



Peer Review Plan

Date: October 31, 2023

BSEE Funding Source or Author's Division: Office of Offshore Regulatory Programs
Emerging Technologies Branch 45600
Woodland Road
Sterling, VA 20166
PRA NASA Interagency Agreement

Title: Evaluation of Technology Collaboration Program (TCP) 5026 – ESTIMATING TROPICAL CYCLONE THREATS TO FLOATING RIGS IN THE GULF OF MEXICO

Subject and Purpose: The subject of this study is PEER REVIEW OF REPORT " ESTIMATING TROPICAL CYCLONE THREATS TO FLOATING RIGS IN THE GULF OF MEXICO." This peer review seeks to review the assumption that a Dynamic Positioning Mobile Offshore Drilling Unit, or DP MODU will move off location in the advance of any approaching tropical cyclone, making it unlikely that this type of rig will be pushed off location causing a serious environmental catastrophe or loss of life. In order to make this assumption, it is recognized that the time required to secure the well and move off location is different for different rig types. Because these times are different, it is important to understand the risk that tropical cyclones impose on operating rigs in the GoM. The transition time needed to safely secure the well and move off location is known as T-time. For this reason, it is important to estimate the cyclone threats in the GoM and the amount of time in advance needed for the rig to move to a safe location.

This project studied the following five subjects to develop its conclusions, these subjects are as follows: What are the general statistical data on cyclones based on the historical data; What are the concepts of cyclone forecasting and storm size; Develop an estimation of potential threat of upcoming cyclones at selected locations in the GoM (frequency of potential threat where the rig location is on the forecasted area to be affected by the cyclone); Evaluation of the historical frequency of cyclones passing within 150 nautical miles from selected locations of the GoM; Extrapolation of the historical frequency of cyclones to estimate the risk of cyclones hitting selected locations for any period of time in the future.

Estimating Tropical Cyclone Threats to Floating Rigs in the Gulf of Mexico final report, prepared by the Risk and Reliability Analysis Branch Safety and Mission Assurance Directorate Johnson Space Center (JSC) S&MA, was funded by the Bureau of Safety and Environmental Agency (BSEE) under an interagency agreement with the National Aeronautics and Space Administration (NASA). The intent of the final report is to summarize the results of a comprehensive review of the Estimation of Tropical Cyclones Threats to Floating Rigs in the Gulf of Mexico and provide information on time needed for a DP MODU to move off location in the advance of a tropical cyclone or hurricane.

Impact of Dissemination: BSEE considers this study is influential scientific information, which requires a robust evaluation that the scientific community and stakeholders will accept. This study's findings may directly impact the production methods, industry specifications, best practices, and

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selection for equipment utilized for high-pressure and high-temperature offshore oil and gas operations. The results from this study are essential for reviewing new projects in deeper waters for offshore operations.

Upon conclusion of the peer review, BSEE will post all possible contracted deliverables, tasks, data, analyses, and information, including the peer-review reporting, reports, and comments on BSEE's research records website: <https://www.bsee.gov/research-record>.

Timing of Review: Estimated to be from November 15, 2023 – November 14, 2024 (Total peer review process of not more than 12 months is desired for this project.)

Manner of Review, Selection of Reviewers, and Nomination Process:

This peer review shall be conducted through the contract BSEE BPA Process. This process will provide for a panel of qualified subject matter experts (SMEs) selected by the agency in order to achieve an optimum level of expertise across the spectrum of issues. The SMEs will be required to maintain both balance and independence while minimizing any potential conflicts of interest. The public will not be consulted in the nomination of potential peer reviewers.

Primary criteria for peer reviewers include the following:

- Mechanical Engineering, Civil Engineering, Chemical Engineering, Coastal and Ocean Engineering, Atmospheric Physics, etc.
- Practical experience and knowledge specific tropical cyclones and computational fluid dynamics (CFD), finite element analysis(es) for CFD, etc.
- Practical experience and knowledge specific running and design numerical models or estimating the movements of tropical cyclones and hurricanes (typhoons), etc.

The secondary tier of criteria should include the following:

- No more than two persons from petroleum and gas industry
- At least one from outside of the petroleum and gas industry

Reviewers may be selected from academia, industry, and federal government. The group of reviewers shall not include multiple reviewers from the same affiliation and shall strive to include various perspectives on the issue considered.

Expected Number of Reviewers:

Three reviewers, plus contractor oversight, and writing personnel.

Requisite Expertise:

- Subject Matter Experts with five years of experience in a relevant field and should also have some other strong credentials, e.g., a Ph.D. with a substantial publication or patent record specific to the evaluated technology, a young investigator award, or a strong pedigree (e.g., a Ph.D. from a high caliber institution or under a recognized leader in the field).

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- Publications and Patents. Qualified experts often have many peer-reviewed journals and/or patents on the evaluated technology.
- Other evidence is that the person is a recognized expert in the field. Qualified experts have often managed a public policy program that has had a national impact, has a record of bringing innovations to the market or holds vital patents.
- In a relevant field, an advanced degree - Ph.D., Sc.D., D.Eng., MS, or MBA. Experts with only a bachelor's degree should have other experience and or a record of significant accomplishments indicating their expertise.
- Relevant awards. Qualified experts may have received a prestigious award such as the National Medal of Science, American Chemical Society National Award, Young Investigator Award, R&D 100 Award, or other awards specific to technology (e.g., Fuel Cell Seminar Award).
- Key Society Membership. Qualified experts may be members of a society like the National Academy of Sciences (NAS), the National Academy of Engineering (NAE), the American Physics Society, a National Laboratory Fellow, etc.

Opportunity for Public Comment:

At the time of this peer review plan's posting, the research report will be available on BSEE's Peer Review Public Posting website located here: <https://www.bsee.gov/what-we-do/research/peer-review>. BSEE welcomes public comment, especially from those with experience with DP MODUs. BSEE invites the public to comment within the 30-day window indicated on the website through the process described below, which is consistent with the guidance on the website:

- For comments pertaining to this peer review plan, send emails to: bsee_peerreviewplancomments@bsee.gov
- For comments pertaining to the research, send emails to: bsee_researchpubliccomment@bsee.gov

In the subject line list of a public comment email, please state: "TCP 5026 – ESTIMATING TROPICAL CYCLONE THREATS TO FLOATING RIGS IN THE GULF OF MEXICO" + the words "peer review plan" or "research" + the words "public comment."

- List out any comments, questions, feedback by number (ex. 1, 2, 3, etc.)
- If referencing any sources of published information, please list the complete source information in a recognized reference format (such as APA)
- Please include your name, contact information, and affiliation

The agency will provide public comments deemed significant and relevant to the peer reviewers to address during their review.

Agency Contact: Joshua Toepfer

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