Chapter 4 Secondary Containment and Impracticability

4.1 Introduction

The purpose of the SPCC rule is to prevent discharges of oil into navigable waters of the United States and adjoining shorelines. One of the primary ways the rule sets out to accomplish this goal is by requiring secondary containment. A secondary containment system provides an essential line of defense in the event of a failure of the primary containment, such as a bulk storage container, a mobile or portable container, piping, or oil-filled equipment. The system provides temporary containment of discharged oil until the appropriate actions are taken to abate the source of the discharge and remove oil from areas where it has accumulated to prevent it from reaching navigable waters or adjoining shorelines. The rule includes two categories of secondary containment requirements:

- A **general provision** addresses the potential for oil discharges from all regulated parts of a facility. The containment method, design, and capacity are determined by good engineering practice to contain the most likely discharge of oil until cleanup occurs.

- **Specific provisions** address the potential of oil discharges from areas of a facility where oil is stored or handled. The containment design, sizing, and freeboard requirements are specified by the SPCC rule to address a major container failure.

The *general* secondary containment requirements are intended to address, in accordance with good engineering practice, the most likely oil discharges from areas or containers such as mobile refuelers and other non-transportation-related tank trucks; oil-filled operational or process equipment; (non-rack) transfer areas; or piping. In determining the method, design, and capacity for general secondary containment, only the typical failure mode needs to be considered.

The *specific* secondary containment requirements are intended to address a major container failure (e.g., the entire contents of the container and/or compartment) associated with a bulk storage container; single compartment of a tank car or tank truck at a loading/unloading rack; mobile/portable containers; and production tank batteries, treatment, and separation installations (including flow-through process vessels and produced water containers). These specific provisions (see *Table 4-1* in *Section 4.1.1*) provide explicit requirements for sizing, design, and freeboard.

The purpose of this chapter is to clarify the relationships among the various general and specific secondary containment requirements of the SPCC rule, and to illustrate how these requirements apply. This chapter also discusses the rule's impracticability determination provision, which may be used when a facility owner/operator cannot install secondary containment by any reasonable method. The additional requirements that accompany an impracticability determination, the documentation needed to support such a determination, and the role of the EPA inspector in reviewing secondary containment requirements and impracticability determinations are also discussed.

The remainder of this chapter is organized as follows.

- ***Section 4.2*** provides an overview of the SPCC rule's general secondary containment provisions, including exceptions to the requirement to provide secondary containment.
- ***Section 4.3*** discusses the specific secondary containment requirements and the meaning of "sufficient freeboard."
- ***Section 4.4*** discusses issues related to secondary containment, such as active versus passive measures, the "sufficiently impervious" requirement, facility drainage, and man-made structures.
- ***Section 4.5*** describes the impracticability determination provision.
- ***Section 4.6*** describes required measures when secondary containment is impracticable.
- ***Section 4.7*** discusses how the impracticability determination may be used in certain circumstances.
- ***Section 4.8*** discusses alternative measures in the rule in lieu of secondary containment at oil production facilities.

4.1.1 Overview of Secondary Containment Provisions

The SPCC rule includes several secondary containment provisions intended to address the various activities or locations at a facility where oil is handled. This section differentiates among these general and specific secondary containment provisions.

Table 4-1 lists all the secondary containment provisions of the SPCC rule for different types of facilities.

Table 4-1: Secondary containment provisions in 40 CFR part 112.

Type of Facility	Secondary Containment	Rule Section(s)
All Facilities	General containment (areas with potential for discharge, such as piping–including flowlines, bulk storage containers, oil-filled operating and manufacturing equipment, and oil equipment associated with transfer areas)	§112.7(c)
	Mobile refuelers and other non-transportation-related tank trucks.	§112.7(c)
	Loading/unloading racks**	§112.7(h)(1)
	Qualified Oil-Filled Operational Equipment	§112.7(c) or alternate measures in §112.7(k)
Onshore Storage	Bulk storage containers (except mobile refuelers and other non-transportation-related tank trucks)	§112.8(c)(2) or §112.12(c)(2)
	Mobile or portable oil containers (except mobile refuelers and other non-transportation-related tank trucks)	§112.8(c)(11) or §112.12(c)(11)
Onshore Oil Production	Bulk storage containers, including tank batteries, separation, and treating facility installations (except for flow-through process vessels and produced water containers)	§112.9(c)(2)
	Flow-through process vessels	§112.9(c)(2) or §112.7(c) and alternate measures in §112.9(c)(5)
	Flowlines and intra-facility gathering lines	§112.7(c) or alternate measures in §112.9(d)(3)
	Produced water containers	§112.9(c)(2) or §112.7(c) and alternate measures in §112.9(c)(6)
Onshore Oil Drilling and Workover	Mobile drilling or workover equipment	§112.10(c)
Offshore Oil Drilling, Production, and Workover	Oil drilling, production, or workover equipment	§112.7(c)

** Although this requirement applies to all facilities, loading/unloading racks are generally not present at typical oil production facilities or farms, as discussed in *Section 4.7.3*.

Figure 4-1 through *Figure 4-4* illustrate the relationships between the secondary containment requirements at various types of facilities. EPA inspectors should use the flowchart that corresponds to the type of facility he or she is inspecting (see the figure description for each flowchart). The second row of each flowchart identifies the types of containers, equipment, and activities or areas where oil is handled, with reference to the appropriate secondary containment rule provision. The flowcharts note the use of impracticability determinations and additional design considerations for other areas with the potential for discharge.

Figure 4-1: Secondary containment provisions in 40 CFR part 112 related to onshore storage facilities (§§112.7 and 112.8 or 112.12).

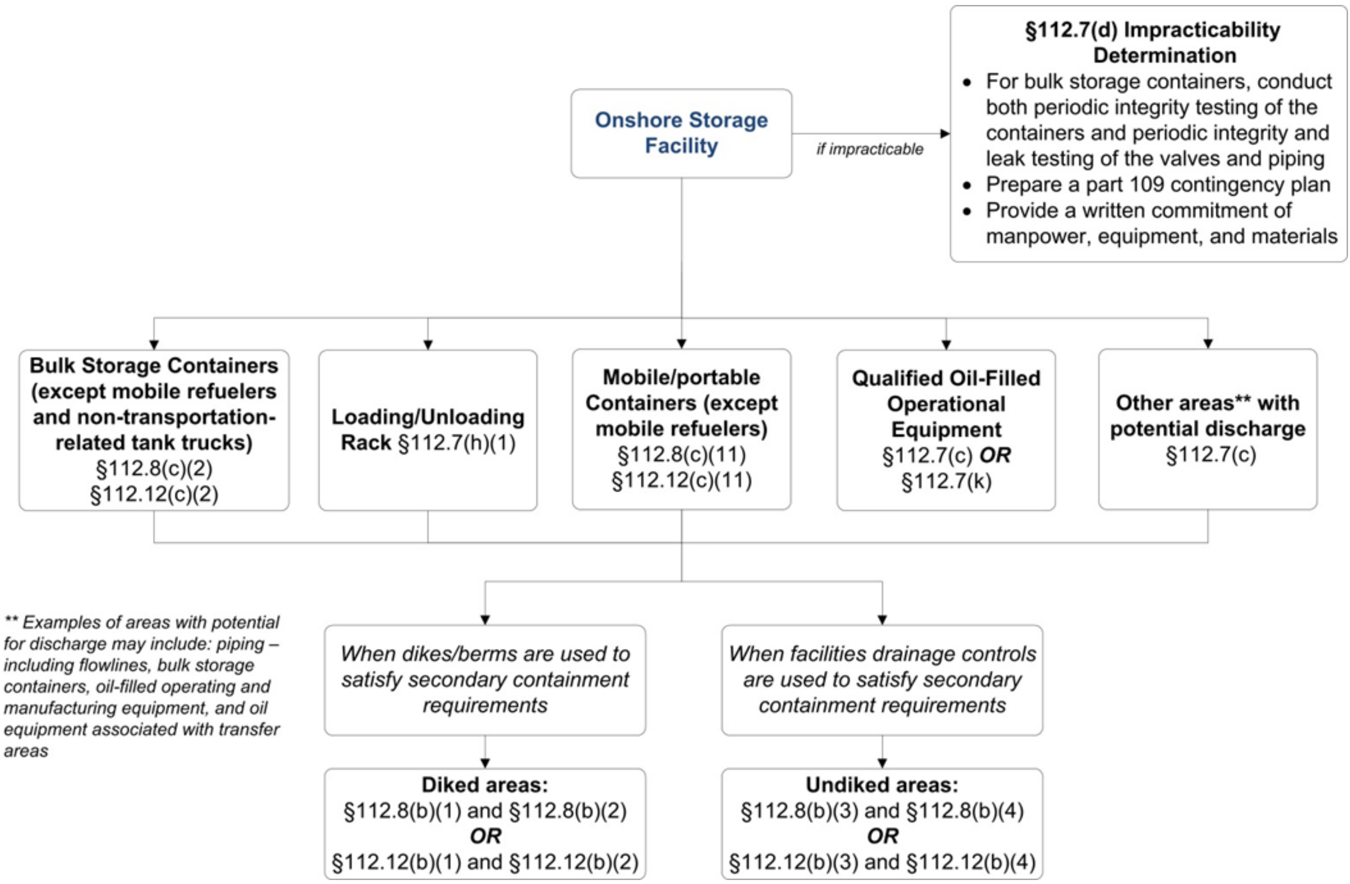
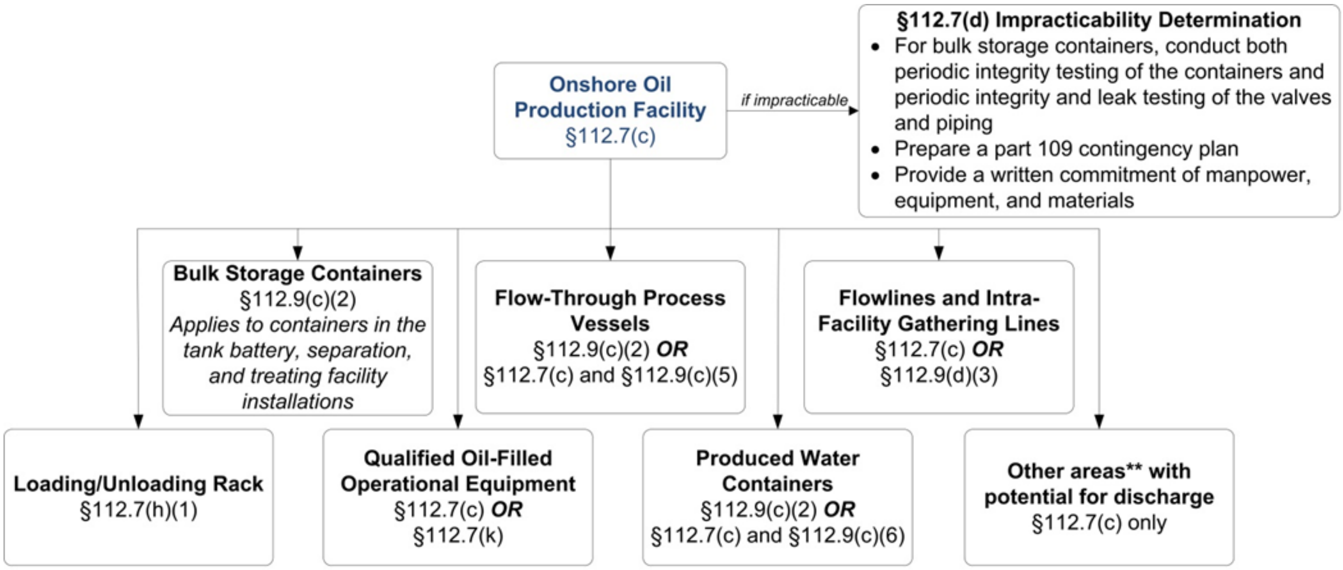


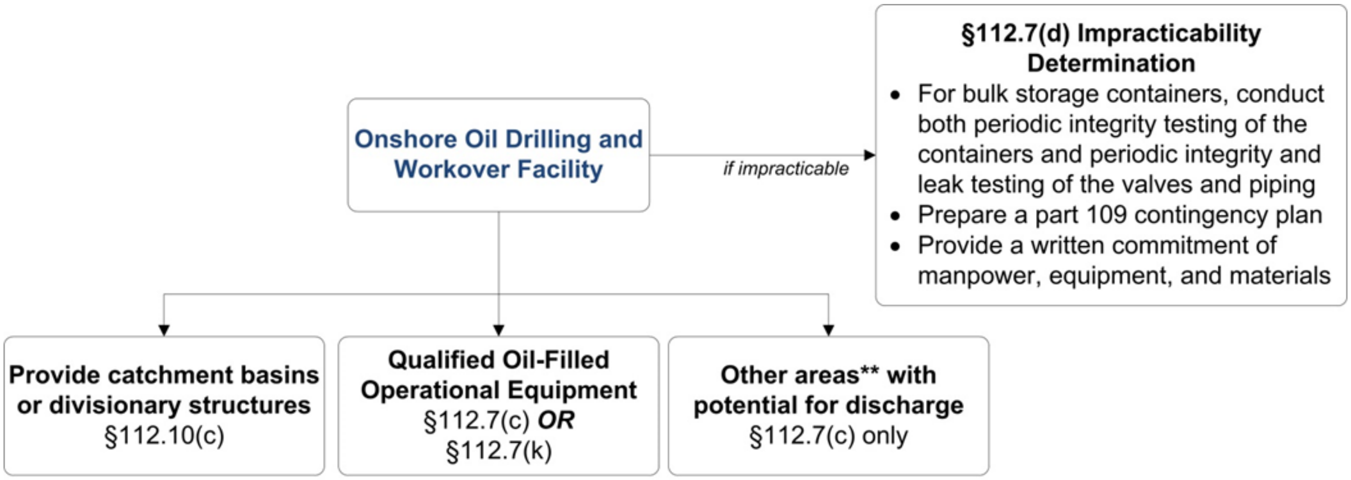
Figure 4-2: Secondary containment provisions in 40 CFR part 112 related to onshore oil production facilities (§§112.7 and 112.9).



*** Examples of areas with potential for discharge may include: piping – including flowlines, Christmas trees, pumpjacks, bulk storage containers (not part of a tank battery), oil-filled operating and manufacturing equipment, and oil equipment associated with transfer areas.*

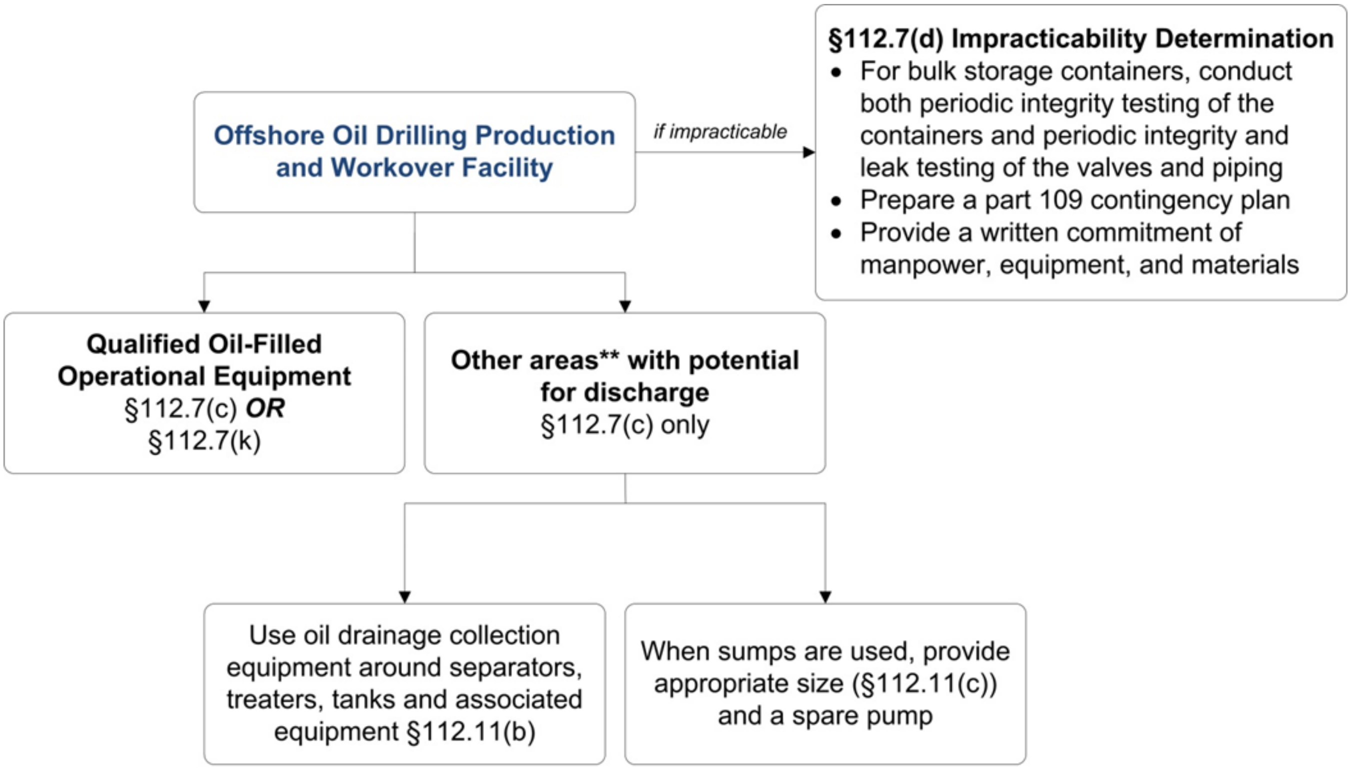
Oil production facilities do not typically have loading/unloading racks as defined in §112.2, but when oil is transferred through a loading/unloading rack, sized secondary containment in accordance with §112.7(h)(1) applies. Oil transfers to trucks within oil production facilities normally occur at transfer areas that are subject to general secondary containment in accordance with §112.7(c).

Figure 4-3: Secondary containment provisions in 40 CFR part 112 related to onshore oil drilling and workover facilities (§§112.7 and 112.10).



*** Examples of areas with potential for discharge may include: piping – including flowlines, bulk storage containers, additive tanks containing oil, lubricant oil tanks, oil-filled operating and manufacturing equipment, and oil equipment associated with transfer areas.*

Figure 4-4: Secondary containment provisions in 40 CFR part 112 related to offshore oil drilling, production, and workover facilities (§§112.7 and 112.11).[79]



*** Examples of areas with potential for discharge may include: piping – including flowlines, wellheads, blowout preventers, stock tanks, bulk storage containers, additive tanks containing oil, lubricant oil tanks, oil-filed operating and manufacturing equipment, flow-through process vessels, oil tanks for drilling rigs, and oil equipment associated with transfer areas.*

4.2 General Secondary Containment Requirements

At a regulated facility, all areas and equipment with the potential for a discharge are subject to the general secondary containment provision, §112.7(c). These may include bulk storage containers; mobile/portable containers; mobile refuelers and other non-transportation-related tank trucks; oil production tank batteries, treatment, and separation installations; pieces of oil-filled operational or manufacturing equipment; loading/unloading areas (also referred to as transfer areas); and piping; and may include other areas of a facility where oil is present. For the areas where specific (sized) secondary containment is also required (as described in Section 4.7), this sized secondary containment fulfills the general secondary containment requirements. The general secondary containment provision requires that these areas be designed with appropriate containment and/or diversionary structures to prevent a discharge in quantities that may be harmful (i.e., a discharge as described in §112.1(b)). "Appropriate containment" must be designed to address the *most likely* quantity of oil that would be discharged from the primary containment system (e.g., container,

[79] Onshore components associated with offshore facilities may also be subject to §§112.8 or 112.9 requirements (as applicable).

equipment), such that the discharge will not escape secondary containment before cleanup occurs. In determining the most likely quantity, the facility owner/operator should consider factors such as the typical failure mode (e.g., overfill, fracture in container wall, etc.), resulting oil flow rate, facility personnel response time, and the duration of the discharge. An example calculation for a transfer area is included in *Section 4.7.2*. A similar calculation can be applied for any area or equipment subject to the general secondary containment requirement (e.g., oil-filled equipment such as transformers). Calculations may be provided as part of the documentation to support the adequacy of secondary containment measures employed at the facility, although they are not required. Nevertheless, the Plan preparer must include enough detail in the SPCC Plan to describe the efficacy of the measures used to comply with the general secondary containment requirements in §112.7(c).

Section 112.7(c) lists several methods of providing secondary containment, which are described in *Table 4-2*. These methods are examples only; other containment methods may be used, consistent with good engineering practice. For example, a facility could use an oil/water separator, combined with a drainage system, to collect and retain discharges of oil within the facility. PE certification (or self-certification, in the case of qualified facilities) of the SPCC Plan includes verification that the selected secondary containment methods for the facility are appropriate and follow good engineering practice.

§112.7(c)

Provide appropriate containment and/or diversionary structures or equipment to prevent a discharge as described in §112.1(b) except as provided in paragraph (k) of this section for qualified oil-filled operational equipment, and except as provided in §112.9(d)(3) for flowlines and intra-facility gathering lines at an oil production facility. The entire containment system, including walls and floor, must be capable of containing oil and must be constructed so that any discharge from a primary containment system, such as a tank or pipe, will not escape the containment system before cleanup occurs. In determining the method, design, and capacity for secondary containment, you need only to address the typical failure mode, and the most likely quantity of oil that would be discharged. Secondary containment may be either active or passive in design. At a minimum, you must use one of the following prevention systems or its equivalent:

(1) For onshore facilities:
(i) Dikes, berms, or retaining walls sufficiently impervious to contain oil;
(ii) Curbing or drip pans;
(iii) Sumps and collection systems;
(iv) Culverting, gutters, or other drainage systems;
(v) Weirs, booms, or other barriers;
(vi) Spill diversion ponds;
(vii) Retention ponds; or
(viii) Sorbent materials.

(2) For offshore facilities:
(i) Curbing or drip pans; or
(ii) Sumps and collection systems.

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

Discharge as described in §112.1(b) is a discharge in quantities that may be harmful, as described in part 110 of this chapter [40 CFR part 110], into or upon the navigable waters of the United States or adjoining shorelines, or into or upon the waters of the contiguous zone, or in connection with activities under the Outer Continental Shelf Lands Act or the Deepwater Port Act of 1974, or that may affect natural resources belonging to, appertaining to, or under the exclusive management authority of the United States (including resources under the Magnuson Fishery Conservation and Management Act).

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

Table 4-2: Example methods of secondary containment listed in §112.7(c).

Secondary Containment Method	Description of Examples
Dikes, berms, or retaining walls sufficiently impervious to contain oil	Types of permanent engineered barriers, such as raised earth embankments or concrete containment walls, designed to hold oil. Normally used in areas with potential for large discharges, such as single or multiple aboveground storage tanks and certain piping. Temporary dikes and berms may be constructed after a discharge is discovered as an active containment measure (or a countermeasure) so long as they can be implemented in time to prevent the spilled oil from reaching surface waters. Please see *Section 4.4.1*, *Passive versus Active Measures of Secondary Containment*.
Curbing	Typically consists of a permanent reinforced concrete or an asphalt apron surrounded by a concrete curb. Can also be of a uniform, rectangular cross-section or combined with mountable curb sections to allow access to loading/unloading vehicles and materials handling equipment. Can be used where only small spills are expected and also used to direct spills to drains or catchment areas. Temporary curbing may be constructed after a discharge is discovered as an active containment measure (or a countermeasure) so long as it can be implemented in time to prevent the spilled oil from reaching surface waters. Please see *Section 4.4.1*, *Passive versus Active Measures of Secondary Containment*.
Culverting, gutters, or other drainage systems	Types of permanent drainage systems designed to direct spills to remote containment or treatment areas. Ideal for situations where spill containment structures cannot or should not be located immediately adjacent to the potential spill source.
Weirs	Dam-like structures with a notch through which oil may flow to be collected. Generally used in combination with skimmers to remove oil from the surface of water.
Booms	Form a continuous barrier placed as a precautionary measure to contain/collect oil. Typically used for the containment, exclusion, or deflection of oil floating on water, and is usually associated with an oil spill contingency or facility response plan to address oil spills that have reached surface waters. Beach booms are designed to work in shallow or tidal areas. Sorbent-filled booms can be used for land-based spills. There are very limited applications for use of booms for land-based containment of discharged oil.
Barriers	Spill mats, storm drain covers, and dams used to block or prevent the flow of oil. Temporary barriers may be put in place prior to a discharge or after a discharge is discovered. These are all considered effective active containment measures (or countermeasures) as long as they can be implemented in time to prevent the spilled oil from reaching navigable waters and adjoining shorelines. Please see *Section 4.4.1*, *Passive versus Active Measures of Secondary Containment*.

Secondary Containment Method	Description of Examples
Spill diversion ponds and retention ponds	Designed for long-term or permanent containment of storm water, but also capable of capturing and holding oil or runoff and preventing it from entering surface water bodies. Temporary spill diversion ponds and retention ponds may be constructed after a discharge is discovered as an active containment measure (or countermeasure) as long as they can be implemented in time to prevent the spilled oil from reaching navigable waters and adjoining shorelines. There are very limited applications for use of temporary spill diversion and retention ponds for land-based containment of discharged oil due to the timely availability of the appropriate excavation equipment required to rapidly construct the ponds. Please see *Section 4.4.1*, *Passive versus Active Measures of Secondary Containment*.
Sorbent materials	Insoluble materials or mixtures of materials (packaged in forms such as spill pads, pillows, socks, and mats) used to recover liquids through the mechanisms of absorption, adsorption, or both. Materials include clay, vermiculite, diatomaceous earth, and man-made materials. Used to isolate and contain small drips or leaks until the source of the leak is repaired. Commonly used with material handling equipment, such as valves and pumps. Also used as an active containment measure (or countermeasure) to contain and collect small-volume discharges before they reach waterways. Proper use of these materials may require a properly equipped and trained spill response team specifically trained to contain an oil discharge *prior to* reaching navigable waters or adjoining shorelines Please see *Section 4.4.1*, *Passive versus Active Measures of Secondary Containment*.
Drip pans	Used to isolate and contain small drips or leaks until the source of the leak is repaired. Drip pans are commonly used with product dispensing containers (usually drums), when uncoupling hoses during bulk transfer operations, and for pumps, valves, and fittings.
Sumps and collection systems	A permanent pit or reservoir and its associated troughs/trenches that collect oil.

The general secondary containment provision applies to all areas of a facility that have a potential to cause an oil discharge. However, the provision allows for alternative measures in the SPCC Plan for:

- Qualified oil-filled operational equipment; and
- Flowlines and intra-facility gathering lines

These alternative measures are further described below.

4.2.1 Alternative Measures for General Secondary Containment Requirement: Qualified Oil-Filled Operational Equipment

Providing adequate secondary containment for oil-filled operational equipment is often impracticable, therefore, the SPCC rule provides an optional alternative to the general secondary containment requirements for oil-filled operational equipment that meets qualifying criterion in §112.7(k) (commonly referred to as "qualified oil-filled operational equipment").

Oil-filled operational equipment, as defined in §112.2, is equipment that includes an oil storage container (or multiple containers) in which the oil present is used solely to support the function of the apparatus or the device. For more information on oil-filled equipment, refer to *Chapter 2: SPCC Rule Applicability.*

§112.2

Oil-filled operational equipment means equipment that includes an oil storage container (or multiple containers) in which the oil is present solely to support the function of the apparatus or the device. Oil-filled operational equipment is not considered a bulk storage container, and does not include oil-filled manufacturing equipment (flow-through process). Examples of oil-filled operational equipment include, but are not limited to, hydraulic systems, lubricating systems (*e.g.*, those for pumps, compressors and other rotating equipment, including pumpjack lubrication systems), gear boxes, machining coolant systems, heat transfer systems, transformers, circuit breakers, electrical switches, and other systems containing oil solely to enable the operation of the device.

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

§112.7(k)

Qualified Oil-filled Operational Equipment. The owner or operator of a facility with oil-filled operational equipment that meets the qualification criteria in paragraph (k)(1) of this sub-section may choose to implement for this qualified oil-filled operational equipment the alternate requirements as described in paragraph (k)(2) of this sub-section in lieu of general secondary containment required in paragraph (c) of this section.

(1) *Qualification Criteria—Reportable Discharge History:* The owner or operator of a facility that has had no single discharge as described in § 112.1(b) from any oil-filled operational equipment exceeding 1,000 U.S. gallons or no two discharges as described in § 112.1(b) from any oil-filled operational equipment each exceeding 42 U.S. gallons within any twelve month period in the three years prior to the SPCC Plan certification date, or since becoming subject to this part if the facility has been in operation for less than three years (other than oil discharges as described in § 112.1(b) that are the result of natural disasters, acts of war or terrorism)

(2) *Alternative Requirements to General Secondary Containment.* If secondary containment is not provided for qualified oil-filled operational equipment pursuant to paragraph (c) of this section, the owner or operator of a facility with qualified oil-filled operational equipment must:

(i) Establish and document the facility procedures for inspections or a monitoring program to detect equipment failure and/or a discharge; and

(ii) Unless you have submitted a response plan under §112.20, provide in your Plan the following:

(A) An oil spill contingency plan following the provisions of part 109 of this chapter.

(B) A written commitment of manpower, equipment, and materials required to expeditiously control and remove any quantity of oil discharged that may be harmful.

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

Determining Eligibility for Alternative Measures for Oil-Filled Operational Equipment

The facility owner/operator determines if he is eligible to use the alternative measures in §112.7(k) by considering the reportable discharge history from any oil-filled operational equipment at the facility. *Table 4-3* identifies the criterion for determining if the facility has qualified oil-filled operational equipment.

Table 4-3: Reportable discharge history criterion for oil-filled operational equipment.

You must answer no to the following to be eligible for alternative measures in §112.7(k): In the three years before the SPCC Plan is certified, has the facility had any discharges to navigable waters or adjoining shorelines from **oil-filled operational equipment** as described below:	
A single discharge of oil greater than 1,000 gallons?	Yes or No
Two discharges of oil each greater than 42 gallons within any 12-month period?	Yes or No

When considering the above questions, the owner/operator does not need to include discharges that are the result of natural disasters, acts of war, or terrorism. Additionally, when determining the applicability of this SPCC reporting requirement, the gallon amount(s) specified (either 1,000 or 42) refers to the amount of oil that actually reaches navigable waters or adjoining shorelines, not the total amount of oil spilled. EPA considers the entire volume of the discharge to be oil for the purposes of these reporting requirements.

Let's consider the following examples:

Example 1: A facility has one discharge from oil-filled operational equipment over the past three years in which 1,500 gallons of oil discharged onto the ground but only 20 gallons reached navigable waters or adjoining shorelines (causing a sheen and reportable to the NRC).

You must answer no to the following to be eligible for alternative measures in §112.7(k): In the three years before the SPCC Plan is certified, has the facility had any discharges to navigable waters or adjoining shorelines **from oil-filled operational equipment** as described below:	
A single discharge of oil greater than 1,000 gallons?	**No**
Two discharges of oil each greater than 42 gallons within any 12-month period?	**No**

Does the facility have qualified oil-filled operational equipment? Yes. The facility has qualified oil-filled operational equipment because there was only one reportable oil discharge from oil-filled operational equipment and the amount discharged to navigable waters (20 gallons) was less than 1,000 gallons (i.e., they met the reportable discharge history criterion).

<u>Example 2:</u> A facility has one 1,500-gallon discharge from oil-filled operational equipment to navigable waters.

You must answer no to the following to be eligible for alternative measures in §112.7(k): In the three years before the SPCC Plan is certified, has the facility had any discharges to navigable waters or adjoining shorelines **from oil-filled operational equipment** as described below:	
A single discharge of oil greater than 1,000 gallons?	**Yes**
Two discharges of oil each greater than 42 gallons within any 12-month period?	**No**

Does the facility have qualified oil-filled operational equipment? No. In this example, the oil discharge to navigable waters was larger than 1,000 gallons and therefore the facility does not qualify for alternative measures.

<u>Example 3:</u> A 2,000-gallon oil discharge to navigable waters occurs while unloading a vehicle into a bulk storage container.

You must answer no to the following to be eligible for alternative measures in §112.7(k): In the three years before the SPCC Plan is certified, has the facility had any discharges to navigable waters or adjoining shorelines **from oil-filled operational equipment** as described below:	
A single discharge of oil greater than 1,000 gallons?	**No**
Two discharges of oil each greater than 42 gallons within any 12-month period?	**No**

Does the facility have qualified oil-filled operational equipment? Yes. The facility has qualified oil-filled operational equipment because the oil discharge did not originate from oil-filled operational equipment and therefore is not considered when determining eligibility of the facility to use alternative measures for qualified oil-filled operational equipment.

Alternative Measures

If an owner or operator uses alternative measures in lieu of meeting the secondary containment requirements for qualified oil-filled operational equipment., he or she is required to establish and document an inspection or monitoring program for qualified oil-filled operational equipment to detect equipment failure and/or a discharge. Additionally, the owner/operator must prepare an oil spill contingency plan and provide a written commitment of manpower, equipment, and materials required to expeditiously control and remove any quantity of oil discharged that may be harmful (unless the facility has submitted a Facility Response Plan.) The advantage of the §112.7(k) alternative to the general secondary containment requirements is that the facility owner/operator is not required to prepare an impracticability determination for the qualified oil-filled operational equipment (impracticability determinations are discussed in *Section 4.5* of this chapter). Note that the use of alternative measures is optional for qualified oil-filled operational equipment; the owner/operator can instead provide secondary containment or may prepare an impracticability determination.

For facility owners and operators that rely on contingency planning for qualified oil-filled operational equipment in lieu of secondary containment, the discovery of a discharge by inspection or monitoring is critical for effective and timely implementation of the contingency plan. An inspection or monitoring program ensures that facility personnel are alerted quickly of equipment failures and/or discharges. The SPCC Plan must describe the inspection or monitoring program and the owner or operator must keep a record of inspections and tests, signed by the appropriate supervisor or inspector, for a period of three years in accordance with §112.7(e).

Qualified Oil-Filled Operational Equipment and Qualified Facilities Overlap

Some facilities may meet the criteria for qualified facilities as provided in §112.3(g) and have qualified oil-filled operational equipment on-site. Owners and operators of such facilities can use the alternative measures for oil-filled operational equipment described in §112.7(k) and self-certify the SPCC Plan. The owner or operator can choose to develop an oil spill contingency plan, provide a written commitment of manpower, equipment and materials and implement an inspection or monitoring program as an alternative to secondary containment for qualified oil-filled operational equipment. Since no impracticability determination is necessary for qualified oil-filled operational equipment, the owner or operator can self-certify his/her SPCC Plan and is not required to have a PE develop and certify the contingency plan for the qualified oil-filled operational equipment. The responsibility of preparing a contingency plan and identifying the necessary equipment, materials and manpower to implement the contingency plan would fall on the owner or operator of the qualified facility. For more information on qualified facilities, visit the EPA website at http://www.epa.gov/oem/content/spcc/spcc_qf.htm.

Tip – Generator sets

One commonly asked question is whether generator sets are considered oil-filled operational equipment.

No. Generator sets (gen sets) are a combination of oil-filled operational equipment and a bulk storage container. Lubrication systems on gen sets may be oil-filled operational equipment, but bulk storage tanks providing fuel for the generator typically are not oil-filled operational equipment.

Oil-Filled Manufacturing Equipment is not Oil-Filled Operational Equipment

The definition of oil-filled operational equipment does not include oil-filled manufacturing equipment (flow-through process). Oil-filled manufacturing equipment is inherently more complicated than oil-filled operational equipment because it typically involves a flow-through process and is commonly interconnected through piping. For example, oil-filled manufacturing equipment may receive a continuous supply of oil, in contrast to the static capacity of other, non-flow-through oil-filled equipment. Examples of oil-filled manufacturing equipment include, but are not limited to, process vessels, conveyances such as piping associated with a process, and equipment used in the alteration, processing or refining of crude oil and other non-petroleum oils, including animal fats and vegetable oils (71 FR 77276, December 26, 2006).

4.2.2 Alternative Measures for General Secondary Containment Requirement: Flowlines and Intra-facility Gathering Lines

"Flowlines" are typically found at oil production facilities. They are piping that transfer crude oil and well fluids from the wellhead to the tank battery where separation and treatment equipment are typically located. Flowlines may also connect a tank battery to an injection well. Depending on the size of the oil field, flowlines may range in diameter and run from hundreds of feet to miles between the wellheads and the tank batteries or primary separation operations.

> **§112.9(d)(3)**
>
> For flowlines and intra-facility gathering lines that are not provided with secondary containment in accordance with §112.7(c), unless you have submitted a response plan under §112.20, provide in your Plan the following:
>
> (i) An oil spill contingency plan following the provisions of part 109 of this chapter.
>
> (ii) A written commitment of manpower, equipment, and materials required to expeditiously control and remove any quantity of oil discharged that might be harmful.
>
> 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 term ‘‘gathering lines’’ refers to piping or pipelines that transfer crude oil product between tank batteries, within or between facilities. Gathering lines often originate from an oil production facility's lease automatic custody transfer (LACT) unit, which transfers oil to other facilities involved in gathering, refining or pipeline transportation operations. EPA considers gathering lines subject to EPA's jurisdiction if they are located within the boundaries of an otherwise regulated SPCC/FRP facility (that is, intra-facility gathering lines) (73 FR 74274, December 5, 2008). See *Section 2.5.8* for a more detailed description of flowlines and intra-facility gathering lines, and the SPCC rule's applicability to each; note that intra-facility gathering lines subject to DOT requirements at 49 CFR parts 192 or 195 are exempt from the SPCC rule entirely.

Secondary containment is, in many cases, impracticable for flowlines and intra-facility gathering lines. For example, an oil production facility in a remote area may have many miles of flowlines and gathering lines, around which it would not be practicable to build permanent containment structures. It may not be possible to install secondary containment around flowlines running across a farmer's or rancher's fields since berms may become severe erosional features and can impede access to the fields by farm/ranch tractors and other equipment. Similarly, it may be impracticable to construct secondary containment around flowlines that run along a fence or county road due to space limitations or intrusions into a county's property or right-of-way. At unattended facilities, active secondary containment methods are not effective in meeting secondary containment requirements because there is limited capability to detect a discharge and deploy active measures in a timely fashion.

Therefore, §112.9(d)(3) provides an optional alternative to the general secondary containment requirements for flowlines and intra-facility gathering lines that are subject to the SPCC rule. In lieu of secondary containment, the facility owner or operator may implement an oil spill contingency plan in accordance with 40 CFR part 109 (*Criteria for State, Local and Regional Oil Removal Contingency Plans*) and have a written commitment of manpower, equipment, and materials required to expeditiously control and remove any quantity of oil discharged that may be harmful. These requirements are the same as those in §112.7(d) of the rule, however, the Plan does not need to include an impracticability determination for each flowline and intra-facility gathering line.

The contingency plan required when secondary containment is not practicable for flowlines and intra-facility gathering lines should rely on strong maintenance, corrosion protection, testing, recordkeeping, and inspection procedures to prevent and quickly detect discharges from such lines. It should also ensure quick availability and deployment of response equipment. An effective flowline maintenance program is necessary to detect a discharge in a timely manner so that the oil discharge response operations described in the contingency plan may be implemented effectively.

Additionally, eliminating the requirement for secondary containment means that more prescriptive requirements are needed for discharge prevention to ensure the integrity of the primary containment of the pipe itself. The SPCC rule requires a performance-based program of flowline and intra-facility gathering line maintenance, in accordance with §112.9(d)(4), that addresses the facility owner or operator's procedures and must be documented in their SPCC Plan. See *Section 3.3.5* and *Chapter 7: Inspection, Evaluation, and Testing* (*Section 7.2.12*) for more information.

The complexity or simplicity of a facility's contingency plan is subject to good engineering practice as determined by the Plan certifier. EPA developed a model contingency plan (see *Appendix F* of this guidance). This model contingency plan is intended as an example and inspectors should only use it for this purpose.

4.3 Specific (Sized) Secondary Containment Requirements

While all parts of a regulated facility with potential for a discharge are, at a minimum, subject to the general secondary containment requirements of §112.7(c),[80] areas where certain types of containers, activities, or equipment are located may be subject to additional, more stringent containment requirements, including specifications for minimum capacity (see *Table 4-1*.) The SPCC rule specifies a required minimum size for secondary containment for the following areas:

- Loading/unloading racks;
- Bulk storage containers including mobile or portable containers (does not apply to mobile refuelers or other non-transportation-related tank trucks); and
- Production facility bulk storage containers, including tank batteries, separation, and treating equipment (e.g., produced water tanks).

The applicable requirements for each of these types of containers or equipment are discussed in more detail in *Section 4.7* of this chapter. In general, provisions for specific secondary containment require that the

80 Note that the rule includes alternative provisions for certain equipment, in lieu of the general secondary containment requirements of §112.7(c).

chosen containment method be sized to contain the largest single oil compartment or container plus "sufficient freeboard" to contain precipitation,[81] as discussed in *Section 4.3.2* below.

EPA inspectors should note that the "largest single compartment" may consist of several containers that are permanently manifolded together. Permanently manifolded tanks are tanks that are designed, installed, or operated in such a manner that the multiple containers function as a single storage unit (67 FR 47122, July 17, 2002). Accordingly, the total capacity of manifolded containers is the design capacity standard for the sized secondary containment provisions (plus freeboard in certain cases).

4.3.1 Role of the EPA Inspector in Evaluating Secondary Containment Methods

The EPA inspector should evaluate whether the secondary containment system is adequate for the facility, and whether it is maintained to contain oil discharges to navigable waters or adjoining shorelines. This evaluation may include reviewing inspection reports and maintenance records. Some items that the inspector should look for include:

For a dike, berm, or other engineered secondary containment system:

- Capacity of the system to contain oil as determined in accordance with good engineering practice and the requirements of the rule;
- Cracks in containment system materials (e.g., concrete, liners, coatings, earthen materials);
- Discoloration;
- Presence of spilled or leaked material (standing liquid);
- Corrosion of the system;
- Erosion of the system;
- Operational status of drain valves or other drainage controls;
- Dike or berm permeability;
- Presence of debris;
- Level of precipitation in diked area and available capacity versus design capacity;
- Location/status of pipes, inlets, and drainage around and beneath containers;
- Excessive vegetation that may inhibit visual inspection and assessment of berm integrity;
- Large-rooted plants (e.g., shrubs, cacti, trees) that could affect the berm integrity;
- Holes or penetrations to the containment system created by burrowing animals; and
- Drainage records for rainwater discharges from containment areas.

[81] Does not apply to the loading and unloading rack secondary containment requirements.

For retention and drainage ponds:

- Capacity of the system to contain oil as determined in accordance with good engineering practice and the rule requirements;
- Erosion of the system;
- Discoloration;
- Design capacity versus available capacity;
- Presence of spilled or leaked liquid;
- Presence of debris;
- Cracks in containment system materials (e.g., concrete, liners, coatings, earthen materials);
- Stressed vegetation;
- Evidence of water seeps from the system; and
- Operational status of drain valves or other drainage controls.

While the rule does not require that secondary containment calculations be kept in the Plan, EPA strongly recommends that the facility owner or operator maintain the calculations such that if questions arise during an inspection, the calculations which serve as the basis for the capacity of the secondary containment system will be readily available for review by the EPA inspector. Industry guidance also recommends that facility owners or operators include any secondary containment capacity calculations and/ or design standards with the Plan. API Bulletin D16, ‘‘Suggested Procedure for Development of a Spill Prevention Control and Countermeasure Plan,’’ contains example calculations to which inspectors may refer (see Exhibit E of ‘‘Suggested Procedure for Development of Spill Prevention Control and Countermeasure Plans,’’ API Bulletin D16. Fifth Edition, April 2011).

Examples and blank worksheets are available in *Appendix H* of this guidance. These documents were developed to help qualified facility owner/operators to calculate secondary containment volume.[82] These worksheets address four specific scenarios and may not be valid for every facility:

- Single Vertical Cylindrical Tank Inside a Rectangular or Square Dike or Berm
- Multiple Horizontal Cylindrical Tanks Inside a Rectangular or Square Dike or Berm
- Rectangular or Square Remote Impoundment Structure
- Constructing New Secondary Containment

82 Disclaimer: Please note that these are simplified calculations for qualified facilities that assume: 1) the secondary containment is designed with a flat floor; 2) the wall height is equal for all four walls; and 3) the corners of the secondary containment system are 90 degrees. Additionally, the calculations do not include displacement for support structures or foundations. For Professional Engineer (PE) certified Plans, the PE may need to account for site-specific conditions associated with the secondary containment structure which may require modifications to these sample calculations to ensure good engineering practice.

4.3.2 Sufficient Freeboard

The SPCC rule does not specifically define the term "sufficient freeboard," nor does it describe how to calculate this volume. The 1991 proposed amendment to the SPCC rule recommended the use of industry standards and data on 25-year storm events to determine the appropriate freeboard capacity. Numerous commenters on the 1991 proposal questioned the 25-year storm event recommendation and suggested alternatives, such as using 110 percent of storage tank capacity or using other characteristic storm events. EPA addressed these comments in the preamble to the 2002 amendments to the rule:

> *We believe that the proper standard of "sufficient freeboard" to contain precipitation is that amount necessary to contain precipitation from a 25-year, 24-hour storm event. That standard allows flexibility for varying climatic conditions. It is also the standard required for certain tank systems storing or treating hazardous waste. (67 FR 47117, July 17, 2002)*

However, the SPCC rule did not set this standard as a requirement for freeboard capacity. Therefore, the use of precipitation data from a 25-year, 24-hour storm event is not enforceable as a standard for containment freeboard. In the 2002 preamble, EPA further stated:

> *While we believe that the 25-year, 24-hour storm event standard is appropriate for most facilities and protective of the environment, we are not making it a rule standard because of the difficulty and expense for some facilities of securing recent information concerning such storm events at this time. (67 FR 47117, July 17, 2002)*

Ultimately, EPA determined that, for freeboard, "the proper method of secondary containment is a matter of engineering practice so [EPA does] not prescribe here any particular method" (67 FR 47101, July 17, 2002). However, where data are available, the facility owner/operator (and/or certifying PE) may want to consider the appropriateness of the 25-year, 24-hour storm event precipitation design criteria for containment freeboard.

A "110 percent of storage tank capacity" rule of thumb may be an acceptable design criterion in many situations, and aboveground storage tank regulations in many states require secondary containment to be sized to contain at least 110 percent of the volume of the largest tank. However, in some situations, 110 percent of storage tank capacity may not provide enough volume to contain precipitation from storm events. Some states require that facilities consider storm events when designing secondary containment structures, and in certain cases these requirements translate to more stringent sizing criteria than the 110 percent rule of thumb.

Other important factors may be considered in determining necessary secondary containment capacity. According to practices recommended by industry groups such as the American Petroleum Institute (API), these factors include:

- Local precipitation conditions (rainfall and/or snowfall);
- Height of the existing dike wall;

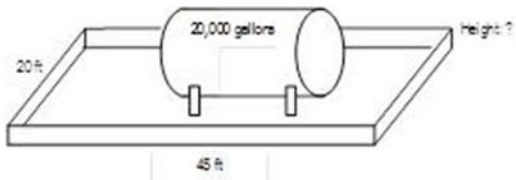
- Size of tank/container;
- Safety considerations; and
- Frequency of dike drainage and inspection.

The following examples (*Figure 4-5* and *Figure 4-6*) present secondary containment size calculations for hypothetical oil storage areas. The certifying PE (or owner/operator, in the case of qualified facilities) determines what volume constitutes sufficient freeboard for precipitation for secondary containment and should document in the Plan how the determination was made.

Figure 4-5: Sample calculation of containment size, using two design criteria.

The following example compares two different design criteria: one based on the volume of the tank and one based on precipitation.

Scenario:
A 20,000-gallon horizontal tank is placed within an engineered secondary containment structure, such as a concrete dike. The tank is 35 feet long by 10 feet in diameter. The secondary containment area provides a 5-foot buffer on all sides (i.e., dike dimensions are 45 feet x 20 feet.



Given the dike footprint, we want to determine the wall height necessary to provide sufficient freeboard for precipitation, based on (1) the tank storage capacity; (2) actual precipitation data. Several storm events in the recent past caused precipitation in amounts between 3.6 and 4.0 inches at this location, although greater amounts have also been reported in the past. *Note: The factor for converting cubic feet to gallons is 7.48 gallons/ft^3.*

1. Calculation of secondary containment capacity, based on a design criterion of 110% of tank storage capacity:

Containment surface area = 45 ft x 20 ft = 900 ft^2
Tank volume, based on 100% of tank capacity = 20,000 gallons
Tank volume, in cubic feet = 20,000 gallons / 7.48 gallons/ft^3 = 2,674 ft^3
Wall height that would contain the tank's volume = 2,674 ft^3 / 900 ft^2 = 2.97 ft

Containment capacity with freeboard, based on 110% of tank capacity = 22,000 gallons
Containment capacity, in cubic feet = 22,000 gallons / 7.48 gallons/ft^3 = 2,941 ft^3
Wall height equivalent to 110% of storage capacity = 2,941 ft^3 / 900 ft^2 = 3.27 feet
Height of freeboard = 3.27 ft - 2.97 ft = 0.3 ft = 3.6 inches

Therefore, a dike design based on a criterion of 110% of tank capacity provides a dike wall height of 3.27 feet.

2. Calculation of secondary containment capacity, based on rainfall criterion:

After a review of historical precipitation data for the vicinity of the facility, the PE determined that a 4.5 inch rain event is the most reasonable design criterion for this diked area.

Containment surface area = 45 ft x 20 ft = 900 ft^2
Tank volume, based on 100% of tank capacity = 20,000 gallons
Tank volume, in cubic feet = 20,000 gallons / 7.48 gallons/ft^3 = 2,674 ft^3
Wall height that would contain the tank's volume = 2,674 ft^3 / 900 ft^2 = 2.97 ft

The height of the dike would need to be 3.35 feet (2.97 ft + 4.5 in).

Therefore, a dike design based on a 4.5 inch rain event provides a dike wall height of 3.35 feet, or almost 1 inch higher than calculated using the 110% criterion.

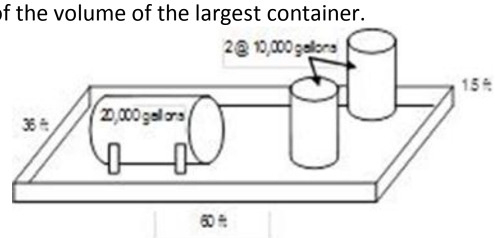
Conclusion:

As noted from the comparison of the two design criteria illustrated above, the dike heights are similar although not exactly the same. The adequacy of the secondary containment freeboard is ultimately an engineering determination made by the PE and certified in the Plan.

Figure 4-6: Sample secondary containment calculations, for multiple tanks in a containment area.

The EPA inspector has questioned the adequacy of the secondary containment based on the following scenario and wants to verify how much precipitation the dike area can hold and compare it to available precipitation data to determine if 112% is an adequate design criterion for this facility.

Scenario:
A 60 ft x 36 ft concrete dike surrounds one 20,000-gallon horizontal tank (10 ft diameter and 35 ft length) and two 10,000-gallon vertical tanks (each 10 ft diameter and 15 ft height). The dike walls are 18 inches (1.5 feet) tall. The SPCC Plan states that secondary containment is designed to hold 112% of the volume of the largest container.



Notes:

- *The factor for converting gallons to cubic feet is 7.48 gallons/ft^3.*
- *The volume displaced by a cylindrical vertical tank is the tank volume within the containment structure and is equal to the tank footprint multiplied by height of the concrete dike. The tank footprint is equal to $\pi D^2/4$, where D is the tank diameter.*

1. Calculate total dike capacity:

Total capacity of the concrete dike = length x width x height = 60 ft x 36 ft x 1.5 ft = 3,240 ft^3 = 24,235 gallons

2. Calculate net dike capacity, considering displacement from other tanks within the dike:

The total capacity of the concrete dike is reduced by the volume displaced by other tanks inside the containment structure. The displacement is:
= number of tanks x footprint x height of dike wall = 2 π(10 ft)^2/4 x 1.5 ft = 235.6 ft^3 = 1,762 gallons

The net dike capacity, i.e., the volume that would be available in the event of a failure of the largest tank within the dike, is:
= Total volume - tank displacement = 24,235 - 1,762 = 22,473 gallons = 3,004 ft^3

3. Calculate the amount of available freeboard provided by the dike, given the net dike capacity:

The available freeboard volume is:
= Net dike capacity - volume of largest tank within the dike
= 22,473 - 20,000 = 2,473 gallons = 331 ft^3

This is equivalent, expressed in terms of the capacity of the largest tank, to:
= Net dike capacity/volume of largest tank within the dike
= 22,473 / 20,000 = 112%

This available freeboard volume provides a freeboard height:
= Available freeboard volume / dike surface area
= 331 ft^3 / (60 ft x 36 ft) = 0.15 ft ≈1.8 in

Therefore, this dike provides sufficient freeboard for 1.8 inches of precipitation.

Conclusion:

The EPA inspector should review the Plan and/or inquire about the precipitation event considered in determining that sufficient freeboard for precipitation is provided. The adequacy of the secondary containment freeboard is ultimately an engineering determination made by the PE and is certified in the Plan. This example serves only as a guide on doing the calculations for certain circumstances in which the inspector has concerns with the freeboard volume associated with the secondary containment design.

4.3.3 Role of the EPA Inspector in Evaluating Sufficient Freeboard

When reviewing an SPCC Plan, the EPA inspector should evaluate whether the size of secondary containment is adequate to meet the freeboard requirement. When examining the secondary containment measures for bulk storage containers, mobile or portable oil containers, and oil production facility bulk storage containers, the inspector should ensure that the Plan documents that the secondary containment can hold the entire capacity of the largest single container, plus sufficient freeboard to contain precipitation. Whatever method is used to calculate the amount of freeboard that is "sufficient" for the facility and container configuration should be documented in the Plan.

To determine whether secondary containment is sufficient, the EPA inspector may:

- Verify that the Plan specifies the capacity of secondary containment along with supporting documentation, such as calculations for comparing freeboard capacity to the volume of precipitation in an expected storm event.
  - If calculations are not included with the Plan, and the inspector suspects the secondary containment is inadequate, the inspector may request supporting documentation from the owner/operator.[83]
  - If diked area calculations appear inadequate, review local precipitation data such as data from airports or the National Weather Service,[84] as needed.
- Review operating procedures, storage tank design, and/or system controls for preventing inadvertent overfilling of oil storage tanks that could affect the available capacity of the secondary containment structure.
- Confirm that the secondary containment capacity can reasonably handle the contents of the largest tank on an *ongoing basis* (i.e., including during rain events).
- During the inspection, verify that the containment structures and equipment are maintained and that the SPCC Plan is properly implemented.

4.4 Issues Related to Secondary Containment Requirements

The following sections describe issues related to all secondary containment requirements, general and specific.

[83] Industry guidance recommends that facility owners/operators include any secondary containment capacity calculations and/or design standards with the Plan. API Bulletin D16, "Suggested Procedure for Development of Spill Prevention Control and Countermeasure Plans," contains example calculations to which inspectors may refer.

[84] National Weather Service, Hydrometeorological Design Studies Center, Current Precipitation Frequency Publications, available at http://www.nws.noaa.gov/oh/hdsc/currentpf.htm#N2.

4.4.1 Passive versus Active Measures of Secondary Containment

In some situations, permanent containment structures, such as dikes, may not be feasible (e.g., may cause pooling of liquids around electrical equipment which may present a hazard). Section 112.7(c) specifically allows for the use of active containment measures (countermeasures or spill response capability), which prevent a discharge to navigable waters or adjoining shorelines. Active containment measures are those that require deployment or other specific action by the owner or operator. These measures may be deployed either before the start of an activity involving the handling of oil, or in reaction to a discharge, so long as the active measure is designed to prevent an oil spill from reaching navigable water or adjoining shorelines. Passive measures are permanent installations and do not require deployment or action by the owner/operator.

Active measures (countermeasures) include, but are not limited to:

- **Placing a properly designed storm drain cover over a drain to contain a potential spill in an area where a transfer occurs, *prior* to the transfer activity.** Storm drains are normally kept uncovered; deployment of the drain cover prior to the transfer activity may be an acceptable active measure to prevent a discharge from reaching navigable waters or adjoining shorelines through the drainage system.

- **Placing a storm drain cover over a drain in reaction to a discharge, before the oil reaches the drain.** If deployment of a drain cover can *reliably* be achieved in time to prevent a discharge of oil from reaching navigable waters or adjoining shorelines, this may be an acceptable active measure. This method may be risky, however, and is subject to a good engineering judgment on what is realistically and reliably achievable, particularly under adverse circumstances.

- **Using spill kits in the event of an oil discharge.** The use of spill kits, strategically located and ready for deployment in the event of an oil discharge, may be an acceptable active measure, in certain circumstances, to prevent a spill from reaching navigable waters or adjoining shorelines. This method may be risky and is subject to good engineering judgment, considering the volume most likely expected to be discharged and proximity to navigable waters or adjoining shorelines.

- **Use of spill response capability (spill response teams) in the event of an oil discharge.** This method differs from activating an oil spill contingency plan (see §112.7(d)) because the response actions are specifically designed to contain an oil discharge *prior to* reaching navigable waters or adjoining shorelines. Such actions may include the emergency construction/deployment of dikes, curbing, diversionary structures, ponds, and other temporary containment methods (such as sorbent materials), so long as they can be implemented in time to prevent the spilled oil from reaching navigable waters or adjoining shorelines. This method may be risky and reliance on oil spill response capability for secondary containment is subject to good engineering judgment.

- **Closing a gate valve that controls drainage from an undiked area prior to a discharge.** If the gate valve is normally kept open, closing it before an activity that may result in an oil discharge may be an acceptable active measure to prevent a spill from reaching navigable waters or adjoining shorelines. Note that the rule requires that bypass valves for *diked areas* be sealed closed (§§112.8(c)(3)(i) and 112.12(c)(3)(i)).

Considerations in Selecting an Active Containment Measure

The use of active containment as a strategy to address discharges should be carefully evaluated. The efficacy of active containment measures to prevent a discharge depends on their technical effectiveness (e.g., mode of operation, absorption rate), placement and quantity, and timely deployment prior to or following a discharge. For discharges that occur only during attended or observed activities, such as those occurring during transfers, an active measure (e.g., sock, mat, other portable barrier, or land-based response capability) may be appropriate, provided that the measure is capable of containing the most likely volume of an oil discharge from a typical failure mode, and is timely and properly constructed/deployed. Ideally, in order to further reduce the potential for an oil discharge to reach navigable waters or adjoining shorelines, the active measure should be deployed prior to initiating the activity with potential for a discharge.

Tip – Active vs. passive containment measures

Active: The containment measure involves a certain action by facility personnel before or after the discharge occurs. These actions are also referred to as spill countermeasures.

Passive: The containment measure remains in place regardless of the facility operations and therefore does not require an action by facility personnel.

For certain active measures, however, such as the use of “kitty litter” or other sorbent material, it may be impractical to pre-deploy the measure. In such cases, the sorbent material should be readily available so that it can be used *immediately* after a spill occurs but before it can spread. Portable tanks can be equipped with a spill kit to be used in the event of a discharge during transfers. The spill kit should be sized, however, to effectively contain the volume of oil that could be discharged. Most commercially available spill kits are intended for relatively small volumes (up to approximately 150 gallons of oil).

Active containment measures can be used to satisfy the general secondary containment requirement when they are capable of containing the most likely discharge volume identified in the SPCC Plan. Elements to consider may include the capacity of the containment measure, effectiveness, timely implementation, and the availability of facility personnel and equipment to implement the active measure effectively. For example, a discharge of 600 gallons would require deploying more than 900 “high-capacity” sorbent pads (20 inches by 20 inches) since each pad absorbs less than 0.7 gallons of oil. The same spill volume would require nine sorbent blankets, each measuring 38 inches by 144 feet and weighing approximately 40 pounds. The rapid deployment of such response equipment and material would be difficult to achieve under most circumstances, particularly if only a few individuals are present when the discharge occurs, or during adverse conditions (e.g., rainfall, fire).

Using an active measure to meet the specific secondary containment requirement for a bulk storage container may be difficult because the containment system must be sized for the entire capacity of the bulk oil storage container. Therefore, the use of active measures for larger oil containers may not be appropriate or in accordance with good engineering practice or sound industry standards.

In certain circumstances, sorbents, such as socks, booms, pads, or loose materials may be used to complement passive measures. For example, where berms around transfer areas are open on one side for access, and where the ground surface slopes away from the opening with no nearby drains, sorbent material may be effective in preventing small quantities of oil from escaping the bermed area in the event of a discharge.

The secondary containment approach implemented at a facility need not be "one-size-fits-all." Different approaches may be taken for the same activity at a given facility, depending on the material and location. For example, the SPCC Plan may specify that drain covers and sorbent material be pre-deployed prior to transfers of low viscosity oils in certain areas of a facility located in close proximity to drainage structures or navigable waters. For other areas and/or other products (e.g., highly viscous oils), the Plan may specify that sufficient spill response capability (spill response teams) are available for use in the event of a discharge, so long as personnel and equipment are available at the facility and these measures can be effectively implemented in a timely manner to prevent oil from reaching navigable waters or adjoining shorelines.

Evaluating the ability of active secondary containment measures deployed after a discharge to prevent oil from reaching navigable waters or adjoining shorelines involves considering the time it would take to discover the discharge, the time for the discharge to reach navigable waters or adjoining shorelines, and the time necessary to deploy the active secondary containment measure. For some active containment measures such as the use of sorbent materials, the amount of oil the secondary containment measure can effectively contain, including the potential impact of precipitation on sorption capacity, is also a critical factor. Good engineering practice would indicate that active secondary containment measures may be used to satisfy the general secondary containment requirements of §112.7(c) only in certain circumstances.

The use of an active measure containment strategy can be risky if not properly designed, evaluated and implemented. If an active measure fails to prevent an oil discharge from reaching navigable waters or adjoining shorelines, the owner or operator is liable for the discharge and cleanup, and is responsible for properly reporting it to the National Response Center. Furthermore, even when used to comply with §112.7(c), active measures should be limited to those situations where a PE has determined that the typical failure mode involves a small volume of oil. Generally, active containment measures are not appropriate for satisfying the specific containment requirements for a major container failure. Inspectors should closely review the SPCC Plan and evaluate the rationale, equipment and implementation of such a strategy, as in most cases, this would not be considered good engineering practice.

Deployment of Active Measures

Active measures are not appropriate for all situations with the potential for an oil discharge. As noted above, active measures often have limited absorption or containment capacity. Additionally, storage tanks, piping, and other containers pose a risk of discharge during off-hour periods when facility personnel are generally not on site or are too few in number to detect a discharge in a timely manner and deploy the containment measure(s) in order to prevent a discharge of oil to navigable waters or adjoining shorelines. Predeployment of active measures in a “fixed” configuration may be problematic since sorbent materials or portable barriers are typically not engineered for long-term deployment, and their performance may be affected by precipitation, ultraviolet light degradation, or cold temperature. Moreover, in some cases, the deployment of an active measure can interfere with other systems; for example, by impeding the proper operation of drainage structures (e.g., drain cover). For these reasons, engineered structures (such as dikes and berms, curbing, spill diversion ponds, or similar systems) remain the most effective means of spill control and containment for oil storage containers.

The SPCC Plan must describe the procedures used to deploy the active measures, explain how the use of active measures is appropriate to the situation, and explain the methods for discharge discovery that will be used to determine when deployment of the active measures is appropriate (§112.7(a)(3)(iii) and (iv)). The Plan should, for instance, discuss whether active measures will be put in place before a potential discharge event (e.g., a boom placed around a vehicle before fueling activities begin) or whether the active measures will be deployed quickly after a spill occurs as a countermeasure (e.g., sorbents on hand and readily available). The Plan should describe the amount of materials available and the location where they are stored, and the manpower required to adequately deploy the material in a timely manner. Both the amount and location of materials should be determined based on good engineering practice, taking into consideration the potential volume of a discharge and the time necessary to deploy the measure to prevent a discharge to navigable waters or adjoining shorelines. Some of this information may already be described in other existing documents at the facility, in which case, these documents should be referenced in the SPCC Plan and be available at the time of an inspection.

Using Active Measures with Oil-Filled Operational Equipment

Oil-filled operational equipment (e.g., electrical transformers, capacitors, switches) poses unique challenges; permanent (passive) containment structures, such as dikes, may not always be feasible. Oil-filled operational equipment as defined in §112.2 is only subject to the general secondary containment provision, and the owner/operator may use the flexibility of active containment measures as described above. However, active containment measures may be risky because they require the ability to detect a discharge, and these measures must be implemented *effectively and in a timely manner to prevent oil from reaching navigable waters and adjoining shorelines,* as required by §112.7(a)(3)(iii) and (c). As provided in §112.7(k), owners and operators of facilities with eligible oil-filled operational equipment have the option to prepare an oil spill contingency plan and a written commitment of manpower, equipment, and materials to expeditiously control and remove any oil discharged that may be harmful, in lieu of general secondary containment, without having to make an individual impracticability determination as required in §112.7(d).

Role of the EPA Inspector in Evaluating the Use of Active Measures of Secondary Containment

Inspectors should carefully evaluate the use of active measures and determine if the equipment and personnel are available for deployment of this secondary containment method. The EPA inspector should inspect the facility to determine whether the active measures are appropriate for the facility – i.e., the inspector should note whether material storage locations are reasonable given the time necessary to deploy measures, and whether the amount of available materials is sufficient to handle the anticipated discharge volume. In addition, the inspector should document whether the owner/operator of the facility is keeping the necessary records.

Upon EPA inspection, a facility owner/operator should be able to demonstrate that facility personnel are able to carry out the deployment procedure as written. The EPA inspector should verify that the facility's SPCC Plan contains the following items, and that items in the Plan are observed in the field and/or verified through discussions with facility personnel. Questions for the EPA inspector to consider in evaluating the adequacy of active measures are also provided below.

- Explanation showing why the use of active measures is appropriate.
  - What is the expected/most likely potential discharge volume, and is the active measure appropriately sized to contain the spill?
  - What is the discharge detection method and is it appropriate?
  - How much time is required to deploy the selected active measure?
  - Given these factors, is the active measure a reasonable approach?
- Detailed description of deployment procedures.
  - Will active measures be put in place before or after a spill occurs?
  - If measures are to be activated after a spill occurs, does the Plan describe the method of discharge detection?
  - Are the equipment and personnel available to deploy/implement the proposed active containment measure in an effective and timely manner to prevent oil from reaching navigable waters or adjoining shorelines?
  - Does the Plan identify drainage pathways and the appropriate deployment location(s) for the active measures?
- Description of all necessary materials and the location where they are stored (i.e., location of drain covers, spill kits, or other spill response equipment).
  - In cases where spill kits or sorbent materials are to be used, does the Plan describe the amount of materials available?
  - Are inventory and/or maintenance logs provided to ensure that spill response equipment/materials are currently in sufficient supply and in good working condition (i.e., not damaged, expired, or used up)?
  - Are the equipment/materials located such that personnel can realistically get to the equipment and deploy it quickly enough to prevent a discharge to navigable waters or adjoining shorelines? That is, are the material and equipment accessible (not locked, or a key is available), and are they located close enough to the potential source of discharge?

- Description of facility staff responsible for deploying active measures.
  - Are training records up to date?
  - Have the personnel involved in activities for which the active measures might be deployed been trained (e.g., are they familiar with the location and use of spill response materials, drainage conditions)?
  - Is there sufficiently trained facility staff present at all times to effectively deploy the measures in the event of a discharge?

Furthermore, the EPA inspector may review records and documentation such as:

- Personnel training records
- Drill records
- Deployment logs

The EPA inspector does not need to require the facility personnel to actually deploy the active measure (e.g., through a demonstration or drill) to show that the measure is adequate and can be deployed in a timely manner. However, the inspector may ask a series of questions in order to determine if the procedures for deploying an active measure are well understood.

4.4.2 "Sufficiently Impervious"

Section 112.7(c) states that the entire secondary containment system, "including walls and floor, must be capable of containing oil and must be constructed so that any discharge from a primary containment system ... will not escape containment before cleanup occurs." With respect to bulk storage containers at onshore facilities (except oil production facilities), §§112.8(c)(2) and 112.12(c)(2) state that diked areas must be "sufficiently impervious to contain oil." The purpose of the secondary containment requirement is to prevent discharges as described in §112.1(b); therefore, effective secondary containment methods must be able to contain oil until the oil is cleaned up.

The rule does not specify permeability, hydraulic conductivity, or retention time performance criteria for these provisions (i.e., "sufficiently impervious" does not necessarily mean *indefinitely* impervious). Instead, the owner/operator and/or the certifying PE have the flexibility to determine how best to design the containment system to prevent a discharge to navigable waters or adjoining shorelines. This determination is based on a good engineering practice evaluation of the facility configuration, product properties, and other site-specific conditions. For example, a sufficiently impervious retaining wall, dike, or berm, including the walls and floors, must be constructed so that any discharge from a primary containment system will not escape the secondary containment system before cleanup occurs and before the oil reaches navigable waters or adjoining shorelines (§§112.7(c), 112.8(c)(2) and 112.12(c)(2)). In other words, secondary containment structures such as dikes, berms and retaining walls can be considered sufficiently impervious as long as they allow for cleanup to occur in time to prevent a discharge to navigable waters or adjoining shorelines. Ultimately, the determination of imperviousness should be verified by a PE and documented in the SPCC Plan.

The preamble to the 2002 SPCC rule amendments states that “a complete description of how secondary containment is designed, implemented, and maintained to meet the standard of sufficiently impervious is necessary” (67 FR 47102, July 17, 2002). Therefore, pursuant to §112.7(a)(3)(iii) and (c), the Plan should address how the secondary containment is designed to effectively contain oil until it is cleaned up. Control and/or removal of vegetation may be necessary to maintain the imperviousness of the secondary containment and to allow for the visual detection of discharges. The owner or operator should monitor the conditions of the secondary containment structure to ensure that it remains impervious to oil. Repairs of excavations or other penetrations through secondary containment need to be conducted in accordance with good engineering practice.

The earthen floor of a secondary containment system may be considered “capable of containing oil” until cleanup occurs, or “sufficiently impervious” if there is no subsurface conduit to navigable waters allowing the oil to reach navigable waters before it is cleaned up. Should oil reach navigable waters or adjoining shorelines, it is a reportable discharge under 40 CFR part 110. The suitability of earthen material for secondary containment systems may depend on the properties of both the product stored and the soil. For example, compacted local soil may be suitable to contain a viscous product, such as liquid asphalt cement, but may not be suitable to contain gasoline. Permeability through the wall (or wall-to-floor interface) of the structure may result in a discharge to navigable waters or adjoining shorelines and must be carefully evaluated.

In certain geographic locations, the native soil (e.g., clay) may be determined as sufficiently impervious. However, in many more instances good engineering practice would generally not allow the use of a facility’s native soil alone as secondary containment when the soil is not homogenous. In fact, certain state requirements may restrict the use of soil as a means of secondary containment, and many state regulations explicitly forbid the discharge of oil on soil. Pennsylvania’s Storage Tank and Spill Prevention Act, for example, requires that facilities take immediate steps to prevent injury from any discharge of a substance that has the potential to flow, be washed or fall into waters, and endanger downstream users. Pennsylvania’s law requires that residual substances be removed within 15 days from the ground or affected waters. Discharges to soil and groundwater may violate other federal regulations (and violate Section 311(b)(3) of the Clean Water Act if an oil discharge to groundwater impacts a navigable water or adjoining shoreline). The EPA inspector should strongly urge facility owners and operators to investigate and comply with all state and local requirements. An inspector who notices potential violations of other statutes or regulations should contact the appropriate authorities for follow-up with the facility.

In summary, the owner/operator must base determinations of sufficiently impervious secondary containment design on good engineering practice and site-specific considerations and this must be documented in the Plan.

Role of the EPA Inspector in Evaluating "Sufficiently Impervious"

Like other technical aspects of the SPCC Plan, the determination that a facility's soil is sufficiently impervious must be made on a case-by-case basis by the certifying PE (or owner/operator, in the case of qualified facilities). The EPA inspector should determine whether the facility's secondary containment is sufficiently impervious, based on a review of the SPCC Plan, inspection reports, maintenance records, and an observation of site conditions. The EPA inspector may ask to see any calculations or engineering justifications (as applicable) used in determining levels of imperviousness; this information should be maintained with the Plan to facilitate the inspector's review. To evaluate whether secondary containment is sufficiently impervious, the EPA inspector may consider the following:

- Whether the SPCC Plan describes how secondary containment is designed, implemented, and maintained to be sufficiently impervious. The certification of the Plan's adequacy is the responsibility of the PE (or the owner or operator of a qualified facility) and a determination of sufficient imperviousness may be based strictly on geotechnical knowledge of soil classification and best engineering judgment. The inspector may review records of hydraulic conductivity tests, if such tests were conducted to ascertain the imperviousness of the secondary containment structure. The inspector may also review drainage records that are required to be kept by the facility owner/operator in accordance with §112.8(c)(3), §112.9(b)(1), or §112.12(c)(3). If, for example, facility personnel never drain the outdoor containment, then the inspector may pose follow-up questions to clarify how the facility removes precipitation after heavy rainfall, since lack of rainfall accumulation could indicate that the water is escaping the containment structure through the walls or floor.

- Procedures for how the owner/operator minimizes and evaluates the potential for corrosion of the bottom/bases of bulk storage containers that cannot be visually inspected. Corrosion of container bottom is addressed in part by integrity testing of bulk storage containers under §112.8(c)(6) or §112.12(c)(6). If a facility owner/operator cannot certify that the material under the container is sufficiently impervious (whether earthen or manmade), the inspector should consider:

  - Whether the inspection and integrity testing program in the Plan includes an internal inspection, in accordance with industry standards. The scope of this internal inspection should include the bottom plate. Since the bottom plate cannot be examined from the underside, the only inspection available is to assess the fitness of the bottom plate via an internal inspection. (See *Chapter 7: Inspection, Evaluation, and Testing* for more information on integrity testing.)
  - Whether the owner/operator of the facility has a system in place to detect oil discharges from a container bottom in order to commence cleanup before a discharge escapes the containment systems.

- Evidence of stained soil or stressed vegetation outside the containment area as well as at nearby outfalls or other areas affected by runoff from the secondary containment structure. For example, at onshore oil production facilities, there may be oil stains or white areas and white salt crystal deposits on the outside of berm walls and on the ground surface farther away from the berm. These deposits may indicate that oil and produced water has flowed through the secondary containment and that the structure may not be sufficiently impervious.

- How the secondary containment is constructed (materials and method of construction). The inspector should consider the type of soil (if soil is used). Floor and walls constructed of sandy material, for example, may not be appropriate to hold refined products such as gasoline. If earthen material is used, then it should have a high clay content and be properly compacted, not simply formed into a mound. Untreated cinder blocks used for containment should be closely evaluated by an inspector due to their porous nature.

- If a facility considers the earthen floor of a secondary containment system to be sufficiently impervious, the inspector should consider any underground pathway that could lead to navigable waters.

4.4.3 Facility Drainage (Onshore Facilities)

The facility drainage requirements of §§112.8(b) and 112.12(b) are design standards for secondary containment (not additional secondary containment requirements) and are therefore eligible for deviations that provide equivalent environmental protection in compliance with §112.7(a)(2) and as determined appropriate by a PE. *Chapter 3: Environmental Equivalence* discusses ways to evaluate whether facility drainage systems that deviate from the specified design standards are “environmentally equivalent” and comply with §112.7(a)(2) (see *Section 3.3.1*).

The following sections describe how the facility drainage provisions at §§112.8(b) and 112.12(b) relate to each other and to the secondary containment requirements.

Facility Drainage Control from Diked Areas

When a dike (the term as used here also includes other barrier methods such as berms, retaining walls, curbing, weirs, or booms) is used as the containment method to satisfy either general or specific secondary containment requirements, then facility drainage requirements also apply. The requirements for diked areas at onshore facilities (except oil production facilities) are found in §112.8(b)(1), 112.8(b)(2) (or §112.12(b)(1), and 112.12(b)(2)); for diked areas at onshore oil production facilities they are found in §112.9(b)(1). Drainage from diked storage areas can be accomplished by several means such as valves, manually activated pumps, or ejectors. If dikes are drained using valves, they must be of manual design to prevent an uncontrolled discharge outside of the dike, such as into a facility drainage system or effluent treatment system, except where facility systems are designed to control such a discharge (§§112.8(b)(1) and 112.12(b)(1)). Although not required by the rule, owners and operators should strongly consider locking valves controlling dike or remote impoundment areas, especially when they can be accessed by non-facility personnel.

For diked areas serving as secondary containment for bulk storage containers, §§112.8(c)(3) and 112.12(c)(3) require that storm water accumulations be inspected for the presence of oil and that records of the drainage events be maintained. Prior to draining these areas, accumulated oil on the rainwater must be removed and returned to storage or disposed of in accordance with legally approved methods.

Facility Drainage Control from Undiked Areas

When secondary containment requirements are addressed through facility drainage controls, such as culverting, gutters, ponds, or other drainage systems, the requirements in §112.8(b)(3) and (4), or §112.12(b)(3) and (4) apply. For example, a facility may

§§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.

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

§§112.8(c)(3) and 112.12(c)(3)

Not allow drainage of uncontaminated rainwater from the diked area into a storm drain or discharge of an effluent into an open watercourse, lake, or pond, bypassing the facility treatment system unless you:

(i) Normally keep the bypass valve sealed closed.

(ii) Inspect the retained rainwater to ensure that its presence will not cause a discharge as described in § 112.1(b).

(iii) Open the bypass valve and reseal it following drainage under responsible supervision; and

(iv) Keep adequate records of such events, for example, any records required under permits issued in accordance with §§ 122.41(j)(2) and 122.41(m)(3) of this chapter.

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

choose to use the existing storm drainage system to meet secondary containment requirements by channeling discharged oil to a remote containment area to prevent a discharge to navigable waters or adjoining shorelines. The facility drainage system must be designed to flow into ponds, lagoons, or catchment basins designed to retain oil or return it to the facility. Catchment basins must not be located in areas subject to periodic flooding (§§112.8(b)(3) and 112.12(b)(3)).

Conversely, the owner or operator of a facility does not have to address the undiked area requirements of §112.8(b)(3) and (4) or §112.12(b)(3) and (4) if the facility does not use drainage systems to meet one of the secondary containment requirements in the SPCC rule. For example, if the SPCC Plan documents the use of an active containment measure (such as a combination of sorbents and a spill mat) that is effective to prevent a discharge to navigable waters or adjoining shorelines, then secondary containment has been provided and it is not necessary to alter drainage systems at the facility. The facility drainage system design requirements in §112.8(b)(3) and (4) or §112.12(b)(3) and (4) apply only when the facility uses these drainage systems to comply with the secondary containment provisions of the rule.

The EPA inspector should determine if the facility's documentation in the Plan identifies whether the final ponds, lagoons, or catchment basins are designed/sized to meet the appropriate general and/or specific secondary containment requirements. The following examples help to illustrate how to determine the appropriate size of the ponds, lagoons, or catchment basins:

- **General Secondary Containment.** A facility owner/operator may use a storm water drainage system that flows to a containment pond to address the general secondary containment requirements of §112.7(c) for a piece of operational equipment (including electrical oil-filled equipment). The secondary containment system must be designed to address the typical failure mode and to contain the volume of oil most likely to be discharged as determined according to good engineering practice and documented in the SPCC Plan (not necessarily a complete/major container failure).

- **Specific Secondary Containment.** If a facility owner/operator uses a storm water drainage system that flows to a catchment basin to comply with the specific secondary containment requirements for a bulk storage container, the secondary containment system must be designed to contain the capacity of the largest bulk storage container located inside the containment system (with appropriate freeboard for precipitation) as dictated by the rule's requirements in §§112.8(c)(2) or 112.12(c)(2). The specific secondary containment requirement is based on a worst case container failure in which the entire capacity of the container is discharged.

- **General and Specific Secondary Containment.** In a case where a drainage system to a final catchment basin is used to meet multiple secondary containment needs for the facility, including compliance with both general and specific secondary containment requirements, the system's design will need to meet the most stringent rule requirement (typically sized for the specific secondary containment requirement).

Oil Production Facility Drainage

Owners and operators of oil production facilities must close and seal drains on secondary containment systems associated with tank batteries and separation and treating areas (both dikes and other equivalent measures required under §112.7(c)(1)) at all times, except when draining uncontaminated rainwater (§112.9(b)(1)). Prior to drainage, the owner/operator must inspect the diked area and take action as provided in §112.8(c)(3)(ii), (iii), and (iv). If oil is present, then the owner/operator must remove accumulated oil on the rainwater and return it to storage or dispose of it in accordance with legally approved methods.

§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.

Owners and operators of oil production facilities must also inspect field drainage systems (such as drainage ditches or road ditches), and oil traps, sumps, or skimmers at regularly scheduled intervals for an accumulation of oil that may have resulted from any small discharge and promptly remove any accumulations of oil from these systems. EPA inspectors should evaluate facility records to verify compliance with the drainage procedures described in §112.8(c)(3). Any storm water discharge records maintained at the facility in accordance with the NPDES requirements in §122.41(j)(2) or 122.41(m)(3) are acceptable to satisfy the recordkeeping requirements of §§112.8(c)(3)(iv) or 112.12(c)(3)(iv). Field observations may also shed light on compliance with the drainage provisions of the rule.

Role of the EPA Inspector in Evaluating Onshore Facility Drainage

The EPA inspector should review the facility's SPCC Plan to ensure that the drainage procedures are documented and records are maintained. The EPA inspector should also examine the facility to determine whether the drainage procedures are implemented as described in the SPCC Plan and whether they are appropriate for the facility. If a facility uses drainage systems to meet one or more secondary containment requirements, the EPA inspector should evaluate whether the final ponds, lagoons, or catchment basins are designed/sized in accordance with the appropriate general and/or specific secondary containment requirements. The EPA inspector should also evaluate the facility records to verify compliance with the drainage procedures described in §112.8(c)(3).

4.4.4 Man-made Structures

If an oil storage container at a regulated facility is located inside a building, the PE certifying the SPCC Plan may take into consideration the ability of the building walls and/or drainage systems to serve as secondary containment. As described throughout this chapter, the SPCC regulation is performance-based and provides flexibility to the facility owner or operator in terms of how to design and implement secondary containment to provide adequate protection.

As described in *Section 4.3*, the regulation provides general design criteria for secondary containment of bulk storage containers by requiring that the containment system be sized to contain the capacity of the largest container, with freeboard for precipitation, as appropriate. The SPCC rule does not specify a volume amount to account for precipitation (e.g., 110 percent of capacity); instead it allows the facility owner or operator, or the PE certifying the Plan, to consider location-specific conditions, including the possibility that a bulk storage container is located indoors where precipitation is not a factor. When secondary containment is provided inside a building, freeboard calculations for precipitation are typically not applicable.

The SPCC rule also requires that the containment structure provided around bulk storage containers be sufficiently impervious to oil. Any indoor drainage system that leads directly to a storm sewer (discharging into a stream), a sanitary sewer (discharging into a Publicly Owned Treatment Works (POTW)), or otherwise directly into a waterbody may serve as a conduit for a discharge to navigable waters or adjoining shorelines. Therefore, the containment structure must not be equipped with open floor drains or an automated sump pump unless the drainage system has been purposefully equipped to treat any discharge (e.g., by use of an adequately sized, designed and maintained oil-water separator). Additionally, any doorways, windows, or other openings that would permit a discharge to flow out of the building must also be taken into consideration.

To the extent that an existing building structure meets the SPCC performance criteria for secondary containment, the owner/operator can consider such a building as an appropriate containment structure. In cases where the building walls are used for secondary containment, the calculation of the capacity of the secondary containment structure would need to consider the displacement by other containers, equipment, and items sharing the containment structure.

Where applicable, containers may be subject to the National Fire Protection Association's Flammable and Combustible Liquids Code (NFPA 30) in addition to the SPCC requirements. For containers located in buildings, NFPA 30 prescribes specific requirements to control fire hazards involving flammable or combustible liquids, particularly in the areas of design, construction, ventilation, and ultimately facility drainage. Specifically, NFPA 30 requires that curbs, scuppers, drains or similar features prevent the flow of liquids to adjacent buildings during emergencies, and includes provisions to handle water from fire protection systems. In the area of facility drainage, NFPA 30 requires that a facility be designed and operated to prevent the discharge of liquids to public waterways, public sewers, or adjoining property. Thus, if a facility is designed, constructed and maintained to applicable fire codes, such as NFPA 30, the building may serve as secondary containment under the SPCC rule.

4.4.5 Double-walled or Vaulted Tanks or Containers

A double-walled tank is essentially a tank within another tank, equipped with an interstitial (i.e., annular) space and constructed in accordance with industry standards. The inner tank serves as the primary oil storage container while the outer tank serves as secondary containment. The outer tank of a double-walled tank may provide adequate secondary containment for discharges resulting from leaks or ruptures of the entire capacity of the inner storage tank. The term ''vaulted tank'' has been used to describe both double-walled tanks (especially those with a concrete outer shell) and tanks inside underground vaults, rooms, or crawl spaces. Double-walled or vaulted tanks are subject to secondary containment requirements.

In the case of vaulted tanks, the Plan preparer must determine whether the vault meets the requirements for secondary containment in §112.7(c). This determination should include an evaluation of drainage systems and of sumps or pumps which could cause a discharge of oil outside the vault. Industry standards for vaulted tanks often require the vaults to be liquid tight, which if sized correctly, may meet the secondary containment requirement. There might also be other examples of such alternative systems. (67 FR 47102, July 17, 2002).

EPA issued two memorandums to address how the secondary containment requirements of §112.7(c) apply to double-walled tanks. In the first memo, issued April 29, 1992,[85] EPA described that shop-fabricated aboveground double-walled tanks that meet certain industry construction standards, with capacities less than 12,000 gallons, installed and operated with protective measures such as overfill alarms, flow shutoff or restrictor devices, and constant monitoring of product transfers would generally comply with the secondary containment requirements of §112.7(c). As an alternative to the overfill prevention measures to contain discharges from a double-walled tank, active or passive measures of secondary containment may be used to contain overfills from tank vents that may occur during transfer operations.

The 1992 memo was later amended on August 9, 2002[86] to remove the 12,000 gallon tank capacity limitation and to discuss additional SPCC requirements that apply to double-walled tanks.

Shop-fabricated double-wall ASTs, regardless of size, may generally satisfy not only the secondary containment requirements of §112.7(c), but also the specific secondary containment requirements for sizing secondary containment for bulk storage containers found at §112.8(c)(2).[87] Double-walled tanks that store animal fats or vegetable oils may generally satisfy the secondary containment requirements of §112.12(c)(2).

However, please note that double-walled tanks with fittings or openings (e.g. a manway) located below the liquid

Tip – Transfers from double-walled tanks

A double-walled tank may have adequate containment for the bulk storage container; however it does not provide adequate secondary containment to address transfer-related overfills from the tank vent. Active secondary containment measures may be used to contain overfills from vents associated with transfer operations.

85 Memorandum, *Use of Alternative Secondary Containment Measures at Facilities Regulated under the Oil Pollution Prevention Regulation (40 CFR Part 112)*, OSWER 9360.8-37, Don R. Clay, OSWER Assistant Administrator, April 29, 1992.

86 Memorandum, *Use of Alternative Secondary Containment Measures at Facilities Regulated under the Oil Pollution Prevention Regulation (40 CFR Part 112)*, OSWER 9360.8-38, Marianne Lamont Horinko, OSWER Assistant Administrator, August 9, 2002.

87 Double-walled tanks typically do not require additional freeboard for precipitation when the interstice is not exposed to precipitation.

level of the container may require additional secondary containment to conform with industry standards and/or local codes. For example, NFPA 30 (paragraph 22.11) requires that piping connections be above the liquid level to conform to spill control requirements.

Summary of required elements from the double-walled tank memos:

The use of certain shop-built double-wall ASTs serve as an "equivalent" preventive system for purposes of the general secondary containment requirements of §112.7(c) when they include the following elements:

1) Containers are shop fabricated;
2) The inner tank is an Underwriter Laboratories (UL)-listed steel tank;
3) The outer tank is constructed in accordance with nationally accepted industry standards (e.g., API, STI, the American Concrete Institute);
4) Equipped with the following overfill prevention measures to contain overfills from tank vents:
    a) Overfill alarm and
    b) Automatic flow restrictor or flow shut-off; and
5) All product transfers are constantly monitored.

Alternative to Overfill Prevention Measures: As an alternative to the overfill prevention measure described in the fourth bullet above, the container may be equipped with either active or passive secondary containment methods to address the typical failure mode and the most likely quantity of oil that would be discharged from the tank's vents during during transfer operations.

Inspection Requirements for Double-walled Tanks

Section 112.8(c)(6) requires the owner or operator to conduct integrity testing on a regular schedule and whenever he makes repairs. The section also requires the owner or operator to frequently inspect the outside of the container for signs of deterioration, discharges, or accumulation of oil inside diked areas (for a double-walled tank, this inspection requirement applies to the inner tank). For more information on how to meet the inspection requirements for double-walled-tanks see *Chapter 7: Inspection, Evaluation, and Testing.*

§112.2

Repair means any work necessary to maintain or restore a container to a condition suitable for safe operation, other than that necessary for ordinary, day-to-day maintenance to maintain the functional integrity of the container and that does not weaken the container.

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

Other Applicable Secondary Containment Requirements

While shop-fabricated double-wall ASTs may satisfy the requirements of §112.7(c) and §112.8(c)(2), such tanks, associated appurtenances/piping and transfer activities are also subject to other applicable SPCC requirements. For example, the facility owner or operator must satisfy §112.7(h) requirements for tank car and tank truck loading/unloading racks if he transfers oil in bulk to double-wall tanks from highway vehicles or railroad cars. If such transfers occur, where loading/unloading area drainage does not flow into a catchment basin or treatment facility designed to handle spills, a quick drainage system must be used. The containment system must be designed to hold at least the maximum capacity of any single compartment of a tank car of tank truck loaded or unloaded at the facility. Transfer areas (those not associated with a loading/unloading rack) need to comply with the general secondary containment requirements in §112.7(c).

Additionally, any piping, equipment, or device not contained within a double-walled AST is subject to the general secondary containment requirements of §112.7(c). If a facility drainage system will be used to comply with secondary containment then the piping, equipment or device is also subject to requirements of §112.8(b) or §112.12(b).

4.5 Overview of the Impracticability Determination Provision

Although secondary containment systems are preferred, they may not always be practicable. If a PE determines that containment methods are "impracticable," alternative modes of protection to prevent and contain oil discharges are available. The SPCC rule provision found in §112.7(d) allows facility owners/operators to substitute other measures in place of secondary containment.

If an impracticability determination is made, the SPCC Plan must clearly describe why secondary containment measures are impracticable and how the alternative measures are implemented (§112.7(d)). See *Section 4.6* of this chapter for more information on the alternative measures.

The option of determining impracticability assumes that it is feasible to effectively and reliably implement an oil spill contingency plan. EPA inspectors should be aware that an impracticability determination may affect the applicability to the facility of the FRP requirements under 40 CFR part 112 subpart D. In addition, an impracticability determination may affect the calculation of the worst case discharge volume, which may impact the amount of resources required to respond to a worst case discharge scenario to comply with the FRP requirements.

§112.7(d)

Provided your Plan is certified by a licensed Professional Engineer under §112.3(d), or, in the case of a qualified facility that meets the criteria in §112.3(g), the relevant sections of your Plan are certified by a licensed Professional Engineer under §112.6(d), if you determine that the installation of any of the structures or pieces of equipment listed in paragraphs (c) and (h)(1) of this section, and §§112.8(c)(2), 112.8(c)(11), 112.9(c)(2), 112.10(c), 112.12(c)(2), and 112.12(c)(11), to prevent a discharge as described in 112.1(b) from any onshore or offshore facility is not practicable, you must clearly explain in your Plan why such measures are not practicable; for bulk storage containers, conduct both periodic integrity testing of the containers and periodic integrity and leak testing of the valves and piping; and, unless you have submitted a response plan under §112.20, provide in your Plan the following:

1) An oil spill contingency plan following the provisions of part 109 of this chapter.
2) A written commitment of manpower, equipment, and materials required to expeditiously control and remove any quantity of oil discharged that may be harmful.

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

Only secondary containment requirements can be determined to be impracticable; for most other technical requirements, the rule provides flexibility to facility owners or operators to implement alternative measures that provide equivalent environmental protection (see *Chapter 3: Environmental Equivalence* for more information on the environmental equivalence provision).

Because the expertise of a trained professional is important in making site-specific impracticability determinations, owners or operators of Tier II qualified facilities (as described in §112.3(g)) who choose to self-certify their SPCC Plans in lieu of PE-certification cannot take advantage of the flexibility allowed by the impracticability provision, unless such determinations are reviewed and certified in writing by a PE (§112.6(b)(3)(ii) and 112.6(b)(4)). When secondary containment is determined to be impracticable in accordance with §112.7(d), the Plan must clearly explain why secondary containment measures are not practicable at the facility and provide the alternative measures required in §112.7(d) in lieu of secondary containment.

4.5.1 Meaning of "Impracticable"

The impracticability determination is intended to be used when a facility owner/operator cannot install secondary containment by any reasonable method. Considerations include space and geographical limitations, local zoning ordinances, fire codes, safety, or other good engineering practice reasons that would not allow for secondary containment (67 FR 47104, July 17, 2002). EPA clarified in a *Federal Register* notice that economic cost may be considered as one element in a decision on alternative methods, consistent with good engineering practice for the facility, but may not be the only determining factor in claiming impracticability (see text box "*Notice concerning certain issues pertaining to the July 2002 Spill Prevention, Control, and Countermeasure (SPCC) rule"* below). Each impracticability determination is site-specific and EPA inspectors should carefully evaluate the rationale for the impracticability determination described by the PE in the SPCC Plan.

Notice concerning certain issues pertaining to the July 2002 Spill Prevention, Control, and Countermeasure (SPCC) rule

The Agency did not intend with [preamble language at 67 FR 47104] to opine broadly on the role of costs in determinations of impracticability. Instead, the Agency intended to make the narrower point that secondary containment may not be considered impracticable solely because a contingency plan is cheaper. (This was the concern that was presented by the commenter to whom the Agency was responding.)

In addition, with respect to the emphasized language enumerating considerations for determinations of impracticability, the Agency did not intend to foreclose the consideration of other pertinent factors. In fact, in the response-to-comment document for the SPCC amendments rulemaking, the Agency stated that "... for certain facilities, secondary containment may not be practicable because of geographic limitations, local zoning ordinances, fire prevention standards, *or other good engineering practice reasons.*"

The above text is an excerpt from 69 FR 29728 (May 25, 2004).

4.6 Required Measures when Secondary Containment is Impracticable

Pursuant to §112.7(d), if secondary containment is impracticable for any area where secondary containment requirements apply, facility owners or operators must clearly explain in the SPCC Plan why such secondary containment is impracticable and implement additional requirements. The additional requirements are:

- Periodic integrity testing of bulk storage containers;

- Periodic integrity testing and leak testing of the valves and piping associated with bulk storage containers;
- An oil spill contingency plan prepared in accordance with the provisions of 40 CFR 109, unless the facility has submitted a Facility Response Plan (FRP) under §112.20; and
- A written commitment of manpower, equipment, and materials required to expeditiously control and remove any quantity of oil discharged that may be harmful.

This section describes these additional requirements.

4.6.1 Integrity Testing of Bulk Storage Containers

When a facility owner or operator shows that secondary containment around a bulk storage container is impracticable, he or she must conduct periodic integrity testing of the container (§112.7(d)). Integrity testing is any means to measure the strength (structural soundness) of the container shell, bottom, and/or floor to contain oil. Integrity testing must be done in accordance with good engineering practice, and consider applicable industry standards. For a thorough discussion of integrity testing, see *Chapter 7: Inspection, Evaluation, and Testing*. *Chapter 7* describes the scope and frequency of inspections and tests, considering industry standards and the characteristics of the container. When there is no secondary containment around a container, good engineering practice would suggest a more stringent integrity testing schedule than would be required for a container if secondary containment were in place. Although the SPCC rule does not incorporate specific inspection frequency, certain industry standards require more frequent and/or more intensive inspection of containers when they do not have secondary containment.[88]

It should be noted that if an impracticability determination is made for bulk storage containers located at an oil production facility, the containers are subject to integrity testing under §112.7(d) and integrity testing should be in accordance with applicable industry standards and good engineering practice.

The EPA inspector should verify that the Plan describes the integrity testing of bulk storage containers, in particular for those containers for which secondary containment is impracticable. The EPA inspector should also review testing records to ensure that the inspection program is implemented as described.

4.6.2 Periodic Integrity and Leak Testing of the Valves and Piping

When the facility owner or operator determines that secondary containment for a bulk storage container is impracticable, he/she must also perform periodic integrity and leak testing of valves and piping associated with the container for which secondary containment is impracticable (§112.7(d)). As the PE establishes the periodic integrity testing for the bulk storage container, he will also determine the minimal

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88 For example, the Steel Tank Institute's "Standard for the Inspection of Aboveground Storage Tanks," SP001, 5th Edition, Steel Tank Institute, September 2011 (summarized in *Chapter 7: Inspection, Evaluation, and Testing*) requires more frequent inspections of tanks that do not have adequate secondary containment.

elements of the integrity and leak testing program needed for the for the valves and piping and identify what portion of piping to include in the program.

Leak testing determines the liquid tightness of valves and piping and whether they may discharge oil. Leak testing should be performed in accordance with appropriate industry standards. *Chapter 7: Inspection, Evaluation, and Testing* provides an overview of integrity and leak testing of valves and piping. As for integrity testing, good engineering practice may suggest a more stringent leak testing schedule than would be required if secondary containment were in place. The scope of this integrity and leak testing program is a matter of good engineering practice and should be clearly described in the SPCC Plan.

> **Tip – Valves and piping**
>
> Valves and piping are subject to additional periodic integrity testing and leak testing requirements when a PE determines that secondary containment is impracticable for an associated bulk storage container.

The EPA inspector should verify that the Plan describes the type and scope of integrity and leak testing for valves and piping associated with bulk storage containers for which secondary containment is impracticable. The inspector should also review testing records to ensure that the testing program is implemented as described and is in accordance with the scope of the testing program described by the PE in the Plan.

4.6.3 Oil Spill Contingency Plan and Written Commitment of Resources

Unless he or she has submitted a Facility Response Plan under §112.20, an owner or operator who determines that secondary containment is impracticable must include with the SPCC Plan an oil spill contingency plan following the provisions of 40 CFR part 109 and a written commitment of manpower, equipment, and materials required to expeditiously control and remove any quantity of oil that may be harmful (§112.7(d)).

The requirements for the content of contingency plans are given in 40 CFR part 109 (Criteria for State, Local, and Regional Oil Removal Contingency Plans). The elements of the contingency plan are outlined in §109.5, and include:

- Definition of the authorities, responsibilities, and duties of all persons, organizations, or agencies that are to be involved or could be involved in planning or directing oil removal operations;
- Establishment of notification procedures for the purpose of early detection and timely notification of an oil discharge;
- Provisions to ensure that full resource capability is known and can be committed during an oil discharge situation;
- Provisions for well-defined and specific actions to be taken after discovery and notification of an oil discharge; and
- Specific and well-defined procedures to facilitate recovery of damages and enforcement measures as provided for by state and local statutes and ordinances.

Refer to the model contingency plan in *Appendix F* of this guidance for an example contingency plan prepared in compliance with the SPCC rule and 40 CFR part 109.

A ‘‘written commitment’’ of manpower, equipment, and materials means either a written contract or other written documentation showing that the owner/operator has made provision for items needed for response purposes. According to 40 CFR 109.5, the commitment includes:

- Identification and inventory of applicable equipment, materials, and supplies that are available locally and regionally;
- An estimate of the equipment, materials, and supplies that would be required to remove the maximum oil discharge to be anticipated;
- Development of agreements and arrangements in advance of an oil discharge for the acquisition of equipment, materials, and supplies to be used in responding to such a discharge;
- Provisions for well-defined and specific actions to be taken after discovery and notification of an oil discharge, including specification of an oil discharge response operating team consisting of trained, prepared, and available operating personnel;
- Pre-designation of a properly qualified oil discharge response coordinator who is charged with the responsibility and delegated commensurate authority for directing and coordinating response operations and who knows how to request assistance from federal authorities operating under current national and regional contingency plans;
- A preplanned location for an oil discharge response operations center and a reliable communications system for directing the coordinated overall response actions;
- Provisions for varying degrees of response effort depending on the severity of the oil discharge; and
- Specification of the order of priority in which the various water uses are to be protected where more than one water use may be adversely affected as a result of an oil discharge and where response operations may not be adequate to protect all uses. (67 FR 47105, July 17, 2002).

Note that a facility owner/operator does not need to develop a separate contingency plan and written commitment of manpower, equipment, and materials for each individual impracticability determination. A single plan, describing how the elements apply to each area where secondary containment is impracticable, will suffice. Additionally, the elements required under §112.7(d) may be integrated into other contingency plans that already may be in place at the facility, such as those developed pursuant to other federal or state requirements.

For a contingency plan to satisfy the requirements of §112.7(d), the owner or operator of a facility must be able to activate and implement the contingency plan immediately upon detection of a discharge. As part of evaluating the adequacy of the contingency plan developed to satisfy requirements of §112.7(d), the EPA inspector should consider the time it takes facility personnel to detect and mitigate a discharge to navigable waters or adjoining shorelines. For example, at an unmanned facility (or during periods of time when a facility is unattended), effective implementation of the contingency plan may involve enhanced discharge detection methods such as more frequent facility visits and inspections, or the use of spill detection equipment.

4.6.4 Difference between Contingency Plans and Active Containment Measures

Note that active containment measures are used to meet *secondary containment requirements*, and contingency plans are used to meet *the requirement in §112.7(d) when an impracticability determination is made*. There is a subtle but important difference between active containment measures (i.e., countermeasures, including land-based response capability) and an oil spill contingency plan as described in §112.7(d). Active containment measures (as opposed to passive containment measures – i.e., permanent structures) require deployment or other action; they are put in place prior to or immediately upon discovery of an oil discharge. The purpose of active containment measures is to contain an oil discharge before it reaches navigable waters or adjoining shorelines. These measures should be designed to prevent discharges from leaving the facility boundaries.

A contingency plan, for SPCC purposes, is a detailed oil spill response plan developed when any form of secondary containment is determined to be impracticable. It addresses controlling, containing, and recovering an oil discharge in quantities that may be harmful to navigable waters or adjoining shorelines. The purpose of a contingency plan should be both to outline response capability or countermeasures to limit the quantity of a discharge reaching navigable waters or adjoining shorelines (if possible), and to address *response to a discharge of oil that has reached navigable waters or adjoining shorelines*. Thus, active containment measures can be part of a contingency plan and every effort should be made to control the oil discharge before it reaches navigable waters or adjoining shorelines.

Tip – Active containment measures vs. Contingency Plans

Active containment measure is used to describe any land-based response capability that is deployed or implemented immediately upon discovery of a discharge before the discharge reaches navigable waters or adjoining shorelines.

Contingency Plan is used to describe measures for controlling, containing, and recovering oil that has been discharged into or upon navigable waters or adjoining shorelines in such quantities as may be harmful.

4.6.5 FRP Implications for Impracticability Determinations

When a facility owner/operator determines that secondary containment is impracticable, he must also determine how this affects applicability of the Facility Response Plan (FRP) rule requirements under 40 CFR part 112.20 and 112.21 for the facility. The facility owner/operator may need to either prepare an FRP or revise an FRP to address how a lack of adequate secondary containment affects the worst case discharge planning volume for the facility.

Facility Not Previously Subject to FRP

If a facility is not subject to the FRP rule, then the owner or operator must determine if an impracticability determination will cause the facility to meet the following FRP applicability criterion:

> *The facility's total oil storage capacity is greater than or equal to one million gallons and it does not have secondary containment for each aboveground storage area sufficiently large to contain the capacity of the largest aboveground oil storage tank within each storage area plus sufficient freeboard to allow for precipitation (see §112.20(f)(1)(ii)(A)).*

If so, then the facility could reasonably be expected to cause substantial harm to the environment by discharging oil into or on navigable waters or adjoining shorelines and is now subject to the FRP requirements under §§112.20 and 112.21. The owner or operator must prepare and submit an FRP to the EPA Regional Administrator (RA) in accordance with §112.20(a)(2).

Even when the total facility capacity is less than one million gallons, the EPA RA may determine that a facility is a "substantial harm" facility and require the owner or operator to prepare and submit an FRP. The RA may consider a lack of secondary containment as a criterion to require an FRP for a facility in accordance with §112.20(f)(2).

Once an FRP is received, the EPA RA will review the plan to determine whether a facility could, because of its location, reasonably be expected to cause significant and substantial harm to the environment by discharging oil into or on navigable waters or adjoining shorelines (§112.20(c)). The EPA RA will review the "significant and substantial harm" facility FRP, require amendments (as applicable), and approve any response plan that meets the FRP rule requirements.

Aboveground oil storage tanks without adequate secondary containment will also factor into the calculation of the worst case discharge planning volume for the facility, which has implications for the quantity of response resources (by contract or other means) required under the FRP rule (see Appendices D and E of 40 CFR 112).

Facility Previously FRP-subject

If a facility was previously subject to the FRP requirements and then makes a determination of impracticability, the owner or operator of the facility must consider the implications of that change on the FRP. The owner or operator will need to recalculate the worst case discharge planning volume to address aboveground oil storage tanks without adequate secondary containment as well as determine sufficient response resources to respond to the worst case discharge in accordance with Appendix E.

The owner or operator must revise and resubmit portions of the FRP within 60 days of a facility change that materially may affect the response to a worst case discharge and submit a revised FRP to the EPA RA (§112.20(d)(1)). A lack of adequate secondary containment may also influence the RA to determine that the facility could reasonably be expected to cause significant and substantial harm to the environment by discharging oil into or on navigable waters or adjoining shorelines.

4.6.6 Role of the EPA Inspector in Reviewing Impracticability Determinations

Determinations of impracticability must be reviewed by the PE certifying the Plan in accordance with §112.3(d) or §112.6(b)(4) to ensure that they are consistent with good engineering practice. The EPA inspector should verify that the Plan has been certified by a PE and that the additional measures specified in §112.7(d) are documented in the Plan, as explained below.

By certifying a Plan, or a portion of a Plan, a PE attests that it 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. Thus, if impracticability determinations and the corresponding alternative measures and contingency plan have been reviewed by the certifying PE and are properly documented, they should generally be considered acceptable by regional EPA inspectors.

However, if an impracticability determination and/or the additional required measures appear to be at odds with recognized industry standards, do not meet the overall objective of oil spill response/prevention, or appear to be inadequate for the facility, appropriate follow-up action may be warranted. In this case, the EPA inspector should clearly document the concerns (including photographs and drawings of the facility configuration, flow direction, and proximity to navigable waters) to assist RA review and follow-up. This may include requesting additional information from the facility owner or operator to justify the impracticability determination, the adequacy of the contingency plan, or determine compliance with other requirements of §112.7(d). The EPA inspector should also assess how the lack of adequate secondary containment impacts FRP applicability or worst case discharge planning for the facility (see *Section 4.6.5*).

A PE making an impracticability determination should have considered, to the extent possible, all reasonably appropriate options for secondary containment. The documentation presented in support of the impracticability determination should discuss the reasons why various secondary containment options are impracticable. The documentation must demonstrate the reasoning used to determine why secondary containment is impracticable, rather than provide an exhaustive evaluation of all potentially available types of secondary containment.

The example below (see *Figure 4-7*) describes an inadequate impracticability determination. The supporting discussion provided in the example does not provide a sufficient discussion of the reasons why a concrete dike is not practicable. It also fails to address, even in general terms, whether means of secondary containment other than a concrete dike may be practicable (e.g., remote impoundment, drainage systems, or active measures). Finally, the discussion does not provide information on the measures that are provided in lieu of secondary containment and how the facility intends to implement the contingency plan, commit manpower and equipment to respond, and perform the required testing on the bulk storage containers and associated piping and appurtenances. Refer to §112.7(c) and (d) for a list of available secondary containment options as well as the alternative measures required in the SPCC Plan when an impracticability determination is made.

Figure 4-7: Example of inadequate impracticability determination: Bulk Storage Containers

Bulk Storage Tanks – 40 CFR 112.8(c)(2)

XYZ Oil has determined that secondary containment is impracticable for the two bulk storage tanks located to the east of the maintenance building. There is not sufficient space to build a concrete dike because of the proximity to the property line. XYZ Oil is therefore implementing a contingency plan for this portion of the facility.

For comparison, the following example (see *Figure 4-8*) provides an adequate impracticability determination. The supporting discussion provided in the example clearly explains why various methods of secondary containment measures are not practicable, and documents the measures that the facility has implemented in lieu of secondary containment. Additionally, the PE explains the additional equipment/procedures that will be implemented to compensate for the lack of adequate secondary containment. These additional measures would typically provide an EPA inspector with assurance that a facility will be able to address oil discharges using a contingency plan (and ensure its timely implementation).

Figure 4-8: Example of adequate impracticability determination: Bulk Storage Containers

Bulk Storage Tanks – 40 CFR 112.8(c)(2)

XYZ Oil has determined that secondary containment is impracticable for the two bulk storage tanks located to the east of the maintenance building. There is not sufficient space to accommodate a dike or berm with the required containment capacity due to minimum setbacks and maximum dike height. A dike or berm with the required capacity would either encroach on the neighbor's property and/or exceed a 6-feet safe wall height (Occupational Safety and Health Administration (OSHA) Flammable and combustible liquids regulation, 29 CFR 1910.106). The facility also lacks the space necessary for remote impoundment. Other measures listed under §112.7(c) such as the use of sorbents would not be a reliable and effective means of secondary containment since the volumes involved may exceed the sorbent capacity.

The tanks are currently in good condition and do not need to be replaced. However, tanks of double-wall design may be considered as potential replacement in the future. The existing tanks have been equipped with a leak detection device to aid with the discovery of an oil discharge. The containers, due to a lack of containment, are going to be subject to a more aggressive integrity testing program than required by the governing standard (see Section 2.7 of the SPCC Plan, Integrity Testing, for details). Finally, the tanks are equipped with an overfill system and automatic shutdown leak detection to prevent overfills.

Because secondary containment for these two bulk storage tanks is impracticable, XYZ Oil has provided in this SPCC Plan the additional elements required under 40 CFR 112.7(d), namely:

- Periodic integrity testing of bulk storage containers, and periodic integrity and leak testing of valves and piping (see Section 2.7 of the SPCC Plan).
- A written commitment of manpower, equipment, and materials required to expeditiously control and remove any quantity of oil discharged that may be harmful (see Appendix F of the SPCC Plan).
- An Oil Spill Contingency Plan following the provisions of 40 CFR part 109 (see Appendix G of the SPCC Plan).

In addition to verifying that the SPCC Plan clearly describes the reason why secondary containment measures are not practicable and documents the implementation of the additional measures required in §112.7(d), the EPA inspector should verify that:

- The facility's contingency plan can be implemented as written;
- The equipment for response is available;
- The commitment of manpower, equipment, and materials is documented;
- The contingency plan describes the location of drainage systems, containment deployment locations, and oil collection areas (including recovered oil storage capability);
- There is a process in place to detect a discharge and implement the contingency plan at an unmanned facility;
- There are procedures for early detection of oil discharges that enables timely contingency plan implementation;
- There is a defined set of response actions; and
- The contingency plan meets all the criteria of §109.5.

Figure 4-9 provides a checklist that an EPA inspector can review to verify that all the criteria of §109.5 are included in a facility's oil spill contingency plan. The EPA inspector may also refer to the checklist included in *Figure 4-13* at the end of this chapter when identifying and reviewing technical rule requirements that are eligible for the impracticability provision.

Figure 4-9: Checklist of required components of state, local, and regional oil removal contingency plans. Please refer to the complete text of 40 CFR §109.5.

109.5–Development and implementation criteria for state, local, and regional oil removal contingency plans*		Yes	No
Definition of the authorities, responsibilities and duties of all persons, organizations or agencies which are to be involved in planning or directing oil removal operations.		☐	☐
Establishment of notification procedures for the purpose of early detection and timely notification of an oil discharge including:			
(1)	The identification of critical water use areas to facilitate the reporting of and response to oil discharges.	☐	☐
(2)	A current list of names, telephone numbers and addresses of the responsible persons (with alternates) and organizations to be notified when an oil discharge is discovered.	☐	☐
(3)	Provisions for access to a reliable communications system for timely notification of an oil discharge, and the capability of interconnection with the communications systems established under related oil removal contingency plans, particularly State and National plans (e.g., NCP).	☐	☐
(4)	An established, prearranged procedure for requesting assistance during a major disaster or when the situation exceeds the response capability of the State, local or regional authority.	☐	☐
Provisions to assure that full resource capability is known and can be committed during an oil discharge situation including:			
(5)	The identification and inventory of applicable equipment, materials and supplies which are available locally and regionally.	☐	☐
(6)	An estimate of the equipment, materials and supplies which would be required to remove the maximum oil discharge to be anticipated.	☐	☐
(7)	Development of agreements and arrangements in advance of an oil discharge for the acquisition of equipment, materials and supplies to be used in responding to such a discharge.	☐	☐
Provisions for well-defined and specific actions to be taken after discovery and notification of an oil discharge including:			
(8)	Specification of an oil discharge response operating team consisting of trained, prepared and available operating personnel.	☐	☐
(9)	Predesignation of a properly qualified oil discharge response coordinator who is charged with the responsibility and delegated commensurate authority for directing and coordinating response operations and who knows how to request assistance from Federal authorities operating under existing national and regional contingency plans.	☐	☐
(10)	A preplanned location for an oil discharge response operations center and a reliable communications system for directing the coordinated overall response operations.	☐	☐
(11)	Provisions for varying degrees of response effort depending on the severity of the oil discharge.	☐	☐
(12)	Specification of the order of priority in which the various water uses are to be protected where more than one water use may be adversely affected as a result of an oil discharge and where response operations may not be adequate to protect all uses.	☐	☐
Specific and well defined procedures to facilitate recovery of damages and enforcement measures as provided for by State and local statutes and ordinances.		☐	☐

* The contingency plan should be consistent with all applicable state and local plans, Area Contingency Plans, and the National Contingency Plan (NCP).

4.7 Selected Issues Related to Secondary Containment and Impracticability Determinations

Section 112.7(d) lists the provisions of the SPCC rule for which facility owners or operators may determine impracticability. Discussed below are commonly raised issues related to secondary containment requirements for various types of equipment and areas at a facility, and the use of impracticability determinations.

4.7.1 Piping (General Secondary Containment Requirement, §112.7(c))

Discharge reports from the Emergency Response Notification System (ERNS) suggest that discharges from valves, piping, flowlines, and appurtenances are much more common than catastrophic tank failure or discharges from tanks (67 FR 47124, July 17, 2002). To prevent a discharge to navigable waters or adjoining shorelines, the SPCC rule requires that all piping (including buried piping) comply with the general secondary containment requirements contained in §112.7(c).[89]

In many cases, secondary containment for piping will be possible. Nevertheless, §112.7(c) provides flexibility in the method of secondary containment: active containment measures including land-based response capability, sorbent materials, drainage systems, and other equipment are acceptable. Section 112.7(c) does not prescribe a specific containment size for piping; however, the secondary containment must be designed to address a typical failure mode for the piping and most likely quantity of oil discharged. The SPCC Plan should describe the expected sources of a discharge from piping systems, maximum flow rate, duration of a discharge, and discharge detection capability at the facility taking into consideration the specific features of the facility and operation. Calculations for each piping system may not be practical at large facilities due to the large number and complexity of the piping; instead, more general assumptions specific to the conditions at the individual facility may be appropriate as long as they are well documented in the Plan. The EPA inspector should ensure that the secondary containment method for piping is described in the SPCC Plan and that the PE has certified that the method is appropriate for the facility according to good engineering practice. In the case of a qualified facility, the owner or operator would certify that the method is appropriate for the facility in accordance with accepted and sound industry practices and standards. If active containment measures are selected, the facility personnel should be able to demonstrate that they can identify a discharge in a timely manner (e.g., a leak detection method) and effectively deploy these measures to contain a potential spill before it reaches navigable waters or adjoining shorelines.

Secondary containment may not always be practicable for piping. If secondary containment is not practicable, then the facility owner/operator may make an impracticability determination and comply with the alternative regulatory requirements described in §112.7(d), which includes developing an oil spill contingency plan. In order for a contingency plan to be effective, discharges must be detected in a timely manner. For

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89 The owner/operator of an oil production facility may either, comply with the general secondary containment requirements of §112.7(c) for flowlines and intra-facility gathering lines or develop a contingency plan and a written commitment of manpower, equipment and materials in accordance with §112.9(d)(3).

example, good engineering practice may require that unattended facilities where secondary containment is impracticable be inspected more frequently than would be required at a typical facility where secondary containment is provided. The SPCC Plan may include other procedures, testing and or equipment to aid in the timely implementation of a contingency plan and/or overall oil spill prevention. This may include, but is not limited to, aggressive pipe integrity management/testing procedures, leak detection equipment and enhanced corrosion protection. If it is not feasible to effectively and reliably implement a contingency plan and the facility does not meet the applicability criteria under the Facility Response Plan (FRP) requirements in §112.20, then owners/operators must determine how to comply with the applicable secondary containment requirements in §112.7(c).

4.7.2 Loading or Unloading Area (or Transfer Area) (General Secondary Containment Requirement, §112.7(c))

All areas with the potential for a discharge as described in §112.1(b) are subject to the general secondary containment provision, §112.7(c). These areas may include loading/unloading areas (also referred to as transfer areas), piping, mobile refuelers, and may include other areas of a facility where oil is present. A transfer operation is one in which oil is moved from or into some form of transportation, storage, equipment, or other device, into or from some other or similar form of transportation, such as a pipeline, truck, tank car, or other storage, equipment, or device (67 FR 47130, July 17, 2002). Loading or unloading areas where oil is transferred but no loading/unloading rack (as defined in §112.2) is present are subject to §112.7(c), and thus appropriate secondary containment and/or diversionary structures to prevent a discharge to navigable waters or adjoining shorelines are required. The SPCC rule does not require specifically sized containment for transfer areas; however, containment capacity must be based on the typical failure mode and most likely quantity of oil that would be discharged.

The general secondary containment requirement at §112.7(c) applies to both loading and unloading areas. Examples of activities that occur within transfer areas include, but are not limited to:

- Unloading oil from a truck to a heating oil tank;
- Loading oil into a vehicle from a dispenser; and
- Transferring crude oil from an oil production tank battery into tank trucks.

Secondary containment may be either active or passive in design and take into consideration the specific features of the facility and operation or activity. Specific features of different loading/unloading operations include the hardware, procedures, and personnel who are able to take action to limit the volume of a discharge. The determination of adequate general secondary containment volume must consider the typical failure mode and the most likely quantity of oil that would discharge as a result of that failure:

- **Typical Failure Mode**
  - **Identify the source and the mechanism of failure.** These could include a failed hose connection; improper transfer equipment connection or disconnection; pump, valve, flange or pipe fitting leak; or overfill of a container. Determining the typical failure mode would be based on the type of transfer operation, equipment, and procedures, facility experience and spill history, potential for human error, etc.
- **Most Likely Quantity of Oil Discharged.** This factor is based on the **reasonably expected** rate of discharge and duration of the discharge.
  - **The reasonably expected rate of discharge.** This factor will depend on the typical mode of failure. It may be equal to the maximum rate of transfer, e.g., when an improperly connected transfer hose connection separates, or the expected leakage rate, e.g., from a pump, pipe flange, pipe fitting, or hose valve.
  - **The ability to detect and react to the discharge.** This factor will depend on the availability of monitoring instrumentation for prompt detection of a discharge and/or the proximity of personnel to detect and respond to the discharge. The ability to detect a discharge is critical for the implementation of active containment measures.
  - **The reasonably expected duration of the discharge.** This factor may depend on the accessibility of manual or automatic shutdown mechanisms, the proximity of qualified personnel to the operation, and other factors that may limit the duration of a discharge.

After identifying the typical failure mode for each transfer area and the most likely quantity of oil that would be discharged, the facility owner/operator can determine the appropriate type of secondary containment (i.e., active or passive). To determine if active containment measures are appropriate to address the most likely discharge quantity, the owner/operator must determine the time it would take a discharge to impact navigable waters or adjoining shorelines. This factor will depend on the proximity to waterways and storm drains, and the slope of the ground surface between the loading area and the waterway or drain. The SPCC Plan must describe the type of secondary containment and, for active containment measures, clearly outline the procedures, equipment, and personnel necessary to implement this containment strategy.

Additionally, a number of other factors may also affect the appropriate volume for secondary containment at loading and unloading areas, such as the variable rate of transfer; the ability to control a discharge from a breached container, if such a breach is reasonably expected to occur; the availability of personnel in close proximity to the operations and the necessary time to respond; the presence or absence of monitoring instrumentation to detect a discharge; the type and location of valving that may affect the probable time needed to stop the discharge; and the presence or absence of automatic valve actuators. These are a few examples of the factors that a PE may want to consider when reviewing the adequacy of secondary containment systems at a facility. The EPA inspector may consider the same factors when assessing the adequacy of secondary containment.

An example calculation for secondary containment capacity in accordance with §112.7(c), based on these considerations, is provided in *Figure 4-10*. Note that the calculation of a most-likely discharge is often a site-specific determination that must be in accordance with good engineering practice.

Figure 4-10: Sample calculation of appropriate general secondary containment capacity at a transfer area.

Scenario: A fuel truck is loading oil into a heating oil tank at a regulated facility, with an attendant present throughout the operation.

Details:

- The truck is loading at a rate of 150 gallons per minute.
- The typical failure mode expected is a ruptured hose connection.
- A shutoff valve, present on the loading line, and the pump control are accessible to the attendant.
- An evaluation determines that the discharge will not impede the attendant's access to the shutoff valve and pump control. The attendant can safely shut down the pump and close the valve within 10 seconds of the hose connection rupture, based on past experience under similar circumstances; 15 seconds is assumed to be a conservative estimate of the response time.

Calculations:

With a flow rate of 150 gal/min and a reaction time of 15 seconds, the most likely discharge is calculated to be 37.5 gallons:

[(150 gal/min) x (1 min/60 sec) x (15 sec)] = 37.5 gallons

Conclusion:

Secondary containment volume should be at least 37.5 gallons. A larger volume for secondary containment would be needed if time required to safely close the shutoff valve takes longer than 15 seconds.

To determine if an active containment measure would be appropriate then the owner or operator also needs to consider the time it would take the discharge to impact navigable waters or adjoining shorelines.

Secondary containment structures, such as dikes or berms, may not be appropriate in areas where vehicles continuously need access; however, curbing, drainage systems, active containment measures, or a combination of these systems can adequately fulfill the secondary containment requirements of §112.7(c). A facility owner or operator may implement methods for secondary containment other than dikes or berms. For example, a transfer truck loading area at an onshore oil production facility may be designed to drain discharges away to a topographically lower area using a crescent or eyebrow-shaped berm. In certain situations, secondary containment at transfer areas may be impracticable due to geographic limitations, fire codes, etc. In these cases, owners/operators may determine that secondary containment is impracticable in accordance with §112.7(d), and must clearly explain the reasons why secondary containment is not practicable and comply with the alternative regulatory requirements.

4.7.3 Loading/Unloading Rack (Specific Secondary Containment Requirements, §112.7(h)(1))

> **§112.2**
>
> *Loading/unloading rack* means a fixed structure (such as a platform, gangway) necessary for loading or unloading a tank truck or tank car, which is located at a facility subject to the requirements of this part. A loading/unloading rack includes a loading or unloading arm, and may include any combination of the following: piping assemblages, valves, pumps, shut-off devices, overfill sensors, or personnel safety devices.
>
> 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 112.7(h) applies to areas at regulated facilities where traditional loading/unloading racks for tank cars and tank trucks are located. EPA inspectors should evaluate compliance with the requirements of §112.7(h) for equipment that meets the definition of "loading/unloading rack" as found in §112.2.

A loading/unloading arm is a critical component of a loading/unloading rack. A loading/unloading arm is typically a movable piping assembly that may include fixed piping or a combination of fixed and flexible piping, typically with at least one swivel joint (that is, at least two articulated parts that are connected in such a way that relative movement is feasible to transfer product via top or bottom loading/unloading to a tank truck or tank car). However, certain loading/unloading arm configurations present at loading racks may include a loading/unloading arm that is a combination of flexible piping (hoses) and rigid piping without a swivel joint. In this case, a swivel joint is not present on the loading arm because flexible piping is attached directly to the rigid piping of the loading arm and the flexible hose provides the movement needed to conduct loading or unloading operations in lieu of the swivel joint.

> **§112.7(h) – Facility tank car and tank truck loading/unloading rack (excluding offshore facilities).**
>
> (1) Where loading/unloading rack drainage does not flow into a catchment basin or treatment facility designed to handle discharges, use a quick drainage system for tank car or tank truck loading and unloading racks. You must design any containment system to hold at least the maximum capacity of any single compartment of a tank car or tank truck loaded or unloaded at the facility.
>
> Note: The above text is an excerpt of the SPCC rule. Refer to 40 CFR part 112 for the full text of the rule.

In developing the definition in §112.2, EPA considered existing definitions of the term ''loading rack'' and related terms, as found in industry, federal, state, or international references, and reviewed various types of equipment considered components of loading racks (*see* 72 FR 58378, October 15, 2007). This definition does not include simple loading or unloading configurations, but rather only includes the associated equipment and structures associated with loading/unloading arms as part of a rack. Equipment present at a loading/unloading area where a pipe stand connects to a tank car or tank truck via a flexible hose is not a loading/unloading rack because there is no loading or unloading arm. Because some top and bottom loading/unloading racks are made up of a combination of steel loading arms connected by flexible hosing, the presence of flexible hoses on oil transfer equipment should not be used as an indicator of whether the equipment meets the definition of loading/unloading rack.

Section 112.7(h)(1) requires a sized secondary containment system: the containment must hold at least the maximum capacity of any single compartment of a tank car or tank truck loaded or unloaded at the facility.

However, the SPCC rule does not require that secondary containment for loading/unloading racks be designed to include freeboard for precipitation. When drainage from the areas surrounding a loading/unloading rack do not flow into a catchment basin or treatment facility designed to handle discharges, facility owners and operators must use a quick drainage system (§112.7(h)(1)). A "quick drainage system" is a device that drains oil away from the loading/unloading area to some means of secondary containment or returns the oil to the facility.

Loading and unloading activities that take place beyond the rack area are not subject to the requirements of §112.7(h), but are subject, where applicable, to the general secondary containment requirements of §112.7(c). Loading/unloading racks can be located at any type of facility; however, loading/unloading racks are not typically found at farms or oil production facilities. Oil transfers to or from oil storage containers at farms and oil production facilities where no loading rack is present are subject to the general secondary containment requirement. For more information on these requirements, see Section 4.7.2, Transfer Areas.

Figure 4-11 and *Figure 4-12* illustrate how SPCC secondary containment requirements apply at two facilities with loading/unloading areas and with equipment that meet the definition of loading/unloading rack. In *Figure 4-11*, the facility has two separate and distinct areas for transfer activities. One is a tank truck unloading area and the other includes a tank truck loading rack. The unloading area contains no rack structure, so the secondary containment requirements of §112.7(c) apply. The requirements of §112.7(h) apply to the area surrounding the loading rack. As highlighted by this example, the presence of a loading rack at one location of a facility does not subject other loading or unloading areas in a separate part of the facility to the requirements of §112.7(h).

In *Figure 4-12*, the tank truck loading rack and unloading area are co-located. In this situation, the more stringent secondary containment provision applies; therefore, the area is subject to the sized secondary containment requirements of §112.7(h)(1).

In certain situations, the sized secondary containment requirements of §112.7(h)(1) for loading/unloading racks may be impracticable due to geographic limitations, fire codes, etc. In these cases, the owner or operator may determine that secondary containment is impracticable as provided in §112.7(d). Under that provision, the SPCC Plan must clearly explain the reasons why secondary containment is not practicable, and comply with the alternative regulatory requirements.

Settlement agreement between EPA and API and Marathon Oil Company

"[T]he Agency does not interpret §112.7(h) to apply beyond activities and/or equipment associated with tank car and tank truck loading/unloading racks. Therefore, loading and unloading activities that take place beyond the rack area would not be subject to the requirements of 40 CFR §112.7(h) (but, of course, would be subject, where applicable, to the general containment requirements of 40 CFR §112.7(c))."

The above text is an excerpt from a settlement agreement between EPA and API and Marathon Oil Company. See *Appendix H*.

Figure 4-11: Facility with separate unloading area and loading rack. The tank unloading area is subject to §112.7(c). The tank truck loading rack is subject to §112.7(h)(1).

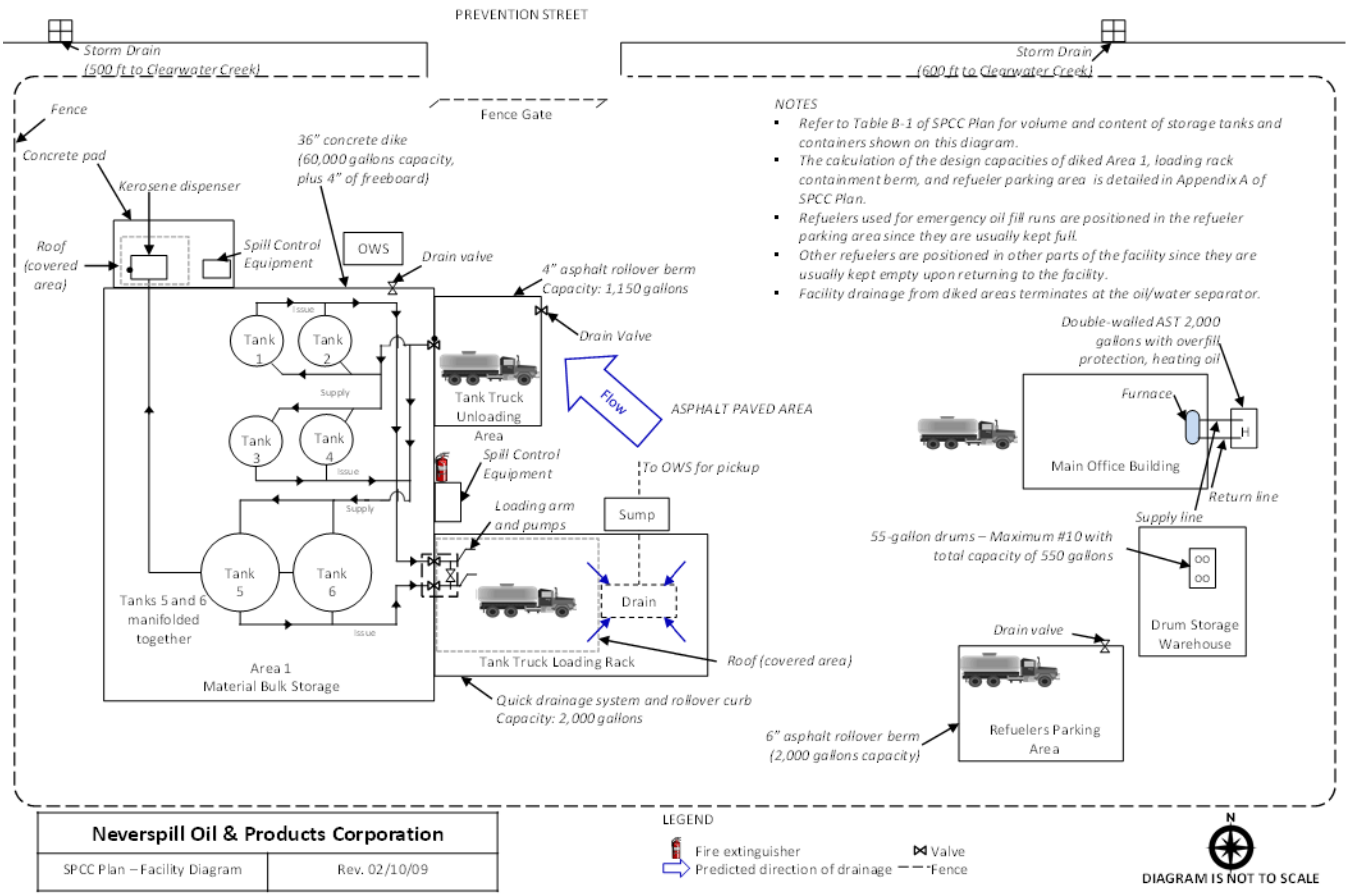
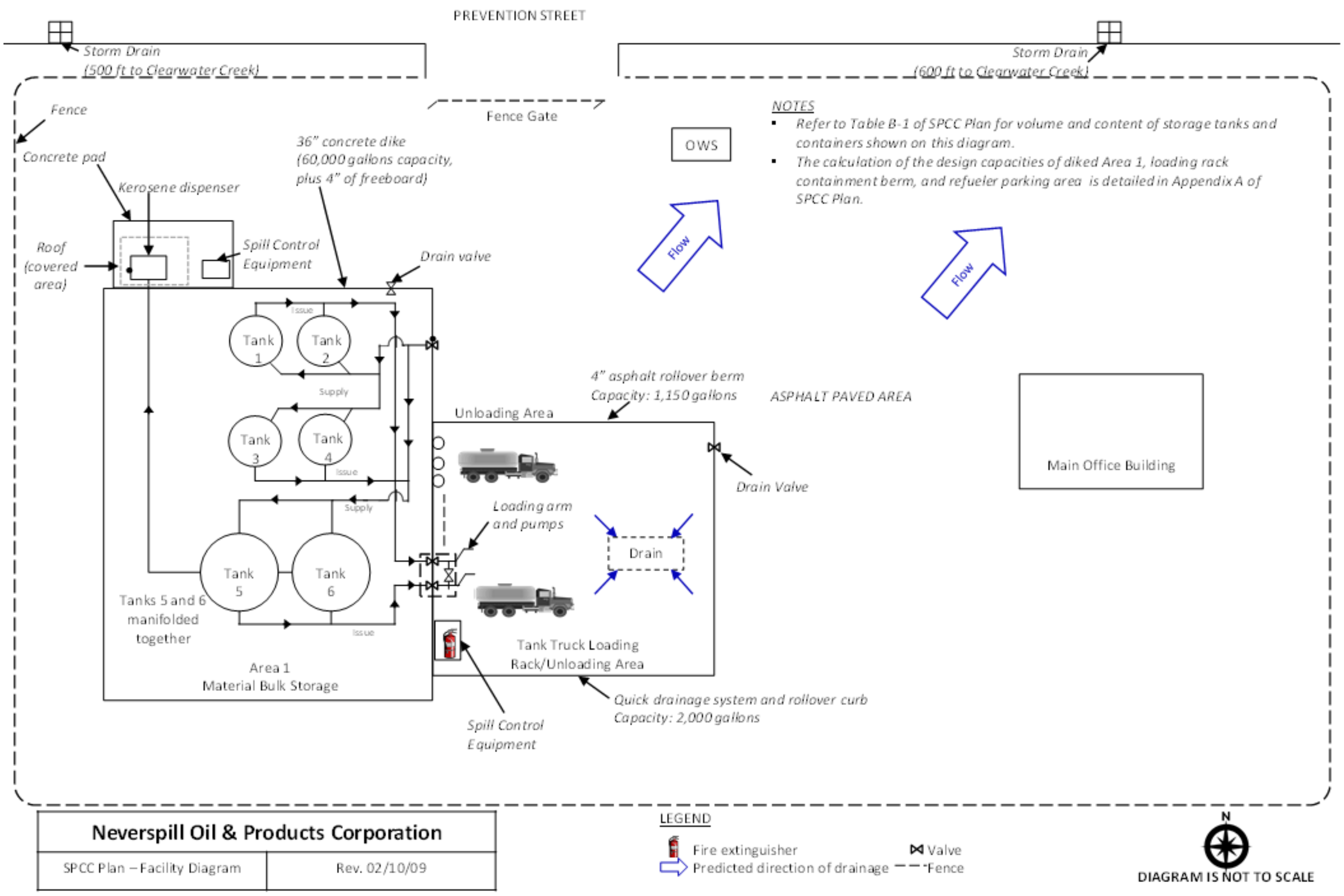


Figure 4-12: Facility with co-located unloading area and loading rack. This containment area is designed to meet the more stringent §112.7(h)(1) provision.



4.7.4 Onshore Bulk Storage Container (Specific Secondary Containment Requirements, §112.8(c)(2) and §112.12(c)(2))

Under the SPCC rule, a bulk storage container is any container used to store oil with a capacity of 55 gallons or more (§§112.1(d)(5) and 112.2). Bulk storage containers are used for purposes including, but not limited to, the storage of oil prior to use, while being used, or prior to further distribution in commerce. Oil-filled pieces of electrical, operating, or manufacturing equipment are not considered bulk storage containers.

Bulk storage containers at a regulated facility (except mobile refuelers and other non-transportation-related tank trucks) must comply with the specific (sized) secondary containment requirements of §112.8(c)(2).[90]

90 The specific secondary containment requirements for bulk storage containers do not apply to oil-filled equipment (though they are subject to the general secondary containment requirements of §112.7(c). Certain oil-filled operational equipment may

For bulk storage containers, secondary containment must be designed to hold the entire capacity of the largest single container and sufficient freeboard[91] to contain precipitation. Secondary containment is required for all facilities with bulk storage containers, large or small, attended or unattended.

§§112.8(c)(2) and 112.12(c)(2)

Construct all bulk storage container installations (except mobile refuelers and other non-transportation-related tank trucks) so that you provide a secondary means of containment for the entire capacity of the largest single container and sufficient freeboard to contain precipitation. You must ensure that diked areas are sufficiently impervious to contain discharged oil. Dikes, containment curbs, and pits are commonly employed for this purpose. You may also use an alternative system consisting of a drainage trench enclosure that must be arranged so that any discharge will terminate and be safely confined in a facility catchment basin or holding pond.

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)(2) considers the use of dikes, containment curbs, and pits as secondary containment methods, or allows an alternative system consisting of a drainage trench enclosure that must be arranged so that any discharge will terminate and be safely confined in a facility catchment basin or holding pond. Dikes contain oil in the immediate vicinity of the storage container, whereas remote impoundment drains discharge to an area located away from the container. Examples of design considerations and requirements for these types of containment are set forth in the National Fire Protection Association (NFPA) 30 Flammable and Combustible Liquids Code.[92]

Diked areas must be sufficiently impervious to contain discharged oil. The purpose of the ''sufficiently impervious'' standard is to prevent discharges as described in §112.1(b) by ensuring that diked areas can contain oil and are sufficiently impervious to prevent such discharges (67 FR 47117; July 17, 2002). For more information on sufficiently impervious secondary containment see *Section 4.4.2*.

An owner or operator may determine that secondary containment is impracticable under §112.7(d), when he or the PE certifying the Plan, determines that it is not practicable to design a secondary containment system that can hold the capacity of the largest single container plus sufficient freeboard. If secondary containment is determined to be impracticable, the EPA inspector should verify that the SPCC Plan clearly explains why secondary containment is not practicable, and that the facility is complying with the alternative regulatory requirements, such as conducting both periodic integrity testing of the containers and periodic integrity and leak testing of the valves and piping (§112.7(d)). For further information on the alternative regulatory requirements in §112.7(d), see *Section 4.6*.

qualify for alternative requirements in lieu of secondary containment in accordance with §112.7(k).

91 For more information on sufficient freeboard, see the discussion in Section 4.3.2 of this chapter.

92 For more information on NFPA, visit their website at www.nfpa.org.

4.7.5 Mobile/Portable Containers (Except for Mobile Refuelers and Other Non-Transportation-related Tank Trucks) (Specific Secondary Containment Requirements, §§112.8(c)(11) and 112.12(c)(11))

Mobile or portable oil storage containers with a capacity to store 55 gallons or more of oil and operating exclusively within the confines of a non-transportation-related facility are regulated under the SPCC rule. With the exception of mobile refuelers and other non-transportation related tank trucks, such containers must comply with the secondary containment requirements of §112.8(c)(11) (or §112.12(c)(11) in the case of a facility that stores or handles animal fats or vegetable oils).

> **§§112.8(c)(11) and 112.12(c)(11)**
>
> Position or locate mobile or portable oil storage containers to prevent a discharge as described in §112.1(b). Except for Mobile refuelers and other non-transportation-related tank trucks, you must furnish a secondary means of containment, such as a dike or catchment basin, sufficient to contain the capacity of the largest single compartment or container with sufficient freeboard to contain precipitation.
>
> Note: The above text is an excerpt of the SPCC rule. Refer to 40 CFR part 112 for the full text of the rule.

Examples of mobile portable containers include, but are not limited to, 55-gallon drums, skid tanks, totes, and intermediate bulk containers (IBCs).

According to §§112.8(c)(11) and 112.12(c)(11), mobile or portable containers (excluding mobile refuelers and other non-transportation-related tank trucks) must be positioned or located to prevent a discharge as described in §112.1(b). The provision requires that the secondary containment be sized to hold the capacity of the largest single compartment or container with sufficient freeboard to contain precipitation.

The appropriate containment methods for mobile containers may vary depending on the activity in which the container is engaged at a given time. Thus, secondary containment requirements may be met differently depending upon the type of operation being performed, as described below.

When mobile containers, such as drums, skids, and totes, are in a stationary mode, the requirements of §§112.8(c)(11) and 112.12(c)(11)[93] may be met through the use of permanent secondary containment methods, such as dikes, curbing, drainage systems, and catchment basins. In order to comply with this requirement, an owner/operator may designate an area of the facility in which to locate mobile containers when not in use. This area must be designed, following good engineering practices, to hold the capacity of the largest single compartment or container with sufficient freeboard to contain precipitation. The area designated for mobile portable containers must be identified on the facility diagram[94] provided within the SPCC Plan (§112.7(a)(3)).

While in use, mobile containers, such as drums, skids, and totes, must also comply with the requirements of §112.8(c)(11) or §112.12(c)(11) according to good engineering practice and the areas where the containers are used must be marked on the facility diagram. For these types of containers, the EPA inspector should verify that the secondary containment methods are appropriate to prevent a discharge to navigable waters or adjoining shorelines. For example, an oil-filled drum positioned for use at a construction site must be

93 Mobile/portable containers at Tier I qualified facilities are subject to §112.6(a)(3)(ii) in lieu of §§112.8(c)(11) and 112.12(c)(11).

94 Tier I qualified facilities are not subject to the facility diagram requirement in §112.7(a)(3).

equipped with secondary containment sized in accordance with §112.8(c)(11). The facility owner or operator may determine that it is impracticable to provide sized secondary containment in accordance with §112.8(c)(11), when the container is in use at the facility, or the general containment of §112.7(c), pursuant to §112.7(d). If so, then the SPCC Plan must properly explain why secondary containment is impracticable, and document the implementation of the alternative regulatory requirements of §112.7(d).

4.7.6 Mobile Refuelers and other Non-transportation-Related Tank Trucks (General Secondary Containment Requirement, §112.7(c))

When mobile containers meet the definition of mobile refuelers, in §112.2, then they are excluded from the sized secondary containment requirements for bulk storage containers. Providing sized secondary containment for vehicles that move frequently within a non-transportation-related facility to perform refueling operations can raise safety and security concerns (71 FR 77266, December 26, 2006). However, the general secondary containment requirements at §112.7(c) still apply. Furthermore, since mobile refuelers are a subset of bulk storage containers, the other provisions of §§112.8(c) and 112.12(c) also still apply.

§112.2

Mobile refueler means a bulk storage container onboard a vehicle or towed, that is designed or used solely to store and transport fuel for transfer into or from an aircraft, motor vehicle, locomotive, vessel, ground service equipment, or other oil storage container.

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 definition of mobile refueler describes vehicles of various sizes equipped with a bulk storage container such as a cargo tank or tank truck that is used to fuel or defuel aircraft, motor vehicles, locomotives, tanks, vessels or other oil storage containers, including full trailers and tank semi-trailers. The definition also includes nurse tanks, which are mobile vessels used at farms to store and transport fuel for transfers to or from farm equipment, such as tractors and combines, and to other bulk storage containers, such as containers used to provide fuel to wellhead/relift pumps at rice farms. A nurse tank is often mounted on a trailer for transport around the farm, and this function is consistent with that of a mobile refueler.

The exemption from sized secondary containment for mobile refuelers also applies to other non-transportation-related tank trucks.[95] Other non-transportation-related tank trucks may operate similarly to mobile refuelers, though not specifically transferring fuel. Instead, these tank trucks may carry other oils such as transformer oils, lubrication oils, crude oil, condensate, or non-petroleum oils such as AFVOs. Examples include a truck used to refill oil-filled equipment at an electrical substation and a pump truck at an oil production facility. These tank trucks may have the same difficulty in complying with the sized secondary containment requirements as mobile refuelers. Therefore, all non-transportation-related tank trucks are excluded from the sized secondary containment requirements for bulk storage containers, however the general secondary containment requirements at §112.7(c) apply (see 73 FR 74236, December 5, 2008).

Vehicles used to store oil, operating as on-site fueling vehicles within locations such as construction sites, military, or civilian remote operations support sites, or rail sidings are generally considered non-

[95] For more information on the jurisdiction of non-transportation-related tank trucks see *Chapter 2: SPCC Rule Applicability*.

transportation-related. Indicators of when a vehicle is intended to be used as a storage tank (and therefore considered non-transportation-related) include, but are not limited to:

- The vehicle is not licensed for on-road use;
- The vehicle is fueled on-site and never moves off-site; or
- The vehicle is parked on a home-base facility and is filled up off-site but then returns to the home base to fuel other equipment located exclusively within the home-base facility, and only leaves the site to obtain more fuel.

The exemption from sized secondary containment requirements does not apply to vehicles that are used primarily to store oil in a stationary location, such as tanker trucks used to supplement storage and serving as a fixed tank. An indicator that a vehicle is intended to store oil in a fixed location is that the vehicle is no longer mobile (e.g., it is hard-piped or permanently parked, or that the tank car has been separated from the cab of the truck).

Tip – Non-transportation related vehicles and railroad cars

The 1971 Memorandum of Understanding between EPA and the Department of Transportation (DOT) states that "highway vehicles and railroad cars which are used for the transport of oil exclusively within the confines of a non-transportation-related facility and which are not intended to transport oil in interstate or intrastate commerce" are considered non-transportation-related, and therefore fall under EPA's regulatory jurisdiction. For example, some oil refinery tank trucks and fueling trucks dedicated to a particular facility (such as a construction site, military base, or similar large facility) fall under this category.

4.7.7 Bulk Storage Containers at Oil Production Facilities (Sized Secondary Containment Requirements, §112.9(c)(2))

The secondary containment requirements of §112.9(c)(2) apply to all tank battery, separation, and treating facility installations at a regulated oil production facility, except for flow-through process vessels that comply with the alternative requirements under §112.9(c)(5), and produced water containers that comply with the alternative requirements of §112.9(c)(6).

According to the 2002 rule preamble, the sized secondary containment requirement at §112.9(c)(2) is not required for the entire leased area, merely for the contents of the largest single container in the tank battery, separation, and treating facility installation, with sufficient freeboard to contain precipitation." (67 FR 47128, July 17 2002) Thus, containers (e.g. drums storing

§112.9(c)(2)

Except as described in paragraph (c)(5) of this section for flow-through process vessels and paragraph (c)(6) of this section for produced water containers and any associated piping and appurtenances downstream from the container, construct all tank battery, separation, and treating facility installations, so that you provide a secondary means of containment for the entire capacity of the largest single container and sufficient freeboard to contain precipitation. You must safely confine drainage from undiked areas in a catchment basin or holding pond.

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

lubrication oil, which are not located within the tank battery are subject only to the general secondary containment requirements of §112.7(c) and not subject to §112.9(c)(2).

Section 112.9(c)(2) specifies that secondary containment be designed so that it is able to contain the entire capacity of the largest single container with sufficient freeboard to contain precipitation.[96] Additionally, pursuant to §112.9(c)(2), if facility drainage is used as a method of secondary containment for bulk storage containers, drainage from undiked areas must be safely confined in a catchment basin or holding ponds. Although the undiked drainage requirements of §112.9(c)(2) do not apply to other areas of the facility or lease, such as truck transfer or wellhead or flowline areas because they are not bulk storage containers, the rule does require that field drainage systems (such as drainage ditches or road ditches), and oil traps, sumps, or skimmers be inspected at regularly scheduled intervals. Promptly remove any accumulations of oil in these drainage systems that may have resulted from a small discharges (§112.9(b)(2)).

Section 112.7(c) also applies and requires the entire containment system, including walls and floor, must be capable of containing oil and must be constructed so that any discharge from a primary containment system, such as a tank, will not escape the containment system before cleanup occurs.[97]

The facility owner/operator may determine that it is impracticable to provide sized secondary containment in accordance with §112.9(c)(2). Pursuant to §112.7(d), the SPCC Plan must then clearly explain why secondary containment is not practicable, and document how the alternative regulatory requirements of §112.7(d) are implemented. Owners or operators of unattended facilities need to determine how to identify when an oil discharge occurs in order to effectively implement an oil spill contingency plan. This may involve additional site inspections, or some other method as determined appropriate by a PE.

Tip – Oil pits

Because a pit used as a form of secondary containment may pose a threat to birds and wildlife if oil is present in the pit, EPA encourages owners or operators who use a pit to take measures to mitigate the effect of the pit on birds and wildlife. Such measures may include netting, fences, or other means to keep birds or animals away. In some cases, pits may also cause a discharge as described in §112.1(b). The discharge may occur when oil spills over the top of the pit or when oil seeps through the ground into the groundwater, and then to navigable waters or adjoining shorelines. Therefore, EPA recommends that an owner or operator not use pits in an area where such pit may prove a source of such discharges. Should the oil reach navigable waters or adjoining shorelines, it is a reportable discharge under 40 CFR 110.6.

(67 FR 47116; July 17, 2002)

4.7.8 Onshore Drilling or Workover Equipment (Secondary Containment Requirements, §112.10(c))

Section 112.10(c) applies to onshore oil drilling and workover facilities. Areas with drilling and workover equipment are required to provide catchment basins or diversion structures to intercept and contain discharges

96 Refer to *Section 4.3.2* of this chapter for more information on calculating sufficient freeboard.

97 Refer to *Section 4.4.2* of this chapter for more information on sufficiently impervious secondary containment.

of fuel, crude oil, or oily drilling fluids. This provision contains no specific sizing requirement, and no freeboard requirement; it is essentially similar to the general secondary containment requirement of §112.7(c).

> **§112.10(c)**
>
> Provide catchment basins or diversion structures to intercept and contain discharges of fuel, crude oil, or oily drilling fluids.
>
> Note: The above text is an excerpt of the SPCC rule. See 40 CFR part 112 for the full text of the rule.

The facility owner/operator may determine that it is impracticable to provide secondary containment in accordance with §112.10(c). Pursuant to §112.7(d), the SPCC Plan must then clearly explain why secondary containment is not practicable, and document how the alternative regulatory requirements of §112.7(d) are implemented.

4.8 Alternative Measures in Lieu of Secondary Containment at Oil Production Facilities

4.8.1 Flow-through Process Vessels at Oil Production Facilities (General Secondary Containment Requirements, §112.7(c) and Alternative Requirements)

Flow-through process vessels at oil production facilities, such as horizontal or vertical separation vessels (e.g., heater-treater, free-water knockout, and gun barrel) have the primary purpose of separating oil from other fractions (water and/or gas) and sending the fluid streams to the appropriate container. These flow-through process vessels are bulk storage containers and are subject to the bulk storage container requirements of §112.9(c) including specific secondary containment requirements of §112.9(c)(2).

There is a potential fire-hazard if spilled oil collects around heater-treaters when dikes or berms are used to comply with the sized secondary containment requirements of the SPCC rule. Therefore, as an alternative to the sized secondary containment and inspection requirements for bulk storage containers at oil production facilities, §§112.9(c)(2)[98] and 112.9(c)(3), an oil production facility owner or operator may opt to provide general secondary containment in accordance with §112.7(c), and comply with the following requirements for flow-through process vessels at oil production facilities:

- Periodically and on a regular schedule, visually inspect and/or test flow-through process vessels and associated components (such as dump valves) for leaks, corrosion, or other conditions that could lead to a discharge as described in §112.1(b);
- Take corrective action or make repairs to flow-through process vessels and any associated components as indicated by regularly scheduled visual inspections, tests, or evidence of an oil discharge; and
- Promptly remove or initiate actions to stabilize and remediate any accumulations of oil discharges.

[98] See *Section 4.7.7*.

The additional requirements are necessary because oil production facilities are generally unattended, so there is a lower potential to immediately discover and correct a discharge than at other facilities that are typically attended during hours of operation. These alternative measures are optional, i.e., the owner or operator may still choose to comply with the sized secondary containment and inspection requirements of §§112.9(c)(2) and 112.9(c)(3). The facility owner or operator can decide which option is best suited to the design and operation of the facility. For more information on the alternate provisions for flow-through process vessels, see *Chapter 7: Inspection, Evaluation, and Testing*, *Section 7.2.9*.

SPCC Plans that include the alternative measures in §112.9(c)(5) must address how flow-through process vessels comply with general secondary containment requirements of §112.7(c). Flow-through process vessels must be provided with secondary containment so that any discharge does not escape the containment system before cleanup occurs. In determining how to provide appropriate general secondary containment for flow-through process vessels, an oil production facility owner or operator may consider the typical failure mode and most likely quantity of oil that would be discharged (see §112.7(c)). Based on site-specific conditions, the owner or operator can determine what capacity of secondary containment is needed, and design the containment method accordingly. The design for general secondary containment should address site-specific factors, including, but not limited to, frequency of site visits, rate of flow of the wells, capacity of the containers, and whether the facility is equipped with automatic shut-off devices to prevent an overflow (see 73 FR 74278, December 5, 2008).

The general secondary containment provision allows for the use of both active and passive containment measures to prevent a discharge to navigable waters or adjoining shorelines. However, active containment measures would generally have limited applicability at oil production facilities because these facilities are typically not attended and owners or operators may not be able to detect a discharge in a timely manner to successfully implement the active containment measures. In contrast, passive containment measures are installations that do not require deployment or action by the owner or operator and may be more appropriate for unattended oil production operations. *Section 4.4.1* provides several examples of the use of active and passive containment measures at an SPCC-regulated facility.

Owners or operators of oil production facilities that implement the alternative provisions for flow-through process vessels in accordance with §112.9(c)(5) are not required to locate flow-through process vessels within a secondary containment system sized for the entire capacity of the largest single container and sufficient freeboard to contain precipitation. However, oil production facility owners and operators may want to provide secondary containment (such as berms) around the entire tank battery, which is a typical design for many oil production facilities. These batteries can include flow-through process vessels, such as separators, along with oil stock tanks and other bulk storage containers. Such a facility design would provide the maximum environmental protection (see 73 FR 74277, December 5, 2008).

Further, the owner/operator of the facility must install sized secondary containment and comply with bulk storage container inspection requirements (§112.9(c)(2) and (c)(3)) for flow-through process vessels within six months of a discharge(s) from flow-through process equipment as described below and a report must be submitted to the RA in accordance with the requirements of §112.4:

- More than 1,000 U.S. gallons of oil in a single discharge to navigable waters or adjoining shorelines, or
- More than 42 U.S. gallons of oil in each of two discharges to navigable waters or adjoining shorelines within any twelve month period.

This excludes discharges that are the result of natural disasters, acts of war, or terrorism. When determining the applicability of this SPCC reporting requirement, the gallon amount(s) specified (either 1,000 or 42) refers to the amount of oil that actually reaches navigable waters or adjoining shorelines not the total amount of oil spilled. EPA considers the entire volume of the discharge to be oil for the purposes of these reporting requirements.

EPA inspectors should review inspection records to ensure that the Plan is being properly implemented to comply with the alternative requirements. If, upon inspection, it is discovered that the owner or operator of the facility is not implementing the alternative requirements included in the SPCC Plan, then the RA may require the Plan be amended to include sized secondary containment for flow-through process vessels at the facility and inspections in accordance with 112.9(c)(2) and (c)(3).

Finally, if the owner or operator of the facility determines that secondary containment is impracticable and chooses not to implement the alternative requirements in §112.9(c)(5), then the facility owner or operator may comply with §112.7(d). The SPCC Plan must then clearly explain why secondary containment is impracticable; include with the SPCC Plan an oil contingency plan following the provisions of 40 CFR part 109 (unless he or she has submitted an FRP under §112.20); and provide a written commitment of manpower, equipment, and materials required to expeditiously control and remove any quantity of oil that may be harmful (§112.7(d)). Owners or operators of unattended facilities may need to determine how to quickly identify when an oil discharge occurs in order to effectively implement an oil spill contingency plan. This may involve additional site inspections, or some other method as determined appropriate by a PE.

4.8.2 Produced Water Containers at Oil Production Facilities (General Secondary Containment Requirements, §112.7(c) and Alternative Requirements)

Produced water containers are defined in §112.2 and are typically located within a tank battery at an oil production facility where they are used to store well fluids remaining after marketable crude oil is separated from the fluids extracted from the reservoir and prior to disposal, re-injection, subsequent use (or beneficial reuse), or further treatment. Under normal operating conditions, a layer of oil may be present on top of the fluids in these produced water containers. These produced water containers are typically at the end of the oil treatment process and often accumulate emulsified oil not captured in the separation process. The amount of oil by volume observed in produced water containers varies, but is generally estimated to range from less than one to up to ten percent, and can be greater.

> **§112.2**
>
> *Produced water container* means a storage container at an oil production facility used to store the produced water after initial oil/water separation, and prior to reinjection, beneficial reuse, discharge, or transfer for disposal.
>
> Note: The above text is an excerpt of the SPCC rule. Refer to 40 CFR part 112 for the full text of the rule.

Skimming operations for produced water containers that remove or recover free phase oil on a regular basis may operate similarly to separation operations for flow-through process vessels. Therefore, the additional compliance measures for produced water containers described below is consistent with alternative compliance options provided for other bulk storage containers (i.e., flow-through process vessels) which separate oil and water mixtures.

For produced water containers, instead of complying with the sized secondary containment and inspection requirements for bulk storage containers at oil production facilities, §§112.9(c)(2)[99] and 112.9(c)(3), an oil production facility owner or operator may opt to provide general secondary containment and comply with the following additional requirements:

- Implement on a regular schedule a procedure to separate free-phase oil (or skimming program).
- Regularly scheduled visual inspection and/or testing of produced water containers and associated piping and appurtenances for leaks, corrosion, or other conditions that could lead to a discharge as described in §112.1(b).
- Corrective action or repairs to produced water containers and any associated piping as indicated by regularly scheduled visual inspections, tests, or evidence of an oil discharge.
- Prompt removal or initiation of actions to stabilize and remediate any accumulations of oil discharges associated with produced water containers.

The general secondary containment requirement at §112.7(c) calls for secondary containment to be designed to hold the most likely quantity of oil potentially discharged in an event, rather than installation of sized secondary containment designed to hold the contents of the largest container with sufficient freeboard. Typically, the quantity of oil contained by general secondary containment is expected to be smaller than the amount of oil that would need to be contained by sized secondary containment. Good general secondary containment practices can be successfully implemented if such practices are designed by a PE in consideration of the site specific factors and in combination with additional oil spill prevention practices including inspections, procedures to minimize the amount of free-phase oil in the container and procedures to remove/ remediate discharged oil.

99 See *Section 4.7.7*.

§112.9(c)(6)

Produced water containers. For each produced water container, comply with §112.9(c)(1) and (c)(4); and §112.9(c)(2) and (c)(3), or comply with the provisions of the following paragraphs (c)(6)(i) through (v):

(i) Implement, on a regular schedule, a procedure for each produced water container that is designed to separate the free-phase oil that accumulates on the surface of the produced water. Include in the Plan a description of the procedures, frequency, amount of free-phase oil expected to be maintained inside the container, and a Professional Engineer certification in accordance with §112.3(d)(1)(vi). Maintain records of such events in accordance with §112.7(e). Records kept under usual and customary business practices will suffice for purposes of this paragraph. If this procedure is not implemented as described in the Plan or no records are maintained, then you must comply with §112.9(c)(2) and (c)(3).

(ii) On a regular schedule, visually inspect and/or test the produced water container and associated piping for leaks, corrosion, or other conditions that could lead to a discharge as described in §112.1(b) in accordance with good engineering practice.

(iii) Take corrective action or make repairs to the produced water container and any associated piping as indicated by regularly scheduled visual inspections, tests, or evidence of an oil discharge.

(iv) Promptly remove or initiate actions to stabilize and remediate any accumulations of oil discharges associated with the produced water container.

(v) If your facility discharges more than 1,000 U.S. gallons of oil in a single discharge as described in §112.1(b), or discharges more than 42 U.S. gallons of oil in each of two discharges as described in §112.1(b) within any twelve month period from a produced water container subject to this subpart (excluding discharges that are the result of natural disasters, acts of war, or terrorism) then you must, within six months from the time the facility becomes subject to this paragraph, ensure that all produced water containers subject to this subpart comply with §112.9(c)(2) and (c)(3).

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

Produced water containers must be provided with secondary containment so that any discharge does not escape the containment system before cleanup occurs. In determining how to provide appropriate general secondary containment for produced water containers, a production facility owner or operator may consider the typical failure mode and most likely quantity of oil that would be discharged (*see* §112.7(c)). Based on site-specific conditions, the owner or operator can determine what capacity of secondary containment is needed, and design the containment method accordingly. The design for general secondary containment should address site-specific factors, including, but not limited to, frequency of site visits, rate of flow of the wells, frequency of the free-phase oil separation and removal process or procedure, the amount of oil that typically accumulates on the surface of the produced water container between skimming operations, capacity of the containers, and whether the facility is equipped with automatic shut-off devices to prevent an overflow.

The general secondary containment provision allows for the use of both active and passive containment measures to prevent a discharge to navigable waters or adjoining shorelines. However, active containment measures would generally have limited applicability at oil production facilities because these facilities are typically not attended and owners or operators may not be able to detect a discharge in a timely manner to successfully implement the active measures. In contrast, passive containment measures are installations that do not require deployment or action by the owner or operator and may be more appropriate for unattended oil production operations. See *Section 4.4.1* of this guidance for several examples of the use of active and passive containment measures at an SPCC-regulated facility.

The facility owner or operator must implement a process and/or procedure for the produced water container (s) that is designed to remove the free-phase oil that accumulates on the surface of the produced water container. This process or procedure must be implemented on a regular schedule so that the amount of free phase oil that collects in produced water containers is within the amounts managed by the general secondary containment system designed by the PE to address the typical failure mode, and the most likely quantity of oil that would be discharged.

The SPCC Plan must include a description of the free-phase oil separation and removal process or procedure, the frequency it is implemented or operated, the amount of free-phase oil expected to be maintained inside the container, and a description of the adequacy of the general secondary containment approach for the produced water container, including the anticipated typical failure mode and the method, design, and capacity for general secondary containment. Additionally, the owner or operator must keep records of the implementation of these procedures in accordance with §112.7(e) (see 73 FR 74287, December 5, 2008).

Section 112.3(d)(1)(vi) requires the PE to certify that an oil removal process or procedure for produced water containers is designed according to good engineering practice to reduce the accumulation of free-phase oil, and that the process or procedure and frequency for required inspections, maintenance, and testing have been established. Oil production facility owners or operators that meet the criteria for Tier II qualified facilities (as described in §112.3(g)) and choose to self-certify their SPCC Plans cannot take advantage of the flexibility allowed in the alternative requirements for produced water containers, unless the procedures for skimming produced water containers are reviewed and certified in writing by a PE (§112.6(b)(3)(iii) and 112.6(b)(4)).

If the facility experiences a discharge of more than 1,000 U.S. gallons of oil in a single discharge to navigable waters or adjoining shorelines, or discharges more than 42 U.S. gallons of oil in each of two discharges to navigable waters or adjoining shorelines, occurring within any twelve month period (excluding discharges that are the result of natural disasters, acts of war, or terrorism)[100] from any produced water container, then the facility owner/operator may no longer take advantage of this alternative option and must comply with the sized secondary containment requirements at §112.9(c)(2) and the inspection requirements at §112.9(c)(3) within six months for all produced water containers at the facility. Additionally, in accordance with the requirements of §112.4, the owner or operator must submit a report to the RA within 60 days of the discharge(s) and to the appropriate state agency or agencies in charge of oil pollution control activities.

The facility owner/operator may determine that it is impracticable to provide sized secondary containment for produced water containers in accordance with §112.9(c)(2) and choose not to implement the alternative requirements for these containers as described in §112.9(c)(6). The SPCC Plan must then clearly

[100] When determining the applicability of this SPCC reporting requirement, the gallon amount(s) specified (either 1,000 or 42) refers to the amount of oil that actually reaches navigable waters or adjoining shorelines not the total amount of oil spilled. EPA considers the entire volume of the discharge to be oil for the purposes of these reporting requirements.

explain why secondary containment is not practicable; include with the SPCC Plan an oil spill contingency plan following the provisions of 40 CFR part 109 (unless he or she has submitted an FRP under §112.20); and provide a written commitment of manpower, equipment, and materials required to expeditiously control and remove any quantity of oil that may be harmful (§112.7(d)). Owners or operators of unattended facilities may need to determine how to quickly identify when an oil discharge occurs in order to effectively implement an oil spill contingency plan. This may involve additional site inspections, or some other method as determined appropriate by a PE.

Finally, these alternative measures are optional. The owner or operator may still choose to comply with the sized secondary containment and inspection requirements of §§112.9(c)(2) and 112.9(c)(3) for produced water containers. The facility owner or operator can decide which option is best suited to the design and operation of the facility. For more information on the alternate provisions for produced water containers, see *Chapter 7: Inspection, Evaluation, and Testing*, *Section 7.2.10.*

Tip – Discharge from flow-through process vessels or produced water containers

If flow-through process vessels or produced water containers at the facility cause a single discharge of oil to navigable waters or adjoining shorelines exceeding 1,000 U.S. gallons, or two discharges of oil to navigable waters or adjoining shorelines each exceeding 42 U.S. gallons within any 12-month period then:

- Install sized secondary containment with sufficient freeboard for precipitation for the type of containers that caused the discharge (i.e., either all flow-process vessels or all produced water containers at the facility) within six months of such a discharge(s), and
- Submit a report to the Regional Administrator (in accordance with the requirements of §112.4) within 60 days of the discharge(s) and to the appropriate state agency or agencies in charge of oil pollution control activities.

The report must include the name of the facility; the name of the owner or operator; location of the facility; maximum storage or handling capacity of the facility and normal daily throughput; corrective action and countermeasures taken, including a description of equipment repairs and replacements; an adequate description of the facility, including maps, flow diagrams, and topographical maps, as necessary; the cause of the discharge(s), including a failure analysis of the system or subsystem in which the failure occurred; additional preventive measures taken or contemplated to minimize the possibility of recurrence; and any other information as the Regional Administrator may reasonably require pertinent to the Plan or discharge.

Figure 4-13: List of SPCC requirements eligible for impracticability determinations.

Rule Element	Relevant Section(s)	Evaluation	Verification	Nonconformance
ALL FACILITIES				
General Containment	112.7(c)	Are appropriate containment and/or diversionary structures provided to prevent a discharge to navigable waters of adjoining shorelines? Is the containment system capable of containing oil and constructed so that any discharge from the primary containment system will not escape before cleanup occurs? Are active measures properly documented? Is the most likely discharge volume documented?	Visual.	Does the Plan explain why secondary containment is impracticable? Is a Contingency Plan (or FRP) provided? Does the Plan include a written commitment of manpower, equipment, and materials? Does the facility conduct periodic integrity testing of bulk storage containers and integrity and leak testing of associated valves and piping? Does the facility implement alternative measures for qualified oil-filled operational equipment (§112.7(k))? Does an oil production facility implement alternative measures for flowlines and intra-facility gathering lines as provided in §112.9(d)(3)?
Loading/unloading Racks	112.7(h)(1)	Does the loading/unloading rack area drainage flow into a catchment basin or treatment facility? If not, is a quick drainage system used? Is the secondary containment system sized to contain the maximum capacity of any single compartment of a tank car or tank truck loaded there?	Visual.	Does the Plan explain why secondary containment is impracticable? Is a Contingency Plan (or FRP) provided? Does the Plan include a written commitment of manpower, equipment, and materials?
ALL ONSHORE FACILITIES, EXCEPT OIL PRODUCTION				
Bulk Storage Containers	112.8(c)(2) OR 112.12(c)(2)	Is the secondary containment system (except when for mobile refuelers and other non-transportation-related tank trucks) sized to contain the entire capacity of the largest single container and sufficient freeboard to contain precipitation? Are dikes sufficiently impervious to contain oil?	Visual.	Does the Plan explain why secondary containment is impracticable? Is a Contingency Plan (or FRP) provided? Does the Plan include a written commitment of manpower, equipment, and materials? Does the facility conduct periodic integrity testing of bulk storage containers and integrity and leak testing of associated valves and piping?

Rule Element	Relevant Section(s)	Evaluation	Verification	Nonconformance
	112.8(c)(11) OR 112.12(c)(11)	Are mobile or portable oil containers (except mobile refuelers and other non-transportation-related tank trucks) located within a dike, catchment basin or other means of secondary containment large enough to contain the largest single container and sufficient freeboard to contain precipitation?	Visual.	Does the Plan explain why secondary containment is impracticable? Is a Contingency Plan (or FRP) provided? Does the Plan include a written commitment of manpower, equipment, and materials? Does the facility conduct periodic integrity testing of bulk storage containers and integrity and leak testing of associated valves and piping?
ONSHORE OIL PRODUCTION FACILITIES				
Drainage	112.9(c)(2)	Is drainage from undiked areas safely confined in a catchment basin or holding pond?	Visual.	Does the Plan explain why secondary containment is impracticable? Is a Contingency Plan (or FRP) provided? Does the Plan include a written commitment of manpower, equipment, and materials? Does the facility conduct periodic integrity testing of bulk storage containers and integrity and leak testing of associated valves and piping?
Bulk Storage Containers	112.9(c)(2)	Are all tank battery, separation, and treatment facility installations provided with secondary containment that can contain the largest single container and sufficient freeboard to contain precipitation?	Visual.	Does the Plan explain why secondary containment is impracticable? Is a Contingency Plan (or FRP) provided? Does the Plan include a written commitment of manpower, equipment, and materials? Does the facility conduct periodic integrity testing of bulk storage containers and integrity and leak testing of associated valves and piping? Does the facility implement alternative measures for flow-through process vessels in accordance with §112.9(c)(5)? Does the facility implement alternative measures for produced water tanks in accordance with §112.9(c)(6)?

Rule Element	Relevant Section(s)	Evaluation	Verification	Nonconformance
Flow-through Process Vessels	112.9(c)(2)	Are all flow-through process vessels provided with secondary containment that can contain the largest single container and sufficient freeboard to contain precipitation? - or - Are appropriate containment and/or diversionary structures provided? Is the containment system capable of containing oil and constructed so that any discharge from the primary containment system will not escape before cleanup occurs? Are flow-through process vessels and components inspected or tested for leaks, corrosion or other conditions that could lead to a discharge to navigable waters or adjoining shorelines? Are oil accumulations promptly removed or actions initiated to stabilize and remediate them? Was corrective action taken if a discharge occurred?	Visual.	Does the facility comply with §112.9(c)(2)? - or - Does the Plan explain why secondary containment is impracticable? Is a Contingency Plan (or FRP) provided? Does the Plan include a written commitment of manpower, equipment, and materials? Does the facility conduct periodic integrity testing of bulk storage containers and integrity and leak testing of associated valves and piping? - or - Does the facility comply with alternative requirements in §112.9(c)(5)?

Rule Element	Relevant Section(s)	Evaluation	Verification	Nonconformance
Produced Water Containers	112.9(c)(2)	Are all produced water containers provided with secondary containment that can contain the largest single container and sufficient freeboard to contain precipitation? - or - Are appropriate containment and/or diversionary structures provided? Is the containment system capable of containing oil and constructed so that any discharge from the primary containment system will not escape before cleanup occurs? Is there a procedure to separate free-phase oil? Are records maintained that document implementation of the procedure? Is periodic inspection and/or testing of produced water containers and any associated piping and appurtenances for leaks, corrosion, or other conditions that could lead to a discharge to navigable waters or adjoining shorelines, conducted? Are corrective action or repairs to produced water containers and any associated piping taken, as indicated by regularly scheduled visual inspections, tests, or evidence of an oil discharge? Are oil accumulations promptly removed or actions initiated to stabilize and remediate them?	Visual.	Does the facility comply with §112.9(c)(2)? - or - Does the Plan explain why secondary containment is impracticable? Is a Contingency Plan (or FRP) provided? Does the Plan include a written commitment of manpower, equipment, and materials? Does the facility conduct periodic integrity testing of bulk storage containers and integrity and leak testing of associated valves and piping? - or - Does the facility comply with alternative requirements in §112.9(c)(6)?
ONSHORE OIL DRILLING AND WORKOVER FACILITIES				
Drainage	112.10(c)	Are catchment basins or diversion structures provided to intercept and contain discharges of fuel, crude oil, or oily drilling fluids?	Visual.	Does the Plan explain why secondary containment is impracticable? Is a Contingency Plan (or FRP) provided? Does the Plan include a written commitment of manpower, equipment, and materials? Does the facility conduct periodic integrity testing of bulk storage containers and integrity and leak testing of associated valves and piping?