

UST MINI BOOT CAMP



SHEAR VALVES, E-STOPS AND FIRE SUPPRESSION

John Olko

Manager, Environmental Compliance

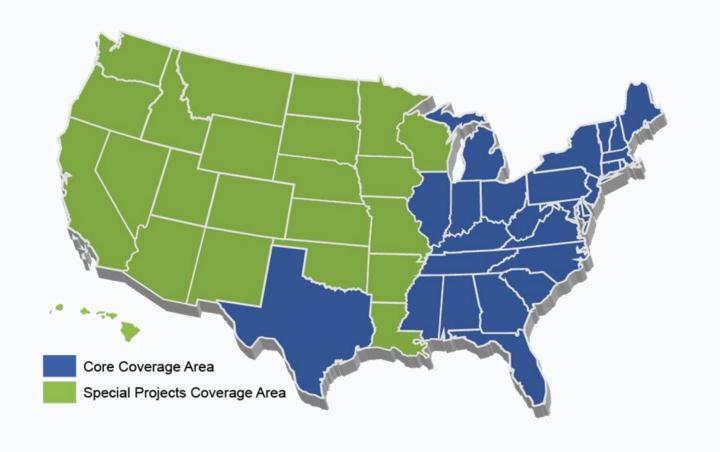
Owl Services USA

Cell: (610) 368-0601

john.olko@owlservices.com

PRIMARY COVERAGE AREAS

- OWL Services provides its core compliance, testing and associated services throughout the East Coast of the United States, portions of the Midwest and Texas. With strategically located crews working within these areas, OWL Services is responsive to your needs, where you need us and when you need us.
- Our resourcefulness has enabled us to accommodate customers located within our Special Projects Coverage Area, which includes most of the Unites States, including Hawaii.







Shear Valves & E-Stops – why do we have them, how do they work – How to test

Fire Suppression Systems – Identification, how they operate





Shear Valves

- Per NFPA 30A (fire code):
 - Required on pressurized piping systems (not required on suction piping systems)
 - Required to be tested annually (per fire marshal, not by most UST regulatory agencies)

Shear Valve Video 1

Shear Valve Video 2





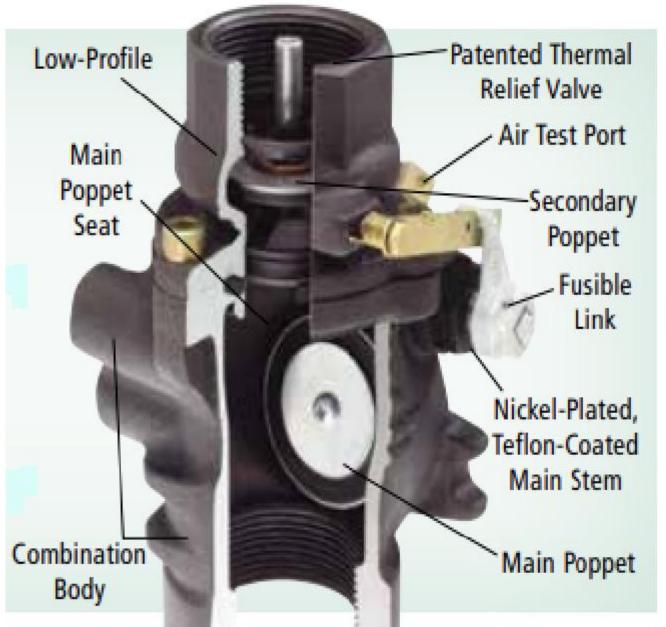
NFPA 30A

6.3.9 Where liquid is supplied to the dispensing device under pressure, a listed, rigidly anchored emergency shutoff valve, incorporating a fusible link or other thermally actuated device, designed to close automatically in event of severe impact or fire exposure shall be installed in the supply line at the base of each individual island type dispenser or at the inlet of each overhead dispensing device. The emergency shutoff valve shall be installed in accordance with the manufacturers' instructions. The emergency shutoff valve shall not incorporate a slip joint feature.

6.3.9.1 The automatic closing feature of this valve shall be tested at the time of installation and at least once a year thereafter by manually tripping the hold open linkage. Records of such tests shall be kept at the premises or shall be made available for inspection by the authority having jurisdiction within 24 hours of a verbal or written request.



OPW – 10 Series and 10 Plus







EBW Brand





EMCO Wheaton

A0060 Stainless Steel Emergency Shear Valve Stainless steel body and top for E85, DEF, ULSD, and Biodiesel blends up to B100.











Crash Video 1





Testing PEI RP 1200





10. SHEAR VALVE INSPECTION AND TESTING

10.1 General. Shear valves are also known as emergency shutoff valves, crash valves or impact valves. They are located on the product lines and sometimes on the vapor lines inside each dispenser. They must be located at grade level and securely anchored to function as intended. They immediately block fuel or vapor flow if a dispenser is displaced from its regular position or if a fire occurs inside the dispenser.

NOTE: Authorities having jurisdiction (AHJs) may require shear valves to be inspected and tested regularly. Furthermore, if a dispenser is dislodged from its normal position on the island after being hit by a vehicle or after a drive-off occurs, the shear valve should be inspected and tested for proper operation.

If product is dispensed using a submersible pump, a shear valve must be present on each product riser at the base of the dispenser.

10.2 Product Shear Valves.

- **10.2.1 Purpose.** The purpose of this test and inspection is to verify that the product shear valves are properly installed per manufacturer's specification and verify that product will no longer flow through a product shear valve that is in the closed position.
- 10.2.2 Description of Test. The product shear valve is inspected for proper installation per the manufacturer. The product shear valve arm is then tripped to stop the flow of fuel into the dispenser. An attempt is made to pump product through the nozzle with the shear valve in the closed position.
- 10.2.3 Preparation. Barricade the entire dispenser that is to be inspected and tested so that no customers will attempt to pump fuel. Open the dispenser cover to access the inside of the dispenser.
- **10.2.4 Test Equipment.** Test equipment should include:
- · 5-gallon metal test can;
- 11/16 -inch box wrench or properly sized wrench.



FIGURE 10-1. When activated by fire or impact, the shear valve closes and blocks fuel flow from the dispenser supply lines. The shear valve shown is in the closed position.

10.2.5 Test Procedure.

- 1. Inspect the product shear valve for proper installation, anchoring and clearance. The portion of the shear valve located below the shear section must be rigidly anchored to the dispenser box frame or the concrete dispenser island using hardware and materials specifically designed for this purpose. If the shear valve is not properly anchored, close the shear valve, remove the dispenser from service and notify the appropriate person to have it repaired.
- 2. Trip the product shear valve.
- Attempt to pump fuel through the nozzle into the test can.
- Using the wrench, reset the product shear valve arm into the open position.
- Place the cover back on the dispenser and remove barricades.
- **10.2.6 Pass/Fail Criteria.** If a product shear valve meets all of the following criteria, it passes the test:







P L

SHEAR VALVE OPERATION INSPECTION											
acility Name:						Owner					
ddress:						Address					
ity, State, Zip Code:						City, State, Zip Code:					
acility I.D. #:						Phone #:					
esting Company:						Phone #:					
nis data sheet is for inspecting shear valves located inside dispensers. See PEI/RP1200 Section 10 for the inspection procedure.											
roduct Grade											
ispenser ID#											
hear ValveType (Product/ apor)											
. Is the shear valve rigidly nchored to the dispenser box ame or dispenser island?	□ Yes □ No	☐ Yes ☐ No	□ Yes □ No	□ Yes □ No	□ Yes □ No	□ Yes □ No	□ Yes □ No	□ Yes □ No	□ Yes □ No		
. Is the shear section posi- oned between ½ inch above r below the top surface of the spenser island?	□ Yes □ No	□ Yes □ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	□ Yes □ No		
. Is the lever arm free to love?	□ Yes □ No □ NA	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA		
. Does the lever arm snap hut the poppet valve?	□ Yes □ No □ NA	□ Yes □ No □ NA	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA	□ Yes □ No □ NA	□ Yes □ No □ NA	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA		
Can any product be disensed when the product shear alve is closed?	☐ Yes ☐ No ☐ NA	□ Yes □ No □ NA	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA	☐ Yes ☐ No ☐ NA		
"No" to Lines 1-4 or a "Yes" for Line 5 indicates a test failure.											
est Results	□ Pass □ Fail	□ Pass □ Fail	□ Pass □ Fail	□ Pass □ Fail	□ Pass □ Fail	□ Pass □ Fail	□ Pass □ Fail	□ Pass □ Fail	□ Pass Fail		
omments:											

Tester's Signature

Tester's Name (print)





PEI RP1200 - Testing Summary

- 1. Inspect the shear valve for proper installation and anchoring
- 2. If the valve is not properly anchored, it should be closed and the dispenser removed from service.
- 3. IF all is OK then trip the shear valve
- 4. Attempt to pump fuel through the nozzle into a test can
- 5. Using a wrench, reset the shear valve arm into the open position.





Pass/Fail

Must be Properly anchored

Shear section must be located ½ inch above and ½ inch below the level of the top surface of the dispenser island

Lever arm free to rotate to snap the poppet – No wire ties

Correct plug installed in the test port

No fuel flows from the dispenser when the valve is closed



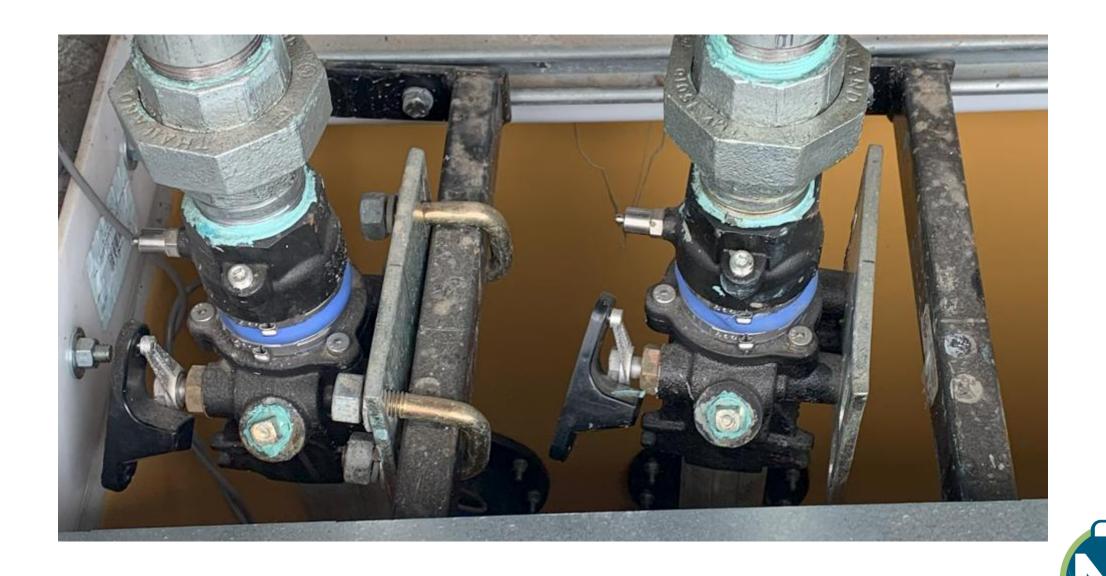


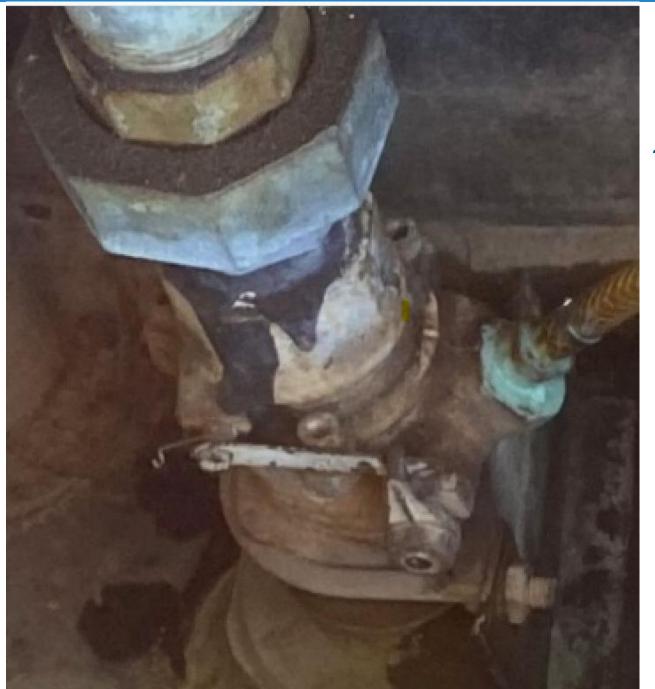










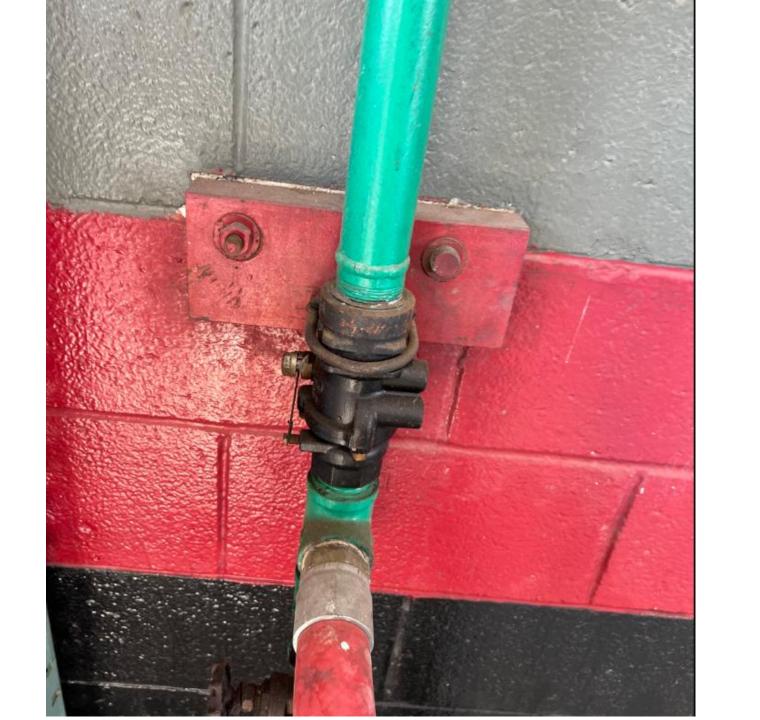
















Emergency Stop Systems









Tank Savvy - ESTOP



DEPARTMENT OF ECOLOGY
State of Washington

SEPA A

NEIWPCC

NFPA 30A Code for Motor Fuel Dispensing Facilities and Repair Garages

6.7 Emergency Electrical Disconnects. Fuel dispensing systems shall be provided with one or more clearly identified emergency shutoff devices or electrical disconnects. Such devices or disconnects shall be installed in approved locations but not less than 6 m (20 ft) or more than 30 m (100 ft) from the fuel dispensing devices that they serve. Emergency shutoff devices or electrical disconnects shall disconnect power to all dispensing devices; to all remote pumps serving the dispensing devices; to all associated power, control, and signal circuits; and to all other electrical equipment in the hazardous (classified) locations surrounding the fuel dispensing devices. When more than one emergency shutoff device or electrical disconnect is provided, all devices shall be interconnected. Resetting from an emergency shutoff condition shall require manual intervention and the manner of resetting shall be approved by the authority having jurisdiction.

Exception: Intrinsically safe electrical equipment need not meet this requirement.

- 6.7.1 At attended motor fuel dispensing facilities, the devices or disconnects shall be readily accessible to the attendant.
- 6.7.2 At unattended motor fuel dispensing facilities, the devices or disconnects shall be readily accessible to patrons and at least one additional device or disconnect shall be readily accessible to each group of dispensing devices on an individual island.





An Emergency Stop is not a Circuit Breaker









Testing PEI RP 1200





Recommended Practices for the Testing and Verification of Spill, Overfill, Leak Detection and Secondary Containment Equipment at UST Facilities

11. EMERGENCY STOP

WARNING: FIRE AND SPILL HAZARD

- · "Stop" buttons on the point-of-sale console do not shut off all power to the fuel dispensing system.
- · In an emergency, activate the dedicated and stand-alone emergency stop switch/button.
- **11.1 General.** The emergency stop (E-stop) switch also is called the emergency shutoff switch. When activated, the switch disconnects power to:
- · all dispensing devices on all islands;
- · all submersible pumps for all fuel grades that serve dispensing devices;
- · all power, control and signal circuits associated with the dispensing devices and the submersible pumps;
- · all other non-intrinsically safe electrical equipment in the classified areas surrounding fuel dispensing devices.

If more than one E-stop switch is present, test each switch separately for proper operation.

> NOTE: Intrinsically safe tank system monitoring electrical equipment should not be disconnected by the E-stop.

- 11.2 Purpose. This test is performed to determine whether every E-stop switch that is installed at a facility is functioning as designed.
- 11.3 Description of Test. Each E-stop switch is activated and the entire fueling system is checked to verify that power has been disconnected to:
- · all dispensing devices on all islands;
- · all submersible pumps for all fuel grades that serve dispensing devices;
- · all power, control and signal circuits associated with the dispensing devices and the submersible pumps;
- · all other non-intrinsically safe electrical equipment in the classified areas surrounding fuel dispensing devices.
- 11.4 Preparation. Ensure that all customer fueling operations have been discontinued.



FIGURE 11-1. The E-stop should be clearly labeled and located where it is easily accessible.

11.5 Test Equipment. None needed. Observations are made as to whether the equipment has power or does not have power.

11.6 Test Procedure.

- 1. Ensure that the system is fully powered in normal operating condition.
- 2. Depress the E-stop switch.
- 3. Ensure that power has been disconnected from:
- · all dispensing devices on all islands;
- · all submersible pumps for all fuel grades that serve dispensing devices;
- · all power, control and signal circuits associated with the dispensing devices and the submersible pumps;
- · all other non-intrinsically safe electrical equipment in the classified areas surrounding fuel dispensing devices.







ECOLOGY



Facility Name:			Owner:						
Address:			Address:						
City, State, Zip Code:			City, State, Zip Code:						
Facility I.D. #:			Phone #:						
Testing Company:			Phone #: Date:						
This procedure is to verify the op to dispensers, submersible turbi E-stop separately. See PEI/RP12	ine pumps (STPs)) and all non-intri	nsically safe elec						
E-stop Number or ID									
Location									
E-stops labeled and located where easily accessible?	□Yes □No	□Yes □No	□ Yes □ No	□Yes □No	□ Yes □ No	□ Yes □ No			
System fully powered and in normal operating condition?	□ Yes □ No	□Yes □No	□ Yes □ No	□Yes □No	☐ Yes ☐ No	□Yes □No			
3. After activating E-stop, power	r disconnected f	rom:							
3a. All dispensing devices on all islands?	□ Yes □ No	□Yes □No	☐ Yes ☐ No	□Yes □No	☐ Yes ☐ No	□ Yes □ No			
3b. All STPs for all fuel grades?	☐ Yes ☐ No	□Yes □No	☐ Yes ☐ No	□Yes □No	☐ Yes ☐ No	☐ Yes ☐ No			
3c. All power, control and signal circuits associ- ated with the dispens- ing devices and the STPs?	☐ Yes ☐ No	□ Yes □ No	☐ Yes ☐ No	□ Yes □ No	☐ Yes ☐ No	☐ Yes ☐ No			
3d. All other non-intrinsi- cally safe electrical equipment in classi- fied areas surround- ing fuel dispensing devices?	□ Yes □ No	□Yes □No	☐ Yes ☐ No	□Yes □No	☐ Yes ☐ No	□Yes □No			
All intrinsically safe electri- cal equipment remains energized after E-stop acti- vation?	□Yes □No	□Yes □No	☐ Yes ☐ No	□Yes □No	☐ Yes ☐ No	□ Yes □ No			
After testing, E-stop has been reset and power rees- tablished to normal operat- ing condition?	☐ Yes ☐ No	□Yes □No	☐ Yes ☐ No	□Yes □No	☐ Yes ☐ No	□ Yes □ No			
A "No" to lines 3a-3d indicates	a test failure.								
Test Results	□ Pass □ Fail	□ Pass □ Fail	□ Pass □ Fail	□ Pass □ Fail	□ Pass □ Fail	□ Pass □ Fail			
Comments:									

Tester's Signature

Tester's Name (print)

EMERGENCY STOP SWITCH





Testing E-Stops – PEI Summary

Ensure the system is fully powered

Depress the E-Stop Switch

Ensure that power has been disconnected from

all dispensers

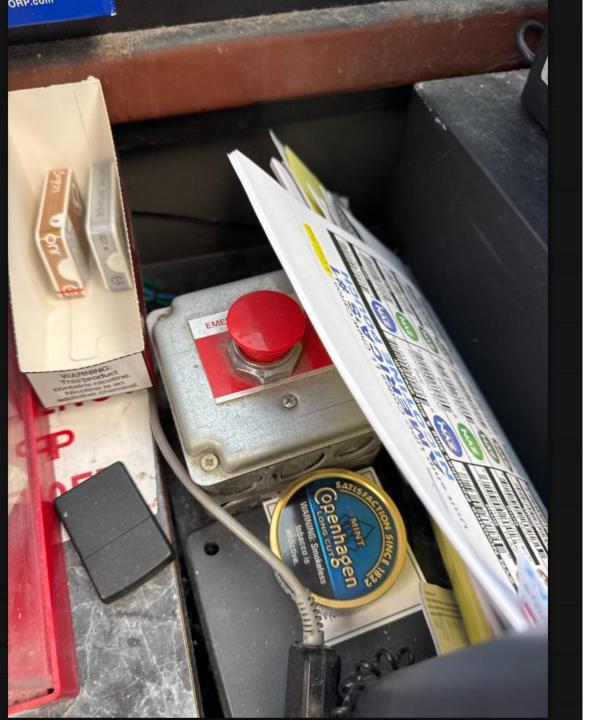
all STPs

Reset the Estop

Ensure that power has been reestablished to normal operating conditions.

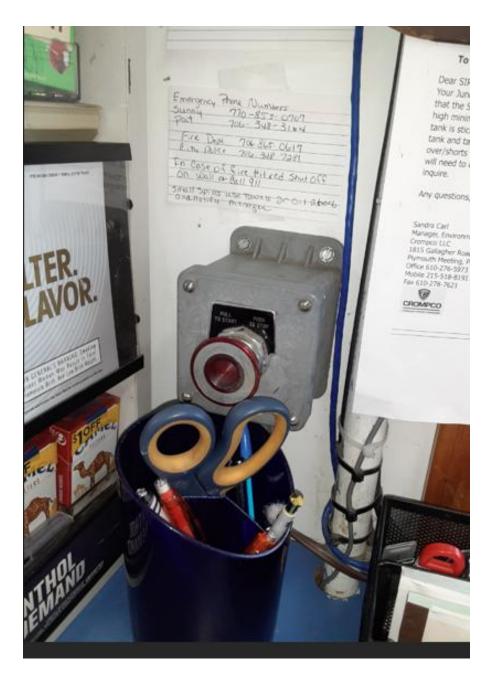
Pass/Fail – If all Estop switches/buttons disconnect power to all dispensing devices and submersible pumps











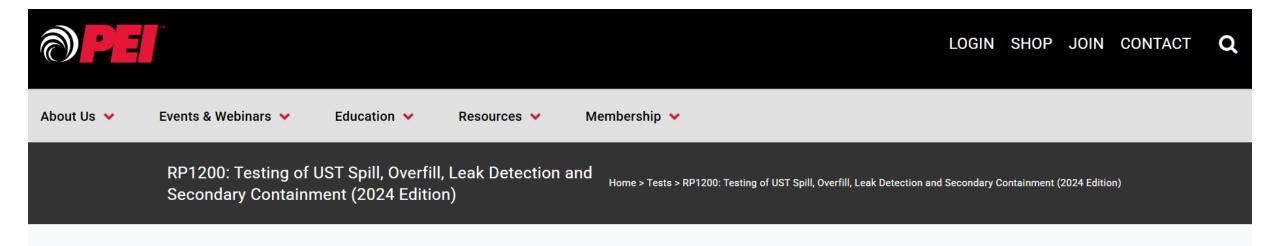




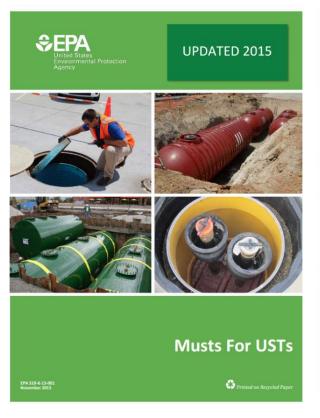


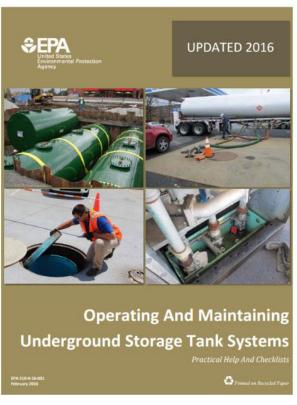


https://pei.org/test/rp1200/









Musts for UST's:

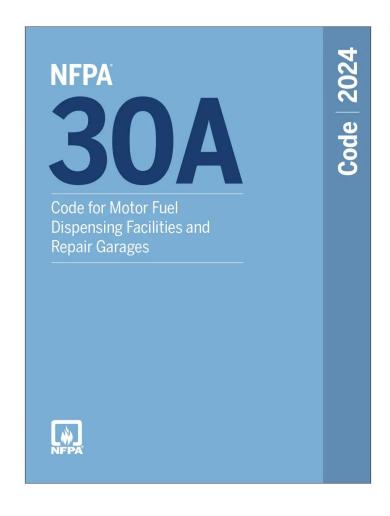
https://www.epa.gov/sites/production/files/2015-12/documents/musts for usts.pdf

Operating and Maintaining UST Systems:

https://www.epa.gov/sites/production/files/2016-02/documents/om_final_2-17-16_508_0.pdf







https://www.nfpa.org/for-professionals/codes-and-standards/list-of-codes-and-standards/free-access











FIRE SUPPRESSION SYSTEMS











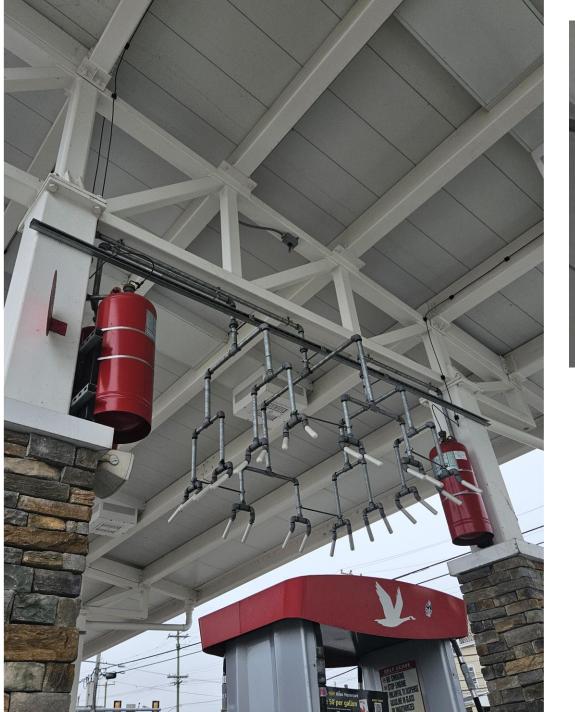






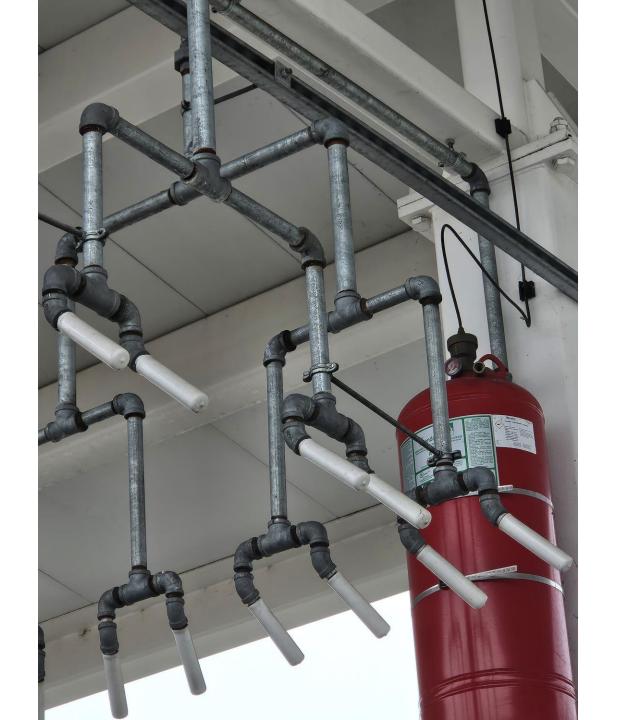


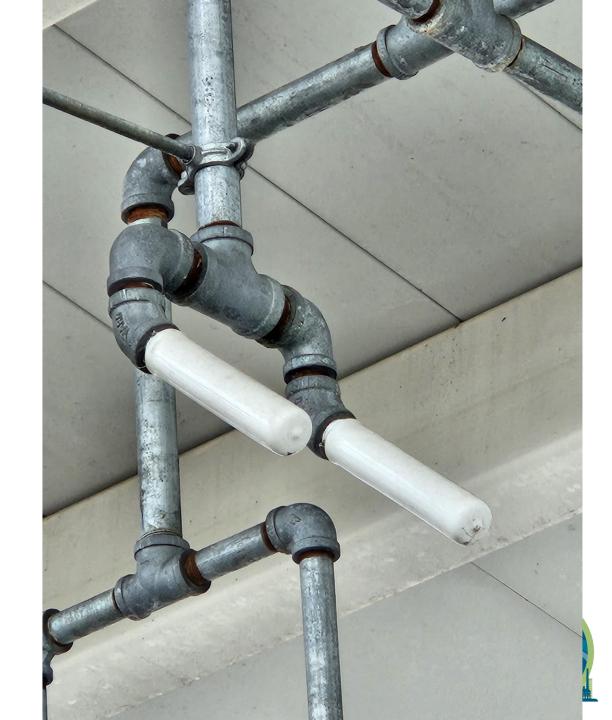
















How they Work

Detection – Heat Sensors are placed around the dispensers.

Activation – When a fire is detected. The system is automatically activated.

Suppression – Nozzles release a dry chemical agent (like sodium bicarbonate) to smother the flames and cut off the fuel supply.

Fuel Shut Off – The system may include an automatic fuel shut off valve to prevent more fuel from feeding the fire.

Manual Override – A manual pull station allows for manual activation of the system in case the automatic system fails.

- These systems provide rapid fire suppression to minimize damage to the station and potential harm to customers and employees.

https://www.youtube.com/watch?v=WjGdWdCY_rQ

When things go wrong!!!



https://www.youtube.com/watch?v=10cuaRyZUL4



https://www.youtube.com/watch?v=4QmA6yXuKuk

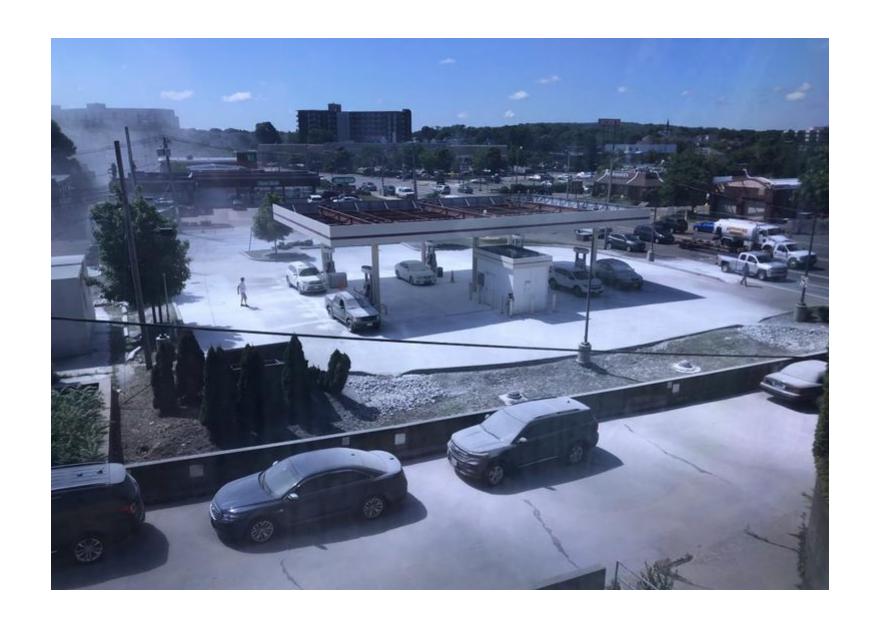




















Contact Information:

John Olko

Environmental Compliance Manager

Owl Services USA

Cell: (610) 368-0601

john.olko@owlservices.com



