

TWENTY-SIXTH EDITION, 2019

LIST OF LEAK DETECTION EVALUATIONS FOR STORAGE TANK SYSTEMS



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DISCLAIMER

GENERAL

Appearance on this list is not to be construed as an endorsement by any regulatory agency nor is it any guarantee of the performance of the method or equipment. Equipment should be installed and operated in accordance with all applicable laws and regulations.

This list of Leak Detection Evaluations was prepared by a work group consisting of State and EPA members and is limited to evaluations of leak detection equipment and procedures or systems, conducted by an "independent third-party evaluator" (see Appendix "Glossary of Terms") and reviewed by the work group. This list includes evaluations conducted in accordance with either EPA Standard Test Procedures for Evaluating Leak Detection Methods (EPA/530/UST-90/004 through 010) or other test procedures accepted by the NWGLDE as equivalent to the EPA standard test procedures (see Part III "Acceptable Test Protocols").

The National Work Group on Leak Detection Evaluations (NWGLDE) does not guarantee the performance of any leak detection method or equipment appearing on this List, nor does it warrant the results obtained through the use of such methods or equipment.

SPECIFIC

- The NWGLDE does not evaluate methods or equipment and appearance on this List does not mean they are automatically acceptable for use in any particular state or local jurisdiction.
- The NWGLDE List is not an EPA List, nor does appearance on this list constitute endorsement or approval by the NWGLDE or EPA. Anyone claiming that a device or method is "EPA approved" because it appears on this list is making a false claim.
- The NWGLDE makes no representations concerning the safe operation of any method or equipment. Users of any method or equipment appearing on this List assume full responsibility for the proper and safe operation of said equipment and assume any and all risks associated with its use.
- On each data sheet, this List reports parameters and data values for methods, equipment, and software that are specific to the most current third-party evaluation submitted to the NWGLDE. Subsequent modifications or changes to the method, equipment, or software may produce parameters and data values that are significantly different than the listed third-party evaluation parameters and data values. It is the responsibility of the local implementing agency to accept or reject those modifications or changes.
- NWGLDE Listings apply to leak detection functionality only and not material compatibility. Since long term material compatibility with the product stored is not addressed in test procedures and evaluations, the NWGLDE makes no representations as to the compatibility of leak detection equipment with the product stored.
- Unless specifically indicated on the individual data sheets, performance with alternative fuels has not been demonstrated **with the following exception:**

Biodiesel B6 through B20 meeting ASTM D7467 and biodiesel B100 meeting ASTM D6751 may be used with all equipment listed for diesel whether or not these alternative fuels are included on individual data sheets. This exception DOES NOT APPLY to leak detection test methods using Out-Of Tank Product Detection (Vapor Phase) for B6-B20, and Out-Of Tank Product Detection (Liquid and Vapor Phase) and any tracer-based test methods for B100. For these methods, individual data sheets will have to be referenced to determine applicability.

- Measurements derived for minimum detectable water level and minimum water level change for automatic tank gauge method, continuous automatic tank gauge method, and certain non-volumetric tank tightness test method listings were calculated in 100% hydrocarbon fuels, unless otherwise noted.
- NWGLDE listed leak detection equipment may be applicable for use with additional liquids after consultation with the manufacturer and/or third party evaluator and subject to approval by the implementing agency.

The National Work Group on Leak Detection Evaluations (NWGLDE) is pleased to publish our 26th Edition, 2019 of the "List of Leak Detection Evaluations for Storage Tank Systems." Please note, the NWGLDE has significantly changed the format of this List. All of our listings are kept current on our webpage: <http://www.nwglde.org>. As this webpage has the current listings and most users access our information through the much easier-to-navigate webpage, the NWGLDE will no longer be maintaining a full, printed List of all of the NWGLDE evaluations. Instead, the new "List" will simply be a list of the changes made to the evaluations and methods within the past year. Attached, please find only those listings that are new or updated since the previous publication (25th Edition, January 2018). Please use our webpage to access current information, listings, and methods.

For help with accessing anything on our web site, please contact our webmaster, David Wilson, at djwilson@utah.gov, or give him a call at (801) 536-4138.

If you need to contact members of the work group, information for contacting them may be found on our webpage (http://www.nwglde.org/group_members.html). The work group team and team leaders are also listed on our webpage to help you determine the appropriate contacts (http://www.nwglde.org/team_members.html).

Vendors should send new third-party evaluations, which were performed by an "independent third-party evaluator" (see Glossary of Terms on webpage), to be reviewed by the work group to the team leader and all of the members of the team. Please follow all requirements and policies for submittals and include all documentation for a more prompt review (available on our webpage).

Please note, all reviews and listings are conducted and prepared by the NWGLDE, an independent work group consisting of state and EPA members. It is not a work group specifically affiliated with EPA or any specific state. The NWGLDE does not "approve" leak detection equipment or procedures. The "List" includes leak detection equipment/procedures that the work group has reviewed. The review confirms that the leak detection equipment/procedures were third-party evaluated in accordance with an acceptable protocol and in accordance with the EPA performance standards under appropriate test conditions. Implementing agencies must approve leak detection equipment and procedures, ensure appropriate installation, and determine compliance with UST regulations.

Thank you and we look forward to working with you soon.

Don Taylor, Chair
National Work Group on Leak Detection Evaluations (NWGLDE)





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What's New Since The 25th Edition List, 2018 (01/18/2018)

MOST RECENT WEBSITE ADDITIONS/REVISIONS:

- ◆ **Franklin Fueling Systems**
 - [INCON EVO 200 and EVO 400 consoles \(INCON FMP-LL3 Magnetostrictive Digital Probe\)](#)
Added to Automatic Tank Gauging Method February 1, 2018
- ◆ **Leighton O'Brien**
 - [Leighton O'Brien Dry Test \(Pressure Decay Test\)](#)
Added to Non-Volumetric Tank Tightness Test Method (Ullage) March 27, 2018
- ◆ **Leighton O'Brien**
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Added to Volumetric Tank Tightness Test Method (Underfill) March 27, 2018
- ◆ **Purpora Engineering, Inc. (originally listed as Heath Consultants, Inc.)**
 - [Petro Tite Line Tester](#)
Revised listing June 25, 2018
- ◆ **Purpora Engineering, Inc. (originally listed as Heath Consultants, Inc.)**
 - [Petro Tite Line Tester \(for Flexible Pipelines\)](#)
Revised listing June 25, 2018
- ◆ **CGRS, Inc.**
 - [iotaVision L005 Enhanced Leak Detection \(ELD\) Method](#)
Added to Non-Volumetric Tank Tightness Test Method (Tracer) July 17, 2018
- ◆ **Hansa Consult of North America, LLC**
 - [HCNA Pipeline Leak Detection System, Version 2.0](#)
Revised listing October 1, 2018

— FUTURE EVENTS — NWGLDE MEETING:

The NWGLDE Fall meeting will be held September 13-14, 2018 in Louisville, Kentucky, at the Galt House Hotel following the [National Tanks Conference](#).

Additional details are available by downloading the following Memo and Agenda:

[VENDOR INVITATION MEMO](#)

EPA, Regulator, Interested Parties

[INVITATION MEMO](#)

[MEETING AGENDA](#)

Contact [Heather Peters](#) for more information.

Issue Date: February 1, 2018

Franklin Fueling Systems

INCON EVO 200 and EVO 400 consoles

(INCON FMP-LL3 Magnetostrictive Digital Probe)

AUTOMATIC TANK GAUGING METHOD

| | |
|-----------------------|--|
| Certification | Leak rate of 0.2 gph with PD = 99.94% and PFA = 1.006%. Leak rate of 0.1 gph with PD = 97.20% and PFA = 2.76%. |
| Leak Threshold | 0.1 gph for leak rate of 0.2 gph. 0.05 gph for leak rate of 0.1 gph. A tank system should not be declared tight if the test result indicates a loss or gain that equals or exceeds this threshold. |
| Applicability | Gasoline, diesel, aviation fuel, fuel oil #4, biodiesel blends B6-B20 meeting ASTM D7467, biodiesel B100 meeting ASTM D6751. |
| Tank Capacity | Maximum of 30,000 gallons for leak rate of 0.2 gph. Maximum of 20,000 gallons for leak rate of 0.1 gph. Tank must be between 50 and 90% full. |
| Waiting Time | Minimum of 5 hours 20 minutes between delivery and testing for leak rate of 0.2 gph. Minimum of 5 hours 20 minutes between delivery and testing for leak rate of 0.1 gph. None between dispensing and testing. There must be no delivery during waiting time. |
| Test Period | Length of the test is determined automatically based on quality of test data. Average data collection time during evaluation was 5 hours 21 minutes for leak rate of 0.2 gph. Average data collection time during evaluation was 4 hours 39 minutes for leak rate of 0.1 gph. Test data is acquired and recorded by system's computer. Leak rate is calculated from data determined to be valid by statistical analysis. There must be no dispensing or delivery during the test. |
| Temperature | Probe contains 5 thermistors to monitor product temperature. At least one thermistor must be submerged in product during testing. |
| Water Sensor | Must be used to detect water ingress. Minimum detectable water level in the tank is 0.208 inches. |
| Calibration | Thermistors and probe must be checked and, if necessary, calibrated in accordance with manufacturer's instructions. |
| Comments | Not evaluated using manifolded tank systems. Therefore, this certification is only applicable when there is a probe used in each tank and the siphon is broken during testing. Tests only portion of tank containing product. As product level is lowered, leak rate in a leaking tank decreases (due to lower head pressure). Consistent testing at low levels could allow a leak to remain undetected. EPA leak detection regulations require testing of the portion of the tank system which routinely contains product. EVO 200 can support up to 6 tanks. EVO 400 can support up to 14 tanks. |

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Dates of Evaluation:
10/05/2017 (20,000 gallons)
10/06/2017 (30,000 gallons)



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Issue Date: March 27, 2018

Leighton O'Brien**Dry Test (Pressure Decay Test)****NON-VOLUMETRIC TANK TIGHTNESS TEST METHOD (ULLAGE)**

| | |
|-----------------------|--|
| Certification | Leak rate of 0.1 gph with PD = 100% and PFA = 0%. |
| Leak Threshold | A tank system should not be declared tight when the pressure decay trend results in an indication of failure or inconclusive on the test apparatus screen. |
| Applicability | Gasoline, diesel, aviation fuel, fuel oil #4, biodiesel blends B6-B20 meeting ASTM D7467, biodiesel B100 meeting ASTM D6751. |
| Tank Capacity | Maximum tank volume evaluated is 20,000 gallons. Larger tanks may be tested provided that the Test Period is correspondingly increased by extrapolation. |
| Waiting Time | Not evaluated. |
| Test Period | Average is 15 minutes with tank filled to 5% Average is 6 minutes with tank filled to 50% Average is 3 minutes with tank filled to 95% There must be no dispensing or delivery during test. |
| Test Pressure | Proprietary. |
| Temperature | Not evaluated. |
| Groundwater | Depth to groundwater in tank excavation backfill must be determined. If groundwater is above product level, net test pressure must be increased by 2.2 psi (15 kPa) in the ullage during the test. |
| Comments | Not evaluated using manifolded tank systems. Evaluated using unleaded fuel calibrated orifice. Tests only ullage portion of tank. Product-filled portion of tank must be tested using a volumetric underfill test method. |

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 Tel: (816) 443-2494
 Dates of Evaluation: 12/01/2016



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Issue Date: March 27, 2018

Leighton O'Brien

Wet Test

VOLUMETRIC TANK TIGHTNESS TEST METHOD (Underfill)

| | |
|-----------------------|--|
| Certification | Calculated minimum detectable leak rate of 0.1 gph with PD = 99.99% and PFA = 0.0099% at 95% tank volume and the PD is greater than 97.31% at all other tank volumes. |
| Leak Threshold | Calculated leak threshold is 0.050 gph with PD = 95% and PFA = 5%. A tank system should not be declared tight if the test result indicates a loss or gain that equals or exceeds this threshold |
| Applicability | Gasoline, diesel, aviation fuel, fuel oil #4, solvents, waste oil, biodiesel blends B6-B20 meeting ASTM D7467, biodiesel B100 meeting ASTM D6751. |
| Tank Capacity | Maximum size of tank = 20,000 gallons. |
| Waiting Time | Minimum of 2 hours and 59 minutes between delivery and testing. |
| Test Period | Minimum of 1 hour and 7 minutes. There must be no dispensing or delivery during test. |
| Temperature | If a test is to be conducted following a product delivery, the delivered product should not have temperature differences greater than ± 6.5 degrees F from the product already in the tank. |
| Groundwater | Depth to groundwater in tank excavation backfill should be determined if possible. If groundwater is above bottom of tank or is undetermined, then two passing tests are required at different product heights or different tank pressures to achieve a 1.5 psi differential. Conducting the Leighton O'Brien Wet Test and the Leighton O'Brien Dry Test (NVTTC Ullage) in combination will achieve this result. |
| Calibration | Differential pressure sensor must be calibrated regularly in accordance with manufacturer's instructions. |
| Comments | This method was not evaluated with groundwater taken into account. Tests only portion of tank containing product. Not evaluated using manifolded tank systems. Testing can be conducted at product levels of 10 inches or greater. Evaluated in a 13,750 gallon, horizontal fiberglass tank containing diesel fuel with a diameter of 120 inches and 323 inch length. |

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Evaluator: Ken Wilcox Associates
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Dates of Evaluation: 12/01/2016



Issue Date: November 22, 1995
Revision Date: June 25, 2018

Purpora Engineering, Inc.
(originally listed as Heath Consultants, Inc.)

Petro Tite Line Tester

LINE TIGHTNESS TEST METHOD

- Certification** Leak rate of 0.1 gph with PD = 99.99% and PFA = 0.34%.
- Leak Threshold** 0.05 gph.
A pipeline system should not be declared tight if the test result indicates a loss that equals or exceeds this threshold. Vendor claims this equipment can detect leaks at .01 gph, and trains operators to declare leaks at .01 gph.
- Applicability** Gasoline, diesel, aviation fuel, fuel oil #4.
- Specification** System tests fiberglass and steel pipelines.
Tests are conducted at 150% operating pressure.
Mechanical line leak detectors shall be removed or manually isolated from the pipeline for duration of test, or check valve in pump must be manually closed if testing is to be conducted with mechanical line leak detector in place.
- Pipeline Capacity** Maximum of 129 gallons.
- Waiting Time** None between delivery and testing.
None between dispensing and testing.
- Test Period** Minimum of 30 minute (two 15 minute readings) test when the detected leak does not exceed 0.005 gph, or minimum of 1 hour (four 15 minute readings) test when the detected leak is more than 0.005 gph for the first 30 minutes. When testing multiple lines and leak rates do not exceed 0.005 gph, the following test times are utilized:

| <u>Number of Lines</u> | <u>Test Times</u> | <u>Number of Consecutive Readings</u> | <u>Interval</u> |
|------------------------|-------------------|---------------------------------------|-------------------|
| <u>1</u> | <u>30 Minutes</u> | <u>Six (6)</u> | <u>5 Minutes</u> |
| <u>2</u> | <u>30 Minutes</u> | <u>Three (3)</u> | <u>10 Minutes</u> |
| <u>3</u> | <u>30 Minutes</u> | <u>Two (2)</u> | <u>15 Minutes</u> |

Test data are acquired and recorded manually.

- Calibration** System must be checked annually and, if necessary, calibrated in accordance with manufacturer's instructions.
- Comments** The manufacturer does not support test results if the technician does not hold a current Petro-Tite certification when the test is performed. Re-certification is required by the manufacturer every 2 years. Third party evaluation was not conducted utilizing a test manifold.

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Evaluator: Ken Wilcox Associates
Tel: (816) 443-2494
Dates of Evaluations: 03/11/91, 05/06/01



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Issue Date: March 10, 2000
Revision Date: June 25, 2018

Purpora Engineering, Inc.
(originally listed as Heath Consultants, Inc.)

Petro Tite Line Tester
(for Flexible Pipelines)

LINE TIGHTNESS TEST METHOD

- Certification** Leak rate of 0.1 gph with PD = 99.99% and PFA = 0.37%.
- Leak Threshold** 0.05 gph.
A pipeline system should not be declared tight if the test result indicates a loss that equals or exceeds this threshold.
Vendor claims this equipment can detect leaks at .01 gph, and trains operators to declare leaks at .01 gph.
- Applicability** Gasoline, diesel, aviation fuel, fuel oil #4.
- Specification** System tests flexible pipelines.
Tests are conducted at 60 psi.
Mechanical line leak detectors shall be removed or manually isolated from pipeline for duration of test, or check valve in pump must be manually close dif testing is to be conducted with mechanical line leak detector in place.
- Pipeline Capacity** Maximum of 49.6 gallons.
- Waiting Time** None between delivery and testing.
None between dispensing and testing.
- Test Period** Minimum of 30 minute (two 15 minute readings) test when the detected leak does not exceed 0.005 gph, or minimum of 1 hour (four 15 minute readings) test when the detected leak is more than 0.005 gph for the first 30 minutes. When testing multiple lines and leak rates do not exceed 0.005 gph, the following test times are utilized:

| <u>Number of Lines</u> | <u>Test Time</u> | <u>Number of Consecutive Readings</u> | <u>Interval</u> |
|------------------------|------------------|---------------------------------------|-----------------|
| 1 | 30 Minutes | Six (6) | 5 Minutes |
| 2 | 30 Minutes | Three (3) | 10 Minutes |
| 3 | 30 Minutes | Two (2) | 15 Minutes |

Test data are acquired and recorded manually.

- Calibration** System must be checked annually and, if necessary, calibrated in accordance with manufacturer's instructions.
- Comments** The manufacturer does not support test results if the technician does not hold a current Petro-Tite certification when the test is performed. Re-certification is required by the manufacturer every 2 years. Third party evaluation was not conducted utilizing a test manifold.

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Dates of Evaluations: 03/11/91, 12/07/94, 05/06/01

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Issue Date: July 17, 2018**CGRS, Inc.****iotaVision™ L005
Enhanced Leak Detection (ELD) Method****NON-VOLUMETRIC TANK TIGHTNESS TEST METHOD (TRACER)**

| | |
|------------------------|--|
| Certification | Leak rate of 0.005 gph as vapor with $P_D = 100\%$ and $P_{FA} = 0\%$. |
| Leak Threshold | A tank system should not be declared tight when brine is observed in the primary containment. |
| Applicability | Method tests the primary containment of newly installed secondarily contained tanks. It does not test single-wall, portions of the tank that are not exposed to the brine solution such as tank bungs and manway penetrations. The primary component of the system under test must be dry, containing no liquid, except that it may contain up to 1 inch of residual ballast water if a dyed brine solution is used. The interstice must be liquid filled. |
| Tank Capacity | Not limited by capacity. |
| Test Period | Following the pre-test waiting time, normal test duration operationally in the field is 1 minute for each 5 feet of leak point target area (up to 4 feet wide), and is less than 60 minutes for most containers. The test duration can vary depending on the condition of the tank surface. If the tank surface is clean and free of any water, the test duration could be shorter. If the inside of the tank is dirty, contains some gravel and has up to 1 inch of ballast water, it is possible that the test duration would be longer. The assessment of the tank condition is determined by the trained technician that is operating the iotaVision™ method. Once the tank condition is determined, an appropriate test duration is implemented. |
| Waiting Time | After the brine level is raised to a minimum of 3 inches above the primary tank, a minimum 30 minutes of pre-test waiting time to allow brine solution to collect in the low point of the tank where it may be visually observed. |
| Dosage | The interstice must be completely filled with colored or clear brine. |
| Sampling Points | Tank top access must be sufficient to allow the entry of the remote observation vehicle. |
| Groundwater | Groundwater level is not determined and does not impact the test. |
| Detector | Colored or colorless brine is observed visually via a remote inspection vehicle inserted into the tank. |
| Calibration | Not applicable. |
| Comments | <p>This method allows for the detecting of the clear brine solution or a dyed brine solution ingress into the primary space of a double walled tank at any point that can be observed.</p> <p>When a dyed brine that has a contrasting color, when compared to the tank surface, is used to fill the interstice, there can be up to 1 inch of water present at the bottom of the tank at the beginning of the pre-soak test period.</p> <p>This method is mainly used to test newly installed double walled tanks that have an interstitial space that is filled with a colored brine solution. These newly installed tanks do not have product present inside the primary area of the tank.</p> <p>CGRS prohibits the use of this test method in a tank that has contained petroleum product at any time without specific written approval from the CGRS director of health and safety.</p> |

1/22/2019

CGRS, Inc. B

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Date of Evaluation: 08/17/17



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Issue Date: March 7, 2006

Revision Dates: February 17, 2011, October 1, 2018

Hansa Consult of North America, LLC

HCNA Pipeline Leak Detection System, Version 2.0

LARGE DIAMETER LINE LEAK DETECTION METHOD (6 inches diameter or above)

| | |
|--------------------------|---|
| Certification | Leak rate of 0.002% of line volume (0.02 gph per 1000 gallons of product) in the pipeline segment being tested with PD > 95% and PFA < 5%. |
| Leak Threshold | 0.001% of line volume in gph. A pipeline system should not be declared tight if the test results indicate a loss that equals or exceeds the threshold. |
| Applicability | Gasoline, diesel, aviation fuel, fuel oil #4, solvents, waste oil, biodiesel B6-B20 meeting ASTM D7467, biodiesel B100 meeting ASTM D6751. |
| Specification | System tests either single or double-walled fiberglass or steel piping. |
| Pipeline Capacity | The Hansa 3rd party certified minimal detectable leak rate for large diameter pipeline systems (airport hydrant systems) is listed in the table below by maximum test section volume. |

Leak Detection Rate Per Test Section Volume (EPA maximum allowable/Hansa 3rd party certified)

| Test Section Volume (Gallons) | EPA Semiannual Test-Leak Detection Rate Not To Exceed (Gallons Per Hour) | EPA Annual Test-Leak Detection Rate Not To Exceed (Gallons Per Hour) | Hansa 3rd party certified minimum detectable leak rate. (Gallons Per Hour) |
|-------------------------------|--|--|--|
| 5,000 to 25,000 | 1.0 | 0.5 | 0.5 |
| 25,001 to 50,000 | 1.0 | 0.5 | 1.00 |
| 50,001 to 75,000 | 1.5 | 0.75 | 1.5 |
| 75,001 to 100,000 | 2.0 | 1.0 | 2.00 |
| 101,000 to 125,000 | 3.0* | 1.5 | 2.50 |
| 125,001 to 150,00 | 3.0* | 1.5 | 3.00 |
| 150,001 to 175,00 | 3.0* | 1.5 | 3.50 |

* EPA semi-annual minimum detectable leak rate may be 6.0 gallons per hour until October 13, 2022 for pipe segments greater than 100,000 gallons. After October 13, 2022, the minimum detectable leak rate cannot exceed 3.0 gallons per hour.

| | |
|------------------------|--|
| Waiting Time | None between delivery and testing. None between dispensing and testing. |
| Test Period | Minimum of 45 minutes after setup. Piping must be isolated and blocked during test. |
| System Features | System may be permanently installed on pipeline to perform monitoring, or may be transported and set up to perform line tightness testing. A single 45 minute test is required to simultaneously test as many sections as required consisting of typically two 15-minute monitoring periods at operating pressure, and one 15-minute monitoring period at a lower pressure level. System measures change in pressure gradients and reports output quantity in gph, while compensating for thermal and pipeline "creeping" effects. If leak is declared, message is printed and alarm is automatically activated immediately after completion of test. Pipeline segment being tested must be completely isolated. |

Calibration System must be calibrated in accordance with manufacturer's instructions.

Comments Prior to conducting tests on a line, the HCNA V2.0 must be commissioned to confirm the existing line characteristics for each individual test section.
System may be used on large underground bulk pipelines such as airport hydrant fueling systems. Manufacturer claims system is applicable to any size of underground pressurized piping, typically between 3,000 and 500,000 gallons.
The third-party evaluations utilized a total of 66 tests. 36 of these tests were conducted with various induced leak rates. 6 of the test were performed at volumes of less than 25,000 gallons.

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Evaluator: Ken Wilcox Associates
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Date of Evaluation: 12/15/05, 08/28/18



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