



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 Assessment Program (TAP) 788 – STUDYING “FITNESS FOR SERVICE” OF THE SEALING ASSEMBLIES AND CEMENT SYSTEM IN SHALLOW WELL DESIGNS BY CONDUCTING SCALED LABORATORY TESTING, LEAKAGE MODELLING, AND RISK ASSESSMENT

Subject and Purpose: The subject of this study is “FITNESS FOR SERVICE SEAL ASSEMBLIES AND CEMENT SHALLOW WELLS.” This Peer Review aims to verify the scientific and technical merit of the assumptions, inputs, methodologies, and results of the research conducted.

The use of seals in sub-mudline or liner systems raises significant design concerns. The presence of the elastomeric seal introduces an element of design uncertainty in the well containment system since it may mask a poor cement job. The seal assembly and the cement column are currently pressure tested in the field together as a system rather than independently. These tests verify the integrity of the dual barrier system (seal and cement) rather than testing each barrier independently. Therefore, if the system fails the pressure test, this means that both barriers have failed (e.g., both the seal and cement failed). If the system passes the pressure test, it indicates that at least one of the two barriers is effective but does not demonstrate that both barriers are independently holding the pressure.

BSEE funded a study to research industry-standard sealing materials, cement systems, seal-cement configurations, and the performance of these individual barriers or barrier systems in representative downhole environments. The project evaluated whether the seal or the cement should be considered as the primary barrier, if the seal is regarded as a temporary barrier to ensure a successful pressure test, or if it is part of a dual barrier system (i.e., seal assembly and cement) that should last for the life of the well.

Impact of Dissemination: BSEE considers the "TAP 788 – FITNESS FOR SERVICE SEAL ASSEMBLIES AND CEMENT SHALLOW WELLS" report is influential, as it comprises experimental and testing data results, modeling assessment, design, technical, and literature information. These research findings may suggest the need to update technical review evaluations and risk assessments of operators' proposed utilization of liner seal assemblies and cementing for shallow wells on the OCS. Further, this study's proposed findings, analyses, guidance, conclusions, and recommendations may suggest the need to update BSEE's technical review and

risk assessment processes of operators' proposed use of liner seal assembly shallow well designs

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as part of their requests for alternate compliance or departure from BSEE regulations and permitting applications.

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: November 2023 – December 2024 (Total peer review process of not more than 13 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:

- Oil and gas operations, drilling
- Cementing Operations, cement, resins, ceramics, and materials
- Shallow Well Designs
- Well barriers, well integrity
- Process safety (e.g., well control, critical barrier evaluation, loss of containment, spill prevention, well integrity)

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

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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: "TAP 791 – arctic pipelines standards and technology" + 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: Marvin Montgomery

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