



Approval # 200028-U (Replaces 920095-U)

Environmental & Regulatory Services Division
Bureau of Storage Tank Regulation
201 West Washington Avenue
P.O. Box 7837
Madison, WI 53707-7837

Wisconsin COMM 10 Material Approval

Equipment PAL-AT Leak Detection Systems Liquid-Phase Out-of-Tank Product Detector Models (AT20C, AT50C, AT40K), And Tank Watch Leak Detection Models (PHM10 and PHMS)

Manufacturer PermAlert ESP, Inc.
7720 N Lehigh Avenue
Niles, IL 60648

Expiration of Approval: December 31, 2003

SCOPE OF EVALUATION

The Tank Watch Leak Detector System and the PAL-AT Leak Detection and Location System, manufactured by PermAlert ESP, Inc., have been evaluated in accordance with Wisconsin Administrative Flammable and Combustible Liquids Codes, Chapter **COMM 10.61(7)(a)**.

DESCRIPTION AND USE

The PAL-AT System may include leak sensing cable, or a sensor probe for the detection of hydrocarbons only. The PAL-AT System is designed for use within piping or tank secondary containment.

The TFH and AGW sensor cables give a quantitative output. The TFH or AGW sensor cable may be used with JMP and JPL jumper cables to form a leak detection network of no longer than 4,000 feet. TFH sensors can be used for single-wall pipes and Tanks,

while AGW can be used for double wall contained pipes and flat floors. TFH sensor cables are not reusable, while AGW sensors can be reusable if checked and maintained for their cleanness, integrity and capabilities by a qualified technician.

The PHL hydrocarbon sensor probe or PWS water sensor probe, which may also be used with the PAL-AT System gives a qualitative output. Both PHL and PWS sensor probes can be used for double wall tanks, sealed trenches and are reusable if checked and maintained for their cleanness, integrity and capabilities by a qualified technician. However, PWS can not be used alone, it must be used with another probe that has approved hydrocarbon detection features.

The Tank Watch Leak Detection System is a probe-based system designed for use in short runs of double wall pipe or double wall tanks. The probes are designed for hydrocarbon detection or for both water and hydrocarbon detection and have a qualitative output. They are also reusable if checked and maintained for their cleanness, integrity and capabilities by a qualified technician.

TESTS AND RESULTS

The detection systems were evaluated by the Carnegie Mellon Research Institute using test procedures that are equivalent to the EPA protocol for evaluation of liquid-phase out-of-tank product detectors with respect to liquid contact product detectors. The cable and probes were tested with gasoline, synthetic fuel, diesel fuel, #2 heating oil, and water, where appropriate.

The TFH cable was found to have a lower detection limit of 5.02 feet of cable (1.41 inch of coiled cable) for a 95 percent probability of detection (P_D) and 5 percent probability of false alarm (P_{FA}). Average response times for various test lengths of cable and hydrocarbon types were approximately 20 minutes or less for a 0.16 gph leak. Average recovery times were found to be over one hour.

The AGW cable was found to have a lower detection limit of 9.70 feet of cable (2.01 inch of coiled cable) for a 95 percent probability of detection (P_D) and 5 percent probability of false alarm (P_{FA}). Average response times for various test lengths of cable and hydrocarbon types were approximately 20 minutes or less for a 0.14 gph leak. Average recovery times were found to be less than ten minutes.

The PHL hydrocarbon sensor for the PAL-AT system was found to have a lower detection limit of 0.15 inch of product for 95 percent P_D and 5 percent P_{FA} . Average response times for the hydrocarbons tested were found to be less than two minutes for a 0.13 gph leak; average recovery times were less than 10 minutes for gasoline and synthetic fuel but greater than one hour for fuel oil and diesel.

The PWS water sensor for the PAL-AT system was found to have a lower detection limit of 0.84 inch of water for 95 percent P_D and 5 percent P_{FA} . Average response times for the water tested were found to be less than two minutes for a 0.13 gph leak; average recovery times were less than one minute.

The hydrocarbon probe 8068295 for Tank Watch was found to have a lower detection limit of 0.15 inch of product for 95 percent P_D and 5 percent P_{FA} . The average response times for hydrocarbons tested were under one minute for a 0.14 gph flow rate; average recovery times were under 4 minutes.

The hydrocarbon/water probe 8068235 for Tank Watch was found to have lower detection limits of 0.22 inch of hydrocarbon and 0.76 inch of water for 95 percent P_D and 5 percent P_{FA} . The average response times for the liquids tested were found to be less than two minutes for a 0.13 gph flow rate; average recovery times were under 3 minutes.

LIMITATIONS / CONDITIONS APPROVAL

The systems are approved for use as an interstitial liquid-phase product monitors for use within secondary containment for UST systems, in accordance with **s. COMM 10.61(7)(a)**. The probes or sensor cables shall be located to detect a release through the inner wall in any portion of the tank that routinely contains product.

This approval is limited to the Tank Watch Leak Detection System, models PHM10 and PHMS, with combination hydrocarbon/water probe 8068235 or with hydrocarbon probe 8068295; and to the PAL-AT Leak Detection and Location System, models AT2OC, AT5OC, and AT40K, with TFH hydrocarbon sensor cable or AGW sensor cable and JMP and JPL jumper cables or with PHL hydrocarbon sensor or PWS water sensor.

All installation, testing and maintenance shall be performed in accordance with the manufacturer's recommendations and all applicable codes. In addition, a qualified technician shall conduct all necessary maintenance and calibration procedures as recommended by the manufacturer to assure continued and proper operation of the system. Leak detection system maintenance must be conducted annually by a qualified technician and the respective documents maintained on site.

This approval will be valid through December 31, 2003, 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 not specified in this document.

Reviewed by: _____
Ahmed Ghalib,
Code Consultant

Approval Date: _____

Approved by: _____