

NWGLDE ACCEPTABLE PROTOCOLS

Some of the NWGLDE Acceptable Protocols are available for download . They are **Adobe Acrobat?PDF** files which are zipped to facilitate the download process. In order to open and view the files you will need **Adobe Acrobat?Reader?/b> along with a ZIP Utility installed on your computer. A link to both programs can be found on the [Downloads](#) page in the [Utilities](#) section.**

Aboveground Storage Tank Leak Detection Method (A)

"Alternative Test Procedures for Evaluating Leak Detection Methods: Mass-Based Leak Detection Systems for Aboveground Storage Tanks," Ken Wilcox Associates, November 2002. 

"Alternative Test Procedures for Evaluating Leak Detection Methods: Volumetric Leak Detection Systems for Aboveground Storage Tanks," Ken Wilcox Associates, December 2009. 

"Standard Test Procedures for Evaluating Leak Detection Methods: Non-Volumetric Tank Tightness Testing Methods", EPA/530/UST-90/005, March 1990. 

Automatic Electronic Line Leak Detector (B)

"Standard Test Procedures for Evaluating Leak Detection Methods: Pipeline Leak Detection Systems," EPA/530/UST-90/010, September 1990. 

"Protocol for Reduced Testing Evaluations for Extending Line Volume or Additional Types of Line Construction Materials", Ken Wilcox Associates, March 8, 2011. 

Automatic Mechanical Line Leak Detector (C)

"Standard Test Procedures for Evaluating Leak Detection Methods: Pipeline Leak Detection Systems," EPA/530/UST-90/010, September 1990. 


"Protocol for Reduced Testing Evaluations for Extending Line volume or Additional Types of Line Construction Materials", Ken Wilcox Associates, March 8, 2011. 

Automatic Tank Gauging Method (D)

"Standard Test Procedures for Evaluating Leak Detection Methods: Automatic Tank Gauging Systems," EPA/530/UST-90/006, March 1990. 

"Test Procedures for Comparison of Different ATG Probes," Ken Wilcox Associates, March 27, 2000. 

(With acceptable modification, this method is also applicable to comparisons of different ATG controllers.)


"ATG/CITLDS Water Detection Testing In Ethanol or Blends Greater Than 10% Ethanol," NWGLDE addendum to "Standard Test Procedures for Evaluating Leak Detection Methods: Automatic Tank Gauging Systems? EPA/530/UST-90/006, March 1990. Developed under coordination by the ATG team of the National Work Group on Leak Detection Evaluations, December 2007. 

Amendment to EPA ATG and Non Volumetric TTT Protocols for Water Sensor Testing, Jairus D. Flora Jr. Ph.D., December 17, 2008. 

Test Procedures for Comparison of Different Automatic Tank Gauge Consoles, Ken Wilcox Associates, October 4, 2010. 

ATG Low Level Testing Guidance, National Work Group on Leak Detection Evaluations, April 28, 1997

Bulk Underground Storage Tank Leak Detection Method (50,000 Gallons Or Greater) (E)

"Alternative Test Procedures for Evaluating Leak Detection Methods: Mass-based and Volumetric Leak Detection Systems for Bulk Field-constructed Tanks," Ken Wilcox Associates, November 2000. 

"Alternative Test Procedures for Evaluating Leak Detection Methods: Evaluation of Bulk Field-constructed Tanks," Ken Wilcox Associates, February 1996. (Evaluations prior to November 2000 only). 


"Protocol for Certification of the AST Test Mass Balance Leak Detection System," AST Test Systems Inc., May 1997. (Evaluations prior to November 2000 only)

"Standard Test Procedures for Evaluating Leak Detection Methods: Non-Volumetric Tank Tightness Testing Methods", EPA/530/UST-90/005, March 1990. 

Continuous In-Tank Leak Detection Method (F)

"Evaluation Protocol for Continuous In-Tank Leak Detection Systems? Midwest Research Institute, April 7, 1995. 

"Evaluation Protocol for Continuous In-Tank Leak Detection Systems," Jairus D. Flora, Jr. Ph.D., January 7, 2000. 


"ATG/CITLDS Water Detection Testing In Ethanol or Blends Greater Than 10% Ethanol," NWGLDE addendum to "Standard Test Procedures for Evaluating Leak Detection Methods: Evaluation Protocol for Continuous In-Tank Leak Detection Systems" by Jairus D. Flora, Jr. Ph.D., January 7, 2000. Developed under coordination by the ATG team of the National Work Group on Leak Detection Evaluations, December 2007. 

Amendment to EPA ATG and Non Volumetric TTT Protocols for Water Sensor Testing, Jairus D. Flora Jr. Ph.D., December 17, 2008. 

Continuous Interstitial Line Monitoring Method (Pressure/Vacuum Decay) (G)

"Alternative Test Procedures for Evaluating Leak Detection Methods: Evaluation of Vacuum Interstitial Monitoring Methods," Ken Wilcox Associates, September 1996. 

"Draft European Standard prEN 13160-2, Leak Detection Systems - Part 2, Version 2.0, European Committee for Standardization, August 2001.

"Final European Standard EN 13160-2, Leak Detection Systems - Part 2: Pressure and Vacuum Systems (Note: Acceptance also applies to sections of the other 6 parts of EN 13160 which are referenced within Part 2.), European Committee for Standardization, May 2003. This Standard may be purchased from Standards Direct. 

"Evaluation Protocol for Vacuum-Wrapped Pressurized Portions of a Fuel Containment and Dispensing System? Revision 3A, Jairus D. Flora, Jr., Ph.D., December 15, 2006. 

Continuous Interstitial Monitoring Method (Liquid Filled) (H)

"Test Procedure for the Evaluation of Double-Wall Pipe with Liquid Filled Interstice for Loss Prevention," Ken Wilcox Associates, May 21, 2004. 

["Alternative Test Procedures for Evaluating Leak Detection Methods: Evaluation of Liquid Level Sensors,"Ken Wilcox Associates, September 1996.](#) 


["Standard Test Procedures for Evaluating Leak Detection Methods: Automatic Tank Gauging Systems? EPA/530/UST-90/006, March 1990.](#) 

["Standard Test Procedures for Evaluating Leak Detection Methods: Non-Volumetric Tank Tightness Testing Methods? EPA/530/UST-90/005, March 1990.](#) 

Continuous Interstitial Tank System Monitoring Method (Pressure/Vacuum Decay) (I)

["Alternative Test Procedures for Evaluating Leak Detection Methods: Evaluation of Vacuum Interstitial Monitoring Methods,"Ken Wilcox Associates, September 1996.](#) 

["Draft European Standard prEN 13160-2,"Leak Detection Systems - Part 2, Version 2.0, European Committee for Standardization, August 2001.](#)

["Final European Standard EN 13160-2,"Leak Detection Systems - Part 2: Pressure and Vacuum Systems \(Note: Acceptance also applies to sections of the other 6 parts of EN 13160 which are referenced within Part 2.\), European Committee for Standardization, May 2003. This Standard may be purchased from \[Standards Direct.\]\(#\)](#) 

Continuous Pressurized Piping Leak Detection Method (J)


["Evaluation Protocol for Continuous Pressurized Piping Leak Detection Systems Revision 1.1," Jairus D. Flora, Jr., Ph.D., March 2009.](#) 

Interstitial Product Detectors (Liquid-Phase) (K)

["Standard Test Procedures for Evaluating Leak Detection Methods: Liquid-Phase Out-of-Tank Product Detectors? EPA/530/UST-90/009, March 1990.](#) 

["Development of Procedures to Assess the Performance of External Leak Detection Devices: Liquid-Phase ASTM-Formatted Methods - Revised Draft to Include JP-4 Jet Fuel,"Radian Corporation, June 29, 1990.](#)

["Test Procedures for Third-party Evaluation Of Leak Detection Methods: Cable Sensor Liquid Contact Leak Detection Systems,"Carnegie Mellon Research Institute, November 11, 1991.](#) 

["Test Procedures for Third-party Evaluation of Leak Detection Methods: Point Sensor Liquid Contact Leak Detection Systems,"Carnegie Mellon Research Institute - Advanced Devices and Materials Group, November 11, 1991.](#) 

["Alternative Test Procedures for Evaluating Leak Detection Methods: Evaluation of Liquid Level Sensors,"Ken Wilcox Associates, September 1996. \(Interstitial only.\)](#) 

Interstitial Tank Tightness Test Method (L)

["Standard Test Procedures for Evaluating Leak Detection Methods: Volumetric Tank Tightness Testing Methods," EPA/530/UST-90/004, March 1990.](#) 

["Standard Test Procedures for Evaluating Leak Detection Methods: Non-Volumetric Tank Tightness Testing Methods? EPA/530/UST-90/005, March 1990.](#) 

["Alternative Test Procedures for Evaluating Leak Detection Methods: Evaluation of Vacuum Interstitial Monitoring Methods,"Ken Wilcox Associates, September 1996.](#) 

Line Leak Detection Method for Airport Hydrant and Field Constructed Systems (M)

"Modified Third party Testing Protocol for Large Pipeline Leak Detection,"EFA Technologies, Inc., August 1995.

"Proposed Protocol for the Performance Evaluation of the MALT and MALTtm Plus," Ken Wilcox Associates, Inc., February 9, 1996.

"Standard Test Procedures for Evaluating Leak Detection Methods: Pipeline Leak Detection Systems? EPA/530/UST-90/010, September 1990."

"Protocol for Reduced Testing Evaluations for Extending Line Volume or Additional Types of Line Construction Materials", Ken Wilcox Associates, March 8, 2011. 

"Standard Test Procedures for Evaluating Leak Detection Methods: Non-Volumetric Tank Tightness Testing Methods", EPA/530/UST-90/005, March 1990. 

Line Tightness Test Method (N)

"Standard Test Procedures for Evaluating Leak Detection Methods: Pipeline Leak Detection Systems,EPA/530/UST-90/010, September 1990. 

"Protocol for Reduced Testing Evaluations for Extending Line volume or Additional Types of Line Construction Materials", Ken Wilcox Associates, March 8, 2011. 

"Standard Test Procedures for Evaluating Leak Detection Methods: Non-Volumetric Tank Tightness Testing Methods", EPA/530/UST-90/005, March 1990. 

Non-Volumetric Tank Tightness Test Method (Tracer, Ullage, Vacuum Induced Acoustic Signal) (O)

"Standard Test Procedures for Evaluating Leak Detection Methods: Non-Volumetric Tank Tightness Testing Methods,EPA/530/UST-90/005, March 1990. 


Amendment to EPA ATG and Non Volumetric TTT Protocols for Water Sensor Testing, Jairus D. Flora Jr. Ph.D., December 17, 2008. 

Out-of-Tank Product Detectors (Liquid-Phase) (P)

"Standard Test Procedures for Evaluating Leak Detection Methods: Liquid-Phase Out-of-Tank Product Detectors,EPA/530/UST-90/009, March 1990. 

"Development of Procedures to Assess the Performance of External Leak Detection Devices: Liquid-Phase ASTM-Formatted Methods - Revised Draft to Include JP-4 Jet Fuel,"Radian Corporation, June 29, 1990.


"Test Procedures for Third-party Evaluation Of Leak Detection Methods: Cable Sensor Liquid Contact Leak Detection Systems,"Carnegie Mellon Research Institute, November 11, 1991. 

"Test Procedures for Third-party Evaluation of Leak Detection Methods: Point Sensor Liquid Contact Leak Detection Systems,"Carnegie Mellon Research Institute - Advanced Devices and Materials Group, November 11, 1991. 

Out-of-Tank Product Detectors (Vapor-Phase) (Q)

"Standard Test Procedures for Evaluating Leak Detection Methods: Vapor-Phase Out-of-Tank Product Detectors,EPA/530/UST-90/008, March 1990. 

"Development of Procedures to Assess the Performance of External Leak Detection Devices: Vapor-Phase ASTM-Formatted Methods,"Radian Corporation, June 6, 1990.

"Development of Procedures to Assess the Performance of External Leak Detection Devices: Vapor-Phase ASTM-Formatted Methods,"Radian Corporation, June 29, 1990. 

Secondary and Spill Containment Test Methods (R)


"Standard Test Procedures for Evaluating Leak Detection Methods: Non-Volumetric Tank Tightness Testing Methods", EPA/530/UST-90/005, March 1990. 

"Standard Test Procedures for Evaluating Leak Detection Methods: Automatic Tank Gauging Systems," EPA/530/UST-90/006, March 1990. 

Amendment to EPA ATG and Non Volumetric TTT Protocols for Water Sensor Testing, Jairus D. Flora Jr. Ph.D., December 17, 2008. 

Statistical Inventory Reconciliation Test Method (Qualitative, Quantitative) (S)

"Standard Test Procedures for Evaluating Leak Detection Methods: Statistical Inventory Reconciliation Methods," EPA/530/UST-90/007, June 1990. 

"Protocol for Determining Applicability of a SIR Method for Manifolder Tanks and Determining Size Limitation," Developed under coordination by the SIR team of the National Work Group on Leak Detection Evaluations, November 1996. 

"SIR Reliability Comparison (Limited Application) Protocol," Developed by Dr. Mitchell, SIR International, in coordination with the SIR team of the NWGLDE, July 2016.

Volumetric Tank Tightness Test Method (Overfill, Underfill) (T)

"Standard Test Procedures for Evaluating Leak Detection Methods: Volumetric Tank Tightness Testing Methods," EPA/530/UST-90/004, March 1990. 

"Low Level Testing Guidance for Volumetric Tank Tightness Testing Methods" Developed by National Work Group on Leak Detection Evaluations (NWGLDE), September, 21, 2015.