ADEQ Underground Storage Tank (UST) Guidance
Low Level Hydrostatic Testing for Underground Storage Tank Containment Sumps

In July 2015, the United States Environmental Protection Agency (US EPA) published the 2015 underground storage tank (UST) regulation. The revisions strengthen the 1988 federal UST regulations by increasing emphasis on properly operating and maintaining UST equipment. As part of the 2015 UST regulation, by October 13, 2018, owners and operators of UST systems using interstitial monitoring as the primary method of leak detection, will be required to test containment sumps once every three years to ensure that they remain liquid tight, and keep records of the testing.

The 2015 UST regulation allows some flexibility in what method can be used to meet the requirement for containment sump testing; 40 CFR 280.35(a)(1)(ii) requires spill prevention equipment and containment sumps used for interstitial monitoring of piping be tested at least once every three years to ensure the equipment is liquid tight. Options for conducting the testing include:

- Requirements developed by the manufacturer
- A code of practice developed by a nationally recognized association or independent testing laboratory
    - US EPA has noted it will accept the integrity test method listed in Petroleum Equipment Institute (PEI) Recommended Practice (RP) 1200
- Requirements developed by the implementing agency determined to be no less protective of the environment than the two options listed above

The containment sump testing requirement in 40 CFR 280.35 is applicable if interstitial monitoring of piping is used as the primary method of release detection for UST systems installed prior to January 1, 2009 and all UST systems installed after January 1, 2009, which is Arizona's effective date for secondary containment with interstitial monitoring requirement. Some systems installed prior to the effective date use a primary release detection method other than interstitial monitoring of piping, because at the time the system was installed, it was not required to be secondarily contained and use interstitial monitoring as the primary method of release detection. The sump testing requirement in 40 CFR 280.35 is not applicable for containment sumps if the primary method of release detection is not interstitial monitoring.

Applicability of Low Level Containment Sump Testing

Based on review of US EPA resources including the *UST Technical Compendium* and *Low Liquid Level UST Containment Sump Testing Procedure*, comparison to methods employed by other implementing agencies throughout the country, and feedback from stakeholders, ADEQ has determined low level containment sump test method is appropriate for the 3-year testing requirement when the following conditions can be met:

- Containment sumps must be equipped with liquid sensors mounted at the lowest point in the sump and the sensors are configured to both alarm and automatically shut down one of the following:
    - All submersible turbine pumps (STPs), or

  - The dispenser provided the facility is always staffed when the pumps are operational, or
  - The dispenser provided the facility is only equipped with a single one-product tank supplying a single dispenser
- Containment sumps must be free of debris and incidental moisture prior to testing
- Individuals performing this test must be an ADEQ certified service provider and currently certified by the tank monitoring system and/or sensor manufacturer in the appropriate test procedure
- Testing of sensor activation must be in accordance with the sensor manufacturer's instructions

If any one of the following conditions are found prior to low level testing, it will disqualify the containment sump from being eligible for testing using this method, and PEI RP 1200 will be required:

- The containment sump is found with a liquid level high enough to trigger a properly positioned sensor, whether or not sensor is found in alarm
- A sensor is found elevated above the lowest point in the sump or otherwise manipulated to prevent activation
- The pretest visual inspection (per PEI RP 1200 Subsection 6.5.5, paragraph 3) reveals any cracks, holes, compromised boots, or damaged or missing gaskets
- Any other conditions exist that would prevent the service provider from following the test method presented in this guidance

ADEQ believes it is consistent with US EPA to allow the use of low level testing to meet the 3-year testing requirement in 40 CFR 280.35(a)(1)(ii) and require PEI RP 100 or PEI RP 1200 to be used for new installations and repairs to containment sumps in accordance with American Petroleum Institute (API) 1615 and manufacturers' recommendations. High level hydrostatic testing is necessary to test the *integrity* of the containment sump after installation or repair to ensure the quality and soundness of the work completed. Please note that a repair which effects the integrity of the walls or floor of a sump would require PEI RP 1200, if the repair or installation dealt only with the sump sensor itself, then low level sump testing would still be appropriate.

Low Level Containment Sump Test Method

This test method is largely based on PEI RP 1200-17, Section 6.5 "Containment Sump Integrity Testing", which is available from the Petroleum Equipment Institute, and may be ordered from their website at https://www.pei.org/resources.

Pretest Preparation

1. Determine the manufacturer of the sensors to be tested and details of how the manufacturer specifies a functionality test be performed; it is recommended to keep documentation of the manufacturer's test procedure for future reference
2. Review and follow PEI caution statements concerning removal of sump lid, cover, and/or manhole cover; as well as risk from and potential damage to electrical connections when water is added to the sump
3. Obtain the necessary equipment for the test which consists of a measuring device, time clock, and water
4. Begin the pretest inspection to determine if there is liquid in the sump at levels high enough to trigger a properly positioned sensor
    - NOTE: If this condition is observed, the sump immediately fails the test, the sensor must be repaired or replaced, and the sump must be tested for integrity using PEI RP 1200

5. Remove water, fuel, trash, and debris from the sump
6. Continue the pretest inspection to identify if sensors have been elevated or otherwise manipulated to prevent activation
    - NOTE: If this condition is observed, the sump immediately fails the test, the sensor must be repositioned, and the sump must be tested for integrity using PEI RP 1200
7. Complete the pretest inspection to ensure the sump is free of cracks, holes, compromised boots, or damaged or missing gaskets
    - NOTE: If any of these are present below the water level appropriate for the low level test, the sump immediately fails the test and repairs must be made and tested for integrity using PEI RP 1200. If any of these are observed above the water level appropriate for the low level test, it is allowable to continue with the low level test, and then repair or replace the damaged components in accordance with manufacturers' specifications and Arizona Administrative Code R18-12-220.
8. Document the pretest inspection findings on the test report form

Test Procedure

1. Place a measuring stick in the sump at the lowest level of the sump and secure it against the sump wall; document the level of the lowest sump penetration on the test report form
2. Add water to the sump until the water level reaches 4 inches above the point where the sensor activates or 4 inches above the "crown" in applicable STP sumps
    - Document on the test report form whether the liquid sensor is activated, alarms and shuts off the submersible pump (or dispenser if appropriate)
    - NOTE: Sensors may be removed during the one-hour hydrostatic containment test, to allow for the individual testing of other sumps and sensors
3. Due to the potential for sump deflection, wait 5 minutes before beginning the test; document the water level above the bottom of the sump and the test start time on the test report form
4. Avoid disturbing the water in the sump during the test
5. After completion of the one-hour test, document the test end time and the water level above the bottom of the sump on the test report form
6. Document any drop in water level, accurate to 1/16th of an inch, on the test report form
7. Indicate passing or failing results on the test report form:
    - Pass - level drops 1/8th inch or less
    - Fail - level drops more than 1/8th inch
8. Remove the measuring stick from the sump
9. Remove the water from the sump, wipe it clean and dry; properly reposition the sensor if needed
    - Properly dispose of the sump test water according to appropriate wastewater disposal authority requirements
10. Remove or open any test boots that would prevent flow of liquid from the piping interstitial space into the sump
11. Replace the sump lid, cover, and/or manhole cover back in place
12. Document any problems identified that require repairs on the test report form

Posttest Actions

If all sumps achieved a passing result:

1. Complete the test report form and provide a copy to the facility

- If during the pretest inspection, damaged components were identified above the water level appropriate for the low level test, complete the necessary repairs and document on the test report form
- The facility shall maintain the test report form on-site for at least five years along with the rest of the facility's documentation of all calibration, maintenance, and repair of release detection equipment

2. No further action is required

If one or more sumps failed the test:

1. Contact ADEQ for an inspection
2. If repairs that require an ADEQ plan review for modification are necessary, contact ADEQ at ustplanreview@azdeq.gov or visit http://www.azdeq.gov/node/2271 for more information
3. Complete the necessary repairs and document on the test report form
4. Complete the test report form and provide a copy to the facility
    - The facility shall maintain the test report form on-site for at least five years along with the rest of the facility's documentation of all calibration, maintenance, and repair of release detection equipment
5. If a repair was required and inventory records suggest a discrepancy, the facility should report a suspected release and follow the suspected release process of 24-hour, 14-day, and 90-day reporting