STATEMENTS HAVE COMMON FAILINGS.

THEY DO NOT DELVE SUFFICIENTLY INTO THE POLITICAL ENVIRONMENT, THE ECONOMIC ENVIRONMENT OR THE PETROLEUM INDUSTRY ENVIRONMENT.

TO EXPLAIN BRIEFLY, I FEEL THAT THE ENTIRE PURPOSE OF SUCH AN ENVIRONMENTAL IMPACT STATEMENT IS TO ASSESS THE EFFECTS OF A CERTAIN ACTION ON NOT ONLY A SPECIFIC BIT OF ENVIRONMENT, BUT UPON THE NATION AS A WHOLE. AND THE NATION MEANS THE AMERICAN PEOPLE. THE CURRENT POLITICAL ATMOSPHERE IN THE NATION IS ANT-OIL. WE HAVE A NATIONAL ADMINISTRATION AND A CONGRESS THAT ARE AT LOGGERHEADS OVER ENERGY POLICY. WITHIN ALASKA, THERE EXISTS A WIDE SPECTRUM OF VIEWPOINTS RANGING BETWEEN PRISTINE PRESERVATION AND DEVOUT DEVELOPMENT. PERHAPS AN ENVIRONMENTAL IMPACT STATEMENT COULD BE A VEHICLE TO HELP BRING ABOUT A REASONABLE CONSENSUS AMONG AMERICANS.

THE SECOND WEAK POINT IN MOST IMPACT STATEMENTS CONCERNS THE ECONOMIC ENVIRONMENT. THERE ARE MANY TABLES OF STATISTICS AND MANY PAGES OF ALTERNATIVES. BUT THERE SEEMS TO BE SCANT DISCUSSION OF THE BASIC IMPORTANCE OF HYDROCARBON ENERGY AND RAW MATERIALS TO THE NATION. THE NATION'S RECESSION AND INFLATION CAN BE TRACED IN LARGE PART TO THE RECENT FOREIGN OIL EMBARGO AND TO THE QUADRUPLING OF PRICES BY FOREIGN SUPPLIERS. THESE TWO POINTS INDICATE THAT ANY FURTHER DELAY IN EXPLORATION OF POTENTIAL U.S. HYDROCARBON PROVINCES COULD BE DANGEROUS TO THE NATION'S ECONOMIC HEALTH.

THIRDLY, IT SEEMS THAT AN IMPACT STATEMENT COULD PROVIDE AMERICAN CITIZENS MORE INFORMATION AND INTERPRETATION ON THE PETROLEUM INDUSTRY ENVIRONMENT AS IT RELATES TO OPERATING PROCEDURES AND THE TIME NEEDED TO BRING NEWLY FOUND RESOURCES TO PRODUCTION. FOR INSTANCE, THE IMPACT STATEMENT SUGGESTS AN ALTERNATIVE OF DELAYING THE SALE PENDING DEVELOPMENT OF MORE SOPHISTICATED OIL SPILL EQUIPMENT AND DEVELOPMENT OF IMPROVED

SUBSEA COMPLETION METHODS. THIS IS HARDLY A VIABLE ALTERNATIVE.

THE PETROLEUM INDUSTRY WHICH CAN OPERATE SUCCESSFULLY AND SAFELY IN UPPER COOK INLET AND IN THE NORTH SEA CAN OPERATE SUCCESSFULLY IN THE GULF OF ALASKA. TO DELAY A POSITIVE STEP WHILE AWAITING PERFECTION IS NOT REALISTIC. EVEN IF THE FIRST SALE IS HELD NOW, IT WILL BE YEARS BEFORE FULL PRODUCTION IS ACCOMPLISHED, AND THE NATION CAN ILL AFFORD THE DELAY. AND THERE IS THAT OLD SAYING IN THE OIL INDUSTRY, THAT NOBODY EVER FOUND AN OIL FIELD OR GAS FIELD WITHOUT ACTUALLY DRILLING A HOLE. IT IS TIME TO BEGIN DRILLING THOSE HOLES.

(7)

FAIRBANKS ENVIRONMENTAL CENTER
Box 1796
Fairbanks, Alaska 99707
(907) 479-3684

STATEMENT OF PATRICIA SENNER, FAIRBANKS ENVIRONMENTAL CENTER, REGARDING THE DEIS OUTER CONTINENTAL SHELF PROPOSED OIL AND GAS LEASING IN THE NORTHERN GULF OF ALASKA, BLM, ANCHORAGE, ALASKA, 12 AUGUST 1975.

I am Patricia Senner, Director of Regional Affairs, for the Fairbanks Environmental Center. Located at 1895 Pioneer Way in Fairbanks, the Environmental Center is dedicated to the protection of the Alaskan environment through education and action. We have a great deal of interest in the BLM OCS program in Alaska, including the Gulf of Alaska, because of its implications for the state as a whole.

The Draft Environmental Impact Statement (DEIS) for the Northern Gulf of Alaska is very complete and should provide the Department of Interior with a reference for making sound decisions.

The Environmental Center has been watching with great concern the development of the Interior Department's accelerated leasing program of which this proposed lease is part. It is our opinion that contrary to Interior's contention the program is anything but orderly. If the goal of the United States is independence from foreign oil sources, then we should develop an energy policy for achieving that goal. In developing a national energy policy, studies should be conducted regarding where energy is most needed and where energy can come from to supply those needs. There was no indication in the DEIS of the availability of this type of information.

Nowhere in the DEIS is there a discussion of how Gulf of Alaska oil and gas will help alleviate current shortages in regional domestic supplies. Where will Gulf of Alaska be sent, how will it eventually get to its desinations, and when will the necessary facilities be constructed for its transportation?

THe DEIS states:: "Petroleum produced from the sale area will be distributed to U.S. markets through west coast refineries or to Japanese or Canadian markets in exchange for petroleum to be received by the U.S. in locations other than the west coast."(p.7) The petroleum received in exchange from Japan would presumeably originate in some foreign country. How does this situation fit into our goal of energy independence? Why must we risk our valuable resources to secure more foreign oil?

STATEMENT OF PATRICIA SENNER
BLM DEIS OCS-Northern Gulf of Alaska

There are many informational gaps in our knowledge of the Gulf of Alaska. A very superficial count of deficiencies listed in the DEIS produced 27 areas where little or no knowledge currently exists. Just a few of the areas where information is sketchy include: trace metals and low and high molecular weight hydrocarbon levels in the Gulf, light transmittance through the water column, direct current measurements for the Gulf, phytoplankton distribution, zooplankton in bays and estuaries, effects of crude oil on terrestrial coastal vegetation, sublethal effects of oil pollution -- especially chronic low levels, and information on first and second order effects of oil pollution on marine mammals.

The Bureau of Land Management is currently spending millions of dollars of the tax payer's money to fill in some of the informational gaps. The studies of the northern Gulf of Alaska just started this year and many will will not be completed for another two years. The purpose of these studies is to help BLM write impact statements, to help the Interior Department make decisions about which areas are environmentally sensitive to development, and to help write lease stipulations and operating orders.

We have difficulty understanding why the Interior Department undertook these investigations if they have already decided which areas to lease, written their impact statement, and produced operating orders for the Gulf. The operating orders for the Gulf were produced even before the DEIS was written. As we stated in our testimony last February regarding the programatic DEIS, "The Environmental Center cannot justify in advance writing off certain environmental losses as 'acceptable' when it cannot even be predicted what those losses will be."

The DEIS states, "Operator must comply with requirements of the Federal Water Pollution Control Act Amendments of 1972." This may not be the case. Operations outside the 12 mile limit may not fall under EPA jurisdiction. The average distance of oil and gas fields from shore will be about 22 miles. Lawyers for EPA are currently ruling on this matter. Even if EPA does have jurisdiction over OCS operations, draft effluent guidelines for oil platforms have not been promulgated. It may be as long as two years before these guidelines become finalized.

On August 7, Representative John Murphy asked President Ford to order a 90 day delay in outer continental shelf oil leasing in California and Alaska so that Congress might pass legislation to give the states time to prepare for impact of offshore dirlling. Mr. Murphy appealed to President Ford after the Department of the Interior refused the delay, stating it "is not in the public interest."

We have difficulty seeing how the Interior Department can determine what is in the public interest before holding hearings on the DEIS for the proposed leases. Interior has always made the point that NEPA is the way in which the public is involved in Interior's decision-making process. This appears not to be the case if Interior has already made the decision on when to hold the leases in the Gulf.

Alaska has a fair idea of what it takes to prepare for oil exploration and development from their experience with the oil pipeline boom. It takes time to develop the services people will require in communities which currently don't have them. Fairbanks has been experiencing a boom for well over a year now, and the telephone services, are still poor, necessary police protection is inadequate, housing is critically short, and many new housing developments can't hook up to good water and sewer systems. Since Fairbanks was a fairly large city before the boom hit, you can imagine how long it will take smaller coastal communities to prepare adequately for the impact to hit.

All these things lead us to conclude that the decision to lease in the northern Gulf of Alaska should be delayed at least two years. There currently is not a critical need for oil on the west coast, and the Gulf of Alaska is the area presenting the highest environmental risk for oil development. Interior's own DEIS claims that 220 of the 330 tracts being offered present a relatively high hazard potential. We can understand Interior's desire to have these areas explored soon. Legislation may very well be passed this year which would allow Interior to conduct exploratory operations. We think the Gulf of Alaska would be an excellent place for Interior to start their own exploratory program since the resources for the state are so very valuable.

The oil companies have frequently stated that they are ready to explore and develop in the Gulf. We would like to raise the question of whether the people of the state of Alaska are ready for such massive development. I believe that most people view such development with considerable ambivalence. It is nice to be able to find employment, but there are prices to pay. The price of increased crime, more restrictions on individual freedoms, higher prices, less abundant wildlife, a more hectic and polluted environment, and so on. We don't subscribe to the belief that if there is oil someplace that it must be developed. There are other values and resources at stake here which warrent protection.

This concludes our statement today. I have included for the record the Environmental Center's comments before Mr. Murphy's Ad hoc OCS Committee earlier this month which detail even more completely our concerns for OCS development in Alaskan waters.

Thank you for this opportunity to present these views.

(8)

To: United States Department of Interior
Bureau of Land Management

Subject: Alaska Outer Continental Shelf Hearing,
August 12, 1975, Anchorage, Alaska

Mr. Chairman, members of the committee, my name is Millett F. Keller. I am a resident of Anchorage and have lived here for the past 12 years. I originally came to Alaska in 1963 as an employee in the oil industry work in exploration. Approximately one year after arriving in Alaska I left the oil industry and have been employed in private business in Anchorage ever since. I would like to thank you for the opportunity to make this presentation to you.

I would like to limit my remarks to the portions of the report dealing with the impact of the OCS leasing on Anchorage. It appears to me that the report seems to stress, in an overwhelming way, the possible negative impact of the oil industry on Anchorage. I feel that in order to adequately evaluate such an impact report, both the negative and positive aspects of the impact should be evaluated.

During my 12 years in Alaska I have had an opportunity to view the impact of the oil industry on the State. During this period the oil industry has grown very rapidly, the offshore fields in Cook Inlet have been developed, the distribution and manufacturing facilities on the Kenai Peninsula have been constructed, the transportation systems to deliver the Cook Inlet oil to the Lower 48 and Japan have been implemented and the discovery and development of the North Slope oil reserves has begun.

to expand its parks system and fish and game and fisheries programs. Many of these positive environmental impacts would never have happened without the benefits of selling oil leases to the oil industry.

It is most important that the positive impact of socio-economic factors as well as environmental factors be considered in an overall impact statement. In the area of socio-economic impact, I can only say that during my 12 years in Anchorage, I have seen only positive impacts on the socio-economic life in Anchorage. I have been quite active in civic and cultural activities in Anchorage. I have seen the oil industry play a vital role in improving this aspect of life for all Alaskans. The contributions made in the form of unrestricted grants to the University of Alaska, the outright contributions to support a private fund raising effort to expand the local hospital are adequate examples of positive socio-economic impact.

The oil industry has also contributed substantially to the arts and other social organizations such as Salvation Army, YMCA, and the scouting programs. I have had an opportunity to serve on the Board of Directors of the Alaska Festival of Music for the last year, and I can tell you that without the support of the major oil companies, the program which the Alaska Festival of Music presented to the State would not have been possible. This program included such notable groups as the Metropolitan Opera Madrigal Singers, Benny Goodman, Cannonball Adderly, the Atlanta Ballet, and the Seattle Repertory Theater. ARCO, British Petroleum, EXXON, Standard Oil Company of California, Union Oil and Alyeska Pipeline Service Company made grants to the Festival which have made it possible for the Festival to defray expenses for local musicians as well as bringing in notable outside groups.

It is important that these socio-economic factors also be considered in an impact statement. For example, it would be appropriate to include the estimated amount of contributions to the Community Chest, local churches, the estimated amount of contributions to capital fund drives sponsored by organizations like the YMCA and the Providence Hospital, as well as the potential donations to be realized by the Scouts, Boys Club, and other such groups that will occur as a result of increased oil industry activity in Alaska.

In conclusion, I can state that my personal experience would indicate that of all the industries the State has to select as partners in enhancing the quality of life in Alaska, the oil industry would be by far and away the best choice. No other sector, including timber, fishing, federal government or military have contributed in as positive a manner as the oil industry.

I feel it is important to the future of Anchorage that we encourage, not discourage, the growth of the oil industry in Alaska. The oil industry has had an excellent track record to date in Alaska, and I have no reason to believe that that record would change in the future. I would strongly urge that the Federal Government move ahead as swiftly as possible with the Gulf of Alaska Leasing Program, and also actively study other potential leasing areas in the State.

(10)

MY NAME IS HELEN FISCHER. I HAVE BEEN A RESIDENT OF ALASKA FOR MORE THAN 30 YEARS--AND IT HAS BEEN MY PRIVILEGE TO NOT ONLY WITNESS THE ADVANCEMENTS MADE IN ALASKA SINCE THE WAR YEARS, BUT TO PARTICIPATE IN THEM; BOTH AS A BUSINESS WOMAN AND AS AN ELECTED REPRESENTATIVE OF MY FELLOW CITIZENS.

I SERVED IN THE TERRITORIAL HOUSE AND IN THE FIRST, SEVENTH, AND EIGHTH LEGISLATURES, AND AM A FORMER DEMOCRATIC NATIONAL COMMITTEE-WOMAN. I AM PRESENTLY A MEMBER OF THE HOUSE OF REPRESENTATIVES FROM DISTRICT 1 IN THE NINTH LEGISLATURE.

ONE ADDITIONAL ITEM OF BACKGROUND IS IMPORTANT TO THE STATEMENT I WILL MAKE. I WAS A DELEGATE TO THE ALASKA CONSTITUTIONAL CONVENTION AND FOUGHT WITH ALL MY MIGHT FOR A STRONG EXECUTIVE FORM OF GOVERNMENT IN ALASKA.

THIS WAS, IN MY VIEW, NECESSARY BECAUSE PRIOR TO STATEHOOD, THE FEDERAL GOVERNMENT HAD DISCOURAGED ECONOMIC DEVELOPMENT IN THE TERRITORY ~~THROUGH~~ thus STIFFLING SOCIAL PROGRESS AND WE ALL KNOW THAT SOCIAL PROGRESS--TO BE LASTING--CAN ONLY BE ACHIEVED IF IT IS SUPPORTED BY A STRONG ECONOMY.

WE DID ESTABLISH A STRONG EXECUTIVE GOVERNMENT IN ALASKA AND THE RESULTS WERE GOOD. RESOURCE DEVELOPMENT RAISED OUR STANDARD OF LIVING AND, MOST IMPORTANTLY FOR THE NATION, RESULTED IN THE DISCOVERY OF OIL AND GAS EQUAL TO ABOUT 30 PERCENT OF TOTAL PROVEN RESERVES IN THE U.S.

NOW, A STRANGE THING HAS HAPPENED. OUR STRONG EXECUTIVE SYSTEM IS BEING USED TO STIFLE GROWTH. AND GROWTH, IF PROPERLY HANDLED, MEANS A BETTER LIFE FOR ALASKANS. THE CURRENT STATE ADMINISTRATION, ALTHOUGH NOT REQUIRED BY LAW, PREPARED AN ENVIRONMENTAL IMPACT STATEMENT ON A PROPOSED LEASE SALE IN STATE WATERS OF THE BEAUFORT SEA. PUBLIC HEARINGS WERE HELD. THERE WAS MINIMAL OPPOSITION TO THE SALE, YET NO WORD HAS BEEN FORTHCOMING ON WHEN THE SALE WILL BE HELD. AND THE STATE'S NEED FOR REVENUES AND THE NATION'S NEED FOR NEW RESERVES HAVE NEVER BEEN GREATER. THE STATE ADMINISTRATION IS DRAGGING ITS FEET.

THE ONLY HOPE I HAVE IS THAT THE FEDERAL GOVERNMENT, PRODDED BY THIS NATION'S DESPERATE NEED FOR RESOURCES OF ALL KINDS, WILL ENCOURAGE DEVELOPMENT IN ALASKA.

I BELIEVE AN EARLY LEASE SALE IN THE GULF OF ALASKA WILL CONTRIBUTE TO MY GOALS FOR ALASKA. I URGE THE SALE BE HELD THIS YEAR.

HAVING SAID THAT WITHOUT QUALIFICATION, I FURTHER URGE THAT GOVERNMENT--FEDERAL, STATE AND LOCAL--ALONG WITH INDUSTRY AND THE CITIZENS OF ALASKA WORK TOGETHER TO MAXIMIZE THE BENEFITS OF THE LEASE SALE AND TO MINIMIZE THE ADVERSE IMPACTS WHICH COULD OCCUR WITHOUT PROPER CARE. I FAIL TO SEE WHY THIS CANNOT BE DONE. CERTAINLY A BIG STEP IN THAT DIRECTION WOULD BE FOR THE FEDERAL GOVERNMENT TO RECOGNIZE THE NEED FOR INITIAL IMPACT FUNDS--ESPECIALLY IN THE COASTAL COMMUNITIES IN THE PROPOSED SALE AREA. WE MUST WORK TOGETHER, BUT WE MUST ALSO HAVE FEDERAL FUNDS TO TIDE US OVER UNTIL A TAX BASE IS ESTABLISHED IN THE COASTAL AREA.

I BELIEVE THE FEDERAL GOVERNMENT HAS AN OBLIGATION TO DO THIS. I ALSO BELIEVE ALASKA HAS AN OBLIGATION TO PROVIDE AN ECONOMIC CLIMATE CONDUCIVE TO RESROUCE DEVELOPMENT. OUR COUNTRY NEEDS RESOURCES AND WE HAVE THEM HERE. THE PETROLEUM INDUSTRY APPARENTLY IS READY TO EXPLORE. THEY HAVE THE TECHNOLOGY AND CAN DO IT RIGHT. FURTHER, GOVERNMENT, UNDER EXISTING LAW, CAN ASSURE THAT DEVELOPMENT IS DONE PROPERLY.

I WILL CLOSE WITH AN ADDITIONAL THOUGHT: ALASKANS ARE SPECIAL PEOPLE WHO VALUE WHAT THIS GREAT STATE HAS TO OFFER. IT FEEDS NOT JUST OUR PHYSICAL HUNGER, BUT OUR SPIRITUAL HUNGER AS WELL. WE WANT THE PIONEERING SPIRIT TO LIVE. WE WILL FIGHT TO PRESERVE THAT. BUT, PLEASE, DON'T CONFUSE THIS WITH THE HARPING OF THE SMALL, VOCAL GROUP OF OUTSIDE ENVIRONMENTALISTS WHO USE THE SAME WORDS, YET MEAN SOMETHING ENTIRELY DIFFERENT. THEY WOULD HAVE US BE PRIMITIVES. WE ARE NOT. WE WERE NOT 30 YEARS AGO. AND, EXCUSE MY WORDS OF EMPHASIS, BUT TO HELL WITH THEM. LET'S MOVE AHEAD IN THE SPIRIT OF '76 AND DEVELOP THE GOD GIVEN RESOURCES OF ALASKA FOR THE BENEFIT OF ALL AMERICANS. THANK YOU.

(11)

STATEMENT

BY

ROBERT L. HARTIG

ATTORNEY-AT-LAW AND GEOLOGIST

BEFORE THE DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGEMENT HEARING

ON THE

PROPOSED LEASE SALE OF OIL AND GAS

ON THE

OUTER CONTINENTAL SHELF

IN THE GULF OF ALASKA

ANCHORAGE WESTWARD HOTEL, ANCHORAGE, ALASKA

AUGUST 12, 1975

MR. MESCH AND MEMBERS OF THE PANEL, MY NAME IS BOB HARTIG AND I AM AN ATTORNEY IN PRIVATE PRACTICE HERE IN ANCHORAGE. I WISH TO ADD MY THANKS FOR THIS OPPORTUNITY TO APPEAR BEFORE YOU AND TO EXPRESS MY VIEWS ON THE PROPOSED LEASE SALE OF THE SUBMERGED LANDS ON THE OUTER CONTINENTAL SHELF IN THE GULF OF ALASKA.

UNTIL THE SECRETARY OF THE INTERIOR ANNOUNCED HIS PLAN

LAST YEAR TO LEASE SOME TEN MILLION ACRES OF SUBMERGED LANDS OFF THIS COUNTRY'S COAST, INCLUDING ALASKA, IN AN EFFORT TO PROVIDE POTENTIAL MINERAL LANDS FOR DEVELOPMENT, FEW ALASKANS WERE AWARE OF THE PRESENT ENERGY CRISES. EVEN TODAY, WITH THE STATE'S EXPANDING ECONOMY, A REASONABLY GOOD EMPLOYMENT STATUS, AND THE FACT WE HAVE NOT WITNESSED GAS RATIONING OR SUFFERED OTHER INCONVENIENCES, MANY ALASKANS ARE PROBABLY UNAWARE FROM AN ENERGY STANDPOINT, OF THE SERIOUSNESS OF THIS NATIONAL AND WORLD PROBLEM.

THE RESPONSE BY OUR STATE AND LOCAL LEADERS, LEGISLATIVE REPRESENTATIVES, INDUSTRY PERSONNEL AND MEMBERS OF THE PUBLIC TO THIS HEARING AS WELL AS THE EARLIER HEARINGS BEFORE THE COUNCIL ON ENVIRONMENTAL QUALITY AND THE DEPARTMENT OF THE INTERIOR, IS PROOF OF THE IMPORTANCE PLACED BY ALASKANS ON THE DEVELOPMENT OF THE OCS LANDS OFF OUR COAST.

IN THE PAST, THERE HAS BEEN CONCERN EXPRESSED THAT THE DEVELOPMENT OF THE OUTER CONTINENTAL SHELF WOULD SERVE TO REDUCE THE EXPLORATION DOLLARS THAT THE PETROLEUM INDUSTRY WOULD SPEND ON ONSHORE DEVELOPMENT OF STATE AND NATIVE LANDS. HOWEVER, THE CURRENT REAL ENERGY CRISES HAS SERVED TO ELIMINATE THESE FEARS. THE INCREASED NEEDS FOR FOSSIL FUELS TO PROVIDE THE ENERGY REQUIRED TO PROVIDE THE NECESSARY SERVICES FOR AMERICA'S CITIZENS AND

INDUSTRY WILL REQUIRE NOT ONLY THE PRODUCTION FROM THE PRUDHOE BAY FIELD AND OTHER ONSHORE FIELDS, BUT ALSO ALL THE FIELDS THAT CAN BE FOUND OFF AMERICA'S CONTINENTAL COASTS AND, EVEN WITH SUCCESSFUL OIL STRIKES IN THESE PRIZED AREAS, IT IS PREDICTED THAT THE UNITED STATES WILL STILL BE GROSSLY DEPENDENT UPON FOREIGN CRUDE FOR THE NEXT DECADE.

DEVELOPMENT OF THE OUTER CONTINENTAL SHELF, HOWEVER, MUST BE CONSIDERED IN RELATION TO NAVIGATION, COMMERCIAL AND SPORT FISHING, FUTURE MINING ON THE SEAFLOOR AND SEA BED, AND AESTHETIC VALUES. I SUPPORT IMPROVED PROTECTION AND ENHANCEMENT OF THE ENVIRONMENT WITH PERIODIC REVIEW AND CONSIDERATION OF RECOMMENDATIONS FROM ALL INTERESTED SOURCES. WE MUST CONTINUE TO STRIVE FOR A RATIONAL BALANCE IN THIS AREA. WE MUST, HOWEVER, IN LIGHT OF THE ENERGY NEEDS OF OUR NATION, TAKE A PRACTICAL APPROACH TO ISSUES OF ENVIRONMENT VERSUS DEVELOPMENT.

THE PETROLEUM INDUSTRY HAS DEMONSTRATED ELSEWHERE, IN THE GULF OF MEXICO, OFFSHORE CALIFORNIA, AND IN THE HARSH ENVIRONMENT OF THE NORTH SEA, ITS ABILITY TO CONDUCT EXPLORATORY ACTIVITIES UNDER THE SAME ADVERSE CLIMATIC, TIDE AND WATER CONDITIONS AS CAN BE EXPECTED IN THE GULF OF ALASKA, YET PROTECT THESE WATERS FROM ANY DETRIMENTAL EFFECTS TO THE FISHERIES OR THE ENVIRONMENT.

OUR ALASKAN FISHERIES, WHICH ADMITTEDLY HAVE DETERIORATED OVER THE YEARS DUE TO THE CONTINUED ENCROACHMENT BY FOREIGN FISHERMEN AND THE OVER-HARVESTING OF THESE RESOURCES BY OUR OWN FISHERMEN, WAS ONCE THE LEADING INDUSTRY IN THIS STATE. THE AREAS ALONG ALASKA'S COASTLINE, EXTENDING FROM NORTON SOUND TO THE EXTREME SOUTHERN TIP OF SOUTHEASTERN ALASKA, ARE THE PRIMARY COMMERCIAL MARINE FISHERIES AREAS. THIS SAME AREA OF THE GULF OF ALASKA IS LIKEWISE ONE OF THE NATION'S GREATEST POTENTIAL AREAS FOR OIL AND GAS DEVELOPMENT.

IN THIS REGARD, I AM HOPEFUL THAT THE DEPARTMENT OF THE INTERIOR WILL INQUIRE BEYOND THE STATEMENTS OF THOSE WHO ADVOCATE DELAY IN THE NECESSARY DEVELOPMENT OF THESE RESOURCE AREAS.

PROBABLY NO ONE TODAY WOULD DENY THAT A REASONABLE DELAY IN THE CONSTRUCTION OF THE TRANS-ALASKA PIPELINE WAS PROPER. WHILE THE DELIVERY OF THE MUCH NEEDED OIL WAS DELAYED, ASSURANCES WERE OBTAINED FOR THE PROTECTION OF THE ENVIRONMENT. MANY OF THOSE WHO OPPOSED THAT CONSTRUCTION, HOWEVER, WERE NOT SATISFIED EVEN AFTER THE FILING OF THE ENVIRONMENTAL IMPACT STATEMENT AND, IT CAN BE DETERMINED, SOUGHT TO DELAY THE CONSTRUCTION FOREVER. SOME OF THESE SAME INDIVIDUALS AND ORGANIZATIONS ARE ACTIVE TODAY AND AGAIN ARE VOICING WHAT APPEAR TO BE SINCERE ENVIRONMENTAL CONCERNS

YET A WILLINGNESS TO COOPERATE IN BALANCING THE PROPOSED DEVELOPMENT WITH ENVIRONMENTAL ISSUES.

IT WOULD BE UNFORTUNATE IF CONTINUED DELAYS FOR OCS DEVELOPMENT WERE IMPOSED EVEN THOUGH INDUSTRY HAS DEMONSTRATED ITS OPERATIONAL ABILITY AND HAS SATISFIED THE ENVIRONMENTAL CONCERNS.

THE PETROLEUM INDUSTRY HAS BECOME ONE OF THE LEADING INDUSTRIES OF THIS STATE. DURING THE PERIOD OF DIMINISHED ACTIVITY IN THE FISHING INDUSTRY, THE INDUSTRY HAS CONTINUED TO PROVIDE RELATIVE HIGH LEVELS OF EMPLOYMENT AND RETURNED SUBSTANTIAL REVENUES TO THE STATE THROUGH BONUSES, ROYALTIES, AD VALOREM, CORPORATE AND INDIVIDUAL TAXES. THESE REVENUES HAVE SERVED TO PROVIDE A PORTION OF THE MUCH NEEDED CAPITAL TO EXPAND THE REHABILITATION PROJECTS FOR OUR FISHERIES AND TO OTHERWISE PROVIDE A GREAT PORTION OF THE MONEY REQUIRED TO SUPPORT THE STATE GOVERNMENT.

THE COUNCIL ON ENVIRONMENTAL QUALITY, IN THEIR REPORT, FOUND THE GULF OF ALASKA, ON THE BASIS OF ENVIRONMENTAL CONSIDERATIONS, THE LEAST DESIRABLE OF ALL AREAS FOR OCS DEVELOPMENT. THIS SAME AREA IS LISTED BY THE PETROLEUM INDUSTRY AS ONE OF THE PRIME EXPLORATION AREAS FOR IMMEDIATE DRILLING.

IT IS RECOGNIZED THAT, UNTIL SUCCESSFUL WELLS ARE DRILLED AND THE PETROLEUM FIELDS DELINEATED, IT IS IMPOSSIBLE TO KNOW THE NATURE OR EXTENT OF THE PRODUCTION FACILITIES THAT WILL BE REQUIRED. IN THIS REGARD, THE NEED FOR CONTINUED FEDERAL, STATE AND INDUSTRY COOPERATION IS APPARENT. THROUGH THE CONTINUED COORDINATED ACTIVITIES, WITH CONSIDERATION BEING GIVEN TO ALL DISCIPLINES, NECESSARY DEVELOPMENT CAN CONTINUE TO THRIVE AND TO EXPAND IN A HARMONIOUS MANNER.

THE REMAINING CONSIDERATION WHICH I WISH TO REVIEW IS THE SOCIAL AND ECONOMIC IMPACT THAT CAN BE EXPECTED TO TAKE PLACE ON THE INDIVIDUAL COMMUNITIES AND THE STATE.

IT MUST BE NOTED THAT THE EXPLORATION ACTIVITY OFFSHORE WILL REQUIRE THE ADDITION OF EXPANDED SERVICES BY LOCAL AND STATE GOVERNMENTS IN THE FORM OF POLICE PROTECTION, SCHOOLS, HEALTH AND SOCIAL SERVICES, ETC. WHILE IT CAN BE ARGUED THAT THESE SERVICE REQUIREMENTS WILL MORE THAN BE OFFSET BY THE BENEFITS DERIVED FROM THE ADDITIONAL ACTIVITY BROUGHT ABOUT BY THE JOBS AND TAXES, CONSIDERATION MUST BE GIVEN TO THE NATURE AND SIZE OF THE AFFECTED COMMUNITIES.

A MARKED INCREASE IN PETROLEUM ACTIVITY IN ANY OF THE SMALL COMMUNITIES ALONG ALASKA'S COAST CAN BE EXPECTED TO DOMINATE THE ECONOMIC ACTIVITY AND TO PLACE AN IMMEDIATE IMPACT AND POSSIBLE STRAIN ON THE SMALL COMMUNITY. ONE ONLY NEED TO REVIEW THE DEMAND MADE BY THE INCREASED POPULATION IN VALDEZ, OCCASIONED BY THE CONSTRUCTION OF THE OIL PIPELINE, TO UNDERSTAND THE CONCERN IN THIS AREA.

IN ORDER TO ALLEVIATE THIS IMPACT, CONSIDERATION SHOULD BE GIVEN TO THE PROPOSED LEGISLATION WHICH PROVIDES FOR REVENUE SHARING FROM THE FEDERAL OFFSHORE RESOURCES WITH ADJACENT STATES.

THE NEED TO MAKE ADDITIONAL POTENTIAL LANDS AVAILABLE IS NOW. ANY FURTHER DELAY WILL ONLY INCREASE THE ENERGY PROBLEMS. EVEN WITH THE UTILIZATION OF OTHER ENERGY FUELS, THE ENFORCEMENT OF CONSIDERATION PRACTICES AND THE EXPECTED TECHNOLOGICAL BREAK-THROUGHS IN ENERGY FUELS, THE DEVELOPMENT OF THE NATION'S FOSSIL FUELS MARKS THE ONLY IMMEDIATE HOPE FOR THE ALLEVIATION OF THE ENERGY CRISES.

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(12)

SEA-LAND SERVICE, INC.

TESTIMONY

PRESENTED AT THE FEDERAL HEARING CONCERNING THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED SALE OF OIL AND GAS LEASES ON THE OUTER CONTINENTAL SHELF IN THE GULF OF ALASKA

ANCHORAGE, ALASKA
AUGUST 12, 13, 1975

MR. CHAIRMAN AND MEMBERS OF THE HEARING PANEL, MY NAME IS JAN M. KOSLOSKY, JR. I APPEAR HERE TODAY IN MY CAPACITY AS ALASKA SALES MANAGER, SEA-LAND SERVICE, INC., ALASKA DIVISION. I WANT TO THANK YOU FOR THIS OPPORTUNITY TO PRESENT THE VIEWS OF SEA-LAND ON THIS VITAL SUBJECT AND ALSO TO EXPRESS APPRECIATION FOR THE FACT THAT THESE HEARINGS ARE BEING HELD IN ALASKA, THEREBY ALLOWING MANY ALASKANS THE OPPORTUNITY TO VOICE THEIR OPINIONS.

SEA-LAND SERVICE IS THE LARGEST CONTAINERSHIP CARRIER IN THE UNITED STATES MERCHANT MARINE INDUSTRY, OFFERING CONTAINERIZED CARGO SERVICE THROUGHOUT THE FREE WORLD AND SPECIFICALLY IN THE ALASKA TRADE SINCE 1964. OUR BUSINESS TO AND WITHIN ALASKA HAS INCREASED DRAMATICALLY OVER THE PAST ELEVEN YEARS WITH A PRESENT SERVICE SCHEDULE OF THREE NORTHBOUND SAILINGS PER WEEK FROM SEATTLE TO ANCHORAGE AND FOUR SAILINGS ON ALTERNATE WEEKS FOR AN AVERAGE OF 5,180 CONTAINER LOADS PER MONTH. PORTS OF CALL ON THE LINEHAUL VESSELS ARE SEATTLE, ANCHORAGE AND KODIAK

WITH SCHEDULED FEEDER VESSEL SERVICE TO CORDOVA, ADAK, SAND POINT, CAPTAINS BAY, CHIGNIK AND DUTCH HARBOR. IN 1976 OUR ALEUTIAN CHAIN SERVICE WILL BE EXPANDED TO INCLUDE THE COMMUNITIES OF FALSE PASS, KING COVE AND SQUAW HARBOR. IN ADDITION TO THE VESSEL OPERATION, SEA-LAND OPERATES SEA-LAND FREIGHT SERVICE, INC. WHICH IS A FULLY CERTIFIED INTER-STATE AND INTRA-STATE MOTOR CARRIER. IT OFFERS SERVICE TO ALL COMMUNITIES ACCESSIBLE BY HIGHWAY FROM HOMER, SEWARD AND VALDEZ TO THE SOUTH AND TO PRUDHOE BAY TO THE NORTH.

OUR INVOLVEMENT WITH THE OIL INDUSTRY IN ALASKA BEGAN WHEN WE ENTERED THE ALASKA TRADE AND HAS CONTINUED THROUGH TO THE PRESENT. THE INDUSTRY NOW CONTRIBUTES SIGNIFICANTLY TO OUR OVERALL BUSINESS WITH SHIPMENTS RANGING FROM DRILLING COMPOUNDS, BITS, DRILL STEM,CASING, CHEMICALS, CEMENT, INSTRUMENT HOUSES, MACHINE PARTS AND OTHER REQUIRED HARDWARE. WE ARE NOW IN THE PROCESS OF SUBSTANTIALLY EXPANDING OUR TRUCKLINE OPERATION BOTH AT FAIRBANKS AND KENAI SPECIFICALLY TO ATTRACT OIL INDUSTRY BUSINESS. THIS CAPITAL INVESTMENT WILL RESULT IN A LARGER PAYROLL, MORE FACILITIES AND ROLLING STOCK AVAILABLE IN THE MARKET PLACE.

IT IS PERHAPS THE LAST POINT THAT BEARS SOME FURTHER DEFINITION. FOR EXAMPLE, IT IS CLEAR TO ALL WHO EITHER RESIDE IN ALASKA OR DO BUSINESS IN ALASKA, THAT TRANSPORTATION OF GOODS IS ONE OF THE KEYS TO ECONOMIC STABILITY AND GROWTH. ALASKA IS ALMOST EXCLUSIVELY A CONSUMATIVE ECONOMY AND BECAUSE

OF THIS FACT, IS TOTALLY RELIANT ON A QUALITY, COST EFFICIENT TRANSPORTATION SYSTEM. WITHIN TRANSPORTATION ECONOMICS, VOLUME AT A PROPER RETURN ON INVESTMENT DETERMINES SERVICE FREQUENCY AS WELL AS THE VARIETY OF MODES IN THE MARKET PLACE. THIS HAS BEEN DEMONSTRATED REPEATEDLY NOT ONLY WITH WATER SERVICE TO ISOLATED ALASKAN TOWNS BUT WITH TRUCKING SERVICE TO THOSE COMMUNITIES SERVED BY ROAD.

DEVELOPMENT OF ALASKA'S OUTER CONTINENTAL SHELF WILL NOT ONLY ACCOMPLISH THE OBVIOUS OBJECTIVES OF PROVIDING THE NATION A COST STABLE ENERGY SOURCE; IT WILL ALSO BRING A LONG TERM GROWTH TO THOSE COMMUNITIES AFFECTED AND WILL ALLOW THE TRANSPORTATION FIRM DOING BUSINESS IN ALASKA TO MAKE THE CAPITAL INVESTMENTS NECESSARY TO IMPROVE AND EXPAND THE TRANSPORTATION NETWORK THROUGHOUT THE PRINCE WILLIAM SOUND AREA.

TRANSPORTATION AND MATERIAL PACKAGING TECHNOLOGY HAS BEEN GREATLY EXPANDED WITH THE CONSTRUCTION OF THE PIPELINE. A GOOD PORTION OF THIS TECHNOLOGY CAN BE APPLIED TO THE SUPPORT TASK FOR OFF-SHORE DEVELOPMENT AND AT THE SAME TIME ENCOURAGE MORE FREQUENT AND COMPETITIVE SERVICE AT A POSSIBLY IMPROVED RATE STRUCTURE FOR THE LONG TERM BENEFIT OF THE COMMUNITIES AFFECTED.

THANK YOU.

4|12 (13)

U. S. DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGEMENT

PUBLIC HEARING

ON

PROPOSED LEASING IN THE GULF OF ALASKA

Anchorage, Alaska

August 12-13, 1975

Statement of

Charles H. Murphy

Chairman, Murphy Oil Corporation

Mr. Chairman, Gentlemen:

My name is Charles Murphy. I am Chairman of Murphy Oil Corporation, a medium-sized international integrated oil company which also owns controlling interest in the world's largest offshore contract drilling company. In my testimony I will address specifically the issues of separation of exploration from development and Federal exploration. This I attempt within the context of exploration and development of our nation's Outer Continental Shelf frontiers at large, drawing on our hard learnt lessons of twenty-two years, beginning in the shallow, near shore Gulf of Mexico and ranging on to the North Sea a hundred miles from land in 500 feet of water.

At the outset, in plain language, I feel compelled to assert that exploration and development are by their nature so overlapping as to be inseparable as a practical matter, and that a direct government role in exploration would retard development of our nation's resources when the public interest clearly requires acceleration.

Lately you have seen a welter of revised estimates of the amount of oil and gas recoverable from our frontiers. This is a lot of sound and fury signifying nothing. No one knows, or could possibly know, without extensive exploration, delineation drilling, and production tests whether we have some, much, or not any commercial reserves on our frontier continental shelves. What <u>is</u> known about them is that they are prospective. What must be learned,

and quickly, is whether they harbor some, much, or not any commercially producible reserves.

North Sea cost and operating experience matched with two of the best known producing trends of the U.S.A. will clear up the point. In May I was a member of a group of American environmentalists, government people, and oilmen inspecting North Sea development and its onshore impact. During a briefing, a cool British professional, with no axe to grind, explained that none of the finds of under 300 million barrels appeared possible of development without subsidy or a moratorium on taxes. In discussion another rose to say, "My esteemed colleague is out of date - the threshold is now 1 billion barrels."

Our central Gulf of Mexico shelf, which is in an advanced stage of exploration and development, has only six fields of more than 300 million barrels reserves. There are none of 1 billion barrels. The six total about 2.8 billion barrels. So, if Gulf of Alaska costs and operating conditions are similar to those of the North Sea but with reservoirs similar to the central Gulf, we might have reserves of, say, 3 billion barrels if the 300 million threshold is right, not any if at least 1 billion barrel traps are required to make the grade.

But we <u>think</u> the structures in the Gulf of Alaska are larger than in the Gulf of Mexico - we <u>hope</u> the pays are thicker. So let's turn to the several basins of Southern California, one of the world's most prolific producing provinces, square mile for square mile, and where, as in the Gulf of Mexico, age of the rocks is about the same as age of the prospective beds here.

In Southern California there are thirteen fields of over 300,000,000 barrels each, totaling 12.1 billion barrels; five of over 1 billion barrels, totaling 7.4 billion barrels. The producing province here could be twice the areal extent of that in Southern California. So if costs and operating conditions in the Gulf of Alaska are like those in the North Sea and the oil fields like those of Southern California, we would have reserves of around 24 billion barrels or 15 billion, as the case may be. In the one case productive capacity might be around 4.8 million barrels a day, in the other around 3.0 million barrels a day.

In short, there are many plausible cases ranging from no producible reserves at all up to 24 billion barrels. But, you may say, "There could be five Prudhoe Bays out here." Well, so there may - or ten for that matter - or, once again, none.

Objects of the exercise I've just been through are two. Firstly, our ignorance of resources on the frontier Outer Continental Shelf is such that a rational energy policy cannot evolve until hard information begins to be accumulated. Secondly, the environmental impact could be de minimis. Obviously, our energy problem is one thing if we do have vast oil and gas reserves on the OCS, quite another if they are insignificant. And just as clearly, all the debate about revenue sharing, state and local planning for onshore impact of offshore development, and the like, will have been an exercise in futility if, God help us, there is no oil, or only a little, there. And that, by the way, now seems the most likely case on Canada's Scotian shelf where five years ago the prospects were exciting.

So much for the background. Within it let's turn to separation of exploration and production and to a Federal role.

Exploration and development are, in reality, a single, integrated effort, in both physical and economic terms. One successful hole in a petroleum deposit does not - and cannot - provide information needed to determine how much oil or gas may be there, or the size and boundaries of the field. For example, every time a company listed on a stock exchange makes a discovery, it's required under SEC rules to announce it as "a material fact." Then the company invariably feels compelled to add the shopworn phrase: "Further drilling will be required to determine commercial significance of the find."

I am familiar with the Office of Technological Assessment's study on the subject of separation. I know some members of the Ad Hoc Task Force personally and all of them by reputation. I hold them all in high regard. When men of such professional standing and practical experience say, as they do (p. 4), "that development* begins after discovery...in commercial quantities," I conclude that they are not applying to the American frontier Outer Continental Shelves - the regions, after all, we are concerned with - experience accumulating in the most analogous region overseas - Scottish waters of the North Sea. In the same paragraph one finds the statement, "Production* of the oil...begins only after a reasonable estimate has been made of the approximate amount and potential flow rates* of the oil...found."

*Emphasis added.

Here, based on North Sea experience, one would have to substitute "development" for "production." The meaning, as you can see, is something entirely different. I can describe firsthand how it is working in a field operated by a group including my own company. About a year and a half ago the operators encountered pay, cored and logged the formation, and were confident of a discovery, but no tests were made owing to weather. A stepout well was then drilled three miles away. This time production casing was set and extensive flow tests were conducted. At that time a discovery had obviously been made but to this day, if asked by the Oil and Gas Journal for their statistical section, I could not say which well was the discovery. Over the next six months two stepout wells indicated that a large but indeterminate reserve had been found. At that stage serious preliminary planning started for development - the general route, but not diameter, of a pipeline; the type of permanent platforms, but not their location or number; inquiry, but not orders, for tubular and plate steel tonnage. A third long stepout indicated the probability but not the proof that the threshold reserve of 1 billion barrels was present. On such evidence, considering the overpowering importance of time, it was deemed a reasonable business risk to place firm orders for steel tonnage and to commit irrevocably for use of such equipment as pipeline lay barges and supporting vessels. That marked commencement of development. But was exploration over? Clearly not. Two widely spaced delineation wells were required to distinguish proven from probable reserves and to determine optimum location of the permanent platforms. So far we've seen seven wells -

one, or two, rank wildcats; two, or four, high risk stepouts; one, or three, delineation wells - the numbers in each case depending on one's point of view and personal definition of terms. All were without question exploratory wells to varying degrees. All were abandoned as sacrificial after they had yielded up their share of Mother Earth's secrets, the hallmark of an exploration hole. Yet six of the seven were extensively flow tested through production casing (necessary to assess producing capability of the reserve and thereby to determine diameter of the pipeline, amount of platform and shoreside storage, etc.), an operation usually thought of as the bridge between the development and production functions.

There is now a pause, or change of pace, but not a cessation, in the work program as laying the pipeline begins, specifications of the storage depot are prepared and construction commences on the permanent platforms. The mobile rig can be spared for a vital rank wildcat elsewhere. But exploration will resume concurrently with what will clearly be development drilling from fixed platforms as deeper formations remain to be explored and the field pay in a separate fault block must be tested.

Gentlemen, we are not at this hearing considering exploration and development as an abstraction. The subject is exploration and development in cold, deep, turbulent seas. I suggest that this case history of a field in the North Sea demonstrates that under operating conditions expected to prevail in the Gulf of Alaska and the North Atlantic OCS exploration, discovery, delineation, development, then more rank wildcatting, overlap so as to defy any precise distinction among them.

Now let us turn to a government role in exploration of the OCS. The question boils down to this: Who can locate and produce that oil and gas most effectively, at least cost and most benefit to the public - private industry or the Federal government? In a word, at the least cost to society?

I believe - measured by any truly objective standard - that private industry is in a far better position to achieve these goals than is government.

The case of a direct government role is based, among others, on,

1) getting fair value for the publicly-owned resource, and

2) enhancing competition in the petroleum industry.

Let's look at these. As to fair value, I would like to introduce some startling statistics. They answer the question of who really has been receiving the benefits of offshore operations in the United States.

During the 21-year history of Federal OCS lease sales, receipts from offshore operations have totaled $19.3 billion. Ninety-four percent of that money has gone to the Federal government in royalties, bonuses, and rentals. only six percent, $1.1 billion, has gone to the oil industry.

In addition to bonuses, rentals, and royalties, exploration, development, and production costs to the companies so far are an estimated $9.7 billion.

In other words, the oil companies to date have spent $8.5 billion more than they have received - cash in versus cash out. To be sure, there is capital value in the remaining reserves and speculative value in the blocks not yet tested, and I do not imply that companies do not ultimately hope OCS operations will be profitable. My purpose is simply to point out that, to date,

such operations have not been the bonanza or "giant giveaway" that has sometimes been depicted. My intuition is that the ultimate aggregate rate of return on all OCS blocks leased to date will be less than the yield on electric utility bonds.

The point can be made another way. From September 1972 through May 1974, the aggregate high bids at OCS sales were $8.9 billion. The aggregate runnerup bids were $5.0 billion. The $3.9 billion left on the table is equivalent to 40 percent of the total profits during 1973 of the 25 largest oil companies.

Last year alone companies paid bonuses and first-year rentals of more than $5 billion. From 1954 through last year the total in bonuses and first-year rentals exceeded $14 billion - just for the <u>right</u> to look for oil and gas and to develop any found. No guarantee for the exploring companies - no risk to the taxpayers. Now it might be said that the government would not have had to pay itself the bonuses and that would be literally true. But in economics cost of an opportunity foregone is just as real as cash on the barrel head.

Would a government search, followed by sale of prospects after oil had been indicated on them, enhance competition by relieving independents of the rank wildcat risk? It sounds like a good idea, but like so many being put forward these days, I suspect it would have the opposite of the desired effect.

First, let's approach the subject on the basis of pure reason. Introduction of this new player in the game - big, rich, notoriously callous toward large expenditures, would have the effect of weakening all other competitors. By definition, almost, the small and weak would be driven from the field first. In the words of an old Slavic proverb, "By the time the fat become lean, the lean are dead." That's not the intent of the proponents of government exploration, yet a plausible outcome is concentration in the hands of a few large companies and the Federal government.

Moving on to the practical, while there are seven or so giant firms in our business, there are many more of medium size and smaller companies - of which my own is one - ranging down to the individual proprietor. While I have personally witnessed plenty of bare knuckle competition among the giants, we like to think that much of the competitive balance in our business is supplied by these medium-size and smaller companies.

Let's refresh our memories of how they operate. An independent wildcatter - the fellow who in myth, but not in fact, finds most of the oil - typically is a seller, not a buyer, of properties at the very stage leases would be auctioned under the proposed system. He takes the risk, licks his wounds if the well is dry, and cashes in if he hits it big, leaving to the majors problems of financing development, the headaches of reservoir studies, and the tedium of keeping lifting cost down, so as to free himself to go out and try it again.

Now for the medium-size companies - I hope you would accept my company as Exhibit "A" for this purpose. We consistently buy leases at every stage - from dollar an acre trend plays, through (with partners) $80 million for a prime OCS wildcat block, on to fully developed producing properties. The stage at which we do least well is bidding for semiproven or proven undeveloped reserves. Some years ago we avidly wanted the City of Wilmington's proven acreage in the Wilmington field, and we weren't even in the running. Throughout the 1950's and 60's we were consistent bidders for Crown reserves in Canada. We got our share out of sheer doggedness, but I am here to tell you it was hard slogging. In the early 50's there was a fair amount of open land in the Scurry County Reef field, and we didn't get an acre.

In short, based on abstract reasoning and application of accumulated practical experience to the proposal that government explore, then auction leases on the OCS, I think competition more likely to be lessened than enhanced.

Now I should like to turn to general, yet compelling, objections to direct exploration by the Federal government. Firstly, the inevitable delay that would be a consequence of mobilizing for a task industry is already organized and equipped to accomplish. Secondly, the probability that of the oil there, whatever it is, much would remain undiscovered.

The effect of delay would be a heavy burden on consumers, taxpayers, and workers - in a word, the nation as a whole. Let's examine that question.

For a number of years, this country has consumed more oil and gas than it has been finding. But this has not always been the case. Until 1967, the oil component of our energy mix was delivered, as it were, first in a large stream from the interior of the lower-48 states; second, in a smaller stream from abroad; and, third, in a growing rivulet from our Outer Continental Shelf.

Not only was the first of these the largest, it also stemmed from a resource base sufficiently developed to provide backup capacity, should either the import stream be curtailed by the actions of other countries, or the development of our frontier resources be delayed by impediments of our own government. This was the optimum posture.

Unfortunately, strictures of both kinds did, in fact, occur:

..In 1967, the Six Day War closed the Suez Canal;

..In 1969, a moratorium was placed on drilling and production in the Santa Barbara Channel, following the oil spill there;

..From early 1970 through mid-November 1973, development of Alaska's North Slope was suspended because of the postponement of the trans-Alaska pipeline - and oil, which could have been flowing to U.S. consumers during the Arab embargo, is still underground at Prudhoe Bay;

..In the early 1970's, a number of scheduled lease sales were postponed, following two offshore accidents, although neither accident more than temporarily affected the environment; and

..The Yom Kippur War - and the subsequent Arab oil embargo of Winter 1973-74 - seriously affected the availability of fuel in the United States.

These events - plus the discouraging effects that price controls and added tax burdens have had on the incentive to find new oil and natural gas

deposits - have combined to erode our spare productive capacity. Today, that backup capacity is gone.

Consider in retrospect, for example, what the result would have been had we had one million barrels per day of Alaskan oil flowing to the lower-48 states, when the Arab embargo was imposed. Would the OPEC cartel then have been as successful as they were in raising prices? I don't pretend to know the precise answer, but I firmly believe we could have resisted - and forestalled - at least some of the price increase.

I mention this to emphasize that delay is not without cost. It has a price, and this nation is now paying it. You can be sure the OPEC cartel is carefully watching our actions for evidence of further delay, which will permit them to continue collecting their present - or a higher - price.

As I stated earlier, our backup productive capacity is gone. We find that production from the maturely developed lower-48, onshore portion of our resource base is actually declining at a rate of about one-half million barrels per day per year. Delays in turning around the decline in domestic production threaten to retard recovery from the recession, as energy shortages cause some factories to close, and others to curtail production.

This has already occurred in the case of natural gas. It could occur in other fuels, if delays further widen the breach between domestic supply and demand. Imports may not be available to fill the gap.

Let me interject here one thought that might be helpful to you in your deliberations. We are currently getting about 17 percent of all the oil and

natural gas produced in this country from wells in the Gulf of Mexico. Seventeen percent.

Now, let's look at what that production means in terms of the consumer and worker on the East Coast, for example. And I'm talking about averages. Obviously, no one can account for each barrel of oil or cubic foot of natural gas in the vast delivery mix of our national supply system. But, on the average, one out of every six gallons of gasoline, and one out of every three cubic feet of natural gas, consumed on the East Coast today, originated in a well offshore Louisiana or Texas.

My point is this, gentlemen. Much of the area already leased in the Gulf of Mexico has been explored, developed and placed in production. And, despite continuing efforts to find new petroleum deposits there, production in many of the tracts has matured, and is declining. And I ask: Where - aside from increased imports - will the oil and gas come from, if we don't get on with the job of exploring the frontier areas of the OCS and Alaska?

Finally, the risk of leaving much oil undiscovered arises from premature condemnation of prospects and entire trends in a government exploration program. To be sure, governments elsewhere do explore for oil as monopoly. Aside from the outright totalitarian states, Mexico and Brazil do it that way. Others, notably Italy and France, have a mixture with government predominating. In Canada there is an admixture with private industry predominating.

I am familiar with all of those. And I believe any objective observer will certify that none can approach, much less rival, the American way. I did

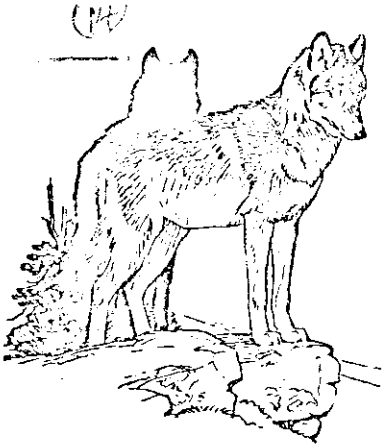
not coin the phrase (but I wish I had) "oil is found in the minds of men." The drill only confirms the correctness, or reveals the errors, of the mind's ideas. The more "ideas," the greater the chance for discovery.

Our form of government, responsible through both a legislature and an executive to its people, is just not organized to apply multiple working hypotheses to locate oil and gas in subtly expressed geologic situations. An industry composed of many different companies, and many different experienced teams to gather and analyze data, is equipped for such ventures.

To turn over this effort, even in limited areas, to government would be the same as asking one company (with plenty of money and no experience) to do the job. I am not among those who make sport of criticizing our government. I revere our system and I hold in admiration many public servants - career and elected. But it stubs its toe every time it departs from its proper function, which is to govern. The combination of law and regulations which led to the fiasco in catalytic mufflers on 1975 autos bears eloquent witness. Not to speak of running passenger trains, or even delivering the mail.

By your leave I close on a personal note. If Professor Schumpeter was right when he said - in his monumental work, "Capitalism, Socialism and Democracy" - that capitalism will inevitably give way to socialism, I am one free enterpriser who will not sulk in his tent. I will cheerfully do my level best, no matter what the system. But the wherewithal to do the job today - right now - is in the private sector. I believe that I can conscientiously say, even were I philosophically persuaded that the government should

accelerate its intrusion into business, it should not, as a purely practical matter, do so on the Outer Continental Shelf in the 1970's.



Alaska Conservation Society

Incorporated in 1960

Box 80192 College, Alaska 99701

TESTIMONY FOR THE HEARINGS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT ON OUTER CONTINENTAL SHELF PROPOSED OIL AND GAS LEASING IN THE NORTHERN GULF OF ALASKA (SALE #39) PREPARED BY THE BUREAU OF LAND MANAGEMENT ALASKA OUTER CONTINENTAL SHELF OFFICE, ANCHORAGE, ALASKA ON TUESDAY AUGUST 12, 1975

My name is Virginia dal Piaz. I am representing the Alaska Conservation Society. This organization was incorporated in 1960 and is the largest Alaskan conservation group with a membership of about one thousand.

We note that the description of the proposed action is described in the "would" and "could" tenses on the first three pages. From page six on, the premise of "will" and "shall" is made. This, and inumerable other phraseology, indicates that an administrative decision has already been made to definitely hold the proposed lease sale, that this was communicated effectively to the environmental impact statement writing team and that the government views the draft environmental impact statement as a "pro-forma" legal exercise. We know only too well how hard it is to teach old dogs new tricks, nevertheless, environmental assessments are not to be treated as project proposals nor the scene of biases toward these proposals.

The estimate of the recoverable oil resources used the USGS resource statistics incorrectly. All calculations for planning use the 2.8 billion barrel figure which has a five percent probability, or as we must point out, a 95 percent IMPROBABILITY. At this stage of the game, the 50-50 probability should be used, and that is slightly less than 1.0 billion barrels of petroleum. This is such a simple statistical fact that we can only assume a deliberate attempt to mislead the public.

No mention was made that today's technology results in extracting only 32% of the petroleum in any geologic trap. Thus the amount of recoverable oil statistics could be aided much more by advancing the recovery technology and holding off until that technology is available.

The description of the physical and biological environment was done very well and with excellent documentation. However, the discussion of the social and cultural impacts particularly the continual inuendos that increased traffic, trade and industry along the coast would be of overall benefit to the people and cultures of the area is misleading. People live there primarily BECAUSE OF the lack of these things. Their culture can exist ONLY in the absence of traffic and industry which has become so typical of the American scene.

The treatment of the estimated impact of this Outer Continental Shelf lease sale is alarmingly naive and understated. It is stated that the TOTAL area impacted by on shore loading, storage and treatment facilities at Cordova, Yakutat, Yakutaga and elsewhere would be 760 acres (1.2 square miles). The LNG plant would require 120 acres and pipelines would require only 175 acres. Once before, we listened to the same sort of phoney statistics from Alyeska and the oil industry. They told us that impacts of an oil pipeline would be limited to a narrow strip of land representing a fraction of 1% of the land area of the state. Today we see the unfavorable social, economic and environmental effects THROUGHOUT the state.

The section on probabilities for oil spills is likewise inadequate. The statistics from the Gulf of Mexico were used for extrapolation to the Gulf of Alaska. In no way could operation in Alaska be safe from failure as in the Carribean. The geologic hazards are similar to the California coast at Santa Barbara and we are all aware of the severe problems there. Earthquakes are severe and frequent. Hurricane force storms occur along with freezing conditions. Ten Alaskan Brown bears loose in this hearing room would be easier to deal with than some of the conditions to be encountered during any oil production in the Gulf of Alaska.

Risks along the Pacific shores are much greater than are predicted based on many of the world-wide average figures used in the Draft Environmental Impact Statement.

Even if the amount of oil spilled were not underestimated, the ratio of oil spilled to recoverable oil would be unacceptably high. Such an analysis of this ratio was only begun in the draft environmental impact statement before us. That job must be completed.

As we are becoming more and more aware, low level chronic oil spillage from day to day operation may pose as much or more of a threat to ecosystems as more spectacular large scale spills. We cannot just write off the possibility of long term damage to ecosystems in the area as "acceptable risk".

In addition we are appalled that there is little or no discussion of the cumulative effects of oil pollution from sources outside the Outer Continental Shelf lease program on the area.

We can only ask: Isn't there a strong possibility or likelihood of pollution from shipping activities between Valdez and the northwestern United States once tanker traffic starts?...Or can that all be ignored because all those other environmental impact statements are now filed away "out of sight, out of mind"? Although someone might judge the effects of spills from one project to be acceptable surely no one is so naive as to think that when several projects are simultaneously adding to the problem there is not an increased danger of eventually adding the proverbial "straw that breaks the camels back". If dangers of "chronic pollution" aren't bad enough, we can only wonder at what point the combined contamination ceases to be chronic and becomes acute.

The section on irretreivable committment of mineral resoucres is totally inadequate in that the basic assumption has been made that "it takes no resources to extract, process and deliver petroleum." Perhaps as with other poorly thought-out energy schemes this project will also yield less energy or only insignificantly more than the total of mineral energy resources used in the process. Land loses are grossly underestimated.

The Council on Environmental Quality assessment was that the Gulf of Alaska is an area of highest risk for outer continental shelf petroleum extraction. It is an area of rich biological productivity, as has been well documented. It is an area particularly ill prepared for the cultural and economic impacts. We can therefore only conclude that the proposed action with its proposed timing is being pushed for reasons of presumed political expediency.

No environmental impact statement can be acceptable unless it weighs all these factors for each outer continental shelf area and comes to a logical and rational conclusion as to how to proceed. We find this process entirely lacking.

We can only join with the Governor of this state, many members of Congress and a vast body of the public in urging delay and reconsideration by the Department of Interior.

If this is not done, citizens may be forced to seek help through both legislative and judicial processes.

An alternative action proposed is Energy Conservation. It is stated: "In the short term (we would add also in the long term) ENERGY CONSERVATION OFFERS THE ONLY OPTION FOR MATCHING ENERGY REQUIREMENTS TO AVAILABLE SUPPLY. THE GOALS OF NATIONAL SELF-SUFFICIENCY AND CONSERVATION OF NATURAL RESOURCES ARE BEST ACHIEVED THROUGH ENERGY CONSERVATION." (Page 753). This is an admirably concise way of saying it, so then, lets not just pay lip service, lets do it!

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OUTER CONTINENTAL SHELF HEARINGS

ANCHORAGE, ALASKA

AUGUST 12, 1975

STATEMENT BY

CHARLES R. WEBBER

MY NAME IS CHARLES R. WEBBER AND I REPRESENT LIQUID AIR INCORPORATED IN THE STATE OF ALASKA. I HAVE BEEN A RESIDENT OF THIS STATE FOR 21 YEARS, DURING WHICH TIME I HAVE SERVED ACTIVELY ON BOARDS AND COMMITTES DEALING WITH PETROLEUM AND PIPELINE PROJECTS.

LIQUID AIR IS A MANUFACTURER OF INDUSTRIAL AND MEDICAL GASES AND MAINTAINS MANUFACTURING FACILITIES IN ALASKA WHERE IT SERVES AS A SUPPLIER TO INDUSTRIAL CUSTOMERS. AS A MANUFACTURER IT IS ONE OF THE FEW TRULY INDUSTRIAL MANUFACTURING OPERATIONS IN THE STATE. IN FACT, THE PERFORMANCE REPORT OF THE ALASKAN ECONOMY, PRODUCED BY THE STATES DIVISION OF ECONOMIC ENTERPRISE DOES NOT INCLUDE A SEPARATE INDUSTRIAL MANUFACTURING CATAGORY. THE ONLY MAJOR CONSUMER PRODUCT PRODUCTION, OUTSIDE OF THE NORTH KENAI REFINING/PETROCHEMICAL COMPLEX, IS LIMITED TO THE FISHERIES, AND TO A LESSER EXTENT WOOD PRODUCTS.

ALASKA MUST BROADEN ITS ECONOMIC BASE TO ASSURE ITS ECONOMIC VIABILITY IN THE FUTURE. THE OIL INDUSTRY OPERATING IN THE GULF OF ALASKA HAS THE OPPORTUNITY TO ASSIST IN THIS THROUGH THE AVAILABILITY OF ENERGY AND THROUGH THE CONVENIENCE OF TRANSPORTATION. THERE IS THE OPPORTUNITY FOR BUSINESS GROWTH DURING THE INSTALLATION OF PRODUCTION FACILITIES IN THE GULF AND THE POSSIBILITY OF CONVERSION INDUSTRIES FOR THE PRODUCTS DISCOVERED.

IN THE CASE OF ANY NATURAL GAS THAT IS DISCOVERED THERE WOULD BE A REQUIREMENT FOR LIQUIFICATION AND THE POSSIBILITY OF SECOND AND THIRD STAGE CONVERSION TO PETROCHEMICALS. CONVERSION PLANTS AND THEIR ASSOCIATED GATHERING SYSTEMS CAN PRODUCE SUBSTANTIAL PROPERTY TAX REVENUE UPON THEIR COMPLETION. THIS REVENUE CAN BE DERIVED FROM AN INDUSTRY THAT RANKS LOW IN TERMS OF SOCIAL AND ENVIRONMENTAL IMPACT AND HIGH IN CAPITAL INVESTMENT.

OUR COMPANY HAS HAD AN OPPORTUNITY TO WORK WITH THE PETROLEUM INDUSTRY IN MOST PLACES OF THEIR OPERATION IN ALASKA AND IT HAS GIVEN ME AN OPPORTUNITY TO SEE FIRST HAND THE CONCERN THE INDUSTRY HAS FOR THE ENVIRONMENT. THE INDUSTRY SHOULD BE HIGHLY COMPLIMENTED ON THE RESOURCES, PEOPLE AND TECHNICAL SKILL THEY HAVE PUT INTO THE FIELD IN THEIR EFFORTS IN ALASKA. THE PETROLEUM INDUSTRY HAS CAREFULLY ASSISTED IN MATTERS CONCERNING ENVIRONMENTAL, SOCIAL, AND ECONOMIC IMPACT AND HAS BEEN A RESPONSIBLE PARTNER WITH ALASKA IN THE ALASKAN OPERATIONS.

AT A TIME WHEN THIS NATION IS IN SUCH DIRE NEED OF "HOME" PRODUCED ENERGY IT WOULD SEEM INAPPROPRIATE TO NOT GIVE THE INDUSTRY CREDIT FOR ITS ACCOMPLISHMENTS IN OUR STATE AND PERMIT THEM TO CONTINUE TO MEET THE CHALLENGE OF ENERGY PRODUCTION IN THE GULF OF ALASKA. THE PETROLEUM INDUSTRY CAN DRAW ON 18 YEARS OF SUCCESSFUL EXPERIENCE IN OFF SHORE DRILLING IN THE GULF OF MEXICO AND MORE RECENT SUCCESSES IN THE SEVERE ENVIRONMENTAL

CHALLENGES OF THE NORTH SEA. THE INDUSTRY HAS THE CAPABILITY TO MEET THE CHALLENGE AND MUST NOT BE DISUADED BY THOSE WHO SUGGEST A THOUSAND REASONS WHY IT CAN'T OR SHOULDN'T BE DONE.

IT MIGHT BE WELL TO POINT OUT THAT ALASKA IN DEALING WITH THE OFF SHORE DRILLING IN THE GULF OF ALASKA WILL BE REQUIRED TO DEAL WITH PROBLEMS THAT MAY TEND TO REPEAT THEMSELVES AS OTHER RESOURCE POSSIBILITIES ARE IDENTIFIED. THE SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACT ISSUES WILL MOST CERTAINLY NEED TO BE RESOLVED AT EACH NEW SIZABLE PROJECT AND IT IS THIS CHALLENGE THAT FACES US HERE. A RELUCTANCE TO DRIVE FORWARD AND FIND THE SOLUTIONS REQUIRED ONLY LESSENS THE RATE AT WHICH THE ENERGY NEEDS OF OUR COUNTRY CAN BE MET.

A DELAY IN SUPPLYING ENERGY TO OUR COUNTRY CAN CONTRIBUTE ECONOMIC DEPRESSION AT A TIME WHEN THE NATIONAL VITALITY IS MOST IMPORTANT. THERE IS GENERAL AGREEMENT THAT AMERICA WILL BE DEPENDANT ON OIL AND GAS AS A PRIMARY ENERGY SOURCE FOR AT LEAST TWENTY YEARS.

OUR COUNTRY IS FACING CHALLENGES ON THE ECONOMIC FRONT THAT RELATE TO THE GULF OF ALASKA DRILLING. IF THERE IS PRODUCTION IN THE GULF IT IS APPARANT THAT EACH BARREL PRODUCED THERE WILL LESSEN EQUIVALENTLY THE NEED FOR IMPORTED OIL AND THEREBY ASSIST THE BALANCE OF PAYMENTS SITUATION BY COUNTERING THE OUTFLOW OF U.S. DOLLARS THAT ARE SO GREATLY NEEDED TO SUPPORT OUR ECONOMY. AS OIL

PRICES RISE THE VALUE OF U.S. PRODUCED OIL RISES COMMENSURATELY AND WE ARE SEEING SOME SHARP INCREASES IN OIL PRICES.

PRODUCTION FROM THE GULF OF ALASKA WILL ALSO SERVE TO STRENGTHEN THE DEFENSE POSITION OF OUR COUNTRY FOR IT IS CONCEIVABLE THAT INTERRUPTION OF THE IMPORT SUPPLY LINE COULD ALTER THE COUNTRIES ABILITY TO RESPOND MILITARILY SHOULD THERE BE A NEED.

IN LIGHT OF THE FOREGOING, AND WITH CONSIDERATION OF REASONABLE ENVIRONMENTAL SAFE GUARDS, THE COMMITTEE IS URGED TO PROCEED WITH THE NECESSARY STEPS TO INSURE THAT A LEASE SALE IN THE NORTHERN GULF OF ALASKA BE HELD AT THE EARLIEST POSSIBLE TIME.

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DEPARTMENT OF THE INTERIOR - BUREAU OF LAND MANAGEMENT

HEARING ON PROPOSED LEASING
NORTHERN GULF OF ALASKA

AUGUST 12-13, 1975 - ANCHORAGE, ALASKA

STATEMENT OF WILLIAM M. MEYERS

I AM WILLIAM M. MEYERS OF THE LAW FIRM OF LISKOW & LEWIS OF NEW ORLEANS, LOUISIANA. I AM APPEARING HERE TODAY AS ATTORNEY FOR THE GULF OF ALASKA OPERATORS COMMITTEE. AS WILL BE EXPLAINED LATER, THE GULF OF ALASKA OPERATORS COMMITTEE IS COMPRISED OF 28 MEMBER COMPANIES.

THE COMMITTEE HAS REQUESTED AND OBTAINED PERMISSION TO MAKE A MULTI-WITNESS PRESENTATION. THIS WAS DONE FOR TWO REASONS. FIRST, WE BELIEVE THAT A COORDINATED PRESENTATION OF THIS TYPE ON BEHALF OF THE OFFSHORE INDUSTRY WILL BETTER COVER THE PERTINENT ISSUES INVOLVED IN THIS HEARING THAN WOULD A SERIES OF SEPARATE STATEMENTS FROM THE MEMBER COMPANIES WHICH WOULD BE LARGELY REPETITIVE. SECOND, WE BELIEVE THAT CONSIDERABLE TIME WILL BE SAVED IN MAKING THIS INDUSTRY PRESENTATION SINCE A GREAT MAJORITY OF THE MEMBERS OF THE GULF OF

ALASKA OPERATORS COMMITTEE WILL NOW CONTENT THEMSELVES WITH FILING WRITTEN STATEMENTS.

OUR WITNESSES WILL COVER THE MANY IMPORTANT ISSUES RELATING TO THE EXPLORATION AND DEVELOPMENT OF THE PETROLEUM POTENTIAL OF THE GULF OF ALASKA. WE WILL DISCUSS THE NEED FOR THE OIL AND GAS RESOURCES OF THE GULF, THE PHYSICAL OCEANOGRAPHY, THE GEOLOGY, THE TECHNOLOGY, THE SOCIO-ECONOMIC IMPACTS, AND THE ENVIRONMENTAL EFFECTS. CERTAINLY, IN EVALUATING THIS TESTIMONY IT IS NECESSARY TO EXAMINE THE PARTICULAR BACKGROUND AND QUALIFICATIONS OF EACH WITNESS. WE SUBMIT THAT EACH OF OUR WITNESSES IS AN ESTABLISHED EXPERT IN HIS FIELD. EACH IS WELL-EQUIPPED BY EDUCATION, TRAINING AND EXPERIENCE TO ADDRESS THE SUBJECT WHICH HE HAS BEEN ASSIGNED IN A RESPONSIBLE AND OBJECTIVE MANNER.

OUR WITNESSES WILL BE PRESENTED IN SEVERAL PANELS. THE FIRST PANEL CONSISTS OF DR. HOWARD A. SLACK, VICE PRESIDENT, ATLANTIC RICHFIELD COMPANY AND CHAIRMAN OF THE GULF OF ALASKA OPERATORS COMMITTEE, AND MR. JOHN A. SILCOX, VICE PRESIDENT AND GENERAL MANAGER, EXPLORATION

DEPARTMENT, WESTERN OPERATIONS, INC., STANDARD OIL COMPANY OF CALIFORNIA.

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I NOW PRESENT DR. SLACK WHO WILL DISCUSS THE PURPOSES OF THE GULF OF ALASKA OPERATORS COMMITTEE AND THE VARIOUS ENVIRONMENTAL STUDIES WHICH HAVE BEEN CONDUCTED BY THE COMMITTEE AND CERTAIN OF ITS MEMBER COMPANIES.

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OUR NEXT WITNESS, MR JOHN SILCOX, WILL COMMENT ON THE REPORT RENDERED BY THE COUNCIL ON ENVIRONMENTAL QUALITY ENTITLED "OCS OIL AND GAS - AN ENVIRONMENTAL ASSESSMENT".

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MR. SHERMAN H. CLARK IS OUR NEXT WITNESS AND WILL DISCUSS "THE NEED FOR PETROLEUM SUPPLY FROM THE GULF OF ALASKA".

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THE NEXT PANEL WILL DEAL WITH THE PHYSICAL OCEANOGRAPHY AND OCEAN GEOLOGY OF THE GULF OF ALASKA. THE WITNESSES ARE:

1. MR. PAUL HORRER WHOSE SUBJECT IS THE PHYSICAL MARINE ENVIRONMENT OF THE GULF OF ALASKA.

2. MR. JOHN MCKEEVER WHO WILL DISCUSS SEAFLOOR SEDIMENTS AND CHARACTERISTICS, AND INDUSTRY SURVEYS OF BOTTOM CONDITIONS.

3. MR. H. J. FITZGEORGE WHO WILL TESTIFY AS TO THE OIL AND GAS POTENTIAL OF THE AREA UNDER CONSIDERATION.

4. DR. JOHN H. WIGGINS WHO WILL DISCUSS THE "PROBABILISTIC RESPONSE OF OFFSHORE PLATFORMS TO SEISMIC EXCITATIONS IN THE GULF OF ALASKA".

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THIS IS A CONTINUATION OF THE TESTIMONY ON BEHALF OF THE GULF OF ALASKA OPERATORS COMMITTEE.

OUR NEXT PANEL WILL COMMENT ON TECHNOLOGY FOR OCS DEVELOPMENT. THE WITNESSES ARE:

1. MR. L. E. WILSON WHO WILL SPEAK ON EXPLORATORY DRILLING OPERATIONS, WITH EMPHASIS ON THE NORTH SEA EXPERIENCE.

2. DR. KENNETH BLENKARN WHO WILL DISCUSS DEVELOPMENT AND PRODUCTION, PIPELINES, AND DESIGN OF STRUCTURES TO WITHSTAND WAVE AND SEISMIC FORCES.

3. MR. A. D. MOOKHOEK WHOSE SUBJECT IS TRANSPORTATION AND TERMINALS.

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THIS CONCLUDES THE PRESENTATION OF THE GULF OF ALASKA OPERATORS COMMITTEE SCHEDULED FOR TODAY.

WEDNESDAY, AUGUST 12, 1975

THIS IS A CONTINUATION OF THE PRESENTATION OF THE GULF OF ALASKA OPERATORS COMMITTEE.

OUR FIRST WITNESS TODAY WILL BE MR. GUENTER M. CONRADUS WHO WILL REPORT ON THE STUDY MADE ON THE ECONOMIC AND SOCIAL IMPACT OF OIL RELATED ACTIVITIES IN THE GULF OF ALASKA.

THE NEXT PANEL OF WITNESSES WILL DISCUSS THE ENVIRONMENTAL EFFECTS OF OFFSHORE DEVELOPMENT.

1. MR. JOE TYSON WILL REPORT ON THE GULF UNIVERSITIES RESEARCH CONSORTIUM OFFSHORE ECOLOGY INVESTIGATION.

2. MR. WILLIAM F. GUSEY WILL COMMENT ON THE IMPACT OF THE PROPOSED OFFSHORE LEASING ON FISH AND WILDLIFE.

OUR LAST GROUP OF WITNESSES WILL DISCUSS OIL AND THE MARINE ENVIRONMENT.

1. DR. CLAYTON D. MCAULIFFE WILL DISCUSS THE FATE AND MOVEMENT OF OIL SPILLS.

2. DR. DALE STRAUGHAN WILL COMMENT ON THE ENVIRONMENTAL EFFECTS OF OIL SPILLS, PARTICULARLY RELATED TO THE SANTA BARBARA INCIDENT.

3. MR. E. W. MERTENS WILL REPORT ON THE RESEARCH PROGRAM CONDUCTED BY THE AMERICAN PETROLEUM INSTITUTE'S COMMITTEE ON THE FATE AND EFFECTS OF OIL IN THE MARINE ENVIRONMENT.

4. DR. A. H. LASDAY WILL DISCUSS CERTAIN AREAS OF THE DRAFT ENVIRONMENTAL IMPACT STATEMENT RELATING TO THE EFFECTS ON THE ENVIRONMENT OF CRUDE OIL AND OF OIL AND GAS DRILLING AND PRODUCTION RELATED FLUIDS.

5. MR. JESSE P. JOHNSON WILL DISCUSS OIL SPILL CONTINGENCY PLANNING.

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THIS CONCLUDES THE TESTIMONY ON BEHALF OF THE GULF OF ALASKA OPERATORS COMMITTEE.

(17)

STATEMENT OF

HOWARD A. SLACK
ATLANTIC RICHFIELD COMPANY

CHAIRMAN, GULF OF ALASKA OPERATORS' COMMITTEE

before the

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

HEARING

on

PROPOSED OIL AND GAS LEASING

on the

OUTER CONTINENTAL SHELF

NORTHERN GULF OF ALASKA

ANCHORAGE, ALASKA

AUGUST 12-13, 1975

GULF OF ALASKA OPERATORS COMMITTEE

STATEMENT OF HOWARD A. SLACK, ATLANTIC RICHFIELD COMPANY

OFFSHORE SALE ENVIRONMENTAL HEARING

ANCHORAGE, ALASKA

AUGUST 12-13, 1975

GOOD MORNING. MY NAME IS HOWARD A. SLACK. BY EDUCATION, I AM A PHD IN ENGINEERING PHYSICS. I AM A MEMBER OF THE SOCIETY OF EXPLORATION GEOPHYSICISTS, THE AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, AND A MEMBER OF THE BOARD OF DIRECTORS OF THE ALASKA STATE CHAMBER OF COMMERCE. I AM VICE PRESIDENT AND RESIDENT MANAGER FOR ATLANTIC RICHFIELD COMPANY IN ALASKA. MY AREA OF RESPONSIBILITY IS ALL MY COMPANY'S EXPLORATION AND PRODUCTION ACTIVITIES IN AND ADJACENT TO THE STATE OF ALASKA, INCLUDING THE OUTER CONTINENTAL SHELF. THE LATTER REPRESENTS APPROXIMATELY 383 MILLION ACRES OR ABOUT 66-2/3 % OF THE TOTAL UNITED STATES CONTINENTAL SHELF.

I AM APPEARING TODAY IN THE CAPACITY OF CHAIRMAN OF THE GULF OF ALASKA OPERATORS COMMITTEE, WHOSE MEMBERSHIP CONSISTS OF 28 COMPANIES. THESE COMPANIES ARE:

AMERICAN INDEPENDENT OIL CO., INC.
AMERICAN PETROFINA OIL COMPANY
AMOCO PRODUCTION COMPANY
ATLANTIC RICHFIELD COMPANY
ASHLAND OIL, INC.
BP ALASKA INC.
CHAMPLIN PETROLEUM COMPANY
CITIES SERVICE OIL COMPANY

CLINTON OIL COMPANY
CONTINENTAL OIL COMPANY
EXXON COMPANY, U.S.A.
GULF OIL COMPANY, U.S.
MARATHON OIL COMPANY
DEPCO, INC.
MOBIL OIL CORPORATION
MURPHY OIL CORPORATION
NATIONAL COOPERATIVE REFINERY
PANCANADIAN PETROLEUM COMPANY
PENNZOIL COMPANY
PHILLIPS PETROLEUM COMPANY
PLACID OIL COMPANY
SHELL OIL COMPANY
SKELLY OIL COMPANY
STANDARD OIL COMPANY OF CALIFORNIA
SUN OIL COMPANY
TENNECO OIL COMPANY
TEXACO, INC.
UNION OIL COMPANY OF CALIFORNIA

THE GULF OF ALASKA OPERATORS COMMITTEE WAS ORGANIZED IN NOVEMBER OF 1971 TO DEVELOP AN ASSESSMENT OF THE IMPACT OF OIL EXPLORATION AND DEVELOPMENT ON THE ENVIRONMENT OF THE GULF OF ALASKA AND TO PREPARE AND COORDINATE THE PRESENTATION OF TESTIMONY AT THE ENVIRONMENTAL HEARING FOR THAT AREA.

THE COMMITTEE ACCOMPLISHES ITS TASK THROUGH A NUMBER OF WORKING SUBCOMMITTEES. THESE SUBCOMMITTEES ARE:

ENERGY DEMAND
ENVIRONMENTAL AND BIOLOGY
GEOLOGY AND GEOPHYSICS
OIL SPILL PREVENTION
DRILLING AND PRODUCTION
MARINE TERMINALS AND TRANSPORTATION
ADMINISTRATION AND COMMUNICATIONS
PUBLIC, BUSINESS AND GOVERNMENT RELATIONS
SPECIAL PROJECTS

AND EACH IS EMPOWERED TO DEAL WITH THOSE PROBLEMS, RESEARCH AND STUDY RELATED TO ITS PARTICULAR INTERESTS. A SMALL EXECUTIVE COMMITTEE MEETS MORE FREQUENTLY THAN THE ENTIRE COMMITTEE TO COORDINATE THE EFFORTS OF THE GROUP. THE OFFICERS, THE EXECUTIVE COMMITTEE, AND THE SUBCOMMITTEE CHAIRMEN COMPRISE THE COORDINATING COMMITTEE.

THE OIL INDUSTRY HAS BEEN INTERESTED IN THE GULF OF ALASKA OCS FOR MANY YEARS, BECAUSE OF THE BELIEF THAT THIS AREA HOLDS PROSPECTS FOR MAJOR DISCOVERIES WHICH CAN SIGNIFICANTLY AID OUR COUNTRY'S GOAL OF REASONABLE ENERGY SELF-SUFFICIENCY. IN ANTICIPATION OF LEASING IN THIS REGION, THE INDUSTRY LONG AGO COMMENCED ONE OF THE MOST EXTENSIVE PROGRAMS OF ENVIRONMENTAL STUDY EVER ATTEMPTED. LET'S TAKE A LOOK AT SOME OF THE MORE SIGNIFICANT ACTIVITIES UNDERTAKEN BY THE GULF OF ALASKA OPERATORS COMMITTEE RELATIVE TO THE GULF OF ALASKA.

1. GROUP OCEANOGRAPHIC SURVEY: THIS SURVEY, UNDERTAKEN IN 1968, WAS ORGANIZED SOME TWO FULL YEARS PRIOR TO PASSAGE OF THE NATIONAL ENVIRONMENTAL POLICY ACT OF 1969. IT WAS DESIGNED TO ESTABLISH THE FULL RANGE OF PHYSICAL ENVIRONMENTAL CONDITIONS SO AS TO ASCERTAIN THEIR EFFECT ON PETROLEUM EXPLORATION, PRODUCTION, AND TRANSPORT. THIS RESPONSIBLE EFFORT RESULTED FROM THE STRONG DESIRE OF THE PARTICIPANTS TO DETERMINE WHETHER OPERATIONS COULD BE SAFELY AND ECONOMICALLY CONDUCTED IN THIS AREA. HISTORICAL DATA OF RECORD WAS COMPILED AND AN IN-OCEAN DATA BUOY WAS ACTIVATED TO GATHER WAVE DATA. THESE DATA HAVE CONVINCED US THAT CONDITIONS IN THE GULF OF ALASKA ARE NO WORSE THAN IN OTHER AREAS OF THE WORLD WHERE PETROLEUM OPERATIONS ARE CURRENTLY BEING SAFELY CONDUCTED. WITH THIS KNOWLEDGE, INDUSTRY HAS PROCEEDED WITH FURTHER ENVIRONMENTAL STUDIES AND WITH EXPLORATION COMMITMENTS PREPARATORY TO A SALE.

TO MY KNOWLEDGE, THE GULF OF ALASKA GROUP OCEANOGRAPHIC SURVEY IS UNIQUE. NOWHERE ELSE IN THE WORLD HAS THE INDUSTRY UNDERTAKEN SUCH AN EXTENSIVE EFFORT PRIOR TO MAJOR EXPLORATION AND PRODUCTION EXPENDITURES. THE DATA OBTAINED BY THE GROUP OCEANOGRAPHIC SURVEY IS PROPRIETARY TO THE PARTICIPANTS. HOWEVER, SINCE THE DATA PROVIDE THE MOST COMPREHENSIVE COMPILATION OF INFORMATION RELATIVE TO THE GULF OF ALASKA, THE PARTICIPANTS HAVE RELEASED TO THE GULF OF ALASKA OPERATORS COMMITTEE AND THEY, IN TURN, TO THE BLM AND THE COUNCIL ON ENVIRONMENTAL QUALITY, A CONDENSATION OF THE SURVEY REPORTS. THIS IS IN THE FORM OF FIVE SEPARATE DOCUMENTS. ADDITIONALLY, THE SURVEY GROUP HAS MADE CERTAIN APPROPRIATE PORTIONS OF THE INFORMATION AVAILABLE TO THE DRILLING CONTRACTING INDUSTRY FOR THEIR USE IN EQUIPMENT DESIGN.

2. REVIEW OF THE OCEANOGRAPHY AND RENEWABLE RESOURCES OF THE NORTHERN GULF OF ALASKA: THIS WORK WAS DONE BY THE INSTITUTE OF MARINE SCIENCES IN 1972, EDITED BY DONALD H. ROSENBERG AND WAS PARTIALLY FUNDED BY THE GULF OF ALASKA OPERATORS COMMITTEE. THIS STUDY WAS AVAILABLE TO THOSE WRITING THE DRAFT ENVIRONMENTAL IMPACT STATEMENT.

3. FISH, WILDLIFE AND PETROLEUM PRODUCTION, THE GULF OF ALASKA: THIS COMPILATION OF EIGHT SEPARATE REPORTS BY THE ENVIRONMENTAL AND BIOLOGY SUBCOMMITTEE OF THE GULF OF ALASKA OPERATORS COMMITTEE COVERS BIRDS, TERRESTRIAL WILDLIFE, MARINE MAMMALS, THREATENED SPECIES AND THE FISHERY RESOURCES OF THE GULF OF ALASKA.

ADDITIONALLY, IT REVIEWS THE EFFECT OF OIL ON FISH AND WILDLIFE WITH SPECIAL CONSIDERATION TO RECENT DATA ON COLD WATER EFFECTS. IT CONCLUDES WITH A STUDY CONDUCTED BY SHELL OIL ON EXPLORATORY FISHING DRAGS FOR DEMERSAL FISH AND SHELLFISH.

4. THE OIL ACTIVITY RELATED SOCIAL AND ECONOMIC IMPACT ON THE GULF OF ALASKA COMMUNITIES: THIS STUDY WAS CONDUCTED BY THE MATHEMATICAL SCIENCES NORTHWEST, INC. IN SEATTLE UNDER THE DIRECTION OF GUENTER CONRADUS AND FINANCED BY THE GULF OF ALASKA OPERATORS. COMMITTEE.

5. OIL SPILL TRAJECTORY PROGRAM: INTERSEA RESEARCH CORPORATION IS PERFORMING CALCULATIONS OF TRAJECTORIES ON THE OCEAN'S SURFACE FROM SEVERAL LOCATIONS WHERE OIL AND GAS OPERATIONS MIGHT BE CONDUCTED. MR. CLAYTON MCAULIFFE OF CHEVRON OIL FIELD RESEARCH COMPANY, USING PREVIOUS RESULTS, HAS MADE ESTIMATES OF BIODEGRADATION, DISPERSION, AND EVAPORATION OF POSSIBLE ACCIDENTAL OIL RELEASES IN THE GULF OF ALASKA. BOTH PROJECTS WERE INTIATED AND SUPPORTED BY THE GULF OF ALASKA OPERATORS COMMITTEE.

6. SEISMIC RISK ANALYSIS: THIS STUDY WAS CONDUCTED BY THE J. H. WIGGINS COMPANY OF CALIFORNIA AND REPRESENTS A PROBABILISTIC ANALYSIS OF THE GULF OF ALASKA SEISMIC ENVIRONMENT. THE LIKLIHOOD OF EARTHQUAKES OF VARYING MAGNITUDES OCCURRING AT ANY SITE HAS BEEN ESTIMATED AND THE RESPONSE AND PERFORMANCE OF OFFSHORE STRUCTURES TO SEISMIC EVENTS EXAMINED. THIS WORK FORMS A BASIS FOR THE DEVELOPMENT OF SEISMIC DESIGN CRITERIA AND THE ASSESSMENT OF THE FEASIBILITY AND RELIABILITY OF OFFSHORE STRUCTURES.

7. OIL SPILL PREVENTION AND CONTINGENCY PLAN: THE GULF OF ALASKA OPERATORS COMMITTEE HAS AN OIL SPILL PREVENTION AND CONTINGENCY PLAN WHICH WILL BE IN EFFECT PRIOR TO THE FIRST EXPLORATORY DRILLING ON THE OUTER CONTINENTAL SHELF OIL IN THE GULF OF ALASKA.

IN ADDITION TO THESE PROGRAMS ALREADY MENTIONED, THERE ARE MANY OTHER STUDIES THAT HAVE BEEN ORGANIZED AND SUPPORTED BY SEVERAL OF THE COMMITTEE'S MEMBER COMPANIES. SOME OF THIS WORK IS ONGOING NOW AND SOME IS IN THE PLANNING STAGES. THESE PROGRAMS INCLUDE:

(1) A WAVE AND WEATHER FORECAST STUDY (1971-1972)

MANAGED BY EXXON AND CONDUCTED BY OCEANOGRAPHIC SERVICES.

(2) AN OFFSHORE SOIL BORING PROGRAM (1973)

MANAGED BY SHELL AND CONDUCTED BY EXPLORATION SERVICES, INC.

(3) A WAVE AND WIND MEASUREMENT PROGRAM (1974-1976)

BEING ADMINISTERED BY MARATHON AND CONDUCTED BY INTERSEA RESEARCH.

(4) A WAVE HINDCAST EVALUATION PROGRAM (1975-1976)

THAT IS USING THE MANY PHYSICAL MEASUREMENTS COLLECTED FROM THE WAVE AND WIND MEASUREMENT PROGRAM TO IMPROVE WAVE FORECASTING TECHNIQUES. THIS PROGRAM ALSO IS BEING ADMINISTERED BY MARATHON AND CONDUCTED BY INTERSEA RESEARCH.

(5) A SUPERSTRUCTURE ICING REVIEW (1975)

ADMINISTERED BY MARATHON.

(6) AN OCEAN CURRENT MEASUREMENT PROGRAM (1974-1975) CONDUCTED BY BOLT, BERANEK AND NEWMAN.

(7) A METEOROLOGICAL AND OCEANOGRAPHIC FORECASTING PROGRAM (1975-1976) THAT WILL BE ADMINISTERED BY MARATHON AND WILL USE MUCH OF THE PHYSICAL MEASUREMENT DATA COLLECTED IN THE GULF OF ALASKA.

MOST OF THIS DATA HAS BEEN MADE AVAILABLE TO THE BUREAU OF LAND MANAGEMENT FOR ITS USE IN PREPARING THE DRAFT ENVIRONMENTAL IMPACT STATEMENT. OTHER STATE AND FEDERAL AGENCIES HAVE RECEIVED THIS INFORMATION UPON REQUEST. AS MR. MEYERS HAS INDICATED, SUBSEQUENT TESTIMONY BY REPRESENTATIVES OF THE GULF OF ALASKA OPERATORS COMMITTEE WILL CONTAIN FURTHER DETAILS OF SOME OF THESE PROGRAMS.

FROM THE ACTIVITIES WHICH I HAVE DESCRIBED, WE MUST CONCLUDE THAT THE INDUSTRY HAS THOROUGHLY STUDIED THE GULF OF ALASKA ECOSYSTEM. NOTHING HAS BEEN FOUND THROUGH THESE STUDIES WHICH PRECLUDES THE OIL INDUSTRY FROM OPERATING IN THIS AREA WITH COMPLETE ENVIRONMENTAL SAFETY.

THE GULF OF ALASKA OPERATORS COMMITTEE SUBMITS TO YOU THAT NEVER HAS OUR INDUSTRY ENTERED A NEW AREA SO WELL INFORMED, WELL EQUIPPED AND WELL TRAINED AS WE ARE NOW FOR THE PROPOSED EXPLORATION AND DEVELOPMENT OF THE GULF OF ALASKA. WE ARE PREPARED TO GO FORWARD, AND WE HAVE HIGH HOPES THAT OUR EFFORTS WILL RESULT IN SIGNIFICANT DISCOVERIES OF PETROLEUM WHICH ARE SO BADLY NEEDED FOR THE ECONOMIC WELL-BEING AND SECURITY OF OUR COUNTRY.

8/8/75

17

PROBABILISTIC RESPONSE OF OFFSHORE PLATFORMS TO SEISMIC EXCITATION IN THE GULF OF ALASKA

Oral Testimony

by

John H. Wiggins, Ph.D.
Professional Engineer
Professional Geophysicist

Presented at the
Environmental Hearing:
Gulf of Alaska
Offshore Sale

SLIDE 1

My name is John Wiggins. I hold a Master of Science Degree in Geophysics, with a speciality in Seismology and the Doctor of Philosophy Degree in Civil Engineering, with a speciality in Structural Dynamics. I am a Registered Civil Engineer and Geophysicist in the State of California, and am one of four persons selected to develop seismic risk maps for the United States, National Bureau of Standards' earthquake code study. My firm has been intimately involved with developing the seismic risk maps for the State of Alaska over the last two and one half years.

My purpose here is to discuss the probabilistic response of offshore platforms to seismic excitation in the Gulf of Alaska.

SLIDE 2

Earthquake engineering is made up of three disciplines in the scientific community. The first deals with the seismic enviornment in which principally seismologists work. From the knowledge of the seismic environment, one can estimate ground shaking, structural response and the failure of various structural elements and components. The latter two disciplines are left to the structural engineer and specialists in engineering mechanics.

All of these disciplines and the knowledge inherent within them, have varying degrees of uncertainty. By combining all of the disciplines and the uncertainties, one can estimate the seismic risk of a particular structural design located at a particular geographical position.

SLIDE 3

This slide illustrates the specific steps that must be treated in an earthquake engineering analysis. Specifically, I shall first discuss the "proneness" of an area to earthquake activities. By combining the seismicity inputs with the soil-structure models, modes of vibration and estimates of damage can be computed in probabilistic terms.

SLIDE 4

Until recently, earthquake design codes, as well as almost all codes and standards, have been developed with the "hope" that absolute safety would result. We now realize that some risk is involved with every standard or code used in design practice. Earthquake codes currently being developed for the National Bureau of Standards by more than 70 national experts is being developed with a clear expectation of risk (chance of loss) in mind. It is within this risk acceptance rationale that I shall direct my testimony.

SLIDE 5

Let us first examine the factors that influence ground motions.

SLIDE 6

The mechanism of earthquake action in the Gulf of Alaska is now generally agreed to be caused by a layer of roving plates which are moving relative to one another. The Pacific Plate is being forced northwesterly in relation to the American Plate. The area of interest is located in the vicinity of the junction of the Pacific and American Plates.

SLIDE 7

On page 53 of the EIS, it is stated that there are two methods for estimating future seismicity. One of these can only be used for relative comparisons. There are actually six basic methods which have been developed in order to make estimates about future seismic motions. Method 1 is deterministic in its approach. Maximum credible earthquakes are postulated to occur on known fault lines which intersect the earth's surface. Usually an earthquake magnitude and distance from source to site is postulated by an expert.

SLIDE 8

This slide indicates the zone of the postulated maximum credible earthquake magnitude of 8.5 developed by the U.S. Geological Survey. It ranges from the dotted line to the 3,000 meter contour depth line. The major problem in determining potential future motions is specifying the location of the earthquake within this broad zone. Should it be located at the center of the zone, directly underneath the site, or at some other distance?

SLIDE 9

In order to overcome some of these objections, Method 2 assumes that a good estimate of future seismicity may be derived from examining historic seismic conditions that are not modified by judgment. Various scientists have contended, however, that historic data are too limited to derive accurate probabilistic values of seismicity.

SLIDE 10

Method 3 assumes that the "negative" of seismic history can be expected to occur in the future. Thus, where seismic "gaps" appear in the data , one can expect a large earthquake in the near future. Such a "gap" has been postulated to occur within the zone anticipated for the general sale area.

SLIDE 11

This figure indicates all earthquakes greater than magnitude 7 that have occurred since 1938. The 38 years of data alleges to indicate that there is a seismic feature missing in the area of the sale. However, if one considers a longer history, and includes the three earthquakes that occurred in the "gap" in 1899 and 1900, one can compute the amount of energy released along the eastern, western and "gap" areas. More than twice the energy per year has been released in the "gap" area per mile as compared to that for the eastern and western areas combined. On page 55 of the EIS, further evidence elaborating on the usefulness of the "gap" theory in forecasting future seismic motions is developed.

SLIDE 12

Method 4 attempts to combine the knowledge of fault locations and historic data in a manner such that all past earthquakes are judgmentally placed in "source zones." The resulting seismicity is therefore influenced heavily by human judgment. This method has the same drawbacks as Methods 1 and 2 in that criteria depend on the involved individual's judgment and the completeness of the data.

SLIDE 13

Method 5 makes the assumption that our knowledge about past seismic history is highly uncertain. Earthquakes are postulated to occur anywhere within a very large region. The major drawback to this "shoulder-shrugging" process is that major tectonic features are known and should be considered in some logical way.

SLIDE 14

Method 6 has only recently been postulated. Some earth scientists think that there is a link between the huge earthquakes which periodically erupt all around the rim of the Pacific Ocean basin. A huge tremor that shakes Japan, the scientists suspect, may trigger another large earthquake months later in Peru, Mexico or Alaska.

This view has been cautiously expressed and has not been able to meet the test or repeatability using 75 years of fairly accurate information.

SLIDE 15

I have chosen to use Method 2 for the best, first estimate of the seismicity in the Gulf. I believe that Method 2 is superior for the following reasons:

1. We have used yet another approach for mapping called the Bayesian method. It combines Methods 1 with 2 in a rigorous mathematical procedure. To date, we have constructed Bayesian maps only for California. However, those maps reveal that where data are of good quality and in sufficient number,

there is little difference between a Bayesian map and Method 2.

2. Historical data allow us to use the probabilistic method and present a logical engineering framework for decision making.

3. The rationale follows that set forth by the Structural Engineers Association of California in their earthquake design policy.

4. It has been shown in all case law involving flood plain zoning, another natural hazard, that the severity of the regulation must match the severity of the historic risk.

SLIDE 16

Before talking about earthquake history, let us examine something that is more familiar; namely, automobile accidents. This slide describes the number of yearly accidents that might be expected. The number of vehicles involved in an accident may be described as the magnitude of the accident. Note that the data do not fall on top of one another, because they involve different data bases. Also, the data diverge for 8 and 9 vehicles. The reliability of the information in the large magnitude is lower than that in the low magnitude range. Nevertheless, as more yearly data are plotted, they will converge on the line, even at high mangitude.

SLIDE 17

The same phenomenon is experienced in earthquake history. This slide plots the magnitude of events that have occurred in and about the City of Anchorage, using two data bases. The first is that which has been taken by NOAA since 1963. It is an accurate information base; however, the reporting period (10.5 years) is short compared to the historic Alaska data base of 74 years. The historic data base, however, is incomplete for magnitudes lower than 6.5.

The 10.5 year data base coincides quite closely with the regression curve plotted in the lower magnitude ranges. More information is available in the smaller magnitude range than that for large magnitudes. This finding reflects the automobile accident example.

However, if the historic is combined with the 10.5 year data base, the circles plot closer to the regression curve than do the triangles, indicating that the line is a good estimate of seismicity.

SLIDE 18

The ground motion that might be experienced by a structure is influenced by the distance as well as the size of the earthquake. It is suggested that the EIS make note of this fact. On pages 362, 364, 365 and 366, it is mentioned that structures are designed to resist earthquakes of a specified Richter magnitude. But magnitude is only one part of the two-part problem of deriving intensity. Unlike water waves, which occur over large regions, earthquake motions dissipate from source to site. Thus, the second part of deducing

intensity is to know the attenuation properties of the geographical region in question. What are the ground motions at the epicenter and how do they dissipate with distance?

Curves used in our study to develop seismic risk maps are constructed primarily from California earthquake data. The question might arise as to whether California information can be used to discuss Alaska conditions, both near the epicenter and at some distance from the epicenter. This slide shows the difference in attenuation properties in the eastern and in the western or California region of the United States. In 1811, an earthquake slightly smaller than the famous 1906 San Francisco earthquake occurred in southern Missouri. The area of potential damage is considerably larger than that of the 1906 quake. Similarly, the 1971 San Fernando earthquake affected a much smaller area than did the 1886 Charleston, South Carolina earthquake which had a similar magnitude.

SLIDE 19

This slide plots the region in which people can notice an earthquake. I have also plotted the areas felt by six typical Alaska earthquakes. In all but one instance, the data fall well below the California line indicating that California attenutation equations are conservative in an analysis of Alaska. Page 44 of the EIS confirms our estimates of the attenuation properties for the Gulf of Alaska region.

SLIDE 20

Is the same observation correct in the near-field? It has been postulated that because Alaska earthquakes occur on

"low angle" faults, this may not be the case. As you can see, the Pacific Plate being pushed under the American Plate has a very gentle slope.

The following rationale leads me to the conclusion that the use of California data in the near-field is also an adequate approximation of Alaskan conditions:

1. Alaska earthquakes have deeper foci than do California quakes. The average depth of the 1964 shocks was 26.5 kilometers. California earthquakes have an average depth of about 16 kilometers.

2. As the slide depicts, it is questionable whether or not the sale area is underlain by the low angle fault type.

SLIDE 21

3. Referring back to an earlier figure, the western Alaska aftershock zones appear to be wider than the eastern aftershock zones. When the energies are balanced, however, the length to width ratio of the zones are nearly similar.

The largest recent earthquake in California (the 1952 Arvin earthquake of magnitude 7.7) had a similar aftershock length to width ratio. This indicates that the aftershock zone width is not necessarily proof that low angle faulting contributes to large zones of high intensity vibrations.

SLIDE 22

Using all of the historic information available and treating each earthquake as a point source, hard rock velocity contours for an arbitrary return period, 100 years, have been constructed for the Gulf of Alaska. In the general area of the sale, the contours range from a low of about 3 inches per second at the southeast edge to a high of about 7 inches per second at the northwest edge of the area.

SLIDE 23

Using the fault line correction technique, in a sense combining Method 1 and Method 2, we have constructed a more realistic map. Particle velocity ranges from 4 inches per second to 8 inches per second within the general vicinity of the sale. Considering the differences in techniques for constructing maps, these differences are small and lend confidence to the analysis.

SLIDE 24

Recognizing that maps can be produced for different return periods, the question arises as to what return period or, put another way, what probability of occurrence during the structure lifetime is acceptable for design? In order to answer this question, we can examine the de facto risk associated with the current and proposed United States codes.

Present California codes have associated with them a de facto 22% chance that the level of design will be equaled or exceeded during the 50-year lifetime expectancy of a building. The U.S.G.S. is now using the 10% chance of exceedance

in their map values for a 50-year building life. These percentages of exceedance may be compared with water wave exceedance estimates appearing on page 36 of the EIS. These estimates are 26% for the 100-year and 14% for the 200-year storms.

SLIDE 25

Recognizing these de facto as well as stipulated criteria, four candidate levels of shaking, reflected by the response spectra shown, have been used to analyze various offshore platform designs in various kinds of soils. Level 3 corresponds to the strongest record recorded on soil in California, and Level 4 corresponds to 1.5 times that level. Using the relative methods of determining seismic recurrence frequencies referred to on page 53 of the EIS, 0.5 inches/yr. vertical uplift has been evidenced on the average over the last 4500 years. Assuming a dip angle of 10^{o}, the horizontal movement has been about 2.3 inches/yr. which corresponds to the California San Andreas Fault rate of movement. The base, particle velocity spectra are shown in this slide.

SLIDE 26

Herein are shown the various risks associated with the inputs used in analysis. The probability of occurrence of each level at the strongest and the weakest seismic locations are noted. Levels 3 and 4, for the most part, equal or are below current and proposed probabilistic levels.

SLIDE 27

We may now proceed to the structural analysis and response procedure. Seismograms, typical of that shown in the lower left-hand corner of this slide, were used to excite structures.

SLIDE 28

Actual test site soil borings were taken in the Gulf of Alaska. Three typical sites are shown: Soils I, II and III might be termed as soft, stiff, and semi-stiff, respectively. These soil configurations were modeled for computer treatment.

SLIDE 29

We have analyzed and modeled typical offshore structures, one of which is shown. The vibration modes have been coupled with soil as demonstrated by the lower figure on the right.

SLIDE 30

Let us proceed now to the development of an understanding of the damage that might occur from the various levels of vibration.

SLIDE 31

Three platform configurations were considered: template, outrigger and tower. These are jargon descriptions of various designs that may be considered for the Gulf of Alaska region. Five modes of failure were considered: failure of the deck structure, the template, the piles in compression and tension, and failure of the conductor pipe in which oil pipes are contained.

SLIDE 32

The performance of the tower structure in 600 feet of water can be demonstrated. Assuming the sofest soil, the normalized deck displacement relative to rock is shown for the levels of input and various types of analyses performed.

I want to make two points in this slide: First, the worst level of shaking was provided by level 3, when soil interaction is considered, because of tuning between the soil column and the structure. Tuning between the soil and the structure is therefore a very important consideration to investigate in the design of any structure located at a particular site.

Second, it can also be seen that the two different methods of analysis; namely, DYNALIST II and SAP IV, (which is used to design California hospitals and other structures) present only slightly different results.

In summary, all three possible preliminary designs are expected to survive earthquake actions of level 3 and 4 without collapse, but with some damage. This result indicates that structures can be designed using the current seismic knowledge as input.

SLIDE 33

In order to gain a perspective on how severe level 3 and level 4 earthquakes are, let us compare them with existing codes. Level 4 is higher than all of the codes, including the California Hospital Code. Likewise, level 3 is higher than all but the 1976 Uniform Building Code which assumes the worst soil and the most importan structure.

Herein I am plotting the UBC code levels stipulated for the design of "other structures." In that code, forces are doubled for "other structures" as compared with buildings because of the usual lack of redundancy built into bridge piers and the like. But offshore drilling platforms that are highly interlaced with bracing, are very redundant types of structures and could be categorized as "buildings" when the intent of the doubling factor is recognized. Thus, for platforms of the template variety, level 3 and level 4 would be inputs well above all of the codes shown.

SLIDE 34

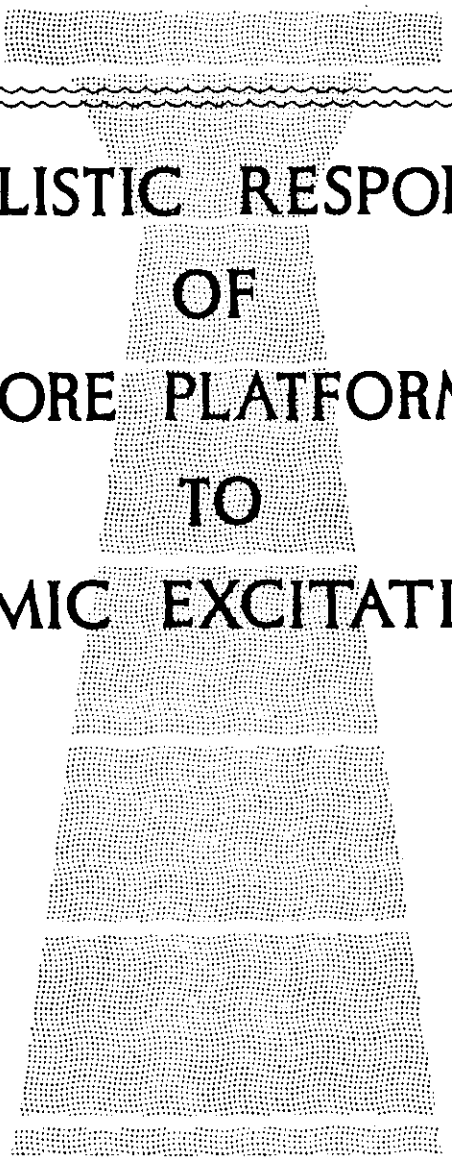
In summary, it must be recognized that the earthquake engineering problem of design is probabilistic in nature, as pointed out in the EIS. There are many factors that affect safety and the environmental risk. How big is the earthquake? Where will it be located? What is the chance that response will be equaled or exceeded? How does response affect the probability of damage? How will damage affect loss consierations?

With the appropriate consideration of each probabilistic term, enough knowledge and know-how is available so that structures can be designed for the GOA within an acceptable level of risk.

Thank you,

J. H. Wiggins

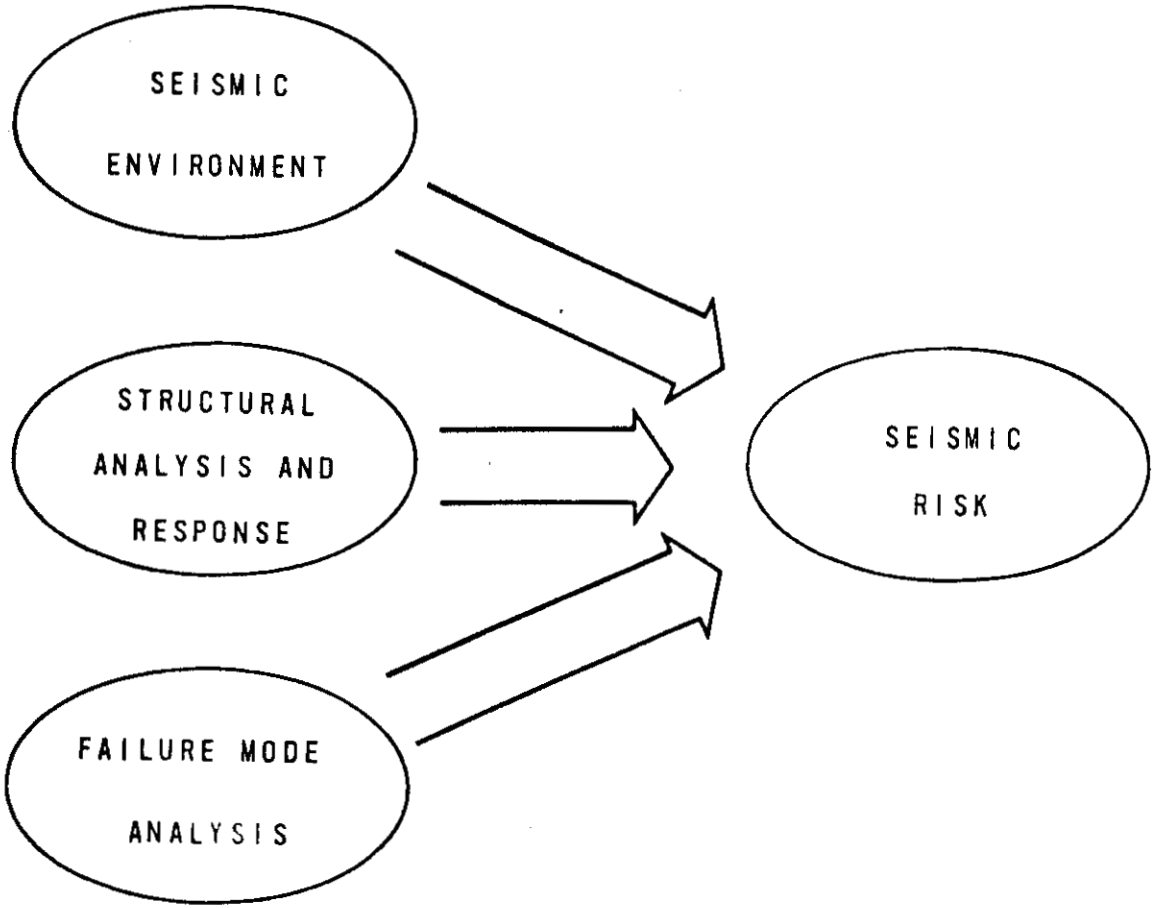
J. H. WIGGINS COMPANY



PROBABILISTIC RESPONSE OF OFFSHORE PLATFORMS TO SEISMIC EXCITATION

SLIDE 1

EARTHQUAKE ENGINEERING

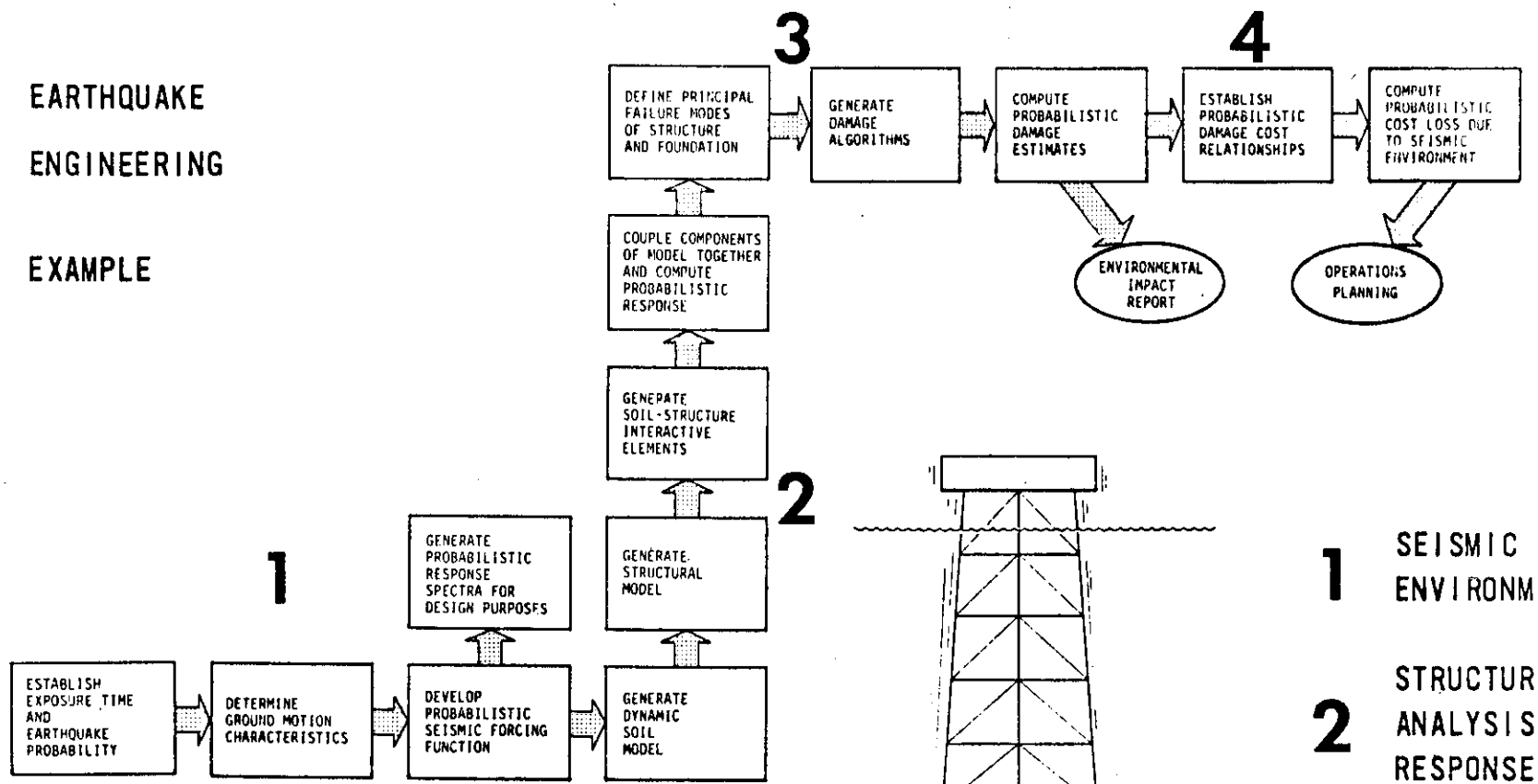


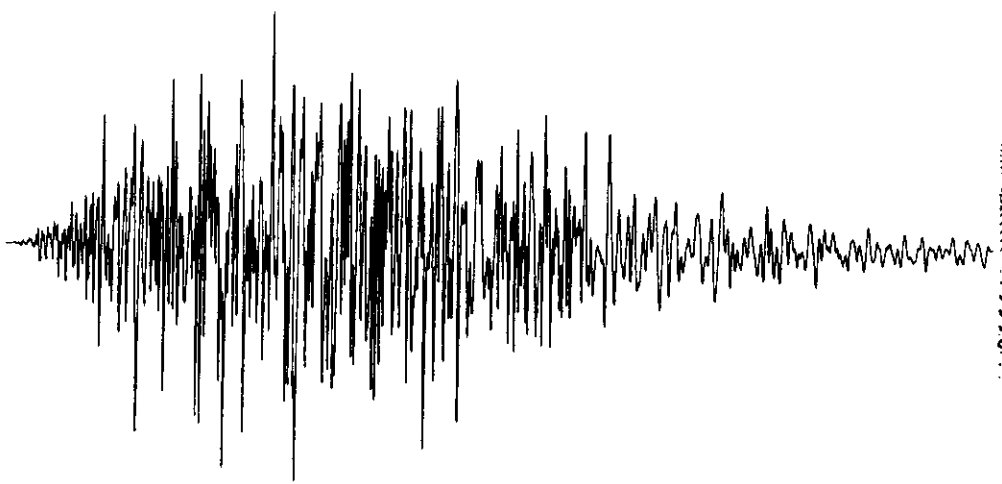
SLIDE 2

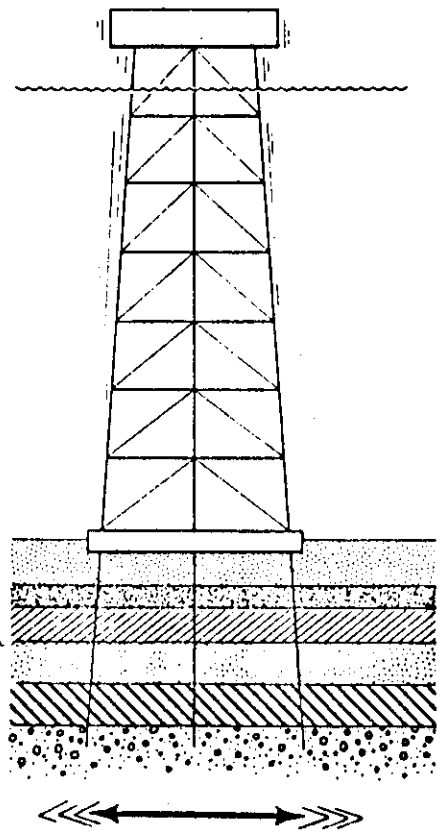
EARTHQUAKE

ENGINEERING

EXAMPLE







1 SEISMIC ENVIRONMENT

2 STRUCTURAL ANALYSIS AND RESPONSE

3 FAILURE MODE ANALYSIS

4 RISK ANALYSIS

j.h.wiggins company

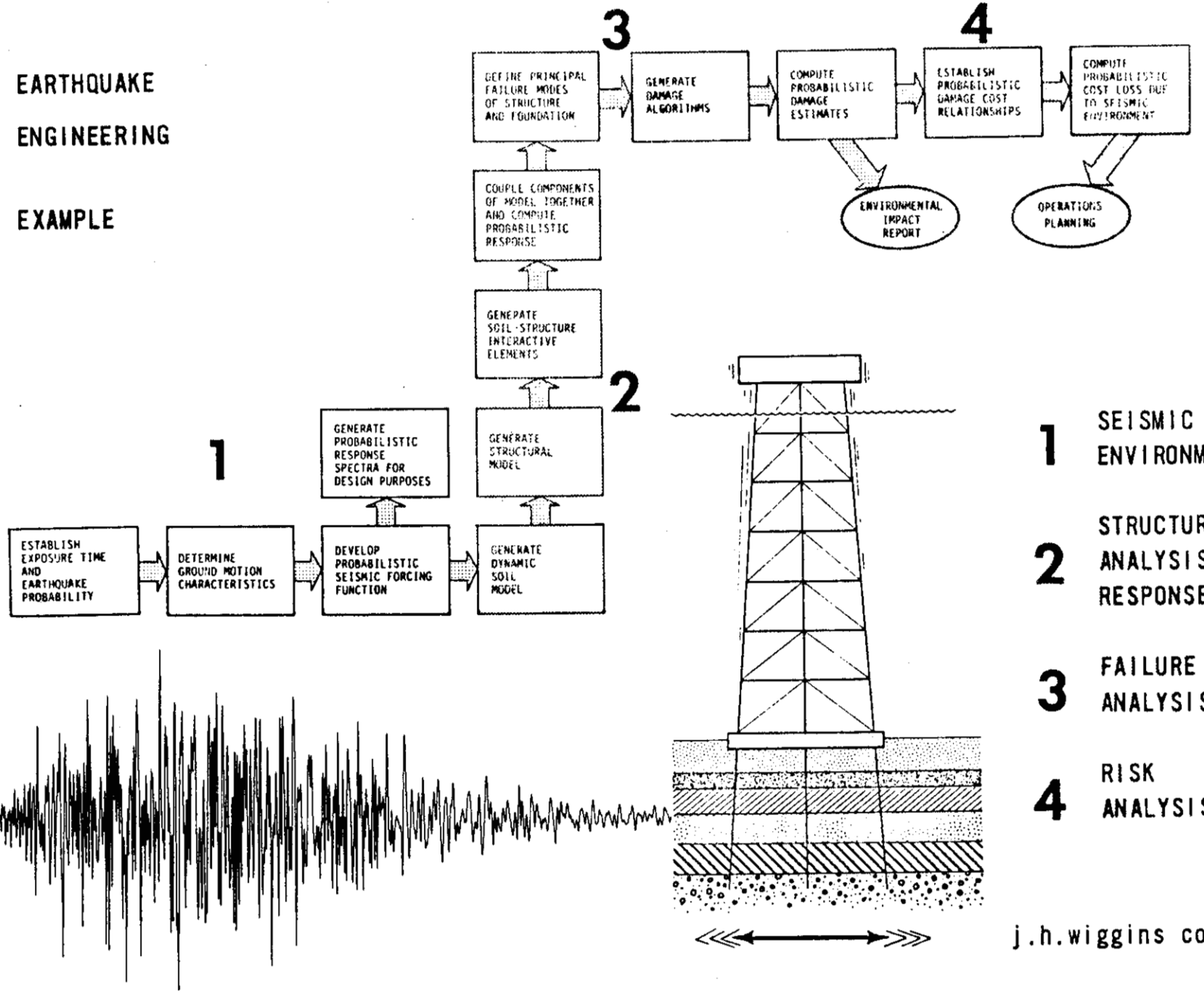
EARTHQUAKE DESIGN RATIONALE

CURRENT EARTHQUAKE DESIGN CODES ARE BEING DEVELOPED WITH THE CLEAR EXPECTATION OF RISK . . . (CHANCE OF LOSS)

EARTHQUAKE

ENGINEERING

EXAMPLE



1 SEISMIC ENVIRONMENT

2 STRUCTURAL ANALYSIS AND RESPONSE

3 FAILURE MODE ANALYSIS

4 RISK ANALYSIS

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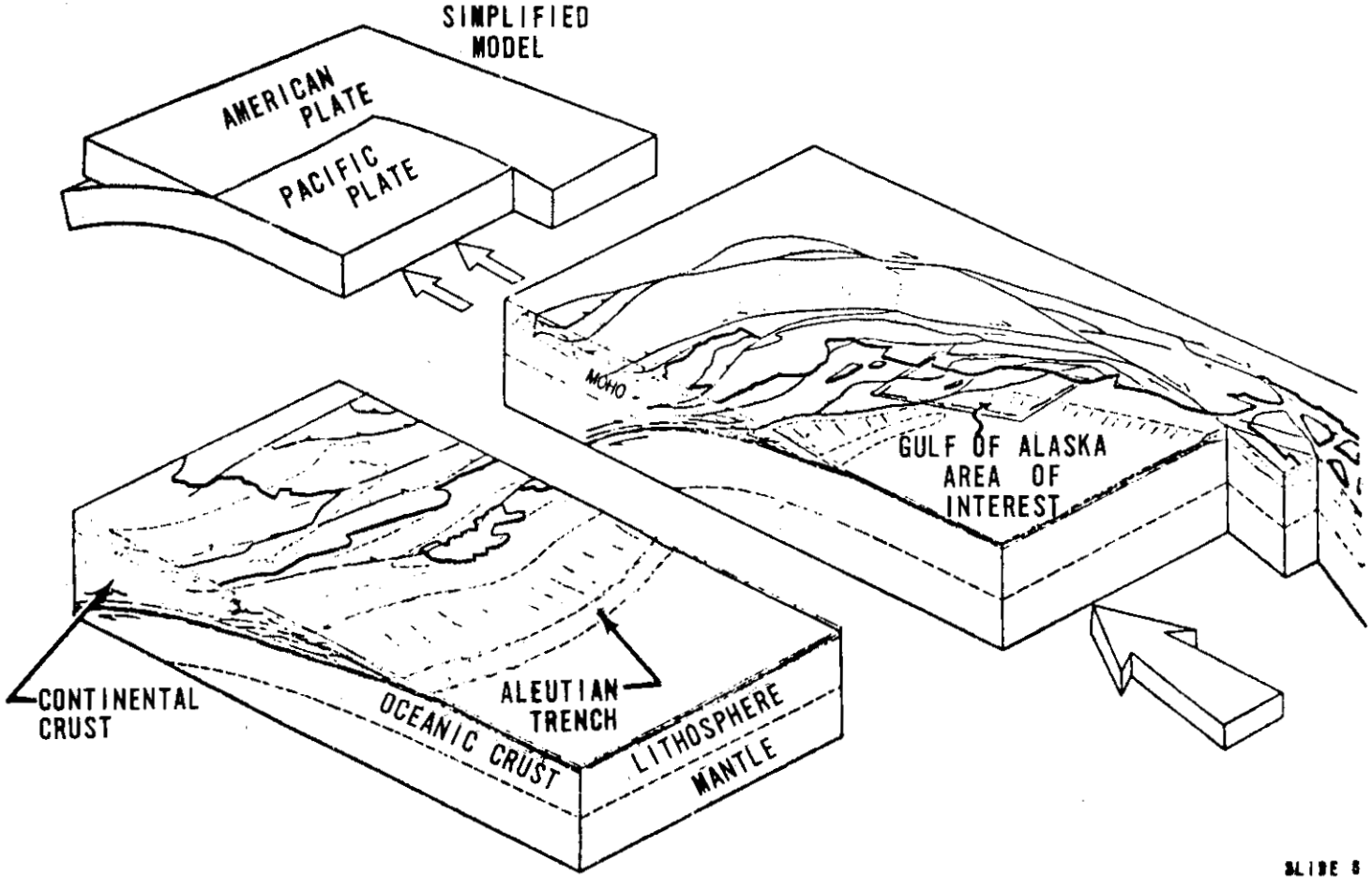
SLIDE 5

GULF OF ALASKA PLATE MOTION

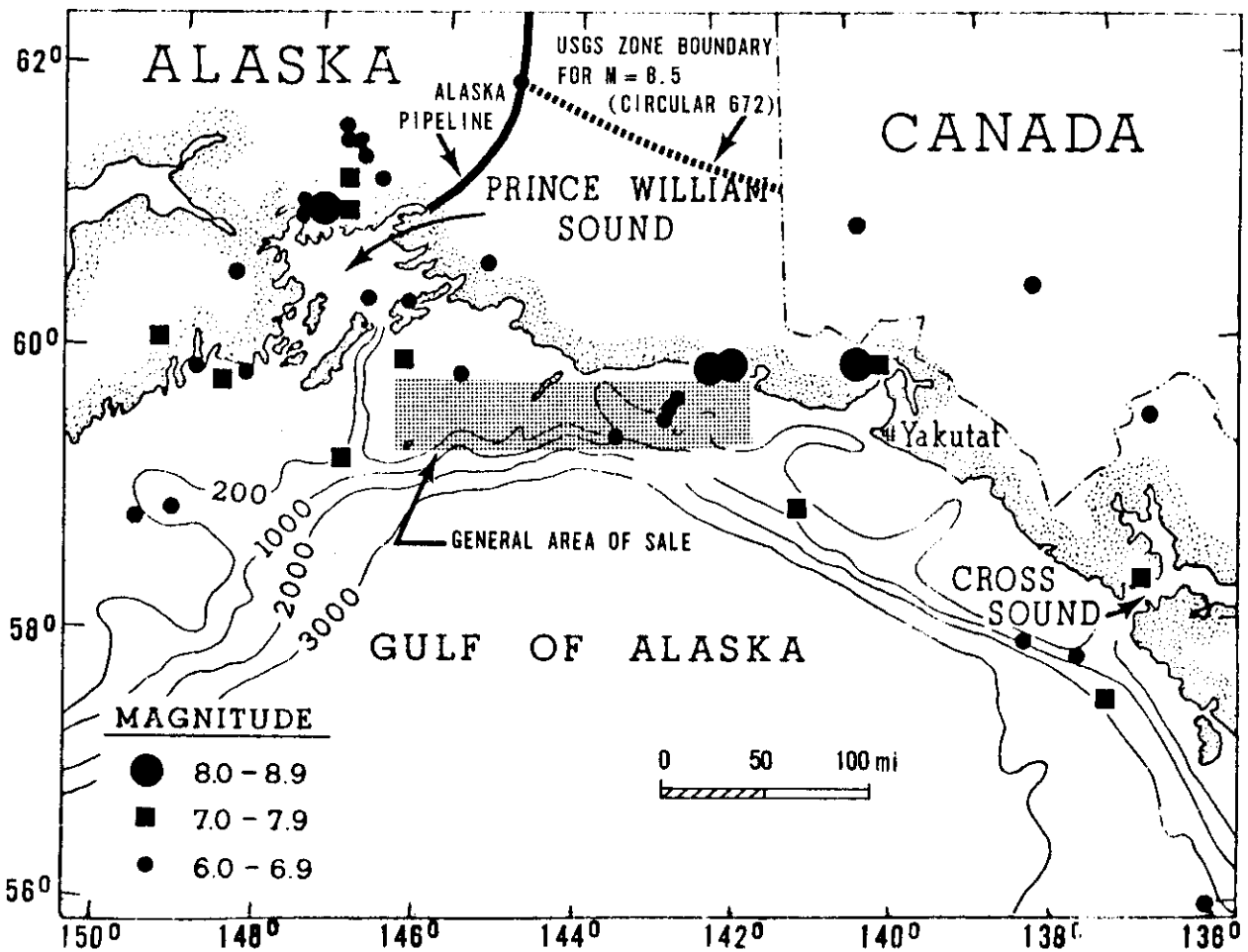


SLIDE 8

METHODS FOR CONSIDERING SEISMICITY

1. DETERMINISTIC – EXPERT JUDGMENT ABOUT MAGNITUDE AND DISTANCE

GULF OF ALASKA—EPICENTERS OF HISTORIC EARTHQUAKES



1. Submarine contours in meters.
2. After Page.

SLIDE 9

METHODS FOR CONSIDERING SEISMICITY

1. DETERMINISTIC – EXPERT JUDGMENT ABOUT MAGNITUDE AND DISTANCE
2. PROBABILISTIC – HISTORY IS LIKELY TO REPEAT ITSELF

METHODS FOR CONSIDERING SEISMICITY

1. DETERMINISTIC – EXPERT JUDGMENT ABOUT MAGNITUDE AND DISTANCE
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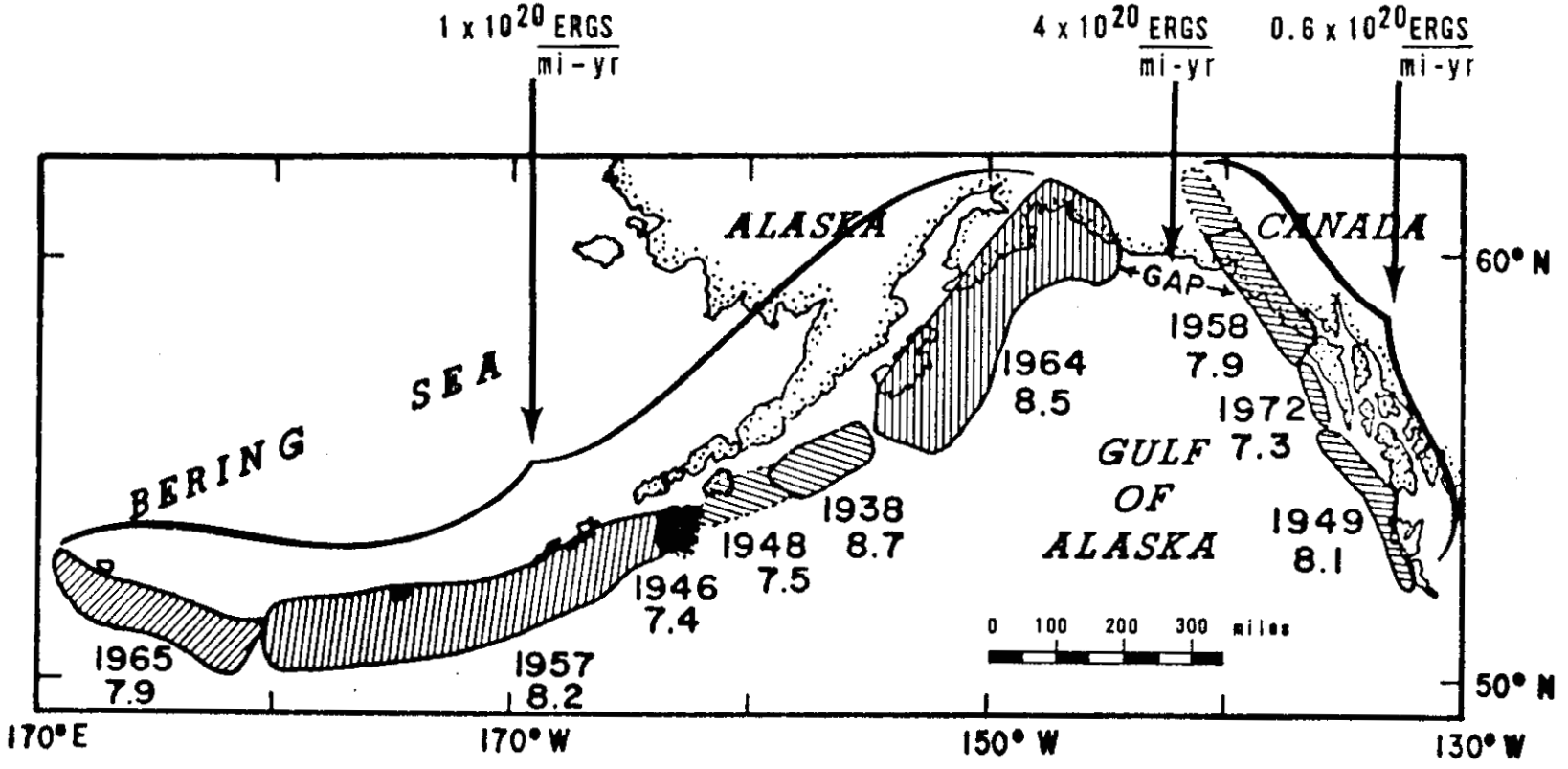
3. PROBABILISTIC – THE 'NEGATIVE' OF HISTORY IS LIKELY TO OCCUR

AFTERSHOCK ZONES OF EARTHQUAKES OF MAGNITUDE 7.3 OR GREATER SINCE 1938



1. Dashed where extent of zone is uncertain.
2. Dates and magnitudes given.
3. After Page.

SLIDE 11

METHODS FOR CONSIDERING SEISMICITY

1. DETERMINISTIC – EXPERT JUDGMENT ABOUT MAGNITUDE AND DISTANCE
2. PROBABILISTIC – HISTORY IS LIKELY TO REPEAT ITSELF
3. PROBABILISTIC – THE 'NEGATIVE' OF HISTORY IS LIKELY TO OCCUR
4. DETERMINISTIC:PROBABILISTIC – HISTORY REPEATS ITSELF ON KNOWN FAULTS

METHODS FOR CONSIDERING SEISMICITY

1. DETERMINISTIC – EXPERT JUDGMENT ABOUT MAGNITUDE AND DISTANCE
2. PROBABILISTIC – HISTORY IS LIKELY TO REPEAT ITSELF
3. PROBABILISTIC – THE 'NEGATIVE' OF HISTORY IS LIKELY TO OCCUR
4. DETERMINISTIC:PROBABILISTIC – HISTORY REPEATS ITSELF ON KNOWN FAULTS
5. PROBABILISTIC:UNCERTAIN – HISTORY WILL REPEAT ITSELF AT A UNIFORM RATE OVER A BROAD AREA

METHODS FOR CONSIDERING SEISMICITY

1. DETERMINISTIC – EXPERT JUDGMENT ABOUT MAGNITUDE AND DISTANCE

2. PROBABILISTIC – HISTORY IS LIKELY TO REPEAT ITSELF

3. PROBABILISTIC – THE 'NEGATIVE' OF HISTORY IS LIKELY TO OCCUR

4. DETERMINISTIC : PROBABILISTIC –
   HISTORY REPEATS ITSELF ON KNOWN FAULTS

5. PROBABILISTIC : UNCERTAIN –
   HISTORY WILL REPEAT ITSELF AT A
   UNIFORM RATE OVER A BROAD AREA

6. PSUEDO DETERMINISTIC –
   LARGE PRIOR EARTHQUAKES FORETELL
   FUTURE SHOCKS

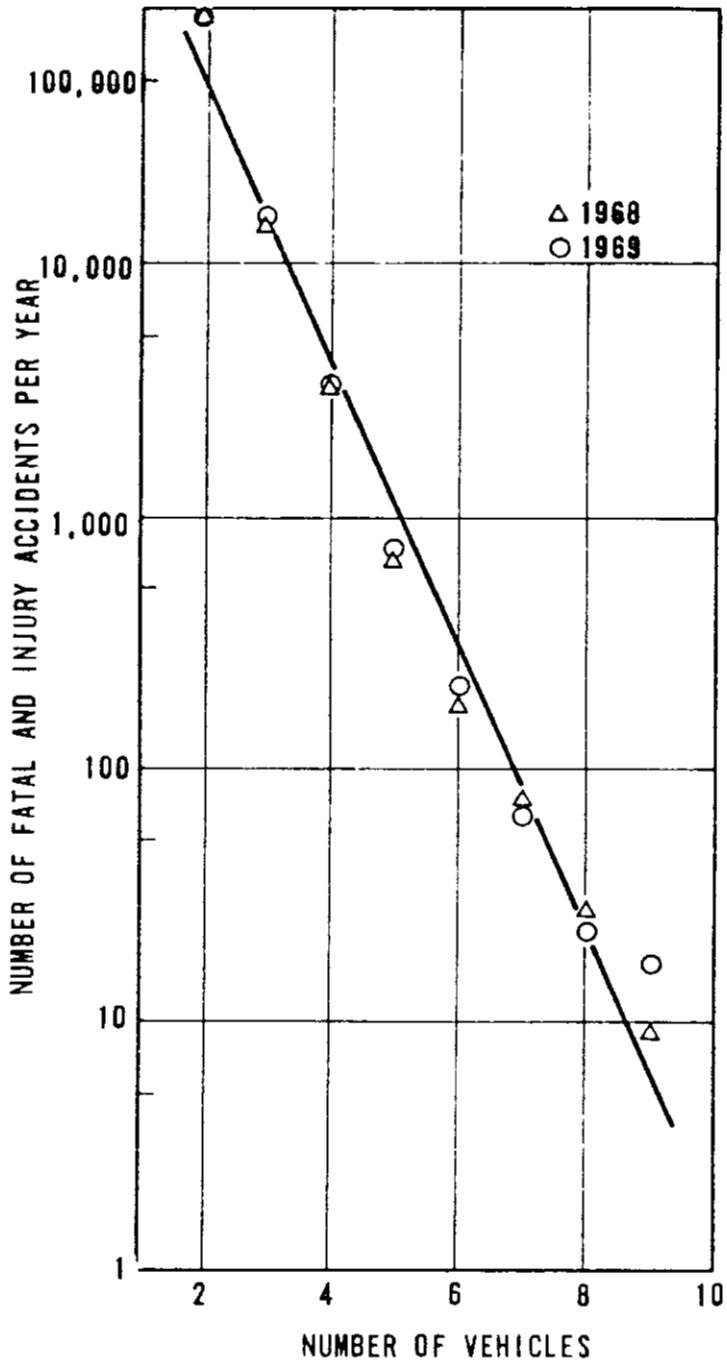
OUR METHOD OF REPRESENTING SEISMICITY

USE METHOD 2 – HISTORY IS LIKELY TO REPEAT ITSELF USING FAULT LINE CORRECTIONS IN METHOD 1

REASONS

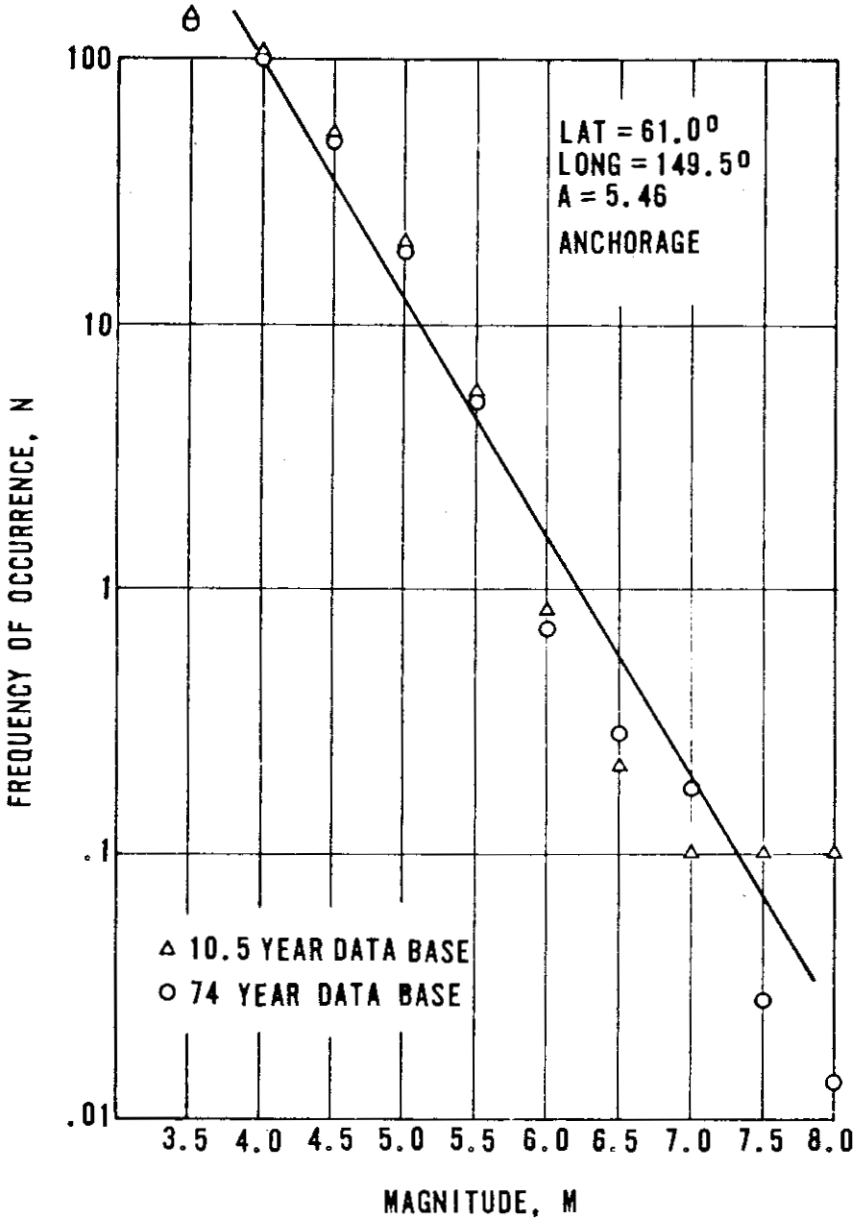
1. BAYESIAN MAPS OF CALIFORNIA
2. PROBABILISTIC ENGINEERING FRAMEWORK
3. FOLLOWS RATIONALE OF STRUCTURAL ENGINEERS ASSOCIATION OF CALIFORNIA
4. SATISFIES CASE LAW REQUIRING THAT 'THE SEVERITY OF THE REGULATION SHALL MATCH THE SEVERITY OF THE RISK.'

FATAL AND INJURY ACCIDENTS BY NUMBER OF VEHICLES (CALIF.)



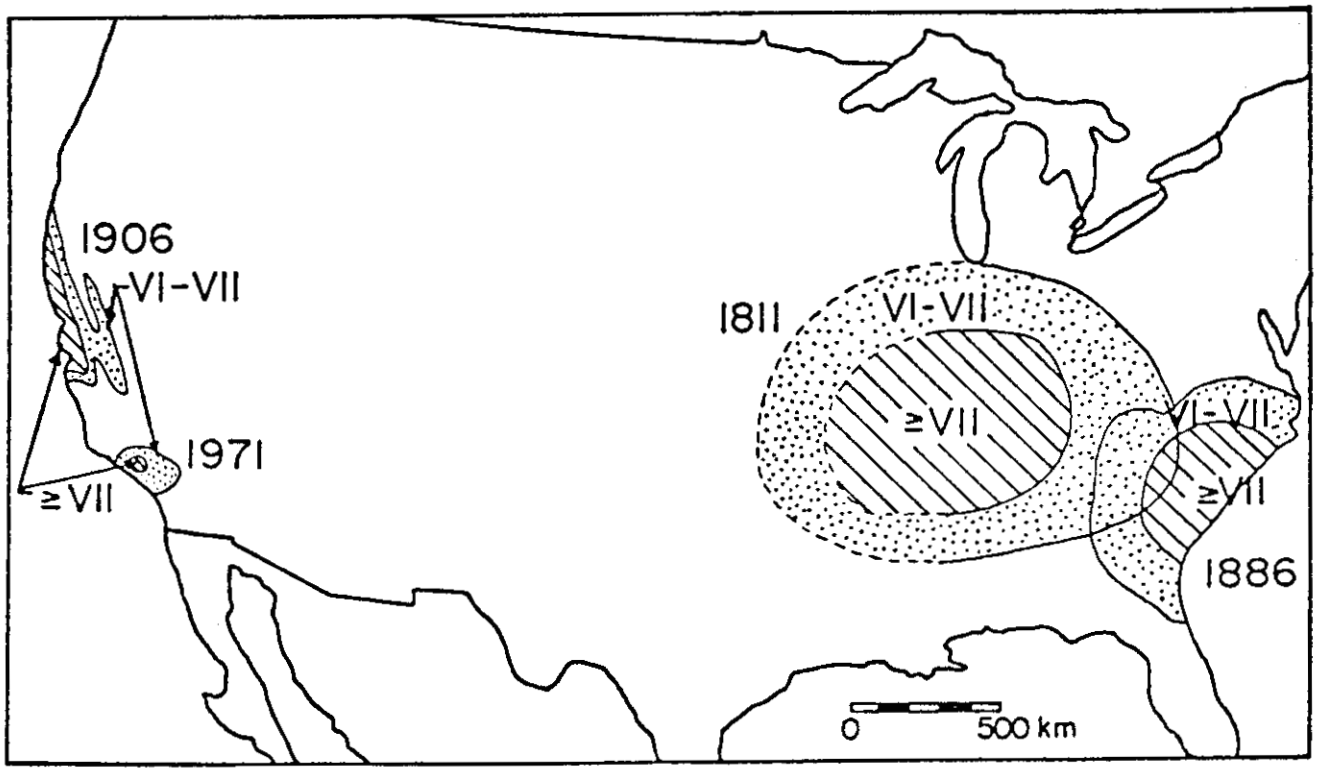
SLIDE 16

EARTHQUAKE FREQUENCY DISTRIBUTION FOR ANCHORAGE



SLIDE 17

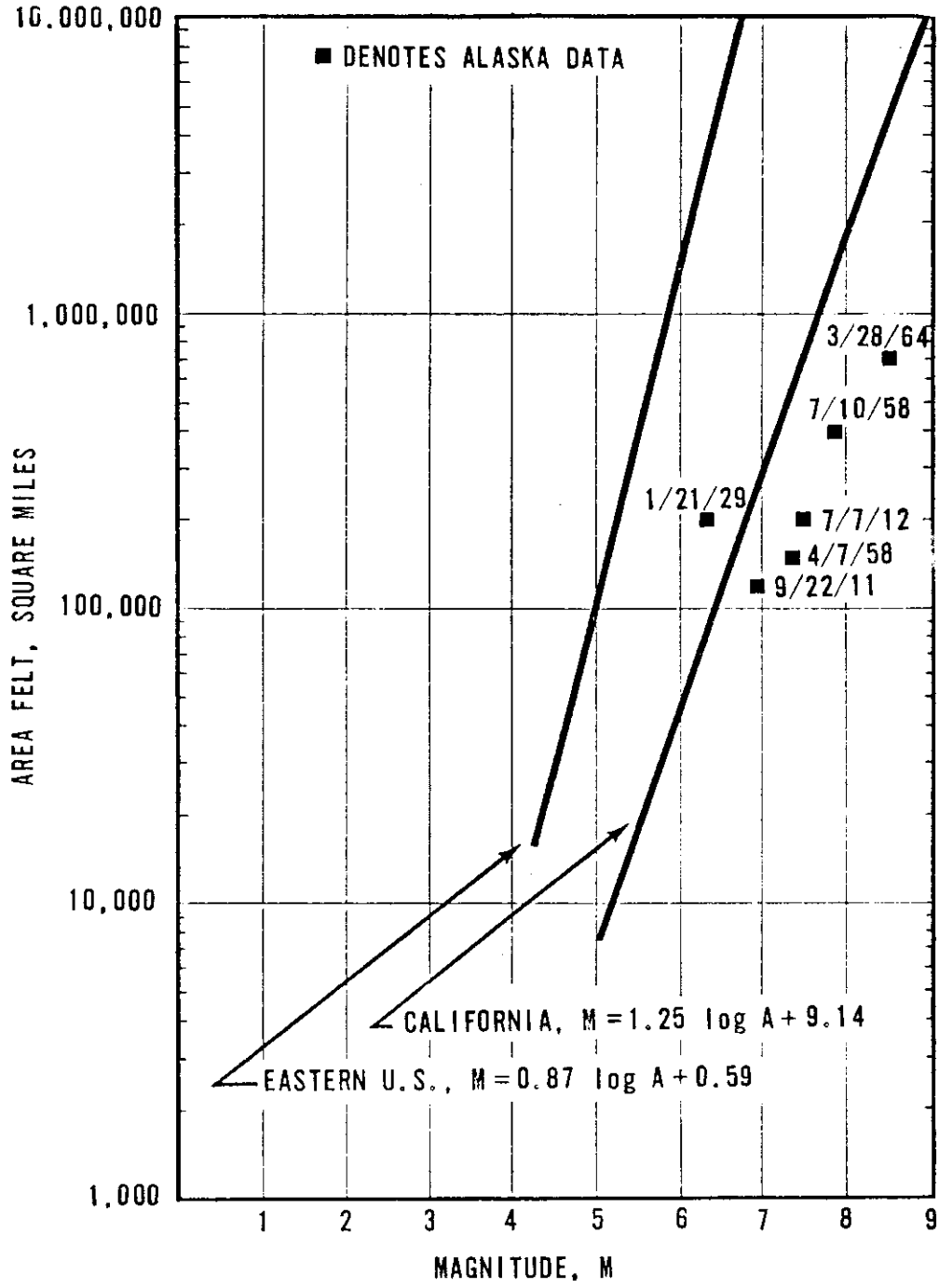
COMPARISON OF DAMAGE AREAS



1. The 1906 and 1811 earthquakes were about equal in magnitude, as were the 1971 and 1886 earthquakes.
2. After Nuttli.

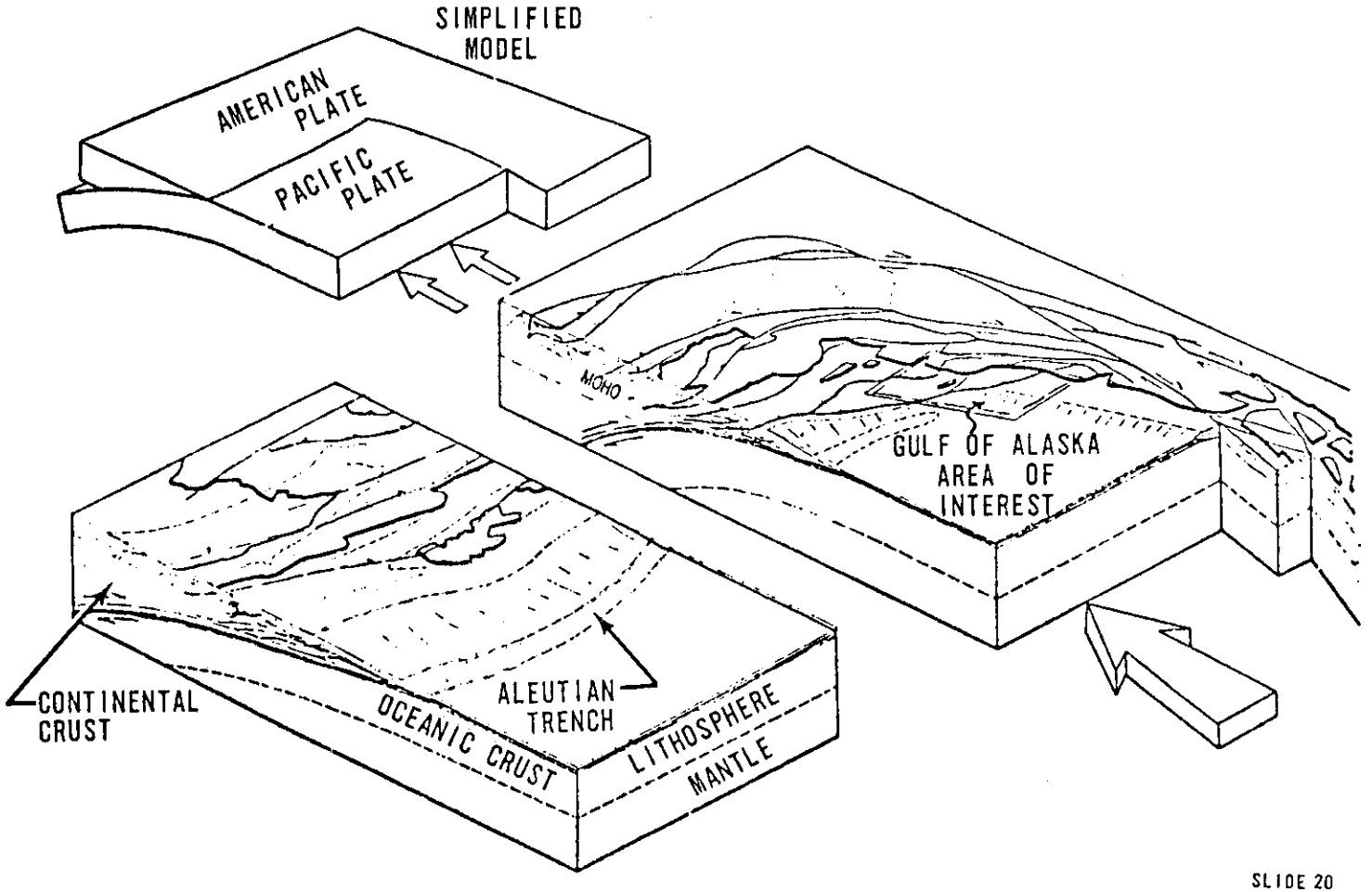
SLIDE 18

FELT AREA OF ALASKA EARTHQUAKES IS LESS THAN THAT OF CALIFORNIA OR THE EASTERN PART OF THE UNITED STATES

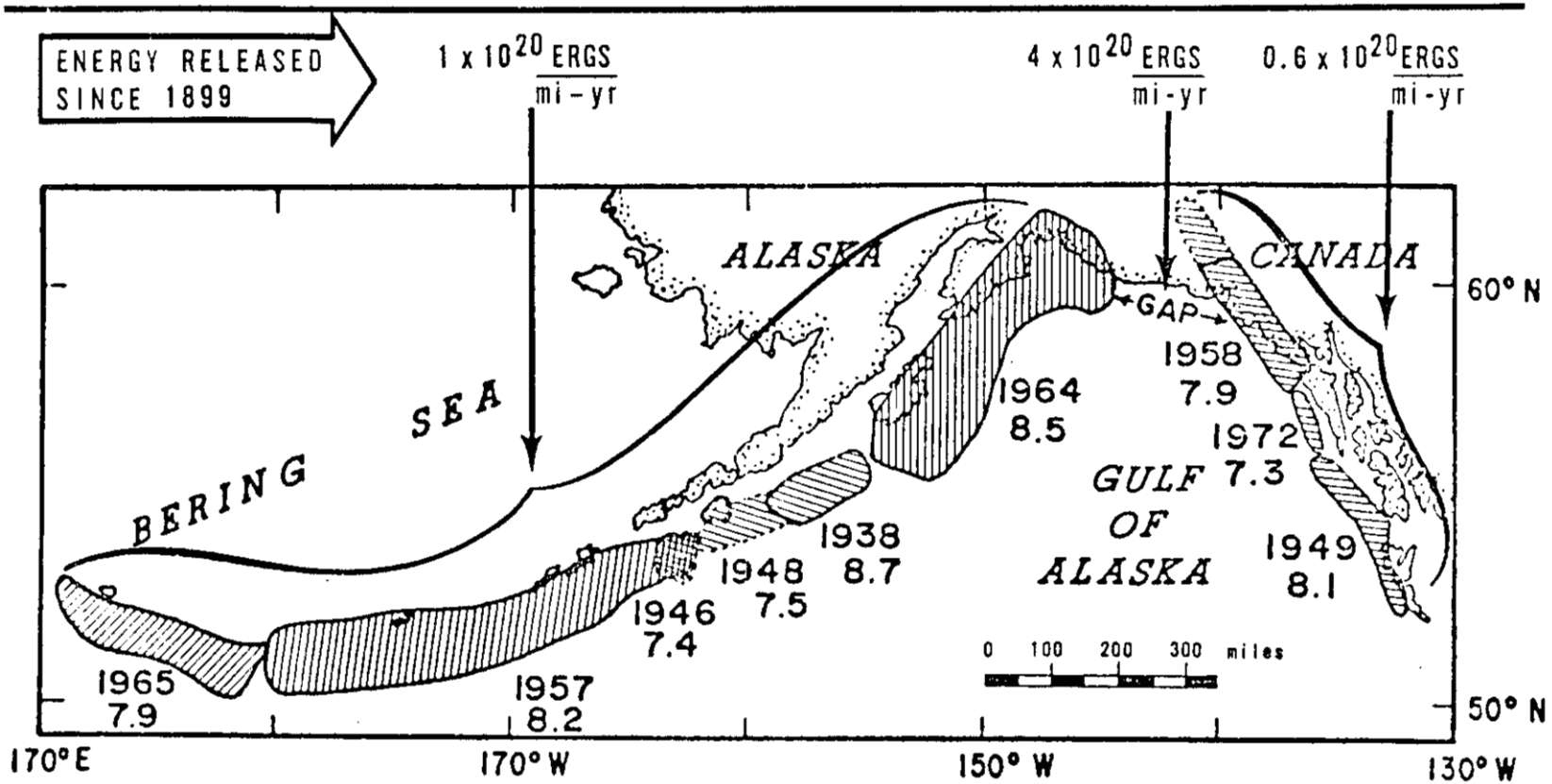


THE TWO CURVES WERE CONSTRUCTED FROM EQUATIONS IN NBS, BSS #61, ASSUMING A 'FELT' MMI OF III.

GULF OF ALASKA PLATE MOTION



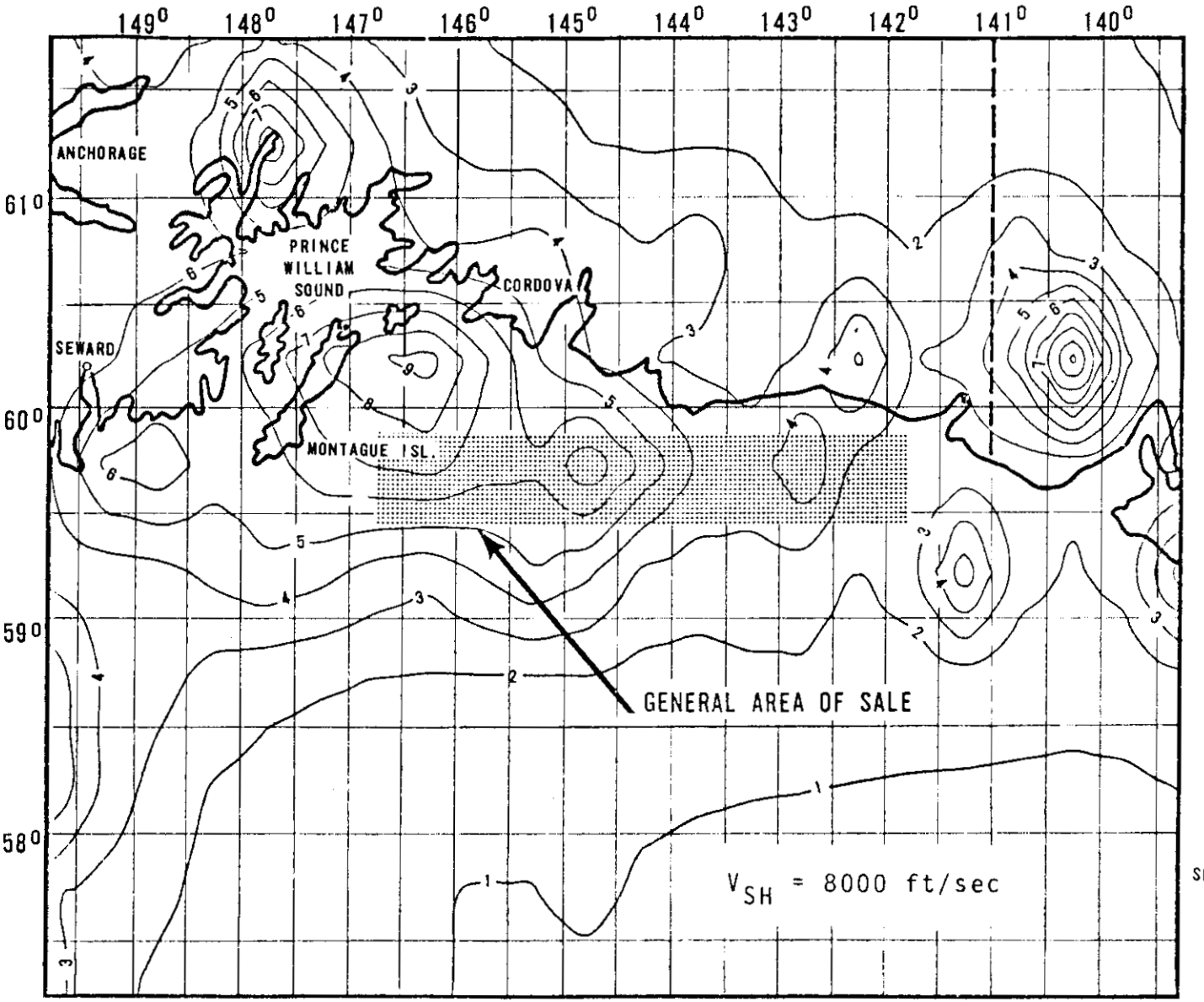
AFTERSHOCK ZONES OF EARTHQUAKES OF MAGNITUDE 7.3 OR GREATER SINCE 1938



1. Dashed where extent of zone is uncertain.
2. Dates and magnitudes given.
3. After Page.

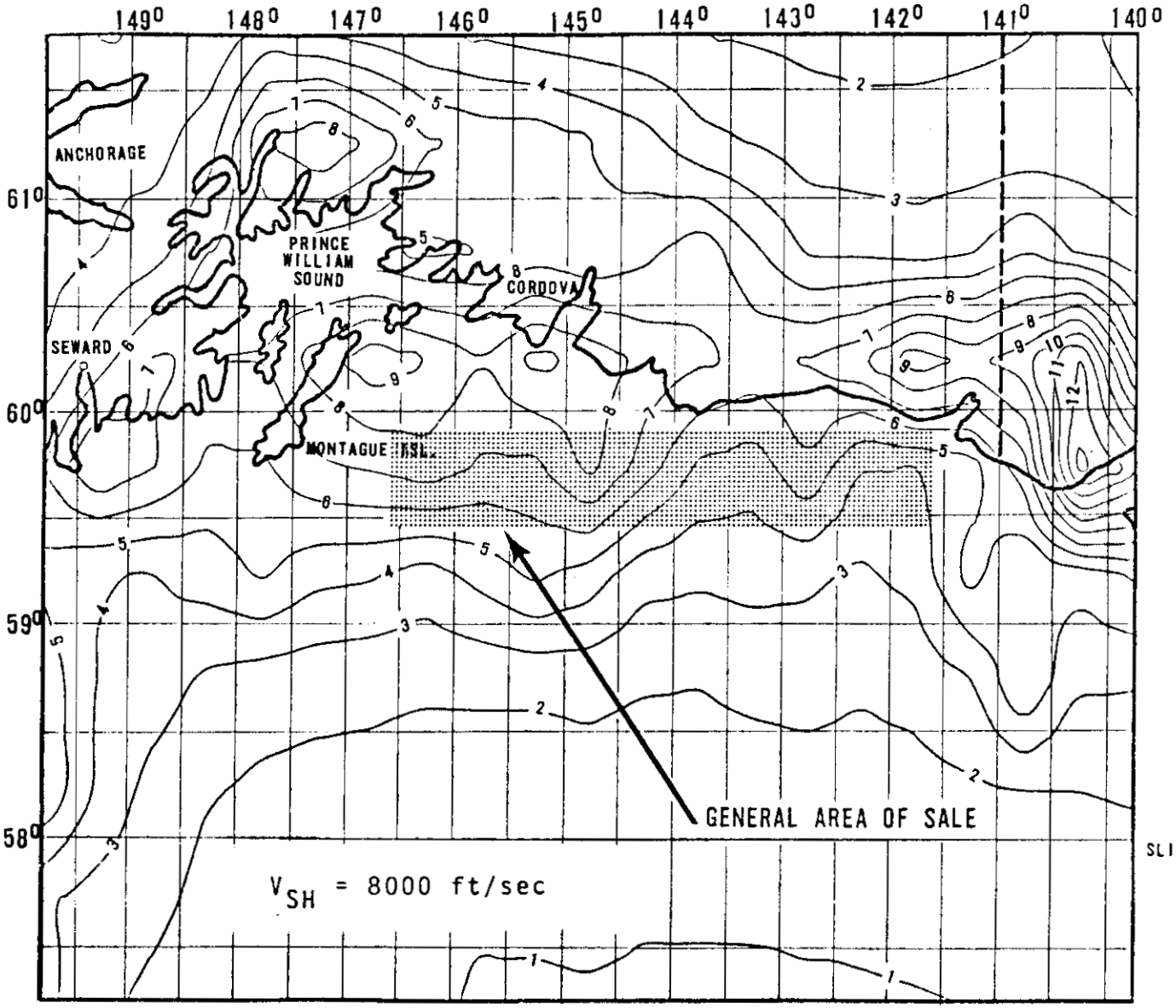
SLIDE 21

HARDROCK VELOCITY (IN/SEC), GULF OF ALASKA, RETURN PERIOD = 100 YEARS
(NO FAULT LINE ENERGY DISTRIBUTION)



SLIDE 22

HARDROCK VELOCITY (IN/SEC), GULF OF ALASKA, RETURN PERIOD = 100 YEARS
(WITH FAULT LINE ENERGY DISTRIBUTION)

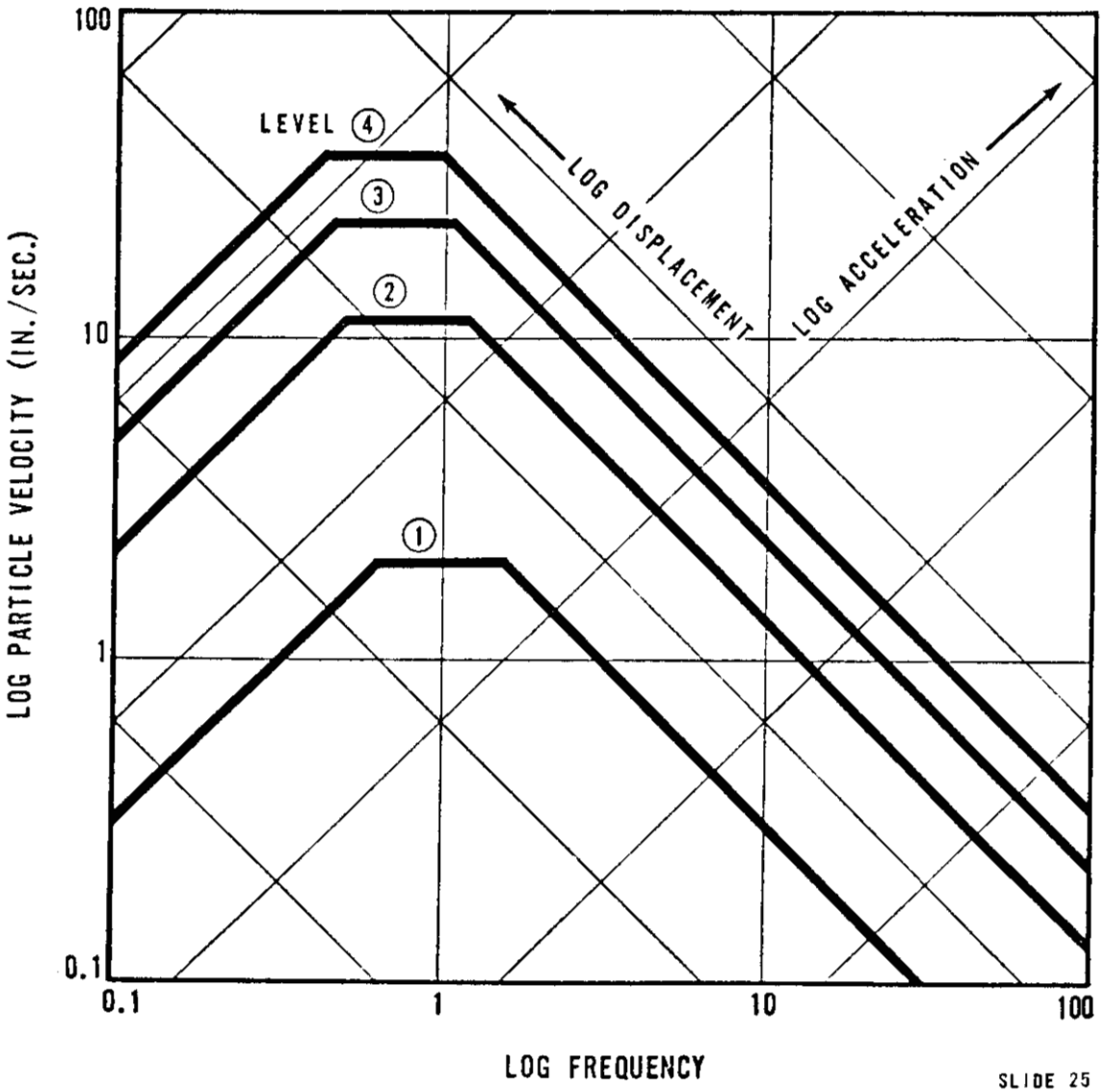


SLIDE 23

ANALYSIS CRITERIA

	BUILDING LIFE	PROBABILITY OF EQUALING OR EXCEEDING
UNIFORM BUILDING CODE	50 YRS	22%
USGS RISK MAPS	50 YRS	10%

HARDROCK PARTICLE VELOCITY SPECTRA (V_{SH} = 3800 FT/SEC)



SLIDE 25

EARTHQUAKE PROBABILITIES FOR SEISMIC ENVIRONMENTS IN GOA

FOR MONTAGUE ISLAND AREA

LEVEL NUMBER:	P_0(%):
1	99.9
2	31.9
3	12.8
4	5.6

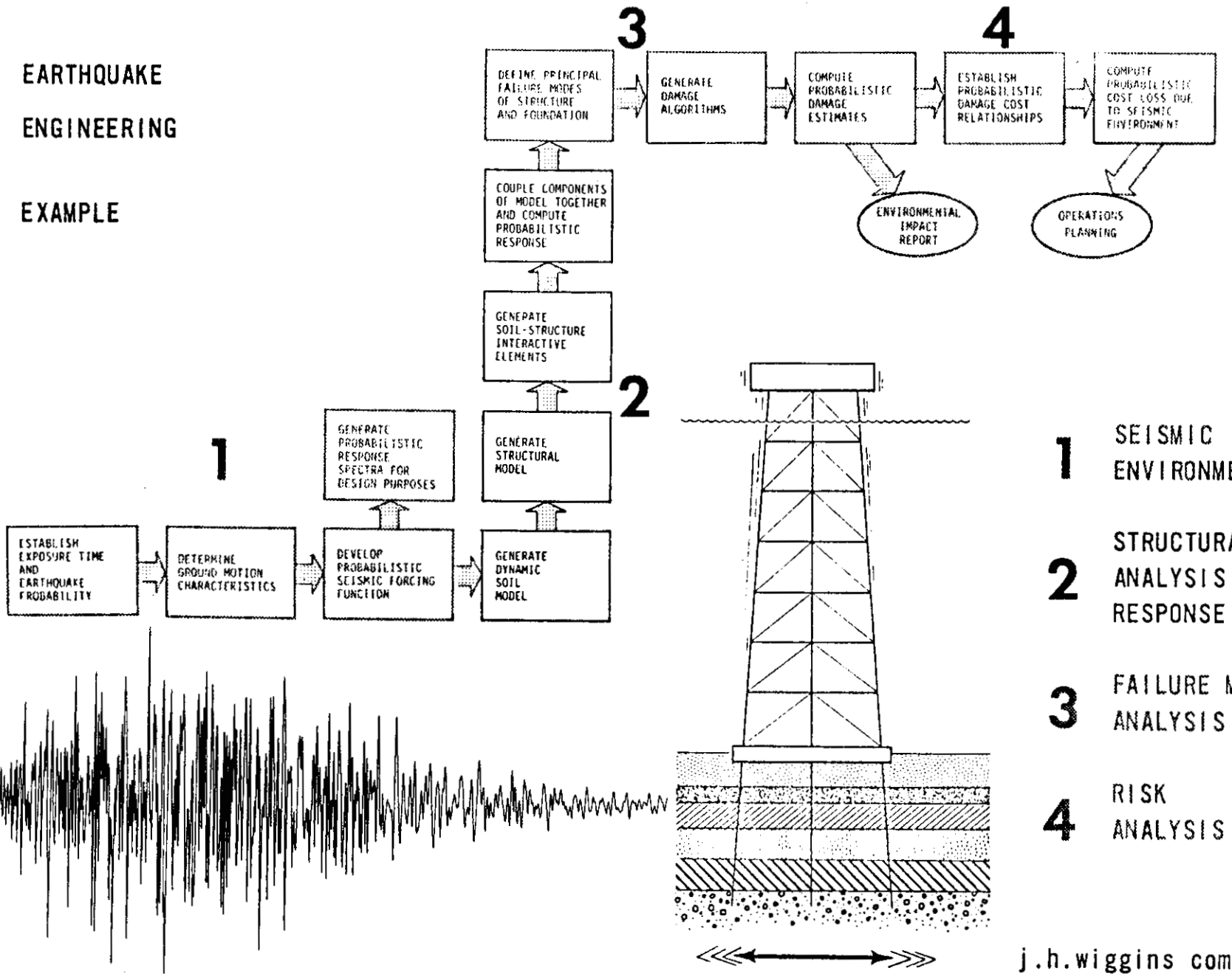
FOR YAKUTAT AREA

LEVEL NUMBER:	P_0(%):
1	97.2
2	18.4
3	6.0
4	3.1

EARTHQUAKE

ENGINEERING

EXAMPLE



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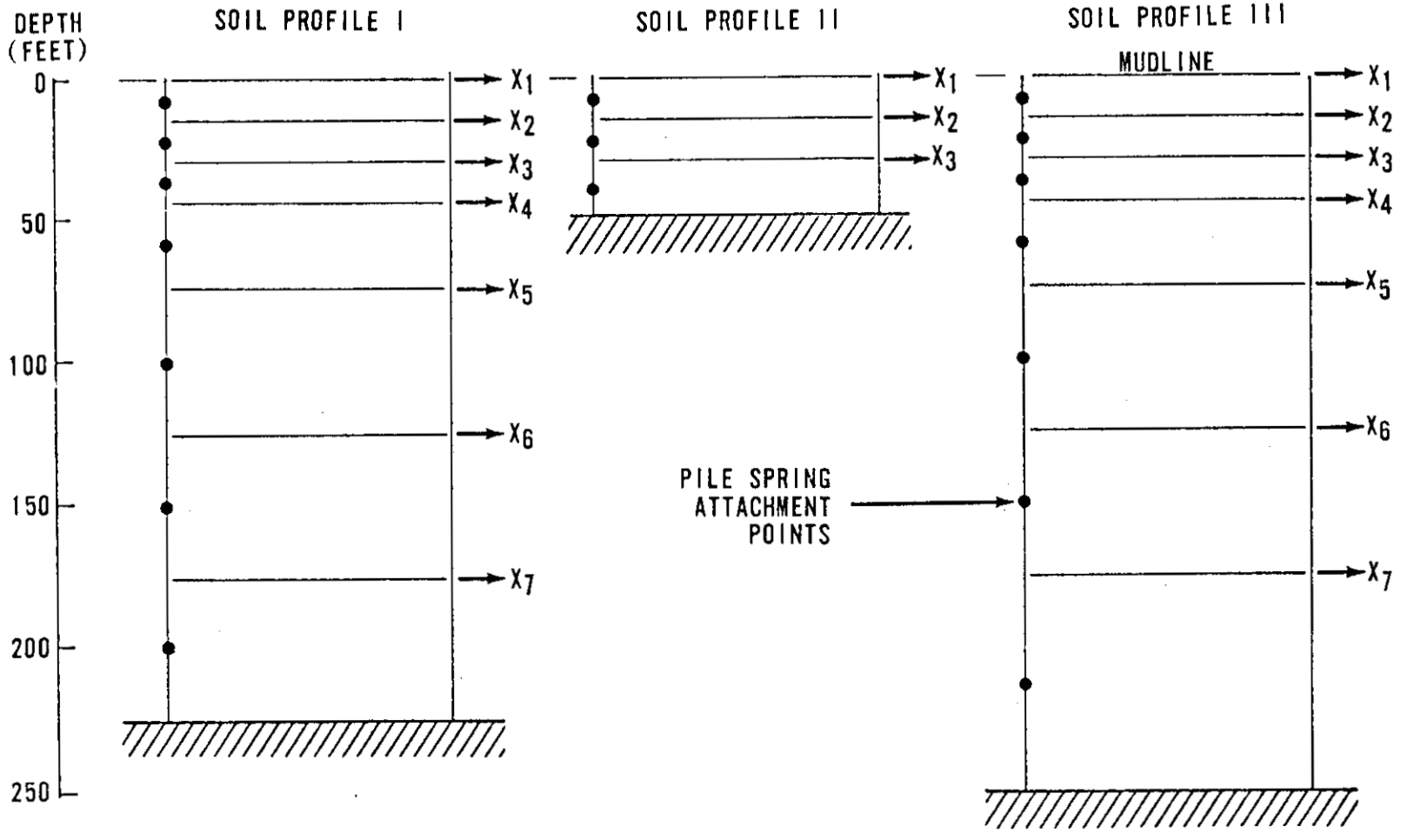
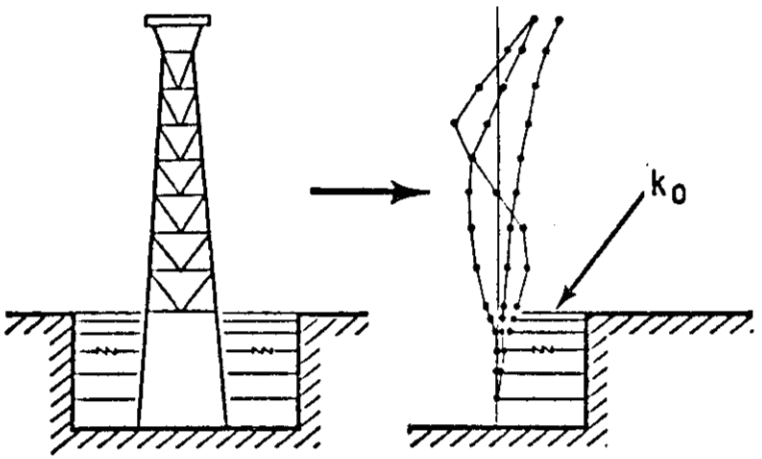
SLIDE 27

FINITE ELEMENT MODELS FOR THREE SOIL PROFILES

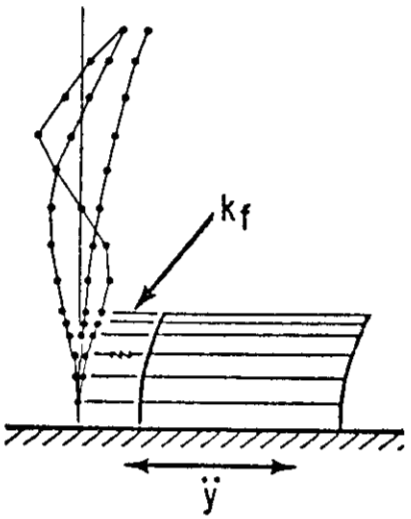


SLIDE 28

MODAL REPRESENTATION OF A COMPLEX STRUCTURE



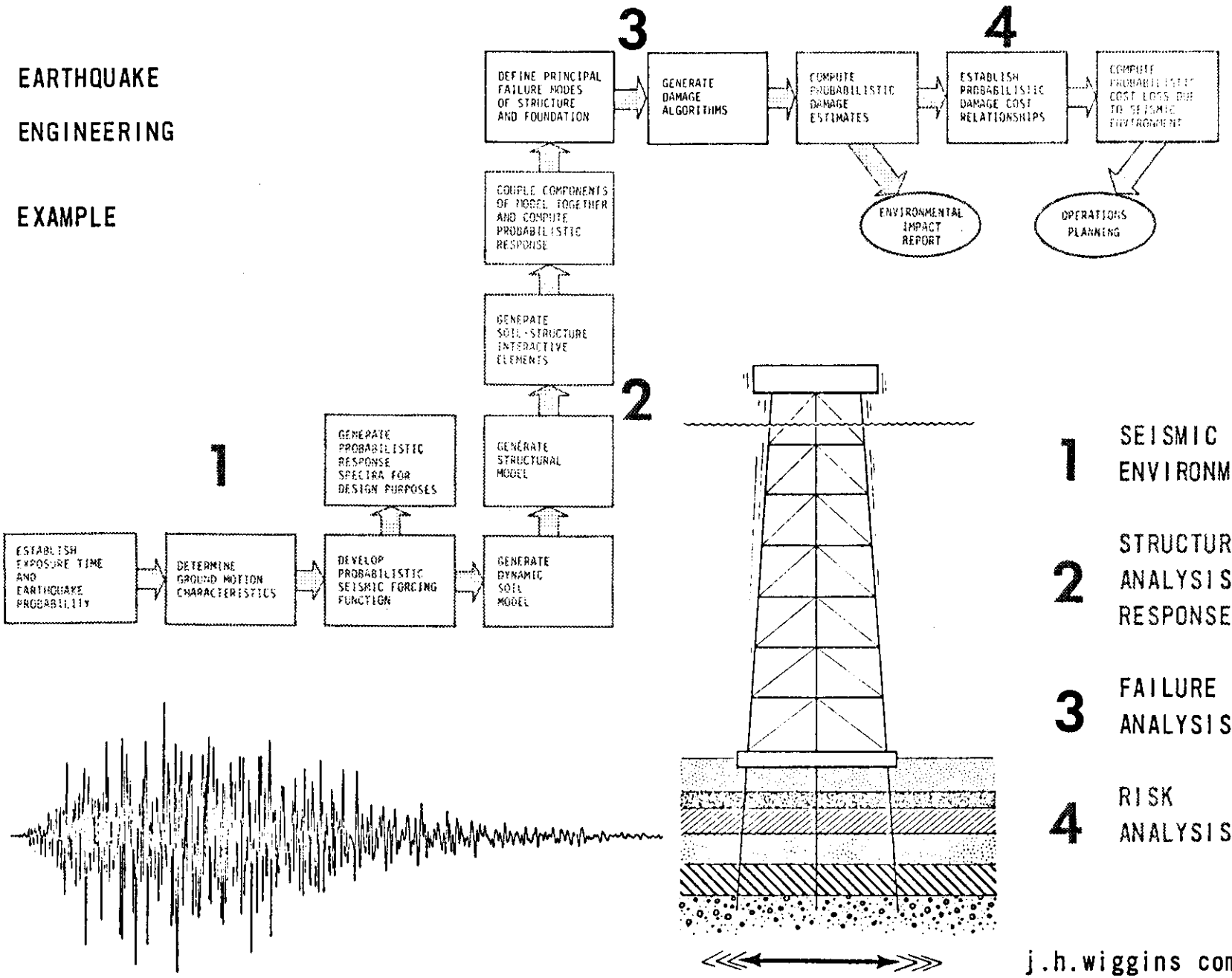
COUPLED RESPONSE OF SOIL STRUCTURE SYSTEM



EARTHQUAKE

ENGINEERING

EXAMPLE



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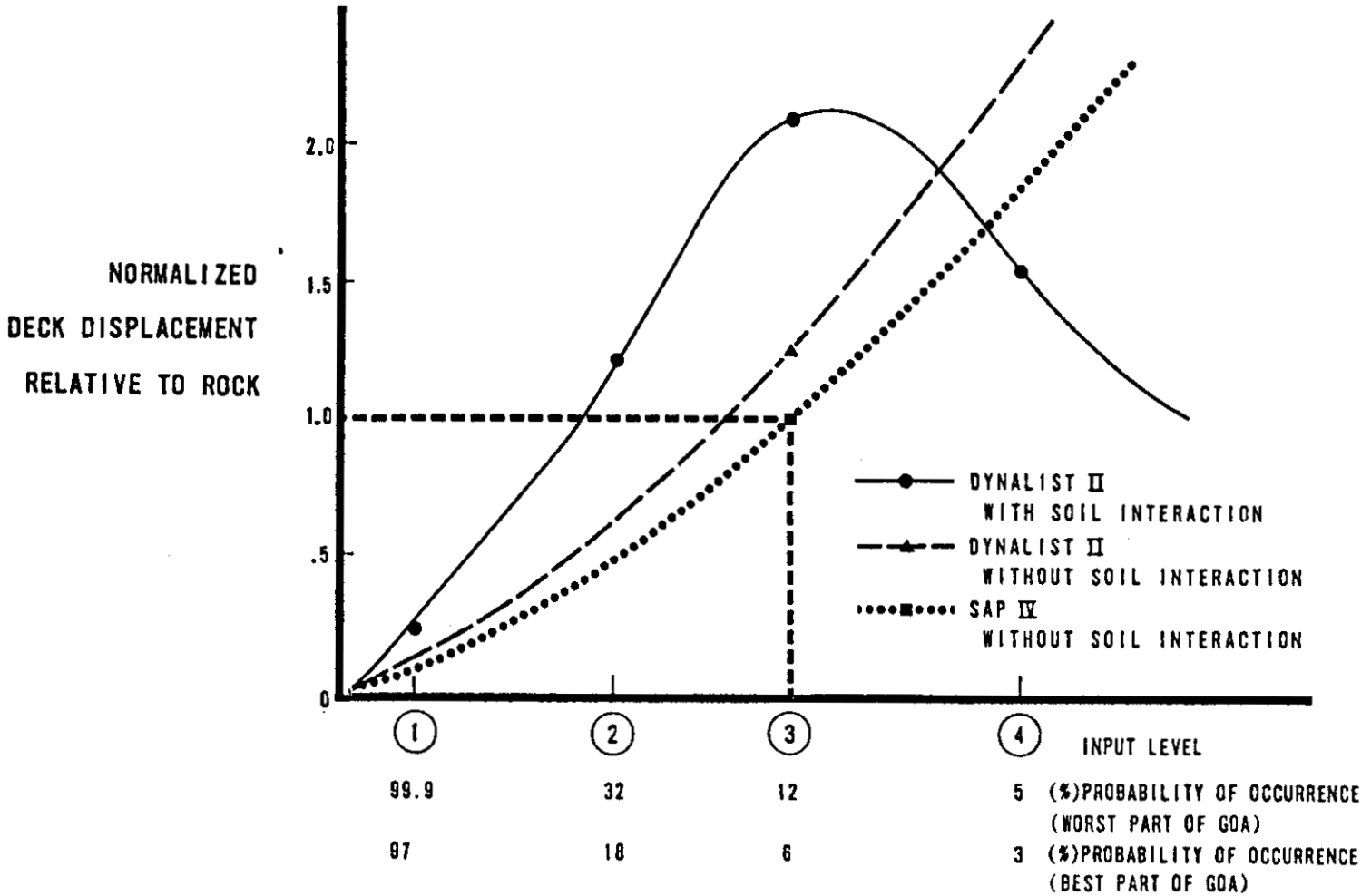
SLIDE 30

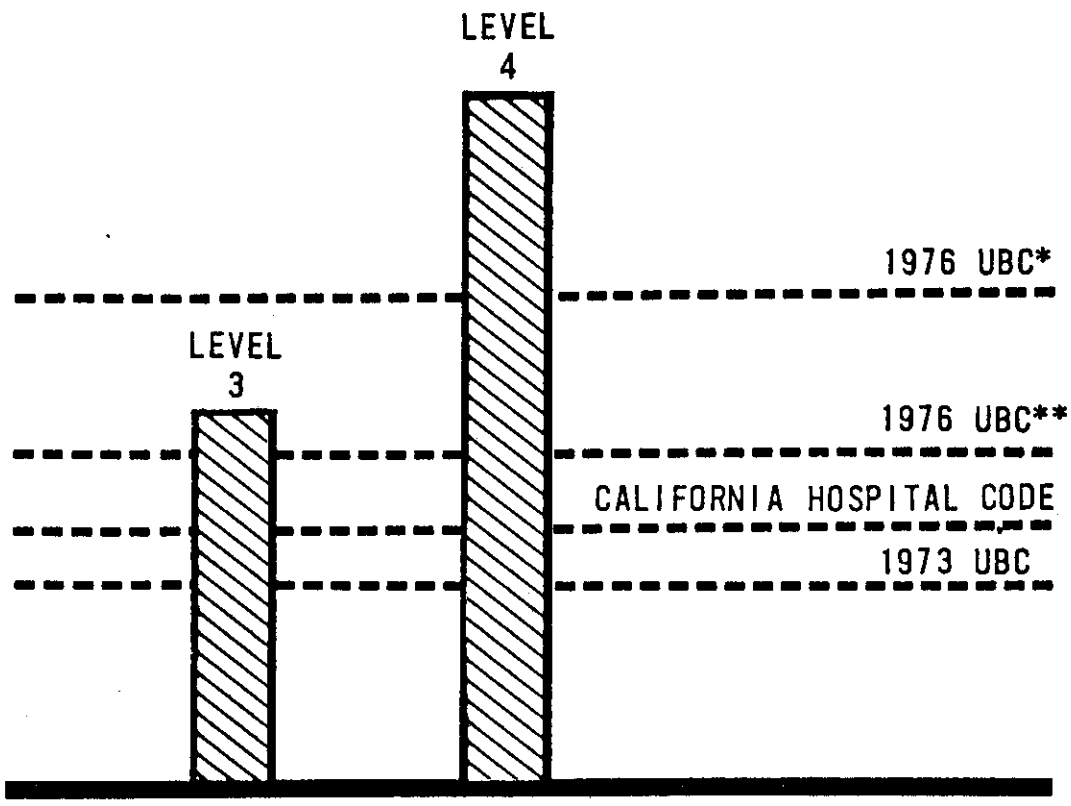
FAILURE MODES CONSIDERED

1. DECK STRUCTURE
2. TEMPLATE
3. PILES IN COMPRESSION
4. PILES IN TENSION
5. CONDUCTOR PIPE

COMPARISON OF RESPONSE METHODS



COMPARISON OF LEVELS OF ANALYSIS PERFORMED ON PRELIMINARY GOA STRUCTURES WITH EXISTING U.S. CODES



* Worst Soil, Most Important Structure.

** Best Soil, Most Important Structure.

SEISMIC RISK - PROBABILITY OF OCCURRENCE

- PROBABILITY OF EARTHQUAKE = P_E
- PROBABILITY OF LOCATION = P_L
- PROBABILITY OF RESPONSE = $P_E \times P_L \times P_R$
- PROBABILITY OF DAMAGE = $P_E \times P_L \times P_R \times P_D$
- PROBABILITY OF LOSS ($) = $\underbrace{P_E \times P_L \times P_R \times P_D \times P_\$}$

CONDITIONAL PROBABILITIES

(7)

THE OIL AND GAS POTENTIAL OF THE GULF OF ALASKA

STATEMENT BY
H. J. FITZGEORGE, MOBIL OIL CORPORATION

PREPARED FOR
GULF OF ALASKA OPERATORS COMMITTEE

GULF OF ALASKA ENVIRONMENTAL IMPACT HEARING
ANCHORAGE, ALASKA
AUGUST 12-13, 1975

My name is Harold Fitzgeorge. I am Vice-President of the Western Exploration and Producing Region, North American Division of Mobil Oil Corporation. In this position I am responsible for all exploration and producing operations for the State of Alaska and contiguous waters, and the northern two-thirds of the United States, including the West Coast and offshore areas.

Prior to this assignment, my experience included assignments as President of Mobil Oil Company de Venezuela, Exploration Manager for Mobil International, and Vice-President and Exploration Manager of Mobil Oil Canada, Ltd. In total, I have 27 years of experience in oil and gas exploration and development since I began working as a geologist in Oklahoma City.

Mobil Oil Corporation is an active member of the Gulf of Alaska Operators Committee, and I am pleased to speak here today. It provides me an opportunity as a geologist to discuss the oil and gas potential of a region that could become one of the most important oil and gas provinces of the U.S. I will elaborate on this, but wish to caution you that in spite of my scientifically based optimism, there are no certainties in oil and gas exploration.

The Gulf of Alaska Sedimentary Basin lies between Kodiak Island on the west and the coastline just west of Juneau, Alaska. It is almost 900 miles long and varies from 40 to 100 miles wide. The total area of the basin is about 40,000 square miles, of which 85%, or about 34,000 square miles, lies beneath the waters of the Gulf of Alaska. This area compares in size with the Louisiana and Texas combined offshore areas.

Oil explorationists look for several criteria when evaluating the oil potential of a basin. Two important factors are source and reservoir rocks. An oil basin must have sedimentary rocks capable of generating oil, and sufficiently thick porous rocks to contain the oil. Oil is generated from organic rich sediments by heat when these sediments are buried to depth, and it is commonly trapped in porous sand reservoir rocks in the earth. Large anticlinal structures contain much of the known world oil accumulations.

The presence of source beds and hydrocarbons in the Gulf of Alaska is well documented:

- A total of 108 oil and 15 gas seeps have been reported onshore by the U.S. Geological Survey. All are west of Yakutat Bay, with clusters of 86 of them in the Katalla area and 29 in the Yakataga area. Several offshore seep areas have also been noted.

- Shallow oil was discovered in 1902 on the north shore of the Gulf of Alaska at Katalla. Cumulative production of nearly 154,000 barrels from the Pt. Hey sandstone and fractured Poul Creek shales resulted from this and subsequent drilling between 1902 and 1933. The oils were described as high gravity, paraffin base and very low in sulfur content.

- A total of 71 wells have been drilled in the province, including one near Middleton Island, 70 miles offshore. Although no commercial discoveries by today's standards have been made, numerous shows of oil and gas have been recorded and the existence of a thick sedimentary sequence has been clearly established.

- Geological and geophysical studies indicate that the Gulf of Alaska Sedimentary Basin contains rock thicknesses in the order of 20,000 feet of Tertiary and Pleistocene rocks, of which the younger 10,000 to 15,000 feet are highly prospective for oil and gas. Estimates of the volume of these younger rocks range from 50,000 to 75,000 cubic miles.

The many onshore indications of hydrocarbons in the basin logically led to a search for petroleum offshore. In 1964 Mobil conducted their first seismic survey in the Gulf of Alaska, and in 1966 joined 24 companies in the first group survey in the Gulf of Alaska. Since then, numerous group and proprietary surveys have been conducted, and my company alone, as an example, has participated in 19 proprietary and 11 group surveys. In addition, we have obtained gravity, aeromagnetic, shallow seismic and sidescan sonar surveys plus bottom sampling and core hole data. We estimate that industry in both group and proprietary surveys has collected over 60,000 miles of seismic data, 8,000 line miles of gravity data, 14,000 line miles of aeromagnetic and 6,000 miles of shallow resolution seismic data. They have drilled 89 core holes and obtained extensive dart core coverage. Our company alone has obtained in excess of 4,500 dart cores. I estimate these surveys represent a pre-sale investment on the part of private competitive industry in the amount of $26 million dollars.

Now let us take a closer look at the geology and oil and gas potential of the Gulf of Alaska. It is important for everyone, and in particular local, state and federal government officials, who influence and directly affect offshore exploration and producing operations, to understand the potential of the Gulf of Alaska in light of our worsening domestic oil and gas shortages.

The prospective Sedimentary rocks of the Gulf of Alaska are sands and shales of Teritary and Pleistocene age and are both marine and non-marine in depositional origin. These sediments are exposed along the northern edge of the basin and have been further described in the subsurface by wells drilled along the shore and seaward by core holes, bottom sampling, geophysics and one deep test near Middleton Island.

Rocks of Cretaceous age are highly intruded, contorted and metamorphosed and are not regarded as objectives for oil and gas exploration.

The Tertiary rocks of the basin are of two distinct sequences: the lower unit is of Paleocene and Eocene age. They are usually hard, dense and highly deformed, and as such offer limited potential.

These rocks are overlain by a sequence of middle and upper Tertiary and recent sediments thought to be in the range of 15,000 to 20,000 feet thick. Beds of Oligocene, Miocene, Pliocene and Pleistocene age exhibit adequate reservoir characteristics, and the organic shales and silts of early Miocene age are thought to be potential source beds, as shown by the many oil and gas seeps from these rocks in the central part of the Gulf of Alaska.
It is interesting to note that rocks of the same age are the major producing horizons in California and the Gulf of Mexico.

Numerous structural features have been indentified both onshore and offshore. Within the designated sale area there are large anticlinal structures mapped by the seismograph. Structures of the magnitude outlined can contain significant reserves which are critically needed for the continued economic well being of Alaska and the lower forty-eight.

Analysis of crude oils from the Katalla Oil Field and various seeps indicate that the Gulf of Alaska has the potential for high quality, low sulfur crudes. The Katalla area crudes measure 41-45^{o} API gravity, with negligible sulfur and high gasoline yields. Analysis of seep crudes show sulfur contents of .8% by weight or lower. This type of crude is a highly desirable source for our product needs in light of air quality control requirements for low sulfur products.

Published figures vary widely on the oil and gas potential of the Gulf of Alaska. Likewise, the areas covered and the methods used by various analyses differ. The Alaska State Department of Natural Resources, Division of Geological and Geophysical Survey, using a volumetric method, estimated in 1974 for the Gulf of Alaska offshore a speculative recoverable resource of 5.4 billion barrels of oil and 39.4 trillion cubic feet of gas, to water depths of 1,500 meters. The United States Geological Survey has recently published a survey for Southern Alaska offshore which gives the lowest limit at 95% probability to be 1 billion barrels of oil, and the highest limit to be 6 billion barrels with a 5% chance: gas reserves are estimated at 2 to 17 trillion cubic feet at the same probabilities. These USGS reserves are for 200 meters or less of water depth and include the Cook Inlet and Kodiak Island Province, which are not included in the aforementioned State of Alaska survey. The Draft Environmental Impact Statement contains the USGS estimate of oil and gas potential for that portion of the Gulf of Alaska contained in the proposed sale area. The lower limit, at 95% probability, is 100 million barrels of oil and 300 billion cubic feet of gas. The high side of that estimate, with a 5% probability, is for 2.8 billion barrels of oil and 9 trillion cubic feet of gas.

Mobil's most recent estimates in the Gulf of Alaska of the potential recoverable oil and gas are of similar magnitude. However, there is no way of knowing what might ultimately be found until the drill bit actually penetrates the reservoirs we think might be present. The potential of the area can only be determined by a succession of exploratory wells seeking out every stratigraphic trend, every structural trend and every combination of both until the final oil potential of the region is known.

There are those who will argue that estimates of the hydrocarbon potential for the entire U.S. offshore are too high and those who argue the other side. Mobil's as well as many other responsible published opinions is that the United States' undiscovered resources will be large in the offshore with the Gulf of Alaska being one of the significant undrilled frontier areas. We think the offshore offers the best opportunity to find large accumulations of oil that will allow us a viable alternative to increased dependence on foreign imports; however, there have been no offshore Federal sales since 1968, except the Gulf of Mexico. In the first quarter of 1975 oil imports represented 38% of total petroleum supply. Our nation should not continue its heavy and increasing dependence on foreign energy sources. Our offshore areas must be explored now. America needs to breathe new life into its domestic oil and gas exploration. In a Department of interior survey of the oil industry, the Gulf of Alaska

was ranked number one in OCS sale priority for its probability of large potential. The oil industry by its already large investment in the Gulf of Alaska has shown it is prepared to carry out an exploration and producing program in an environmentally safe manner that will contribute to a greater and safer domestic energy supply.

Thank you for your attention, and if I can answer any questions you may have I will be pleased to do so.

STATEMENT OF

JOHN H. McKEEVER
AMOCO PRODUCTION COMPANY

BEFORE THE

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

HEARING ON

PROPOSED OIL AND GAS LEASING ON THE OUTER CONTINENTAL SHELF NORTHERN GULF OF ALASKA

ANCHORAGE, ALASKA
AUGUST 12-13, 1975

Gulf of Alaska
Sea Floor

Good Morning. My name is John McKeever. I am a Staff Geologist and exploration representative in Alaska for Amoco Production Company and have been employed in that capacity, resident in Alaska, for nine years. During that time I have been concerned, on behalf of my company, with field work, with geophysical work, and with bottom sampling in the Gulf of Alaska. I have reviewed the draft environmental statement. In preparing the Final Environmental Statement, I believe you should be aware that the oil and gas industry, and others, have acquired a very great deal of information about the sea floor in the Gulf of Alaska, and that considerable technology to interpret this information with respect to environmental concerns exists.

We do not suggest that the Gulf of Alaska sea floor is free from problem areas. We do, however, firmly believe that industry has the information and the knowledge to identify these areas and that our operations can be conducted with complete environmental safety.

IN GEOLOGY, AS IN HISTORY, ONE OF THE MOST BASIC PRINCIPLES IS THAT THE PAST IS A KEY TO PREDICTING THE FUTURE. FORTUNATELY, THERE IS A RECORD OF IMPORTANT PAST EVENTS IN THE GULF OF ALASKA TO AID US IN JUDGING THE SAFETY OF FUTURE OPERATIONS. THIS RECORD IS ENSCRIBED IN THE GEOLOGY OF THE GULF OF ALASKA. IT IS WRITTEN IN THE ROCKS EXPOSED ALONG THE SHORE, AND MORE GERMANE TO OUR PRESENT CONCERNS, IT IS WRITTEN IN THE SEDIMENTS UNDERLYING THE WATERS OF THE GULF OF ALASKA.

IN THE NEXT FEW MINUTES I WILL SHOW YOU HOW WE READ THE HISTORY WRITTEN IN THE ROCKS OF THE SEA FLOOR AND HOW WE CAN THEN ANSWER QUESTIONS ABOUT THE GULF OF ALASKA'S SEA FLOOR STABILITY IN RELATION TO LARGE EARTHQUAKES, STORM WAVES, TIDAL AND STORM CURRENTS, AND NATURAL OIL AND GAS SEEPS. BEFORE GETTING INTO THE TECHNICAL DETAILS OF HOW WE READ THE HISTORY OF THE ROCKS, LET'S REVIEW FOR A MOMENT WHAT WE ALREADY KNOW ABOUT THE GULF OF ALASKA. WE KNOW THERE ARE OIL AND GAS SEEPS IN THE AREA. WE KNOW THAT THE GULF IS SUBJECT TO LARGE WAVES AND SEVERE STORMS, AND THAT THESE HAVE OCCURRED FOR MANY YEARS. WE ALSO KNOW THAT WITHIN RECORDED HISTORY THE AREA HAS BEEN SUBJECT TO VERY LARGE EARTHQUAKES, AND THAT THESE ALSO TOOK PLACE IN PREHISTORIC TIMES. WE ALSO KNOW THAT SINCE ROCKS OF THE SEA FLOOR WERE

PRESENT DURING SUCH PAST EVENTS AND FAILED ONLY IN LOCAL AREAS, IT IS VERY UNLIKELY THAT WIDESPREAD FAILURE WILL OCCUR IN THE FUTURE.

NOW THEN, LET'S PROCEED TO INTERPRET GEOLOGIC HISTORY AND IF POSSIBLE TO PREDICT THE FUTURE. WE BEGIN BY GATHERING INFORMATION ABOUT THE SEA FLOOR, AND THIS IS OBTAINED IN A VARIETY OF WAYS, RANGING FROM DIRECT OBSERVATION BY PEOPLE IN SUBMERSIBLE VESSELS TO DETAILED MAPPING BY GEOPHYSICAL SURVEYS.

THE TWO METHODS MOST FREQUENTLY USED BY THE PETROLEUM INDUSTRY HAVE BEEN SEA FLOOR SAMPLING AND HIGH RESOLUTION ACOUSTIC SEISMIC SURVEYS. IN SEA FLOOR SAMPLING, AN ACTUAL PIECE OF ROCK OR OTHER MATERIAL FROM ON OR BENEATH THE SEA FLOOR IS RECOVERED BY DREDGING OR CORING. DEVICES SUCH AS CLAMSHELL OR BUCKET DREDGES, DART OR PISTON CORERS, OR ROTARY CORE DRILLS ARE USED TO OBTAIN ACTUAL SAMPLES OF THE MATERIAL ON OR BELOW THE SEA FLOOR.

HIGH RESOLUTION ACOUSTIC SEISMIC SURVEYS ARE USUALLY SPOKEN OF AS ACOUSTIC SURVEYS. ALL ACOUSTIC SURVEY SYSTEMS HAVE AN UNDERWATER ENERGY SOURCE BROADCASTING SOUND WAVES INTO THE WATER. THE SOUND IS SENT OUT IN SHORT PULSES AT PRECISELY

TIMED INTERVALS. WHEN THE SOUND PULSES STRIKE A SURFACE SUCH AS THE SEA FLOOR OR BEDS BENEATH IT, THEY ARE REFLECTED BACK, IN PART, AND ARE DETECTED BY SENSITIVE RECEIVERS, AND THE TOTAL TRAVEL TIME IS RECORDED. THE DISTANCE BETWEEN THE SOUND SOURCE AND THE REFLECTING SURFACE CAN THEN BE CALCULATED FROM THE KNOWN VELOCITY OF SOUND THROUGH THE TRANSMITTING MEDIUM.

THE RANGE OF USEFUL FREQUENCIES FOR ACOUSTIC SYSTEMS IS FROM ABOUT 40 UP TO 300,000 HERTZ. THE HIGHER FREQUENCY, SHORTER WAVE LENGTH SYSTEMS HAVE HIGHER RESOLUTION AND ACCURACY, BUT SHALLOW PENETRATION, WHILE THE LOWER FREQUENCY, LONG WAVE LENGTH SYSTEMS HAVE GREATER CAPABILITY IN DEEP PENETRATION. THE ENERGY SOURCE AND RECEIVERS OF ANY SYSTEM CAN BE TUNED TO RECORD SPECIFIC FREQUENCIES THAT PROVIDE THE BEST INFORMATION OR THE INFORMATION MOST DESIRED ABOUT A PARTICULAR AREA. SUCH SYSTEMS ARE CALLED TUNED TRANSDUCER SYSTEMS. UNDER GOOD CONDITIONS, THE HIGH FREQUENCY SYSTEMS CAN DEFINE FEATURES WITH LESS THAN A FOOT OF RELIEF ON THE SEA FLOOR AND THEY CAN ALSO DETECT SCHOOLS OF FISH AND BUBBLE COLUMNS IN THE WATER. THE LOWER FREQUENCY SYSTEMS CAN PENETRATE PERHAPS AS MUCH AS 3000' INTO THE SEA FLOOR AND DEFINE BEDS WITH A RANGE OF ACCURACY OF 2' TO 30'.

A NUMBER OF ACOUSTIC SYSTEMS ON DIFFERENT FREQUENCIES CAN BE MOUNTED ON ONE SURVEYING VESSEL AND WHEN THIS IS DONE THE RESULTING SURVEY IS CALLED A MULTI-SENSOR SURVEY. WHILE ACOUSTIC SURVEY DATA IS BEING RECORDED ON SHIPBOARD, THE EXACT POSITION OF THE SHIP IS ALSO BEING RECORDED CONTINUOUSLY BY NAVIGATIONAL SYSTEMS OF THE SHORAN OR LORAN TYPE. THUS, THE EXACT LOCATION WHERE EACH PIECE OF DATA WAS COLLECTED IS KNOWN AND CONSEQUENTLY, MAPS OF THE DATA CAN BE PREPARED.

EXAMPLES OF THIS DATA ARE SHOWN HERE. FIGURE 5 IS A DEPTH RECORDER PROFILE. NAVIGATIONAL STATIONS ALONG THE PROFILE ARE NUMBERED ACROSS THE TOP OF THE RECORD AND MARKED BY VERTICAL LINES. THE DEPTH SCALE ON THIS RECORD IS IN FATHOMS, AND YOU WILL NOTE THAT THE RECORD SHOWS A SCARP WITH ABOUT EIGHT FATHOMS OF RELIEF ON THE LEFT, AND BUBBLE CLUSTERS IN THE WATER COLUMN ON THE RIGHT.

A TUNED TRANSDUCER RECORD IS SHOWN IN THE LOWER PART OF FIGURE 5. THIS RECORD WAS RUN SIMULTANEOUSLY WITH THE DEPTH RECORDER RECORD ABOVE AND IT SHOWS THE SAME SCARP, THE SAME BUBBLE CLUSTERS; HOWEVER, THE HORIZONTAL SCALE IS EXPANDED.

AN ELECTROMECHANICAL RECORD IS SHOWN IN THE UPPER LEFT OF FIGURE 6. HERE WE SEE TWO LAYERS OF SEDIMENTARY ROCK,

COLORED GREEN AND YELLOW, AND WE SEE THE DETAILS OF THEIR CONTACT WITH A SERIES OF OLDER BEDS BENEATH THEM. PENETRATION HERE IS ABOUT 500' BENEATH THE SEA FLOOR. A SPARKER RECORD IS SHOWN IN THE LOWER PART OF FIGURE 6 AND IT SHOWS A SIMILAR SUCCESSION OF BEDS ALONG A DIFFERENT SURVEY LINE.

A SIDE SCAN SONAR RECORD IS SHOWN IN FIGURE 7. IN THIS SYSTEM THE SOUND IS BEAMED DOWN AND OUT ON EITHER SIDE OF THE SHIP'S TRACK AND THE RECORD FORMS A PICTURE MUCH LIKE AN AERIAL PHOTOGRAPH OF THE SEA FLOOR SURFACE.

THE ACTUAL BOTTOM SAMPLES CAN BE EXAMINED BY SPECIALISTS IN GEOLOGY AND ENGINEERING TO DETERMINE HOW OLD THE BEDS MAY BE, THE KIND OF ENVIRONMENT IN WHICH THEY WERE DEPOSITED, WHETHER THEY MAY PROVIDE SUITABLE SOURCES, OR SUITABLE RESERVOIRS, FOR OIL AND GAS, AND HOW STRONG THEY MAY BE FOR ENGINEERING PURPOSES.

WHEN THESE PROPERTIES ARE DETERMINED, THEY CAN BE CORRELATED WITH THE LAYERS OF SEDIMENTARY ROCK DETERMINED BY THE ACOUSTIC SURVEYS, AND MAPS CAN BE MADE SHOWING THE SEA FLOOR TOPOGRAPHY, THE TREND OF SEA FLOOR GEOLOGIC FEATURES, THE DISTRIBUTION OF DIFFERENT KINDS OF SEA FLOOR SEDIMENTS, AND THE GEOLOGIC STRUCTURE OF THE OLDER BEDS BENEATH THE SEA FLOOR.

THESE RESULTS CAN BE USED TO DETERMINE THE PRESENT SEA FLOOR ENVIRONMENT AS WELL AS ITS RECENT HISTORY, AND CAN ALSO BE USED TO PLAN FURTHER EXPLORATION ACTIVITY. ONE OF ITS PRINCIPAL USES FROM THE ENVIRONMENTAL STANDPOINT, IS THAT IT ENABLES THE PETROLEUM INDUSTRY TO LOCATE THE AREAS WHERE HAZARDS MAY BE INVOLVED AND TO AVOID THEM OR TO PLAN AROUND THEM.

A NUMBER OF SEA FLOOR SURVEYS HAVE BEEN CARRIED OUT IN THE GULF OF ALASKA BY INDUSTRY GROUPS, BY PRIVATE GROUPS, AND BY INDIVIDUAL COMPANIES. THE SURVEYS HAVE BEEN CONCENTRATED IN THE GENERAL AREA BETWEEN MIDDLETON ISLAND AND ICY BAY. BY THE END OF SUMMER 1975, IT IS ESTIMATED THAT THE INDUSTRY WILL HAVE ACCUMULATED ABOUT 6000 LINE MILES OF ACOUSTIC SURVEYS, OVER 5000 DART CORE SAMPLES, AND POSSIBLY 25,000' OF DRILL SAMPLES, AT A TOTAL COST OF MORE THAN $15 MILLION. MOST OF THIS EXPENDITURE MAY BE CREDITED TO THE PETROLEUM INDUSTRY AS AN INVESTMENT IN ENVIRONMENTAL UNDERSTANDING OF THE REGION.

BENEATH THE CONTINENTAL SHELF LIE ROCKS SIMILAR TO THOSE FOUND ONSHORE BORDERING THE GULF OF ALASKA. HOWEVER, OFF-SHORE THE FORMATIONS ARE LESS STRUCTURALLY DISTURBED THAN

THEY ARE ONSHORE, AND THEY WERE PLANED OFF BY MARINE AND GLACIAL EROSION DURING RATHER LATE GEOLOGIC TIME.

DURING THE PLEISTOCENE ICE AGES THE SEA LEVEL WAS LOWERED AND MUCH OF THE GULF OF ALASKA'S CONTINENTAL SHELF WAS ABOVE THE SURFACE OF THE SEA. IT WAS THEN COVERED BY GREAT ICE SHEETS ORIGINATING IN THE MOUNTAINS BEHIND THE PRESENT COAST LINE. THE ICE APPEARS TO HAVE CUT SEVERAL MAJOR CHANNELS ACROSS THE GULF OF ALASKA CONTINENTAL SHELF FROM MONTAGUE ISLAND CHANNEL TO ALSEK CHANNEL, AND GLACIATION APPEARS TO BE THE PRIMARY DETERMINANT OF THE BATHYMETRY OF THE GULF OF ALASKA CONTINENTAL SHELF.

THE UPPER RECORD ON FIGURE 8 IS AN ELECTROMECHANICAL RECORD, AND SHOWS THE SEQUENCE OF BEDROCK FORMATION AND GLACIAL AND RECENT OVERBURDEN THAT ARE TYPICAL OF MUCH OF THE NORTHERN GULF OF ALASKA. THE BOTTOM PART OF THE RECORD SHOWS BEDROCK SLOPING UPWARD TOWARDS THE SEA FLOOR, AND TRUNCATED BY A GLACIAL UNCONFORMITY. THIS EROSIONAL SURFACE SLOPES AT A LOW ANGLE AND IS FAIRLY SMOOTH AND REGULAR WITH PERHAPS 100' OF RELIEF.

DIRECTLY OVERLYING THE BEDROCK ALONG THIS UNCONFORMITY IS A LAYER OF OVERBURDEN ABOUT 40' TO 100' THICK. ITS SURFACE

HAS A LOW UNIFORM AVERAGE DIP SEAWARD WITH ERRATIC LOCAL RELIEF OF 10'. THIS LAYER SHOWS NO STRATIFICATION AND IT IS FEATURELESS EXCEPT FOR A NUMBER OF SMALL DIFFRACTION PATTERNS. CORE SAMPLES FROM THIS LAYER SHOW THAT IT IS OF LATE PLEISTOCENE TO RECENT AGE AND WAS DEPOSITED BY GLACIERS IN A MARINE ENVIRONMENT. IT IS CALLED THE GLACIAL OVERBURDEN LAYER AND IS OVERLAIN BY ANOTHER LAYER OF OVERBURDEN WHICH HERE THICKENS UNIFORMLY FROM ABOUT 20' TO 230' IN A SEAWARD DIRECTION. AT THIS LOCALITY THE UPPER SURFACE OF THIS LAYER FORMS THE SEA FLOOR WHICH IS EXTREMELY SMOOTH WITH A GENTLE SEAWARD SLOPE. THE SMALL CYCLIC VARIATIONS IN ITS THICKNESS ARE CAUSED BY WAVES OR SWELLS AT THE SURFACE OF THE SEA. SAMPLES OF THIS LAYER SHOW THAT IT IS A MARINE DEPOSIT OF RECENT AGE, COMPOSED ALMOST ENTIRELY OF SILTY CLAY WITH SCATTERED PEBBLES AND COBBLES EMBEDDED WITHIN IT, AND IT IS CALLED A RECENT OR NORMAL MARINE OVERBURDEN.

WHERE RECENT OVERBURDEN IS ABSENT, THE SEA FLOOR LOSES ITS SMOOTH ACOUSTIC CHARACTER AND TAKES ON A CHARACTER REFLECTING ITS COMPOSITION. WHEN GLACIAL OVERBURDEN FORMS THE SEA FLOOR, ITS TOPOGRAPHY IS TYPICALLY HUMMOCKY, AND SIDE SCAN SONAR SURVEYS MAY SHOW A COBBLY SURFACE OR EVEN MAY OUTLINE LARGE BOULDERS. WHERE BEDROCK FORMATIONS FORM THE SEA FLOOR THEY ARE USUALLY TOPOGRAPHICAL HIGHS, AND SHOW A ROUGH SURFACE, OFTEN WITH RIDGES THAT FOLLOW AND TRACE THE MORE RESISTANT BEDS.

THE LOWER ELECTROMECHANICAL RECORD IN FIGURE 8 SHOWS RECENT OVERBURDEN PARTLY COVERING A SEA FLOOR TOPOGRAPHIC HIGH, BUT ABSENT ACROSS THE ROUGH, ERODED APEX OF THE HIGH. THE ROUGH TOPOGRAPHY OF THIS FEATURE, AND THE ABSENCE OF DETECTABLE GLACIAL OVERBURDEN, MAY INDICATE THAT IT WAS NEVER GLACIATED AND IS IN FACT A BED ROCK OUTCROP.

THE GULF OF ALASKA HAS UNDERGONE A LONG HISTORY OF EARTH MOVEMENTS THAT HAVE FOLDED AND TILTED THE UNDERLYING BEDROCK. THE RECORD OF THESE EARTH MOVEMENTS IS EVIDENT FROM THE ACOUSTIC SURVEYS SHOWING FORMATION BEDROCK BENEATH THE OCEAN FLOOR. HOWEVER, THERE HAS NOT BEEN ANY EXTENSIVE FOLDING OR FAULTING OFFSHORE SINCE THE LATE PLEISTOCENE. WE CAN DEMONSTRATE THIS BECAUSE WE SEE NO DEFORMATION, OR AT LEAST, ONLY OCCASIONAL INSTANCES OF DEFORMATION OF THE GLACIAL OVERBURDEN LAYER AND THE RECENT OVERBURDEN LAYER.

THE RECENT OVERBURDEN LAYER FORMS THE SEA FLOOR, OVER ABOUT 75% OF THE SHELF AREA, AND THE GLACIAL OVERBURDEN COVERS ABOUT 10%, WHILE 15% OF THE SEA FLOOR IS COMPOSED OF BEDROCK ITSELF.

SINCE THE RECENT OVERBURDEN LAYER BLANKETS MOST OF THE SHELF, ITS STABILITY AS A FOUNDATION LAYER IS ESPECIALLY

IMPORTANT. THE FLAT PARALLEL REFLECTORS WITHIN THIS UNIT ARE BEDDING PLANES FORMED AS THE UNIT WAS DEPOSITED. BREAKS IN THESE BEDDING PLANES WOULD INDICATE TECTONIC DISTURBANCE. SUCH A BREAK IS VISIBLE IN THE BEDDING OF THE RECENT OVERBURDEN ON THE RIGHT SIDE OF FIGURE 8B, SHOWING THAT THE SEDIMENTS HAVE SHIFTED SLIGHTLY SINCE THEY WERE DEPOSITED AND THEREFORE MIGHT NOT PROVIDE A FIRM FOUNDATION IN THE FUTURE. ACOUSTIC SURVEYS HAVE FOUND SUCH AREAS OF INSTABILITY AT ONLY A FEW ISOLATED LOCALITIES. IN THE REST OF THE REGION THE BEDDING IN THE RECENT LAYER IS PARALLEL AND UNBROKEN. THIS SHOWS THAT THESE SEDIMENTS HAVE BEEN UNDISTURBED OVER A PERIOD OF MANY THOUSAND YEARS SINCE THEY WERE DEPOSITED, AND THAT THEY WILL PROVIDE A STABLE FOUNDATION FOR ANY FUTURE CONSTRUCTION.

ACOUSTIC SURVEYS HAVE SHOWN THE DISTRIBUTION, THICKNESS AND TOPOGRAPHY OF THE VARIOUS KIND OF BEDS THAT FORM THE SEA FLOOR IN THE NORTHERN GULF OF ALASKA, AND THEY SHOW RECENT STRUCTURAL MOVEMENTS. AS MENTIONED EARLIER, THERE ARE ONLY A FEW LOCATIONS WHERE THERE HAVE BEEN RECENT MOVEMENTS WITHIN THE PROPOSED SALE AREA.

THERE ARE BATHYMETRIC TRENDS WHERE THE BOTTOM SLOPE MAY BE STEEP ENOUGH TO BE UNSTABLE AND SUBJECT TO SLUMPING. THESE

TRENDS OF SLUMPING HAVE BEEN LOCATED AND MAPPED BY ACOUSTIC SURVEYS AND SEEM GENERALLY TO BE ALONG THE OUTER EDGE OF THE CONTINENTAL SHELF IN THE AREA OF DEEP WATER. FIGURE 9A, ON THE SPARKER RECORD AT THE TOP, IS A PROFILE ACROSS THE BOUNDARY BETWEEN THE CONTINENTAL SHELF AND THE SLOPE. IT SHOWS A ZONE OF SMALL FRACTURES NEAR THE EDGE OF THE SHELF AND A ZONE OF PROBABLE SLUMPING DOWN THE SLOPE. SUCH UNSTABLE AREAS WILL BE AVOIDED DURING OFFSHORE EXPLORATION OPERATIONS.

ACOUSTIC SURVEYS CAN ALSO BE UTILIZED TO LOCATE BUBBLE COLUMNS IN THE WATER AND ACOUSTIC VOIDS IN THE BEDS BENEATH THE SEA FLOOR. FIGURE 5 SHOWS AN EXAMPLE OF BUBBLES IN THE WATER COLUMN. THE LOWER ELECTROMECHANICAL RECORD ON FIGURE 9B SHOWS A CLUSTER OF ACOUSTIC DISCONTINUITIES. IN OTHER REGIONS IT HAS BEEN FOUND THAT SUCH ACOUSTIC DISCONTINUITIES AND BUBBLE COLUMNS ARE OFTEN EVIDENCE FOR HYDROCARBON GAS SEEPS. THUS, TO REDUCE THE POSSIBILITY OF BLOWOUTS, OPERATORS WOULD AVOID DRILLING OR TAKE ADEQUATE PRECAUTIONS IN LOCATIONS WHERE SEEPS HAVE BEEN MAPPED OR ARE SUSPECTED.

THE SEA FLOOR SURVEYS UNDERTAKEN COLLECTIVELY AND INDIVIDUALLY BY COMPANIES IN THE PETROLEUM INDUSTRY PROVIDE THE KNOWLEDGE NEEDED TO CARRY OUT ENVIRONMENTALLY SAFE PETROLEUM

EXPLORATION AND DEVELOPMENT ACTIVITIES. THE SURVEYS THAT HAVE BEEN MADE SHOW THE CHARACTERISTICS OF THE SEA FLOOR IN THE REGION AND THEY HAVE LOCATED THE TRENDS WHERE PROBLEMS MAY EXIST. THE TOTAL INDUSTRY EFFORT THAT HAS GONE INTO SEA FLOOR SAMPLING AND ACOUSTIC SURVEYING WILL GO FAR TO MAINTAIN ENVIRONMENTAL INTEGRITY IN EXPLORATION FOR PETROLEUM IN THE GULF OF ALASKA.

THANK YOU.

(17)

STATEMENT OF

PAUL L. HORRER
INTERSEA RESEARCH CORPORATION

before the

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

HEARING

on

PROPOSED OIL AND GAS LEASING

on the

OUTER CONTINENTAL SHELF

NORTHERN GULF OF ALASKA

ANCHORAGE, ALASKA
AUGUST 12-13, 1975

GULF OF ALASKA OPERATORS COMMITTEE

Statement of Paul L. Horrer, Intersea Research Corporation

OFFSHORE SALE ENVIRONMENTAL HEARING

Anchorage, Alaska

My name is Paul Horrer. I am President of Intersea Research Corporation. My educational background includes a BS in Meteorology from Cal Tech and MS in Physical Oceanography from Scripps Institution of Oceanography. My work experience includes 8 years as research oceanographer at Scripps and 19 years as a consulting oceanographer. The latter includes projects in Alaska beginning with the Chevron marine terminal at Nikiski in 1959. My firm, Intersea Research, is presently conducting a two-year wave measurement program at five locations in the Gulf of Alaska. Intersea's predecessor company, Marine Advisers, Inc., carried out an extensive in-office study in 1968-70 to develop and summarize data on weather, waves and currents in the Gulf of Alaska as well as two years of wave measurements at Yakutat. Both projects were financed by groups of oil companies.

Slide 1

The purpose of my testimony is to discuss the physical marine environment of the Gulf of Alaska, particularly as this environment affects offshore petroleum operations; to describe the state of present scientific knowledge of this environment; and to indicate some future improvements to be expected in such knowledge.

Generally my testimony is in agreement with the Draft Environmental Impact Statement which presents a good description of the physical marine environment. Two exceptions involve (a) ocean currents, and (b) tsunamis. Some recent information, not included in the EIS, is available on currents. The other exception is that I disagree with the broad statements made in the EIS regarding potential damage to rigs and facilities due to tsunamis. Written comments on the EIS will be filed later.

Slide 2 Past and present measurements in the Gulf that are pertinent to this testimony include both public and industry-sponsored programs which date back to the end of the last century, beginning with weather observations from ships, as well as shore-based recording of tides and sea water temperature. Those initial programs and others are continuing, and now there are weather satellites and sophisticated wave and weather telemetering buoys.

The weather plays a governing role in dictating the nature of almost all offshore operations. The knowledge of average or frequently occurring weather conditions is an important factor in planning for efficient and safe offshore operations. Evaluations of extreme or rarely occurring conditions provide the basis for the design of structures or other facilities. And, finally, prediction of weather is an integral part of the conduct of prudent offshore operations.

Slide 3 Within the Gulf of Alaska area, wind measurement data are available at coastal stations, at Middleton Island, at two weather buoys (EB-03 and

EB-33), and from some ship reports. Such information gives a first estimate of wind conditions generally to be found within the Gulf of Alaska but does not necessarily describe all offshore locations. However, there are methods by which winds can be calculated from the synoptic weather charts

Slide 4 of historical data published by the Weather Bureau. In 1967, the petroleum industry organized and supported an environmental study of the Gulf of Alaska costing $1,200,000 and requiring thirty months of effort. The prime contractor for this effort was my consulting firm, Marine Advisers, Inc. The Marine Advisers' project included wind calculations from weather maps, technically known as wind hindcasts, for twenty locations in the Gulf of

Slide 5 Alaska. An example result of this study is summarized in this slide which portrays the monthly variation of wind conditions throughout the year at one location. For example, this indicates that during the month of January winds greater than 24 knots could be expected to occur 25 percent of the time.

Slide 6 More detail is available in information about the directions of winds, presented in this slide as a typical "wind rose" at an information site. For example, this diagram indicates that winds from the east-southeast, at speeds between 11 and 21 knots, occur approximately 10 percent of the time.

Slide 7 In addition, the examination of wind information permits evaluations of the extreme events to be expected. As in all evaluations of extreme events, one must view the information in a probabilistic manner. Annual extreme winds have different sorts of probability distributions than do typical winds. A series of observed annual maximum events is fitted to one of these theoretical distribution functions and the speed occurring once per century on the average can then be determined. This slide indicates that at a

typical offshore location in the Gulf of Alaska, one should expect wind gusts of 100 knots to occur on the average once every five years.

It is important to note that, in general, winds are not directly the most important parameter which influence offshore structures or operations. Instead, it is the waves generated by the winds which constitute the most important phenomenon. Winds determined from the historical synoptic weather maps may also be used to evaluate waves occurring during past history. Such historical wave evaluations, or wave hindcasts, were also a part of the industry-supported Gulf of Alaska project begun in 1967.

Slide 8 Wave calculations were verified against wave measurements, also made as a part of the project. This slide indicates the seasonal variation of normal waves at a typical station in the Gulf of Alaska. These results, for example, indicate during the month of January, sea states with significant waves higher than 12 feet should be expected to occur 25 percent of the time. Significant wave height is a technical term but one whose numerical value corresponds closely to the subjective visual impression

Slide 9 of wave height reported by a trained observer. Information on the occurrence of extreme wave events is depicted in the next slide. This indicates that a wave 95 feet high should occur, on the average, once every 100 years.

Refinement of these wave data will be accomplished, if needed, by means of the wave measurements and hindcast evaluation being performed

Slide 10 now by Intersea for a group of oil companies. "Waverider" buoys, which measure sea surface elevation fluctuations by means of a specialized

accelerometer, telemeter data to shore while also analyzing and recording results on a cassette tape within the buoy. Fifteen of these were installed in five clusters of three each, for redundancy, in August and

Slide 11 September 1974. Wave data is received and recorded ashore from the Waveriders at Sitkinak Island, Middleton Island and Yakutat. Wind and other weather data are recorded ashore at these three locations. It is planned to continue this program into 1976.

The Gulf of Alaska has earned a reputation as being a stormy area of the world. However, this area is not markedly different from other areas in which the offshore petroleum industry has successfully conducted operations. The indicated extreme winds of the Gulf of Alaska are substantially less than those associated with Gulf of Mexico tropical hurricanes, and the persistence of storm winds in the Gulf of Alaska does not appear to suggest more severe conditions than encountered in the Norwegian North Sea. In both of these mentioned areas, the petroleum industry now operates successfully. The industry also copes with stormy

Slide 12 sea conditions in other areas, as well. An evaluation of various areas of the world has been made on the basis of ship reports of wave heights. This survey comparison is presented on the next slide. It is to be recognized that ship reports of wave heights reflect certain biases on the part of observers on ships with different characteristics. Nevertheless, the trends are significant in indicating that the Gulf of Alaska is not more stormy than other areas in which offshore petroleum operations have been conducted. In terms of extremes, it is worthwhile to note that the drilling vessel SEDCO 135F experienced a wave reported to be 95 feet high in drilling off Vancouver

(Petroleum Engineer, March 1969) without evidence of threat to the structural integrity or safety of the unit. Moreover, the industry has designed platforms for very large waves, and these have been utilized in the North Sea.

One familiar with the sea will recognize, of course, that conditions of wind and waves are also accompanied by various types of ocean currents. On the continental shelf, away from constricted bays, currents are not generally, however, a major factor in offshore design or routine operations. They are, nevertheless, considered in structural design and must be accounted for in any oil spill containment and cleanup contingency plan. The previously-described industry-sponsored study determined both normal current and extreme

Slide 13 conditions of current to be expected in the Gulf of Alaska. Such information is included in this slide which depicts the occurrence of normal types of current. This, for example, indicates that current velocities which exceed

Slide 14 one knot should generally be anticipated 25 percent of the time. Estimated extreme current values are shown in the next slide, where surface currents are evaluated for a typical location to be as much as 4 knots. The values for current indicated in these slides do not differ from currents found in many other areas of the world such as the North Sea or the Grand Banks area, and they are not as severe as currents in Cook Inlet.

Slide 15 Direct measurements of currents with recording current meters were carried out in the Gulf of Alaska in 1974 by Bolt, Beranek & Newman, and Intersea at seven locations and by the National Ocean Survey at three locations. Analysis of these data will permit further refinement of the Marine Advisers' study of currents.

As with traditional maritime activity, the drilling of offshore oil wells, especially exploratory wells, must be carried out with one eye on the weather. This means that weather forecasts are important. One oil company organized a trial forecasting effort, with emphasis upon those weather conditions which might, for example, call for shut down of an exploratory drilling operation.

Over a trial period of three months, routine forecasts were made for an area off Yakutat by a marine forecasting consulting firm. Particular attention was devoted to the forecast of sea states. Concurrently with the forecasting, waves were measured in the forecast area using a Waverider. Comparison of forecast and measured conditions of seas provides a measure of forecast reliability. From such comparisons the following conclusions have been established.

1. Most important, there occurred no storm conditions which were not forecast.

2. There were only a few "false alarm" forecast storms, which failed to materialize.

While experienced judgment indicates that present Gulf of Alaska forecasting is adequate for offshore operations, improvements are desirable and to be expected. A group of oil companies is considering a new year-long forecasting program using a computer-based wave model to gain practice in this science before exploratory drilling is initiated. Special forecasting

generally improves rapidly with experience gained in actual operations. For the Gulf of Alaska, one may expect that this normal evolution of improvement will be augmented through expansion of the input data base by additional oceanographic buoys to be deployed by the National Oceanographic and Atmospheric Administration. One such buoy is now in operation off Kodiak, and another is off Yakutat, as shown in an earlier slide.

Slide 16

In addition to knowledge of winds, waves and currents, the offshore industry also requires estimates of the total water level rise and, especially, estimates of the probability that various design water level elevations will occur. Besides waves and the infrequent earthquake-produced tsunami, the components of raised sea surface elevations are astronomical tide and storm surge. Tides in the Gulf of Alaska are of the mixed type, containing both diurnal and semi-diurnal components. In the northeast part of the Gulf of Alaska, extreme tides range from -3 to +15 feet relative to the Mean Lower Low Water reference datum.

Storm surge is the increase in sea-surface elevation due to low barometric pressure and to wind tide. In the Marine Advisers' study, storm surge was calculated for the most severe storms of record. Depending on location and water depth, the 100-year storm may raise the water level by one to five or six feet. The 100-year combined astronomical and storm tide is on the order of 20 feet above mean lower low water or 15 feet above mean sea level. This is considerably less than in Cook Inlet.

Slide 17 Good documentation now exists on tsunami run-up elevation in harbors and bays, and thus shore facilities can be constructed at safe elevations. In the open Gulf, although the tsunami is higher at places than the tides, it is much lower than the maximum storm wave. For example, in the Good Friday 1964 earthquake, it has been calculated by numerical modeling that the water elevations about 50 miles west of the proposed lease area reached a maximum of 30 feet, five minutes after initial ground motion. In the open Gulf, the tsunami was not a bore nor was it steep like a wind wave, but rather the water level rose gradually to its maximum elevation.

Slide 18 In the CEQ report the potential damage to underwater oil storage systems on the open coast due to tsunamis was assessed improperly. In order to place it into proper perspective, it is useful to compare the tsunami with storm waves. Drag and inertial forces on a hypothetical storage vessel due to a tsunami will be much smaller than those due to the maximum storm wave for which the industry is confident it can safely design.

For example, a tsunami raising the water level 30 feet in 5 minutes at a location where the water depth is 200 feet would produce water horizontal acceleration and velocity maxima of 0.15 ft/sec^2 and 7 ft/sec. By comparison, the maxima for a storm wave 90 feet high with a 16 second period would be 8 ft/sec^2 and 20 ft/sec at the surface decreasing to 4 ft/sec^2 and 10 ft/sec at the bottom.

Buoyancy forces due to a tsunami will be comparable to those due to the design storm wave. Of course, buoyancy forces matter

only for an underwater storage tank which has large volume above the still water level. A storm wave 90 feet high with 16 seconds period in 200 feet water depth would raise the water level an average of 44 feet along a 300-foot wide structure; the hydrodynamic attenuation reduces this to 25 feet differential water pressure at the sea floor. That compares with 30 feet calculated water level rise due to the 1964 tsunami in the open Gulf.

The offshore petroleum industry generally expends substantial effort in understanding the physical marine environment where offshore operations are conducted. It is to be noted that much of the detailed information is obtained to meet expanding needs as development proceeds. Specific design information, required for design of producing facilities, is most effectively gathered in the course of early exploratory phases. From the foregoing, it is quite clear that the industry has already completed the required preliminary assessment of the physical marine environment of the Gulf of Alaska. Although more complete and detailed knowledge will be gained as offshore activity in the area increases, I am confident that sufficient knowledge is already available to permit operations to be conducted with safety to the environment and to personnel.

GULF OF ALASKA

MARINE PHYSICAL ENVIRONMENT

PRESENT KNOWLEDGE

FUTURE IMPROVEMENT

METEOROLOGICAL AND PHYSICAL OCEANOGRAPHIC MEASUREMENTS

BY SHIPS OF OPPORTUNITY
- WEATHER
- SHIP'S DRIFT

BY OCEANOGRAPHIC SHIPS
- SEA WATER DENSITY
- CURRENTS

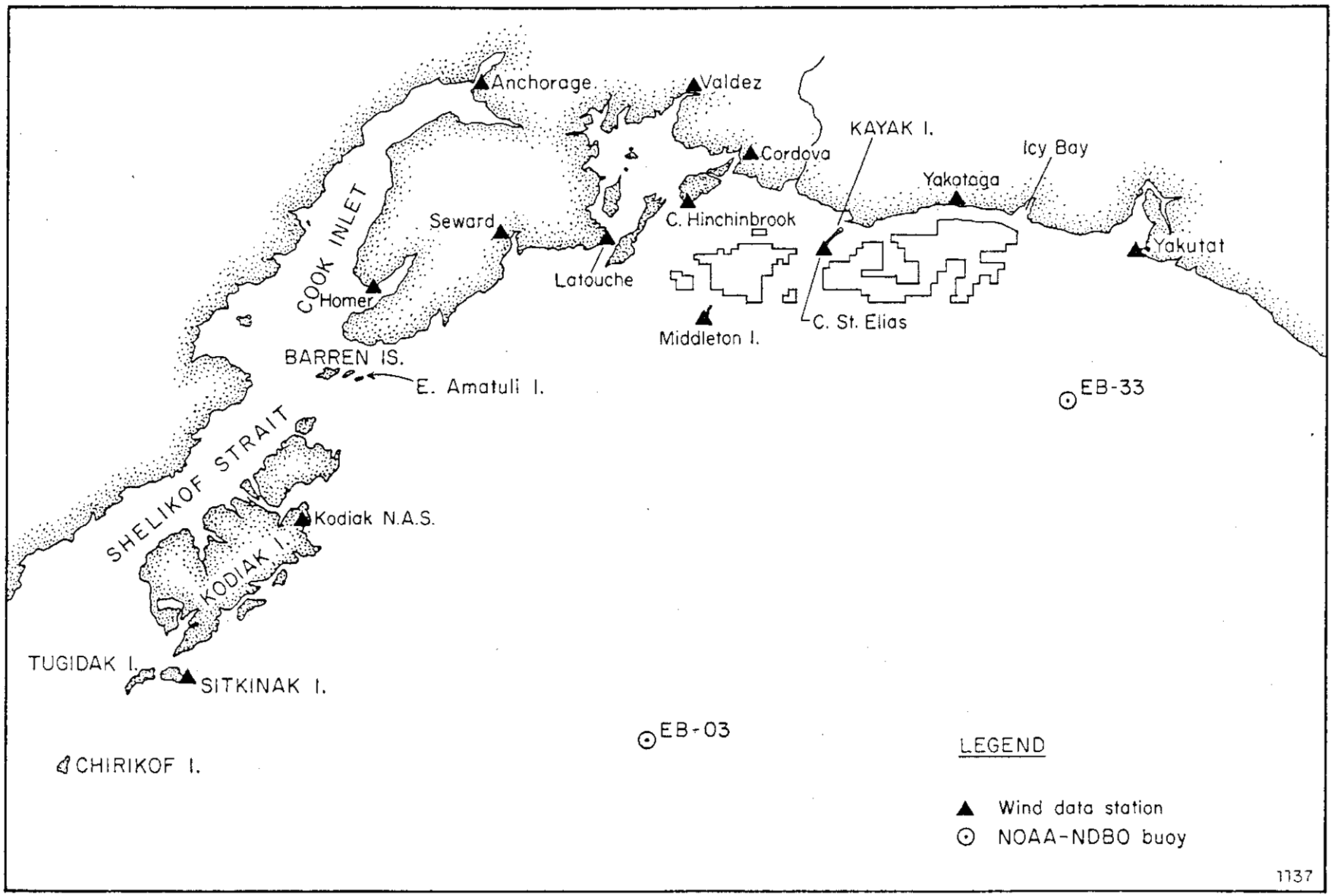
AT AIRSTRIPS, LIGHTHOUSES AND HARBORS
- WEATHER
- TIDE
- SEA TEMPERATURE

BY INSTRUMENT BUOY SYSTEMS
- WIND, AIR AND WATER TEMPERATURES, BAROMETER
- WAVES
- CURRENTS

BY UNDERWATER SENSOR CABLED TO SHORE RECORDER
- WAVES
- TSUNAMIS

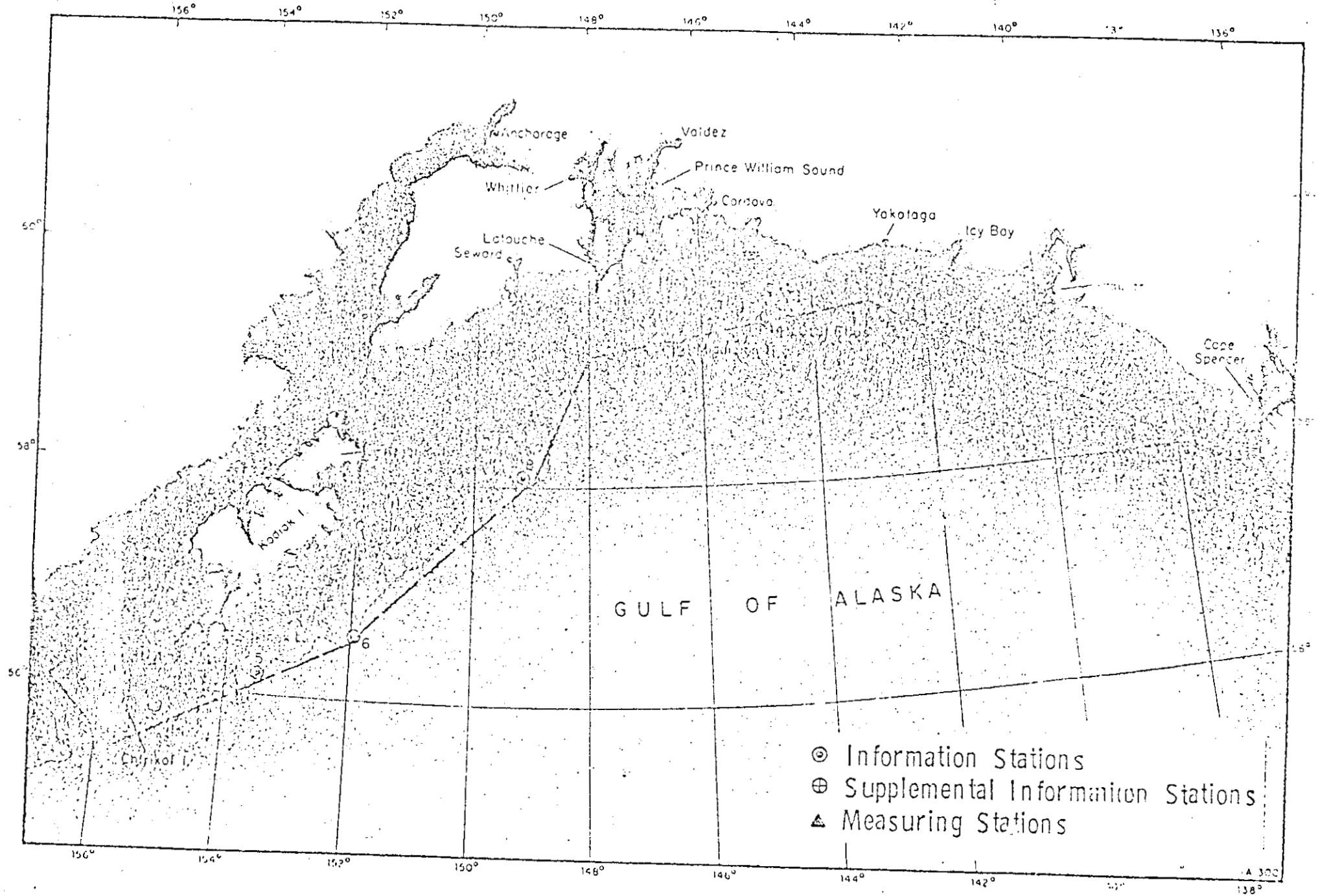
BY SATELLITES
- CLOUD COVER
- SEA TEMPERATURE

WIND DATA STATIONS

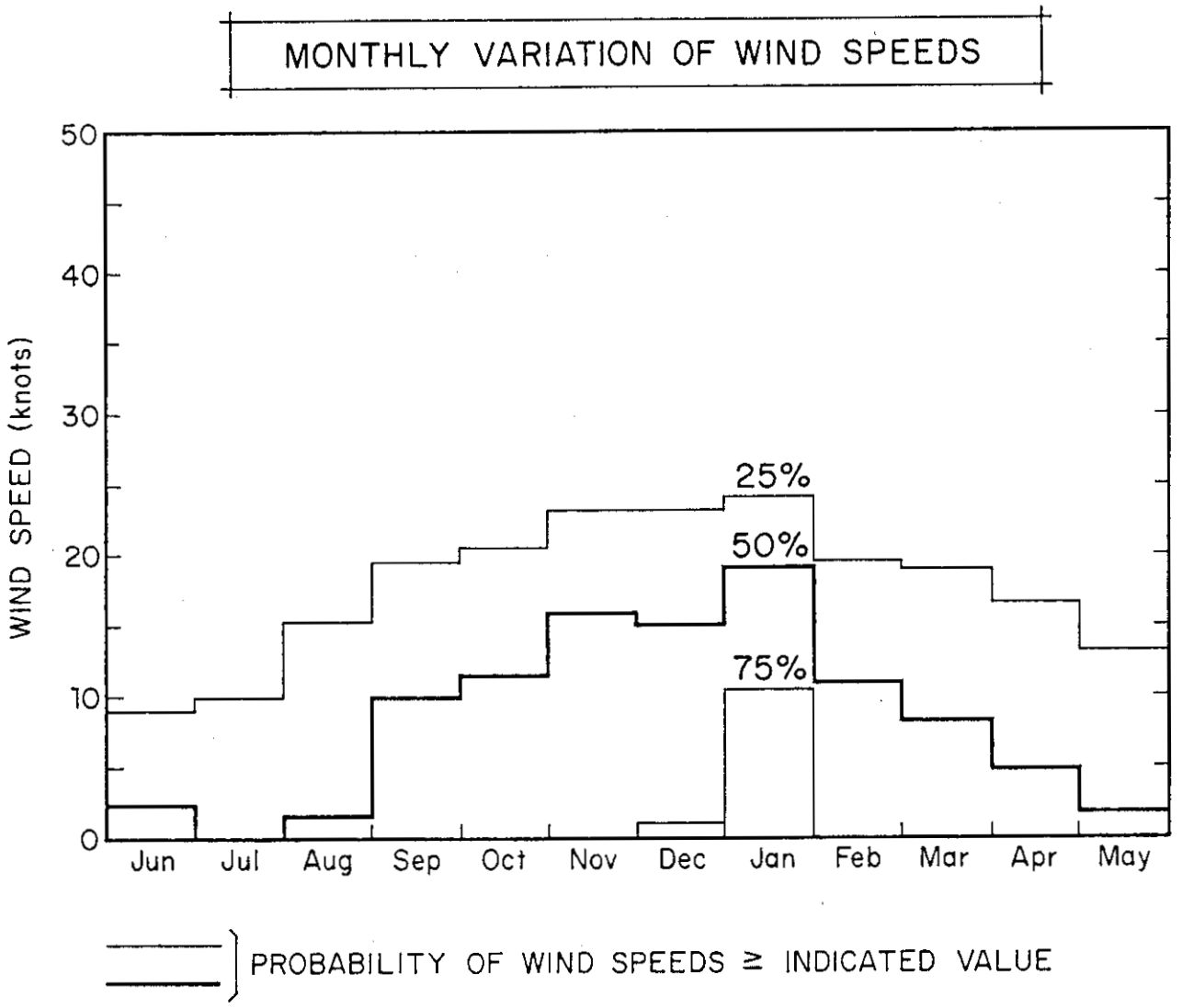


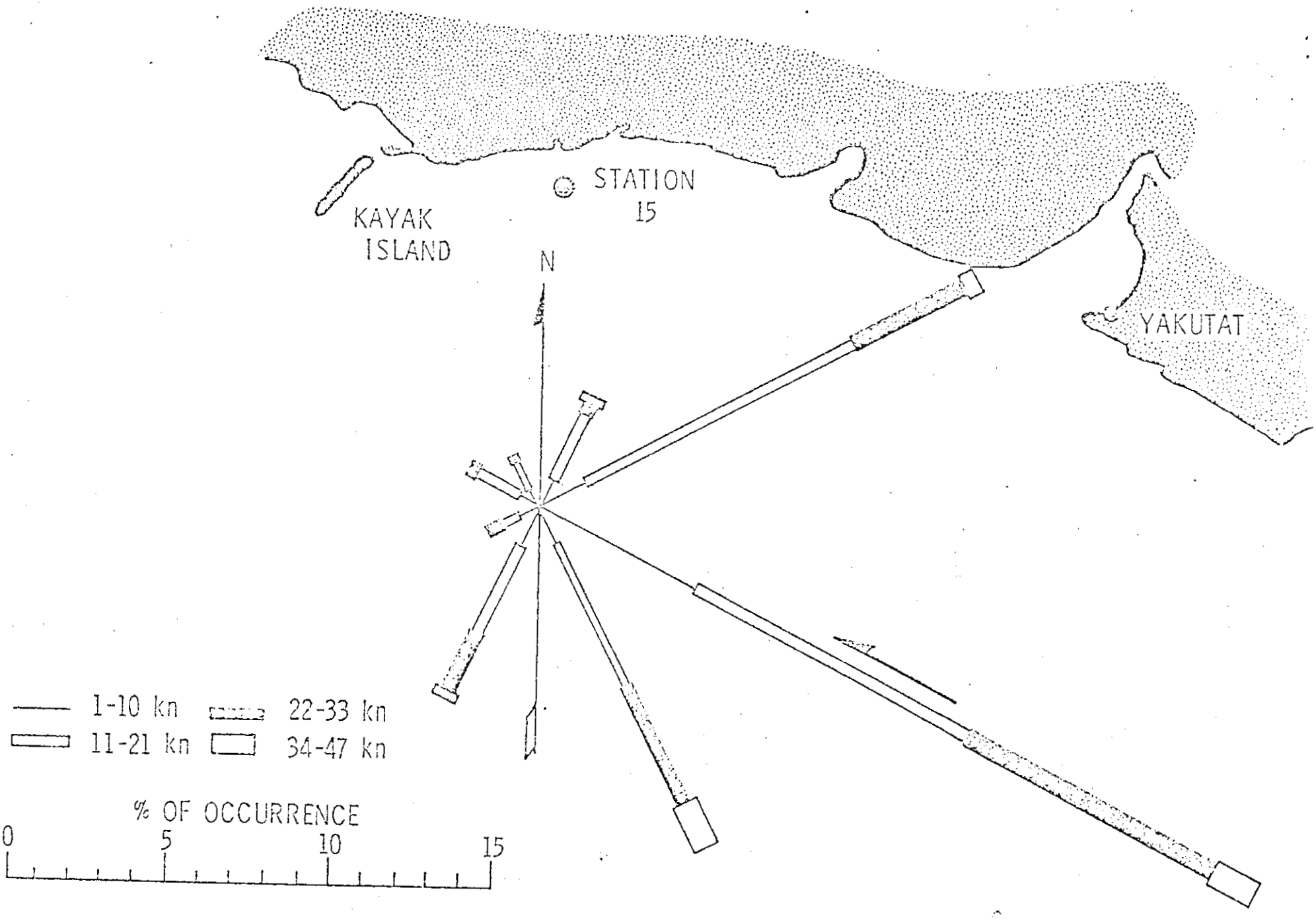
SLIDE 3

LOCATION MAP FOR STUDY AREA AND VICINITY



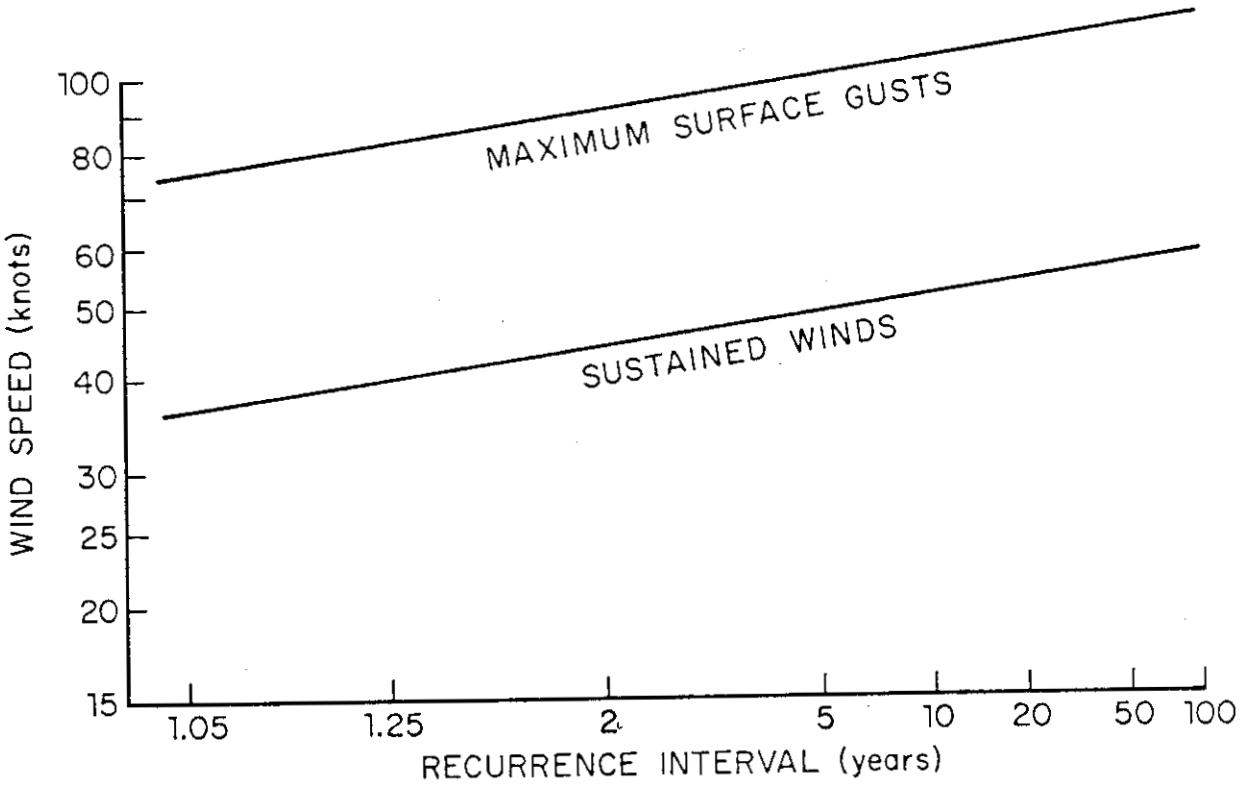
SLIDE 4


MONTHLY VARIATION OF WIND SPEEDS
WIND SPEED (knots)
50
40
30
20
10
0
25%
50%
75%
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
PROBABILITY OF WIND SPEEDS ≥ INDICATED VALUE

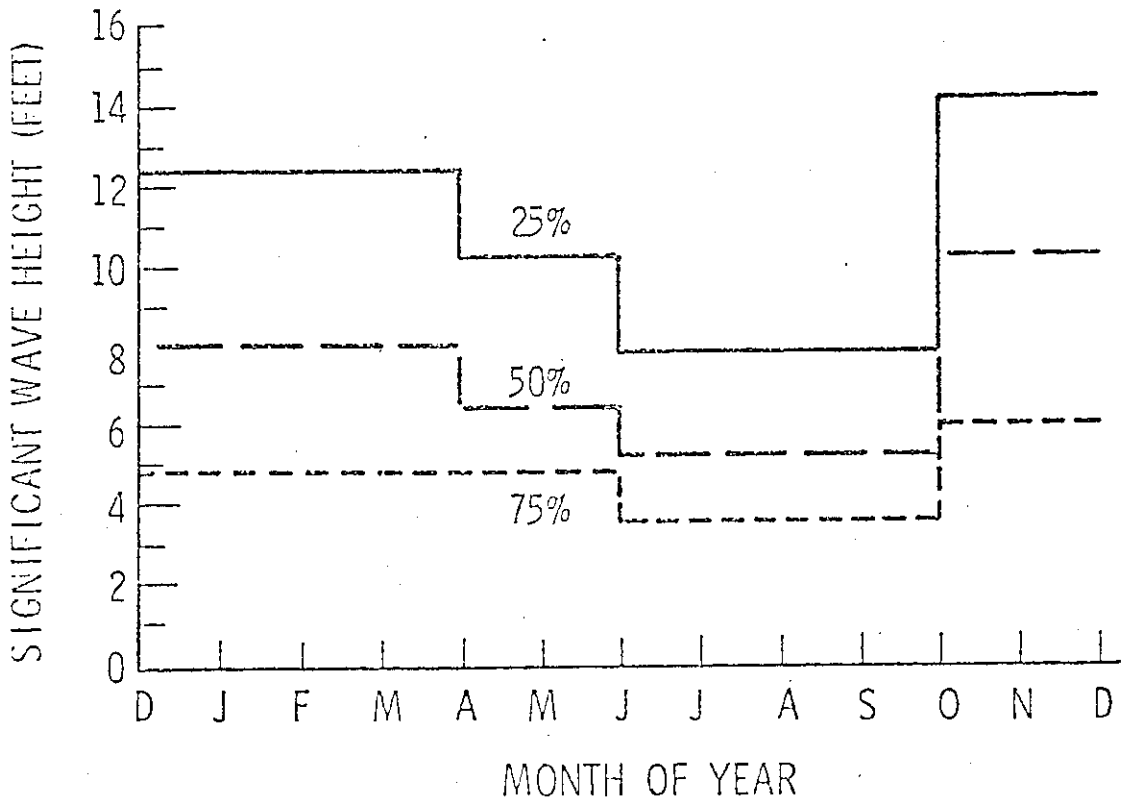


WIND DISTRIBUTION AT STATION 15 IN WINTER

RECURRENCE INTERVAL OF WINDS

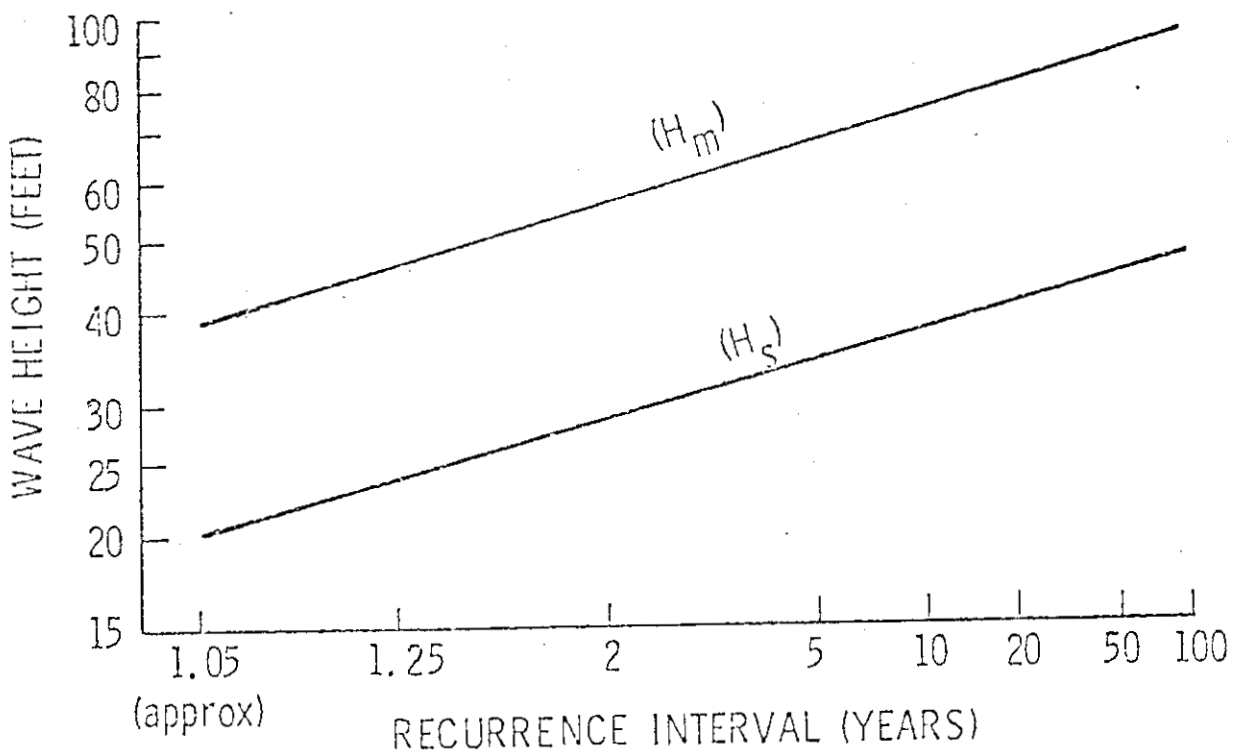


SEASONAL VARIATION OF WAVE HEIGHTS

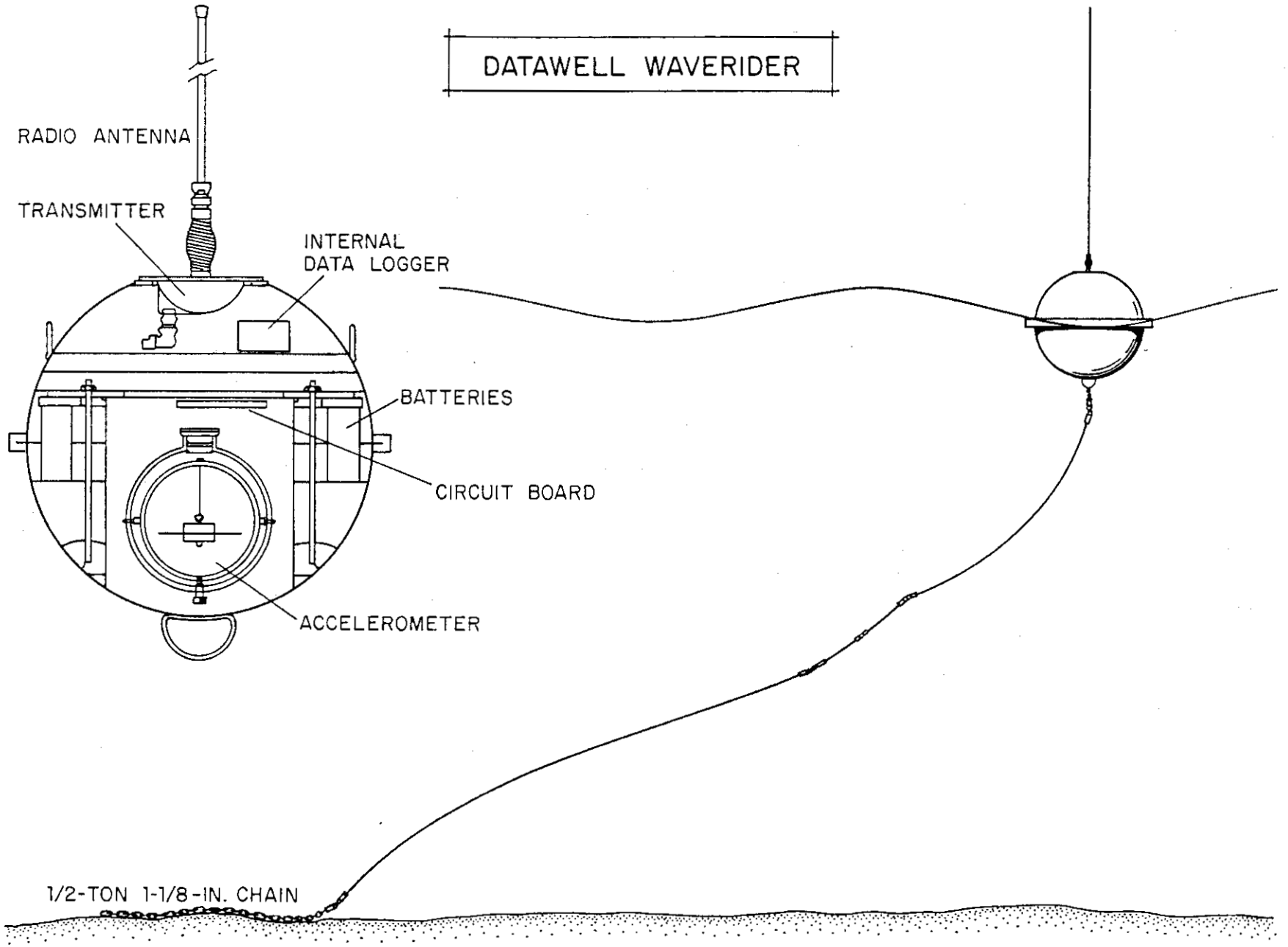


PROBABILITY OF WAVE HEIGHTS INDICATED VALUE

RECURRENCE INTERVAL OF SIGNIFICANT WAVE HEIGHT (H_s) AND MAXIMUM WAVE HEIGHT (H_m)



SLIDE



SLIDE 10

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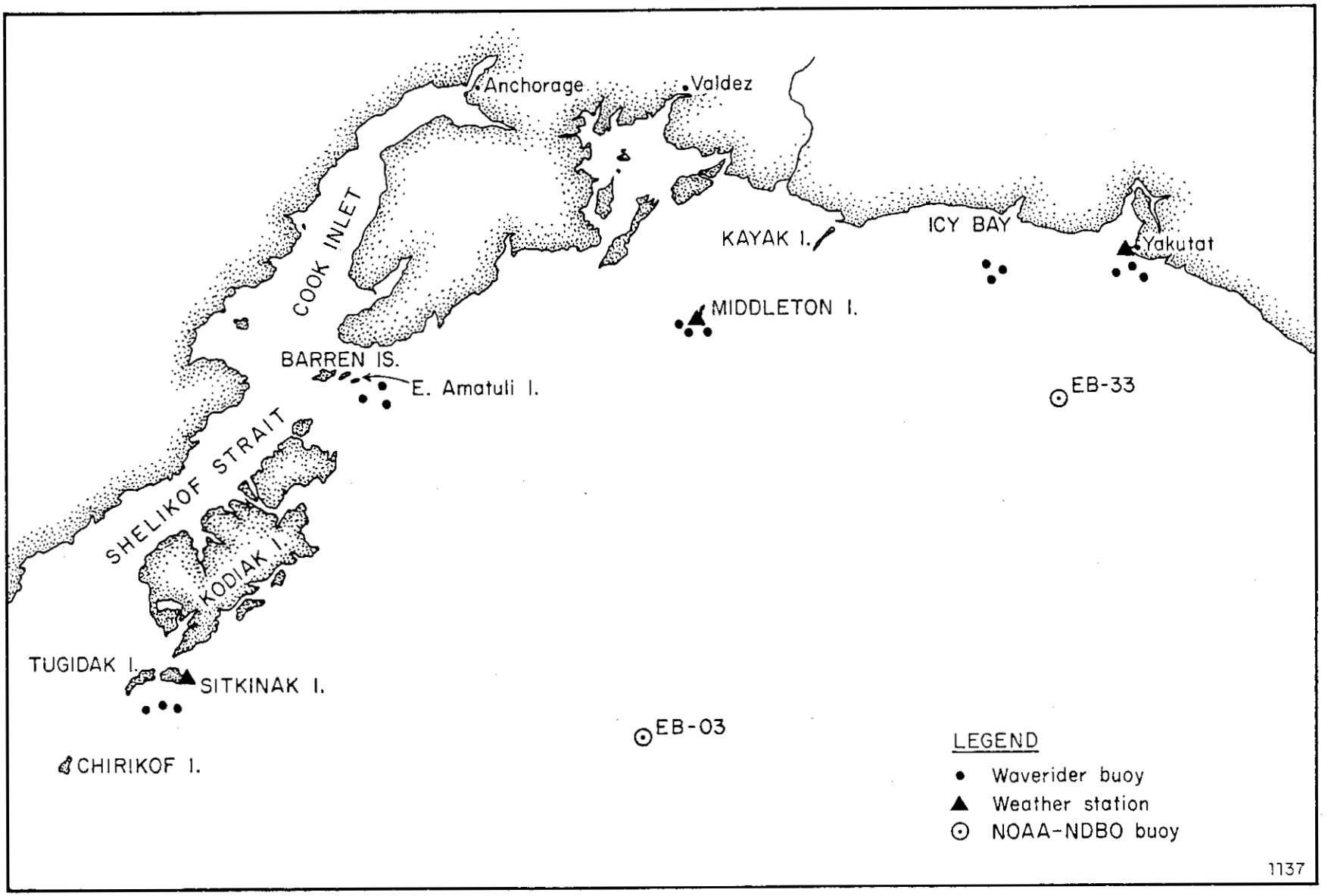
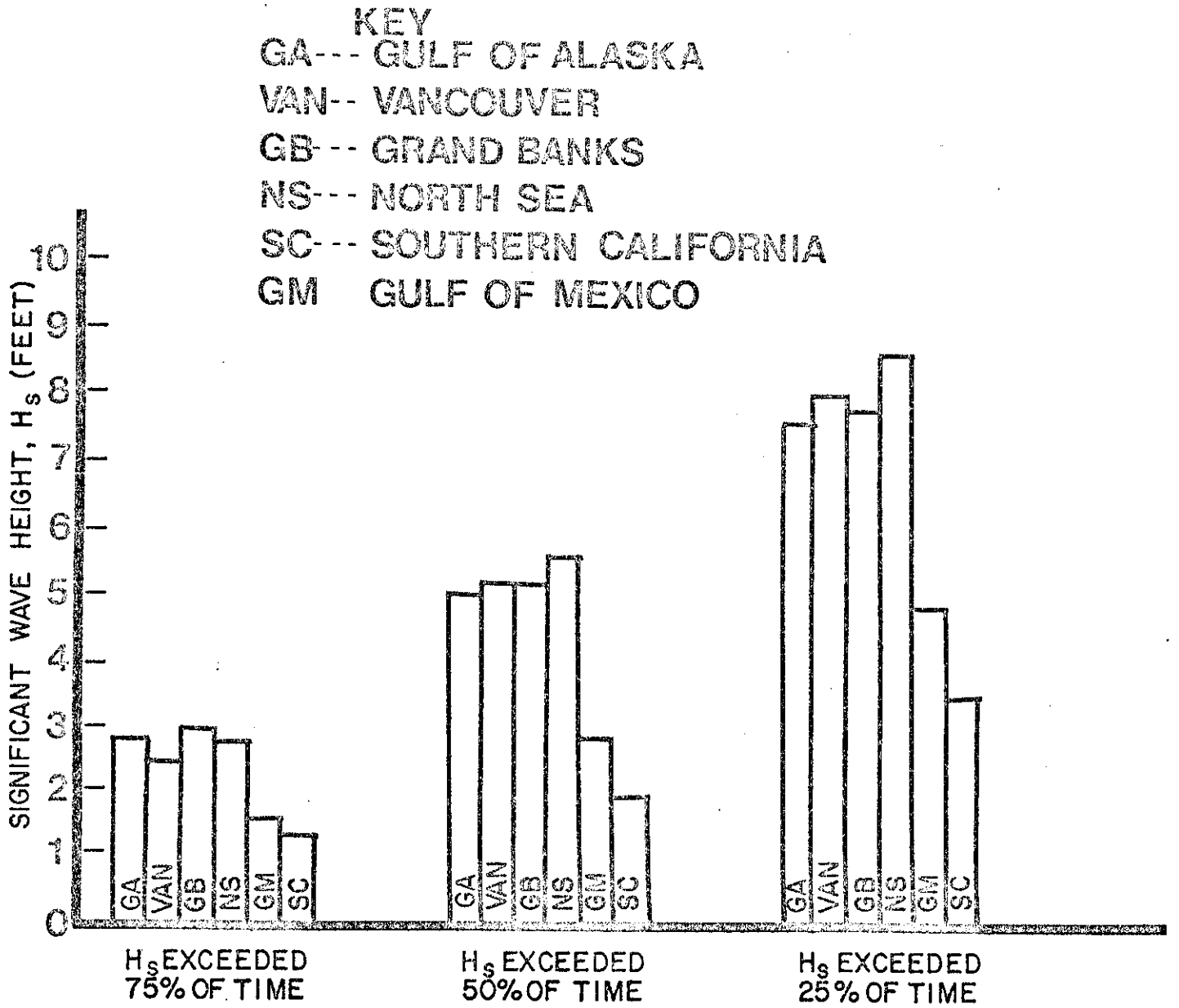
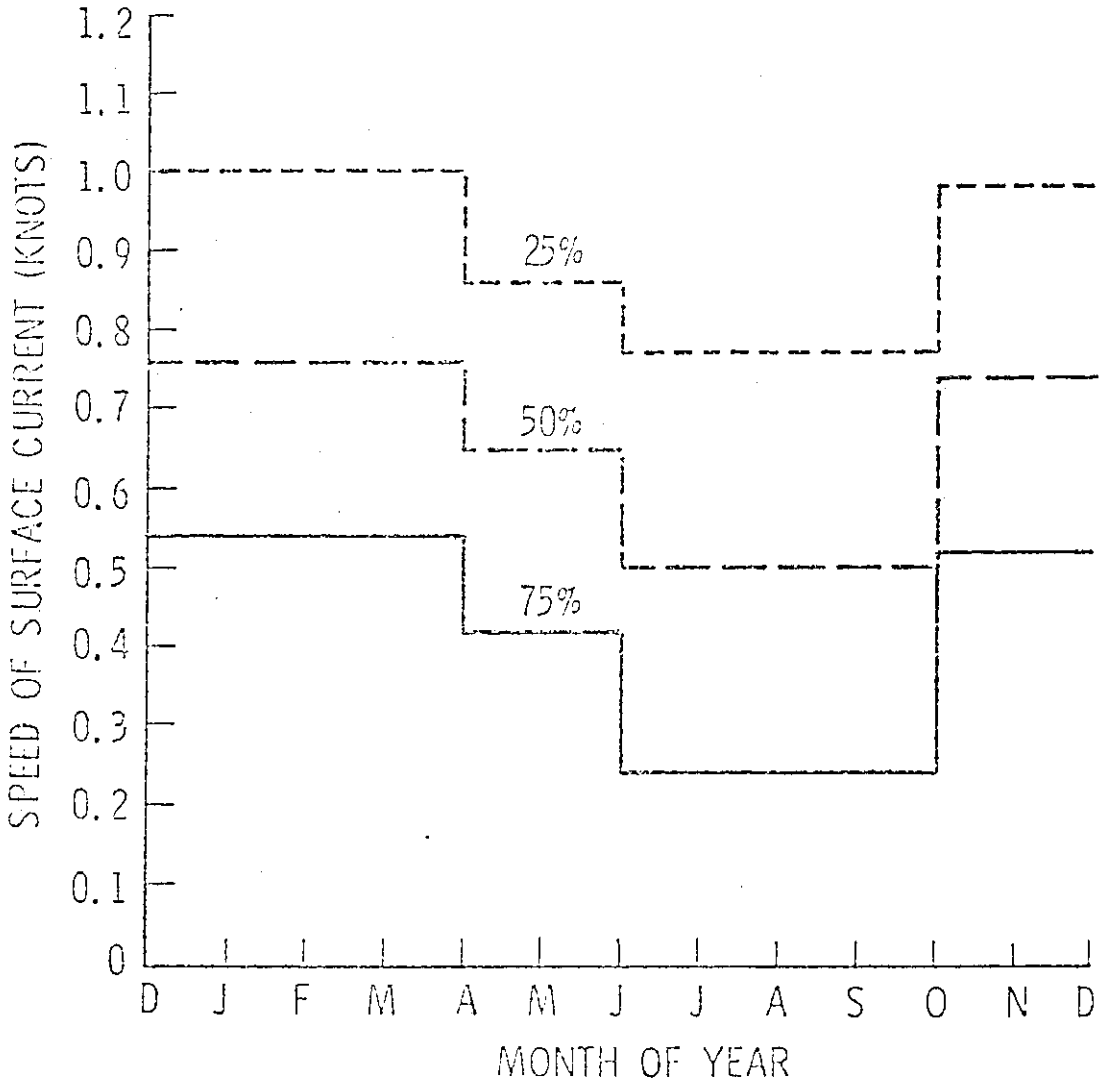
GULF OF ALASKA
WAVE AND WIND MEASUREMENT PROGRAM



COMPARISON OF WAVE HEIGHTS IN VARIOUS OPERATING LOCATIONS



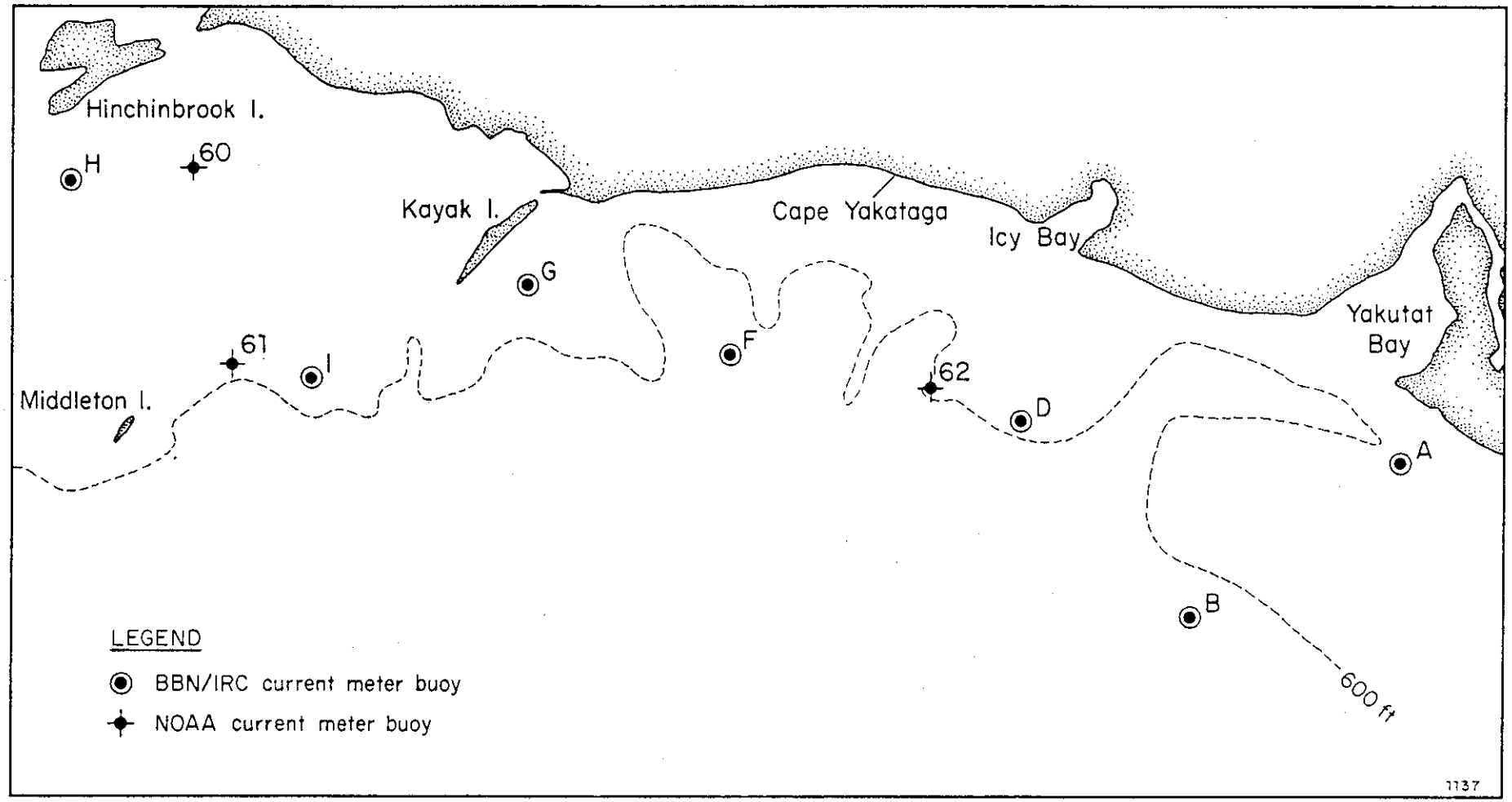
SEASONAL VARIATION OF SURFACE CURRENT SPEEDS



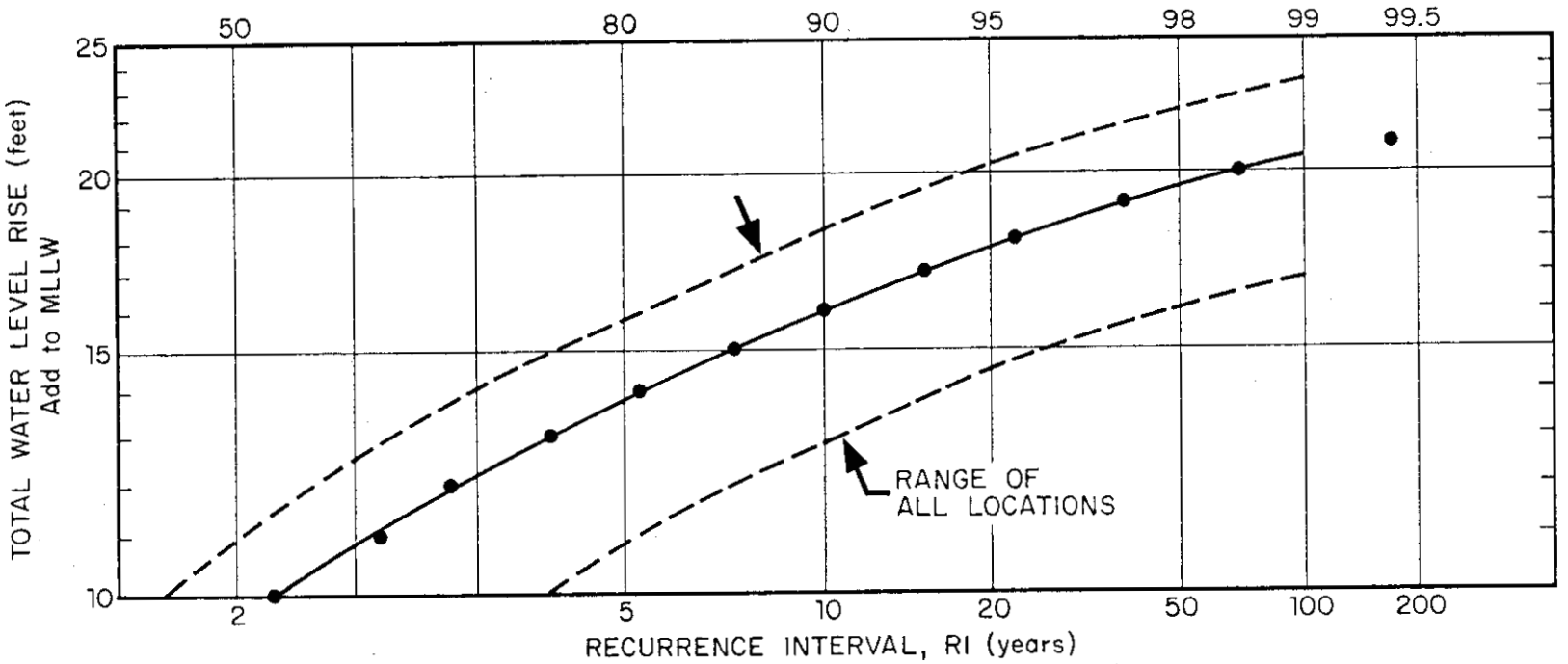
PROBABILITY OF CURRENT INDICATED VALUE

SLIDE

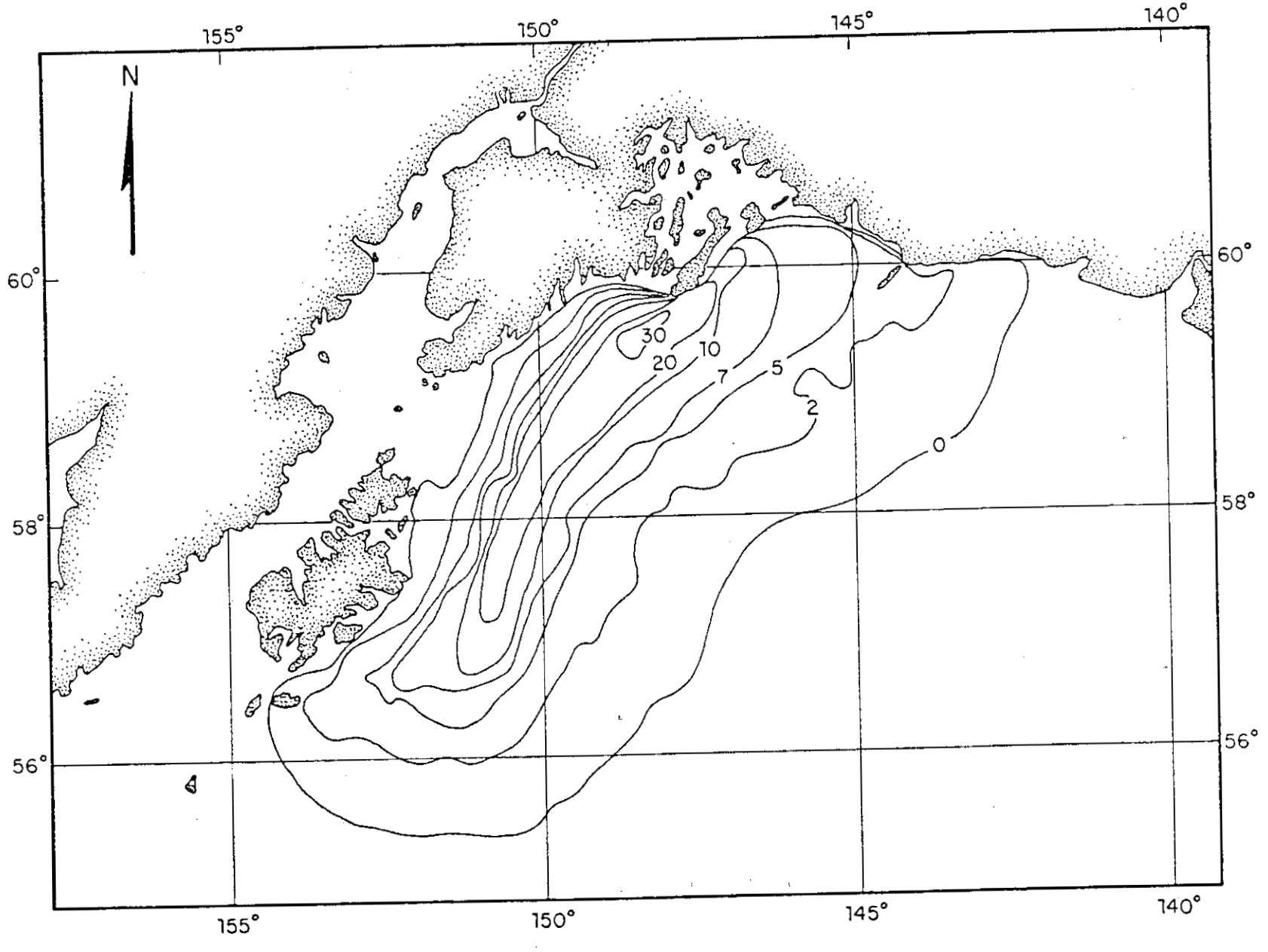
GULF OF ALASKA
CURRENT METER MEASUREMENTS



COMBINED WATER LEVEL ELEVATION DUE TO ASTRONOMICAL & STORM TIDE



COMPUTED MAXIMUM 1964 TSUNAMI ELEVATION (feet)



COMPARISON OF TSUNAMI AND STORM WAVE