

UNDERGROUND STORAGE TANK SYSTEM OVERFILL PREVENTION EQUIPMENT INSPECTION REQUIREMENTS

Authority Cited: California Health and Safety Code (HSC); Title 23 California Code of Regulations (23 CCR)

A. Scope

This document addresses inspection of underground storage tank (UST) overflow prevention equipment. It supplements State Water Resources Control Board (SWRCB) Local Guidance Letter LG-150-2, which is available online at www.waterboards.ca.gov/water_issues/programs/ust/leak_prevention/lgs/. For compliance purposes, refer to the actual text of the regulations and industry standards since the wording in this document summarizes requirements. All Unidocs forms and documents are available at www.unidocs.org.

B. Overflow Prevention Options

The local UST Program Unified Program Agency (UPA) may waive the requirement for overflow prevention equipment where the tank inlet exists in an observable area, the spill container is adequate to collect any overflow, and the tank system is filled by transfers of no more than 25 gallons at one time.¹ [23 CCR §2635(c)(2)]

All USTs that are not exempted pursuant to 23 CCR §2635(c)(2) must be equipped with an overflow prevention system which does not allow for manual override and meets one of the following options: [23 CCR §2635(c)(1)]

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|-----------|---|---|
| A1 | Alert the transfer operator when the tank is 90% full by restricting the flow into the tank [23 CCR §2635(c)(1)(A)] | <i>Flow restrictor (ball float) installed below vent riser @ 90%</i> |
| A2 | <u>Or</u> Alert the transfer operator when the tank is 90% full by triggering an audible and visual alarm. [23 CCR §2635(c)(1)(A)] | <i>External audible & visual alarm @ 90%</i> |
| B | Restrict delivery of flow to the tank at least 30 minutes before the tank overfills, provided the restriction occurs when the tank is filled to no more than 95% of capacity; <u>and</u> activate an audible alarm at least 5 minutes before the tank overfills. [23 CCR §2635(c)(1)(B)] | <i>Flow restrictor (ball float) installed below vent riser @ ≤95% <u>and</u> external audible alarm</i> |
| C | Provide positive shut-off of flow to the tank when the tank is filled to no more than 95% of capacity. [23 CCR §2635(c)(1)(C)] | <i>Mechanical overflow prevention (flapper) valve @ 95%</i> |
| D | Provide positive shut-off of flow to the tank so that none of the fittings located on the top of the tank are exposed to product due to overfilling. [23 CCR §2635(c)(1)(D)] | <i>Mechanical overflow prevention (flapper) valve @ >95%</i> |

C. General Requirements for Overflow Prevention Equipment Inspections

1. Overflow prevention equipment for USTs installed on or before September 30, 2018 must be inspected by October 13, 2018 and every 36 months thereafter; and within 30 days of completion of a repair. [23 CCR §2637.2(a)(1)]
2. Overflow prevention equipment for USTs installed on and after October 1, 2018 must be inspected upon installation and every 36 months thereafter; and within 30 days of completion of a repair. [23 CCR §2637.2(a)(2)]

¹ This provision allows, but does not require, the UPA to waive the requirement. In cases where the UST operator allows overfilling to occur, the UPA may withdraw such a waiver and require the UST owner/operator to retrofit the UST with approved overflow prevention equipment.

3. Periodic inspections must be completed anytime before or during the month the testing is required.² [23 CCR §2620(e)]
4. Inspections must be performed by a UST Service Technician meeting the requirements of 23 CCR §2715(f). [23 CCR §2637.2(c)]
5. For UST Service Technicians inspecting overfill prevention equipment, the requirement to be trained and certified by the equipment manufacturer may be obtained through certification by the manufacturer of the overfill prevention equipment being inspected or through the developer of the inspection method being used. [23 CCR §2715(f)(2)(D)]
6. In the event that no training or certification exists that would satisfy the above criteria, the local UPA may approve comparable alternate training or certification. [23 CCR §2715(f)(2)(E)]

D. Inspection Methods and Procedures

1. Overfill prevention equipment inspections must be conducted using an inspection procedure that demonstrates that the overfill prevention equipment is set to activate at the correct level specified in 23 CCR §2635(c)(1) and will activate when regulated stored substance reaches that level. Inspections must be performed as follows: [23 CCR §2637.2(b)]
 - In accordance with the manufacturer's guidelines or standards.
 - Using an applicable method specified in an industry code or engineering standard *if there are no manufacturer's guidelines or standards*.
 - Using a method approved by a state-registered professional engineer (PE) *if there are no applicable manufacturer's guidelines or standards, industry codes, or engineering standards*.
2. Some manufacturers' guidelines or standards may not fully address both elements of the inspection. For example, a manufacturer may have detailed procedures for installing their equipment to activate at a particular liquid level, but those procedures may not specifically address testing or inspection procedures to verify functionality. In such cases, the SWRCB advises that an applicable method specified in an industry code or engineering standard be used.
3. Per State Water Resources Control Board guidance, "All equipment used to satisfy the overfill prevention requirement of section 2635(c)(1) and listed in the Tank Construction section on the Tank Information page of the California Environmental Reporting System (CERS) must be inspected. UST owners and operators are required to list in CERS only the equipment used to satisfy the overfill prevention requirement of section 2635(c)(1). To determine what equipment is used to satisfy the overfill prevention requirement of section 2635(c)(1) the UST owner or operator must first identify which method of overfill prevention is being used."

² Per State Water Resources Control Board guidance, "A UST owner or operator may change the due date of the inspection by performing the inspection early, but an inspection conducted late will not change the due date." "A UST owner or operator that performs an inspection early may not return to the original due date and must perform the next inspection before the end of the new 36 calendar month compliance period."

E. Industry Standards for Inspections and Testing

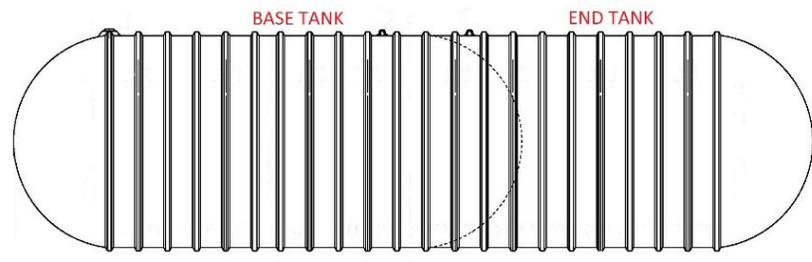
1. As noted above, the use of industry codes or engineering standards is only allowed in cases where the overfill prevention equipment manufacturer does not have their own guidelines or standards.
2. Industry codes must be published.
3. The following table summarizes spill container testing standards published in the Petroleum Equipment Institute's (PEI) *Recommended Practices for the Testing and Verification of Spill, Overfill, Leak Detection and Secondary Containment Equipment at UST Facilities* (PEI/RP1200-17):

Equipment Type	RP1200 Inspection/Testing Standard
<p style="text-align: center;">Mechanical Overfill Prevention (Flapper) Valve</p>	<ul style="list-style-type: none"> • Remove the drop tube. • Visually inspect valve and float for damage or corrosion that inhibits functionality and remove any debris and foreign objects. • Manually move the float mechanism to ensure free movement. • With the float mechanism in the shutoff (closed) position, visually inspect the drop tube and confirm that the shutoff valve will move into the product flow path. • If possible, verify that the bypass valve is open and free of blockage. • Using the manufacturer's procedure, examine the drop tube and shutoff valve to determine if product flow will be completely shut off at 95% of tank capacity. Make any adjustments necessary to ensure that flow will be completely shut off when the tank is no more than 95% full. • Reinstall the drop tube. • Pass Criteria = Device functions as designed and complete shutoff of product flow is able to occur when the tank is no more than 95% full.
<p style="text-align: center;">Ball Float</p>	<ul style="list-style-type: none"> • Verify that all tank-top fittings are vapor-tight. • Remove the ball float assembly. • Visually inspect the float and cage and remove any debris or foreign objects. • Check the ball for holes and cracks, free movement in the cage, and corrosion that affects proper operation of the ball float. • Check the vent orifice to confirm that it is located near the top of the tank and open. • Refer to the manufacturer's installation procedure to confirm that vapor flow will be restricted when the tank is no more than 90% full. • Reinstall the ball float per the manufacturer's installation instructions. • Pass Criteria = Ball float functions as designed, flow restriction occurs when the tank is no more than 90% full, and the tank-top fittings are vapor-tight.

Equipment Type	RP1200 Inspection/Testing Standard
<p>Overfill Alarms <i>[Note: This test is for overfill alarms triggered by automatic tank gauging (ATG) systems that use magnetostrictive probes for fuel level measurements.]</i></p>	<ul style="list-style-type: none"> • Measure the product level at the tank’s ATG probe riser and compare to the ATG console’s reading to confirm accuracy of the ATG. • Verify that the ATG is programmed to activate the external overfill alarm unit when the tank is no more than 90% full. Consult the tank chart for the inch-level setting for 90% tank volume. • Confirm that the overfill alarm circuit is operational. • Activate the overfill alarm to confirm operation of alarms. • Disconnect the ATG probe cable and remove the probe from the tank. • Inspect the probe and confirm that the floats move freely. • Reconnect the ATG probe cable. • Move the fuel float to the middle of the probe and confirm that the ATG panel shows the correct product height in inches. • Slowly move the fuel float up the probe until the overfill alarm triggers. • At the point where the overfill alarm triggered, measure the distance from the bottom of the probe to the bottom of the fuel float. • Using the tank chart, find the volume that corresponds to the float height and determine the % of tank capacity. • Compare the measurements to the values programmed in the ATG console. • Reinstall the ATG probe. • Pass Criteria = Alarms activate when the tank is no more than 90% full and fuel level on the ATG console agrees with the gauge stick reading.

F. Overfill Activation Height

It is critical to consult the manufacturer’s tank calibration chart to determine the height above the tank bottom that corresponds to 90% or 95% of the tank’s liquid capacity. If USTs were rectangular, calculating activation height would be a simple matter. To activate at 90% of capacity, you would merely locate a point that is 90% of the distance between the tank floor and tank roof. Since USTs are cylinders, this does not work. One inch of product at 50% of a cylindrical tank height holds many more gallons than 1” of product at 90% since the tank is much wider in the middle. This is compounded in the case of fiberglass tanks, which are cylinders with rounded ends, and thus are both wider and longer in the center than they are near their tops and bottoms. Also, compartmented fiberglass tanks will have a **BASE TANK** that has two convex ends and an **END TANK** that has one convex end and one concave end. If tank charts are not available, Ken Wilcox Associates has a tank calculator available at www.kwaleak.com/downloads/tank_calculator.htm.



G. Notification and Reporting

1. The UST owner/operator must notify the local UPA at least 48 hours prior to conducting an overfill prevention inspection. [23 CCR §2637.2(f)]
2. Results of overfill prevention inspections must be recorded on the *Overfill Prevention Equipment Inspection Report Form* located in Appendix IX of Title 23 California Code of Regulations. [The Unidocs document number is UN-109.] [23 CCR §2637.2(d)]
3. Copies of the inspection procedures and all documentation required to determine the results must be attached to the *Overfill Prevention Equipment Inspection Report Form*. [23 CCR Appendix IX]
4. Pass or fail, the UST owner/operator must submit a copy of the *Overfill Prevention Equipment Inspection Report Form* and required attachments to the local UPA within 30 days of completion of the inspection. [23 CCR §2637.2(e)]

H. Record Keeping

The UST owner/operator must maintain overfill prevention equipment inspection records on-site, or off-site at a readily accessible location *if approved by the local UPA*, for at least 36 months. These records must be made available, upon request within 36 hours, to the local UPA or the State Water Resources Control Board. [23 CCR §2712(b)(1)(G)]

I. Repairs and Retrofits

1. Check with the local UPA regarding plan check and permit requirements before repairing or replacing overfill prevention equipment. UPAs cannot approve a repair or upgrade unless it can be demonstrated that the UST system is structurally sound and the method of repair or upgrade will prevent unauthorized releases due to structural failure or corrosion during the operating life of the UST system. [23 CCR §2660(k)]
2. On or after October 1, 2018, installation of new or replacement flow restrictors (ball floats) on vent riser piping does not satisfy the overfill prevention requirements of 23 CCR §2635.³ [23 CCR §2635(d)]
3. All overfill prevention which uses flow restrictors on vent piping which require repair or replacement on or after October 1, 2018 must be retrofitted with overfill prevention equipment in accordance with 23 CCR §2635. [23 CCR §2665(c)]

J. Converting from One Overfill Prevention Method to Another

1. A permit or other approval from the UPA is likely required prior to switching overfill prevention methods.
2. Options A1 and B both use ball floats, so switching to them has been prohibited since October 1, 2018.
3. Since it is generally easier to inspect an audible and visual overfill alarm system than it is to remove and inspect mechanical overfill prevention valves or flow restrictors (ball floats), the UST owner/operator may be tempted to remove those devices and only use audible and visual alarms triggered @ 90% pursuant to Option A2. For USTs installed on or after July 1, 2003, this is not a problem since all piping

³ Ball floats installed prior to October 1, 2018 may continue to be used for overfill prevention, provided they pass their periodic inspections. Ball floats may be installed after October 1, 2018, but do not qualify as overfill prevention equipment, and they should not be identified as overfill prevention equipment on the CERS UST – Tank Information Page.

connected to those tanks must be secondarily contained and monitored per HSC §25290.1(k) or 25290.2(j). It is also not a problem for USTs installed on or before July 1, 1987.

For USTs installed between July 2, 1987 and June 30, 2003, before switching to Options A2 or D is allowed, it must first be confirmed that the tank fill riser pipes and underground vent lines are secondarily contained and interstitially monitored. Per 23 CCR §2636(a)(1), vent and riser piping in those UST systems is only exempt from secondary containment, interstitial monitoring, and corrosion protection if overfill prevention Options B or C are used.

- The following table lists allowed options for various UST systems based on their installation date⁴ and how they are constructed and monitored.

Allowed Overfill Prevention Methods

Tank Install Date	Option A1 OK?	Option A2 OK?	Option B OK?	Option C OK?	Option D OK?
7/1/2003 - Present	<ul style="list-style-type: none"> ➤ Yes if Ball Float (BF) installed prior to 10/1/2018 ➤ No if BF installed on or after 10/1/2018 	<ul style="list-style-type: none"> ➤ Yes 	<ul style="list-style-type: none"> ➤ Yes if BF installed prior to 10/1/2018 ➤ No if BF installed on or after 10/1/2018 	<ul style="list-style-type: none"> ➤ Yes 	<ul style="list-style-type: none"> ➤ Yes
7/2/1987 – 6/30/2003	<ul style="list-style-type: none"> ➤ Yes if UST has monitored fill sump <i>and</i> DW U/G Vent Line <i>and</i> BF installed prior to 10/1/2018 ➤ No if direct bury spill bucket ➤ No if unmonitored fill sump ➤ No if SW or unmonitored U/G Vent Line ➤ No if BF installed on or after 10/1/2018 	<ul style="list-style-type: none"> ➤ Yes if UST has monitored fill sump <i>and</i> DW U/G Vent Line ➤ No if direct bury spill bucket ➤ No if unmonitored fill sump ➤ No if SW or unmonitored U/G Vent Line 	<ul style="list-style-type: none"> ➤ Yes if BF installed prior to 10/1/2018 ➤ No if BF installed on or after 10/1/2018 	<ul style="list-style-type: none"> ➤ Yes 	<ul style="list-style-type: none"> ➤ Yes if UST has monitored fill sump <i>and</i> DW U/G Vent Line ➤ No if direct bury spill bucket ➤ No if unmonitored fill sump ➤ No if SW or unmonitored U/G Vent Line
On or before 7/1/1987	<ul style="list-style-type: none"> ➤ Yes if BF installed prior to 10/1/2018 ➤ No if BF installed on or after 10/1/2018 	<ul style="list-style-type: none"> ➤ Yes 	<ul style="list-style-type: none"> ➤ Yes if BF installed prior to 10/1/2018 ➤ No if BF installed on or after 10/1/2018 	<ul style="list-style-type: none"> ➤ Yes 	<ul style="list-style-type: none"> ➤ Yes

⁴ A UST system’s installation date is the date the tank is initially placed in the excavation.