STATE OF WISCONSIN
Department of Agriculture,
Trade and Consumer Protection

Approval # 2024003
(Replaces 20200002)

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

Wisconsin ATCP 93 Material Approval

Equipment: PM2 Quantitative Wet and PM2 Qualitative Dry Line Tightness Tests

Manufacturer: Leighton O'Brien, Inc.
3024 Foust Dr
Spring Hill, TN 37174

Expiration of Approval: **No Expiration date unless changes to the approval are made.**

SCOPE OF EVALUATION

The Leighton O'Brien PM2 Wet and Leighton O'Brien PM2 Dry Line Tightness Test Systems, manufactured by Leighton O'Brien USA, Inc. have been evaluated in accordance with **s. ATCP 93.130(1)(a)** of the current edition of the Wisconsin Administrative Flammable, Combustible and Hazardous 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 Leighton O'Brien Line Test (PM2) is a volumetric test, using a twin cylinder test rig with a digital level gauge in one cylinder. The two-cylinder system permits coarse or fine resolution measurements, and the second cylinder can also act as a liquid reservoir. Pressure or vacuum is applied to the top of both cylinders evenly to challenge the line. The pass/fail criteria are based on the liquid level response. In addition, a vapor trap is added to the system to catch any air ingress during a vacuum test. This allows for very accurate volumetric leak rate calculations based on digitally measured liquid level. According to the manufacturer, "Completely dry lines or lines in an unknown state of prime can also be tested. This is done by isolating the two cylinders at the top and using the rig as a digital manometer, also allowing for a volumetric dry leak rate based on the changing liquid level in the rig."

Both types ("wet" and "dry/unknown") of tests were run during the evaluation. This capability was also tested during the evaluation, using a qualitative approach. Since the line was not full of liquid product, no temperature circulation could be done. This reflects the situation in the field if the system is used to test a line that is dry or only partially full of product. The system in its "dry/unknown" mode is designed to check for leaks of air or vapor.

TESTS AND RESULTS

The performance of the Leighton O'Brien PM2 Wet Line Test as a line tightness testing method was verified by Ken Wilcox Associates in accordance with the EPA Protocol for volumetric tank tightness testing systems. The Leighton O'Brien 2 Wet Test system was found to detect a leak of 0.1 gph with 99.6 percent probability of detection and 0.4% percent probability of false alarm.

The performance of the Leighton O'Brien PM2 Dry Line Test as a line tightness testing method was verified by Ken Wilcox Associates in accordance with the EPA Protocol for non-volumetric tank tightness testing systems. The Leighton O'Brien MP2 Dry Line Test system was found to detect a leak of 0.1 gph with 100 percent probability of detection and 0% percent probability of false alarm.

LIMITATIONS / CONDITIONS OF APPROVAL

- The Leighton O'Brien PM2 Wet and Leighton O'Brien PM2 Dry Line Tightness Test systems are approved for use on pipeline systems for underground storage tank facilities that contain gasoline, diesel, aviation fuel, #4 fuel oil, biodiesel B6-B20 meeting ASTM D7647, biodiesel B100 meeting ASTM D6751, and other liquids with manufacturer approval. They are approved for use on both rigid and flexible piping.
- Manifolded piping may be tested as long as the total length of piping is within the capacity and configuration limitations.
- The operating instructions and test procedures specified by Leighton O'Brien USA, 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. Technician must hold a current Leighton O'Brien

certification to operate equipment. Re-certification is required by the manufacturer every 2 years.

- 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 detectors shall be removed or manually isolated from the pipeline for duration of the test, or check valve in pump must be manually closed if testing is to be conducted with mechanical line leak detector in place.**
- The systems may be used when trapped vapor is present in the pipeline. For both the wetand dry test methods back pressure from groundwater or product in the backfill is overcome by pressurizing the system during the test.
- Data is collected and reviewed for accuracy by technician on-site; however, result declaration and certification can only be determined by remote analysis using Leighton O'Brien proprietary software.
- A sample Leighton O'Brien UPSS Precision Test report is provided in Appendix A of this approval.

Critical performance parameters for the **Leighton O'Brien PM2 Wet Tightness Test:**

Parameter	Value
Test Line Pressure	**- The greater of 45 psi or 150% of normal operating pressure**
Maximum Test Line Pressure	**•150% of normal operating pressure • 7 to 21 psi for suction systems**
Maximum Test Line Size	**6 in.**
Minimum waiting period between last product dispensing and start of data collection	**27.5 minutes**
Minimum time for test	**17.25 minutes**
Total maximum allowable volume of product in any **flexible** test pipeline	**109.8 gallons or less**
Total maximum allowable volume of product in any **rigid** test pipeline	**371.22 gallons or less**
Total maximum allowable volume of product in any **Hybrid** (rigid and flexible piping combination) test pipeline	**481 gallons or less[1]**

1: The capacity of the flexible component cannot exceed 109.8 gallons.

Critical performance parameters for the **Leighton O'Brien PM2 Dry Tightness Test**
(Lines can be tested empty or partially full of liquid)**:**

Parameter	Value
Test Line Pressure	**- The greater of 45 psi or 150% of normal operating pressure**
Maximum Test Line Pressure	**•150% of normal operating pressure • 7 to 21 psi for suction systems •1.5 to 21 psi for interstitial**
Maximum Test Line Size	**6 in.**
Minimum waiting period between last product dispensing and start of data collection	**None**
Minimum time for test	**3 minutes**
Total maximum allowable volume of product in any **flexible** test pipeline	**109.8 gallons or less**
Total maximum allowable volume of product in any **rigid** test pipeline	**371.22 gallons or less**
Total maximum allowable volume of product in any **Hybrid** (rigid and flexible piping combination) test pipeline	**481 gallons or less[1]**

1: The capacity of the flexible component cannot exceed 109.8 gallons.

This approval does not expire and will be valid 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: 2/9/2024

Reviewed by: Signature on File Date: 2/9/2024
Erik Otterson
Environmental Specialist
Bureau of Weights and Measures

Approved by: Signature on File Date: 2/9/2024
Greg Bareta, P. E.
Section Chief
Bureau of Weights and Measures
Storage Tank Regulation

APPENDIX A: Sample Report

LEIGHTON O'BRIEN
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Hawthorn East, Victoria, 3123

Telephone: +61 (0) 3 9813 5122
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Toll-free
Telephone: +61 (1) 800 627 567

Website: www.leightonobrien.com

UPSS Precision Test Report

14th June 2010

Example Site

Test Date: 13th June 2010
Reason for Test: Due Diligence
Customer Contact: John Smith

Executive Summary

The Premium pressure line clearly passed the test, however the Unleaded pressure line did not pass the test. The result for the Unleaded line indicates a line wall breach

It is recommended that the Unleaded line to tank 2 be replaced, as the line showed clear and continuous loss during the test.

Aim

To investigate the integrity of the underground product line as a due diligence exercise.

Method

Individual tests were performed on the product lines using the Leighton O'Brien PM2 line testing system. The lines were isolated at the tank top by closing the

Summary of Line Results as Tested

Line Test Round 1		
Product Lines	Date	Line
Premium Unleaded Tank 1 to all dispenser	13-Jun-10	PASS
Unleaded Tank 2 to all dispensers	13-Jun-10	FAIL

Other Relevant Observations

- All visible parts of the systems, sealed by the technician, were shown to be tight using soapy water.
- Ground water was measured at 4300mm in the monitoring well.

Comments/Discussions

The Premium pressure line clearly passed the test, however the Unleaded pressure line did not pass the test.
The Unleaded pressure line was tested from the shear valves to the ball valve in the tank top opening. There were no visible leaks in the system. The result for the Unleaded line indicates a line wall breach.

Recommendations

It is recommended that the Unleaded line to tank 2 be replaced, as the line showed clear and continuous loss during the test.

Addendum

Date of Test: 13th June 2010
Licensed Leighton O'Brien Tester: Example Technicim
Report Prepared by: Peter Wagner
Report ID: Example Diagnostic Report.doc

Glossary of Acronyms used

PM2	Leighton O'Brien Line test.
HC	Hydrocarbons
PSH	Phase Separated Hydrocarbons
UPP	Brand specific double wall high density polyethylene piping
UPSSs	Underground Petroleum Storage Systems
USEPA	United States of America Environmental Protection Agency

The underground pipe and tank configurations contained in this report are deduced from information gathered at the site by to Leighton O'Brien and by information given to Leighton O'Brien by the client.

Details of Pressure Line Test

Premium Unleaded Tank 1 to all dispensers				
Line	PASS	time	kPag	Rate ml/hr
		11.02.44	311.135	0
Tested	wet	11.03.44	311.130	0
		11.04.44	311.138	0
Date	13-Jun-10	11.05.44	311.140	0
Unit SN	1224	11.06.44	311.141	0
Cert. No.	12214	11.07.44	311.138	0

Unleaded Tank 2 to all dispensers				
Line	FAIL	time	kPag	Rate ml/hr
		10:19:41	287.616	-413
Tested	wet	10:20:41	287.611	-414
		10:21:41	287.613	-412
Date	13-Jun-10	10:22:41	287.631	-415
Unit SN	1224	10:23:41	287.623	-410
Cert. No.	12215	10:24:41	287.601	-411