

**UNITED STATES DEPARTMENT OF THE INTERIOR  
MINERALS MANAGEMENT SERVICE  
ALASKA OCS REGION**

**NOTICE TO LESSEES AND OPERATORS OF FEDERAL OIL AND GAS LEASES  
IN THE ALASKAN OUTER CONTINENTAL SHELF REGION**

**NTL 00-A02**

Effective Date: February 7, 2000

**SHALLOW HAZARDS SURVEY AND EVALUATION FOR  
OCS PIPELINE ROUTES AND RIGHTS-OF-WAY**

**Introduction**

The Minerals Management Service (MMS) Regional Supervisor for Field Operations (RS/FO), requires a shallow hazards evaluation based on a high-resolution geophysical survey and geotechnical analysis for all areas considered for pipeline routes on the Alaskan Outer Continental Shelf (OCS). The pipeline survey should be designed to investigate potentially hazardous conditions that could affect the safety of OCS operations.

Potentially hazardous shallow conditions or features include seismicity, fault scarps, mud slides, steep-walled canyons and slopes, submarine channels, current scour, dynamic sedimentary bedforms, ice gouging, permafrost, gas hydrates, unstable soil conditions, and other geological or *man-made features*. *In addition, archaeological resources must be evaluated in areas where the Regional Director determines that they may be likely to occur or if archaeological resources are found during the pipeline route or shallow hazards surveys (see NTL 00-A03 Archaeological Survey and Report Requirements for OCS Exploration and Development Activities).*

This Notice to Lessees (NTL) provides guidance for pipeline rights-of-way shallow hazards geophysical surveys, evaluations, and reporting procedures for the Alaska OCS Region. It is issued to clarify and interpret requirements contained in regulations and does not impose additional requirements.

**General Guidelines**

Qualified and experienced personnel should perform the field survey, process and analyze data, prepare the report, and acknowledge responsibility by signing the appropriate data logs, analysis and reports. You are responsible for obtaining the best possible results using the most appropriate survey technology. Poor quality data due to acquisition or processing technique is not acceptable and could result in a resurvey.

You should conduct the activities described in this notice according to all applicable laws, regulations, rules, and lease stipulations, including the Marine Mammal Protection Act of 1972 as amended and the Endangered Species Act of 1973 as amended.

We are aware that seasonal constraints for operating in the arctic OCS often make timing for collection, processing, interpreting, and submitting data difficult. However, surveys need to be conducted and information provided to us for review sufficiently in advance of drilling, platform construction, or rig set-down operations.

We strongly recommend that you review your proposed survey strategy with appropriate MMS personnel before starting any survey operations.

### **Notification**

You should notify other potentially affected OCS users before conducting this survey and you must satisfy any lease stipulations or mitigating measures in effect--in the Beaufort Sea this includes Lease Sale 170 stipulations and Information to Lessees notice regarding coordination with subsistence communities. You should notify us a minimum of 2 weeks before starting any survey operations. In addition, you or your contractor should notify us at least 72 hours before mobilizing this survey so that an MMS observer may make arrangements to be present.

### **Shallow Hazards Pipeline Survey Requirements**

Shallow hazards data must provide information on sea floor conditions that may present hazards to pipeline integrity and safety, including pipe-lay and trenching operations. Data must also provide information on shallow sub-seafloor conditions that may pose a hazard to the integrity of the pipeline.

#### **1) Program Design**

A pipeline survey generally consists of five (5) approximately parallel lines where one line is coincident with the proposed pipeline route, and which cover an area 300 meters (m) on either side of the center line. The grid should provide 150 percent coverage of the sea floor on side scan sonar data. Tie-lines perpendicular to the center-line, should be acquired at intervals of every 1,200 m or closer. A variance from the five (5) line spread may be desirable or necessary depending on specific conditions, pipe-lay methods, and design considerations.

#### **2) Subbottom Profiles**

Use subbottom profiling techniques and systems that portray the sea floor and subbottom reflections with a vertical resolution of 1 millisecond or better at a two-way travel time corresponding to a depth of 30 m below the sea floor. A combination of piezoelectric (3.5 kHz) and electromechanical (boomer or equivalent) systems is usually used. However, other systems and techniques will be considered.

Vertical exaggeration should not exceed 10:1 on geophysical records. Decouple and/or compensate the system for wave heave if you undertake operations in a sea state of greater than Beaufort Code 2. All seismic systems should be integrated with the survey navigation resulting in accurate posting of fixed points on seismic lines.

### **3) Sea Floor Imagery**

Use side scan sonographs of the sea floor that can identify areas of exposed rock outcrops, sea floor scarps, depressions, scour, sedimentary textures, underwater obstacles, areas of potential biological activity, or archaeological resources. Recordings should be of optimal quality (good resolution, minimal distortion) resulting in displays automatically corrected for slant range, lay-back and vessel speed, and provide 150 percent coverage of the area to be affected by the proposed pipeline operations.

### **4) Bathymetry**

Fathometer data should consist of high frequency (12 kHz or higher) continuous sea floor profiles. In areas of complicated sea floor characteristics a multi-beam system may be needed.

### **5) Water-Column Anomaly Detection**

Use a system capable of detecting gas in the water column. Analog profiles of bathymetry are capable of detecting gas where it is present in the water-column. To obtain good records, this may involve higher bandpass frequency during water-column profiling than normally used to record only the sea floor return.

### **6) Magnetometer**

If necessary, you may need to collect magnetometer data. Magnetometer survey techniques should be capable of detecting and aiding the identification of ferrous or ferric or other objects having a distinct magnetic signature. Depressed towing may be needed to achieve desired resolution. Auxiliary recording of sensor depth or its height above the sea floor may also be needed. Sensitivity is normally 1 gamma. Noise level should not exceed  $\pm 3$  gammas.

### **7) Geotechnical Information**

Sea floor samples and/or soil borings along the route are used to evaluate sediment characteristics and engineering parameters. Submit a descriptive geotechnical evaluation including, lithologic description, soil analysis and slope stability as part of the geotechnical study. Integrate the boring or sample locations with navigation for the pipeline right-of-way shallow hazards survey.

## **8) Other Investigations**

We may require you to submit additional information, before approving a proposed pipeline route or right-of-way as determined by our review of the report and geophysical or other data. Optional equipment and techniques, including underwater photography and television, diver inspection, and additional sea floor sampling, may be needed to substantiate route selection to ensure personnel and equipment safety or to avoid archaeological or biological resources.

### **Navigation**

You should use the best available technology for your navigational positioning system, with an accuracy of  $\pm 2$  m (6 feet). For marine surveys the vessel track should not vary more than  $\pm 15$  m (50 feet) from the pre-plot line, except to avoid obstructions. The navigation system should be integrated with seismic systems and posted on seismic records. All fix marks should be easily identified on post-plots. For marine deep-tow systems, an ultra short baseline system may be required in order to track the towfish within a 1 percent error margin and should be integrated with the ships navigation.

### **Data Preparation**

Submit paper copies of data in optimal quality and Z-folded with identification labels or headers exposed to facilitate ease of handling during interpretation. Annotate data records with fix marks at 100 m or other appropriate intervals and with all scale parameters and changes during recording including start and stop information and shot points. You should display paper records with consistent orientation; such as west to the left and north to the left. Annotate line crossings and corresponding shot-points on the records. Do not make interpretative markings on the data portion of the original records or copies you submit.

### **Report Format and Content**

The narrative report should discuss field and professional personnel, systems and instrumentation, operational procedures and conditions, interpretive techniques and results, general geologic conditions, shallow sedimentary environments, and specifically address the potential for shallow hazards and engineering considerations in the area of the proposed activity. Analyses of these data should provide sufficient information for a general shallow hazards evaluation of the area along the entire length of the proposed pipeline route and right-of-way. The responsible technical personnel should prepare and sign the pipeline route shallow hazards survey report, which clarifies all steps from planning through data acquisition, data processing, analysis and evaluation.

You should submit two copies (except as otherwise indicated) of the survey report, which includes the following items:

1. Technical description of equipment, data acquisition techniques, conditions during data acquisition, data processing strategy and techniques.
2. Interpretation and evaluation of hazards and constraints.
3. Six maps, all containing geographic coordinates, plane coordinates, bar scales in feet and meters, lease boundaries in conformance with NAD-83 official protraction diagrams, block and lease numbers, and the proposed pipeline route:
  - a. Page-size geographic area map showing proposed pipeline route and locations of geotechnical borings and sample in relation to other nearby geographic features.
  - b. Navigation post-plots for all investigations at a scale of 1:12,000. This map includes locations of soil boring and/or sediment samples.
  - c. Bathymetry map at a scale of 1:12,000 contoured in intervals of 2 m or less, or in a way not to impair legibility of the map. Use a post-plot map as the base.
  - d. Geologic features map, showing features at and near the sea floor at a scale of 1:12,000. Use a post-plot map as the base.
  - e. Geologic structure map at a scale of 1:12,000, showing thickness of unconsolidated sediment interpreted from high-resolution geophysical data, contoured in intervals of 2 m or less, or in a way not to impair legibility of the map. Use a post-plot map as the base.
  - f. Hazards map, showing results of all interpretations with explanation or legend detailing those geophysical systems used as source for the mapping, at a scale of 1:12,000. Use a post-plot map as the base.
4. Near surface geologic structural cross-sections along and at right angles to the centerline with related interpreted geophysical and geotechnical boring profiles.
5. Boat logs detailing data collection parameters.
6. Other graphics that may be included in the report, as appropriate:
  - a. Soil profiles and descriptions available from any drilling or coring in the area.
  - b. Any other interpretive graphics prepared in connection with the investigation.
  - c. Page-size reductions of the six maps described above.
  - d. Photographs, films or video tapes of site investigations, if applicable.
  - e. Archaeological and/or biological survey reports and analyses.

**Data and Records**

1. Submit one paper copy of all survey data and reproducible copies of all digital data. Data records should be in order. Include two copies of an itemized invoice of materials transmitted, enumerating the data by type, line number, and inclusive fix-points (one invoice for paper copies and one for digital copies). Original side scan sonar records may need to be submitted if paper copy quality is inadequate to evaluate sea floor features.
2. Submit navigation data for the survey on tape or digital diskette/CDROM.
3. To facilitate development of our regional database we request, for digitally produced maps above, that you to provide copies in Arc/Info Export file format as unprojected data in latitude, longitude, and decimal degrees.

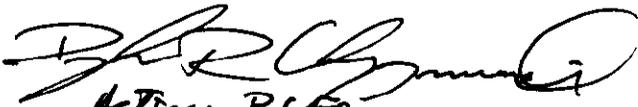
**Authority**

This notice is issued under authority of the Code of Federal Regulations at 30 CFR 250.1007(a)(5) (Applications) and 30 CFR 250.1009(c)(4) (General Requirements for a Pipeline Right-of-Way Grant).

According to 30 CFR 250.196 (formerly 250.118), we may release to the public all high resolution seismic data 60 days after you submit it to us.

**Paperwork Reduction Act of 1995 (PRA) Statement:** The collection of information referred to in this NTL is required in 30 CFR part 250, subpart J; and 30 CFR part 251. The Office of Management and Budget (OMB) has approved the information collection requirements in these regulations and assigned OMB control numbers 1010-0050 for subpart J and 1010-0048 for part 251. This NTL does not impose additional information collection requirements subject to the PRA.

If you have any questions, please contact Jeffrey Walker at (907) 271-6190 or [jeffrey.walker@mms.gov](mailto:jeffrey.walker@mms.gov).

*for*   
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Jeffrey Walker  
Regional Supervisor  
Field Operations Office

7 Feb. 2000  
Date