Aboveground Storage Tank Installation and Modification PA Certification Renewal Course

Presented By:

Doug Kassay

Keystone Petroleum Equipment

PADEP Regulations of 2018

- The current version of the PADEP regulations that we are under went into effect on 12/22/2018
- Most of the changes were directed towards UST's & Owners and Operators of tank systems
- Very little changes in the regulations affect your AMMX or AMNX certifications, if you see ★ in the presentation then it means a change because of the 2018 regs

PADEP Regulations of 2018

- As a responsible AMMX or AMNX individual you should be at least able to direct your customers to the regulation changes that affect them
- The next two slides are the highlights of the regulation changes that affect ASTs from the owners & operators perspective

PADEP Regulations of 2018

Subchapter G: Technical Standards for Small ASTs	
Required revisions or addendums of Spill Prevention Response Plans to be submitted to the Department within 180 days.	245.603(a)
Required owners and operators of AST facilities with an aggregate aboveground storage capacity greater than 21,000 gallons to maintain a written or electronic log. Each entry shall include, at a minimum: 1. the name of the certified individual, 2. the individual's signature or equivalent verification of presence onsite, 3. the company name, 4. the date of work, start and end times, and a brief description of work performed, including tank identification.	245.603(c)
Added variance provisions for ASTs equal to or less than 21,000 gallons in capacity.	245.606
Required spill prevention equipment to be permanently installed.	245.612(d)(1)
Clarified that AST systems and AST system components must be maintained in a good state of repair to ensure they function as designed.	245.612(h)

Added minimum testing requirements for cathodic protection systems. 1. Sacrificial systems – Once every 3 years 2. Impressed current systems – Annually 3. Rectifier checks – Once every 60 days	245.613(c)
Added recordkeeping requirements for log entries required under 245.603(c).	245.615(b)(8)
Added recordkeeping requirements for cathodic protection tests.	245.615(b)(9)-(10)
Reduced the In-Service Integrity Inspection interval from 10 years to 5 years. New inspection schedule will be set at next scheduled inspection.	245.616(c)
Aboveground storage tanks shall be permanently closed within 5 years of being placed TOS unless the owner requests an extension in writing and the Department approves the request	245.617
Separated the requirements for permanent closures or changes in service of ASTs from the requirements for Temporarily Out-of-Service ASTs. Clarified requirements for closure or change-in-service.	245.618

PADEP Regulations of 2018

Subchapter F: Technical Standards for Large ASTs and ASTs in Underground Vaults	
Added all ASTs in underground vaults to the requirements under Subchapter F.	245.501
The Department will publish notice of approved variances in the Pennsylvania Bulletin.	245.503(6)
Required revisions or addendums of Spill Prevention Response Plans to be submitted to the Department within 180 days.	245.512
Required owners and operators of ASTs in underground vaults to check the continuous leak detection systems, required under 245.523(7), to ensure the equipment is functioning as designed, as part of their 72-hour visual inspections.	245.513(b)(1)(iii)
Required owners and operators of AST facilities with an aggregate aboveground storage capacity greater than 21,000 gallons to maintain a written or electronic log. Each entry shall include, at a minimum: 1. the name of the certified individual, 2. the individual's signature or equivalent verification of presence onsite, 3. the company name, 4. the date of work, start and end times, and 5. a brief description of work performed, including tank identification.	245.514(b)
Added recordkeeping requirements for log entries required under 245.514(b).	245.516(c)(8)
Added recordkeeping requirements for cathodic protection tests. 1. Last two cathodic protection test results 2. Last three rectifier readings for each 60-day period	245.516(c)(11) and 245.516(c)(16)
Clarified that tank bottoms that are not adequately protected from corrosion and deterioration shall be upgraded.	245.531
Added minimum testing requirements for cathodic protection systems. 1. Sacrificial systems – Once every 3 years 2. Impressed current systems – Annually 3. Rectifier checks – Once every 60 days	245.532

Clarified that coatings or lining systems used to protect a tank interior from corrosion and deterioration must be bonded firmly to the interior surfaces of the tank.	245.534(a)
Required shutdown procedures used for overfill prevention to be in writing, and provided to the Department upon request.	245.541(b)(2)
Clarified that newly installed or replacement emergency containment structures or emergency containment structures for aboveground storage tanks installed after 10/11/1997 must be 1×10^{-6} cm/sec	245.542(1)
Clarified that only aboveground storage tanks installed on or before 10/11/1997 can meet the SPRP + Professional Engineer emergency containment option	245.542(2)
Clarified that water must be removed from emergency containment structures before it comes into contact with the AST or piping.	245.542(f)
In-service Integrity Inspection interval for ASTs in underground vaults greater than 5,000 gallons in capacity, and ASTs in underground vaults storing highly hazardous substances greater than 1,100 gallons in capacity shall be: 1. within 6 and 12 months of installation 2. at least every 3 years thereafter New inspection schedule will be set at next scheduled inspection.	245.551(d)(5)
Aboveground storage tanks shall be permanently closed within 5 years of being placed TOS unless the owner requests an extension in writing and the Department approves the request	245.562(f)

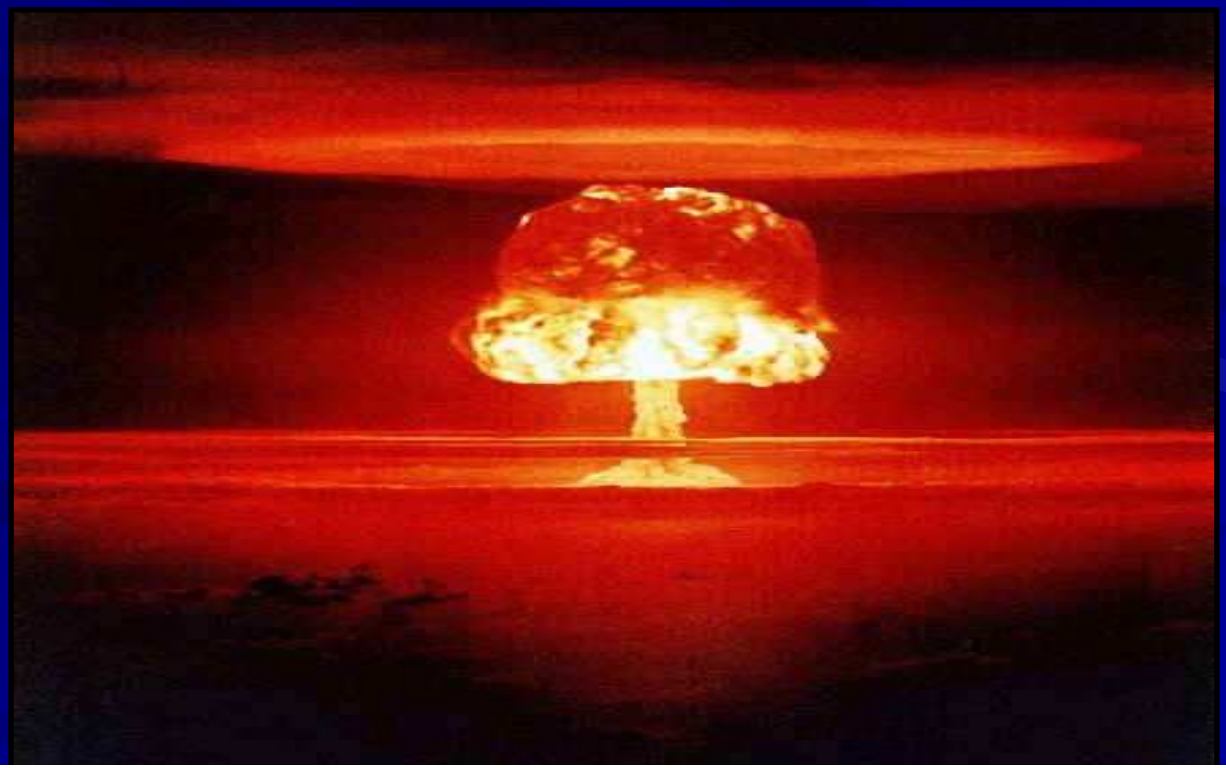
Module 1
Safe Practices and Requirements in the Installation of ASTs

Health and Safety

- Causes of Accidents
- Hazards and hazard information
- Training
- Safety Equipment
- Safety Meetings, Inspections, and Checklists
- Planning for a safe job

What Causes Accidents?

- Improper training
- Taking shortcuts / Cutting corners
- Complacency
- Distractions / Loss of focus



Hazards

- Confined Space / Asphyxiation
- Chemical Exposure
- Trauma / Blunt Force
- Fire
- Weather
- Tripping

Tripping

- Tripping is always a leading cause of jobsite injury
- Chords, slippery surfaces, poor house keeping *(PUT AWAY TOOLS NOT BEING USED),* debris, doorways

Safety Training and Documentation

- All workers should have general nationally recognized training (ie OSHA 40hr)
- General training requires an annual 8 hour refresher course
- Workers should also be trained in safety issues specific to the job
- Emergency response and safety plans should be reviewed and on site
- Confined space entry permit
- Material Safety Data Sheets (MSDS) should be available for each potentially hazardous substance involved with the job

Safety Equipment

- Harness, Helmet, Respirator, Air Filter, Explosive Gas Meter, Splash Suit, Eye Protection, Steel Toe Boots
- Communication Devices; radios, cell phones, landline
- All relevant safety contact information should be readily available

Safety Equipment

- The atmosphere of any modification requiring tank entry should be continuously monitored for the presence of hazardous vapors
- An explosive gas meter should be able to warn you about

1. Explosive Environment
2. Oxygen Concentration Should be between 19.5%- 23.5%

Safety Walkaround-Inspection Checklist

Jobsite Location _____ **Ticket/Serial No.** _____
Date of Inspection _____
Time of Inspection _____
Supervisor/Foreman Name(s) _____
_____

Specific Job Hazards/Conditions
- ☐ _____
- ☐ _____
- ☐ _____
- ☐
- ☐ _____

Existing Utilities
- ☐ Support adequate
- ☐ Loose materials
- ☐ Utilities identified and protected
- ☐ White paint/flags
- ☐ Lawful dig ticket in hand

Weather
- ☐ Overnight freezing
- ☐ Rain

Personal Protective Equipment
- ☐ Reflectorized vests in vehicular areas
- ☐ Hard hats, steel-toe shoes, etc. being used as specified

General Observations and Conditions
- ☐ Weather _____
- ☐ Traffic _____
- ☐ Terrain _____
- ☐ Other _____
  _____

Comments/Notes:
_____
_____
_____
_____
_____

(Back of page to list local emergency contact information)

Elements of an Effective Jobsite & Safety Plan

- Training and Meetings
- Emergency Response
- Site Access
- Security
- Municipal and Community Concerns
- Site Specific Conditions
- Weather Impact and Control
- Subcontractors

Elements of an Effective Jobsite Safety Plan

- Excavation
- Confined Space
- Personal Protective Equipment (fall protection)
- Hazardous Materials & Fire Prevention
- Tools, Heavy Equipment, Ladders, Welding Equipment
- Electrical Hazards
- Drugs, Alcohol, & Firearms
- Incident Management Procedures

Highlights from Module 1

- Keep training up to date
- All jobs should have a safety plan
- Maintain a safety checklist
- Do not work without the appropriate safety equipment
- Always protect your feet and eyes!

Module 2
Regulatory Requirements Regarding the Installation of ASTs

PA DEP & ASTs

- PA DEP defines an aboveground storage tank as a stationary tank with a capacity greater than 250gal that has more than 90% of its volume (including piping volume) above supporting grade, which can be visually inspected from the exterior and contains a regulated substance .
- AMMX certification category stands for “Aboveground Manufactured Metallic Storage Tank – Installation and Modification”
- ASTs are divided into large and small
  - Small ASTs are less than or equal to 21,000 gallons
  - Large ASTs are >21,000 gallons
- However there may be exemptions!

PA DEP *Most Common* AST Exemptions

- An AST <1,100gal used for storing motor oil or motor fuel for noncommercial purposes
- An AST storing heating oil consumed on the premises less than 30,000gal
- Most pipeline facilities
- Flow-through process tanks including but not limited to a pressure vessel and oil water separators
- Tanks regulated under the Solid Waste Management
- Farm Tanks <1,000gal

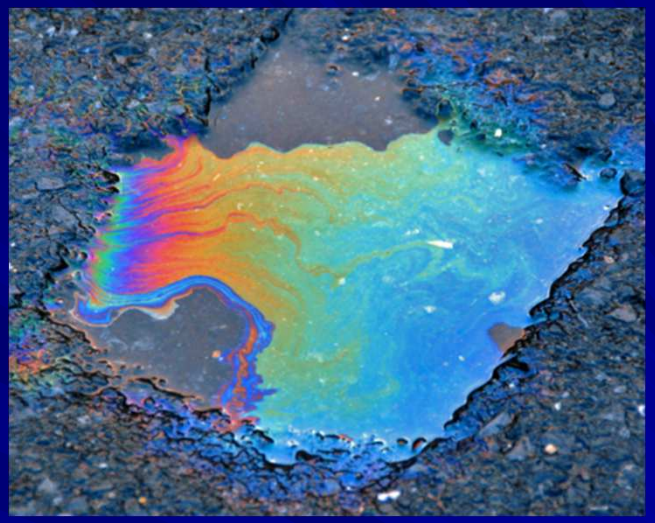
DEP Correspondence

- Reporting spills and obvious contamination
- Notice of Contamination
- SSIP
- 30 Day Installation/Closure Notification
- Registration Form
- Registration Amendment
- Modification Report

Reporting Releases & Contamination

- All PADEP certified individuals are required to report contamination to the appropriate regional office if encountered while performing a regulated activity
- Reportable Events:
  - A release of a regulated substance
  - Suspected or confirmed contamination of soil, surface or groundwater from regulated substances
  - A regulated substance observed in a containment structure or facility.

UMX/UMI Reportable Event Examples



- Obvious and/or suspected contamination includes the following:
  - Product stained or product saturated soil or backfill
  - Ponded product in an excavation
  - Free product or sheen on the water in excavation excavation
  - Hole in the piping or tank
  - Product in a containment sump

Notice of Contamination

What you must do:

- Verbal notification within 24 hours
- Written notification from the certified individual must be submitted within 48 hours of confirmation of the contamination (Notification of Contamination Form)

What else you should do:

- Inform the owner and make him aware that he also has responsibilities for making a verbal & written notice to the PADEP within 15 days
- Inform the owner that he should make notification to USTIF of the release; failure to notify USTIF within 60 days of the discovery of the release can result in USTIF denying the claim

When do I report?

Owner & Operators

- Any spill to soil or a waterway is reportable, this includes storm sewers
- A spill to an impervious surface in quantities greater than 25 gallons
- A spill to an impervious surface in quantities less than 25 gallons if you don't meet all 3:
  - Have control of over the release
  - The release is completely contained
  - The total volume of the release is recovered and removed within 24 hours of the release
- A release to a containment sump higher than the bottom of the first penetration
- After a failed or inconclusive investigation of a suspected release

If you make a notification of release to the PADEP you should also notify USTIF

§ 245.304. Investigation and reporting of suspected releases.

(a) The owner or operator of a storage tank system or storage tank facility shall initiate and complete an investigation of a suspected release of a regulated substance as soon as practicable, but no later than 7 days after the indication of a suspected release. An indication of a suspected release includes one or more of the following conditions:

(1) The presence of a regulated substance or an unusual level of vapors from a regulated substance outside of storage tank system components designed to routinely contain or convey product, at or near a storage tank facility.

(2) Evidence of a regulated substance or vapors in soils, basements, sewer lines, utility lines, surface water or groundwater in the surrounding area.

(3) Unusual operating conditions, indicative of a release, such as the erratic behavior of product dispensing equipment.

(4) The sudden or unexpected loss of a regulated substance from a storage tank system or the unexplained presence of water in a storage tank system.

(5) Test, sampling or monitoring results, including the sounding of an alarm, from a release detection method which indicate a release.

(6) The discovery of holes in or damage to a storage tank system during activities such as inspection, repair or removal from service.

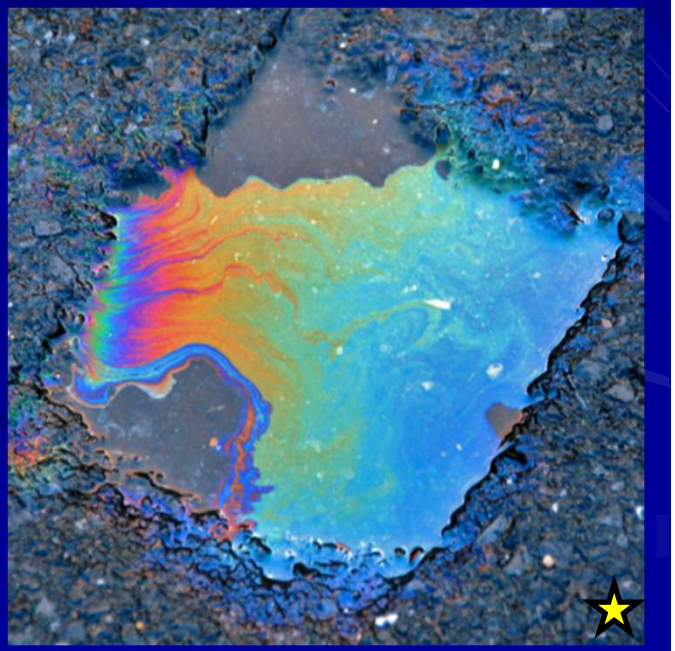
(7) Other events, conditions or results which may indicate a release.

When do I report?

installers & inspectors

- A release (any release regardless of gallons or where it occurred)
- Suspected or confirmed contamination
- A regulated substance observed in a containment structure or facility (make sure your sumps are clean and dry)
- Certified individual performing testing must report a failed test (sump, overfill, spill prevention testing)

A reputable certified company should also remind the owner to call USTIF



HOW DO I REPORT?

Notice of Release

(Owners & operators)

- Verbal notification to the PADEP (and any affected utilities) within 24 hours by owner/operator
- Written notification by owner/operator filed within 15 days to the appropriate regional office and local municipality (Notification of Reportable Release Form)

NOTICE OF CONTAMINATION

(INSTALLERS & INSPECTORS)

- If a certified individual is performing a regulated activity at a facility they are required to report
- A certified individual must submit a written notification within 48 hours (Notification of Contamination Form)
- Make sure to clean your sumps/spill buckets prior to inspection (A certified inspector must make a notification of contamination if we see water/fuel in a sump)

Notification of Contamination Form
Certified Individuals
Notification of Reportable Release
Owners and Operators

- They are the same form!!!
- Facility specific information

  Name, Address, DEP ID #, Municipality, Site Contact (operator), and phone #
- Owner Information:

  Name, Address, Phone Number
- Spill Information:

  Product, Quantity, Date of Event

  Have any remedial actions been taken???

  Is the release confirmed or suspected?

  How did the release occur and is it contained?

Site Specific Installation Plan (SSIP)

- A Site Specific Installation Plan must be **APPROVED** for any facility installing 21,000gal+ aggregate AST capacity before tank handling activities begin
- Typically an engineering firm will obtain the SSIP
- SSIP's expire five years from issuance unless an extension is granted
- SSIP application must show the location of the proposed tanks and a spill prevention response plan that includes the proposed tanks
- SSIP requirements exclude field constructed tanks that were previously closed

PA DEP Installation Notification

- 30 Day Notice is required for large ASTs only.
- A Site Specific Installation Plan must be **APPROVED** for any facility installing 21,000gal+ aggregate AST capacity before tank handling activities begin

PADEP Registration Form

- Used to register new tanks for use for a facility
- Make sure all of the information on the form is accurate
- This does not allow the facility to begin operation. A copy of the temporary permit must be available to receive a delivery.
- Make sure your client submits the signed registration form to PA DEP! Call DEP to confirm receipt.

Registration Amendment Form

- Used to make administrative changes at a facility, nothing physical on the tank system
- Product changes
- Operator or contact information changes
- Changes in operating status (Temporarily Out of Service)

Modification Reports

- Along with new installations, modifications to ASTs must be done by a certified individual with the correct category certification.
- Modification reports must be submitted within 30 days of the completion of tank handling activity(s) by the certified individual completing the activity.
- Know the difference between major modifications, minor modifications, and maintenance. (See PA DEP Modification Guidance Document)

AST Major Modifications

- Replacement or addition of a tank shell plate or plates
- Installation, repair or replacement of interior tank lining or coating
- Repair or replacement of regulated piping
- Installation/addition of appurtenances such as spill & overfill prevention, tank gauging, or a structure that may put additional stress on the tank shell that was **NOT** part of the initial design considerations.

AST Minor Modifications

- Excavation within the emergency containment that is not under or does not effect the tank, piping, and piping supports.
- Modifying or substantially repairing emergency or secondary containment structures.
- Installation/addition of appurtenances such as spill & overfill prevention, tank gauging, or a structure the tank was designed with and fittings exist on the tank shell or roof.
- Repairs involving cutting or welding on aboveground piping runs or not like kind replacements downstream from the first control valve and within the emergency containment

AST Maintenance Activities

- Changing circuit boards and electrical repairs
- Changing filters
- Painting (so long as excavation isn't required)
- Painting, caulking, or minor surface repair to emergency contianment
- Calibration activities
- Cathodic protection testing (tester should be qualified)
- Changing hoses and nozzles
- Replacing ATG when gauge brackets already exist
- Checking monitoring/observation wells
- Installing temporary leak clamp
- Repair or replacement of threaded/flanged ancillary equipment located downstream of the first isolation valve
- Replacing emergency containment drain valve
- AST Cleaning

Emergency vs. Secondary Containment

- In most cases emergency and secondary containment are the same thing!
- For example, a double-wall tank serves as both for most smaller ASTs. (A spill bucket is needed to complete emergency containment for a double-wall AST)
- If you ever have any questions, call PA DEP and get something in writing before beginning the installation.

Emergency Containment

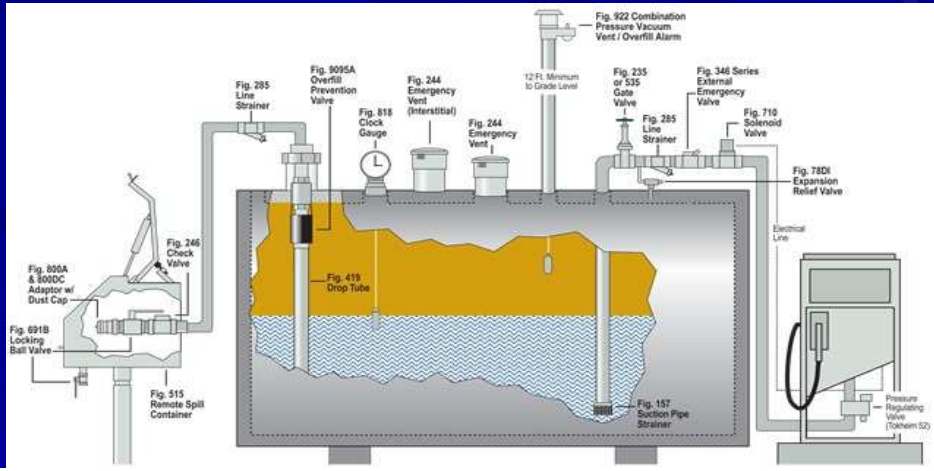
- PA DEP defines emergency containment as: A containment structure which serves to convey, capture, and **CONTAIN** the total volume of an anticipated release of a regulated substance from an above or underground storage tank system and which is expeditiously emptied.
- Emergency containment is meant to contain releases from overfills, spills, and leaks
- Emergency containment must prevent a release from further entering the environment for a minimum of 72 hours and must have a capacity 110% the volume of the largest tank in the containment.
- For larger installations (think tank farm) dykes are often used. These must be designed by professional engineer.

Secondary Containment

- PA DEP defines secondary containment as: An additional layer of impervious material creating a space in which a release of a regulated substance from a storage tank may be **DETECTED** before it enters the environment.
- Most emergency containment can also be used to detect a release.
- Secondary containment is most often a separate entity in vertical tanks. A double-bottom is required for secondary containment.

Labor and Industry

- An application to L&I must be submitted before installing, replacing or relocating any tank, pump or drawing-off device which must comply with the requirements of the F&C Liquids Act. L&I regulates class I and II liquids. In most cases if a tank is being regulated by PADEP, it will also require a L&I permit. Check L&I regulations if in doubt.
- For L&I permits, the forms 703 - Intent to Install & 702 - Aboveground Tanks must be submitted along with site drawings and a check for the permit fee.
- Upon successful permit review by L&I you will receive an Authorization to Proceed letter before you can begin work.
- Prior to operating the AST system you must pass a L&I field inspection.



Criteria for PADEP generator tank registration

- The tank associated with the generator is greater than 1100 gallons in capacity.
- The tank is used to store a regulated substance, such as Diesel Fuel or Gasoline.
- The generator tank is permanently installed.

Criteria for L&I generator tank registration

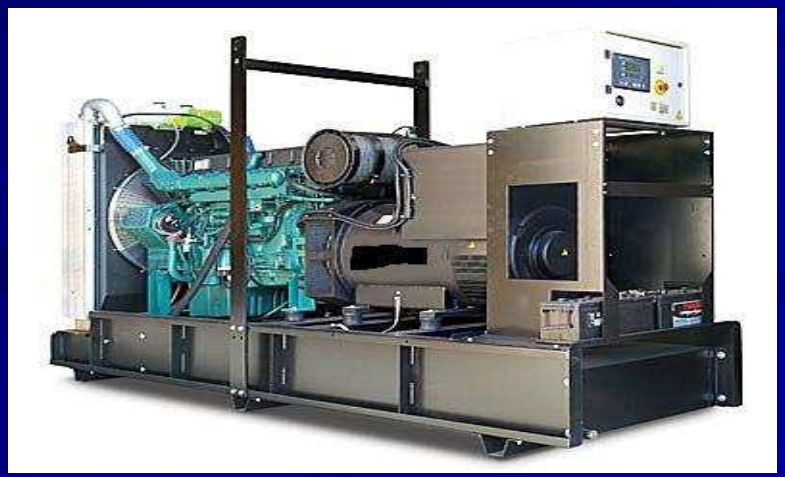
- The tank associated with the generator is greater than 3,000 gallons in capacity.

What is required for a regulated generator tank

- The tank must be registered with PADEP and the owner must pay annual registration fees.
- The tank must be installed by a PADEP certified installer.
- The PADEP certified installer must have AMMX certification.
  - The PADEP certified installer must have direct, onsite supervision and control of the installation

What do they look like

The PADEP certified installer must have direct, onsite supervision and control of the installation.



Highlights from Module 2

- A modification report must be submitted within 30 days of the completion of the activity.
- Use the DEP modification guidance to know the difference between maintenance, major and minor modifications.
- PA DEP 30 day installation notifications are only required for large ASTs. **Site specific installation plans must be approved for those facilities installing 21,000gal+ of aggregate capacity.**
- Do not start work without an L&I permit.
- ASTs less than 1,100 gallons used to sell fuel to the public are required to be registered with the PADEP.
- Emergency containment must contain a release for at least 72 hours and be able to contain 110% of the largest tank capacity.
- Secondary containment aids is detecting a release; emergency containment aids in containing a release.

Module 3
Site Planning for Installation and Modification of Aboveground Storage Tank Systems

Installation Considerations

- Excavation is not always required for AST installations. If it is required, burial depth, soil conditions, backfill, PA One Call, groundwater, and previous contamination should all be considered
- What are the required set backs from property lines, buildings, and roadways? Always consider where equipment will be safely stored
- Containment Dimensions
- Anchoring methods
- Locate utilities above and underground (especially for upgrades at existing facilities)

PA ONE CALL

www.paonecall.org

- Your company work site information
- Location including address, county, municipality and two nearest intersections
- Depth and area of excavation
- Duration of work
- Area should be marked in white
- 1-800-242-1776

PENNSYLVANIA ONE CALL SYSTEM, INC.

Dig Safely.

www.paonecall.org

CALL 1-800-242-1776

WORK LOCATION REQUEST FORM

TELEPHONE NUMBER: (_____) _____ EXT.: _____ CALLER: _____

COMPANY NAME: _____

ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

WORKSITE INFORMATION:

COUNTY: _____ MUNICIPALITY: _____ WARD: _____

STREET ADDRESS: _____ STREET NAME: _____

NEAREST INTERSECTION: _____

SECOND INTERSECTION: _____

SITE MARKED IN WHITE: ☐ Yes ☐ No

LOCATION INFORMATION: _____

_____

_____

SUBDIVISION: _____ TYPE OF WORK: _____

WORKING IN: ☐ STREET ☐ SIDEWALK ☐ PUBLIC PROPERTY ☐ PRIVATE PROPERTY

☐ OTHER (SPECIFY) _____

DEPTH: _____ EXTENT OF EXCAVATION: _____

METHOD OF EXCAVATION: _____ OWNER/WORK BEING DONE FOR: _____

DURATION OF JOB: _____ PERSON TO CONTACT: _____

PHONE: (_____) _____ EXT: _____ BEST TIME TO CALL: _____

FAX #: (_____) _____ EMAIL ADDRESS: _____

REMARKS: _____

_____

_____

NOTIFICATION TYPE:

☐ **CONSTRUCTION** (Not less than 3 nor more than 10 Business Days) **PROPOSED DIG DATE:** _____ **TIME:** _____

☐ **DESIGN** (Not less than 10 nor more than 90 Business Days)

TO BE COMPLETED AFTER PLACING ONE CALL

LAWFUL START DATES: _____ THROUGH _____

OTHER SERIAL NUMBERS REFERENCED: _____

FACILITY OWNER MEMBERS NOTIFIED: _____

_____

_____

SERIAL NUMBER ASSIGNED: _____ DATE/TIME: _____

THERE IS AN ANNUAL FEE

1/3/2007

PA ONE CALL
Web Ticket Entry

- PA One-Call requests can now be made online
- To participate in this system you must attend a two hour training session
- This system benefits regular users of the one-call system by cutting entry time from 10 minutes to 4 minutes
- Web tickets can be entered 24/7

Labor and Industry Setbacks

- L&I regulations, including a chart with the setback requirements, can be found at: http://www.portal.state.pa.us/portal/server.pt?open=514&objID=552950&mode=2
- Generally UL142's (single or double wall non-fire rated tank) should be at least 50' from buildings and 100' from the property line.
- UL2085's (double wall fire rated tank) should be at least 25' from buildings and 50' from the property line.
- If the requirements can't be met a variance can be applied for. A variance is usually seeking relief from hardship and typically won't be granted because it is more convenient for the owner.

Securing the Site

- The site must always be secured while personnel are not working
- Barricades, fencing, & equipment are common barriers
- No smoking signs

- Be aware of traffic in and around the site
- Equipment (especially the tank) should be stored out of harms way
- Be aware of other contractors and their activity on the site

Highlights from Module 3

- If excavation is needed consider soil conditions, call one call before you dig, and mark the proposed excavation area in white
- Know the site's building locations and property lines. Use this to plan setbacks and possibly influence the tank type selection.
- A safe site is a secure site.
- Try your best to safely secure all equipment and work with other contractors so the job goes smoothly for all involved.
- UL2085 is a double wall fire protected tank.
- Steel AST supports must have a fire resistive minimum rating of 2 hours.

Module 4
Aboveground Storage Tank Foundation, Support, and Anchoring

Soil Analysis

- Generally not required for shop-built tanks unless soil is unstable or if site is in a flood plain.
- Soil data may be available from local contractors or facility owners.
- If needed, contact an engineer.

Tank Foundation Design

- Must evenly support tank to prevent movement or uneven settling.
- Must be well drained to prevent accumulation of water.
- Consult an engineer to determine proper foundation requirements.

Vertical Tank Foundations

- Must extend at least 12 inches beyond the perimeter of the tank.

Horizontal Tank Saddles

- Constructed of steel or reinforced concrete
- Must be installed on a firm and stable foundation
- Size and location is determined by the manufacturer

Anchoring

- Tanks must be protected from flotation.
- Tanks should be secured to the foundation or restraining pad.

Highlights from Module 4

- The foundation for a vertical tank must extend 12 inches beyond the perimeter of the tank, at a minimum.
- Extensive soil analysis is required if the site is in a flood plain or has unstable soils.

Module 5
Practices and Procedures Involved with AST Testing and Installation

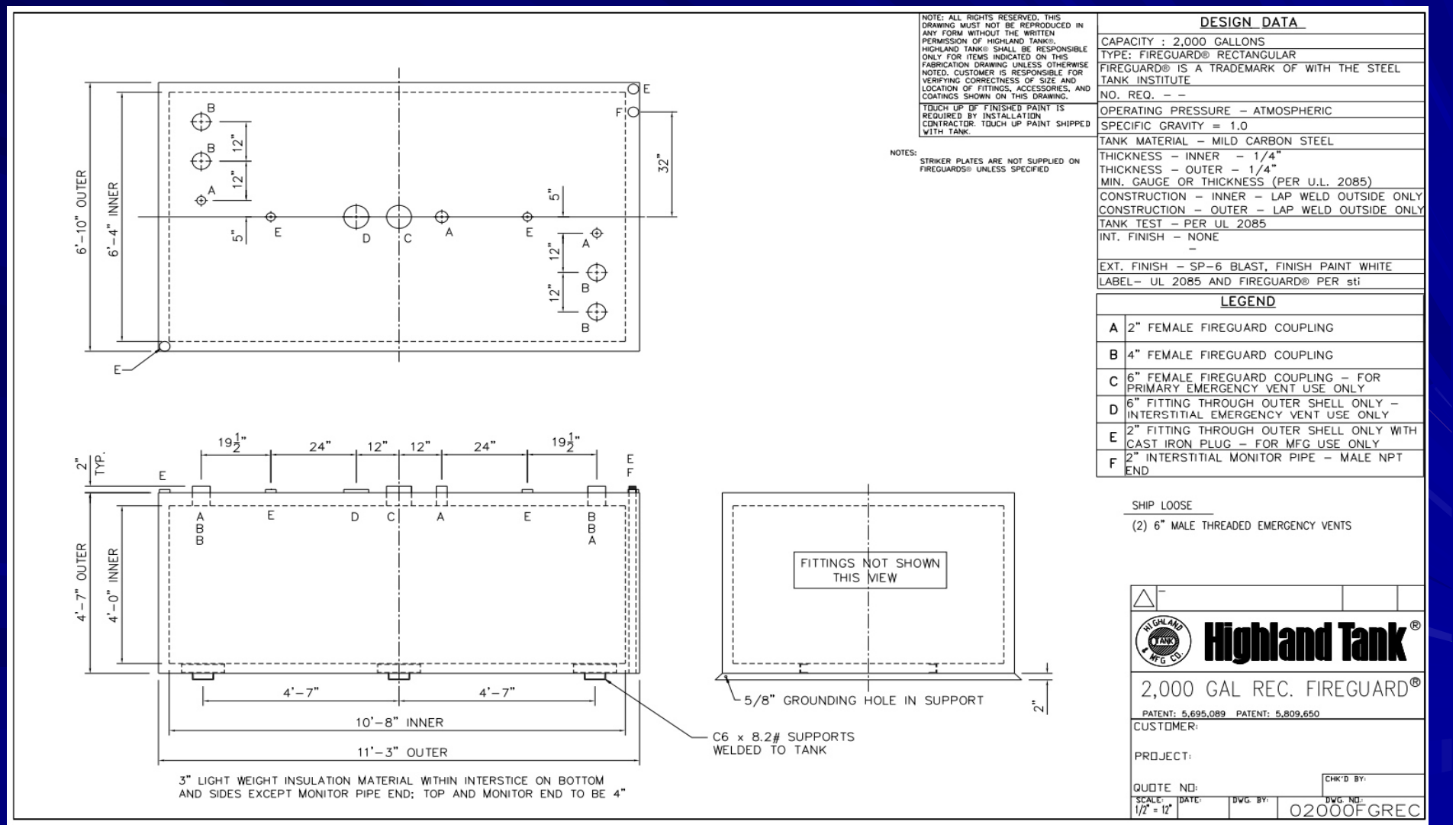
AST Testing and Installation

- Documents
- Moving the tank
- Storing the tank
- Pre-installation inspection and testing

Typical Documents for AST installation

- Site drawing showing location of tank
- Tank manufacturer shop drawing
- Construction drawing
- Tank and component warranty/startup form
- Local permits
  - In many cases the required documents and/or drawings are dictated by the local municipal building permit requirements.

Manufacturer Shop Drawing



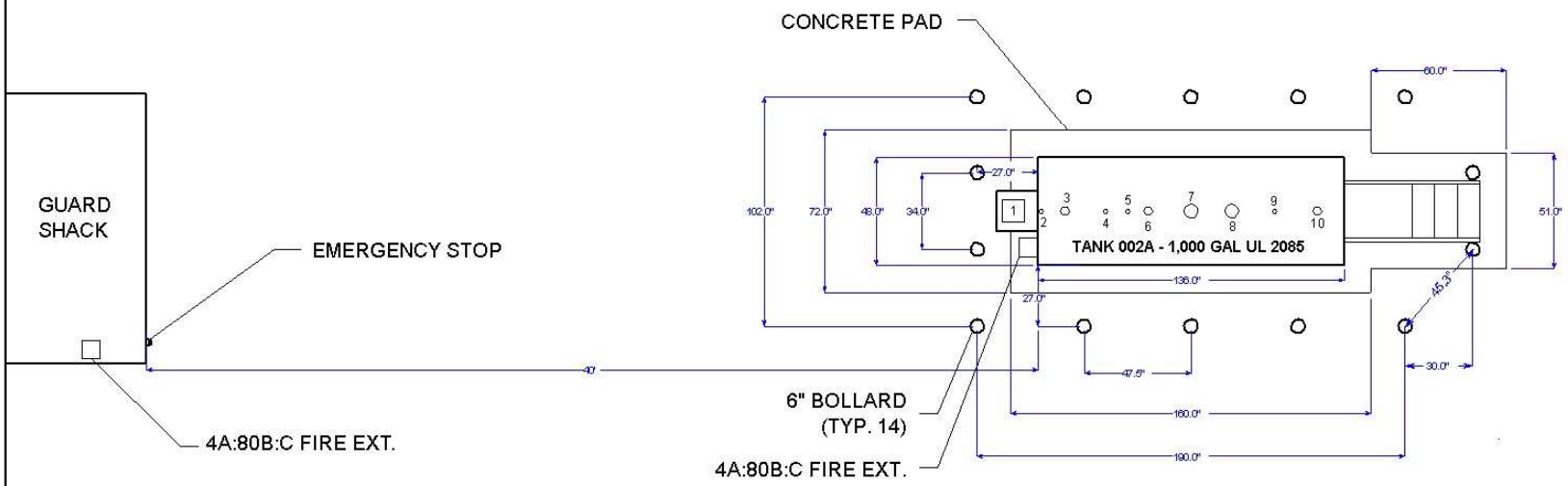
Construction Drawing

GUARD SHACK
W/ E-STOP

PROPOSED TANK LOCATION
(REPLACING EXISTING 2,000
GALLON DIESEL AST)

TANK TOP LEGEND

1 - WAYNE, S1, FUEL DISPENSER
2 - KRUEGER, TYPE-K-64, INTERSTITAL GAUGE
3 - FE PETRO, STP33, SUBMERSIBLE PUMP
4 - MORRISON, 918C, OVERFILL GAUGE
5 - PLUG - NOT USED
6 - 2" REGULAR VENT WITH EBW 802-303-01 VENT HEADER
7 - 6" EMERGENCY VENT WITH EBW 803-303-01
8 - 6" INTERSTITIAL EMERGENCY VENT
9 - MORRISON, 918GH, FUEL LEVEL GAUGE
10 - OPW, 116-7085, OVERFILL SPILL BUCKET



NOTES: RE-USE EXISTING CONDUIT FROM THE GUARD SHACK TO THE LOCATION OF THE NEW TANK. ALL ELECTRIC WORK PER NEC FOR HAZARDOUS LOCATIONS.

CONCRETE PAD TO BE 4,000 PSI, 8" THICK WITH #10 WIRE CENTERED. BROOM FINISH.

REVISION HISTORY

CLEVELAND BROTHERS - WILKES BARRE
970 WILKES-BARRE TOWNSHIP BLVD.
LUZERNE COUNTY/ WILKES-BARRE TOWNSHIP

I & I F&C APPLICATION
FUEL ISLAND LAYOUT

DRAWN BY: doug@kpehd.com
DATE: 6/11/2012
DRAWING NO: 1
REV: B

KEYSTONE PETROLEUM EQUIPMENT LTD

Jobsite Checklist

- Verify that the tank that was delivered matches the manufacturer's shop drawing.
- Look for manufacturer contact information
- Minimize conflicts between the various drawings used for construction and the job specifications.

Pre-installation Testing

- Always follow manufacturers instructions.
- First perform a basic visual inspection of the tank to check for possible damage.
- Never leave a tank under pressure unattended.

The Soap Test

- Remove plugs, apply pipe dope and reinstall.
- Use a pressure gauge with appropriate range.
- 0-10 psi is best. 0-15 is maximum.
- Gauge increments should be in ¼ or ½lb
- NEVER USE A VACUUM GAUGE

The Soap Test

- Pressurize the tank between 3 and 5psi, in accordance with manufacturers instructions
- NEVER PRESSURIZE ABOVE 5PSI!
- Using a pressure relief valve is highly recommended.
- Monitor pressure for at least 30 minutes
- Apply soap to all surfaces and inspect for bubbles
- If any problems are detected, cease installation and contact the manufacturer immediately

The Soap Test Double Wall Tanks

- Seal all fittings as previously discussed.
- Connect the primary and secondary walls with a ball valve between the two tank walls.
- Pressurize the primary tank with the ball valve between the two walls closed.

The Soap Test Double Wall Tanks

- Disconnect the pressurizing device.
- Open the valve between the two walls, pressurizing the secondary wall.
- Pressure gauges must be used on both walls.
- Use a pressure relief valve on both walls.
- Soap and inspect as previously discussed.

Other Pre-installation Tests

- Many manufactured ASTs come with a vacuum pulled on the secondary wall, monitor the vacuum gauge confirming it is within the manufacturer's guidelines.

Moving the tank

- As with most things, always follow the manufacturer's instructions.
- If you are moving a tank, you are lifting a tank, never drag the tank.
- Lift by the lifting lugs.
- An individual should hold a rope tied to either end of the tank (or both) for directional stability.
- Never put chains or cables around a tank shell.

Highlights from Module 5

- Compare the tank warranty sheet to the tank and job specs
- Always follow the manufacturer's guidelines for pre-installation testing
- Never use a vacuum gauge for a pre-installation air test
- Never pressurize a tank above the manufacturer's guidelines!
- Moving a tank means lifting a tank
- Lift by the lifting lugs; do not put chains or cables around a tank
- A worker(s) with a rope tied to either or both ends of the tank should be used to steady the tank during lifting

Module 6
Components Associated with AST Installation

Spill Containment

- Required on an AST to complete emergency containment requirements. Usually a spill bucket is used to meet this requirement.
- Must be liquid tight. All spill buckets should be tested upon installation or modification of an existing spill bucket.

Overfill Prevention

- Overfill device must be permanentely installed
- If the device can stop the flow of product then the must automatically shutoff the flow of product to the tank at 95% capacity or alert the driver at 90% capacity
- Visual gauges are the most common form of overfill prevention on ASTs. They must be able to be seen by the delivery driver!
- AST overfill prevention devices must be compatible with the delivery method

Overfill Prevention
Drop tube shutoff devices

- Action point should be 95% of the tanks capacity at the highest. You can set them lower.
- Ensure you use a shut off valve rated for pressurized deliveries.

External Overfill Alarms

- Audible and/or visual alarms that notify the driver when the tank is 90% full.
- It must be audible and/or visible to the driver while he or she is making the delivery.

Leak Detection Equipment and/or Methods

- Automatic Tank Gauges (ATG)
- Probes
- Line Leak Detectors
- Liquid Sensors
- Visual inspection with log file

ATG and Probes

- Check the systems 3rd party certification and make sure it is capable of monitoring the planned fuel system

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- Check job specs
- Ensure the probes have the proper floats for the product being stored.
- Take care in programming the system and double check it.

Line Leak Detectors

- Mechanical must be able to detection 3.0gal/hr release at 10psi. Need to be tested annually

- Electronic capable of performing 3.0/gal/hr, 0.2/gal/hr, and 0.1gal./hr releases. Not every ELLD comes with the software to detect 0.2 and 0.1gal/hr releases. ELLDs CURRENTLY do not need to be tested annually.

- When using LLDs with ASTs you must consider vertical drop and the head pressure rating of the LLD

Liquid Sensors

- Can be used for tank release detection when placed at the bottom of the tank interstice.
- Can be stand alone units at the tank or tied into an ATG.

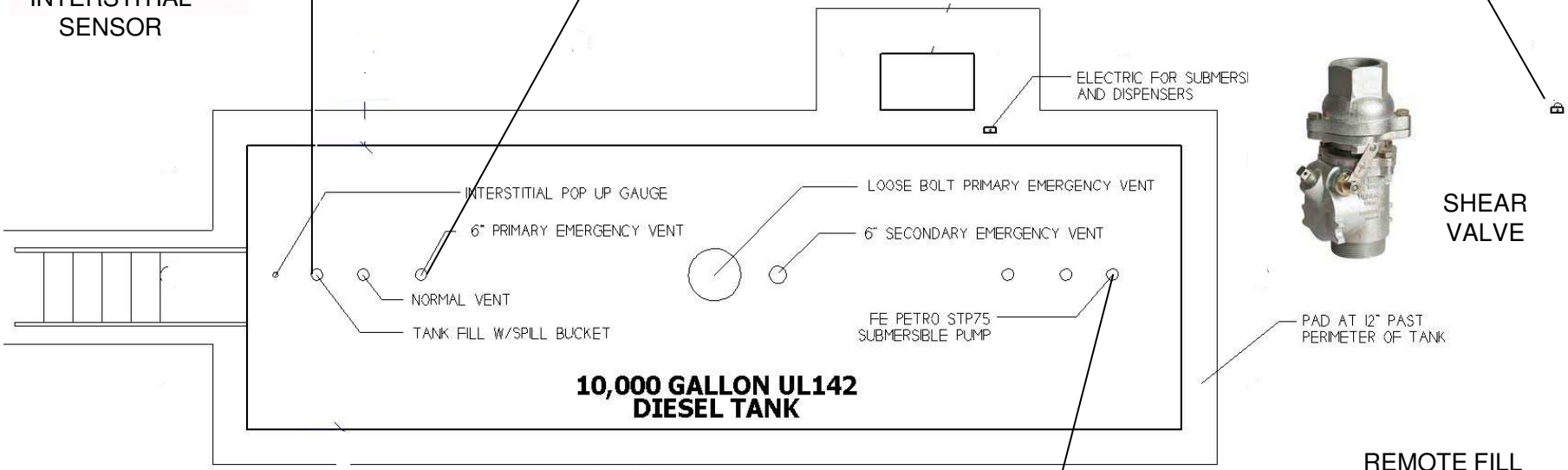
SPILL BUCKET

EMERGENCY VENT

LEVEL GAUGE/FLOAT

EMERGENCY STOP

INTERSTITIAL SENSOR



SHEAR VALVE

ANTI-SIPHON VALVE

BLOCK VALVE

STP

REMOTE FILL

Highlights from Module 6

- Be familiar with all of the components being installed and their purpose.
- AST components do not have to be coated with dielectric material.
- Vent risers must be constructed of steel.
- L&I requires shear valves at grade level for remote dispensers.
- The block valve should be installed as close as practicable to the tank and upstream of other components.

Module 7
Practices and Procedures for the Installation of Piping Associated with ASTs

Piping

- Must be UL listed and compatible with the product stored.
- Piping for ASTs is only regulated when it is inside of the emergency containment. All piping should be monitored for releases as all releases are required to be cleaned up regardless of whether it came from a regulated or unregulated portion of the piping.

Types of Piping

- Flexible
- Fiberglass
- Poly ethylene
- Steel

Piping Installation

- Consider product compatibility before selecting piping material.
- Carefully inspect piping prior to installation.
- Match piping to the correct flexible connection.
- If piping will be run above and below grade, different pipe types may be required.

Piping Testing

- Test piping @ 1.5 X max operating pressure or by manufacturer's specifications.
- Never air test re-used piping (nitrogen or helium).
- Secondary flexible lines are usually tested between 3-5psi (manufacturer's instructions) Soap test similar to tanks.
- Also pressure test vent system.

Highlights from Module 7

- Ensure that the piping material is compatible with the product being stored.
- Never test piping over 1.5 X max operating pressure or beyond manufacturer's recommendations.
- Only piping inside the emergency containment is regulated.

Module 8
Corrosion Protection of ASTs

Corrosion Protection

- A typical AST with supports will not need any type of corrosion protection.
- Tank coatings and protections should be kept free from deterioration.

Corrosion Protection

- For ASTs where the tank bottom comes into contact with grade, a determination should be made if corrosion protection is needed.
- Considerations for using corrosion protection
  - Type of cushion; i.e. concrete, asphalt, soil, backfill, etc.
  - Contents of tank; i.e. heated product could cause condensation on outside of tank.
  - Always refer to API 651 for guidance.

Types of Corrosion Protection for ASTs

- Corrosion protection systems for ASTs are the same as for USTs
  - Galvanic (Sacrificial)
  - Impressed Current
  - Consult a NACE certified individual for proper sizing of either system.

Highlights from Module 8

- Cathodic protection needs tested within 6 months of installation and every 3 years thereafter
- Galvanic uses a difference in potential while impressed current is powered

Questions Before the Test