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Safety and Environmental Management Systems (SEMS) Background Summary



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Background

The offshore oil and gas industry experienced one of its most severe accidents on April 20, 2010 when the Mobile Offshore Drilling Unit (MODU), Deepwater Horizon, experienced an uncontrolled release of hydrocarbons that sparked an explosion resulting in a fire that destroyed the MODU and led to the deaths of 11 workers. This event also triggered a release of crude oil from the Macondo well serviced by Deepwater Horizon that could not be isolated for several months, resulting in a Spill of National Significance (SONS) into the Gulf of Mexico. This aspect of Deepwater Horizon was most devastating economically and environmentally for coastal communities along the northern littoral of the Gulf from the panhandle of Florida to the Texas/Louisiana border.

The offshore oil and gas industry had developed the Safety and Environmental Management Program (SEMP) in 1993. The SEMP program, which is a process safety-like program, was published in API-RP 75. This program, which has been incorporated into the current SEMS regulations by reference, was voluntary and not adopted or enforced by the primary government agency responsible for regulating offshore oil and gas exploration and production operations, the Minerals Management Service (MMS) of the Department of the Interior. MMS has since been replaced by the Bureau of Ocean Energy Management Regulation and Enforcement (BOEMRE), which has subsequently been split into three agencies: Office of Natural Resources Revenue (ONRR), Bureau of Ocean Energy Management (BOEM), and Bureau of Safety and Environmental Enforcement (BSEE). BSEE has responsibility for enforcing the new SEMS regulations.

SEMS Regulation Summary

The final SEMS rule, as adopted in 30 CFR 250, requires offshore operators to develop and implement Safety and Environmental Management Systems (SEMS) for oil, gas, and sulfur operations in the Outer Continental Shelf (OCS). The final rule will apply to all OCS oil, gas, and sulfur operations and the facilities under BSEE jurisdiction including drilling, production, construction, well workover, well completion, well servicing, and Department of Interior (DOI) pipeline activities. The rule became effective on November 15, 2010.

BSEE is incorporating by reference, and making mandatory, the American Petroleum Institute's *Recommended Practice for Development of a Safety and Environmental Management Program for Offshore Operations and Facilities*, API RP 75, Third Edition, May 2004, reaffirmed in May 2008 in its entirety. This recommended practice, including its appendices, constitutes a complete Safety and Environmental Management System (SEMS) program. In addition, BSEE has added further text in the regulation to the language published in API RP 75 to clarify compliance requirements. It is the intent of the rule to hold operators accountable for the overall safety of the offshore facility, including ensuring that all contractors and subcontractors have safety policies and procedures in place that support the implementation of the operator's SEMS program and align with the principles of managing safety set forth in API RP 75. The final

SEMS rule will require all elements of API RP 75 described below, with additional clarifications and requirements in each element.

The SEMS regulation and API RP 75 are intended to require OCS facility owners/operators to develop and implement a safety and environmental program that “identifies, addresses, and manages safety, environmental hazards, and impacts during design, construction, startup, operation, inspection, and maintenance of all new and existing facilities...” (30 CFR 250.1901) “concerning significant safety hazards and environmental impacts over which they can control and can be expected to have an influence.” (API RP 75, section 1.1.1). Although the phrases “safety and environmental management system” or “safety and environmental program” do not include “process safety” they contain elements that are intended to prevent large scale events such as fires, explosions, and spills/releases that can have an effect on the safety of the platform and on the environment of the OCS and contiguous areas of the ocean environment.

In this respect the SEMS regulations have the same basic purpose as and are closely related to the process safety programs in place at many onshore facilities, which are also intended to prevent large scale events from having catastrophic consequences on facility workers as well as the public and the environment. Although there are many similarities between the SEMS regulation and OSHA’s Process Safety Management (PSM) Standard (29 CFR 1910.119) and EPA’s Risk Management Program (RMP) Rule (40 CFR 68) they are not identical. These regulations do not apply at OCS facilities, and the Department of the Interior/BSSE is a different agency and regulator than OSHA or EPA. Therefore, SEMS may be applied and enforced differently on the OCS than the PSM Standard and RMP Rule are enforced onshore. However, given the similarities in concept as well as content the SEMS regulations do impose a process safety-like program on OCS oil and gas facilities, although that phrase is not used explicitly in the regulations or in API RP 75.

The SEMS elements are described briefly below and also include similarities to and parallels with process safety programs, where these are appropriate:

- **General** – This SEMS element covers organizational, designation of responsibilities, overall training and expertise, and the requirement that the SEMS policies, practices, and procedures be written. This requirement is largely inferred in PSM and RMP, but is an explicit general requirement in SEMS.
- **Safety and Environmental Information** – This SEMS element includes requirements for a body of written information that describes the design, construction, and operation of the facility. It is very similar to the process safety information element of process safety programs.
- **Hazards Analysis** – This SEMS element requires that hazard analyses be performed by November 15, 2011 and that the recommendations from these studies are resolved and documented. In this respect it is very similar to the process hazard analysis element of process safety programs. This SEMS element also requires that Job Safety Analyses (JSA) be performed for operational tasks. JSAs are a common technique used in occupational safety to analyze an operational or maintenance task before it is started.

- **Management of Change** – This SEMS element is very similar in concept and requirements to the management of change (MOC) element in process safety programs.
- **Operating Procedures** - This SEMS element is very similar to the requirements to the operating procedures element in process safety programs, except that job titles and reporting relationships must be included in the procedures and annual certification of the procedures is not explicitly required in SEMS programs as it is in onshore process safety management programs.
- **Safe Work Practices** – This SEMS element includes a general requirement that necessary safe work practices be developed for the facility, but no specific requirements. However, it does contain most of the requirements contained in the process safety program contractor element, including contractor selection, orientation, access/egress, and other requirements.
- **Training** – This SEMS element incorporates many of the training requirements in the training, MOC, mechanical integrity, and emergency response elements of process safety programs. However, this SEMS element applies to all platform employees, not just the operators, as in PSM/RMP.
- **Assurance of Quality and Mechanical Integrity (MI) of Critical Equipment** – This SEMS element is very similar to the MI element in process safety programs, except that is a little broader in that it applies to all facility equipment and systems that can prevent or mitigate uncontrolled releases of hydrocarbon, toxic materials, or other materials that can have safety or environmental impacts. This element includes provisions for written procedures, training or maintenance personnel, the inspection, testing, and preventive maintenance program for the facility, deficiency management, and quality assurance for the design, fabrication, installation, and spare parts for OCS facility equipment.
- **Pre-startup Review** – This SEMS element requires pre-startup safety reviews (PSSR) that are identical to those required under process safety programs.
- **Emergency Response and Control** – This SEMS element is similar in concept and content to the emergency planning and response element in process safety programs, except that the requirements for drills are more explicit and there is a requirement for an emergency operations center (EOC). Unlike PSM/RMP, the SEMS emergency response requirements do not refer to the pre-existing regulations governing emergency response activities, e.g., OSHA’s Emergency Action Plan (29 CFR 1910.38(a) and 1910.165) or HAZWOPER (29 CFR 1910.120) regulations.
- **Investigation of Incidents** – This SEMS element is very similar to the same element in process safety programs in concept and content, including the requirement to investigate near misses.
- **Audit of Safety and Environmental Management Program Elements** - This SEMS element is substantially different in requirements to the audit element of process safety programs, although it is the same in concept. SEMS requires that an audit of the program be performed within two years of the initial implementation of the SEMS program and triennially thereafter. SEMS audits must be performed by either independent third parties or second parties that are impartial and also have the technical qualifications to perform such audits. BSEE has approval over who performs

these audits, can observe them in person if they choose, and will also receive a copy of the audit reports. Corrective action plans to address the audit findings must also be submitted to BSSE. BSSE may verify that the corrective actions have been implemented if they choose. BSSE may also require additional follow-up SEMS audits if they deem them necessary.

- **Records and Documentation** – This SEMS element, which has no direct process safety programs regulatory corollary, requires that all SEMS records be kept for 6 years, except that the records retention period for several elements are 2 years. Also, a copy of facility records must be kept in an onshore location. Form MMS-131 providing OCS performance measures data must be submitted to BSSE annually.

Enforcement options for BSSE allowed under SEMS include: issuance of Incidents of Non-compliance, civil penalties, or initiation of probationary or disqualification procedures as an OCS operator. Nothing in the final SEMS rule affects the U.S. Coast Guard's authority and jurisdiction over vessels and offshore facilities.

Note that SEMS 2 is coming. BSSE proposed the revised regulation in the Federal Register in September 2011 (FR56683). In summary, the major changes are:

- SEMS 2 adds an employee participation element, which is also an element of onshore PSM/RMP programs.
- SEMS 2 makes changes to the requirements for JSAs in the Hazard Analysis element. If a particular activity is conducted on a recurring basis, and if the parameters of these recurring activities do not change, then the new JSA can be waived. Also, JSAs would have to be approved and signed by the person in charge of the facility, and hazard recognition training would have to be performed.
- SEMS 2 would require that all SEMS audits be performed by independent third parties (I3P). This is probably the most significant change in SEMS 2.

The current schedule target is to adopt the final SEMS 2 regulation in August 2012 with a 60-90 day phase-in period. Therefore, if the schedule holds, the revised regulation would be enforceable by the end of the year.

Offshore Process Safety Management Conference 2012

SEMS development and implementation strategies will be covered in detail at the Offshore Process Safety Management conference in Houston TX, September 11 – 12, 2012.

Come and join us in Houston for this rare opportunity to network, learn and share knowledge with over 150+ senior offshore professionals and gain exclusive insight into SEMS development, best practice and compliance from a regulatory, operator and contractor perspective.

[Download our brochure here for a full attendee list, speaker line-up and full conference outline!](#)

- Hear the latest Regulations and industry recommended practice from BSEE, API and COS to help develop your Safety and Environmental Management System
- What is acceptable risk? Learn from leading operators how to identify and prioritize risk for your offshore facilities to prevent early life failures
- Deliver an effective maintenance and reliability program to reduce costs and assure optimum production levels
- Review successful integrity leadership and management strategies to ensure a culture of effective, sustainable process safety performance improvement
- Case study examples for implementing a robust SEMS strategy that will ensure compliance and reduce risk to people, property and the environment

[Download the PDF brochure now for a complete overview of the conference agenda and speaker line up!](#)

If you are interested in speaking or sponsorship opportunities please contact:

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References:

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- American Petroleum Institute, API RP 75, *Recommended Practice for Development of a Safety and Environmental Management Program for Offshore Operations and Facilities*, 3rd Ed May 2004, Reaffirmed May 2008.
- Department of the Interior, Bureau of Safety and Environmental Enforcement, *National Notice To Lessees And Operators Of Federal Oil, Gas, And Sulphur Leases, Outer Continental Shelf, Guidance on the Development, Implementation and Maintenance of a Safety and Environmental Management Systems (SEMS) Program for Outer Continental Shelf (OCS) Oil, Gas and Sulphur Operations*, NTL No. 2011-N09, DOI/BSSE SEMS.
- Center for Chemical Process Safety, *Guidelines for Auditing Process Safety Management Systems*, 2nd Ed.
- Department of Labor, Occupation Safety and Health Administration, 29 CFR 1910.119, *Process safety management of highly hazardous chemicals*.
- Environmental Protection Agency, 40 CFR 68, *Accidental Release Prevention Requirements: Risk Management Programs Under Clean Air Act Section 112(r)(7)*.
- Department of the Interior, 30 CFR 250, *Oil and Gas and Sulphur Operations in the Outer Continental Shelf—Safety and Environmental Management Systems, Proposed Rule*, FR56683, September 14, 2011.

Center for Offshore Safety

The Center for Offshore Safety (COS) was established in 2011. The mission and guiding principles of COS are as follows:

Mission: The Center for Offshore Safety is designed to promote the highest level of safety for offshore drilling, completions, and operations through leadership and effective management systems addressing communication, teamwork, and independent third-party auditing and certification.

Guiding Principles:

- Industry leaders will demonstrate a visible commitment to safety
- Operators, contractors, and suppliers will work together to create a pervasive culture of safety
- Decision making at all levels will not compromise safety
- Safety processes, equipment, training, and technology will undergo constant examination and improvement
- Members will share learnings and embrace industry Standards and best practices, to promote continual improvement

- Open communication and transparency of safety information will be utilized to build mutual trust among stakeholders and promote collective improvement in industry performance
- Collaborative approaches will be utilized to drive safe and responsible operations, and mutual accountability
- Everyone will be personally responsible for safety and empowered to take action

COS has developed a SEMS audit protocol, as well as SEMS auditing guidance. These and other documents, including the full mission and guiding principles statements, are available on COS's website, www.centerforoffshoresafety.org. A process for qualifying and certifying I3P SEMS auditors is currently being finalized by COS and will be published shortly.

AcuTech

AcuTech specializes in consulting for security, safety, and emergency management systems for the process industries. Our consultants have internationally recognized expertise in process safety and risk management programs analysis, development, implementation, with specialization in the petroleum, chemical, and petrochemical industry. We have deep experience conducting audits, evaluations, and assessments of safety programs, as well as investigations to determine causes of incidents and help companies develop, improve and implement management systems to prevent further undesirable consequences.

Our experience includes past work with offshore facilities and Safety and Environmental Management Programs (SEMP), experience working with API 75, auditing, and audit training. Due to our expertise in auditing and safety programs, as well as our work on the of the CCPS book *Guidelines for Auditing Process Safety Management System, 2nd Ed.* Also, AcuTech recently developed the COS SEMS Audit Guidance document.

Our scope of services includes regulatory compliance with federal, state and local requirements, but our abilities extend beyond these standards to enable us to deliver world class services for the most demanding global companies. AcuTech blends strong project management skills with a personalized, responsive business style allowing us to work in harmony with our clients. We emphasize on-time, cost-effective performance, provided by professionals experienced in achieving these goals. Contact us today at our headquarters at 703-245-3015, our Houston office at 832-431-3198 or email us at help@acutech-consulting.com to learn how AcuTech's services can help you.

AcuTech will be delivering a presentation at the offshore PSM conference Sep 11-12 2012, Houston TX on **'Auditing SEMS Mechanical Integrity Programs for BSEE Compliance'**.