

SP001 Annual Tank Inspections

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SP001 Annual Tank Inspections

Objectives

- Provide background and context about SP001 Annual Inspection
- Briefly review Checklist Guidance Key Items
- Review the questions on the Annual Inspections, and provide guidance on how to complete the inspection

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SP001 Annual Tank Inspections

Disclaimer

- This presentation provides general information about conducting annual inspections under the SP001 industry standard. This information is presented as guidance, and is not a statute or regulation.
- The universe of ASTs and tank systems is exceptionally diverse, as is the equipment installed on these systems. Some specific equipment on certain tanks may not be covered by the Standard—these are to be inspected following the manufacturer recommended inspection/testing schedules and procedures

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SP001 Annual Tank Inspections

STI SP001 Annual Inspection Checklist

General Inspection Information:

Inspection Date: _____	Prior Inspection Date: _____	Retain until date: _____
Inspector Name (print): _____	Title: _____	
Inspector's Signature: _____		
Tank(s) inspected ID _____		
Regulatory facility name and ID number (if applicable) _____		

Inspection Guidance:

- > This checklist is intended as a model. Locally developed checklists are acceptable as long as they are substantially equivalent (as applicable).
- > For equipment not included in this Standard, follow the manufacturer recommended inspection/testing schedules and procedures.
- > The periodic AST Inspection is intended for monitoring the external AST condition and its containment structure. This visual inspection does not require a Certified Inspector. It shall be performed by an owner's inspector per paragraph 4.1.2 of the standard.
- > Remove promptly standing water or liquid discovered in the primary tank, secondary containment area, interstie, or spill container. Before discharge to the environment, inspect the liquid for regulated products or other contaminants and disposed of it properly.
- > In order to comply with EPA SPCC (Spill Prevention, Control and Countermeasure) rules, a facility should regularly test liquid level sensing devices to ensure proper operation (40 CFR 112.8(c)(8)(v)).
- > Non-conforming items important to tank or containment integrity require evaluation by an engineer experienced in AST design, a Certified Inspector, or a tank manufacturer who will determine the corrective action. Note the non-conformance and corresponding corrective action in the comment section.
- > Retain the completed checklists for at least 36 months.
- > Complete this checklist on an annual basis, supplemental to the owner monthly-performed inspection checklists.
- > **Note: If a change has occurred to the tank system or containment that may affect the SPCC plan, the condition should be evaluated against the current plan requirement by a Professional Engineer knowledgeable in SPCC development and implementation.**

ITEM	STATUS	COMMENTS / DATE CORRECTED
Tank Foundation/Supports		
1	Free of tank settlement or foundation washout?	<input type="checkbox"/> Yes <input type="checkbox"/> No
2	Concrete pad or ring wall free of cracking and spalling?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A

Copies of the SP001 Standard (complete), including the monthly and annual inspection checklists, are available at: www.steeltank.com

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SP001 Annual Tank Inspections- Background Information

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It's NOT acceptable to remove questions from the checklist if you just don't want to inspect the item—this would require an environmental equivalence determination by a PE in your SPCC Plan. However, you can reformat the content in the checklist to make it more user friendly, like changing the layout from landscape to portrait, adding columns for more tanks for your facility, or similar changes.

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Not all equipment is covered by this Standard— in this case, follow the manufacturer's recommendations. Manufacturer's recommended inspection/testing schedules and procedures take precedence over the content of the Standard; this is particularly important for mechanical equipment, such as valves, leak detection devices, and other similar equipment. Some equipment may require more frequent testing or checking based on the manufacturer. Some manufacturers require such testing/inspection in order to maintain the warranty of the equipment.

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This note is important, as this is a pretty general inspection checklist that can't cover every possible tank system configuration. Testing liquid level sensing devices is an important SPCC requirement that gets overlooked in a lot of SPCC Plans.

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The annual inspection checklist is to be conducted in addition (NOT in lieu of) to the monthly inspection. These inspection checklists have different queries and checks.

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SP001 Annual Inspection Questions Tank Foundation/Supports

Free of tank settlement or foundation washout?

Yes No

Why of Concern? Settlement and/or washout causes distortion in tank, piping, and equipment; can lead to increased stress on portions of tank, could lead to catastrophic failure. Distortions can lead to localized low points where water can collect and accelerate corrosion

How to Check: Inspect entire tank foundation and surrounding area, looking for uneven or unusual foundation conditions, including erosion, cracking, distortions or loss of underlying support. Other evidence of settlement: leaning tanks, distortion on connected piping or equipment, water collecting in low points around tank/foundation not previously identified



This photo shows some washout of the secondary containment berm of this tank system, but not the tank itself

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SP001 Annual Inspection Questions Tank Foundation/Supports

Concrete pad or ring wall free of cracking and spalling? Yes No N/A

Why of Concern? Cracks in concrete pad can occur from arise from a variety of reasons. Cracks allow water to infiltrate and cause corrosion of the tank and concrete rebar.

Spalling is the flaking, peeling and chipping of the smooth concrete surface revealing the rough rocky concrete matrix below.

How to Check: Inspect concrete pad for visible cracks and indications of spalling. As a general rule of thumb, cracks larger than 1/16" should be repaired to the extent possible, although this is guidance only. At a minimum, continue monitoring cracks in the future to determine if any changes are evident.



This concrete is cracked and shows vertical offset-should be checked and repaired

Spalling of concrete, caused by corrosion of rebar



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SP001 Annual Inspection Questions Tank Foundation/Supports

Tank supports in satisfactory condition? Yes No N/A

Why of Concern? Tank supports are typically fabricated of steel or concrete; CFC (5704.2.9.2.3) requires supports or pilings for ASTs storing Class I, II, and IIIA flammable and combustible liquids require 2-hour fire resistance rating, with certain exceptions.

How to Check: Inspect tank supports for proper anchorage, corrosion, and overall integrity. Corrosion common at the tank shell/foundation junction, especially for horizontal tanks secured on saddle style foundations. Anchor bolts are also locations where corrosion is commonly found, particularly in certain environments, like coastal areas and in vaults.

Key Notes: Tanks with unusual or unconventional supports should be checked carefully; in some cases, this may be potentially a clue that a UST is being used aboveground.

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SP001 Annual Inspection Questions Tank Foundation/Supports



Aggressive corrosion at tank support; black material is wear pad placed between concrete support and tank



Unconventional or field engineered foundations are clues that UST might be being used as AST

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SP001 Annual Inspection Questions Tank Foundation/Supports

Is water able to drain away from tank if tank is resting on a foundation or on the ground?

Yes No N/A

Why of Concern? Tanks should be designed to avoid having rainwater collect at the base of the tank to limit corrosion and pooling of liquids in event of tank failure. Substantial corrosion that can severely damage the tank foundation and supports occurs if tanks are installed without a means to direct water away from the tank.

How to Check: Inspect area around tank to check for evidence of corrosion, standing water, or water staining. If water is found, have these areas promptly drained to limit the extent of corrosion

The poor design of this AST foundation allowed rainwater to collect underneath the tank, resulting in extensive corrosion of the steel supports



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SP001 Annual Inspection Questions Tank Foundation/Supports

Is the grounding strap between the tank and foundation/supports in good condition?

Yes No N/A

Why of Concern? Grounding provides a conductive path to earth to allow static charges that occur during fuel transfer to dissipate. A ground rod is connected to the tank via a strap or wire that is connected to the tank shell.

How to Check: Check the grounding strap to make sure remains securely connected to the tank and is not frayed or damaged.

Key Notes: Not all tanks are equipped with grounding straps. Fuel tanks, including those containing gasoline, diesel, jet fuel, and other similar liquids need proper bonding and grounding.

More sophisticated systems for grounding and bonding are used at facilities like airports, military installations and bulk plants where high fuel rate transfers occur



Ground rod and bonding cable installed for a fuel AST

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SP001 Annual Inspection Questions Tank Shell Heads and Roof

Free of visible coating failure? YesNo

Why of Concern? Coating failure in SP001 is defined as “significant peeling, cracking, spalling, blistering, pitting and chipping etc. of the coating on an AST resulting in the exposure of the metal surface and corrosion of the tank shell.”

How to Check: Check the tank surface and note any areas where coating failure is observed. While most of CA has relatively low corrosion rates, some locations are much more aggressive, including coastal areas. Vaulted tanks can also have accelerated corrosion due to the humidity inside the vault.



Substantial corrosion found on a tank located in a coastal area



Corrosion on flat surfaces inside emergency generators can occur from rainwater intrusion into the enclosure. The only way to quantify how bad is corrosion is through ultrasonic thickness (UT) testing to determine the remaining steel thickness

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SP001 Annual Inspection Questions Tank Shell Heads and Roof

Free of noticeable distortions, buckling, denting, or bulging?? YesNo

Why of Concern? Tanks should not show distortions—these are most commonly evidence of under-pressure or over-pressure events. An exception might be the case where impact damage has occurred, or damage done as a result of natural causes, such as earthquakes—but these are rare.

How to Check: Visually inspect the tank shell to check for distortions, including buckling, denting, or bulging. Check the connections between the shell and tank heads, (on horizontal tanks) or roof of vertical tanks--these areas are often locations where distortion is first observed

Key Notes: Ensure that proper venting is maintained on the tank, and that all vents (primary and emergency) are in good working condition. If the distortion is substantial, the tank should be evaluated by a qualified individual.

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SP001 Annual Inspection Questions Tank Shell Heads & Roof



The distortion on these tanks likely caused by insufficient venting



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SP001 Annual Inspection Questions Tank Shell Heads and Roof

Free of standing water on roof? Yes No NA

Why of Concern? Depending upon the design and condition of the tank, rectangular and vertical cylindrical tanks may have low spots where standing water can collect causing corrosion.

How to Check: Check the tank for the presence of standing water on the tank roof. In dry conditions, evidence of standing water formerly collecting on the tank roof often appears as round staining.

If water is found, remove promptly. Evaluate ways to prevent water ponding in future.



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SP001 Annual Inspection Questions Tank Shell Heads and Roof

Are all labels and tags intact and legible? Yes No NA

Why of Concern? Labels, placards, and tags all contain valuable information that informs operators, delivery drivers, and response personnel.

How to Check: Inspect the tank labels, placards, and tags to ensure these are not faded, damaged, or illegible. As a best practice, all tank penetrations should be labeled—this should reduce the chances of fill errors. Filling of the wrong tank port is actually common on double walled tanks, unfortunately. Labeling each port on the tank is a cheap way to potentially reduce operating errors.

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SP001 Annual Inspection Questions Tank Manways, Piping and Equipment

Flanged connection bolts tight and fully engaged with no sign of wear or corrosion? Yes No NA

Why of Concern? Flanges are used on tanks for various purposes, from making connections of piping to the tank, on manways, and other equipment. Over time, the bolt connections can become loose due to vibration, wear, and other causes. Gaskets on these fittings can also degrade/fail over time.

How to Check: Inspect the flange connection for full engagement of the connection bolts. Since these are also locations where rainwater can penetrate, check for corrosion at the bolt/nut connection.

Key Notes: Some flanges have specific bolting sequences and torque settings to be used during the installation.



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SP001 Annual Inspection Questions Tank Equipment

Normal and emergency vents free of obstructions? YesNo

Why of Concern? Both normal and emergency vents are critical tank equipment designed to ensure the tank remains at or near atmospheric pressure. If these devices are obstructed, the integrity of the tank will be at risk. Although not common in CA, ice storms can freeze up the vents and cause catastrophic damage during tank fills.

How to Check: Check both primary (working) vents and emergency vents are clear and not obstructed by debris, nests, insects, or if any piping or other equipment is blocking the vent. If the tank is located in an area subject to ice storms, this inspection should be done after these events.



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SP001 Annual Inspection Questions

Normal vent on tanks storing gasoline equipped with a pressure vacuum vent? YesNo NA

Why of Concern? CARB regulations in CA generally require pressure vacuum vents on ASTs storing gasoline >250 gallons. These use specialized equipment to reduce vapor emissions. These also conserve fuel by reducing evaporative losses.

How to Check: PV vents on regulated gasoline ASTs in CA are required to be EVR certified, and are required be labeled on the vent. Confirm PV vent meets these requirements.

Key Notes: This is a check solely for the existence of a PV valve. Since most AST systems storing gasoline in CA are APCD permitted, the manipulation of this unit may require a trained or certified person. If you plan to work on this vent, make sure you are familiar with the specific requirements associated with this equipment.

Depending upon your location and permit requirements, these may also require testing by a qualified individual, typically following TP-201.1E, "Vapor Recovery Test Procedure, Leak Rate and Cracking Pressure of Pressure/Vacuum Vent Valves."

The values posted on this vent are the cracking pressures



EVR rated pressure vacuum vent on gasoline AST

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SP001 Annual Inspection Questions Tank Equipment

Are flame arrestors free of corrosion and are air passages free of blockage? Yes No NA

Why of Concern? Flame arrestors are used on certain tanks to reduce the chance of flames igniting the vapor space inside the tank; blocked passages will affect tank venting.

How to Check: Follow the manufacturer's instructions for inspection of the flame arrestor. In certain cases, nuts on the hood of the arrestor body can be removed to inspect the fins or plates inside. Take actions if equipment is not operable or damaged.

Not common in CA, but found occasionally. Flame arrestors come in a variety of styles and designs



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SP001 Annual Inspection Questions Tank Equipment

Is the emergency vent in good working condition and functional, as required by the manufacturer? Consult manufacturer requirements. Verify that components are moving freely, including long bolt manways
 Yes No

Why of Concern: Required by the Fire Code to relieve excessive internal pressure caused by exposure to fires (5702.2.7.4)

How to Check: Emergency vents are typically larger diameter (typically 4-12 inches diameter) ports with weighted lids. Other styles include spring loaded emergency vents, as well as pop-up styles. Emergency vents should be able to be lifted from the port with some difficulty, as these devices are designed to lift at a pre-determined pressure. Manway covers on long bolt manway style emergency vents should be able to be lifted, and remain as originally intended with every other bolt removed and the remaining bolts with minimum of 1.5" of travel.

Key Notes: Tanks without adequate emergency relief venting are considered "not suitable for continued service" under SP001 as these conditions jeopardize the life or safety of personnel working near the tank.

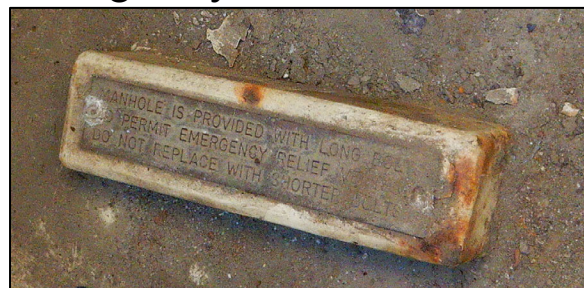
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SP001 Annual Inspection Questions Tank Equipment

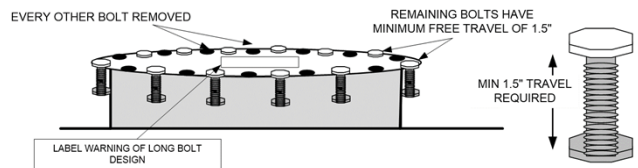


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SP001 Annual Inspection Questions Long bolt Manway Emergency Vent



LONG BOLT MANWAY EMERGENCY VENTING DESIGN



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SP001 Annual Inspection Questions Interstitial Leak Detection Equipment

Mechanical leak Detection Systems: Is the interstitial leak detection equipment in good condition? Is the inspection window clean and clear on mechanical systems YesNo NA

Why of Concern: For double walled tanks, the absence of liquids in the interstice confirms that the primary tank is not leaking. Mechanical leak gauges use a float that will engage an orange or red colored visual indicator that will pop up in the gauge if liquids are collected in the interstice.

How to Check: Check to ensure the inspection window remains clean, clear, and easily visible. Follow the manufacturer's instructions for checking these units—most can be unscrewed and removed from the tank to check for damage and proper operation. Ensure that the tank top connection of the leak gauge remains sealed to prevent rainwater from infiltrating the interstice.



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SP001 Annual Inspection Questions Interstitial Leak Detection Equipment

Electronic Leak Detection Systems: Is the interstitial leak detection equipment in good condition, and are wire connections intact? YesNo NA

Why of Concern: For double walled tanks, the absence of liquids in the interstice confirms that the primary tank is not leaking. Electronic leak detection systems trigger an audible and/or visual alarm in the event liquids are collected in the interstice.

How to Check: Follow the manufacturer's instructions for checking these units. Check the alarm unit to confirm this is in operable condition. Check the wire connections to make sure these remain secure. If required by manufacturer, remove the leak sensor and test for operability.

Key Notes: While there is NOT an annual monitoring certification explicitly required like that in the UST world, most electronic leak detection systems require periodic inspections, some may require a qualified technician.



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SP001 Annual Inspection Questions Interstitial Leak Detection Equipment

Electronic Leak Detection Systems:

Does system test button activate properly and confirm continuity? Yes No NA

What it does: The continuity check confirms that the circuit is complete from the leak sensor back to the panel.

How to Check: Follow the manufacturers instructions for checking these units. Pressing the system test button should trigger indication on the panel or device. If unsure, check owner's manual for directions on how to test system.



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SP001 Annual Inspection Questions Valve Inspections

Are all valves free of leaks, corrosion and other damage? Follow manufacturers' instructions for regular maintenance of these valves.

- Anti-siphon Valve
- Check Valve
- Gate Valve
- Pressure Regulator Valve
- Expansion Relief Valve
- Solenoid Valve
- Fire Valve
- Shear Valve

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SP001 Annual Inspection Questions Mechanical Anti-siphon Valves

Check and inspect the anti-siphon valve to confirm proper operation. Is equipment operational, free of leaks, corrosion and other damage? Yes No NA

What it does: Mechanical anti-siphon valves typically use internal springs to keep the valve poppet closed until pumps are activated. Once the pump engages, enough force exists that compress the spring into an open position, allowing product to flow. These devices prevent inadvertent siphoning that could occur if a small leak occurs on the piping that extends below the liquid level in the tank.

How to Check: Look for presence of leakage or corrosion around the exterior of the valve, and at the piping/valve connection.

Key Notes: There's usually little that can be adjusted on these valves, although some have adjustable spring tension normally set at the installation. These devices come in a variety of designs.



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SP001 Annual Inspection Questions Check Valve Inspections

Check and inspect the check valve to confirm proper operation. Is equipment operational, free of leaks, corrosion and other damage? Yes No NA

What it does: Check valves are installed to allow fluids to flow in one direction only, and can be found at various locations on tank systems. Normally a check valve will be located on a remote fill line to prevent fuel in the fill line from flowing back toward the delivery driver when the fill valve is opened. These are also located at other locations where backflow needs to be prevented.

How to Check: Look for presence of leakage or corrosion at the piping/valve connection. Most valves of this type are to be installed either vertically or horizontally, not at an angle.



Check Valves

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SP001 Annual Inspection Questions Gate Valve Inspections

Check and inspect the gate valve to confirm proper operation. Is equipment operational, free of leaks, corrosion and other damage? Yes No NA

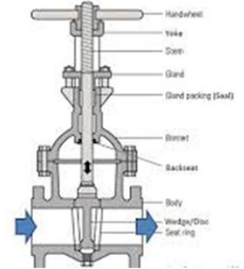
What it does: Gate valves are installed as isolation valves on tank systems—these normally open valves are installed to “isolate” portions of the downstream piping to allow work to be performed. Usually found on piping at or near the top of the tank, but may be installed at other locations depending upon the application. These type of valves are not typically designed to throttle or control fluids within the piping. Also called block valves. Ball valves are also commonly used.

How to Check: Look for presence of leakage or corrosion around the stem and exterior of the valve. These should be able to be manipulated open and closed relatively easily.

Key Notes: Not all systems have these valves, although well designed systems include these.



Gate Valve



Ball Valve

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SP001 Annual Inspection Questions Valve Inspections

Check and inspect the pressure regulator valve to confirm proper operation. Is equipment operational, free of leaks, corrosion and other damage? Yes No NA

What it does: Pressure regulator valves are located inside of fuel dispensers and are used on suction systems, where the pump is located inside the dispenser. The pressure regulator valve prevents fuel from flowing to the pumping unit when the pump is not activated.

How to Check: Look for presence of leakage or corrosion at the base of the dispenser where the pressure regulator valve is located.

Key Notes: Problems with pumping fuel would likely occur if these valves malfunctioned. If problems are noted with these units, a petroleum contractor should service this valve.



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SP001 Annual Inspection Questions Expansion Relief Valve Inspections

Check and inspect the expansion relief valve to confirm proper operation. Is equipment operational, free of leaks, corrosion and other damage? Yes No NA

What it does: Expansion relief valves are used on tank piping to relieve excess pressure due to increases in ambient temperature occurring during daylight hours. These are normally located on piping runs at the tank top, but can also be installed at other piping locations to relieve pressure build up. Small diameter piping is used to direct the liquids back to the tank. Often used when close control over the piping pressure is needed, such as with line leak detectors.

How to Check: Check to ensure the expansion relief valve has been installed in the proper location and for the presence of leakage or corrosion.

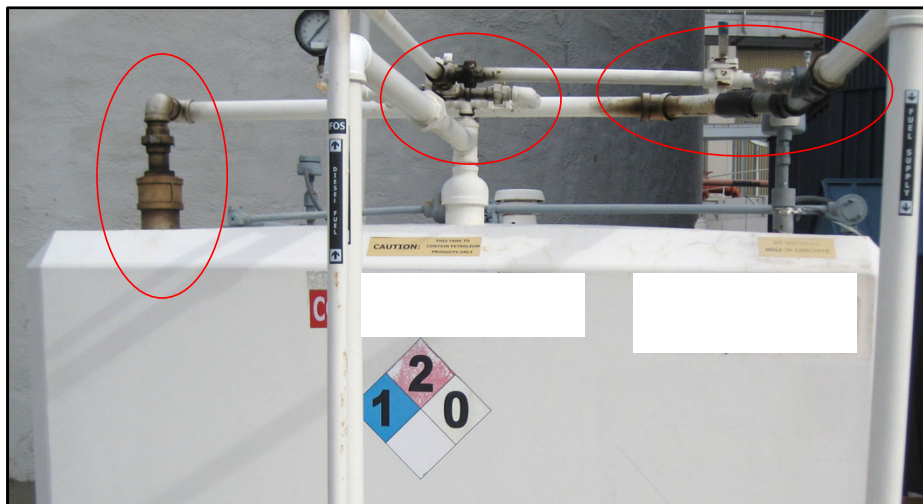
Key Notes: In some cases, extensive staining at threaded fittings on piping exposed to ambient temperature fluctuations may be caused by inadequate expansion relief. Installing an expansion relief valve may reduce or limit this condition.



Morrison Bros Pressure Relief Valve

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SP001 Annual Inspection Questions Valve Inspections



Valves and fittings on this tank show staining & weeping that gets worse during heat of the day. Likely this tank needs expansion relief on the piping

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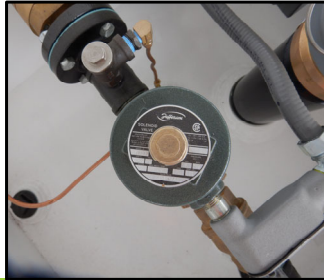
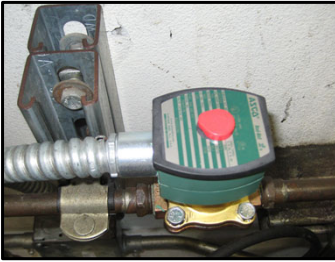
SP001 Annual Inspection Questions Solenoid Valve Inspections

Check and inspect the solenoid valve and cycle valve to confirm proper operation. Is equipment operational, free of leaks, corrosion and other damage? Yes No NA

What it does: Solenoid valves are electrically operated spring controlled valves located on piping near the tank top and are used to prevent siphoning of the tank. These are normally closed, but open upon signal from the dispenser when the electrical signal for fuel is received. Widely used. They can also serve as flow control purposes on emergency generator systems with day tanks, where the solenoid valve location may vary.

How to Check: Check the solenoid valve by engaging the dispenser and checking to hear or feel the plunger device opening/closing—you should hear a noticeable click. Evidence of improper operation would be loss of the ability to pump fuel, excessive noise, or weeping joints near the valve.

Key notes: These valves always include an electrical connection, since they require power to operate.



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SP001 Annual Inspection Questions Fire Valve Inspections

Check and inspect the fire valve to confirm proper operation. Is equipment operational, free of leaks, corrosion and other damage? Yes No NA

What it does: Fire valves are typically installed downstream of the submersible pump on the tank top or may be installed at the base of tanks. They include a fusible link connector that is designed to intentionally fail in a fire, and snap the valve closed. Designed to limit the release of fuel downstream in a fire event by closing off the piping.

How to Check: These can be manually cycled to release the hook that permits the valve to snap closed. Ensure that the valve lever can move freely and has the proper clearance to close completely. Confirm that the valve is not wired or improperly secured in the open position. Check the fusible link element, making sure it is in place and properly positioned. Check to ensure that no weeping or leakage of the valve is occurring. Return the spring-loaded hasp to the original position when the check is complete.

Key Notes: Not all systems have these types of valves installed



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SP001 Annual Inspection Questions Shear Valve Inspections

Check and inspect the shear valve to confirm proper operation. Is equipment operational, free of leaks, corrosion and other damage? Yes No NA

What it does: Shear valves are installed inside fuel dispensers on systems using submersible pumps. These spring-loaded valves are designed to snap closed in event of a vehicle impact; most also include a fusible link assembly that is designed to intentionally fail in a fire. These block fuel flow in the piping by closing the spring-loaded valve.

How to Check: Refer to manufacturers' instructions for further information about how to check this equipment. Check to ensure that no weeping or leakage of the valve is occurring. Check the fusible link element, making sure it is properly positioned and not wired open.

Manually cycle (trip) the valve to ensure that components are moving freely and the valve handle or lever has the proper clearance to close completely. The pump nozzle should not dispense fuel when the valve is tripped. Restore the equipment when finished testing to the original position.



Some shear valves require the use of a wrench to reset the shear valve arm. Refer to the manufacturer's instructions to confirm procedure prior to tripping the shear valve.

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SP001 Annual Inspection Questions Strainers and Filters

Are strainers and filters clean and in good condition? Yes No NA

What it does: Strainers and filters limit the amount of debris, particles and sometimes water that enter downstream equipment and to filter fuel before dispensing. While most fuel systems will have filters (commonly located inside the dispenser), strainers are less common on fueling systems. Emergency generator systems also have fuel filters

How to Check: Check the strainer and/or filter assembly to ensure it is clean and in good condition. If equipped, check the strainer basket and check the cap and gasket seal, and bolts. If not in satisfactory condition, take actions to repair or replace equipment.

Check the filter assembly and condition. Check for leaks and for decreased fuel flow. If these conditions are encountered, replace or repair filter as needed.



Filter system on emergency generator

Note: Work on filters and strainers should be done by qualified personnel familiar with the tank system. Isolation of piping, lockout of electrical, and other safety considerations needed for this task.

Filter inside dispenser



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SP001 Annual Inspection Questions Insulated Tank Inspections

Free of missing insulation? Insulation free of visible signs of damage? Insulation adequately protected from water intrusion? Yes No NA

Insulated tanks are used where the product is to be maintained at an elevated temperatures to be able to stored and pumped. Examples include certain asphalt emulsions, wax tanks, and others. These tanks have a layer of insulation—such as fiberglass wool or similar products—often covered with a jacketing material like aluminum.

Why of Concern? Insulated tank systems are susceptible to corrosion under insulation (CUI), a type of corrosion that can be particularly damaging. Water tends to get trapped within the insulation, (either from rain, condensation, or other sources) and the warm humid environment is ideal for corrosion to develop. Since the steel tank itself is covered by insulating material, routine direct visual examination isn't possible. Full evaluation of the tank shell requires insulation removal.

How to Check: Visually check to confirm insulation is intact and remains as originally designed. Ensure that jacketing is properly maintained to prevent water intrusion. Arrange for repairs if insulation is missing, damaged or not protected.



Example of corrosion found beneath insulation

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SP001 Annual Inspection Questions Insulated Tank Inspections

Insulation free of noticeable areas of moisture? Yes No NA

How to Check: Check the insulation for the presence of moisture, such as dark stained areas, wet areas, or similar indications. If moisture is observed, investigate the source of the moisture and make necessary repairs.



The staining at the base of this tank suggests water has infiltrated the insulation beneath the jacketing at some point. Removal of insulation needed to check for extent of damage.

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SP001 Annual Inspection Questions Insulated Tank Inspections

Insulation free of mold? Yes No NA

How to Check: Check the insulation for the presence of mold, mildew, or other growth. These conditions indicate that the insulation may be chronically wet and can lead to corrosion underneath the insulation. If found, take action to address the source of the moisture and mold.



Green colored mold/mildew found on this tank

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SP001 Annual Inspection Questions Insulated Tank Inspections

Free of visible signs of coating failure? Yes No NA

How to Check: Many insulated tanks use jacketing to protect the underlying insulation. In other cases, wraps or coatings may be used to protect the insulation. For these systems, visually inspect the integrity of the coating material to ensure the coating remains intact and in good condition. Areas where jacket damage or coating failure has occurred should be promptly repaired.

Tanks with insulation damage like this when exposed to rainwater will likely have CUI issues



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SP001 Annual Inspection Questions Tank/Piping Release Detection

Is inventory control being performed and documented if required? Yes No NA

The requirement for maintaining daily inventory records is not currently part of any known CA Fire Code requirement for ASTs, although it is a Fire Code requirement under Chapter 23 (Motor Fuel Dispensing Facilities and Repair Garages) for USTs.

Section 2306.2.1.1 Inventory Control for Underground Tanks *Accurate daily inventory records shall be maintained and reconciled on underground fuel storage tanks for indications of possible leakage from tanks and piping.....*

For ASTs in California, the response to this question will generally be NA (not applicable)

Since the SP001 Standard applies nationwide, this provision was included for states that have inventory control requirements for ASTs.

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SP001 Annual Inspection Questions Tank/Piping Release Detection

Is leak detection being performed and documented if required? Yes No NA

This requirement applies to remote pumping systems (pressurized systems) for motor fuel dispensing facilities (Chapter 23) where submersible pumps transfer liquids to dispensers.

Section 2306.7.7.1 of the CA Fire Code (Motor Fuel Dispensing Facilities and Repair Garages) does contain a requirement for leak detection for Remote Pumping Systems:

2306.7.7.1 Leak Detection. Where remote pumps are used to supply fuel dispensers, each pump shall have installed on the discharge side a listed leak detection device that will detect a leak in the piping and provide an indication. A leak detection device is not required if the piping from the pump discharge to under the dispenser is above ground and visible.

LLDs normally don't work very well on AST systems, due to temperature changes that occur in above grade systems that result in thermal contraction of fuel.

How to check: Determine if facility operators are performing testing of leak detection systems. Not needed if all piping is visible as described above.

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SP001 Annual Inspection Questions

Are electrical wiring and boxes in good condition? Yes No NA

Why of concern: Many locations near petroleum tank systems are electrically classified areas and often require special protections for wiring, junction boxes, and electrical connections.

How to check: Check the electrical wiring associated with the system for the presence of loose fittings, unprotected or exposed wiring, electrical boxes with improper seals, or other non-conforming conditions. This includes lighting, pumps, motors, conduit runs, and other related electrical system components.

Key Notes: Exposed or improperly installed electrical components on a tank system can pose serious safety concerns.

In a formal external inspection, the presence of damaged or non-compliant electrical systems within the hazardous area which may create an imminent ignition source requires the SP001 inspector to determine the tank is not suitable for continued service.



Exposed wiring next to tank storing flammable liquids

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SP001 Annual Inspection Questions Other Equipment

Has the cathodic protection system on the tank been tested as required by the designing engineer? Yes No NA

What it does: Cathodic protection (CP) is a method used to prevent corrosion by connecting the steel (cathode) to a sacrificial metal (anode) that preferentially corrodes. Galvanic CP uses simply a sacrificial anode with a less negative electrochemical potential compared with the metal to be protected (cathode). Impressed current CP uses a DC source (rectifier) to provide the electrons and drive the oxidation onto the anode, thereby protecting the cathode (metal). For CP systems to work, they require the four components of an electrochemical cell: a cathode, an anode, a metallic connection, and an electrolyte, like water or soil. Without these four components, CP doesn't work.

CP systems are used on ASTs that are underlain by and in direct contact with sand or soil. ASTs installed on concrete pads that extend beneath the tank do not have a complete pathway for electron transfer--and as a result CP won't work and is not used. Shop fabricated ASTs very rarely use CP in California, although some buried steel piping may have CP installed.

How to check: CP systems require periodic testing, more frequently for impressed current systems than for galvanic systems. If the site has a cathodic protection system, confirm that the system is being properly monitored and tested



Impressed current system rectifier—this requires periodic readings to determine if system is providing sufficient cathodic protection

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Questions



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