ALERT 2010 OPERATIONS MANUAL
For
UNDERFILL & ULLAGE SYSTEMS

Version 1.1

Tank Explorer 2010

USB Ullage

For Windows XP and Windows 7

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UNDERFILL TESTING

LoadCell

The ***LoadCell***, in conjunction with the ***Probe*****,** is at the core of the ***Alert System***. The ***LoadCell*** is a measuring device that detects changes in the weight of the Alert Probe in an underground storage tank.

Probe

The ***Probe***, shown here with the load cell is a cylindrical tube, which is hung from the ***LoadCell*** and inserted into the underground storage tank. To the ***Probe*** is added sufficient ballast to achieve a state of negative buoyancy. The ***Tank Explorer Software*** determines the proper amount of ballast to be added to the Probe. ***Probes*** are available in various lengths and diameters to accommodate the size of most storage tanks to be tested. Standard sections are 2, 4, & 6 ft. lengths to be assembled as needed.

Software

There are several versions of the Alert Operating system software from our 1st package in DOS format from 1988 to the latest version (Tank Explorer 2010) for Windows XP & 7 with USB input. The software records and collates data from the Load Cell to determine a leak rate based on changes in the weight of the probe.

Computer

There are minimum requirements for the computer used to run the ***Tank Explorer 2010 Software***; Windows XP or higher (Vista often has problems) with 1 gig of hard drive space available. Microsoft Excel is required for graphing of the Ullage results.

Pedal Blocks

The ***Pedal Blocks*** are used to adjust the ***Load Cell*** jack assembly to fit larger sizes of drop tubes. Available in sizes for 3 and 4 inch.

Insertion Tool

The ***Insertion Tool*** is used to position and lock the ***LoadCell*** inside of the Storage tank that is being tested.

Process

The ***Signal Conditioners*** electronics are engineered to detect small changes in the ***Load Cell*** output. If the mass level of the tank changes, that is if the product is leaking out of, or foreign material such as water is seeping into the storage tank, the changes in the mass of the fluids inside of the tank effects the buoyancy of the ***Probe.*** These changes are detected by the ***LoadCell*** and recorded. The ***Tank Explorer 2010 Software*** determines the leak rate by calculating the relationship between the probe diameter, liquid surface area, and weight change of the probe.

ULLAGE TESTING

Ullage Description

Ullage is defined as the portion of the storage tank that lies between the product inside of the storage tank and the top of the storage tank. The ***Alert Technologies Ullage System*** has the ability to test up to **8,000 gallons** of ullage space at a negative pressure of 1 *psig (*pounds per square inch above atmospheric pressure) or a *positive pressure 1.5 *psig* (pounds per square inch above atmospheric pressure), and up to **24,000 gallons** of ullage space at a negative pressure of 1.5*psig* (pounds per square inch below atmospheric pressure).

***Positive pressure testing must always be done with an inert gas such as nitrogen.**

Sonde

The ***Sonde***, the key component of the ***Alert Ullage System,*** is an electronic device that listens for leaks when the tank that is being tested. The ***Sonde*** is connected to the computer, via the ***USB Ullage Signal Conditioner***, where the ullage software analyzes the input data.

USB Ullage Signal Conditioner

The ***USB Signal Conditioner,*** shown here with a 50' Ullage Cable, converts the analog signal from the ***Sonde*** to a digital signal that the computer can interpret.

Sonde Plug

The ***Sonde Plug***, available in various diameters to accommodate common storage tank openings, and is used in conjunction with the ***Sonde***. The ***Sonde Plug*** is placed in the fuel storage tank opening with the ***Sonde***. The ***Sonde*** is connected to the electrical cable that passes through the tube structure of the ***Sonde Plug***, and hangs below the ***Sonde Plug*** into the storage tank. The ***Sonde*** bladder is inflated and is used as a seal for pressurization during the ***Ullage*** portion of testing.

Ullage Process

The ***Ullage Test*** must be performed with *all vent lines plugged. The ***Sonde*** is attached to the ***Sonde Plug***, via connecting cable, and placed inside of the storage tank so that the ***Sonde*** is positioned in the space that lies between the liquid and top of the storage tank. The ***Sonde*** is then connected to the ***USB Ullage Signal Conditioner,*** which plugged into the computer. A reference test is performed at atmospheric pressure to determine the normal sound level in the tank. A pressure or vacuum is added to the tank and the test is recorded. Any change in sound amplitude is recorded and compared to the reference test to detect a leak. After the leak test has been completed the ***Tank Explorer 2010 Software*** coalates the test data and presents a full report, with graph, for the tester to print.

*See Operations Manual for complete testing procedures.

Care, Transport and Storage of *Alert Technologies* Equipment

LoadCell

The ***Loadcell*** is the heart and sole of the ***Alert UnderFill Testing System*** and should always be handled and stored with care. Caution should be taken whenever the probe is being attached to or removed from the ***LoadCell's*** snap hook. The load sensing device, the blade, is fragile and may be damaged by severe jolts. Never attempt to tighten the snap hook's retaining screw. Adjustment of this screw will damage the blade. The ***LoadCell's*** electrical cable may be coiled up for storage. However, care should be taken to prevent the electrical cable from being crimped. The electrical cable should be cleaned and inspected for damage prior to and after each usage. ***LoadCells*** should always be carried by the jack assembly and never by the electrical cable. Doing so could do damage to the internal electrical connections. Connectors should also be inspected for damage (bent or broken pins) and/or foreign materials lying between the pins prior to and after each usage.

When transporting the ***LoadCell*** to and from the job site, it is suggested that the ***LoadCell*** be secured in a PVC tube that is long enough to insure that the snap hook will be protected, with the jackscrew of the ***LoadCell*** secured against the inner wall of in the PVC tube. It is further suggested that the ***LoadCell*** should be prevented from rolling freely in the transport vehicle.

LoadCell Cleaning

Although the ***LoadCell*** is sealed to protect the electronics inside, always avoid Immersing the ***LoadCell*** in the product within the tank being tested. If, however, the ***LoadCell*** is submersed in the product it should be cleaned thoroughly with a diluted solution of mild detergent and water.

Sonde

Six (6) “double A” (AA) batteries operate most of the ***Sonde***. It is recommended that batteries be removed when the units are being stored for extended periods.

Installation of the batteries is performed by loosening the two (2) stainless steel screws at four (4) pin Cannon connecter end of the ***Sonde*** and swinging open the single hinged cap. When inserting the batteries into the battery tubes make sure that there is uniformity of battery polarity (+ to –, or – to +) within each battery tube. It is important to remember that the spring end of each battery tube is designated as the negative terminal of each battery tube.

WARNING: Never attempt to clean the pogo pins or pogo pin contact block within the cap of the ***Sonde*** with abrasive materials. Doing so will cause damage.

Sonde Cleaning

When cleaning the ***Sonde***, **ALWAYS** avoid wetting the microphone. Wetting the microphone will destroy the auditory acuity. Clean the body of the ***Sonde*** with a diluted solution of a mild soap and water.

Probes

Alert Technologies Probes are thin wall aluminum tubing and care should be taken to prevent damage. They must be clean, sealed tightly, and dent free to work properly.

TANK TESTING PROCEDURE

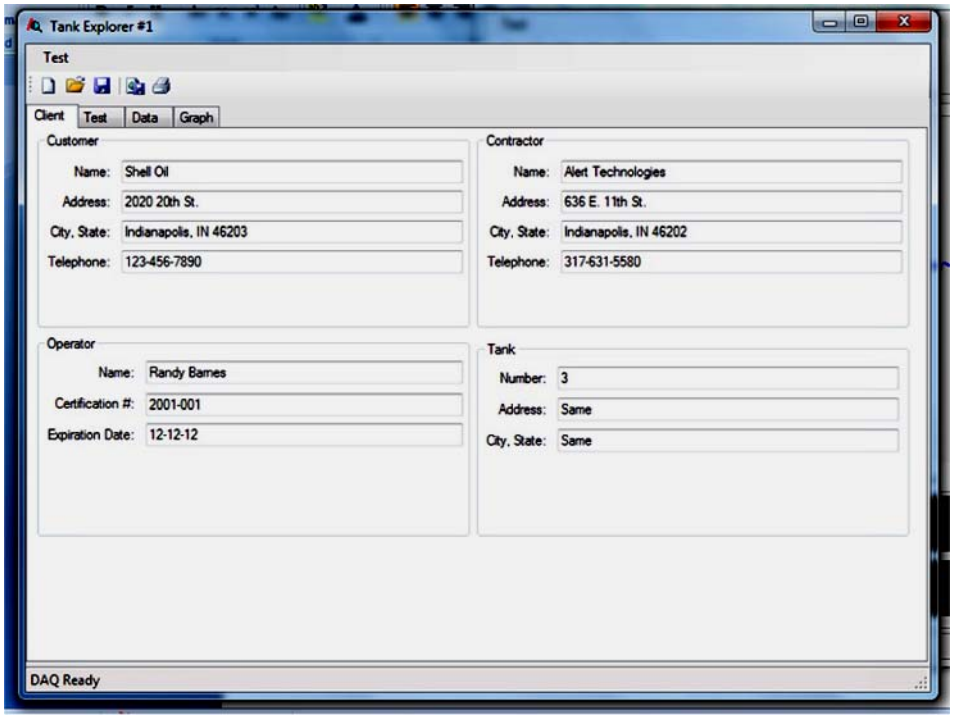
Process and Procedure

The tester, to insure the safe completion of the tank test, should perform a site survey and secure the area being tested.

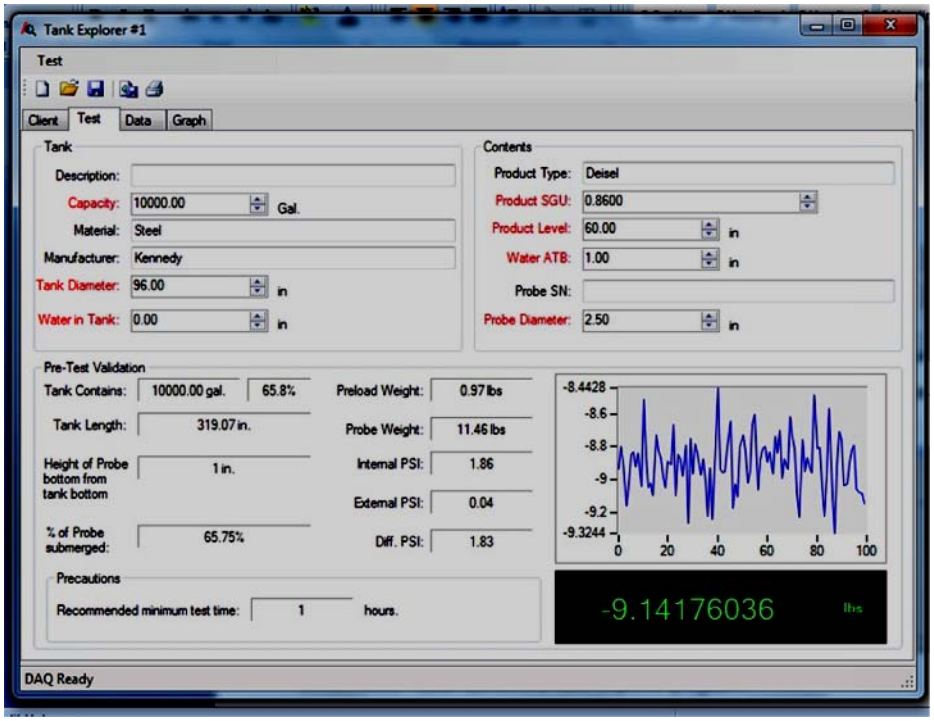
Remove the covers of the access port to assess the condition of equipment below ground level. Make notes of tools needed and any unusual condition that may affect the process of the test or the safety of the tester.

Set up computer and activate the Tank Explorer program.

Enter the required information on the “Client” tab in the Tank Explorer program (underfill).



Move to the “Tank” tab and enter tank data. Fields in **RED** are required for pre-test calculations and or leak rate calculation.

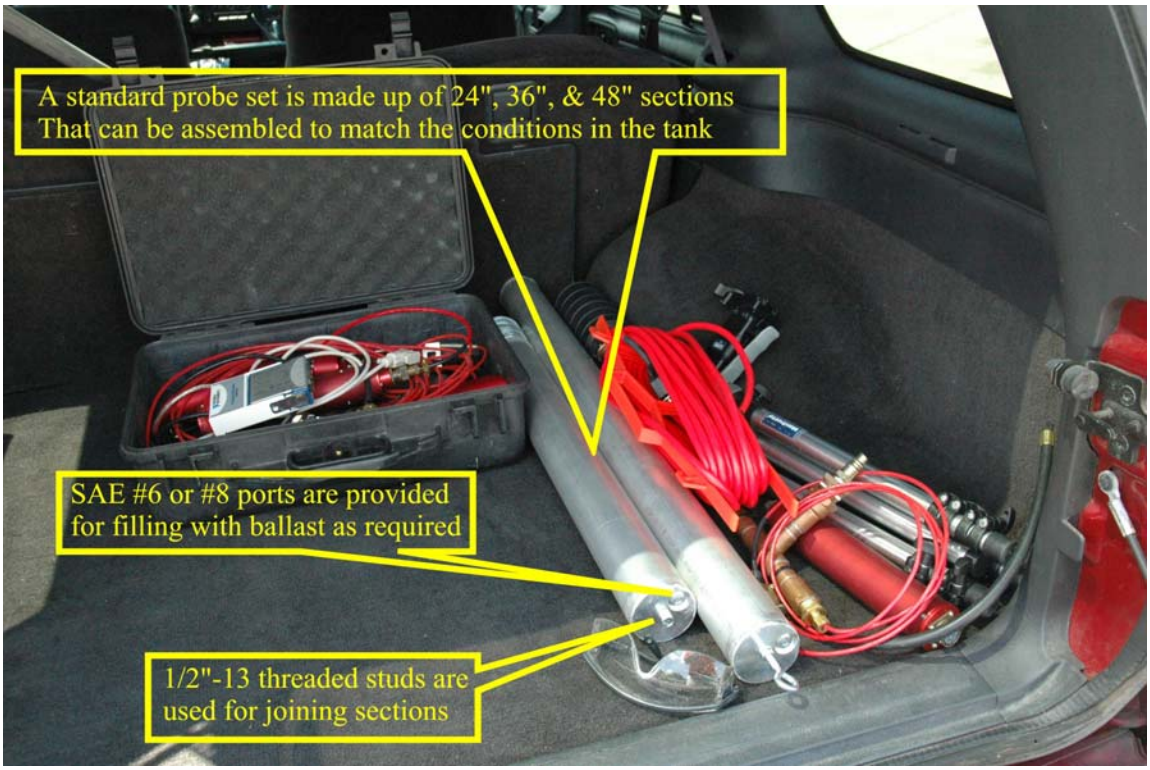


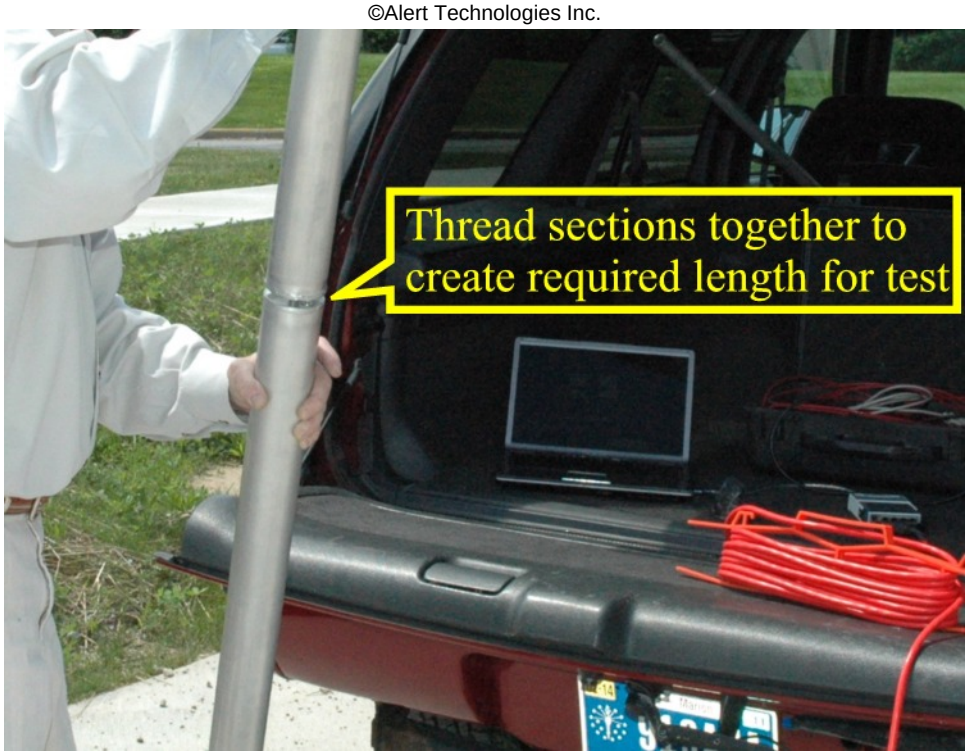
1. Tank **Capacity** is usually available at the site.
2. **Tank diameter** is determined by subtracting the length of the drop tube from the depth to the bottom of the tank.
3. **Water in tank** is determined using water finding paste on the tank level stick.
4. **Product SGU** or specific gravity can be measured with a hydrometer or obtained from material data sheets at the tank site.
5. **Product level** is determined by “sticking” the tank and measured from the bottom.
6. **Water ATB** (above tank bottom) is the level of water outside of the tank and measured from the bottom of the tank to the ground water level.
7. **Probe diameter** is the diameter of the probe used in the test. Standard probe diameter is 2.5 inch (6.35cm).

Enter this data and the **Pre-Test Validation** section will present vital data for setting up the system and testing the tank.

Key to the set-up are

1. **Height of Probe** is the position of the probe above the bottom of the tank when positioned in the tank.
2. **Probe weight** is the approximate downward force exerted on the load cell when the probe is positioned.
3. **Probe Weight** is what the probe should weigh including the chain prior to insertion into the tank.
4. **Differential PSI** is the effective difference between the pressure inside the tank and outside the tank. See **Water Protocol** for a complete description.
5. **Recommended minimum test time** is determined by the software based on conditions in the tank and based on our USEPA certification requirements. Refer to certifications for details.





Underfill Set-up and Test

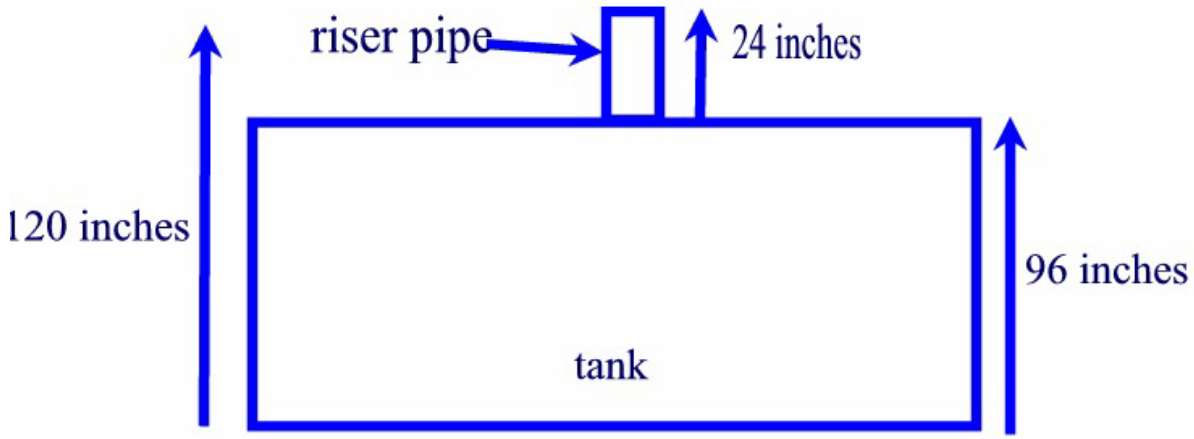
1. Determine the length of probe required. **The probe should be the shortest possible length that allows for positioning 1 inch (2.54 cm) above the bottom of the tank without completely submerging the probe.**
   *** A submerged probe will not work.**
   ****At Least 60% of the Probe assembly must be submerged.**
2. Position the probe on the plastic gutter 1 inch from one end.

3. Set the load cell with the insertion tool attached in the gutter at a position that would place the bottom of the load cell near the top of the inside of the tank.
4. Connect a section of chain between the probe hook and the load cell hook removing all slack so that when it is installed in the tank all positions will stay relative.
5. Weigh the probe and chain and adjust the weight to the recommended probe weight number in the pre-test data section.
6. Using a piece of tape or marker, mark the position on the insertion tool that relates to the top of the riser. When the assembly is lowered into the tank to this mark the probe should be positioned 1 inch above the bottom.
7. If nessesary, install pedal blocks on the load cell to adapt to the correct size drop tube.
8. Disconnect the chain from the load cell and lower the probe assembly into the tank using a long screw driver through the chain to support the probe in the tank.
9. Attach the load cell to the chain and lower the system to the mark on the insertion tool and tighten the jack assembly by rotating the top of the tool counter clock-wise. **Caution: do not let go of the lower section of the insertion tool until you are sure the system is solidly locked into the riser.**
10. Once the load cell is firmly clamped in the riser the insertion tool can be removed. It is a good idea to cover the opening at this point to help stabilize temperature inside the tank.
11. Plug the load cell into the USB Signal conditioner and verify that the pre-load is within range. See “The Test” section.

Determining the level of the product inside of the tank. Prior to inserting measuring device into the tank apply a *water indicating paste* to the end of the measuring device. This will notify the technician of the presence water inside of the tank.

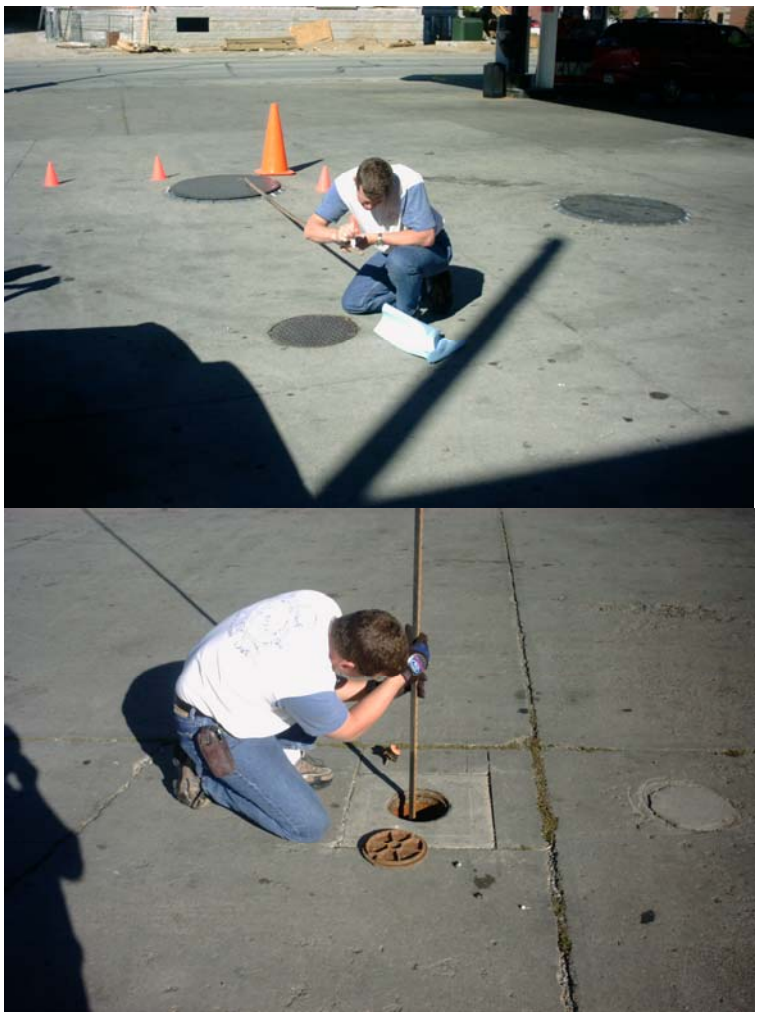
Total distance from top of riser to the bottom of tank equals 120 inches. Subtract riser pipe length of 24 inches to get the approximate diameter of the tank, 96 inches.

120 - 24 = 96



It is required that the specific gravity of the product be determined. This is accomplished by the use of a hydrometer. Using a bailer remove a sample from the tank and use a hydrometer with a scale of at least .650 to 1 sgu to determine specific gravity. The accuracy of this data determines the accuracy of the probe weighting and good numbers can save time.

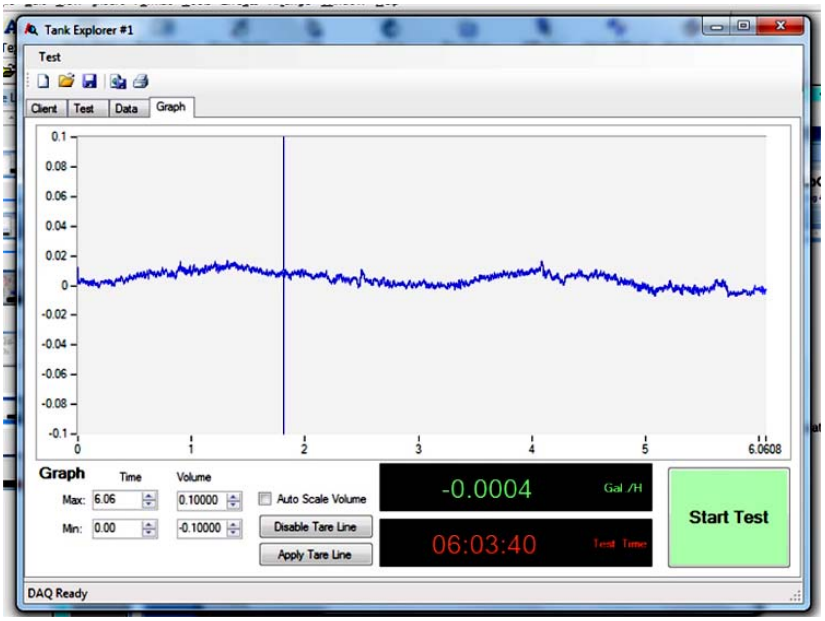
Checking ground water outside of the tank is done at the monitoring well.



The Underfill Test

1. Enter data in the “Client” and “Test Tab” as described above. Then click the save icon.
2. Plug the Load Cell into the USB Signal conditioner Channel “0” port while monitoring the “Test Tab”.
    a. The load cell output in the lower right should read between .5 and 1.7 pounds. If the load is out of this range the probe weight should be adjusted.
3. Go to the “Graph” tab and click on Start in the lower right corner.
    a. The System will take 20 to 30 seconds to tare in the load cell and then begine to collect data.
    b. During the test you can zoom into the graph by adjusting the Volume settings from ± 1 to ±.1. You can also vary the time display on the graph.
4. The recommended test time is automatically displayed but the test will continue to run until you stop it.
5. The Calculated “Leak Rate” and “Test Time” are displayed at the bottom of the window.

6. As a rule the system will take a few minutes to settle in. This frequently presents the need to adjust the front of the test by removing the early data.
    a. This is done by the “Enable Tare Line” and dragging it to a point where the data levels out. When you click on apply it will recalculate the leak rate from that point.
    b. You can re-enable and move the tare line any time during the test but once you save the test it is locked in.
7. When the required data has been collected and the tare line adjusted for lowest leak rate the test needs to be saved.
    a. Click on the “Save Data” icon to the right of the save icon, select the location you want to save the file (best if kept in the same folder as the Client information).



Reattach the insertion tool to the LoadCell. Loosen the jack assembly by turning the inner shaft of the Insertion Tool clockwise. Slowly lift the assembly high enough to place the long handled screwdriver into the eyebolt of the probe Cap or extension chain.

Remove the LoadCell. Carefully lift the probe out of the tank. Pour the ballast out of the probe. Return the probe(s) and LoadCell(s) back to the service truck.

Replace all covers and remove any debris from work site. Remove Barricades when job is completed.

ULLAGE TEST PROCEDURES

The Alert 1050 and 1050X Ullage Systems are certified to test up to 8,000 gallons of ullage space at a positive pressure of 1.5psig and to 24,000 gallons of ullage space at a negative pressure of 1.5psig (42 inches of water). The actual test duration is five (5) minutes following tank pressurization. Total time to perform the test is approximately thirty minutes per tank including set-up and breakdown.

Seal all openings to the tank.

Remove the Pressure/Vac-Valves from the vent lines and install the nitrogen injection caps or plug the vent lines with friction or inflatable plugs. If plugs are used, nitrogen must be introduced to the system through the Ullage plug.

For suction systems, the product line(s) must be isolated from the dispenser(s).

Plug the Stage I Vapor Recovery opening. Use the proper brass plug that fits in the ball float cage tee extractor assembly, or an inflatable rubber plug.

For manifold vent systems use an inflatable plug positioned above the manifold tee on the system being tested. Plug the other systems with brass plugs or inflatable plugs until they are to be tested.

If a stage II Vapor Recovery system is installed (weather used or not), you may either plug off the return ports at the collection tank(s) or disconnect the gathering lines at the dispenser and plug or cap the line openings.

Install the Sonde so that the transducer at the bottom of the Ullage Sonde is at least four to six inches below the base of the riser. **NEVER SUBMERGE THE ULLAGE SONDE INTO THE PRODUCT BEING TESTED.**

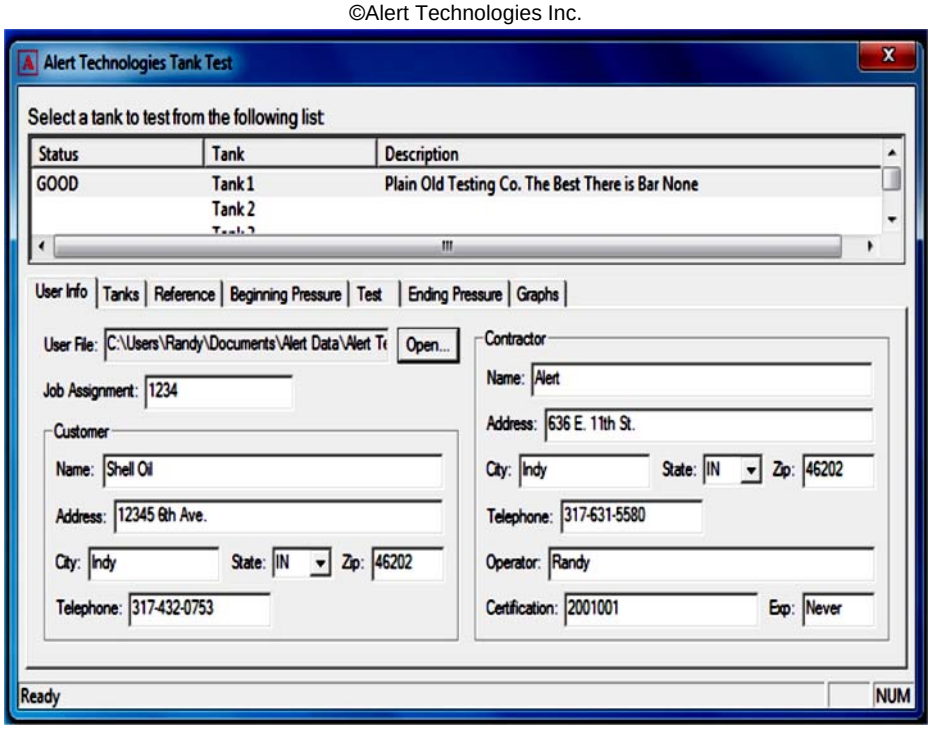
Connect the Ullage Sonde to the cable at the bladder-end of the Ullage Plug. Lay Ullage Sonde and Ullage plug into vinyl gutter. Measure upward from the transducer and mark the spot onto the cable, at the valve end of the Ullage Sonde Plug, to the length of the riser plus four inches.

Lower the Sonde and Ullage Plug into the riser. Inflate bladder until it fits snuggly in the riser. Lower the Ullage Sonde so that the mark made on the cable is at the head of the brass friction adaptor fitting atop the Ullage Plug. Secure the cable by turning the brass fitting clockwise.

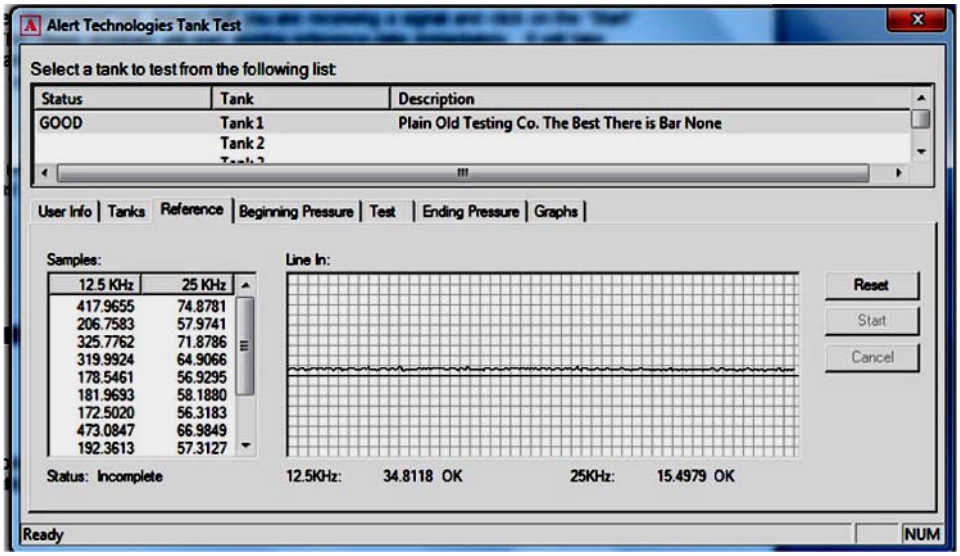
Connect the Ullage cable to the USB Signal Conditioner and attach it to the computer.

Open the Ullage program on the PC. On the “User Info” tab enter the User, Customer, and Contractor information.

Move to the “Tank” tab and complete this information.



Select the “Reference” tab, insure that you are receiving a signal and click on the “Start” button. The Ullage program will start storing reference data immediately. It will take approximately one minute before the tables on the left of the screen will begin to fill in (this timed will vary depending on the processing speed of the computer).



After two minutes the reference test will end. In the lower left corner the program will display the “Status” of the reference test. If the status is “OK”, go to the next step. If the reference is high or noisy, find the source of the noise and correct it. If the reference is low check the Sonde batteries and inspect the transducer for debris or damage.

Nitrogen Source setup.

If the ground water is above the level of the product, a pressure test **must** be performed. It will be necessary to calculate the existing pressure on the tank and calculate the necessary pressure to overcome it.

Example:
If the level of the water in the backfill area is thirty inches above the product level, the test pressure must be:

30 X 0.036 = 1.08 psig + 1.5 psig = 2.58 psig

Use the calculated test pressure for pressure testing.

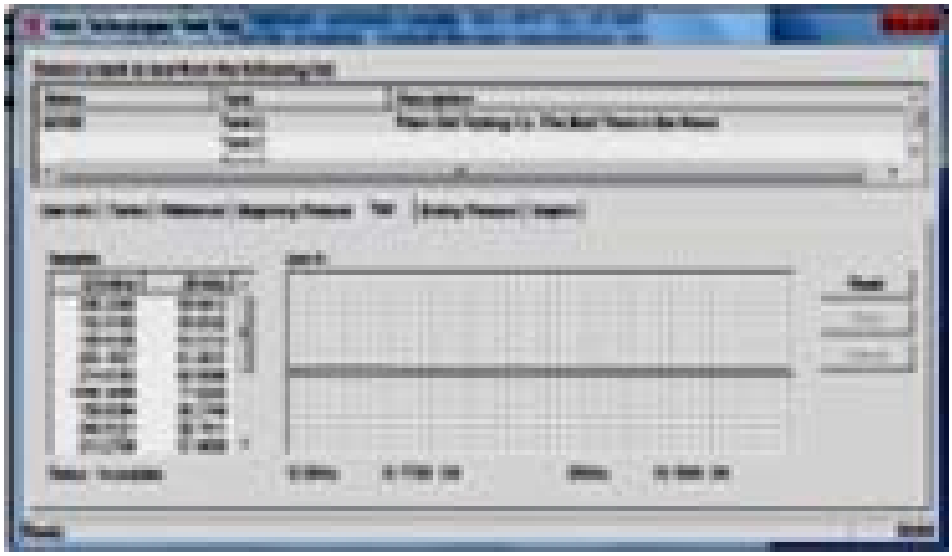
Vacuum testing is performed at 1.5 psig of vacuum, provided that the water table is below the product level.

Install a 0.5 to 3.0 psi pressure regulator onto the nitrogen cylinder. When installed, slowly open the nitrogen supply valve. Adjust the regulator to 0 psig (closed). Record the beginning cylinder pressure

Select the “Beginning Pressure” tab. Input the beginning pressure (bottle) and the tank pressure (+/- 1.5 LB/IN Sq.) in LB/IN Sq.

Apply pressure or vacuum to the tank. Be careful not to overpressure the tank. When adding pressure account for the existing head pressure of the liquid mass on the bottom of the tank. Do not exceed the tank manufacturers maximum pressure (usually five LB/IN Sq.) at tank bottom. When using a vacuum 1.5LB/IN Sq. is typical. Consult the tank manufacturer for specific tank limits.

Enter data in the “Beginning Pressure” window and go to the “Test” tab.



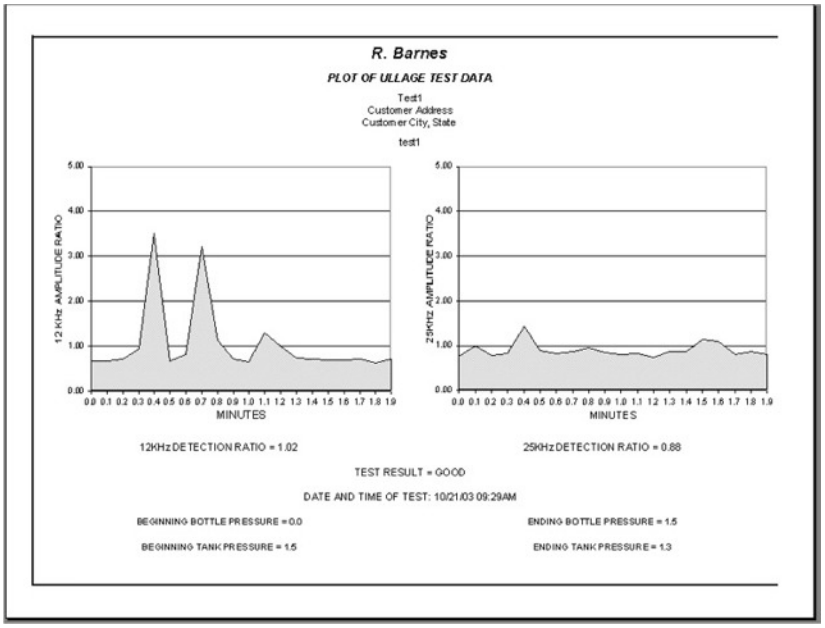
Click on the “Start” button.

This runs the same way as the reference portion of the test.

When the test is finished, select the “Ending Pressure” tab. Input the ending nitrogen pressure and the ending tank pressure.

Go to the “Graph” tab and click on “Generate Graph”

The graph will open as an Excel spread sheet for printing.



Close the spread sheet and “X” out of the Ullage program.

At this point it will ask if you wish to save the test file. Click “Yes” and save it to the desired folder.

Depressurizing and Rig-Down Testing Equipment

Close the nitrogen injection supply valve and disconnect the nitrogen supply line. Open the supply valve and vent the system. Rig-down all of the testing equipment and stow equipment. Replace all covers and remove debris from worksite. Remove safety barricades when job is complete.

Water Protocol (Underfill)

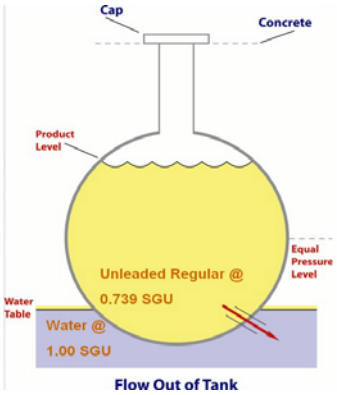
For foreign liquids to flow into or product flow out of the storage cell (leak) a pressure differential of plus (+) or minus (-) 0.2 psi is needed. The product inside of the tank and ground water outside of the tank that is above the tank bottom (ATB), creates this pressure differential. Simply stated, if the internal tank pressure equals the ground water pressure external to the tank, within a range of positive +0.2 psi and a negative -0.2 psi, a state of equilibrium exists and a no flow condition (leak) exists. Under this condition the Underfill test cannot proceed.

Where: Hpr = Product height in tank
Psgu = Product specific gravity
Hgw = Ground water height external to tank
Constant = 0.036 (conversion of height in inches to Pressure in psi)
Hpr(0.036) (Psgu) = internal tank pressure
Hgw(0.036) = ground water pressure

If the condition exists where the product height is 31 inches and the products specific gravity is 0.763 with an external water height ATB of 12 inches, the equation below can be applied.

31(0.036) (0.763) = 0.852
12(0.036) = 0.33
0.852 – 0.33 = 0.522

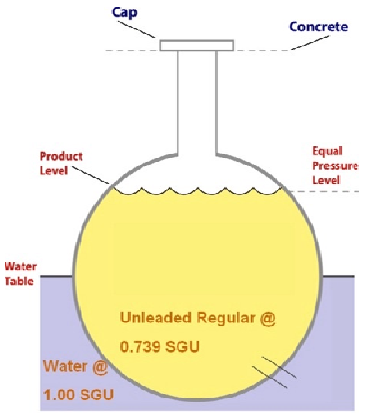
A positive pressure of 0.522 psi exists and there will be flow of product through a defect below the product level inside of the tank. The positive pressure of 0.522 exceeds the 0.2 psi differential required for a leak to be detected.



However, if the product level is at 23.5 inches, with a specific gravity of 0.763 and the external ground water height is at 18 inches, the equation below applies.

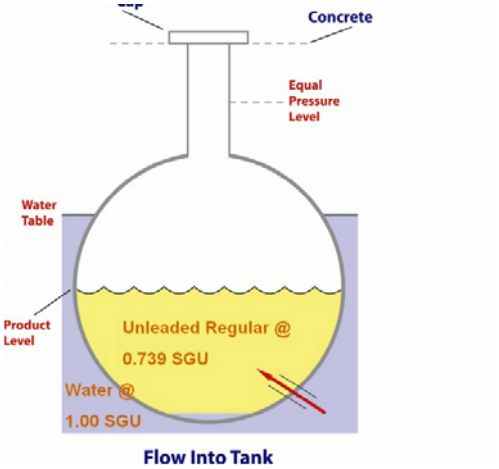
23.5 (0.036) (0.736) = 0.645
18 (0.036) = 0.648
0.645 – 0.648 = -0.003

A negative pressure of –0.003 exists and the tank is said to be at equilibrium. Even if there is a defect in the tank below the product level there will be no flow into or out of the storage cell.



No Flow

If the pressure of the HGW is greater than the pressure exerted by liquid inside of the tank (greater than -0.2 psi) ground water will penetrate the defective wall of the tank.



Flow Into Tank

If equilibrium exists steps must be taken prior to continuing with the Underfill test. The test can be successfully completed provided that A) the water level measured in the tank is less than 1/8 inch. B) If water is found in the tank, the ground water level must be determined. This is done by checking the water level at the monitoring well, by drilling a new well, or by consulting local geological information. C) If water is present within the tank and the ground water level cannot be determined, the test must be ran at two different fluid levels separated by 0.4 psi. These tests can be performed by either raising or lowering the fluid level or by applying a positive or negative pressure to the ullage portion of the tank. The tank test can be run when equilibrium does not exist.

Software Installation Instructions

These instructions are intended as a general instruction to help install the Tank Explorer 2010 and the USB Ullage on the same computer. The user will need to adjust the standard installation of the Tank Explorer program since the two programs were designed to be independent programs.

Tank Explorer 2010 Installation

1. Insert the Alert Technologies Tank Explorer 2010 DVD-Rom.
2. Using windows file manager open the file named “TankExploreSetup.exe”.
3. At the “Tank Explorer Setup” dialog box select “OK”.
4. When the “Tank Explorer Setup: Installations Options” dialog box opens, select “Install NI Drivers” and “Install TankExplorer 2010” and hit the “Install” button.
5. Select “OK” at the notification box “When the NI installation is done, do not restart the machine”.
6. When the “NI-DAQmx 9.2.1” asks for the installation directory do not change the default directory, Select “Next”.
7. Alert Technologies recommends using a “Typical” installation.
8. Do not allow program updates. This may affect the Alert Technologies software. Then select “Next”.
9. Select “I accept the License Agreement” for National Instruments, then hit the “Next” button.
10. Select “I accept the License Agreement” for Microsoft, then hit the “Next” button.
11. If no changes need to be made, hit “Next” to start the installation process. This part can take 30 minutes or more. At the “Installation Complete” message select “Next”.
12. When the NI-DAQmx 9.2.1 installer asks, select “Restart Later”.
13. The “Tank Explorer” program will now start to install. When setup wizard asks, hit the “Next” button.
14. At the “Select Installation Folder” use the default location and “Everyone”, then select “Next”.
15. Select “next” at the “Confirm Installation” dialog box. When the “Installation Complete” is displayed select “Close”.
16. At the “Tank Explorer Setup” prompt, select “Yes” to reboot the system.
17. After the computer reboots plug in the “Alert Technologies High Speed USB Carrier” into an available USB port. The computer will install the drivers for the USB device automatically. Another restart may be required at this time.
18. After the computer restarts plug the “High Speed USB Carrier” into an available USB port.
19. Windows will find the new device and install the drivers for it.
20. Open the “National Instruments” Program in Program Files and click on “Measurement & Automation”.
21. Click on “Devices and Interface”, highlight the “NI USB-9237 xxx”. The flag will turn green when the Signal Conditioner is recognized. Close the National Instruments Program.
22. Open The Tank Explorer 2010 Program and click on hardware. Click on Channel “0” to open the channel setup window.

23. At the “Physical Channel” window hit the down arrow and click on “dev xxx 0”. Select “Swap Units” to determine Liters or Gallons, when finished click “Start”.
24. Now plug a LoadCell into channel “0”. The load on the LoadCell will be displayed in the black window. If the reading is 123.456xxx the LoadCell was not recognized. Go back to step 22. A number that changes indicates the load on the LoadCell should be displayed. Click on “save”
25. Click on “Hardware” and repeat steps 23 through 25 for channels 1, 2 and 3.
26. Tank Explorer 2010 is complete.

USB Ullage Instructions

Use the following step by step instructions to install the Alert Technologies USB Ullage program. You will need to restart your computer during this process. Please finish other work and close all other programs before starting the software installation. Performing any steps out of this order will make the installation more difficult.

1. Install the CD-ROM or the downloaded file.
2. Open the folder named “Alert USB Ullage”. Run “setup.exe”.
3. At the “Ullage Setup Wizard” dialog box, select “Next”.
4. At the “Select Installation Folder” dialog box, select “Next”. If you change the directory from the default location it will make future troubleshooting difficult.
5. At the “Confirm Installation” dialog box, select “Next”. For Windows 7 only: at the Windows “User Account Control” Dialog box select “Yes” to allow the installation program to run.
6. At the “Installation Complete” dialog box, select “Close”.
7. On the Desktop there are two new icons, “Ullage” and “InstaCal Installer”. Double click on the “InstaCal Installer” icon. For Windows 7 only: at the Windows “User Account Control” Dialog box select “Yes” to allow the icalsetup.exe program to run.
8. At the “Win-Zip Self-Extractor” dialog box, select “OK” for the program to install.
9. At the “Win-Zip Self-Extractor – icalsetup.exe” dialog box, select “Setup” to continue the installation.
10. When the “InstaCal for Windows – InstallShield Wizard” Dialog box opens, Select “Next”.
11. When the “InstaCal for Windows – InstallShield Wizard” Dialog box asks for a “Destination Folder”, Select “Next”. If you change the directory from the default location it will make future troubleshooting difficult.
12. When the “InstaCal for Windows – InstallShield Wizard” Dialog box asks “Ready to Install the Program”, Select “Install”.
13. When the “InstaCal for Windows – InstallShield Wizard” Dialog box says “Installation Wizard Completed”, Select “Finish”.
14. The “InstaCal for Windows Installer Information” will ask you to restart your computer. Restart your computer before continuing.
15. Delete the “InstaCal Installer” icon. It will no longer be needed.
16. Plug in the Alert Technologies USB Ullage Cable. This is the box with an USB cable on one end and a 37-pin connector on the other end. You do not need the Sonde or other cables at this time. Windows will automatically find and install the hardware drivers at this time. Windows will only notify you of the hardware installation the first time the USB cable is plugged into the computer.

17. Select the “Start” menu. Open “All Programs”. Find the folder for “Measurement Computing”. The program “Instacal” should be listed. Start the program “Instacal”.
18. The “InstaCal” program dialog box opens. “InstaCal” should open a new dialog box called “Plug and Play Board Detection”. The program should detect a board named “USB-1408FS (Serial# XXX)”. If the Plug and play detection does not appear close the program. The most common reason for not detecting the board is Windows has disabled the device because the user plugged it into the computer too soon.
19. Select “OK” at the ”Plug and Play Board Detection” dialog box.
20. Verify the PC Board list only contains “Universal Serial Bus”. The only item in the list should be: “Board#0 – USB-1408FS (serial# XXX)”. Delete any extra boards. The “USB-1408FS (serial# XXX)” must be listed as board #0, if it is not, change it to board #0. If the list is correct close the “InstaCal” program.
21. For Windows7 installations only: The Ullage program must be run in Windows XP SP3 compatibility mode to save test data. If the “Service Pack 3” has not been installed, please update the PC before continuing. To set the program in compatibility mode, first right click the Ullage icon. Select “Properties” from the bottom of the list. In the “Properties” dialog box, go to the “Compatibility” tab. On the “Compatibility” tab, select the box marked “Run this program in Compatibility mode for”. Set the compatibility mode selection to “Windows XP Service Pack 3”. Select “OK” to save the change and close the “Properties” dialog box.
22. Open the “Ullage” shortcut on the computer desktop.
23. To test if the Ullage program can find the device select the “Reference” tab. If you have a signal in the “Line In” window the software is installed correctly. If the “Line In” window says “Analog input board #0 not installed” the hardware drivers did not install correctly or the USB cable is unplugged. Check the “InstaCal” program board list again to see if the board is listed.