GSFC INTEGRATED CONTINGENCY PLAN (ICP)

NASA's Goddard Space Flight Center
Greenbelt Campus Only

Supervisors & Oil Handling Personnel Training

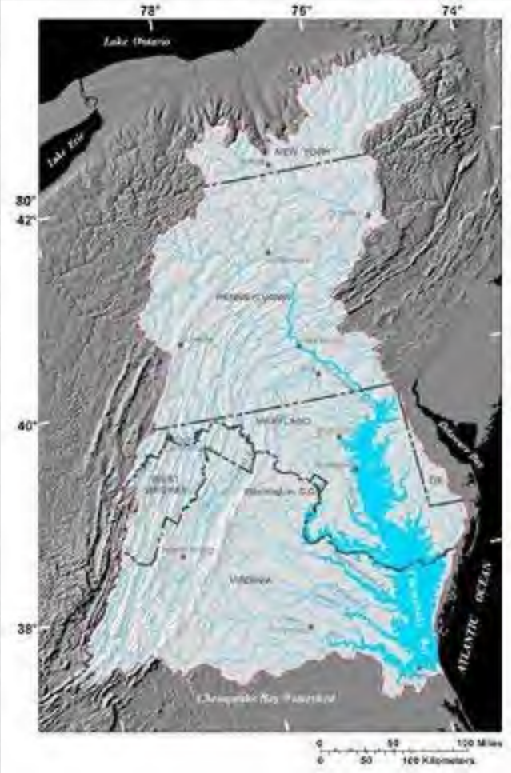
Training Content

- A brief historical review
- Oil Operations Background
- ICP Overview
- Definitions
- Reportable Releases (Spills)
- Tank Management Requirements
- Recordkeeping Requirements
- Contact Information

Oil Operations Environmental Impacts

GSFC is located in the Chesapeake Bay watershed.

- It spans more than **64,000 square miles**, and encompasses parts of six states—Delaware, Maryland, New York, Pennsylvania, Virginia and West Virginia—and the entire District of Columbia.
- The Chesapeake Bay is North America's largest **estuary** and has a shoreline of more than 12,800 kilometers (8,000 miles- long than the entire west coast of the USA).
- Spills and other harmful activities pose a negative impact on the Bay if not properly managed.
- GSFC strives to reduce source point and non-source point pollution to the watershed.

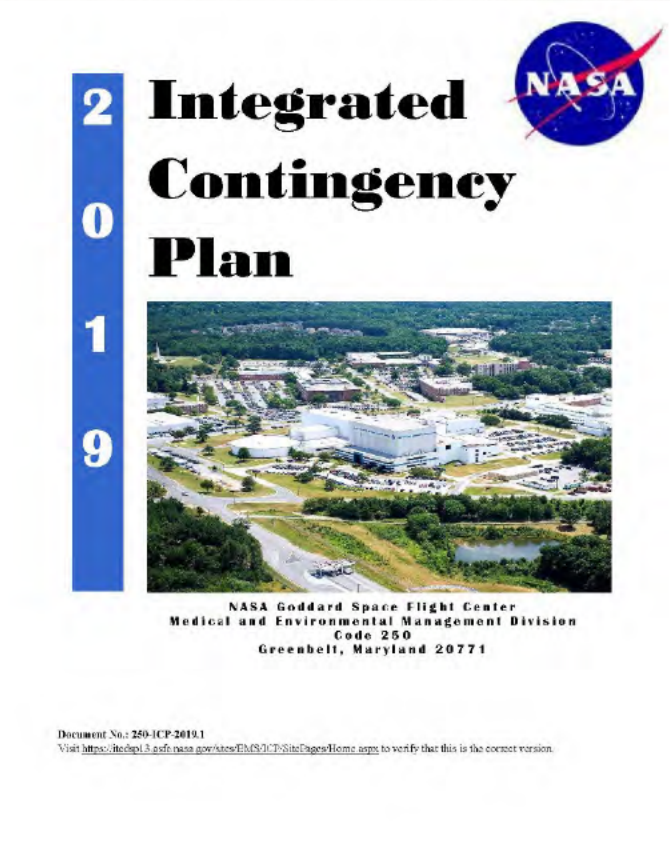


Oil Operations at GSFC

GSFC manages and stores approximately **288,000 gallons** of petroleum and non-petroleum products. The Center operates under an Oil Operations Permit issued by the state of Maryland, which includes regulatory requirements for storing and managing petroleum and non-petroleum products onsite.

GSFC owns more than 30 Aboveground Storage Tanks (ASTs). The largest tanks on Center are a system of three 50,000 gallon tanks located near Bldg. 24, the Central Heating and Refrigeration Plant.

GSFC's ICP


2019

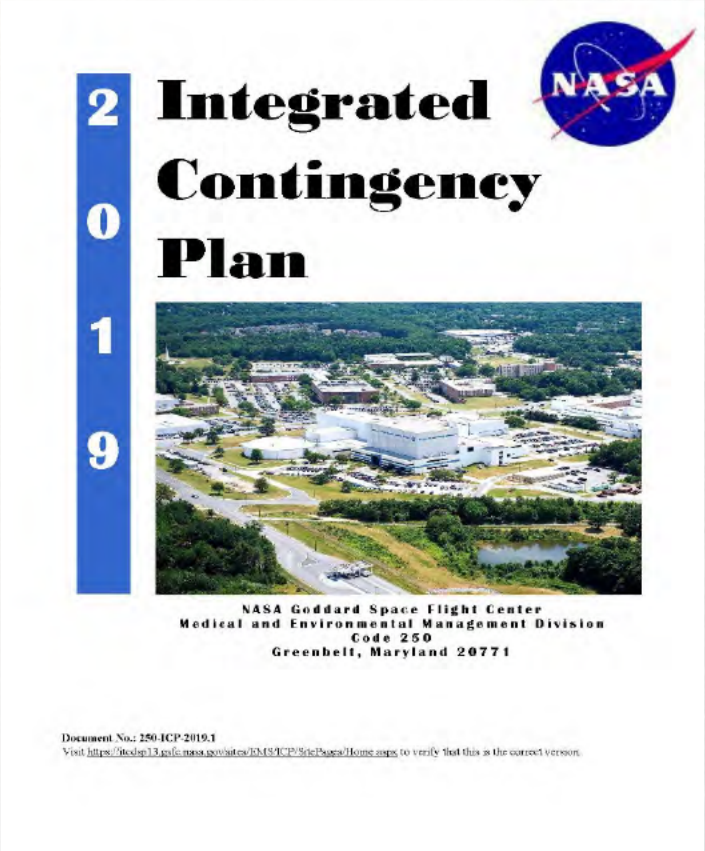
Integrated Contingency Plan

NASA Goddard Space Flight Center
Medical and Environmental Management Division
Code 250
Greenbelt, Maryland 20771

Document No.: 250-ICP-2019.1
Visit https://itedsp13.gsfc.nasa.gov/sites/EMS/ICP/SitePages/Home.aspx to verify that this is the correct version.

GSFC's ICP is a unique document that incorporates Federal, State, NASA, and GSFC regulations and guidelines into one document. It describes oil handling procedures, secondary containment requirements, and critical emergency response procedures for spills.

GSFC's ICP



2019

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The ICP contains the Center oil inventory, maps, and checklists including:

- Maryland Department of the Environment (MDE) Spill Incident Form
- Monthly Oil Inspection Checklists
- Oil Transfer Checklist
- Secondary Containment Release Checklist

How do you access the ICP?

- The official copy of the ICP is a digital document which resides on the Medical and Environmental Management Division's (MEMD) website at https://code200-external.gsfc.nasa.gov/250/ under "Documents."
- Individuals must contact MEMD to gain access to the ICP.
- The owner of any hardcopies must ensure they are using the most current version of the ICP.
- Any amendments or changes to the ICP will be uploaded to the MEMD website.

Who needs ICP training?

All oil handling personnel must complete ICP training annually.

The ICP defines "oil handling personnel" as those individuals who:

- Use, store, and/or transfer oil;
- Witness the use, storage and/or transfer of oil;
- Supervise the use, storage and/or transfer of oil;

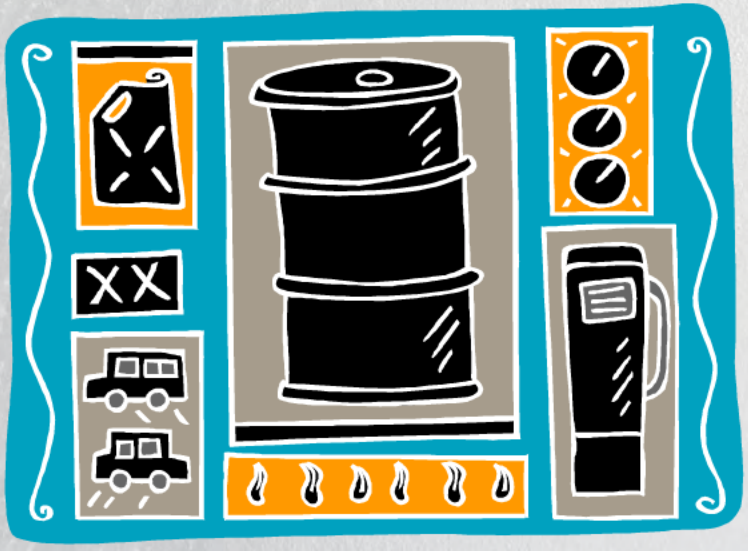
Oil handling personnel also include:

- Employees who repair or maintain machinery that contains oil;
- Individuals who perform emergency response functions for spills;
- Supervisors of the above employees.

Definition of Oil

The ICP definition of oil includes petroleum-based oils (e.g., gasoline, diesel, #2 fuel oil, hydraulic fluid, motor oil) and non-petroleum oils (e.g., animal fats, vegetable oils).

The ICP also applies to chemical releases, such as those found in laboratories or construction materials containing potentially harmful chemicals.



Definition of Bulk Storage Container

The ICP defines a bulk storage container as <u>any</u> container of oil with a storage **capacity** of 55-gallons or more including:

- Stationary Storage Tanks
- Portable Storage Tanks
- Mobile Generator Tanks
- Drums
- Aboveground Storage Tanks

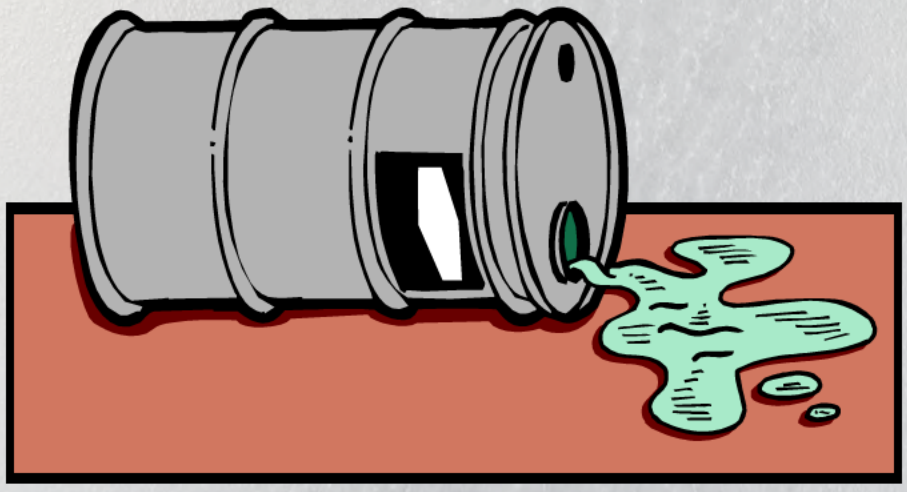
The ICP also applies to oil-filled equipment such as:

- Transformers
- Generators
- Elevators
- Centrifuges

Definition of a Reportable Release (Spill)

A **reportable release** is any impermissible release of a solid, liquid, or gaseous compound to the environment (e.g., on the floor, to the air, on the ground, down a drain). Examples include:

- Antifreeze or oil leak from a car or an air conditioning unit;
- Hydraulic fluid leak from heavy equipment; or
- Broken mercury thermometer or other mercury-containing device.



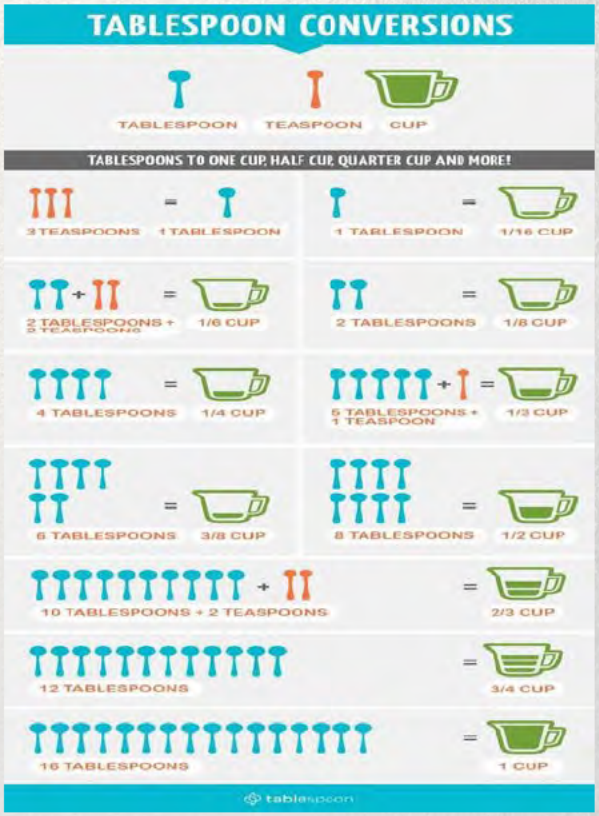
Estimating spilled material

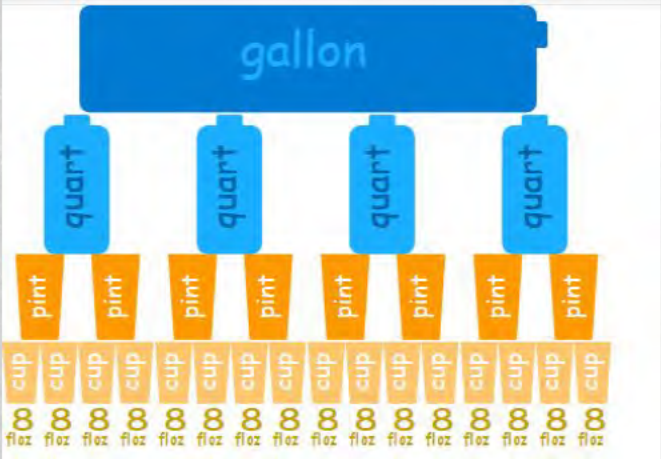
The table below is the conversion from teaspoons to gallons. In order to ensure compliance with our oil permit, we need to know how much material has been released. The following slides will show what these volumes look like when spilled on a hard surface.

STANDARD -> METRIC CONVERSIONS						
STANDARD MEASURE		EQUIVALENT TO		PRECISE CONVERSION		APPROXIMATE CONVERSION
1 tbsp	=	3 tsp	=	14.78677 mL	≈	15 mL
1 fl oz	=	2 tbsp	=	29.57353 mL	≈	30 mL
1 cup	=	8 fl oz	=	236.58824 mL	≈	237 mL
1 pint	=	2 cups	=	473.17648 mL	≈	473 mL
1 pint	=	16 fl oz	=	473.17648 mL	≈	473 mL
1 quart	=	2 pints	=	946.35296 mL	≈	946 mL
1 gallon	=	4 quarts	=	3.7854 L	≈	3.8 L
1 gallon	=	128 fl oz	=	3.7854 L	≈	3.8 L
1 gallon = 4 quarts = 8 pints = 16 cups = 128 fl oz						
www.math-salamanders.com						

The next slide visually brings these relationships together

More visual representations





Now that you have a visual relationship, what does it look like when on an impervious surface?

1 cup

1 pint

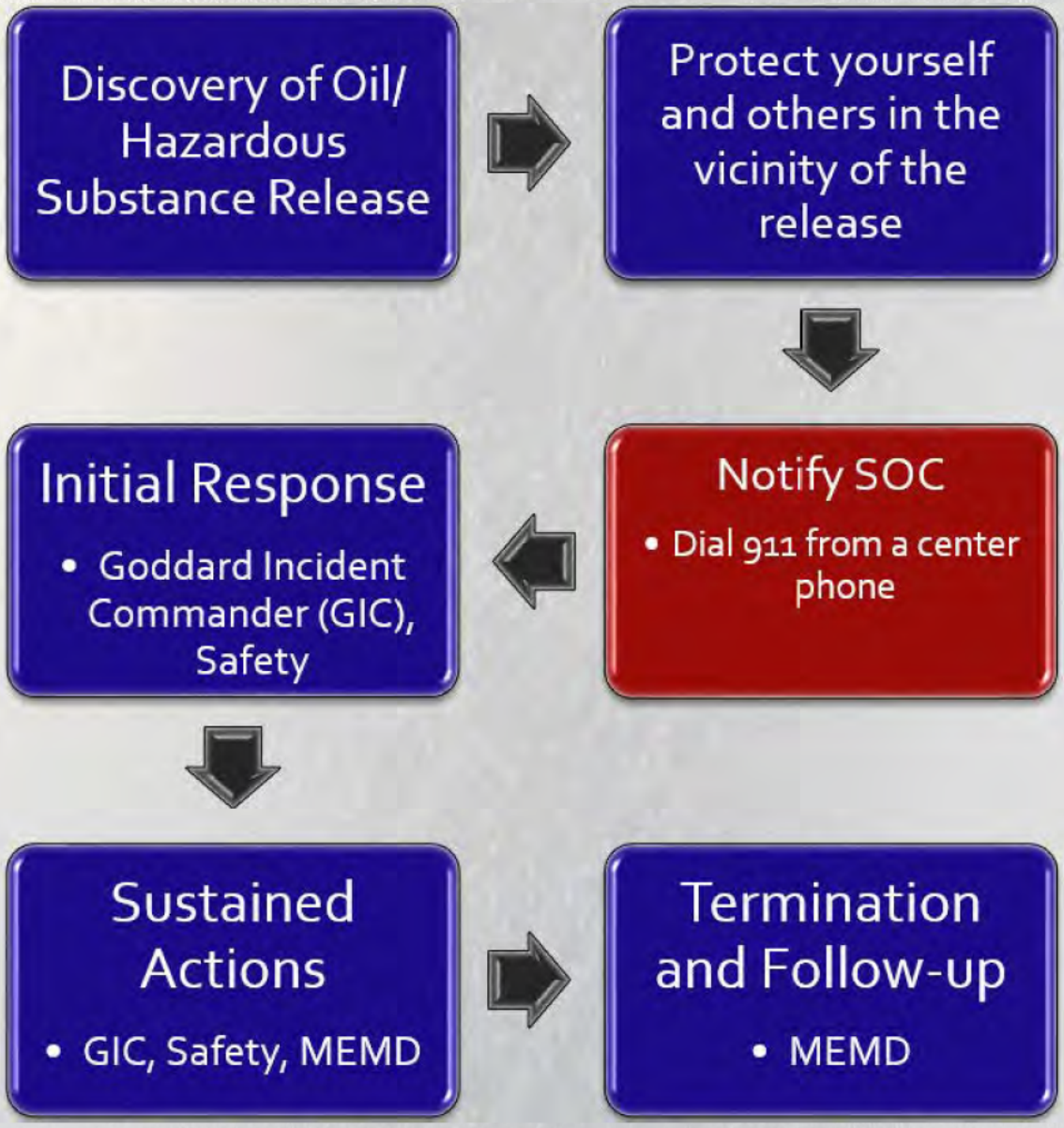
1 quart

Spills from Vehicles and Equipment

If a vehicle (personal, government or contractor owned) or operational equipment (e.g., forklift, lawnmower, truck) is leaking oil, fuel, hydraulic fluid, antifreeze or any other substance, this constitutes a release.

Washing of these substances into local waterways (through rainfall, melting snow, etc.) may result in contamination of the water and/or soil and could result in a violation. This is a perfect example of **non-point source** pollution.

Spill Reporting and Response



Discovery

What to do upon discovering an oil or hazardous substance release (or any type of emergency).

If you are involved in a release or spill to the environment or within your building, take the following actions:

- **Protect yourself and those in the vicinity from the release.**
- **Report ALL onsite hazardous material and oil or petroleum product spills/releases to the Security Operations Center (SOC)** by:
  - Dialing **911** (using an onsite phone) or
  - **(301) 286-9111** (using an offsite or cellular phone) or
  - Contacting the Security Operations Center (SOC) from a Goddard-issued radio.

If in doubt as to whether or not to call the SOC err on the side of caution and report the spill.

Reporting A Spill

GSFC's oil operations permit imposes regulatory reporting requirements to the State. The MEMD responds to and tracks all spills reported to the SOC and completes regulatory notifications, if required.

When you report a spill to the SOC, the Operator should request the following information:

- Name, code and phone number of reporting party
- Type of emergency (fire, chemical spill, etc.)
- Location of emergency
- Any injury to personnel
- Cause of emergency (if known)

Reporting A Spill

- When reporting spills, be prepared to provide as much information as possible to the SOC Operator, including:
  - Type and/or name of chemical (if known)
  - Estimated quantity and flow rate (if known)
  - The source of the spill (if known)
  - If the spill poses a risk to people/ environment
  - If spill has been contained or controlled
  - If spill has entered any surface water, drains, etc.

Primary Emergency Contacts

Security Operations Center (SOC)

911 from all internal telephones

Security Operations Center (SOC)

301-286-9111 or radio SOC

Goddard Incident Commander (GIC)

301-286-8661

GSFC Emergency Manager

301-286-1109

Building Emergency Plan (BEP)

- **All GSFC employees are expected to read and understand the BEP for their respective buildings.**
- BEPs describe the actions and responses required during emergencies, including evacuation plans.
- BEPs are specific to each building.
- Plans can be found:
  - Posted in building,
  - On the Protective Services Division website, and
  - Through building Facilities Operations Mangers (FOM) or Supervisors.

Spill Prevention

GSFC has developed and implemented various spill prevention and control measures to reduce the potential for petroleum spills, including:

- Tank Design Guidelines;
- Monthly Inspection requirements;
- Bulk Oil Transfer procedures; and
- Secondary Containment Release procedures.

Prevention Measures are discussed in detail within the ICP.

Prevention

Spill prevention and control measures are used to:

- Prevent uncontrolled releases of oil;
- Ensure that GSFC performs and documents necessary activities required for compliance with its Oil Operations Permit; and
- Meet State of Maryland and federal regulations.
- Cost control. Cleaning up spills is very expensive

The owner/operator of the oil storage system is responsible for supervision, documentation, and record retention.

Tank Requirements

GSFC's ICP details requirements for all oil storage containers at the Greenbelt site. MEMD regularly inspects storage tanks to ensure continuous compliance with training, housekeeping, structural, and inspection requirements. At a minimum, inspections evaluate and document the following requirements.

- Labeling
- Tank Gauge
- Overfill Protection
- Secondary Containment
- Lighting
- Normal (Atmospheric)
- Emergency Venting
- Spill Kit
- Records (e.g., logbook)

Above Ground Storage Tank (AST) Diagram

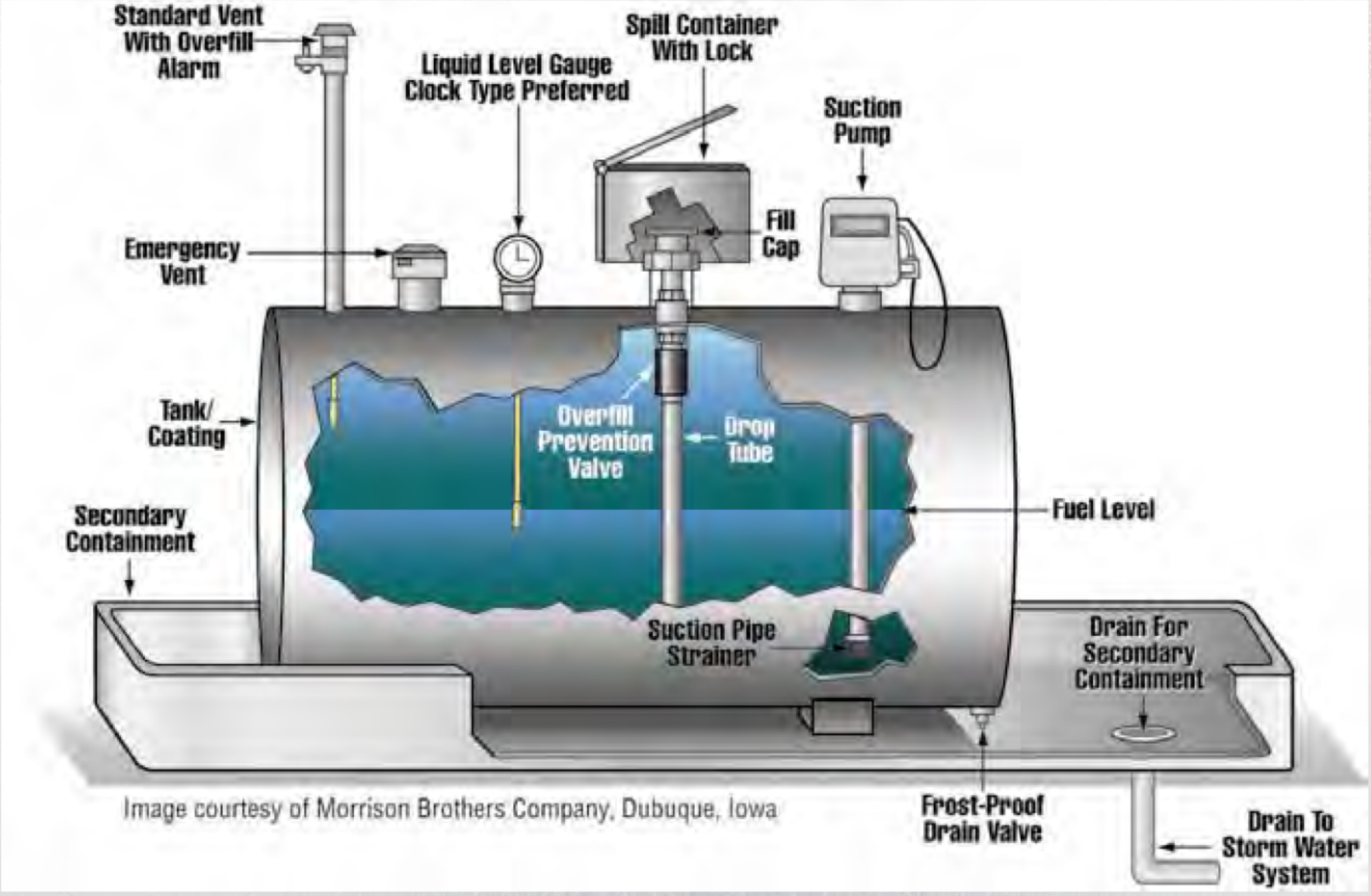
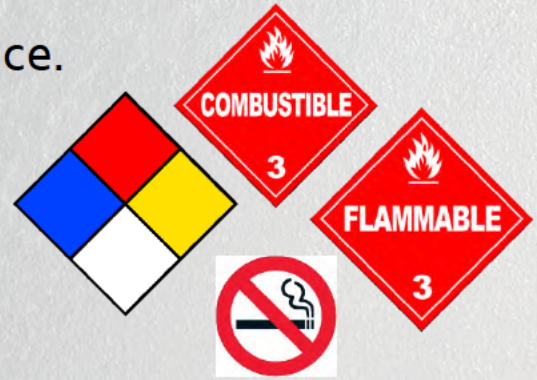


Image courtesy of Morrison Brothers Company, Dubuque, Iowa

Labeling

- Place labels on side of tank that is visible when approaching the tank.
- Should be large enough to be viewed from a distance.

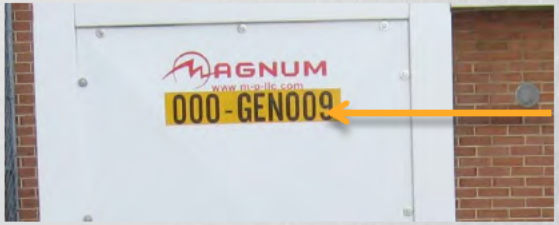
Tank Hazard



Tank Contents

Tank Capacity

55 GALLONS



Tank Identification Number

031B-FST001

Tank Gauging and Overfill Protection

All ASTs must be equipped with a fast response system for determining liquid level in each container. The system must include both a gauge and an overfill alarm.

- The gauge must be precise enough to be useful in performing inventory monitoring. ("pop-up" style gauges **do not** meet this requirement).
- The overfill alarm must operate independently of the gauge.
- The overfill alarm must activate when liquid level reaches 90% of the tanks maximum safe fill height.

Tank Gauging and Overfill Protection

Acceptable Types of Devices : Gauging

Tank Gauging Stick

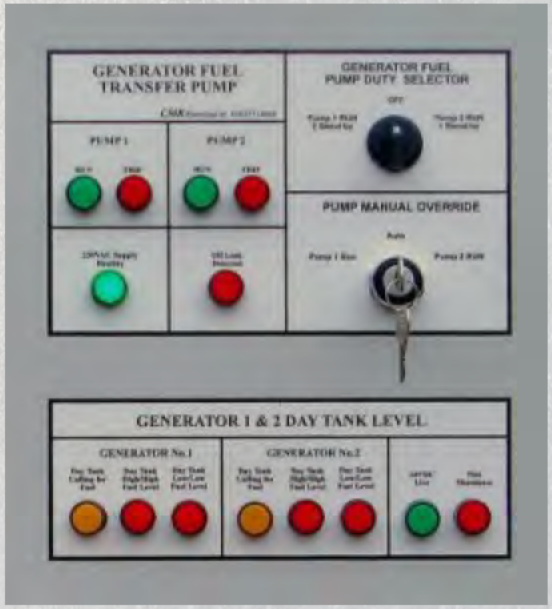
Clock Gauge

Digital Fuel Level Monitor

Tank Gauging and Overfill Protection

Acceptable Devices : Overfill Protection

Audible Alarm



Visual Alarm

Pop-up sensor

Tank Gauging and Overfill Protection

Operators are responsible for:

- Effectively utilizing the gauge to quickly determine liquid level inside the tank.
- Proper maintenance of the gauge in accordance with manufacturers recommendations.
- **Annually test of overfill protection device to insure proper operation**.
- Testing needs to be documented

Secondary Containment

All bulk storage containers with a capacity of 55-gallons or more shall be either double walled or provided with secondary containment.

- Secondary containment area should be sized to hold the volume of the largest container plus freeboard for precipitation.
- Drainage valves must remain in a secured position when not in use.
- Tank owner must have a system to monitor secondary containment area for leaks.

Secondary Containment - Types

Diked areas can be either permanent or temporary water tight structures that are capable of holding the appropriate volume of oil and rainwater (if applicable)

Accumulated rainwater must be drained in accordance with procedures outlined in the ICP, – Secondary Containment Release Procedures and Checklist.

Secondary Containment

Containment pallets provide secondary containment for 55-gallon drums and small containers.

Secondary Containment

Double Walled Tanks consist of a primary tank containing the product wrapped in a second tank providing containment. The space between the inner and outer tank is called the interstitial space.

- Interstitial space is also called annular space. The annulus is the space between the outside wall of the container and the inside wall of its secondary containment.
- Interstitial space must be accessible to check for the presence of liquid.
- If you observe oil in the interstitial space, document it on the monthly inspection checklist and notify MEMD immediately.

Lighting

Each AST requires lighting that is sufficient to assist in the discovery of discharges at night.

Spill Kit

An emergency spill kit should be maintained at or near all tanks and oil storage areas. This applies to rental equipment brought on site for short term use

Record Keeping

- The **owner/ operator** of the oil storage system is responsible for maintaining all records of inspections, bulk oil transfers, and secondary containment release information for 3 years.
- The Logbook with the completed inspection forms must be kept at or near the tank location and be available for random inspections.

Monthly Oil Inspections

The Monthly Inspection Checklist is used to document the required inspection of all oil storage systems ≥55 gallons, including ASTs, drums, generators, and mobile fuel tanks. Monthly Detailed inspection procedures and the checklist are in **Appendix D** of the ICP.

- Tank owner is responsible for monthly inspections
- Monthly inspection procedures include maintenance and housekeeping requirements
- Inspections must be documented on the checklist provided in the ICP

Monthly Oil Inspections

- Record volume in the tank and date of inspection.
- Check tank shell, footings and appurtenances for damage or evidence of corrosion.
- Ensure that the area around the tank is clean and orderly.
- Look for evidence of spills.
- Check of interstitial space for evidence of leakage from the inner tank.
- Note any corrective actions or preventative measures implemented

GSFC ICP Monthly Inspection Checklist

Tank/Oil Storage Area Number:_____ Visit https://itcdsp13.gsfc.nasa.gov/sites/EMS/ICP/SitePages/Home.aspx to verify that this is the correct version.

Inspection Date MM/DD/YYYY	Fuel Level	Tank/Drum in good condition	Pipes/ Nozzle in good condition (if applicable)	Secondary Containment in good condition (if applicable)	Area is clean and orderly	Spills identified or observed near the tank or drum	Overfill alarm working properly	Liquid in the interstitial space	Notes and/or Maintenance Performed
		☐ ☐ Yes No	☐ ☐ Yes No	☐ ☐ Yes No	☐ ☐ Yes No	☐ ☐ Yes No	☐ ☐ Yes No	☐ ☐ Yes No	
		☐ ☐ Yes No	☐ ☐ Yes No	☐ ☐ Yes No	☐ ☐ Yes No	☐ ☐ Yes No	☐ ☐ Yes No	☐ ☐ Yes No	

Oil Transfer Procedure

Oil transfer is defined as transferring oil from one container to another. The full procedures for oil transfers are provided in **Appendix E** of the ICP. Note that the storage tank must be gauged prior to and after active filling. This is a federal and state regulatory requirement.

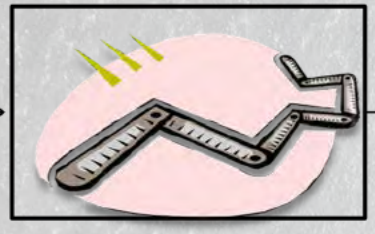
1. Gauge the tank prior to filling. The gauge level (in inches/gallons) must be written down in the Logbook associated with that particular tank.
2. After the initial gauging, tank filling must be supervised by two people, other than the person filling the tank. One person must watch the tank gauge, and another person watches the person filling the tank.
3. When the tank is at 90%, the oil transfer operations cease.
4. Look at the tank gauge again and record the level (in inches/gallons), and indicate how much oil was added.
5. Only trained personnel can accept delivery.

Oil Transfer Checklist

- Detailed procedures and checklist are in Appendix E.
- Lists inspection items that help to prevent spills during refueling operations.
- The checklist must be completed any time a tank is filled or oil is transferred.
- During filling of an AST, a designated individual from GSFC must witness the transfer in addition to the person delivering fuel.

Oil Transfer Procedure Summary

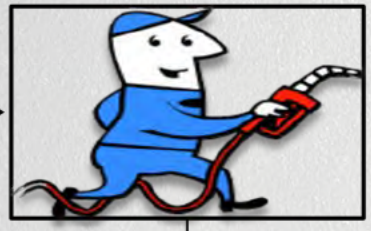
Gauge Tank Prior to Filling



Record Fuel Level and Amount of Fuel on Truck in Logbook

Prepare Fueling Area for Oil Transfer

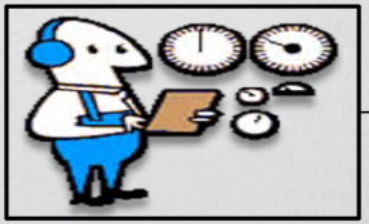
Begin Fuel Transfer



One Person Watches Fuel Gauge; One person watches fueling operation

Complete Fuel Transfer

Gauge Tank After Filling

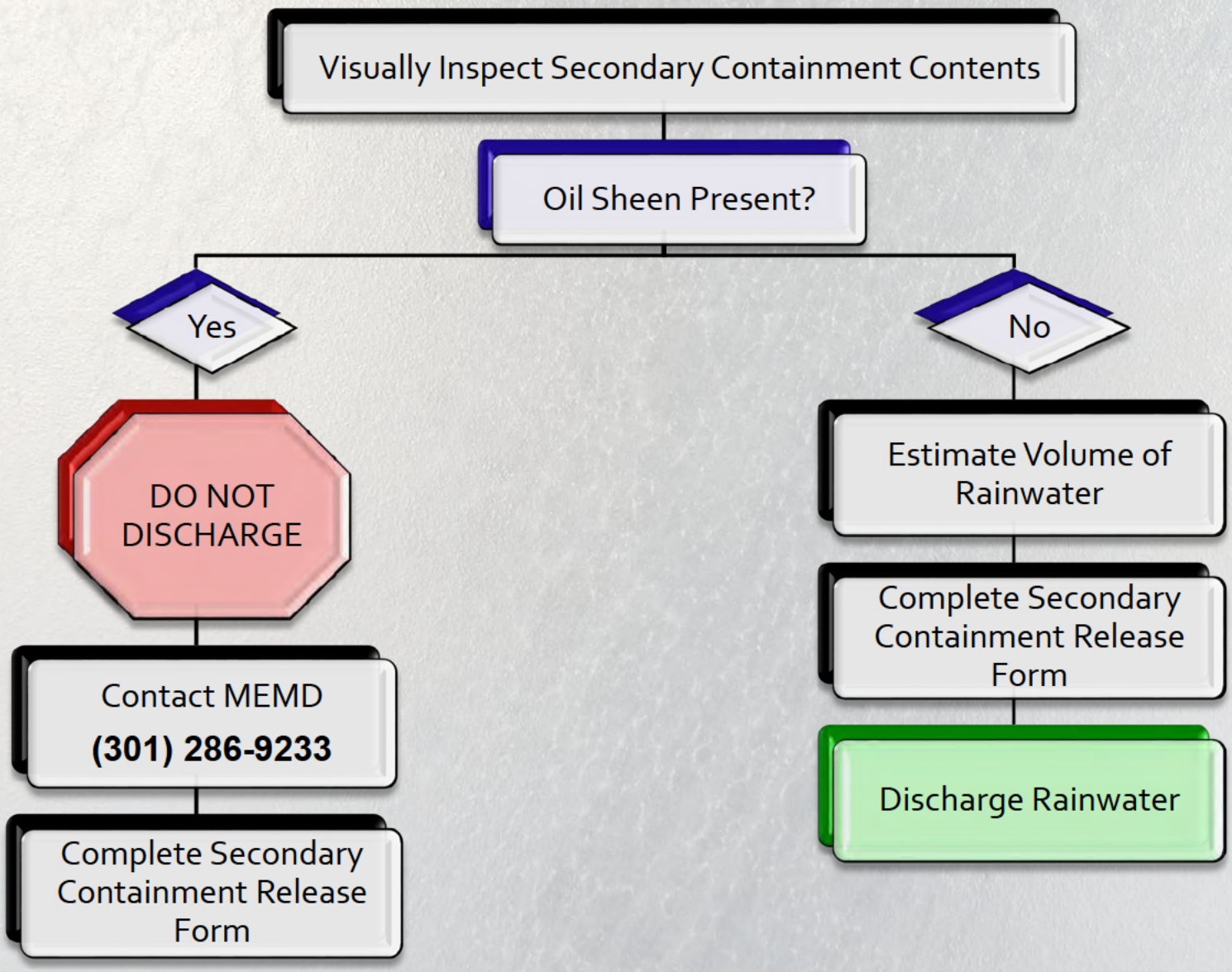


Record Amount Transferred in Logbook

Secondary Containment Release

- The secondary containment release form and procedures are in the ICP.
- The form must be completed any time contents are discharged.
- A **witness** must be present and initial completed form prior to discharge of non-oily containment liquid.
- You must document if there is oil or an oil/water mixture present.
- If a sheen is present, do **NOT** discharge. Contact the MEMD at (301) 286-9233 for assistance.

Secondary Containment Release Summary

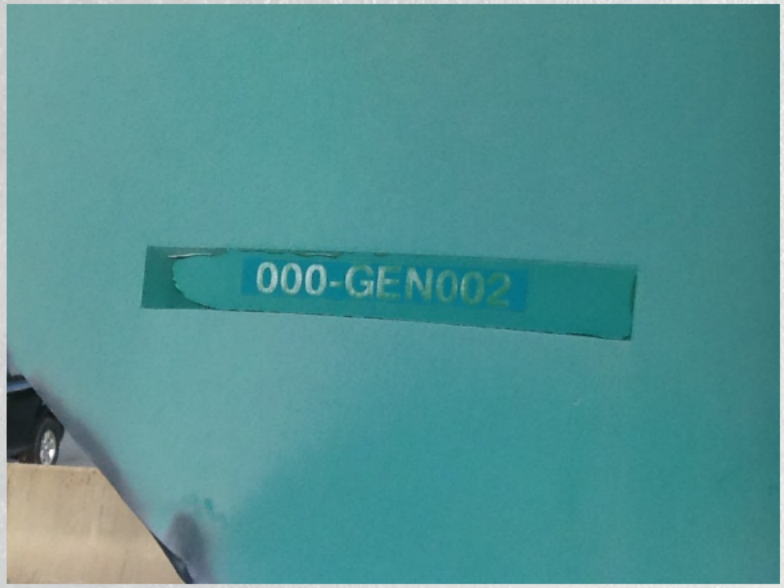


Common Compliance Findings

MEMD regularly assesses the compliance of all tanks and oil operations at GSFC. All findings are tracked to closure.

Common Findings

- Improper Labeling
- Evidence of Corrosion
- Incomplete or missing records/forms
- Evidence of unreported spills
- Lack of Secondary Containment



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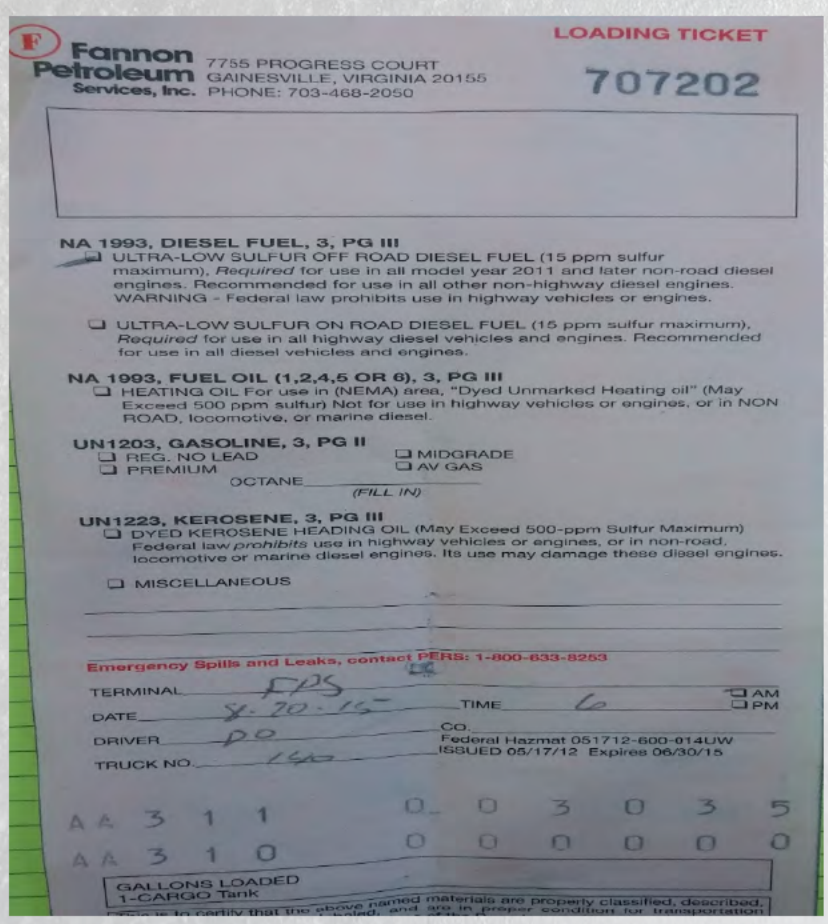


Fannon Petroleum Services, Inc.
7755 PROGRESS COURT
GAINESVILLE, VIRGINIA 20155
PHONE: 703-468-2050

LOADING TICKET
707202

NA 1993, DIESEL FUEL, 3, PG III
☐ ULTRA-LOW SULFUR OFF ROAD DIESEL FUEL (15 ppm sulfur maximum), *Required* for use in all model year 2011 and later non-road diesel engines. Recommended for use in all other non-highway diesel engines. WARNING - Federal law prohibits use in highway vehicles or engines.

☐ ULTRA-LOW SULFUR ON ROAD DIESEL FUEL (15 ppm sulfur maximum), *Required* for use in all highway diesel vehicles and engines. Recommended for use in all diesel vehicles and engines.

NA 1993, FUEL OIL (1,2,4,5 OR 6), 3, PG III
☐ HEATING OIL For use in (NEMA) area, "Dyed Unmarked Heating oil" (May Exceed 500 ppm sulfur) Not for use in highway vehicles or engines, or in NON ROAD, locomotive, or marine diesel.

UN1203, GASOLINE, 3, PG II
☐ REG. NO LEAD ☐ MIDGRADE
☐ PREMIUM ☐ AV GAS
OCTANE _____ (FILL IN)

UN1223, KEROSENE, 3, PG III
☐ DYED KEROSENE HEADING OIL (May Exceed 500-ppm Sulfur Maximum) Federal law *prohibits* use in highway vehicles or engines, or in non-road, locomotive or marine diesel engines. Its use may damage these diesel engines.

☐ MISCELLANEOUS

Emergency Spills and Leaks, contact PERS: 1-800-633-8253

TERMINAL FPS
DATE 8-20-15 TIME 6 ☐ AM ☐ PM
DRIVER DO CO.
TRUCK NO. 140
Federal Hazmat 051712-600-014UW
ISSUED 05/17/12 Expires 06/30/15

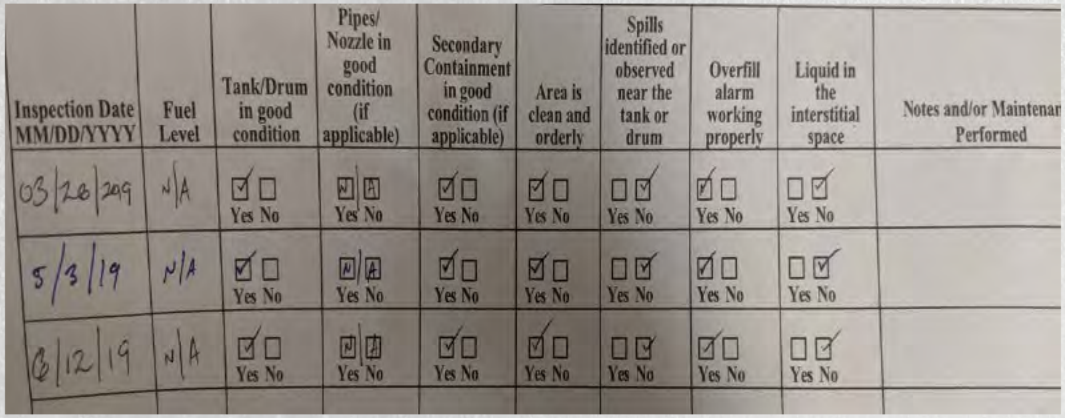
AA 3 1 1 0 0 3 0 3 5
AA 3 1 0 0 0 0 0 0 0

GALLONS LOADED
1-CARGO Tank

I hereby certify that the above named materials are properly classified, described, packaged, and are in proper condition for transportation

Common Findings

- Improper Labeling
- Evidence of Corrosion
- Incomplete or missing records/forms
- Evidence of unreported spills
- Lack of Secondary Containment



Inspection Date MM/DD/YYYY	Fuel Level	Tank/Drum in good condition	Pipes/ Nozzle in good condition (if applicable)	Secondary Containment in good condition (if applicable)	Area is clean and orderly	Spills identified or observed near the tank or drum	Overfill alarm working properly	Liquid in the interstitial space	Notes and/or Maintenan Performed
03/26/209	N/A	☑ Yes ☐ No	N/A Yes No	☑ Yes ☐ No	☑ Yes ☐ No	☐ Yes ☑ No	☑ Yes ☐ No	☐ Yes ☑ No	
5/3/19	N/A	☑ Yes ☐ No	N/A Yes No	☑ Yes ☐ No	☑ Yes ☐ No	☐ Yes ☑ No	☑ Yes ☐ No	☐ Yes ☑ No	
8/12/19	N/A	☑ Yes ☐ No	N/A Yes No	☑ Yes ☐ No	☑ Yes ☐ No	☐ Yes ☑ No	☑ Yes ☐ No	☐ Yes ☑ No	

Common Findings

- Improper Labeling
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Points of Contact

Organization	Number	Reason to call
SOC	**(301) 286-9111 or 911**	Report spills/other emergencies
Lori Levine (Code 250)	**(301) 286-6741 or (301) 286-7442 (main)**	Questions regarding ICP
MEMD Hazardous Waste	**(301) 286-9233**	Report mixture of oil/water in secondary containment

Review

The ICP is designed to protect you, the environment, GSFC property and GSFC's mission. This training has covered the following:

- Necessary actions to be taken in the event of an oil or hazardous substance release or spill.
- Preventive measures to reduce the number and volume of spills.
- Roles and responsibilities for key personnel.

This training fulfills annual training requirements for the ICP.

Additional Information

Take appropriate environmental training for your job, such as:

- Environmental Awareness Training
- Storm Water Pollution Prevention Plan
- Hazardous Waste Management

Call the Code 250 Medical and Environmental Management Division at 6-7442 or 301-286-7442 (from an offsite or cellular phone) or email at gsfc-enviro@lists.nasa.gov.

Visit https://code200-external.gsfc.nasa.gov/250/ for environmental program information and points of contact

My email for any questions**: howard.m.syvarth@nasa.gov**

WHAT DO YOU SEE?

Or what's wrong with this...

SPOT THE ISSUE(S) IN EACH OPERATION!

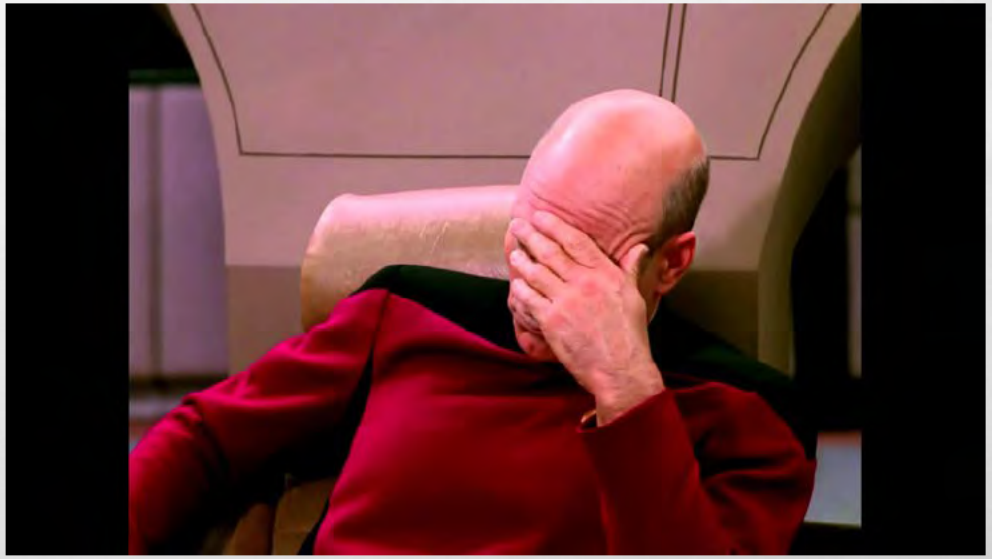
WHAT DO YOU SEE?

SPEAK UP.....my mind reading skills are rusty

Labels are missing or/faded

CORRECTIVE ACTIONS

- REPLACE LABELS



WHAT DO YOU SEE?

- NOTHING!!!
  - THE CAPACITY OF THIS TANK IS ONLY 35 GALLONS (REGULATIONS ARE FOR CONTAINERS 55 GAL OR LARGER)
  - LABELING CAPACITY OF SMALL CONTAINERS IS HELPFUL BUT NOT REQUIRED

WHAT DO YOU SEE?

- TANK LABELS ARE MISSING
  - CAPACITY
  - CONTENTS
  - HAZARD IDENTIFICATION
- MISSING ADEQUATE LIGHTING

CORRECTIVE ACTIONS

- LABEL ALL OIL CONTAINERS WITH A CAPACITY OF 55 GALLONS OR GREATER.
- PORTABLE CONTAINERS LIKE 55 GALLON DRUMS MAY HAVE LABELS ATTACHED TO THE DRUM OR AFFIXED TO THE ADJACENT WALL.
- ENSURE THAT LABELS CAN BE SEEN BY RESPONDERS APPROACHING THE UNIT
- PROVIDE SUFFICIENT LIGHTING

WHAT DO YOU SEE?

- LABELS ARE MISSING
- NO RECORDS OF INSPECTION
- UNIT IS NOT INCLUDED IN ICP
- TANK OWNER HAS NOT TAKEN APPROPRIATE TRAINING

This is new unit that was delivered to the center discovered by Code 250.

CORRECTIVE ACTIONS

- NOTIFY CODE 250 PRIOR TO DELIVERY OF NEW UNITS
- ENVIRONMENTAL ADMINISTRATIVE LOCKOUT/TAGOUT WILL RELIEVE ENVIRONMENTAL COMPLIANCE LIABILITY UNTIL UNITS ARE READY TO BE PLACED INTO SERVICE
- COMPLETE ICP TRAINING ANNUALLY

WHAT DO YOU SEE?

- ALL LABELS ARE MISSING
- NO RECORDS OF INSPECTION
- NO TRAINING HAS BEEN COMPLETED
- DRUMS STORED IN SUB-BASEMENT TO SUPPORT EQUIPMENT THAT IS NO LONGER NEEDED!

CORRECTIVE ACTIONS

DON'T NEED IT? GET RID OF IT!

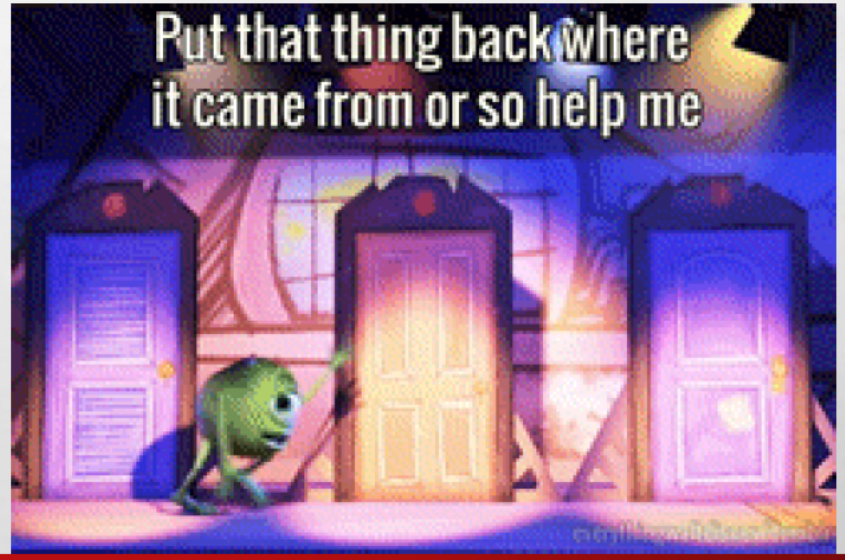
WHAT DO YOU SEE?

- MISSING SECONDARY CONTAINMENT
  - BUT IT'S INSIDE!
    - MOST WORK AREAS HAVE FLOOR DRAINS THAT GO DIRECTLY TO THE STORMWATER SYSTEM, THEREFORE THE BUILDING CANNOT SERVE AS CONTAINMENT.
- LABELS ARE MISSING
- NO RECORDS OF INSPECTION

This is actually a drum from a designated oil storage area that was left out when not in use.

CORRECTIVE ACTIONS

- **RETURN DRUMS TO DESIGNATED STORAGE AREA WHEN NOT IN USE.**



WHAT'S THE DIFFERENCE?

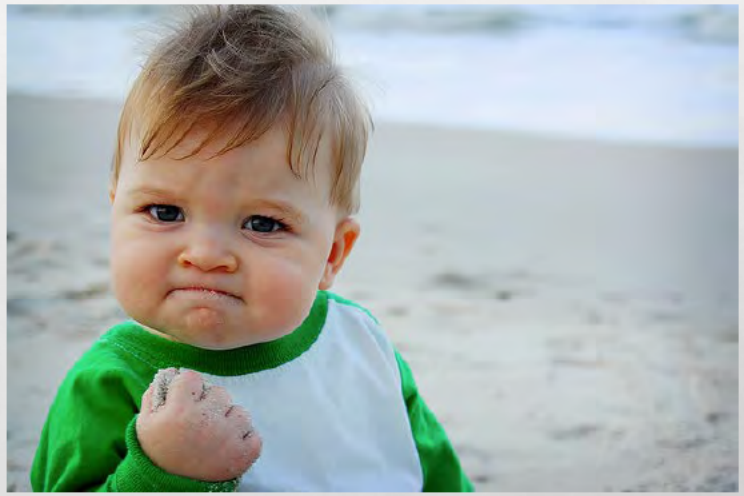
Equipment that stores oil to provide motive power to itself are exempted from certain regulations!

WHAT'S THE DIFFERENCE?

These exemptions do not include transformers, elevators, air compressors and other oil-filled equipment.

WHAT DO YOU SEE?

- **MISSING EMERGENCY VENT.**



CORRECTIVE ACTIONS

- ENSURE THAT TANKS ARE FITTED WITH THE APPROPRIATE APPURTENANCES.
  - ATMOSPHERIC VENT
  - APPROPRIATELY SIZED EMERGENCY VENT
  - FUEL GAUGE
  - OVERFILL PROTECTION METHOD
  - SECONDARY CONTAINMENT WITH MONITORING METHOD
  - LIGHTING
  - LABELING

WHAT DO YOU SEE?

- TANK LABELS ARE MISSING
  - CAPACITY
  - HAZARD IDENTIFICATION
- TANK CONTENTS ARE MISLABELED
  - TANK CONTAINS USED OIL
- TANKS SHOWS SIGNS OF CORROSION

CORRECTIVE ACTIONS

- COAT TANK SHELL AND PIPING TO PREVENT CORROSION
- ENSURE THAT LABELS ARE REPLACED AFTER PAINTING
- KEEP TANK AND SURROUNDING AREA CLEAN AND FREE OF DEBRIS
- MONITOR PITTING AND RECORD PROBLEMS ON CHECKLIST UNTIL REPAIRS ARE COMPLETED
- NOTE REQUIRED MAINTENANCE ON CHECKLIST

WHAT DO YOU SEE?

- TANK LACKS SUFFICIENT OVERFILL PROTECTION
  - OPERATOR CANNOT SEE TANK GAUGE FROM CONTROLS ACROSS THE ROOM.
- SECONDARY CONTAINMENT IS PROVIDED BY THE BUILDING.

This is a single walled tank.

CORRECTIVE ACTIONS

- INSTALL AN ELECTRONIC AUDIBLE OR VISUAL ALARM TO WARN OPERATORS WORKING FROM A DISTANCE.

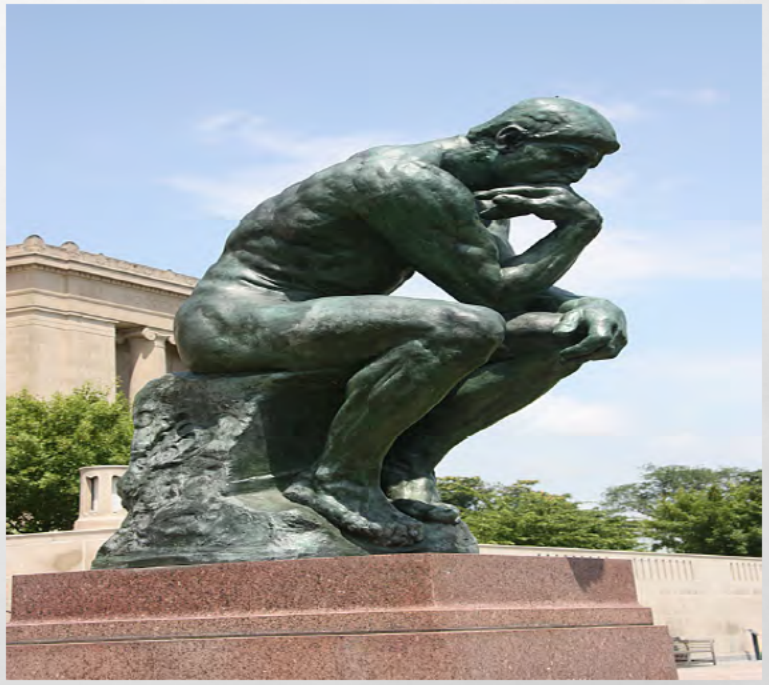
WHAT DO YOU SEE?

Tank shows evidence of corrosion.

CORRECTIVE ACTIONS

- COAT TANK SHELL AND PIPING TO PREVENT CORROSION
- ENSURE THAT LABELS ARE REPLACED AFTER PAINTING
- KEEP TANK AND SURROUNDING AREA CLEAN AND FREE OF DEBRIS
- MONITOR PITTING AND RECORD PROBLEMS ON CHECKLIST UNTIL REPAIRS ARE COMPLETED
- NOTE REQUIRED MAINTENANCE ON CHECKLIST

THIS IS WHAT GOOD HOUSEKEEPING LOOKS LIKE

LASTLY……

- UNDERSTAND YOUR JOB
- KNOW WHAT MATERIALS GO WHERE
- IF YOU AREN'T SURE, DON'T ASSUME, ASK