

**Minutes**  
**National Work Group on Leak Detection Evaluations (NWGLDE) Meeting**  
**Sacramento, April 1-3, 2009**

WEDNESDAY, April 1, 2009

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A complete list of meeting attendees for the sessions is attached.

**ANNOUNCEMENTS**

- No official announcements made, although it was noted that Shaheer Muhanna and Jon Reeder could not attend on account of state imposed travel constraints.

**WELCOME VISITORS**

- No visitors in attendance at time.

**TEAM UPDATES**

**ATG & VTTT TEAM – Lamar Bradley**

- Discussed the amendment to EPA ATG and NVTTC protocols for water sensor testing officially accepted by NWGLDE on 17DEC08.
- Discussed the possibility of protocol amendments being on table @ EPA due to concerns with alternative fuels. Tim Smith had sponsored this idea to management, to review all protocols from a functionality standpoint. Work would be done by the Office of Research & Development (ORD), looking at least at ATG/NVTTC water sensors vs. ethanol blends and biodiesel viscosity variation concerns with LLD and SIR.
- Discussed issue of listing an ATG also as a VTTT. It looks like accounting for water outside the tank might be the hang-up, but what if that can be addressed? To be discussed further.

**CITLDS TEAM – Shaheer Muhanna**

- Shaheer Muhanna was not able to attend. Helen Robbins gave the team update.
- The team had assisted Greg Bareta on LLD Team protocol.

**NVTTC TEAM – Helen Robbins**

- Leak Detection Technology listing issue from OCT08 was resolved and product was listed.
- CGRS Iota Vaportite V005 listing changed to include “Enhanced Leak Detection Requirements”.

- Received letter from USTest requesting a change in listed test period. Helen asked for a 3<sup>rd</sup> party test, but received only a summary page. Team is waiting for more from USTest.

### **LLD TEAM – Greg Baretta**

- Accepted protocol from Continuous Pipe, will be added to list.
- Series 8494 PLLD. Curt Johnson requested that the LLD team consider revising the listing as WPLLD in response to feedback from an Alabama inspector. The inspector was also concerned that it is only listed for rigid piping. Burden is on Veeder-Root to produce 3<sup>rd</sup> party flexible pipe testing. Peter Rollo remarked that a maximum operating range for wireless systems should be addressed, and asked if we need a functional range protocol.

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### **GUEST SPEAKER –**

Dr. Wilson, microbiologist from ORD satellite lab Oklahoma, tasked by OUST to look at ethanol. He reports the phenomena of ethanol vapors and water in sump promoting biological growth resulting in production of acetic acid, which is rough on ferrous components, and “snot” (microbiologist term for biological gel secretions) which can be a mechanical impediment to the operation of valves, et al. Dr. Wilson requested that if any state encounters such a phenomena, please collect and ship a 40 ml air-free sample to his office for analysis. He further stressed the point that it has been documented that MtBE routinely escaped as a vapor release, and it’s not much of a stretch to assume that ethanol can or is doing the same. Ethanol in reduced concentration in water outside of tank ullage can support biological activity in the form of “acetobacters” producing a vinegar smell and acetic acid that will strip paint and corrode steel (stainless steel not affected).

Dr. Wilson also offered that ethanol breaks down to methane and hydrogen, possibly causing an explosion threat. He also pointed out that forensics can determine if methane is from ethanol or natural gas by the type of carbon isotope. Carbon 14 is atmospheric, picked up by plants, and ends up in ethanol. Carbon 13 is found in natural gas.

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### **SIR TEAM – Lamar Bradley**

- Victoria Chamber of Commerce has not replied to team since AUG05.

### **IMM TEAM – Tim Smith**

- Listed one item: Franklin Fueling Systems Tank Sentinel TS Series w/ TSP 12 & 14 inch discriminating magnetostrictive sensors.
- Tyco Thermo Controls LLC LS-3 still under review. Team is waiting for reply from Tyco or else listing will limit to salt water, motor oil, and oil salt water mix.

- OPW Site Sentinel Console with Intelligent Sensor w/ co interface for addition to existing listing.
- Preferred Utilities RBS Leak Detector received for review. It appears to be more appropriate for day tanks and secondary containment pipe drip legs, so team will seek application clarification from manufacturer.

**AST TEAM– Peter Rollo**

- Vista Methods, Doug Mann. Team has been waiting for two years for information.

**SECONDARY CONTAINMENT TESTING METHODS TEAM – William Moore**

- No activity to report.

**LIST ADMINISTRATION TEAM – Curt Johnson**

- Hard copy list for FY 2009 is on website.

**WEB SITE ADMINISTRATION– Marcia Poxson**

- No activity to report.

**TEAM CHANGES**

- William Moore is being utilized as a subject matter technical expert by the ATG Team.

**PROTOCOLS UNDER REVIEW**

- Discussed feeling that new protocols should be manufacturer driven and not developed by NWGLDE.

**NEW BUSINESS**

- Item # 4. It was decided that Administration Team would include the acronym “WPLLD” in the glossary.
- Item #6. Lamar will look at developing a template for combining the “Under Review”, “Not Listed”, and “Review Completed” lists and will circulate a draft for review.
- Item #8, Low Level Certification of ATGs. Discussed the fact that manufactures wish to list as low as 9%, but only test at 50 – 95%.
- Discussed fact that OPW wants to use old ECO probes with Isight software while phasing out ECO. OPW wants to be able to mix and match all combinations. OPW wishes to, or may be running, 12

test probe comparison tests in lieu of full testing of each combination. NOTE: OPW will address/clarify this on 02APR09.

- Discussion on minimum test time requirements for product combinations.

### **End of Wednesday Meeting**

THURSDAY, April 2, 2009

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### **WELCOME VISITORS**

The group welcomed visitors/presenters and they were asked to sign in [Attendance List attached]

### **VENDOR PRESENTATIONS**

#### **Steve Howell, Technical Director, National Biodiesel Board (NBB)**

Steve's stated purpose for his presentation is to start a detailed dialog between NBB and industry representatives and regulators. NBB started with soybeans in 1992 with the mission to reduce and eliminate barriers to sales by maintaining and improving ASTM standards and to address all technical questions. NBB currently represents greater than 300 producers and marketers, and over 20 feedstock groups. NBB wants to work cooperatively with NWGLDE to share science and California Water Resources Board info.

Biodiesel has a limited chemical makeup vs. petroleum, consisting primarily of 5 chemicals. Ethanol is an octane, biodiesel is a cetane, and both are oxygenated. Biodiesel consists of 5 fatty acid esters: C16:0, C18, C18:1, C18:2, and C18:3, and these proportions vary and affect its properties. The ASTM standard for B100 is D6751, and allows viscosity parameters of 1.9 – 6.0, .86 - .90 SpG @ 60°F, and has a coefficient of expansion roughly equivalent to that of diesel. As biodiesel degrades its acidity rises, and that is how "freshness" is measured, and it goes bad before its viscosity changes. The shelf-life for B20 is roughly 6 months unless additives are used. Other ASTM standards are D975 for B5, and D7467 & D975 for B6 – B20. API diesel temperature compensation tables are ok for up to B20. Unlike ethanol, water absorption is very similar to petroleum, will have free water phase at tank bottom. Like ethanol, biodiesel is a solvent and will hold contaminants in suspension. Biodiesel blends up to B20 are probably ok with leak detection. Blends greater than B20 are unknown but may have elastomer and hose concerns. Fate and transport is unknown.

NBB seeks regulation of biodiesel specifications in order to ensure industry viability. What is next step?: to move forward with protocols and data acquisition. An RP would be nice – National Livermore Lab has a handbook.

**Dr. Sam Gordji**

Dr. Gordji presented one method of “Obtaining  $P_D$ ,  $P_{FA}$ , and other Important Parameters for Pipeline Leak Detection System”. Ken Wilcox, Ken Wilcox Associates remarked that he does not do it this way, graphically, even though it’s understood as being an EPA requirement. Ken does a straight calculation instead.

### **John Zheng, Product Manager, OPW Fuel Management Systems, Chicago**

John introduced a density sensor developed for marketing in India and central/eastern Europe where product density is often used as a measurement of fuel quality. It works just like a hydrometer, and is electronically sensed. It mounts on the mag probe between the water float and product float, and is accurate to +/- 0.025 g/cc. It is useful in the biodiesel market for real-time SpG measurement so leak detection calculation will be accurate, as apposed to programming for a “typical” SpG. The anticipated list price is approximately \$300 each, and it is supported with a software upgrade for no extra cost.

### **End of Presentations**

### **Open Meeting General Discussion on Subjects Related to NWGLDE Mission**

- Lamar Bradley remarked that it should be considered whether or not a new protocol is required for 3<sup>rd</sup> party evaluation of OPW Density Sensor.
- Steve Purpora, Purpora Engineering, asked if there will be an E10 listing. Curt Johnson replied that anyone is open to write a protocol and that NWGLDE would look at it. Ken Wilcox interjected that testing can be done in a quart jar as well as a tank. Lamar Bradley replied that scaling up is an issue. Ken begged to differ that depth is the only issue, not surface area. General discussion followed regarding Alison’s presentation [Alison Hathcock, SC DHEC @ 21 Annual National Tanks Conference] regarding leak detector manufactures saying there is no protocol for evaluating their products in alternative fuels. Lamar reminded everyone that there is a protocol, developed by NWGLDE, but that manufacturers have shown no interest in using it. Ken conjectured that maybe it’s a simple issue function of product level, or maybe it is for E10 but not E85. Steve suggested that NWGLDE put “not evaluated for alternative fuels” on each product listing, not only on disclaimer, in order to drive the industry to test products with alternative fuels. Brad Hoffman, Tanknology, says they are finding leaks in E10 tanks and have data they can provide. Greg Bareta remarked that we need a protocol defining a leak rate for water. Tim Smith stated that the EPA protocol review window is open, please submit suggestions.

### **End of Open Meeting**

### **Discussion of Presentations**

- Steve Howell, NBB – Need to follow up on deliverables. NWGLDE would entertain a “White Paper” submittal from NBB documenting that blends up to B20 are equivalent to diesel. If acceptable, NWGLDE may add blends up to B20 as exemption in disclaimer.
- Dr. Sam Gordji. It is nice that Sam is willing to share his knowledge.

- John Zheng, OPW. NWGLDE would entertain an E10 “White Paper” submittal from ethanol industry showing how densities might change with different percentages of water in solution prior to phase separation. Such information would conceivably allow us to determine whether or not density sensors or even water sensors would have a practical function and may address the compatibility issue. NWGLDE would expect specifications on SpG at different water contents. Curt Johnson would be the point of contact. Lamar Bradley would like to find out at what density existing water floats float and having Tanknology back up their testing claims with float density and E10 testing specifics.

### **New Business Continued**

- Item # 1, 2, & 3. It was determined that these items were adequately discussed during the Presentations and Discussion of Presentations.
- Item # 5. It was discussed that ethanol conductivity is greater than that of gasoline but less than that of water, but we don't know the exact value. This reinforces the need for the existing fuels disclaimer. It was further discussed as to whether or not the alternative fuel disclaimer statement is sufficient or if disclaimer should also be added to each listing, and how a NWGLDE definition of “alternative fuel” affects each state. Tabled further changes until White Papers received.

Lamar Bradley will draft a NWGLDE letter for distribution to states by ASTSWMO requesting state concerns with leak detection and other concerns regarding E10 and pending E15. NWGLDE would then follow up with a request for product testing information and/or White Papers from ATG manufacturers if concern is shown by states.

- Item # 7 & 8. Existing protocol seems to allow a rating at ~ 10%, even if only tested at 50 & 95%. If we are not ok with this, do we need to change the protocol? William Moore stated that they need to do 12 additional tests at each particular level and thermister position because the leak rate is related to a pressure. Lamar Bradley will write Ken Wilcox regarding a protocol addendum for low level testing and will table proposed low level listings until we see Ken's reply and discuss it amongst group.
- Item # 9. Lamar Bradley stated that early ATG team never used weather data and it seems that such data is not necessary. Should we amend the protocol to not require weather data? William Moore stated that it is not our protocol. Tim Smith added that protocols are dynamic and for guidance only, that procedures can vary if it is justified why and accepted by NWGLDE. Lamar concluded that NWGLDE will just not ask for weather data if not otherwise initially reported.
- Item # 10 – LUSTLINE. It was announced that Ellen Frye would like an article for the May edition from NWGLDE in 2 weeks with the title “How Alternative Fuels Affect Leak Detection”. It was discussed that NWGLDE already produced such an article, namely Compatibility in 2007 and Functionality in 2008. Helen Robbins will confer with Ellen to resolve. It was suggested that a statement be added that NWGLDE does not recommend the use of leak detection testing that requires the addition of water to tanks containing ethanol blends.

### **Old Business**

- Item # 2. Tim Smith has drafted a SOP manual for the IMM team which has been through peer review and used for evaluation on Entropy, seemed to work fine. Tim's idea is to further develop the SOP for the entire group if it works well for the sensor team. Tim will get a draft to group in one week.
- Item # 3. Jon Reeder has been very busy and has not had time to work on a new NWGLDE logo.

### **END OF THURSDAY MEETING**

FRIDAY, April 3, 2009

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### **Old Business Continued**

- Item # 1. The group discussed that the Loop System is a state issue. Greg Baretta brought up point that the pipe orientation is not as survivable in a fire as conventional sump entries, but that OPW suggests a fire suppression system. There is also a concern that since there isn't a continuous slope to a low point sump, water in the interstitial low point could freeze and compromise the inner and/or outer piping. It was also pointed out that there is not much faith in the longevity of vacuum systems (operators turn them off because they work too well) and that no vacuum leak detection system has been submitted to the group for listing.
- Item # 4. Curt Johnson found John Kneece's CD with files, Russ Brauksieck will forward his files to Curt, and Scott Bacon has lost his archived files. Jon Reeder is not authorized to mail his files so will try to make other arrangements. The group wishes to scan all historical and new documents both for preservation and for availability to interested members. Tim Smith volunteered to scan documents for members who could not scan their own. It was pointed out that Therron Blatter of Utah is a good tech source for scanning/optical recognition software knowledge.
- Item # 5. The policy memos were last updated on December 5, 2008. It was recognized that Policy #3 could be replaced by a SOP. A draft SOP is currently under construction.

### **Other Issues Not Previously Covered**

- Discussed leak detection issues and equipment functionality concerns related to E10 - E85. Tim Smith has a 6 page table of items having functionality issues because of contact with product. For example, Veeder Root has 4 pieces of equipment where they claim compatibility with E85. Tim wanted to identify manufacturer claims vs. 3<sup>rd</sup> party so wrote to manufacturer for validation and 3<sup>rd</sup> party information. Some replied with data, but since we don't have a protocol, we don't know if valid or not. Tim is hoping to have complete review of equipment compatibility for ethanol and biodiesel, and hopes to report to group soon. Lamar Bradley reports regarding the CA LG113 Listing. He states that Laura Fisher, California, says probes must be evaluated and listed on CA LG113 listing. Lamar says NWGLDE has a protocol, and that Ken Wilcox has a 1 ¼ page protocol that appears to be insufficient. So Laura is looking for a protocol, NWGLDE has one that nobody uses, and Ken has one that NWGLDE does not support. Lamar believes that testing must be to scale, not beaker sized. Rate of water ingress must be proportional to size of vessel and/or to correct scale. It seems that protocol submittals are trending toward minimizing scale, scope, and iterations.

**Meetings**

- The question was raised whether or not NWGLDE meetings should continue to be held in conjunction with the National Conference. It was decided that it should because it would be more convenient for members and vendors.
- The next meeting is this fall in Annapolis Maryland. The spring 2010 meeting is in Mobile Alabama, and the fall 2010 meeting is in conjunction with the National Conference in Boston Massachusetts.
- Tim Smith is going to take the minutes at the Annapolis meeting this fall.

**Team Meetings and Adjournment**

Revised 11MAY09 mwj

**NWGLDE Meeting Agenda  
(Last Revised 3/26/2009)**

**Wednesday, April 1, 2009**

1:30 p.m.	Welcome Visitors
2:00 p.m.	Team Leader Updates
	1. Lamar Bradley – ATG and VTTT Methods
	2. Shaheer Muhanna – CITLDS Method
	3. Helen Robbins – NVTTC Methods
	4. Greg Baretta – Line Leak Detection Methods
3:00 p.m.	Break
3:15 p.m.	Team Leader's Updates Continued
	5. Lamar Bradley – SIR Method
	6. Tim Smith – Interstitial Monitoring and Out-of-Tank Detector Methods
	7. Peter Rollo – Aboveground and Bulk Storage Tank Methods
	8. Bill Moore – Secondary and Spill Containment Test Methods
	9. Curt Johnson – Administration
4:15 p.m.	Review Temporary and Regular Team Assignments
4:30 p.m.	Protocols Under Review Update
5:00 p.m.	Adjourn

**Thursday, April 2, 2009**

8:00 a.m.	Vendor/Evaluator Presentation – Steve Howell, National Biodiesel Board – Board Program Background, History and Planned Efforts
8:30 a.m.	Vendor/Evaluator Presentation – Sam Gordji – Obtaining the Probability Of False Alarm $P_{FA}$ and the Probability Of Detection $P_D$ For Pipelines
9:00 a.m.	Break
9:15 a.m.	Vendor/Evaluator Presentation – Open
9:45 a.m.	Vendor/Evaluator Presentation – Open
10:15 a.m.	Break
10:30 a.m.	Vendor/Evaluator Presentation – Open
11:00 a.m.	General Discussion on Subjects Related to NWGLDE Mission
12:00 p.m.	Lunch
1:30 p.m.	Discuss Vendor/Evaluator Presentations
3:00 p.m.	Break
3:15 p.m.	New Business
	1. Discuss Evaluator Presentations
	2. Discuss Any Responses to Ethanol Blend Addendum to ATG and CITLDS protocols
	3. Discuss Any New Leak Detection Issues And Concerns Related To Alternative Fuels
5:00 p.m.	Adjourn

**Friday, April 3, 2009**

8:00 a.m.	New Business - Continued
	4. Discuss Wireless Line Leak Detectors (WPLD) and Flex Pipe – Curt Johnson
	5. Discuss the Use of Conductivity Probes in Ethanol Fuels – Lamar Bradley
	6. Discuss Combining the “Under Review”, “Not Listed”, “Review Completed” Lists – Curt Johnson
	7. Discuss Protocol Review Memos and Letters To Be Added To protocols – Curt Johnson
	8. Discuss Low Level Certification of ATGs – Lamar Bradley
	9. Discuss Use Of Ambient Data in ATG Testing Evaluations – Lamar Bradley
	9. Discuss next LUSTLINE article
9:30 a.m.	Break
9:45 a.m.	Old Business
	1. Discuss the latest on the “Loop” piping system
	2. Discuss Status of SOP Manual – Tim Smith
	3. Discuss Status of New NWGLDE logo – Jon Reeder
	4. File Retention Committee Report – Lamar Bradley, Curt Johnson
	5. Review Policy Memos to Make Sure They Are Up-To-Date – Curt Johnson
10:30 a.m.	Discuss Any Other Issues Not Previously Covered
11:00 a.m.	Discuss Location of Fall 2010 meeting.
11:15 a.m.	Appoint Member to Take Minutes at Next Meeting
11:30 a.m.	Lunch
1:00 p.m.	Team Meetings
5:00 p.m.	Adjourn



ATTENDANCE LIST  
 National Work Group on Leak Detection Evaluations  
 Sacramento, California  
 April 1-3, 2009

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