Bureau Interim Directive Data Sheet

BID No: 2018-033G

Series: Program Series

To: All BSEE Employees

Approving Official: Bryan Domangue, Regional Supervisor, RFO

Office of Primary Responsibility: Office of Safety Management, Regional Field Operations, Gulf of Mexico Region

Effective Date: 3/6/2018

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Title: Risk Based Inspections

Type of BID:

☐ National ☒ Regional ☐ Emergency (not to Exceed 60 days)

Originating Office Location(s):

☐ Headquarters ☐ Alaska ☐ Atlantic
☒ Gulf of Mexico ☐ Pacific

Distribution Designation

☐ Public ☒ Internal

Materials Superseded:
N/A

United States Department of the Interior

BUREAU OF SAFETY AND ENVIRONMENTAL ENFORCEMENT
WASHINGTON, DC 20240-0001

DEPARTMENT OF THE INTERIOR
BUREAU OF SAFETY AND ENVIRONMENTAL ENFORCEMENT

BUREAU INTERIM DIRECTIVE

SIGNATURE PAGE

BID Number ***and Title:*** *2018-033G, Risk Based Inspections*

For Bryan Domangue
Regional Supervsior
GOMR Regional Field Operations

3/6/2018

United States Department of the Interior

BUREAU OF SAFETY AND ENVIRONMENTAL ENFORCEMENT
WASHINGTON, DC 20240-0001

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BID No: 2018-033G

Title: Risk Based Inspections

Designation: Internal

PURPOSE AND OBJECTIVES

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, BSEE currently inspects each drilling facility at least once every 30 days when on location.

The risk-based inspection program (RBI) is intended to supplement the current annual inspection program. The RBI program will utilize a systematic approach, employing both a quantitative risk model as well as subjective performance and risk-related intelligence information, to identify higher-risk facilities on which to focus inspections and resources. Once the target facilities are identified, focused inspections, audits, or hybrid reviews concentrating on the identified risk characteristics (i.e., focused, risk based inspections) will be conducted by BSEE.

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

- Allow BSEE to better focus inspection resources on relatively higher-risk/higher consequence facilities;
- Allow BSEE the ability to systematically monitor facility and operational risk profiles;
- Allow BSEE to better identify best practices regarding offshore operations and risk management;
- Confirm that companies are properly identifying, managing, and mitigating risks;
- Encourage continuous improvement in risk management for offshore operations; and,
- Enable 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 Agency to possibly develop 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.

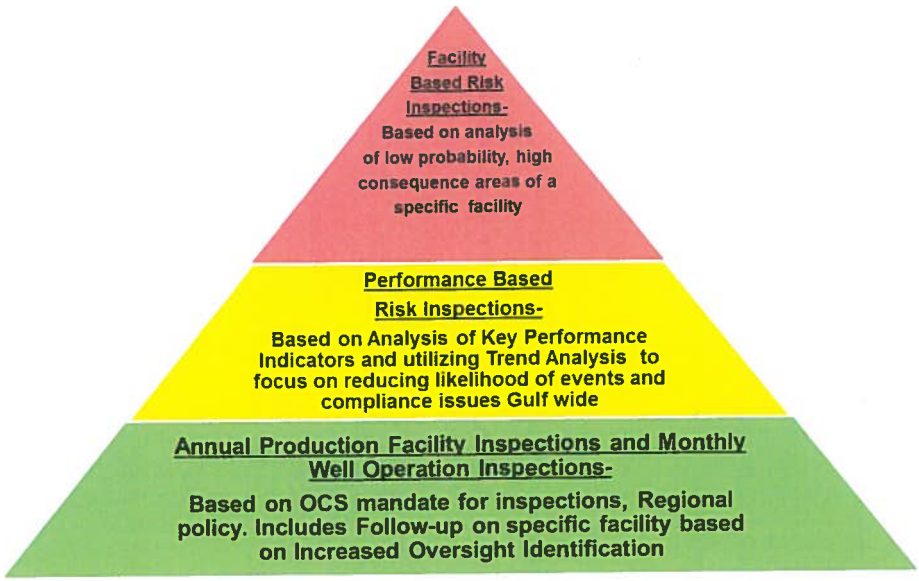
POLICY, PROCEDURE OR GUIDANCE

BSEE's RBI Program consists of two components – Facility-Based Risk Inspections (FBRI) and Performance-Based Risk Inspections (PBRI).

The FBRI focuses on low probability, high consequence items at a unique facility – either production or well operations. BSEE conducts a review of facility specific data (Incidents of Noncompliance (INC), incidents, production, distance to shore, number of components, etc.) and develops a unique protocol to evaluate the operator's management of at the specific facility. This process involves a specialized protocol for the specific hazards, barriers and risks identified at the facility.

The PBRI focuses on reducing the likelihood of events and compliance issues on the entire Outer Continental Shelf. BSEE specialists review key performance indicators, such as incident and INC data, to identify any trends that warrant the attention of focused inspections (e.g., gas releases, lifting incidents, compressor fires). The PBRI is very narrow in focus and covers multiple facilities, multiple operators, and multiple districts in a two- to three-day window.

In BSEE's Gulf Of Mexico Region, the RBI program is managed and maintained in, by Field Operations, Office of Safety Management (OSM). Below is the tiered approach to the BSEE Inspection program:



RBI Process

This BID captures the process of a RBI program. This includes the following topics: resource requirements; interfaces and dependencies with other groups and offices; risk identification and risk mitigation; achievement of RBI objectives; and satisfaction of BSEE's management and

stakeholders. This BID also documents and analyzes the tools utilized by BSEE and measures collected throughout the RBI process.

Risk-based Model for FBRI

Argonne National Lab (ANL) was contracted by BSEE to develop a risk-based model to identify and rank the platforms by their relative risk. The model was intended to be used by the Agency to help maximize the efficiency of the limited inspection resources. ANL's statistical correlation analysis of over 140 historical data characteristics indicated that there were several characteristics, when assessed together, would be indicative of higher risk for an offshore platform. Since its development in 2013, the model has consistently identified a subset of specific platforms that would be responsible for a significant majority of major incidents (fire, fataliy, spill, explosion, loss of well control).

ANL's model is based on basic risk formulation. Risk is defined as the likelihood or frequency of an event's occurrence times the consequence of that event, as shown below.

$$Frequency \times Consequence = Risk$$

Embracing this definition, a risk function was created by ANL that attempts to capture the likelihood or probability of a complex incident, and the possible consequence or damage of that incident. The risk function can therefore be broken into two pieces, first is the likelihood aspect, or frequency factor, detailed below,

$$I\_Maj+I\_Slot+I\_(INC\_1\ )+I\_(Incid\_1\ )+I\_(Incid\_2\ )=F$$

where,

I_Maj = Indicator flag-Major complex
I_Slot = Indicator flag-Slot Count≥15
I_(INC_1) = Indicator flag- Inspection with INC in previous year
I_(Incid_1) = Indicator flag- Incident in previous year
I_(Incid_2) = Indicator flag-Incident 2 years prior
F = Frequency factor

The second part of the risk formula, the consequence factor, involves the component count.

$$n\_comp = C$$

where,

n_comp = Number of Components
C = Consequence Factor

Using the component count as an indicator of the possible repercussions of an incident, the final

risk function can be completed. Now the frequency factor is multiplied by the component count to give the final risk metric number.

The goal of the ANL Model was to create a risk-based function that would rank platforms based on their characteristics and past performance. This would provide BSEE an objective measure that could be used to prioritize platform inspections. It was also desired to create a function that was straightforward and intuitive to use, and that clearly separated the riskiest platforms from the general pack. An example of the model output is below:

	COMPLEX_ID_NUM	MMS_COMPANY_NUM	FBUS_ASC_NAME	AREA_CODE	BLOCK_NUMBER	DISTRICT_CODE	I_Maj	I_Slot	I_INC1	I_Incid1	I_Incid2	F_FY2017	C_FY17	R_I
1	2440	00078	Chevron U.S.A. Inc.	WR	718	2	1	0	1	1	1	4	539	2
2	23552	03035	Fieldwood Energy Offshore LLC	GC	65	2	1	1	1	1	0	4	397	1
3	1001	02481	BP Exploration & Production Inc.	MC	474	1	1	0	1	1	1	4	365	1
4	1323	00981	Anadarko Petroleum Corporation	GC	608	2	1	0	1	1	1	4	337	1
5	24129	03026	EnVen Energy Ventures, LLC	EW	873	2	1	1	1	1	0	4	320	1
6	24130	01834	Stone Energy Corporation	VK	989	1	1	1	1	1	0	4	289	1
7	1101	02481	BP Exploration & Production Inc.	MC	778	1	1	1	0	1	1	4	283	1
8	1175	02782	Eni US Operating Co. Inc.	MC	773	1	1	0	1	1	1	4	272	1
9	1035	03280	Freeport-McMoRan Oil & Gas LLC	GC	645	2	1	1	1	1	1	5	215	1
10	821	00981	Anadarko Petroleum Corporation	EB	602	4	1	0	1	1	1	4	266	1
11	20285	03035	Fieldwood Energy Offshore LLC	SP	60	1	1	1	1	1	1	5	205	1
12	23883	01834	Stone Energy Corporation	MC	109	1	1	1	1	0	1	4	249	9
13	1899	02010	BHP Billiton Petroleum (GOM) Inc.	GC	653	2	1	0	1	1	1	4	243	9
14	420	00689	Shell Offshore Inc.	GC	158	2	1	0	1	1	1	4	242	9
15	2008	00689	Shell Offshore Inc.	AC	857	4	1	0	1	1	0	3	320	9

The quantitative model was developed with two separate components: likelihood (i.e., frequency) and a consequence (i.e., worst case scenario[1]). This model will be run annually to develop a facility risk ranking for all the production facilities currently operating in the GOM. This quantitative **Inherent Risk** (A) component provides the foundation of the RBI Program (see attached diagram Applying the RBI Model).

This quantitative output shall not be used alone for facility identification in the RBI process without the review and evaluation of the qualitative risk components that provide BSEE with the ability to incorporate additional **Performance (B)** information or **Other Risk Related Intelligence (C)**. By incorporating these two qualitiative risk components into the facility ranking process, BSEE has the ability to incorporate our experience, business factors, SEMS or Inspecton data, IOL profiles, and recent changes in operating or business environment e.g., changes in ownership, bankruptcy etc. Once facilities are selected, it is through these qualitative components that BSEE is able to identify the risk drivers of the unique platform(s). These qualitative components can be easily changed to reflect new information and lessons learned as the RBI program matures.

FBRI Process

BSEE OSM identifies multiple facilities utilizing the ANL model to conduct a FBRI. By focusing on the facilities with the highest twenty-five ANL risk scores, OSM can identify one to three facilities for focus 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.

Following the selection of the facility, OSM and the appropriate District representatives (FBRI Team) review the facility drawings and performance data to identify low probability, high consequence topics specific to the facility. Examples include:

- Personnel on Board
- Fire / Gas Release
- Loss of Power
- Modification of Facility
- Subsea Leak Detection
- Blowouts
- Mooring failure

The BSEE FBRI team comprises two SEMS Engineers, one field engineer, and one inspector. Prior to the inspection, the FBRI team develops a focused protocol that has onshore- and offshore-related questions to determine how the Designated Operator has developed, implemented, and maintained their SEMS Program to address the aforementioned risk drivers.

All FBRI inspections will be scheduled by OSM and the corresponding District Supervisory Inspector, or their designee. The offshore portion of the FBRI should be conducted prior to the onshore portion.

At the conclusion of the inspection, the FBRI team shall host a closeout meeting with the operators to discuss the preliminary findings of the FBRI team and allow for feedback. Within 30 days of the completion of theclose-out meeting , the FBRI team shall share a report of findings with the Designated Operator and require a corrective action plan if applicable. The report should address good practices, noncompliance issues, and areas for improvement. All of the conclusions presented by the FBRI team need to be fully supported by evidence within the report.

Additionally, the FBRI team should consider the following throughout FBRI process:

1. Carefully manage time during the initial planning and developmental phases of the FBRI to ensure the proper risk topics are selected for the specific facility, and that the schedule of the FBRI coincides with the District's availability.
2. Conduct the FBRI offshore portion simultaneously with the District's annual inspection. This would benefit BSEE by sharing findings from both the FBRI and the annual

inspection in order to identify if facility non-compliances could potentially indicate company-wide management system concerns.

3. Have necessary SMEs to cover all assigned risk item focus topics.
4. Provide clarity on delegating additional weight to specific risk topics. A decision should be made to determine if each risk item must incorporate an equal amount of attention or not.
5. Target facilities that have experienced recent incidents, INCs, etc. in order to understand the relationship between the implementation of the operator's SEMS Program and operational issues at the facility-level.

PBRI Process

Once a quarter, OSM meets to review the latest compliance and incident data to identify any trends Gulf wide. OSM's review focuses on a predetermined timeframe not to be less than three months. If the analysis points to a potential risk for production, well operations, or both, OSM shall develop a list of proposed facilities to be inspected. The top Operators with risk-specific compliance or performance issues should be used to develop the proposed facility list, and the top factors and equipment should feed into the inspection protocol.

The PBRI should include unique facilities and Operators to have the most exposure. Each BSEE District should be involved in every PBRI.

Prior to the PBRI taking place, OSM shall facilitate training sessions with Regional and District personnel assigned to conduct the PBRI. The training provides guidance on the inspection protocol and how to access GOM shared drive information for facility-specific documentation.

All PBRI participants will be instructed to complete every Performance-Based item on the inspection form and fifty (50) percent of the risk-related PINCs applicable to the facility type. Each inspection will be documented as an "Audit or Other Special Inspection." All documentation and paperwork is forwarded by the Districts to OSM for analysis. OSM performs in-depth reviews on a sample of the PBRI facilities – not to be less than twenty (20) percent.

During the PBRI, Inspectors and OSM personnel are instructed to test the effectiveness of operators' SEMS by witnessing the application of safety management principles/processes applied to ongoing operations, further evaluating the operators understanding of risk and critical risk management principles associated with gas releases.

Additionally, the PBRI team should consider the following throughout PBRI process:

1. OSM needs to continuously monitor OCS performance to ensure timely response to risk concerns. This is partially covered by conducting the monthly Regional Performance Meetings; however, quarterly meetings, in line with Increased Oversight List reviews, should be scheduled to identify trends that exist on a Regional level and develop plan(s) to address those risk(s).

2. All PBRI participants must participate in the protocol training prior to conducting an inspection on a specific topic. This reduces a lot of confusion and streamlines the PBRI process offshore.
3. OSM SEMS staff should always be embedded with and support Districts in the PBRI process.
4. Protocol for the identified risk should always include performance-based and compliance-based questions if applicable. The performance-based should be specific to the trends identified by the OSM, and the compliance-based should be generic to the operation(s) and equipment being inspected.
5. GOMR Management should be briefed by OSM once trends are identified to make final decision on the topic(s) covered by the PBRI process.
6. PBRI inspections shall always be unannounced, well planned and limited to less than 50 facilities at a time.

Distribution of Findings

Even though the FBRI and PBRI have different objectives, timely dissemination of findings is imperative to focus on reducing likelihood of events and compliance issues Gulf-wide and facility-wide. In the future, BSEE should use the following procedures when disseminating information internally and with our stakeholders:

- FBRI letters shall be submitted to the Operator with all supporting documentation within 30 days of the closeout of the inspection
- PBRI report shall be submitted to BSEE representatives within 60 days of the inspection – longer time is needed due to the audits which take place after the inspections
- PBRI Safety Alert and the associated protocol used in the PBRI should be released within 90 days of the inspection to Industry
- BSEE should hold annual meetings / workshops with Industry to discuss the RBI process and findings
- BSEE management should disseminate information on serious events (power losses, BOP failures, LTAs > 3 days, major fires, etc.) on a real-time basis across regions and throughout the bureau

BSEE RBI Scheduling

The following steps for PBRI implementation should occur on an annuals basis:

1. All PBRI data reviews shall coincide with Increased Oversight List reviews
    a. January – Review October through December of previous year at a minimum
    b. April – Review January through March of current year at a minimum
    c. July – Review April through June of current year at a minimum
    d. October – Review July through September of current year at a minimum
2. OSM shall meet with ORD, RFO and DOS management on the same schedule to support proposed PBRIs
3. Conduct 100-150 PBRI facility inspections in a calendar year

The following steps for FBRI implementation should occur on an annual basis:

1. January - OSM shall contact OORP to receive previous FY final ANL model and prioritize a list of 25-30 facilities to analyze at the field level
2. March - OSM shall meet with ORD, RFO and DOS management to propose five (5) facilities and finalize the list of FBRI subject facilities – can include well operations
3. Conduct three FBRI facility inspections outside the peak of hurricane season
    a. May – 1st FBRI
    b. July – 2nd FBRI
    c. November – 3rd FBRI
4. Focus of all FBRI needs to be on the Critical Risk Management principles at the subject facility and within the company

AUTHORITY
The OCS Lands Act, 43 U.S.C. §§ 1331–1356b, provides the Secretary of the Interior the authority to lease and regulate natural resources on the OCS. (See 43 U.S.C. § 1334(a).) On May 19, 2010, Secretarial Order 3299 established the reorganization of the Minerals Management Service, the regulatory agency that was then responsible for oversight of OCS activities. Pursuant to 119 Departmental Manual 1, BSEE is responsible for issuing and monitoring OCS oil and gas permits and inspecting offshore structures and facilities, among other responsibilities.

REFERENCES
N/A

MATERIALS SUPERSEDED
N/A

RESPONSIBILITIES

1. All Employees, RFO, GOM OCS Region:
    a. Adhere to the procedures contained in this directive.

2. Division Chief, OSM, GOM OCS Region:
    a. Ensure the objectives of this directive are met.
    b. Ensure staff compliance with this directive

EXPIRATION
This interim directive will remain in effect for two years unless superseded or cancelled .

POINT OF CONTACT
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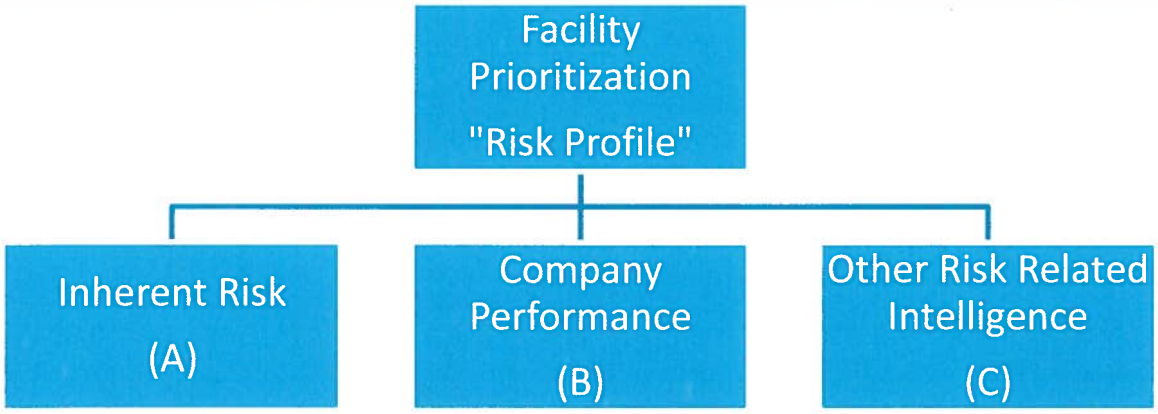
ATTACHMENTS
Applying the RBI Model Graphic

BSEE
Bureau of Safety and Environmental Enforcement

Applying the RBI Model



1) **Rank Inherent Risk (A) of the OCS facilities--** The foundation of the RBI program is the quantitative risk model developed by Argonne with BSEE. The quantitative model was developed with two separate components: likelihood (i.e., frequency) and a consequence (i.e., worst case scenario[2]). This model will be run annually to develop a facility risk ranking for all the production facilities currently operating in the GOM.

2) **Select the characteristics for the qualitative risk components: Performance (B) and Other Risk-Related Intelligence (C)** these two qualitative risk components – performance (B) and other risk-related intelligence (C) – provide BSEE with the ability to easily incorporate additional performance information or risk-related insights or data into the process for identifying high risk profile facilities. These components provides BSEE with the ability to incorporate our experience, business factors, SEMS or Inspection data, IOL profiles, recent changes in operating or business environment e.g., changes in ownership, bankruptcy etc.