The creation of the Center for Offshore Safety (COS) in 2011 was a groundbreaking achievement for the industry, and has played a central role in both advancing a culture of safety in offshore operations and providing an important interface with government regulators. The COS is an industry-led initiative with the mission of promoting continuous safety improvement for offshore drilling, completions and operations through effective leadership, communication, teamwork, disciplined management systems and independent third-party auditing and certification. The COS draws on expertise and input from both the U.S. oil and natural gas offshore industry and the regulatory community.

Through the COS, industry members are committed to improving the safety performance by subscribing to the following principles:

1. **CENTER FOR OFFSHORE SAFETY**

   - Industry leaders will demonstrate a visible commitment to safety.
   - Operators, contractors and suppliers will work together to create a culture of safety.
   - Decision making at all levels will not compromise safety. Safety processes, equipment, training and technology will undergo continuous examination and improvement; and
   - Members will share learnings and apply industry standards, good practices and promote continual improvement.
A key focus of the COS is the implementation of Safety and Environmental Management Systems by the offshore industry, which is discussed below in the next section.

In addition, among others, the COS has developed the following robust guidelines for promoting safety in offshore operations:

- COS-3-04 Guidelines for a Robust Safety Culture First Edition
- Guideline for Skills and Knowledge Management System for the U.S. Offshore Oil & Gas Industry
- Guidelines for Leadership Site Engagement

The COS also collects, analyzes, and shares safety performance data so that the industry can continuously improve operations by sharing data and learning from incidents. Improved performance – and more specifically improved performance in safety – occurs effectively through a process of learning, collaborating and taking action through good practices and advanced technologies. The COS is now firmly established as a “center” for making that happen.

2. SAFETY AND ENVIRONMENTAL MANAGEMENT SYSTEMS

Today, operators in the U.S. offshore oil and natural gas industry follow a robust systems-based approach to safety by implementing Safety and Environmental Management Systems, or “SEMS”. One of the foundational elements of the industry-led Center for Offshore Safety is API RP 75, API Recommended Practice for Development of a Safety and Environmental Management (SEMS) Program for Offshore Operations and Facilities. API RP 75 was incorporated into federal regulations by the Bureau of Safety and Environmental Enforcement (BSEE), an agency within the U.S. Department of the Interior. According to BSEE, “SEMS is a nontraditional, performance-focused tool for integrating and managing offshore operations. The purpose of SEMS is to enhance the safety of operations by reducing the frequency and severity of accidents.” API RP 75 outlines the various key elements for inclusion in an effective SEMS program, such as the completion of a thorough hazards analysis and the implementation of effective management of change procedures. Completion of a hazards analysis helps to ensure that risks are identified, prevented and mitigated. Management of change procedures allow operators to reexamine the hazards analysis to help make sure that no new risks are being introduced into operations prior to changes in operations occurring.

The COS has also created a process for accrediting independent third-parties to provide audits of individual company SEMS. Members of the COS are required to undergo SEMS audits, and BSEE has implemented a regulatory requirement for all offshore operators – whether they are members of the COS or not – to undergo SEMS audits by accredited, independent third-parties, also known as audit service providers or “ASPs”. Additionally, BSEE has incorporated into its SEMS regulations various guidance documents that have been published by the COS. This ensures the qualifications and competencies of audit teams that review the SEMS programs of offshore operators by building in a further layer of quality assurance.
3. ESTABLISHMENT OF CAPPING AND CONTAINMENT COMPANIES AND STANDBY EQUIPMENT

A significant achievement of the offshore oil and natural gas industry is the creation of well intervention and containment consortiums that were founded in 2010 to provide containment technology and response capabilities for the unique challenges of capping a well that is releasing oil thousands of feet below the water’s surface. These companies, the Marine Well Containment Company (MWCC) and the HWCG, LLC, maintain quickly deployable systems that are designed to stem any uncontrolled flow of hydrocarbons from a subsea well and facilitate the training of their member companies on the installation and operation of these systems. BSEE requires companies to demonstrate access to equipment and staff resources to deploy such systems to cap a well or capture uncontrolled hydrocarbons, and companies are able to demonstrate compliance with this requirement through participation in MWCC or HWCG.

4. NEW AND REVISED INDUSTRY EQUIPMENT AND SAFETY STANDARDS

Overall, through API’s accredited standards development process, the oil and natural gas industry has published over 100 new and revised exploration and production standards over the course of the past 10 years. Industry standards provide a foundation for safe and environmentally responsible operations. For drilling and production, a key to the overall system of safety is the barrier philosophy, where multiple layers of protection are put into place to effectively ensure that oil and natural gas are contained. This philosophy is reflected in both the standards developed by the industry and in the regulations promulgated by the government. In December 2010, consistent with recommendations made by industry task forces, API released Standard 65-2, Isolating Potential Flow Zones During Well Construction (2nd Edition). This document contains best practices for zone isolation in wells to prevent annular pressure or flow past containment barriers that are installed and verified during well construction. This document has been incorporated by reference into BSEE’s regulations for offshore operations. In November 2012, API released Standard 53, Blowout Prevention Equipment Systems for Drilling Wells (4th Edition), which provides the requirements on the installation, maintenance, testing and inspection of blowout prevention equipment. As stated in the introduction of this document, the “objective of this standard and the recommendations within is to assist the oil and natural gas industry in promoting personnel safety, public safety, integrity of the drilling equipment, and preservation of the environment for land and marine drilling operations.” BSEE incorporated this document by reference into its regulations in April 2016 (the “Well Control Rule”). In March 2013, API published Recommended Practice 96, Deepwater Well Design and Construction (1st Edition), which provides the operational considerations to safely design and construct deepwater wells with maximum reliability and includes a barrier philosophy to ensure that redundancies are in place to effectively prevent an incident.
Safety in U.S. Offshore Oil and Gas Operations Has Been Strengthened

5. U.S. DEPARTMENT OF THE INTERIOR DRILLING SAFETY RULE

The government, through BSEE and its predecessor agencies, has made significant changes to the regulatory requirements applicable to offshore oil and natural gas operations. In addition to the requirements for SEMS as discussed above, BSEE published a final drilling safety rule on August 22, 2012 (this rule had been previously issued as an interim rule on October 15, 2010 by the predecessor agency, the Bureau of Ocean Energy Management, Regulation and Enforcement). The BSEE regulations now have extensive requirements for well design and integrity, and blowout preventer and control systems. Under these drilling safety provisions, BSEE requires, among other things:

(1) identification of the mechanical barriers and cementing practices that will be used;

(2) independent third-party verification that the blowout prevention equipment is designed for the specific equipment on the rig and for the specific well design;

(3) independent third-party verification that the blowout prevention equipment will operate in the conditions in which it will be used;

(4) a certification signed by a registered professional engineer that the casing and cementing design is appropriate for the purpose for which it is intended under the expected conditions; and

(5) for wells that use subsea blowout prevention equipment, the inclusion of two independent barriers, including one mechanical barrier, for each annular flow path. There are also extensive requirements for the maintenance, testing and inspection of blowout prevention equipment.


BSEE has also instituted new requirements for determining the worst case blowout discharge and the associated demonstration of capability to effectively respond to such a discharge. On its part, the industry has enhanced its ability to respond to a potential offshore environmental incident through improved oil spill response planning and spill monitoring, and the increased availability of spill response tools such as dispersants, in-situ burning capabilities, mechanical recovery, and shoreline protection. The industry has conducted extensive projects and research related to oil spill response and these materials are available at http://www.oilspillprevention.org.
SAFETY IN U.S. OFFSHORE OIL AND GAS OPERATIONS HAS BEEN STRENGTHENED

7. ENHANCED U.S. DEPARTMENT OF THE INTERIOR INSPECTION AND ENFORCEMENT

The U.S. Department of the Interior manages a robust inspection and enforcement program through the Bureau of Safety and Environmental Enforcement. According to BSEE, “In 2017, BSEE inspectors conducted 17,661 inspections throughout the Gulf of Mexico on oil and natural gas production facilities and drilling rigs. Oil production from the U.S. Outer Continental Shelf totaled 621,223,717 barrels in 2017, 99% of this production came from the Gulf of Mexico.” The U.S. Gulf of Mexico alone produces more oil than 8 OPEC nations. BSEE’s inspection and enforcement program helps ensure the highest levels of safety and environmental performance for U.S. Offshore operations. U.S. oil and natural gas companies pay inspection fees to cover the cost of this program and, based upon the direction of Congress, these fees must be set aside for the funding of the inspection program.

Earlier this year, BSEE announced a new inspection program that systematically identifies facilities and operations that have a high-risk profile. BSEE noted that, “Inspection findings and incident reports are used by BSEE to assign a risk factor score to each production facility in the Gulf of Mexico. The risk factor score is based on specific performance and risk-related information that falls into two types of risk-based inspections: “facility based” and “performance based.”

The approach aligns with findings in a 2012 GAO report advising the agency to identify and evaluate offshore operations according to risk. The risk-based inspections supplement BSEE’s existing National Safety Inspection Program. The new risk-based inspection protocol looks beyond compliance and assesses the integrity of critical safety systems on facilities and operations, including those that have had multiple incidents of non-compliance or events and may need more attention. Earlier this year, BSEE conducted risk-based inspections of 40 facilities over a two-day period, based on real-time data focused on improving safety.

Also, beginning April 1, BSEE started significantly increasing the time that its inspectors spend on offshore oil and natural gas facilities. Using better technology to access electronic records maintained onshore, the agency can now be more efficient in its offshore inspections while reducing helicopter operating expenses 15 percent – a savings to taxpayers estimated at nearly $20 million over 3.5 years. BSEE Director Scott A. Angelle stated, “This approach greatly improves our inspectors’ efficiency, increasing safety oversight at OCS facilities. Our team developed a smarter, safer strategy that provides more physical inspection time offshore and reduces government costs. This makes sense for the American taxpayer and increases our ability to ensure safe operations offshore.”
8. **API’S Q2 CERTIFICATION FOR SERVICE SUPPLY CONTRACTORS**

The performance of contractors in the oil and natural gas exploration sector is vital to safe and responsible offshore operations. Oil and gas contractors, also known as service supply organizations, are now implementing Specification Q2, *Quality Management System Requirements for Service Supply Organizations for the Petroleum and Natural Gas Industries (1st Edition)* to help ensure a high level of performance in all operations, particularly in the offshore. API’s Spec Q2 is the first ever quality management system (QMS) certification for service supply organizations in the oil and natural gas industry. Its approach to industry improvement is similar to API’s Spec Q1, which certifies oil and natural gas equipment manufacturers for the safety, consistency and interchangeability of their products. Development of Spec Q2 began in early 2010 to reduce risk and improve service quality by identifying and standardizing the expectations for execution of upstream services like well construction, intervention, production and abandonment. The standard was officially unveiled in December 2011 and is recognized around the world as a key tool for advancing contractor performance.

9. **IMPROVED COAST GUARD REGULATIONS, INSPECTIONS AND TRAINING**

The Coast Guard plays a key role in overseeing offshore oil and natural gas operations, and its responsibilities extend to safety of life, property and navigation and protection of the environment on OCS units and vessels engaged in OCS activities. This includes units and vessels such as mobile offshore drilling units that are used in oil and natural gas exploration and production operations. The Coast Guard has been very active in revising its regulatory policies over the past several years and has made significant enhancements including, among others:

- Regulations for third-party testing and certification of electrical equipment in hazardous locations on newly constructing MODUs, floating offshore facilities, and vessels other than offshore supply vessels that engage in offshore activities
- Revised crane regulations
- Guidelines for fire and explosion analyses
- Guidelines for lifesaving and fire-fighting equipment, training and drills onboard manned offshore facilities
- Updated inspection protocols for vessels in offshore operations
- Improved collaboration with the Bureau of Safety and Environmental Enforcement on regulatory oversight, inspection and oversight, and spill response
Innovation and advancements in technologies simultaneously increase safety and environmental soundness throughout the offshore well process with commensurate benefits in efficiency and project economics. Innovation cascades across the offshore industry and is evident in advancements in everything from information management systems and large data analytics to well planning and design, manufacture of heavy iron drilling rigs and tubulars, complex downhole completion equipment and tools, and new methods and techniques. As a result of the constant advancement of technologies across all project components, U.S. ingenuity and engineering prowess has elevated safety and systems integrity to the highest levels in offshore oil and natural gas operations and across the broad spectrum of industrial engineering applications.
Safety in U.S. offshore oil and gas operations has been strengthened.