STATEMENT OF BRIAN SALERNO
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UNITED STATES DEPARTMENT OF THE INTERIOR
BEFORE THE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

December 1, 2015

Chairman Murkowski, Ranking Member Cantwell, and members of the Committee, thank you for the opportunity to appear here today to discuss the Bureau of Safety and Environmental Enforcement's (BSEE) proposed Well Control Rule and other regulations related to offshore oil and gas production.

The proposed Well Control Rule is an outgrowth of an unprecedented amount of analysis and critical thought that followed the Macondo blowout and resulting consequences of the *Deepwater Horizon* tragedy. Many words have been spoken and written about avoiding another *Deepwater Horizon* incident and learning lessons that can help us prevent such tragedies. Perhaps this use of shorthand loses sight of the horrific details of April 20, 2010. On that night, the crew of the *Deepwater Horizon* was finishing work after drilling the Macondo exploratory well. The crew had one step to complete before it could move off of the well – temporary abandonment of the well. At just before 10:00PM, an undetected influx of hydrocarbons escalated into a blowout. When the well blew out, a mixture of hydrocarbons, mud, and water rained down on the workers on the rig floor. Very quickly, hydrocarbons that had flowed onto the rig floor ignited in two separate fiery explosions. Hydrocarbons continued to flow from the well and fueled the fire that continued to burn until the rig sank on April 22. Eleven men died and 16 were injured in the explosion and fire on the *Deepwater Horizon* that evening. Over the next 87 days, millions of barrels of oil flowed from the out-of-control Macondo well into the Gulf of Mexico.

Following the Macondo blowout, numerous investigations were conducted, including a

joint investigation by the Department of the Interior and the Department of Homeland Security[1], an investigation by the National Academy of Engineering[2], a report by the Council on Environmental Qualityreport by the Council on Environmental Quality[3], and an investigation by a National Commission[4] formed by the President. These investigations and reports made clear that the loss of life on April 20, 2010 and the subsequent pollution of the Gulf of Mexico were the result of poor risk management, last minute changes to the operational plan, failure to observe and respond to critical indicators, inadequate well control response, and insufficient training by companies of individuals responsible for drilling the Macondo well. In particular, BP and Transocean failed in myriad ways to protect the lives of those onboard and to prevent the environmental catastrophe that ultimately occurred. The tragic events of April 20, 2010 showed the dire consequences that can result when companies fail to implement a culture of safety that assesses and mitigates risk. The tragedy that has become synonymous with the *Deepwater Horizon* was preventable.

The various investigations and reports that took place after the *Deepwater Horizon* tragedy resulted in recommendations regarding blowout preventers, well design, cementing, well integrity testing, kick detection and response, real-time monitoring of well operations, and other areas. The Well Control Rule synthesizes and incorporates a variety of these recommendations in an effort to reduce risks across all phases of drilling operations. This rule will be a critical component of BSEE's efforts, writ large, to drive down risks associated with offshore operations.

The need for the Well Control Rule is demonstrated by the fact that loss of well control

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[1] The Bureau of Ocean Energy Management, Regulation and Enforcement, U.S. Department of the Interior, *Report Regarding the Causes of the April 20, 2010 Macondo Well Blowout* (Sep. 2011), http://www.bsee.gov/uploadedFiles/BSEE/BSEE_Newsroom/Publications_Library/OCS_Archives/DeepwaterHorizon/BOEMRE%20Final%20DWH%20Sept2011.pdf; United States Coast Guard, U.S. Department of Homeland Security, *Report of Investigation into the Circumstances Surrounding the Explosion, Fire, Sinking, and Loss of Eleven Crew Members Aboard the Mobile Offshore Drilling Unit Deepwater Horizon in the Gulf of Mexico – April 20, 2010* (Sep. 2011), http://www.bsee.gov/uploadedFiles/BSEE/BSEE_Newsroom/Publications_Library/OCS_Archives/DeepwaterHorizon/2_DeepwaterHorizon_ROI_USCG_Volume%20I_20110707_redacted_final.pdf.

[2] National Academy of Engineering and National Research Council (NAE/NRC), *Macondo Well-Deepwater Horizon Blowout* (Dec. 2011), http://www.nae.edu/Publications/Reports/53926.aspx.

[3] Council on Environmental Quality, *Report Regarding the Mineral Management Service's National Environmental Policy Act Policies, Practices, and Procedures as They Relate to Outer Continental Shelf Oil and Gas Exploration and Development* (Aug 2010), https://ceq.doe.gov/current_developments/docs/CEQ_Report_Reviewing_MMS_OCS_NEPA_Implementation.pdf.

[4] National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling, *Deep Water: The Gulf Oil Disaster and the Future of Offshore Drilling* (Jan. 2011), http://www.gpo.gov/fdsys/pkg/GPO-OILCOMMISSION/pdf/GPO-OILCOMMISSION.pdf.

(LWC) incidents are happening at the same rate five years after the Macondo blowout as they were before. In 2013 and 2014, there were eight and seven LWC incidents per year, respectively – a rate on par with pre-Macondo losses of well control.[5] These represent LWC in all water depths. Some of these LWC incidents have resulted in blowouts, such as the 2013 Walter Oil and Gas incident in which a loss of well control resulted in a blowout that caused a massive explosion and fire on the rig. All 44 workers were safely evacuated, but the fire lasted over 72 hours and the rig was completely destroyed, resulting in a financial loss approaching $60 million. It was determined that this incident occurred due to the crew's inability to identify critical well control indicators and the failure of critical well control equipment. The Incident Report published about the Walter blowout identified numerous points throughout the drilling operation where things could have been much worse.[6] Blowouts like these can easily lead to much larger incidents that pose a significant risk to human life and can cause serious damage to the environment. It is abundantly clear that despite post-Macondo improvements in safety and technological advancements, there are still issues that must be addressed in order to see an appreciable decrease in dangerous loss of well control incidents. The proposed Well Control Rule represents a concerted effort to address these issues and reduce risk offshore.

The Well Control Rule is an important pillar of BSEE's ongoing efforts to promote safe and environmentally responsible operations. This rule, which is in the process of being revised to address comments and suggestions made in response to the publication of the proposed version, includes safety enhancements in well design, cementing, blowout preventer maintenance and operations, real-time monitoring, and a number of other provisions. The Rule seeks to mitigate or eliminate different types of risks associated with drilling activities in several ways. First, the rule implements many of the recommendations related to well-control equipment and fill gaps in the regulatory program. It calls for increases in the performance and reliability of well-control equipment, with particular focus on blowout preventers. It improves regulatory oversight of the design, fabrication, maintenance, inspection, and reporting requirements for critical equipment. It also seeks to gain information on leading and lagging indicators of BOP

[5] *See* Attachment 1. *Also available at* http://www.bsee.gov/uploadedFiles/BSEE/BSEE_Newsroom/Publications_Library/Annual_Report/BSEE%202014%20Annual%20Report.pdf.

[6] *See* Bureau of Safety and Environmental Enforcement, U.S. Department of the Interior, *Investigation of Loss of Well Control and Fire South Timbalier Area Block 220, Well No. A-3 OCS-G24980 – 23 July 2013* (July 2015), http://www.bsee.gov/uploadedFiles/BSEE/Enforcement/Accidents_and_Incidents/Panel_Investigation_Reports/ST%20220%20Panel%20Report9_8_2015.pdf.

component failures and identify trends in those failures and help prevent accidents. Finally, the rule ensures that industry uses recognized engineering practices as well as innovative technology and techniques to increase overall safety.

BSEE began drafting the Well Control Rule following the release of numerous investigative reports on the *Deepwater Horizon* disaster that made specific suggestions on modifications to existing rules. BSEE considered all of more than 400 recommendations, conducted workshops with industry participants, and engaged all stakeholders about how its regulations could be modified to address the risks that were exposed on April 20, 2010, when 11 lives were lost and millions of barrels of oil were spilled into the Gulf of Mexico. The Well Control Rule is the culmination of a significant amount of analysis and input by many acclaimed engineers, scientists, investigators, management systems specialists, and experts from a variety of other disciplines. From the very beginning of the rulemaking process, industry and other stakeholders have been directly and substantially involved and engaged – through workshops, listening sessions, information exchanges, and formal and informal communications. Prior to releasing the proposed rule, BSEE conducted over 50 meetings with various companies, trade associations, regulators, and other stakeholders. After issuing the proposed rule in April 2015, BSEE extended the original 60-day comment period by an additional 30 days to provide industry and other interested stakeholders ample opportunity to review the proposed rule and submit comments. In that time, BSEE received over 5,000 pages of technical comments from over 170 commenters.

The Bureau is now in the process of reviewing these comments and will revise the regulations accordingly where doing so will improve the quality of the rule. While I cannot discuss those specific changes at this time because the process has not been completed, I can assure you that the Bureau has heard industry's and other stakeholders' comments loud and clear. We have heard the concerns about drilling margins, blowout preventer inspections, accumulator capacity, and real-time monitoring. We have heard the concerns about the use of prescriptive language and about the potential, unintended consequences of the rule. The Bureau must now go through the process of reviewing the technical input received and determine how the text can be revised to best serve the interests of safety, environmental protection, and resource conservation. Any changes made will be the result of the Bureau's careful consideration of comments and suggestions made by the entities that will be affected by the Rule. This is

precisely how Congress intended the rulemaking process to work when it enacted the Administrative Procedure Act. Any suggestion that industry was blind-sided by this Rule or was somehow cut out of the process is plainly false. I share your frustration that I cannot discuss the substance of our deliberations about the rule, and although I cannot yet share how we are revising the text of the rule, I would be happy to explain any changes we have made once the final rule is published.

In addition to the Well Control Rule, the Bureau is in the process of finalizing several other proposed rules: the Arctic Rule, the Production Safety Systems Rule, and the Crane Safety Rule.

The Arctic Rule revises and adds requirements for exploratory drilling operations on the Arctic Outer Continental Shelf (Beaufort Sea and Chukchi Sea Planning Areas) where the extreme environmental conditions, geographic remoteness, lack of fixed infrastructure, and sensitive marine environment require heightened safety requirements and measures that are specifically tailored to the operational and environmental challenges of the Arctic OCS. The Arctic Rule went through very much the same process of technical development and stakeholder engagement as the Well Control Rule. In developing the Arctic Rule, the Bureau conducted an extensive campaign of public meetings and other outreach activities and reviewed more than 100,000 formal comments. Such a process is absolutely essential when developing highly technical rules that affect a broad range of stakeholders like the Arctic Rule and the Well Control Rule. Indeed, the highly complex and impactful rules through which our Bureau executes our mission depends on the types of outreach in which we have engaged throughout the development of both of our latest rules.

The Bureau is also engaged in two other major rulemakings. The Production Safety Systems Rule amends and updates BSEE regulations pertaining to safety and pollution prevention systems and will bolster human safety, environmental protection, and regulatory oversight of critical equipment involved in the production of hydrocarbons. Finally, the Crane Safety Rule proposes to incorporate the latest industry standard for the design and operation of cranes mounted on offshore platforms with the goal of reducing the risk of lifting incidents – a much needed improvement in our regulations as lifting incidents involving cranes have increased

in recent years.[7] Each of these rulemakings, in addition to the Well Control Rule, plays a critical role in advancing offshore safety and reducing the risk of fatalities, injuries, oil spills, and other offshore incidents.

Since its formation in 2011, the Bureau of Safety and Environmental Enforcement (BSEE) has focused on ensuring that companies operate offshore in a safe and environmentally responsible manner. The Well Control Rule represents a substantial step forward in line with our agency's mission to improve safety and reduce risk offshore. The Rule is the result of a confluence of investigations, studies, technology assessments, stakeholder consultations, and other activities and, once finalized and put into effect, we believe will represent the greatest improvement in offshore safety in almost three decades. It also serves as a testament to the 11 lives lost as a result of the *Deepwater Horizon* tragedy.

Our work as regulators – on behalf of the American people – is never finished and we must strive to keep pace with the risks of offshore drilling and production while promoting the development of a positive culture of safety amongst offshore operators. Our commitment and duty to the public is to remain vigilant in instituting the reforms necessary to achieve this goal. We believe that the Well Control Rule is one of several necessary reforms that we are undertaking that will create a safer environment offshore. We will continue to work cooperatively with the regulated community to promote best practices and to support a robust culture of safety within the offshore oil and gas industry, which produces these resources that are so valuable and essential to our economy.

This concludes my formal statement, and I am happy to answer any questions you have at this time.

[7] *See* Attachment 1 at 43. *Also available at* http://www.bsee.gov/uploadedFiles/BSEE/BSEE_Newsroom/Publications_Library/Annual_Report/BSEE%202014%20Annual%20Report.pdf.

BSEE

Bureau of Safety and Environmental Enforcement

ANNUAL REPORT

2014

BSEE
Bureau of Safety and
Environmental Enforcement

Letter from the Director

I am very pleased to present the Bureau of Safety and Environmental Enforcement (BSEE) 2014 Annual Report, the first such report produced by the bureau since its formation in 2011. This report highlights BSEE's activities in promoting safety, protection of the environment, and conservation of offshore resources. It also provides a useful summary of safety performance and environmental compliance trends on the Outer Continental Shelf (OCS), as well as BSEE's priorities going forward. Our intention is that this will be the first of many periodically produced reports focused on OCS performance.

As will be evident as you read through the report, BSEE is focused on the reduction of risk offshore. We pursue this objective through a comprehensive program of regulations, technical assessments, inspections, and incident investigations. In addition, we place great emphasis on the establishment of a safety culture throughout industry, the cornerstone of this effort being the Safety and Environmental Management System, or SEMS. SEMS is performance based, and forms a necessary counterpart to our more traditional regulatory oversight activities. We believe this hybrid approach is the most realistic way to take safety to the next level.

Part of managing risk is monitoring the trends we are seeing offshore, and gauging the effectiveness of our approach. This not only provides a valuable perspective on risks, it helps direct our future efforts. Moreover, information of this nature needs to be shared among all stakeholders, so that we have a common appreciation for the progress that has been made as well as the challenges ahead. It is in this spirit that we developed this report.

In the coming year, you can expect to see further development of many concepts presented in this report, and which BSEE has advanced during 2014. Concepts such as: risk-based inspections, near-miss reporting, a strengthened ability to assess emerging technology, and continued investment in environmental response capability. We will continue to refine the SEMS program. All of these initiatives support a culture of safety and the management of risk, and all will add to our ability to assess trends and share information.

A necessary pre-condition for continual improvement is having the necessary talent within our organization. Therefore we will maintain a long-term strategic focus on our workforce, and strive to attract the best talent our Nation has to offer. We will engage with youth, college and university students, returning veterans, and industry professionals in this effort. This will serve not only the internal interests of our Bureau, but more importantly the needs of the public and the industry, both of whom demand a highly knowledgeable and adaptable regulator. We would welcome interest from academia, industry and non-governmental organizations in this regard.

It was an exciting year at BSEE in 2014, and 2015 and beyond promise to be equally so. Please review this report and feel free to give us your feedback on how we can improve it to better suit your interests. We value our engagement with you!

Sincerely,

Brian Salerno

Director

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Overview of BSEE

Mission

The Bureau of Safety and Environmental Enforcement (BSEE) promotes safety, protects the environment, and conserves energy resources offshore through vigorous regulatory oversight and enforcement.

BSEE, a bureau within the U.S. Department of the Interior (DOI), is the United States' regulator of offshore energy exploration, production, and development. BSEE's jurisdiction and regulatory responsibilities are defined by the Outer Continental Shelf Lands Act (OCSLA), which outlines federal responsibility over the submerged lands of the Outer Continental Shelf. BSEE ensures compliance with provisions of other federal laws, including the National Environmental Policy Act, the Clean Air Act, the Clean Water Act, the Federal Oil and Gas Royalty Management Act, and Oil Pollution Act of 1990.

BSEE uses the full range of authorities, policies, and tools to compel safety, emergency preparedness, environmental responsibility, and appropriate development of offshore oil and natural gas resources. Key functions include:

- An offshore regulatory program that develops standards and regulations, and emphasizes a culture of safety in all offshore activities;
- Oil spill prevention and preparedness including evaluation of industry oil spill response plans to ensure compliance with regulatory requirements;
- Funding scientific research to enhance the information and technology needed to build and sustain the organizational, technical, and intellectual capacity within and across BSEE's key functions that keeps pace with industry technological improvements, innovates regulation and enforcement, and reduces risk through systematic assessment and regulatory and enforcement actions in order to better carry out the BSEE mission;
- Investigations of serious incidents and allegations of unsafe and/or illegal conduct during offshore operations; and
- Enforcement of all applicable environmental and operational regulations, as well as ensuring that operators adhere to the stipulations of their approved leases, plans, and permits.

BSEE Structure

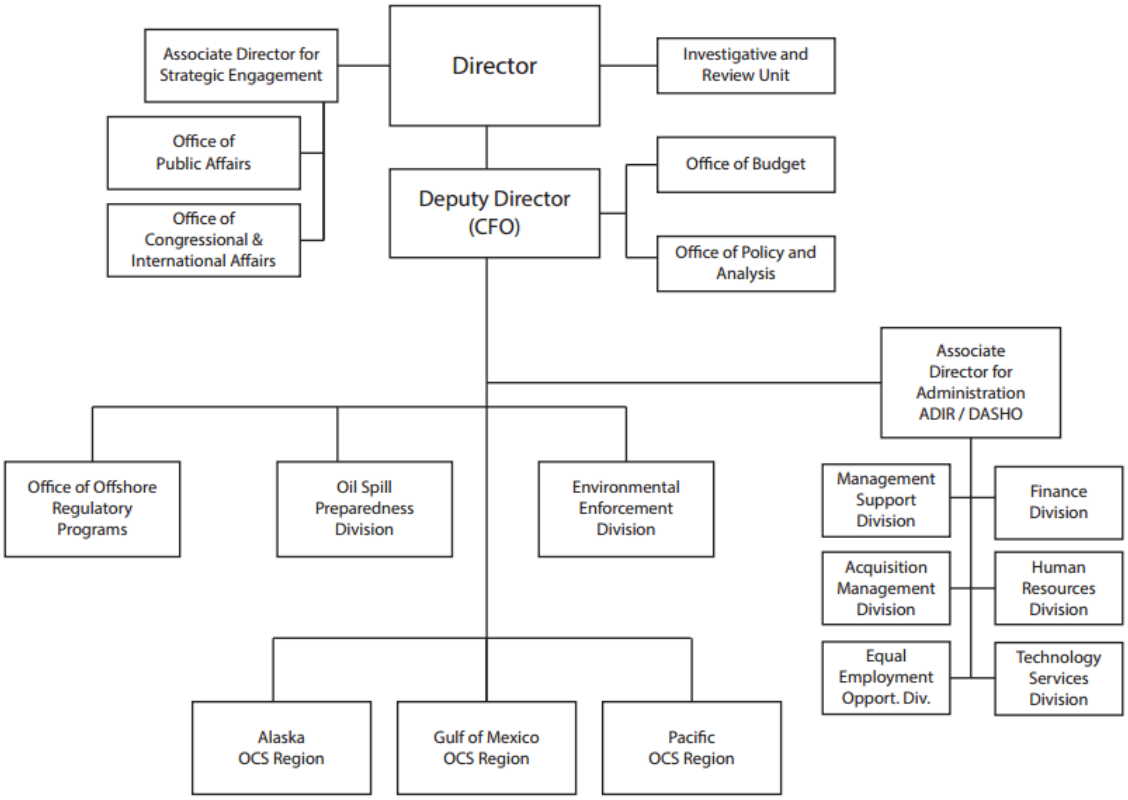

Figure 1: The organizational structure of BSEE as of December 2014.

BSEE's mission is supported by national offices and divisions located in the Washington, D.C., metro area and three regional offices located in Anchorage, Alaska; New Orleans, Louisiana; and Camarillo, California. The regional offices review and grant permits, perform inspections, issue citations, prepare and refer civil penalties, and investigate incidents. The three headquarters-based divisions—Office of Offshore Regulatory Programs, Oil Spill Preparedness Division, and Environmental Enforcement Division—work with the regional offices to ensure that BSEE's regulatory responsibilities are carried out effectively. The Office of Offshore Regulatory Programs develops standards and regulations to enhance operational safety and environmental protection for the exploration, production, and development of oil and natural gas on the OCS. The Oil Spill Preparedness Division develops and enforces requirements for offshore operators' Oil Spill Response Plans, conducts research, and oversees the oil spill response exercise programs. The Environmental Enforcement Division provides sustained regulatory oversight to ensure compliance with all applicable environmental regulations, as well as lease, plan, and permit terms.

Contributing to America's Energy Needs

The resources and activity under BSEE's jurisdiction are vast. Five hundred and twenty-eight million barrels of oil and 1.3 trillion cubic feet of natural gas were produced on the OCS from January to December 2014 (Table 1). This offshore oil and gas production accounted for 16 percent of America's domestic oil production and 5 percent of gas production[1]. Table 2 illustrates the diverse types of activities that occur in each of the regions.

Table 1: Production by Region in 2014.

	Alaska Region	Gulf of Mexico Region	Pacific Region	Total OCS
Oil (barrels)	603,698	509,304,746	18,439,833	528,348,277
Gas (MCF[2])	30,744,323	1,273,521,681	28,191,781	1,332,457,785

Table 2: Offshore Activity and Infrastructure on the OCS by Region in 2014.

	Alaska	Gulf of Mexico	Pacific
Designated Operators	4	133	6
Platforms	1[3]	2,481	23
Total Wells Drilled	0	329	21
Weekly Average Number of Working Drilling Rigs	0	116	14
Miles of Pipelines	0	27,267	213

The Energy Information Administration projects offshore production will continue to grow through 2040, as the pace of development activity quickens and new large development projects, predominantly in the deepwater and ultra-deepwater areas of the Gulf of Mexico (GOM), are brought into production.

BSEE approved 317 drilling permits in 2014. Before a permit to drill can be granted, however, there are many direct and related approvals, including environmental compliance that must be in place. To that end, the well may not be drilled within the same calendar year. As a result of current and past approvals, operators drilled 330 wells in 2014.

"The resources and activity under BSEE's jurisdiction are vast. Five hundred and twenty-eight million barrels of oil and 1.3 trillion cubic feet of natural gas were produced on the OCS from January to December 2014."

[1] Data percentages were derived from total domestic oil and gas production numbers listed at www.EIA.gov.
[2] MCF = thousands of cubic feet.
[3] The Alaska Region has one producing project that consists of six producing wells on the Federal OCS from a gravel island located in Alaska State waters.

Focus Areas for BSEE in 2014

In 2014, the Bureau set organizational priorities based on focus areas outlined by Director Salerno: risk management, safety and environmental compliance, organizational effectiveness, transparency, and people. These focus areas strategically prioritize the Bureau's actions, and are strengthened by BSEE's guiding principles of clarity, consistency, predictability, and accountability to the American public and the regulated community.

Risk Management

Risk management is critical for BSEE to achieve its mission. In 2014, BSEE made progress to reduce both internal risks to the organization and external risks that the Bureau influences through its operational activities. BSEE reduced internal risks by investing in its people, increasing transparency in its decision-making processes, and implementing lessons learned from previous offshore incidents. BSEE's ability to recognize, assess, manage, and drive mitigation of external operating risks throughout all offshore activities is critical for effective inspections and permit evaluation and processing. BSEE is able to more efficiently and effectively manage its internal resources and build its capacity to take a proactive position for ensuring safe and responsible offshore energy development by applying a risk management methodology and selectively shifting BSEE oversight from assessing compliance to assessing the effectiveness of operations, technologies, and procedures.

The Bureau has undertaken a number of projects to improve risk management and reduce risk. One project is to identify the multiple physical barrier system for all the major modes of offshore operations. This means identifying the successful approach required to fulfill each major mode; to date BSEE has done this for the comparison of conventional drilling and managed pressure drilling, and for production platforms for the flow path of hydrocarbons. Hand in hand with this effort is another project to identify safety critical equipment associated with offshore operations under BSEE's oversight responsibility.

In order to reduce risk, both industry and BSEE need information that can be used to compare outcomes and identify effective mitigation strategies. BSEE helped increase information available to identify and quantify risk across the offshore industry by partnering with the Bureau of Transportation Statistics (BTS) to develop the near-miss reporting system, Safe OCS. BTS is developing the reporting system and will act as a third-party repository of the reported data when operational. The system will provide anonymity to the reporting source and impose substantial legal penalties for anyone who breaks these protections. Safe OCS has enormous potential to increase understanding of potentially severe safety problems that are averted. The aggregate data provided by this system will be publically available on the BTS website, will assist with the identification of leading indicators for incidents, and will inform prevention and mitigation efforts.

Cutting-edge offshore technologies also create risks that must be quantified and understood in order to better protect lives and the environment. BSEE invested over $23 million[4] to ensure that emerging technologies are thoroughly evaluated through 35 research studies[5], strategic partnerships, and providing the start-up funds for the Ocean Energy Safety Institute[6] (OESI). The OESI is a collaborative

[4] During Fiscal Year 2014, extending from October 1, 2013 to September 30, 2014.
[5] Technology Assessment Programs at BSEE: http://www.bsee.gov/Technology-and-Research/Technology-Assessment-Programs/index/
[6] Ocean Energy Safety Institute at Texas A&M University: http://oesi.tamu.edu/

initiative involving government, academia, and scientific experts. It facilitates research and development, training federal workers on identification and verification of Best Available and Safest Technology (BAST), and implementation of operational improvements in the areas of offshore drilling safety and environmental protection, blowout containment, and oil spill response. From investing in employees and processes to building industry-wide tools, BSEE has actively worked to reduce both internal and external risks throughout 2014.

Safety and Environmental Compliance

BSEE continued to promote a robust safety culture and environmental stewardship across the offshore industry in 2014 through its various compliance and research tools.

The Safety and Environmental Management Systems (SEMS) program is an important element in these efforts, and forms the cornerstone of a hybrid regulatory approach that emphasizes performance in order to achieve risk reduction offshore. This year, BSEE analyzed the first round of SEMS audits concluded in 2013. BSEE found that system maturity and the level of SEMS awareness and understanding varied significantly among operators. BSEE will continue to work with industry stakeholders on meeting their SEMS requirements, to ensure that companies working offshore create a safety culture that enables operations over and above regulatory compliance. BSEE also will continue to train its own inspectors to look for evidence of a robust safety culture and to evaluate how well the workforce adheres to an operator's SEMS when they conduct their annual inspections.

BSEE continues to verify environmental compliance of permits in order to protect the marine environment. BSEE continued to engage our international regulatory counterparts to share lessons learned, enhance pollution prevention, and coordinate preparations for potential oil spill responses. By engaging U.S. neighbors and other key international partners, BSEE is reducing risks to the shared marine environment, and promoting safety and environmental stewardship that extends beyond international boundaries.

Ensuring that appropriate technologies exist to respond to an oil spill is critical for mitigating environmental risks. BSEE invested nearly $14 million in 30 new projects in Fiscal Year 2014[7] to develop and assess oil spill mitigation options.[8] Studies funded by BSEE evaluated the feasibility of response strategies in the Arctic, dispersant efficacy, and remote sensing options that may be used to track oil after a spill. The National Academy of Sciences vetted a BSEE-funded research study[9] that revised the method and variables that are evaluated in determining whether appropriate capabilities are available to respond to an offshore oil spill. BSEE began to implement these results as practical tools that could support future planning requirements. BSEE continued to manage Ohmsett[10], which is the premiere facility for testing, research, and training for oil spill responses. It is the only U.S. facility where full-scale oil spill response equipment can be used in a safe, controlled, and contained simulated marine condition. Using the Ohmsett facility, BSEE researchers conducted six weeks of critical training for oil

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[7] Fiscal Year 2014 extended from October 1, 2013, to September 30, 2014.

[8] Oil Spill Response Research at BSEE: http://www.bsee.gov/Technology-and-Research/Oil-Spill-Response-Research/index/

[9] A description of the research can be found at: http://www.bsee.gov/Technology-and-Research/Oil-Spill-Response-Research/Projects/Project-673/

[10] More information concerning Ohmsett can be found at: http://www.ohmsett.com/

spill response personnel and a large-scale independent testing of dispersant effectiveness under cold water conditions. Through its oil spill response research, BSEE is working to reduce the risk that potential spills could pose to the marine environment.

Organizational Effectiveness

Over the course of 2014, staff across BSEE contributed to planning strategic program realignments that will help BSEE reduce risk inherent to our internal processes and increase the Bureau's ability to mitigate external risk across the OCS. These realignments focus on a national program model for core functions such as technology, investigations, enforcement, environmental compliance, and data stewardship. This approach will increase coordination and consistency across BSEE regions, and help BSEE enhance safety and environmental stewardship across the OCS. Planning was completed in 2014, and the national program model will be implemented in 2015.

BSEE, recognizing the need to evolve with a dynamic industry, bolstered its technological capacity by establishing the Engineering Technology Assessment Center (ETAC) in Houston. The center, when fully staffed, will serve as a focal point for emerging technology evaluation and provide additional capability for BSEE to enhance its current technology assessment functions. The technology center will leverage BSEE's internal expertise with contract support, while providing a primary point of interaction with the Ocean Energy Safety Institute on technology projects. ETAC will work with industry to increase technologically-focused research and development that could lead to improved technologies that reduce risk across all operations offshore.

Ensuring Transparency

BSEE undertakes its mission on behalf of the American public. The Bureau is committed to ensuring that its decisions and actions are driven by data, and are transparent to the public we serve. As such, we must enhance our use of data and make that data readily available to the public, while protecting privacy, proprietary, and business confidential information. To meet these important objectives, BSEE has placed a significant focus on creating a Data Stewardship team, whose primary responsibility is to focus on improving the overall quality and use of our data. Additionally, we are working to ensure the availability of the necessary tools for effective data management and use of data. In 2014, BSEE completed a Business Intelligence pilot to prove the viability of such a tool in our current technology architecture. The pilot was highly successful in demonstrating how we could better use data, and the Bureau is now working to deploy the pilot across the Bureau.

BSEE is refining its definition of enforcement and clarifying the objectives of its enforcement function. It also is developing transparent policies for when and how to administer various enforcement tools, which may increase the impact of enforcement on risky industry behaviors. An effective compliance program requires clear and understandable standards, sufficient reporting and recordkeeping to measure compliance, an effective oversight program in the field, a range of enforcement tools graduated to risk, and incentives to move beyond baseline compliance to an effective safety and environmental protection management system.

To achieve greater accountability within the federal framework, the Bureau has undertaken a series of agreements with other federal partners over the past several years. BSEE and the U.S. Coast Guard recognize the importance of consistency for ensuring transparent regulation offshore. In 2014, the two agencies, who share regulatory jurisdiction on the OCS, signed a Memorandum of Agreement (MOA) in 2014.[11] The MOA clearly outlines the responsibilities of each agency for inspection and oversight of systems and sub-systems for fixed facilities on the OCS. This memorandum will ensure a comprehensive joint approach in the regulation of these facilities, and offer transparent and consistent expectations to all OCS stakeholders.

"BSEE undertakes its mission on behalf of the American public. The Bureau is committed to ensuring that its decisions and actions are driven by data, and are transparent to the public we serve."

[11] MOA between BSEE and the USCG: http://www.bsee.gov/uploadedFiles/BSEE/International_and_Interagency_Collaboration/Interagency/Agreements/MOA-2014-USCG-Fixed%20OCS%20Facilities.pdf

People

BSEE is taking steps to meet the consistent challenge of recruiting and retaining top talent. BSEE offers comprehensive technical training, and provides advancement opportunities for employees to become leaders in their fields. In 2014, BSEE initiated a Bureau-wide program that fosters a more inclusive work environment and encourages employees to embrace the value of diversity. Additionally, BSEE continues to offer special higher salary rates for grades GS-5 through GS-15 for Petroleum Engineers, Geologists, and Geophysicists within the BSEE Gulf of Mexico Region to more effectively compete with industry for talent. Despite inherent challenges, BSEE was successful in 2014 recruitment efforts. The Bureau hired 88 personnel, a net gain of nine full time equivalent employees, of which 56 were from critical scientific, inspection, and engineering fields. BSEE continues to implement a nationwide targeted campaign to aggressively recruit from university and professional job fairs. BSEE participates in the Department of the Interior's Youth Initiative and has helped to bring "The offshore" to classrooms in 2014. Moving forward, BSEE will remain committed to hiring, retaining, and fostering the next generation of a highly skilled, qualified, and diverse workforce dedicated to accomplishing BSEE's mission.

The Bureau is committed to employee development, as well as retention of a highly technical workforce. BSEE staff leveraged in-house training and external training opportunities held by third parties, including academia, other federal agencies, and industry. We make our training classes available to other federal agencies and, in certain circumstances, other international regulators. In calendar year 2014, BSEE offered 105 training courses with 24,486 contact training hours conducted. One hundred forty five engineers attended an average of three classes each, while 124 inspectors attended an average of approximately four classes each. Additionally, 16 members of the United States Coast Guard (USCG) and three foreign nationals participated.

Report from the Regions

BSEE's three regional offices are: the Gulf of Mexico Region (New Orleans, Louisiana); the Alaska Region (Anchorage, Alaska); and The Pacific (Camarillo, California). Each BSEE region has a common mission and similar responsibilities; however, each Region is charged with oversight of oil and gas operations that present unique challenges and circumstances. The Gulf of Mexico Region has the most extensive exploratory and production activities on the OCS and, as such, involves oversight of a broad range of upstream oil and gas activities. The Pacific Region has not had any new exploration activities in years, yet it continues to have responsibility over a variety of different types of production facilities. In particular, The Pacific staff specialize in the maintenance of maturing assets and the conservation of reservoir resources. The Alaska Region is BSEE's youngest region, in terms of the stage of exploration and development activities occurring or proposed to occur. The oversight of these frontier operations is critically important as companies explore and plan to develop oil and gas resources in the Alaska OCS.

Gulf of Mexico

The majority of exploration, production, and development activities occur in the Gulf of Mexico Region. BSEE's Gulf of Mexico Region faces increasing levels of activity, with deeper wells at higher pressures and temperatures in both shallow and deepwater.

During 2014, activity in the Region remained robust, despite the turbulence in the oil and gas markets. There was an increase in deepwater floating drilling rig activity from 40 (19 drill ships and 21 semisubmersibles) in 2013 to 52 (33 drill ships and 19 semisubmersibles in 2014). In addition, six new drill ships are expected to start work in the Gulf of Mexico in 2015. The number of deepwater floating production facilities in the Region also increased with the installation of two production spars and two semisubmersible facilities. These new facilities (and associated pipeline infrastructure) have required increased inspection and oversight to ensure the protection of personnel and the environment. BSEE's Gulf of Mexico Region oversight responsibilities include a readiness to deploy teams of inspectors and investigators in response to offshore incidents. During 2014, Region personnel, along with personnel from BSEE's Investigations and Review Unit, investigated a number of offshore incidents, including a gas blowout and an explosion resulting in a fatality. Incidents resulting in environmental harm and injuries to personnel also were investigated. The Region reviews and assesses new technologies and the innovative use of existing technology when projects are still in the concept design phase. To do this, the Region coordinates with headquarter program managers to ensure that BSEE is positioned to effectively and efficiently assess the proposed use of new technologies and operations to identify any risks to offshore personnel and the environment. During 2014, the Region supported Bureau-wide initiatives to engage international regulators and market participants to share information on risks and common safety and environmental protection priorities. This included meetings with regulators from Denmark, Norway, and the United Kingdom, as well as international oil and gas operators and contractors on specific areas of mutual interest including risks associated with shallow water operations.

"BSEE's Gulf of Mexico Region faces increasing levels of activity, with deeper wells at higher pressures and temperatures in both shallow and deepwater."

BSEE's Gulf of Mexico Region also continued in 2014 its efforts to engage the next generation of offshore scientists, engineers, and investigators by participating in a number of STEM-related events. In late 2014, the Region hosted seniors from a local high school and taught them about BSEE's mission to ensure safe and responsible offshore operations.

Pacific

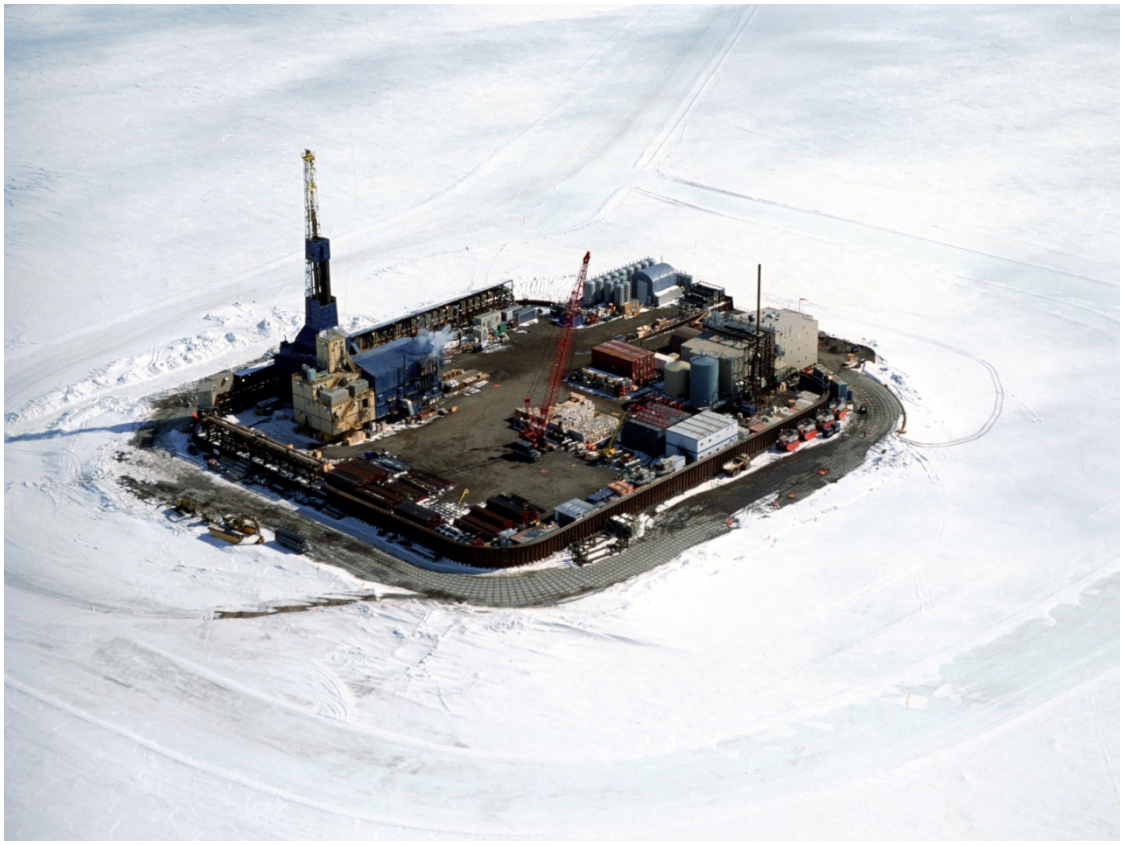
The BSEE Pacific Region has mature fields and aging infrastructure that are located in close proximity to sensitive marine environments and the coastline. As facilities age and primary production declines, BSEE's Pacific Region performs increased oversight and focuses on resource conservation. In 2014, the Pacific Region took steps to prepare for aging facility operations and eventual decommissioning. The Pacific Region enhanced its incident investigation program and implemented a preventative program that directly addresses the root causes of recurring incidents. The lessons learned from investigations in the Pacific Region were used to inform issuance of two safety alerts in 2014.[12] By initiating studies that augment the investigations process, and enhancing communications to both the public and industry, the Pacific Region worked to balance the concerns of the California community with the responsible development of offshore resources.

[12] Safety alerts for all regions can be found at http://www.bsee.gov/Regulations-and-Guidance/Safety-Alerts/Safety-Alerts/

Alaska

Alaska is a place of intrinsic natural resource value that also contains relatively unexplored Arctic energy potential. Although no drilling or exploration activities were pursued on the Alaska OCS in 2014, several companies have expressed a commitment to develop their leases in the years ahead. Exploratory drilling activities are expected to resume in the Chukchi Sea in 2015. The key challenges faced by BSEE's Alaska region include ensuring that region-specific guidance is in place to help protect the Arctic environment in the face of extreme climatic and logistical challenges. From seasonal ice coverage and floating ice to subsistence whale hunts, the challenges posed in the Arctic are unique. Since the Alaskan Native communities are closely connected to the Arctic environment culturally, socially, and economically, BSEE's Alaska Region hired a tribal and community liaison in 2014 to facilitate the harmonization of offshore exploration with the needs of Alaskan communities, should Alaska OCS resources be developed in the future.

With international operations advancing in Arctic areas due to changing Arctic conditions, BSEE developed important relationships with fellow Arctic offshore regulators. BSEE provided critical support to working groups organized under the Arctic Council, and co-headed the U.S. delegation to the Task Force on Oil Pollution Prevention throughout 2014. BSEE was instrumental in facilitating the initiation of an Arctic Offshore Regulators Forum (AORF). The AORF will be a technical and operational forum for offshore petroleum safety regulators to exchange information, best practices, and relevant experiences that are unique to the Arctic, in order to continually improve offshore safety and environmental protection. BSEE represents the U.S. as the inaugural chair for the AORF management committee and has worked to establish the organization's Terms of Reference and initial work sessions for that organization.



Regulatory Activity in 2014

Regulatory refinements and/or enforcements are a primary approach that BSEE uses to reduce risk to offshore workers and the environment. In 2014, BSEE continued to finalize the Production System Safety Rule[13] which refines the requirements of 30 CFR § 250 Subpart H. The Bureau released proposed rules for publication for Arctic Operations,[14] as well as a comprehensive well control rule that incorporates many technical recommendations made following the *Deepwater Horizon* tragedy. BSEE also published an Advanced Notice of Proposed Rulemaking[15] to solicit feedback from the public and regulated community on helicopter and aviation safety on fixed offshore structures, recognizing that the majority of offshore fatalities for offshore workers occurred during transportation incidents. In 2014, BSEE conducted over 4,800 facility inspections (facilities can include rigs, platforms, pipelines or on-shore meters) at approximately 2,500 facilities, and issued approximately 2,900 INCs. BSEE collected $5,695,498 million in 53 civil penalty cases. BSEE staff completed 95 formal incident investigations.[16] BSEE also began developing a risk-based inspection methodology to target areas of the greatest risk. A pilot project will begin in 2015 that will focus on past performance, Safety and Environmental Management Systems Compliance, and other conditions.

During 2014, BSEE used a variety of enforcement tools to respond to violations and to promote compliance. To avoid potential harm to personnel and the environment, BSEE issued 153 facility shut-in Incidents of Non-Compliance (INCs) and 1,146 component shut-in INCs.[17] In 2014, BSEE referred 58 violations for civil penalty assessment, with eight related to contractors. The number of referred civil penalty cases has been steadily increasing since 2012, with 38 referrals in 2012 and 56 cases referred in 2013. BSEE also met with 57 operators during 2014 to review annual performance and to recommend specific performance improvement measures. BSEE continued to oversee improvements by one operator through a performance-improvement-plan, which BSEE required after the operator was involved in repeated incidents during OCS operations.

BSEE is currently implementing measures that will ensure that it is prepared to utilize the full range of regulatory and administrative enforcement tools in the coming years. These efforts are aimed at continued improvement of the Bureau's ability to promote safe and environmentally responsible offshore operations.

"BSEE is currently implementing measures that will ensure that it is prepared to utilize the full range of regulatory and administrative enforcement tools in the coming years. These efforts are aimed at continued improvement of the Bureau's ability to promote safe and environmentally responsible offshore operations."

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[13] http://www.gpo.gov/fdsys/pkg/FR-2013-08-22/pdf/2013-19861.pdf

[14] http://www.bsee.gov/uploadedFiles/BSEE/Regulations_and_Guidance/Proposed_Rules/ArcticNPRMFRnotice.2.24.15.pdf

[15] http://www.regulations.gov/#!docketDetail;D=BSEE-2014-0001

[16] See http://www.bsee.gov/Inspection-and-Enforcement/Accidents-and-Incidents/Incident-Investigations/

[17] Component shut-in INCs are issued for a portion of the facility that is to be shut-in until corrective action is completed.

Table 3: Inspections performed by BSEE on the OCS by region from January 1, 2014, to December 31, 2014. Note that inspection types are not mutually exclusive, and several functions may be examined during the same inspection.

Type of Inspection	BSEE Total	Alaska	Gulf of Mexico	Pacific
Well Operations[18]	1,249	0	1,147	102
Production[19]	3,226	2	3,006	218
Pipelines[20]	4,241	0	4,189	52
Meters[21]	4,374	2	4,357	15
Environmental[22]	3,263	2	3,073	188
Other[23]	4,033	0	3,773	260
Total	20,386	6	19,545	835

[18] Well operations inspections include: drilling, workover, completion, and abandonment.
[19] Production inspections include production and flaring.
[20] Pipeline inspections involve the review of service and maintenance records and checking safety valves and devices.
[21] Meters inspections involve the review of calibration documents and the physical inspection of seals.
[22] Environmental inspections include: pollution, air quality, and oil spill exercise.
[23] Other includes USCG guidelines, hydrogen sulfide, site security, and compliance inspections.

Table 4: Oil spill preparedness verification and audits conducted in each region during calendar year 2014.

	Total OCS	Alaska Region	Gulf of Mexico Region	Pacific Region
Table Top GIUE[24]	9	0	7	2
Deployment GIUE	3	0	2	1
Spill Management Team Audits	55	2	46	7
Equipment Deployment Audits	24	0	22	2
Equipment Verification of Capabilities	41	0	39	2
Total	132	2	116	14

[24] GIUE is a Government Initiated Unannounced Exercise. BSEE has the authority to initiate GIUEs under 30 CFR § 254.42(g)

Table 5: INCs issued by region and category from January 1, 2014, to December 31, 2014. The data in the table does not include rescinded INCs.

INC Category	BSEE Total	Alaska	Gulf of Mexico	Pacific
Completion	16	0	16	0
Crane	64	0	54	10
Drilling	104	0	102	2
Electrical	160	0	105	55
General	933	0	869	64
Hydrogen Sulfide	5	0	4	1
Measurement & Site Security	488	0	488	0
Pipelines	62	0	60	2
Pollution	147	0	141	6
Production	762	0	678	84
Well Work-over/Abandonment	48	0	48	0
USCG-related	114	0	103	11
Total	2903	0	2668	235

Table 6: Top ten companies paying the most in civil penalties for violations on the OCS in 2014 are shown in the table below. Over $5 million was collected from 53 cases from January 1, 2014, to December 31, 2014. All revenues collected as part of the civil penalties program are collected and distributed by the U.S. Department of the Treasury.

Violating Company	Total Fines Paid	Number of Cases
GOM Shelf LLC	$1,230,000	1
Apache Corporation	$475,000	3
EnVen Energy Ventures, LLC	$438,000	1
Black Elk Energy Offshore Operations, LLC	$355,000	4
Mariner Energy Resources, Inc.	$295,000	1
Mariner Energy, Inc.	$280,000	1
SandRidge Energy	$250,000	1
Chevron U.S.A. Inc.	$220,000	3
Linder Oil Company	$175,000	2
Dynamic Offshore Resources, LLC	$170,000	2
Total OCS Civil Penalties	**$5,695,498**	**53**

Safety Performance on the OCS

Operators on the OCS are required to report incidents related to operations associated with permits, leases, and other activities regulated by BSEE (30 CFR § 250.187-190). Incidents that must be reported include fatalities, injuries requiring evacuation of the injured person, losses of well control, fires and explosions, incidents that result in structural damage, gas releases that initiate equipment or process shutdown, reportable[25] releases of hydrogen sulfide (H_2S) gas, collisions resulting in property or equipment damages greater than $25,000, incidents involving crane or personnel/material handling operations, incidents that damage or disable safety systems or equipment, spills of a barrel or more,[26] musters for evacuation for reasons not related to weather or drills, and all other incidents resulting in property or equipment damage greater than $25,000. (30 CFR § 250.188). BSEE investigates these incidents and uses the findings to identify incident causes and trends. This information helps BSEE identify appropriate actions to prevent the recurrence of incidents and enhance safety and environmental protection on the OCS. Incident data is reported below from calendar year 2007 to 2014, after the publication of the Incident Reporting Rule[27] that became effective July 17, 2006. The Incident Reporting Rule more clearly defines which incidents must be reported, broadens the scope to include incidents that have the potential to be serious, and requires the reporting of standard information for both oral and written reports. This has resulted in more consistent incident reporting and the collection of more reliable incident information.

"BSEE investigates these incidents and uses the findings to identify incident causes and trends. This information helps BSEE identify appropriate actions to prevent the recurrence of incidents and enhance safety and environmental protection on the OCS."

This safety information is reported here to provide a high-level overview of safety performance on the OCS, and identify trends and emerging safety and environmental performance concerns. By identifying areas for improvement, both BSEE and industry can move towards addressing emerging concerns and reduce risk on the OCS. In the data that is shown in the figures of this document, please note that the numbers for 2010 to 2011 were impacted due to a lack of drilling after the *Deepwater Horizon* tragedy occurred.

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[25] Reportable releases are defined in 30 CFR § 250.490(l).

[26] Reporting required by 30 CFR § 250.187 in accordance with 30 CFR § 254.46.

[27] 30 CFR § 250.187-190.

Table 7: Total number of incidents occurring on the OCS for years 2007 to 2014.

Incident	2007	2008	2009	2010	2011	2012	2013	2014
Fatalities[28]	5	11	4	12	3	4	3	1
Injuries	440	332	301	285	231	287	268	277
Loss of Well Control	7	8	6	4	3	4	8	7
Fires/Explosions	118	151	145	130	105	140	111	121
Collisions	21	22	29	8	14	10	23	12
Spills (> 50 bbls)	4	33	11	5	3	8	6	8
Lifting	161	201	222	101	109	179	197	206
Releases (Gas or H_2S)	18	28	25	19	20	19	22	29
Musters for evacuation	26	48	53	28	36	49	67	51
Total	800	834	796	592	524	700	705	712

[28] Fatalities resulting from OCS operations.

Fatalities

Both BSEE and industry strive for a fatality-free year, every year. As such, the Bureau requires that all fatalities must be reported by immediate oral report, per 30 CFR §250.188(a)(1). An average of five fatalities resulting from operations per year occurred on the OCS between 2007 and 2014. The *Deepwater Horizon* tragedy accounted for 11 of 12 fatalities in 2010, marking the highest number of fatalities for a given year. The lowest number of fatalities for any year was in 2014, when 1 fatality was reported (Figure 2). In the past three years, there has been an overall decrease in fatalities.

The events resulting in fatalities vary, from explosions and fires to electrocutions (Figure 3). Explosions and fires were associated with 44% of fatalities on the OCS from 2007 to 2014. The *Deepwater Horizon* tragedy in 2010 was the causal factor for 11 of the 12 fatalities that year. The second most prevalent incident associated with fatalities is lifting incidents, which accounted for 16% of all fatalities from 2007 to 2014.

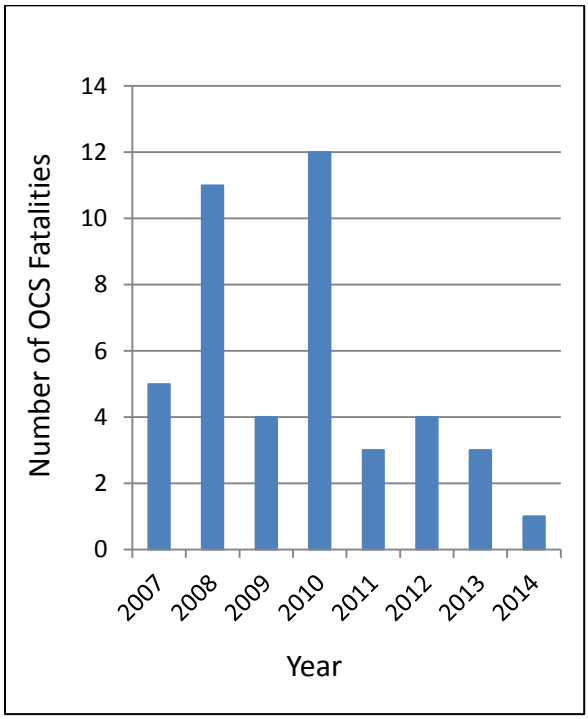


Figure 2: Number of OCS Fatalities per year.

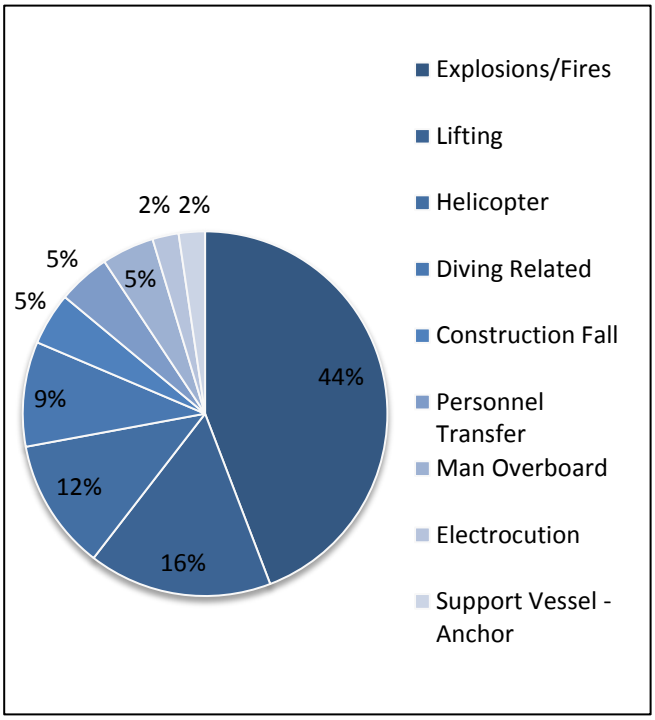


Figure 3: Causes of Fatalities for the time interval of 2007 – 2014.

Injuries

The Bureau requires the reporting of all injuries that require evacuation of the individual from the facility to shore or to another offshore facility. BSEE categorizes injuries as follows:

- Major – injuries that resulted in more than 3 days away from work, restricted duty, or transfer of the injured person to another job (DART)
- Minor – injuries that resulted in 1-3 days DART; or,
- Other – injuries that required evacuation to shore or to another offshore facility for medical treatment but did not result in any DART.

Between 2007 and 2014, an average of 303 injuries per year was reported on the OCS (Table 7). While injury incidents have generally decreased since 2007, there was a slight increase in injuries reported between 2013 and 2014 (Figure 4).

A similar decreasing trend in injuries was observed when injuries were normalized to the number of man-hours worked per year.[29] In 2014, 11 injuries were reported per 200,000 man-hours (Figure 5). Thirty-nine percent of injury incidents investigated by BSEE in 2013 and 2014 were caused by human engineering problems, which includes issues associated with the human-machine interface, poor working environments, system complexity, and non-fault tolerant systems. Thirty-two percent of injury incidents investigated in 2013 and 2014 were caused by problems in work direction, which is related to the planning, site preparation, selection of workers, and supervision for a specific job or task.
In recent years the number of "major" injuries has declined somewhat, while the number of "minor" and "other" injuries has increased slightly (Figure 6). Overall, injuries increased slightly from 2013 to 2014. Approximately 47% of injuries reported on the OCS between 2007 and 2014 resulted in DART for more than 3 days (Figure 7).

[29] From 1997-2012, the number of man-hours worked and other information was reported annually by operators to BSEE through voluntary participation in the OCS Performance Measures Program (http://www.bsee.gov/Regulations-and-Guidance/Safety-and-Environmental-Management-Systems---SEMS/OCS-Performance-Measures/). On October 15, 2010, the Safety and Environmental Management (SEMS) Rule made the reporting of this information a requirement (30 CFR §250.1929). For this report, the number of man-hours worked for CY 2013-2014 is the total man-hours worked reported by all OCS operators. For previous years, the total OCS man-hours worked was estimated, based on the percentage of operators who reported this information.

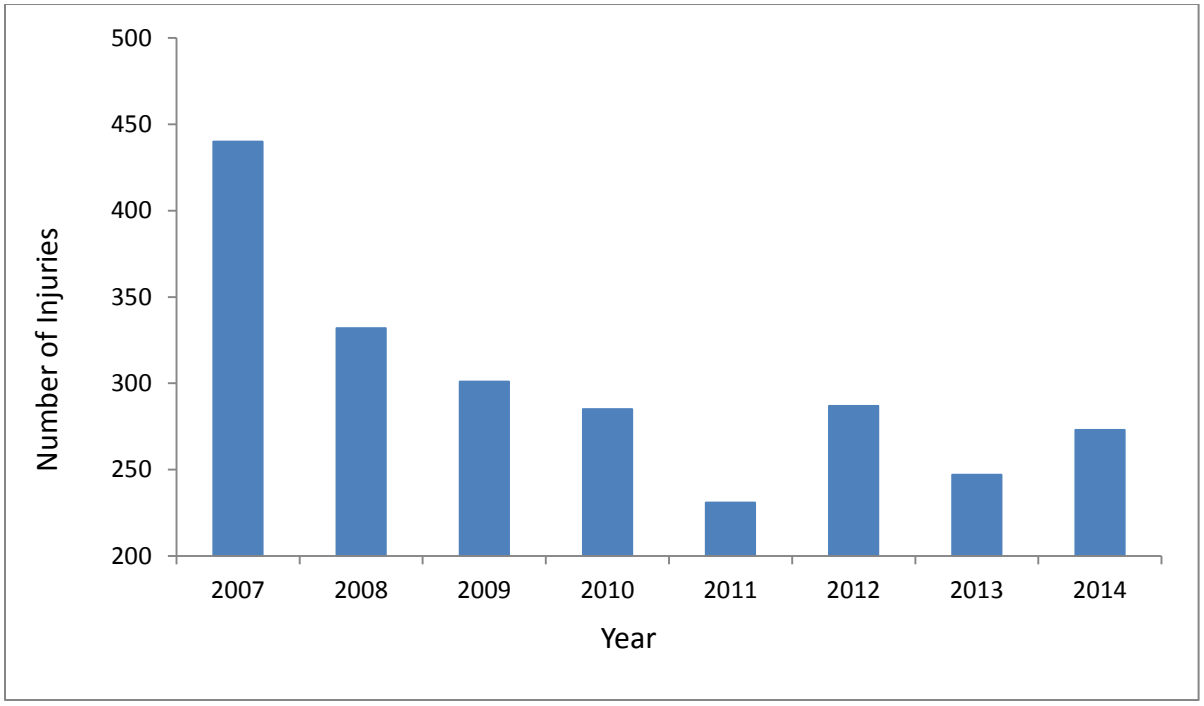


Figure 4: Number of injuries per year on the OCS for years 2007 to 2014.

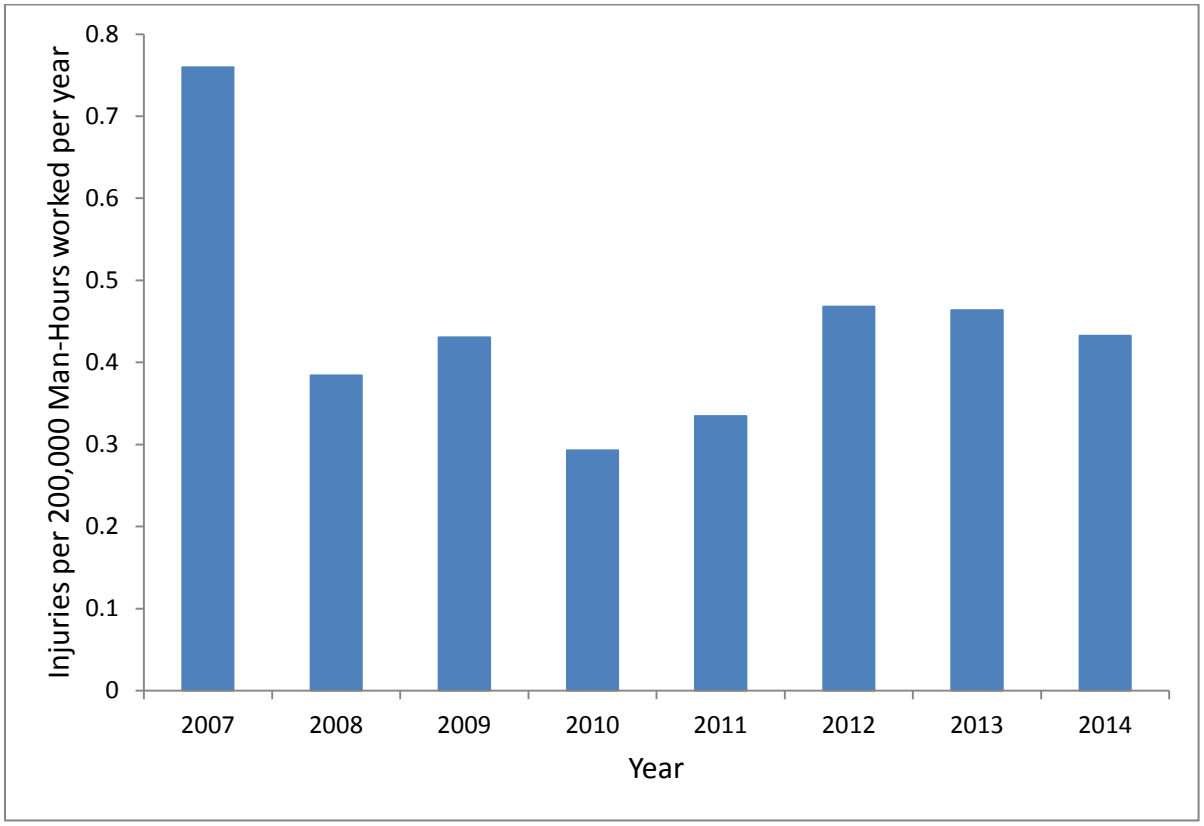


Figure 5: Injuries that occurred on the OCS normalized by man-hours for years 2007 to 2014.

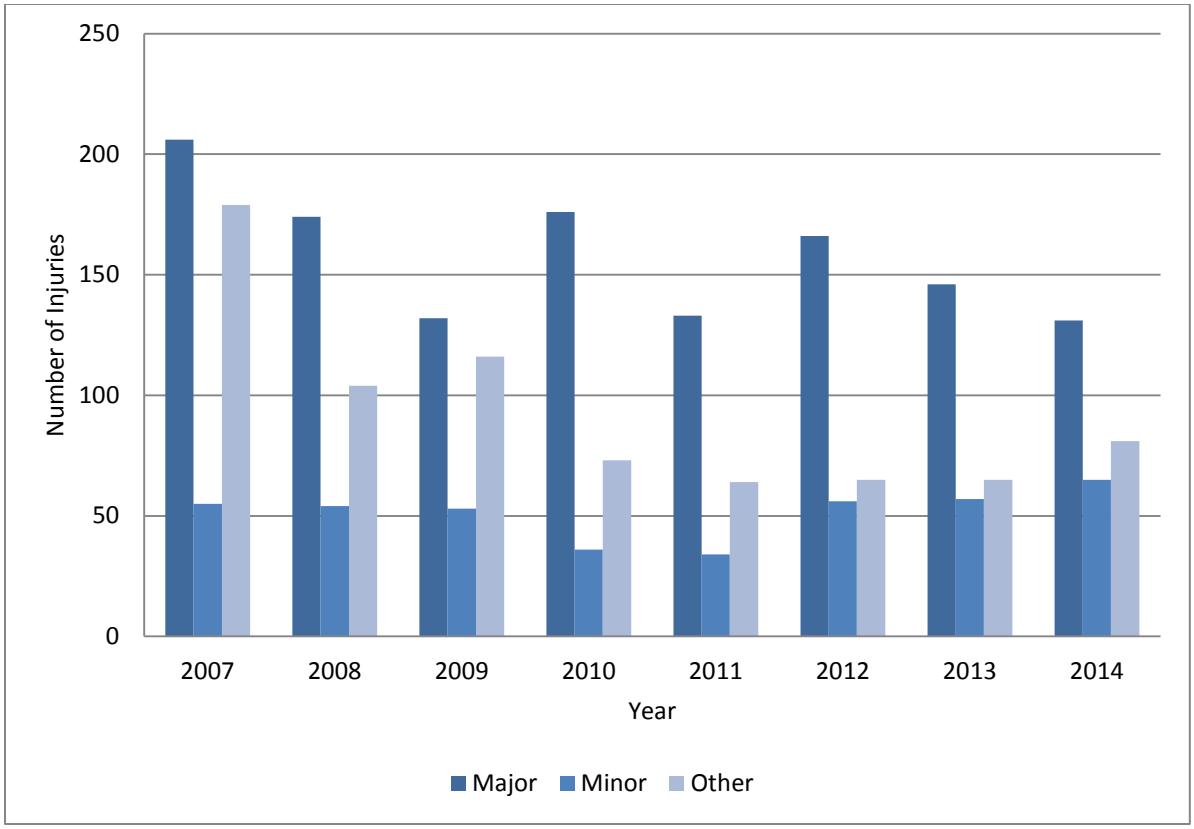


Figure 6: Injuries by category on the OCS for years 2007 to 2014.

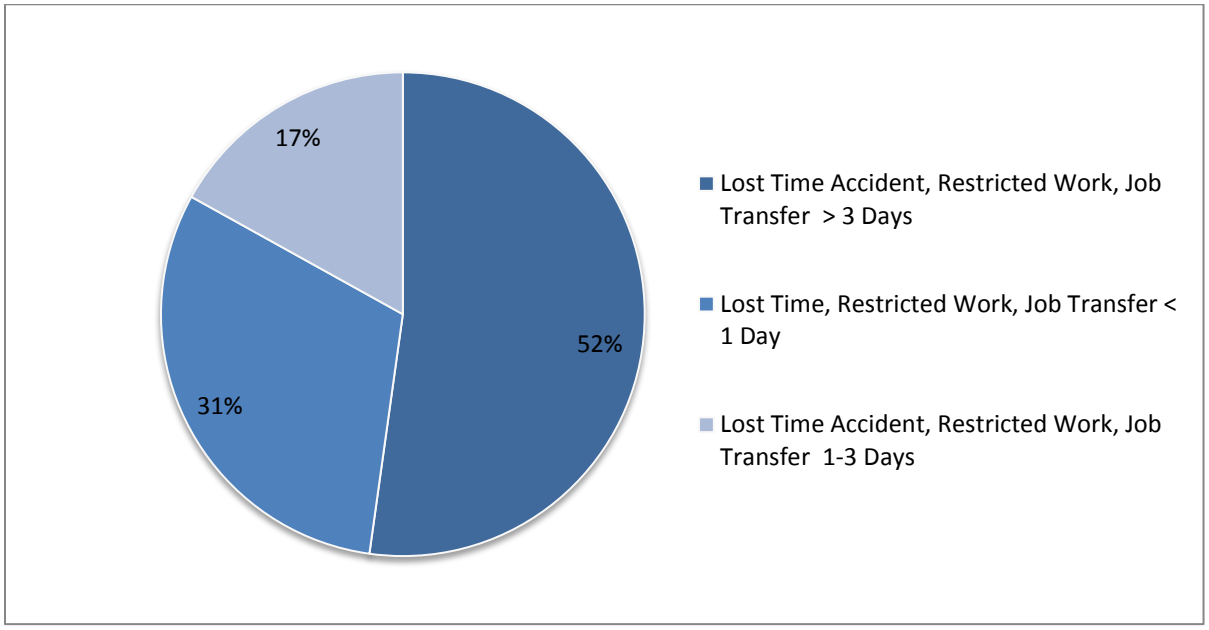


Figure 7: Injuries that occurred on the OCS for years 2007 to 2014. The color coding is based on the number of DART days; blue for major, yellow for minor, and orange for other.

Loss of Well Control

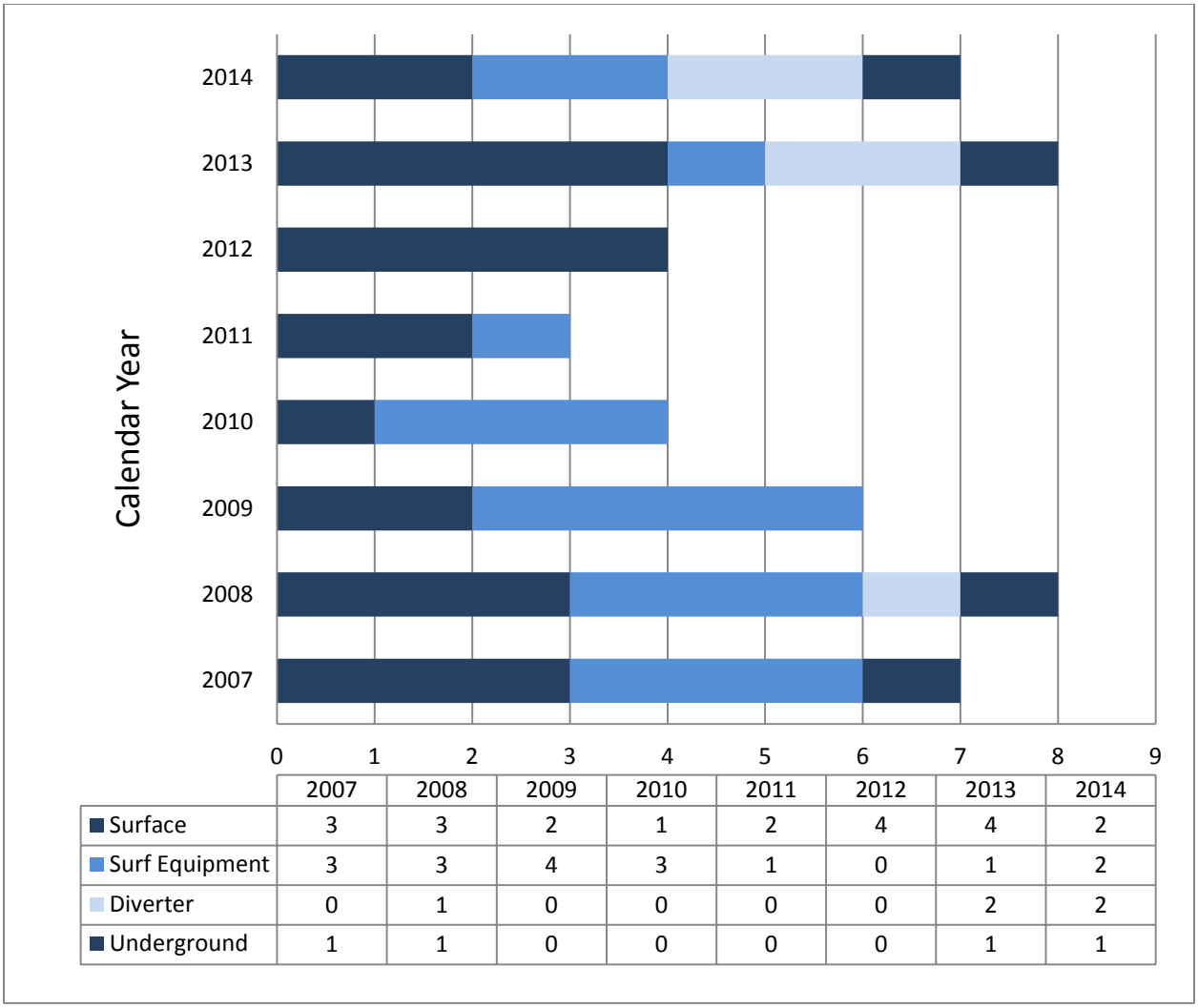
The Bureau requires that all loss of well control incidents (LWC) be reported immediately per 30 CFR §250.188(a)(3). Loss of well control incidents are categorized into the following types:

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

From 2007 to 2014, an average of six LWC incidents were reported on the OCS per year. The fewest LWC incidents were reported in 2011, and the most incidents were reported in 2008 and in 2013 when eight incidents were reported. The LWC incidents per well-related activity have increased since 2011. In 2014, the calculated rate was one LWC incident per 213 well-related activities. Six of the last seven investigations completed by BSEE for LWC incidents found that the root cause of the incidents was tied to equipment difficulties, in particular the design specifications of wells.

From 2007 to 2014, 45 percent of LWC incidents were associated with flow at the surface, 36 percent were associated with the failure of surface equipment, 11 percent were associated with flow through a diverter, and 8 percent were associated with flow underground (Figure 8). Losses of well control associated with flow at the surface most often occur during the drilling of a well or other well work operations (completion, workover, or abandonment), while losses of well control associated with underground flow and flow through a diverter occur during drilling operations. Loss of well control incidents associated with failures of surface equipment or procedures can occur during drilling, other well work, or production operations.

"From 2007 to 2014, an average of six LWC incidents were reported on the OCS per year."



	2007	2008	2009	2010	2011	2012	2013	2014
Surface	3	3	2	1	2	4	4	2
Surf Equipment	3	3	4	3	1	0	1	2
Diverter	0	1	0	0	0	0	2	2
Underground	1	1	0	0	0	0	1	1

Figure 8: Losses of well control (horizontal axis) on the OCS by type, displayed by year from 2007 to 2014.

Fires and Explosions

The Bureau requires that fires and explosions lasting longer than five minutes be reported by immediate oral report, per 30 CFR §250.188(a)(4). For fires lasting less than five minutes, the Bureau requires that reporting occur within 12 hours of incident. There are four general categories of fires and explosions:

- Incidental where less than $25,000 property or equipment damage occurs,
- Minor where $25,000 to $1,000,000 property or equipment damage occurs,
- Major where over $1,000,000 property or equipment damage occurs, or
- Catastrophic where over $10,000,000 property or equipment damage occurs with destruction of a facility.

Over the eight-year timeframe of this report, an average of 128 fires and explosions per year were reported on the OCS. The lowest number of fires and explosions, 105, was reported in 2011, and the highest number, 151, was reported in 2008 (Table 7, Figure 9). When normalized, fires and explosions per installation show an overall increasing trend (Figure 10) in the past two years. In 2014, the calculated rate was one fire or explosion per 22 installations.

In 2014, 97.5 percent of fires and explosions reported were incidental and 2.6 percent reported were minor. Throughout the analyzed 8-year period, 95.8 percent of all fire and explosion incidents were incidental, 3.7 percent were minor, 0.4 percent were major, and 0.1 percent were catastrophic (Figure 11).

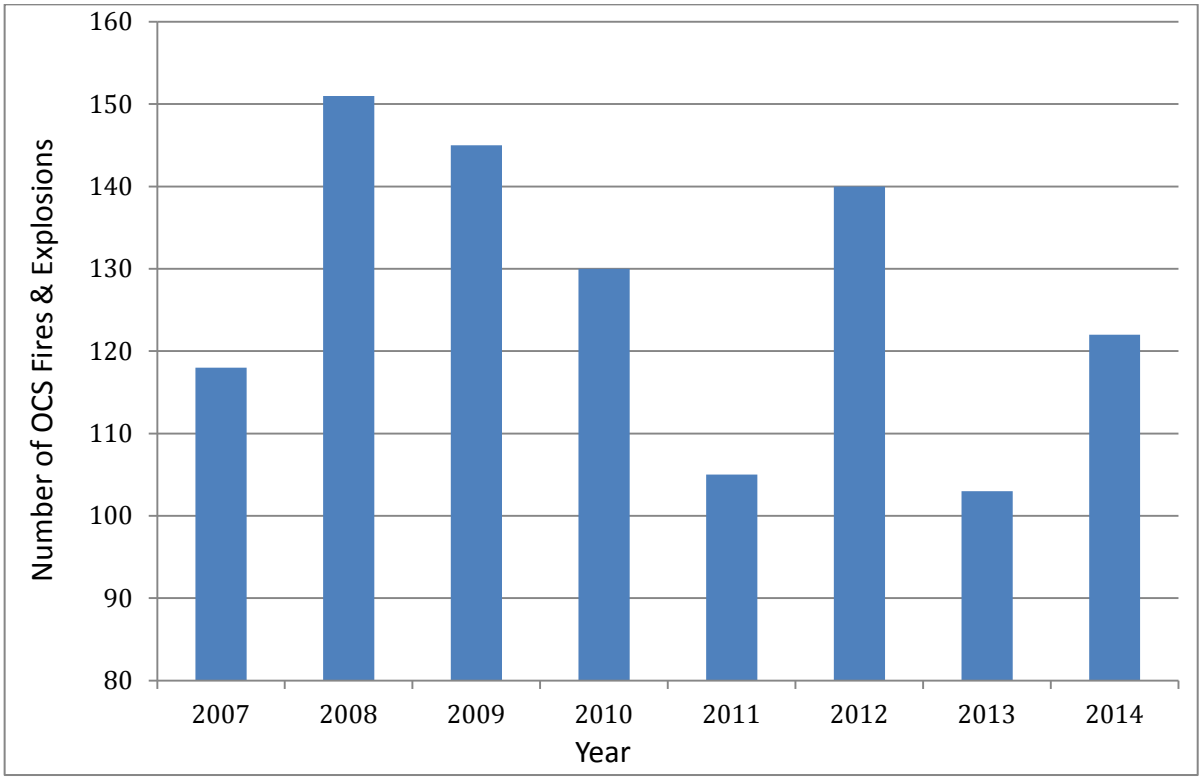


Figure 9. Fires and explosions that occurred on the OCS displayed by year for 2007 to 2014.

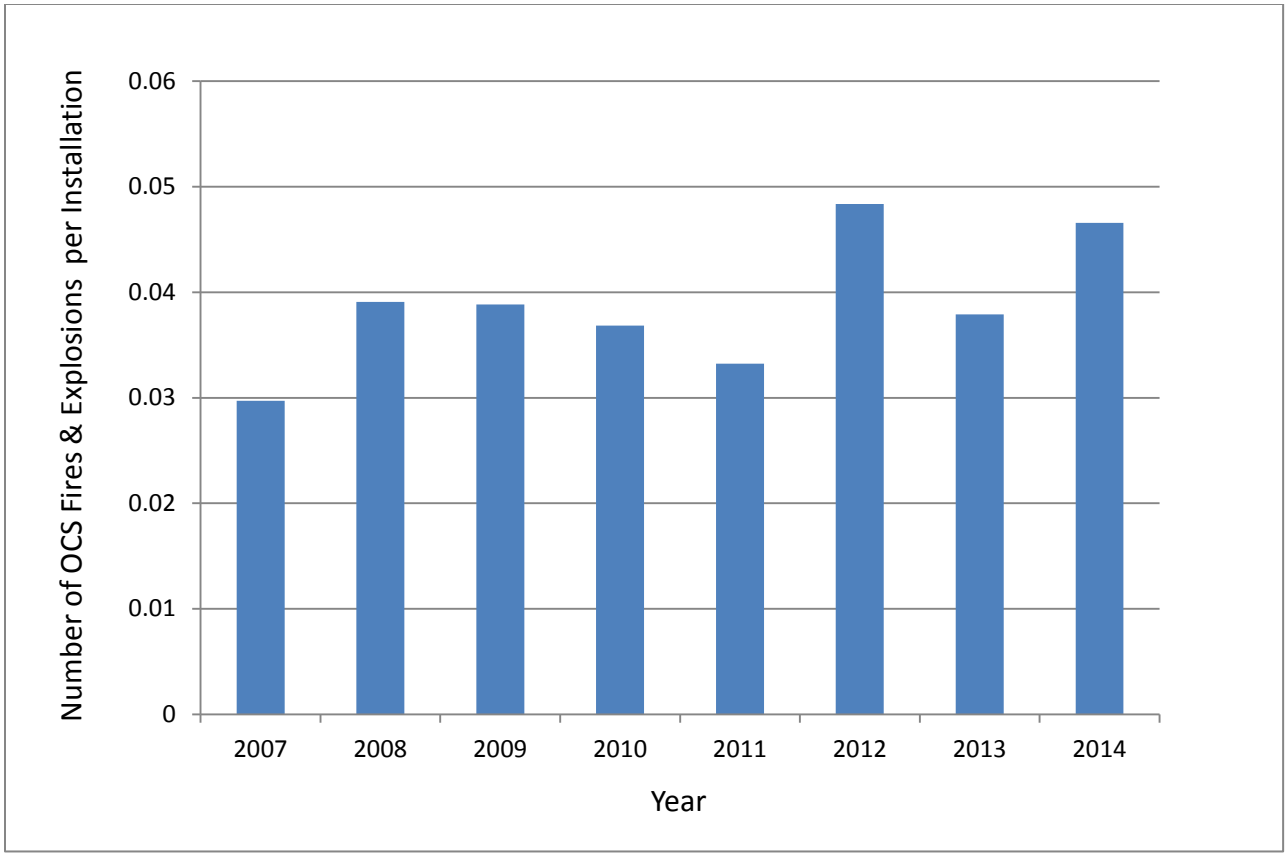
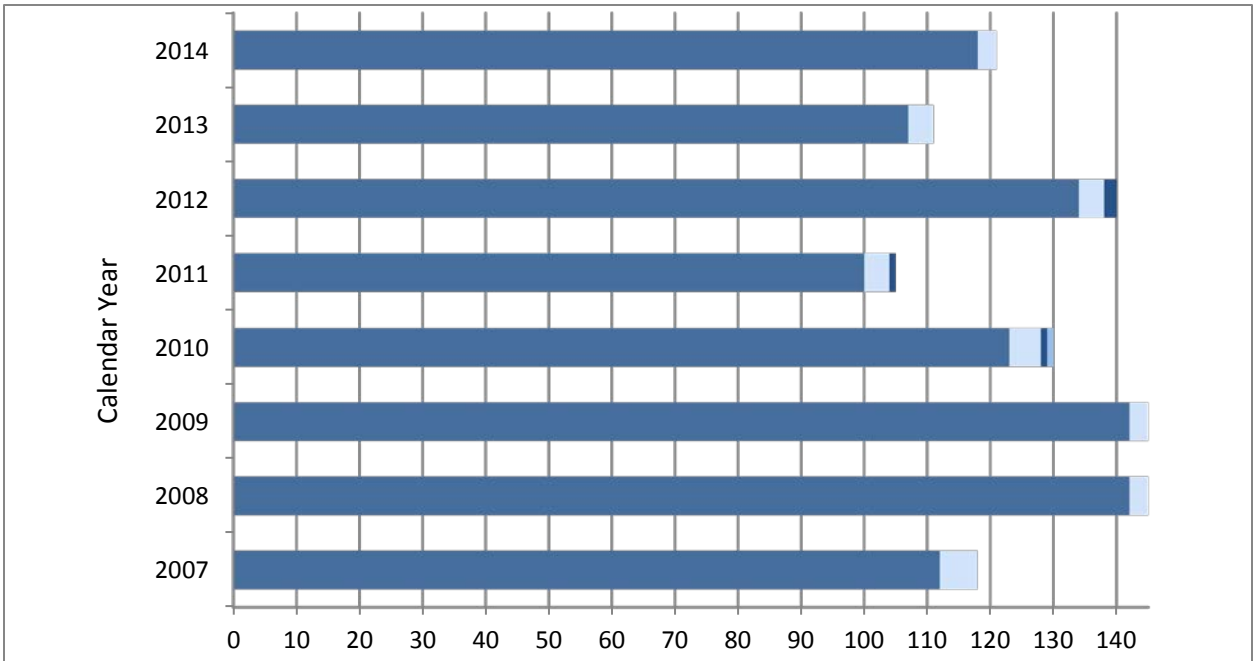


Figure 10: Total number of fires and explosions that occurred on the OCS per installation per year for 2007 to 2014.



	2007	2008	2009	2010	2011	2012	2013	2014
Incidental	112	142	142	123	100	134	107	118
Minor	6	9	3	5	4	4	4	3
Major	0	0	0	1	1	2	0	0
Catastrophic	0	0	0	1	0	0	0	0

Figure 11: Fires and explosions on the OCS (horizontal axis) per category and year from 2007 to 2014.

Collisions

The Bureau requires that collisions resulting in more than $25,000 in damage be reported within 12 hours of occurrence, per 30 CFR §250.188(a)(6). Over the 8-year timeframe of this report, an average of 17 collisions was reported per year (Figure 12). The fewest collisions were reported in 2010, and the highest number of incidents was reported in 2009. When the number of collisions is normalized to the number of installations, the highest number of collisions per offshore installation occurred in 2013. The number of collisions decreased per installation in 2014, when the calculated rate was one collision per 219 installations (Figure 13). Figure 14 depicts the breakout of major (greater than $25,000 damage) and minor (less than $25,000 damage) collisions. Major collisions have been declining since 2011.

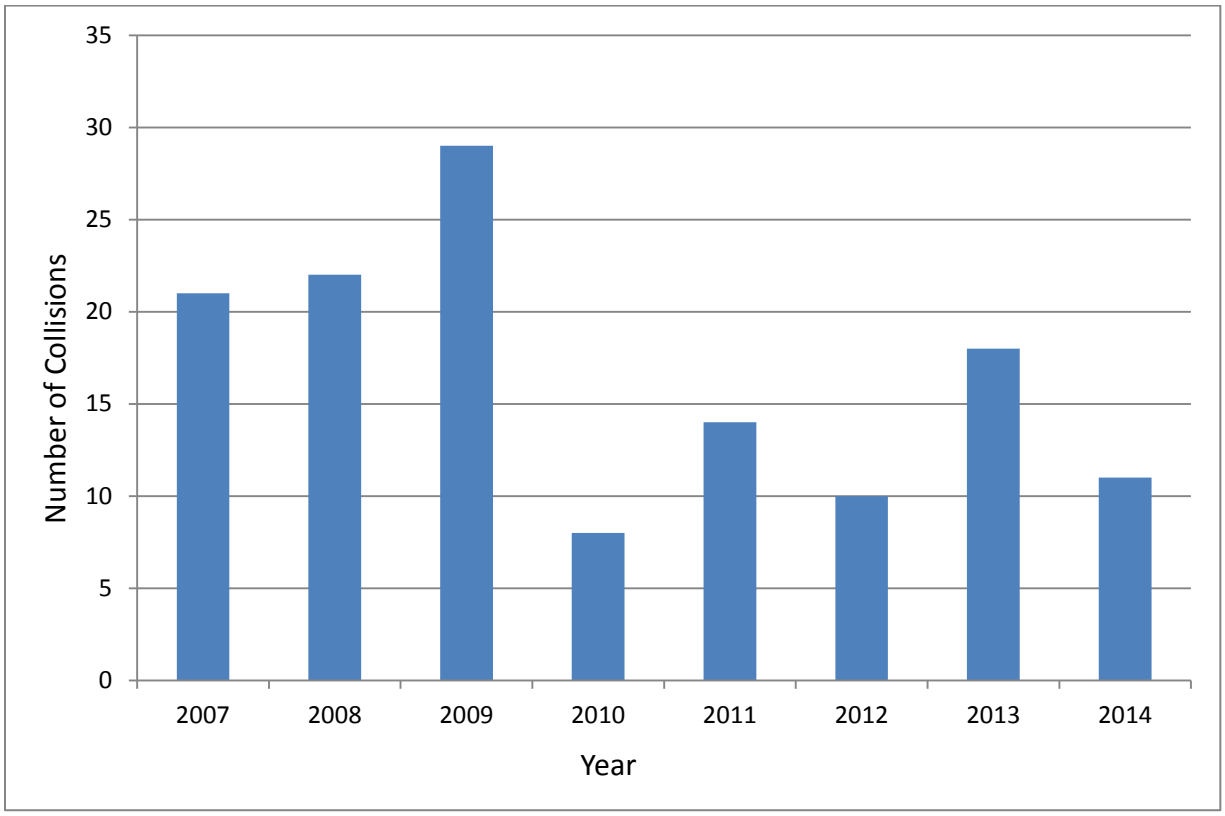


Figure 12: Number of collisions on the OCS shown annually for years 2007 to 2014.

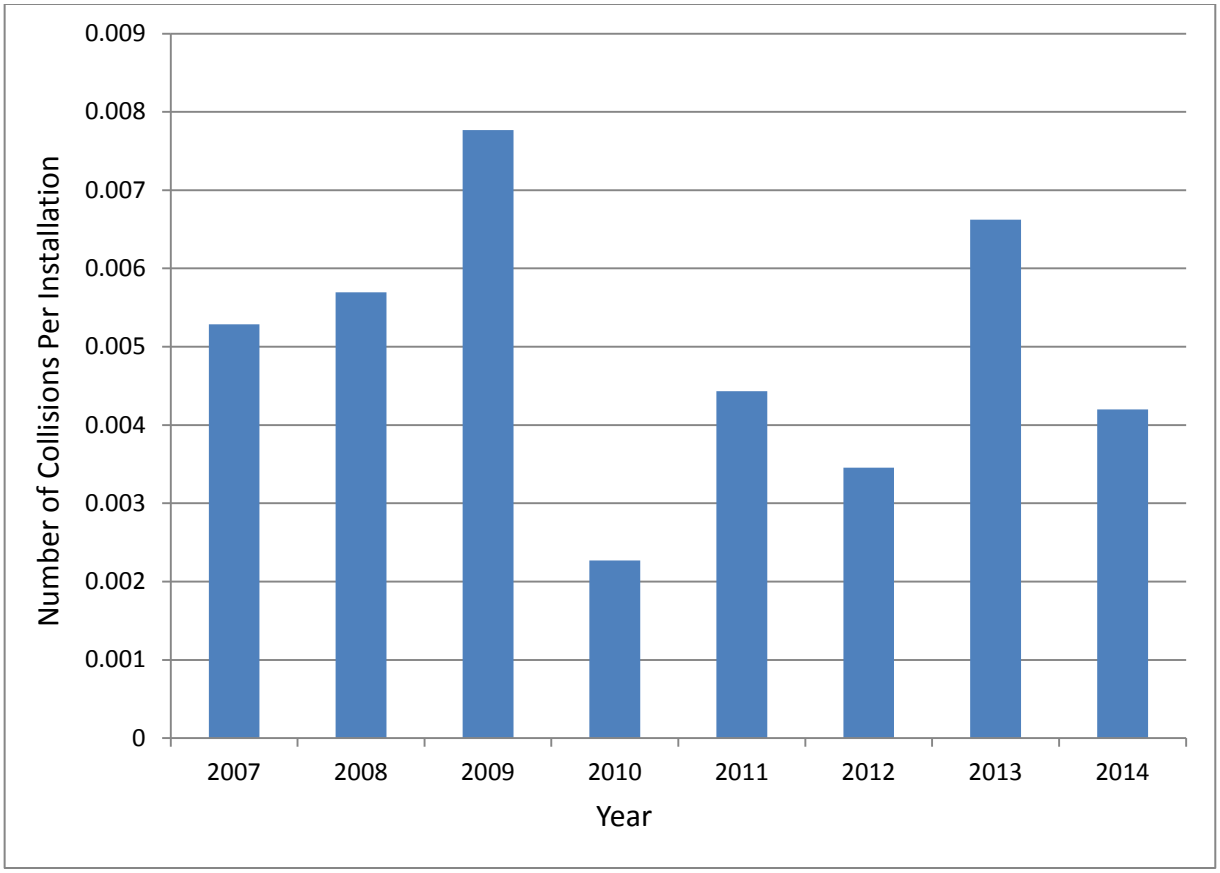


Figure 13. Collisions on the OCS installations[30] shown annually per installation for years 2007 to 2014.

[30] Installations include both production facilities (platforms) and drilling rigs.

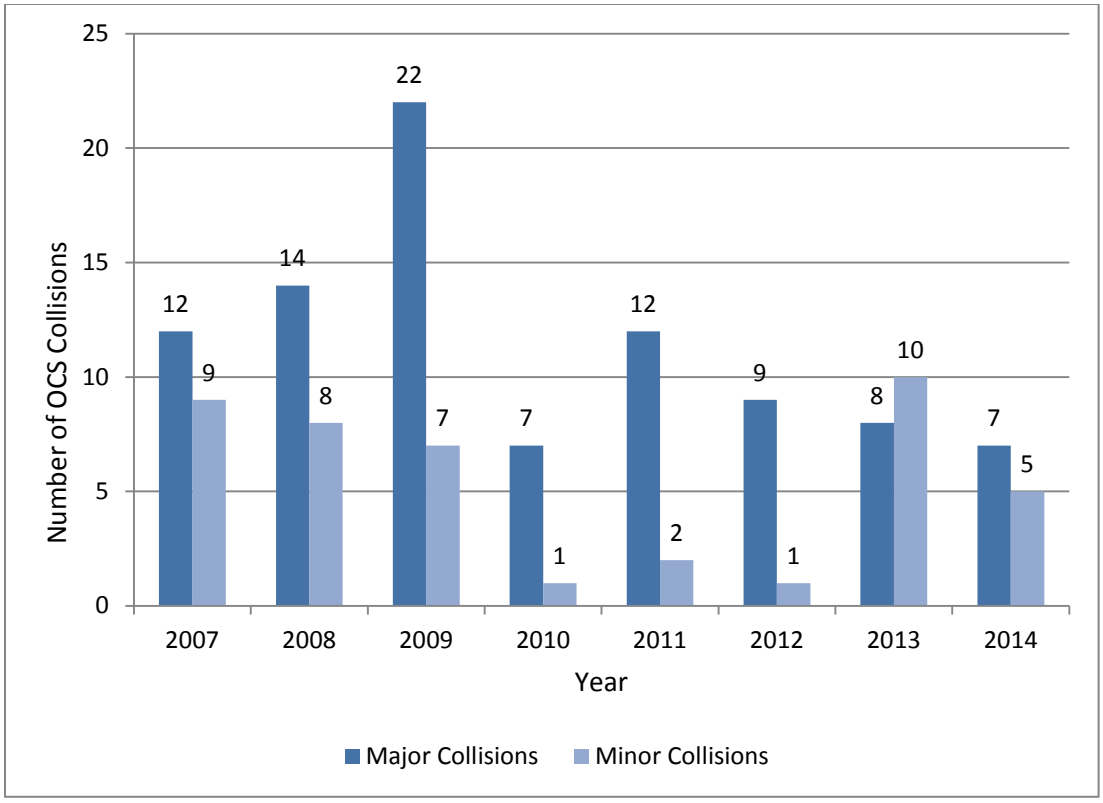


Figure 14: Collisions on the OCS depicted annually for the years 2007 to 2014. Major collisions (dark blue) correspond to property or equipment damage greater than $25,000. Minor collisions (light blue) correspond to property or equipment damage less than $25,000.

Spills

The Bureau requires that all pollution incidents resulting in the release of one barrel total fluid volume[31] or more be reported by oral report immediately, per 30 CFR § 254.46(b). From 2007 to 2014, an average of ten oil spills releasing more than 50 barrels was reported on the OCS per year. The fewest number of these spills was reported in 2010, and the greatest number was reported in 2008[32] (Figure 15). From 2007 to 2014, 33 percent of spills greater than 50 barrels contained crude or refined petroleum, 28 percent contained synthetic-based drilling fluid, 20 percent contained other chemicals, and 18 percent were mixtures of products resulting from topside equipment and hurricane-induced failures (Figure 16). In general, there is no real trend in the types of fluids spilled each year, though Figure 16 depicts the breakout of fluids by type and synthetic-based mud releases have increased slightly in the past several years. The number of spills was low for 2010 and 2011 due to the temporary moratorium on drilling related to post-*Deepwater Horizon* oil spill containment requirements, though the spill volume was highest for 2010 due to the *Deepwater Horizon* tragedy.

In Figure 17, the rate of the volume of petroleum spilled per volume of oil produced on the OCS is depicted. The volume of petroleum spilled includes all crude oil and refined petroleum products for spills greater than or equal to one barrel. The high rate in 2008 is due to spills associated with OCS facilities damaged during Hurricanes Gustave and Ike in the Gulf of Mexico. The large volume in 2010 is due to *Deepwater Horizon*.

In Figure 18, the number of barrels of oil produced and the number of barrels of oil spilled between the years 2007-2014 are highlighted along with a trend line showing an overall increase in production the past two years correlating with a decrease in spills for the same period. In 2010, approximately 590 million barrels of oil were produced, and including *Deepwater Horizon*, 5,000,271 barrels were spilled. In 2014 over 528 million barrels of oil were produced on the OCS compared to only 24 barrels being spilled in the same time frame.

"From 2007 to 2014, an average of ten oil spills releasing more than 50 barrels was reported on the OCS per year."

[31] Spilled fluids can include crude oil, refined petroleum, synthetic-based drilling fluid, or other chemical or fluid mixtures resulting from topside equipment and hurricane-induced failures.

[32] The majority of the spills in 2008 were a result of facility damage during Hurricanes Gustav and Ike.

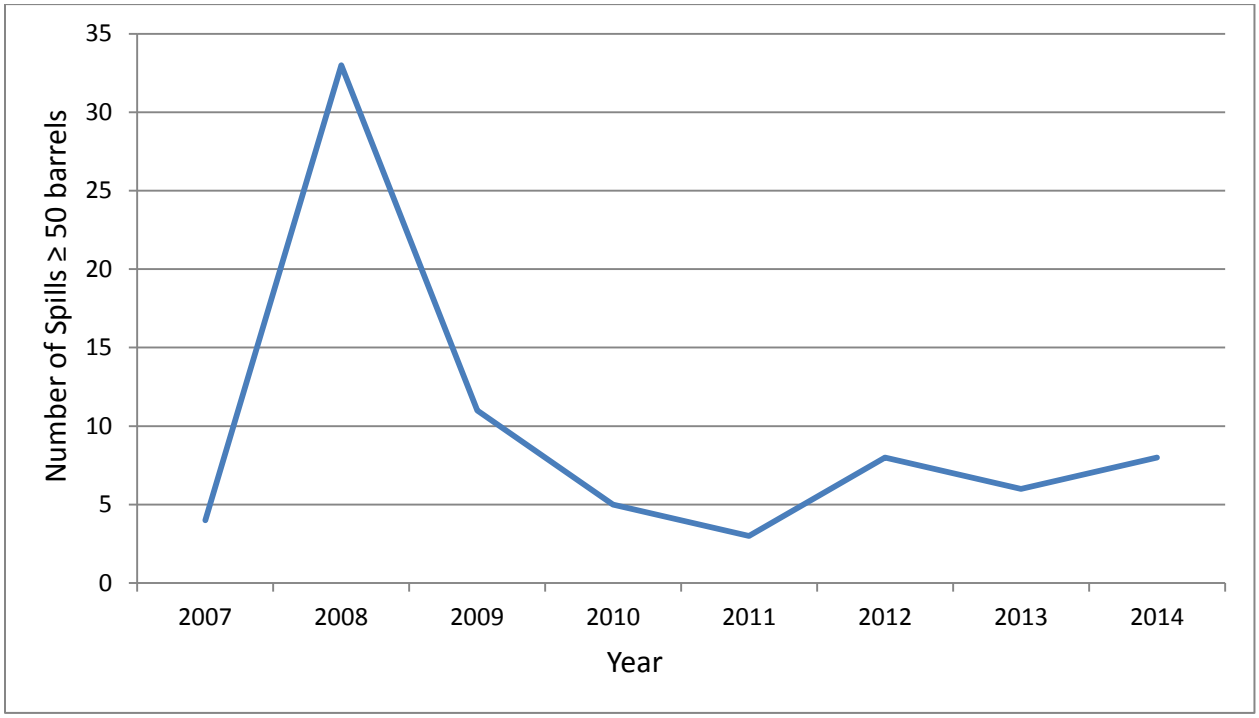


Figure 15: Spills on the OCS that were greater than or equal to 50 barrels per year.

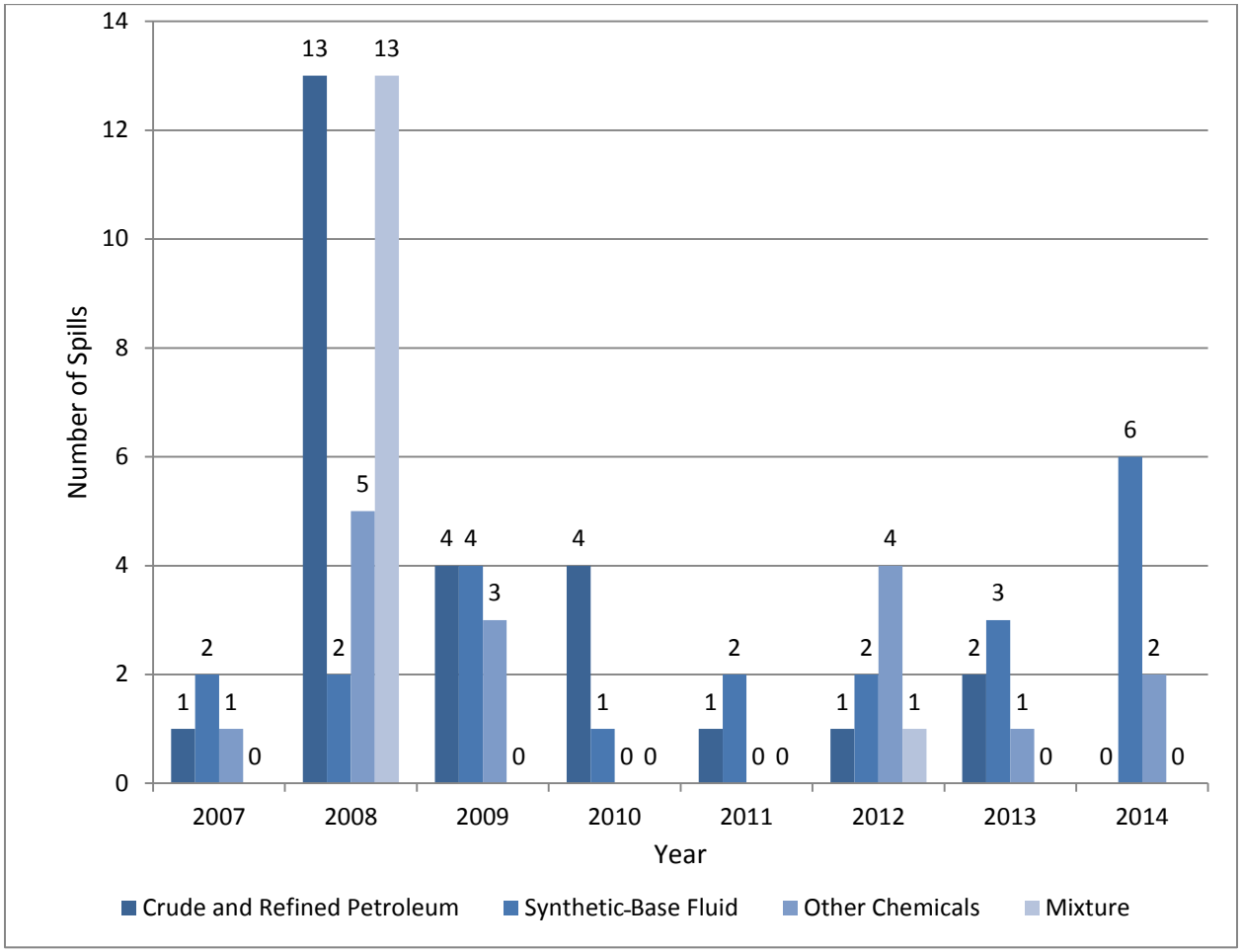


Figure 16. Number of OCS spills greater than or equal to 50 barrels shown by type of fluid released per year for 2007 to 2014. Other chemicals can include zinc bromide, calcium bromide, sodium bromide, asphaltene inhibitors and Methanol or Glycol.

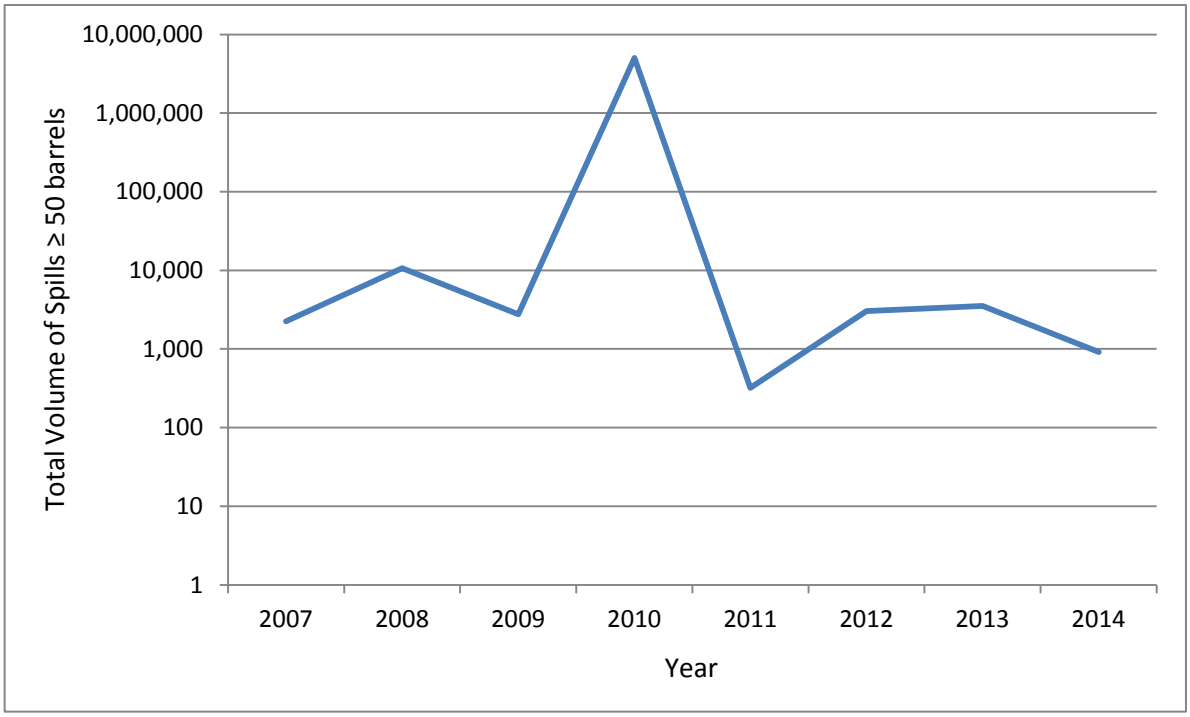


Figure 17: Total volume (in barrels) of major spills (over 50 barrels released) per calendar year on the OCS for years 2007 to 2014. The oil spill from the 2010 Macondo well blowout and oil spill is included. That spill was estimated at five million barrels.

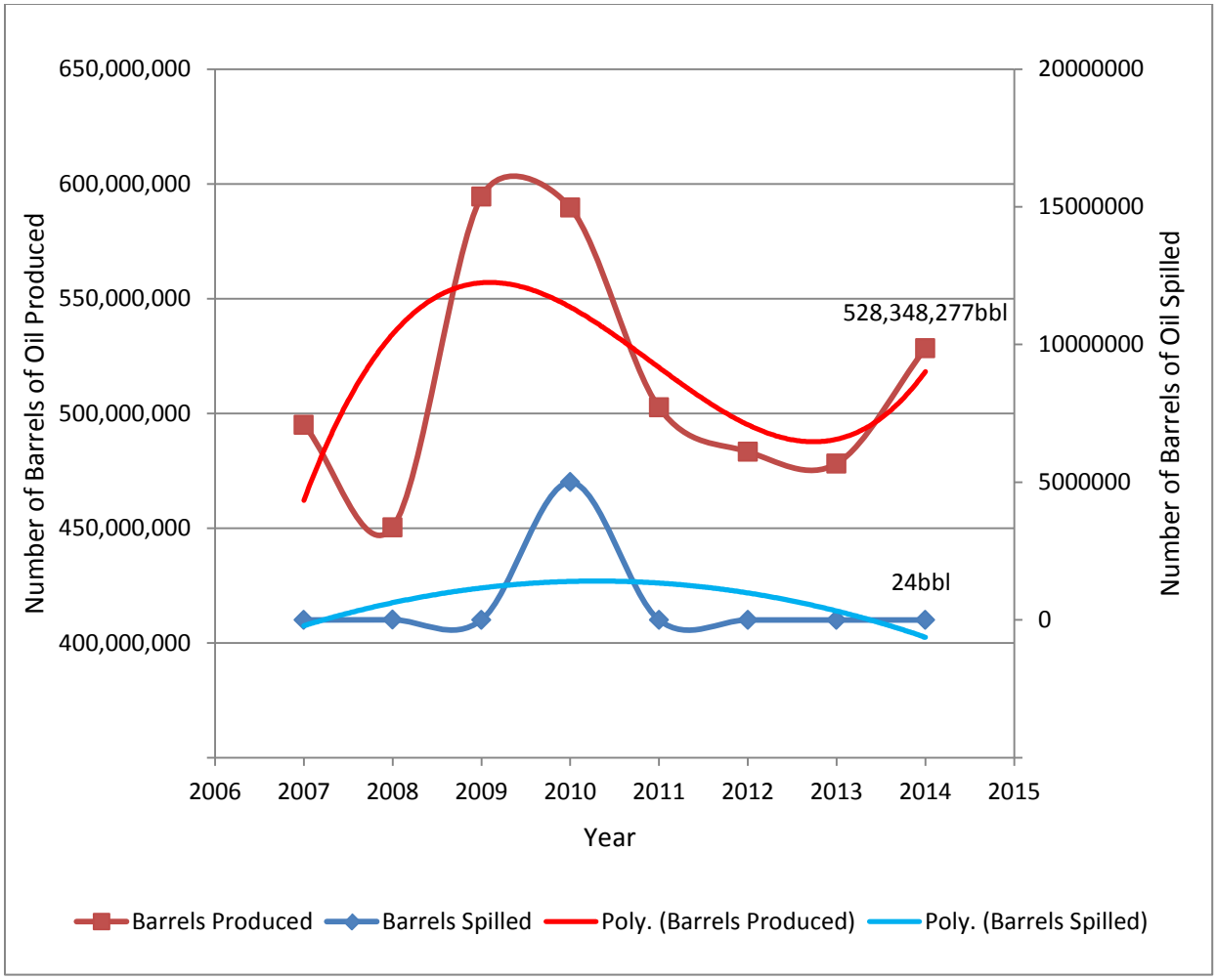


Figure 18: Total number of barrels of oil produced compared to total number of barrels of oil spilled on the OCS between 2007-2014.

Lifting Incidents

The Bureau requires that all incidents involving crane or personnel/material handling operations be reported, pursuant to 30 CFR § 250.188(a)(8). Over the eight-year timeframe of this report, an average of 167 lifting incidents per year was reported. The lowest number of incidents was reported in 2010; however, incidents have tended to increase since 2010 (Figure 19). The trend of increasing lifting incidents is also observed when incidents are normalized to the number of offshore installations (Figure 20). In 2014, the calculated rate was one lifting incident per 12.7 installations.

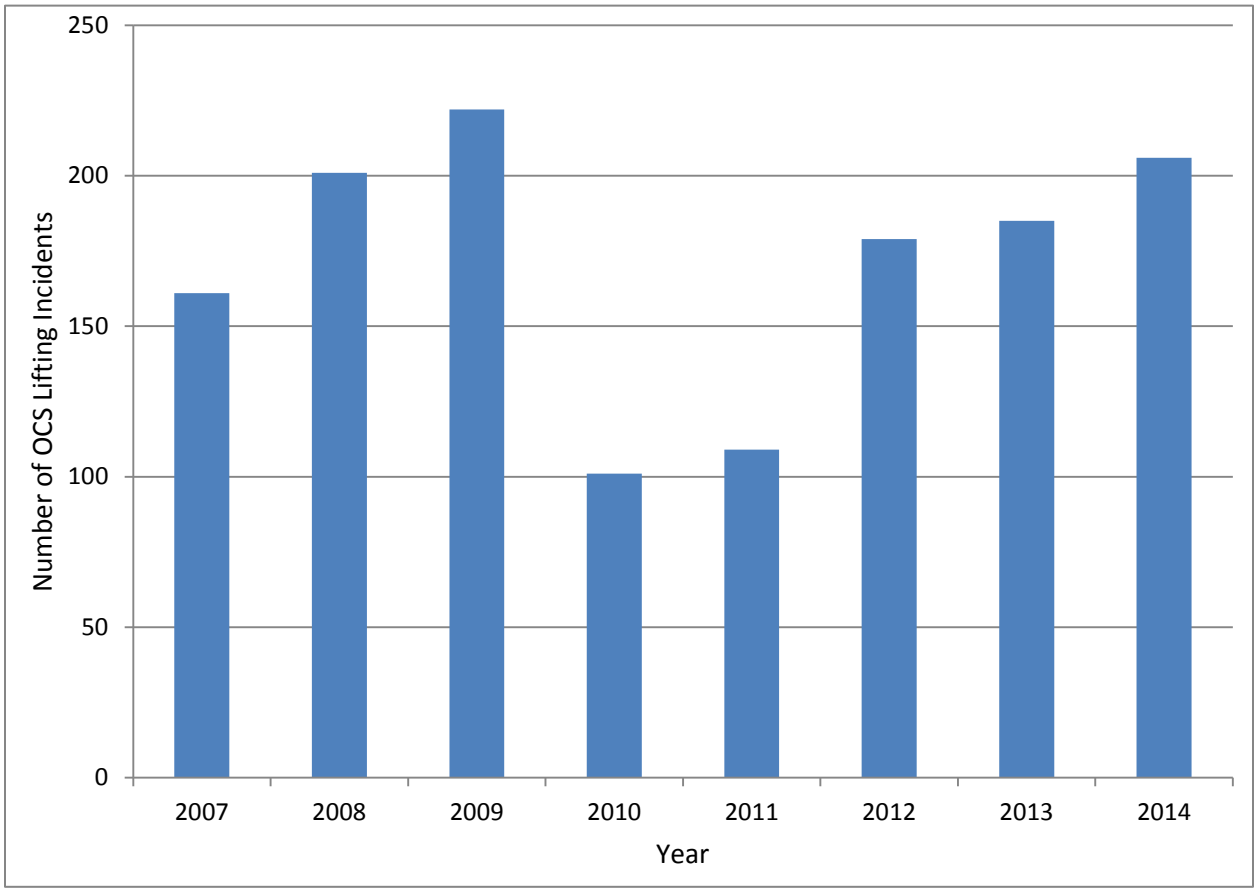


Figure 19: Lifting incidents on the OCS per year for 2007 to 2014.

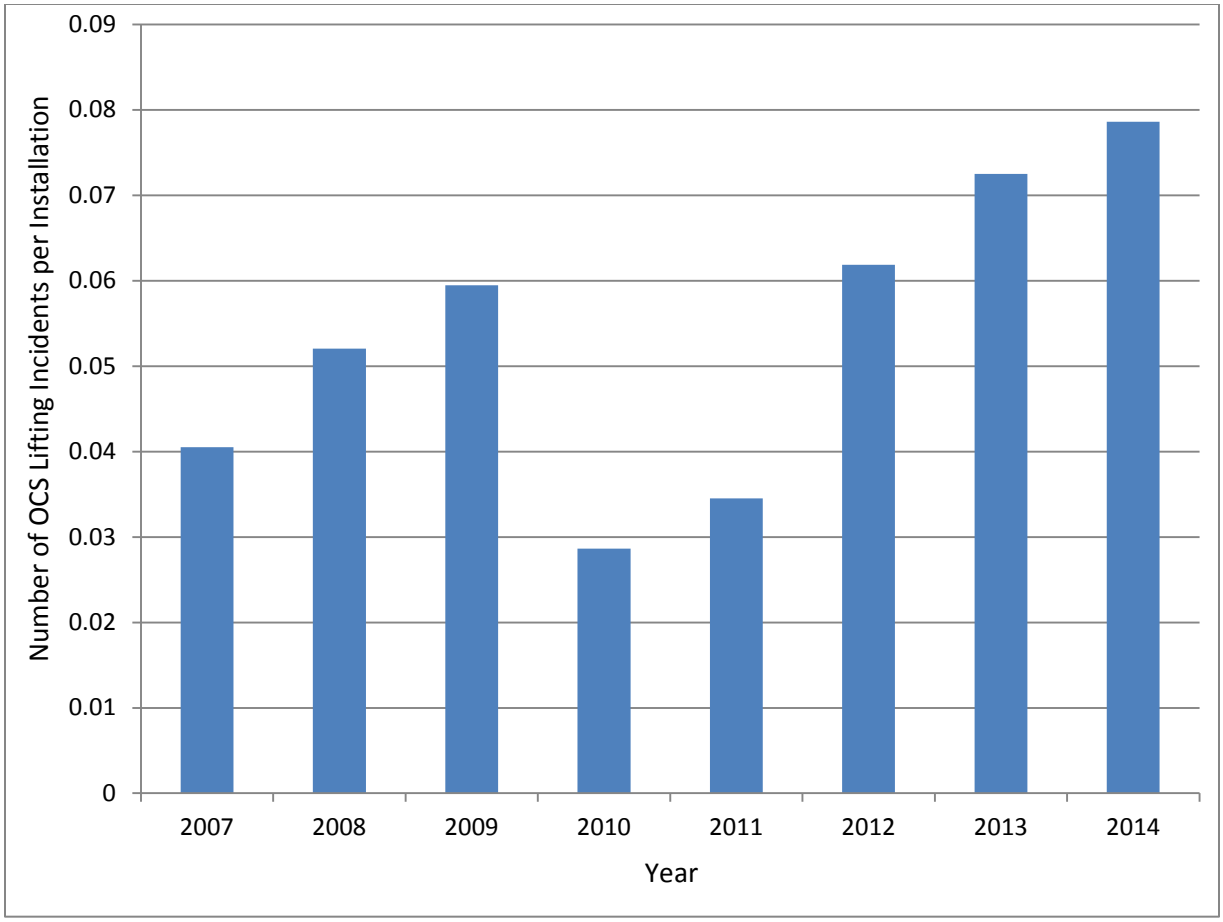


Figure 20: Lifting incidents on the OCS per installation, depicted by year for 2007 to 2014.[33]

[33] The normalized number includes all installations, which could include some idle platforms. In future reports, this number will be refined as better data is available. When idle platforms are excluded, the normalized numbers in this figure would increase.

Gas and Hydrogen Sulfide Releases

The Bureau requires that all gas releases that initiate equipment or process shutdown and all hydrogen sulfide (H_2S) incidents that meet the criteria in 30 CFR § 250.490(l) must be reported pursuant to 30 CFR §250.188(b)(2) and 30 CFR §250.188(a)(5). For this section, the number of releases in the figures below show gas and H_2S releases combined. An average of 22.5 release incidents per year was reported from 2007 to 2014. The fewest were reported in 2014, and the most were reported in 2008 (Figure 21). The number of H_2S releases declined by nearly 50 percent from 2013 to 2014.

When the number of release incidents in a year is normalized to the number of offshore installations, the trend of releases per installation is increasing (Figure 22). In 2014, the calculated rate was one release per 90 offshore installations.

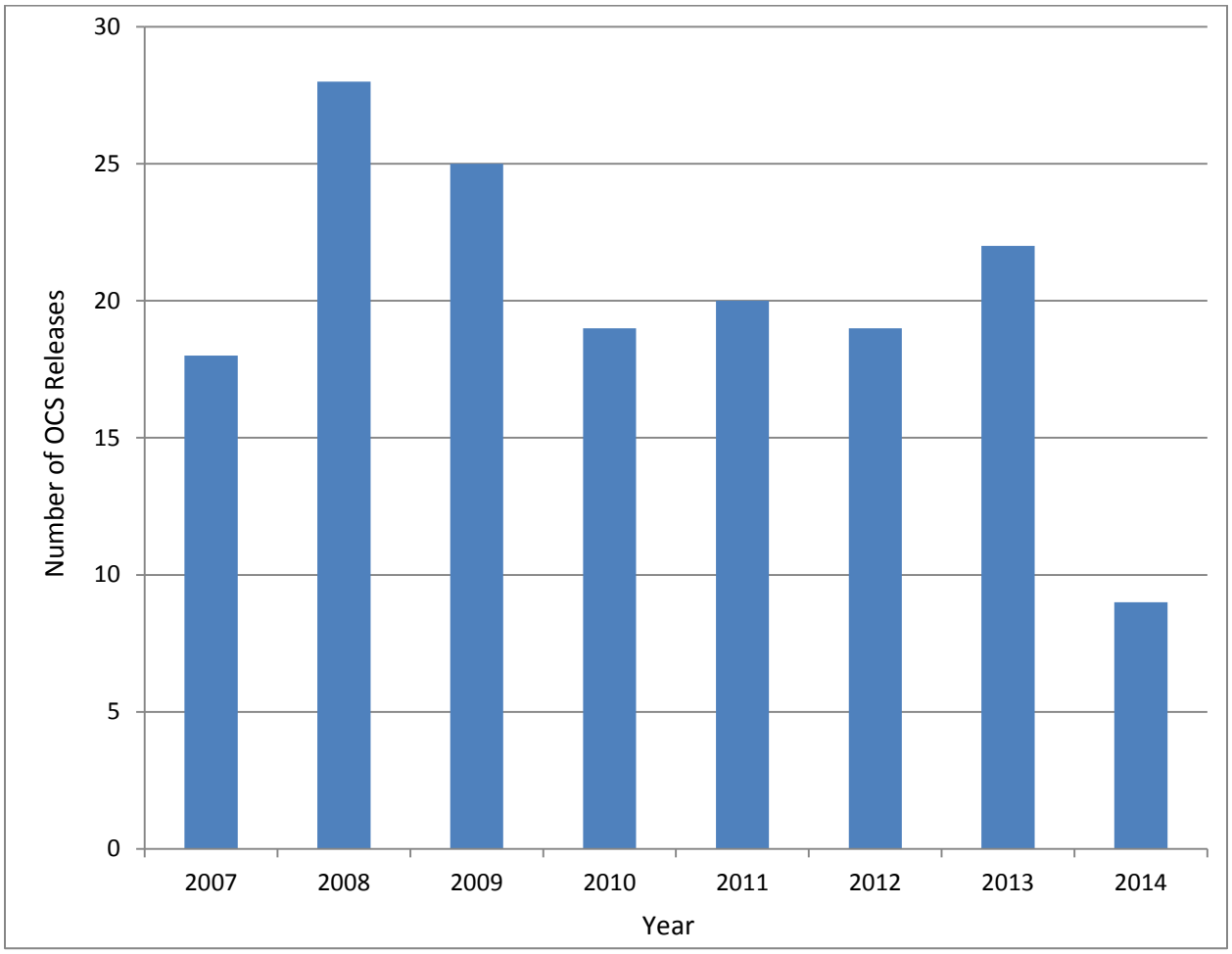


Figure 21: Releases of gas or H_2S on the OCS per year from 2007 to 2014.

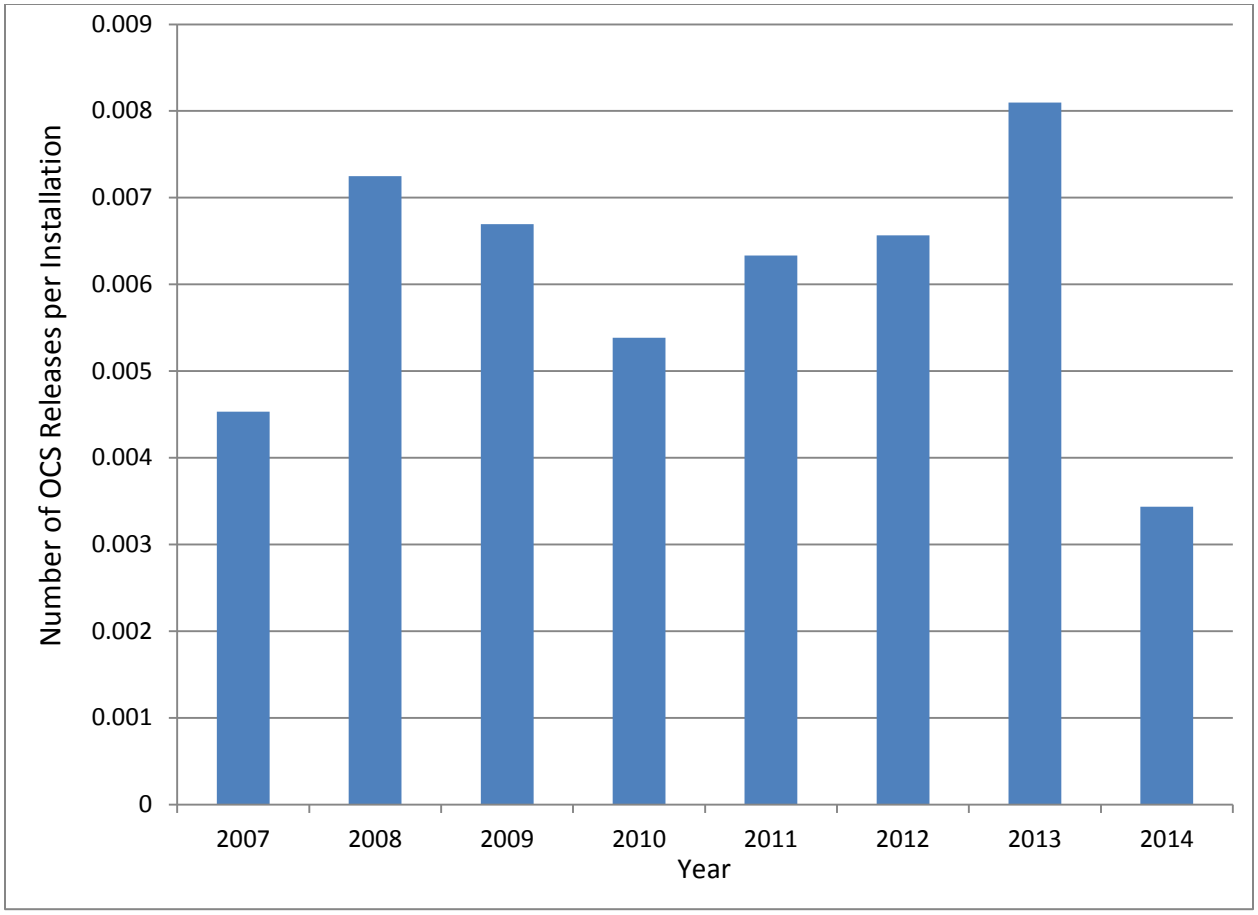


Figure 22: Releases of gas or H_2S on the OCS per installation per year from 2007 to 2014.

Muster for Evacuation

The Bureau requires reporting of all incidents requiring operations personnel on the facility to muster for evacuation for reasons not related to weather or drills, per 30 CFR § 250.188(b)(3). Over the eight-year timeframe of this report, an average of 45 musters for evacuation per year was reported. The fewest were reported in 2007, and the most were reported in 2013 (Figure 23). Both the total number of musters for evacuation (Figure 23), and the musters for evacuation per installation (Figure 24) have overall increasing trends, although there were fewer reported in 2014 than in 2013. In 2014, the calculated rate was one muster for evacuation per 53 offshore installations for the year.

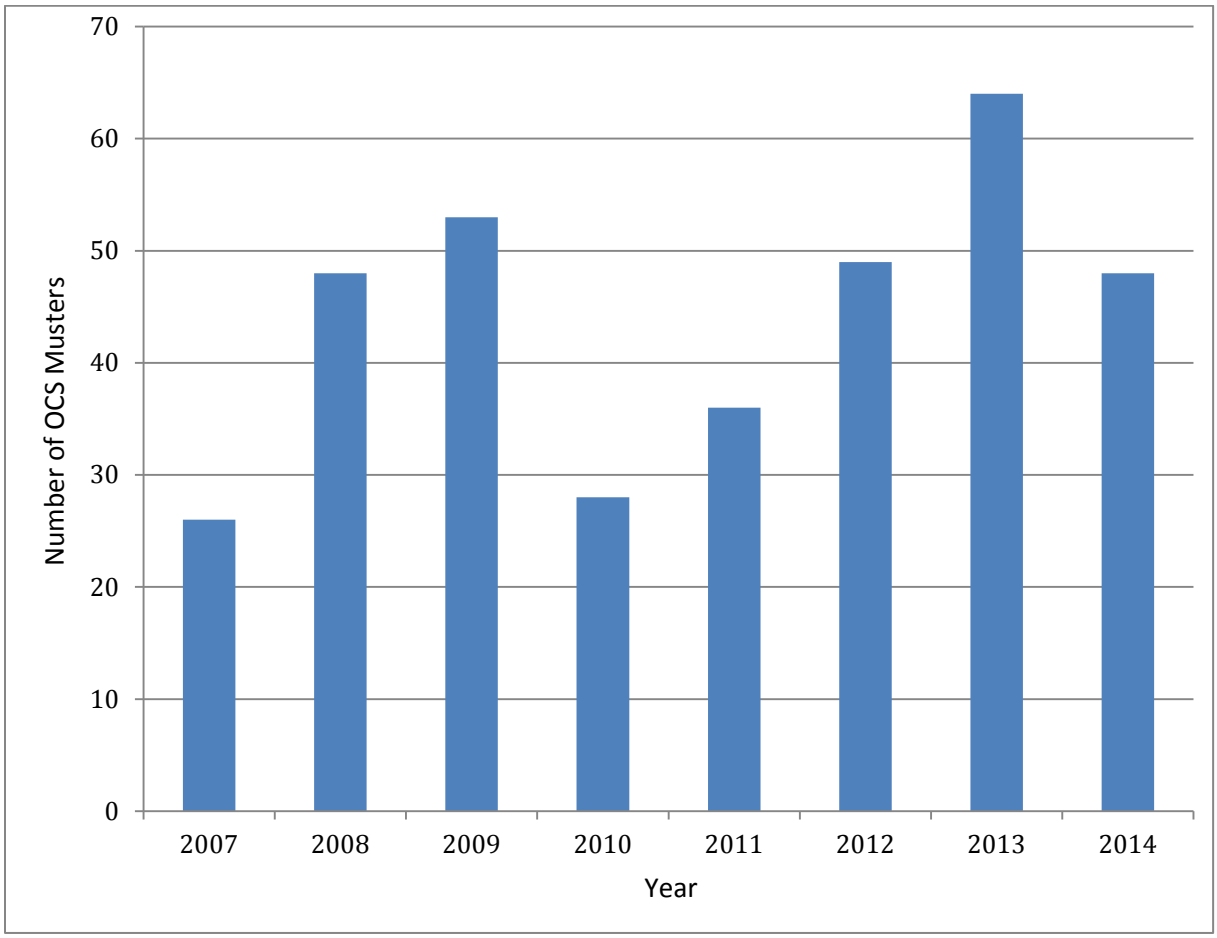


Figure 23: Musters for evacuation on OCS facilities by year for 2007 to 2014.

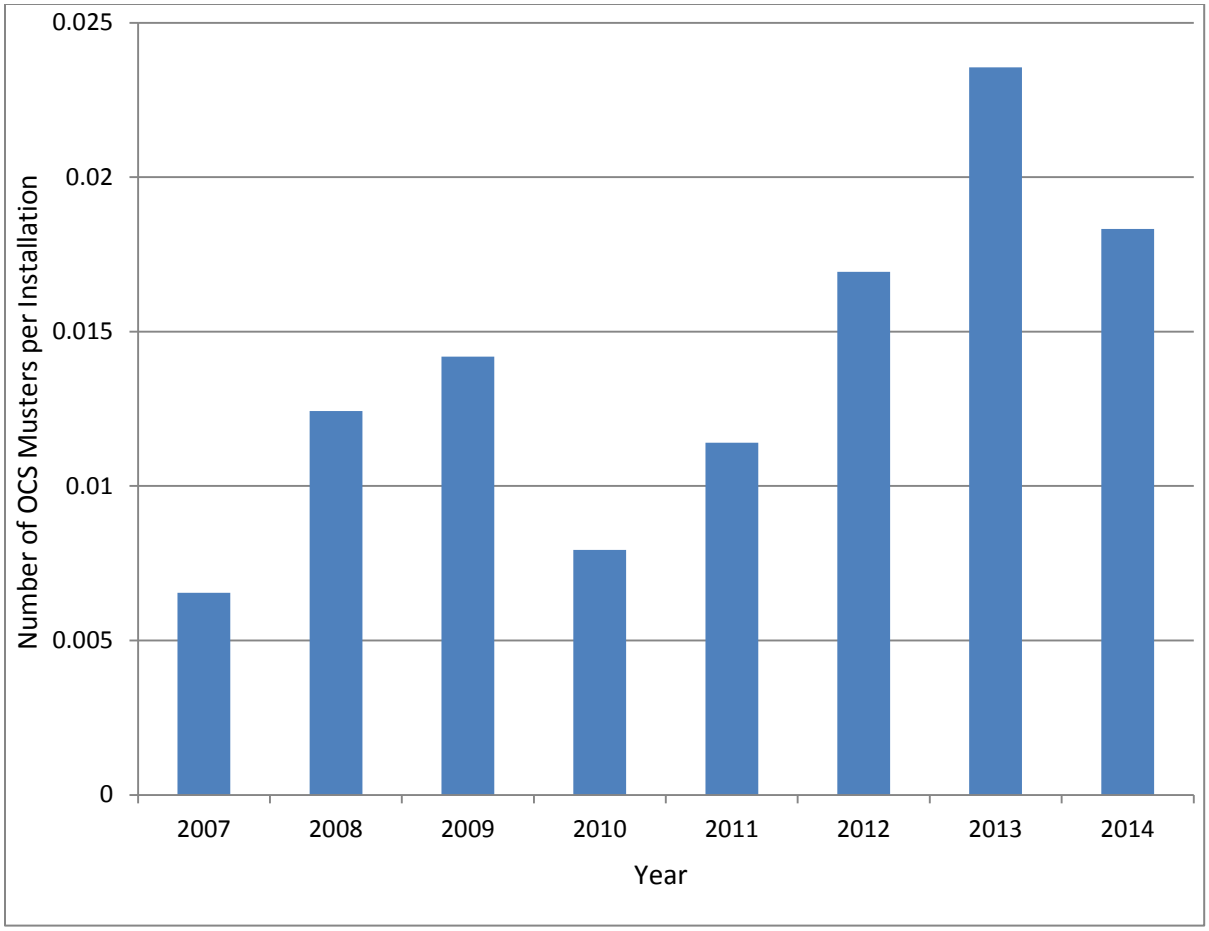


Figure 24: Musters for evacuation per OCS installation for each year from 2007 to 2014.

Investigations and Root Causes of Major Incidents

During 2014, BSEE conducted investigations of incidents and potential violations occurring during oil and gas operations on the OCS.[34] Incident investigations focused on identifying causes and developing recommendations to prevent the likelihood of recurrence of similar incidents. A majority of the incidents were determined to be caused, at least in part, by human performance factors, including communications, training, and equipment operation difficulties. In a minority of incidents, BSEE found equipment and/or design defects as causes (Table 8).

Table 8: Root causes of incidents investigated by BSEE.

Root Cause	Occurrence
Procedures – Human Performance Difficulty (HPD)	15.28%
Training - HPD	0.00%
Quality Control - HPD	0.00%
Communication - HPD	4.17%
Management System - HPD	4.17%
Human Engineering - HPD	19.44%
Work Direction - HPD	26.39%
Design – Equipment Difficulty (ED)	20.83%
Equipment/parts defects - ED	8.33%
Preventive/predictive maintenance - ED	0.00%
Management Systems - ED	1.39%
Tolerable failure - ED	0.00%

In Table 8, each of these categories represents a different type of incident, which are described as follows:

- Procedures – HPD: An incident where the most basic cause can reasonably be associated to a procedure not being used or followed, is incorrect, or being utilized incorrectly.

- Training – HPD: An incident where the most basic cause can reasonably be associated with training not being present, limited, or requiring improvement.

- Quality Control – HPD: An incident where the most basic cause can reasonably be associated to inspections not being required, inspection instructions or techniques needing improvement, or no hold point[35] is defined for inspections.

- Communication – HPD: An incident where the most basic cause can reasonably be associated to a total lack of communication, communication not being timely, information turnover needing improvement, or a misunderstood verbal communication(s).

[34] For a complete listing of BSEE investigations, please refer to: http://www.bsee.gov/Inspection-and-Enforcement/Accidents-and-Incidents/Reports/

[35] A hold point is a point in the repair or alternation process beyond which work may not proceed until the required inspection or testing has been performed and documented.

- Management System – HPD: An incident where the most basic cause can reasonably be associated to no standards, policies or administrative controls in place; standards, policies or administrative controls being ignored; inadequate oversight or employee relations; or corrective action system failures.

- Human Engineering – HPD: An incident where the most basic cause can reasonably be associated to complications with human-machine interface, work environment issues, over-complicated systems, or non-fault tolerant systems.

- Work Direction – HPD: An incident where the most basic cause can reasonably be associated to inadequate preparation, improper selection of an employee, or inadequate supervision during work.

- Design – ED: An incident where the most basic cause can reasonably be associated to inadequate design specifications or inadequate design review hazard identifications.

- Equipment/parts defects – ED: An incident where the most basic cause can reasonably be associated to equipment or parts being defective through procurement, manufacturing, handling, storage, or quality control.

- Preventive/predictive maintenance – ED: An incident where the most basic cause can reasonably be associated to a nonexistent or inadequate preventive/predictive maintenance program.

- Management Systems – ED: An incident where the most basic cause can reasonably be associated to repeat failures of equipment where a management system fails to have corrective actions implemented.
- Tolerable failure – ED: An incident where the most basic cause can reasonably be associated to a design failure that is considered tolerable.

For the most serious incidents that occur offshore, BSEE conducts panel investigations, which are in-depth investigations resulting in detailed findings and recommendations. These investigations are typically handled by a team of individuals including BSEE investigators (from BSEE's Investigations and Review Unit and from the regional offices), inspectors, and other experts. BSEE investigations will often include an assessment of companies' safety and compliance policies and procedures, as well as other information potentially relevant to the incident. Investigations typically involve a combination of witness interviews, evidence analysis (including forensics), review of company documentation, assessment of prior company performance, and other relevant information. Some panel investigations lead to recommended enforcement actions and/or referrals to other enforcement authorities. In 2014, BSEE completed two panel investigation reports and initiated two panel investigations.

BSEE incident investigations can also lead to the issuance of safety alerts,[36] a vehicle to inform industry participants about the circumstances surrounding an incident (or potential incident). In 2014, BSEE

[36] For a complete listing on BSEE Safety Alerts, please refer to: http://www.bsee.gov/Regulations-and-Guidance/Safety-Alerts/Safety-Alerts/

issued 11 safety alerts. In addition, in 2014 BSEE released two technical reviews analyzing certain failures of connectors and bolts used in critical equipment.

BSEE also conducts investigations of alleged violations by individuals and companies operating offshore. Typically, such investigations are initiated as the result of conditions discovered by BSEE inspectors and/or reported by offshore workers. BSEE investigations can result in the issuance of INCs, the assessment of civil penalties, and/or referral to other enforcement authorities. In 2014, BSEE conducted a number of these types of investigations and worked closely on multiple matters with the Department of the Interior Office of the Inspector General and other federal enforcement authorities.

The primary goal of every BSEE incident investigation is to determine what happened to cause an incident so that the Bureau can act to minimize the likelihood that a similar incident will occur in the future. A robust culture of safety can be achieved only when BSEE and industry have a clear understanding of how companies should act to prevent offshore incidents.

BSEE coordinates closely with the U.S. Coast Guard and other federal and state agencies to determine how to effectively respond to the incident and to determine which agency will be the primary investigator.

"The primary goal of every BSEE incident investigation is to determine what happened to cause an incident so that the Bureau can act to minimize the likelihood that a similar incident will occur in the future."

Looking Forward

The steady decrease in fatalities, major injuries, and other incidents since BSEE's inception in 2011 is encouraging. This trend, however, is countered by increases in fires and explosions per installation, major spills, releases of gas and hydrogen sulfide, and lifting incidents. These trends indicate that although there has been progress in making the OCS safer and protecting the environment, there is still progress to be made. BSEE is currently working on a proposed crane rule to reduce lifting incidents based on the increased number of lifting incidents observed on the OCS. Input from stakeholders once the rule is proposed will be critical to ensure it is as effective as possible.

Most root causes of incidents investigated by BSEE were linked to human performance difficulties, and the interface between people and engineered systems. This is a subject that both the Bureau and industry must keep in mind moving forward, if risk and incidents are to be reduced on the OCS. Developing a meaningful safety culture that permeates all actions offshore, and goes well above and beyond regulatory compliance is necessary to reduce risk.

BSEE believes that the primary responsibility for maintaining safety and environmental stewardship at all times lies with the companies operating on the OCS. In order to shift the burden of responsibility to industry, BSEE began to adjust governing regulations and compliance verification procedures to reflect, where appropriate, a performance-based approach. BSEE's implementation of the SEMS program cemented this new performance-based approach. Moving forward, BSEE will further adjust its oversight and align regulatory practices to reinforce safety conscious behaviors, discourage complacent behavior, and foster the development of a robust and positive safety culture.

Going forward, the Bureau will move towards a risk-based inspection approach, predicated on the idea that companies that have taken the responsibility for creating a culture of safety will have greater flexibility in operating in a safe and environmentally responsible manner. In 2015, BSEE will develop risk-based inspection approaches to compliance and oversight that complements SEMS and our current inspection program.

BSEE will add depth and capacity to our existing programs by realigning our internal structure to a national program model. This will facilitate clear, consistent, and readily accessible information to the industry and public. Part of this effort includes continuing to recruit and retain the best technical talent, and to bolster the Bureau's technical capacity. The Emerging Technology Assessment Center was established in Houston in 2014, and in 2015 the Bureau will fully build out the capabilities of this new center. The Bureau will bolster our capacity for analyzing data gained through incident reporting requirements, near-miss reporting, and real-time monitoring. The Bureau also will continue to work with industry to better understand their safety processes, so that we can mitigate and reduce risk. Through these initiatives, BSEE will continue to ensure that offshore exploration, production, and development occurs in a safe and environmentally responsible way, while actively working to improve offshore safety performance.

In 2015, the Bureau will continue to work to develop regulations, inspection guidelines, and procedures for the development of offshore renewable energy. The added capacity to the renewable energy inspection program will ensure that the appropriate regulatory structure will be in place to protect the safety of workers and the environment.

BSEE will continue to share lessons learned and best practices with international offshore oil and gas regulators, both with organizations such as the International Regulators Forum, the Arctic Council and the Arctic Offshore Regulators Forum, and through bilateral and multilateral engagements with other countries around the world. The Bureau will continue to focus on strategic engagement with countries,

such as Canada and Mexico, that share boundaries with the United States. In particular, the international program will work to implement the terms of the Transboundary Agreement that BSEE administers with the U.S. Bureau of Ocean Energy Management and the Agencia de Sequirdad Energia y Ambiente (ASEA) in Mexico.

In the year ahead, BSEE staff will be working with stakeholders to share lessons learned and best practices, looking for ways to get better information through SEMS and our near-miss reporting system, while continuously working to fulfil the needs of the BSEE mission. The Bureau will be also working with industry on the latest technological advances, all of which come together to help reduce risk offshore. The risks inherent in offshore activities will never be fully eliminated, but through this work, BSEE can substantially reduce those risks.

"It is my belief that we can never relax our focus on safety. The trends we see in the first BSEE Annual Report show that progress is being made to improve safety and reduce risk offshore but there is still more work to be done and further improvements to be made."

Brian Salerno
Director

BSEE
Bureau of Safety and
Environmental Enforcement