



NORTH CAROLINA
Environmental Quality

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PROCEDURES FOR UST SYSTEMS WITH INOPERATIVE OR FAILED CORROSION PROTECTION SYSTEMS

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The following procedures are intended to insure proper management of UST systems with inoperative or failed corrosion protection systems. “Inoperative corrosion protection systems” are impressed current corrosion protection systems that are not operational. Typically, the electrical power has been turned off or the system has been otherwise disabled so that it is not functioning. “Failed corrosion protection systems” are impressed current corrosion protection systems or galvanic corrosion protection systems that are not providing a metal structure with adequate corrosion protection. Typical failed impressed current or galvanic corrosion protection systems are those that have failed the most recent corrosion protection test and were not repaired in a timely manner or those that have no record of continuous corrosion protection testing.

DEFINITIONS

Corrosion Expert

A person that is accredited or certified by the National Association of Corrosion Engineers (NACE) as being qualified to engage in the practice of corrosion control of underground metal tanks and piping or a registered professional engineer with education and experience in corrosion control. NACE certification levels of Corrosion Specialist and Cathodic Protection Specialist meet the regulatory requirement for corrosion expert. This person may design and supervise installation of corrosion protection systems, conduct corrosion surveys, repair inoperative or failed systems, and perform stray current or cathodic interference testing and analysis.

Cathodic Protection Tester

A person who can demonstrate an understanding of the principles and measurements of all common types of corrosion protection systems for USTs. At a minimum, such persons must have education and experience in soil resistivity, stray current, structure-to-soil potential and component electrical isolation measurements. Although not required to have a NACE certification, persons with the following NACE certification levels are viewed as meeting the regulatory requirements: Cathodic Protection Technologist, Cathodic Protection Technician, Cathodic Protection Tester, Senior Corrosion Technologist, Corrosion Technologist and Corrosion Technician. Corrosion experts also meet the regulatory requirement for cathodic protection tester. A Cathodic Protection Tester may install, test and perform maintenance on corrosion protection systems. Cathodic Protection Testers may also repair, replace or modify components of a system as long as these changes are within the specifications of the original system design. A Corrosion Expert must approve modifications that are outside of the original design.

Precision Line Tightness Test

A third party certified test capable of detecting a 0.1-gallon per hour leak rate at 1½ times the operating pressure.



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Precision Tank Tightness Test

A third party certified test capable of detecting a 0.1 gallons per hour leak rate from any portion of the tank that routinely contains product. Both the wetted portion (portion of tank filled with product) and non-wetted portion (ullage) of the tank must be tested. Automatic tank gauge or statistical inventory reconciliation leak rate test results may not be used to fulfill the precision testing requirements in these procedures.

PROCEDURES

A. Failed or Inoperative Impressed Current Corrosion Protection Systems

- 1.) For impressed current corrosion protection systems that have been inoperative for 0 - 90 days or that are repaired within 0 - 90 days after failing a corrosion protection test, all of the following must be done:
 - a.) Power must be restored to an inoperative corrosion protection system. A damaged or failed corrosion protection system must be repaired by a cathodic protection tester. (A corrosion expert must approve any modifications to the system that are outside of the original design.)
 - b.) A cathodic protection tester must test the corrosion protection system.
- 2.) For impressed current corrosion protection systems that have been inoperative for 90 - 365 days or that are repaired 90 - 365 days after failing a corrosion protection test, all of the following must be done:
 - a.) Power must be restored to an inoperative corrosion protection system.
 - b.) The corrosion protection system must be repaired, re-tested and re-commissioned under the supervision of a corrosion expert.
 - c.) A precision test must be conducted on the entire UST system.
- 3.) If a UST system has been in operation for the last 365 days, but the impressed current corrosion protection system has been inoperative for more than 365 days or the impressed current corrosion protection system is not repaired for more than 365 days after failing a corrosion protection test, all of the following must be done:
 - a.) An internal inspection on any metal USTs must be conducted according to a national standard (e.g., API 1631). If the UST fails the internal inspection, the UST owner must permanently close the tank, in accordance with 15A NCAC 2N .0802 and the UST Section's *Guidelines for Site Checks, Tank Closure, and Initial Response and Abatement*.
 - b.) All metal piping and buried metal components (e.g., flex connectors) that routinely contain product must be uncovered and inspected by a UST equipment contractor. If the metallic components have no visible corrosion and have passed a line tightness test (unless the piping system is exempt from leak detection e.g. Safe or European Suction) then the contractor must complete the UST-24, Certification of No Visible Corrosion on Metallic Piping Components and immediately repair or replace the cathodic protection system. If the metallic components have visible corrosion and/or do not pass a line tightness test then they must be replaced. Replacement components must meet the performance standards of 15A NCAC 2N .0900 as well as having secondary containment monitoring.
 - c.) The corrosion protection system must be repaired, re-tested and re-commissioned under the supervision of a corrosion expert.
 - d.) A precision test must be conducted on the entire UST system.

- 4.) If a UST system has been out-of-service for the last 365 days and the impressed current corrosion protection system has been inoperative for more than 365 days or the impressed current corrosion protection system is not repaired for more than 365 days after failing a corrosion protection test, the UST system must be permanently closed in accordance with 15A NCAC 2N .0802 and the UST Section's *Guidelines for Site Checks, Tank Closure, and Initial Response and Abatement*. The UST Section may grant an extension in accordance with 15A NCAC 2N .0801, provided that a site assessment is conducted in accordance with 15A NCAC 2N .0803 prior to filing for the extension.

B. Failed Galvanic Cathodic Protection Systems

- 1.) For galvanic corrosion protection systems that have had continuous corrosion protection testing (every three years) and that fail the most recent corrosion protection test, one of the following must be done:
 - a) The corrosion protection system must be repaired according to industry standards and re-tested by a cathodic protection tester.
OR
 - b) A new galvanic corrosion protection system must be designed by a corrosion expert and installed and tested under the supervision of a corrosion expert.
OR
 - c) A new impressed current corrosion protection system must be designed by a corrosion expert and installed and tested under the supervision of a corrosion expert.
- 2.) If a UST system has been in operation for the last 365 days but, the galvanic corrosion protection systems have not had continuous corrosion protection testing (every three years) or for those systems that fail the most recent corrosion protection test and are not repaired within 365 days, the following must be done:
 - a.) An internal inspection must be conducted on any metal USTs according to a national standard (e.g., API 1631). If the UST fails the internal inspection, the UST owner must permanently close the tank, in accordance with 15A NCAC 2N .0802 and the UST Section's *Guidelines for Site Checks, Tank Closure, and Initial Response and Abatement*.
 - b.) All metal piping and buried metal components (e.g., flex connectors) that routinely contain product must be uncovered and inspected by a UST equipment contractor. If the metallic components have no visible corrosion and have passed a line tightness test (unless the piping system is exempt from leak detection e.g. Safe or European Suction) then the contractor must complete the UST-24, Certification of No Visible Corrosion on Metallic Piping Components and immediately repair or replace the cathodic protection system. If the metallic components have visible corrosion and/or do not pass a line tightness test then they must be replaced. Replacement components must meet the performance standards of 15A NCAC 2N .0900 as well as having secondary containment monitoring.
 - c.) A precision test must be conducted on the entire UST system.

Provided that the UST passes the internal inspection and the entire UST system passes the precision test, one of the following must be done:

- d) The corrosion protection system must be repaired according to industry standards, re-tested, and re-commissioned under the supervision of a corrosion expert. If repairs are made to STI-P3 tanks using STI RP R972 the corrosion expert supervision is not required.

OR

e) A new galvanic corrosion protection system must be designed by a corrosion expert and installed and tested under the supervision of a corrosion expert.

OR

f) A new impressed current corrosion protection system must be designed by a corrosion expert and installed and tested under the supervision of a corrosion expert.

- 3.) If the UST system has been out-of-service for more than 365 days and there is no proof that the corrosion protection system has adequately provided corrosion protection to the UST system (e.g., no passing corrosion protection test), the UST system must be permanently closed, in accordance with 15A NCAC 2N .0802 and the UST Section's *Guidelines for Site Checks, Tank Closure, and Initial Response and Abatement*. The UST Section may grant an extension in accordance with 15A NCAC 2N .0801, provided that a site assessment is conducted in accordance with 15A NCAC 2N .0803 prior to filing for the extension.