Making Sure Your AST is Compliant with SPCC

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Preparing For Your SPCC Plan

- The Goal of an SPCC Plan is to Prevent a Release from Occurring.
- Tanks, Drums, and Containers must be set-up to prevent a release from occurring.
- As part of developing a SPCC Plan, you may have to upgrade some of these components to complete your SPCC.

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Aboveground Gas Tank?

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Tank Design and Compliance with 112.7 of SPCC Regulations

- Prepare with good engineering practice
- Full approval of management to commit resources
- Complete plan in writing
- If plan calls for additional facilities or procedures, methods or equipment that are not yet fully operational, items must be discussed explaining the details of installation and operational startup

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Compliance Starts With The Design

- Proper Design or Upgrade
- Follow Industry Standards and Guidelines
- Choose The Right Equipment

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PROPER DESIGN

PRIMARY ISSUES

- Safety Considerations
- Product Losses
- Precipitation Handling
- Space Availability and Accessibility
- Proper Tank Placement
- Aesthetics and Security

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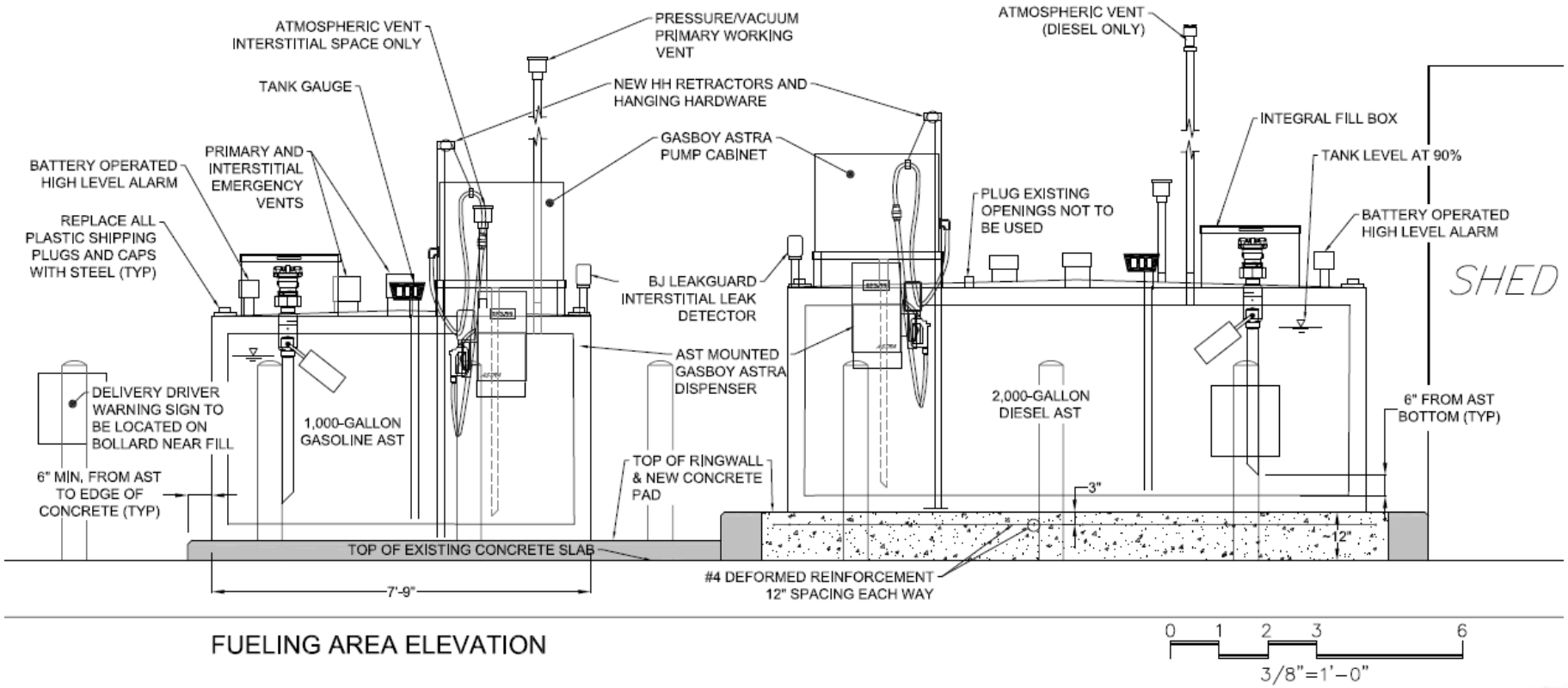
PROPER DESIGN



STANDARDS AND GUIDELINES

Consolidated Regulations or Standards Do Not Exist

Regulations

- SPCC Regulations For Petroleum (40 CFR 112)
- They do not provide technical construction guidance

SUMMARY OF STANDARDS AND CODES APPLICABLE TO ABOVEGROUND STORAGE TANKS

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS

- **NFPA 30**, "Flammable and Combustible Liquids Code" (2012)
- **NFPA 30A**, "Code for Motor Fuel Dispensing Facilities and Repair Garages" (2012)

STEEL TANK INSTITUTE (STI) STANDARDS

- **STI SP001-11** "Standard for Inspection of Aboveground Storage Tanks (2011)

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SUMMARY OF STANDARDS AND CODES APPLICABLE TO ABOVEGROUND STORAGE TANKS

PETROLEUM EQUIPMENT INSTITUTE (PEI)

- **PEI/RP 200-13**, 2013, "Recommended Practices for Installation of Aboveground Storage Systems for Motor Vehicle Fueling."

AMERICAN PETROLEUM INSTITUTE (API) STANDARDS

- **Standard Number 650**, 2014, "Welded Steel Tanks for Oil Storage," 12th Edition.
- **Standard Number 651**, 2014, "Cathodic Protection of Aboveground Storage Tanks," 4nd Edition.
- **Standard Number 653**, 2014, "Tank Inspection, Repair, Alteration and Reconstruction," 5nd Edition.

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Tank Design and Compliance with 112.7 of SPCC Regulations

(c) **Provide appropriate containment and/or diversionary structures to prevent discharge**; entire containment system including walls must be capable of containing oil such that a **release from the primary will not escape before cleanup occurs**; at a minimum use one of the following prevention systems or its equivalent for onshore facilities:

(i) Dikes, berms, retaining walls sufficiently impervious
(ii) Curbing
(iii) Culverting, gutters, or other drainage systems
(iv) Weirs, booms or other barriers
(v) Spill diversion ponds
(vi) Retention ponds
(vii) Sorbent materials

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Secondary Containment?

Any Issues Here?


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SPACE AVAILABILITY AND ACCESSIBILITY

- Secondary Containment design may need more space than is available
  - Pre-fabricated designs take less space
- Deliveries are made via pressurized pumping
  - Need to ensure both ends of the delivery are managed
  - Tank needs to be accessible for deliveries

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PROPER PLACEMENT OF TANKS

- Distance From Buildings
- Distance From Property Lines
- Distance from Dispensers
- Spacing Between Tanks

NOTE: Your local fire official may be the controlling agency.

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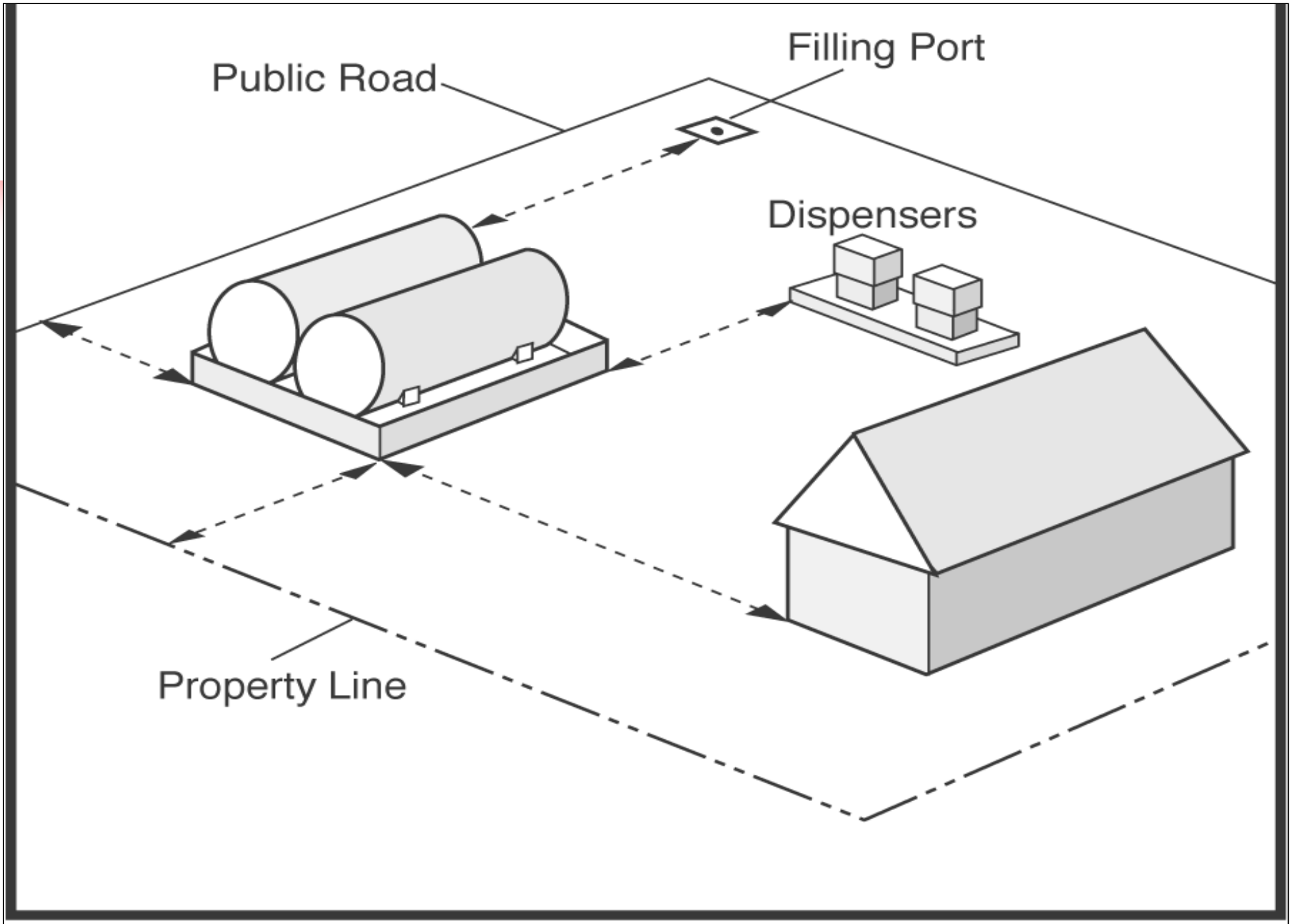

PEI RP 200

Know The Flow Direction If A Spill Occurs

SECONDARY CONTAINMENT

- Clay or Earthen Dike
- Steel Dike with or without Rain Shields
- Tanks in Underground Vaults
- Double Wall Tank 300 Degrees
- Double Wall Tank 360 Degrees

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TYPES OF TANKS

- **Off-ground Versus On-ground**
  - Totally aboveground tanks can be easily inspected.
  - Onground tanks which must be taken out of service to be inspected.
  - Tanks in underground vaults, are aboveground tanks.

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Aboveground Tank??

AST IN A UNDERGROUND VAULT

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Open Dike vs. Double Wall

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PRECIPITATION HANDLING

- Secondary containment may mean “collection of rainwater”
- Divert or protect against water collection
  - Use Double Wall Tanks
  - Use roofs or shields
- Easy to address if a wastewater handling mechanism is already onsite
  - POTW
  - Oil/water Separator
- May have a surface discharge requiring a permit

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Rain Protection?

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Problems With Dike Tanks

- Removal of water
  (Clean or Contaminated?)
- Proper inspections
- Maintain dike condition

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Problems With Dike Tanks

What Do You Need On a Double wall AST?

- Spill Bucket
- Overfill Device
  - Overfill Prevention Valve
  - High Level Alarm
- Level Gauge

What Does A Double Wall Tank Need?

Spill Bucket

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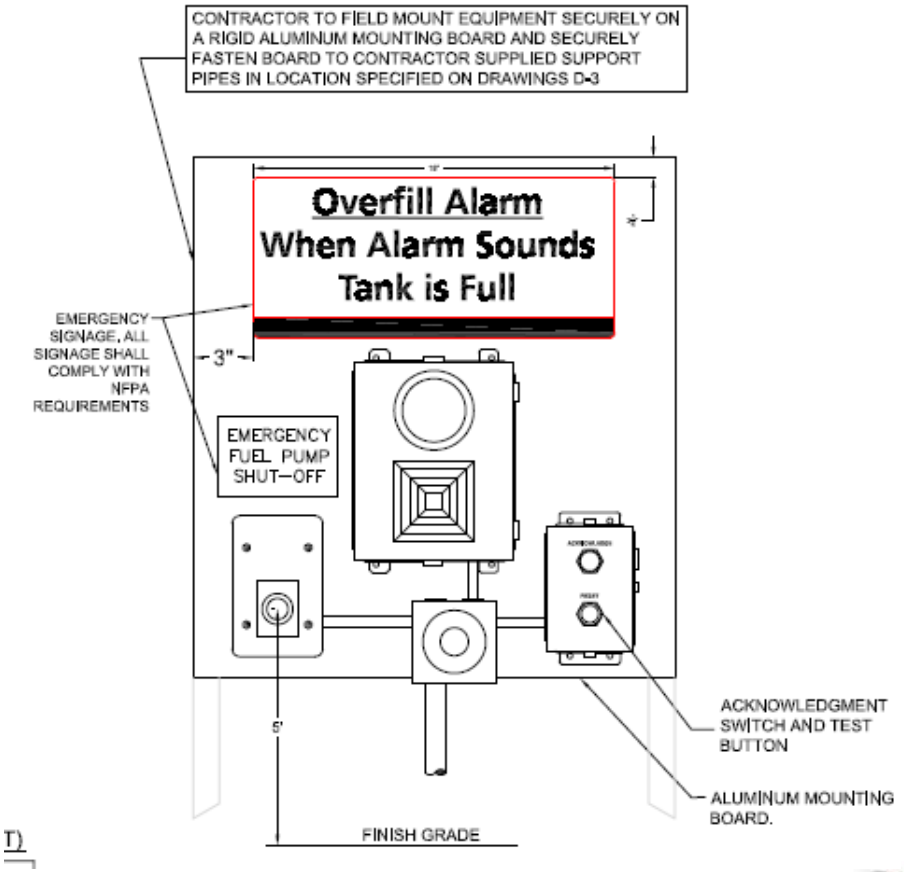
What Does A Double Wall Tank Need?

Overfill Alarm (90%)



What Does A Double Wall Tank Need?

Overfill Prevention (95%)

61fSTOP-1000

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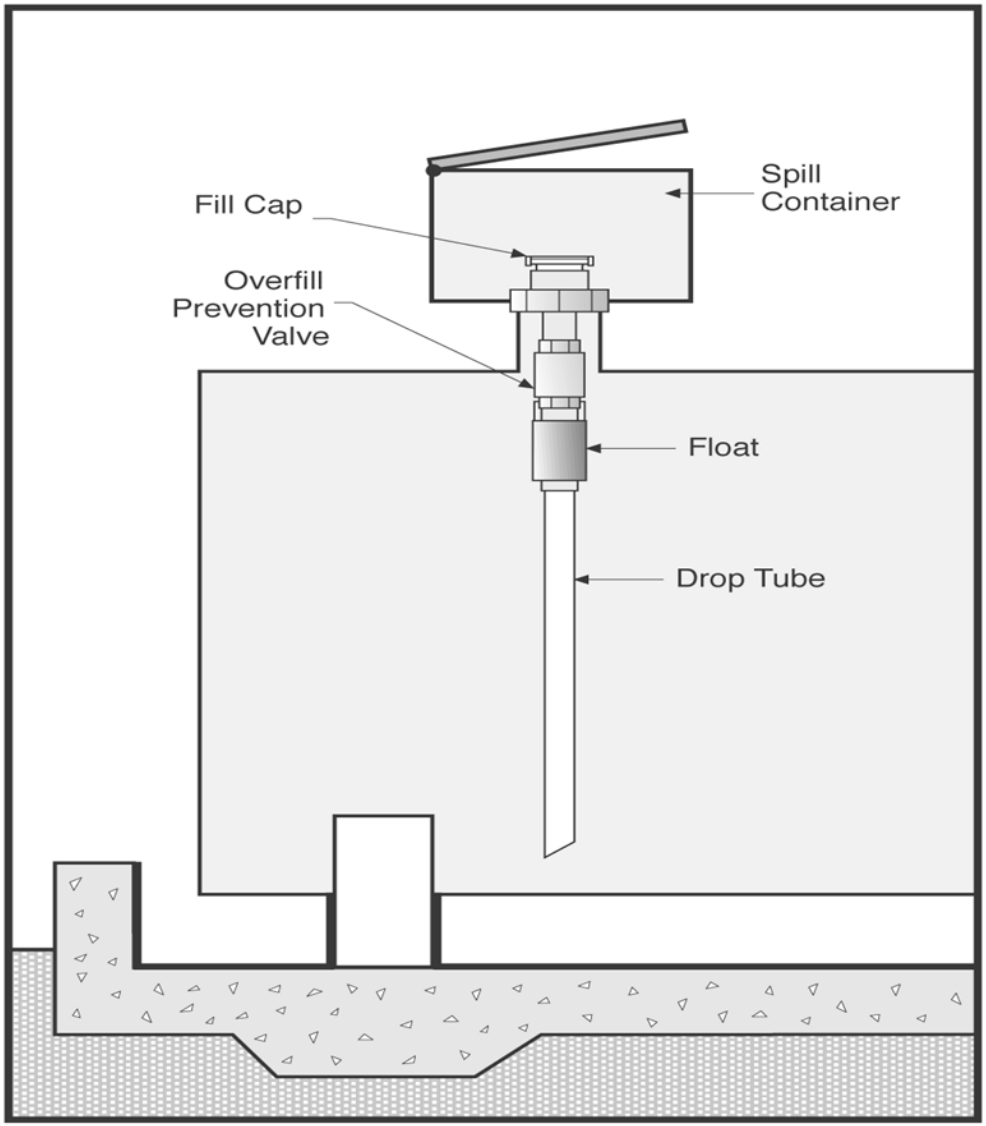
Fill Cap
Spill
Container
Overfill
Prevention
Valve
Float
Drop Tube

PEI RP 200

What Does A Double Wall Tank Need?

Tank Gauge

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What Does A Double Wall Tank Need?

- Means To Determine Secondary

Tank Design and Compliance with 112.8 of SPCC Regulations

(c) Bulk Storage Tanks

- Engineer with good engineering practice and provide at least one of the following devices:
  - High level alarms with audible or visual signal
  - High level pump cutoffs
  - Direct audible or code signal communication
  - Fast response system with a person monitoring at all times during filling
  - Test level devices regularly for proper operation

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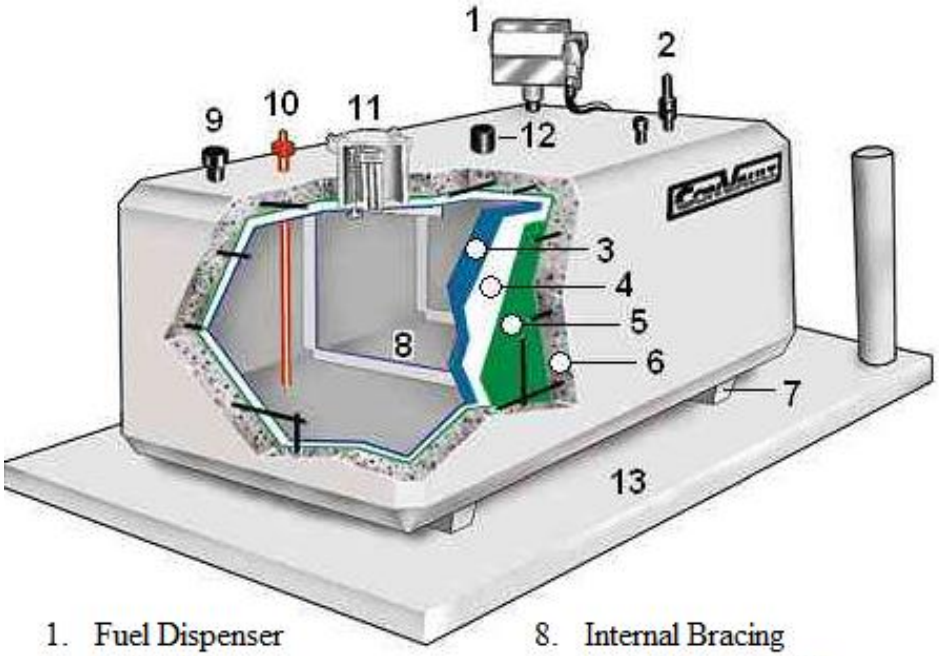
All Types of Tanks and Containers


FIREGUARD
Steel
FIREGUARD

ConVault Tank



1. Fuel Dispenser
2. Level Indicator
3. Steel Primary Tank
4. Polystyrene Layer
5. HDPE Liner
6. Reinforced Concrete
7. Support Legs
8. Internal Bracing
9. Atmospheric Vent
10. Leak Detector Tube
11. Overfill Containment
12. Emergency Vent
13. Concrete Slab

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THE RIGHT EQUIPMENT

- Secondary Containment
- Proper Venting
- Protection/Security
- Release Detection
- Overfill Prevention
- Anti-Siphon Valve or Solenoid Valves

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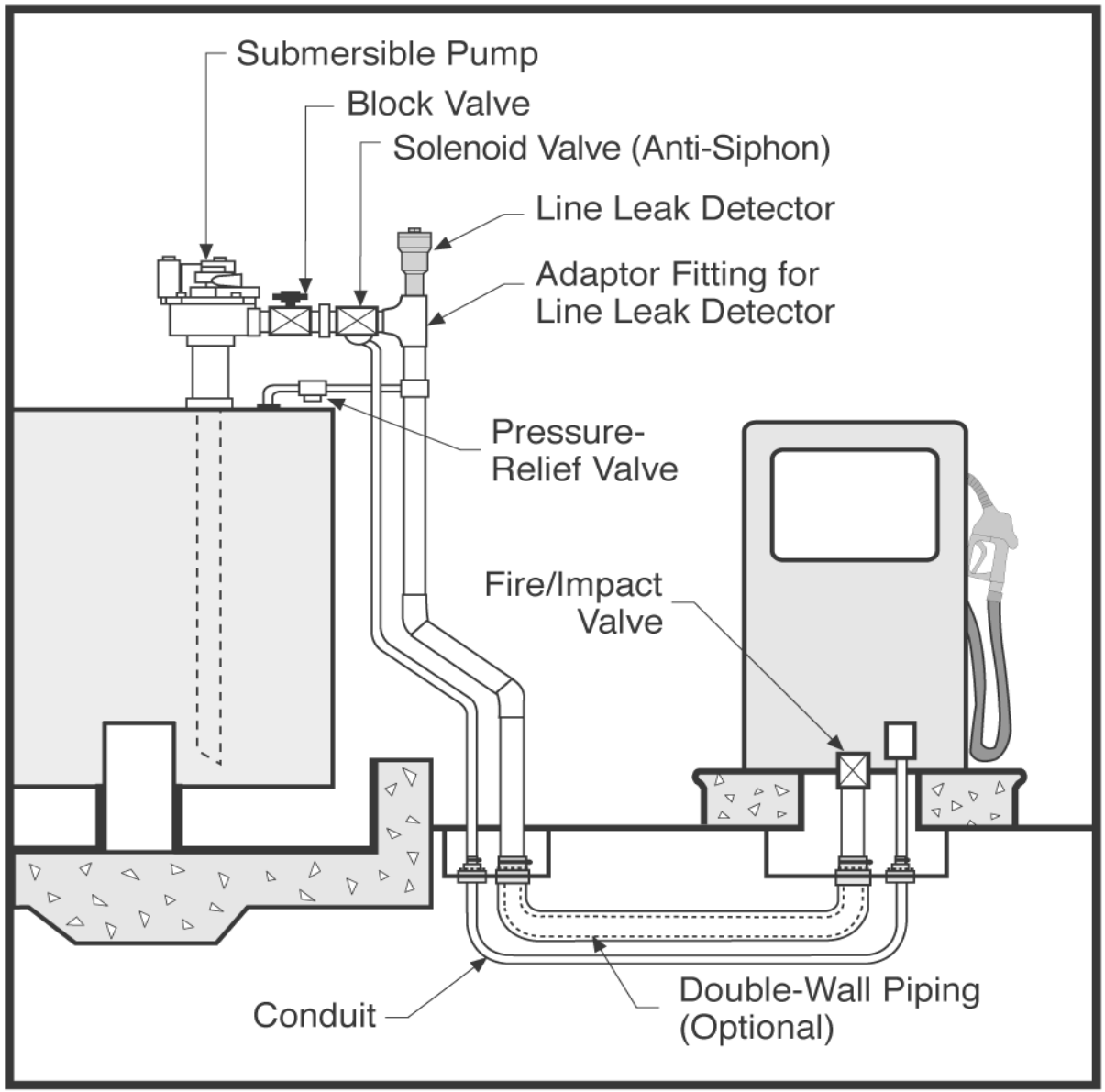

Submersible Pump
Block Valve
Solenoid Valve (Anti-Siphon)
Line Leak Detector
Adaptor Fitting for
Line Leak Detector
Pressure-
Relief Valve
Fire/Impact
Valve
Conduit
Double-Wall Piping
(Optional)

PEI RP 200

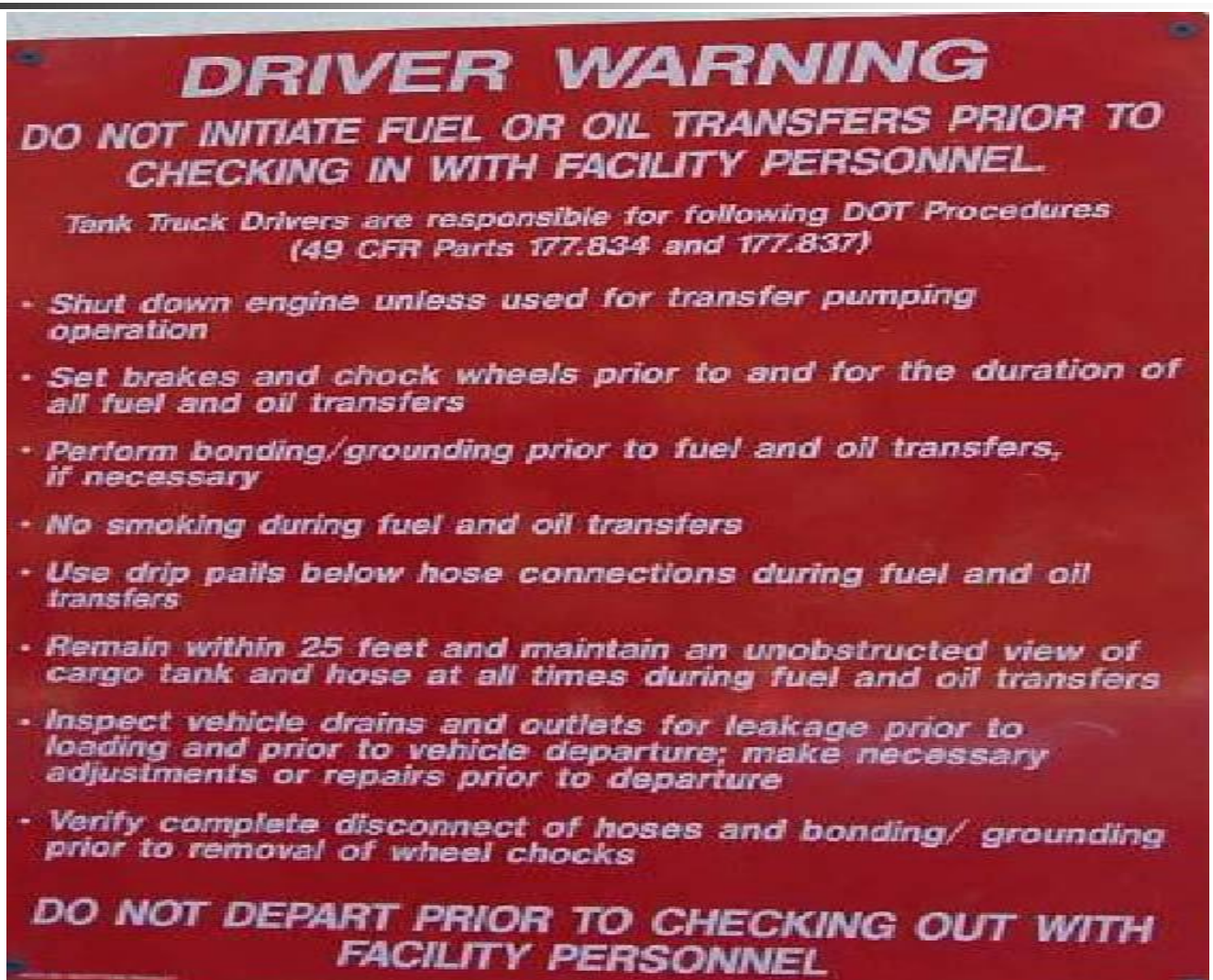
Do We Have Line Leak Detection?


550 GAL

TANK ANCHORS


EXIT 16
Diamondhead
EXIT ONLY
WAFFLE HOUSE

112.7 (a)(3)(ii) – Product Transfer Procedures - Delivery Instructions in Plan and Posted



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SPILL PREVENTION PROCEDURES
ALL FUEL TRUCKS
REMEMBER TO
DISCONNECT ALL LINES
AND SECURE
VALVES BEFORE
DEPARTURE.
TANK #3
PRODUCT: DIESEL
DESIGN CAP: 20,000 GALS.
WORKING CAP: 18,000 GALS.
TANK DIAMETER: 126"
TANK #1
PRODUCT: DIESEL
DESIGN CAP: 20,000 GALS.
WORKING CAP: 18,000 GALS.
TANK DIAMETER: 126"
TANK #4
PRODUCT: DIESEL
DESIGN CAP: 20,000 GALS.
WORKING CAP: 18,000 GALS.
TANK DIAMETER: 126"
TANK #2
PRODUCT: DIESEL
DESIGN CAP: 20,000 GALS.
WORKING CAP: 18,000 GALS.
TANK DIAMETER: 126"

Tank Design and Compliance with 112.7 of SPCC Regulations

(e) Inspections, Tests and Records

- Written procedures for inspections with records
  - ➔ Procedures
  - ➔ Schedule/frequency
  - ➔ Types of equipment
  - ➔ Persons conducting
  - ➔ Recordkeeping

- Made part of the plan and maintained for 5 years

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Tank Design and Compliance with 112.7 of SPCC Regulations

(g) Security

- Facility storing oil must be fully fenced and/or locked and/or guarded when unattended;
- All equipment must be secured;
- Ensure that master flow and drain valves so that they remain closed when in non-operating status
- Lock starter controls in off position
- Securely cap or blank-flange the loading/unloading connections of piping when not in use for extended periods of time
- Provide adequate lighting to ensure discovery of discharges
- Lighting may be required

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SECURITY 112.7 (g)

- Describe how you secure and control access to the oil handling, processing and storage areas
  - Secure master flow and drain valves
  - Prevent unauthorized access to starter controls on oil pumps
  - Secure out-of-service and loading/unloading connections of oil pipelines
  - Address the appropriateness of security lighting to both prevent acts of vandalism and assist in discovery of oil discharges

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AESTHETICS AND SECURITY

- ASTs may be more visible to the public
  - Consider camouflage or painting
  - Inside construction – concern for codes and accessibility
- Security concerns
  - Fencing may be required
  - Lighting may be required


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Vehicle Protection


NO SMOKING
DANGER
FUEL OIL
DANGER
ASOLINE
DANGER
FLAMMABLE
NOAA-4
DIESEL FUEL
ONLY
NOAA-3
GAS

INSPECTION DETAILS

- Inspection Criteria
- How Often?
- What Are You Looking For?
- What Tools Do You Need?
- What Types Of Inspections?
- Type of Tanks

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Inspection and Testing Intervals

- SP001 categorizes ASTs:
  - 1 - with spill control and leak detection
  - 2 – with spill control – no leak detection
  - 3 – without spill control or leak detection
- Matrix of Inspection and Testing requirements based on Category and tank size

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INSPECTION/TEST DESIGNATIONS

P – Periodic by Owner

E – Formal external by Certified Inspector

I – Formal Internal by Certified Inspector

L – Leak Test by Owner

Examples of Tank Configuration

Tank Configuration	Tank has CRDM	Tank Has Spill Control	AST Category
SW AST in contact with ground	no	no	3
SW AST in contact with ground	no	yes	2
Elevated Tank	yes	yes	1
AST Double Bottom	yes	yes	1
DW AST with overfill prevention	yes	yes	1
DW AST without overfill prevention	yes	no	3

CRDM: Continuous Leak Detection Method

INSPECTION SCHEDULE

Tank Size		Cat 1	Cat 2	Cat 3
Shop Built Tanks	0 – 1,100	P	P	P, E&L (10)
	1,101 – 5,000	P	P, E&L (10)	(P, E&L (5), I(10)) or (P, E(5) & L(2))
	5,001 – 30,000	P, E(20)	(P, E(10) & I(20)) or (P, E(5) & L(10))	(P, E&L (5), I(10)) or (P, E(5) & L(1))
	30,000 – 50,000	P, E(20)	(P, E&L(5) I(15))	(P, E&L(5) I(10))
Field Erected		P, E(5), I(10)	P, E(5), I(10)	P, E(5), I(10)
Portable Containers		P	P	P**

P-Periodic Insp. by Owner
E-External Insp. by Cert. Inspector
I-Internal Inspection
L-Leak Test

INSPECTION CHECKLISTS

- CHECKLIST DESIGNED FOR PERIODIC INSPECTION
  - DAILY
  - WEEKLY
  - MONTHLY AND QUARTERLY
  - SEMI-ANNUALLY
  - ANNUALLLY
- INCLUDES COMMENTS AND ITEMS TO BE CORRECTED

INSPECTION REQUIREMENTS

- Inspection Criteria May Be Required By Regulations or By Industry Codes and Standards
  - Industry Codes
    - Pre-Manufactured Tanks
      - Steel Tank Institute (STI) SP001-11
    - Field Fabricated
      - American Petroleum Institute (API) 653

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INSPECTION INTERVALS

- ROUTINE IN-SERVICE
  - Conducted by facility personnel at least every month.
  - State regulations may be more stringent (Daily).
  - Annual inspections, conduct by someone other than the person who performs the monthly inspection.
  - Integrity Inspection (Type of inspection will depend on the type of tank; off ground or on ground).
    - Off-Ground: Could be every 20 years, or less depending on professional judgment.
    - On-Ground : Could be every 1 to 20 years depending on; the type of tank, location, and professional judgment.

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INSPECTION INTERVALS

- INTEGRITY INSPECTION (Third Party Inspections)
  - Conducted by authorized inspector (API 653, STI, or other qualified individual).
  - SPCC Plan will determine integrity inspection schedule on small manufactured AST.
  - One API ASTs interval shall be 5 years or the quarter corrosion rate life of the tank shell, whichever is less.

CONTAINER AND EQUIPMENT INSPECTIONS AND TESTING PROGRAM

Facility Component	Action	Frequency/Circumstances
All aboveground valves, piping and appurtenances	Assess general condition of items, such as flange joints, expansion joints, valves, catch pans, pipeline supports, locking of valves and metal surfaces.	Monthly
Monitoring system	Test for proper operation	Monthly by facility personnel, annual by certified installer who should inspect and test all sensors and level gages.
Oil/Water separator	Clean out	Annually or as required.
Buried Piping	Testing	Annually


CAP.
1,000
GALS.
NO. 2
FUEL
OIL
COMBUSTIBLE

WHAT ARE WE LOOKING FOR?

- Leaks and Spills
- Damaged or Worn Components
  - Piping Supports
  - Paint
  - Pumps
  - Alarms
- Labeling
- Spill Supplies

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Piping Support

WHAT ARE WE LOOKING FOR?

- Proper Venting
  - Primary Venting
  - Emergency Venting
- Gauging
  - Visual
  - Electronic
- Tank Anchors
- Proper Grounding

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Paint Condition

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Check Stairways and Ladders


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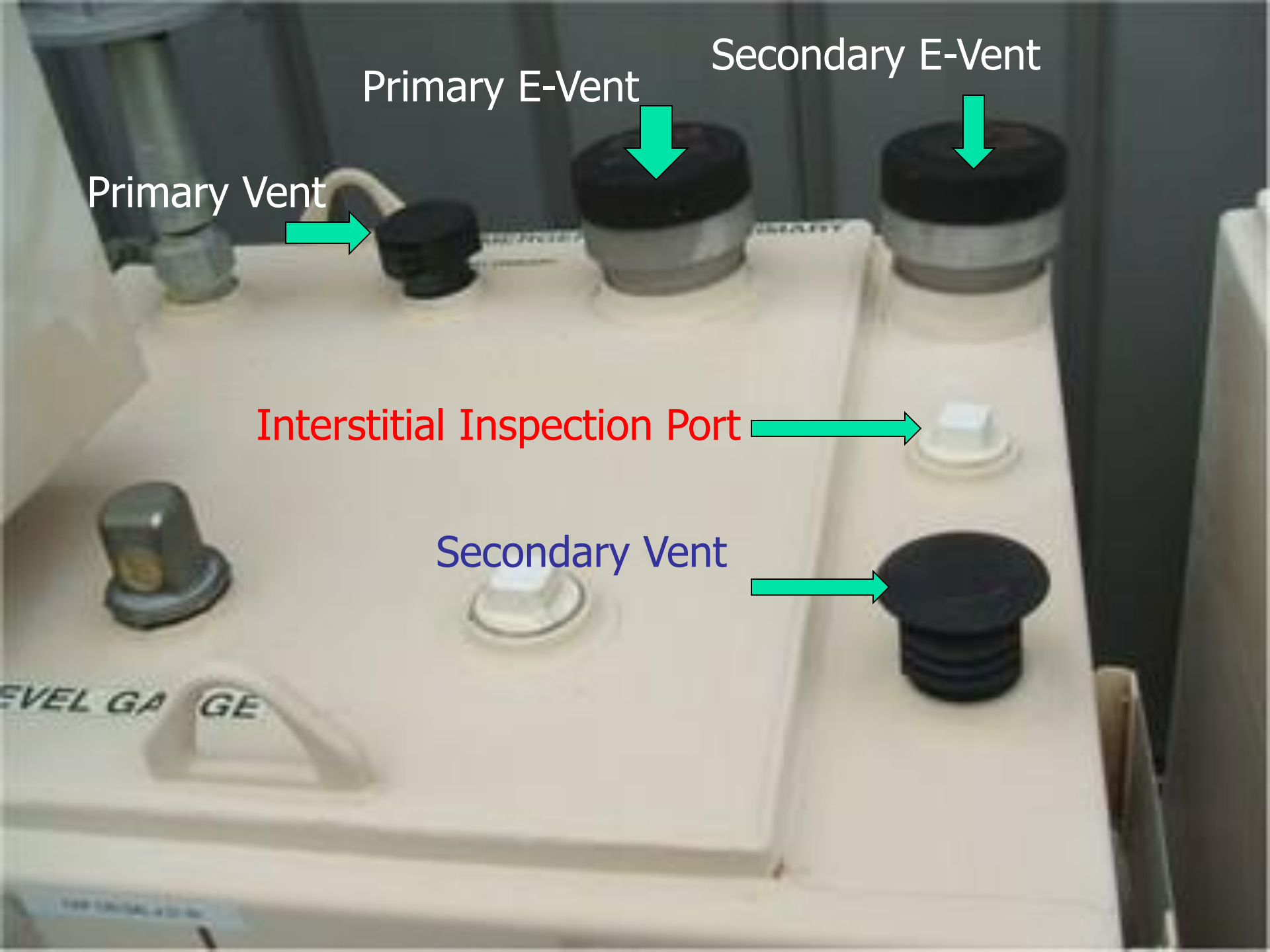
Secondary E-Vent
Primary E-Vent
Primary Vent
Interstitial Inspection Port
Secondary Vent

Proper Signage

Secondary Monitoring

RECORDS

- Copies of Past Inspections
- Installation Documentation
- Maintenance Records
- Leak Detection Records
- Registration and Permits

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Active Measures

- Active containment measures require deployment or other specific action by the owner or operator
- May be appropriate for discharges that occur during manned activities if it:
  - Can contain the volume and rate of oil
  - Is properly constructed
  - Is deployed in a timely manner

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Confirm Spill Kits are On Site Wherever Needed and Fully Stocked

The Effect of Time On ASTs


NO SMOKING