“If it is not safe....
Don’t Do It!!”

ExxonMobil SPSA Safety Program

Forecourt Safety, Grounding & Bonding
Quick Agenda Review

• Forecourt Safety
  – Job Safety Analysis (JSA)
    • Planning to work on the forecourt
    • Identifying the Hazards
  – Handling Flammable Materials
  – Barricade Procedure
  – Personal Protective Equipment
  – Grounding/Bonding
  – Situational Awareness
A couple quick questions

• Anyone ever had an employee hit by an automobile when working on the forecourt?
• Anyone ever had an employee who had a significant spill (~ over 5 gallons) on the forecourt?
• Anyone ever had an employee who had a fire while working on the forecourt?
• Anyone have to deal with the family after an employee was severely injured while on the job.
• We all have a vested interest in working safely and eliminating injuries for many reasons…
Job Safety Analysis (JSA)

- JSA is a useful technique for identifying hazards so that workers can take measures to eliminate or control hazards. Once the analysis is completed, the results should be communicated to all workers who are, or will be, performing that job.

- The process of completing a JSA requires the job to be broken down into chronological steps. Each step is reviewed in order to identify hazards that could cause injury.

- Once the hazard is identified, recommendations are made to mitigate the hazard.

- If the hazard cannot be eliminated, the JSA prescribes appropriate measures to be taken in order to reduce the risk associated with the task or minimize the potential injury.
The NCWM Safety Subcommittee has conducted a lot of research on safety. The goal of the subcommittee is to raise awareness regarding safety and provide some resources that can be easily accessed through the website for agencies who are developing or updating safety programs. The NCWM Safety Program Toolbox contains links to a lot of material that can be used when developing a safety program.
What are some of the hazards when working on the forecourt of a fueling facility?

• The fuel itself is flammable & hazardous if ingested or the body is exposed to the material.
• The traffic is often the most hazardous challenge of working on a fueling system.  
  – Not only the volume of cars but the inconsistent traffic pattern.
• The equipment can be hazardous.  
  – Sharp edges  
  – The pump when pressurized can cause a spill
• Footing can be a hazard  
  – The forecourt may not be in good shape and/or there may be curbs or dispenser islands.  
  – Diesel fuel on the ground can be slippery.  
  – If the truck you are working on has a step, the step may be a hazard.
• Lack of ergonomics - Bending, stooping, lifting and/or pulling the hose over to the prover can cause back or shoulder injuries over time if the proper technique is not utilized. Hand held provers are much more labor intensive especially when returning fuel into the UST.
• Weather – Weather effects everything we do in the field. Rain, wind, snow, ice, lightning, extreme temperatures (both heat & cold) all create safety challenges when working on the forecourt.
Emergency Stop Button
(E-Stop)

• Before starting work on a fueling facility locate the e-stop button. The e-stop will immediately stop all fueling if the button is pushed.
• In the event there is an accident, spill or anything that could jeopardize the safety of people getting fuel hit the e-stop button immediately.
• E-stops are required to be tested every year for functionality.
Handling a flammable material

• Eliminate all ignition sources
  – No Smoking
  – No running engines
  – No welding or hot-work without following the appropriate procedures and obtaining a hot-work permit.
  – Static Electricity

• Always have a fire extinguisher close by in case of a fire.
  – Fire extinguishers are required to be inspected annually.
  – Use ABC or BC rated extinguishers for flammable liquids

• Always identify the emergency stop button (E-stop) on a facility prior to working on the fueling system.

• Always avoid spills – spills are the uncontrolled release of flammable product which significantly increases the risk on a fire.

• Pumping/storing fuel in approved containers designed for fuel storage. Using appropriate equipment for doing the job. (Steel allows for a ground. Cones are not funnels)

• Wear adequate personal protective equipment so that if an accident occurs you are in the best position to react to it.
  – Gloves - nitrile
  – Safety Glasses
  – Cotton Uniform
  – Non Skid Boots (possibly steel toed)

https://youtu.be/e8Wn4JzRnuc
Traffic at Convenience Stores/Gas Stations/HyperMarketers

• In 1990 there were approximately 2,265,985 active registered underground storage tanks in the US selling gasoline & diesel fuel.

• As of March 2019 there are approximately 548,682 active registered underground storage tanks in the US selling gasoline & diesel fuel.

• Despite declining # of UST’s demand/consumption of gasoline has increased

• In the US we are selling more fuel through fewer fueling systems. (ave.1,725,600 gallons per store per year)

• More traffic on each store!!!
Working Traffic Hazards

• Possibly the most hazardous part of the job when working on a fueling facility is the traffic.
  – Often people getting fuel are in a hurry. Traffic patterns on a busy gas station are often erratic.
  – Even though fueling a vehicle is pretty safe (statistically speaking) it can get dangerous very quickly. Many people are not paying full attention when fueling a vehicle.

• Although traffic hazards cannot be entirely removed there are several procedures that when used can greatly improve the safety of working on a fueling system.
  – Barricading is the most critical

• Barricading your work area helps deter people and cars from entering the work area.
  – The most effective barricade includes:
    • Positioning the vehicle so that it provides the most protection and allows the person to complete the job.
    • 28” orange cones
    • Safety flags
    • Caution tape and/or cone bars

• Barricading when putting fuel back in UST is often necessary

https://www.youtube.com/watch?v=JE3NUHa0xIs
Personal Protective Equipment (PPE)

• Personal Protective Equipment is equipment/clothes worn in order to minimize exposure to hazards that may cause injuries.

• Typical PPE for working on the forecourt includes the following:
  – Gloves
  – Safety Vest or Hi-Visibility Shirts
  – Cotton uniform
  – Safety Glasses
  – Boots – possibly steel toe
  – First Aid Kit/Eye Wash Bottle
Ergonomics, Footing & Other Hazards

- Using provers is not a natural motion for most people. It often requires bending or lunging which can be hard on the body.
- It is important to use equipment to try to reduce the strain on the body.
- Always use caution when walking around pump islands. Not only are the curbs an obstruction but leaving tools or boxes around create tripping hazards.
- Diesel fuel is extremely slippery. If you get it on the bottom of your boots it can be a slipping hazard.
- Boots with ankle support can help reduce sprained ankles.
Understanding Static Electricity

Seraphin® Test Measure
Rancocas, NJ 08073
(609)267-0922
www.seraphinusa.com
PARTS OF THE ATOM

NUCLEUS made up of PROTONS (+) and NEUTRONS (no charge)

ELECTRONS (-) travel around the nucleus
ELECTRICAL CHARGES

• The charge of one proton is equal in strength to the charge of one electron.
• When the number of protons in an atom equals the number of electrons, the atom itself has no overall charge, it is neutral.
ELECTRONS CAN MOVE

• The protons and neutrons in the nucleus are held together very tightly. Normally the nucleus does not change. But some of the outer electrons are held very loosely. They can move from one atom to another.

• POSITIVELY CHARGED ATOM: An atom that looses electrons

• NEGATIVELY CHARGED ATOM: An atom that gains electron
STATIC ELECTRICITY IS THE IMBALANCE OF POSITIVE AND NEGATIVE CHARGES

• When two different materials come into close contact -- for example, felt rubbing against a balloon, or two air masses in a storm cloud -- electrons may be transferred from one material to the other.

• When this happens, one material ends up with an excess of electrons and becomes negatively charged, while the other ends up with a deficiency of electrons and becomes positively charged.

• This accumulation of imbalanced charges on objects results in the phenomena we commonly refer to as static electricity.
STATIC ELECTRICITY (continued)

• Materials that bear imbalances of opposite charge will attract each other and cling together.

• Materials that bear imbalances of like charge will repel each other.

• **When an object bearing an enormous accumulation of positive or negative charge comes close to another object bearing the opposite charge, a spark may jump across the space between them.**
  
  – This results in both the enormously powerful discharges of lightning and the small yet stimulating shocks we receive when touching something after shuffling across a carpet in our stocking feet.
DEFINITIONS

• BONDING: Connects various pieces of conductive equipment together to keep them at the same potential. Static sparking cannot occur between objects that are at the same potential.

• GROUNDING: A form of bonding in which conductive equipment is connected to an earthing electrode or to a building grounding system in order to prevent sparking between conductive equipment and grounding structures.

• CONTINUITY: Continuous electrical path
DISPENSERS

• Standards call for continuity between the dispenser and nozzle
STATIC ELECTRICITY AND SAFE OPERATION OF YOUR VOLUMETRIC TESTING EQUIPMENT
EARTH GROUND
PROBLEM?
CART PROPERLY GROUNDED
TEST MEASURE TOUCHING FUNNEL DURING DRAINING
PORTABLE CALIBRATION CART
BALL JOINT BONDING WIRE
SLIP-ON UNIT
Perform periodic tests of the bonded object to the ground clamp on the end of the cable grounding reel with Ohm Meter to confirm continuity. Maximum resistance to be 25 ohms. If higher, remove and replace reel. Inspect the entire cable length for kinks and/or broken wires. Inspect the cable clamp for good compression force and/or damage.
DISCHARGE HOSE WITH STATIC WIRE
STEEL FUNNEL WITH COPPER SPOUT
BONDING WIRE
NOZZLE / PROVER CONTACT PRIOR TO FILLING PROCESS
PROBLEM?
S/S LPG PROVER SYSTEM
REVIEW

• Static electricity is an imbalance of charges on objects.

• When an object bearing an enormous accumulation of positive or negative charge comes close to another object bearing the opposite charge, a spark may jump across the space between them.
WARNING

• No prediction or advice can be given about all the different conditions which can cause static discharges to accumulate.

• Refer to the National Fire Protection Association Codes, NFPA 77 and NFPA 99 for recommended practice on static electricity.
Understanding Static Electricity

Seraphin® Test Measure
Rancocas, NJ 08073
(609)267-0922
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Situational Awareness

• What is situational awareness (SA)?
  – Situational awareness is being aware of what is happening around you in terms of where you are, where you are supposed to be, and whether anyone or anything around you is a threat to your health and safety.
  – Our knowledge, experience and education enables us to understand what is going on around us and helps us to determine if it is safe. This means that everyone’s situational awareness is individual and potentially different. We use our situational awareness to make decisions and instruct others.

• The reason why it is important to provide forecourt training is not only to prevent accidents/injuries from taking place but also to be in a position to react quickly when a problem occurs.

• Often a quick reaction to a problem can minimize the damage and or possibly prevent injury.

• Stay alert while working on the forecourt……
Safe Performance Self Assessment (SPSA)

Before Beginning Any Activity/Task/Job

**Assess** the risk
What could go wrong?
What is the worst thing that could happen if something goes wrong?

**Analyze** how do you reduce the risk!
Do I have all the training and knowledge to do this job safely?
Do I have all the proper tools and personal protective equipment?

**ACT** to ensure safe operations!
Take necessary Action to ensure the job is done safely!
Follow written procedures! Ask for assistance, if needed!

Do Not Proceed Unless Everything is Safe!
For Everyone Every Day All the Time