

A New Era of Management:

*Driving Safety Performance and
Environmental Stewardship Improvements
Beyond Regulation through Innovation
and Collaboration*

Risk Based Inspections

Assessment Report

Bureau of Safety and
Environmental Enforcement

May 2019



Risk Based Inspection (RBI) Program

RBI Implementation

Risk Based Inspection (RBI) Program

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1.0 General

The Bureau of Safety and Environmental Enforcement (BSEE) is required by the Outer Continental Shelf Lands Act, as amended (OCSLA), to inspect each production facility under BSEE’s regulatory purview at least once per year. Additionally as a practice, BSEE currently inspects each drilling facility at least once every 30 days when on location.

In late 2015, BSEE initiated a Risk Based Inspection pilot which used a systematic approach relying on both a quantitative model and qualitative performance and risk-related data. As part of the pilot, a number of inspections were conducted but BSEE was not able to close out the pilot and advance to a fully executed program. In its March 2017 report *Oil and Gas Management: Stronger Leadership Commitment Needed at Interior to Improve Offshore Oversight and Internal Management*¹, GAO provided its findings from a 2016 review and criticized the previous administration for its inaction. The report stated that BSEE had not been successful in implementing the supplemental inspection approach focused on a risk based approach.

In an effort to drive safety performance and environmental stewardship improvements beyond regulations, and immediately upon his arrival at the Bureau in June 2017 BSEE Director Angelle brought a renewed energy to the Risk Based Inspection pilot and instructed staff to work toward making the program a reality. Director Angelle also introduced a Change Management Initiative program which included additional efforts to bring the critical function of inspections to a more comprehensive and strategic level through innovation. This involved developing an inventory of all applicable types of inspections used by the Bureau divisions and regions, and documenting the three tiers of inspection capability relative to available resources and current activity levels.

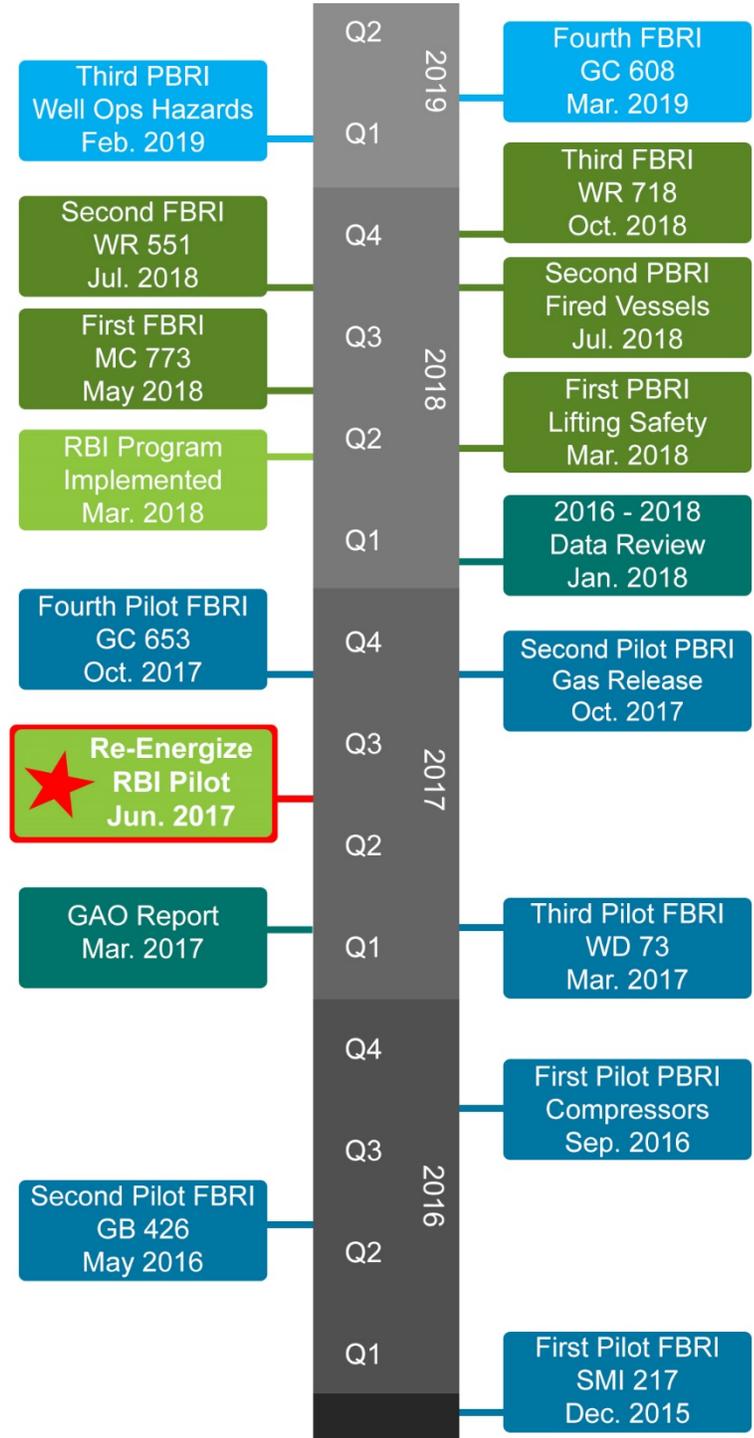
¹ [Report – GAO 17-293](#) (Oil and Gas Management: Stronger Leadership Commitment Needed at Interior to Improve Offshore Oversight and Internal Management)

In March 2018, **BSEE commenced implementation, at Director Angelle's instruction, of a formal risk-based inspection (RBI) program (BID No. 2018-033G) as a supplement to the current annual inspection program.** The RBI program utilizes a systematic approach, employing both a quantitative risk model as well as subjective performance and risk related intelligence information, to identify higher-risk facilities or operations on which to focus inspections and resources.

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With this program, BSEE employs widespread risk management practices to the offshore oil and gas sector. BSEE's risk-based inspection program:

- Allows BSEE to better focus inspection resources on relatively higher-risk/higher consequence facilities;
- Allows BSEE the ability to systematically monitor facility and operational risk profiles;
- Allows BSEE to better identify best practices regarding offshore operations and risk management;
- Allows BSEE to verify, via field inspections, that companies are properly identifying, managing, and mitigating risks;
- Encourages continuous improvement in risk management for offshore operations; and,
- Enables BSEE to learn about potential best practices on higher-risk facilities where performance exceeds the norm (e.g., higher-risk facilities that display positive performance characteristics).



Overall, the objective and scope of the BSEE RBI program is to assist the Bureau with the development of inspection tasks and techniques to enhance its focus on offshore oil and gas facilities that exhibit a number of distinguishing risk factors; to minimize redundant inspection efforts and cost; to shift from a reactive to a proactive oversight regime; and to implement a risk management tool.

2.0 BSEE Risk Based Inspections Overview

Since the implementation of the program in March 2018, BSEE has conducted two Performance Based Risk Inspections (PBRI²) (Cranes and Fired Vessels³) and three Facility Based Risk Inspections (FBRI⁴) (Jack St. Malo, Turritella, and Devil's Tower). Between the Crane and Fired Vessel PBRIs, BSEE conducted focused inspections on 67 facilities and reviewed 2990 files. As a result of these inspections, BSEE has:

- Issued two safety alerts with 19 recommendations to drive improved safety performance;
- Required facility and Operator specific corrective action plans for deficiencies identified in the Facility Based Risk inspections; and,
- Met with industry multiple times to discuss the RBI process, results from RBI inspections, and ways to work as partners to improve performance.

Employing a RBI protocol is a prime example of a new era of management driving safety performance and environmental stewardship improvements beyond regulation through innovation and collaboration. In a results-driven environment, the emphasis on the RBI has both the Bureau and Industry focusing on achieving success by focusing on ensuring the safety and success of offshore operations.

3.0 Performance Based Risk Inspections

At the direction of BSEE leadership, staff with the Gulf of Mexico Region's (GOMR) Office of Safety Management (OSM) meets monthly to review the latest compliance and incident data to identify any trends Gulf wide. This review informs performance based risk inspections (PBRI), which are based on analysis of key performance indicators and utilizing trend analysis to focus on reducing the likelihood of events and compliance issues Gulf wide.

Prior to each PBRI taking place, specific protocol is developed and training sessions are held with Regional and District personnel assigned to conduct the PBRI. **BSEE Regional and District leadership participates in all training sessions as a demonstration of support for the RBI program. The complete engagement, from the inspectors to top Regional management, throughout the PBRI process shows the commitment to a common purpose – improving offshore performance beyond regulation.**

In order to reach our Bureau's goals, BSEE management pushes our staff to identify our weaknesses, learn from them, and make recommendations to avoid repeating them.

3.1 Lifting Safety Performance Based Risk Inspections

In January 2018, OSM staff met to review the latest compliance and incident data to identify any trends Gulf wide. The review focused on data from 2016 through 2017. The analysis pointed to a potential risk associated with cranes and lifting safety. During the time period reviewed, 178 crane incidents were

² Performance Based Risk Inspections focus on reducing the likelihood of adverse events across the Outer Continental Shelf after an analysis of compliance and incident data identifies trends indicating risk associated with widely-employed procedures or equipment.

³ Fired vessels are hydrocarbon processing vessels on offshore oil and gas facilities in which the temperature of a fluid is increased by the addition of heat supplied by a flame within the vessel.

⁴ Facility Based Risk Inspections focus on low-probability, high-consequence items at a unique production facility.

reported to BSEE by 30 unique operators. Further, the Bureau issued 103 crane-related incidents of non-compliance (INCs) during the same time period. The proposed facility list was developed by identifying the operators with the most compliance or performance issues, and the inspection protocol was developed using the top incident factors (procedures, communications, worker qualifications, etc.) identified by the review.

The PBRI included 30 production platforms and 10 well operations in the GOMR, operated by 14 unique operators. BSEE inspection teams, comprised of inspectors and engineers, in each BSEE district conducted a minimum of eight inspections between March 13 and 14, 2018. One facility inspection was conducted March 19 in conjunction with a previously scheduled annual inspection. The PBRI was a joint exercise with the United States Coast Guard (USCG). The actual inspections accounted for 819 hours and review of 2,209 files.

For findings and recommendations resulting from the Lifting Safety RBI, see [BSEE Safety Alert 332, "Crane Hazards Identified by BSEE in Risk Based Inspections."](#)

3.2 Fired Vessel Performance Based Risk Inspections

In May 2018, OSM staff reviewed the latest compliance and incident data to identify any trends Gulf-wide. The review focused on data from 2016 through 2018 year-to-date. The analysis pointed to a potential risk associated with fired vessels. During the time frame reviewed, seventeen (17) fired vessel incidents were reported to BSEE by twelve (12) unique Operators. Due to four recent events and the severity (injury, damage to platform, shut-in production, etc.), a unique inspection protocol was developed to focus on reducing likelihood of similar incidents and compliance issues Gulf-wide. Further, seventy-six (76) fired vessel-related Incidents of Non-Compliance (INCs) were issued, representing approximately two percent of the 3,658 total INCs issued during the review time period. The top Operators with compliance or performance issues fed into the proposed facility list, and the top factors of the incidents (equipment, training, procedures, etc.) fed into the inspection protocol.

Twenty-seven (27) production platforms in the GOMR operated by fourteen (14) unique Operators were included in the PBRI. BSEE inspection teams, comprised of inspectors and engineers, in each BSEE district conducted a minimum of five (5) inspections between July 17 and 20. The actual inspection accounted for 361 hours and review of 781 files.

For findings and recommendations resulting from the Fired Vessel RBI, see [BSEE Safety Alert 341, "Fired Vessel Hazards Identified by BSEE in Risk Based Inspections."](#)

4.0 Facility Based Risk Inspections

OSM staff identified multiple facilities utilizing the Argonne National Label (ANL) model to be included in a facility based risk inspection (FBRI). After determining the twenty five facilities with the highest ANL risk scores, OSM selected the first three facilities to be inspected based on the production volumes of the facility, Offshore Safety Index rank, weighted INC-to-Component rank, and incident severity rank of the Designated Operator. FBRI are based on analysis of low probability, high consequence areas on specific facilities.

Following the selection of the facility, OSM staff and the appropriate District representatives reviewed the facility drawings and performance data to identify low probability, high consequence topics specific to the facility. FBRI facilities and topics to date are:

- Devil's Tower
 - Uninterruptable Power Supply
 - Cranes and Lifting Safety
 - Energy Isolation – Lock Out, Tag Out
 - Pre-startup Review and Management of Change programs
- Turritella
 - Uninterruptable Power Supply
 - Task Level Hazards Analysis
 - Subsea Leak Detection
 - Training and competency of personnel (change of vessel ownership)
- Jack St. Malo
 - Personnel on Board – Emergency Response
 - Cranes and Lifting Safety
 - Gas Compressors
 - Simultaneous Operations
 - Subsea Operations and Leak Detection

At the conclusion of the inspections, the FBRI team hosted a closeout meeting with each Operator to discuss the preliminary findings of the FBRI team and allow for feedback. Within 30 days of the completion of the inspection, the FBRI team submitted reports of findings with the Designated Operator and required a corrective action plan to address each deficiency.

5.0 Lessons Learned

With the RBI program out of its pilot phase, from March – December 2018 GOMR staff successfully conducted two performance-based risk inspections and three facility-based risk inspections. In February 2019 BSEE conducted its third round of PBRI, and in March 2019, the fourth FBRI. Planning is underway within OSM for additional RBI rounds throughout 2019.

As with any start-up program, the team learns from each inspection and applies those learnings to adjust the protocol and techniques used to continually improve the inspection tool. In conducting the five 2018 RBI, the Bureau observed the following in regards to program implementation and performance:

- An estimated 200 - 250+ man-hours of review, analysis, and planning were initially required to develop an actionable protocol from inspection and incident data. Each protocol is unique to the specific inspection being conducted, whether PBRI or FBRI, and each is intended for one-time use.

As the process of data review and protocol development has been refined, BSEE is now able to conduct the analysis and produce an inspection protocol in half the time.

- Prior to implementation of the early 2018 RBIs, industry became aware of the selected topics and facilities being inspected. A large number of staff received training and were in possession of inspection documents weeks in advance of the scheduled inspections.

To keep subsequent rounds of RBI “unannounced,” BSEE scheduled inspector training as close to the date of inspection as possible and offered multiple sessions to ensure all participating inspectors had the opportunity to attend without disruption to the normal inspection schedule. Additionally, location of the selected facilities was shared only with Supervisory Inspectors for preparation of manifests, and only days before the inspection. These supervisors received specific instruction not to release information about the selected facilities.

- By holding FBRI in addition to annual inspections required under OCSLA, BSEE created an unforeseen burden on operators, who were required to submit to multi-day inspections multiple times in a year.

To minimize disruptions to operations, BSEE staff in the Region and District now attempt to coordinate FBRI with OCSLA-mandated annual inspections.

- Following a PBRI, OSM conducts a secondary evaluation of some of the subject facilities based on inspection results. OSM evaluation protocols following the first rounds of PBRI were inconsistent, resulting in some operators receiving multiple requests for documentation, pertaining to different facilities, with short turnaround times.

OSM now reviews the inspection results as a whole and generates a list of common evaluations to be conducted on all selected facilities. Coordination of this process minimizes the number of facilities per operator included in secondary evaluations.

6.0 Conclusions

It has been demonstrated that the risk based inspection tool serves as a valuable contribution to the Bureau’s Inspections Program by efficiently using resources and a data-driven approach to target those operations and facilities in most need of oversight. The findings are being used to inform the entire industry and thereby have far-reaching effects of continuous improvement.

The RBI is only one element of BSEE’s overall Inspections Program which serves to to achieve our goals and advance our mission. All staff involved in the process are integral in fulfilling BSEE’s mission to promote safety, protect the environment and conserve resources offshore through vigorous regulatory oversight and enforcement.