Results of U.S. EPA Alternative Evaluation

Liquid Level Sensor

This form documents the performance of the liquid level sensor described below. The evaluation was conducted by the equipment manufacturer or a consultant to the manufacturer according to the U.S. EPA's requirements for alternative protocols. The full evaluation report also includes a report describing the method, a description of the evaluation procedures, and a summary of the test data.

Tank owners using this system should keep this form on file to prove compliance with the federal regulations. Tank owners should check with state and local agencies to make sure this form satisfies their requirements.

Method Description

Name PMP Corporation Sensors

Version number(s) 62208, 62209, 62420, 62460, 62401, 62404, 62407 and 62409

Sensors for use with Veeder Root TLS-450 series, TLS-350 series, TLS-300 series, TLS-PC, ILS-350, Simplicity, Gilbarco EMC series, EMC Basic series, EMC-PC, Red Jacket ProMax, and ProPlus

Vendor PMP Corporation
(Name of Manufacturer)

25 Security Drive, PO Box 422
(Address)

Avon	CT	06001-0422	(860) 677-9656
(City)	(State)	(Zip Code)	(Phone)

Evaluation Parameters

The sensor listed above was tested for the abilities to respond to liquids when the sensor is installed in underground storage tank applications. The following parameters were determined from this evaluation.

Threshold Levels – The liquid levels at which alarms are triggered.

Precision (standard deviation) - Agreement between multiple measurements of the same product level.

Detection Time - Amount of time the detector must be exposed to product before it responds.

Fall Time - Amount of time before the detector stops responding after being removed from the product.

Specificity - Types of products that the sensor will respond to.

Evaluation Results

Note: If the test data can be presented in a more appropriate manner, the evaluator may select to present the information below in a data table, which can be attached to these forms.

62420 and 62460 Interstitial Sensor for Steel Tanks

Table 1. Results of the Evaluation of the 62460 and 62420 with Unleaded

Parameter	Data
Threshold Level (inches)	1.2942
Precision - Standard Deviation (inches)	0.0029
Detection Time (minute)	< 1
Fall Time (minute)	<1

Table 2. Results of the Evaluation of the 62460 and 62420 with Diesel

Parameter	Data
Threshold Level (inches)	1.2450
Precision - Standard Deviation (inches)	0.0028
Detection Time (minute)	< 1
Fall Time (minute)	<1

Liquid Level Sensor - Results Form

Table 3. Results of the Evaluation of the 62460 and 62420 with Waste Oil

Parameter	Data
Threshold Level (inches)	1.2512
Precision - Standard Deviation (inches)	0.0022
Detection Time (minute)	< 1
Fall Time (minute)	< 1

Table 4. Results of the Evaluation of the 62460 and 62420 with Water

Parameter	Data
Threshold Level (inches)	1.1221
Precision - Standard Deviation (inches)	0.0021
Detection Time (minute)	< 1
Fall Time (minute)	<1

Table 5. Results of the Evaluation of the 62460 and 62420 with E-85

Parameter	Data
Threshold Level (inches)	1.2679
Precision - Standard Deviation (inches)	0.0025
Detection Time (minute)	< 1
Fall Time (minute)	< 1

62208 and 62209 Piping Sump Sensors

Table 6. Results of the Evaluation of the 62208 and 62209 with Unleaded

Parameter	Data
Threshold Level (inches)	1.1666
Precision - Standard Deviation (inches)	0.0031
Detection Time (minute)	< 1
Fall Time (minute)	<1

Table 7. Results of the Evaluation of the 62208 and 62209 with Diesel

Parameter	Data
Threshold Level (inches)	1.1144
Precision - Standard Deviation (inches)	0.0021
Detection Time (minute)	< 1
Fall Time (minute)	<1

Table 8. Results of the Evaluation of the 62208 and 62209 with Waste Oil

Parameter	Data
Threshold Level (inches)	1.1666
Precision - Standard Deviation (inches)	0.0021
Detection Time (minute)	< 1
Fall Time (minute)	< 1

Table 9. Results of the Evaluation of the 62208 and 62209 with Water

Parameter	Data
Threshold Level (inches)	1.0133
Precision - Standard Deviation (inches)	0.0033
Detection Time (minute)	< 1
Fall Time (minute)	<1

Table 10. Results of the Evaluation of the 62208 and 62209 with E-85

Parameter	Data
Threshold Level (inches)	1.1275
Precision - Standard Deviation (inches)	0.0021
Detection Time (minute)	< 1
Fall Time (minute)	< 1

62401, 62404, 62407 and 62409 Interstitial Sensors for Fiberglass Tanks

Table 11. Results of the Evaluation of the 62401, 62404, 62407 and 62409 with Unleaded

Parameter	Data
Threshold Level (inches)	0.3327
Precision - Standard Deviation (inches)	0.0022
Detection Time (minute)	< 1
Fall Time (minute)	<1

Table 12. Results of the Evaluation of the 62401, 62404, 62407 and 62409 with Diesel

Parameter	Data
Threshold Level (inches)	0.3226
Precision - Standard Deviation (inches)	0.0021
Detection Time (minute)	< 1
Fall Time (minute)	<1

Table 13. Results of the Evaluation of the 62401, 62404, 62407 and 62409 with Waste Oil

Parameter	Data
Threshold Level (inches)	0.3494
Precision - Standard Deviation (inches)	0.0036
Detection Time (minute)	< 1
Fall Time (minute)	< 1

Table 14. Results of the Evaluation of the 62401, 62404, 62407 and 62409 with Water

Parameter	Data
Threshold Level (inches)	0.2953
Precision - Standard Deviation (inches)	0.0018
Detection Time (minute)	< 1
Fall Time (minute)	<1

Table 15. Results of the Evaluation of the 62401, 62404, 62407 and 62409 with E-85

Parameter	Data
Threshold Level (inches)	0.3269
Precision - Standard Deviation (inches)	0.0020
Detection Time (minute)	< 1
Fall Time (minute)	< 1

Specificity –This testing performed during this evaluation was done with water, diesel fuel, E-85, waste oil and unleaded gasoline. However, the sensor will respond to any liquid, including bio-diesel and other types of fuel, after its threshold is exceeded.

Additional Limitations or Considerations - None

> Safety Disclaimer: This test procedure only addresses the issue of the methods ability to respond to liquids. It does not test the equipment for safety hazards.

Certification of Results

I certify that the liquid level sensor was tested under conditions according to the vendor's operating instructions. I also certify that the evaluation was performed using methods described in the attached Alternative EPA Test Procedures for Liquid level sensors, and that the results presented above are those obtained during the evaluation.

H. Kendall Wilcox, Ph.D., President	Craig Wilcox, Vice President
(printed name)	(printed name)
H. Kendall Wilcox	Craig Wilcox
(Signature)	Ken Wilcox Associates, Inc. (Signature)
Ken Wilcox Associates, Inc.	Grain Valley, MO 64029
(organization performing evaluation)	(city, state, zip)
March 13, 2015	(816) 443-2494
(date)	(phone number)