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## Title 30 - Mineral Resources

### Chapter II - Bureau of SAFETY and Environmental Enforcement, Department of the Interior

#### Subchapter B - Offshore

#### Part 250 - Oil and Gas and Sulphur Operations in the Outer Continental Shelf

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##### EDITORIAL NOTE ON PART 250

**Editorial Note:** Nomenclature changes to part 250 appear at 77 FR 50891, Aug. 22, 2012.

## **Subpart P - Sulphur Operations**

### **§ 250.1600 Performance standard.**

Operations to discover, develop, and produce sulphur in the OCS shall be in accordance with a BOEM-approved Exploration Plan or Development and Production Plan and shall be conducted in a manner to protect against harm or damage to life (including fish and other aquatic life), property, natural resources of the OCS including any mineral deposits (in areas leased or not leased), the National security or defense, and the marine, coastal, or human environment.

### **§ 250.1601 Definitions.**

Terms used in this subpart shall have the meanings as defined below:

*Air line* means a tubing string that is used to inject air within a sulphur producing well to airlift sulphur out of the well.

*Bleedwater* means a mixture of mine water or booster water and connate water that is produced by a bleedwell.

*Bleedwell* means a well drilled into a producing sulphur deposit that is used to control the mine pressure generated by the injection of mine water.

*Brine* means the water containing dissolved salt obtained from a brine well by circulating water into and out of a cavity in the salt core of a salt dome.

*Brine well* means a well drilled through cap rock into the core at a salt dome for the purpose of producing brine.

*Cap rock* means the rock formation, a body of limestone, anhydride, and/or gypsum, overlying a salt dome.

*Sulphur deposit* means a formation of rock that contains elemental sulphur.

*Sulphur production rate* means the number of long tons of sulphur produced during a certain period of time, usually per day.

### **§ 250.1602 Applicability.**

- (a) The requirements of this subpart P are applicable to all exploration, development, and production operations under an OCS sulphur lease. Sulphur operations include all activities conducted under a lease for the purpose of discovery or delineation of a sulphur deposit and for the development and production of elemental sulphur. Sulphur operations also include activities conducted for related purposes. Activities conducted for related purposes include, but are not limited to, production of other minerals, such as salt, for use in the exploration for or the development and production of sulphur. The lessee must have obtained the right to produce and/or use these other minerals.
- (b) Lessees conducting sulphur operations in the OCS shall comply with the requirements of the applicable provisions of subparts A, B, C, I, J, M, N, O, and Q of this part and the applicable provisions of 30 CFR 550 subparts A, B, C, J and N.
- (c) Lessees conducting sulphur operations in the OCS are also required to comply with the requirements in the applicable provisions of subparts D, E, F, H, K, and L of this part and the applicable provisions of 30 CFR 550, subpart K, where such provisions specifically are referenced in this subpart.

### **§ 250.1603 Determination of sulphur deposit.**

- (a) Upon receipt of a written request from the lessee, the District Manager will determine whether a sulphur deposit has been defined that contains sulphur in paying quantities (*i.e.*, sulphur in quantities sufficient to yield a return in excess of the costs, after completion of the wells, of producing minerals at the wellheads).
- (b) A determination under paragraph (a) of this section shall be based upon the following:
  - (1) Core analyses that indicate the presence of a producible sulphur deposit (including an assay of elemental sulphur);
  - (2) An estimate of the amount of recoverable sulphur in long tons over a specified period of time; and
  - (3) Contour map of the cap rock together with isopach map showing the extent and estimated thickness of the sulphur deposit.

### **§ 250.1604 General requirements.**

Sulphur lessees shall comply with requirements of this section when conducting well-drilling, well-completion, well-workover, or production operations.

- (a) **Equipment movement.** The movement of well-drilling, well-completion, or well-workover rigs and related equipment on and off an offshore platform, or from one well to another well on the same offshore platform, including rigging up and rigging down, shall be conducted in a safe manner.
- (b) **Hydrogen sulfide (H<sub>2</sub>S).** When a drilling, well-completion, well-workover, or production operation is being conducted on a well in zones known to contain H<sub>2</sub>S or in zones where the presence of H<sub>2</sub>S is unknown (as defined in § 250.490 of this part), the lessee shall take appropriate precautions to protect life and property, especially during operations such as dismantling wellhead equipment and flow lines and circulating the well. The lessee shall also take appropriate precautions when H<sub>2</sub>S is generated as a result of sulphur production operations. The lessee shall comply with the requirements in § 250.490 of this part as well as the requirements of this subpart.
- (c) **Welding and burning practices and procedures.** All welding, burning, and hot-tapping activities involved in drilling, well-completion, well-workover or production operations shall be conducted with properly maintained equipment, trained personnel, and appropriate procedures in order to minimize the danger to life and property according to the specific requirements in §§ 250.109 through 250.113 of this part.
- (d) **Electrical requirements.** All electrical equipment and systems involved in drilling, well-completion, well-workover, and production operations shall be designed, installed, equipped, protected, operated, and maintained so as to minimize the danger to life and property in accordance with the requirements of § 250.114 of this part.
- (e) **Structures on fixed OCS platforms.** Derricks, cranes, masts, substructures, and related equipment shall be selected, designed, installed, used, and maintained so as to be adequate for the potential loads and conditions of loading that may be encountered during the operations. Prior to moving equipment such as a well-drilling, well-completion, or well-workover rig or associated equipment or production equipment onto a platform, the lessee shall determine the structural capability of the platform to safely support the equipment and operations, taking into consideration corrosion protection, platform age, and previous stresses.
- (f) **Traveling-block safety device.** All drilling units being used for drilling, well-completion, or well-workover operations that have both a traveling block and a crown block must be equipped with a safety device that is designed to prevent the traveling block from striking the crown block. The device must be checked for proper operation weekly and after each drill-line slipping operation. The results of the operational check must be entered in the operations log.

### § 250.1605 Drilling requirements.

- (a) **Sulphur leases.** Lessees of OCS sulphur leases shall conduct drilling operations in accordance with §§ 250.1605 through 250.1619 of this subpart and with other requirements of this part, as appropriate.
- (b) **Fitness of drilling unit.**
  - (1) Drilling units shall be capable of withstanding the oceanographic and meteorological conditions for the proposed season and location of operations.
  - (2) Prior to commencing operation, drilling units shall be made available for a complete inspection by the District Manager.
  - (3) The lessee shall provide information and data on the fitness of the drilling unit to perform the proposed drilling operation. The information shall be submitted with, or prior to, the submission of Form BSEE-0123, Application for Permit to Drill (APD), in accordance with § 250.1617 of this subpart. After a drilling unit has been approved by a BSEE district office, the information required in this paragraph need not be resubmitted unless required by the District Manager or there are changes in the equipment that affect the rated capacity of the unit.
- (c) **Oceanographic, meteorological, and drilling unit performance data.** Where oceanographic, meteorological, and drilling unit performance data are not otherwise readily available, lessees shall collect and report such data upon request to the District Manager. The type of information to be collected and reported will be determined by the District Manager in the interests of safety in the conduct of operations and the structural integrity of the drilling unit.
- (d) **Foundation requirements.** When the lessee fails to provide sufficient information pursuant to 30 CFR 550.211 through 550.228 and 30 CFR 550.241 through 550.262 to support a determination that the seafloor is capable of supporting a specific bottom-founded drilling unit under the site-specific soil and oceanographic conditions, the District Manager may require that additional surveys and soil borings be performed and the results submitted for review and evaluation by the District Manager before approval is granted for commencing drilling operations.
- (e) **Tests, surveys, and samples.**

- (1) Lessees shall drill and take cores and/or run well and mud logs through the objective interval to determine the presence, quality, and quantity of sulphur and other minerals (e.g., oil and gas) in the cap rock and the outline of the commercial sulphur deposit.
  - (2) Inclination surveys shall be obtained on all vertical wells at intervals not exceeding 1,000 feet during the normal course of drilling. Directional surveys giving both inclination and azimuth shall be obtained on all directionally drilled wells at intervals not exceeding 500 feet during the normal course of drilling and at intervals not exceeding 200 feet in all planned angle-change portions of the borehole.
  - (3) Directional surveys giving both inclination and azimuth shall be obtained on both vertically and directionally drilled wells at intervals not exceeding 500 feet prior to or upon setting a string of casing, or production liner, and at total depth. Composite directional surveys shall be prepared with the interval shown from the bottom of the conductor casing. In calculating all surveys, a correction from the true north to Universal-Transverse-Mercator-Grid-north or Lambert-Grid-north shall be made after making the magnetic-to-true-north correction. A composite dipmeter directional survey or a composite measurement while-drilling directional survey will be acceptable as fulfilling the applicable requirements of this paragraph.
  - (4) Wells are classified as vertical if the calculated average of inclination readings weighted by the respective interval lengths between readings from surface to drilled depth does not exceed 3 degrees from the vertical. When the calculated average inclination readings weighted by the length of the respective interval between readings from the surface to drilled depth exceeds 3 degrees, the well is classified as directional.
  - (5) At the request of a holder of an adjoining lease, the Regional Supervisor may, for the protection of correlative rights, furnish a copy of the directional survey to that leaseholder.
- (f) **Fixed drilling platforms.** Applications for installation of fixed drilling platforms or structures including artificial islands shall be submitted in accordance with the provisions of subpart I, Platforms and Structures, of this part. Mobile drilling units that have their jacking equipment removed or have been otherwise immobilized are classified as fixed bottom founded drilling platforms.
- (g) **Crane operations.** You must operate a crane installed on fixed platforms according to § 250.108 of this subpart.
- (h) **Diesel-engine air intakes.** Diesel-engine air intakes must be equipped with a device to shut down the diesel engine in the event of runaway. Diesel engines that are continuously attended must be equipped with either remote-operated manual or automatic-shutdown devices. Diesel engines that are not continuously attended must be equipped with automatic shutdown devices.

### § 250.1606 Control of wells.

The lessee shall take necessary precautions to keep its wells under control at all times. Operations shall be conducted in a safe and workmanlike manner. The lessee shall utilize the best available and safest drilling technologies and state-of-the-art methods to evaluate and minimize the potential for a well to flow or kick. The lessee shall utilize personnel who are trained and competent and shall utilize and maintain equipment and materials necessary to assure the safety and protection of personnel, equipment, natural resources, and the environment.

### § 250.1607 Field rules.

When geological and engineering information in a field enables a District Manager to determine specific operating requirements, field rules may be established for drilling, well completion, or well workover on the District Manager's initiative or in response to a request from a lessee; such rules may modify the specific requirements of this subpart. After field rules have been established, operations in the field shall be conducted in accordance with such rules and other requirements of this subpart. Field rules may be amended or canceled for cause at any time upon the initiative of the District Manager or upon the request of a lessee.

### § 250.1608 Well casing and cementing.

- (a) **General requirements.**
- (1) For the purpose of this subpart, the several casing strings in order of normal installation are:
    - (i) Drive or structural,
    - (ii) Conductor,
    - (iii) Cap rock casing,

- (iv) Bobtail cap rock casing (required when the cap rock casing does not penetrate into the cap rock),
  - (v) Second cap rock casing (brine wells), and
  - (vi) Production liner.
- (2) The lessee shall case and cement all wells with a sufficient number of strings of casing cemented in a manner necessary to prevent release of fluids from any stratum through the wellbore (directly or indirectly) into the sea, protect freshwater aquifers from contamination, support unconsolidated sediments, and otherwise provide a means of control of the formation pressures and fluids. Cement composition, placement techniques, and waiting time shall be designed and conducted so that the cement in place behind the bottom 500 feet of casing or total length of annular cement fill, if less, attains a minimum compressive strength of 160 pounds per square inch (psi).
- (3) The lessee shall install casing designed to withstand the anticipated stresses imposed by tensile, compressive, and buckling loads; burst and collapse pressures; thermal effects; and combinations thereof. Safety factors in the drilling and casing program designs shall be of sufficient magnitude to provide well control during drilling and to assure safe operations for the life of the well.
- (4) In cases where cement has filled the annular space back to the mud line, the cement may be washed out or displaced to a depth not exceeding the depth of the structural casing shoe to facilitate casing removal upon well abandonment if the District Manager determines that subsurface protection against damage to freshwater aquifers and against damage caused by adverse loads, pressures, and fluid flows is not jeopardized.
- (5) If there are indications of inadequate cementing (such as lost returns, cement channeling, or mechanical failure of equipment), the lessee shall evaluate the adequacy of the cementing operations by pressure testing the casing shoe. If the test indicates inadequate cementing, the lessee shall initiate remedial action as approved by the District Manager. For cap rock casing, the test for adequacy of cementing shall be the pressure testing of the annulus between the cap rock and the conductor casings. The pressure shall not exceed 70 percent of the burst pressure of the conductor casing or 70 percent of the collapse pressure of the cap rock casing.
- (b) **Drive or structural casing.** This casing shall be set by driving, jetting, or drilling to a minimum depth of 100 feet below the mud line or such other depth, as may be required or approved by the District Manager, in order to support unconsolidated deposits and to provide hole stability for initial drilling operations. If this portion of the hole is drilled, a quantity of cement sufficient to fill the annular space back to the mud line shall be used.
- (c) **Conductor and cap rock casing setting and cementing requirements.**
- (1) Conductor and cap rock casing design and setting depths shall be based upon relevant engineering and geologic factors including the presence or absence of hydrocarbons, potential hazards, and water depths. The proposed casing setting depths may be varied, subject to District Manager approval, to permit the casing to be set in a competent formation or through formations determined desirable to be isolated from the wellbore by casing for safer drilling operations. However, the conductor casing shall be set immediately prior to drilling into formations known to contain oil or gas or, if unknown, upon encountering such formations. Cap rock casing shall be set and cemented through formations known to contain oil or gas or, if unknown, upon encountering such formations. Upon encountering unexpected formation pressures, the lessee shall submit a revised casing program to the District Manager for approval.
  - (2) Conductor casing shall be cemented with a quantity of cement that fills the calculated annular space back to the mud line. Cement fill shall be verified by the observation of cement returns. In the event that observation of cement returns is not feasible, additional quantities of cement shall be used to assure fill to the mud line.
  - (3) Cap rock casing shall be cemented with a quantity of cement that fills the calculated annular space to at least 200 feet inside the conductor casing. When geologic conditions such as near surface fractures and faulting exist, cap rock casing shall be cemented with a quantity of cement that fills the calculated annular space to the mud line, unless otherwise approved by the District Manager. In brine wells, the second cap rock casing shall be cemented with a quantity of cement that fills the calculated annular space to at least 200 feet above the setting depth of the first cap rock casing.
- (d) **Bobtail cap rock casing setting and cementing requirements.**
- (1) Bobtail cap rock casing shall be set on or just in cap rock and lapped a minimum of 100 feet into the previous casing string.
  - (2) Sufficient cement shall be used to fill the annular space to the top of the bobtail cap rock casing.
- (e) **Production liner setting and cementing requirements.**

- (1) Production liners for sulphur wells and bleedwells shall be set in cap rock at or above the bottom of the open hole (hole that is open in cap rock, below the bottom of the cap rock casing) and lapped into the previous casing string or to the surface. For brine wells, the liner shall be set in salt and lapped into the previous casing string or to the surface.
- (2) The production liner is not required to be cemented unless the cap rock contains oil or gas. If the cap rock contains oil or gas, sufficient cement shall be used to fill the annular space to the top of the production liner.

### § 250.1609 Pressure testing of casing.

- (a) Prior to drilling the plug after cementing, all casing strings, except the drive or structural casing, shall be pressure tested. The conductor casing shall be tested to at least 200 psi. All casing strings below the conductor casing shall be tested to 500 psi or 0.22 psi/ft, whichever is greater. (When oil or gas is not present in the cap rock, the production liner need not be cemented in place; thus, it would not be subject to pressure testing.) If the pressure declines more than 10 percent in 30 minutes or if there is another indication of a leak, the casing shall be recemented, repaired, or an additional casing string run and the casing tested again. The above procedures shall be repeated until a satisfactory test is obtained. The time, conditions of testing, and results of all casing pressure tests shall be recorded in the driller's report.
- (b) After cementing any string of casing other than structural, drilling shall not be resumed until there has been a time lapse of at least 8 hours under pressure for the conductor casing string or 12 hours under pressure for all other casing strings. Cement is considered under pressure if one or more float valves are shown to be holding the cement in place or when other means of holding pressure are used.

[76 FR 64462, Oct. 18, 2011, as amended at 81 FR 36151, June 6, 2016]

### § 250.1610 Blowout preventer systems and system components.

- (a) **General.** The blowout preventer (BOP) systems and system components shall be designed, installed, used, maintained, and tested to assure well control.
- (b) **BOP stacks.** The BOP stacks shall consist of an annular preventer and the number of ram-type preventers as specified under paragraphs (e) and (f) of this section. The pipe rams shall be of proper size to fit the drill pipe in use.
- (c) **Working pressure.** The working-pressure rating of any BOP shall exceed the surface pressure to which it may be anticipated to be subjected.
- (d) **BOP equipment.** All BOP systems shall be equipped and provided with the following:
  - (1) An accumulator system that provides sufficient capacity to supply 1.5 times the volume necessary to close and hold closed all BOP equipment units with a minimum pressure of 200 psi above the precharge pressure, without assistance from a charging system. Accumulator regulators supplied by rig air that do not have a secondary source of pneumatic supply must be equipped with manual overrides or other devices alternately provided to ensure capability of hydraulic operations if rig air is lost.
  - (2) An automatic backup to the accumulator system. The backup system shall be supplied by a power source independent from the power source to the primary accumulator system. The automatic backup system shall possess sufficient capability to close the BOP and hold it closed.
  - (3) At least one operable remote BOP control station in addition to the one on the drilling floor. This control station shall be in a readily accessible location away from the drilling floor.
  - (4) A drilling spool with side outlets, if side outlets are not provided in the body of the BOP stack, to provide for separate kill and choke lines.
  - (5) A choke line and a kill line each equipped with two full-opening valves. At least one of the valves on the choke line and one valve on the kill line shall be remotely controlled, except that a check valve may be installed on the kill line in lieu of the remotely controlled valve, provided that two readily accessible manual valves are in place and the check valve is placed between the manual valve and the pump.
  - (6) A fill-up line above the uppermost preventer.
  - (7) A choke manifold designed with consideration of anticipated pressures to which it may be subjected, method of well control to be employed, surrounding environment, and corrosiveness, volume, and abrasiveness of fluids. The choke manifold shall also meet the following requirements:
    - (i) Manifold and choke equipment subject to well and/or pump pressure shall have a rated working pressure at least as great as the rated working pressure of the ram-type BOP's or as otherwise approved by the District Manager;

- (ii) All components of the choke manifold system shall be protected from freezing by heating, draining, or filling with proper fluids; and
  - (iii) When buffer tanks are installed downstream of the choke assemblies for the purpose of manifolding the bleed lines together, isolation valves shall be installed on each line.
- (8) Valves, pipes, flexible steel hoses, and other fittings upstream of, and including, the choke manifold with a pressure rating at least as great as the rated working pressure of the ram-type BOP's unless otherwise approved by the District Manager.
- (9) A wellhead assembly with a rated working pressure that exceeds the pressure to which it might be subjected.
- (10) The following system components:
- (i) A kelly cock (an essentially full-opening valve) installed below the swivel and a similar valve of such design that it can be run through the BOP stack installed at the bottom of the kelly. A wrench to fit each valve shall be stored in a location readily accessible to the drilling crew;
  - (ii) An inside BOP and an essentially full-opening, drill-string safety valve in the open position on the rig floor at all times while drilling operations are being conducted. These valves shall be maintained on the rig floor to fit all connections that are in the drill string. A wrench to fit the drill-string safety valve shall be stored in a location readily accessible to the drilling crew;
  - (iii) A safety valve available on the rig floor assembled with the proper connection to fit the casing string being run in the hole; and
  - (iv) Locking devices installed on the ram-type preventers.
- (e) **BOP requirements.** Prior to drilling below cap rock casing, a BOP system shall be installed consisting of at least three remote-controlled, hydraulically operated BOP's including at least one equipped with pipe rams, one with blind rams, and one annular type.
- (f) **Tapered drill-string operations.** Prior to commencing tapered drill-string operations, the BOP stack shall be equipped with conventional and/or variable-bore pipe rams to provide either of the following:
- (1) One set of variable bore rams capable of sealing around both sizes in the string and one set of blind rams, or
  - (2) One set of pipe rams capable of sealing around the larger size string, provided that blind-shear ram capability is present, and crossover subs to the larger size pipe are readily available on the rig floor.

### § 250.1611 Blowout preventer systems tests, actuations, inspections, and maintenance.

- (a) Prior to conducting high-pressure tests, all BOP systems shall be tested to a pressure of 200 to 300 psi.
- (b) Ram-type BOP's and the choke manifold shall be pressure tested with water to rated working pressure or as otherwise approved by the District Manager. Annular type BOP's shall be pressure tested with water to 70 percent of rated working pressure or as otherwise approved by the District Manager.
- (c) In conjunction with the weekly pressure test of BOP systems required in paragraph (d) of this section, the choke manifold valves, upper and lower kelly cocks, and drill-string safety valves shall be pressure tested to pipe-ram test pressures. Safety valves with proper casing connections shall be actuated prior to running casing.
- (d) BOP system shall be pressure tested as follows:
  - (1) When installed;
  - (2) Before drilling out each string of casing or before continuing operations in cases where cement is not drilled out;
  - (3) At least once each week, but not exceeding 7 days between pressure tests, alternating between control stations. If either control system is not functional, further drilling operations shall be suspended until that system becomes operable. A period of more than 7 days between BOP tests is allowed when there is a stuck drill pipe or there are pressure control operations and remedial efforts are being performed, provided that the pressure tests are conducted as soon as possible and before normal operations resume. The date, time, and reason for postponing pressure testing shall be entered into the driller's report. Pressure testing shall be performed at intervals to allow each drilling crew to operate the equipment. The weekly pressure test is not required for blind and blind-shear rams;
  - (4) Blind and blind-shear rams shall be actuated at least once every 7 days. Closing pressure on the blind and blind-shear rams greater than necessary to indicate proper operation of the rams is not required;

- (5) Variable bore-pipe rams shall be pressure tested against all sizes of pipe in use, excluding drill collars and bottomhole tools; and
- (6) Following the disconnection or repair of any well-pressure containment seal in the wellhead/BOP stack assembly. In this situation, the pressure tests may be limited to the affected component.
- (e) All BOP systems shall be inspected and maintained to assure that the equipment will function properly. The BOP systems shall be visually inspected at least once each day. The manufacturer's recommended inspection and maintenance procedures are acceptable as guidelines in complying with this requirement.
- (f) The lessee shall record pressure conditions during BOP tests on pressure charts, unless otherwise approved by the District Manager. The test duration for each BOP component tested shall be sufficient to demonstrate that the component is effectively holding pressure. The charts shall be certified as correct by the operator's representative at the facility.
- (g) The time, date, and results of all pressure tests, actuations, inspections, and crew drills of the BOP system and system components shall be recorded in the driller's report. The BOP tests shall be documented in accordance with the following:
  - (1) The documentation shall indicate the sequential order of BOP and auxiliary equipment testing and the pressure and duration of each test. As an alternate, the documentation in the driller's report may reference a BOP test plan that contains the required information and is retained on file at the facility.
  - (2) The control station used during the test shall be identified in the driller's report.
  - (3) Any problems or irregularities observed during BOP and auxiliary equipment testing and any actions taken to remedy such problems or irregularities shall be noted in the driller's report.
  - (4) Documentation required to be entered in the driller's report may instead be referenced in the driller's report. All records, including pressure charts, driller's report, and referenced documents, pertaining to BOP tests, actuations, and inspections, shall be available for BSEE review at the facility for the duration of the drilling activity. Following completion of the drilling activity, all drilling records shall be retained for a period of 2 years at the facility, at the lessee's field office nearest the OCS facility, or at another location conveniently available to the District Manager.

### § 250.1612 Well-control drills.

Well-control drills must be conducted for each drilling crew in accordance with the requirements set forth in § 250.711 or as approved by the District Manager.

*[81 FR 26037, Apr. 29, 2016]*

### § 250.1613 Diverter systems.

- (a) When drilling a conductor or cap rock hole, all drilling units shall be equipped with a diverter system consisting of a diverter sealing element, diverter lines, and control systems. The diverter system shall be designed, installed, and maintained so as to divert gases, water, mud, and other materials away from the facilities and personnel.
- (b) The diverter system shall be equipped with remote-control valves in the flow lines that can be operated from at least one remote-control station in addition to the one on the drilling floor. Any valve used in a diverter system shall be full opening. No manual or butterfly valves shall be installed in any part of a diverter system. There shall be a minimum number of turns in the vent line(s) downstream of the spool outlet flange, and the radius of curvature of turns shall be as large as practicable. Flexible hose may be used for diversion lines instead of rigid pipe if the flexible hose has integral end couplings. The entire diverter system shall be firmly anchored and supported to prevent whipping and vibrations. All diverter control equipment and lines shall be protected from physical damage from thrown and falling objects.
- (c) For drilling operations conducted with a surface wellhead configuration, the following shall apply:
  - (1) If the diverter system utilizes only one spool outlet, branch lines shall be installed to provide downwind diversion capability, and
  - (2) No spool outlet or diverter line internal diameter shall be less than 10 inches, except that dual spool outlets are acceptable if each outlet has a minimum internal diameter of 8 inches, and both outlets are piped to overboard lines and that each line downstream of the changeover nipple at the spool has a minimum internal diameter of 10 inches.
- (d) The diverter sealing element and diverter valves shall be pressure tested to a minimum of 200 psi when nipped upon conductor casing. No more than 7 days shall elapse between subsequent pressure tests. The diverter sealing element, diverter valves, and diverter control systems (including the remote) shall be actuation tested, and the diverter lines shall be



tested for flow prior to spudding and thereafter at least once each 24-hour period alternating between control stations. All test times and results shall be recorded in the driller's report.

#### **§ 250.1614 Mud program.**

- (a) The quantities, characteristics, use, and testing of drilling mud and the related drilling procedures shall be designed and implemented to prevent the loss of well control.
- (b) The lessee shall comply with requirements concerning mud control, mud test and monitoring equipment, mud quantities, and safety precautions in enclosed mud handling areas as prescribed in §§ 250.455 through 250.459 of this part, except that the installation of an operable degasser in the mud system as required in § 250.456(g) is not required for sulphur operations.

#### **§ 250.1615 Securing of wells.**

A downhole-safety device such as a cement plug, bridge plug, or packer shall be timely installed when drilling operations are interrupted by events such as those that force evacuation of the drilling crew, prevent station keeping, or require repairs to major drilling units or well-control equipment. The use of blind-shear rams or pipe rams and an inside BOP may be approved by the District Manager in lieu of the above requirements if cap rock casing has been set.

#### **§ 250.1616 Supervision, surveillance, and training.**

- (a) The lessee shall provide onsite supervision of drilling operations at all times.
- (b) From the time drilling operations are initiated and until the well is completed or abandoned, a member of the drilling crew or the toolpusher shall maintain rig-floor surveillance continuously, unless the well is secured with BOP's, bridge plugs, packers, or cement plugs.
- (c) Lessee and drilling contractor personnel shall be trained and qualified in accordance with the provisions of subpart O of this part. Records of specific training that lessee and drilling contractor personnel have successfully completed, the dates of completion, and the names and dates of the courses shall be maintained at the drill site.

#### **§ 250.1617 Application for permit to drill.**

- (a) Before drilling a well under a BOEM-approved Exploration Plan, Development and Production Plan, or Development Operations Coordination Document, you must file Form BSEE-0123, APD, with the District Manager for approval. The submission of your APD must be accompanied by payment of the service fee listed in § 250.125. Before starting operations, you must receive written approval from the District Manager unless you received oral approval under § 250.140.
- (b) An APD shall include rated capacities of the proposed drilling unit and of major drilling equipment. After a drilling unit has been approved for use in a BSEE district, the information need not be resubmitted unless required by the District Manager or there are changes in the equipment that affect the rated capacity of the unit.
- (c) An APD shall include a fully completed Form BSEE-0123 and the following:
  - (1) A plat, drawn to a scale of 2,000 feet to the inch, showing the surface and subsurface location of the well to be drilled and of all the wells previously drilled in the vicinity from which information is available. For development wells on a lease, the wells previously drilled in the vicinity need not be shown on the plat. Locations shall be indicated in feet from the nearest block line;
  - (2) The design criteria considered for the well and for well control, including the following:
    - (i) Pore pressure;
    - (ii) Formation fracture gradients;
    - (iii) Potential lost circulation zones;
    - (iv) Mud weights;
    - (v) Casing setting depths;
    - (vi) Anticipated surface pressures (which for purposes of this section are defined as the pressure that can reasonably be expected to be exerted upon a casing string and its related wellhead equipment). In the calculation of anticipated surface pressure, the lessee shall take into account the drilling, completion, and producing

conditions. The lessee shall consider mud densities to be used below various casing strings, fracture gradients of the exposed formations, casing setting depths, and cementing intervals, total well depth, formation fluid type, and other pertinent conditions. Considerations for calculating anticipated surface pressure may vary for each segment of the well. The lessee shall include as a part of the statement of anticipated surface pressure the calculations used to determine this pressure during the drilling phase and the completion phase, including the anticipated surface pressure used for production string design; and

- (vii) If a shallow hazards site survey is conducted, the lessee shall submit with or prior to the submittal of the APD, two copies of a summary report describing the geological and manmade conditions present. The lessee shall also submit two copies of the site maps and data records identified in the survey strategy.
- (3) A BOP equipment program including the following:
    - (i) The pressure rating of BOP equipment,
    - (ii) A schematic drawing of the diverter system to be used (plan and elevation views) showing spool outlet internal diameter(s); diverter line lengths and diameters, burst strengths, and radius of curvature at each turn; valve type, size, working-pressure rating, and location; the control instrumentation logic; and the operating procedure to be used by personnel, and
    - (iii) A schematic drawing of the BOP stack showing the inside diameter of the BOP stack and the number of annular, pipe ram, variable-bore pipe ram, blind ram, and blind-shear ram preventers.
  - (4) A casing program including the following:
    - (i) Casing size, weight, grade, type of connection and setting depth, and
    - (ii) Casing design safety factors for tension, collapse, and burst with the assumptions made to arrive at these values.
  - (5) The drilling prognosis including the following:
    - (i) Estimated coring intervals,
    - (ii) Estimated depths to the top of significant marker formations, and
    - (iii) Estimated depths at which encounters with fresh water, sulphur, oil, gas, or abnormally pressured water are expected.
  - (6) A cementing program including type and amount of cement in cubic feet to be used for each casing string;
  - (7) A mud program including the minimum quantities of mud and mud materials, including weight materials, to be kept at the site;
  - (8) A directional survey program for directionally drilled wells;
  - (9) An H<sub>2</sub>S Contingency Plan, if applicable, and if not previously submitted; and
  - (10) Such other information as may be required by the District Manager.
- (d) Public information copies of the APD shall be submitted in accordance with § 250.186 of this part.

### **§ 250.1618 Application for permit to modify.**

- (a) You must submit requests for changes in plans, changes in major drilling equipment, proposals to deepen, sidetrack, complete, workover, or plug back a well, or engage in similar activities to the District Manager on Form BSEE-0124, Application for Permit to Modify (APM). The submission of your APM must be accompanied by payment of the service fee listed in § 250.125. Before starting operations associated with the change, you must receive written approval from the District Manager unless you received oral approval under § 250.140.
- (b) The Form BSEE-0124 submittal shall contain a detailed statement of the proposed work that will materially change from the work described in the approved APD. Information submitted shall include the present state of the well, including the production liner and last string of casing, the well depth and production zone, and the well's capability to produce. Within 30 days after completion of the work, a subsequent detailed report of all the work done and the results obtained shall be submitted.
- (c) Public information copies of Form BSEE-0124 shall be submitted in accordance with § 250.186 of this part.

**§ 250.1619 Well records.**

- (a) Complete and accurate records for each well and all well operations shall be retained for a period of 2 years at the lessee's field office nearest the OCS facility or at another location conveniently available to the District Manager. The records shall contain a description of any significant malfunction or problem; all the formations penetrated; the content and character of sulphur in each formation if cored and analyzed; the kind, weight, size, grade, and setting depth of casing; all well logs and surveys run in the wellbore; and all other information required by the District Manager in the interests of resource evaluation, prevention of waste, conservation of natural resources, protection of correlative rights, safety of operations, and environmental protection.
- (b) When drilling operations are suspended or temporarily prohibited under the provisions of § 250.170 of this part, the lessee shall, within 30 days after termination of the suspension or temporary prohibition or within 30 days after the completion of any activities related to the suspension or prohibition, transmit to the District Manager duplicate copies of the records of all activities related to and conducted during the suspension or temporary prohibition on, or attached to, Form BSEE-0125, End of Operations Report, or Form BSEE-0124, Application for Permit to Modify, as appropriate.
- (c) Upon request by the District Manager or Regional Supervisor, the lessee shall furnish the following:
  - (1) Copies of the records of any of the well operations specified in paragraph (a) of this section;
  - (2) Copies of the driller's report at a frequency as determined by the District Manager. Items to be reported include spud dates, casing setting depths, cement quantities, casing characteristics, mud weights, lost returns, and any unusual activities; and
  - (3) Legible, exact copies of reports on cementing, acidizing, analyses of cores, testing, or other similar services.
- (d) As soon as available, the lessee shall transmit copies of logs and charts developed by well-logging operations, directional-well surveys, and core analyses. Composite logs of multiple runs and directional-well surveys shall be transmitted to the District Manager in duplicate as soon as available but not later than 30 days after completion of such operations for each well.
- (e) If the District Manager determines that circumstances warrant, the lessee shall submit any other reports and records of operations in the manner and form prescribed by the District Manager.

**§ 250.1620 Well-completion and well-workover requirements.**

- (a) Lessees shall conduct well-completion and well-workover operations in sulphur wells, bleedwells, and brine wells in accordance with §§ 250.1620 through 250.1626 of this part and other provisions of this part as appropriate (see §§ 250.501 and 250.601 of this part for the definition of well-completion and well-workover operations).
- (b) Well-completion and well-workover operations shall be conducted in a manner to protect against harm or damage to life (including fish and other aquatic life), property, natural resources of the OCS including any mineral deposits (in areas leased and not leased), the National security or defense, or the marine, coastal, or human environment.

**§ 250.1621 Crew instructions.**

Prior to engaging in well-completion or well-workover operations, crew members shall be instructed in the safety requirements of the operations to be performed, possible hazards to be encountered, and general safety considerations to protect personnel, equipment, and the environment. Date and time of safety meetings shall be recorded and available for BSEE review.

**§ 250.1622 Approvals and reporting of well-completion and well-workover operations.**

- (a) No well-completion or well-workover operation shall begin until the lessee receives written approval from the District Manager. Approval for such operations shall be requested on Form BSEE-0124. Approvals by the District Manager shall be based upon a determination that the operations will be conducted in a manner to protect against harm or damage to life, property, natural resources of the OCS, including any mineral deposits, the National security or defense, or the marine, coastal, or human environment.
- (b) The following information shall be submitted with Form BSEE-0124 (or with Form BSEE-0123):
  - (1) A brief description of the well-completion or well-workover procedures to be followed;
  - (2) When changes in existing subsurface equipment are proposed, a schematic drawing showing the well equipment; and
  - (3) Where the well is in zones known to contain H<sub>2</sub>S or zones where the presence of H<sub>2</sub>S is unknown, a description of the safety precautions to be implemented.

(c)

- (1) Within 30 days after completion, Form BSEE-0125, including a schematic of the tubing and the results of any well tests, shall be submitted to the District Manager.
- (2) Within 30 days after completing the well-workover operation, except routine operations, Form BSEE-0124 shall be submitted to the District Manager and shall include the results of any well tests and a new schematic of the well if any subsurface equipment has been changed.

#### **§ 250.1623 Well-control fluids, equipment, and operations.**

- (a) Well-control fluids, equipment, and operations shall be designed, utilized, maintained, and/or tested as necessary to control the well in foreseeable conditions and circumstances, including subfreezing conditions. The well shall be continuously monitored during well-completion and well-workover operations and shall not be left unattended at any time unless the well is shut in and secured;
- (b) The following well-control fluid equipment shall be installed, maintained, and utilized:
  - (1) A fill-up line above the uppermost BOP,
  - (2) A well-control fluid-volume measuring device for determining fluid volumes when filling the hole on trips, and
  - (3) A recording mud-pit-level indicator to determine mud-pit-volume gains and losses. This indicator shall include both a visual and an audible warning device.
- (c) When coming out of the hole with drill pipe or a workover string, the annulus shall be filled with well-control fluid before the change in fluid level decreases the hydrostatic pressure 75 psi or every five stands of drill pipe or workover string, whichever gives a lower decrease in hydrostatic pressure. The number of stands of drill pipe or workover string and drill collars that may be pulled prior to filling the hole and the equivalent well-control fluid volume shall be calculated and posted near the operator's station. A mechanical, volumetric, or electronic device for measuring the amount of well-control fluid required to fill the hole shall be utilized.

#### **§ 250.1624 Blowout prevention equipment.**

- (a) The BOP system and system components and related well-control equipment shall be designed, used, maintained, and tested in a manner necessary to assure well control in foreseeable conditions and circumstances, including subfreezing conditions. The working pressure of the BOP system and system components shall equal or exceed the expected surface pressure to which they may be subjected.
- (b) The minimum BOP stack for well-completion operations or for well-workover operations with the tree removed shall consist of the following:
  - (1) Three remote-controlled, hydraulically operated preventers including at least one equipped with pipe rams, one with blind rams, and one annular type.
  - (2) When a tapered string is used, the minimum BOP stack shall consist of either of the following:
    - (i) An annular preventer, one set of variable bore rams capable of sealing around both sizes in the string, and one set of blind rams; or
    - (ii) An annular preventer, one set of pipe rams capable of sealing around the larger size string, a preventer equipped with blind-shear rams, and a crossover sub to the larger size pipe that shall be readily available on the rig floor.
- (c) The BOP systems for well-completion operations, or for well-workover operations with the tree removed, shall be equipped with the following:
  - (1) An accumulator system that provides sufficient capacity to supply 1.5 times the volume necessary to close and hold closed all BOP equipment units with a minimum pressure of 200 psi above the precharge pressure without assistance from a charging system. After February 14, 1992, accumulator regulators supplied by rig air which do not have a secondary source of pneumatic supply shall be equipped with manual overrides or alternately other devices provided to ensure capability of hydraulic operations if rig air is lost;
  - (2) An automatic backup to the accumulator system supplied by a power source independent from the power source to the primary accumulator system and possessing sufficient capacity to close all BOP's and hold them closed;
  - (3) Locking devices for the pipe-ram preventers;
  - (4) At least one remote BOP-control station and one BOP-control station on the rig floor; and

- (5) A choke line and a kill line each equipped with two full-opening valves and a choke manifold. One of the choke-line valves and one of the kill-line valves shall be remotely controlled except that a check valve may be installed on the kill line in lieu of the remotely-controlled valve provided that two readily accessible manual valves are in place, and the check valve is placed between the manual valve and the pump.
- (d) The minimum BOP-stack components for well-workover operations with the tree in place and performed through the wellhead inside of the sulphur line using small diameter jointed pipe (usually  $\frac{3}{4}$  inch to  $1\frac{1}{4}$  inch) as a work string; *i.e.*, small-tubing operations, shall consist of the following:
  - (1) For air line changes, the well shall be killed prior to beginning operations. The procedures for killing the well shall be included in the description of well-workover procedures in accordance with § 250.1622 of this part. Under these circumstances, no BOP equipment is required.
  - (2) For other work inside of the sulphur line, a tubing stripper or annular preventer shall be installed prior to beginning work.
- (e) An essentially full-opening, work-string safety valve shall be maintained on the rig floor at all times during well-completion operations. A wrench to fit the work-string safety valve shall be readily available. Proper connections shall be readily available for inserting a safety valve in the work string.

### § 250.1625 Blowout preventer system testing, records, and drills.

- (a) Prior to conducting high-pressure tests, all BOP systems shall be tested to a pressure of 200 to 300 psi.
- (b) Ram-type BOP's and the choke manifold shall be pressure tested with water to a rated working pressure or as otherwise approved by the District Manager. Annular type BOP's shall be pressure tested with water to 70 percent of rated working pressure or as otherwise approved by the District Manager.
- (c) In conjunction with the weekly pressure test of BOP systems required in paragraph (d) of this section, the choke manifold valves, upper and lower kelly cocks, and drill-string safety valves shall be pressure tested to pipe-ram test pressures. Safety valves with proper casing connections shall be actuated prior to running casing.
- (d) BOP system shall be pressure tested as follows:
  - (1) When installed;
  - (2) Before drilling out each string of casing or before continuing operations in cases where cement is not drilled out;
  - (3) At least once each week, but not exceeding 7 days between pressure tests, alternating between control stations. If either control system is not functional, further drilling operations shall be suspended until that system becomes operable. A period of more than 7 days between BOP tests is allowed when there is a stuck drill pipe or there are pressure control operations, and remedial efforts are being performed, provided that the pressure tests are conducted as soon as possible and before normal operations resume. The time, date, and reason for postponing pressure testing shall be entered into the driller's report. Pressure testing shall be performed at intervals to allow each drilling crew to operate the equipment. The weekly pressure test is not required for blind and blind-shear rams;
  - (4) Blind and blind-shear rams shall be actuated at least once every 7 days. Closing pressure on the blind and blind-shear rams greater than necessary to indicate proper operation of the rams is not required;
  - (5) Variable bore-pipe rams shall be pressure tested against all sizes of pipe in use, excluding drill collars and bottomhole tools; and
  - (6) Following the disconnection or repair of any well-pressure containment seal in the wellhead/BOP stack assembly, the pressure tests may be limited to the affected component.
- (e) All personnel engaged in well-completion operations shall participate in a weekly BOP drill to familiarize crew members with appropriate safety measures.
- (f) The lessee shall record pressure conditions during BOP tests on pressure charts, unless otherwise approved by the District Manager. The test duration for each BOP component tested shall be sufficient to demonstrate that the component is effectively holding pressure. The charts shall be certified as correct by the operator's representative at the facility.
- (g) The time, date, and results of all pressure tests, actuations, inspections, and crew drills of the BOP system and system components shall be recorded in the operations log. The BOP tests shall be documented in accordance with the following:
  - (1) The documentation shall indicate the sequential order of BOP and auxiliary equipment testing and the pressure and duration of each test. As an alternate, the documentation in the operations log may reference a BOP test plan that contains the required information and is retained on file at the facility.

- (2) The control station used during the test shall be identified in the operations log.
- (3) Any problems or irregularities observed during BOP and auxiliary equipment testing and any actions taken to remedy such problems or irregularities shall be noted in the operations log.
- (4) Documentation required to be entered in the driller's report may instead be referenced in the driller's report. All records, including pressure charts, driller's report, and referenced documents, pertaining to BOP tests, actuations, and inspections shall be available for BSEE review at the facility for the duration of the drilling activity. Following completion of the drilling activity, all drilling records shall be retained for a period of 2 years at the facility, at the lessee's field office nearest the OCS facility, or at another location conveniently available to the District Manager.

#### **§ 250.1626 Tubing and wellhead equipment.**

- (a) No tubing string shall be placed into service or continue to be used unless such tubing string has the necessary strength and pressure integrity and is otherwise suitable for its intended use.
- (b) Wellhead, tree, and related equipment shall be designed, installed, tested, used, and maintained so as to achieve and maintain pressure control.

#### **§ 250.1627 Production requirements.**

- (a) The lessee shall conduct sulphur production operations in compliance with the approved Development and Production Plan requirements of §§ 250.1627 through 250.1634 of this subpart and requirements of this part, as appropriate.
- (b) Production safety equipment shall be designed, installed, used, maintained, and tested in a manner to assure the safety of operations and protection of the human, marine, and coastal environments.

#### **§ 250.1628 Design, installation, and operation of production systems.**

- (a) **General.** All production facilities shall be designed, installed, and maintained in a manner that provides for efficiency and safety of operations and protection of the environment.
- (b) **Approval of design and installation features for sulphur production facilities.** Prior to installation, the lessee shall submit a sulphur production system application, in duplicate, to the District Manager for approval. The application shall include information relative to the proposed design and installation features. Information concerning approved design and installation features shall be maintained by the lessee at the lessee's offshore field office nearest the OCS facility or at another location conveniently available to the District Manager. All approvals are subject to field verification. The application shall include the following:
  - (1) A schematic flow diagram showing size, capacity, design, working pressure of separators, storage tanks, compressor pumps, metering devices, and other sulphur-handling vessels;
  - (2) A schematic piping diagram showing the size and maximum allowable working pressures as determined in accordance with API RP 14E, Recommended Practice for Design and Installation of Offshore Production Platform Piping Systems (as incorporated by reference in § 250.198);
  - (3) Electrical system information including a plan of each platform deck, outlining all hazardous areas classified according to API RP 500, Recommended Practice for Classification of Locations for Electrical Installations at Petroleum Facilities Classified as Class I, Division 1 and Division 2, or API RP 505, Recommended Practice for Classification of Locations for Electrical Installations at Petroleum Facilities Classified as Class I, Zone 0, Zone 1, and Zone 2 (as incorporated by reference in § 250.198), and outlining areas in which potential ignition sources are to be installed;
  - (4) Certification that the design for the mechanical and electrical systems to be installed were approved by registered professional engineers. After these systems are installed, the lessee shall submit a statement to the District Manager certifying that the new installations conform to the approved designs of this subpart.
- (c) **Hydrocarbon handling vessels associated with fuel gas system.** You must protect hydrocarbon handling vessels associated with the fuel gas system with a basic and ancillary surface safety system. This system must be designed, analyzed, installed, tested, and maintained in operating condition in accordance with API RP 14C, Analysis, Design, Installation, and Testing of Basic Surface Safety Systems for Offshore Production Platforms (as incorporated by reference in § 250.198). If processing components are to be utilized, other than those for which Safety Analysis Checklists are included in API RP 14C, you must use the analysis technique and documentation specified therein to determine the effect and requirements of these components upon the safety system.

- (d) **Approval of safety-systems design and installation features for fuel gas system.** Prior to installation, the lessee shall submit a fuel gas safety system application, in duplicate, to the District Manager for approval. The application shall include information relative to the proposed design and installation features. Information concerning approved design and installation features shall be maintained by the lessee at the lessee's offshore field office nearest the OCS facility or at another location conveniently available to the District Manager. All approvals are subject to field verification. The application shall include the following:
- (1) A schematic flow diagram showing size, capacity, design, working pressure of separators, storage tanks, compressor pumps, metering devices, and other hydrocarbon-handling vessels;
  - (2) A schematic flow diagram (API RP 14C, Figure E1, as incorporated by reference in § 250.198) and the related Safety Analysis Function Evaluation chart (API RP 14C, subsection 4.3c, as incorporated by reference in § 250.198).
  - (3) A schematic piping diagram showing the size and maximum allowable working pressures as determined in accordance with API RP 14E, Design and Installation of Offshore Production Platform Piping Systems (as incorporated by reference in § 250.198);
  - (4) Electrical system information including the following:
    - (i) A plan of each platform deck, outlining all hazardous areas classified according to API RP 500, Recommended Practice for Classification of Locations for Electrical Installations at Petroleum Facilities Classified as Class I, Division 1 and Division 2, or API RP 505, Recommended Practice for Classification of Locations for Electrical Installations at Petroleum Facilities Classified as Class I, Zone 0, Zone 1, and Zone 2 (as incorporated by reference in § 250.198), and outlining areas in which potential ignition sources are to be installed;
    - (ii) All significant hydrocarbon sources and a description of the type of decking, ceiling, walls (e.g., grating or solid), and firewalls; and
    - (iii) Elementary electrical schematic of any platform safety shutdown system with a functional legend.
  - (5) Certification that the design for the mechanical and electrical systems to be installed was approved by registered professional engineers. After these systems are installed, the lessee shall submit a statement to the District Manager certifying that the new installations conform to the approved designs of this subpart; and
  - (6) Design and schematics of the installation and maintenance of all fire- and gas-detection systems including the following:
    - (i) Type, location, and number of detection heads;
    - (ii) Type and kind of alarm, including emergency equipment to be activated;
    - (iii) Method used for detection;
    - (iv) Method and frequency of calibration; and
    - (v) A functional block diagram of the detection system, including the electric power supply.

### **§ 250.1629 Additional production and fuel gas system requirements.**

- (a) **General.** Lessees shall comply with the following production safety system requirements (some of which are in addition to those contained in § 250.1628 of this part).
- (b) **Design, installation, and operation of additional production systems, including fuel gas handling safety systems.**
  - (1) Pressure and fired vessels must be designed, fabricated, and code stamped in accordance with the applicable provisions of sections I, IV, and VIII of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (as specified in § 250.198). Pressure and fired vessels must have maintenance inspection, rating, repair, and alteration performed in accordance with the applicable provisions of API Pressure Vessel Inspections Code: In-Service Inspection, Rating, Repair, and Alteration, API 510 (except Sections 5.8 and 9.5) (as incorporated by reference in § 250.198).
    - (i) Pressure safety relief valves shall be designed, installed, and maintained in accordance with applicable provisions of sections I, IV, and VIII of the ANSI/ASME Boiler and Pressure Vessel Code (as specified in § 250.198). The safety relief valves shall conform to the valve-sizing and pressure-relieving requirements specified in these documents; however, the safety relief valves shall be set no higher than the maximum-allowable working pressure of the vessel. All safety relief valves and vents shall be piped in such a way as to prevent fluid from striking personnel or ignition sources.

- (ii) The lessee shall use pressure recorders to establish the operating pressure ranges of pressure vessels in order to establish the pressure-sensor settings. Pressure-recording charts used to determine operating pressure ranges shall be maintained by the lessee for a period of 2 years at the lessee's field office nearest the OCS facility or at another location conveniently available to the District Manager. The high-pressure sensor shall be set no higher than 15 percent or 5 psi, whichever is greater, above the highest operating pressure of the vessel. This setting shall also be set sufficiently below (15 percent or 5 psi, whichever is greater) the safety relief valve's set pressure to assure that the high-pressure sensor sounds an alarm before the safety relief valve starts relieving. The low-pressure sensor shall sound an alarm no lower than 15 percent or 5 psi, whichever is greater, below the lowest pressure in the operating range.
- (2) **Engine exhaust.** You must equip engine exhausts to comply with the insulation and personnel protection requirements of API RP 14C, section 4.2c(4) (as incorporated by reference in § 250.198). Exhaust piping from diesel engines must be equipped with spark arresters.
- (3) **Firefighting systems.** Firefighting systems must conform to subsection 5.2, Fire Water Systems, of API RP 14G, Recommended Practice for Fire Prevention and Control on Open Type Offshore Production Platforms (as incorporated by reference in § 250.198), and must be subject to the approval of the District Manager. Additional requirements must apply as follows:
  - (i) A firewater system consisting of rigid pipe with firehose stations shall be installed. The firewater system shall be installed to provide needed protection, especially in areas where fuel handling equipment is located.
  - (ii) Fuel or power for firewater pump drivers shall be available for at least 30 minutes of run time during platform shut-in time. If necessary, an alternate fuel or power supply shall be installed to provide for this pump-operating time unless an alternate firefighting system has been approved by the District Manager;
  - (iii) A firefighting system using chemicals may be used in lieu of a water system if the District Manager determines that the use of a chemical system provides equivalent fire-protection control; and
  - (iv) A diagram of the firefighting system showing the location of all firefighting equipment shall be posted in a prominent place on the facility or structure.
- (4) **Fire- and gas-detection system.**
  - (i) Fire (flame, heat, or smoke) sensors shall be installed in all enclosed classified areas. Gas sensors shall be installed in all inadequately ventilated, enclosed classified areas. Adequate ventilation is defined as ventilation that is sufficient to prevent accumulation of significant quantities of vapor-air mixture in concentrations over 25 percent of the lower explosive limit. One approved method of providing adequate ventilation is a change of air volume each 5 minutes or 1 cubic foot of air-volume flow per minute per square foot of solid floor area, whichever is greater. Enclosed areas (e.g., buildings, living quarters, or doghouses) are defined as those areas confined on more than four of their six possible sides by walls, floors, or ceilings more restrictive to air flow than grating or fixed open louvers and of sufficient size to allow entry of personnel. A classified area is any area classified Class I, Group D, Division 1 or 2, following the guidelines of API RP 500 (as incorporated by reference in § 250.198), or any area classified Class I, Zone 0, Zone 1, or Zone 2, following the guidelines of API RP 505 (as incorporated by reference in § 205.198).
  - (ii) All detection systems shall be capable of continuous monitoring. Fire-detection systems and portions of combustible gas-detection systems related to the higher gas concentration levels shall be of the manual-reset type. Combustible gas-detection systems related to the lower gas-concentration level may be of the automatic-reset type.
  - (iii) A fuel-gas odorant or an automatic gas-detection and alarm system is required in enclosed, continuously manned areas of the facility that are provided with fuel gas. Living quarters and doghouses not containing a gas source and not located in a classified area do not require a gas detection system.
  - (iv) The District Manager may require the installation and maintenance of a gas detector or alarm in any potentially hazardous area.
  - (v) Fire- and gas-detection systems must be an approved type, designed and installed according to API RP 14C, API RP 14G, and either API RP 14F or API RP 14FZ (the preceding four documents as incorporated by reference in § 250.198).
- (c) **General platform operations.** Safety devices shall not be bypassed or blocked out of service unless they are temporarily out of service for startup, maintenance, or testing procedures. Only the minimum number of safety devices shall be taken out of service. Personnel shall monitor the bypassed or blocked out functions until the safety devices are placed back in service. Any safety device that is temporarily out of service shall be flagged by the person taking such device out of service.



### § 250.1630 Safety-system testing and records.

- (a) **Inspection and testing.** You must inspect and successfully test safety system devices at the interval specified below or more frequently if operating conditions warrant. Testing must be in accordance with API RP 14C, Appendix D (as incorporated by reference in § 250.198). For safety system devices other than those listed in API RP 14C, Appendix D, you must utilize the analysis technique and documentation specified therein for inspection and testing of these components, and the following:
- (1) Safety relief valves on the natural gas feed system for power plant operations such as pressure safety valves shall be inspected and tested for operation at least once every 12 months. These valves shall be either bench tested or equipped to permit testing with an external pressure source.
  - (2) The following safety devices (excluding electronic pressure transmitters and level sensors) must be inspected and tested at least once each calendar month, but at no time may more than 6 weeks elapse between tests:
    - (i) All pressure safety high or pressure safety low, and
    - (ii) All level safety high and level safety low controls.
  - (3) The following electronic pressure transmitters and level sensors must be inspected and tested at least once every 3 months, but at no time may more than 120 days elapse between tests:
    - (i) All PSH or PSL, and
    - (ii) All LSH and LSL controls.
  - (4) All pumps for firewater systems shall be inspected and operated weekly.
  - (5) All fire- (flame, heat, or smoke) and gas-detection systems shall be inspected and tested for operation and recalibrated every 3 months provided that testing can be performed in a nondestructive manner.
  - (6) Prior to the commencement of production, the lessee shall notify the District Manager when the lessee is ready to conduct a preproduction test and inspection of the safety system. The lessee shall also notify the District Manager upon commencement of production in order that a complete inspection may be conducted.
- (b) **Records.** The lessee shall maintain records for a period of 2 years for each safety device installed. These records shall be maintained by the lessee at the lessee's field office nearest the OCS facility or another location conveniently available to the District Manager. These records shall be available for BSEE review. The records shall show the present status and history of each safety device, including dates and details of installation, removal, inspection, testing, repairing, adjustments, and reinstallation.

### § 250.1631 Safety device training.

Prior to engaging in production operations on a lease and periodically thereafter, personnel installing, inspecting, testing, and maintaining safety devices shall be instructed in the safety requirements of the operations to be performed; possible hazards to be encountered; and general safety considerations to be taken to protect personnel, equipment, and the environment. Date and time of safety meetings shall be recorded and available for BSEE review.

### § 250.1632 Production rates.

Each sulphur deposit shall be produced at rates that will provide economic development and depletion of the deposit in a manner that would maximize the ultimate recovery of sulphur without resulting in waste (e.g., an undue reduction in the recovery of oil and gas from an associated hydrocarbon accumulation).

### § 250.1633 Production measurement.

- (a) **General.** Measurement equipment and security procedures shall be designed, installed, used, maintained, and tested so as to accurately and completely measure the sulphur produced on a lease for purposes of royalty determination.
- (b) **Application and approval.** The lessee shall not commence production of sulphur until the Regional Supervisor has approved the method of measurement. The request for approval of the method of measurement shall contain sufficient information to demonstrate to the satisfaction of the Regional Supervisor that the method of measurement meets the requirements of paragraph (a) of this section.

### § 250.1634 Site security.

- (a) All locations where sulphur is produced, measured, or stored shall be operated and maintained to ensure against the loss or theft of produced sulphur and to assure accurate and complete measurement of produced sulphur for royalty purposes.
- (b) Evidence of mishandling of produced sulphur from an offshore lease, or tampering or falsifying any measurement of production for an offshore lease, shall be reported to the Regional Supervisor as soon as possible but no later than the next business day after discovery of the evidence of mishandling.