Safety and Environmental Management Systems (SEMS) for Gulf of Mexico
## REVISION RECORD

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1 General – Management Responsibility

Apache Corporation fully recognizes the value of maintaining an integrated Safety and Environmental Management System (SEMS) for its outer continental shelf (OCS) facilities that operate under the jurisdiction of the Bureau of Safety and Environmental Enforcement (BSEE) and pipelines regulated by the Department of the Interior (DOI).

Apache is committed to requiring that the program elements of Apache’s SEMS are properly documented and available at field and/or office locations, as appropriate for each program element. Apache’s Management is also committed to continuously maintain and improve the SEMS Program based on changing circumstances, audit program results and evolving technologies.

1.1 Purpose and Objective

The Safety and Environmental Management System (SEMS) is structured to ensure safety, environmental protection and operational efficiency is achieved during drilling, construction and production activities on Apache offshore facilities in OCS waters. The objective of the SEMS is to identify, address and manage safety and environmental hazards during the design, construction, start-up, operation, inspection and maintenance of new or existing facilities, including MODUs, in an efficient and practical manner. The various elements of the program are written in accordance with the guidelines outlined in:

API RP 75 Recommended Practice for Development of a Safety and Environmental Management Program for Offshore Operations and Facilities

30 CFR Part 250 Oil and Gas and Sulphur Operations in the Outer Continental Shelf, Subpart S – Safety and Environmental Management Systems (SEMS) (Sections 250.1900-1929)

1.1.1 Owners and Operators

Apache’s SEMS program is designed to promote safety and environmental protection during the performance of offshore oil, gas and sulphur operations. This SEMS document is based upon the following hierarchy of program development:

1. Safety and Environmental Policy
2. Planning
3. Implementation and operation
4. Verification and corrective action
5. Management review
6. Continual improvement

1.1.2 Contractors

Apache will ensure that Contractors are familiar with the SEMS and that contractor’s established safety and environmental policies and practices are consistent with the Apache’s SEMS. Apache has contracted with ISNetWorld (ISN) to enhance and streamline the contractor data management processes.
ISN will work with contractors to gather information in order to verify and evaluate the information based on Apache and BSEE criteria.

1.2 Management of Program Elements and Principles

1.2.1 Management of Program Elements
The program elements described herein address the following 12 areas:
   a. Safety and Environmental Information (Section 2)
   b. Hazards Analysis (Section 3)
   c. Management of Change (Section 4)
   d. Operating Procedures (Section 5)
   e. Safe Work Practices (Section 6)
   f. Training (Section 7)
   g. Assurance of Quality and Mechanical Integrity of Critical Equipment (Section 8)
   h. Pre-Startup Review (Section 9)
   i. Emergency Response and Control (Section 10)
   j. Investigation of Incidents (Section 11)
   k. Audit of Safety and Environmental Management Program Elements (Section 12).
   l. Documentation and Record Keeping (Section 13).

1.2.2 Principles
Apache’s SEMS program is based on the following principles:
   a. Management is responsible for the overall success of the SEMS program. In order to achieve this, management assigns program authority and accountability within the organization for each covered facility. Authority and individual responsibility is discussed in further detail in each element of this SEMS.
   b. Management is responsible for developing and endorsing a written program which addresses the elements identified in 1.2.1. That program is defined in this document.
   c. Management provides leadership in establishing goals and performance measures, demands accountability for implementation and provides necessary resources for carrying out an effective SEMS program.
   d. Management appoints specific representatives who will be responsible for establishing, implementing and maintaining the SEMS program. Apache Vice Presidents for the Gulf of Mexico Shelf and Deepwater Regions have designated the following managers to jointly perform this function: Region Production Operations Manager, Region Construction Manager, Region Production Engineering Manager, Region Drilling Manager, Region Procurement Manager and Region EHS&R Manager. An organizational chart is included in Appendix A.
   e. Management designates specific representatives who are responsible for reporting to management the performance of the safety and environmental management system. Apache has designated the SEMS department as responsible for reporting.
   f. Management will review the SEMS program annually to determine if it continues to be suitable, adequate and effective. The management review will address the possible need for changes to policy, objectives, and other elements of the program in light of program audit results, changing circumstances and the commitment to continual improvement. Observations, conclusions and recommendations from the review are documented and maintained by the SEMS department.
g. Management has developed and endorsed a written description of the company’s safety and environmental policies and organizational structure that define responsibilities, authorities and lines of communication required to implement the management program. These documents can be found on Apache’s SEMS Portal (https://semsportal.apachecorp.com).

h. Management utilizes the expertise of personnel in identifying safety hazards and environmental impacts, optimizing operations, developing safe work practices, developing training programs and investigating incidents.

i. Apache management and their contractors’ management each have their own responsibility to protect the environment, safety and health of their work forces.

j. The facilities are designed, constructed, maintained, monitored and operated in a manner compatible with applicable industry codes, standards and generally accepted practice in compliance with all applicable governmental regulations.

k. Management of safety hazards and environmental impacts is an integral part of the design, construction, maintenance, operation and monitoring of a facility.

l. Suitably trained and qualified personnel are employed to carry out all aspects of the safety and environmental management program.

m. The management program described herein is maintained and updated by means of periodic audits to ensure effective performance.

n. Safety and environmental management enhances operational performance, protection of personnel and property, and protection of the environment by reducing the probability and/or severity of uncontrolled releases and other undesirable events.

o. Human factors are considered in the design and implementation of the company’s SEMS program.

The subsequent sections of this document will specify the policies and procedures required for implementation of Apache’s SEMS.

1.2.3 Setting Objectives and Goals
Apache’s SEMS utilizes a goal and performance measurement system to gauge the success in meeting safety and environmental objectives. The Shelf and Deepwater Region EHS&R Managers will monitor and report results to management. The following are considered in this system:

a. A commitment to continuous improvement.

b. Responsibility for achieving objectives and goals at each relevant function and level of the organization.

c. Objectives and goals specifying the means and timeframes by which they are to be achieved.

d. Performance measures established to gauge safety and environmental performance using industry standard definitions and formulas that allow Apache to compare their performance from year to year and with industry “averages” or other operators.

e. Internal programs to effectively communicate the safety and environmental objectives, goals and performance measures. Apache’s safety and environmental performance is communicated externally as required by regulations.

Performance goals shall include, but are not be limited to, the following:

- Reduction in Total Recordable Incident Rate (TRIR) for contractors
• Reduction in spills.
• Reduction in NPDES discharge violations.
• Reduce Production INC to Component Ratio
• Reduce Drilling INC to Rig Inspection Ratio

1.2.4 Communication
Apache has established policy and procedures for both internal and external communication of safety and environmental information.

Internal Communication
The internal communication of SEMS information is the responsibility of several job functions within Apache. The EHS & R Department generate and distribute safety alerts, publish monthly newsletters and maintain the SEMS Portal (website). The SEMS Portal serves as the repository for the SEMS Plan and pertinent documents. EHS Specialist, Production Foreman and Apache PICs conduct Safety Meetings at crew change locations and on Apache facilities. The Training Coordinator distributes regulatory and safety alerts which require acknowledgement through CBT in SEMS Portal. Regulatory Foremen facilitate annual regulatory workshops which include both Apache and contractor production operations employees. The EHS Department conducts ACE (Apache Consultant Expectation) Training for our worksite supervisors.

External Communication
From Apache:
• Apache submits MMS-131 forms to BSEE on an annual basis
• Apache communicates with BSEE, BOEM, EPA, OSHA, etc as required by regulation.

To Apache:
• The Apache SEMS Portal is the interface for communication. The SEMS Help feature facilitates electronic communication from external interested parties. These communications are received and disseminated by the SEMS department.
• Monitoring of changes to Governmental regulations pertinent to Apache’s SEMS program is accomplished by membership in industry groups such as API, GCAT, OOC, Clean Gulf Associates, GCEAG, GCSTG, etc. and the BSEE mailing list.

1.3 Scope
1.3.1 Applications
1.3.1.1 Apache’s SEMS is intended for offshore oil, gas, and sulphur facilities and associated equipment. This includes well drilling, servicing, production and pipeline facilities and operations that have the potential for creating a safety hazard or significant environmental impact. The elements of this SEMS will be applied to these facilities as appropriate. For simple and nearly identical facilities (such as well jackets, subsea tiebacks and single well caissons), certain elements of the SEMS will be addressed only once after verifying that site specific deviations have been evaluated. Apache will incorporate SEMS for all existing facilities and any other facilities as acquired.
Facilities include all types of offshore structures permanently or temporarily attached to the seabed (i.e., mobile offshore drilling units; floating production systems; floating production, storage and offloading facilities; tension-leg platforms; Multi-Service Vessels, and spars) used for exploration, development, production, and transportation activities for oil, gas, or sulphur from areas leased in the OCS. Facilities also include DOI regulated pipelines.

When actions are taken in accordance with the SEMS, such actions shall conform to the most current requirements of applicable federal, state and local regulations or flag State requirements. Some parts of Apache’s SEMS may allow for more appropriate guidelines for certain applications (e.g., the International Maritime Organization’s (IMO) International Safety Management (ISM) Code for vessel operations).

1.3.1.2
Apache reports environmental releases as required to appropriate Government Agencies, such as BSEE and the EPA. *Apache Gulf of Mexico Safe Work Practices* identify the environmental impacts of its activities and include processes to minimize environmental impact. Job Safety Analyses (JSA) specifically address environmental hazards at the operational/task level. Section 3 of this SEMS documents the hazards analysis process for determining the level of environmental risk associated with the activity. The Deepwater Region will utilize their Environmental Impact Assessment Process (guidance document).

1.3.1.3
Toxic substances currently handled on Apache OCS operations include naturally occurring hydrocarbon compounds such as benzene and hydrogen sulfide (H2S). These substances are addressed in the *Apache Gulf of Mexico Safe Work Practices*, which will be updated as appropriate to include future toxic substances as identified.

1.3.1.4
Other materials are considered in this SEMS program. Due to their thermal, physical, or chemical properties, such materials handled in offshore operations may constitute a safety or environmental hazard if released in an uncontrolled manner. The *Apache Gulf of Mexico Safe Work Practices* shall address these substances as necessary for safe operations.

1.4 Definitions
Common industry terms are available in API RP 75 Appendix D. Company specific terms are defined as necessary in this document.

1.5 Standards, Regulations, and References
SEMS documents are maintained and stored per procedures for each individual element in this document. Apache retains SEMS documents pertaining to each manned platform at that platform or shore-based locations. SEMS documents pertaining to unmanned platforms are retained at the manned host platform or shore-based location.
1.5.1 Industry Codes, Practices, and Standards
Codes, practices and standards useful in the design, fabrication, installation, layout, operation, inspection, testing and maintenance of facilities are listed in API RP-75 Appendix B. These references are not to be considered a part of this SEMS except for those specific sections of documents referenced elsewhere in the SEMS.

1.5.2 Government Codes, Rules, Conventions, and Regulations
As part of the management program, Apache monitors government regulations for changes in established requirements for the design, fabrication, installation, layout and operation of facilities. Apache also monitors for change and complies with environmental regulations. (See 1.2.4 Communications)

1.5.3 References
Numerous textbooks, references and technical articles have been written on the design, fabrication, installation, layout and safety analysis of offshore production facilities. These references are not to be considered a part of this SEMS except for those specific sections of documents referenced elsewhere in the SEMS.

1.5.4 Consultants
For the purposes of this manual and as mentioned in referenced documents, the roles of PIC, lead operator or consultant may be considered interchangeable.
2 Safety & Environmental Information

2.1 General
The purpose of this element is to provide employees and contractors Safety and Environmental information as it relates to capabilities and limitations of Apache facilities. These guidelines will allow Apache to operate within those limits in order to avoid potential safety and environmental incidents. This information will provide the basis for implementing the SEMS program elements. Consideration will be given to the requirements of all the SEMS program elements, including Section 3, “Hazards Analysis” in determining the extent and detail of required information. The Safety and Environmental information will include documentation on process and mechanical design. Process, mechanical and facilities design information shall be retained for the life of the facility. Relevant portions of this information are available at the manned platform and / or onshore offices.

For simple and nearly identical facilities within the same field, a common compliance documentation package may be compiled. Such documentation must reflect site-specific deviations from the norm for each facility.

The Regulatory Foreman/Specialist is responsible for maintaining up-to-date safety and environmental information for his covered facilities. In this capacity, the Regulatory Foreman/Specialist incorporates the results of any relevant Management of Change activities (see Section 4) into the safety and environmental information.

It is the responsibility of the SEMS department to maintain up-to-date SEMS documentation in the appropriate location.

2.2 Process Design Information

2.2.1 Process safety information is presented in SAFE Charts and Safety Analysis Flow Diagrams that are prepared in accordance with API RP 14C “Recommended Practice for Analysis, Design, Installation, and Testing of Basic Surface Safety Systems for Offshore Production Platforms.” All installed devices that are listed on the SAFE Charts are shown on the Safety Flow Diagrams (SFD), Process Flow Diagrams (PFD) or simplified Piping and Instrument Diagrams (P&ID). The latest BSEE approved compliance drawings can be found on the SEMS Portal. Safe upper and lower operating limits for process variables such as temperatures, pressures and flows can be found on the BSEE safety device testing data.

Where the original process design information no longer exists, information will be developed in conjunction with a hazard analysis in sufficient detail to support the analysis.

2.3 Mechanical and Facilities Design Information

2.3.1 Process and mechanical design information forms the basis for SEMS elements such as hazards analysis, management of change, training, and operating procedure. Apache maintains the following types of information for each facility:
  - Environmental information and procedures (SEMS Portal)
  - Process & mechanical design information (Houston engineering)
• Simplified Process Flows and/or Safety Flow Diagrams (ADEPT, SEMS Portal, onsite)
• SAFE charts (ADEPT, SEMS Portal, onsite)
• Equipment layouts (ADEPT, SEMS Portal, onsite)
• Electrical area classification drawings (ADEPT, SEMS Portal, onsite)
• Station Bill (ADEPT, SEMS Portal, onsite)
• Description of alarm systems (SAFE chart, 3rd party inspections)
• Description of well control systems (individual project files)
• Design basis for passive and active fire protection systems (fire protection & safety equipment layouts – ADEPT, SEMS Portal, onsite)
• Design basis for emergency evacuation procedures (SEMS Portal & onsite)
• Chemical safety information (MSDS, onsite)
• BSEE regulatory files (J:\Regulatory Group\Apache electronic files)
• Relief System Analysis (N:\Houston\Dept\GulfCoast\Private\_____Construction_Projects\2011 SEMS)
• Deepwater files (J:\Regulatory\Apache Deepwater\Area-Block)

2.3.2
The mechanical and facility design for Apache operated mobile offshore units (MOUs) shall conform to the applicable requirements of the flag State and classification society. The combination of appropriate and valid flag State certificates (e.g., International Load Line Certificate, U.S. Coast Guard Certificate of Inspection, IMO MODU code certificate, or International Oil Pollution Prevention Certificate) and classification society certificates generally provide substantial evidence of conformance with these requirements.

2.3.3
The mechanical and facility design will be consistent with the applicable consensus codes and standards in effect at the time the design was prepared or, in the absence of such codes and standards, recognized and generally accepted engineering practices as well as the applicable governmental regulations. When the mechanical design is not consistent with applicable consensus codes and standards or when a hazards analysis or other review reveals that existing equipment is designed and is constructed in accordance with consensus codes, standards, or practices that are no longer in general use, suitability of design for intended use shall be documented.

2.3.4
Where the original mechanical design information no longer exists, suitability of equipment design for intended use shall be verified and documented. This may be done on the basis of engineering analysis or documentation of successful prior operating experience.

2.3.5
Design and installation of new facilities and major modifications shall include consideration of human factors.
3 Hazards Analysis

3.1 Application
A hazards analysis (facility level) shall be performed for all existing facilities that are covered by Apache’s SEMS. A complete hazards analysis report, including updates, shall be kept on file for the life of the facility. All hazards analysis reports are available on Apache’s SEMS Portal. The report is maintained for use in periodic reviews as discussed below.

The purpose of the hazards analysis is to identify, evaluate and, where unacceptable, reduce the likelihood and/or minimize the consequences of uncontrolled releases and other safety or environmental incidents. Human factors shall be considered in this analysis.

3.2 Methodology
The hazards analysis shall be appropriate to the complexity of the operation and will identify, evaluate and manage the hazards involved in the operation. The hazards analysis shall address the following:

- Hazards of the operation
- Previous incidents related to the operation being evaluated, including any incident in which an Incident of Noncompliance or a civil or criminal penalty was issued
- Control technology applicable to the operation being evaluated
- A qualitative evaluation of the possible safety and health effects on employees, and potential impacts to the human and marine environments, which may result if the control technology fails
- Human Factors

As a minimum, hazards analysis requirements for production equipment may be met by ensuring that the facility conforms to the requirements of API RP 14C, Recommended Practice for Analysis, Design, Installation and Testing of Basic Surface Safety Systems on Offshore Production Platforms. API RP 14J, Recommended Practice for Design and Hazards Analysis for Offshore Production Facilities contains guidance in selecting analysis techniques appropriate to the risk of each facility. Locations with clusters of structurally interconnected platforms shall be analyzed together.

Hazards analysis requirements for simple and nearly identical facilities, such as well jackets, single well caissons, and subsea tie-back systems may be fulfilled by performing a single hazards analysis which can be applied to all such facilities after verification that any site specific deviations are addressed in each of the elements of the SEMS program.

The recommended approach to hazards analysis on offshore facilities is to concentrate on the areas that present the greatest risk. For low risk facilities, such as unmanned wellhead platforms with minimal processing equipment, the review shall concentrate on verification that the facility will shut-in upon detection of unsafe conditions. For moderate risk facilities, such as unmanned production and processing platforms, the review shall additionally concentrate on mitigation of an accidental release. This shall include fire and gas detection/protection and ignition prevention. For facilities that present the highest risk, such as production or processing platforms with living quarters, the review shall additionally concentrate on the effects of an uncontrolled release on personnel. This shall include layout, fire, escape and rescue, and emergency response.
For MODU’s, it may be necessary to perform site-specific hazard analyses for certain operations to assure that the mobile offshore drilling unit is not exposed to conditions beyond its designed limits. Additional direction regarding MODU hazards analysis is presented in the IADC publication “Health Safety and Environmental Case Guidelines for Mobile Offshore Drilling Units”. Primary objectives of the MODU hazards analysis include:

- Identification of the sources of hazards included in the drilling contractor’s scope of operations
- Assessment of risks associated with these hazards and effectiveness of controls within the drilling contractor’s management system, including documented and experience based work practices
- Verification to ensure that identified risks are reduced to a level that does not exceed the drilling contractor’s tolerable limits for safe operations
- Verification of compliance with applicable regulatory and contractually agreed HSE requirements

A checklist format based on API RP 14J guidelines will be the preferred method for hazards analysis. A checklist is commonly used as a convenient means of verifying compliance with minimal standards and to identify areas that require further evaluation. In general, the checklist method provides this minimum level of review for most offshore facilities. The checklist is prepared by experienced personnel familiar with the design and operation of these or similar facilities, company and industry standards / procedures and hazard analysis methodology. Once the checklist has been prepared, it can then be applied by less experienced personnel. A checklist is generally the quickest and easiest method of hazards analysis and is very effective for control of standard hazards. Checklists provide a guide to the evaluator of items to be considered in performing the hazards evaluation. In addition, past incidents and near misses at existing facilities shall be reviewed.

Production facilities are generally simple, standard processes with a vast amount of operating experience and a relatively low inherent risk. This risk is dependent, to some extent, on location and environment. All hazards analysis procedures apply to production facilities; however, the direction and level of effort devoted to the hazards analysis shall be relative to the inherent risk. In general, the more sophisticated techniques for hazards analysis will be the exception rather than the rule for production facilities.

In most cases, mitigation of the hazards is simple or obvious and involves modifications to comply with standard practice. It is important to consider a wide range of possible solutions to the hazards identified and not to expect that every hazard must be controlled by an alteration in physical design. Also, consider that making a modification to an existing facility could introduce additional risks.

The analysis shall include a review of previous incidents related to the operation and facility being evaluated. Non-regulatory incidents are reviewed by Apache EH&S. Relevant findings of these reviews shall be included in the periodic hazard analyses. Apache will review all incidents relating to their operations to determine if undesirable trends exist for location or type of incident.

For complex operations or exceptionally high risk facilities such as sub-sea tie back systems, an alternate form of hazard analysis may be warranted. Apache SEMS department may be contacted to assist with coordination and facilitation of hazard analyses utilizing methodologies other than API 14J checklists. For these reviews, hazards identified as having insufficient safeguards in place or requiring
follow-up action for completion may be qualitatively evaluated in terms of the risk they present to personnel, environment, the facility and the business as necessary to prioritize response.

3.3 Initial Analysis
Per requirements as defined in 30CFR250 Subpart S, Section 250.1911, a hazards analysis (facility level) must be performed on each facility. The hazards analyses shall be performed in order of priority. The following factors (not necessarily in prioritized order) may be considered when establishing priority ranking for performing hazards analyses:

a. Areas with continuous offshore population, such as living quarters on major platforms, and platform clusters or complexes.
b. Inventory and flow rate of flammable, toxic or other materials that may constitute a safety hazard or cause a significant environmental impact.
c. Locations involving simultaneous operations such as producing while drilling or producing while constructing above or below the water line.
d. Facilities that remove natural gas liquids or handle hydrogen sulfide.
e. Facilities with severe operating conditions, such as high pressures, highly corrosive fluids or conditions such as abnormal sand production or high flow rates that may cause severe erosion or corrosion.
f. Facilities in proximity to areas the operator considers to be environmentally sensitive areas.

In performing a hazards analysis on a new or modified facility, special consideration shall be given to the following:

a. Previous experience with a similar facility.
b. Design circumstances, such as changes in the design team or the design itself, after the project is underway.
c. Unusual facility location, design or configuration, equipment arrangement or emergency response considerations.
d. Any findings that need to be brought to resolution before startup or that require immediate attention shall be clearly identified.
e. Operating procedures and practices, including simultaneous operations guidelines.

3.4 Periodic Analysis
Apache shall provide for updating hazards analyses within the Management of Change process. Hazard Analysis is continuously appended through the MOC process. The Hazard Analysis record can be found on Apache’s SEMS Portal. Hazards analyses shall be reviewed periodically and updated as appropriate, with typical review intervals ranging between 5 years for high-priority facilities and 10 years for low-priority facilities. Priority factors listed in Section 3.3.a and changes in the facility process shall be considered in establishing review frequency. The hazards analysis may be updated if necessary when an internal audit is conducted to ensure that it is consistent with current operations on the facility.

The MOC process includes the requirement for determining whether the change requires an addition to the existing facility hazard analysis. Operational changes can be described as Permanent or Temporary. Permanent changes include modifications to the existing equipment, piping or structure which will remain after the operation is complete. Temporary changes include addition of equipment and materials to the facility for operations that do not require site modifications. This equipment and materials will be removed at completion of the operation. The specific hazards of the operation shall be determined during the
planning phase hazard review. This will consist of reviewing the applicable Hazard Identification sheet and applicable Hazard Checklists found within the MOC program. These documents shall be verified as applicable to the proposed operation and modified as necessary. The Hazard ID sheet and checklists may be used in conjunction with Job Safety Analysis (JSA) to communicate potential hazards of the operation to site personnel.

3.5 Analysis Personnel
The size and makeup of the hazards analysis team shall be appropriate to the complexity and risk of the particular facility. The effectiveness of a hazards analysis depends on the skills, knowledge and efforts of the analysis personnel. A hazards analysis is normally performed by a team, but it can be performed by an individual for simple facilities. The team or individual shall be person(s) knowledgeable in engineering, operations, design, process, safety, environmental and other specialties deemed appropriate. At least one person on the team shall be familiar with the hazards analysis methodology being employed. The Regulatory Foreman, SEMS department or MOC initiator shall determine the members of the team for each hazards analysis. Team members may be Apache personnel or contractors. The hazard analysis records shall show name and job title as a means of qualification for team members or the rationale for their selection.

3.6 Analysis Record
The hazards analysis record shall document the hazards that were identified, the recommended actions to reduce the hazards, appropriate safeguards, alternatives or corrective actions as necessary for risk mitigation and a qualitative assessment of the risk level of the hazards recommended for mitigation if required to prioritize response and recommendations close-out verification. The Area Foreman, Deepwater equivalent or MOC initiator shall ensure the communication of all identified hazards and follow-up actions to the appropriate personnel. The SEMS department shall insure a current analysis, including updates, shall be maintained for each facility covered by the SEMS requirements for the life of the facility. The documentation will be maintained on Apache’s SEMS Portal. Revisions shall include reference to the applicable MOC.

The analysis will be documented to show who conducted the analysis, when it was conducted, what information was covered and any recommendations. Identified hazards and recommendations resulting from the review shall be summarized and distributed to appropriate personnel for action. When resolution before startup is stipulated, or when immediate action is required, the Area Foreman, Deepwater equivalent or MOC initiator shall assure that hazardous conditions are resolved and that the resolution is documented.

3.8 Job Safety Analysis - Application
The Job Safety Analysis (JSA) is the process of identifying/evaluating hazards and implementing control measures to eliminate or reduce the potential for an incident. JSA’s shall be performed for tasks on all facilities that are covered by Apache’s SEMS.

Although a JSA may be conducted for any job where the JSA process will prevent accidents or injuries, a JSA will be required for, but not limited to the following jobs:

- Jobs requiring Hot Work (welding, burning, grinding, etc.)
- Jobs requiring personnel to work at heights or working outside the handrails
• Vessel/tank cleaning or confined space entry jobs
• Jobs requiring Lockout/Tagout procedures
• Jobs requiring opening of process piping or equipment
• Jobs being performed during simultaneous operations
• Jobs that involve crane or lifting operations
• Jobs that involve deck openings (open holes)

3.8 Job Safety Analysis - Methodology
The JSA is a group activity coordinated by the Person in Charge (PIC), Lead Operator, or Consultant. All personnel involved with the project must be involved in the Job Safety Analysis process. The JSA will identify, analyze and record:
  a. The steps involved in performing a specific job
  b. The existing or potential safety and health hazards associated with each step
  c. The recommended action(s)/procedure(s) that will eliminate or reduce these hazards and the risk of a workplace injury or illness

The Pre-Job safety meeting shall be held before work begins so that the actual work environment will be communicated and the crew will become familiar with the job. The completed JSA form will be reviewed by all who will work on the particular job for which the JSA was developed. The Person in Charge shall sign and the supervisor of the job/task shall approve the JSA prior to the work commencement and document the results of the JSA in writing and must ensure that records are kept onsite for 30 days. All affected personnel within the work area will abide by the JSA. Copies of JSAs are to be kept at the job site and readily accessible to employees. Apache will retain these records for 2 years and make them available to BSEE upon request.

3.9 Stop Work Authority
Apache believes it is the responsibility and duty of all personnel to stop work when an unsafe condition or act is observed that could affect the safety of personnel and/or the environment. The use of Stop Work Authority must be discussed in all pre-job planning and Job Safety Analysis (JSA).

If an unsafe condition or act is observed:
  • Take immediate action by stopping the work
  • Notify the supervisor in charge.
  • Discuss and/or determine corrective measures with all involved
  • Review and/or revise JSA as necessary
  • Communicate corrective measures
  • Resume Work Safely

Under NO circumstances shall repercussions be directed towards personnel who use Stop Work Authority. This policy is included in Apache’s Safe Work Practices.

3.10 Documentation
Apache’s Daily Work Review and Permit Storage (DWRAP) is designed to store and maintain work permits and JSAs. The DWRAP process is accessible through the SEMS Portal.
4 Management of Change

4.1 General

Apache’s management program has established procedures to identify and control hazards associated with change and maintain the accuracy of safety information. A facility is subject to continual change to increase efficiency, improve operability and safety, accommodate technical innovation and implement mechanical improvements. On occasion, temporary repairs, connections, bypasses or other modifications may be made out of operating necessity. Any of these changes can introduce new hazards or compromise the safeguards built into the original design. Care must be taken to understand the process, facility and personnel safety and environmental implications of any changes. Although some changes may be minor with little likelihood of compromising safety or environmental protection, all changes may have the potential for disruption, injury or business loss.

The Management of Change (MOC) procedure addresses modifications of a facility and the safe management of change. MOC ensures that changes are recognized, documented, formally reviewed and approved before being implemented to avoid potential safety, environmental and operational problems.

The MOC will govern changes when modifications to the following occur:

- Equipment
- Operating procedures
- Personnel changes (including contractors)
- Materials
- Operating conditions

MOC records will be retained for 2 years and are available to BSEE upon request.

MOC procedures do not apply to situations involving replacement in kind (such as replacement of one component by another component with the same performance capabilities). For a change to be a replacement –in-kind (RIK), it should meet the original technical specifications of the system or equipment. Also, changes that fall within the safe operating window defined in approved operating procedures or safety and environmental information, or are approved operations that are included in the operating procedures are considered RIK.

MOC’s may be initiated by personnel in the field (Person in Charge) or office staff (Engineers, Foreman, Regulatory Foreman, etc.). The procedure for initiating, reviewing and processing, including time limits for resolution of MOC’s if necessary, is documented in Apache Gulf of Mexico Safe Work Practices and in guidance documents housed on the SEMS Portal. MOC’s are submitted electronically via Apache SEMS Portal and automatically routed to appropriate personnel for review and approval. MOC action item close-out is required prior to implementation of the requested change.

4.2 Change in Facilities

Change in facilities arises whenever the process or mechanical design is altered. Apache’s MOC addresses changes in facilities that occur as a result of changes in wellstream composition, process chemicals, sales contract specifications, instrumentation and control systems or materials of construction.
Typical instances in which change in facilities would likely occur include the following:

a. Construction of new production or process facilities.

b. New facility projects that involve production or process tie-ins to existing facilities, equipment reconfiguration, or modification of existing facilities/equipment.

c. Modification of existing facilities that result in changes to facility or equipment design, structural support, layout or configuration.

d. Projects to increase facility throughput or accommodate different produced fluids which are outside the original design parameters.

e. Significant changes in operating conditions, including pressures, temperatures, flow rates or process conditions different from those in the original process or mechanical design.

f. Equipment changes, including the addition of new equipment or modifications of existing equipment. These can include changes in alarms, instrumentation and control schemes.

g. Modifications of the process or equipment that cause changes in the facility’s pressure relief requirements. These can include increased process throughput, operation at higher temperatures or pressures, increased size of equipment or the addition of equipment that might contribute to greater pressure relief requirements.

h. Bypass connections around equipment that is normally in service if the bypass is not part of the currently permitted configuration.

i. Operations outside the scope of current written operating procedures.

j. Changes made in the process or mechanical design or in operating procedures that result from a hazards analysis performed as described in Section 3, “Hazards Analysis.”

k. Introduction of new or different process chemicals (for example, corrosion control agents, anti-foulants, anti-foam agents), drilling muds or workover/completion fluids if not covered by Apache Gulf of Mexico Safe Work Practices or applicable operating procedures.

l. Change in facilities may include mechanical changes that would not necessarily appear on a process and instrument diagram, including drilling and construction equipment and temporary connections or replaced components that are “not in kind,” such as:
   1. Replacement equipment or machinery that differs in specifications from the original equipment or previously approved modification.
   2. Temporary piping, connections, pipe repairs, or hoses.
   3. Temporary electrical equipment or utility connections, other than for emergency situations.
   4. Modifications to drilling diverter system, blowout preventers (BOPs) and drilling top drives that have not been previously approved. These management of change items will be addressed by the drilling contractor.

m. Changes to an approved drilling, completion, well servicing, or decommissioning programs that require BSEE District approval.

4.3 Change in Personnel
Apache’s MOC addresses change in personnel, including contractor personnel as appropriate, that occurs whenever there is a change in the organization or in personnel that supervise or operate the facility. Routine personnel vacancies and replacements, rotation, and shift or tour changes do not require additional management of change action.

Under some certain circumstances organization changes, particularly those brought about by acquisition or sale of a facility, necessitate a thorough review of the facility’s safety and environmental management
program. Upon acquisition or transfer of management control, a screening level review will be conducted and the facility will be incorporated into the new organization’s safety and environmental management program.

### 4.4 Managing the Changes

Apache’s management program has established and implemented written procedures to manage change in facilities and personnel. These procedures are flexible enough to accommodate both major and minor changes. These procedures cover the following:

a) The process and mechanical design basis for the proposed change.

b) An analysis of the safety, health, coastal and marine environments considerations involved in the proposed change, including, as appropriate, a hazards analysis. The effects of the proposed change on separate but unrelated upstream or downstream facilities (i.e., structures/platforms, pipelines, process equipment, emergency isolation and control systems and equipment, mitigative systems and equipment, accommodations areas, emergency evacuation facilities and equipment) and on area wide emergency plans (i.e., evacuation or oil spill) shall also be reviewed.

c) The necessary revisions of the operating procedures, including the facilities SEMS program, safe work practices and training program. If an MOC results in a change in the operating procedures of the facility, such changes shall be documented and dated.

d) Communication of the proposed change and the consequences of that change to appropriate personnel. For significant changes, training consistent with the guidance in Section 7 may be appropriate.

e) The necessary revisions of the safety and environmental information.

f) The duration of the change, if temporary.

g) Required authorizations to effect the change.

Additional details regarding Apache’s MOC program are available on the SEMS Portal.
5 Operating Procedures

5.1 General
Apache’s management program includes the requirement for written facility operating procedures designed to enhance efficient, safe and environmentally sound operations involved in each operation addressed in Apache’s SEMS program. Each facility’s written operating procedures shall be readily accessible to all employees involved in the operations. Within Apache’s group of facilities, the designs may differ only in the size and/or number of equipment items present. Consequently, standard operating procedures may be written and applied to multiple facilities if appropriate. However, operating procedures shall be made available for each facility regardless of similar preparation. Apache’s operating procedures directly address human factors issues associated with the interaction between facilities and personnel. The operating procedures’ format, content and intended use consider the final user (human factors) to minimize the likelihood of procedural error.

For Shelf Operations the Area Foreman through the Management of Change program is responsible for identifying facility changes which require revisions to the operating procedures. The Area Foreman is responsible for ensuring that the procedures are reviewed as necessary. The SEMS department shall ensure that operating procedures are reviewed periodically (see Periodic Review below).

For Deepwater Operations the SEMS department through the Management of Change Program is responsible for identifying changes to the subsea tieback systems which require revisions to the operating procedures. The Deepwater Production Supervisor will be responsible for revising the procedures with input from the host facility. The Subsea Tie-Back Operator and Host Platform Operator Bridging Document delineate the SEMS Program boundary for each Operator is the platform Boarding Valve on the Riser. Operations performed downstream of the boarding valve will fall under the Host Platform Operators SEMS program and Operating Procedures. Operations performed upstream of the boarding valve will fall under Apache’s SEMS program. The Deepwater Production Supervisor will be responsible for ensuring the procedures are reviewed as necessary. The SEMS department shall ensure that operating procedures are reviewed periodically (see Periodic Review below).

For each facility, a complete set of operating procedures is maintained and updated for the life of the facility. A complete copy of the manual is readily available at the manned platform for each facility and on the SEMS Portal.

5.2 Content of Operating Procedures
Written operating procedures shall include the following:

a. The job title and reporting relationship of the person or persons responsible for each of the facility’s operating areas.

b. Instructions for the sound operation of each facility that is consistent with the safety and environmental information including, as appropriate:
   • Startup, including initial, following construction and after an emergency shutdown (ESD)
   • normal operations
   • all emergency operations (including but not limited to medical evacuations, weather-related evacuations and emergency shutdown operations)
   • normal shutdown
c. Instructions for simultaneous operations (SIMOPS) and bypassing/flagging out-of-service equipment are included in Apache’s Safe Work Practices. Operation-specific procedures will be developed for temporary operations on an as-needed basis.

d. The operating limits resulting from the information specified in Section 2 – Safety and Environmental Information and, where safety and environmental considerations are present, a description of the following:
   • The safety and environmental consequences of deviation outside the operating limit envelop.
   • The steps required to correct or avoid a deviation from the operating limits.

e. Environmental and occupational safety and health considerations shown below are included in Apache’s Safe Work Practices or compliance documentation.

f. The special precautions required to prevent environmental damage and personnel exposure, including engineering controls, and personal protective equipment.

g. The control measures to be taken if physical contact or airborne exposure occurs.

h. Any special or unique hazards.

i. Continuous and periodic discharge of hydrocarbon materials, contaminants or undesired by-products into the environment is restricted by governmental limitations.

j. Any lease or concession stipulations established by the recognized governmental authority.

5.3 Periodic Review

Operating procedures must be accessible to all employees involved in the operations. When changes are made in facilities, operating procedures shall be reviewed as part of the management of change procedure described in Section 4 – Management of Change. Operating procedures are continuously reviewed during their ongoing usage. Additionally, a documented review of operating procedures will be conducting at intervals concurrent with the SEMS audit period as specified in Subpart S.
6 Safe Work Practices

6.1 General
Apache’s management program has established and implemented Safe Work Practices (SWP). These practices are designed to provide guidance for minimizing the risks associated with operating, maintenance and modification activities and the handling of materials and substances that could affect safety or the environment. These practices apply to all individuals on Apache facilities, including Apache employees, contractors and visitors. Human factors are considered in the development of safe work practices.

The Environmental, Health, Safety and Regulatory (EHS&R) Department is responsible for the preparation and revision of the manuals that describe basic safe work practices. The EHS&R Department is responsible for the evaluation of contractor’s safety program.

Safe work practices include, but are not limited to:
- Opening of pressurized or energized equipment or piping.
- Lockout and tag-out of electrical and mechanical energy sources.
- Hot work and other work involving ignition sources.
- Confined space entry
- Crane operations

Apache’s Daily Work Review and Permit Storage procedure (DWRAP) is implemented for the tasks listed above. The JSA system includes provisions for adequate communication of work activities to shift change and replacement personnel, including contractors, if they will perform the work or may affect or be affected by it. Apache’s Safe Work Practices meet the most current provisions of applicable federal, state or local regulations or flag state requirements.

6.2 Safe Conduct of Work Activities
Apache provides Safe Work Practices for all personnel, including contractors, for the safe conduct of operating, maintenance and modification activities, including simultaneous operations. These practices are presented in the Apache Gulf of Mexico Safe Work Practices. A copy of this document is available on the host platform associated with each facility. The manual is available to employees at all times through the Apache SEMS Portal. Apache will communicate the safety and environmental management system expectations and specific requirements to all employees, including contractors.

6.3 Control of Hazardous Materials
Materials specifications, inventories, separation, confinement and handling of toxic or hazardous materials that can affect safety and environmental protection are determined, documented and communicated to appropriate personnel per Apache Hazardous Communications policy and applicable Safe Work Practices.

6.4 Contractor Selection
Apache’s SEMS includes procedures and verification that contractor personnel understand and can perform their assigned duties for activities such as, but not limited to:
- Installation, maintenance or repair of equipment
- Construction, startup and operation of facilities
- Turnaround operations
d. Major renovation

e. Specialty work

Apache will utilize ISNetworld (ISN) to assist with selection and evaluation of contractors. Apache will:

- Perform periodic evaluations of the performance of contract employees in fulfilling their obligations and document that contracted employees are knowledgeable, skilled and experienced in the work practices necessary to perform their job in a safe and environmentally sound manner in accordance with Apache’s SEMS program
- Verify documentation of each contracted employee’s expertise to perform his/her job
- Verify that a copy of the contractor’s safety policies and procedures are available upon request
- Make the results of Apache’s verification for selecting contractors available to BSEE upon request
- Maintain a contractor employee injury and illness log for 2 years, related to the contractor’s work in the operation area and include this information on Form MMS-131
- Apache will inform contractors of any known hazards at the facility they are working on during the site-specific orientation.

Contractors shall agree to the conditions as set forth in Apache’s Safety and Environmental Management System (SEMS) Agreement and Expectations document or applicable bridging agreement prior to initiating any work on Apache facilities or leases. Apache and the contractor will agree on appropriate Contractor’s safety and environmental policies and practices before the contractor begins work at Apache’s facilities or leases. Where a contractor works at several Apache facilities, a single safety and environmental policies and practices review by Apache may be acceptable instead of a review at each facility where the contractor performs work.

ISN will work with the contractor to gather information in order to verify and evaluate the information based on Apache’s criteria. Contractor information entered in ISN includes:

- Company Profile – Contractor / Supplier Dashboard
- Management System Questionnaire (MSQ)
- Review and Verification of Health & Safety Programs (RAVS)
- Review of Training Documents (T-RAVS)
- OSHA Forms (Last 3 Years)
- Experience Modification Rate (EMR) Letters (Last 3 Years)

Apache will utilize ISN to assist with monitoring and evaluating contractors and their personnel on two separate levels:

1. Company Level Evaluations
2. Employee Level Evaluations

Apache will also continue on-site auditing of contractors based primarily regarding:

a. Type of work (Risk)
b. Volume of work (Manhours/Exposure)
c. Safety performance (Issues)
d. Verification of ISNetworld information
7 Training

7.1 General
Apache’s management program has established and implemented training programs so that all personnel, including contractors, are trained to work safely and are aware of environmental considerations offshore, in accordance with their duties and responsibilities.

Training addresses the operating procedures described in SEMS Section 5, the safe work practices recommended in SEMS Section 6, and the emergency response and control measures recommended in SEMS Section 10. Additional training is provided as necessary for changes in facilities that require new or modification to existing operating procedures for the safe implementation of those procedures. Training records for Apache employees are kept in the SEMS training database.

The EHS&R Training Coordinator is responsible for:

- Developing, maintaining and auditing Apache’s employee training.
- Ensuring that training instructors are qualified and their qualifications are documented.

Apache’s training program may utilize industry recognized training modules, videos and other media to supplement our Computer Based Training (CBT) modules and shall be reinforced by appropriate demonstrations and “hands-on” training where applicable. Reinforcement through on-the-job training is permissible if under the supervision of a knowledgeable operating/maintenance person of proven performance.

Training completion and progress will be tracked within the tracking data system.

7.2 Initial Training
Apache’s Training Coordinator shall ensure that all employees assigned to work on the OCS receive training for the basic wellbeing of personnel and protection of the environment, and ensure that persons assigned to operate and maintain the facility possess the required knowledge and skills to carry out their duties and responsibilities, including startup and shutdown.

All new employees, contractors and visitors receive a safety orientation by the Person in Charge (PIC) when they arrive on Apache’s facility. Additionally, all personnel shall receive training per API RP T-1, Recommended Practice for Orientation Program for Personnel Going Offshore for the First Time (latest edition) or the equivalent, prior to their first work assignment offshore.

For all personnel regularly assigned offshore, training, as applicable, in non-operating emergencies per API RP T-4, Recommended Practice for Training of Offshore Personnel in Non-Operating Emergencies (latest edition), rescue of persons in the water per API RP T-7, Recommended Practice for Training of Personnel in Rescue of Persons in Water (latest edition), and firefighting per API RP 14G, Recommended Practice for Fire Prevention and Control on Open Type Offshore Production Platforms (latest edition).

Appropriate personnel, regularly or occasionally assigned as required by the circumstances, will be trained in safe work practices and hazards communication.
The Training Coordinator ensures that each employee is trained in the appropriate job-specific topics relating to his duties. Qualification criteria is developed and implemented for all operating and maintenance personnel. Processes are in place to evaluate whether persons assigned to operate and maintain the facility possess the required knowledge and skills to carry out their duties and responsibilities, including startup and shutdown. These requirements are listed in Apache’s Employee Training Matrix. Some examples of appropriate training are:

- Crane operation and maintenance training per API RP 2D, *Recommended Practice for Operation and Maintenance of Offshore Cranes* (latest edition), for those who operate platform cranes.
- Production operations where hydrogen sulfide is known to be present per API RP 55, *Recommended Practices for Oil and Gas Producing and Gas Processing Plant Operations Involving Hydrogen Sulfide* (latest edition).
- Well Control and Production Safety Training per 30CFR Part 250, Subpart O.

All regularly assigned personnel, as applicable, shall be trained in environmental protection and pollution control as per applicable government regulations.

### 7.3 Periodic Training

Refresher training will be provided to maintain understanding of and adherence to the current operating procedures. Procedures are developed to verify adequate retention of the required knowledge and skills. For those requiring verification, a procedure such as periodic drills is established. The interval and frequency of refresher training and verification, where needed, is documented on the Apache Training Matrix.

### 7.4 Communication

Apache’s management program requires that whenever a change is made in the procedures recommended in SEMS Sections 5, 6, or 10, personnel will be trained in or otherwise informed of the change before they are expected to operate the facility. SEMS section 4, Management of Change, documents the required steps for determining when and how communication to effected personnel will take place.

### 7.5 Contractor Training

Contractor training requirements are listed in Apache’s Contractor Training Matrix. Apache has contracted with ISNetworld for management of contractor training requirements to verify that personnel are trained in the work practices necessary to perform their jobs in a safe and environmentally sound manner. Contractor training shall include, as appropriate, operating procedures, safe work practices, emergency response and control measures.

The Contractor’s employer is responsible for ensuring the completion, documentation and recordkeeping of training prior to beginning work at Apache’s facilities. Contractors shall ensure that training instructors are qualified and their qualifications are documented.
The training provided to contract personnel includes applicable site-specific safety and environmental procedures and rules pertaining to the facility and the applicable provisions of emergency procedures. This applies to contractors performing operating duties, maintenance or repair, major renovation or specialty work at the facility.

Apache may elect to verify contractor training utilizing a variety of methods in addition to ISNetworld. These methods may include audits of the contractor’s environmental, health and safety training programs and operator observation of contractor work performance.

More specific information can be found in Section G Chapter 2 of the *Apache Gulf of Mexico Safe Work Practices*. 
8 Assurance of Quality and Mechanical Integrity

8.1 General
Apache’s management program requires that procedures are in place and implemented so that critical equipment for any facility subject to SEMS regulations is designed, fabricated, installed, tested, inspected, monitored and maintained in a manner consistent with appropriate service requirements, manufacturer’s recommendations or industry standards. Apache requires through contractor agreements that contractors have programs in place to address their own critical equipment. Human factors are considered, particularly regarding equipment accessibility for operation, maintenance and testing. The overall quality assurance strategy to require conformance to specifications/requirements will be developed at the beginning of any project and become a part of the overall project execution plan and maintenance program. The quality assurance strategy will carry over into the operating and maintenance procedures and management of change. The purpose of the mechanical integrity program is to ensure that equipment is fit for service.

Apache identifies “Critical Equipment” as all equipment and systems used to prevent or mitigate uncontrolled releases of hydrocarbons, toxic substances, or other materials that may cause environmental or safety consequences and includes the following facility equipment:

- Wellheads
- Subsea Trees
- Subsea Blow Out Preventers
- Pressure and Atmospheric Vessels
- Storage tanks
- Piping systems (including casing and tubular goods)
- Relief devices and systems
- Safety shutdown and alarm systems
- Process control devices
- Electrical systems
- Pumps and compressors
- Firefighting equipment

The responsibility for implementing Apache’s mechanical integrity program is shared by the Region Production Operations Manager, Region Construction Manager, Region Production Engineering Manager, Region Drilling Manager, Region Procurement Manager, Region EHS&R Manager and Offshore District Production Manager as defined in the sections below.

8.2 Procurement
Apache will provide written procedures for procurement of critical equipment as part of the overall quality and mechanical integrity assurance program to verify equipment compliance with applicable design and material specifications as defined in the purchase order, purchase document or contract. This includes purchase of maintenance materials, spare equipment and parts to provide assurance that these are suitable for the application for which they will be used. Standards, specifications and industry codes include but are not limited to Apache Standard Specifications and Appendix B of API RP 75. In many instances, industry specifications alone are adequate. An example is the purchase of flanges per ASME B16.5 and API 6A, or pipe procured per ASTM A-106 Grade B or API 5L.
Deliveries shall be verified to ensure receipt of specified material. Delivery tickets, if used for documentation, shall have the model/serial numbers and manufacturer's specifications on the tickets. Verification shall be the responsibility of the facility PIC, lead maintenance supervisor or project site supervisor as appropriate.

8.3 Fabrication
Apache will provide written procedures to ensure that the fabrication of equipment is in accordance with the manufacturer or engineering consultant’s design and material specifications as defined in the purchase order. Procedures for the fabrication of critical process equipment shall be developed and included in the Request for Quotation as appropriate. Applicable standards, specifications and industry codes include but are not limited to Apache Standard Specifications and Appendix B of API RP 75.

Specifications or the purchase order may additionally define QA/QC procedures to be included in vendor site visits. These procedures may include but are not limited to the following items as applicable:

- Quality plan and procedures
- Personnel qualifications
- Safety records
- Material traceability, part identification and control
- Inspection hold points
- Pressure and/or function testing procedures
- Coating procedures
- Shipping preparation and procedures
- Documentation and recordkeeping

8.4 Installation
Apache conducts appropriate checks and inspection before startup to verify that the installation of critical equipment is consistent with design specifications and the manufacturer’s instructions as defined in the purchase order, installation specification or manufacturer’s instructions as appropriate. Applicable standards, specifications and industry codes include but are not limited to Apache Standard Specifications and Appendix B of API RP 75.

8.5 Maintenance
Maintenance programs include appropriate inspection and testing for critical equipment to sustain ongoing mechanical integrity. Apache executes a maintenance program that enhances safety and protects the environment.

The maintenance program includes the following provisions:

a. Procedures to maintain the mechanical integrity of equipment.
b. Use of contractor maintenance personnel whose training has been verified per Section 7 of this document.
c. Procedures to review all changes in facilities in accordance with Section 4.
8.6 Testing and Inspection
Apache has established programs for testing, inspection, calibration and monitoring of critical equipment. Such programs include the following items:

a. A list of critical equipment and systems that are subject to inspection and testing.
b. The frequency of testing and inspection, acceptable limits, and criteria for passing the test or inspection.
c. Testing and inspection procedures that follow commonly accepted standards and codes.
d. Documentation of completed testing and inspection as required by regulations.
e. Procedures to document and correct critical equipment deficiencies or operations that are outside acceptable limits.
f. A system for reviewing and authorizing changes in tests and inspections.
g. Appropriate auditing procedures to ensure compliance with the program.

The frequency of inspections and testing will be consistent with industry codes and standards, applicable manufacturer's recommendations, good engineering practices and regulatory requirements. Inspection and testing frequency may be increased or decreased based upon prior experience but shall in no instance be less stringent than regulatory requirements.

Deficiencies found to be outside the manufacturer’s recommended limits shall be corrected before further use of the equipment. The decision for determining whether to continue to operate the affected equipment, isolate and bypass or shut down will be made by the Area Production, Maintenance Foreman, Deepwater equivalent as appropriate.

8.7 Training
The training of Apache and contract personnel involved in maintenance, testing and inspection shall be defined by the appropriate training matrix and is more fully described in Section 7 of this document. Training for company personnel is monitored and documented by the Training Coordinator. Contractor training is the responsibility of the contractor and is documented within ISNetworld for verification by company personnel who employ these specialists.

8.8 Documentation & Recordkeeping
All inspection and testing of equipment and systems covered by the SEMS shall be documented. Inspection and testing records provide data for historical trending of failures and gauging the effectiveness of the mechanical integrity program. Recordkeeping shall meet the requirements as included in Section 13.3 of this document.

Testing and inspection documentation shall include:
- the date of the inspection or test,
- the name, position and signature (electronic acceptable) of person performing inspection or test,
- a serial number, API 14C component designation or other identification of the equipment on which the inspection or test was performed,
- a description of the inspection or test performed,
- the results of the inspection or test, including any deficiencies,
- verification that all deficiencies were adequately addressed.
Maintenance, testing and inspection requirements for evaluation and documentation of in-service piping, vessels, production equipment, and structural elements is found in the Apache’s In-Service Mechanical Integrity Evaluation Plan for Offshore Oil and Gas Production Piping and Equipment.

Requirements for rotating equipment, electrical systems and process control devices are based on historical data, testing programs and OEM recommendations. This information can be found at the field locations and Area Maintenance Foreman’s Lafayette office.

Safety devices (alarms, shutdowns, relief valves) are inspected, tested and maintained per the requirements of API RP 14C and 30CFR250 Subpart H. Documentation of testing and inspection is available through Apache’s SEMS Portal and/or host platform location.

Firefighting equipment is inspected, tested and maintained per requirements of API RP 14C, 30CFR250 Subpart H and applicable Coast Guard Requirements. Documentation is available through Apache’s SEMS Portal and/or host platform location.
9 Pre-Startup Review

9.1 General

Apache’s management program requires that the commissioning process include a pre-startup safety and environmental review (PSR) for new and significantly modified facilities to confirm that the following criteria are met:

a. Construction and equipment are in accordance with specifications.

b. Safety, environmental, operating, maintenance and emergency procedures are in place and are adequate.

c. Safety and environmental information is current.

d. Hazards analysis recommendations have been considered addressed, and implemented as appropriate.

e. Training of operating personnel has been completed.

f. Programs to address management of change and other elements of this publication are in place.

g. Safe work practices are in place.

Documentation of PSR completion is included in Apache’s Management of Change procedure.
10 Emergency Response and Control

10.1 General
Apache’s management program requires that emergency response and control plans are in place and are ready for immediate implementation. These plans are validated by drills carried out to a schedule defined by the Emergency Action Plan as defined below. The drills address the readiness of personnel and their interaction with equipment.

10.2 Emergency Action Plan
Written action plans have been established to assign authority to the appropriate qualified person(s) at a facility for initiating effective emergency response and control. These plans also address emergency reporting and response requirements and comply with all applicable governmental regulations. The following action plans document the action plans:

- **Emergency Evacuation Plan (EEP)**
  A written plan approved by the U.S. Coast Guard is developed for and kept at each manned facility. These plans contain provisions for all potential emergencies. *Emergency Evacuation Plans* are also written for and kept at each mobile drilling unit. It is the EHS&R Manager’s responsibility for the preparation and maintenance of this Plan, excluding drilling operations. It is the responsibility of the Houston Regulatory Managers to develop this plan for drilling operations.

- **Well Containment Plan (WCP)**
  A well specific written plan approved by the Bureau of Safety and Environmental Enforcement (BSEE) for deepwater exploration and development drilling activities. The WCP is located in the Deepwater Region’s Houston office and an electronic copy is available on the Portal.

- **Oil Spill Contingency Plan**
  Apache’s written Oil Spill Contingency Plan provides for the protection of personnel, the environment, and the equipment in the event of an oil spill. The Plan meets the requirements of federal regulation 30CFR250.42. This plan also includes reporting procedures, inspection schedules, and a *Spill Management Team Quick Guide*. The Shelf Region Plan is located in the Lafayette and Houston offices, and is maintained at the direction of the Shelf Region Production Operations Manager. The Deepwater Region Plan is located in the Houston office and is maintained at the direction of the Deepwater Region EHS&R Manager.

- **Oil Spill Management Team Quick Guide**
  The *Spill Management Team Quick Guide* contains spill response procedures and the information necessary to facilitate reporting and field documentation of the spill response. This Quick Guide is available on the Apache SEMS Portal. This information is maintained by Apache’s EHS&R groups.

- **Station Bill**
  A Station Bill is developed and maintained for each of Apache’s facilities. The Station Bill is maintained by Operations, and provides information on personnel responsibilities in the event of a fire, explosion, man overboard, and platform abandonment. The Station Bill provides an equipment layout, location of firefighting equipment, lifesaving equipment, emergency shutdown stations, automatic detection systems, employee alarm systems, intercom systems, and personnel evacuation routes. The Station Bill is posted in the office building and living
quarters of the facility. All employees, contractors, and visitors are required to be familiar with the Station Bill and their individual responsibilities in case of emergency.

- **Medical Evacuation**
  
  Medical Evacuation procedures are maintained by the EHS&R department and provide guidance for the evacuation of injured or seriously ill personnel from an Apache facility or lease to a medical facility. This plan provides the information and phone numbers required for securing transportation and medical services. This plan is posted at the facility. Apache contracts a 24 hour search and rescue helicopter.

### 10.3 Emergency Control Center

The on-site Emergency Control Center (ECC) will be located in the main office on each manned facility. In the event the facility needs to be evacuated, the disaster ECC will be located at either the Houston or Lafayette office.

An emergency control center(s) has access to the following:

a. Emergency action plans (refer to 10.2) that address events such as:
   1. Spills of hazardous substances
   2. Collisions
   3. Fire and/or blowouts

b. Oil Spill Contingency Plan

c. Safety and environmental information (refer to SEMS Section 2)

### 10.4 Training and Drills

Training incorporating emergency response and evacuation procedures is conducted periodically for all personnel (including contractor’s personnel). Training drills based on realistic scenarios for all these plans are conducted periodically at all Apache facilities to ensure that all personnel can react to an emergency situation in a prepared, organized and confident manner. The drills are designed to do the following:

- train personnel in their assigned tasks
- verify that safety and emergency equipment performs properly
- verify that response plans and contingency plans are complete and understood by all personnel
- verify that communications systems work

All personnel involved in a drill will review the proceedings of the drill as soon as possible after the drill is completed. The Person in Charge (PIC) documents each drill to record the type of drill, the results, and the persons involved.
11 Investigation of Incidents

11.1 General
Apache’s management program has established procedures for investigation of incidents with serious safety or environmental consequences. The program allows for investigation of incidents that are determined by facility management or BSEE to possess the potential for serious safety or environmental consequence. Incident investigations are initiated as promptly as possible, considering the necessity of securing the incident scene and protecting people and the environment.

The intent of the investigation is to learn from the incident and help prevent similar incidents. A corrective action program is established based on the findings of the investigation in order to analyze incidents for common root causes. The corrective action program is a follow-up system to the incident analysis procedures. The investigation is to be expedited and findings and recommendations resolved in a timely manner.

The incident investigation is directed by legal and conducted by personnel designated by Apache and/or contractor. An incident investigation is to be conducted by personnel knowledgeable in the process involved, investigation techniques and other specialties that are viewed as relevant or necessary.

11.2 Investigation
Apache has a program in place to investigate incidents that result in, or could reasonably have resulted in, serious safety or environmental consequences. This incident investigation program applies to all Apache facilities. The investigation of an incident will address the following:
   a. The nature of the incident.
   b. The factors (human or other) that contributed to the initiation of the incident and its escalation/control.
   c. Recommended changes identified as a result of the investigation.

A corrective action program will be established based on the findings of the investigation in order to analyze incidents for common root causes. The corrective action program will:
   a. Retain the findings of investigations for use in the next hazard analysis update, company audit, or for a minimum of 2 years, whichever is greater.
   b. Determine and document the response to each finding to ensure that corrective actions are completed; and
   c. Implement a system whereby conclusions of investigations are distributed to similar facilities and appropriate personnel within their organization.

The corrective action plan will include the identified action, name of person responsible for the action completion, target date for completion, status, actual completion date and comment on resolution of the action. The action plan will be closed out when all actions have been completed. Communication of the incident and corrective action will be provided through safety meetings and alerts, training, changes in company policies and procedures as appropriate.

11.2.1 Investigation Process
Apache’s investigative process is more fully described in the Apache’s Safe Work Practice “Incident Investigation Process” found on the SEMS Portal.
12 Audit of Safety and Environmental Management System Elements

12.1 General
Apache has established and maintains an audit program and procedures for the periodic audit of the safety and environmental management program. The purpose of the audit program is to determine if the program elements have been properly implemented and maintained and to provide information on the results of the audit to management. Apache’s management has committed sufficient resources to the SEMS audit in order to meet its intended scope.

The audit program and procedures will cover:
- a. The activities and areas to be considered in audits.
- b. The frequency of audits
- c. The audit team
- d. How audits will be conducted
- e. Audit reporting

The SEMS department is responsible for scheduling and coordinating the auditing of Apache’s SEMS.

12.2 Scope
The scope of the audit includes:
- a. Determining if the management program elements of all SEMS Sections 1-13 are in place.
- b. Determining if the management program elements incorporate the required components.
- c. Testing system to evaluate the effectiveness of the management program. The system shall include a review of records and documentation as discussed in Section 13, private interviews of various levels and disciplines of personnel, and facility inspections.
- d. Identifying areas of potential improvement in the safety and environmental management program.

12.3 Audit Coverage
When selecting facilities to audit, consideration will be given to common features to obtain a cross-section of practices for the facilities operated.

The testing system of the audit need not be applied to each facility; rather, inspections and interviews will be conducted at fields that differ significantly. This will include a number of facilities sufficient to evaluate management’s commitment to items a, b, and c in Section 12.2.

During each audit cycle, at least fifteen percent (15%) of Apache operated facilities will be audited. The facilities included in the audit shall not be the same as those included in the previous audit. If sufficient deficiencies are identified in the effectiveness of any safety and environmental management program elements, the test sample size will be expanded for that program element.

12.4 Audit Plan
A written Audit Plan will be developed prior to the Audit and submitted to BSEE at least 30 days before the Audit. The Audit plan will be flexible enough to permit changes based on information gathered during the Audit and to permit the effective use of resources. Apache shall revise the facility listing if requested by BSEE.
The plan includes the following elements to the extent they are applicable to the specific audit:

a. Audit objectives and scope
b. Audit criteria
c. Identification of the audit team
d. Identification of the facilities to be audited
e. Identification of the program elements to be audited.
f. Procedures to be used in the audit.
g. Confidentiality requirements
h. Report contents and format, expected date of issue and distribution of the audit report.

12.5 Audit Frequency
The first audit will be conducted within 2 years of November 15, 2011 (initial implementation date) and at least once every 3 years thereafter.

12.6 Audit Team
An audit of Apache’s SEMS program will be performed by personnel from within the organization and/or by external person (Independent Third Party - I3P) selected by Apache. The audit will be conducted by one or more persons knowledgeable in the process involved and other specialties deemed necessary. The audit team will be selected carefully to insure impartiality.

The selected audit team will meet the requirements of 30 CFR 250.1926, which states that the following qualifications will be taken into account when selecting the Audit Team:

1. The audit team personnel shall have previous education and experience with SEMS, or similar management related programs.
2. The audit team personnel shall have technical capabilities of for the specific project.
3. The audit team personnel will have the ability to perform the independent third-party functions for the specific project considering current commitments.
4. The audit team personnel will have previous experience with BSEE regulatory requirements and procedures.
5. The audit team will have previous education and experience to comprehend and evaluate how the company's offshore activities, raw materials, production methods and equipment, products, byproducts and business management systems may impact health and safety performance in the workplace.

If Apache employs the services of an I3P, that I3P cannot have significantly participated in the development of the specific SEMS element being audited.

12.7 Audit Report
Upon completion of the audit, the team will prepare an audit report. The topics to be addressed in the audit report are those determined in the audit plan and will contain the findings. The final report will be dated and signed by the audit team. Audit related information that may be in the audit reports includes, but is not limited to:

a. Identification of the facilities audited
b. Identification of the program elements audited
c. Summary of objectives and scope of the audit
d. Criteria against which the audit was conducted  
e. Period covered by the audit and the date(s) the audit was conducted  
f. Identification of the audit team  
g. Statement of the confidential nature of the contents  
h. Distribution list for the audit report  
i. Summary of the audit process, including any obstacles encountered  
j. Audit findings and conclusions, such as whether the program element(s) is properly implemented and maintained.

The Audit Report will be provided to Apache’s management and specifically the Region Production Operations Manager, Region Construction Manager, Region Production Engineering Manager, Region Drilling Manager, Region Procurement Manager and Region EHS&R Manager who shall jointly be responsible for developing and implementing an Audit Response plan. This plan shall include the appropriate response to the findings and assuring a satisfactory resolution. Included in the response plan is the name and job title of the person responsible for responding to the deficiency and a time frame for completion of the response.

A copy of the Audit Report including the Audit Response plan will be provided to BSEE within 30 days of completion of the audit. BSEE will notify Apache within 14 days of receipt of the plan if the proposed schedule is not acceptable. BSEE may verify that the response was completed and that the response effectively addressed the Audit findings.

Records of the audit are to be retained at least 6 years from the date of completion at Apache’s Houston and/or Lafayette offices.
13 Records and Documentation

13.1 General
Apache has established a documentation system for the safety and environmental management program to ensure that records and documents are maintained in a manner sufficient to implement the management system. Records or documentation are kept in either paper or electronic form. The SEMS program documentation may not always be retained in a separate file or binder, but may be integrated into Apache’s filing or document control system. All records and documentation will be dated (with dates of revision) and readily identifiable. Audit requirements in Section 12 will be considered when formatting, distributing and filing the records and documentation related to the SEMS program.

13.2 Documentation
Various elements in the SEMS program identify documentation requirements. In addition to those requirements, documentation will be sufficient to describe the core elements of the program and the interaction between the elements.

13.3 Records
Various elements in Apache’s SEMS program identify requirements for record keeping. Apache adheres to specific requirements per 30 CFR 250.1928. Those requirements are as follows:

a. Apache’s SEMS program procedures ensure that records and documents are maintained for a period of 6 years, except as provided below. All SEMS audits are documented and kept for 6 years and are available to BSEE upon request. Apache shall maintain a copy of all SEMS program documents at an onshore location.

b. For JSAs, the person in charge of the activity will document the results of the JSA in writing and ensure that records are kept onsite for 30 days. Apache will retain these records for 2 years and make them available to BSEE upon request.

c. Apache documents and dates all management of change provisions as specified in §250.1912/SEMS Section 4, Management of Change. Apache will retain these records for 2 years and make them available to BSEE upon request.

d. Apache will maintain injury/illness log for 2 years and make them available to BSEE upon request.

e. Apache keeps all evaluations completed on contractor’s safety policies and procedures for 2 years and makes them available to BSEE upon request. ISNetworld will assist Apache in meeting this requirement.

f. Facility level hazard analysis shall be maintained for the life of the facility.

13.4 Record and Document Control
Apache has established and maintains procedures for controlling records and documents pertaining to the SEMS program.

All Shelf Region Production Safety System design permit applications submitted to government agencies for approval are logged and tracked to completion using a document database maintained by the EHS&R Clerks. Once approved the permits are placed in the Shelf Region’s document storage
program ("Adept"). Adept provides the region a way to track changes and assure consistent documentation throughout the organization. An MOC number must accompany all drawing release requests. Prior to releasing any of the above drawings from Adept for revision, an MOC number must be entered and accepted. Adept is a comprehensive, out-of-the-box data and document management system. This system allows Apache to manage, track and share engineering and business documents of all types between our various office locations and third party contractors. A third party contractor facilitates and maintains the documents housed in Adept for Apache.

The Deepwater Region maintains all government approved safety system schematics for subsea systems within the Portal.
14 Reference Information

14.1 Apache Shelf SEMS Organizational Chart
14.2 Apache Deepwater SEMS Organizational Chart