Material Storage Fire Protection Requirements

Tank Farm Plant Operating Procedure

EFFLUENT TREATMENT FACILITY

USQ Not Required – ETF is a < Hazard Category 3 Radiological Facility

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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure ensures the safe storage of miscellaneous operations and maintenance materials in and around the ETF processing areas to ensure fire protection features and safe egress are maintained.

1.2 Scope

This procedure provides instructions for a monthly inspection of the 2025E Building exterior, Process Area (Room 131), 2025ED, and Drum Storage Room (Room 137) for safe storage of miscellaneous operations and maintenance materials. The requirements in this procedure are from National Fire Protection Association codes and standards, the Uniform Building and Fire Codes, and the Fire Hazards Analysis. Assumptions and controls specified in the Fire Hazards Analysis are implemented by this procedure.

Steps shall be taken to correct or initiate correction of storage of materials that is not in compliance with this procedure.

2.0 INFORMATION

2.1 Terms and Definitions

- IBC - Intermediate Bulk Container.
3.0 PRECAUTION AND LIMITATION

3.1 Personnel Safety

NOTE - Exterior inspections per Section 5.1 may be skipped if weather conditions make walking around the building hazardous.

3.2 Radiation and Contamination Control

3.2.1 Work in radiological areas will be performed using a radiological work permit following review by Radiological Control per ALARA Work Planning procedure, TFC-ESHQ-RP_RWP-C-03.

3.3 Environmental Compliance

3.3.1 In the event of a spill/leak/release, notify the SOM/FWS and respond per ETF-ERP-85B-003, Emergency Spill or Release at ETF.

4.0 PREREQUISITES

4.1 Special Tools, Equipment, and Supplies

The following supplies may be needed to perform this procedure:

- Tape measure.
5.0 **PROCEDURE**

**Special Instructions**

Sections 5.1 through 5.5 of this procedure may be performed in any logical order, including concurrently, repeated, or out of sequence.

**NOTE -** Section 5.1 does not apply to:

- Permanently installed plant equipment or area boundary markers
- Storage of metal piping on pipe racks on the south side of the building
- Picnic tables or bike racks
- Plastic receptacles for snow-melting chemicals
- Semi-permanent structures, such as the laundry shed and smoker’s shack.

### 5.1 2025E Exterior

5.1.1 **ENSURE** no materials, including gas grills, are stored within 5 feet of the exterior walls of the 2025E Building.

**NOTE -** Fire hydrants are located in the following locations:

- Northwest yard (near RCA HVAC chillers)
- Northeast yard (near back fence)
- Southeast yard (near Load-In area access gate)
- Southwest yard (south of Room 100).

- The area around each fire hydrant should be maintained clear of stored material to allow emergency response vehicle access.

5.1.2 **ENSURE** that no stored material blocks the area within 10 feet of either side of fire hydrants located around Building 2025E.

5.1.3 **ENSURE** no combustible materials are stored within 25 feet of the exterior walls of the 2025E Building.

5.1.4 **IF** materials are found stored that do not meet requirements of this procedure, **CORRECT** problem immediately.

5.1.5 **IF** problem cannot be immediately corrected, **INITIATE** appropriate work documents to correct the problem **AND** **RECORD** problem and disposition on Data Sheet 1.
5.2 Process Area (Room 131)

NOTE - Section 5.2 does not apply to storage of small items protruding two feet or less from a wall, such as cleaning implements (mops, etc.), RadCon dress-up benches, ladders, and other such items.

- Section 5.2 does not apply to laydown of parts and materials that occur as a result of temporary maintenance activities or the setup of temporary or permanent radioactive material areas or contamination areas.

5.2.1 ENSURE miscellaneous maintenance and operational materials are stored within areas delineated on Figure 1 – Process Area Storage (Room 131).

5.2.2 CHECK that total amount of concentrated sulfuric acid (H₂SO₄), excluding chemical feed systems, stored in process area is less than 1,000 gallons (less than 15,000 lb).

5.2.3 ENSURE empty plastic pallets are not stacked upon each other unless ALL of the following conditions are met:
- Only one pallet stack exists in the process area
- Pallets placed in single stack to a maximum height of seven pallets
- A 4-foot by 4-foot piece of sheet metal (20-gauge minimum) is placed between each pallet.

5.2.4 IF materials are found stored that do not meet the requirements of this procedure, IMMEDIATELY CORRECT problem.

5.2.5 IF problem cannot be immediately corrected, INITIATE appropriate work documents to correct problem AND RECORD problem and disposition on Data Sheet 1.
5.3 Drum Storage Room (Room 137)

5.3.1 **ENSURE** general storage materials are segregated from drummed waste in accordance with minimum distances shown on Figure 1.

5.3.2 **ENSURE** empty plastic pallets are not stacked upon each other unless all the following conditions are met:
- Only one pallet stack exists in the drum storage room
- Pallets placed in single stack to a maximum height of seven pallets
- A 4-foot by 4-foot piece of sheet metal (20-gauge minimum) is placed between each pallet.

5.3.3 **ENSURE** metal drummed waste is stacked a maximum of three layers high.

5.3.4 **ENSURE** waste in plastic drums is stacked a maximum of one layer high.

5.3.5 **ENSURE** waste in plastic drums is stored contiguously (not between pallets of metal drums).

5.3.6 **ENSURE** pallets of plastic drums are separated from stacked pallets of metal drums by at least 36 inches.

5.3.7 **DETERMINE** the maximum number of pallets containing metal drums, which may be stored in Room 137, as follows:

5.3.7.1 **COUNT** number of pallets containing one or more plastic drums and one or more carboys in Room 137.

5.3.7.2 **DETERMINE** number of allowable pallets of metal drums from the following table:

<table>
<thead>
<tr>
<th>Number of Pallets of Plastic Drums Counted In step a.</th>
<th>Allowable Number of Pallets of Metal Drums</th>
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<tbody>
<tr>
<td>0</td>
<td>180</td>
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<tr>
<td>1 - 10</td>
<td>156</td>
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<td>11 - 20</td>
<td>132</td>
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<td>21 - 30</td>
<td>109</td>
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<td>31 - 40</td>
<td>85</td>
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</table>
5.3 Drum Storage Room (Room 137) (Cont.)

NOTE - IBCs containing waste from sump cleanout jobs, for instance, are sometimes stored in Room 137. They are typically 330-gallon plastic totes.

5.3.7.3 COUNT the number of IBCs in Room 137.

5.3.7.4 REDUCE allowable number of pallets of metal drums obtained from the table above by five for each IBC counted in step 5.3.7.3.

5.3.7.5 ENSURE number of pallets of metal drums stored in Room 137 is less than the number determined in step 5.3.7.4.

5.3.8 IF number of pallets of metal drums is more than the allowable number determined above, IMMEDIATELY CORRECT problem.

5.3.9 IF problem cannot be immediately corrected, CONTACT SOM for further direction.

5.3.10 IF materials are found stored that do not meet the requirements of this procedure, IMMEDIATELY CORRECT problem.

5.3.11 IF problem cannot be immediately corrected, INITIATE appropriate work documents to correct problem AND RECORD problem and disposition on Data Sheet 1.

5.4 2025ED

5.4.1 ENSURE there is no indoor storage (temporary or permanent) of materials not associated with customer waste drum or tanker unloading.

5.4.2 ENSURE there is no garaging of vehicles, including forklifts, other than vehicles necessary for tanker unloading activities.

5.4.3 ENSURE there is no indoor storage of empty plastic drums, pallets of empty drums or pallets without drums.

5.4.4 IF materials are found stored that do not meet the requirements of this procedure, IMMEDIATELY CORRECT problem, if possible.

5.4.5 IF problem cannot be immediately corrected, INITIATE appropriate work documents to correct problem AND RECORD problem and disposition on Data Sheet 1.
5.5 Storage Tent 2125 E East of Verification Tank Berm

NOTE - The storage tent is intended for tanker decontaminating activities and storage of the following types of materials:

- Hoses
- Scaffold material including wood planking
- Empty drums
- Fiberglass and plastic pallets
- Delivered items for short term storage.

5.5.1 **ENSURE** there is no storage of hazardous materials (liquids, solids, or gases).

5.5.2 **ENSURE** there is no storage of flammable materials (liquids, solids, or gases).

5.5.3 **ENSURE** there is no garaging of vehicles, including forklifts, other than vehicles necessary for tanker decontamination activities.

5.5.4 **IF** materials are found stored that do not meet the requirements of this procedure, **IMMEDIATELY CORRECT** problem, if possible.

5.5.5 **IF** problem cannot be immediately corrected, **INITIATE** appropriate work documents to correct problem **AND**

5.5.6 **RECORD** problem and disposition on Data Sheet 1.

5.5.7 **WHEN** inspection is complete, **SIGN** Data Sheet 1.
5.6 Records

5.6.1 **PERFORM** the following for records identified within this procedure.

5.6.1.1 **RECORD** the number of times the record was generated in applicable column

OR

**PLACE** a check mark (✓) in the N/A column.

5.6.1.2 **SUBMIT** the package for verification of completed records.

<table>
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<tr>
<th>Records Submittal Checklist</th>
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<tr>
<td>Data Sheet 1 - Inspection Results.</td>
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**FWS/OE/Shift Manager** **SEND** the completed records to the Central Shift Office for records retention.

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The record custodian identified in the company-level Records Inventory and Disposition Schedule (RIDS) is responsible for record retention in accordance with TFC-BSM-IRM_DC-02.
## Data Sheet 1 - Inspection Results

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Signature                           Print (First & Last)            Date
Operator

_________________________ / ___________________________ / ________________
Signature                           Print (First & Last)            Date
Operator

_________________________ / ___________________________ / ________________
Signature                           Print (First & Last)            Date
Shift Operations Manager
Figure 1 – Process Area Storage (Room 131)
Figure 2 – Drum Storage Room Storage (Room 137)
Material Storage Fire Protection Requirements

Attachment 1 – Definitions

Sheet 1 of 2

Combustible

Definition

- A **combustible** material can be a solid or liquid

The U.S. Occupational Health and Safety Administration (OSHA) defines a **combustible liquid** as “any liquid having a flash point at or above 100°F (37.8°C), but below 200°F (93.3°C), except any mixture having components with flashpoints of 200°F (93.3°C), or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.”

- Compare this definition to flammable, which indicates a liquid that is even easier to ignite (flash point below 100°F).

OSHA divides combustible (and flammable) liquids into several classes. To see these, look at 29 CFR 1910.106.

Combustible solids are those capable of igniting and burning. Wood and paper are examples of such materials.

Additional Info

The U.S. Department of Transportation defines a **combustible solid** in 49 CFR 173.124 (Subpart D) as materials that:

1. Are solids which may cause a fire through friction, such as matches;
2. Show a burning rate faster than 2.2 mm (0.087 inches) per second when tested in accordance with UN Manual of Tests and Criteria; or
3. Any metal powders that can be ignited and react over the whole length of a sample in 10 minutes or less, when tested in accordance with UN Manual of Tests and Criteria.

These are closely related to the third broad class of materials listed under flammable solids.

**Spontaneously combustible** materials can undergo combustion and burn without the addition of heat or flame; arguably, the term “spontaneously flammable” is more appropriate. See the flammable solids entry for more info.
Flammable Solid

Definition

- A flammable solid is defined by the U.S. Department of Transportation (DOT) quite extensively (see 49 CFR 173.124). Three broad classes are:
  - Desensitized explosives such as those wetted with sufficient water, alcohol, or plasticizer to suppress explosive properties.
  - Self-reactive materials that are thermally unstable and that can undergo a strongly exothermic (heat-evolving) decomposition even without the participation of oxygen (air). Certain exclusions apply.
  - Readily combustible solids. Examples include:
    - Solids which may cause a fire through friction, such as matches.
    - Pyrophoric (literally, "fire-loving") materials, those that can ignite with no external ignition source within five minutes after coming in contact with air.
    - Self-heating materials, those that exhibit spontaneous ignition or heat themselves to a temperature of 200°C (392°F) during a 24-hour test period. (This behavior is called spontaneous combustion.)
    - Dangerous when wet materials, those that react with water to become spontaneously flammable or to give off flammable gas or toxic gas at a rate greater than 1 liter per kilogram of the material, per hour.