National Work Group on Leak Detection Evaluations Meeting
San Antonio, TX, October 15-17, 2003

Welcome new member: Scott Bacon and Visitor: Stephen Kent
Attendees: Work group members and visitors see attendee's list (attached).

Action Items:

1. November 7, 2003 – all information to be submitted to Curt for 11th edition of the List.
2. November 21, 2003 – Curt will send members a draft copy of the 11th edition of the List for review.
3. December 5, 2003 – Comments regarding the draft are due to Curt.
4. December 19, 2003 – Finalize 11th edition of List.
5. The Interstitial Monitoring Team will be reviewing necessary changes to the Method index now that an additional team for Secondary Containment has been formed (especially pressure/vacuum methods for double walled tanks).
6. Next meetings –March 3-5, 2004 in New Orleans, LA. Note taker: Scott Bacon October 2004 in Gatlinburg, TN.

Revised Assignment of Team Members:

TEAM	LEADER	MEMBERS
Automatic Tank Gauging (ATG) and Volumetric Tank Tightness Test (VTTT) Methods	John Cernero	Mike Kadri Jon Reeder Lamar Bradley
Continuous In-Tank Leak Detection Methods	Shaheer Muhanna	Sharon Sadlon
Non-Volumetric Tank Tightness Test Methods	John Kneece	Scott Bacon
Pipeline Leak Detection Methods	John Kneece	John Cernero
Statistical Inventory Reconciliation (SIR) Methods	Jon Reeder	Lamar Bradley
Interstitial Monitoring and Out of Tank Detector Methods (formerly known as Sensor and Vacuum Methods)	Tim Smith	Scott Bacon Sharon Sadlon Mike Kadri
Aboveground Storage Tank Methods	Mike Kadri	Jon Reeder John Cernero
Secondary Containment Testing Methods	Scott Bacon	Tim Smith Shaheer Muhanna
List Administration and Surveys	Curt Johnson	Tim Smith Jon Reeder Scott Bacon

Team Leader Updates:

List Administration (Curt)

- Time frame to have changes for 11th edition to Curt (Nov. 7)
- Include generic e-mail and URL information for listings.
- All members (except absent John Cernero) paid dues for the web site.
- The NWGLDE has recruited Scott Bacon as the backup Webmaster.

Sensors (Tim Smith)

- **Beaudreau Electronics, Inc**. revised listings updated the controller.
  - Models 404, 406 Liquid Level Sensors with Models 500, 500C Controllers, Model 522 Remote Monitoring System, and Model 522T Monitoring System (Revision Date: May 21, 2003)
  - Models 510, 516 Discriminating Sensors with Models 500, 500C Controllers, Model 522 Remote Monitoring System, and Model 522T Monitoring System (Revision Date: May 21, 2003)
- **MassTech International, Ltd.** is working with Ken Wilcox on the Chemical Fuse sensor. Ken has not evaluated the sensor yet.
- **Mosier**- The team was not able to list the vacuum interstitial monitoring system for double-walled tanks. The reasons are documented in the review file.
- **Nesco** is now **Phoenix Technologies, Division of Phoenix Group**.
- **Omntec** updated controllers.
- **Raychem Corporation** changed their name to **Tyco Thermal Controls LLC**
- **SGB**- The VLX was evaluated under the accepted draft European Evaluation Protocol, so it has been listed. A third party evaluation will be necessary to substantiate pump-off value changes that have been requested.

  An Italian company will re-package the DLR/G monitoring system manufactured by SGB.
- **Eurotank** is a re-packaged German vacuum based leak detection system under review. ASF Thomas has provided a letter to document that Manfred Fiech is the sole distributor of the Eurotank.
- **Western Fiberglass** has sent NWGLDE its "Evaluation of the Western Fiberglass Liquid Filled Interstitial Monitoring System for Loss Prevention – CO-Flow™ Hydraulic Interstitial Monitoring System." KWA Associates has performed the third-party evaluation. The document is dated October 8, 2003.
- **Veeder-Root** has two new brine sensors and a position sensitive sensor that have been listed.
  - TLS-300 series, TLS-350 Series, EMC Series, EMC Basic, Red Jacket ProMax and ProPlus with Single Stage Hydrostatic Sensor 794380-301 and Dual Stage Hydrostatic Sensors 794380-302, 303 (Revision Date: May 20, 2003)
  - ILS-350, TLS-300 Series, TLS 350 Series, EMC Series, EMC Basic, Red Jacket ProMax and ProPlus with Position Sensitive Sensor 794380-323 (Issue Date: July 8, 2003)
- **The protocol -** "Test Procedure for the Evaluation of Double Wall Pipe with Liquid Filled Interstice for Loss Prevention,"May 27, 2003, written by KWA Associates, is currently under review by the work group. The main concern is if 20 feet of piping is sufficient for the purpose of evaluation. When the piping length is scaled up for field application should the reservoir size be affected?
- **Ameron** – The evaluation for Ameron's brine filled piping will not begin until a protocol for evaluation of this leak detection method is accepted by the NWGLDE. This evaluation may need to be revised based upon the results of the review of the

"Test Procedure for the Evaluation of Double Wall pipe with Liquid Filled Interstice for Loss Prevention."

Secondary Containment Methods (Tim Smith & Scott Bacon)

- This new team was created to review third-party evaluated systems used for testing secondary containment areas**.**
- Vapor Issues and Brine Issues will be moved into this team.
- The **first activity of the team will be to:**
  - Review the Evaluation of Secondary Containment Vessels dated October 24, 2001. This protocol has not been formally peer reviewed.

CITLDS (Shaheer Muhanna)

A few new CITLDS were listed:

- **INCON Intelligent Controls, Inc.**
  - **TS 750, 1000, 1001, 2000, 2001 with SCALD 2.0 (Incon TSP-LL2 Magnetostrictive Probe)**
    (Issue Date: July 23, 2003)
- **Warren Rogers Associates, Inc.** - Specific ATGs used in the evaluation (OPW and Veeder Root) are noted in the evaluation because CITLDS are evaluated as a whole system. A probe comparability for level measurements will not determine if the system will have communication problems or problems with the margin of error when a different ATG is used.
  - **WRA PetroNetwork S3 (Version D)**
    (Issue Date: September 15, 2003)

- Since some quantitative CITLDS only report pass/fail results, the NWGLDE will be revising CITLDS listings to ensure that the comment regarding "quantitative" results is accurate.
- According to the listing the Veeder-Root CITLDS has only been evaluated in the 99% operating mode. (Veeder-Root indicated that the 99% operating mode and 95% operating modes are different because they have different thresholds. The 99% operating mode has a 99% probability of detection while the 95% operating mode has a 95% probability of detection.)
- The NWGLDE will begin considering criteria for re-evaluation. For example, minor changes such as adding memory should not require re-evaluation, but board changes, algorithm changes, and new software releases may be appropriate criteria.

Non-Volumetric TTT (John Kneece)

MassTech International, Ltd. submitted three evaluations for the 001 tank integrity test system that are under review.

The following two test methods were listed.

- **MassTech Analog Acoustic Vacuum Method (Vacuum Test)**

(Issue Date: June 4, 2003)

- **MassTech Remote Spectral Analysis Method (Vacuum Test)**
  (Issue Date: June 4, 2003)

Tracer Research Corp. Modified existing listing to add the horizontal sampling system that is utilized with manufactured fill and the surrogate leak technology.

- **Tracer Tight (NVTTT)**
  (Revision Date: October 2, 2003)

ATG & Volumetric TTT (Mike Kadri)

- **World Telemetry, Inc.** has a new ATG listing that has remote reporting without local reporting. The work group is considering adding the comment that on-site reporting is not available.
  - **Data Link ATGS v2.6-h (Magnetostrictive Probe)**
    (Issue Date: September 9, 2003)
- **Alert Technologies** submitted two ATG method evaluations. The evaluations were old, so new evaluations may be needed. Two CITLDS methods evaluations were submitted to the ATG team. The evaluations were performed under an old protocol. They have not been submitted to the CITLDS team for review.

  - VTT - no comments
  - "Comments" are not part of any protocol- they are quotes out of 3rd party evaluations and additional information.

AST (Mike Kadri)

The "Final Alternate Test Procedures for Evaluating Leak Detection Methods: Mass-Based Leak Detection Systems for ASTs" that was peer reviewed was unacceptable. Mike sent the NWGLDE review comments incorporated into the original draft to Ken Wilcox Associates (KWA). KWA will need to finalize/publish the document with a revision date or contact Mike to discuss changes before the NWGLDE can approve the protocol.

Pipeline (John Kneece)

- Tracer pipeline surrogate test method added to listing.

- **Tracer Research Corp.**
  - **Tracer Tight (NVTTT)**
    (Revision Date: August 21, 2003)
- **Campo/Miller** line leak detectors have been rebranded to **Omntec, Franklin Fueling Systems, and Incon LS 300 Series**. A cross reference lists exists.
- **OMNTEC Mfg., Inc.**
  - **Omntec PLLD: LS300-120 PLUS AL, LS300-120 PLUS AL A/S, LS300-120 PLUS AL LSI** **(Originally listed as Campo/Miller)**
    (Issue Date: August 26, 2003)
- **INCON Intelligent Controls, Inc.**
  - **TS-LS300 Series**

(Originally listed as Campo/Miller LS300-120 PLUS AL, LS300-120 PLUS AL A/S, LS300-120 PLUS AL LSI)
(Issue Date: October 2, 2003)

- **Franklin Fueling Systems**
  - **TS-LS300 Series**
    (Originally listed as Campo/Miller LS300-120 PLUS AL, LS300-120 PLUS AL A/S, LS300-120 PLUS AL LSI)
    (Issue Date: October 2, 2003)

    - Under Review:
      - Seeper Trace, Tracer's method for in place pipeline monitoring utilizing in-place monitoring with sled and mobile lab, is under review. Equipment on the sled collects samples along the piping route as the sled travels 2-miles. The samples are analyzed at a mobile laboratory.
      - Ken Wilcox sent the team a proposed field test of mechanical automatic line leak detectors for truck stops (high volume). The document titled "Outline of Proposed Field Test Method Testing MLD's on Pipelines up to 500 gallons" proposes to evaluate line leak detectors at large facilities on a site specific basis.

S.I.R. (Jon Reeder)
New listing:
Simmons Corp.
- **SIR 5.7 LM**
  (Revision Date: July 14, 2003)

  - Resolved issue related to TeleData, Inc. Added manufacturer's statement that reads to the effect that software version 3.20 and version 3.12 are the same.
  - SIR International's listing was reviewed in order to clarify what Pass/Fail is based upon:
    - 0.1 or 0.2 test needs to be indicated
    - Also fixed or movable threshold needs to be indicated.

Protocols Under Review:

1) The NWGLDE expects a fast turn around on the AST protocol if Ken Wilcox addresses all the comments
2) The interstitial monitoring team is reviewing the European testing protocol EN13160-2 May 2003 Leak Detection Systems- Part 2: Pressure and Vacuum Systems.
3) The Test Procedure for the Evaluation of Double-walled Pipe with Liquid filled Interstice for Loss Prevention dated May 27, 2003 by Ken Wilcox is still under review.

New Business:

1) Guy Goodine Question:

a. Was there any discussion that would help us understand how vapor recovery and/or blending dispensers would impact the ATGS' ability to monitor? **NWGLDE Response:** This is not addressed in the ATGS evaluation protocol. Vapor Recovery can cause a positive effect on the tank volume and could hide a leak. Blending should not have an effect. Note that the CITLDS protocol addresses both. Continuous SIR and Continuous Inventory Control may be affected by blending. ATG methods should not be affected by blending. Vapor recovery could affect any of the CITLDS methods.

b. Was there any comment or discussion why they would go back and seek approval for use at vapor recovery sites but omit blending dispensers? **NWGLDE Response:** Note that CITLDS ATGS may omit blending dispenser because they should not have an effect.

c. Is this equipment currently under review by the NWGLDE? **NWGLDE Response:** No

NWGLDE Comments- ATGs can not handle manifold tanks because they are not in the protocol therefore not evaluated. The Workgroup voted to change all ATG listings to comment: "Not evaluated on manifold tanks therefore use on manifold tanks only if the siphon is broken and a probe is in each tank." The first four pages of the ATG manual (EPA 2002) and old EPA guidance available on compendium will be reviewed to determine the exact language of the change.

Duties of Vice Chair- The draft duties (4-10 below) were finalized.

A Vice Chairperson will fill-in for the Chairperson when the Chairperson is unable to attend meetings, and who will assume the role as Chairperson if the Chairperson is unable to complete the 1 year term.

1. The Vice Chairperson serves a term of 1 year beginning Jan. 1st of each year.
2. The Vice Chairperson is elected in accordance with the Work Group "Decision Making Process".
3. Only state or local government members may be elected Vice Chairperson.
4. The Vice Chairperson will preside over proceedings of any regular or specially called meetings of the Work Group in the following circumstances:
   a. The Chairperson is not present for the meeting,
   b. At the discretion of the Chairperson.
5. The Vice Chairperson will be responsible for conducting any roll call votes of the Work Group, if a roll call vote is necessary, and certifying the results of the vote to the Chairperson.
6. The Vice Chairperson will be responsible for working with the designated Secretary and other members to finalize the minutes and distributing minutes of the meeting once they are finalized. If a designated Secretary is unable to attend a meeting, the Vice Chairperson will secure a Secretary *pro tem* for the meeting.

7. The Vice Chairperson will work in conjunction with the Chairperson in filling any Work Group vacancies according to Work Group Policy Memorandum #2.
8. The Vice Chairperson will be responsible for ensuring that the Attendance List for each meeting includes everyone in attendance.
9. The Vice Chairperson will be responsible for arranging appropriate recognition for members who leave the Work Group.
10. The Vice Chairperson will be responsible for initiating an acknowledgement for presenters following the meeting. The acknowledgement should include the signature of the Chairperson.

LD Equipment Maintenance Requirements:
After discussion, the Work Group unanimously decided to create a small committee to research and prepare a proposal for vote. The committee consists of Scott Bacon, Sharon Sadlon and Tim Smith.

The initial thought is that a new maintenance or operability list will be created and posted on the NWGLDE web site. Scott proposed to have a limitations paragraph at the front of the new list stating that the evaluation is a snapshot of how the system works under specific conditions. The specific conditions include the maintenance, testing, and calibration conditions.

Scott will e-mail text regarding limitations (i.e. an evaluation is a snapshot of how a system works under specific conditions) from a California test document for the team to review. The team will also review the 1998 EPA Document "Best Management Practices for Management of USTs."

All Work Group members will take care to receive, review and request changes as necessary for all the documents on the Document Review List.

Threshold Variation on Certain Evaluations:
Thresholds are close to performance standards of ATGs and other equipment.
A set threshold is an arbitrary value supplied by a vendor.
A floating threshold is calculated with the data to meet 95/5 confidence level for data obtained in the field monthly monitoring process.
Note that the rules of statistics are violated if the method detection limit is more than the required detection capability of the method.
No action will be taken regarding this topic.

Tracer Horizontal Sampling System- Discussed earlier

Bulk Tank and AST Definitions
API653 and 650 define bulk tanks.

Field constructed tanks can be either USTs or ASTs. There are two types of field-constructed tanks. The first is gathering tanks used in mining that are assembled and disassembled. The second is very large (greater than 50,000- gallon) tanks.

Manufactured tanks were formerly less than 50,000-gallons, but now 60,000-gallon tanks are manufactured. Evaluators typically define greater than 50,000-gallons as field constructed, so bulk generally applies to tanks 50,000-gallons or greater. EPA did not specify a size in the definition of field-constructed.

The NWGLDE voted to add another category for the Method Index. The new category will be "Aboveground Storage Tanks Method". The Bulk category will be renamed "Bulk Underground Storage Tank Leak Detection Method."

NWGLDE Files
A committee of the administrative team, Lamar Bradley, and John Kneece will develop a proposal on finding a home for the files.

Under Review
Jon Reeder will resend his e-mail regarding the evaluations under review. All members must remind Curt when equipment needs to go on the list and be removed from the list.

Other Issues- None

NOTES FROM THE OPEN MEETING WITH THE VENDORS
Open Meeting Presentations and Discussions

Joie Folkers – Sumpless Containment Proposal for Dispensers
Ameron International presented a new product- sumpless containment. The product is essentially double-walled piping to the surface. An optional "termination ring" will hold product in the vertical 6-inch pipe that terminates at the surface beneath the dispenser. Without the "termination ring," product will flow back to the tank.

Ken Wilcox – Evaluation Issues for Discussion

1) **Euro Protocol**
    a. Are modifications on an equipment specific basis allowed? **NWGLDE Response:** YES, write up as an evaluation by unanimous vote.
    b. How should they be handled? **NWGLDE Response:** Consultation is recommended.
    c. Are there any performance criteria that can be applied to Part 2? **NWGLDE Response:** Yes, incorporated by reference.

Additional NWGLDE discussion regarding topic (closed portion of meeting):
One concern is that the European Standard does not have a confidence level or performance criteria. Interstitial monitoring has no set points/thresholds/leak rate defined by EPA. No performance standards are required by EPA.

The method is supposed to be leak prevention as opposed to leak detection. A large pump can mask a breach in a tank or piping by either pushing product back into the tank (pressure system) or sucking product into the liquid stop/vacuum sensor.

Alarm threshold is established by the manufacturer not the protocol. The pump limit is 85 lph +/- 15 lph.

2) **Enhanced Leak Detection (ELD)**
    a. What is the performance standard? For non-volumetric methods this has been very vague. Is there a threshold that should be used?
    b. Sensitivity can become an issue- i.e. permeation could cause failure. Is there an allowable amount? Or will all systems end up being constructed of metal or other non-permeable material?
    c. Will requirements for ELD be amended to allow methods that do not use chemical markers? i.e. vacuum systems?

NWGLDE Response: For now, this is a California issue.

3) **Line Leak Detectors on High Volume Lines- up to 400 gallons or so**
    a. Current limits are less than 100 gallons
    b. Truck stops now between 200-300 gallons
    c. Construction is mixed- rigid and flexible piping on the same system.

d. Ken Wilcox proposed field evaluation approach. - Outline of Proposed Field Test Method Testing MLD's on Pipelines up to 500 gallons

NWGLDE Response: The pipeline team will discuss this. Large diameter pipeline protocols exist or Ken can draft a new protocol.

4) **Do components of fuel systems need to be tested?**
   a. Examples
      i. Sumps
      ii. Penetration fittings
      iii. Dispenser pans
      iv. Pipe interstice
   b. Typical US approach has been to test systems- leak detector attached to specific size pipe or tank.

NWGLDE Response: The four components that are listed above are part of an engineering design.

5) **How should complex systems that cannot be put into a test chamber be evaluated?**
   a. Example- system relies on information from a tank gauge, multiple temperature sensors, reservoir levels, etc. To evaluate the effectiveness of such a system it would need to be installed on an actual tank or line.

NWGLDE Response: Use a protocol that will fit the equipment.

6) **Status of liquid filled interstice monitoring for pipes and tanks. Will Part 3 of the European Standard be adopted?**

NWGLDE Response: The Work Group has not received a request to review it, so it is not under review.

7) **New Protocols and Peer Review Process**
   a. How to limit the number of new protocols? **NWGLDE response:** The evaluation procedure allows modifications from the protocol to be documented.
   b. If a method does not fit an existing protocol (i.e. the Euro protocol) will it be eliminated from consideration? **NWGLDE response:** No, a new protocol can be written and accepted.
   c. Difficult to find qualified reviewers who are not method developers or vendors of this equipment. **NWGLDE response:** The Work Group requires Peer Review for acceptance of a protocol even though finding knowledgeable peers is difficult. Vendors who know the process may have a conflict of interest and they may have technology they consider proprietary and do not want their competitors to become familiar with. Individual Work Group members may be willing to participate in the peer review process if qualified peers cannot be located or vendors want to keep information confidential.
   d. If a committee is formed, could a (willing) NWGLDE member be included? **NWGLDE response:** Yes.

Ken Wilcox also provided a list of 6 vendor comments.

Everett Spring - Vigilant Method of Secondary Containment Leak Detection
The presentation explained how leaks can be detected by measuring pressure differential in different "chambers" (such as the inner tank, interstitial space of a double-walled tank, and the pressure outside the tank). The systems utilize fluids to generate pressure above or below atmospheric pressure to generate calibrated readings to evaluate for leaks.

Comment: Tim Smith and Scott Bacon will contact Mr. Spring regarding submittal of a third party evaluation for the interstitial monitoring method that he proposed.

Dr. Warren Rogers – PetroNetwork S3 CITLDS based on Continual Reconciliation
The PetroNetwork S3 CITLDS was recently reviewed and listed by the NWGLDE. The third party evaluation was conducted in accordance with the Evaluation Protocol for CITLDS Revision 1, dated January 7, 2000 as a continual reconciliation system. The system uses an On-site Processor (OSP) to collect ATG measurements from the tank or each tank in a manifolded system at minimum after each dispensing operation or set of overlapping dispensing operations as well as during periods when tanks system is dormant. (NWGLDE listing is restricted to ATG used during the evaluation- Veeder-Root TLS-350 and OPW Fuel Management Systems EECO 1500 Automatic Tank Gauges with magnetostrictive probes).

The system allows a combination of monitoring data from a static tank and inventory data from a dynamic tank to be combined in the leak monitoring system. This allows for real time data for an entire system- fill to meter. The method is able to distinguish between tank leaks, line leaks, and mis-calibrated meters.

Dr. Rogers made a formal request to have the NWGLDE change the listing to specify the following magnetostrictive probe requirements: "System uses ATG systems equipped with magnetostrictive probes and that have previously been evaluated as tank tightness testing or automatic tank gauging systems. The precision of level measurements is not to exceed 0.001-inches, exhibit a minimum accuracy of +0.05% full scale, and temperature accuracy not to exceed 0.5 degrees Fahrenheit. Operator should maintain copies of the ATGs third party evaluation as well as the PetroNetwork S3 evaluation."

Comment: The NWGLDE has concerns that communications could be an issue (binary, hex…). A few members also said that instead of the "precision level measure 0.001-inch" the limitation should include 0.1gph test certification. Shaheer Muhanna will follow up with Dr. Rogers to determine if the listing will be changed.

Curt Johnson – Examining Third-Party Tests of Leak Detection Equipment.

Curt Johnson presented the original NWGLDE presentation for the March 23, 1993 EPA UST/LUST Conference.

He noted that EPA does not "approve" leak detection equipment. States may approve leak detection equipment. If states approve leak detection equipment without examining the evaluations of the equipment they could allow the use of leak detection equipment that doesn't meet EPA standards.

The purpose of the NWGLDE is to examine and validate third-party tests of leak detection equipment. Then a list of leak detection evaluation summaries can be made available to states as a basis for approving leak detection equipment and avoid duplication of effort. The Work Group also recommends changes to improve the EPA standard test procedures.

General Discussion on Subjects Related to NWGLDE Mission

1) Maintenance Requirements and Calibration Requirements
The NWGLDE receives maintenance, testing, and calibration documents from vendors when they submit third party evaluations for listing. The maintenance, testing, and calibration documents information is not consistently reflected on evaluation summary sheets. The initial suggestions include making the information available on the website after all information has been consolidated from all vendors. The NWGLDE has appointed a team to make a proposal for work group member vote.

Maintenance, testing, and calibration recommendations and/or requirements exist for most leak detection equipment. Many vendors and regulators agree that it is important to perform the maintenance/calibration to lengthen the life of the equipment and determine when it needs to be replaced. The vendors present at the meeting said they were in agreement with the idea that maintenance, testing and calibration information should be easily available.

2) Update on Brine Monitoring Protocol and Ameron Evaluation Review
The NWGLDE is waiting for input from a statistician to determine if the 20-foot scaling in the brine monitoring protocol is appropriate. If the scaling in the protocol is changed, then the Ameron evaluation may need additional work.

3) How will 0.005-gph be allowed in protocols?
California (CA) requires a one-time test at installation that is a pass/fail qualitative test with a 0.005-gph limit. . Implementation of this CA requirement will be discussed in Sacramento, CA on October 21, 2003. At this time this topic is premature for the NWGLDE to comment.

4) Is the NWGLDE open to new protocols?

The NWGLDE may accept evaluations with modifications to the European protocol or may accept a new protocol from a third party test laboratory. Modifying the European Protocol is a difficult issue because only the author can modify the protocol.

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