

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

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NOTICE TO LESSEES AND OPERATORS OF FEDERAL OIL, AND GAS LEASES AND  
PIPELINE RIGHT-OF-WAY HOLDERS IN THE  
OUTER CONTINENTAL SHELF (OCS), GULF OF MEXICO OCS REGION

**Design of New OCS Platforms and Related Structures for Hurricane Conditions**

**Authority**

This Notice to Lessees and Operators (NTL) is issued pursuant to 30 CFR 250.103. It provides guidance to ensure that the design of new OCS platforms and related structures fully considers the specific environmental conditions at the platform location as required by 30 CFR 250.900(a).

**Background**

Hurricanes Ivan, Katrina, and Rita during the 2004 and 2005 hurricane seasons were detrimental to oil and gas operations on the OCS. Effects included significant structural damage to fixed and floating production platforms (123 fixed platforms and 1 floating platform were destroyed and dozens more suffered significant damage) and significant damage to semi-submersible and jackup drilling rigs. Even though most of the approximately 3,000 OCS platforms that were exposed to hurricane force winds during these storms performed well, the Mineral Management Service (MMS) Gulf of Mexico Region (GOMR) is concerned about the platforms that suffered significant structural damage, as well as the potential for future damage to key energy infrastructure on the OCS.

As a result of the significant damage and destruction caused by these hurricanes, MMS and the oil and gas industry have worked collectively to understand better the specific metocean conditions (winds, waves, surges, and current) that occurred during past hurricanes and to study the impact of these storms on the characterization of the Gulf of Mexico (GOM) metocean environment. Based on this better understanding, MMS and the oil and gas industry have updated the metocean criteria for use in developing the proper criteria for designing new OCS platforms and related structures.

Accordingly, in May 2007, the American Petroleum Institute (API) issued *Interim Guidance on Hurricane Conditions in the Gulf of Mexico* (API Bulletin 2INT-MET) to replace the hurricane

metocean conditions in the GOM presently contained in Section 2.3.4 of API *Recommended Practice for Planning, Designing and Constructing Fixed Offshore Platforms - Working Stress Design* (API RP 2A-WSD), 21<sup>st</sup> Edition, October 2005. At the same time, API issued *Interim Guidance for Design of Offshore Structures for Hurricane Conditions* (API Bulletin 2INT-DG) to provide guidance on how to use the updated metocean conditions in API Bulletin 2INT-MET for the design of new OCS platforms.

In an effort to reduce the potential for future damage, improve platform survivability, ensure structural integrity, and comply with the requirement of 30 CFR 250.900(a) that you must consider the specific environmental conditions at the platform location in the design of your new platforms and related structures, the MMS GOMR hereby provides the following guidance:

#### **A. General Platform Design Guidance**

1. Ensure that the design of all new OCS platforms (including, but not limited to, jacket platforms, compliant towers, caissons, tension leg platforms (TLP's), and moored floating platforms) and related structures proposed in initial platform applications (including Certified Verification Agent (CVA) nominations) you submit to the MMS GOMR after the effective date of this NTL meets or exceeds the guidelines and criteria set forth in the appropriate API document, as modified by API Bulletin 2INT-DG.

2. Continue to use the same formulae and design criteria in the appropriate API document, but substitute, for hurricane conditions, the metocean conditions derived from a valid site-specific study, or, for fixed structures only, the more severe of either (a) the *individual* parameters for winds, waves, surges, and current indicated in API Bulletin 2INT-MET or (b) the *individual* parameters for winds, waves, surges, and current indicated in API RP 2A-WSD. Conduct any site-specific study of hurricane metocean conditions according to the guidance provided in Section 9 of API Bulletin 2INT-MET. If you use metocean conditions developed from a site-specific study, include a certifying statement signed by you and the metocean specialist who conducted the study in your platform application (see 30 CFR 250.905(g)), attesting that the metocean study was conducted according to the standards, conventions, and practices provided in Section 9 of API Bulletin 2INT-MET. Also, identify clearly any deviations from the guidance in Section 9 of API Bulletin 2INT-MET.

3. Be advised that metocean conditions not associated with tropical storm events (e.g., winter storms) are not updated in API Bulletin 2INT-MET (except as noted). Ensure that the design criteria for operating conditions are derived from winter storm conditions identified in Section 17 of API RP 2A-WSD.

4. Ensure that all down flooding points, access hatches, and other points of potential water ingress within splash zones are weather tight and structurally designed to withstand wave impact loads and full immersion in the 100-year design wave crest.

5. Please be advised that API has posted errata for API Bulletin 2INT-MET on their Internet website at <http://www.api.org/Publications/addenda/add-ep.cfm>.

## **B. Exposure Category Evaluation**

Under Section 1.7 of API RP 2A-WSD, an exposure category is determined by the more restrictive level for either life-safety or consequences of failure. Section 1.7.2.a of API RP 2A-WSD describes the L-1 consequences of failure category as referring to those platforms that

1. Are major;
2. Have the potential for well flow of either oil or sour gas in the event of platform failure;
3. Where the shut-in of oil or sour gas production is not planned or is not practical;
4. Support major oil transport pipelines and/or storage facilities; or
5. Are designed for installation in water depths greater than 400 feet.

Based on these criteria, the MMS GOMR has determined that the following fixed platforms are in the L-1 exposure category:

1. Platforms that are subject to the Platform Verification Program (see 30 CFR 250.910), and any other platforms installed in water depths greater than 400 feet;
2. Platforms that produce or handle sour gas (H<sub>2</sub>S concentrations greater than 500 parts per million);
3. Platforms located 10 miles or less from the coastline that store more than 2,000 barrels of liquid hydrocarbons at atmospheric pressure or with blanket gas;
4. Platforms located more than 10 miles from the coastline that store more than 5,000 barrels of liquid hydrocarbons at atmospheric pressure or with blanket gas;
5. Platforms that produce greater than 5,000 barrels of liquid hydrocarbons per day;
6. Platforms that have a liquid hydrocarbon throughput (production plus pipeline transport volume) greater than 15,000 barrels per day;
7. Platforms that produce greater than 25 million cubic feet of natural gas per day; and
8. Platforms that have a natural gas throughput (production plus pipeline transport volume) greater than 75 million cubic feet of natural gas per day.

Ensure that you design any platform that meets any of the L-1 exposure category criteria above to the appropriate L-1 metocean design criteria contained in API RP 2A-WSD and/or API Bulletin 2INT-DG.

The MMS GOMR recognizes that L-2 and L-3 platforms are more susceptible to damage or destruction in large hurricanes. For these platforms, you are encouraged to consider using higher initial design criteria that anticipate future platform modifications or alternative usages that result in platform loads exceeding those in the originally approved design.

## **C. Specific Platform Design Guidance**

API issued API Bulletin 2INT-DG to provide guidance on how to use the updated metocean conditions in API Bulletin 2INT-MET for the design of new OCS platforms. These documents, along with the appropriate API recommended practice, establish design guidance for new OCS platforms. Accordingly, the MMS GOMR offers the following clarifications to assist you in complying with the various API documents regarding platform design cited in 30 CFR 250:

1. API RP 2A-WSD. Replace the appropriate values provided in Section 2.3.4 of API RP 2A-WSD with the values provided in Bulletin 2INT-MET for determining the deck elevation for the specified return period. See table below.

Guidance Issue	Exposure Category			2INT-DG Section
	L1	L2	L3	
Return Period	100-year	≥ 50-year	≥ 25-year	3.1
Deck Elevation	Hurricane Water Elevation (HWE)*			3.2

\* HWE = 100 yr Crest + 15% of 100 yr Crest + 5' Air Gap

Ensure that you design the decks of all new L-1 and L-2 platforms and related structures to a height equal to or greater than the HWE. **Apply the local random wave crest factor (15%) to the wave crest elevation only. Do not apply the factor for the local random wave crest to tide, surge, or loads.** Do not omit the 5-foot air gap in the design of new structures. You may omit the local random wave crest (15%) in establishing the minimum deck elevation only if you ensure that the deck structure and any deck components and equipment that lie below the HWE are designed to withstand the local wave force associated with the local random wave crest.

For all new L-3 platforms and related structures, you may locate the deck below the calculated crest elevation of the wave designated for L-3 structures. If you do, consider the full wave and current forces acting on the inundated deck. If the deck is to be located above the crest elevation of the L-3 wave, set the elevation of the bottom of deck steel above the calculated crest elevation for L-1 structures at that location.

2. API Bulletin 2TD. When designing tie-downs on new facilities, use only wind speeds from API Bull 2INT-MET, with recurrence intervals from full population or sudden hurricane data as noted below:

Environment	Return Period	Speed
Operating		44 knots*
Wind-Expected	100-year Full Population	See API Bulletin 2INT-MET
Wind-Unexpected	100-year Sudden Hurricane	

\* 1-hour average at a 10-meter elevation

When designing equipment tie-downs that are expected to operate anywhere in the GOM, use the conditions set forth in API Bulletin 2INT-MET for the Central Region. If a tie-down is expected to be used solely in one location, you may use site-specific metocean conditions. Refer to Section 4.2 of API Bulletin 2INT-DG when factoring motions associated with tie-downs and platforms.

3. API RP 2T. For TLP design, perform a site-specific study to develop a full set of metocean conditions using the methods described in Section 9 of API Bulletin 2INT-MET to use in the design. Define an extreme condition as a 100-year return period.

Guidance Issue	Facility Type	2INT-DG Section
	TLP	
Return Period	Site-specific study, and extreme condition = 100-yr return	5.1
Deck Elevation	Extreme = 100-yr Crest + 5' Air Gap Survival = 1000-yr Crest + $\geq$ 0' Air Gap	5.2
Minimum Tension	100-yr extreme and 1000-yr survival conditions	5.3
Robustness	$\geq$ 1000-yr survival check	5.4

4. API RP 2FPS. For category 1 FPS systems, perform a site-specific study to develop a full set of metocean conditions using the methods described in Section 9 of API Bulletin 2INT-MET to use in the design. Define an extreme condition as a minimum 100-year return period.

5. API RP 2SK. For new permanent mooring systems, perform a site-specific study to develop a full set of metocean conditions using the methods described in Section 9 of API Bulletin 2INT-MET to use in the design. Perform a mooring sensitivity or weak point analysis, in addition to the API RP 2SK safety factor check.

6. API RP 2RD. Make sure that the design metocean criteria in API Bulletin 2INT-MET are introduced for extreme conditions. Return periods for selecting metocean conditions and other design parameters remain as in API RP 2RD.

### **Paperwork Reduction Act of 1995 Statement**

The information collection referred to in this NTL is intended to provide clarification, description, or interpretation of requirements contained in 30 CFR 250, Subpart I - Platforms and Structures. The Office of Management and Budget (OMB) has approved the information collection requirements in these regulations under OMB Control No. 1010-0149. This NTL does not impose additional information collection requirements subject to the Paperwork Reduction Act of 1995.

### **Contacts**

Please contact Sid Falk of the MMS GOMR Office of Structural and Technical Support at (504) 736-2459 or at [sid.falk@mms.gov](mailto:sid.falk@mms.gov) if you have any questions regarding this NTL.

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