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

Title: Evaluation of Technology Collaboration Program (TCP) Project 5025 – Deepwater Drillship Probabilistic Risk Assessment (PRA)

Subject and Purpose: The subject of this study is PEER REVIEW OF REPORT of "DEEPWATER DRILLSHIP PRA." This peer review aims to verify the scientific and technical merit of the assumptions, inputs, methodologies, and results of the research conducted. This peer review will evaluate and assess the testing methods, assumptions, data quality, the strengths of any inferences made regarding the simulation of operational risks, modeling, failure modes, proposed mitigation techniques, and the overall strengths and limitations of the report.

PRA is a technique used at NASA to quantitatively model risk. NASA has developed an initial PRA procedure guide document appropriate for the oil and gas industry which will enable BSEE to enhance its quantitative assessment of complex offshore development proposals. Development of a PRA on a deepwater drilling facility related to environmental release from the well would be done through collaboration with an industry partnership facilitated by BSEE and would represent the state of the art facility in a harsh environment.

To further enhance the guidance, NASA will assist BSEE in developing BSEE's quantitative risk management capability using PRA. NASA will produce initial PRAs for a deep water drilling facility, and a second PRA for subsea production equipment. PRAs will be performed using the initial guide and available PRA data will be investigated and evaluated. The PRAs will be approached on an integrated facility level to determine not only the importance of systems within BSEE's scope of regulation, but also other systems that may be important to BSEE's environmental mission that may not be within the scope of BSEE's regulation. Sources of data for PRA applications will be investigated to identify sources, evaluate gaps, and develop data analysis methods where applicable. This peer review will evaluate and assess the TCP 5025 project report.

Impact of Dissemination: The lessons learned from performing the PRAs and data task will be used to update the PRA guide on specific issues for offshore industry. 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, 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: July 17, 2023 – July 16, 2024, 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, Structural Engineering, Petroleum Engineering, Electrical Engineering, experience in Risk Analysis, etc.
- Practical experience and knowledge specific to the evaluated technology with emphasis on Risk Analysis.
- Practical experience with offshore equipment design in deep water high-pressure and high-temperature environments, etc.

The secondary tier of criteria should include the following:

- No more than two persons from the oil and gas industry
- At least one from outside of the oil 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).
- 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 tension leg platforms. 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 Deepwater Drillship Probabilistic Risk Assessment (PRA)" + 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: Bipin Patel