National Work Group on Leak Detection Evaluations Meeting
San Diego, CA- September 28-30, 2011

Attendees: Work group members and attendee's list by date attached.

September 28, 2011:

Team Leader Updates:

ATG/Volumetric TTT Method Team (Lamar Bradley)

- **Completed ATG Reviews:**
  - Franklin Fueling Systems water float TSP-IGF4P: New evaluation received 7/26/2011- Mike Juranty reviewed; listed August 2011. New water float designed to float on phase separated layer but not listed for this, only listed for water detection purposes.
- **In-progress ATG Reviews**:
  - None at this time

- **Completed VTTT Reviews:**
  - Mass Technology Corporation CBU 1000D: under-fill mass-based tank tightness test. Results not valid if water above the bottom of the tank. Mike Juranty reviewed; listed April 2011.
- **In-progressVTTT Reviews:**
  - None at this time

- **Other Activity:**
  - ATG 0.1 gph listing issue (ref. Annapolis Fall'09 minutes for details)
  - 5-13-2011: email sent to Dresser Wayne Europe to ask about evaluation of TIG 5000 0.1 gph Precision Test and Quick Test (Q0400-4xx Magnetostrictive probe) - **no reply ever received.** Will modify this listing when time allows, removing 0.1 gph certification.
  - 5-23-2011: modified listing for Tidal Engineering Environmental Monitoring System, EMS 4000 (Ultrasonic Probe #312-9000 and 312-9001) to remove 0.1 gph certification.
  - 5-23-2011: modified listing for L&J Engineering MGC1100/MGC8100 magnetostrictive probe to remove 0.1 gph certification.
  - 5-23-2011: modified listing for Hasstech Tank Compliance Center Model 700 (7100 Series magnetostrictive probe) to remove 0.1 gph certification.

AST and Bulk Storage Team (Peter Rollo)

- **Completed AST/Bulk Storage Reviews:**
  - None this period.
- **In-progress AST/Bulk Storage Reviews**:
  - Mass Technology mass-based system review for Bulk Field Constructed USTs modifies the previous system by incorporating multiple tests of the tank and using the average of the tests to improve the performance of the system.

CITLDS Team (Shaheer Muhanna)

- Nothing new to report with CITLDS listings.

Line Leak Detection Methods Team (Greg Bareta)

- **Completed LLD Reviews:**
  - Protanic Petro-Tite: update listing to remove pre-conditioning pressure. Completed: 04/11/2011.
  - Leak Detection Technology **MD**leak®: listed NVTTT method under line leak detection and large line leak detection methods. Completed: 10/05/2011.
  - Veeder Root PLLD and MLLDs: updated listing for ethanol products. Completed: 09/20/2011.
- **In-progress LLD Reviews**:
  - Vaporless Manufacturing, Inc. - Automatic Mechanical Line Leak Detector, LD 3000/3000S, KWA 04/17/2006, Received: 03/31/2010, updating line length for flexible lines. Additional info. request:
  - Hansa Consult Ingenieurgesellschaft mbH with HC Fuel Systems LLC - LARGE DIAMETER LINE LEAK DETECTION METHOD (6 inches diameter or above), Hansa Consult Pressure-Step Tightness Control System (TCS) Pipeline Leak Detection System, KWA 08/11/2000, received: 11/17/2010 Revise listing for smaller leak rate volume.
  - Ken Wilcox - Large pipeline protocol, KWA.
  - United Testing Systems- U.T.S. 6000 Line Tester (tightness), Midwest Research Institute (MRI), received: 05/04/2011, new listing.

SIR Team (Lamar Bradley)

- Nothing new to report with Statistical Inventory Reconciliation System listings.

NVTTT Method Team (Helen Robbins)

- **Completed NVTTT Reviews:**
  - None this period.
- **In-progress NVTTT Reviews**:
  - 08/22/2011: Charlie Tiso from Mesa Engineering emailed the team regarding a change to the Mesa 2-d acoustical test procedure. Charlie stated that all of the updates were documentation related and do not affect the way the test is conducted. The NVTTT team requested a copy of the revised procedure for review to ensure the changes did not affect the listing; no response has been provided to date.

Interstitial Monitoring and Out-of-tank Detector Methods Team (Tim Smith)

- **Completed Interstitial Monitoring and Out-of-tank Detector Reviews:**
  - Modified Glossary term "Intermittent Detector" to replace the word "regular" with "periodic."
  - Added results for testing in used oil to Veeder-Root's Piping Sump Sensor 794380-208. Date listing added: July 22, 2011
  - Added statement regarding biodiesel to the following Containment Solutions, Inc. listings (Date listing added: April 8, 2011):
    - DDAS 910 Discriminating Sensor for Dry Annular Spaces;
    - DCBS 900 Discriminating Sensor for Collars, Bulkheads, Sumps
  - Added statement regarding biodiesel to the following Veeder-Root listings (Date listing added: April 8, 2011):
    - Secondary Containment Leak Detection (SCLD) TLS-350/ProMax/EMC Console with Vacuum Sensors 857280-100, 200, 30x, or Assembly 332175-001
    - Red Jacket Electronics RE400-058-5, RE400-059-5, RE400-147-5, RE400-148-5 Overfill Sensor, RE400-111-5 Sump Sensor, RE400-203-5 Optical Liquid Discrimination Sensor, RE400-204-5 Dispenser Pan Monitor, RE400-180-5 Liquid Refraction Sensor
    - Red Jacket Electronics RE400-179-5 to RE400-199-5 Combination High Level/Low Level Sensor, RE400-042-5 Hydrostatic Sensor, Red Jacket PPM 4000 with Optical Liquid Discrimination Sensor
    - Dispenser Pan Sensor 847990-001 and Differentiating Dispenser Pan Sensor 847990-002 with Dispenser Control Interface
    - ILS-250, 350, TLS-250i, 250i Plus, 300, 300C, 300i, 300PC, TLS-350 Series, TLS-450 Series, Red Jacket ProMax and ProPlus with Interstitial Liquid Sensor for Fiberglass Tanks 794390-401, 404, 407, 409, Interstitial Liquid Sensor for Steel Tanks 794390-420, 460, Liquid Sensor for Sumps 794390-206
    - ILS-350, TLS-300C, 300i, 300PC, 350, 350PC, 350R, 350RPC, TLS-450 Series, Red Jacket ProMax and ProPlus with Solid-State Pan/Sump Sensor 794380-321, 351, Piping Sump Sensor 794380-208, 209, Micro Sensor 794380-340
    - ILS-350, TLS-300 Series, TLS 350 Series, TLS-450 Series, EMC Series, EMC Basic, Red Jacket ProMax and ProPlus with Position Sensitive Sensor 794380-323
    - TLS-300 Series, TLS-350 Series, TLS-450 Series, EMC Series, EMC Basic, Red Jacket ProMax and ProPlus with Float Sensor 794380-430
    - TLS-300, 300i, TLS-350 Series, TLS-450 Series, Red Jacket ProMax and ProPlus with Discriminating Dispenser Pan Sensor 794380-322, Discriminating Containment Sump Sensor 794380-352

- TLS-350 Series, TLS-450 Series, EMC, EMC-PC, EMC Enhanced, EMC-PC Enhanced, and Red Jacket ProMax with Magnetostrictive Sump Sensor Series 857060-xxx* and 857080-xxx*
- TLS-350 Series, TLS-450 Series, Red Jacket ProMax with Interstitial Liquid Sensor 794380-341, Dispenser Pan Sensor 794380-320, Discriminating Containment Sump Sensor 794380-350, Discriminating Fibretrench Sensor 794380-360, 361, 362
- TLS-350, 350R Series, TLS-450 Series, Red Jacket ProMax with Discriminating Interstitial Sensor 794380-343, Micro Sensor 794380-344
- TLS-350, 350R Series, TLS-450 Series, Red Jacket ProMax with Interstitial Sensor 794380-345

- **<u>In-progress Interstitial Monitoring and Out-of-tank Detector Reviews</u>**:
  - Containment Solutions
    - Hydrostatic Precision Tank Test for DWT-Type II Tanks
    - FCI Liquid Filled Interstitial Monitor Tank Model with Model FHRB 810 Level Sensor

  - Leak Detection Technologies
    - MDLeak Enhanced Leak Detection Method

  - Omntec Mfg.
    - Add "BX-LWF" sensor to existing Omntec listings

  - Steel Tank Institute (STI) – Revision of two Interstitial Tank Tightness Test Methods:
    - Permatank Interstitial Monitor for detection of liquid leaks using liquid sensors.
    - Permatank Vacuum Leak Detection System provided for the STI-P3® Act-100® and ACT-100U® double wall steel underground tanks.

  - Tanknology
    - Vacuum interstitial test for double wall tanks.
      - Non-Volumetric Tank tightness Test Method (Vacuum)
      - Comments: IMOTDM Team and NVTTT Team working together to review request. Method was evaluated using the NVTTT method. Evaluation indicates the purpose of the test is to determine the tightness of a double-wall UST with a dry interstitial space.

  - Review various sensor listings to determine if any are listed with ethanol-blended fuels. Assess potential necessity to delist.

Secondary and Spill Containment Test Methods Team (Bill Moore)

- **<u>Completed Secondary/Spill Containment Reviews:</u>**
  - None this period.
- **<u>In-progress Secondary/Spill Containment Reviews</u>**:
  - Tanknology: protocol review for vacuum testing of spill containments.

Administration Team (Curt Johnson)

- The 19th Edition of the List will be published in early January; workgroup members are urged to submit any additions or changes to the list by late December.

Updated Team Assignments (new assignments in bold):

TEAM	LEADER	MEMBERS
Automatic Tank Gauging (ATG) and Volumetric Tank Tightness Test (VTTT) Methods	Lamar Bradley	Mike Juranty William Moore
Continuous In-Tank Leak Detection Methods	Shaheer Muhanna	Helen Robbins **Heather Peters**
Non-Volumetric Tank Tightness Test Methods	Helen Robbins	Mike Juranty
Line Leak Detection Methods	Greg Bareta	William Moore **Heather Peters**
Statistical Inventory Reconciliation (SIR) Methods	Lamar Bradley	Shaheer Muhanna **Heather Peters**
Interstitial Monitoring and Out-of-Tank Detector Methods	Tim Smith	Peter Rollo William Moore Lamar Bradley
Aboveground and Bulk Storage Tank Methods	Peter Rollo	Greg Bareta Marcia Poxson
Secondary and Spill Containment Test Methods	William Moore	Shaheer Muhanna Tim Smith Mike Juranty
List Administration and Surveys	Curt Johnson	Marcia Poxson Helen Robbins

New Business:

Red Jacket Equipment Obsolescence

The group briefly discussed notification by Veeder Root that as of July 29, 2011 all Red Jacket spare parts for ProLink, ST, PPM, and RLM systems are obsolete and no longer available to support these product lines. Post-discussion the following statement was developed to be added to the affected Red Jacket listings as time allows:

"As of July 29, 2011, Veeder Root has designated all Red Jacket legacy electronic spare parts obsolete for this equipment (with the exception of p/n RJ340-040-5 and -041-5) and availability will be limited. Contact Red Jacket at 800-873-3313 for availability."

Re-use of Discriminating Sensors

The workgroup decided that this was not a workgroup issue; it is a equipment application/use issue which would be addressed as an individual state regulatory policy. The workgroup recognizes that most manufacturers provide requirements for re-use of sensors which the individual state regulators could use to set policy.

Policy on Adding Other Liquids to Individual Listings

This item was initiated as a result of the workgroup policy developed for adding alternative fuels to individual listings. Discussion focused on the possibility that new alternative fuels are in the process of being developed and whether the listings would have to address them on a specific basis. Since the NWGLDE listings only address equipment functionality, not compatibility, the workgroup concluded that for now the statement currently used in each listing under the "applicability" section ("Other liquids with known coefficients of expansion and density may be tested after consultation with the manufacturer.") will continue to be used as is to address the new/forth-coming alternative fuels (except for ethanol and biodiesel which are already addressed under the NWGLDE disclaimer). If the distribution of a new fuel becomes wide-spread, then a similar approach as used for ethanol and biodiesel may be in order.

Vacuum Interstitial Tank Testing

Workgroup concluded that a protocol has to be developed. Some of the items that need to be addressed in the protocol include; leak rate standard (0.1/0.2 gph?) and establishment of equivalency of a vacuum leak rate to liquid leak rate.

Leak Detection Equipment Upgrade/Obsolescence

This issue was brought up due the fact that certain leak detection systems (ATGs, ELLDs) rely on software algorithms to perform the calculations for determining whether or not a system is leaking or not. Since electronic leak detection systems were first introduced many of the equipment manufacturers periodically upgraded their software as a result of finding missed leaks in the field from unanticipated events. The workgroup recognizes the importance of these software upgrades being implemented in the field and has concluded that it would be beneficial if the software version was included on the listing. The workgroup decided that each team will review their listings to assess which listings will require including the software version information. The affected vendors will then be contacted for the software version information. Vendors will also be reminded that any upgrades that affect the functionality of the leak detection equipment will have to be evaluated and submitted to the workgroup for listing changes.

The workgroup also discussed how long a listing should be kept on the list after the product is discontinued or the manufacture goes out of business. The workgroup decided that as along as there is space available on the web site that the obsolete listings would remain.

Installation Guidance Instructions

This item was tabled until the next meeting.

End of Meeting- September 28

September 29, 2011:

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

Presentation by Earle Drack, DirAction, LLC

Mr. Drack presented his "ESense" technology for detecting ethanol phase separation. Highlights of the presentation:

- The system focuses on the conductivity changes in relation to the die-electric constants of the product, water, and ethanol.
- The multi-segmented probe is a complex impedance sensor which detects the magnitude and phase of impedance of the liquid; this allows for the determination of composition gradients throughout the fuel.
- Can be added to existing leak detection system probes.
- Responds with only 1/8-inch of phase separated product.
- Not refined enough to make a determination based on one reading but will be able to use trends to determine changes.
- Detects absorbed water prior to phase separation.
- Need to either remove sludge or ignore first couple of segment readings. (sludge should be minimized due to ethanol product use and tank cleanings)

Presentation by Lorri Grainawi, Steel Tank Institute (STI)

Ms. Grainawi presented a discussion on the proposed new protocol for vacuum testing the interstice of double wall tanks. Highlights of the presentation:

- Protocol will address testing of steel double wall tanks and steel jacketed tanks, not sure if it will cover fiberglass tanks. (Ken Wilcox is the main author of the protocol and could not make it for this meeting, he would be able to confirm applicability)
- Important testing parameters the protocol will address:
  - Open interstice verification (drill hole method)- should not be necessary on double wall steel due to construction, not a tight wrap.
  - Detection time: induced vacuum leak rate equivalent to 0.1 gph liquid. Detection time limit will be established in testing.
  - Interstice and primary liquid Level at start/finish: acceptable limits to 0.1 gph using chart.

End of Open Portion of Meeting

Discussion of Vendor Presentations

ESense Technology: shows promise; DirAction may want to work with ATG vendors to see if implementation possible.

Interstice Vacuum Testing: protocol appears to be progressing nicely; fiberglass tank manufacturers need to provide factors that affect testing of fiberglass tanks, primarily interstice communication.

Old Business:

Update on "Quality Assurance Project Plan" by Battelle

Tim Smith provided update for Battelle; completed and starting testing.

Update on "Technology Assessment: Suitability of Leak Detection Technology for Use in Ethanol-Blended Fuel Service" by Battelle Memorial Institute & Testing update

Tim Smith provided update for Battelle; draft is out for review, waiting Ken Wilcox comments.

Team Meetings

End of Meeting- September 29

September 30, 2011:

Follow-up Discussion on Hearing Tests for LD Equipment Requiring Use of Listening Devices (Manual data acquisition)

This primarily pertains to one method of tank tightness testing; no new information was available at the time of the meeting, vendor has not objected to hearing test requirements. Comments from vendor will be sought before next meeting.

Update on "Under Review", "Not Listed", "Review Completed" Lists

Team Leaders are to send Lamar Bradley updated lists via email.

Status of Draft Intermittent Detector Definition for Glossary

Tim Smith has submitted a new definition for "Intermittent Detector"; the workgroup accepted Tim's proposal and it has been added to the glossary.

Status of Revision to V-R AELLD listed for methanol &ethanol

All requested listings have been revised; reference Line Leak Detection Team report.

Discussion of Web site set-up to add links to images of LD equipment

Workgroup agreed that photos of leak detection equipment should be added to each listing as they are initially created, revised or as other opportunities present. Notice will be added to main NWGLDE website so that vendors, contractors, regulators, are aware and can begin to send equipment photos as they become available.

Discussion of Future LUSTLINE Articles

The group discussed topics for future articles that included: 1) adding photos to listings 2) theory process to add ethanol to listings (reference to Battelle white paper) 3) article on hearing test requirements for manual acoustic tank tightness testing systems.

Discussion of SOP Manual

Tim Smith has completed work on the template for the individual teams SOP manual and will send it out to other team leaders for their use.

File Retention Committee Report

Discussion centered on developing long-term data storage system of third-party submittals (certification reports, letters, etc.); currently resides on server of one individual workgroup member, workgroup would like to move it to independent web-based storage server ("the cloud") with secure access provided to all workgroup members.

Add Link to Equipment Pictures from Listings?

See similar discussion item above.

Policy Memo Review

1) and 2): no changes
3) - Add reference to SOP
   - correct 'and may'; format hard returns
   - II.: remove "system specific"
   - III.: add photo addition statement
4): no changes

Procedures and Policy Memo: remove reference to Jack Quigley (retired) and revise paragraph.

Other Issues

Fall 2012 meeting locations in order of preference: New Hampshire; NYC; Rapid City, SD.

Next Meeting in St. Louis, Missouri/ March 21-23, 2012 (following EPA Tanks Conference)

NWGLDE Meeting Agenda – Revised 09/15/2011

Wednesday September 28, 2011

8:00 a.m.	Welcome NWGLDE New Member and Visitors
8:15 a.m.	Team Leader Updates
	1. Lamar Bradley – ATG and VTTT Methods
	2. Shaheer Muhanna – CITLDS Method
	3. Helen Robbins – NVTTT Methods
	4. Greg Bareta – Line Leak Detection Methods
10:00 a.m.	Break
10:15 a.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
11:30 a.m.	Lunch
1:00 p.m.	Protocols Under Review Update
1:30 p.m.	Review Team Assignments
2:00 p.m.	New Business
	1. Red Jacket equipment Obsolescence – Greg Bareta, Bill Moore
	2. Discuss LUSTLINE article about LLDs – Shaheer Muhanna
	3. Discuss Re-use of Discriminating Sensors –Lamar Bradley, Tim Smith
	4. Discuss adding policy on listing other liquids to our List – Bill Moore
	5. Discuss Vacuum Interstitial Tank Testing – Mike Juranty
3:00 p.m.	Break
3:15 p.m.	6. Leak Detection Equipment Upgrade/Obsolescence – Greg Bareta
	7. Installation Guidance Instructions – Greg Bareta
	Old Business
	1. Update on "Quality Assurance Project Plan" by Battelle – Tim Smith
5:00 p.m.	Adjourn

Thursday, September 29, 2011

8:00 a.m.	Welcome Visitors
8:15 a.m.	Earle Drack, Diraction LLC – Discussion of ESence Technology
8:45 a.m.	Break
9:00 a.m.	Lorri Grainawi, Steel Tank Institute – Discussion of New Protocol for Testing the Interstice of Double Wall Tanks Using Vacuum
9:30 a.m.	Break
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.	Break
11:15 a.m.	Vendor/Evaluator Presentation – Open
11:45 a.m.	General Discussion on Subjects Related to NWGLDE Mission
12:00 p.m.	Lunch
6:30 p.m.	Evening Work Session
	Discuss Vendor/Evaluator Presentations
7:00 p.m.	Old Business
	2. Update on "Technology Assessment: Suitability of Leak Detection Technology for Use in Ethanol-Blended Fuel Service" by Battelle Memorial Institute & Testing Update – Tim Smith
8:00 p.m.	Break
8:15 p.m.	Team Meetings
9:30 p.m.	Adjourn

Friday, September 30, 2011

8:00 am	Old Business - Continued
	3. Follow-up Discussion on Hearing Tests for LD Equipment Requiring Use of Listening Devices – Greg Bareta
	4. Update on "Under Review", "Not Listed", "Review Completed" Lists – Lamar Bradley
	5. Status of Draft Intermittent Detector Definition for Glossary – Tim Smith
10:00 am	Break
	6. Status of revision to V-R AELLD listed for methanol & ethanol – Greg Bareta & Bill Moore
	7. Web site set up to add links to images of LD equipment? – Marcia Poxson
	8. Discuss Future LUSTLINE Articles – Curt Johnson

10:15 am	9. Discuss SOP Manual – Tim Smith
	10. File Retention Committee Discussion – Lamar Bradley, Curt Johnson, Bill Moore
	11. Add Link to Equipment Pictures from listings? – Lamar Bradley
	12. Review Policy Memos – Curt Johnson
	Discuss Any Other Issues Not Previously Covered
	Discuss Next Meeting in St. Louis, MO – Leader?
	Discuss Meeting Location for September 2012 Meeting
	Appoint Member to Take Minutes at Next Meeting
12:00 noon	Adjourn

ATTENDEE LIST

ATTENDANCE LIST
National Work Group on Leak Detection Evaluations
San Diego, CA
September 28, 29, 30, 2011

Name	Representing	Phone Number	Email address
William Moore	Utah DEQ	801-536-4106	billmoore@utah.gov
Heather Peters	Missouri DNR	573-751-7877	heather.peters@dnr.mo.gov
Ricardo Manguvalde	MBM-Brazil	+55(31)33839600	ricardo@grupombm.com.br
Helen Robbins	CT DEP	(860)424-3291	helen.robbins@ct.gov
Mike Juranty	NH DES	603 271-6058	michael.juranty@des.nh.gov
Marcia Poxson	MDEQ	517 373 3290	poxsonm@michigan.gov
Shaheer Muhanna	GAEPD	404-362-257	Shaheer.Muhanna@DNR.state.GA.US
Peter Rollo	DNREC	302-395-2500	PETER.ROLLO@STATE.de.US
TIM SMITH	USEPA/OUST	703-603-7158	SMITH.TIMR@EPA.GOV
Curt Johnson	ADEM	334-271-7986	cdj@adem.state.al.us
Greg Baretta	WDSPS	608-267-9795	greg.baretta@wi.gov

ATTENDANCE LIST

National Work Group on Leak Detection Evaluations

San Diego, CA

September 28, 29, 30, 2011 AM

Name	Representing	Phone Number	Email address
William Moore	Utah DEQ	801-536-4106	billmoore@utah.gov
Fred Hoffman	Tankinology	512-380-7154	fhoffman@tankinology.com
Kevin Keegan	"	847-420-3860	kkeegan@tankinology.com
Curt Johnson	Alabama DEM	334-271-7986	cdj@adem.state.al.us
Tim Smith	U.S. EPA/OUST	703-603-7158	SMITH.TIMR@EPA.GOV
Marcia Poxson	MDEQ	5173733290	poxsonm@michigan.gov
Ricardo M. Ferreira	MBM	55 31 33839600	ricardo@grupombm.com.br
Mike Jurenty	NH DES/NWGLDE	603-~~486~~ 271 6058	michael.jurenty@des.nh.gov
Peter Rollo	DNREC/NWGLDE	302-395-2500	Peter.Rollo@state.de.us
Shaheer Muhanna	GA EPD	404-362-257	Shaheer_Muhanna@dnr.state.ga.us
Bill Jones	WRA	800.972.4772	wjones@warrenrogersassociates.com
Douglas Mann	Vista Leak Detection	937-669-5875	dmann@vistald.com
Sam Gordji	University of MS	662-234-1129	samgordji@yahoo.com
Heather Peters	Missouri DNR	573-751-7877	heather.peters@dnr.mo.gov
Dave Emmington	Veeder Root	(916)638-2066	DEMMINGTON@VEEDER.COM
Greg Bareta	WDSPS	(608) 267-9795	greg.bareta@wi.gov
Helen Robbins	CT DEEP/NWGLDE	(860)424-3291	helen.robbins@ct.gov
Earle Drack	DirAction, LLC	(610)5065701	earle.drack@diraction llc.com
Larri Grainawi	STI	847-438-8365 x244	lgrainawi@skelletank.com