STATE OF WISCONSIN
Department of Agriculture,
Trade and Consumer Protection

Approval # 20210002

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

Wisconsin ATCP 93 Material Approval

Equipment: Vista Precision Solutions' Model LT-100 and LT-100a Monthly Monitoring Method and Line Tightness Testing Method Version 1.0

Manufacturer: Vista Precision Solutions, Inc.
2350 Lindberg Loop
Richland, WA 99354

Expiration of Approval: December 31, 2024

SCOPE OF EVALUATION

Vista Precision Solutions' Model LT-100 and LT-100a pipeline leak detection systems manufactured by Vista Precision Solutions, Inc., has been evaluated in accordance with **s. ATCP 93.510(4)** of the current edition of the Wisconsin Administrative Flammable and Combustible Liquids Code for use as a line tightness tester. Evaluation was for use with both rigid and flexible lines.

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 Vista Precision Solutions' Model LT-100 is a leak detection system for pressurized underground pipelines in which data can be gathered electronically or manually by the operator from a test cylinder having graduations on a sight tube. The system can be permanently installed for periodic monitoring purposes or it can be transported from line to line as a portable means of testing integrity. The system compensates for any fuel temperature changes that may occur during a test. The size pipeline that may be tested using this technique is based on the quality of the test data obtained. The governing factor is the error in thermal compensation, which is calculated for each test. If the error is too large, the test is repeated.

The Model LT-100 line leak detection system may be used on systems containing gasoline, diesel, aviation fuel, fuel oil #4, solvents and waste oil.

The liquid product in the line remains there during the test. All transfer operations must be suspended during the testing. The line must be completely isolated, by means of valves, from any storage tanks connected to it and from other sections of line not being tested. If the valves used to isolate the line do not seal properly, either a double block and bleed valve or blinds must be installed. The instrumentation can be attached at any location along the pipeline. It can be permanently installed for periodic monitoring purposes or it can be transported from line to line to assess integrity.

The Model LT-100 line leak detection system uses a preset threshold and a single test series to determine whether a pipeline is leaking. The systems declare a leak if the output of the measurement system exceeds a threshold of 0.06 gallon per hour. The systems may be used when trapped vapor is present in the pipeline. Tests of pressurized lines can be conducted at any pressure up to 200 psi.

The Model LT-100a is an automated version of the LT-100. The line is pressurized using a small pump and a pressure relief valve rather than using compressed nitrogen. Since this is the only change in the system, the data from the original LT-100 testing are applicable to the LT-100a.

There are no acceptable deviations to the test protocol.

TESTS AND RESULTS

Testing is conducted at two pressures, the test pressure and atmospheric pressure. At each of these pressures, the LT-100 measures and electronically records the volume of fuel that is added to or removed from the line at a constant pressure. One hour of data is collected at each of the two pressures. The cumulative volume changes measured at the two levels of pressure are then analyzed, and a test decision is made. The main output of the LT-100 test is a direct measurement of the leak rate, if a leak rate is present, in gallons per hour. The output of the test also includes a measure of the "goodness" of the test, which is a quantitative estimate (in gallons per hour) of the error in compensating for ambient, thermally induced volume changes during the test. Because of the system's temperature compensation capability, there are no restrictions on product temperature in order to conduct a test, and no waiting period is required after product transfer, delivery, or dispensing.

The Vista system measures volume flow rate at a constant pressure. Because constant pressure is maintained, measured volume changes are a direct measurement of the thermal

expansion or contraction of the liquid in the piping and the flow rate due to a leak if one exists. Temperature compensation is used to remove temperature effects from the measured data.

The performance of the Model LT-100 pipeline leak detection systems was determined by Ken Wilcox Associates, Inc., using the EPA protocol for evaluation of pipeline leak detection systems. When used as a line tightness test with electronic data collection, the systems are capable of detecting a 0.1 gallon per hour leak with a P_{FA} of less than 3 percent and a P_D of greater than 97 percent. When used as a line tightness test with manual data collection, the systems are capable of detecting a 0.1 gallon per hour leak with a PFA of less than 4 percent and a PD of greater than 96 percent.

The conclusion reached after completing the testing and analysis is that the Vista System is capable of reliably testing large pipeline systems within the specifications set by the EPA for much smaller pipelines.

The EPA test procedure used addressed only the issue of the methods ability to detect leaks and not safety hazards.

LIMITATIONS / CONDITIONS OF APPROVAL

- The Vista Solutions LT-100 line leak detection system is approved for use on underground pipeline systems that contain petroleum or other chemical products. It is approved for use on rigid piping.

- The operating instructions and test procedures specified by Vista Solutions, Inc., shall be used to conduct all tests.

- Line tester operation shall be verified annually, and calibrated in accordance with manufacturer's instructions if necessary.

- 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.

- **Mechanical line leak detector shall be removed or manually isolated from the pipeline for the duration of the test, or if testing is to be conducted with mechanical line leak detector in place, check valve in pump must be manually closed.**

- Critical performance parameters for the Vista Solutions LT-100 Line Leak Detection System:

Rigid Piping:

Parameter	Value
Test Line Pressure	**Up to 200 psi**
Minimum waiting period between last product delivery or dispensing and start of data collection	**None**
Minimum time for test	**2 hours**
Total maximum allowable volume of product in any **rigid** test pipeline	**3,400 gallons or less**

This approval will be valid through December 31, 2024, 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: June 6, 2021

Reviewed by: Signature on file Date: June 6, 2021
Erik Otterson
Environmental Specialist

Approved by: Signature on file Date: June 6, 2021
Greg Bareta, P. E.
Section Chief
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Bureau of Weights and Measures