

## **APPLICATION OF TECHNICAL CAPABILITIES TO THE INTEGRITY TESTING OF STORAGE AND DISPENSING SYSTEMS AT ON-SHORE BARGE FACILITIES**

by  
Steven D. Barker  
Vista Research, Inc.

### **“INTEGRITY MANAGEMENT” OF REGULATED TANKS AND PIPELINES**

Billions of gallons fuel and other petroleum products are used worldwide to support the global economy. The management and handling of many of these petroleum products take place in small or intermediate-size terminals, and the dispensing equipment is commensurate in size – involving truck racks and barge terminals that rely on relatively short-run, small-volume piping characteristically located underground and operated under pressure.

The different types of petroleum based-products and aircraft fuels may differ in their specific chemistry, but they are all regulated to varying degrees in nearly every developed country. In the U.S. and Canada, where the federal government, as well as some state/provincial and local governments, have classified aircraft fuels and many other petroleum products as hazardous substances, systems that store and dispense these products must incorporate inventory controls and methods of leak detection. In many jurisdictions, periodic testing of storage/dispensing systems is required. The U.S. Coast Guard, for example, requires annual testing of pipelines under its jurisdiction. In addition, the U.S. Department of Transportation’s Office of Pipeline Safety has implemented a ruling (codified in 49 CFR Part 195, December 2001) specifying that facilities must develop “integrity management plans” for any pipeline containing a regulated product. (See Vista Technical Memorandum 56).

### **A COMPREHENSIVE APPROACH**

Facilities that find themselves in the position of having to implement the DoT regulation need a sensible and cost-effective means of precision testing for their tanks, piping systems and associated on-shore barge facilities. Vista Research has developed a comprehensive approach to conducting integrity tests on the type of storage tanks, pipelines and land-based marine loading racks associated with petroleum products.

With its **unique, non-invasive** technology, Vista conducts testing services using its own equipment – the HT-100 for lines with contained volumes over 3400 gallons capacity; the LT-100 for lines with contained volumes under 3400 gallons (including loading racks); the LRDP for USTs and ASTs (underground and aboveground storage tanks); and the PALS to locate a pipeline leak that has been indicated by a leak detection system. Together these systems provide a complete integrity profile of the entire fuel management system.

The Vista HT-100 provides an assurance of pipeline integrity down to 0.0021% of line volume, with a probability of detection of 95% and a probability of false alarm of 5% – an industry-leading figure. The detection capability of the LT-100 – 0.1 gallon per hour – is certified by a third party as meeting



EPA requirements for testing pipelines associated with USTs. Vista's LRDP, for bulk underground storage tanks, has enough sensitivity to measure volume changes as small as 0.03 gallons per hour in a 100-foot tank. (The LRDP's detectable leak rate is a function of tank diameter.) If tests indicate that a pipeline is leaking, Vista's PALSsystem can locate the position of the leak without injecting gases (and without the subsequent wait for diffusion to occur), and typically without expensive borings and laboratory work.

Many leak detection methods empty the tank or pipeline and fill it with water before conducting a test. To dispose of this water after the test may require special handling or permits. In addition, it may be necessary to flush the storage tanks and lines prior to putting them back into service. The Vista technology avoids these problems. HT-100, LT-100 and LRDP tests are conducted with extant product in the pipeline or tank. The PALS does not come into contact with the product at all.

## PROCEDURE

Vista Research designs a site-specific integrity testing procedure that becomes part of facility's permanent records. These records can provide the foundation for permitting and property transfer negotiations, and other legal or regulatory procedures. Vista customers have received permission from regulators in various cases to use the HT-100 in lieu of the standard hydrostatic pressure test. The U.S. Coast Guard has approved, within its jurisdiction, the use of the HT-100 as an alternative to the hydrostatic pressure test required annually on pipelines by Title 33 of the Code of Federal Regulations.

With the Vista technology, the integrity the product storage system can be determined in a matter of 1.5 hours, during non-operating hours. By comparison, many other methods require days or even weeks for results to become available. For the facility, this means no down time and no water or fuel to be disposed of – translating into savings of time resources.

## CONCLUSION

As is the case with many other environmental management systems, the best approach to designing a logical and cost-effective integrity testing program for on-shore barge loading facilities is to examine the latest technology as well as the latest, innovative applications of existing technologies. The Vista model incorporates both. Due to their speed and accuracy, Vista's non-invasive, low-risk leak detection systems are far superior to more commonly used technologies. Vista's PALS leak location system can find a leak quickly and usually without expensive borings. **The net result is greater accuracy, lower risk and a shortened timeline.**

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*To explore Vista's product line or to obtain background information and technical details about the underlying concepts, visit [www.vistaleakdetection.com](http://www.vistaleakdetection.com).*

