From: Richard Seeger [SeascapeRS@earthlink.net]
Sent: Tuesday, January 29, 2008 6:26 PM
To: Rules Comments
Subject: RIN 1010-AD11

PROPOSED RULE – COMMENTS

MMS Outer continental Shelf pipeline and pipeline Rights-of-Way regulations

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To:
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Attention: Regulations and Standards Branch
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"Pipelines and Pipeline Rights-of-Way, 1010-AD11"

January 29, 2008

COMMENTS:
My background in geophysical and geotechnical survey in the OCS stretches back to the mid 1960s prior to the MMS being involved in the development of regulations and the welcome NTLs which began providing safety nets for field developments. I am familiar with the NTLs in effect at this point and the following comments relate specifically to Pipeline and Pipeline Rights-of-Way.

As public safety is of prime consideration to all regulations I would like to comment on possible pipeline inspection procedures following hurricanes.

Obviously the sheer magnitude of pipeline density throughout the Gulf of Mexico would preclude a geophysical survey of all pipeline routes to determine seafloor scour, pipeline movement or depth-of-cover. The MMS NTL No. 2005-G20 in response to hurricane Katrina and Rita requires visual inspection, scanning sonar, sidescan sonar and magnetometer at pipeline crossings and tie-ins. Assuming that some of these guidelines are in consideration for inclusion in the new NTL, the following is suggested.

A) To facilitate further investigations of the pipelines stability, consider a chirp subbottom profiler, 200 kHz sidescan sonar and a magnetometer to be implemented along major sections of each route. These surveys can be conducted rapidly using a Z pattern along the pipeline. The systems would provide information as to depth-of-cover, scour, sediment redistribution, and pipeline movement. The "Chirp" subbottom profiler can provide fine resolution of the first few milliseconds from the seafloor that can be masked by a conventional discrete frequency (3.5 – 7 kHz) system. Utilized in conjunction with a dual frequency echo sounder can help determine the thickness of flocculent in shallow water areas. A sidescan sonar operating at 200 kHz will provide improved backscatter data useful in determining sediment distribution or scour. Systems are available that combine sidescan sonar and multibeam. The data is co-registered which allows amplitude data to be added to the bathymetry for high definition of seafloor sediment characteristics (i.e. Teledyne Benthos C3D).

B) Areas of seafloor instability – Storms can cause wave and current-induced movements of near shore bottom sediments, barrier islands, and shorelines that can affect the depth of burial and integrity of pipelines laid in waters less that about 60 feet deep. Other challenging areas lie in the Mississippi Delta System where unconsolidated mud accumulations, rapidly deposited during high river flows, move downslope in mass movements when disturbed by storm waves. Pipelines and structures in the path of such movements can be moved and otherwise exposed to severe stresses which may cause failure. Mudslides and liquefaction potential are subject in these areas and cause a threat to buried pipelines in water depths less than 200 ft. and for those on the seafloor surface. These problem areas often cannot be surveyed using typical geophysical techniques due to signals being absorbed by flocculent or fluid mud above the seafloor surface and when an impedance interface required for a seismic reflection is non-existent. The "natural seafloor" surface must be determined using other methods.

Determining soils stability at the pipeline location will most likely require direct measurement of a vertical profile of soils densities through the fluid mud to the point where shear strengths can effectively support and stabilize a pipeline. The measurements may involve coring tools, bottom samplers and a system like the Densitune or RheaTune systems that measure soils density and sheer stress in pascal units. The sensors are lowered through the unconsolidated sediment until refusal. The data then correlated with piston cores or box soils samples can provide a profile of existing soils stability parameters that can be entered into a GIS database. These profiles can be obtained and included in a Pipeline Integrity Program. It is anticipated that only a few locations along the pipeline route would be required.

Data acquisition methods used for geohazard surveys are probably not the most effective approach to the determination of seafloor soils stability that may impact pipeline integrity. Specialized systems and survey methodology are available that may be deemed more appropriate for the determination of unstable soils for inclusion in the new NTL.

Upon request, more specific and detailed information on geophysical and geotechnical systems and survey methodology will be made available to your offices.

Very truly yours,

Richard Seeger

SeaScape Technical Resources