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 facilities to achieve environmental protection in a manner that fits their unique circumstances. It also allows facilities to adopt more protective industry practices and technologies as they become available. The preamble to the 2002 SPCC regulation refers to certain industry standards that may be useful and can be considered in implementing the required spill prevention measures.

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), must verify that these alternative methods are in accordance with good engineering practice, including consideration of industry standards, and provide environmental protection equivalent to the measures described in the SPCC rule.

In the SPCC context, equivalent environmental protection means an equal level of protection of navigable waters and adjoining shorelines from oil pollution. This 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).

The reason for deviating from a requirement of the SPCC rule, as well as a detailed description of 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 he/she 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 two products, and the facility owner or operator may be able to implement equivalent environmental protection through an alternate technology (67 FR 47094, 47095).

As mentioned above and as is the case for other technical elements of the SPCC Plan, the PE must review the selection and implementation of environmentally equivalent measures and

certify them as being consistent with good engineering practice (§112.3(d)). 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.

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.[1] Although secondary containment reduces the risk of a discharge from primary containment (the container or tank) to navigable waters and adjoining shorelines and can increase the effectiveness of another prevention or control measure, it does not serve the purpose of integrity testing, which is to identify potential leaks or failure of primary containment before a discharge occurs.

EPA has indicated, however, that for certain shop-built containers – drums and small bulk storage containers, for example – for which internal corrosion poses minimal risk of failure, which are inspected at least monthly, and for which all sides are visible, visual inspection alone may suffice to meet the integrity testing requirements under §112.8(c)(6) or §112.12(c)(6) (67 FR 47120). These are only examples; alternative measures that provide equivalent environmental protection may also be appropriate for other site-specific circumstances. See Chapter 7, Inspection, Evaluation, and Testing, for a discussion of "environmentally equivalent" integrity testing.

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.

[1] See EPA letter to Daniel Gilligan of PMAA, available in Appendix H of this guidance, or at http://www.epa.gov/oilspill/pdfs/PMAA_letter.pdf.

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), as well as in relevant paragraphs of §§112.8, 112.9, 112.10, and 112.12. Chapter 4 of this document discusses these secondary containment requirements in detail.

§112.7(a)(2)
Comply with all applicable requirements listed in this part. 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), 112.10(c), 112.12(c)(2), 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), 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. Emphasis added. Refer to 40 CFR part 112 for the full text of the rule.

In addition to secondary containment requirements, deviations are not allowed for certain provisions of §112.7, including the general recordkeeping and training provisions. Additionally, deviations are not allowed for the administrative provisions of the rule, §§112.1 through 112.5. The SPCC rule already provides flexibility for the format of records that need to be maintained at the facility by allowing the use of ordinary and customary business records. 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.

Table 3-1 presents a list of the SPCC requirements eligible for consideration for environmental equivalence.

Table 3-1. Requirements eligible for environmental equivalence, by facility type.

Facility Type/Provision	Section(s)	
	Petroleum Oils and Non-Petroleum Oils	**Animal Fats and Vegetable Oils**
All regulated facilities		
Security	112.7(g)	
Loading and unloading racks	112.7(h)(2) and 112.7(h)(3)	
Brittle fracture evaluation	112.7(i)	
Onshore facilities		
Facility drainage/undiked areas	112.8(b), 112.9(b), 112.10(b) and 112.11(b)	112.12(b)
Type of bulk storage container	112.8(c)(1) and 112.9(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) and 112.9(c)(3)	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) and 112.9(c)(4)	112.12(c)(8)
Monitoring treatment/disposal facilities	112.8(c)(9) and 112.9(d)(2)	112.12(c)(9)
Removal of oil in diked areas and production facility drainage	112.8(c)(10)	112.12(c)(10)
Piping	112.8(d), 112.9(d)(1), and 112.9(d)(3)	112.12(d)
Oil drilling and workover facilities		
Facility drainage/undiked areas (rig position)	112.10(b)	N/A
Blowout prevention and well control system	112.10(d)	N/A
Offshore facilities		
Offshore oil drilling and workover facilities	112.11(b) through 112.11(p)	N/A

3.3 Policy Issues Addressed by Environmental Equivalence

This section provides additional guidance on environmentally equivalent measures for specific requirements on 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:

Section 3.3.1	Security
Section 3.3.2	Facility Drainage
Section 3.3.3	Corrosion Protection and Leak Testing of Completely Buried Metallic Storage Tanks
Section 3.3.4	Overfill Prevention
Section 3.3.5	Piping
Section 3.3.6	Evaluation, Inspection, and Testing

Although briefly discussed in Section 3.3.6, deviations from inspection and testing requirements based on environmental equivalence are discussed in greater detail in Chapter 7 of this guidance document.

3.3.1 Security

Section 112.7(g) of the SPCC rule outlines security requirements for facilities, including fencing and lighting, and the use of control equipment and procedures. The security requirements are meant to prevent discharges of oil, as defined in §112.1(b), that could result from acts of vandalism or other unauthorized access to oil-filled containers or equipment. Note that unlike other provisions under §112.7, the security provisions in paragraph (g) *do not apply to oil production facilities.*

A facility owner or operator may achieve the security objective through alternative measures, as appropriate for the facility, if these measures provide environmental protection equivalent to the measures described in the SPCC rule.

As described in §112.7(a)(2), if alternative security measures are used, the Plan must state the reasons for nonconformance, and provide a description of the alternative measures, how they are implemented, and how they will achieve environmentally equivalent protection to prevent a discharge as described in §112.1(b). This description may include a discussion of how these measures help deter vandals, prevent unauthorized access to containers and equipment that could be involved in an oil discharge, or are otherwise equivalent to the SPCC security requirements.

§112.7(g)
Security (excluding oil production facilities).
(1) Fully fence each facility handling, processing, or storing oil, and lock and/or guard entrance gates when the facility is not in production or is unattended.
(2) Ensure that the master flow and drain valves and any other valves permitting direct outward flow of the container's contents to the surface have adequate security measures so that they remain in the closed position when in non-operating or non-standby status.
(3) Lock the starter control on each oil pump in the "off" position and locate it at a site accessible only to authorized personnel when the pump is in a non-operating or non-standby status.
(4) Securely cap or blank-flange the loading/unloading connections of oil pipelines or facility piping when not in service or when in standby service for an extended time. This security practice also applies to piping that is emptied of liquid content either by draining or by inert gas pressure.
(5) Provide facility lighting commensurate with the type and location of the facility that will assist in the:
(i) Discovery of discharges occurring during hours of darkness, both by operating personnel, if present, and by non-operating personnel (the general public, local police, etc.); and
(ii) Prevention of discharge occurring through acts of vandalism.

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

Fencing. Section 112.7(g)(1) requires that owners or operators *fully* fence the facility and/or guard gates when the facility is not in production or attended. Two examples of scenarios discussed in a letter to PMAA[2] regarding environmentally equivalent alternatives to fencing the entire footprint of a facility are discussed below.

Case #1 – Fencing areas directly involved in oil handling, processing, and storage. [Demonstrates environmental equivalence.] For certain facilities where oil-filled 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 alternative may be preferable for very large facilities where fencing 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 are located (Figure 3-1), or around the equipment needed to operate such containers (Figure 3-2), may adequately deter vandals or prevent access by unauthorized personnel, and thus may provide environmental protection equivalent to the §112.7(g)(1) requirement to fully fence the facility to prevent a discharge as described in §112.1(b) from these containers. Note that in the second case (i.e., where a fence is placed only around the equipment used to operate containers), security measures may also be required around the containers themselves, or other equipment and appurtenances connected to the containers.

Figure 3-1. Fencing around storage area.

Case #2 – Placing master disconnect panel controlling power to all pumps, appurtenances (which could result in a discharge such as from a bottom water drain), and containers within an enclosed "pump house." [Does not demonstrate environmental equivalence.] Certain facilities may equip an enclosed pump house with a master disconnect switch that cuts off electrical power to the pumps when the facility is unattended. Such disconnect may provide equivalent protection for the pumps and associated equipment that require power to operate and would meet the §112.7(g)(3) requirement to lock starter controls on oil pumps in the "off" position and restrict access to

Figure 3-2. Fencing around a dispenser pump.

[2] Available on EPA's Web site at http://www.epa.gov/oilspill/pdfs/PMAA_letter.pdf or in Appendix H of this guidance.

authorized personnel only. However, if containers, piping, or appurtenances are also present, the disconnect would not restrict access to equipment that can be operated without electrical power. Therefore, it would not provide environmental protection equivalent to fencing. Additional security measures would therefore be required for equipment that can be operated without electrical power.

Lighting. Section 112.7(g)(5) states that facilities must provide lighting to assist in the discovery of discharges occurring during hours of darkness and help prevent discharges caused by acts of vandalism. Note that the rule requires lighting that is "commensurate with the type and location of the facility." Thus, for unattended facilities that are located away from inhabited areas (for example, farm fields or certain isolated facilities) appropriate lighting may consist of lights that are turned on intermittently. For example, lighting that uses motion-activated detectors may be an appropriate means of meeting the lighting requirements, while avoiding undue attention to the presence of oil containers. Alternatively, an environmentally equivalent approach may combine an alarm system that detects the presence of trespassers, with portable lights used to perform regular rounds of the facility. Whatever approach the owner or operator implements, the SPCC Plan should discuss how lighting provided at the facility is adequate for the type and location of the facility, or how the facility is achieving environmentally equivalent protection through other means.

The security requirements may also be met through other means, depending on facility-specific circumstances. For example, a facility that is attended by a security guard on a 24-hour basis may use closed-circuit cameras to detect and investigate unauthorized access to unfenced portions of the facility. In another example, a facility such as an electrical substation that is remotely located with limited access and monitored through use of a Supervisory Control and Data Acquisition (SCADA) system, may provide environmentally equivalent security by its configuration since the site's inaccessibility may be considered a powerful deterrent to unauthorized access and the SCADA system serves to detect oil discharges remotely without requiring lighting to assist visual detection.

3.3.2 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).

Diked Storage Area Provisions

The objective of the drainage requirements is to provide design specifications for the secondary containment systems employed at the facility to prevent oil-contaminated water from escaping the facility and becoming a discharge as described in §112.1(b).

Sections 112.8(b)(1) and 112.8(b)(2) specify requirements for the design of drainage systems for dikes used as a means of secondary containment. (See Chapter 4 for a more detailed discussion of secondary containment requirements.)

> **§§112.8(b) and 112.12(b)** *Facility Drainage*.
> (1) Restrain drainage from **diked storage areas** by valves to prevent a discharge into the drainage system or facility effluent treatment system, except where facility systems are designed to control such discharge. You may empty diked areas by pumps or ejectors; however, you must manually activate these pumps or ejectors and must inspect the condition of the accumulation before starting, to ensure no oil will be discharged.
> (2) Use valves of manual, open-and-closed design, for the drainage of **diked areas**. You may not use flapper-type drain valves to drain diked areas. If your facility drainage drains directly into a watercourse and not into an on-site wastewater treatment plant, you must inspect and may drain uncontaminated retained stormwater, as provided in paragraphs (c)(3)(ii), (iii), and (iv) of this section
> (3) Design facility drainage systems from **undiked areas** with a potential for a discharge (such as where piping is located outside containment walls or where tank truck discharges may occur outside the loading area) to flow into ponds, lagoons, or catchment basins designed to retain oil or return it to the facility. You must not locate catchment basins in areas subject to periodic flooding.
> (4) If facility drainage is not engineered as in paragraph (b)(3) of this section, equip the final discharge of all ditches inside the facility with a diversion system that would, in the event of an uncontrolled discharge, retain oil in the facility.
> (5) Where drainage waters are treated in more than one treatment unit and such treatment is continuous, and pump transfer is needed, provide two "lift" pumps and permanently install at least one of the pumps. Whatever techniques you use, you must engineer facility drainage systems to prevent a discharge as described in §112.1(b) in case there is an equipment failure or human error at the facility.
>
> Note: The above text is an excerpt of the SPCC rule. Emphasis added. Refer to 40 CFR part 112 for the full text of the rule.

Under §112.8(b)(1) and 112.8(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, 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. When implemented and maintained properly, such systems may provide environmental protection equivalent to using a manually operated valve and visually monitoring discharge from dikes. Certain valves will automatically shut off upon detecting 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. The material expands upon contact with oil, effectively plugging the drainage system. The valve is not actuated, but rather the drainage system becomes plugged upon contact with the oil, thus providing an equivalent measure of environmental protection.

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 and 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 checking their effectiveness by routine inspections and inspections following heavy rain events to ensure that they are operational.

Undiked Storage Area Provisions

Sections 112.8(b)(3) and 112.8(b)(4) specify performance requirements for systems used to drain undiked areas with the potential for a discharge. These two provisions apply only when the facility chooses to use a facility drainage system to meet general secondary containment requirements under §112.7(c) or a more specific requirement under §112.8(c), §112.9(c), §112.10(c) or §112.12(c). Where the facility drainage cannot be engineered as described in §112.8(b)(3), the SPCC rule requires that the facility 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). Additional requirements in §112.8(b)(5) pertain more 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, such as a pond, lagoon, or catchment basin, designed to retain the oil or return it to the facility. Other measures may be implemented to achieve the drainage control objective, based on good engineering practice and 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).

Alternatively, a facility owner or operator may engineer the facility drainage system intended to meet general secondary containment requirements of §112.7(c) to flow into an oil/water separator designed to remove oil resulting from facility operations. Chapter 5 of this guidance document describes the requirements, depending on their function, that apply to oil/water separators at SPCC-regulated facilities. The SPCC Plan should discuss how the oil/water separator provides environmental equivalence, and any procedures necessary to maintain proper operating conditions and the effectiveness of the system (such as maintenance of the filtration systems). Note that the oil/water separator should be designed to handle the anticipated flow rate and volumes of oil and water. Furthermore, the oil/water separator should be inspected or checked periodically (including after heavy rain events) to ensure that it is working effectively and that it is not holding significant quantities of oil for extended periods of time. For the oil/water separator to provide equivalent environmental protection under §112.8(b)(3) and (b)(4), the PE must verify that the oil/water separator is adequately designed and operated to effectively retain any discharge as described in §112.1(b).

Drainage at Production Facilities

> **§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.

Similar deviations from SPCC drainage control requirements are possible for other types of facilities. Section 112.9(b), for example, outlines drainage requirements for production facilities. They include sealing dike drains or drains of equivalent measures required under §112.7(c)(1) for tank batteries and separation and treating areas at all times except when draining uncontaminated rainwater. The PE may specify alternative measures, such as the technologies described above for electrical substations, that would provide equivalent environmental protection by retaining oil within the diked area in the event of a discharge. (See the above discussion in Section 3.3.2, Diked Storage Area Provisions.) Here also, the Plan must describe the measure in detail and 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)).

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

> **§§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.

Section 112.8(c) describes requirements that apply to bulk storage containers at facilities that store, use, or process petroleum and other non-petroleum oils. Similar provisions are included in §112.12(c) for facilities that store, use, or process animal fats and/or vegetable oils. The various subparagraphs under these sections address requirements that apply to different types of bulk storage containers, appurtenances, and related activities.

Subparagraph (c)(4) requires that facility owners or operators protect buried metallic storage tanks from corrosion and regularly perform leak test on the tanks. Completely buried storage tanks are exempted from SPCC requirements, as provided in §112.1(d)(2)(i), when the tanks are subject

to all of the technical requirements of 40 CFR part 280 or a state program approved under 40 CFR part 281. Tanks subject to 40 CFR part 280 or a state program approved under 40 CFR part 281 must follow those requirements. Completely buried tanks that are subject to SPCC requirements must meet the provisions outlined in §112.8(c)(4) or §112.12(c)(4).

Completely buried tanks subject to the SPCC rule include, but are not limited to, tanks with capacity of 110 gallons or less, heating oil tanks, and tanks located inside basements or tunnels. Corrosion protection and leak detection for completely buried tanks that meet the corresponding (corrosion protection and leak detection) testing requirements of 40 CFR part 280 or 40 CFR part 281 are considered environmentally equivalent to §§112.8(c)(4) and 112.12(c)(4). See Chapter 2 for more information on the applicability of the SPCC rule to completely buried storage tanks.

3.3.4 Overfill Prevention

Sections 112.8(c)(8) and 112.12(c)(8) require that each container installation be engineered to avoid discharges during filling activities. At least one of the following systems is required:

- High level alarm with audible or visual signal;
- High liquid level pump cutoff device;
- Direct audible or code signal communication between container gauger and pumping station;
- Fast response system for determining the liquid level, such as digital computer, telepulse, or direct vision gauge, provided that someone is present to monitor gauges and the overall filling operation; and
- Regular tests of liquid level sensing devices to ensure proper operation.

§§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.

The selection of an overfill prevention system should be based on good engineering practice (§112.7 introductory paragraph), considering methods that are appropriate for the types of activities and circumstances. While an audible/visual alarm or fast response system may be appropriate for a large, stationary storage tank, a simpler overfill prevention system may be appropriate for a small tank. In certain cases (e.g., for relatively small containers that can be readily monitored), a filling procedure can be established in place of physical overfill prevention devices, which could be considered environmentally equivalent. The procedure must be adequate to prevent a discharge (as required under §112.8(c)(8)) when considering factors such as the container size; 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. For example, a filling procedure for a small container may involve placing a drain cover on any floor drain, ensuring that valves used to control drainage from the secondary containment are closed or that sorbent material has been deployed around the container area, verifying that the container that will receive the product has sufficient free capacity, and visually monitoring the product level throughout the transfer operation.

In cases where a facility owner or operator uses an overfill prevention approach other than the systems described in the SPCC rule, the Plan must describe the approach and how it provides environmentally equivalent protection (§112.7(a)(2)). Where the alternative approach relies on procedures instead of, or in addition to, a physical device, the Plan should clearly describe the procedures and facility personnel involved in filling operations should be able to demonstrate an understanding of the procedures and proper field implementation. As part of the description of the environmentally equivalent measure required under §112.7(a)(2), the PE may reference other facility documents in the SPCC Plan which 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.

3.3.5 Piping

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

These provisions of the SPCC rule require that 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 regularly inspect all aboveground valves, piping, and appurtenances. The rule also requires integrity and leak testing of all piping at the time of installation, modification, construction, relocation, or replacement. Finally, the rule

§§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.

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 operational equipment.

An 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.[3] 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 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 deviations from prevention requirements related to corrosion and other types of piping damage.

Protecting Buried Piping from Corrosion Damage

EPA recommends that a PE certifying an SPCC Plan consult appropriate industry standards (consulting a qualified corrosion professional may also be appropriate) when evaluating the adequacy of cathodic protection and corrosion prevention systems at the facility. Where the PE determines that cathodic protection of new piping 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), the 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). The SPCC requirement (cathodic protection) averts discharges by preventing container corrosion, while the alternative method (leak detection system and double-wall piping) detects and contains leakage so it may be addressed before it can become a discharge as described in §112.1(b).

Alternatively, the facility owner or operator may implement a comprehensive monitoring, detection, and preventive maintenance program for piping and appurtenances where effective cathodic protection is not reasonably achievable to detect and address potential discharges. The

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

PE that certifies the Plan 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, "Piping Inspection Code: Inspection, Repair, Alteration, and Rerating of In-Service Piping Systems,"

Table 3-2 summarizes key elements of an API-570 inspection program as they relate to the evaluation of buried piping that is not cathodically protected (refer to Chapter 7 of this document for an overview of API-570). Such a program provides a means of assessing the suitability of piping to contain oil and to predict potential failures prior to their occurrence.

Table 3-2. Summary of inspection and leak testing elements of an API-570 program as they apply to unprotected buried piping (refer to the full text of API 570 for details).

Inspection and Leak Testing Elements	Summary
Pipe-to-Soil Potential Survey	Conduct pipe-to-soil potential survey along the pipe route to assess corrosion potential at a five-year interval. Excavate sites where active corrosion cells are located to determine the extent of corrosion damage.
Pipe Coating Holiday* Survey	Conduct pipe coating holiday survey as needed 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.
External and Internal Inspection Intervals	Determine external condition of buried piping that is not cathodically protected by pigging or by excavating according to frequency indicated in API-570 standard table. Adjust inspection of internal corrosion of buried piping based on results of internal inspections of aboveground 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 that of inspections indicated in the standard for buried piping that is not cathodically protected. Alternatively, perform temperature-corrected volumetric or pressure test methods, or use acoustic emission examination and 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, its scope and frequency should be developed and/or reviewed by the PE certifying the Plan to be in accordance with good engineering practice, considering industry standards. For facilities with shorter lengths of piping or where the distance to receiving waters or adjoining shorelines is greater, the program may emphasize certain elements over others, such as frequent leak testing of buried piping. Chapter 7 provides references to industry standards that specifically discuss leak testing, including API Recommended Practice 1110, "Pressure Testing of Liquid Petroleum Pipelines." However, since leak testing only detects leaks, rather than predicting them, good engineering practice would suggest that testing should occur at a greater frequency

than would otherwise be required if other prevention systems, such as cathodic protection and coatings, were in place.

If alternative measures are used to meet the SPCC corrosion protection requirements, §112.7(a)(2) requires that the Plan state the reasons for nonconformance 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, EPA suggests that 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 inspector should verify that the alternative method is described in detail in the Plan, and that the Plan specifies the scope and frequency of tests and inspections and/or refers to the relevant industry standards. The EPA inspector should also review records maintained under normal business practice that document the tests and inspections.

Preventing Physical Damage to Aboveground Piping

Warnings to vehicles entering the facility may be given verbally, posted on signs, or other appropriate means. Alternatively, protecting the equipment from the possibility of a collision by installing fencing, barriers, curbing or other physical obstacles may be considered to provide equivalent environmental protection. Whatever method is implemented at the facility, it must be properly documented in the SPCC Plan in accordance with §112.7(a)(2).

3.3.6 Evaluation, Inspection, and Testing

The SPCC rule sets requirements for the evaluation, inspection, and testing of various parts of a facility that could be involved in a discharge. The requirements are described in Chapter 7 of this guidance document.

The evaluation, inspection, and testing requirements are aimed at detecting oil leaks, spills, or other potential integrity problems before they can result in a discharge as described in §112.1(b). The rule provides flexibility in the manner in which the evaluations, inspections, and tests are performed by allowing the use of methods consistent with good engineering practice, as determined by the PE certifying the Plan, considering industry standards.

While the rule describes the general nature and expected scope for evaluations, inspections, and tests, the requirements are eligible for the environmental equivalence provisions under §112.7(a)(2), and a facility owner or operator can therefore implement alternative measures if he/she states in the Plan the reason for nonconformance and describes in detail the alternative measures and how the alternative measures provide environmental protection equivalent to that provided by the required evaluation, inspection, or test.

The use of environmental equivalence for evaluation, inspection, and testing requirements is discussed in Chapter 7 of this guidance document, along with the background information on

relevant regulatory requirements, industry standards, and recommended practices, which is necessary for discussing alternatives to these provisions.

3.4 Review of Environmental Equivalence

Any substitution of a prevention and control measure required by the rule with an 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 3-3 at the end of this chapter to identify and review technical rule requirements that are eligible for deviation through the environmental equivalence provision.

Environmentally equivalent measures are not available for the general and specific secondary containment provisions of the SPCC rule. Instead, §112.7(d) provides a separate means of deviating from secondary containment requirements through a determination of impracticability when 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 by allowing the use of ordinary and customary business records. The rule also does not specify how the training of oil-handling personnel is conducted, or whom to designate as a person accountable for oil discharge prevention (§112.7(f)).

3.4.1 SPCC Plan Documentation

For each environmental 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 must represent good engineering practice and must achieve environmental protection equivalent to the SPCC rule requirement as required in §112.7(a)(2). Technical deviations, like other substantive technical portions of the Plan requiring the application of engineering judgement, are subject to PE certification (67 FR 47095).

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 alternate methods and how this 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 detailing the steps involved in each activity, required equipment, personnel training, and records that need to be maintained to document and verify implementation. Records that would be kept as part of usual and customary business practices are generally considered 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 with the Plan for a period of three years (§112.7(e)). Certain industry standards, for example API Standards 570 and 653, may specify that records are to be maintained for more than three years.

The two examples below illustrate documentation of environmentally equivalent measures that may be provided in a hypothetical SPCC Plan.

Example #1: Documentation of Environmentally Equivalent Protection for Integrity Testing (§112.8(c)(6)) – Tank Elevated off the Ground

Bulk Storage Tanks – 40 CFR 112.8(c)(6)

ABC Oil is deviating from the integrity testing provision of §112.8(c)(6) for storage tank #3; based on good engineering practice after considering the tank installation and alternative measures, the requirements of Steel Tank Institute (STI) Standard SP-001, and alternative measures implemented by the facility. Tank #3 is a 4,500-gallon UL142 aboveground horizontal tank elevated on built-in saddles, and all sides of the tank are visible. Tank #3 is not insulated, and the outside surface of the tank shell can therefore be observed on an ongoing basis. The tank is located over a concrete floor, which functions as a release prevention barrier and has properly sized containment in accordance with §112.8(c)(2). Under SP-001, the tank is considered a Category 1 tank (aboveground storage tank with spill control and with continuous release detection method) and therefore requires periodic inspection of the tank. The personnel performing these inspections are knowledgeable of storage facility operations, characteristics of the liquid stored, the type of aboveground storage tank and its associated components. Facility personnel perform monthly and annual inspections, as described in Section 3.4 of the Plan and in accordance with the provisions and the checklists presented in SP-001. The scope of inspections and procedures is covered in the training provided to employees involved in handling oil at the facility. The routine inspections focus specifically on detecting any change in conditions or signs of product leakage from the tank, piping system, and appurtenances.

In accordance with inspection procedures outlined in this Plan, if signs of leakage or deterioration from the tank are observed by facility personnel, the tank is to be inspected by a tank inspector certified by the American Petroleum Institute or STI to assess its suitability for continued service, according to SP-001.

Facility personnel who conduct inspections are qualified in accordance with SP-001. The tank's physical configuration, combined with monthly and annual inspections, ensures that any small leak that could develop in the tank shell will be detected before it can become significant, escape secondary containment, and reach the environment. This approach provides environmental protection equivalent to the non-destructive shell

evaluation component of integrity testing required under §112.8(c)(6) since it provides an appropriate and effective means of assessing the condition of the tank and its suitability for continued service.

Example #2: 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 contains three oil-filled 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 oil from escaping the containment structure while allowing water to flow through during normal conditions. The system uses hydrophobic and oleofilic material to block the flow of water upon reacting to the presence of oil. Documentation of the performance of this system and the manufacturer's suggested replacement interval are maintained as an appendix to this Plan.

Employee supervision is not required under regular operating conditions to drain uncontaminated rainwater that has accumulated in the dike. This method deviates from the rule requirements, which generally require that a dike be drained under direct visual supervision using valves of manual, open-and-closed design.

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 (it will not cause 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.
3) Record event in log.

The above examples provide a sufficient level of detail to allow the 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. A Plan that simply notes the use of an alternative measure without supporting descriptions would not be considered sufficient. An example of *insufficient* documentation is given below.

Example #3: *Insufficient* Documentation of Environmentally Equivalent Protection for Integrity Testing (§112.8(c)(6))

Bulk Storage Tanks – 40 CFR 112.8(c)(6)

No integrity testing is needed on tank 3A as this is an elevated shop-built storage tank and all sides are visible. The outside of the tank is to be inspected on a regular schedule.

In contrast to the two previous examples, Example #3 does not provide sufficient detail to ascertain whether the approach provides environmentally equivalent protection. In particular, it does not describe how environmental equivalence is achieved, who performs the inspection, what is inspected, and at what frequency.

3.4.2 Role of the EPA Inspector

Like other technical aspects of the SPCC Plan, the selection and implementation of environmentally equivalent measures must be reviewed by the certifying PE for consistency with good engineering practice (§112.3(d)). 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 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 of the environment against a discharge as described in §112.1(b). 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, 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 protect the environment. EPA believes that, in general, PEs will seek to protect themselves from liability by certifying only measures that do provide equivalent environmental protection (67 FR 47095). 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.

The inspector should note whether the alternative measures meet the standards of common sense, and appear to agree with recognized industry standards or, where such standards are not used, are in accordance with good engineering practice. The 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.

If the inspector questions the appropriateness of alternative measures, he/she should fully document all observations and other pertinent information for further review by the regional staff. 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 retains the authority to require amendment for deviations, as he/she can for any other part of a Plan. If the Regional Administrator 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) and/or an enforcement action may be initiated as deemed appropriate.

Table 3-3 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 3-3. SPCC requirements for environmentally equivalent measures under §112.7(a)(2).

Rule Element	Relevant Section(s)	Evaluation	Verification During Site Visit	Basis for Environmental Equivalence
ALL FACILITIES				
Security	112.7(g)(1)	Is the facility fully fenced? Are entrance gates locked and/or guarded when the facility is not in production or is unattended?	Visual Plan review	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.7(g)(2)	Are adequate measures provided to ensure that master flow and drain valves and other valves that permit direct outward flow of the container's contents to the surface remain in closed position when in non-operating or non-standby status?	Visual Plan review	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.7(g)(3)	Is the starter control for each oil pump accessible only to authorized personnel, and kept locked in "off" position, when the pump is in non-operating or non-standby status?	Visual Plan review	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.7(g)(4)	Are the loading/unloading connections of oil pipelines or facility piping securely capped or blank-flanged when not in service, or when in standby for an extended period?	Visual Plan review	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.7(g)(5)	Is facility lighting appropriate, considering the facility type and location, to assist in the discovery of discharges occurring in hours of darkness and to discourage acts of vandalism?	Visual Plan review	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
Loading and unloading racks	112.7(h)(1)	*No deviation allowed based on environmental equivalence.*		
	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?	Visual Plan review	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?

Rule Element	Relevant Section(s)	Evaluation	Verification During Site Visit	Basis for Environmental Equivalence
	112.7(h)(3)	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?	Visual Review of procedures described in the Plan	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
Field-constructed aboveground containers	112.7(i)	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 action been taken?	Visual Inspection and testing records Brittle fracture evaluation records Plan description of standard by which the brittle fracture evaluation is conducted	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?

Rule Element	Relevant Section(s)	Evaluation	Verification During Site Visit	Basis for Environmental Equivalence
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)	<u>*Diked areas*</u> 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?	Visual Plan review Records of drainage events	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	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> 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?	Visual Plan review	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.8(b)(5) *OR* 112.12(b)(5)	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?	Visual Plan review	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
Bulk Storage Containers	112.8(c)(1) *OR* 112.12(c)(1)	Are the material and construction of containers used for the storage of oil compatible with the product stored and conditions of storage (temperature, pressure, and soil conditions)?	Visual Plan review Standards of construction (tank label), construction documents and as-built specifications	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.8(c)(2) *OR* 112.12(c)(2)	*No deviation allowed based on environmental equivalence.*		

Rule Element	Relevant Section(s)	Evaluation	Verification During Site Visit	Basis for Environmental Equivalence
	112.8(c)(3) *OR* 112.12(c)(3)	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 keep adequate records of dike drainage event?	Visual Plan review Records of drainage events	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.8(c)(4) *OR* 112.12(c)(4)	Does the facility have completely buried metallic storage tanks that were installed after January 10, 1974? If so, are these tanks protected from corrosion by coatings or cathodic protection?	Visual Plan review Installation records	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.8(c)(4) *OR* 112.12(c)(4)	Does the facility have completely buried metallic storage tanks that were installed after January 10, 1974? Are leak tests performed regularly on these tanks?	Visual Plan review Inspection and testing records	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.8(c)(5) *OR* 112.12(c)(5)	Does the facility have partially buried or bunkered metallic tanks used for the storage of oil? If so, are these tanks protected from corrosion by coatings or cathodic protection?	Visual Plan review Records	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.8(c)(6) *OR* 112.12(c)(6)	Does the facility test each aboveground container (including foundation and supports) for integrity on a regular schedule, and whenever a container undergoes material repairs? Do the tests combine visual inspection with another non-destructive shell testing technique? Does the facility frequently inspect the outside of each aboveground container for signs of deterioration, discharges, or accumulation or oil?	Plan review Inspection and testing records	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.8(c)(7) *OR* 112.12(c)(7)	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?	Visual Container specifications Review of procedures described in the Plan	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?

Rule Element	Relevant Section(s)	Evaluation	Verification During Site Visit	Basis for Environmental Equivalence
	112.8(c)(8) *OR* 112.12(c)(8)	Are containers equipped with at least one of the following? - 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. - In the case of bulk storage containers, a fast response system for determining the liquid level (computers, telepulse, direct vision gauges), combined with the continuous presence of personnel to monitor filling operations. Are liquid level sensing devices regularly tested to ensure proper operation?	Visual Review of test procedures described in the Plan Test records	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.8(c)(9) *OR* 112.12(c)(9)	Are effluent treatment facilities inspected frequently to detect possible system upsets?	Inspection and testing records Review of inspection program described in Plan	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.8(c)(10) *OR* 112.12(c)(10)	Are there visible discharges from containers, including seams, gaskets, piping, pumps, valves, rivets, and bolts? If so, is the facility promptly addressing such discharges? Is there accumulation of oil in diked areas? If so, is the facility promptly removing such accumulations?	Visual Plan review	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.8(c)(11) *OR* 112.12(c)(11)	*No deviation allowed based on environmental equivalence.*		
Piping	112.8(d)(1) *OR* 112.12(d)(1)	Does the facility have buried piping installed after August 16, 2002? If so, is this piping protected against corrosion by wrapping and coating? If 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?	Visual Plan review Installation records	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?

Rule Element	Relevant Section(s)	Evaluation	Verification During Site Visit	Basis for Environmental Equivalence
	112.8(d)(2) *OR* 112.12(d)(2)	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?	Visual Plan review	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	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?	Visual Plan review	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.8(d)(4) *OR* 112.12(d)(4)	Are aboveground valves, piping, and appurtenances regularly inspected? *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.* Is buried piping tested for integrity and leaks when installed, constructed, relocated, or replaced?	Inspection records Description of inspection program within the Plan, or reference to industry standard.	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	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 and other oil transfer operations?	Visual	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?

Rule Element	Relevant Section(s)	Evaluation	Verification During Site Visit	Basis for Environmental Equivalence
ONSHORE OIL PRODUCTION FACILITIES				
Drainage	112.9(b)(1)	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?	Visual Plan review Records of drainage events	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.9(b)(1)	Is accumulated water inspected prior to drainage? And is accumulated oil removed and either returned to storage or disposed of properly?	Plan review Records of drainage events	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.9(b)(2)	Are field drainage systems and oil traps, sumps, or skimmers regularly inspected for accumulation of oil?	Visual Inspection records Inspection program described in the Plan, including the schedule and scope of such inspections	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
Bulk Storage Containers	112.9(c)(1)	Are the material and construction of containers used for the storage of oil compatible with the product stored and conditions of storage (temperature, pressure, and soil conditions)?	Visual Construction standards (tank labels, as-build specifications, etc.) Visual indication of incompatibility, i.e., excessive corrosion	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.9(c)(2)	*No deviation allowed based on environmental equivalence.*		
	112.9(c)(3)	Is each container visually inspected periodically and on a regular schedule? *NOTE: Inspections must cover foundation and support of each container that is on or above the ground surface.*	Inspection and testing records Inspection program described in the Plan, including scope and frequency of such inspections	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.9(c)(4)	Are tank battery installations engineered to prevent discharges? - Container capacity is adequate to prevent overfill if the gauger/pumper is delayed in making a schedule round - Equipped with overflow equalizing lines between containers - Adequate vacuum protection to prevent container collapse during transfer of oil - High level sensors if the facility is subject to a computer production control system	Visual Plan review	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?

Rule Element	Relevant Section(s)	Evaluation	Verification During Site Visit	Basis for Environmental Equivalence
Transfer operations	112.9(d)(1)	Are all aboveground valves and piping inspected periodically and upon a regular schedule? *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.*	Inspection and testing records Inspection program described in the Plan, including frequency and scope of inspections	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.9(d)(2)	Are saltwater disposal facilities inspected, particularly following a sudden change in atmospheric temperature?	Plan review Inspection and testing records	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.9(d)(3)	Does the facility have a program of flowline maintenance?	Inspection and maintenance records. Program of flowline maintenance described in the Plan, including the scope and frequency of maintenance	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?

Rule Element	Relevant Section(s)	Evaluation	Verification During Site Visit	Basis for Environmental Equivalence
ONSHORE OIL DRILLING AND WORKOVER FACILITIES				
Mobile drilling or workover equipment	112.10(b)	Is the equipment located so as to prevent a discharge?	Visual Plan review	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
Containment	112.10(c)	*No deviation allowed based on environmental equivalence.*		
Blowout prevention	112.10(d)	If drilling below any casing string, or during workover operations, are a blowout prevention assembly and well control system installed? Are the blowout assembly and well control system capable of controlling well-head pressure?	Visual Installation record Plan review	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
OFFSHORE OIL DRILLING, PRODUCTION AND WORKOVER FACILITIES				
Drainage	112.11(b)	Is oil drainage collection equipment used to prevent and control small discharges? Are facility drains directed toward a central collection sump?	Visual Plan review	See below for cases where a sump is not practicable.
	112.11(b)	If a sump is not practicable, is oil removed from collection equipment as often as necessary to prevent overflow?	Visual Oil removal procedures described in the Plan	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.11(c)	If a sump system is employed, are the sizes of pump and sump adequate? Is a spare pump available?	Visual Plan review	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.11(c)	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? If required by the conditions, are a redundant automatic sump pump and control devices provided?	Visual Preventive maintenance inspection and testing program described in the Plan	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?

Rule Element	Relevant Section(s)	Evaluation	Verification During Site Visit	Basis for Environmental Equivalence
Separators and Treaters	112.11(d)	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?	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.	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
Containers	112.11(e)	Are atmospheric storage or surge containers equipped with high liquid level sensing devices that activate an alarm or control the flow?	Visual Plan review	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.11(f)	Are pressure containers equipped with high and low pressure sensing devices that activate an alarm or control the flow?	Visual Plan review	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.11(g)	Are containers equipped with suitable corrosion protection?	Visual Plan review	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.11(h)	Does the Plan contain a written procedure for inspecting and testing pollution control equipment and systems?	Plan review	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
Pollution prevention equipment and systems	112.11(i)	Are the pollution prevention equipment and systems tested and inspected on a scheduled periodic basis? Are the procedures documented in the Plan?	Inspection and testing records Description of inspection and testing program in Plan, including scope and frequency	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?

Rule Element	Relevant Section(s)	Evaluation	Verification During Site Visit	Basis for Environmental Equivalence
	112.11(i)	Is the facility using simulated discharges for testing and inspecting human and equipment pollution control and countermeasure systems?	Description of testing program in Plan	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
Well shut-in valves	112.11(j)	Is the method of activation or control of well shut-in valves and devices described in sufficient details?	Plan review	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
Blowout Prevention	112.11(k)	If drilling below any casing string or during workover assembly, is a blowout preventer (BOP) assembly and well control system installed? If the BOP assembly and well control system capable of controlling well-head pressure that may be encountered?	Visual Plan review Installation records	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
Flowlines	112.11(l)	Are manifolds (headers) equipped with check valves on individual flowlines?	Visual Plan review	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.11(m)	Are all flowlines equipped with a high pressure sensing device and shut-in valve at the wellhead? If not, is a pressure relief system provided for flowlines?	Visual Plan review	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
Piping	112.11(n)	Is all piping appurtenant to the facility protected from corrosion, such as with protective coating or cathodic protection?	Visual Plan review Installation records	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?
	112.11(o)	Is sub-marine piping adequately protected against environmental stresses and other activities such as fishing operations?	Inspection and maintenance program described in Plan Installation records	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?

Rule Element	Relevant Section(s)	Evaluation	Verification During Site Visit	Basis for Environmental Equivalence
	112.11(p)	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?	Inspection and testing records Review of inspection or testing program described in Plan, including scope and frequency of inspections or tests	Does the Plan state the reason for nonconformance? Does the Plan describe in sufficient detail an alternative measure? Is the alternative measure appropriate for the facility? Does it provide equivalent environmental protection? Is the alternative measure being implemented as described?