

Chapter 3 Environmental Equivalence

3.1 Introduction

The environmental equivalence provision, contained in §112.7(a)(2), allows for deviations from specific requirements of the SPCC rule, as long as the alternative measures provide equivalent environmental protection. The environmental equivalence provision is a key mechanism of the performance-based SPCC rule. This flexibility enables owners and operators of facilities to achieve environmental protection in a manner that fits the facility's unique circumstances. It also allows owners and operators to adopt more protective industry practices and technologies for their facilities as they become available.

The facility owner or operator is responsible for the selection, documentation in the SPCC Plan, and implementation in the field of SPCC measures, including any environmentally equivalent measures. However, a Professional Engineer (PE), when certifying a Plan as per §112.3(d) or §112.6(b)(4), must verify that the Plan (and any alternative methods) are in accordance with good engineering practice, including consideration of applicable industry standards. These alternative methods must also provide environmental protection equivalent to the provisions described in the SPCC rule. Because the expertise of a trained professional is important in making site-specific equivalence determinations, owners or operators of qualified facilities (those meeting the criteria in §112.3(g)) who choose to self-certify their SPCC Plans in lieu of PE-certification cannot take advantage of the flexibility allowed by the environmental equivalence provision, unless the alternative methods have been reviewed and certified in writing by a PE (§112.6(b)(3)(i)).⁶¹

In the SPCC context, equivalent environmental protection means an equal level of protection of navigable waters and adjoining shorelines from oil pollution. This level of protection can be achieved in various ways, but a facility may not rely solely on measures that are required by other sections of the rule (e.g., implementing secondary containment) to provide environmentally equivalent protection. While environmental equivalence need not be a mathematical equivalence, it must achieve the same desired outcome, though not necessarily through the same mode of operation (see 67 FR 47095, July 17, 2002).

The reason for deviating from a requirement of the SPCC rule, as well as a detailed description of the alternate method and how equivalent environmental protection will be achieved, must be stated in the SPCC Plan, as required in §112.7(a)(2). Possible rationales for a deviation include the owner or operator's ability to show that the particular requirement is inappropriate for the facility because of good engineering practice considerations or other reasons, and that the owner/operator can achieve equivalent environmental protection in an alternate manner. Thus, a requirement that may be essential for a facility storing gasoline may be less appropriate for a facility storing hot asphalt cement, due to differences in the properties and behavior of the

⁶¹ For each alternative measure allowed under §112.7(a)(2), a qualified facility's Plan must be accompanied by a written statement that states the reason for nonconformance and describes the alternative method and how it provides equivalent environmental protection in accordance with §112.7(a)(2) (see §112.6(b)(3)(i)).

two products, and the facility owner or operator may be able to implement equivalent environmental protection through an alternate technology (see 67 FR 47094, 47095, July 17, 2002).

As mentioned above, a PE must review the selection of environmentally equivalent measures and certify them as being consistent with good engineering practice (§112.3(d) or §112.6(b)(4)). The selection of alternative measures may be based on various considerations, such as safety, cost, geographical constraints, the appropriateness of a particular requirement based on site-specific considerations, or other factors consistent with engineering principles. See *Section 3.4.1* for a discussion on considering costs when choosing environmentally equivalent measures.

Alternative measures, however, cannot rely solely on measures that are already required by other parts of the rule because this would allow for approaches that provide a lesser degree of protection overall. For instance, as EPA noted in a May 2004 letter to the Petroleum Marketers Association of America (PMAA), the presence of sized secondary containment for bulk storage containers, which is required under §112.8(c) and other relevant parts of the SPCC rule, does not provide, by itself, an environmentally equivalent alternative to performing integrity testing of bulk storage containers.⁶² Secondary containment reduces the risk of a discharge from primary containment (the container or tank) to navigable waters or adjoining shorelines and can increase the effectiveness of another prevention or control measure. However, it does not serve the purpose of integrity testing, which is to identify potential leaks or failure of the container before a discharge occurs.

The remainder of this chapter is organized as follows:

- **Section 3.2** summarizes substantive SPCC requirements subject to the environmental equivalence provision.
- **Section 3.3** clarifies certain policy areas and provides examples of deviations based on the implementation of environmentally equivalent alternatives.
- **Section 3.4** describes the role of the EPA inspector in reviewing deviations based on environmental equivalence.

3.2 Substantive Requirements Subject to the Environmental Equivalence Provision

Section 112.7(a)(2) of the SPCC rule allows deviations for most *technical* elements of the rule (§§112.7 through 112.12), with the exception of the secondary containment requirements of §§112.7(c) and 112.7(h)(1), and in relevant paragraphs of §§112.8, 112.9, 112.10, and 112.12. *Chapter 4: Secondary Containment and Impracticability* discusses these secondary containment requirements in detail.

⁶² See EPA letter to Daniel Gilligan of PMAA, available in *Appendix H* of this guidance.

§112.7(a)(2)

Comply with all applicable requirements listed in this part. Except as provided in §112.6, your Plan may deviate from the requirements in paragraphs (g), (h)(2) and (3), and (i) of this section and the requirements in subparts B and C of this part, except the secondary containment requirements in paragraphs (c) and (h)(1) of this section, and §§112.8(c)(2), 112.8(c)(11), 112.9(c)(2), 112.9(d)(3), 112.10(c), 112.12(c)(2), and 112.12(c)(11), where applicable to a specific facility, **if you provide equivalent environmental protection by some other means of spill prevention, control, or countermeasure**. Where your Plan does not conform to the applicable requirements in paragraphs (g), (h)(2) and (3), and (i) of this section, or the requirements of subparts B and C of this part, except the secondary containment requirements in paragraphs (c) and (h)(1) of this section, and §§112.8(c)(2), 112.8(c)(11), 112.9(c)(2), 112.10(c), 112.12(c)(2), and 112.12(c)(11) you **must state the reasons for nonconformance in your Plan and describe in detail alternate methods and how you will achieve equivalent environmental protection**. If the Regional Administrator determines that the measures described in your Plan do not provide equivalent environmental protection, he may require that you amend your Plan, following the procedures in §112.4(d) and (e).

Note: The above text is an excerpt of the SPCC rule. Refer to 40 CFR part 112 for the full text of the rule. **Emphasis Added.**

Along with secondary containment requirements, the SPCC Plan cannot deviate from:

- Administrative provisions of the rule, such as applicability thresholds, exemptions, definitions and procedures for developing, reviewing and implementing a Plan (§§112.1 through 112.5);
- Rule requirements for Tier I qualified facilities (§112.6(a));
- Alternate measures for secondary containment based on impracticability (§112.7(d)) or for oil-filled operational equipment that meet the criteria in §112.7(k);
- Recordkeeping requirements (§112.7(e))—the SPCC rule already provides flexibility for recordkeeping that allows records of inspections and tests be kept under usual and customary business practices;
- Personnel training (§112.7(f)); and
- A discussion of conformance with any applicable, more stringent state rules (§112.7(j)).

Table 3-1 through Table 3-3 list the SPCC requirements eligible for consideration for environmental equivalence.

Table 3-1: Requirements eligible for environmental equivalence at all facilities.

Provision	Section(s)
Security	112.7(g)
Loading and unloading racks	112.7(h)(2) and 112.7(h)(3)
Brittle fracture evaluation	112.7(i)

Table 3-2: Requirements eligible for environmental equivalence at onshore facilities (excluding oil production).

Provision	Section(s)	
	Petroleum Oils and Non-Petroleum Oils	Animal Fats and Vegetable Oils
Section introduction ⁶³	112.8(a)	112.12(a)
Facility drainage/undiked areas	112.8(b)	112.12(b)
Type of bulk storage container	112.8(c)(1)	112.12(c)(1)
Drainage of diked areas	112.8(c)(3)	112.12(c)(3)
Corrosion protection of buried storage tanks	112.8(c)(4) and 112.8(c)(5)	112.12(c)(4) and 112.12(c)(5)
Integrity testing and/or container inspection	112.8(c)(6)	112.12(c)(6)
Monitoring internal heating coils	112.8(c)(7)	112.12(c)(7)
Engineering of bulk container installation (overfill prevention)	112.8(c)(8)	112.12(c)(8)
Monitoring effluent treatment facilities	112.8(c)(9)	112.12(c)(9)
Correction of discharges and removal of oil in diked areas	112.8(c)(10)	112.12(c)(10)
Piping	112.8(d)	112.12(d)

⁶³ This is an administrative provision to indicate that both the general requirements of §112.7 and the requirements for onshore facilities in either §§112.8 or 112.12 apply. When meeting the general requirements of §112.7, environmental equivalence applies only to the §§112.7(g), (h)(2), (h)(3), and (i) provisions as described in §112.7(a)(2). The availability of environmental equivalence for §112.8(a) and 112.12(a) does not change how environmental equivalence applies in §112.7.

Table 3-3: Requirements eligible for environmental equivalence at onshore and offshore oil production, drilling, and workover facilities.

Facility Type/Provision	Section(s) ⁶⁴
Onshore oil production facilities	
Section introduction	112.9(a)
Facility drainage	112.9(b)
Type of bulk storage container	112.9(c)(1)
Container inspection	112.9(c)(3)
Engineering of bulk container installation (overflow prevention)	112.9(c)(4)
Alternative measures for flow-through process vessels	112.9(c)(5)
Alternative measures for produced water containers	112.9(c)(6)
Monitoring disposal facilities	112.9(d)(2)
Piping	112.9(d)(1) and 112.9(d)(4)
Onshore oil drilling and workover facilities	
Section introduction	112.10(a)
Facility drainage (rig position)	112.10(b)
Blowout prevention and well control system	112.10(d)
Offshore oil drilling, production, or workover facilities	
Drainage, container, blowout prevention, and piping requirements	112.11(a) through 112.11(p)

3.3 Policy Issues Addressed by Environmental Equivalence

This section provides additional guidance on environmentally equivalent measures for specific requirements about which the regulated community has raised questions. The examples discussed below are meant to clarify *selected* rule provisions and to illustrate how deviations based on environmentally equivalent alternatives may be implemented; other circumstances not discussed here may also be addressed through the use of environmentally equivalent measures. The examples in this section address environmental equivalence as it relates to specific major rule provisions, including:

⁶⁴ Sections 112.9(a), 112.10(a) and 112.11(a) are administrative provisions to indicate that both the general requirements of §112.7 and the requirements for facilities in §112.9, 112.10 or 112.11 apply. When meeting the general requirements of §112.7, environmental equivalence applies only to the §§112.7(g), (h)(2), (h)(3), and (i) provisions as described in §112.7(a)(2). The availability of environmental equivalence for §§112.9(a), 112.10(a) and 112.11(a) does not change how environmental equivalence applies in §112.7.

- Facility Drainage (*Section 3.3.1*);
- Corrosion Protection and Leak Testing of Completely Buried Metallic Storage Tanks (*Section 3.3.2*);
- Overfill Prevention (*Section 3.3.3*);
- Facility Transfer Operations, Pumping, and Facility Process Requirements (*Section 3.3.4*);
- Flowline/Intra-Facility Gathering Line Maintenance Program (*Section 3.3.5*);
- Security (Excluding Oil Production Facilities)(*Section 3.3.6*);
- Integrity Testing and Inspection Requirements for Bulk Storage Containers at Onshore Facilities (*Section 3.3.7*); and
- Alternative Measures for Containers at Oil Production Facilities (*Section 3.3.8*).

3.3.1 Facility Drainage

Section 112.8(b) describes facility drainage provisions for onshore facilities that handle petroleum oils and non-petroleum oils other than animal fats and/or vegetable oils. Section 112.12(b) provides the corresponding requirements for facilities that handle animal fats and/or vegetable oils. The description of the design capacity of facility drainage systems is also addressed under §§112.7(a)(3) and 112.7(b).

The objective of these requirements is to provide design specifications for drainage systems used as a means of secondary containment to prevent oil from escaping the facility and becoming a discharge as described in §112.1(b). Note that the secondary containment requirements themselves are not subject to the environmental equivalence provision as described in 112.7(a)(2); deviations from secondary containment requirements must instead be based on an impracticability determination (see *Chapter 4: Secondary Containment and Impracticability*).

Diked Storage Area Provisions

Sections 112.8(b)(1) and (b)(2) (and §112.12(b)(1) and (b)(2)) specify requirements for the design of drainage systems for dikes used as a means of secondary containment. Under §112.8(b)(1) and (b)(2) (and §112.12(b)(1) and (b)(2)), the SPCC regulation requires that when the facility owner/operator uses valves to drain a dike or berm, the valves must be of manual, open-and-closed design and not a flapper design, unless the facility drainage system is equipped to control oil discharges. The facility owner or operator, and the PE certifying a Plan, may consider alternative technologies specifically engineered to prevent oil from escaping the facility containment and drainage control system, while normally allowing drainage of uncontaminated water. For example, certain valves are engineered to automatically shut off upon detecting oil. Material included within the device expands upon contact with oil, effectively plugging the drainage system. The valve is not actuated per se, but rather the device plugs the drainage system upon contact with oil. These types of systems have been

installed at electrical substations, for example, to drain uncontaminated rainwater under normal conditions, while also preventing oil from escaping the containment system in the event of a discharge from transformers or other oil-filled electrical equipment. When implemented and maintained properly, such systems may provide environmental protection equivalent to using a manually operated valve and visually monitoring discharge from dikes.

To be most effective, however, EPA recommends that the systems have a fail-safe design to automatically prevent any oil from escaping the containment area in the event of a system malfunction. The PE certifying the Plan should verify the adequacy of the system to prevent oil discharges to navigable waters or adjoining shorelines, considering factors such as the type of oil and its compatibility with the system selected, the amount of precipitation, maintenance requirements, flow paths, and proximity to navigable waters. The SPCC Plan should also describe procedures for maintaining these systems and verifying their effectiveness by routine inspections and inspections following heavy rain events to ensure that they are operational. See *Chapter 4: Secondary Containment and Impracticability* for more details on secondary containment requirements.

Undiked Storage Area Provisions

Sections 112.8(b)(3) and (b)(4) (and §112.12(b)(3) and (b)(4)) specify performance requirements for systems used to drain undiked areas with the potential for a discharge. These provisions apply only when the facility owner/operator chooses to use a facility drainage system to meet general secondary containment requirements under §112.7(c) or a more specific containment requirement under §§112.7(h)(1), 112.8(c)(2) or 112.12(c)(2). Where the facility drainage cannot be engineered as described in §112.8(b)(3), the SPCC rule requires that the facility owner/operator equip the final discharge points of all ditches within the facility with a diversion system that would, in the event of a discharge, retain the oil at the facility as described in §112.8(b)(4). Requirements in §112.8(b)(5) pertain specifically to engineering multiple treatment units for these drainage systems.

For parts of a facility that could be involved in a discharge and where secondary containment requirements are met through the use of a drainage system rather than a dike or berm, the SPCC rule generally requires facility drainage to flow into a system (e.g., a pond, lagoon, or catchment basin) designed to retain the oil or return it to the facility. For example, an oil/water separator may be used as part of the containment system; however, an environmental equivalent deviation for drainage controls for the separator must be provided.

Other measures that are based on good engineering practice may be implemented to achieve the drainage control objective, subject to PE review and certification. For example, directing undiked facility drainage into an impoundment system located within a neighboring facility may be considered equivalent to keeping it within the facility's confines (as required in §112.8(b)(4)) if the neighboring facility owner has agreed to allow use of the impoundment and as long as the impoundment is designed and managed such that it is capable of handling a potential discharge from both facilities before it becomes a discharge as described in §112.1(b).

Drainage at Oil Production Facilities⁶⁵

Similar deviations from SPCC drainage control requirements are possible for other types of facilities. Section 112.9(b), for example, outlines drainage requirements for tank batteries and separation and treating areas at oil production facilities. They include sealing dike drains or drains of equivalent measures required under §112.7(c)(1) at all times except when draining uncontaminated rainwater. The PE may specify alternative measures (e.g., the technology used at electrical substations as described above that expands upon contact with oil and plugs the drainage system) that would provide equivalent environmental protection by retaining oil within the diked area in the event of a discharge.⁶⁶ The Plan must describe the measure in detail and discuss how it provides environmentally equivalent protection when implemented in the field, as required by §112.7(a)(2).

Wherever a facility owner or operator chooses to deviate from the drainage control provisions by using an alternative measure that provides equivalent environmental protection, the SPCC Plan must state the reasons for nonconformance and describe the alternative measure in detail, including how it achieves equivalent environmental protection when implemented (§112.7(a)(2)).

3.3.2 Corrosion Protection and Leak Testing of Completely Buried Metallic Storage Tanks

Facility owners or operators must protect buried metallic storage tanks (containers) installed on or after January 10, 1974 from corrosion and regularly perform leak test on the tanks. In order to comply with the corrosion protection requirement of §§112.8(c)(4) and 112.12(c)(4), owners and operators of completely buried metallic storage tanks may want to consider the requirements of Subpart B of 40 CFR 280. This regulation includes design, construction and installation requirements for underground storage

§112.9 (b)

Oil production facility drainage.

(1) At tank batteries and separation and treating areas where there is a reasonable possibility of a discharge as described in §112.1(b), close and seal at all times drains of dikes or drains of equivalent measures required under §112.7(c)(1), except when draining uncontaminated rainwater. Prior to drainage, you must inspect the diked area and take action as provided in §112.8(c)(3)(ii), (iii), and (iv). You must remove accumulated oil on the rainwater and return it to storage or dispose of it in accordance with legally approved methods.

(2) Inspect at regularly scheduled intervals field drainage systems (such as drainage ditches or road ditches), and oil traps, sumps, or skimmers, for an accumulation of oil that may have resulted from any small discharge. You must promptly remove any accumulations of oil.

Note: The above text is an excerpt of the SPCC rule. Refer to 40 CFR part 112 for the full text of the rule.

§§112.8(c)(4) and 112.12(c)(4)

Protect any completely buried metallic storage tank installed on or after January 10, 1974 from corrosion by coatings or cathodic protection compatible with local soil conditions. You must regularly leak test such completely buried metallic storage tanks.

Note: The above text is an excerpt of the SPCC rule. Refer to 40 CFR part 112 for the full text of the rule.

⁶⁵ These requirements also apply to wet gas production facilities (where oil condensate is produced).

⁶⁶ See the above discussion in Diked Storage Area Provisions.

tanks (USTs) including corrosion protection methods for new (see §280.20) and existing (see §280.21) UST systems.

To comply with the leak testing requirements of §§112.8(c)(4) and 112.12(c)(4), a facility owner/operator may consider the requirements of 40 CFR 280.43 which specify release detection methods for petroleum UST systems that include tank tightness testing. Additionally, the Petroleum Equipment Institute (PEI) RP1200 publication “Recommended Practices for the Testing and Verification of Spill, Overfill, Leak Detection and Secondary Containment Equipment at UST Facilities” provides general guidelines for the inspection and testing of leak detection, release prevention and overfill prevention equipment at UST facilities. These methods may be appropriate to meet the SPCC leak testing requirements for buried metallic storage tank.

Tank tightness testing may be accomplished by several methods:⁶⁷

- Pressure testing with inert gas such as nitrogen and checking the tank for loss of pressure. Loss of pressure indicates a leak in the tank.⁶⁸ Consult with the tank manufacturer for the recommended test pressure.
- Chemical inoculant testing. A chemical inoculant is added to the product in the tank and sampling ports are installed in the soil around the tank to check for the presence of the chemical (which would indicate a leak in the tank).
- Volumetric testing. Volumetric testing involves measuring very precisely (in milliliters or thousandths of an inch) the change in product level in a tank over time.
- For double-walled tanks, pressure testing or vacuum testing the interstitial space.
- Some automatic tank gauging systems are capable of meeting the regulatory performance requirements for tank tightness testing and can be considered as an equivalent method.

Rather than leak test the completely buried metallic tank, a PE may substitute elements required under 40 CFR part 280 or a state program approved under 40 CFR part 281 to detect a release from the completely buried tank in accordance with the environmental equivalence provision in §112.7(a)(2). For example, a PE may determine that use of a continuous leak detection system in combination with the use of an Automatic Tank Gauge (ATG) is environmentally equivalent to the regular leak testing⁶⁹ requirements in §§112.8(c)(4) and 112.12(c)(4).⁷⁰

⁶⁷ The tank must be isolated from piping connections when performing tank tightness tests. Check with state regulatory authorities for state approved leak testing methods. For more information on tank tightness testing see <http://www.epa.gov/oust/ustsystem/inventor.htm>.

⁶⁸ CAUTION: Do not use compressed air to pressure test tanks that contain or contained flammable or combustible liquids unless the tank is first purged and cleaned.

⁶⁹ EPA stated that leak testing ensures the liquid tightness of a container and whether it may discharge oil (67 FR 47118, July 17, 2002).

⁷⁰ A PE may want to design such an environmentally equivalent measure in accordance with 40 CFR part 280 or a state program

FYI – Cathodic protection of buried tanks

40 CFR 280.20 and 280.21 identify methods for cathodically protecting buried tanks. These methods may be considered when developing corrosion and cathodic protection protocols for completely buried metallic storage tanks subject to the SPCC rule. The following are some examples of codes and standards for protecting metallic tanks from corrosion that may also be considered:

- Steel Tank Institute (STI) “Specification for STI-P3 System of External Corrosion Protection of Underground Steel Storage Tanks”
- Underwriters Laboratories (UL) Standard 1746, “Corrosion Protection Systems for Underground Storage Tanks”
- Underwriters Laboratories of Canada (ULC) CAN4-S603-M85, “Standard for Steel Underground Tanks for Flammable and Combustible Liquids,” CAN4-G03.1-M85, “Standard for Galvanic Corrosion Protection Systems for Underground Tanks for Flammable and Combustible Liquids,” and CAN4-S631-M84, “Isolating Bushings for Steel Underground Tanks Protected with Coatings and Galvanic Systems”
- National Association of Corrosion Engineers (NACE) Standard RP-02-85, “Control of External Corrosion on Metallic Buried, Partially Buried, or Submerged Liquid Storage Systems,” and Underwriters Laboratories Standard 58, “Standard for Steel Underground Tanks for Flammable and Combustible Liquids”

3.3.3 Overfill Prevention

Sections 112.8(c)(8) and 112.12(c)(8) require that each container installation is engineered to avoid discharges during filling activities. The selection of an overfill prevention system should be based on good engineering practice (see §112.7 introductory paragraph), considering methods that are appropriate for the types of activities and circumstances. Regular tests of liquid level sensing devices to ensure proper operation should be conducted on a routine basis.

approved under 40 CFR part 281, as a demonstration of good engineering practice.

§112.8(c)(8) and 112.12(c)(8)

Engineer or update each container installation in accordance with good engineering practice to avoid discharges. You must provide at least one of the following devices:

- (i) High liquid level alarms with an audible or visual signal at a constantly attended operation or surveillance station. In smaller facilities an audible air vent may suffice.
- (ii) High liquid level pump cutoff devices set to stop flow at a predetermined container content level.
- (iii) Direct audible or code signal communication between the container gauger and the pumping station.
- (iv) A fast response system for determining the liquid level of each bulk storage container such as digital computers, telepulse, or direct vision gauges. If you use this alternative, a person must be present to monitor gauges and the overall filling of bulk storage containers.
- (v) You must regularly test liquid level sensing devices to ensure proper operation.

Note: The above text is an excerpt of the SPCC rule. Refer to 40 CFR part 112 for the full text of the rule.

While an audible/visual alarm or fast-response system may be appropriate for a large, stationary storage tank, a simpler overfill prevention procedure may be appropriate for a small container (e.g., relatively small containers that can be readily monitored) when the filling procedure is documented in the SPCC Plan. A procedure for smaller containers that ensures communication between the container gauger and the pumper, is in accordance with §§112.8(c)(8)(iii) and 112.12(c)(8)(iii) and therefore does not require an environmental equivalence determination.

The procedure must be adequate to prevent a discharge by ensuring communication between the container gauger and the pumper. The development of this procedure should consider factors such as the container size; inventory control procedures; filling rate; ability of the person performing the filling operation to continuously monitor product level in the container; reaction time; capacity of the secondary containment and/or catchment basin; and proximity of the tank to floor drains, sumps, and other means through which oil could escape. Personnel should be able to demonstrate an understanding of the procedures and proper field implementation. As part of the description, the Plan preparer may reference other facility documents in the SPCC Plan that discuss relevant established Best Management Practices (BMPs), pollution prevention training, and/or procedures in more detail, rather than restating this information in the SPCC Plan. Additional supporting documentation should be on-site and available for review during an inspection.

For example, a filling procedure for a small container may involve:

- Verifying that the container has sufficient free capacity (i.e., ullage of the container) for the transfer,
- Visually monitoring the product level throughout the transfer operation, and
- Posting the detailed written procedure described in the SPCC Plan next to the container/fill pipe.

Many facilities have smaller storage containers such as 55-gallon drums, Intermediate Bulk Containers (IBCs) and totes that are never filled at the facility. Since these containers are never filled, the overfill requirements do not apply and there is no need to document environmental equivalence deviations for these containers.

Where a facility owner or operator chooses to deviate from the overfill prevention provisions by using an alternative measure that provides environmentally equivalent protection, the SPCC Plan must state the reasons for nonconformance and describe the alternative measure in detail, including how it achieves equivalent environmental protection when implemented (§112.7(a)(2)).

FYI – Preventing container overfills

In order to prevent container overfills consider the following:

- 1) Training individuals involved in the transfer operations;
- 2) Communicating facility oil transfer procedures to personnel;
- 3) Ensuring transfer operations are appropriately monitored;
- 4) Ensuring tank gages and overfill alarms are operational, calibrated and routinely tested;
- 5) Verifying that the container has sufficient available capacity;
- 6) Monitoring the product level throughout the operation; and
- 7) Providing response equipment that is easily accessible from the transfer location

3.3.4 Facility Transfer Operations, Pumping, and Facility Process Requirements

Requirements that apply to valves, appurtenances, piping, and transfer operations at onshore facilities that handle petroleum oils are described in §112.8(d). Similar requirements are described in §112.12(d) for piping at onshore facilities that handle animal fats and/or vegetable oils.

§§112.8(d) and 112.12(d) – Facility-transfer operations, pumping, and facility process.

- (1) Provide buried piping that is installed or replaced on or after August 16, 2002, with a protective wrapping and coating. You must also cathodically protect such buried piping installations or otherwise satisfy the corrosion protection standards for piping in part 280 of this chapter or a State program approved under part 281 of this chapter. If a section of buried line is exposed for any reason, you must carefully inspect it for deterioration. If you find corrosion damage, you must undertake additional examination and corrective action as indicated by the magnitude of the damage.
- (2) Cap or blank-flange the terminal connection at the transfer point and mark it as to origin when piping is not in service or is in standby service for an extended time.
- (3) Properly design pipe support to minimize abrasion and corrosion and allow for expansion and contraction.
- (4) Regularly inspect all aboveground valves, piping, and appurtenances. During the inspection you must assess the general condition of items, such as flange joints, expansion joints, valve glands and bodies, catch pans, pipeline supports, locking of valves, and metal surfaces. You must also conduct integrity and leak testing of buried piping at the time of installation, modification, construction, relocation, or replacement.
- (5) Warn all vehicles entering the facility to be sure that no vehicle will endanger aboveground piping or other oil transfer operations.

NOTE: The above text is an excerpt of the SPCC rule. Refer to 40 CFR part 112 for the full text of the rule.

These provisions of the SPCC rule require that owners and operators of facilities generally protect buried piping against corrosion; cap or blank-flange the terminal connection of piping that is not in service; design pipe supports to minimize abrasion and corrosion and allow for expansion and contraction; regularly inspect all aboveground valves, piping, and appurtenances; and take corrective action when corrosion damage is found. The rule also requires integrity and leak testing of buried piping at the time of installation, modification, construction, relocation, or replacement. Finally, the rule requires warning all vehicles entering the facility to ensure that they will not endanger aboveground piping (or other oil transfer operations). Types of facility piping addressed by this provision include, but are not limited to:

- Transfer piping to and from bulk storage containers, both aboveground and buried;
- Transfer piping associated with manufacturing equipment, both aboveground and buried; and
- Piping associated with oil-filled operational and manufacturing equipment.

A 1987 EPA study into the causes of oil releases indicates that the operational piping portion of an underground storage tank system is twice as likely as the tank portion to be the source of a discharge.⁷¹ Piping failures are caused equally by poor workmanship, improper installation, corrosion, or other forms of deterioration. The SPCC piping requirements aim to prevent oil discharges from aboveground or buried piping due to corrosion, operational accidents, or collision. Accordingly, equivalent environmental protection may be

⁷¹ "Causes of Release from Underground Storage Tank Systems: Attachments," September 1987, EPA 510-R-92-702.

achieved through alternative measures that reduce or eliminate the risks of corrosion to buried piping or the risk of damage to aboveground piping.

The following sections discuss examples of environmentally equivalent deviations from piping requirements.

Protecting Buried Piping from Corrosion Damage

A PE must certify that the Plan has been prepared in accordance with good engineering practices, including consideration of applicable industry standards. Similarly, an owner/operator self-certifies that the Plan has been prepared in accordance with accepted and sound industry practices. Therefore, the Plan preparer may want to consult a qualified corrosion professional when evaluating the adequacy of cathodic protection and corrosion prevention systems at the facility. If the Plan preparer determines that cathodic protection of buried piping installed on or after August 16, 2002 is not appropriate considering site-specific conditions, facility configuration, and other engineering factors (e.g., where the installation of a corrosion system would accelerate corrosion of existing unprotected equipment), then a PE may specify other measures to assess and ensure the continued fitness-for-service of piping. For example, the owner or operator of a facility could, instead of cathodically protecting underground piping, use double-wall piping combined with an interstitial leak detection system (67 FR 47123, July 17, 2002). Cathodic protection averts discharges by preventing container corrosion, whereas the alternative method of installing a leak detection system and double-wall piping averts discharges by detecting and containing leakage so it may be addressed before it can become a discharge as described in §112.1(b). As with any environmentally equivalent measure, this portion of the Plan must be certified by a PE.

Alternatively, the facility owner or operator may implement a comprehensive monitoring, detection, and preventive maintenance program for piping and appurtenances as an alternative for cathodic protection to detect and address potential discharges. The PE who certifies the Plan or this portion of it, should develop and/or review such a program, which may combine inspection, monitoring and leak testing elements with preventive maintenance, contingency measures, and recordkeeping. Examples of these elements are outlined for piping systems in API Standard 570,⁷² "Piping Inspection Code: In-Service Inspection, Rating, Repair, and Alteration of Piping Systems." *Table 3-4* summarizes key elements of an API-570 inspection program when evaluating buried piping that is not cathodically protected (refer to *Chapter 7: Inspection, Evaluation, and Testing* for an overview of API-570). Such a program provides a means of assessing the suitability of piping to contain oil and/or identifying potential failures prior to their occurrence.

⁷² API 570 Third Edition 2009

Table 3-4: Summary of inspection and leak testing elements of an API-570 program for unprotected buried piping – additional inspection and testing requirements are specified in API 570 (refer to the full text of API 570 for details).⁷³

Inspection and Leak Testing Elements	Summary
Above-grade Visual Surveillance	Inspect the surface of the ground covering the piping for discoloration of the soil, softening of asphalt pavement, formation of pools, bubbling water puddles, and noticeable odor. The inspection should be performed at approximately six month intervals and may be performed by the owner/operator.
Pipe-to-Soil Potential Survey	Conduct pipe-to-soil potential survey along the pipe route to assess corrosion potential. Excavate sites where active corrosion cells are located to determine the extent of corrosion damage.
Pipe Coating Holiday* Survey	Conduct pipe coating holiday survey based on results of other evaluations.
Soil Corrosivity	Perform soil corrosivity evaluation at a five-year interval for piping buried in lengths greater than 100 feet that is not cathodically protected.
Cathodic Protection	Monitor at intervals in accordance with Section 10 of NACE RP0169 ⁷⁴ or API RP651 ⁷⁵ when piping cathodically protected.
External and Internal Inspection Intervals	Determine external condition of buried piping that is not cathodically protected by either pigging or by excavating according to frequency indicated in Table 5 of API-570. Adjust inspection of buried piping based on results of inspections of above-grade portion.
Leak Testing Intervals	Alternatively, or in addition to inspection, perform leak testing with pressure at least 10 percent greater than maximum operating pressure at an interval half the length of intervals in API 570 Table 5 for buried piping that is not cathodically protected. Alternatively, perform temperature-corrected volumetric or pressure test methods, use acoustic emission examination, or addition of tracer fluid.

* “Holiday” means any discontinuity, bare, or thin spot in a painted area.

Where a piping inspection and testing program is used to provide environmental protection equivalent to cathodic protection, a PE will develop and/or review the scope and frequency of the program considering industry standards when available,⁷⁶ before certifying that the Plan is in accordance with good engineering practice. Certain elements of a piping inspection and testing program (e.g., frequent leak testing of buried piping) may be emphasized over others based on site-specific factors such as length of piping at the facility or proximity to navigable waters or adjoining shorelines. *Chapter 7: Inspection, Evaluation, and Testing* references

⁷³ API 570 Third Edition 2009

⁷⁴ NACE SP0169-2007 (formerly RP0169), “Control of External Corrosion on Underground or Submerged Metallic Piping Systems”, Edition 2007 www.nace.org

⁷⁵ API RP 651, “Cathodic Protection of Aboveground Petroleum Storage Tanks”, Third Edition, 2007.

⁷⁶ See PE attestation in §112.3(d)

industry standards that specifically discuss leak testing, including API Recommended Practice 1110 – Pressure Testing of Steel Pipelines for the Transportation of Gas, Petroleum Gas, Hazardous Liquids, Highly Volatile Liquids or Carbon Dioxide. However, since leak testing only detects existing leaks, rather than preventing them, good engineering practice may suggest that testing occur at a greater frequency than when other prevention systems, such as cathodic protection and coatings, are in place. Accordingly, the PE who certifies the Plan will determine the appropriate frequency of leak tests for buried piping after considering the other prevention and detection measures incorporated into the inspection program.

If alternative measures are used to meet the SPCC corrosion protection requirements for buried piping, §112.7(a)(2) requires that the Plan state the reasons for nonconformance, describe in detail the alternative measures and explain how the alternative measures provide environmental protection equivalent to coating and cathodically protecting new piping. In order to be considered equivalent environmental protection to cathodic protection, a comprehensive inspection and preventive maintenance program needs to be implemented to effectively detect and address piping deterioration before it can result in a discharge as described in §112.1(b). The EPA inspector should verify that the alternative method is described in detail in the SPCC Plan and that the Plan specifies the scope and frequency of tests and inspections and/or refers to the relevant industry standards, as applicable. The EPA inspector should also review records that document these tests and inspections.

Preventing Physical Damage to Aboveground Piping/Transfer Operations

Warnings to vehicles entering the facility may be verbal, posted on signs, or by other appropriate means. The Plan must describe how the warnings will be communicated and should include locations of signs and information provided on the signs. When relying on verbal warnings, the Plan should describe information provided as part of the verbal warnings and the procedure for issuing those warnings including personnel responsible for providing the warnings.

Alternatively, protecting the equipment from the possibility of a collision by installing fencing, barriers, curbing or other physical obstacles may provide equivalent environmental protection. The SPCC Plan must document the method implemented at the facility to prevent physical damage to aboveground piping and transfer operations, and if an alternative method is used, then it must be documented in accordance with §112.7(a)(2).

3.3.5 Flowline/Intra-Facility Gathering Line Maintenance Program

The SPCC rule requires a flowline or intra-facility gathering line maintenance program, according to §112.9(d)(4). A flowline or intra-facility gathering line maintenance program aims to manage oil production operations in a manner that reduces the potential for a discharge from these piping systems. Common causes of such discharges include mechanical damage (e.g., impact, rupture) and corrosion.

§112.9(d)(4)

Prepare and implement a written program of flowline/intra-facility gathering line maintenance. The maintenance program must address your procedures to:

- (i) Ensure that flowlines and intra-facility gathering lines and associated valves and equipment are compatible with the type of production fluids, their potential corrosivity, volume, and pressure, and other conditions expected in the operational environment.
- (ii) Visually inspect and/or test flowlines and intra-facility gathering lines and associated appurtenances on a periodic and regular schedule for leaks, oil discharges, corrosion, or other conditions that could lead to a discharge as described in §112.1(b). For flowlines and intra-facility gathering lines that are not provided with secondary containment in accordance with §112.7(c), the frequency and type of testing must allow for the implementation of a contingency plan as described under part 109 of this chapter.
- (iii) Take corrective action or make repairs to any flowlines and intra-facility gathering lines and associated appurtenances as indicated by regularly scheduled visual inspections, tests, or evidence of a discharge.
- (iv) Promptly remove or initiate actions to stabilize and remediate any accumulations of oil discharges associated with flowlines, intra-facility gathering lines, and associated appurtenances.

Note: The above text is an excerpt of the SPCC rule. Refer to 40 CFR part 112 for the full text of the rule.

An effective flowline maintenance program is necessary to detect a discharge in a timely manner so that the oil discharge response operations described in the contingency plan may be implemented effectively. The rule specifically requires a written maintenance program which addresses procedures to:

- **Ensure that flowlines and intra-facility gathering lines and associated valves and equipment are compatible with the type of production fluids, their potential corrosivity, volume, and pressure, and other conditions expected in the operational environment.** This preventative measure is intended to help preserve the integrity of the lines and reduce the potential effects of corrosion or other factors that may lead to a discharge.
- **Visually inspect and/or test flowlines and intra-facility gathering lines and associated appurtenances on a periodic and regular schedule for leaks, oil discharges, corrosion, or other conditions that could lead to a discharge as described in §112.1(b).** This measure is intended to ensure that any discharges, potential problems or conditions related to the flowline/intra-facility gathering lines that could lead to a discharge will be promptly discovered. When flowlines and intra-facility gathering lines have no secondary containment, then the frequency and type of testing must allow for the implementation of a contingency plan as described under 40 CFR part 109. An oil spill contingency plan cannot be effective unless a discharge is discovered in a timely manner so that the oil response operations can be implemented as described in the contingency plan. (See *Chapter 7: Inspection, Evaluation, and Testing* for more information on this inspection requirement.)

- **Take corrective action or make repairs to any flowlines and intra-facility gathering lines and associated appurtenances as indicated by regularly scheduled visual inspections, tests, or evidence of a discharge.** The results of the inspections or tests (as described above) will inform the owner/operator of any corrections or repairs that need to be made. Corrective action is necessary in order to prevent a discharge from occurring, as well as in response to a discharge. This measure is intended to prevent discharges as described in §112.1(b) by ensuring that flowlines and intra-facility gathering lines are well maintained and ensuring prompt corrective actions or repairs in response to conditions found during the inspection/testing of the flowlines and intra-facility gathering lines.
- **Promptly remove or initiate actions to stabilize and remediate any accumulations of oil discharges associated with flowlines, intra-facility gathering lines, and associated appurtenances.** Removing oil-contaminated soil is one method to prevent a discharge from reaching navigable waters or adjoining shorelines. Disposal of oil must be in accordance with applicable Federal, State, and local requirements; under §112.7(a)(3)(v), a facility owner or operator is required to describe the methods of disposal of recovered materials in accordance with applicable legal requirements. For the purposes of this provision, removal of recoverable oil may be combined with physical, chemical, and/or biological treatment methods to address any residual oil. These treatment methods must be consistent with other Federal, state or local requirements as applicable, and must be properly managed to prevent a discharge as described in §112.1(b). “Promptly remove” indicates that the owner or operator of the facility has both the responsibility and flexibility to outline an inspection program under §112.9(d)(4)(ii) which puts the timeframe for “prompt removal” in the context of the inspection frequency (73 FR 74276, December 5, 2008).

The facility owner or operator may deviate from the flowline and intra-facility gathering line maintenance program requirements if an environmentally equivalent alternative measure is implemented in accordance with §112.7(a)(2). The Plan preparer certifying the Plan will typically establish the scope and frequency of inspections, tests, and preventive maintenance based on industry standards, manufacturer’s recommendations, and other sources of good engineering practice. There is currently no published industry standard for a flowline or intra-facility gathering line maintenance program, however, a standard may be developed in the future. If a future industry standard is developed that meets all of the requirements described in §112.9(d)(4), then the Plan preparer may follow that standard when developing a flowline/intra-facility gathering line program for the facility. If a future standard does not address all of the SPCC rule requirements, then a PE may need to make an environmental equivalence determination. *Chapter 7: Inspection, Evaluation, and Testing* refers to selected

Tip – Intra-facility gathering lines

As described in §112.1(d)(11), intra-facility gathering lines that are subject to DOT regulatory requirements at 49 CFR part 192 (*Transportation of Natural and Other Gas by Pipeline*) or part 195 (*Transportation of Hazardous Liquids by Pipeline*) are exempt from the SPCC rule.

See Chapter 2: SPCC Rule Applicability for more information.

relevant industry standards that describe methods used to test the integrity of piping, such as API 570⁷⁷ and ASME B31.4. While these are not specific to flowlines and intra-facility gathering lines, they may serve as guidance.

A PE may determine that state requirements governing flowlines and gathering lines are environmentally equivalent to one or more of the SPCC flowline/intra-facility gathering line maintenance requirements. If alternative measures are used to meet the SPCC flowline/intra-facility gathering line maintenance program requirements in §112.9(d)(4), EPA requires that the Plan state the reasons for nonconformance and explain how the alternative measures provide environmental protection equivalent to the outlined procedures.

3.3.6 Security (Excluding Oil Production Facilities)

Section 112.7(g) of the SPCC rule outlines security requirements for facilities. These requirements are intended to prevent discharges of oil to navigable waters or adjoining shorelines that could result from acts of vandalism or other unauthorized access to oil containers or equipment. Unlike other provisions under §112.7, the security provisions in paragraph (g) do not apply to oil production facilities.

Prior to December 2008, the security provision of the SPCC rule required that the facility owner or operator install security systems such as fencing, locks and lighting to prevent unauthorized access to oil-handling operations and controls. However, EPA amended the facility security requirements to be more performance-based and allow an owner or operator of a facility to tailor security measures to the facility's specific characteristics and location (73 FR 74236, December 5, 2008). The security requirements remain subject to the environmental equivalence provision, but given the increased flexibility, there may be limited instances where a PE would determine that a deviation is necessary. Below we provide examples of how the revised security requirements can be met.

A facility owner or operator may achieve the rule's security objectives by providing a description of the security measures and how they are implemented at the facility. This description may include a discussion of how measures employed by the facility help deter vandals and prevent unauthorized access to containers and equipment that could be involved in an oil discharge. Measures that may be used to meet the security requirements include fencing and lighting, as appropriate for the facility.

§112.7(g) – Security (excluding oil production facilities).

Describe in your Plan how you secure and control access to the oil handling, processing and storage areas; secure master flow and drain valves; prevent unauthorized access to starter controls on oil pumps; secure out-of service and loading/unloading connections of oil pipelines; and address the appropriateness of security lighting to both prevent acts of vandalism and assist in the discovery of oil discharges.

Note: The above text is an excerpt of the SPCC rule. Refer to 40 CFR part 112 for the full text of the rule.

⁷⁷ API 570 Third Edition 2009

Securing and Controlling Access to Oil Handling, Processing and Storage Areas

Fencing can serve to secure and control access to the oil handling, processing and storage areas and prevent unauthorized access to starter controls on oil pumps. As part of facility security measures, an owner or operator may *fully* fence the facility and/or guard gates when the facility is not in operation or attended.

Alternatively, for facilities where oil containers and equipment are located within discrete areas, securing only those parts of the facilities that could be involved in an oil discharge may provide an effective level of protection. This may be preferable for very large facilities where controlling access for the entire footprint of the facility would require installing and monitoring very long lengths of fencing. In such cases, installing a fence around the discrete areas of a facility where oil containers and associated valves, pumps and piping are located (*Figure 3-1*), and around the equipment needed to operate pumps and containers, may adequately deter vandals and/or prevent access by unauthorized personnel.



Figure 3-1: Fencing around oil storage area.

Other measures may also adequately control access to the facility and equipment, depending on facility-specific circumstances. One example may be a facility attended on a 24-hour basis by security or other facility personnel with closed-circuit cameras to detect and investigate unauthorized access. Alternatively, a facility may combine an alarm system that detects the presence of trespassers. The rule language no longer prescribes a single method to secure and control access to oil handling, processing and storage areas and therefore allows the facility owner or operator to determine the best method to secure these areas without explaining environmental equivalence.

Appropriateness of Lighting

The SPCC Plan must describe how the facility owner or operator addresses the appropriateness of security lighting to both prevent acts of vandalism and assist in the discovery of oil discharges. Facilities may be equipped with lights to allow facility personnel to discover discharges that occur at night and as a way to prevent acts of vandalism. Appropriate lighting may consist of motion-activated lights to ward off trespassers and allow facility personnel to notice if a discharge occurs. Alternatively, portable lights available for facility personnel to use as they perform regular rounds of the facility may be appropriate. For facilities located away from populated areas (e.g., farms or rural facilities) then the location itself may serve as a deterrent to vandals and, based on the judgment of the Plan certifier, be considered when determining whether lighting is an appropriate security measure for the facility. Alternatively, an owner/operator of an unattended facility may determine that lights at the facility would not be an effective deterrent for vandals and choose instead to fence the facility to prevent vandalism.

Another security measure that may be used to detect oil discharges (typically used at electrical substations) is a Supervisory Control and Data Acquisition (SCADA) system that monitors the facility and detects oil discharges remotely without a need for lighting to assist in visual detection.

No discussion of an environmentally equivalent alternative to security lighting is necessary because the rule does not specifically require lighting. Instead, the facility owner or operator describes in the SPCC Plan how they prevent vandalism and discover oil discharges and whether security lighting is appropriate.

3.3.7 Integrity Testing and Inspection Requirements for Bulk Storage Containers at Onshore Facilities

Integrity testing in accordance with industry standards is required for all aboveground bulk storage containers that store, use, or process petroleum and other non-petroleum oils. Requirements for bulk storage containers located at onshore facilities (excluding oil production facilities) are addressed in §112.8(c)(6). Integrity testing requirements for onshore facilities that store, use, or process animal fats and/or vegetable oils are addressed in §112.12(c)(6). For a complete discussion of integrity testing requirements and how the environmental equivalence provision applies, see *Chapter 7: Inspection, Evaluation, and Testing*.

3.3.8 Alternative Measures for Containers at Onshore Oil Production Facilities

The SPCC rule allows for alternative measures to substitute for sized secondary containment for both flow-through process vessels and produced water containers at onshore oil production facilities. The owner or operator of an oil production facility may choose to follow the alternative measures for flow-through process vessels described in §112.9(c)(5) or the measures for produced water containers as described in §112.9(c)(6), or may substitute environmentally equivalent measures in accordance with §112.7(a)(2).

The alternative measures for flow-through process vessels and produced water containers at oil production facilities are discussed in more detail in *Chapter 4: Secondary Containment and Impracticability*. The general secondary containment requirements in §112.7(c) still apply to these containers, and environmentally equivalent measures cannot be used to substitute for general secondary containment.

3.4 Review of Environmental Equivalence

Whenever an alternative measure is substituted for a prevention and control measure required by the rule, then the environmentally equivalent measure must be documented in the SPCC Plan, as required in §112.7(a)(2). This documentation is reviewed by the EPA inspector during inspections to ensure that the facility is in compliance with the regulatory requirements. The EPA inspector may refer to the list in *Table 3-5* at the end of this chapter to identify and review technical rule requirements that are eligible for deviation through the environmental equivalence provision.

As noted earlier in this Chapter, facility owners and operators may not use environmentally equivalent measures to meet general and specific secondary containment provisions of the SPCC rule. Instead, an impracticability determination in accordance with §112.7(d) provides a separate means of deviating from secondary containment requirements after a PE determines that secondary containment is not practicable.

Environmentally equivalent deviations are also not available for the general recordkeeping and training provisions in §112.7. The rule already provides flexibility in the manner of recordkeeping for inspections and tests by allowing the use of records kept under usual and customary business practices. Personnel training (§112.7(f)) and a discussion of conformance with any applicable, more stringent state rules (§112.7(j)) are essential for all facilities, and environmental equivalence does not apply to the alternative provision for qualified oil-filled operational equipment as described in §112.7(k).

3.4.1 Consideration of Costs

A PE must review the selection and implementation of environmentally equivalent measures and certify them as being consistent with good engineering practice (§112.3(d) or §112.6(b)(4)). The selection of alternative measures may be based on various considerations, such as safety, cost, geographical constraints, the appropriateness of a particular requirement based on site-specific considerations, or other factors consistent with engineering principles.

Unlike impracticability claims, where cost cannot be the sole consideration (69 FR 29729, May 25, 2004), an owner or operator may consider cost as one of the factors in deciding whether to deviate from a particular requirement, but the alternative provided must achieve environmental protection equivalent to the required measure (67 FR 47095, July 17, 2002). Facilities have the opportunity to reduce costs by alternative methods if they can maintain environmental protection (67 FR 47056, July 17, 2002).

3.4.2 SPCC Plan Documentation

For each environmentally equivalent measure, the SPCC Plan must state the reason for nonconformance within the relevant section of the Plan, as required in §112.7(a)(2). The Plan must also describe the alternative measure in detail and explain how the measure provides environmental protection equivalent to that provided by the SPCC provision.

The facility owner or operator must ensure that alternative measures are adequate for the facility; that equipment, devices, or materials are designed for the intended use; and that the equipment, devices, or materials are properly implemented and maintained to provide effective environmental protection (§§112.3(d) and 112.7). EPA emphasizes that the environmental equivalence provision is not intended to be used as a means to avoid complying with the rule or simply as an excuse for not meeting requirements the owner or operator believes are too costly. The alternative measure chosen, and certified by a PE, must represent good engineering practice and must achieve environmental protection equivalent to the SPCC rule requirement as required in §112.7(a)(2).

The PE who certifies the Plan reviews environmentally equivalent measures. If a qualified facility uses environmentally equivalent measures to comply with rule requirements, a PE must specifically certify each



FYI – Cost considerations

EPA clarified in a Federal Register notice that under §112.7(a)(2), owners and operators of facilities may choose environmentally equivalent approaches (selected in accordance with good engineering practices) for any reason, including because they are cheaper.

(see 69 FR 29728, May 25, 2004)

environmentally equivalent measure described in the Plan, as required in §112.6(b)(3)(i), even if other parts of the qualified facility Plan are self-certified by the owner/operator.

In cases where operational procedures are used as environmentally equivalent alternatives to SPCC requirements, the Plan must state the reasons for nonconformance and describe in detail the alternative methods and how the approach will achieve equivalent environmental protection (§112.7(a)(2)). The description should provide the details of how the procedures are implemented at the facility, including specific information on the steps involved in each activity, required equipment, personnel training, and records that need to be maintained to document and verify implementation. Records kept as part of usual and customary business practices are acceptable forms of documentation, but should be referenced in the Plan and available for an inspector's review during an inspection. These records must be maintained at the facility for a period of three years (§112.7(e)). Certain industry standards (for example, API Standards 570 and 653) may specify that records be maintained for more than three years. If a Plan indicates conformance with a standard that requires longer retention of inspection records, then the owner/operator should follow the longer recordkeeping requirement of the standard.

The two examples in *Figure 3-2* and *Figure 3-3* illustrate documentation of environmentally equivalent measures in hypothetical SPCC Plans. The first example in *Figure 3-2* shows *insufficient* documentation, illustrating a Plan description that simply notes the use of an alternative measure without supporting descriptions. Specifically, the example in *Figure 3-2* does not provide sufficient detail to ascertain whether the approach provides environmentally equivalent protection – it does not describe how environmental equivalence is achieved and what procedures are implemented to ensure that the measure performs as intended. The second example in *Figure 3-3* provides a sufficient level of detail to allow an EPA inspector to understand what the facility is doing to meet the objectives of the SPCC rule with regard to the given provision, and to verify implementation of the measure(s) in the field.

Figure 3-2: Example 1: Insufficient Documentation of Environmentally Equivalent Protection for Drainage of Diked Areas (§112.8(b)(1) and §112.8(b)(2)).

Facility Drainage – 40 CFR 112.8(b)(1) and 40 CFR 112.8(b)(2)

The dike structure in Area A is equipped with a [TRADEMARK] drain shutoff system and therefore does not require employee supervision during draining. This provides an environmentally equivalent method of compliance with the drainage requirement.

Figure 3-3: Example 2: Sufficient Documentation of Environmentally Equivalent Protection for Drainage of Diked Areas (§112.8(b)(1) and §112.8(b)(2)).⁷⁸

Facility Drainage – 40 CFR 112.8(b)(1) and 40 CFR 112.8(b)(2)

The dike in Area A contains three transformers (see list of equipment and oil storage capacity in the Plan). The dike is equipped with a [TRADEMARK] drain shutoff system specifically engineered to prevent any oil from escaping the containment structure while allowing water to flow through the valve housing during normal conditions. The system uses hydrophobic and oleophilic material to block the flow of all fluids once it detects the presence of oil. The oil type stored in the containment area has been confirmed by the manufacturer to activate the oil-blocking mechanism and the mechanism ensures that any discharge from the containment structure will not cause a discharge as described in §112.1(b). Attached in an appendix to the Plan are efficacy testing results supplied by the manufacturer of [TRADEMARK].

Further documentation of the performance of this system and the manufacturer's suggested replacement interval are maintained as an appendix to this Plan. This method deviates from the rule requirement to drain dikes under direct visual supervision using valves of manual, open-and-closed design. Employee supervision is not required under regular operating conditions to drain uncontaminated rainwater that has accumulated in the dike, which will reduce manpower and resources necessary to implement the SPCC Plan. Therefore, we are implementing this system which is environmentally equivalent because it will only drain rainwater when oil is not present.

The manufacturer's maintenance and inspection requirements are maintained at the facility. In accordance with those recommendations, the diked area is inspected monthly by facility personnel as part of the scheduled inspection of bulk storage tanks, as per the checklist presented in Appendix A. This inspection includes looking for accumulation of water and presence of oil within the diked area, and examining, and replacing, as warranted, the silt filter and [TRADEMARK] elements. Facility personnel also examine the system, and replace components as needed, within 48 hours of any rainfall greater than 3 inches. Replacement of the silt filter and/or other elements of the [TRADEMARK] system are noted on the monthly inspection sheets, which are maintained at the facility for three years.

All maintenance is performed following the manufacturer's specifications. Maintenance requirements are covered in the employee training program.

In the event that the filter clogs and storm water accumulates within the diked area, facility personnel will follow required procedures for dike drainage as follows:

- 1) Inspect the retained rainwater to ensure that it does not contain oil (to avoid a discharge to *[Insert Name of Waterbody]* or adjoining shorelines which is the nearest navigable water to the facility);
- 2) Open the bypass valve, allow drainage, and reseal the valve; and
- 3) Record event in log.

⁷⁸ This is a hypothetical example for illustrative purposes only. The use of environmental equivalence is a site-specific determination certified by a PE in accordance with good engineering practice. EPA does not endorse this specific example as a means of environmental equivalence. If a system that uses hydrophobic and oleophilic material is used at a facility, the inspector should pay close attention to manufacturers' data supporting the assertion the system is effective to prevent a discharge as described in § 112.1(b) and PE's site-specific considerations for the use of this technology at the facility. Follow-up action by the EPA inspector may include requesting additional information from the facility owner or operator on the implementation of the equivalent measure.

3.4.3 Role of the EPA Inspector

A PE must certify environmentally equivalent measures for a facility to ensure consistency with good engineering practice (§112.3(d) or §112.6(b)(3)(i) and §112.7). For each case where an environmentally equivalent measure is used, the EPA inspector should verify that the Plan includes

- The reasons for nonconformance;
- A detailed description of the alternative measure; and
- An explanation describing how the alternative measure provides protection that is environmentally equivalent.

Additionally, the EPA inspector should verify implementation of the alternative measure in the field.

The explanation describing how an alternative measure achieves environmental equivalence does not need to demonstrate “mathematical equivalency,” but the alternative measure does need to provide equivalent protection to prevent a discharge to navigable waters or adjoining shorelines. The Plan should describe how the alternative measure prevents, controls, or mitigates a discharge, as well as the procedures or equipment used to implement the alternative measure and ensure its continued effectiveness, particularly in terms of the measure’s practical impacts on field operations, employee training, monitoring, and equipment maintenance.

By certifying an SPCC Plan (or portion of a Plan, in the case of a qualified facility), a PE attests that the Plan has been prepared in accordance with good engineering practice, that it meets the requirements of 40 CFR part 112, and that it is adequate for the facility. EPA encourages innovative techniques for preventing discharges, but these techniques need to effectively prevent discharges as described in §112.1(b). EPA believes that PEs will seek to protect themselves from liability by certifying only measures that provide equivalent environmental protection (67 FR 47095, July 17, 2002). If alternative measures are certified by a PE as being environmentally equivalent, are properly documented, and are appropriately implemented in the field, they should generally be considered acceptable by EPA regional inspectors absent a reasonable basis to believe otherwise.

The EPA inspector should note whether the alternative measures make sense and appear to agree with recognized industry standards or, where such standards do not apply, are in accordance with good engineering practice. An EPA inspector should also carefully review alternative approaches that purposely deviate from applicable industry consensus standards. If a PE develops an alternative measure that does not follow an applicable industry standard, then the Plan must describe why the applicable industry consensus standard is not being used and how the alternative measure is environmentally equivalent to the industry standard. The EPA inspector should assess implementation of the alternative measures, including whether they appear to have been altered or differ from the measures described in the Plan and certified by the PE, have not been implemented correctly, require maintenance that has not occurred, appear to be inadequate for the facility, or otherwise do not meet the overall oil spill prevention objective of the SPCC rule. Finally, the EPA inspector should ensure that the rule requirement for which the Plan is deviating is eligible for environmental equivalence

(as identified in §112.7(a)(2)) and that the environmentally equivalent alternative is not an existing SPCC requirement.

If the inspector questions the appropriateness of alternative measures, he/she should fully document all field observations and other pertinent information. Follow-up action by the EPA inspector may include requesting additional information from the facility owner or operator on the implementation of the equivalent measure. The EPA Regional Administrator (RA) has the authority to require amendment of the Plan to correct alternative measures. If the RA determines that the measures described in the SPCC Plan do not provide equivalent environmental protection, then the procedures for requiring a Plan amendment under §112.4(d) and (e) may be initiated. In cases of noncompliance, an enforcement action may follow, as deemed appropriate.

Test Your Knowledge

Can you identify all of the problems with the following environmental equivalence example?

Example: Rather than provide secondary containment for Tank 4 (10,000-gallon shop-built heating oil tank) we are implementing an integrity testing program that follows STI SP001. Implementation of this integrity testing program will prevent discharges of oil from the container and thus this provides equivalent environmental protection to a secondary containment dike.

What problems did you identify?

- 1) *Deviates from Secondary Containment Requirements.* The environmental equivalence provision in §112.7(a)(2) specifies exactly which provisions are eligible for the rule and it excludes secondary containment provisions. Instead, if the facility owner/operator in this example cannot provide adequate secondary containment for the 10,000-gallon tank, then the SPCC Plan must include an impracticability determination in accordance with §112.7(d) and he must develop an oil spill contingency plan and provide a written commitment of manpower, equipment, and materials to implement the contingency plan.
- 2) *Alternative Measure is an Existing SPCC Requirement.* Integrity testing is an SPCC rule requirement that applies to bulk storage containers under §§112.8(c)(6) and 112.12(c)(6). The facility owner/operator cannot substitute one SPCC rule requirement for another because this allows for a lesser degree of overall protection of navigable waters or adjoining shorelines.
- 3) *Inadequate Documentation.* The SPCC Plan must document the reason for deviating from a rule requirement, provide a detailed description of the alternative measure and explain how it is environmentally equivalent. The above example includes a single sentence identifying the alternative measure but does not provide a detailed description of the alternative or an explanation of why the owner/operator did not provide secondary containment for the tank. For an example of adequate documentation of environmental equivalent alternative, see *Section 3.1.1* of this chapter.

Table 3-5 lists the SPCC provisions that may be met through environmentally equivalent measures, and provides guidance on the kinds of questions an inspector should consider when reviewing environmentally equivalent measures in an SPCC Plan and during a site inspection. The table provides a list of evaluation questions for each section of the rule, means of verifying compliance during an on-site review, and elements that should be considered in cases where the facility installation does not conform with the methods described in the SPCC rule. The EPA inspector should use the part(s) of the table that are relevant to the facility being inspected.

Table 3-5: SPCC provisions subject to environmentally equivalent measures under §112.7(a)(2).

Rule Element and Relevant Section(s)	Evaluation	Verification During Inspection
<p>Inspectors: Consider the following questions as you review the basis for environmental equivalence for each provision below.</p> <p>Does the Plan state the reason for nonconformance? Does the Plan describe the alternative measure in sufficient detail? Is the alternative measure appropriate for the facility? Does the Plan describe how the alternative measure is environmentally equivalent? Is the alternative measure being implemented as described? Is the proposed alternative already a rule requirement?</p>		
ALL FACILITIES		
Administrative provisions of the SPCC rule <i>112.1-112.5</i>	<i>No deviation allowed based on environmental equivalence.</i>	
Qualified Facilities <i>112.6</i>	Deviations based on environmental equivalence are only allowed for Tier II qualified facilities. Tier II Qualified Facility Plans can include environmentally equivalent measures when a PE certifies the alternative measures in accordance with 112.6(b)(3)(1) and 112.6(b)(4). Amendments to PE-certified sections of Tier II (or hybrid) Plans must be certified by a PE in accordance with 112.6(b)(2)(i).	
General requirements for an SPCC Plan including facility description, secondary containment, recordkeeping, and personnel training <i>112.7 introductory paragraph and 112.7(a)-(f)</i>	<i>No deviation allowed based on environmental equivalence.</i>	
Security (excluding oil production facilities) <i>112.7(g)</i>	<p>Does the Plan describe:</p> <ul style="list-style-type: none"> - Measures to secure and control access to the oil handling, processing and storage areas? - Measures that ensure that master flow and drain valves are secured? - Measures that prevent unauthorized access to starter controls on oil pumps? - How the out-of-service and loading/unloading connections of oil pipelines are secured? - The appropriateness of security lighting to both prevent acts of vandalism and assist in the discovery of oil discharges? 	<ul style="list-style-type: none"> - Visual - Plan review
Loading and unloading racks <i>112.7(h)(1)</i>	<i>No deviation allowed based on environmental equivalence.</i>	

Rule Element and Relevant Section(s)	Evaluation	Verification During Inspection
Loading and unloading racks 112.7(h)(2)	Are loading/unloading racks equipped with an interlocked warning light or physical barrier system, warning signs, wheel chocks, or a vehicle brake interlock system to prevent vehicles from departing before complete disconnection of oil transfer lines?	<ul style="list-style-type: none"> - Visual review of loading operation - Plan review
Loading and unloading racks 112.7(h)(3)	<ul style="list-style-type: none"> - Are the lowermost drain and all outlets of tank car or tank truck inspected for signs of discharge prior to filling and departure of the vehicles? - Are the drain and outlets tightened, adjusted, or replaced as necessary to prevent liquid discharges while in transit? 	<ul style="list-style-type: none"> - Visual review of loading operation - Review of procedures described in the Plan
Field-constructed aboveground containers 112.7(i)	<ul style="list-style-type: none"> - Has the facility conducted an evaluation of field-constructed aboveground containers undergoing repair, alteration, reconstruction, or change in service that might affect the risk of a discharge or failure? - If a field-constructed aboveground container has discharged oil or failed due to brittle fracture failure or other catastrophe, has the container been evaluated and has appropriate corrective action been taken? - Was repair/corrective action in accordance with an industry standard? 	<ul style="list-style-type: none"> - Visual - Inspection and testing records - Brittle fracture evaluation records - Industry standard by which the brittle fracture evaluation is conducted - Industry standard by which repairs for corrective action were conducted
Conformance with state requirements 112.7(j)	<i>No deviation allowed based on environmental equivalence.</i>	
Qualified oil-filled operational equipment 112.7(k)	<i>No deviation allowed based on environmental equivalence.</i>	
ALL FACILITIES, EXCEPT OIL PRODUCTION		
Facility Drainage 112.8(b)(1) and 112.8(b)(2) OR 112.12(b)(1) and 112.12(b)(2)	<p><u>Diked areas</u></p> <ul style="list-style-type: none"> - Is the facility drainage system or effluent treatment system designed to control oil discharges? - If not, is drainage from diked storage areas restricted by valves? - Are dikes equipped with manual valves of open-closed design? - If pumps or ejectors are used to empty the dikes, are they manually activated? - Is accumulated rainwater inspected for the presence of oil prior to draining? 	<ul style="list-style-type: none"> - Visual - Plan review - Records of drainage events

Rule Element and Relevant Section(s)	Evaluation	Verification During Inspection
Facility Drainage 112.8(b)(3) and 112.8(b)(4) OR 112.12(b)(3) and 112.12(b)(4)	<u>Undiked areas with potential for a discharge</u> <ul style="list-style-type: none"> – Does the facility have ponds, lagoons, or catchment basins designed to capture water from other areas with a potential for a discharge? – If so, are such systems designed to retain or return oil to the facility? – If not, are ditches throughout the facility designed to flow into a diversion system that would retain oil in the facility in the event of a discharge? – If the facility has catchment basins, are they located outside areas subject to periodic flooding? 	<ul style="list-style-type: none"> – Visual – Plan review
Facility Drainage 112.8(b)(5) OR 112.12(b)(5)	<ul style="list-style-type: none"> – If the facility uses more than one treatment unit to treat its drainage water, and this treatment is continuous and requires pump transfer, does the facility have at least two “lift” pumps? – Are facility drainage systems engineered to prevent discharges to navigable waters or adjoining shorelines? 	<ul style="list-style-type: none"> – Visual – Plan review
Bulk Storage Containers 112.8(c)(1) OR 112.12(c)(1)	Are the material and construction of oil storage containers compatible with the product stored and conditions of storage (e.g., temperature, pressure, and soil conditions)?	<ul style="list-style-type: none"> – Visual – Plan review – Standards/ specifications of construction (tank label), construction documents and as-built specifications
Bulk Storage Containers 112.8(c)(2) OR 112.12(c)(2)	<i>No deviation allowed based on environmental equivalence.</i>	
Bulk Storage Containers 112.8(c)(3) OR 112.12(c)(3)	<ul style="list-style-type: none"> – Does the facility prevent unsupervised drainage of rainwater into a storm drain or open watercourse, or bypassing the facility treatment system? – If so, does the facility document procedures to normally: <ul style="list-style-type: none"> – Keep the bypass valve sealed closed; – Inspect retained rainwater to prevent a discharge to navigable waters or adjoining shorelines; – Open the bypass valve and reseal it following supervised drainage; and – Keep adequate records of dike drainage event? 	<ul style="list-style-type: none"> – Visual – Plan review – Records of drainage events
Bulk Storage Containers 112.8(c)(4) OR 112.12(c)(4)	<ul style="list-style-type: none"> – Does the facility have completely buried metallic storage tanks that were installed after January 10, 1974? – Are completely buried metallic storage tanks protected from corrosion by coatings or cathodic protection? – Are leak tests performed regularly on these tanks? 	<ul style="list-style-type: none"> – Visual – Plan review – Installation records – Inspection and testing records

Rule Element and Relevant Section(s)	Evaluation	Verification During Inspection
Bulk Storage Containers <i>112.8(c)(5) OR 112.12(c)(5)</i>	<ul style="list-style-type: none"> - Does the facility store oil in partially buried or bunkered metallic tanks? - If so, are these tanks protected from corrosion by coatings or cathodic protection? 	<ul style="list-style-type: none"> - Visual - Plan review - Records
Bulk Storage Containers <i>112.8(c)(6) OR 112.12(c)(6)</i>	<ul style="list-style-type: none"> - Does the facility inspect or test each aboveground container (including foundation and supports) for integrity on a regular schedule, and whenever a container undergoes material repairs? - Does the Plan identify an applicable industry standard used to determine the appropriate qualifications for personnel performing tests and inspections, the frequency and type of testing and inspections? - If no applicable industry standard exists, does the Plan describe an inspection program that is in accordance with good engineering practices? - Does the facility frequently inspect the outside of each aboveground container for signs of deterioration, discharges, or accumulation or oil? 	<ul style="list-style-type: none"> - Plan review - Applicable industry standard - Inspection program described in the Plan including the schedule and scope of such inspections - Inspection and testing records
Bulk Storage Containers <i>112.8(c)(7) OR 112.12(c)(7)</i>	<ul style="list-style-type: none"> - Does the facility have containers with internal heating coils? - Does the facility monitor the steam return and exhaust lines for contamination from internal heating coils? - Does the facility pass the steam return or exhaust lines through a settling tank, skimmer, or other separation or retention system? 	<ul style="list-style-type: none"> - Visual - Container specifications - Review of procedures described in the Plan
Bulk Storage Containers <i>112.8(c)(8) OR 112.12(c)(8)</i>	<ul style="list-style-type: none"> - Are containers equipped with at least one of the following: <ul style="list-style-type: none"> - High liquid level alarm with audible or visual signal connected to a constantly attended station, - High liquid pump cutoff device, - Direct audible or code signal communication between container gauger and pumping station, or - A fast response system for determining the liquid level (computers, telepulse, direct vision gauges) of each bulk storage container, combined with the continuous presence of personnel to monitor filling operations. - If the SPCC Plan indicates that liquid sensing devices are tested, are the devices regularly tested to ensure proper operation? 	<ul style="list-style-type: none"> - Visual - Review of test procedures described in the Plan - Test records
Bulk Storage Containers <i>112.8(c)(9) OR 112.12(c)(9)</i>	<p>Are effluent treatment facilities inspected frequently to detect possible system upsets that could cause a discharge to navigable waters or adjoining shorelines?</p>	<ul style="list-style-type: none"> - Inspection and testing records - Review of inspection program described in the Plan
Bulk Storage Containers <i>112.8(c)(10) OR 112.12(c)(10)</i>	<ul style="list-style-type: none"> - Are there visible discharges from containers, including seams, gaskets, piping, pumps, valves, rivets, and bolts? If so, is the facility promptly correcting such discharges? - Is there accumulation of oil in diked areas? If so, is the facility promptly removing such accumulations? 	<ul style="list-style-type: none"> - Visual - Plan review

Rule Element and Relevant Section(s)	Evaluation	Verification During Inspection
Bulk Storage Containers 112.8(c)(11) OR 112.12(c)(11)	<i>No deviation allowed based on environmental equivalence.</i>	
Piping 112.8(d)(1) OR 112.12(d)(1)	<ul style="list-style-type: none"> - Does the facility have buried piping installed after August 16, 2002? If so, is this piping protected against corrosion by wrapping and coating? Is this piping cathodically protected? - Does the facility have any exposed buried piping? If so, does the facility inspect it for deterioration and undertake additional examination and corrective action as appropriate? 	<ul style="list-style-type: none"> - Visual - Plan review - Installation records
Piping 112.8(d)(2) OR 112.12(d)(2)	<ul style="list-style-type: none"> - Does the facility have piping that is not in service or is in standby service for an extended period of time? If so, is the terminal connection at the transfer point capped or blank-flanged, and is it marked as to origin? 	<ul style="list-style-type: none"> - Visual - Plan review
Piping 112.8(d)(3) OR 112.12(d)(3)	Are pipe supports properly designed to minimize abrasion and corrosion and to allow for expansion and contraction?	<ul style="list-style-type: none"> - Visual - Plan review
Piping 112.8(d)(4) OR 112.12(d)(4)	<ul style="list-style-type: none"> - Are aboveground valves, piping, and appurtenances regularly inspected? - <i>NOTE: Inspection program must address conditions of items such as flange joints, expansion joints, valve glands and bodies, catch pans, pipeline supports, locking of valves, and metal surfaces.</i> - Is buried piping tested for integrity and leaks when installed, modified, constructed, relocated, or replaced? 	<ul style="list-style-type: none"> - Inspection records - Description of inspection program within the Plan - Applicable industry standard
Piping 112.8(d)(5) OR 112.12(d)(5)	Are all vehicles entering the facility appropriately warned to ensure that they will not endanger aboveground piping or other oil transfer operations?	Visual
ONSHORE OIL PRODUCTION FACILITIES		
Drainage 112.9(b)(1)	<ul style="list-style-type: none"> - Are drains of dikes or other containment measures for tank batteries and separation/treating areas closed and sealed at all times, except when draining uncontaminated rainwater? - Prior to draining uncontaminated rainwater, does the facility inspect the diked area and take the following actions: <ul style="list-style-type: none"> - Document procedures to normally keep the diked drains sealed closed; - Inspect retained rainwater to prevent a discharge to navigable waters or adjoining shorelines; - Open the bypass valve and reseal it following supervised drainage; and - Keep adequate records of dike drainage event? - And is accumulated oil removed and either returned to storage or disposed of properly? 	<ul style="list-style-type: none"> - Visual - Plan review - Records of drainage events

Rule Element and Relevant Section(s)	Evaluation	Verification During Inspection
Drainage 112.9(b)(2)	<ul style="list-style-type: none"> - Are field drainage systems and oil traps, sumps, or skimmers regularly inspected for accumulation of oil? - And is accumulated oil promptly removed? 	<ul style="list-style-type: none"> - Visual - Inspection records - Inspection program described in the Plan, including the schedule and scope of such inspections
Bulk Storage Containers 112.9(c)(1)	Are the material and construction of oil storage containers compatible with the product stored and conditions of storage (e.g., temperature, pressure, and soil conditions)?	<ul style="list-style-type: none"> - Visual - Construction standards (tank labels, as-build specifications, etc.) - Visual indication of incompatibility, (i.e., excessive corrosion)
Bulk Storage Containers 112.9(c)(2)	<i>No deviation allowed based on environmental equivalence.</i>	
Bulk Storage Containers 112.9(c)(3)	<p>Is each container visually inspected periodically and on a regular schedule?</p> <p><i>NOTE: Inspections must cover foundation and support of each container that is on or above the ground surface.</i></p>	<ul style="list-style-type: none"> - Inspection records - Inspection program described in the Plan, including scope and frequency of such inspections
Bulk Storage Containers 112.9(c)(4)	<ul style="list-style-type: none"> - Are tank battery installations engineered to prevent discharges using one of the following: <ul style="list-style-type: none"> - Container capacity is adequate to prevent overflow if gauger/pumper is delayed in making regularly schedule rounds - Equipped with overflow equalizing lines between containers - Adequate vacuum protection to prevent container collapse during transfer of oil - High level sensors to alert computer where the facility is subject to a computer production control system 	<ul style="list-style-type: none"> - Visual - Plan review

Rule Element and Relevant Section(s)	Evaluation	Verification During Inspection
Bulk Storage Containers – Flow-through Process Vessels 112.9(c)(5)	<ul style="list-style-type: none"> – Does the facility owner/operator comply with secondary containment and inspection requirements of 112.9(c)(2) and (c)(3) for flow-through process vessels? – If not, then does the facility comply with the secondary containment requirements of 112.7(c) and implement the following alternative compliance option for this equipment: <ul style="list-style-type: none"> – Visually inspect and/or test flow-through process vessels and associated components periodically for leaks, corrosion, or other conditions that could lead to a discharge to navigable waters or adjoining shorelines; – Take corrective action or repair flow-through process vessels and any associated components as necessary; and – Promptly remove or initiate actions to stabilize and remediate any accumulations of oil discharges associated with flow-through process vessels. – Has the facility discharged more than 1,000 U.S. gallons of oil in a single discharge as described in §112.1(b), or discharges more than 42 U.S. gallons of oil in each of two discharges as described in §112.1(b) within any twelve month period, from flow-through process vessels (excluding discharges that are the result of natural disasters, acts of war, or terrorism)? – If so, did the facility ensure that all flow-through process vessels subject to this subpart comply with §112.9(c)(2) and (c)(3) within six months from the discharge(s)? 	<ul style="list-style-type: none"> – Plan review – Visual – Inspection records – Spill history/spill reports

Rule Element and Relevant Section(s)	Evaluation	Verification During Inspection
Bulk Storage Containers – Produced Water Containers <i>112.9(c)(6)</i>	<ul style="list-style-type: none"> – Does the facility owner/operator comply with secondary containment and inspection requirements of 112.9(c)(2) and (c)(3) for produced water containers? – If not, then does the facility comply with the secondary containment requirements of 112.7(c) and implement the following alternative compliance option for this equipment: <ul style="list-style-type: none"> – Implement a procedure to separate the free-phase oil that accumulates on the surface of the produced water, on a regular schedule, for each produced water container; – Does the Plan describe the procedures, frequency, amount of free-phase oil expected to be maintained inside the container, and include a PE certification in accordance with §112.3(d)(1)(vi); – Maintain records of such events; – Visually inspect and/or test the produced water container and associated piping on a regular schedule, for leaks, corrosion, or other conditions that could lead to a discharge to navigable waters and adjoining shorelines; – Take corrective action or repair produced water containers and any associated piping as necessary; and – Promptly remove or initiate actions to stabilize and remediate any accumulations of oil discharges associated with the produced water container. – Has the facility discharged more than 1,000 U.S. gallons of oil in a single discharge as described in §112.1(b), or discharges more than 42 U.S. gallons of oil in each of two discharges as described in §112.1(b) within any twelve month period, from flow-through process vessels (excluding discharges that are the result of natural disasters, acts of war, or terrorism)? – If so, did the facility ensure that all produced water containers subject to this subpart comply with §112.9(c)(2) and (c)(3) within six months from the discharge(s)? 	<ul style="list-style-type: none"> – Plan review – Visual – Inspection records – Spill history/spill reports
Transfer operations <i>112.9(d)(1)</i>	<p>Are all aboveground valves and piping inspected periodically and upon a regular schedule?</p> <p><i>NOTE: Inspections must cover items such as flange joints, valve glands and bodies, drip pans, pipe supports, pumping well polish rod stuffing boxes, and bleeder and gauge valves.</i></p>	<ul style="list-style-type: none"> – Inspection and testing records – Inspection program described in the Plan, including frequency and scope of inspections
Transfer operations <i>112.9(d)(2)</i>	Are saltwater disposal facilities inspected, particularly following a sudden change in atmospheric temperature?	<ul style="list-style-type: none"> – Plan review – Inspection and testing records
Transfer operations <i>112.9(d)(3)</i>	<i>No deviation allowed based on environmental equivalence.</i>	

Rule Element and Relevant Section(s)	Evaluation	Verification During Inspection
Transfer operations 112.9(d)(4)	<ul style="list-style-type: none"> - Did the facility prepare and implement a written program of flowline/intra-facility gathering line maintenance that addresses the following: - Equipment is compatible with the type of production fluids, their potential corrosivity, volume, and pressure, and other conditions expected in the operational environment; - Flowlines and intra-facility gathering lines and associated appurtenances are visually inspected and/or tested on a periodic and regular schedule; - Frequency and type of testing allows for the implementation of a contingency plan as described in 40 CFR 109 for those flowlines and intra-facility gathering lines that are not provided with secondary containment; - Corrective action is taken or repairs are made for flowlines and intra-facility gathering lines and associated appurtenances as necessary; and - Any accumulations of oil discharges associated with flowlines, intra-facility gathering lines, and associated appurtenances are promptly removed or actions initiated to stabilize and remediate. 	<ul style="list-style-type: none"> - Inspection and maintenance records. - Program of flowline maintenance described in the Plan, including the scope and frequency of maintenance
ONSHORE OIL DRILLING AND WORKOVER FACILITIES		
Mobile drilling or workover equipment 112.10(b)	Is the equipment located so as to prevent a discharge to navigable waters or adjoining shorelines?	<ul style="list-style-type: none"> - Visual - Plan review
Containment 112.10(c)	<i>No deviation allowed based on environmental equivalence.</i>	
Blowout prevention 112.10(d)	<ul style="list-style-type: none"> - Are a blowout prevention (BOP) assembly and well control system installed before drilling below any casing string or during workover operations? - Are the BOP assembly and well control system capable of controlling well-head pressure? 	<ul style="list-style-type: none"> - Visual - Installation record - Plan review
OFFSHORE OIL DRILLING, PRODUCTION AND WORKOVER FACILITIES		
Drainage 112.11(b)	<ul style="list-style-type: none"> - Is oil drainage collection equipment used to prevent and control small discharges? Are facility drains directed toward a central collection sump? - If a sump is not practicable, is oil removed from collection equipment as often as necessary to prevent overflow? 	<ul style="list-style-type: none"> - Visual - Plan review
Drainage 112.11(c)	<ul style="list-style-type: none"> - If a sump system is employed, are the sizes of pump and sump adequate? Is a spare pump available? - If a sump system is employed, does the facility have in place a regularly scheduled preventive maintenance inspection and testing program to assure reliable operation? - Are redundant automatic sump pump and control devices provided (when necessary)? 	<ul style="list-style-type: none"> - Visual - Plan review - Preventive maintenance inspection and testing program described in the Plan

Rule Element and Relevant Section(s)	Evaluation	Verification During Inspection
Separators and Treaters <i>112.11(d)</i>	<ul style="list-style-type: none"> - Does the facility have areas where separators and treaters are equipped with dump valves which predominantly fail in the closed position and where the pollution risk is high? If so, is the facility specially equipped to prevent the discharge of oil, including: - Extending the flare line to a diked area if the separator is near shore? - Equipping the separator with a high liquid level sensor that will automatically shut in wells producing to the separator, or - Installing parallel redundant dump valves? 	<ul style="list-style-type: none"> - Visual - Description of inspection and maintenance of separators and heater treaters (including dump valves) in the Plan, including the schedule and scope of such inspections
Containers <i>112.11(e)</i>	Are atmospheric storage or surge containers equipped with high liquid level sensing devices that activate an alarm or control the flow, or otherwise prevent discharges?	<ul style="list-style-type: none"> - Visual - Plan review
Containers <i>112.11(f)</i>	Are pressure containers equipped with high and low pressure sensing devices that activate an alarm or control the flow?	<ul style="list-style-type: none"> - Visual - Plan review
Containers <i>112.11(g)</i>	Are containers equipped with suitable corrosion protection?	<ul style="list-style-type: none"> - Visual - Plan review
Pollution prevention equipment and systems <i>112.11(h)</i>	Does the Plan include a written procedure for inspecting and testing pollution prevention equipment and systems?	Plan review
Pollution prevention equipment and systems <i>112.11(i)</i>	<ul style="list-style-type: none"> - Are the pollution prevention equipment and systems tested and inspected on a scheduled periodic basis? - Is the facility testing and inspecting human and equipment pollution control and countermeasure systems by using simulated discharges? 	<ul style="list-style-type: none"> - Inspection and testing records - Description of inspection and testing program in Plan, including scope and frequency
Well shut-in valves <i>112.11(j)</i>	Is the method of activation or control of well shut-in valves and devices for each well described in sufficient details?	Plan review
Blowout Prevention <i>112.11(k)</i>	<ul style="list-style-type: none"> - Is a BOP assembly and well control system installed during workover operations or before drilling below any casing string? - Is the BOP assembly and well control system capable of controlling well-head pressure that may be encountered? 	<ul style="list-style-type: none"> - Visual - Plan review - Installation records
Flowlines <i>112.11(l)</i>	Are manifolds (headers) equipped with check valves on individual flowlines?	<ul style="list-style-type: none"> - Visual - Plan review
Flowlines <i>112.11(m)</i>	<ul style="list-style-type: none"> - When the shut-in well pressure is greater than the working pressure of the flowline are flowlines equipped with a high pressure sensing device and shut-in valve at the wellhead? and - Are valves manifolded up to and including the header valves? If not, is a pressure relief system provided for flowlines? 	<ul style="list-style-type: none"> - Visual - Plan review

Rule Element and Relevant Section(s)	Evaluation	Verification During Inspection
Piping <i>112.11(n)</i>	Is all piping appurtenant to the facility protected from corrosion, such as with protective coating or cathodic protection?	<ul style="list-style-type: none"> - Visual - Plan review - Installation records
Piping <i>112.11(o)</i>	Is sub-marine piping adequately protected against environmental stresses and other activities such as fishing operations?	<ul style="list-style-type: none"> - Inspection and maintenance program described in Plan - Installation records
Piping <i>112.11(p)</i>	<ul style="list-style-type: none"> - Is sub-marine piping appurtenant to the facility maintained in good operating condition at all times? - Does the facility have a program to inspect or test sub-marine piping for failures according to a regular schedule? - Does the facility maintain a record of these inspections or tests? 	<ul style="list-style-type: none"> - Inspection and testing records - Review of inspection or testing program described in Plan, including scope and frequency of inspections or tests