ABOUT UST SYSTEMS

• COMPLEX COMBINATION OF MECHANICAL AND ELECTRONIC DEVICES

• EACH UST SITE IS CUSTOM BUILT

• OLDER SYSTEMS CAN HAVE LAYERS OF ADDITIONS AND REPAIRS

• WHAT’S ON RECORD MAY NOT BE WHAT’S IN THE GROUND

• MOST OF WHAT NEEDS INSPECTING CAN BE FOUND BY OPENING LIDS

• CAN FIND SOMETHING STRANGE AND ORIGINAL AT NEARLY EVERY SITE
What's Underground?

Lots!

And each site is different...
What's Your Tank Made of?

- Steel
- Fiberglass
- Fiberglass-clad steel
- Not sure?
Is Your Tank Single-Walled Or Double-Walled?

Single-walled
Is Your Tank Single-Walled Or Double-Walled?

- Double-walled

- Now required for new tanks

- Not sure? Check to verify
What's Your Pipe Made Of?

- Fiberglass
- Flexible Plastic
- Steel (not common)
- Not sure?
Is Your Pipe Single-Walled Or Double-Walled?

Single-walled is directly buried in the ground
Is Your Pipe Single-Walled Or Double-Walled?

Double-walled is pipe within a pipe

- Usually includes containment sumps
- Now required for new piping
- Not sure? Check to verify
How Does Fuel Get Out Of The Tank?

Pressurized pump (submersible turbine pump or STP)

or

Suction pump
Pressurized Pump

- Pump motor is inside the tank
- Pushes product through the piping to dispenser under pressure at about 30 PSI
- Common at gas stations
Suction Pump

- Pump is above-ground, not inside the tank
- Pulls fuel out of the tank
What's Under Your Lids?

Let's find out...
What's Under Your Lids?

Fill Lid:
The color of the lid identifies the product type
What's Under Your Lids?

Fill Riser:
Used to fill the tank
What's Under Your Lids?

Spill Bucket:
Captures small drips during delivery
What's Under Your Lids?

Vapor Riser Lid:
Identifies stage 1 vapor recovery port
What's Under Your Lids?

Vapor Riser, Spill Bucket and Poppet:
Allows gasoline vapors to be returned to tanker truck during a delivery
What's Under Your Lids?

Automatic Tank Gauge Probe Lid:
Allows access to probes that measure fuel and water levels
What's Under Your Lids?

Automatic Tank Gauge Probe:
Measures fuel and water levels in the tank
What's Under Your Lids?

Automatic Tank Gauge Console:
Gives important liquid measurement and alarm information to the UST operator.
What's Under Your Lids?

Interstitial Riser:
Accesses the space between the walls of a double-walled tank including the sensor
What's Under Your Lids?

Containment Sump Lids: Accesses the submersible pump

CAUTION: THESE ARE HEAVY. DON'T OPEN UNLESS PROPERLY TRAINED!
What's Under Your Lids?

Containment Sump:

- Made of fiberglass or plastic
- Houses pump manifold, product piping, flexible connector, sump sensor, etc.
- Must be liquid tight
- Intended to contain leaks

(C) UST Training
What's Under Your Lids?

Dirt:

- Not all submersible pumps have containment sumps
- Leaks go right into the environment
- Be extra careful with piping leak detection!
**Vent Piping**

- **Vent piping** allows the tank to breathe
- **Vent risers** vent vapors high in the air
- **Vent cap** keep rain out of the tank
- Pressure/Vacuum (PV) **vent cap** limits escape of gasoline vapors from high throughput gasoline tanks
What's At Your Dispenser?

There are some important safety features to know about.
What's At Your Dispenser?

Breakaway connector is the device in the hose used in case vehicle driver drives off with nozzle attached.
What's Under Your Dispenser?

- Shear valve
- Crash valve
- Impact valve
- Earthquake valve
- Fire valve

What do YOU call it?
Shear Valve

Used to stop the flow of fuel in pressurized pipe in case of collision or fire
Shear Valve

Keeps fuel from spilling onto the ground when dispenser is knocked over
Shear Valve

• No matter what it is called, it is REQUIRED on product piping under every pressurized piping dispenser

• Shear valves have ongoing compliance issues mostly because installed incorrectly or not properly maintained
What’s Below Your Shear Valve?

Under dispenser **containment** to catch leaks from inside the dispenser

- Dispensers are the source of many leaks
- Required for new installations, but not present at many older facilities
What’s Below Your Shear Valve?

- If no under dispenser containment, you have a risky piping system
- Check your dispensers often for leaks!
What About The Fuel Itself?

We Now Have 21st Century Fuels in 20th Century Tanks!

- Ethanol gasoline
- Biodiesel

(called Alternative Fuels)
Ethanol Gasoline

- Ethanol is an alcohol made from corn
- Ethanol is added to gasoline to improve octane and reduce emissions
- E10 is 10% ethanol, 90% gasoline
- E85 is 85% ethanol and 15% gasoline
Ethanol Cautions

- If water gets into the tank, the ethanol can mix with the water, separate from the gasoline, and sink to the bottom of the tank (called phase separation).

- If the ethanol/water mix gets pumped into vehicles, they will not run.
Lesson Summary

- Many parts to a UST system
- Many different construction materials
- Each system is unique
- Knowing pump type (pressure or suction) is critical
- Demonstrating compatibility is required for fuels greater than E10 and B20
LET'S TAKE A TOUR UNDERGROUND
LET’S TAKE A TOUR UNDERGROUND
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