



STATE OF WISCONSIN
Department of Agriculture,
Trade and Consumer Protection

Approval # 20160001
(Renewal for 20120014)

Bureau of Weights and Measures
Storage Tank Regulation
P.O. Box 7837
Madison, WI 53707-7837

Wisconsin ATCP 93 Material Approval

Equipment: PetroNetwork S3 (Version D) Continuous In-Tank
Leak Detection System (CITLDS)

Manufacturer: Warren Rogers Associates, Inc.
747 Aquidneck Avenue
Middletown, RI 02842

Expiration of Approval: December 31, 2019

SCOPE OF EVALUATION

The Warren Rogers Continuous In-Tank Leak Detection System (CITLDS), Version D, manufactured by Warren Rogers Associates Inc., for leak detection of tanks and connected piping, has been evaluated for use as a method of monthly monitoring complying with **ss. ATCP 93.515 (6) and 93.515 (9)** of the current edition of the Wisconsin Flammable and Combustible Liquids Code.

This evaluation summary is condensed to provide the specific installation, application and operation parameters necessary to maintain the subject systems in compliance with the Wisconsin Administrative Code – ATCP 93.

DESCRIPTION AND USE

The Warren Rogers CITLDS system functions as a quantitative method that continually collects and analyzes data from an approved automatic tank gauge (ATG) console/magnetostrictive probe package and a variety of dispenser interfaces to determine whether a tank system is leaking product. The CITLDS system operates in a long term sampling mode using statistical analysis to evaluate product temperature and product levels collected by the probes every 1 to 15 minutes along with product drop and dispensing data. Monthly data collection period ranges from 6 to 31 days.

The data is collected by the Warren Rogers On-site Processing unit (OSP), and is then transmitted via a data link to the off-site PetroNetwork Host Computer for analysis. The frequency of data transfer is no less than daily, with more frequent call outs triggered by operational events or as a consequence of system diagnostic function. A broadband connection will allow for instantaneous data transfer to the PetroNetwork Host Server as the data is collected.

The system reports a pass or fail along with a minimum detectable leak rate and leak threshold for tanks and associated pipelines. Test results are posted to a secure server in which the system owner through the use of a password protected access can view the monthly test results. E-mail is used to notify the system owner when the results are posted to the web site and also whether the test passed or failed. If a leak is indicated, the leak could be located in any portion of the tank system, including piping. Additional testing will be needed to isolate the location of the leak.

The Warren Rogers CITLDS system may be used with gasoline, diesel fuel, aviation fuel, #4 fuel oil, waste oil, solvents, and other liquids with known coefficients of expansion and density after consultation with the manufacturer.

TESTS AND RESULTS

The performance of the Warren Rogers CITLDS system was determined in accordance with the EPA protocol for evaluation of continuous in-tank leak detection methods, in conjunction with protocol from the National Work Group on Leak Detection Evaluations (NWGLDE) for testing manifolded tanks and determining size limitations. The CITLDS system was found to be capable of detecting a leak using the manufacturer's threshold of 0.10 gallon per hour, with a probability of false alarm (P_{FA}) of less than 1.0 percent. The probability of detection (P_D) of a 0.20 gallon per hour leak was found to be greater than the minimum 95 percent required by regulation.

MONITORING SYSTEM OUTPUT

Detailed here is an example of the typical tank and line monitoring report:

**PetroNetwork S3
CITLDS Report**

Tank Owner: ABC Corporation
 Facility Name: ABC 1 – W99999
 Facility: 123 Main Street
 East Side, TN

Tank Monitoring Report

Tank ID Product	Tank Capacity	Period Covered	System Status	Test Date
01-S	10000	12/01/03-12/31/03	P	12/31/03
02-P	10000	12/01/03-12/31/03	P	12/31/03
03-U	20000-2M	12/01/03-12/31/03	P	12/31/03
04-D	20000-2M	12/01/03-12/31/03	P	12/31/03

Line Monitoring Report

Assoc. Tank ID Product	Tank Capacity	Period Covered	System Status	Test Date
01-S	10000	12/01/03-12/31/03	P	12/31/03
02-P	10000	12/01/03-12/31/03	P	12/31/03
03-U	20000-2M	12/01/03-12/31/03	P	12/31/03
04-D	20000-2M	12/01/03-12/31/03	P	12/31/03

**Monthly Monitoring
Data Quality Report**

Assoc. Tank ID Product	Tank System Capacity	Period Covered	Minimum Detectable Leak (gph)	Threshold (gph)
01-S	10000	12/01/03-12/31/03	0.030	0.015
02-P	10000	12/01/03-12/31/03	0.040	0.020
03-U	20000-2M	12/01/03-12/31/03	0.050	0.025
04-D	20000-2M	12/01/03-12/31/03	0.040	0.020

LIMITATIONS / CONDITIONS OF APPROVAL

- All monitoring equipment shall be installed, calibrated, operated, and maintained in accordance with the manufacturer instructions, and verified every 12 months for operability, proper operating condition, and proper calibration by a certified technician.
- Records of sampling, testing, or monitoring shall be maintained in accordance with **ATCP 93.500(9)**.
- The manufacturer shall submit for a revision to this Wisconsin Material Approval application if any of the functional performance capabilities of this equipment are revised. This would include, but not be limited to changes in software, hardware, or methodology.
- While 3rd party testing does determine a required minimum tank level, EPA leak detection regulations require testing of the portion of the tank system which routinely contains product. Consistent testing at low levels could allow a leak to remain undetected.
- During leak testing, a minimum level of product in tank shall be maintained so as to ensure testing of the portion of the tank and/or piping that routinely contains product, regardless of testing system capability. For instance, if product levels are routinely maintained at 60%, but the leak detection system is capable of testing at 15% product level, then testing shall be performed at 60% levels.
- Critical performance parameters for the **Warren Rogers CITLDS System** (0.20 gph monthly monitoring):

<i>Parameter</i>	<i>Value</i>
Maximum Tank Size ¹	100,000 gallons (Single Tank) 100,000 gallons (Manifolded Tanks)
Maximum No. of Manifolded Tanks	5
Software Version	D
Minimum/Maximum Tank Level ²	9%
Maximum Monthly Throughput	2,718,013 gallons

1. Manifolded tank capacity is an aggregate capacity of all tanks (maximum of five tanks). Each manifolded tank shall have its own leak detection probe.
 2. The CITLDS system will automatically check the tank level, and not perform a test if the tank level is below the minimum.
- The Warren Rogers CITLDS system may be used as a method of monthly monitoring for tanks and connected piping complying with **ss. ATCP 93.515 (8) and 93.515 (9)**.
 - **The applicability of the Warren Rogers CITLDS System is limited to automatic tank gauges that have a Wisconsin Material Approval, utilize a magnetostrictive probe, and are certified at a leak rate of 0.1 gph. Properly calibrated meters are also required for use of the CITLDS system.**
 - **Mechanical or electronic line leak detectors capable of detecting, at a minimum, a leak rate of 3.0 gph at 10 psi within one hour, shall be installed in the piping system to detect catastrophic failures per ATCP 93.515(8)(b).**
 - If for two consecutive months, the test results indicate that a tank system is not tight (fails), or the results are inconclusive (to be considered a fail), the suspected release investigation

and confirmation procedures specified under **ss. ATCP 93.570 and 93.575** shall be followed.

- If a second test is required to confirm the status of a tank system, that test shall be an approved tightness test in accordance with **ss. ATCP 93.515(4)**.

This approval will be valid through December 31, 2019, unless manufacturing modifications are made to the product or a re-examination is deemed necessary by the department. The Wisconsin Material Approval Number must be provided when plans that include this product are submitted for review.

DISCLAIMER

The Department is in no way endorsing or advertising this product. This approval addresses only the specified applications for the product and does not waive any code requirement unless specified in this document.

Effective Date: January 11, 2016

Reviewed by: Signature on File Date: January 11, 2016
Edward J. Sindelar, RS, REM, CESCO
Environmental Engineering Specialist
Bureau of Weights and Measures
Storage Tank Regulation

Approved by: Signature on File Date: January 11, 2016
Greg Bareta, P. E.
Section Chief
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