



Bureau of Safety and Environmental Enforcement

Annual Report 2016



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How We See It

BSEE Employees Share Their Perspectives



"BSEE's regulatory role is crucial to improving safety and protecting the environment on the Outer Continental Shelf. Developing sound and effective rules is typically a difficult, and sometimes very controversial, process that requires the combined efforts of the public, industry and many dedicated people throughout BSEE and the Department of the Interior. But the end result – ensuring that OCS operations are safe for people and protective of the environment – justifies all the hard work, and makes me proud to have been part of the rulemaking process."

Ralph Colleli, Office of Offshore Regulatory Programs



"I sincerely believe in BSEE's mission and am committed every day to ensuring that my efforts are in line with our organizational priorities. Words and actions truly matter, and a positive attitude goes a long way with my fellow coworkers and the industry representatives I work with regularly in the field."

John McCall, Petroleum Engineer, Alaska Region



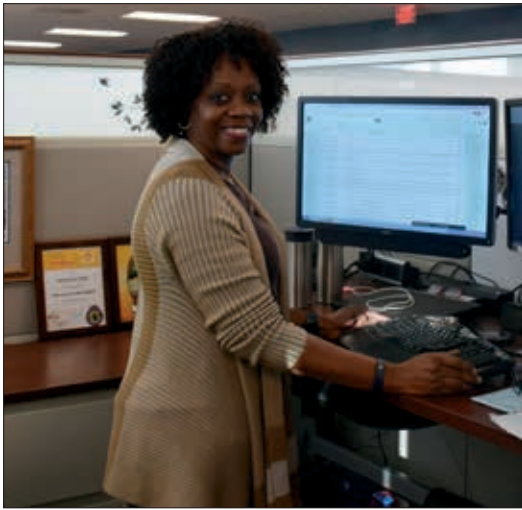
"As a member of the Environmental Compliance Division, I take pride in knowing that my efforts help ensure industry compliance with policies and regulations that balance meeting our nation's energy needs with our shared responsibility to protect the environment and promote safety on the Outer Continental Shelf."

Sara McPherson, Environmental Protection Specialist, Environmental Compliance Division



"Ensuring that industry is complying with all appropriate permits and regulations is fundamental to cautious, safe and responsible energy development. I'm fortunate to serve with BSEE and am committed to doing my part to help develop a culture of safety offshore in the Pacific."

Bruce H. Hesson, Chief, Permitting Section, Pacific Region



"I value my contribution to ensuring the safety and health of all BSEE employees. The way I see it, employee safety, health and production go hand in hand. If our employees are not at their best, the mission of the bureau is at risk."

Rose Capers-Webb, Bureau Safety Manager, Office of Administration



"Our research plays an important part in preparing for oil spills, and Ohmsett is an amazing venue for testing new and existing technologies. For example, in September we tested the effect of low doses of dispersant on containment and recovery of crude. Tests such as these will help inform operations during future spill responses."

Kristi McKinney, Engineer, Oil Spill Preparedness Division



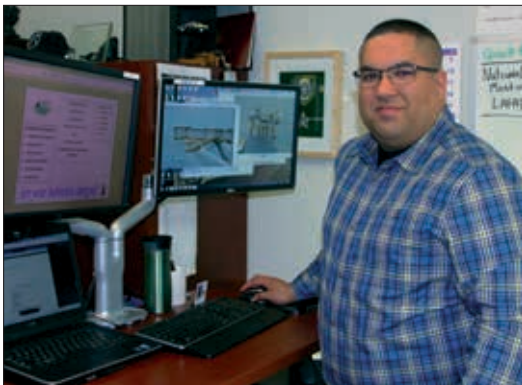
"My team's primary mission is to evaluate the complex technology advancements within the oil and gas industry to ensure they comply with the rules BSEE has in place to keep offshore workers and the environment safe."

Frederick A. Brink IV, Chief, District Operations Support, Gulf of Mexico Region



"BSEE's safety culture is integral to the mission of the Safety Enforcement Division, and it's an honor to work with the dedicated people who are committed to safe operations on the OCS. We work collaboratively in utilizing the full range of enforcement tools to ensure compliance and performance improvements of operations on the OCS."

Jennifer Mehaffey, Lead Enforcement Specialist, Safety Enforcement Division



"Every investigation gives us the opportunity to identify not only the things that went wrong, but also the things that worked. All of these lessons help us promote the messages of safety to everyone on the OCS."

Mike Idziorek, Special Investigator, Safety and Incident Investigations Division



BSEE conducts more than 20,000 inspections of various types annually, and continuously promotes growth of the offshore safety culture. The goal of BSEE's inspections is to encourage not only compliance with safety and environmental regulations, but also the continuous improvement of the offshore safety environment. BSEE inspectors know that worker safety and environmental stewardship are two sides of the same coin: operators that perform well in one category take the other seriously as well.

Training and preparation are hallmarks of BSEE's routine. Whether they take the form of field briefings or more formal week-long classes, BSEE employees are provided with the educational tools that help them perform their jobs to the fullest, while staying safe. In FY 2016, BSEE held 90 formal training courses accounting for a total of 29,502 employee training contact hours.



Overview of BSEE

The Bureau of Safety and Environmental Enforcement (BSEE) is America's lead agency charged with improving safety, ensuring environmental protection and conserving natural resources related to the offshore energy industry operating on the U.S. Outer Continental Shelf (OCS). Over the past year, BSEE finalized key regulations that were called for following the 2010 *Deepwater Horizon* tragedy and subsequent 87-day Macondo well oil spill in the Gulf of Mexico. Since its formation in 2011, the bureau has enforced regulations involving worker safety, oil spill preparedness, environmental compliance and conservation of resources. The bureau's responsibilities also include assessments of novel or improved technologies, inspection and regulation of offshore facilities, investigations following safety and environmental incidents, and collaboration with industry on improvements to the offshore safety culture.

BSEE's headquarters offices are located in the Department of the Interior's main building, which sits two blocks from the White House. The bureau's national program offices are anchored in Sterling, Virginia. National policies are implemented in the field by the three BSEE region offices located in the Gulf of Mexico (New Orleans), Pacific (Camarillo, California) and Alaska (Anchorage). A fourth region, covering the Atlantic, is overseen by Gulf of Mexico staff due to the current low levels of offshore energy activity in the Atlantic. The Gulf of Mexico Region office oversees five district offices spread along the Gulf Coast from Louisiana to Texas. Pacific and Alaska district functions are colocated with the regional offices.

Collectively, the headquarters, national programs and region and district offices coordinate their efforts in order to eliminate redundancies. Research arms in both Texas and New Jersey, as well as contract-

BSEE's Mission and Goals

Mission:

- To promote safety, protect the environment and conserve resources offshore through vigorous regulatory oversight and enforcement.

Operational Excellence Goals:

- Safety – We reduce risk to those working offshore by advancing a culture of safety that encourages industry to go beyond baseline regulatory compliance.
- Environment – We promote environmental stewardship through integrated prevention, compliance, and preparedness activities.
- Conservation – We actively identify and pursue opportunities to improve oil and gas recovery and ensure accurate production measurement.

Organizational Excellence Goals:

- People – We are an employer of choice: we value, engage, and support our people so they can excel.
- Information – We consistently collect, analyze, and use quality information to drive decision making.
- Transparency – We promote transparency through processes that ensure consistency, efficiency, accountability, and collaboration.

Table 1.1 The amount of activity that falls under BSEE’s jurisdiction is extensive. In FY 2016 this activity resulted in the production of approximately 582 million barrels of oil and 1.26 trillion cubic feet of natural gas. The Energy Information Administration projects domestic offshore production will continue to grow through 2040, and BSEE is currently planning in order to be prepared for such increases in production. As shown below, BSEE’s responsibilities extend to various aspects of the complex OCS oil and gas industry.

| | Alaska | Gulf of Mexico | Pacific | Total OCS |
|-------------------------------------|------------|----------------|-----------|---------------|
| Designated Operators | 1 | 81 | 6 | 88 |
| Platforms | 1* | 2165 | 23 | 2189 |
| Total Wells Drilled | 0 | 166 | 2 | 168 |
| Weekly Average Number of Rigs/Units | 0 | 99 | 5 | 104 |
| Miles of Pipelines | N/A | 26,622 | 208 | 26,830 |
| Oil (barrels) Produced | 570,437 | 575,039,470 | 6,381,850 | 581,991,757 |
| Gas (Mcf) Produced | 32,467,480 | 1,219,958,937 | 4,790,376 | 1,257,216,793 |

*The Alaska Region has one producing project that consists of six federal wells on the OCS, directionally drilled from a gravel island located in state waters.

ed researchers throughout the country, provide BSEE and the energy industry with innovative solutions to safety concerns and new approaches that lessen the impacts of oil spills and other environmental hazards.

This 2016 annual report, developed by BSEE staff throughout the U.S., provides an overview of the bureau and an update on the state of the OCS with respect to the energy industry’s record of safety and environmental compliance. This report covers the period from October 1, 2015, to September 30, 2016, which represents the federal fiscal year for 2016 (FY 2016).

Focus Areas

During FY 2016, BSEE continued to demonstrate an unwavering focus on worker safety and environmental protection while also ensuring that offshore operators fulfilled their obligations to maximize resource recovery and minimize waste during production. The bureau has a number of focus areas that reflect its commitment to its core principles. By analyzing data gained through incident reporting requirements, near-miss reporting and real-time monitoring, the bureau is able to determine areas for further improvement and areas that may be leading indicators of safety concerns. BSEE continued its studies of industry safety processes so that future risks can be reduced to their lowest possible level. Through these initiatives and others, BSEE supports offshore energy development by helping the industry operate in a safe and environmentally responsible manner.

During FY 2016, BSEE’s efforts had impacts in the following focus areas:

Safety on Production Facilities

On August 26, 2016, BSEE finalized the Production Safety Systems Rule, which provides the first updates to regulations for production safety systems since the late 1980s. The rule incorporates industry standards and best practices for the use of offshore safety equipment and systems, while also prescribing maintenance, testing and reporting requirements for specific production and safety devices. Covering activities on the more than 2,000 oil and gas facilities on the OCS, the rule addresses many aspects of production safety including subsurface safety devices, safety device testing and production processing systems.

Well Control during Drilling Operations

After careful review and consideration of comments from stakeholders and the public, BSEE published the final Well Control Rule on April 29, 2016. To allow the offshore industry enough time to comply with the rule, different components will be phased in over time. Some aspects of the Well Control Rule do not take full effect for five to seven years. In general terms, items covered by the rule include: (1) incorporation of the latest industry standards that establish minimum baseline requirements for the design, manufacture, repair and maintenance of blowout preventers (BOP), (2) additional controls over the maintenance and repair of BOPs, (3) use of dual shear rams in deepwater BOPs (API Standard 53), (4) a requirement that BOP systems include a technology that allows the drill pipe to be centered during shearing operations, (5) more rigorous third party certification of the shearing capability of BOPs, (6) expanded accumulator capacity and operational capabilities for increased functionality, (7) real-time monitoring capability for deepwater and high-pressure/high-temperature (HPHT) drilling activities, (8) establishment by regulation of criteria for the testing and inspection of subsea well containment equipment, (9) increased

reporting of BOP failure data to BSEE and the Original Equipment Manufacturers (OEMs), (10) setting expectations of what constitutes a safe drilling margin and allowing for alternative safe drilling margins when justified, (11) requiring the use of accepted engineering principles and establishment of general performance criteria for drilling and completion equipment, (12) establishment of additional requirements for using remotely operated vehicles (ROV) to assist in closing the BOP stack, (13) requiring adequate centralization of casing during cementing and (14) making the testing frequency of BOPs used on work-over and decommissioning operations the same as for drilling and completion operations.

Depending upon the source, terminology related to water depth varies significantly. The terms deepwater and ultradeepwater have become commonly used (as well as variants “deep water” and “ultra-deepwater,” etc.). This report generally employs the 500-foot and 5000-foot cutoff terminology as follows:

- Deepwater: >500 feet, 152 meters
- Ultradeepwater: ≥5000 feet, 1524 meters

Safety Culture

One of the primary lessons from the *Deepwater Horizon* tragedy was the realization that the offshore oil and gas industry lacked an overall robust safety culture at the time of the incident. Had such a culture existed among all operators, all decisions would have been viewed in full consideration of safety and risk. Dealing with decisions in such a way decreases the probability of catastrophic outcomes. Only when safety needs are woven into the company’s business culture can it be claimed that safety is receiving proper consideration. Those companies with such a safety culture react to safety-related problems with alarm, not skepticism. They move quickly to identify mechanisms that can reveal the truth and act in ways that minimize risk. They demand appropriate action when a problem arises and see their long-term financial health as directly tied to safe operations.

BSEE requires that each offshore operator create and follow a Safety and Environmental Management System (SEMS) program, and allows companies to improve safety through the use of this performance-based approach. Each company’s SEMS program is a component of its offshore safety culture. The goal of SEMS is to encourage the offshore oil and gas industry to adopt a safety approach that looks beyond baseline compliance with regulations. As more of the industry embraces the SEMS approach, a culture of improved awareness and continuous improvement in operational safety and environmental performance will result.



Even a casual glance at this spar demonstrates the complex work environment experienced on the Outer Continental Shelf. BSEE’s primary responsibilities are to the workers who live and work on offshore facilities and to the environment in which the facilities are located.

Every company's SEMS program is a tool that allows active identification, management and improvement of safety performance related to human behavior, organizational structure, leadership, monitoring of critical equipment and processes, and adoption of standards, processes, and procedures. SEMS takes companies beyond the prescriptive, compliance-based approach and tries to impact company thinking in a way that moves the organization past a focus on the compilation of required documentation.

During the year, BSEE also encouraged leaders from the offshore industry to follow the recommendations of a 2016 U.S. National Academies report. The report, titled "Strengthening the Safety Culture of the Offshore Oil and Gas Industry," recommended that prominent leaders in the offshore industry champion the nine characteristics of safety culture that BSEE published in 2013.

The Nine Characteristics of a Safety Culture

BSEE defines safety culture as the core values and behaviors of all members of an organization that reflect a commitment to conducting business in a safe and environmentally responsible manner. BSEE's Safety Culture Policy Statement informs the offshore community of the bureau's safety expectations but does not create any additional regulatory requirements. The nine characteristics of a robust safety culture are the following:

1. Leadership Commitment to Safety Values and Actions. Leaders demonstrate a commitment to safety and environmental stewardship in their decisions and behaviors;
2. Hazard Identification and Risk Management. Issues potentially impacting safety and environmental stewardship are promptly identified, fully evaluated, and promptly addressed or corrected commensurate with their significance;
3. Personal Accountability. All individuals take personal responsibility for process and personal safety, as well as environmental stewardship;
4. Work Processes. The process of planning and controlling work activities is implemented so that safety and environmental stewardship are maintained while ensuring the correct equipment for the correct work;
5. Continuous Improvement. Opportunities to learn about ways to ensure safety and environmental stewardship are sought out and implemented;
6. Environment for Raising Concerns. A work environment is maintained where personnel feel free to raise safety and environmental concerns without fear of retaliation, intimidation, harassment, or discrimination;
7. Effective Safety and Environmental Communication. Communications maintain a focus on safety and environmental stewardship;
8. Respectful Work Environment. Trust and respect permeate the organization with a focus on teamwork and collaboration; and
9. Inquiring Attitude. Individuals avoid complacency and continuously consider and review existing conditions and activities in order to identify discrepancies that might result in error or inappropriate action.

Another important aspect of a safety culture is the willingness of the company to share safety related data, even when not required to do so. Often such data involves near misses – events that have the potential to result in an incident. In the railroad and aviation industries, near-miss data are essential pieces of information that can be used to prevent future incidents. Throughout FY 2016, BSEE encouraged industry-wide participation in SafeOCS, which allows voluntary and confidential near-miss reporting and is operated by a trusted third party, the U.S. Bureau of Transportation Statistics.

BSEE also cooperates with the Center for Offshore Safety (COS), an industry-sponsored group that promotes responsible offshore operations. COS was effective at bringing the offshore industry, BSEE, the U.S. Coast Guard (USCG) and other organizations together during FY 2016 in order to discuss significant offshore safety issues, including the need to grow an industry-wide safety culture that emanates from CEOs, through contractors, and is part of the approach taken by every employee, including the most recently hired roustabout.

Arctic Exploration

Throughout FY 2016, BSEE remained committed to helping America's domestic energy industry safely explore and develop reserves in the Arctic. In order to provide clear guidance for energy companies while also ensuring that high safety and environmental standards are followed, the Arctic Drilling Rule was finalized on July 7, 2016. These Department of the Interior (DOI) regulations fulfill BSEE's commitment to approach Arctic drilling in a coordinated and deliberative manner that addresses the specialized practices that are used when conducting exploratory drilling operations in the Arctic's unique and challenging environment. Currently, the vast majority of Arctic offshore oil and gas production occurs in nearshore (state) waters. BSEE's Arctic Rule establishes a safety and environmental framework for potential future OCS exploration.



Ice is a major consideration during Arctic energy exploration and production operations. If an Arctic spill were to occur, ice can complicate recovery efforts. BSEE has invested in research and technology that holds promise for improving oil recovery from icy waters.

Research and Collaboration

Critical areas that require focused operations, research and collaboration on the part of BSEE include the following: 1) emerging technologies, 2) reliability of critical safety equipment and 3) risk assessment. BSEE's work in these three areas involves extensive collaboration with other federal entities such as the Department of Energy's (DOE) National Labs and the National Aeronautics and Space Administration (NASA). BSEE is also actively engaged in joint research programs with industry to verify the performance of equipment being used to develop HPHT reservoirs.

BSEE's Best Available and Safest Technologies (BAST) Program establishes a process for fulfilling the provisions of the Outer Continental Shelf Lands Act (OCSLA) Amendments of 1978 through 30 CFR 250.107(c), which requires offshore operators to use BAST whenever practical on all exploration, development and production operations when failure of equipment would have a significant effect or impact on safety, health or the environment. The BAST Determination Process involves government, industry, academia and other OCS stakeholders in a transparent evaluation of technology and performance. The initial BAST assessment uses incidents, technology or systems failures, or near-misses that can significantly increase safety as the basis for determining whether improvements are needed. The BAST Determination Process provides a structured methodology for assessing technology failures or improvements that would have a significant impact on personnel safety, health or the environment. The BAST Determination Process takes economic factors into account through the use of an initial economic feasibility analysis and a more rigorous cost-benefit analysis to estimate the economic effects of incorporating a technology.

In its continuous effort to keep pace with the dynamic oil and gas industry, BSEE bolstered its technological capacity by establishing the Engineering Technology Assessment Center (ETAC) in Houston during FY 2015. The center serves as a focal point for emerging technology evaluation and provides intra-agency guidance related to technology assessment. ETAC leverages BSEE's internal expertise with contract support and also serves as a primary point of interaction on technology projects with the Ocean Energy Safety Institute (OESI). Through ETAC, the bureau is increasing communication with OEMs and participating more fully with standards-setting bodies. ETAC also works with industry to increase technologically-focused research and development projects that could lead to safety improvements and reduction of environmental risk for the broader offshore oil and gas industry.

Experts within ETAC support BSEE's administrators, national programs, and regional and district offices. ETAC manages engineering contracts that provide BSEE with up-to-date offshore energy technology expertise, information on equipment development, a full understanding of failure analysis, and the latest updates on testing protocols. ETAC also supplies engineering expertise for the development of new offshore oil and gas regulations, evaluation of proposed industry standards, and evaluation and use of information being developed by the industry's real-time monitoring centers.



BSEE's Ohmsett test tank is part of a site that is more formally referred to as the National Oil Spill Response Research & Renewable Energy Test Facility. Ohmsett is the leading facility of its type in North America. The saltwater tank is longer than two football fields, and the tank itself allows researchers to mimic open-water conditions using a controlled environment. One recent study involved placing large chunks of ice in the tank to test new approaches for collecting oil from waters with sea ice.

ETAC personnel have also contributed during the review and commenting process for the Well Control Rule, worked on BSEE's youth initiatives, engaged with real-time monitoring centers and participated in BSEE's probabilistic risk assessment (PRA) agreement with NASA.

Oil Spill Research

BSEE maintains a comprehensive, long-term practical oil spill response research (OSRR) program that is the principal federal source of oil spill response research. The OSRR program provides research leadership and funding to improve the detection, containment, treatment and/or cleanup of oil spills that may occur on the OCS. The program's primary areas of research are mechanical containment and recovery, dispersant effectiveness and other chemical interactions, in situ burns and other combustion issues, remote sensing and decision-making support tools. BSEE engineers and scientists either conduct in-house research at the BSEE-managed Ohmsett facility, or manage research projects conducted by external experts. The research is subjected to rigorous peer review protocols to ensure integrity. The OSRR program strives to

- ♦ Advance the state of science and technology used in responding to offshore oil spills;
- ♦ Measure the technology readiness levels (TRL) of new and innovative oil spill response equipment;
- ♦ Maintain the highest level of scientific integrity of research funded and led by BSEE's Oil Spill Preparedness Division (OSPD); and
- ♦ Accelerate integration of research findings into practical application by government and industry through information transfer.

During FY 2016, BSEE research covered several types of response countermeasures, such as developing the concept of a novel oil processing approach that uses magnetic nanoparticles, and integrating and testing an ROV that can measure the thickness of surface oil from below a spill. BSEE also funded research to investigate the use of chemical dispersants in waters containing substantial amounts of ice and evaluate an existing technology in a novel environment of slush ice. BSEE participated in the U.S. Navy's Arctic Ice Exercise (ICEX) more than 200 miles north of Prudhoe Bay, Alaska, to field test an innovative tagging system that tracks oil in ice for future recovery. The Arctic field testing advanced this technology to a higher readiness level and increased confidence that the technology could be applied in that challenging environment.

Ohmsett, the National Oil Spill Response Research and Renewable Energy Test Facility, is managed by BSEE in order to better understand offshore oil spills. Ohmsett is the largest outdoor testing facility of its type in North America, and houses a 667-foot long saltwater tank. Located near Leonardo, New Jersey, Ohmsett provides unique oil spill response training, as well as equipment testing, in an environment that mimics those encountered offshore. With the ability to safely use real crude oil in a controlled environment, Ohmsett staff members are able to perform tests and also offer training for first responders,

Table 1.2 BSEE conducts different types of reviews, audits, and verifications to make sure that the offshore energy industry is prepared to respond should any type of spill occur, including oil spills. The Government Initiated Unannounced Exercises (GIUE) is one of the better known tools BSEE uses to make sure an operator’s preparedness is at an acceptable level. Combined, the various exercises provide the added benefits of improved cooperation, partnership, and government efficiency for federal and state organizations that have mutual responsibilities regarding regulation of the offshore energy industry.

| | Alaska | Gulf of Mexico | Pacific | Total OCS |
|--|--------|----------------|---------|-----------|
| Table Top GIUE | 0 | 18 | 2 | 20 |
| Equipment Deployment GIUE | 0 | 0 | 0 | 0 |
| Combined Table Top & Equipment Deployment GIUE | 0 | 4 | 0 | 4 |
| Industry Spill Response Training & Exercise Audits | 2 | 87 | 10 | 99 |
| Equipment Verification of Capabilities | 1 | 69 | 14 | 84 |

regulators, scientists and original equipment manufacturers. Ohmsett’s cutting edge research includes efforts to improve the measurement of oil slick thickness, develop tools to better quantify oil flow rate during subsea blowouts and conduct large scale tests of the effectiveness of dispersants.

BSEE is a key participant in several domestic and international forums promoting research collaboration on oil spill prevention, preparedness and response activities. Domestically, BSEE serves in a leadership role in the Interagency Coordinating Committee on Oil Pollution Research (ICCOPR), a body mandated by Congress with representatives from 15 federal departments and agencies. ICCOPR members that conduct joint research with BSEE include the Bureau of Ocean Energy Management (BOEM), the USCG Research & Development Center, National Oceanic and Atmospheric Administration (NOAA), the Environmental Protection Administration (EPA) and the Pipeline and Hazardous Materials Safety Administration (PHMSA). To encourage research and share results, BSEE also interacts closely with the National Academy of Sciences Gulf Research Program, the Gulf of Mexico Research Initiative, the Spill Control Association of America and a variety of international organizations.

Oil Spill Preparedness

A key factor in protecting the marine environment is the preparedness of offshore operators with regard to their ability to respond to an oil spill. BSEE provides oversight of preparedness from the time companies apply for permits to drill, throughout the exploration and production operations, during plugging and abandonment of wells and until removal of the platform is completed. BSEE performs extensive reviews of oil spill response plans (OSRPs) and conducts government-initiated unannounced exercises (GIUE), equipment inspections and training audits to maintain offshore operators at a high level of preparedness.

The bureau reviews industry OSRPs to verify that owners and operators of facilities in both federal and state offshore waters are prepared to respond to a worst case oil discharge. BSEE requires that these plans demonstrate that the operator has processes in place and adequate resources available to mount an effective response to a worst case discharge. In FY 2016, BSEE conducted 335 OSRP reviews.

After OSRPs are approved, BSEE conducts a series of activities to validate their soundness and the ability of the operator to implement the plan. BSEE conducts GIUEs to ensure operators maintain a high state of readiness without advance warning. The GIUEs include complex table top and/or equipment deployment exercises that test an offshore facility owner/operator’s ability to respond effectively and efficiently to a hypothetical spill scenario as if it were a real event. BSEE coordinates the GIUEs with the Coast Guard and other federal and state agencies to ensure a comprehensive examination of the operator’s capabilities.

The bureau verifies the preparedness of the offshore spill response community by assessing the quality and performance of equipment listed in the OSRP, such as skimmers, pumps, booms and integrated response vessels. In FY 2016, BSEE conducted 84 spill response equipment verifications in BSEE’s three regions. The bureau also audits industry-led training and exercises conducted by offshore facility owners and operators. This training is provided to ensure that response personnel are proficient in supporting a command and control organization and have the ability to operate their spill response equipment.

BSEE also plays a vital role in the National Response System by addressing offshore oil spill preparedness and response policies, and offers support during significant oil spill incidents when they occur. To that end, the bureau coordinates at the international, federal, state and tribal levels to help ensure a coordinated response effort by all levels of government to an offshore oil spill. During a response to an oil spill from a BSEE-regulated offshore facility, BSEE makes source control support coordinators available to assist the federal on-scene coordinators with technical advice on controlling well blowouts and other types of spills, such as those from pipelines. BSEE also is an active participant in Area Committees and

Table 1.3 Due to lease expirations and the existence of idle iron on active leases, BSEE's oversight of decommissioning of wells, pipeline segments and platforms remained at a high level throughout FY 2016, particularly in the Gulf of Mexico (GOM). BSEE's GOM Region also worked on 19 bankruptcy cases in FY 2016, eight of which were initially filed in FY 2016. Many of these bankruptcies are restructuring agreements that convert bond debt into equity in future production. Shown below are the past three years of activity related to decommissioning.

| | FY 2014 | FY 2015 | FY 2016 |
|----------------------------------|---------|---------|---------|
| Wells Plugged & Abandoned (PA) | 546 | 514 | 617 |
| Pipeline Segments Decommissioned | 375 | 262 | 323 |
| Platforms Decommissioned | 167 | 154 | 174 |

Regional Response Teams to ensure operators' response plans are consistent with regional and area-level Oil Spill Contingency Plans required by the National Response System.

Environmental Compliance

At BSEE, environmental compliance focuses on monitoring, verifying, improving and enforcing industry's compliance with environmental standards during U.S. Outer Continental Shelf operations. It encompasses a broad suite of BSEE's activities that fulfill the bureau's responsibility to protect America's environment and uphold regulations related to the environment. Although environmental compliance includes components of prescriptive inspections, it also extends to all aspects of efforts to protect the environment.

Following the FY 2015 realignment of BSEE's former Environmental Enforcement Division into the Environmental Compliance Division (ECD), ECD implemented a standardized, bureau-wide approach to internal and external environmental compliance. As the lead for BSEE's Environmental Compliance Program, ECD sets policies and procedures for BSEE's collaborative oversight and stewardship of external adherence to environmental standards associated with OCS exploration, development, production and decommissioning across all BSEE's programs and regions.

ECD supports BSEE's environmental enforcement process by assessing and documenting permit and regulation compliance, monitoring compliance through Post-Activity Submittal (PAS) review and conducting field inspections, audits and verification. These and other activities encourage industry to move beyond baseline conformity and implement an effective safety and environmental protection management scheme. Internally, ECD provides feedback and training for BSEE's inspections and prevention programs.

ECD also promotes environmental stewardship among other BSEE programs and staff, building on BSEE's current program goals, activities, roles and responsibilities, and identifying new ways to enhance environmental stewardship throughout the Bureau.

Environmental Stewardship

Environmental stewardship is a critical component of BSEE's collective responsibilities and is a principle that BSEE expects all OCS stakeholders to share. In FY 2016, BSEE convened an Environmental Stewardship Collaboration Core Group, which developed a final report containing 10 specific recommendations regarding BSEE's environmental stewardship responsibilities, coordination efforts with agency partners and communication of BSEE's environmental stewardship successes. Moving forward, these recommendations will be an important tool to promote environmental stewardship through BSEE's broad suite of integrated prevention, compliance, research, educational and preparedness activities. All BSEE essential functions are now expected to promote environmental stewardship through integrated prevention, compliance and preparedness activities.

Safety Data Collection and Analysis

The confidential SafeOCS system is a repository for near-miss reports. Throughout FY 2016, the Bureau of Transportation Statistics (BTS) collected reports to be subsequently analyzed. SafeOCS data are protected from release under the Confidential Information Protection and Statistical Efficiency Act (CIPSEA). The goal of SafeOCS is to learn about potential problems so that incidents can be avoided. Ultimately, the aggregated data (with sources kept confidential) will be shared with the public and industry to assist in the identification of safety trends and potential safety issues.

Soon after the close of FY 2016, SafeOCS was expanded to give the offshore oil and gas industry the option to submit equipment failure reports for well control equipment, required under the Well Control Rule. Since November 7, 2016, industry has been allowed to submit failure reports for safety and pollution prevention equipment, as required under the Production Safety Systems Rule, through SafeOCS. The first analyses from SafeOCS are expected to occur in late spring 2017.



Renewable Energy

News coverage of the Block Island Wind Farm (BIWF), America's first commercial offshore renewable energy facility, greatly increased the amount of attention devoted to BSEE's role in renewable energy. Although many analysts see the growth of offshore renewables as inevitable, many also point out that the U.S. industry is fairly young. However, interest in the deployment of renewable energy projects on the OCS has grown substantially over the past decade, even as deployment has moved at a more modest pace. Wind turbines continue to be at the forefront of planning efforts, but ocean wave energy also shows substantial promise, with some estimates suggesting that recoverable ocean wave energy has the potential to power a significant percentage of American households.

Since the formation of the bureau, and even before, many BSEE employees have been involved in the development of wind energy safety initiatives. From a safety perspective, the OCS presents a unique operating environment for the wind energy industry, with one major obstacle being water depth. Many areas of the OCS will not support traditional wind farm foundations because depth precludes their practical construction. It is possible that floating wind turbines could be used in such areas, but hurricanes and other open-ocean environmental factors present distinct challenges.

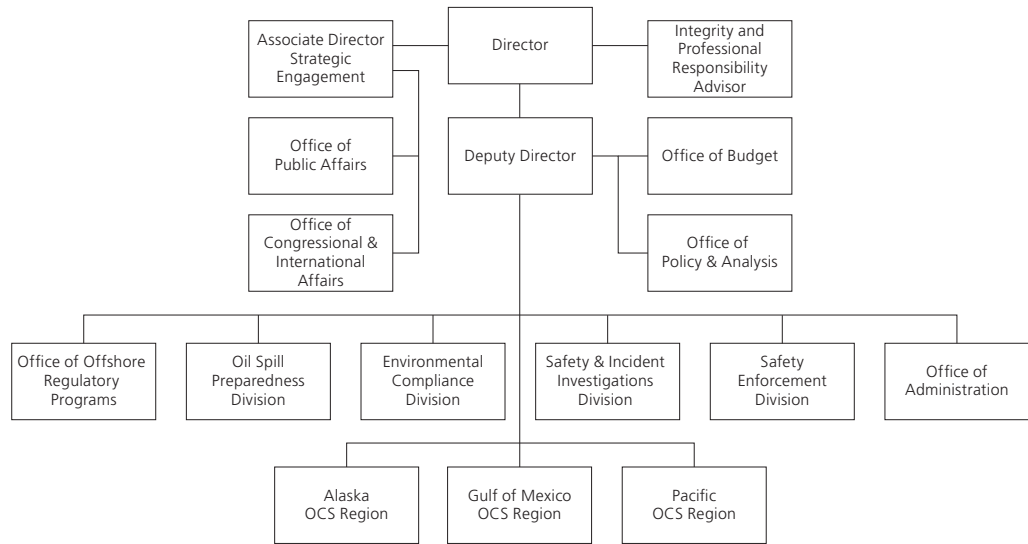
A number of factors must be taken into account before renewable energy structures, such as turbines, are built. These factors include seabed topography, bathymetry, sediment types, and meteorological and oceanographic (metocean) conditions. The wind energy industry has responded to some of the challenges the ocean poses by developing innovative solutions, such as various floating turbine designs, many of which have not yet been fully field tested. As offshore wind energy development continues to gather momentum, BSEE is continually considering ways to best adapt its SEMS program for the renewable energy industry. BSEE regularly communicates with industry experts and international regulators, and it is initiating contracted studies. The bureau's near-term intention is to develop inspection guidelines that reflect an appropriate regulatory structure in order to protect the safety of the facilities, any personnel working on them, surrounding structures and the marine environment.

BSEE worked with BOEM throughout FY 2016 on issues related to the subsea transmission cables that connect the BIWF to the mainland. The BIWF has a generating capacity of 30 megawatts and became operational at the end of calendar year 2016.

The worldwide increase in energy generation via offshore wind is driven by many factors, such as the more reliable nature of sufficient winds in many offshore areas. Wind farms on a scale of that pictured here may be on the horizon for some parts of the Outer Continental Shelf. America's first wind energy facility, the Block Island Wind Farm, has only five turbines but generates an impressive 30 megawatts with its enormous blades. Photo courtesy Andy Dingley.



Bureau of Safety and Environmental Enforcement



In accordance with Secretarial Order 3299, BSEE and BOEM have been working on issues related to transferring the renewable energy responsibilities of environmental oversight, facility inspections and regulatory enforcement from BOEM to BSEE. A BSEE-BOEM transition team is managing the effort to re-designate the renewable energy regulations in 30 CFR Part 585. BSEE, in coordination with BOEM, will then draft a series of touch-point documents to guide the interdependencies between BOEM and BSEE, and both bureaus will work together to update the interagency Memorandum of Understanding (MOU) so that roles and responsibilities of each are clearly defined when the re-designation is published. There are a number of additional renewable energy memoranda that will require updating because of this change, including MOUs involving DOI, USCG and DOE.

Organization

FY 2016 was the first full year during which BSEE operated under its finalized organizational structure, which employs a “national program with field implementation” model that is similar to other DOI agencies. The model emphasizes and strengthens transparency, consistency, predictability and accountability in key bureau functions. Program direction emanates from headquarters, in collaboration with regional offices, and program execution is conducted at the field level. The model preserved the overall structure of a headquarters office in Washington, D.C., established Sterling, Virginia, as the official home of national offices and divisions, and retained the three regional offices located in Anchorage, New Orleans and Camarillo, California, as well as their associated district offices. The primary role of the national programs is to establish national policies, procedures and performance measures in coordination with regional and district offices and other affected BSEE divisions, offices and other programs.

BSEE focused on a number of key national programs in FY 2016, including investigations, enforcement, environmental compliance, permitting, inspections, SEMS and data stewardship. Each of these national programs is composed of a national program manager (generally located in a national office or division), staff from headquarters, and regional and district officials.

The national program manager is responsible for the development and oversight of consistent policies and procedures that are implemented by BSEE’s staff. The three regional directors, through their regional and district office staff, execute most policies at the field level and directly oversee BSEE’s inspection process. BSEE’s organizational model encourages cooperative decision-making related to policy development and implementation, and has produced an operational structure that advances BSEE’s mandated goals of promoting safety, ensuring environmental compliance and maximizing resource conservation on the OCS.

As an organization spread across a large geographic area with diverse functionality, BSEE faces organizational challenges similar to those experienced by other DOI bureaus. Despite these challenges BSEE needs to function as one cohesive organization with shared goals. Informally described as the “One BSEE”



model, the bureau spent considerable effort during FY 2016 sending internal messages that explained the important role each employee plays in carrying out the mission of the organization, and the value of working collaboratively. This messaging also helped disseminate the 2015 organizational structure changes to BSEE's staff. By the close of FY 2016, BSEE had completed employee engagement listening sessions, which involved subgroups of BSEE employees. Based on those sessions, BSEE identified several areas that will be the focus of enhanced communication across the bureau as staff members continue to adjust and work under the more streamlined organizational structure.

Every BSEE employee now has a clearly defined role within the BSEE framework. Stakeholders benefit from this clarity, because the lines of authority are well-defined, areas of expertise are known and employee duties are clear to everyone. All well-run organizations understand that education related to internal and external understanding of roles and responsibilities is a continuous improvement process. For this reason, BSEE plans to continue its employee engagement efforts in FY 2017 and beyond. For BSEE's external audience, the bureau launched its completely revamped website, which serves as a portal of first contact for most stakeholders and provides guidance with regard to which BSEE office or staff member can offer assistance.

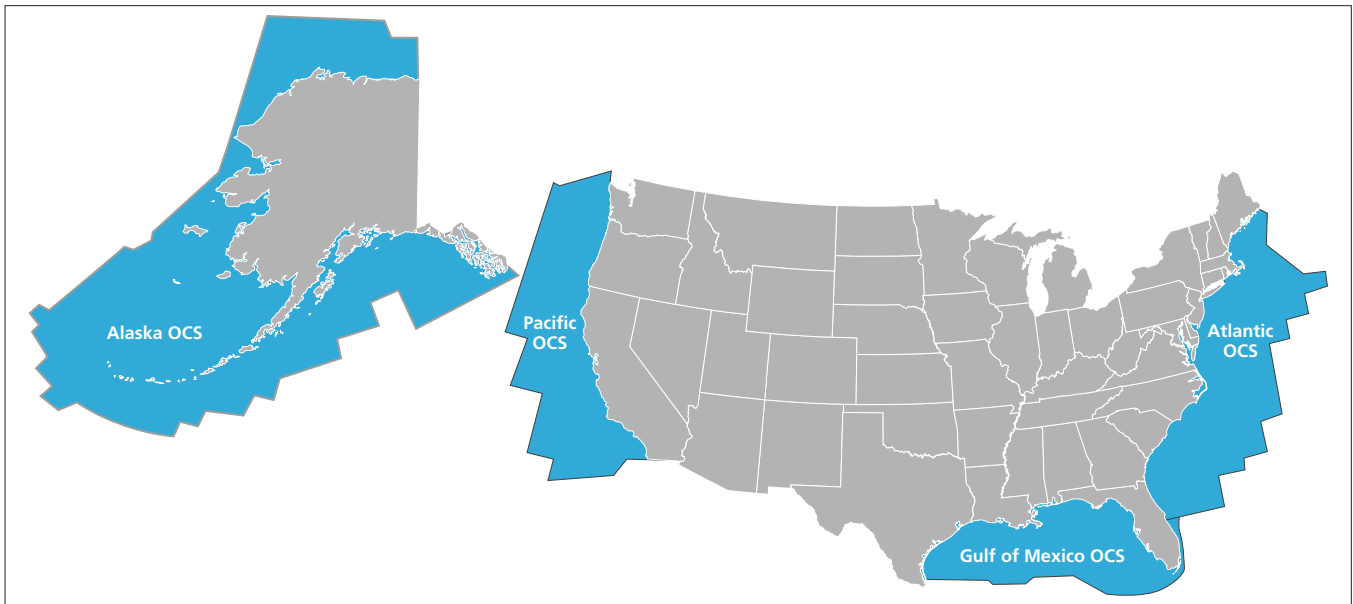
Regional Overviews

Gulf of Mexico

Throughout FY 2016, and despite historically low oil prices, the Gulf of Mexico Region (GOMR) continued to be responsible for a significant amount of oil and gas industry activity on the OCS. BSEE's Gulf of Mexico inspection and regulatory activities during the fiscal year maintained their focus on improving safety and reducing the risk of environmental harm resulting from the more than 2000 oil and gas production and exploration facilities operating in the Gulf of Mexico.

A shift in well operations work occurred in GOMR, as operator assessments of overall project economics for oil and gas, including drilling and production costs, changed in FY 2016. There was a significant reduction in deepwater drilling and completion work, and activity on the older shelf assets shifted

BSEE's inspectors carefully check a variety of components on every facility. Flying via helicopter to offshore facilities on an almost daily basis, the inspectors are dedicated to their mission of promoting a safe work environment that does not harm the environment. They also interact with facility staff in order to attain the mutual goal of safe conditions.



The extent of the U.S. OCS is outlined in this map. BSEE's Gulf of Mexico Region currently oversees Atlantic OCS responsibilities.

to lower-cost well operations projects. Nevertheless, exploration, primarily in the ultradeep waters of the Gulf of Mexico, continued, and new production activities are expected in the future.

Despite the decline in oil prices, average oil production reached a new high of approximately 1.59 million barrels of oil per day in FY 2016 as new, long-term projects continued to come online. For example, the deepwater Heidelberg, Stones and Coelacanth projects began production during FY 2016. Additionally, new subsea wells were tied back subsea to existing deepwater facilities. In contrast to the increase in oil production, natural gas production decreased from 3.56 to 3.33 billion cubic feet per day.

Reductions in capital expenditures, financial restructuring agreements and new bankruptcy filings by several companies operating in the Gulf of Mexico signaled a change in the industry. As a result, BSEE sought to improve tracking and estimating decommissioning costs, increase inspections of operators with significantly reduced operating costs, and oversee safe handling of bankrupt assets and proper abandonments. These areas were a major focus for BSEE engineers and inspection staff throughout the region because each of these areas impacts environmental stewardship and the overall safety of the Gulf of Mexico. BSEE also enhanced its decommissioning support function throughout the year to ensure proper decommissioning costs were assessed for every offshore asset.

At the start of FY 2016, there were 31 drillships, 10 semisubmersibles, nine jackup rigs, 10 platform rigs and 38 non-rig units working in the Gulf of Mexico. By the end of FY16, there were 17 drillships, eight semisubmersibles, four jackup rigs, nine platform rigs and 75 non-rig units working in the Gulf of Mexico. A significant number of deepwater drilling contracts terminated early, with six drillship and three semisubmersible contracts terminated prior to the end of their contract terms.

The number of drilling rigs working in the Gulf of Mexico will likely increase as (1) oil prices increase, (2) operators successfully complete financial restructuring agreements or asset sales and (3) rig contract day rates decline due to current drilling contracts ending in 2017 and 2018.

Of note was the significant rise in the number of non-rig units employed in the Gulf of Mexico, from 38 to 75 this fiscal year. Coiled tubing and wireline units were working to abandon, recomplete, and workover wells at lower costs than using rigs as operators have sought ways to significantly reduce capital expenditures.

The number of facilities in shallow water declined throughout the year, due to lease terminations and the bureau's focus on "idle iron" removal. Most of the oil and gas production is processed and transported from 76 facilities in greater than 500 feet of water.

GOMR continued its robust assessment program of conceptual technology through its deepwater operations plan. A continued focus area for technology assessment is HPHT drilling and completions in the deepwater sector. The region also continued to focus its resources on identifying risk in offshore operations and assessing means of mitigating the potential consequences of those risks. In coordination with BSEE's headquarters office, GOMR further analyzed the data from BSEE's FY 2015 Annual Report to help support the Risk Based Inspection Pilot Project. GOMR will continue to assess both safety and environmental risks and develop permitting and inspection strategies to address the identified risks.



During a year in which BSEE emphasized environmental compliance and stewardship, GOMR participated in facility inspections for air quality, marine trash and debris, and water quality oversight associated with Clean Air Act and Clean Water Act requirements and OCSLA regulations regarding emissions, discharges and debris. Gulf of Mexico regional and district personnel conducted more than 21,000 inspections offshore and issued more than 2000 INCs to operators for corrective actions. They coordinated and prepared 467 National Environmental Policy Act (NEPA) compliance documents tied to drilling, workover, completion work, production, pipeline activities, and structure installations and decommissionings.

Pacific

The Pacific Region contains mature fields and aging infrastructure that are positioned close to sensitive marine environments and the U.S. coastline. Given this environment, BSEE's Pacific Region staff has engaged in increased oversight and maintained its focus on resource conservation. In 2016, the Pacific Region continued to monitor aging facility operations and prepare for eventual decommissioning of numerous platforms. Additionally, the Pacific Region staff has been addressing the long-term preservation issues associated with the May 2015 shutdown of the main onshore arterial pipeline, which typically transports approximately 62 percent of the region's oil.

Activity in the region includes proactively testing oil spill containment and recovery equipment and conducting exercises for spills and leaks. The Pacific Region also implements a comprehensive inspection program to assess and maintain the overall integrity of pipelines. BSEE's Pacific Region continued to expand its efforts during FY 2016 to improve collaboration and communication with state and other federal entities, industry and the public. The overall goal of these efforts was to help make sure that all stakeholders in the region are heard – both industry and the public — as the Pacific Region carried out its responsibilities to regulate energy and mineral resources on the OCS.

BSEE's Pacific Region personnel currently oversee operational and production activity on 23 oil and gas platforms, while simultaneously regulating 208 miles of pipelines in federal waters offshore of California. When fully operational, the platforms are capable of producing approximately 18 million barrels of oil and 28 billion cubic feet of gas annually. With the pipeline shut in, production was approximately 6.38 million barrels of oil and 4.79 billion cubic feet of gas in FY 2016.

These Pacific offshore facilities are part of an aging, but still productive, infrastructure. The West Coast was home to America's first offshore well, over 100 years ago. However, no new facilities have been constructed in the Pacific for some time. BSEE inspectors work with operators to make sure that the Pacific facilities maintain the high safety and environmental standards that are required of offshore energy companies.



Soon after summer ends, BSEE's Alaska inspectors need to shield themselves from the elements. Because oil and gas production does not stop when the weather turns cold, BSEE's inspectors still need to visit Alaska's artificial Northstar Island, which lies in state waters, but has wells that extend to the federal OCS.

Alaska

The Arctic OCS is a critical component to our nation's long-term energy portfolio, and personnel in BSEE's Alaska Region continue to work with industry, stakeholders, tribes and international partners to develop and vet technologies, systems and processes that reduce risk and provide greater protection for Alaska's coastal communities and its sensitive marine environment.

Following the Shell withdrawal from its Chukchi and Beaufort Sea drilling program in late 2015, the Alaska Region redirected its efforts from Mobile Offshore Drilling Units (MODUs) to the development of OCS resources using gravel islands as drilling and production platforms in shallower water. Looking forward, the key challenges being addressed by BSEE's Alaska Region include maintaining region-specific expertise, ensuring that exploration and production projects properly account for the need to protect the Arctic environment, and continuously improving operations in the face of arduous climatic and logistical realities. These conditions are faced by BSEE employees who

perform their continuing oversight of ongoing production activities on Northstar Island, which lies a few miles from Alaska's North Slope.

Two projects currently being reviewed by the Alaska office are the proposed Hilcorp Alaska, LLC Liberty Project and ENI Petroleum Nikaitchuq North Prospect. If developed both projects will be gravel island facilities in the Beaufort Sea with production beginning as early as 2020. From seasonal ice coverage and floating ice to subsistence whale hunts, the challenges posed in the Arctic are unique, but they are also part of the routine industry operations in Alaska.

Alaskan Native communities are closely connected to the Arctic environment culturally, socially and economically. During 2016, BSEE's Alaska Region continued outreach to Native communities through the region's tribal and community liaison. The goal of the outreach efforts was to help facilitate the harmonization of offshore exploration and development with the needs of the state's Native communities. In addition, 2016 also included the acquisition of equity interests by Native corporations in offshore oil exploratory and development projects.

The Alaska Region played a key role in representing BSEE and the United States in international outreach related to Arctic development during 2016. The Alaska Region staff's unique expertise and Arctic experience allowed it to develop important relationships with fellow Arctic offshore regulators, serving as chair of the Arctic Offshore Regulators Forum (AORF). During 2016, AORF successfully served as a technical and operational forum for offshore oil and gas safety regulators to exchange information, review best practices and discuss relevant experiences unique to the Arctic. Participation in AORF represents an important aspect of the Alaska Region's efforts to continually improve offshore safety and environmental protection throughout the Arctic.

BSEE's Alaska Region is involved with a standing interagency (for federal and state) organization that is a permitting coordination group of the Interagency Working Group on Coordination of Domestic Energy Development and Permitting in Alaska (IWG). The local permitting coordination group of the IWG is a director-level group of DOI and other federal and state officials that meet in Anchorage to keep each agency apprised of the energy permitting activities undertaken by the other agencies. The ultimate goal of the group is to streamline procedures for energy projects that require permits from multiple federal agencies while assuring that all the relevant agencies are aware of each other's activities. BSEE was an active participant in this group in FY 2016, and was also engaged in many other outreach and coordination activities within the state of Alaska.

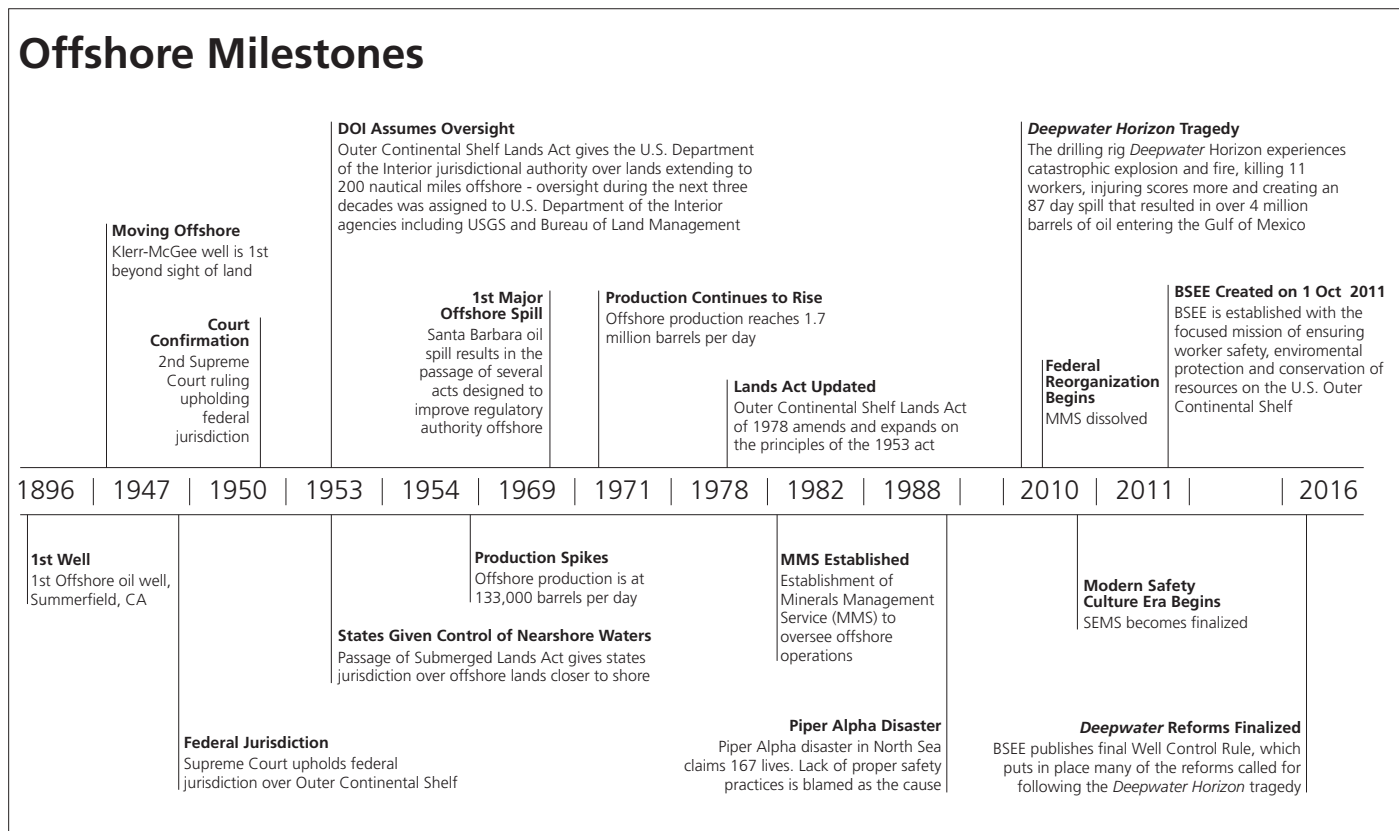
Jurisdiction

BSEE's jurisdiction was established through a series of steps that began several decades ago with passage of the OCSLA and the Oil Pollution Act. With the formal establishment of BSEE in 2011, the bureau assumed duties performed by predecessor agencies. Although BSEE works with BOEM and other federal agencies whenever appropriate, BSEE's jurisdiction is unique in that the bureau is responsible for safety and environmental enforcement operations, from planning and permitting through decommissioning. The full range of BSEE's authorities extend to policies and responsibilities that compel the bureau to regulate safety, emergency preparedness, environmental protection and resource conservation related to the energy industry operating on the federal submerged lands of the OCS.

To carry out its responsibilities, BSEE seeks to continuously improve its ability to properly regulate offshore oil and gas operations, enhance the safety of offshore energy exploration and production, ensure the protection of the environment and promote the implementation of the latest technological advancements. BSEE's hybrid approach to regulation employs both prescriptive and performance-based methods to help ensure the safest operations possible. The regulations BSEE enforces typically incorporate widely-accepted industry standards and best practices.

BSEE conducts on-site inspections to ensure compliance with regulations, lease terms and approved plans. On an annual basis, BSEE conducts approximately 20,000 component inspections for more than 2,000 facilities in Gulf of Mexico, Pacific and Alaskan waters. In FY 2016, BSEE also visited oil spill response equipment depots that contain equipment intended for use in offshore oil spills to ensure its operability and state of readiness for deployment. As part of its mandate, BSEE also tests and creates new technologies, operational innovations and oil spill preparedness techniques. These efforts fulfill BSEE's jurisdictional mandate to remain at the leading edge of the ocean energy industry with respect to safety and environmental protection.

BSEE is continuously reinforcing its role as a world leader in safety and environmental stewardship. With innovative regulatory approaches and appropriate collaboration with industry, BSEE is fostering an offshore safety culture that reduces the risk of incidents and spills, while enhancing its ability to prepare and respond to those that do occur with prompt and appropriate actions. The U.S. OCS provides the raw material for a substantial amount of our nation's energy needs, but it will always be a difficult and sensitive



environment in which to operate. BSEE understands that its jurisdictional role fulfills a critical national function: regulation of the offshore energy exploration and production industry in order to reduce risks for workers, protect the environment, and ensure maximum ultimate recovery – and minimize waste – of America’s vast offshore energy resources.

Public and Stakeholder Engagement

The bureau engages with a diverse community of stakeholders including taxpayers, industry, congressional offices, state governments, non-governmental organizations, academia, other federal agencies, standards development organizations, think tanks, and scientific organizations such as the National Academy of Sciences. The ongoing dialogue with stakeholders covers a range of topics and improves both stakeholder understanding of our policies and practices and BSEE’s ability to better formulate policies in development. It is important to keep in mind that members of the bureau’s staff often live in the same communities as bureau stakeholders and share many of the same concerns as the local communities. In this spirit, BSEE is eager to foster a robust dialogue through a variety of forums.

Public input and communication with impacted companies and other stakeholders is a critical component of BSEE’s decision-making processes. During FY 2016, broad review and comment was solicited for regulatory proposals regarding oil and gas operations. The most visible example of BSEE’s outreach activities may be its three years of engagement with industry, academia, a variety of technical experts, and the public during the time that the Well Control Rule was being finalized. BSEE continues to work with affected companies as the bureau moves into implementation phases of this recent rule.

Throughout 2016, BSEE staff worked with stakeholders to find new ways to obtain better information through SEMS audits and advance its near-miss reporting system. The bureau also worked with a variety of stakeholders to help develop, and bring online, the latest technological safety advances. The risks inherent in offshore activities will never be fully eliminated, but by listening carefully to the public and other stakeholders, BSEE can help industry reduce those risks. No one wants to experience an injury or see a spill occur, and this shared concern is the common ground that should encourage open communication among all parties.

Strategic Engagement

BSEE’s Office of Congressional and International Affairs (OCIA) serves as BSEE’s primary point of contact for the U.S. Congress and the bureau’s international counterparts. OCIA is responsible for the coordination of all communication and engagement with these entities and also ensures consistent messaging and effective exchanges of information. Coordinating with the bureau’s national programs and regional personnel, OCIA is able to access subject matter experts, who then share their experience and knowledge with our regulatory counterparts in other countries. OCIA has found that these collaborations are essential components of BSEE’s international engagement strategy.

The past year was very busy for BSEE on the international front. During FY 2016, the bureau:

- served as chair and executive secretariat of the International Regulators’ Forum (IRF), participating in three of its work groups – Performance Measures, Culture of Safety, and Asset Integrity – and led the 2016 IRF Annual General Meeting;
- continued as chair and executive secretariat for the Arctic Offshore Regulators Forum (AORF), and participated in the spring and fall meetings of the AORF;
- remained an active member of the International Offshore Petroleum Environmental Regulators (IOPER), leading efforts on oil spill preparedness, science and technology;
- interacted with standard setting organizations to identify gaps and other needs in order to address safety and preparedness in offshore operations;
- served on the U.S. delegation to the Arctic Council Emergency Prevention, Preparedness, and Response Working Group, led or co-led projects to improve contingency planning in the Arctic, and attended meetings in Canada and Denmark to support the group’s work on spill response in oil and ice, pan-Arctic spill table top exercises, and continuous exchange of information on country activities;
- increased regulatory collaboration with Mexico regarding safety and environmental protection; and
- engaged in technical exchanges and efforts to build governance capacity with many other countries.



BSEE is an active participant in multiple international bodies that regulate offshore energy. Here, representatives from several countries gathered at the Department of the Interior headquarters building to discuss Arctic offshore safety and environmental issues.

The bureau continued to work extensively on strategic engagement with countries that share marine boundaries with the United States, such as Canada and Mexico. During the past year, BSEE strengthened its already strong safety, environmental and regulatory collaboration with Mexico, reflected by its close ties with Mexico's National Agency for Industrial Safety and Environmental Protection in the Hydrocarbons Sector (ASEA).

BSEE's international responsibilities also involve implementation of the Agreement between the United States of America and the United Mexican States Concerning Transboundary Hydrocarbon Reservoirs in the Gulf of Mexico. The Agreement supports the United States' and Mexico's shared duty to exercise responsible stewardship of the Gulf of Mexico when developing offshore hydrocarbon resources. The agreement is built on a commitment to the safe, efficient and equitable exploitation of transboundary reservoirs. DOI Secretarial Order No. 3333 delegated authority to BSEE to carry out specific responsibilities of DOI under this agreement, including unitization, inspection and enforcement, and production verification for operations involving a transboundary hydrocarbon reservoir. BSEE's engagement and collaboration with ASEA, as well as Mexico's Ministry of Energy and its National Hydrocarbons Commission (CNH), is critical to successful implementation of the Agreement.

BSEE also cooperates extensively with Canada, not only through joint participation in multilateral forums such as the IRF and AORF, but also in direct conversations between BSEE employees and staff with Canada's National Energy Board (NEB), Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB) and the Canada-Nova Scotia Offshore Petroleum Board (CNSOPB), which regulate the Canadian energy industry. Part of the discussions with Canada concerns the joint efforts of BSEE and NEB, C-NLOPB and CNSOPB to promote a stronger safety culture for offshore oil and gas operations.



The cliché, “another day at the office,” takes on a whole new meaning for BSEE’s inspectors. Their typical day involves boarding a helicopter for what is often a long trip to an offshore facility where they then need to work diligently to conduct a careful inspection. We will never know how many lives are saved because of their dedication, nor how many environmental catastrophes were averted because they helped offshore operators appreciate the importance of vigilance.



As the sun sets on BP’s Na Kika platform in the Gulf of Mexico, work continues. The offshore platforms never sleep. Work occurs around the clock and employees must constantly be on guard for issues in the inherently dangerous environment of offshore energy exploration and production. BSEE has been working with the offshore industry to grow the offshore safety culture and help industry operate according to the principles of high reliability organizations.

Regulatory Work & Activities

The foundation of BSEE's regulatory program is a set of enforceable regulations that govern numerous aspects of the offshore energy industry. These regulations are updated and revised as necessary but only after the bureau subjects potential new rules to a rigorous review and comment process and follows other procedures as prescribed by the Administrative Procedure Act. BSEE recognizes the need to temper change with predictable consistency and proposes regulatory changes only after careful consideration of the impact of and need for the alterations. Throughout FY 2016, the bureau coordinated its regulatory efforts with other federal agencies in order to avoid unnecessary duplication and to maximize consistent and efficient regulation of OCS activities. When conducting its regulatory oversight duties, BSEE relies on a variety of federal laws, including OCSLA, NEPA, the Clean Air Act, the Clean Water Act, the Federal Oil and Gas Royalty Management Act, and the Oil Pollution Act of 1990.

The prioritization of BSEE's rulemaking efforts is based on comprehensive reviews of (1) existing oil and gas regulations, (2) safety and environmental risks, (3) findings and lessons learned from exercises, inspections and investigations, (4) new developments in industry practices and OCS technology, (5) results of BSEE research projects and those of its contractors and (6) information about other changing circumstances. In addition, BSEE works with industry groups on standards development and the bureau assesses existing relevant standards for possible incorporation into BSEE's regulations. Performance-based regulations are used wherever they can be effectively implemented, which allows BSEE to use a hybrid regulatory approach that employs a mix of performance-based and prescriptive requirements.

During the past year, BSEE finalized several rules including the Well Control Rule, Arctic Drilling Rule and Production Safety Systems Rule. The rules included provisions that were discussed in many of the post *Deepwater Horizon* reports. BSEE is continuing to work on developing an update to the oil spill response plan regulations and finalizing the Crane Safety Rule.

As a part of its science-based efforts to update the oil spill response plan requirements, BSEE released three new response planning calculators in 2016 for estimating the oil spill removal potential of mechanical recovery, dispersant and in situ burning systems. These response calculators, and their accompanying user manuals, are the result of five years of research, interagency and stakeholder engagement and beta-testing by offshore oil spill removal organizations.

To ensure compliance with safety and environmental regulations, BSEE issues Incidents of Non-Compliance (INC), civil penalties and orders when appropriate. However, BSEE is often able to work with operators to quickly achieve compliance, and thus restore safe conditions and environmental safeguards, without further actions. Annual performance reviews of each operator also assess recurring safety and environmental concerns. Such reviews, and other measures, have revealed that some facilities have a disproportionate number of safety-related issues.

BSEE's pilot risk-based inspections program is examining facilities deemed to have a higher risk profile, with the goal of helping these facilities achieve a state of compliance and increased safety. The risk-based inspections pilot program is also attempting to identify and quantify risks that serve as leading and lagging indicators in order to better gauge operator effectiveness. The bureau continues to evaluate this methodology, which – when combined with findings from our annual inspection program and trends identified in third party SEMS audits – will allow BSEE to focus proper attention on operations that pose the greatest risk to safety and the environment.

BSEE Inspectors are known for their professionalism as well as the seriousness with which they take their work. Inspectors come from a variety of professional backgrounds and each staff member brings skills to the table that complement those of coworkers. Here, inspectors from BSEE's Houma, Louisiana, District begin a new round of inspections.



A major compliance issue for the bureau relates to end-of-life asset management through the decommissioning process. Due in part to the prevailing lower oil prices, decommissioning remained an important topic throughout FY 2016. The bureau continued to make sure that operators maintained their commitment to final abandonment and decommissioning in conjunction with their lease responsibilities. BSEE's newly finalized Decommissioning Costs Rule mandates that operators submit financial information from their decommissioning activities. The information will serve to inform BSEE and BOEM about the level of bonding that should be required for future leases.

Permitting and Inspections

In FY 2016, BSEE conducted more than 21,000 annual, unannounced and other component inspections on more than 2000 facilities. The inspections related to well operations, production, pipelines, meters and environmental compliance (Table 2.1).

BSEE continued to advance its ePermits initiative throughout FY 2016. Use of ePermits continued to reduce review processing time, which is expected to eventually reduce processing time by 30-40 percent for permits, plans and other submitted document reviews. BSEE continues to work closely with BOEM

Table 2.1 Component inspections performed by BSEE on the OCS by region for FY 2016. Note that inspection types are not mutually exclusive, and several functions may be examined during the same inspection. BSEE inspected nearly 22,000 components at more than 2000 facilities. Production facilities are inspected at least once each year and drilling rigs are inspected monthly while active.

| Type of Inspection | Alaska | Gulf of Mexico | Pacific | Total OCS |
|------------------------------|-----------|----------------|------------|---------------|
| Well Operations ¹ | 6 | 858 | 15 | 879 |
| Production ² | 7 | 3077 | 170 | 3254 |
| Pipelines ³ | 0 | 6704 | 90 | 6794 |
| Meters ⁴ | 4 | 4495 | 31 | 4530 |
| Environmental ⁵ | 9 | 2641 | 199 | 2849 |
| Other ⁶ | 4 | 3452 | 236 | 3692 |
| Totals | 30 | 21,227 | 741 | 21,998 |

¹ Well operations inspections include drilling, workover, completion, and abandonment.

² Production inspections include production and flaring.

³ Pipeline inspections involve the review of service and maintenance records and checking safety valves and devices.

⁴ Meters inspections involve the review of calibration documents and the physical inspection of seals.

⁵ Environmental inspections include pollution and air quality.

⁶ Other includes USCG guidelines, hydrogen sulfide, site security, and compliance inspections.



This thorough examination of a Floating Production Storage and Offloading facility (FPSO) requires carefully trained inspectors. All of BSEE's inspectors are highly trained and skilled so that they can keep pace with the continually changing offshore industry.

on its ePlans initiative, which is being conducted in parallel with ePermits. This coordination is allowing the bureaus to develop common electronic submissions and processes for both ePermits and ePlans and will also facilitate interagency information exchange.

BSEE completed the second phase of the ePermits initiative during FY 2015, which involved BSEE subject-matter experts documenting the internal business processes that are used to collect the data necessary for permit and plan decision-making by the bureau. BSEE and BOEM also completed user requirements in the form of user case documentation so that users and developers can construct the ePermits and ePlans components. During FY 2016, initial work began to establish the permitting framework and the first permit actions, which relate to the submission of oil spill plans. The current schedules call for initiating the remaining five permit categories at approximately six-month intervals, with completion of the ePermits project in April 2018.

Enforcement and Investigation

In FY 2016, BSEE issued 2643 Incidents of Noncompliance (INCs, Table 2.2) and referred 38 cases for civil penalty assessment. BSEE collected \$2,456,802 from the 28 civil penalty cases the bureau closed during the year. To avoid potential harm to personnel and the environment, BSEE issued 138 facility shut-in INCs and 1177 component shut-in INCs.

BSEE's investigations are designed to identify root causes and patterns of incidents, some of which will inform updates to BSEE's safety-related programs and regulations. The bureau has developed a tiered-approach to investigations that helps ensure that the level of resources dedicated to an investigation matches the severity of the incident. The bureau's investigative function provides both detailed findings and recommendations. During FY 2016, BSEE initiated 64 district investigations and three panel investigations (panel investigations are BSEE's highest tier of investigation). BSEE completed 63 district investigations during the fiscal year.

BSEE's use of a graduated enforcement continuum ensures that operators return to compliance in the quickest and most efficient manner possible. In those rare cases where the operator is unable or unwilling to comply, the bureau takes appropriate actions to protect workers and the environment. BSEE's Safety and Incident Investigations Division (SIID) manages the National Investigations Program and is staffed by experienced professionals with diverse investigative backgrounds. SIID offers investigative training for BSEE staff, such as BSEE inspectors, as well as staff from other federal entities that share regulatory responsibilities with BSEE. The training is available for personnel that may be involved with any phase of an investigation. The standardized training helps ensure that data collection is done in a consistent and repeatable manner.

Table 2.2 When all applicable safety and environmental protection requirements are not met, BSEE may need to issue Incidents of Noncompliance (INC), which are similar to citations. Upon detecting a violation, the bureau inspector issues an INC to the operator and uses one of two main enforcement actions, warning or shut-in, depending on the severity of the violation. If the violation is not severe or threatening, a “Warning INC” is issued. The Warning INC must be corrected within a reasonable amount of time as specified on the INC. The “Shut-in INC” may be for a single component (a portion of the facility) or the entire facility. The violation must be corrected before the operator is allowed to continue the activity in question. Of the 2643 INCs issued by BSEE in FY 2016, 138 were facility Shut-in INCs and 1177 were component Shut-in INCs.

| INC Category | Alaska | Gulf of Mexico | Pacific | Total OCS |
|-----------------------------|----------|----------------|------------|-------------|
| Completion | 0 | 5 | 0 | 5 |
| Crane | 0 | 50 | 1 | 51 |
| Drilling | 0 | 19 | 0 | 19 |
| Electrical | 0 | 75 | 6 | 81 |
| General | 0 | 1048 | 18 | 1066 |
| Hydrogen Sulfide | 0 | 4 | 0 | 4 |
| Measurement & Site Security | 3 | 182 | 2 | 187 |
| Pipelines | 0 | 114 | 4 | 118 |
| Pollution | 0 | 155 | 0 | 155 |
| Production | 0 | 635 | 106 | 741 |
| Well Work-over/Abandonment | 0 | 16 | 1 | 17 |
| USCG-related | 0 | 168 | 7 | 175 |
| Other | 0 | 24 | 0 | 24 |
| Total | 3 | 2495 | 145 | 2643 |

Table 2.3 BSEE employs civil penalties when appropriate for legal violations. Ultimately, the goal of the penalties is to promote compliance with federal safety and environmental rules. This table lists the 10 companies that paid the most in civil penalties for violations on the OCS for FY 2016. All revenues collected as part of the civil penalties program are collected and distributed by the U.S. Department of the Treasury.

| Violating Companies | Total Fines Paid (\$) | Number of Cases | Number of Violations |
|--------------------------------------|-----------------------|-----------------|----------------------|
| Castex Offshore, Inc. | 395,000 | 2 | 15 |
| Energy Resource Technology GOM, Inc. | 370,000 | 3 | 4 |
| Fieldwood Energy LLC | 245,000 | 3 | 4 |
| Walter Oil & Gas Corporation | 222,000 | 1 | 2 |
| Stone Energy Corporation | 200,000 | 1 | 1 |
| EPL Oil & Gas, Inc. | 190,000 | 2 | 2 |
| Chevron U.S.A. Inc. | 149,520 | 1 | 1 |
| Apache Deepwater LLC | 140,000 | 2 | 2 |
| Energy XXI GOM, LLC | 100,000 | 3 | 3 |
| Fairways Offshore Exploration, Inc. | 85,000 | 1 | 3 |

Interagency Coordination

The OCS is a shared regulatory space that requires coordination among the many federal agencies that have jurisdictional authority that intersects operators, tens of thousands of workers and a large number of contractors. Depending on the type of activity, offshore operators may fall under the jurisdiction of several federal entities. Over the past five years, BSEE has developed close cooperative relationships with a variety of federal partners on the OCS to make sure that activities are coordinated. These close relationships have strengthened the ability of all agencies to deploy resources through intra- and interagency cooperation. The collaboration has also reduced the probability that industry will receive contradictory information or needlessly provide duplicate information. A summary of select BSEE interagency coordination efforts is described below:

PREP 4C – The Preparedness for Response Exercise Program Compliance, Coordination and Consistency Committee (PREP 4C), which is composed of BSEE, USCG, EPA and PHMSA, provides guidance on how the transportation and oil and gas industries can meet their exercise requirements under the Oil Pollution Act of 1990, and ensures a consistent and coordinated regulatory approach by each of its member agencies. In 2016, PREP 4C released a renewed version of the PREP Guidelines, the first published update to this pivotal policy document since 2002. The 2016 PREP Guidelines are the result of

four years of engagement and iterative public comment and review conducted through the Federal Register.

ICOPPR – Interagency Coordinating Committee on Oil Pollution Research is a 15-member Interagency Committee established by Title VII of the Oil Pollution Act of 1990 (Section 7001). ICCOPR was established to “...coordinate a comprehensive program of oil pollution research, technology development, and demonstration among the federal agencies, in cooperation and coordination with industry, universities, research institutions, state governments, and other nations, as appropriate, and shall foster cost-effective research mechanisms, including the joint funding of the research.” Just prior to FY 2016, the committee unanimously approved the Oil Pollution Research & Technology Plan for FY 2015-2021. The purpose of the plan is to provide current assessments of the nation’s oil pollution research needs and priorities. This update was the first to the plan since 1997.

NRS – The National Response System Teams include the National Response Team (NRT), Regional Response Teams (RRTs) and Area Committees (ACs) that plan for, prepare for and respond to oil spills and releases of hazardous substances within their area of responsibility. These teams maintain Contingency Plans and act as advisory boards to the on-scene coordinator. BSEE actively participates within all of these components of the NRS.

EPPR – Arctic Council’s Emergency Prevention, Preparedness, and Response Working Group. BSEE staff serves on the U.S. delegation to this group and through 2016 played a principal role in three major initiatives. From the U.S.-led development of an Arctic Equipment Spill Response Database, to co-led projects such as production of a Circumpolar Response Viability Analysis and publication of a primer on engineering standards as a tool for prevention, BSEE has worked with Arctic partners in contributing to the Arctic Council mission of protection of the Arctic and its unique environmental resources.

CMTS – Committee on the Marine Transportation System. CMTS is a federal interagency coordinating committee directed by Congress, chaired by Department of Transportation, and chartered to improve the coordination of and make recommendations with regard to federal policies that impact the Marine Transportation System. BSEE represents DOI on the CMTS Coordinating Board, one of 25 federal agencies and offices active in the CMTS. BSEE also coordinates the participation of DOI subject-matter experts on Integrated Action Teams (IAT). Currently, BSEE participates on the Data, Infrastructure and Resilience IATs.

BSEE/USCG Coordination – BSEE and USCG have closely aligned jurisdictional and regulatory responsibilities related to offshore energy development on the OCS. From offshore inspections to incident response and investigations, the two organizations collaborate extensively to reduce redundancy and ensure consistency and clarity for the regulated community. The two organizations work closely together under an overarching memorandum of understanding and several memoranda of agreement related to specific issues that touch on the organizations’ shared regulatory space. Senior leaders of the DOI and the Coast Guard have conducted routine meetings in Washington, D.C. since the late 1990s. Since Oct. 1, 2011, however, the meetings have taken on greater significance and have occurred on more frequent basis, as a sign of commitment to interagency coordination. In early 2014, BSEE and the Coast Guard formally established a quarterly meeting schedule that has improved the exchange of information on offshore activities. BSEE and USCG have also established separate quarterly meetings of a Response Workgroup and a Prevention Workgroup, in addition to regional meetings between senior leaders from BSEE regional offices and corresponding Coast Guard districts in Louisiana, California and Alaska.



BSEE’s Interagency Bolt Action team is examining the issue of offshore subsea bolt failures. The team has representatives from a dozen federal agencies and research labs whose areas of expertise involve subjects such as metallurgy. BSEE’s goal is to determine why bolts are failing in ways that are not expected. BSEE’s goals are to determine what is going wrong and how to fix it before a catastrophic event occurs.



Whether a facility is fairly simple (such as the damaged facility above) or extremely complex (such as BP's Mad Dog platform), offshore workers face many risks during their daily routines. BSEE believes that the offshore work environment must be a place where safety never takes a break. While our nation depends on the energy produced offshore to fuel our transportation, heating and electrical needs, we must also keep in mind that the men and women of the offshore workforce need our support as we collectively promote safety and environmental stewardship in the marine environment.



Safety & Environmental Performance

The state of the U.S. Outer Continental Shelf energy industry during FY 2016, in terms of worker safety and impacts on the environment, is summarized in this section. BSEE believes the data presented here provide a viewpoint that allows all stakeholders to step back from day-to-day operations and reflect on the past year's reality. This section can help readers find the answers to questions like, "How did it go?" and "Are the trends improving?" However, we caution the reader to review the data with a critical eye, avoiding the temptation to jump to optimistic conclusions about trends based on short-term shifts. In the following pages, you will read a full and open assessment of what BSEE observed in FY 2016 and where we see potential for improvement.

The report offers some analyses of the data – giving a glimpse into what areas seem to be improving and what areas appear to be lagging behind. We also include some thoughts on how we can work together

Table 3.1 Total number of recordable incidents occurring on the OCS from FY 2007 to 2016. In FY 2016, 475 incidents occurred. The following types of incidents require immediate BSEE notification: fatalities; injuries that require evacuation of the injured person; loss of well control; fires and explosions; collisions that result in property or equipment damage of more than \$25,000; incidents involving structural damage to an OCS facility; incidents involving crane operations; and incidents involving damage to safety systems and equipment.

| Incident Type | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|----------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Fatalities | 5 | 12 | 4 | 12 | 3 | 1 | 4 | 2 | 1 | 2 |
| Injuries | 322 | 263 | 260 | 253 | 221 | 280 | 276 | 285 | 206 | 151 |
| Loss of Well Control | 6 | 7 | 7 | 4 | 5 | 3 | 8 | 5 | 3 | 2 |
| Fires/Explosions | 145 | 141 | 148 | 134 | 113 | 132 | 116 | 135 | 105 | 86 |
| Collisions | 26 | 28 | 26 | 14 | 11 | 13 | 21 | 16 | 9 | 9 |
| Spills (>50 bbls) | 7 | 33 | 7 | 9 | 4 | 5 | 10 | 5 | 7 | 3 |
| Lifting | 180 | 185 | 243 | 118 | 110 | 167 | 197 | 210 | 161 | 155 |
| Gas Releases | 14 | 22 | 33 | 20 | 17 | 27 | 21 | 21 | 21 | 17 |
| Evacuation Musters | 33 | 43 | 55 | 31 | 36 | 48 | 68 | 52 | 70 | 50 |
| Total | 738 | 734 | 783 | 595 | 520 | 676 | 721 | 731 | 583 | 475 |

A Comment on Injury & Fatality Statistics

The analysis of data related to human injuries and fatalities is necessary, but unfortunately impersonal. BSEE knows that behind each number there is a person and his or her family and friends. We hope that readers will understand that the goals of our analyses are to disseminate and learn from data in order to make the offshore work environment safer. BSEE remains committed to the goal of eliminating serious injuries and fatalities throughout the Outer Continental Shelf.

Interpreting Trends

There are many factors that impact OCS events in a given year. It is often the case that factors occurring in one year affect statistics in a subsequent year. Leading and lagging indicators certainly exist within the data included in this report. However, such indicators can be difficult to pinpoint. For example, the low price of oil in both FY 2015 & FY 2016 impacted many aspects of operations on the OCS including industry revenues, mergers, acquisitions, and cessation of operations for some financially troubled companies. It is possible that these aforementioned circumstances, and others, impacted the FY 2016 safety data, and also possible that their impacts will be felt in future years. The data in BSEE's FY 2016 annual report may reveal trends, but BSEE cautions that the trends are suggestive, not definitive, with regard to the direction of industry safety outcomes. As the incident database grows with the addition of future years, it should, eventually, become possible to pinpoint leading and lagging indicators that will help guide the interpretation of safety-related analyses. It should be noted that analyses in this report that are normalized on a "per installation basis" are normalized against the number of production platforms, not drilling installations. As such, normalized data presented herein are illustrative of broad trends only.

to enhance safety and environmental protection offshore. BSEE's collection and analysis of data in this section places FY 2016 data into the context of the past 10 years so that trends can be discussed when such trends seem readily apparent or suggestive. By the end of this Safety and Environmental Performance section, readers of the report should understand "how it went" during FY 2016.

Much of the data presented herein can be traced back to reports from energy industry operators. All operators on the OCS are required to report incidents related to activities regulated by BSEE (30 CFR § 250.187-190), including – but not limited to – those associated with permits and leases. Incidents that must be reported include injuries, fatalities, losses of well control, fires and explosions, oil spills, gas releases, safety system failures, and many other categories. BSEE investigates many of these incidents to identify causes. This information helps us identify appropriate actions to prevent the recurrence of incidents and enhance safety and environmental protection on the OCS.

Fatalities

Fatality data continue to serve as a stark reminder of the dangerous nature of the work that occurs every day on the OCS. BSEE believes that the absence of fatalities is the only acceptable goal. Every fatality must be a call to all involved, highlighting the need for safety vigilance on every job, at all times, and by every person connected to the exploration and production of energy on the OCS. For BSEE, fatalities provide a strong impetus to continue striving toward ever more effective regulatory oversight and the continued growth of the offshore safety culture.

As shown in Figure 3.1, the annual rate of fatalities since BSEE was formed in 2011 has been essentially static, ranging from 1 to 4; no particular trend appears over that timeframe. However, looking further back at the two highest fatality years (2008 and 2010), it remains clear that a single lapse in proper risk management can be catastrophic. Any short-term reductions in numbers can have a tendency to mask the true impact of every loss of life offshore, therefore the only appropriate response to these data is to continue to drive fatalities to zero.

The types of fatality incidents that have occurred over the past decade are varied (see Figure 3.2). Since FY 2007, fatalities occurred across a wide spectrum of exploration, development, production, and facility construction/decommissioning operations on the OCS, and the general downward trend can't be tied to one specific location or circumstance. Although figure 3.2 does give a general sense of the various causes, most fatalities have multiple contributing causes and factors, often including improper or absent hazard analysis, ineffective risk identification, and failure to follow work instructions or protocols. Also, it should be noted that the data include only fatality incidents reportable to BSEE and under BSEE jurisdiction. There may be fatalities resulting from other offshore incidents that are reported to other federal agencies, such as the Coast Guard. For example, helicopter incidents that occur away from a facility are not included herein, but helicopter incidents on platforms are reported to BSEE.

Under current practice, BSEE evaluates each and every reported fatality for referral to a panel investigation, BSEE's most comprehensive and resource-intensive investigative tool. All resulting panel investigation reports are posted on BSEE's web site for public viewing, allowing all to benefit from the lessons learned from these tragedies. If appropriate, BSEE will issue industry-wide alerts that explain how

the fatality occurred and what should be done to prevent the breach of safety barriers that may have contributed to the fatality.

BSEE strongly believes that the inherent risks of working offshore can be identified and mitigated, but when risk management is not done well, a single lapse and resulting incident can generate catastrophic consequences and multiple fatalities. The effects of such an event can be seen in the data from prior years, most notably the *Deepwater Horizon* tragedy in 2010. The factors we are describing should not be interpreted to suggest that fatality data are random, but they are highly volatile, pointing to the great need for continued and enhanced vigilance on the part of industry and government alike. Therefore BSEE will continue to work with industry to reduce risk, encourage the growth of the offshore safety culture, and help the offshore industry achieve the milestone of zero offshore fatalities in a fiscal year, which has proven elusive during the past decade.

Injuries

The offshore oil and gas industry has achieved greater precision and predictability as a result of advances in technology used to support drilling, the advent of satellite-controlled navigation and position control, and real-time monitoring. There has also been a great reduction in the amount of direct physical labor required to perform certain tasks. These developments have decreased the overall risk of injury over time; however, workers continue to interact with powerful equipment capable of exerting ever-greater force as drilling extends into deeper water and farther offshore. In short, risk of injury remains a constant concern on the OCS, an environment where oil and gas production operations, general offshore support operations (e.g., crane lifting), and other inherently dangerous activities are commonplace.

BSEE requires the immediate reporting of all injuries that require evacuation of an individual from the facility to shore or to another offshore facility (30 CFR 250.188(a)(2)). Operators are also obligated to provide a written report within 15 calendar days of injuries “that result in one or more days away from work or one or more days on restricted work or job transfer.” For internal analysis, BSEE categorizes reported injuries as follows¹:

- Major = More than 3 days away from work or more than 3 days of restricted work or job transfer (collectively referred to as DART);
- Minor = 1-3 DART; and
- Other = Injuries that resulted in less than one DART (or those that required evacuation to shore or to another offshore facility for medical treatment but did not result in any DART).

Between FY 2007 and 2016, aggregate annual recordable injuries on the OCS have ranged from a high of 322 in FY 2007 to an all-time low of 151 in FY 2016. An average of approximately 252 injuries per year has been reported on the OCS over the last 10 years. Comparing the 10-year average to the FY

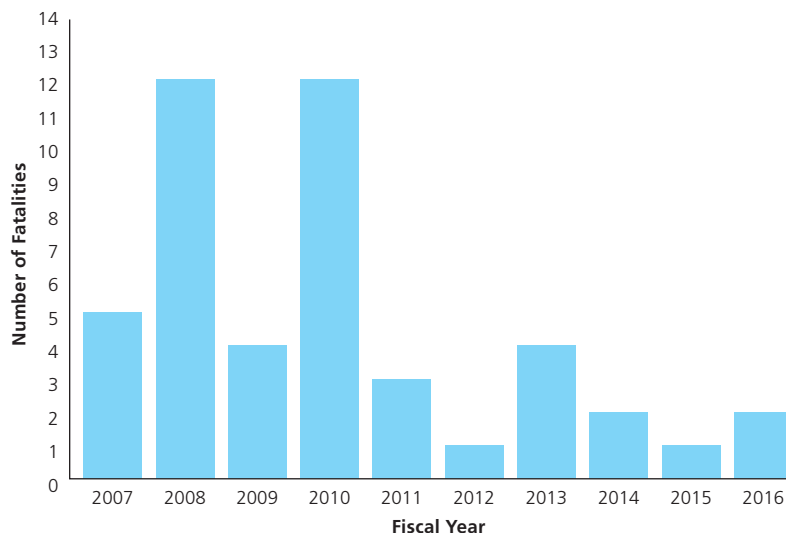


Figure 3.1 The annual rate of fatalities since BSEE was formed in 2011 has been essentially static, ranging from 1 to 4. Looking further back at the two highest fatality years (FY 2008 and 2010), it remains clear that a single lapse in proper risk management can be catastrophic. BSEE considers any fatality unacceptable.

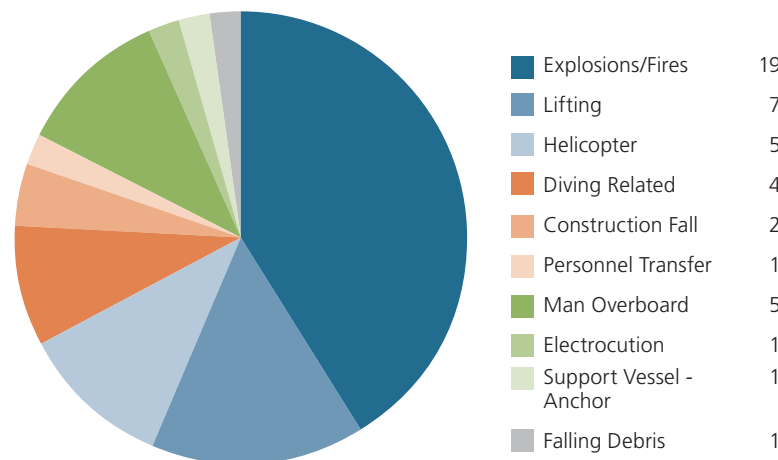


Figure 3.2 The causes of offshore fatalities for the FY 2007-2016 period are summarized here. For FY 2016, one fatality resulted from a lifting incident and one from falling debris. Over the past 10 years the causes of fatalities have varied widely, occurring across a wide spectrum of exploration, development, production, or facility construction/decommissioning activities. Fatalities cannot be tied to one specific location or circumstance, therefore BSEE continues robust enforcement of safety regulations and champions vigilance by industry during all offshore operations.

¹ DART = Days away from work or days of restricted work or job transfer. Recordable injuries include all three categories – Major, Minor, and Other.

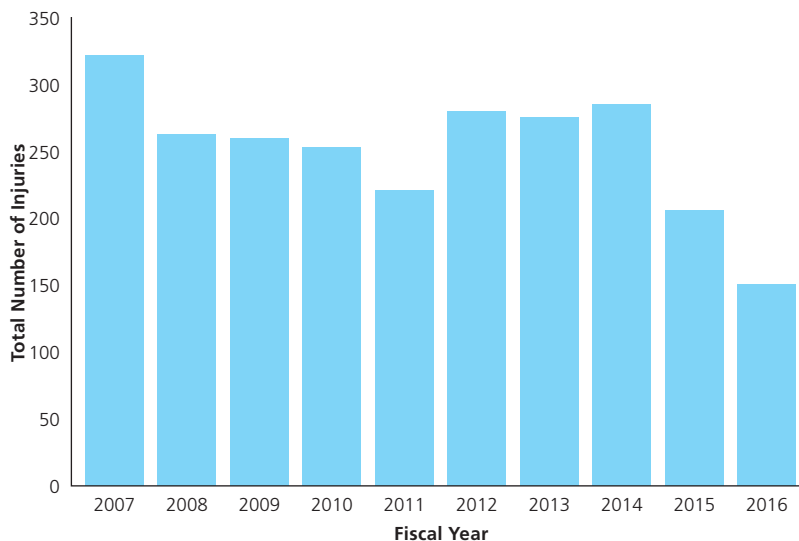


Figure 3.3 The marked drop in recordable injuries offshore over the last two years is encouraging; BSEE will closely monitor this short-term trend, looking for its continuation, but also for indications of whether it is tied to oil prices and resulting changes in offshore activity. The fact remains that, despite technological advances, workers are still performing inherently dangerous activities with ever more powerful equipment in increasingly challenging environments.

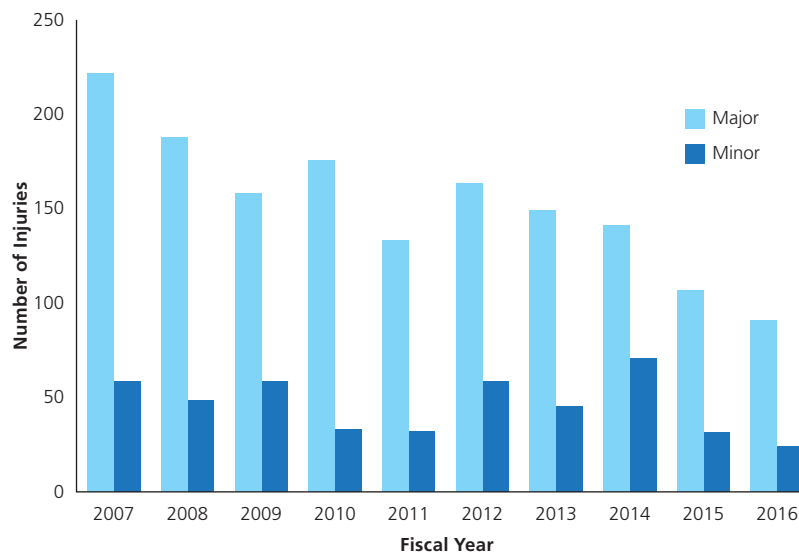


Figure 3.4 Examining injuries of two of the severity categories suggests a somewhat different 10-year trend for major and minor injuries, though the decreasing trend over the last three years is generally consistent between the two types. When an injury causes an individual to miss more than three days away from work or more than three days of restricted work or job transfer (collectively referred to as DART), it is considered major. If the result is 1-3 DART, the injury is classified as minor.

2016 data – whether cast as total injuries (Figure 3.3), major versus minor injuries (Figure 3.4), or injuries per installation (Figure 3.5) – indicates that injuries are down across the OCS. Fewer injuries are always welcome news, but this is a short-term trend that bears watching to see if future results are consistent with recent data. The downturn may mirror the corresponding decrease in development rig activities, increase in non-rig development activities, and/or decrease in overall exploration activity on the OCS over the last few years, which is a result of low oil prices. While exploration and development operations can carry higher risk in some cases, it would be a mistake to take the view that injuries are unavoidable during these phases of work on the OCS. BSEE’s internal data review and analysis suggest that human engineering problems (e.g., human-machine interface, poor working environments, system complexity, and non-fault-tolerant systems) and problems in work direction (e.g., poor planning, site preparation, selection of workers, and supervision) may be among the drivers of the rate of injuries; these are factors that industry vigilance and strong regulatory oversight can and should continue to address, so that injury incidents are avoided.

Fires and Explosions

Offshore oil and gas facilities are constantly engaged in exploring for, extracting, and processing combustible and flammable fluids, making the danger of fire and explosions a constant hazard to be managed. Installations on the OCS are space constrained, often housing multiple industrial functions (e.g., oil and gas extraction, processing, flaring) in close proximity to housing for offshore workers. This reality heightens the need to manage fire/explosion risks, which are compounded by the relatively remote and isolated nature of many offshore facilities. Taken together, these factors mean fire and explosion incidents have the potential to produce catastrophic results. For these reasons, BSEE inspectors pay particularly close attention to leading indicators of fire/explosion risks (e.g., improper welding practices, improper venting), and

our investigators probe deeply for root causes after an incident does occur. Building upon the many preventive measures in place and learning the lessons of prior fires and/or explosions can reduce the chance of recurrence.

The bureau requires immediate oral report of all explosions, and of fires lasting longer than five minutes (per 30 CFR §250.188(a)(4) and BSEE Notice to Lessees and Operators (NTL) No. 2008-G17). For fires lasting less than five minutes, BSEE requires that reporting occur within 12 hours of the incident. The data presented in Figures 3.7 and 3.8 are based on both types of reports from the OCS energy industry. Figure 3.7 depicts the overall number of fires/explosions by type. There are four general categories of fires and explosions considered by BSEE:

- Incidental – property damage equal to or less than \$25,000;

- ♦ Minor – property damage greater than \$25,000 but less than or equal to \$1 million;
- ♦ Major – property damage greater than \$1 million; and
- ♦ Catastrophic – destruction of a facility worth greater than \$10 million.

Over the 10-year timeframe of this report, an average of approximately 126 fires and explosions per year were reported for the entire OCS. The annual range is from an all-time low in FY 2016 of 86 such incidents, to 148 (reported in FY 2009). The data for overall reported fires/explosions are variable but there is a suggestion of a downward trend since FY 2014. When the data are normalized against the number of operating OCS facilities, as depicted in Figure 3.8, the trend of fires and explosions seem less pronounced in recent years.

Due to the nature of offshore facilities, even incidental fires have the potential to create an explosion or become catastrophic. BSEE will continue to scrutinize such events closely, always looking for new ways to enhance offshore safety in an effort to reduce the number of fires and explosions.

Loss of Well Control

The *Deepwater Horizon* tragedy and the corresponding Macondo well blowout are the clearest demonstrations of the catastrophic consequences that can result when well control is lost. Not every well exhibits the same technical challenges of the well that was compromised during that event, but every well has control risks that must be properly identified and managed. Because of these risks, maintaining well control is a central theme in BSEE’s regulations under 30 CFR 250, and most recently was the subject of the Well Control Rule, published in final form in April 2016. The importance of well control is mentioned dozens of times in BSEE regulations in contexts as diverse as well casing and cementing requirements, blowout preventer (BOP) requirements, source control and containment requirements, well control training, drilling fluids used, requirements for production safety systems, and the need for design information on well control equipment to be included in a company’s SEMS plan. BSEE also mandates recurring well control drills, and our inspectors have the authority to order well control drills when they are on a facility. All of these approaches are oriented toward preventing loss of well control (LWC) incidents, which are categorized into the following four types:

- ♦ Uncontrolled flow of formation or other fluids to an exposed formation (underground blowout);
- ♦ Uncontrolled flow of formation or other fluids at the surface (surface blowout);
- ♦ Flow through a diverter; or
- ♦ Uncontrolled flow resulting from a failure of procedures or surface equipment.

Every LWC incident must be immediately reported per 30 CFR 250.188(a)(3). BSEE’s comprehensive regulatory approach helps ensure that such LWC incidents are relatively infrequent; however BSEE treats each LWC event extremely seriously. Each incident has the potential to produce injury, loss of life, and damage to the environment.

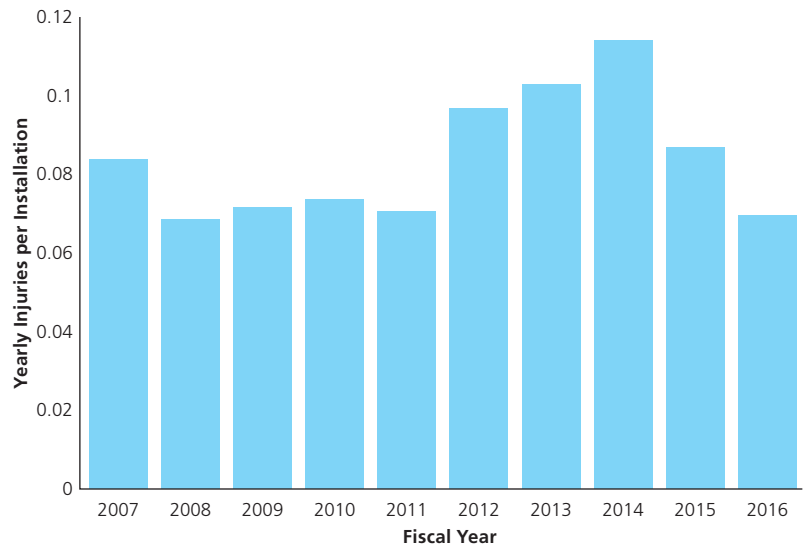


Figure 3.5 Similar to the overall injury rate seen in Figure 3.3, the rate of recordable injuries normalized to the number of operating installations shows a multi-year decline, which is encouraging. Again, BSEE will closely monitor this short-term trend, looking for its continuation, but also indications of whether it is tied to oil prices and resulting changes in offshore activity.

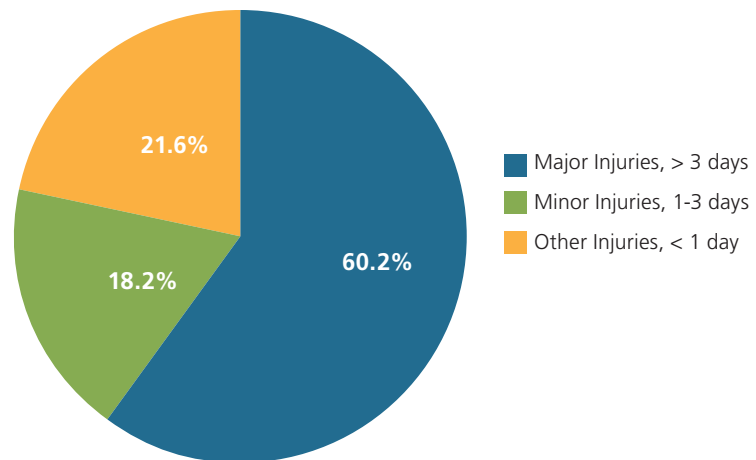


Figure 3.6 For the 10-year period from FY 2007 to 2016, it is clear that major injuries account for most cases. Many injury incidents are attributable to human factors (e.g., human-machine interface, poor working environments, system complexity, or non-fault-tolerant systems) and problems in work direction (e.g., poor planning, site preparation, selection of workers, and/or improper supervision).

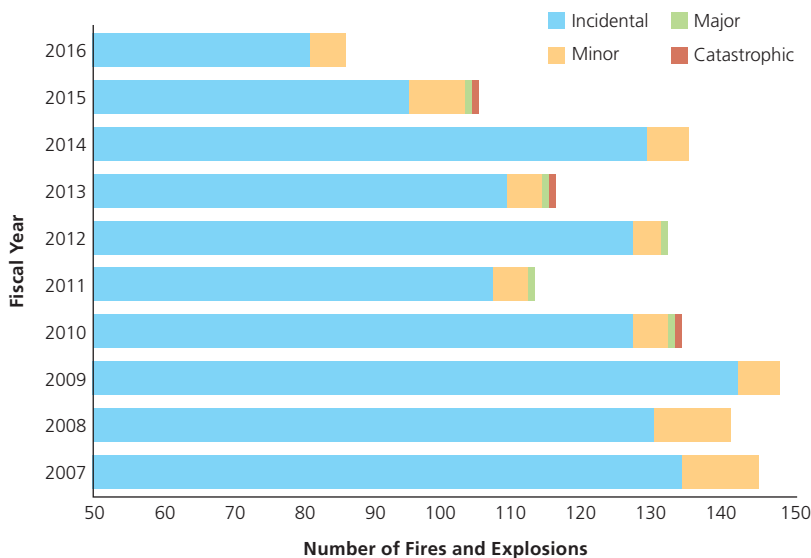


Figure 3.7 Over the 10-year timeframe of this report, an average of approximately 126 fires and explosions per year were reported for the entire OCS. The data for overall reported fires/explosions are variable, but FY 2016 was the year with lowest number of fire/explosion incidents (all of the incidents were fires in FY 2016). FY 2016 is also noteworthy for the absence of major or catastrophic fires/explosions. Note: The X axis on this graph begins at 50.

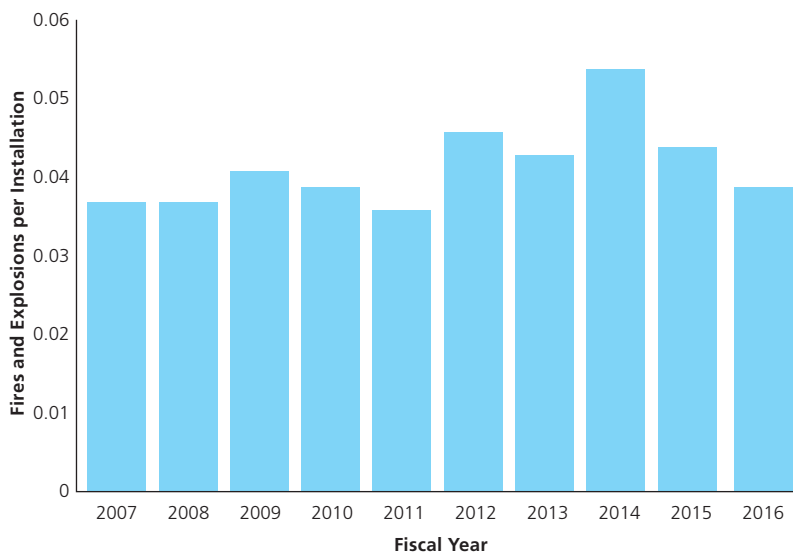


Figure 3.8 When the data for fires and explosions are normalized against the number of operating OCS installations, there was an overall increasing trend until a peak in FY 2014, and a subsequent decrease over the last two years. The data are still within the historic range of variability.

Based on the last 10 years of data, an average of five losses of well control occur each year on the OCS (Figure 3.9). FY 2016 exhibited the lowest number of LWC events in recent years. One of those occurrences involved an underground temporarily uncontrolled flow of fluid while the other was a shallow water flow (the latter is often not considered an LWC, but BSEE includes them in the count of LWCs). The data do show a continually decreasing trend over the last four years, from a high in 2013. As with some of the other categories of incidents, LWC's can be loosely correlated to the recent oil price-driven trends in exploration and development activities mentioned in the prior section. The recent downturn in these types of activities on the OCS may account in part for the low number of LWC events. BSEE will continue to closely oversee industry's management of LWC prevention, and will continue working to provide clear guidance on implementation of the Well Control Rule, so that when exploration and development rig activity increases, LWC events remain rare.

Collisions

Collisions (inclusive of allisions) on the OCS are defined by BSEE in 30 CFR 250.188(a)(6) as "a moving vessel (including an aircraft) striking another vessel, or striking a stationary vessel or object (e.g., a boat striking a platform)." Such incidents can result not only in structural damage to vessels and facilities, but in some instances injury, loss of life or losses of well control. BSEE shares jurisdiction with the Coast Guard for many collisions involving oil and gas operations on the OCS. BSEE requires that collisions resulting in more than \$25,000 in estimated property damage be reported immediately via oral report, followed by a written report within 15 days. In the Gulf of Mexico Region, operators may instead opt to file an electronic written report (via BSEE's eWell system) within 12 hours of the occurrence. BSEE also frequently receives reports of collisions resulting in damage of less than \$25,000; those are classified as minor in Figure 3.10, and are reported for illustrative purposes because BSEE tracks them internally. However because "minor" collisions are

not technically required to be reported, the data for major collisions provides the best indication of the rate of this type of incident.

Over the 10-year timeframe considered in this report, an average of just under 13 major collisions was reported per year (Figure 3.10). The trend in reported major collisions over the last three years has been downward, and in FY 2016 the number of reported major collisions dropped to a 10-year low of four such incidents. While BSEE is not currently aware of a particular cause for the drop in major collisions in FY 2016, it seems possible the recent impact of low oil prices – observed as a decrease in development rig activities, increase in non-rig development activities, and decrease in overall exploration activity on the OCS – may be a contributing factor. Another factor that may be contributing to the downward trend is that industry is trying to make operations more efficient by reducing the number of support vessels on the OCS.

Spills

Spills of oil and related substances offshore typically generate the most public interest, and the effects of the worst such events can capture local, regional and even national attention for extended periods of time. BSEE understands the concerns related to this issue and takes seriously its mission to help prevent spills and ensure that industry is prepared for spills *before* they occur, so that damage to the marine environment is minimized. Our commitment to environmental protection is evidenced by the millions of dollars in oil spill research projects we fund every year; it is made even clearer by our robust oversight of the OCS industry's oil spill preparedness through the BSEE Oil Spill Preparedness Division. Although much of BSEE's emphasis is focused on ensuring that offshore operators are equipped to prevent, control, and clean up after any potential spill, BSEE also requires the rapid reporting of spills if they occur. Per 30 CFR 250.187 and 30 CFR 254.46(a), operators are required to immediately report to BSEE all spills of oil or other liquid pollutants that are known or suspected to be one barrel in volume or greater. This requirement is in addition to, and does not substitute for, National Response Center reporting requirements.

Per 30 CFR 254.46(b)(2), spills greater than 50 barrels in volume require more detailed reporting and monitoring, and such spills trigger greater investigative response by BSEE, which may require the operator to submit additional information about their spill response. From FY 2007 to 2016, an average of nine spills greater than 50 barrels was reported annually on the OCS. The fewest such spills (three) were reported in 2016, and the greatest number was reported in 2008 (Figure 3.11). The majority of the spills in 2008 were a result of facility damage during Hurricanes Gustav and Ike. From FY 2007 through FY 2016, 31% of spills greater than 50 barrels were either crude or refined petroleum, approximately 33% contained synthetic based drilling fluid, approximately 22% contained other chemicals, and just over 13% were mixtures of products (Figure 3.12). There is no apparent trend in the types of fluids spilled each year.

The total volume of oil or other liquid pollutants released over time in individual spills greater than 50 barrels is depicted in Figure 3.13. Apart from the marked peak in 2010 (coinciding with the *Deepwater Horizon* tragedy) and a lesser peak in 2008, spills have been variable, though within a certain range. Removing the peaks might reveal a slightly different trend, but peaks are relevant; additional years of data collection are required before any overall trends can be defined. Even if there were evidence of a decreasing trend, BSEE remains committed to compelling a high degree of preparedness in industry, with the intent of preventing spills and properly responding if they do occur. For further information on long-term trends related to spills, see the report, "2016 Update of Occurrence Rates for Offshore Oil Spills," which is available at: <https://www.bsee.gov/sites/bsee.gov/files/osrr-oil-spill-response-research//1086aa.pdf>.

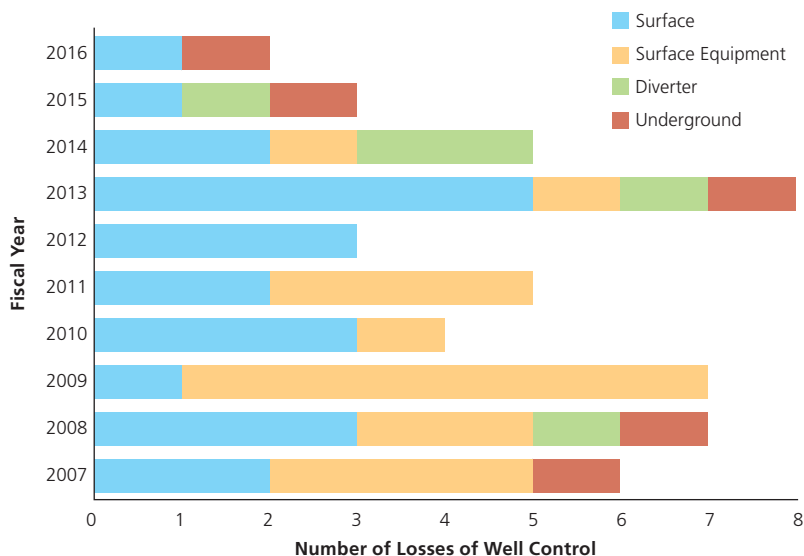


Figure 3.9 With the exception of FY 2013, there appears to be an annual decrease in the occurrence of LWC incidents in recent years, with FY 2016 being the lowest year on record.

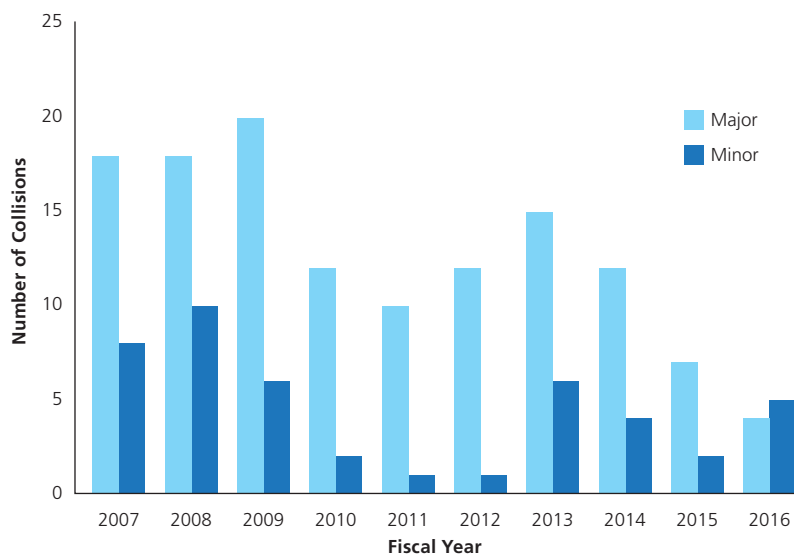


Figure 3.10 Over the 10-year timeframe considered in this report, an average of just over 17 collisions was reported per year. Major collisions have steadily decreased over the last four years, but minor collisions (which could potentially have become major) climbed last year after a multi-year decrease. BSEE will be watching this trend closely as a possible leading indicator.

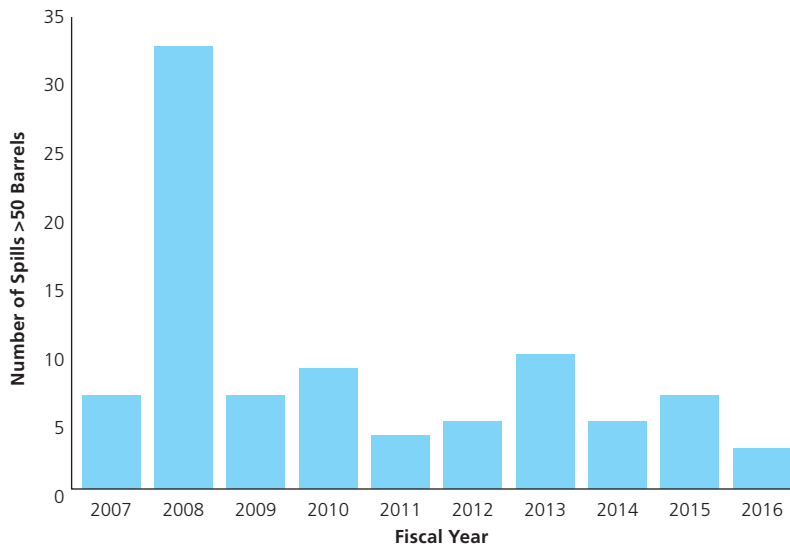


Figure 3.11 From FY 2007 to 2016, an average of nine spills greater than 50 barrels was reported annually on the OCS. The lowest number of such spills (three) was reported in FY 2016, and the greatest number occurred in FY 2008; that year drives the average in this case.

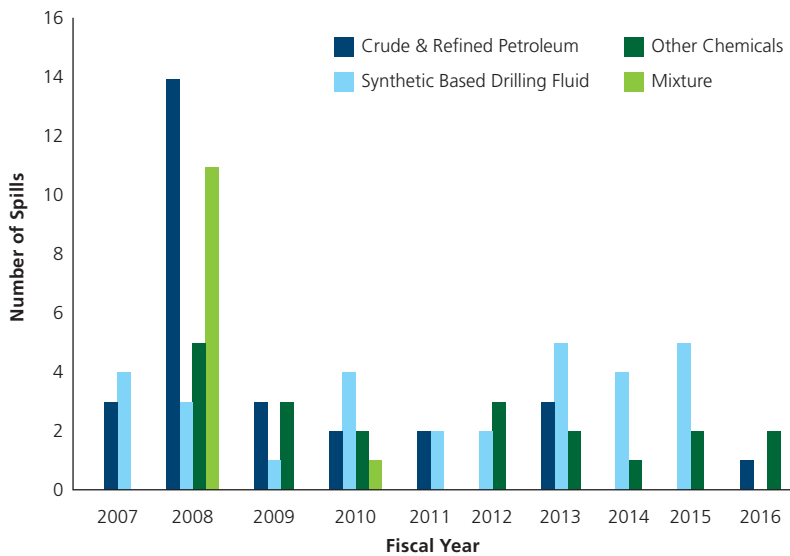


Figure 3.12 Overall, there is no apparent trend in types of fluids spilled each year. The “other chemicals” category generally includes substances like zinc bromide, calcium bromide, sodium bromide, asphaltene inhibitors, methanol and glycol.

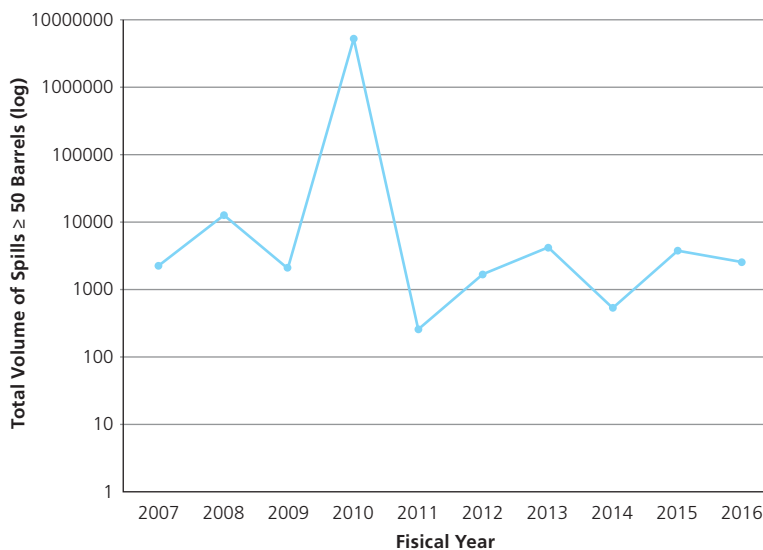


Figure 3.13 Apart from the marked peak in FY 2010 (coinciding with the Deepwater Horizon tragedy) and a lesser peak in FY 2008 (associated with OCS facilities damaged during Hurricanes Gustave and Ike in the Gulf of Mexico) aggregate spill volume has generally been well below 10,000 barrels per year on the OCS. BSEE remains committed to further reducing volumes and compelling a high degree of preparedness in the industry so companies can respond properly if spills occur. Note: data in this graph are presented on a logarithmic scale.

Lifting Incidents

Frequent and routine lifting operations involving personnel and material transfer – both on OCS facilities and between vessels and facilities – is a necessary and commonplace function of the offshore work environment. As with many hazardous offshore operations, engaging in daily routine activity can lead to complacency and a lowered awareness of risk. Lifting – typically by crane – always carries risk due to close quarters, metocean conditions and the need to coordinate with ongoing simultaneous operations (drilling, production, etc.). Lifting incidents range in severity from near misses and minor injuries to fatalities. Most lifting incidents are preventable. As such, BSEE pays close attention to lifting practices among OCS operators and has been working on a new Crane Safety Rule, which is being designed to help reduce lifting incidents. The Stop Work Authority institutionalized under the SEMS program is also of particular value in dynamic situations involving lifting.

BSEE coordinates regularly with the Coast Guard, which shares regulatory space with BSEE in regard to lifting incidents. The data presented here include lifting incidents that are reportable to BSEE. There may be lifting incidents resulting from offshore operations, such as those related to vessel-to-vessel transfer of personnel, which may also be reported to other federal agencies (e.g., USCG). BSEE requires that all lifting incidents (defined as those involving crane or personnel/material handling operations) be reported immediately, per 30 CFR 250.188(a)(8). A follow-up written report is required within 15 days.

Over the course of fiscal years 2007 through 2016, an average of approximately 173 lifting incidents were reported to BSEE per year, with an annual range of 110 (in 2011) to 243 (in 2009). The FY 2016 total of 155 lifting incidents is very close to the 10-year average, but is the lowest since FY 2012 and is reflective of a slight decline over the prior two years (Figure 3.14). When the number of such incidents is calculated on a normalized per installation basis, a slight increase from FY 2015 to FY 2016 emerges (Figure 3.15). For FY 2016, the calculated rate was approximately one lifting incident per 14 installations. BSEE considers this to be an area where much improvement is both needed and possible, and it will continue to be a focus of our regulatory efforts.

Gas Releases

The management of hazardous gases is a critical component of safety and environmental compliance during offshore drilling, production and processing. These gases range from those that are potentially dangerous if mishandled (e.g., nitrogen gas) to those that are acutely toxic. In the latter category, hydrogen sulfide (H₂S) gas requires particular scrutiny during facility design, construction, and operation.

BSEE regulations require identification of gas hazards prior to initiating operations, appropriate design and institutional controls on gas management during operations, and rapid reporting of most gas releases. There are two basic levels of reporting gas releases:

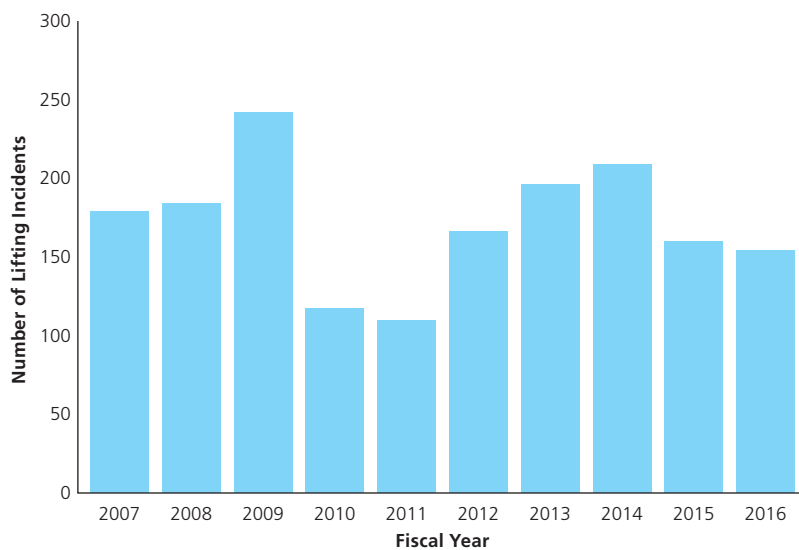


Figure 3.14 Frequent and routine lifting operations for personnel and material are required for offshore oil and gas installations. Over the course of fiscal years 2007 through 2016, an average of approximately 173 lifting incidents was reported to BSEE per year. Overall, lifting incidents have been variable over time, but were lower in FY 2015 and 2016 than the three preceding years.

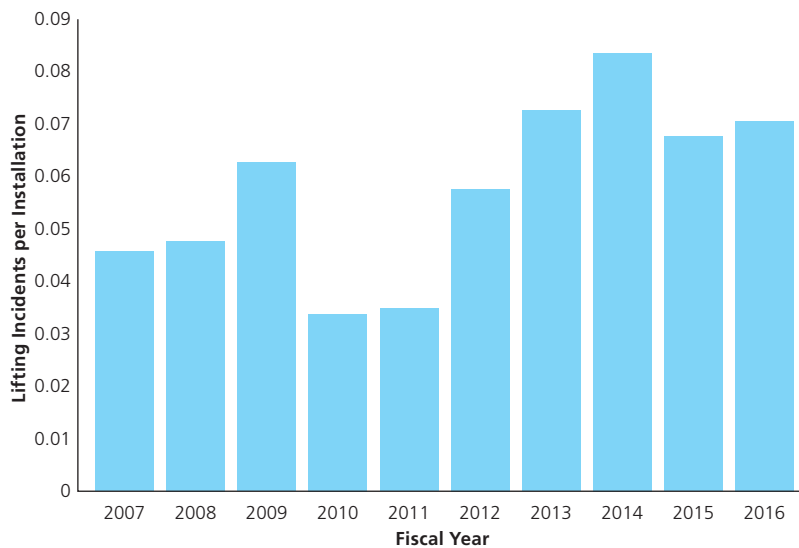


Figure 3.15 When lifting incidents are normalized on a per installation basis, the trends look similar to the trend seen for overall data. For FY 2016, the calculated rate was one lifting incident per 14.1 installations.

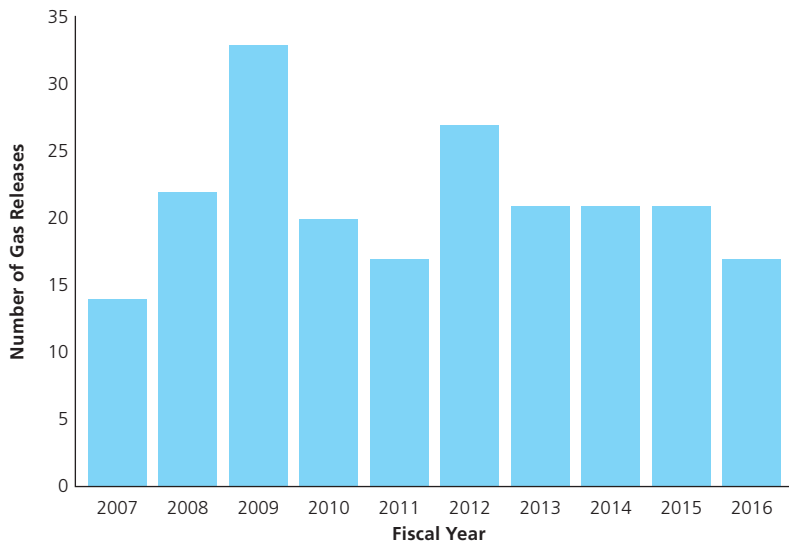


Figure 3.16 Offshore drilling and production require the careful management of hazardous gases. The graph shows that H₂S and other gas releases in recent years have remained relatively constant.

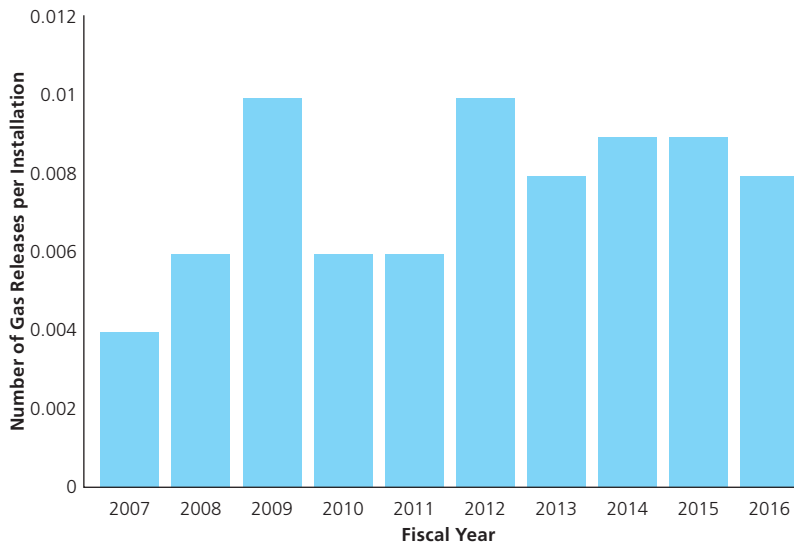


Figure 3.17 Releases of H₂S and other gases on the OCS per installation per year from FY 2007 to 2016 have been relatively constant over the past five years.

- All reportable releases of H₂S gas must be immediately reported to BSEE and followed up by a written report within 15 calendar days per 30 CFR 250.188(a)(5). “Reportable releases” are defined in 30 CFR 250.490(l) as those events that result in a 15-minute time-weighted average atmospheric concentration of 20 parts per million H₂S or more anywhere on the OCS facility.
- All gas releases (regardless of type) that initiate shutdown of equipment or processes must be reported to BSEE via written report within 15 calendar days of occurrence, per 30 CFR 250.188(b)(2).

Figures 3.16 and 3.17 illustrate the trend in OCS gas releases over the last 10 years, both by aggregate occurrences per year (Figure 3.16) and on a per-installation normalized basis (Figure 3.17). In both data presentations, all gas releases reportable under either of the two above categories are aggregated. The data suggest that the number of gas releases in recent years has remained relatively constant. Fortunately reportable gas releases on the OCS continue to be infrequent events, generally occurring on less than 1% of offshore installations per year. Despite their rarity, these incidents can rapidly become deadly when they do occur.

Gas sensors and other safety devices provide a good measure of protection to offshore workers. One key to changing the flat trend into a downward trend in reported gas releases will be vigilance in the areas of equipment testing and maintenance, proper work planning and permitting, effective oversight by industry of their own personnel, and thorough regulatory oversight by BSEE.

Muster for Evacuation

Musters of personnel for evacuation of an offshore facility may occur in a variety of circumstances. They are usually precipitated by some potential hazard to the facility and/or the personnel, such as

gas releases, fires, explosions, losses of well control, or severe collisions. BSEE tracks musters as independent incidents, even though they may be prompted by another type of incident. As such, musters may provide a very general correlation to the rate of other types of incidents – effective risk management and incident reduction across other categories would lead to a reduced number of musters. In this way, musters are a lagging indicator.

All incidents requiring operations personnel to muster for evacuation – for reasons not related to weather or drills – must be reported to BSEE within 15 days of occurrence, per 30 CFR 250.188(b)(3). The average number of musters for evacuation per year is just over 48 on the OCS, based on the last 10 years of data. FY 2016 data show 50 such reported events, making last year approximately average, but with significantly fewer musters than reported in FY 2015 (Figure 3.18). Both the total annual number of musters for evacuation (Figure 3.18), and the musters for evacuation per installation (Figure 3.19) have remained variable in recent years. In FY2016, the calculated rate of musters was approximately one for every 44 offshore installations.

Conclusion

The U.S. Outer Continental Shelf comprises 1.76 billion acres of seafloor that may still hold technically recoverable undiscovered fields containing as much as 90 billion barrels of oil and 327 trillion cubic feet of natural gas. When combined with currently producing and in-development wells, this vast supply of natural resources represents a significant component of our national wealth. Extracting these resources requires the talents of a highly specialized workforce and equipment that is often state-of-the-art. Complicating these efforts are the remoteness of offshore platforms and uncertainties of both weather and subsea operations. Layered throughout these factors are the consequences of missteps that can result in oil spills, gas releases, injuries, and even fatalities.

As BSEE's FY 2016 Annual Report demonstrates, the consequences described herein are not abstract: spills, gas releases, injuries, and fatalities are a current reality of offshore energy extraction. This report argues that the frequency of such incidents can be reduced if the industry is willing to make further commitments to both safety culture and environmental stewardship. Such commitments must run from the lease holders, through their contractors, and be embedded in every decision. Only then can it truly be claimed that safety and environmental protection are top priorities.

BSEE's regulatory role is focused on achieving the safest outcomes for workers while mandating proper environmental protection. We see safety and environmental protection as connected; offshore operators who are environmentally responsible also tend to be those who promote a strong safety culture as an essential part of their day-to-day business. BSEE believes that working with companies to maintain and improve their safety and environmental performance is as important as our role of holding them accountable. As this report demonstrates, the OCS remains a difficult work environment, but further safety and environmental improvements can be made. We remain committed to achieving progress by living up to the goals laid out in our mission statement, which compel us "to promote safety, protect the environment, and conserve resources offshore through vigorous regulatory oversight and enforcement."

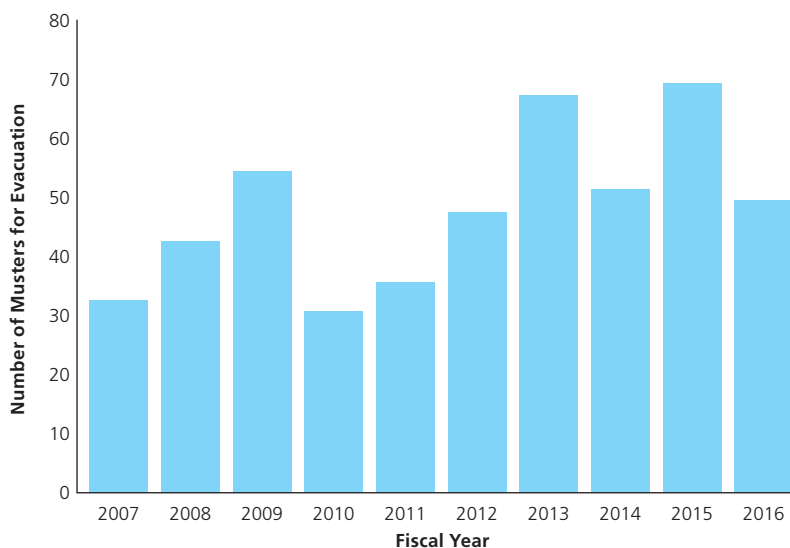


Figure 3.18 Musters of personnel for evacuation of an offshore facility may occur in a variety of circumstances, usually precipitated by some potential hazard on the facility. The total annual number of musters for evacuation shows annual variability during recent years, with a marked decrease from FY 2015 to FY 2016.

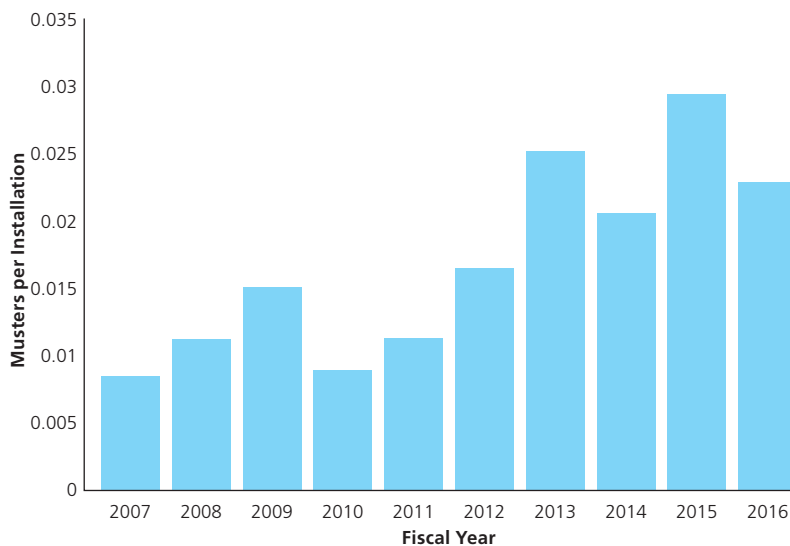


Figure 3.19 In FY 2016, the calculated rate of musters was approximately one for every 44 offshore installations. The per installation number of musters for evacuation shows annual variability during recent years, with a decrease in FY 2016 from the 10-year high in FY 2015. Currently, there are not sufficient data to determine if there is a particular reason for the variability by year in musters for evacuation.



Inspectors from BSEE's New Orleans District Well Operations Unit observe the company's tool pusher as he conducts a successful test of the facility's accumulator.



The size of loads lifted by offshore cranes can be substantial. The crew members seen in the upper left portion of this photograph provide a sense of scale. BSEE has been working with offshore operators to reduce the number of lifting incidents, which have ranged from 110 to 243 per year over the past decade.

Glossary of Abbreviations

| | | | |
|------------------|---|---------|--|
| AORF | Arctic Offshore Regulators Forum | ICEX | U.S. Navy's Arctic Ice Exercise |
| API | American Petroleum Institute | INC | Incident of Noncompliance |
| ASEA | National Agency for Industrial Safety and Environmental Protection in the Hydrocarbons Sector (Mexico) | IOPER | International Offshore Petroleum Environmental Regulators |
| BAST | Best Available and Safest Technology, a BSEE program that assesses the performance of current equipment and advocates state-of-the-art technology for critical operations | IRF | International Regulator's Forum |
| BIWF | Block Island Wind Farm | IWG | Interagency Working Group on Coordination of Domestic Energy Development and Permitting in Alaska |
| BOEM | Bureau of Ocean Energy Management | MODU | Mobile Offshore Drilling Unit |
| BOP | Blowout Preventer | NASA | National Aeronautics and Space Administration |
| BSEE | Bureau of Safety and Environmental Enforcement | NEB | Canada's National Energy Board |
| BTS | U.S. Bureau of Transportation Statistics | NEPA | National Environmental Policy Act |
| CIPSEA | Confidential Information Protection and Statistical Efficiency Act | NOAA | National Oceanic and Atmospheric Administration |
| CNH | National Hydrocarbons Commission (Mexico) | NTL | Notice to Lessees and Operators |
| C-NLOPB | Canada-Newfoundland and Labrador Offshore Petroleum Board | OCIA | Office of Congressional and International Affairs, a BSEE department that coordinates with Congress and international entities |
| CNSOPB | Canada-Nova Scotia Offshore Petroleum Board | OCS | Outer Continental Shelf, all submerged lands owned by the U.S., but excluding nearshore submerged lands that fall under the jurisdiction of adjacent states |
| COS | Center for Offshore Safety | OCSLA | Outer Continental Shelf Lands Act |
| DOE | U.S. Department of Energy | OEM | Original Equipment Manufacturers |
| DOI | U.S. Department of the Interior | OESI | Offshore Energy Safety Institute, a neutral, independent forum for dialogue, shared learning, and cooperative research among academia, government, industry, and other stakeholders. |
| DOT | U.S. Department of Transportation | OSPD | BSEE's Oil Spill Preparedness Division |
| ECD | BSEE's Environmental Compliance Division | OSRP | Oil Spill Response Plan |
| EPA | U.S. Environmental Protection Administration | OSRR | Oil spill response research, a BSEE program that addresses detection, containment, treatment and/or cleanup of offshore oil spills |
| EPPR | The Arctic Council's Emergency Preparedness, Prevention and Response Working Group | PAS | Post-Activity Submittal |
| ETAC | Engineering Technology Assessment Center, a BSEE center that assesses novel and emerging offshore technologies that may reduce risks on the OCS | PHMSA | Pipeline and Hazardous Materials Safety Administration (DOT) |
| GIUE | Government Initiated Unannounced Exercise | PRA | Probabilistic Risk Analysis |
| GOM | Gulf of Mexico | ROV | Remote Operated Vehicle |
| GOMR | BSEE's Gulf of Mexico Region | SafeOCS | A voluntary and confidential BSEE initiative that collects and analyzes near-miss and equipment failure data |
| H ₂ S | Hydrogen Sulfide, a federally regulated gas that is highly flammable and explosive (exposure to this gas can cause effects that range from minor irritation to, in extreme cases, fatality) | SEMS | Safety and Environmental Management System. This BSEE program employs a performance-based approach to managing risk |
| HPHT | High-Pressure/High-Temperature, pertains to wells with such characteristics | TRL | Technology readiness levels |
| ICCOPR | Interagency Coordinating Committee on Oil Pollution Research, a congressionally-mandated forum for research collaboration on oil spill prevention, preparedness, and response activities | USCG | U.S. Coast Guard |



BSEE In Brief

A Quick Summary of Select Activities from Fiscal Year 2016

- ♦ Implemented a tiered approach to incident investigations and finalized the National Investigations Handbook.
- ♦ Partnered with Argonne National Laboratory to conduct an environmental risk assessment to identify offshore operations with the highest potential risk to the environment.
- ♦ Completed the Environmental Stewardship Collaboration Core Group report which proposed 10 recommendations to promote environmental stewardship through BSEE's broad suite of integrated prevention, compliance, research, educational and preparedness activities.
- ♦ Conducted 24 government initiated unannounced exercises and 84 field verifications of oil spill preparedness equipment.
- ♦ Performed 21,998 inspections across all three BSEE regions.
- ♦ Increased the number of joint inspections performed in collaboration with the U.S. Coast Guard.
- ♦ Issued six BSEE Safety Alerts addressing: connector and bolt failures, a subsea flowline failure and delayed detection that resulted in a pollution incident, aviation near misses related to helideck obstructions, catastrophic incidents related to the ejection of traveling slips, an automatic pipe handling system that dropped drill pipe, and an incident involving chemical injection point corrosion that caused a production head failure.
- ♦ Initiated the Leadership Development Program for BSEE employees.
- ♦ Chaired the International Regulators' Forum.
- ♦ Deployed the Storm Evacuation and Damage Assessment Tracking (SEADAT) tool which determines the impact to OCS oil and gas production caused by tropical storms/hurricanes and displays that information in a map-based format.
- ♦ Conducted a series of workshops with BSEE's regulatory counterpart in Mexico, ASEA, on unitization, deep water operations, oil spill preparedness and response, and other topics.
- ♦ Established Interagency Bolt Action Team, initiated a study related to bolt failures, and held a public forum on critical offshore connector equipment failures – all as part of an ongoing effort to identify the causes and solutions related to offshore connector failures.
- ♦ Implemented eInspections in the Pacific Region.
- ♦ Conducted a facility risk-based inspection (RBI) as part of its ongoing RBI pilot program and 50 performance-based inspections focused on preventing compressor fires.
- ♦ Finalized the Arctic Drilling Rule, Decommissioning Costs Rule, Production Safety Systems Rule, and Well Control Rule.
- ♦ Completed a Programmatic Environmental Assessment of well stimulation treatments in the Pacific Region.



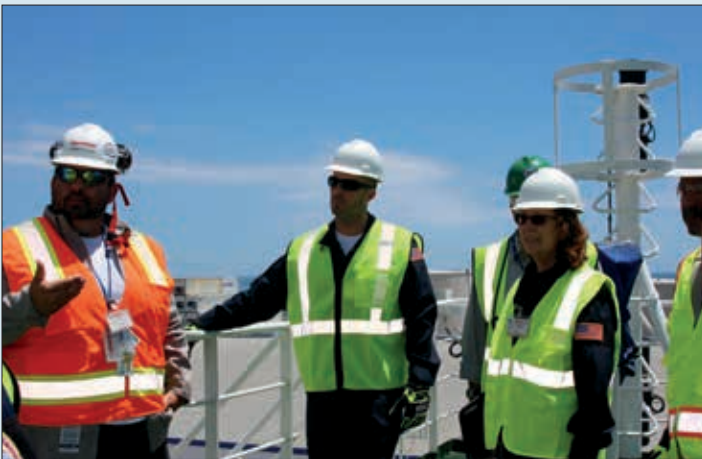
- ♦ Released the 2016 Update of Occurrence Rates for Offshore Oil Spills report, which look at long-term trends in oil spill rates.
- ♦ Established BSEE's Data Stewardship Program.
- ♦ Released new oil spill calculators that identify optimum system arrangements for three oil spill clean-up approaches.
- ♦ Implemented a risk-based meter inspection program in the Pacific Region.
- ♦ Continued to staff the Engineering Technology Assessment Center, which provides BSEE with consulting expertise, value-added solutions, and the comprehensive review of new, unused, innovative and unusual technologies.
- ♦ Honored the First Annual BSEE Science and Technology Challenge winners at the Offshore Technology Conference.



The safety of offshore workers, protection of the environment, and conservation of natural resources triangulate the mission of the Bureau of Safety and Environmental Enforcement (BSEE). This annual report, for fiscal year 2016, will 1) provide you with an overview of the bureau, 2) detail our regulatory approach and activities, 3) deliver critical data and appropriate analyses concerning Outer Continental Shelf (OCS) safety performance, and 4) catalog the environmental incidents that took place within BSEE's jurisdiction.



Here you will find a document that allows you to pause and reflect on what went wrong and what went well during a year that saw the U.S. OCS produce more than 580 million barrels of oil and over 1,250,000,000 Mcf of natural gas. This annual report explores safety trends whenever possible, discussing some factors that seem to be improving and other trends that reveal the need for improvement. BSEE's commitment to safe and responsible development of the natural resources of the OCS is evident in this report. From October 1, 2015 through September 30, 2016 our bureau conducted more than 21,000 component inspections and reviewed 335 Oil Spill Response Plans.



Included in this report, for both the public and industry, are:

- An overview of BSEE;
- A clear outline of the responsibilities of BSEE's various components;
- A description of the ways BSEE regulates to ensure safety and environmental compliance;
- An outline of BSEE's role in making sure that energy extraction is maximized while waste is minimized during production;
- Overviews of BSEE's outreach activities;
- Numerous OCS oil and gas industry safety results; and
- Summarized statistics on oil spills and gas releases.



U.S. Department of the Interior
Bureau of Safety and Environmental Enforcement