

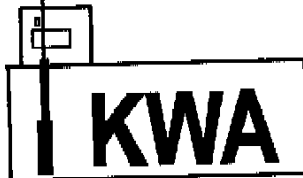


# **Evaluation of the FE Petro STP-MLD-D Pipeline Leak Detector for Hourly Monitoring on Diesel Fuel**

**Addendum to the  
July 1, 1992 Evaluation**

PREPARED FOR  
**FE Petro, Inc.**

**April 30, 1994**



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STP-MLD-D Pipeline Leak Detector  
for Hourly Monitoring on Diesel Fuel**

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July 1, 1992 Evaluation**

PREPARED FOR  
**FE Petro, Inc.  
P.O. Box 139  
McFarland, WI 53558**

**April 30, 1994**

## Preface

The data contained in this report was obtained from the FE Petro STP-MLD-D Pipeline Leak Detector. This report is to be used in conjunction with the July 1, 1992 evaluation of the FE Petro STP-MLD Pipeline Leak Detector for Hourly Monitoring. The report contains additional test data that was collected in April, 1994 on a pipeline containing diesel fuel. Testing was performed in accordance with the EPA Pipeline Leak Detection Test Protocol with the exception of the number of tests performed. The results of this abbreviated testing indicate that STP-MLD-D will perform appropriately on pipelines containing diesel fuel. The work was conducted at the Leak Detection Test Center which is operated by Ken Wilcox Associates, Inc.

Technical questions should be directed to Mr. Don Kenney, FE Petro, Inc. at (608) 838-8786.

KEN WILCOX ASSOCIATES, INC.



H. Kendall Wilcox, President

April 30, 1994

## **Introduction**

This report is to be used in conjunction with the July 1, 1992 evaluation of the FE Petro Pipeline Leak Detector for Hourly Monitoring. In 1991, the STP-MLD system was certified to meet the requirements of the U.S. Environmental Protection Agency for Pipeline Leak Detection Systems. The system was certified with a probability of detection ( $P_D$ ) of 100% and a probability of false alarm ( $P_{FA}$ ) of 0% for Hourly Monitoring. The evaluation applied to pipelines with a volume up to 129 gallons, which is equivalent to 350 ft of 3-in diameter pipe.

This report contains additional test data for the STP-MLD-D system that was conducted in April, 1994 on a 400 ft, 3-in diameter fiberglass pipeline. Testing was performed in accordance with the EPA Pipeline Leak Detection Test Protocol with the exception of the number of tests performed. The results of this abbreviated testing indicate that STP-MLD-D system will successfully perform on pipelines containing diesel fuel. The additional testing suggests that the system is acceptable for use on diesel pipelines up to 800 ft, 3-in diameter.

## **Test Conditions**

The 400 ft fiberglass pipeline is manufactured by Ameron and has a volume of 170.5 gal and a bulk modulus of 33,087 psi.

Six additional tests were conducted on the FE Petro system. The test conditions and results for these 6 tests are in Table 1. Testing was conducted at rates equivalent to 3 gal/h at 10 psig for Hourly Monitoring. Testing was conducted at the temperature extremes of  $\pm 25$  deg F and at neutral. The  $\pm 25$  deg F temperature differences are the extremes required for EPA certification. If a leak detector is successful at these temperature differences, it would also be expected to pass at less extreme temperature differences.

## **Test Results and Discussion**

The performance parameters for the STP-MLD-D system have been summarized in Table 2. The STP-MLD-D was correct in its determination of a leak or a tight pipeline in all of the additional tests. Therefore, the  $P_D$  was 100% and the  $P_{FA}$  was 0% for the six additional tests.

Six tests were conducted on the 400 ft diesel pipeline. Official EPA certification requires that 25 tight tests and 25 leak tests be conducted at various temperatures for Pipeline Leak Detection Systems. Although the FE Petro system has not been re-tested the requisite number of times to receive official EPA certification for diesel containing pipelines, it is the opinion of Ken Wilcox

Table 1. STP-MLD-D Line Test Data

Test No.	Date Test Began	Duration of Circulation	Time between End of Circulation and Start of Data Collection for Test	Total Test Time	Product/Ground Temperature Difference	Induced Leak Rate	Test Result
	(D-M-Y)	(h-min)	(h-min)	(h-min)	(deg F)	(gal/hr)	(leak or tight)
1	19/4/94	1 hr	0 min	1 min	0.98	0	tight
2	19/4/94	1 hr	1 min	3 min	0.98	2.93	leak
3	19/4/94	1 hr	0 min	1 min	25.56	0	tight
4	19/4/94	1 hr	1 min	3 min	25.56	2.93	leak
5	20/4/94	1 hr	0 min	3 min	-25.20	2.93	leak
6	20/4/94	1 hr	3 min	1 min	-25.20	0	tight

**Table 2. Diesel Line Performance Parameters for the STP-MLD-D Pipeline Leak Detector**

Parameter	Value
Probability of False Alarm ( $P_{FA}$ )	0%
Probability of Detection ( $P_D$ )	100%
Maximum Line Size	341 gal (800 ft of 3 in fiberglass line)
Average Waiting Time Delivery of Product	None
Average Test Time	2 minutes

## **FE Petro STP-MLD-D**

Associates, Inc. that, based on the test data provided, the STP-MLD-D system will successfully perform on such pipeline systems.

If the EPA protocol is used to calculate the performance parameters, the STP-MLD-D system can be used on rigid pipelines up to 341 gal (twice the volume of that tested), which is equivalent to 800 ft of 3-in fiberglass pipeline with a  $P_D$  of 95% or greater and a  $P_{FA}$  of 5% or less.

## Attachment 8

### **Application of the System**

Section 17 of the evaluation forms provides for the application of testing diesel lines used in the evaluation. The requirements for Attachment 8 include a justification provided by the manufacturer with concurrence by the evaluator.

The justification for allowing the use of the FE Petro STP-MLD-D leak detector on diesel lines is based on its performance under the most stringent test conditions imposed by the EPA protocol and on its past performance record on gasoline pipelines.

#### **Application to Diesel Lines**

The attached report presents the results of testing with diesel fuel on an FRP line with a total capacity of 341 gallons. Testing was conducted at the two temperature extremes as well as under neutral conditions. The test results on the diesel line meets the EPA performance criteria.