



Peer Review Plan

Date: October 18, 2023

BSEE Funding Source or Author's Division: Office of Offshore Regulatory Programs
Emerging Technologies Branch 45600
Woodland Road
Sterling, VA 20166
PCCI Marine and Environmental Engineering with
INTECSEA a Worley Persons Group

Title: Evaluation of Technology Assessment Program (TAP) Project 791 – ARCTIC PIPELINES STANDARDS AND TECHNOLOGY

Subject and Purpose: The subject of this study of the PEER REVIEW OF REPORT " ARCTIC PIPELINES STANDARDS AND TECHNOLOGY." This peer review aims to verify the scientific and technical merit of the assumptions, inputs, methodologies, and results of the Arctic Pipelines Standards and Technology. Pipelines offshore in the Arctic face challenges that do not exist in other parts of the world. These challenges include environmental loading such as sea ice causing strudel scouring or heat bulbs developing around a heated pipe laying in permafrost, the monitoring and detection of leaks in single walled or double walled pipe-in-pipe (PIP), and the installation and repair in an Arctic environment. This report sought to review the industry standards and provide a gap analysis of those standards, review emerging technologies as pertaining to Arctic pipeline designs, determine the suitability of single walled vs PIP by reviewing design considerations, codes, and standards, provide information on the advancements in pipeline design, installation, and operations applicable to the arctic, and then providing a gap analysis on the findings.

This report provides a literature review and gap analysis of the regulations, standards, and codes of current United States, State of Alaska, and international regulations, standards and related specifications and technical reports for offshore hydrocarbon-carrying pipelines. A review of single-walled versus double-walled pipeline suitability for Arctic offshore applications was conducted. This report provided a discussion on previous project challenges and solutions and emerging offshore Arctic pipeline technology with a focus on, but not limited to, pipelines in Arctic conditions. These documents are assessed based on the information they provide to aid the reader on considerations needed for offshore Arctic pipelines.

This peer review will evaluate and assess the assumptions, data quality, the strengths of any inferences made, and the overall strengths and limitations of the report. Therefore, this peer review will evaluate and assess the TAP 791 project report.

Impact of Dissemination: BSEE considers that 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 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.

Disclaimer: The content of this peer review plan has been verified in compliance with the peer review handbook. For peer review contracts executed prior to peer review plan release, there may be differences in language used between the peer review plan and the executed contract.



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: October 02, 2023 – October 1, 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, Material Science, Construction Engineering, etc.
- Practical experience and knowledge specific to the evaluated technology concerning either single wall pipes or PIP technologies, mechanical testing, finite element analysis(es) for evaluating fatigue design, construction design under Arctic conditions etc.
- Practical experience and knowledge specific to design, build, construct, and maintenance of piping under Arctic conditions, etc.
- Practical experience with offshore pipe design in Arctic conditions, 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).
- Publications and Patents. Qualified experts often have many peer-reviewed journals and/or patents on the evaluated technology.

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- 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: Joshua Toepfer

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