

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

NTL No. 2010-P01

Effective Date: February 24, 2010
Expiration Date: February 23, 2015

**NOTICE TO LESSEES AND OPERATORS OF FEDERAL OIL, GAS, AND SULPHUR
LEASES, OUTER CONTINENTAL SHELF, PACIFIC OCS REGION**

Hydrogen Sulfide

This Notice to Lessees and Operators (NTL) supersedes NTL No. 2003-P05, Hydrogen Sulfide (H₂S) Requirements. It establishes the National Association of Corrosion Engineers (NACE) Standard MR0175-2003, "Standard Material Requirements, Metals for Sulfide Stress Cracking and Stress Corrosion Cracking Resistance in Sour Oilfield Environments," as representing best available and safest technology, provides further guidance on classifying an area for the presence of H₂S, includes guidance on H₂S detection, updates regulatory citations, and includes a guidance document statement.

Purpose

The Minerals Management Service (MMS) regulations at 30 CFR 250.490 require you to take all necessary and feasible precautions and measures to protect personnel from the toxic effects of H₂S and to mitigate damage to property and the environment caused by H₂S. In the following section of this NTL, the MMS Pacific OCS Region (POCSR) clarifies and provides guidance and information regarding the interpretation of certain provisions of these regulations to ensure that you are fully prepared and capable of providing the necessary protection and mitigation.

A major focus of this NTL is to differentiate between the criteria for using NACE Standard MR0175-2003 materials and the criteria for determining an H₂S classification. The NACE standards that relate to an H₂S partial pressure of 0.05 pound per square inch absolute (psia) primarily address stress cracking and stress corrosion resistance, while the MMS definition of "H₂S present" addresses human safety and protecting the environment for H₂S concentrations equal to or exceeding 20 parts per million (ppm). The MMS POCSR is concerned if either threshold is crossed. The criteria for using NACE materials and the MMS definition of "H₂S present" or "H₂S absent" are separate evaluations with discretely different parameters. At a pressure greater than 2,500 pounds per square inch gauge (psig), a well could be classified as "H₂S absent" because the concentration of H₂S is less than 20 ppm but still require NACE Standard MR0175-2003 materials because the partial pressure of H₂S is greater than 0.05 psia.

Regulations and Guidelines

1. 30 CFR 250.107(c) and (d) – “...use the best available and safest technology (BAST)....”

The cited regulations require you to use BAST whenever practical on all exploration, development, and production operations and authorize the MMS to require additional measures to ensure the use of BAST to avoid failure of equipment that would have a significant effect on safety, health and the environment.

The MMS POCSR has determined that NACE Standard MR0175-2003 represents BAST with regard to determining when you must use equipment that is constructed of materials with metallurgical properties that resist or prevent sulfide stress cracking and stress corrosion cracking. Based on this document, the MMS POCSR has determined that you must apply NACE Standard MR0175-2003 provisions for equipment and components that may encounter a partial pressure of H₂S that equals or exceeds 0.05 psia.

Appendix No. 1 of this NTL is a graph that shows the 0.05 psia threshold with respect to pressure and H₂S concentration. This graph is provided as an aid for understanding, but in no way is it intended to replace the provisions of NACE Standard MR0175-2003.

In the absence of direct measurement of H₂S concentrations and reservoir pressure in a well being drilled, completed, or recompleted, the MMS POCSR will now determine that NACE Standard MR0175 provisions are required for the well if any of the following apply:

- a. The well is drilled to a depth where the static reservoir temperature exceeds 275° F.
- b. The well is classified as “H₂S present” or “H₂S unknown.”
- c. A well located within five miles has been drilled to a similar depth and that well has an H₂S partial pressure equal to or greater than 0.05 psia.

When you have measured H₂S concentrations directly and the reservoir pressure within a reservoir, then NACE Standard MR0175-03 will determine the requirements for NACE materials for that reservoir and all other wells drilled within a 5-mile radius to the same formation.

2. 30 CFR 250.490(a)(1) and (2) - H₂S Contingency Plans.

The cited regulations require you to follow the requirements of 30 CFR 250.490, including the submittal of an H₂S Contingency Plan, when you conduct drilling, well-completion/well-workover, and production operations in zones classified as “H₂S present” and “H₂S unknown.” You do not need to submit an H₂S Contingency Plan for operations in zones classified as “H₂S absent.”

3. 30 CFR 250.490(b) - H₂S Classification Definitions.

The cited regulation defines the three H₂S classifications as:

H₂S absent means (1) drilling, logging, coring, testing, or producing operations have confirmed the absence of H₂S in concentrations that could potentially result in atmospheric concentrations of 20 ppm or more of H₂S; or (2) drilling in the surrounding areas and correlation of geological and seismic data with equivalent stratigraphic units have confirmed an absence of H₂S throughout the area to be drilled.

H₂S present means drilling, logging, coring, testing, or producing operations have confirmed the presence of H₂S in concentrations and volumes that could potentially result in atmospheric concentrations of 20 ppm or more of H₂S.

H₂S unknown means the designation of a zone or geologic formation where neither the presence nor absence of H₂S in any concentration has been confirmed.

This process for proper H₂S classification is presented in the flow chart in Appendix No. 2 of this NTL. This flow chart provides general guidance; it does not incorporate all possible scenarios and does not replace geologic knowledge of areas known or suspected to have H₂S present regardless of lithology, depth, temperature, or distance to nearby wells.

4. 30 CFR 250.490(d) - H₂S Detection.

The cited regulation describes what you must do if you encounter H₂S that could potentially result in atmospheric concentrations of 20 ppm or more while conducting operations.

a. *During Production Operations.* In the event you detect H₂S in concentrations that could potentially result in atmospheric concentrations of 20 ppm or more while conducting production operations in areas classified as “H₂S present” or “H₂S unknown,” your approved H₂S contingency plan must be implemented. If you encounter H₂S that could potentially result in atmospheric concentrations of 20 ppm or more in an area classified as “H₂S absent”, “you must immediately notify MMS [the POCSR California District Manager] and begin to follow requirements for areas with H₂S present,” including submittal of an H₂S Contingency Plan (as specified in Item 2 above) within 30 days following detection.

b. *During Drilling Operations.* For drilling in areas classified as “H₂S present” or “H₂S unknown,” your approved H₂S contingency plan must be implemented. If you encounter H₂S that could potentially result in atmospheric concentrations of 20 ppm or more in an area classified as “H₂S absent,” stabilize the situation immediately by taking such measures as evacuating all non-essential personnel, raising the pH of water-based drilling fluids, or adding a scavenger to synthetic based drilling fluid. Once the situation is stabilized, “you must immediately notify MMS [the POCSR California District Manager] and begin to follow requirements for areas with H₂S present,” including submittal of an H₂S Contingency Plan (as specified in Item 2 above) within 30 days following detection.

If you need more time to purchase, modify, or install equipment, contact the District Manager.

5. 30 CFR 250.490(i)(5) - Sensor Location for Production Operations.

The cited regulation requires that you have one H₂S sensor per 400 square feet of deck area and a sensor within 10 feet of each vessel, compressor, wellhead, manifold, or pump that could release enough H₂S to result in atmospheric concentrations of 20 ppm. You may conduct a design analysis including dispersion modeling to determine a more effective or a more efficient placement of sensors. In that case, the MMS POCSR may approve under 30 CFR 250.141 an alternate placement or choice of sensors if the analysis shows that such a placement or sensor choice provides level of safety that equals or surpasses that provided by the specified requirements.

6. 30 CFR 250.490(i)(6)(ii) - Calibration of H₂S Sensors.

The cited regulation specifies that an H₂S sensor tolerance of 2 ppm or 10 percent during a functional test is acceptable. Alternatively, you may use sensors with a greater test tolerance, provided that you adjust the activation point so that the sensor alarm will activate at an H₂S atmospheric concentration no higher than 22 ppm. For example, if the tolerance of the instrument is 25 percent (5 ppm for a reading of 20 ppm), you may set the sensor alarm to activate at 17 ppm. With the possible 5 ppm error, the alarm could activate between 12 and 22 ppm. The level of safety for the worst case of 22 ppm would then be the same as the level of safety specified in the cited regulation.

7. 30 CFR 250.490(i)(13)(i) - Respirator Breathing Time.

The cited regulation requires that you provide all personnel, including contractors and visitors on the facility, with immediate access to self-contained, pressure-demand-type respirators with hoseline capability and breathing time of at least 15 minutes. Under 30 CFR 250.141, "May I ever use alternate procedures or equipment?", the District Manager may approve a request for alternate compliance by an operator for the use of self-contained, pressure-demand-type respirators with hoseline capability that have a breathing time less than 15 minutes in those cases where you show that the overall protection equals or surpasses that provided by the specified requirements.

8. 30 CFR 250.490(i) - Signs, Visual Alert Devices, and Audible Warning Devices.

The cited regulation provides the requirements for visual and audible warning systems. Make sure that any visual device can be seen from the helideck and from all boat landings. Also, make sure that any audible warning alert is recognizable at the helideck and at all boat landings.

9. 30 CFR 250.490(q)(9) - Fuel and/or Instrument Gas.

The cited regulation prohibits you from using gas containing H₂S for fuel gas without receiving prior approval from the District Manager.

Guidance Document Statement

The MMS issues NTL's as guidance documents in accordance with 30 CFR 250.103 to clarify, supplement, and provide more detail about certain MMS regulatory requirements and to outline the information you provide in your various submittals. Under that authority, this NTL sets forth a policy on and an interpretation of a regulatory requirement that provides a clear and consistent approach to complying with that requirement. However, if you wish to use an alternate approach for compliance, you may do so, after you receive approval from the appropriate MMS office under 30 CFR 250.141.

Paperwork Reduction Act of 1995 Statement

The information referred to in this NTL is intended to provide clarification, description, or interpretation of requirements contained in 30 CFR Part 250, subparts A and D. The Office of Management and Budget (OMB) has approved the information collection requirements in these regulations under OMB Control Numbers 1010-0114 and 1010-0141, respectively. This NTL does not impose any additional information collection requirements subject to the Paperwork Reduction Act of 1995.

Contact

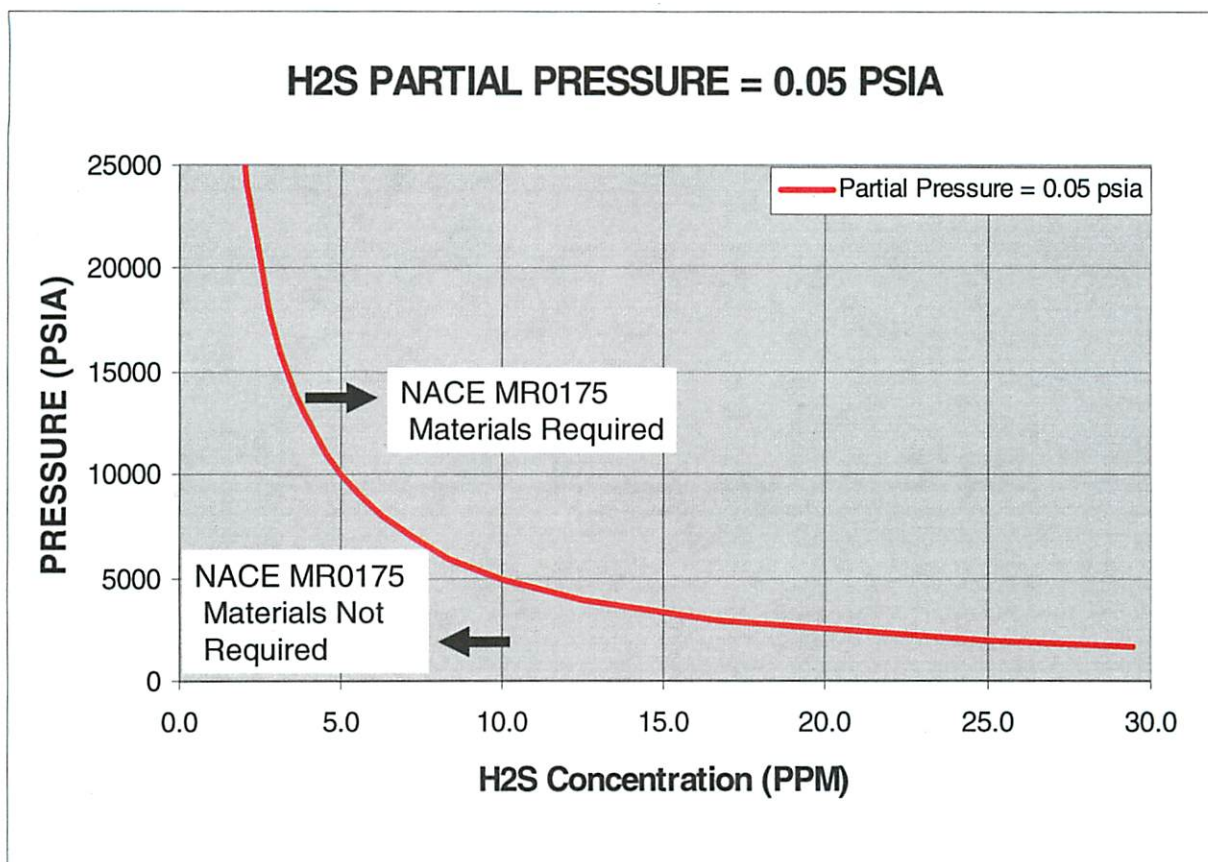
If you have any questions or need clarification regarding this NTL, please contact the California District Manager at (805) 389-7560.



Ellen G. Aronson
Regional Director
Pacific OCS Region

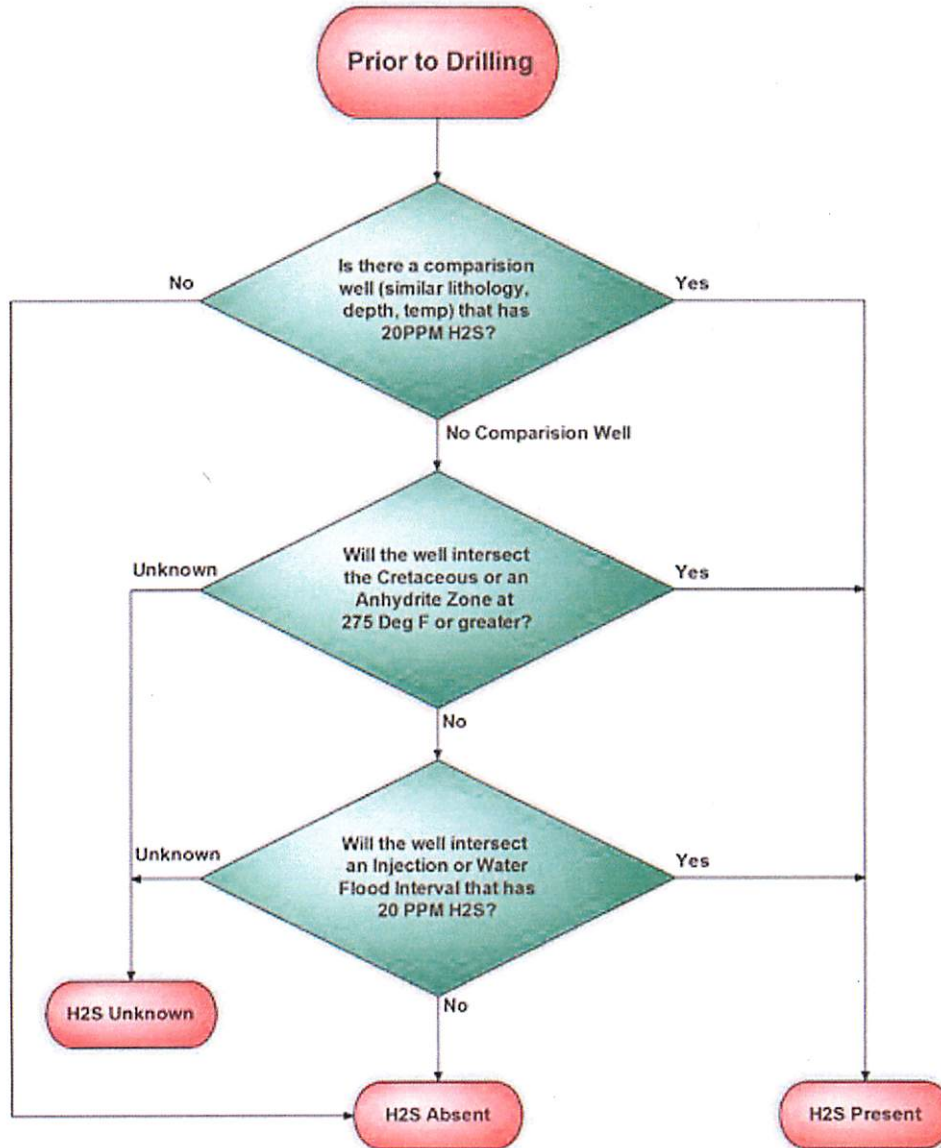
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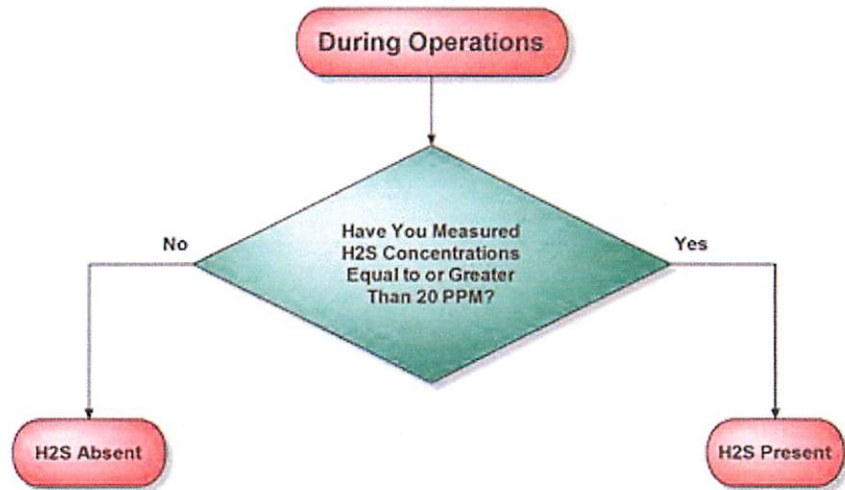
Attachment No. 1



Attachment No. 2

H2S Classification Flow Chart Clarification for CFR 250.490 (b)





This NTL can be found on our Website at:
<http://www.mms.gov/omm/pacific/offshore/ntls/ntllist.htm>