Setup and Operate Thawzall Portable Heat Machine

Tank Farm Operating Procedure

USQ # TF-16-0927-S, Rev. 0

CHANGE HISTORY (≤ LAST 5 REV-MODS)

<table>
<thead>
<tr>
<th>Rev-Mod</th>
<th>Release Date</th>
<th>Justification</th>
<th>Summary of Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-0</td>
<td>06/07/2016</td>
<td>Periodic Review</td>
<td>Removed warning, formatting updates to comply with standard.</td>
</tr>
<tr>
<td>C-1</td>
<td>05/24/2016</td>
<td>Comply with writer’s standard update from corrective action WRPS-PER-2014-0355.9.</td>
<td>Updated the records section to comply with the writers standard.</td>
</tr>
<tr>
<td>C-0</td>
<td>12/13/2013</td>
<td>Reactivation/Periodic review</td>
<td>In general: Added performing location specific hazard analysis. Added identified hazard to procedure for glycol. Added referenced performance document. Clarified steps and updated to standard-01 requirements. Added check lines when positioning multiple components. Updated records section. Added Comment Sheet. Changes and review constitute a periodic review update.</td>
</tr>
<tr>
<td>B-5</td>
<td>02/06/2008</td>
<td>Operations request.</td>
<td>Entire procedure reviewed using the USQ process to ensure a complete hazard review. One editorial change identified in Section 4.1, changing “Substantial Footwear” to “Protective Footwear”</td>
</tr>
</tbody>
</table>

Table of Contents

1.0 PURPOSE AND SCOPE 3
  1.1 Purpose .................................................................................................................. 3
  1.2 Scope ...................................................................................................................... 3

2.0 INFORMATION ........................................................................................................... 3
  2.1 General Information .............................................................................................. 3

3.0 PRECAUTIONS AND LIMITATIONS ......................................................................... 4
  3.1 Personnel Safety .................................................................................................. 4
  3.2 Equipment Safety ................................................................................................. 4
  3.3 Radiation and Contamination Control .................................................................. 5
  3.4 Environmental Compliance .................................................................................. 5
  3.5 Limits ................................................................................................................... 5

4.0 PREREQUISITES ....................................................................................................... 6
  4.1 Special Tools, Equipment and Supplies ................................................................ 6
  4.2 Performance Documents ....................................................................................... 6
Setup and Operate Thawzall Portable Heat Machine

4.3 Field Preparation ........................................................................................................... 6

5.0 PROCEDURE ..................................................................................................................... 7
   5.1 Initial Setup of Thawzall System ................................................................................. 7
   5.2 Start Up Thawzall Portable Heat Machine ................................................................. 10
   5.3 Shut Down Thawzall Portable Heat Machine ............................................................. 14
   5.4 Records ....................................................................................................................... 16

Figure 1 - Thawzall System Component Diagram ................................................................. 17

Figure 2 - Portable Remote Manifold Diagram .................................................................. 18

Data Sheet 1 - Thawzall Daily Inspections ......................................................................... 19

Comment Sheet 1 .................................................................................................................. 20
1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for the setup, operation, and shut down of the Thawzall Portable Heat Machine HO 64-5165 and HO 64-5154.

This procedure can be performed in multiple locations. A work area and/or location specific hazard analysis must be performed prior to starting the activity per TFC-ESHQ-S_SAF-C-02.

1.2 Scope

1.2.1 This procedure applies to the operation of the following equipment and associated components of the model 2M Thawzall Portable Heat Machine:
- Thawzall Portable Heat Machine Trailer
- Yellow Portable Remote Manifold (optional)
- Hoses.

1.2.2 The Thawzall system may be used for any Tank Farm as authorized, but the Thawzall trailer must be stationed outside of the Tank Farm.

2.0 INFORMATION

2.1 General Information

2.1.1 The Thawzall model 2M is a fully contained unit with heat input rated at 175,000 BTU. The unit uses a boiler system to heat propylene glycol/water solution. The solution is circulated through industrial hose. Each section of hose is coupled with disconnects to five individual supply and return zones on the multi-zone manifold.

2.1.2 Refer to Figure 1 in the back of this procedure for the Thawzall system layout. This figure shows the location and label of each valve in the system.

2.1.3 Set up for use to support Tank Farm activities is performed in accordance with approved Tank Farm Work Packages (WP) and Engineering Change Notices (ECN), if necessary.

2.1.4 The yellow portable remote manifold is an optional unit and when used, extends the distance of operability of the system.
3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

3.1.1 Be aware of electrical hazards when plugging in the Thawzall portable heat machine or portable manifold to a 120 VAC/20 A GFCI receptacle.

3.1.2 Slip and trip hazards exist when working around the portable Thawzall unit. Hoses and power cords are tripping hazards.

3.1.3 When checking fluid levels, wear gloves and eye protection to prevent contact with exposed skin and eyes.

3.1.4 Fuel in accordance with manufacturer's recommendations.

3.1.5 During fueling operations, care shall be taken to prevent generation of sparks that could cause fuel vapors to ignite.

3.1.6 A portable eye wash with drench hose will be available when handling glycol.

3.2 Equipment Safety

3.2.1 All hose connections must be secured.

3.2.2 Hoses must not be kinked and never placed in areas that vehicles will be allowed to cross over them when not protected from damage.

3.2.3 The pump must be shutdown to prevent damage if obstructions impede the flow of glycol/water solution through the system or the pump appears to be cavitating.

3.2.4 Using the Thawzall system on HIHTL will not exceed the temperature limit (RPP-17767 Rev 0).
3.3 Radiation and Contamination Control

3.3.1 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.

3.4 Environmental Compliance

3.4.1 All spills will be reported to the On-Call Environmental representative.

3.4.2 Glycol spills shall be disposed of per procedure TO-100-052.

3.5 Limits

Operating Limits

Cold Start Positive Pressure  5 – 10 PSI

Operating Pressure  10 – 30 PSI (not to exceed 30 PSI)
Setup and Operate Thawzall Portable Heat Machine

4.0 PREREQUISITES

4.1 Special Tools, Equipment and Supplies

The following special tools, equipment and supplies may be needed to perform this procedure:

- Gloves, leather or equivalent when checking fluids or valve manipulation
- Safety Glasses with side shields
- Protective Footwear
- Chemical PPE when handling Propylene Glycol solution (SDS/MSDS #038772) is Chemical goggles or Face Shield and rubber or neoprene gloves
- Other tools, equipment and supplies as identified by Shift Manager/OE/FWS.

4.2 Performance Documents

- TO-100-052, Perform Waste Generation, Segregation, Accumulation and Clean-up.

4.3 Field Preparation

4.3.1 ENSURE the Thawzall system and support equipment have been staged at the desired location as directed.

- Thawzall Trailer
- Portable Remote Manifold (optional)
- Hoses
- Insulating Blankets (optional)
- Boards and Sandbags (optional).

4.3.2 ENSURE a work area and/or a location specific hazards analysis has been performed per TFC-ESHQ-S-SAF-C-02.
5.0 PROCEDURE

5.1 Initial Setup of Thawzall System

NOTE - Refer to Figure 1 for equipment location.

5.1.1 PERFORM a visual inspection of Thawzall system on Data Sheet 1 for any damage or leakage.

5.1.1.1 REPORT any findings to Shift Manager/OE.

5.1.2 ENSURE the following electrical breakers at control panel are in the position indicated for the trailer being used.

### HO 64-5165

<table>
<thead>
<tr>
<th>Breaker #</th>
<th>Position</th>
<th>Check (✓) Complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>OFF</td>
<td></td>
</tr>
<tr>
<td>#2</td>
<td>OFF</td>
<td></td>
</tr>
<tr>
<td>#3</td>
<td>OFF</td>
<td></td>
</tr>
<tr>
<td>#8</td>
<td>OFF</td>
<td></td>
</tr>
</tbody>
</table>

OR

### HO 64-5154

<table>
<thead>
<tr>
<th>Breaker #</th>
<th>Position</th>
<th>Check (✓) Complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>#2</td>
<td>OFF</td>
<td></td>
</tr>
<tr>
<td>#5</td>
<td>OFF</td>
<td></td>
</tr>
<tr>
<td>#6</td>
<td>OFF</td>
<td></td>
</tr>
<tr>
<td>#7</td>
<td>OFF</td>
<td></td>
</tr>
</tbody>
</table>

5.1.3 CHECK glycol (60%)/water (40%) solution tank level.
5.1 Initial Setup of Thawzall System (Cont.)

5.1.3.1 IF handling Glycol solution, PERFORM the following:

5.1.3.2 ENSURE a portable eye wash with drench hose is locally available for use.

5.1.3.3 DON the following proper PPE:
   • Chemical goggles or Face Shield
   • Rubber or neoprene gloves.

5.1.3.4 ENSURE glycol/water solution tank is approximately ½ full.

5.1.4 CHECK fuel level in sight glass at rear of Thawzall trailer is approximately ¾ full.

5.1.4.1 IF fuel level in sight glass reads < ¾ full, CONTACT Shift Manager/OE to order fuel.

5.1.5 ENSURE the following trailer valves are CLOSED:

    Check (✓)
    _____ • 3S
    _____ • 3R

5.1.6 DISENGAGE hose reel inside trailer by flipping hand lever clutch to the right.

NOTE - Turning tension brake adjustment knob clockwise increases tension and turning tension brake adjustment knob counter clockwise decreases tension to the brake.

5.1.7 ADJUST tension brake knob, located under hand lever clutch, to desired tension.

5.1.8 PULL hose off of reel until the first set of disconnects rolls off.

5.1.8.1 SEPARATE disconnects.
5.1 Initial Setup of Thawzall System (Cont.)

NOTE - Refer to Figure 2 for portable remote manifold layout.

5.1.9 IF the portable remote manifold (yellow unit) will be used, **PERFORM** the following:

5.1.9.1 **PLUG** supply and return hoses from trailer into yellow portable remote manifold connectors.

5.1.9.2 **ATTACH** hose between portable remote manifold and appropriate zone to be used.

5.1.9.3 IF another zone is directed to be used, **PERFORM** the following:

a. **PULL** next set of disconnects from reel in trailer

b. **ATTACH** hose between portable remote manifold and appropriate zone to be used.

5.1.10 IF the portable manifold unit (yellow) will not be used, **PERFORM** the following:

5.1.10.1 **LAYOUT** hose(s).

5.1.10.2 **PLUG** into appropriate manifold zone to be used on the Thawzall trailer.

5.1.11 IF another zone is needed, **REPEAT** steps 5.1.5 through 5.1.10.2 for next zone.

5.1.12 WHEN hose reel is not in operation, **PERFORM** the following:

5.1.12.1 **TURN** the hose reel brake to the ENGAGED position.

5.1.12.2 **TURN** Hose Reel breaker OFF as follows:

- Breaker #3 for trailer HO 64-5165
- Breaker #7 for HO 64-5154.
5.2 **Start Up Thawzall Portable Heat Machine**

NOTE – This Section will be used anytime that a startup of the Thawzall system is needed.

5.2.1 **ENSURE** all electrical circuit breakers located at the control panel, are positioned to OFF.

5.2.2 **ENSURE** fuel tank valve #1 is open by placing handle in line with pipe.

5.2.3 **ENSURE** expansion tank isolation valve #6 is OPEN.

5.2.4 **ENSURE** Thawzall portable trailer is plugged into 120 VAC/20 A GFCI receptacle.

5.2.5 **IF** using trailer HO 64-5154, **POSITION** breaker #2 to ON.

5.2.6 **POSITION** Thawzall system trailer valves as indicated in the table below. (See Figure 1 for location).

<table>
<thead>
<tr>
<th>Valve Number</th>
<th>Description/Location</th>
<th>Position</th>
<th>Check Complete (✓)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4S</td>
<td>Supply Valve Front of trailer near Control Panel</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>3S</td>
<td>Supply Valve Rear of trailer on right side</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>3R</td>
<td>Return Valve Rear of trailer on left side</td>
<td>OPEN</td>
<td></td>
</tr>
</tbody>
</table>

5.2.7 **POSITION** circulation pump, [breaker #2 for trailer HO 64-5165 or breaker #6 for trailer HO 64-5154], located at control panel, to ON.

5.2.8 **CHECK** pressure gauge, located on front of boiler unit, reads approximately 5 to 10 PSI.
5.2 Start Up Thawzall Portable Heat Machine (Cont.)

5.2.9 IF pressure gauge reads < 5 PSI, ADD fluid to system as follows:

5.2.9.1 POSITION breaker, located at control panel, to ON to energize fill pump as follows:
- Trailer HO 64-5165, breaker #8
- Trailer HO 64-5154, breaker #5.

5.2.9.2 OPEN fill pump ball valve #2 on fill pump.

5.2.9.3 ENSURE valve on bottom of glycol solution tank is OPEN.

5.2.9.4 DO NOT EXCEED 10 PSI when performing the following steps.
   a. POSITION AND HOLD fill pump switch to ON.
   b. CHECK pressure gauge AND
      WHEN pressure gauge reads between 5 PSI and 10 PSI, RELEASE fill pump switch.

5.2.9.5 WHEN fluid filling has been completed, CLOSE fill pump ball valve #2.

5.2.9.6 IF using trailer HO 64-5165, POSITION breaker #8, located at control panel, to OFF.

5.2.10 IF portable remote manifold is used, PERFORM the following:

5.2.10.1 PLUG remote manifold into a 120 VAC/20A GFCI receptacle.

NOTE - At maximum temperature, the return temperature indicator should be between 150° to 165° F.

5.2.10.2 ADJUST grey temperature control knob for the temperature as provided by Shift Manager/OE.
5.2 Start Up Thawzall Portable Heat Machine (Cont.)

5.2.11 **CHECK** flow indicator(s) at rear of trailer.

**OR**

**IF** portable remote manifold is used, **CHECK** flow indicator inside portable remote manifold.

5.2.12 **IF** flow indicators are spinning, **GO TO** step 5.2.14.

5.2.13 **IF** flow indicators are not spinning, **PERFORM** the following:

5.2.13.1 **CHECK** the following ball valves are OPEN at appropriate zone.

**Check (✓):**

- 3S
- 3R.

5.2.13.2 **IF** flow indicators are still not spinning, **CHECK** hose layout for kinks.

5.2.13.3 **IF** there still is no indication of flow, **NOTIFY** Shift Manager/OE.

5.2.14 **IF** using trailer HO 64-5165, **POSITION** boiler circuit breaker #1, at control panel, to ON, to start boiler,

**OR**

**IF** using trailer HO 64-5154, **POSITION** boiler switch at boiler to ON, to start boiler.

5.2.15 **IF** boiler does not fire, **PERFORM** the following:

5.2.15.1 **CHECK** fuel valve #1 is OPEN.

5.2.15.2 **PUSH** red reset button on Beckett Burner. (See Figure 1)
5.2 Start Up Thawzall Portable Heat Machine (Cont.)

5.2.16 CHECK hose and manifolds for leaks AND CONTINUE to monitor for leaks while Thawzall system is operating.

5.2.16.1 IF a leak is detected, NOTIFY the Shift Manager/OE AND PROCEED as directed.

5.2.16.2 RECORD any direction provided on Comment Sheet 1.

5.2.17 PERFORM a daily inspection of Thawzall system using Data Sheet 1 while system is in operation.
5.3 Shut Down Thawzall Portable Heat Machine

NOTE – This Section may be independently used anytime that a shutdown of the Thawzall system is needed.

5.3.1 IF using trailer HO 64-5165, **POSITION** boiler circuit breaker #1, located at control panel, to OFF,

      OR

      IF using trailer HO 64-5154, **POSITION** boiler switch at boiler to OFF.

5.3.2 IF using remote manifold, **UNPLUG** remote manifold.

5.3.3 **POSITION** circulation pump circuit breaker, located at control panel, to OFF as follows:
   - breaker #2 for trailer HO 64-5165
   - breaker #6 for trailer HO 64-5154.

5.3.4 **POSITION** all remaining circuit breakers, located at control panel, to OFF.

5.3.5 IF long term shutdown of the Thawzall system is desired, **PERFORM** Steps 5.3.5.1 through 5.3.6.

   5.3.5.1 IF a portable remote manifold was used, **UNPLUG** remote manifold from 120 VAC/20A GFCI receptacle.

   5.3.5.2 **ENSURE** all manifold valves 3S and 3R are CLOSED.

   5.3.5.3 **CLOSE** supply valve 4S located at front of trailer near control panel.
5.3 Shut Down Thawzall Portable Heat Machine (Cont.)

5.3.5.4 IF moving Thawzall system to another location, **REWIND** hose **AND**

ENSURE hose is neatly rewound to fit properly on hose reel.

a. **ENGAGE** hose reel clutch.

b. **POSITION** circuit breaker #3 for trailer HO 64-5165 or circuit breaker #2 and #7 for trailer HO 64-5154, at control panel, to ON.

   **NOTE** - Turning tension brake adjustment knob counter-clockwise decreases tension to the brake.

c. **LOOSEN** tension knob to brake.

d. **USE** hose reel foot pedal to reel in hose neatly on hose reel.

e. **POSITION** circuit breaker #3 for trailer HO 64-5165 or circuit breaker #2 and #7 for trailer HO 64-5154, at control panel, to OFF.

f. **UNPLUG** Thawzall trailer.

5.3.6 **CLOSE** fuel valve #1.
5.4 Records

5.4.1 PERFORM the following for records identified within this procedure.

5.4.1.1 RECORD the number of times the record was generated in applicable column

OR

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

5.4.1.2 SUBMIT the package to the central shift office.

<table>
<thead>
<tr>
<th>Records Submittal Checklist</th>
<th>Number of times completed</th>
<th>N/A (√)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.4 Records</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 5.4.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data Sheet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data Sheet 1 - Thawzall Daily Inspections</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comment Sheet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comment Sheet 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5.4.2 FWS/OE/Shift Manager SEND the completed records to the Central Shift Office for records retention.

_________________________________________ / ___________________________ / ___________________________
Signature Print (First and Last) Date

FWS/OE/Shift Manager

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-C-02.
Figure 1 - Thawzall System Component Diagram

Machine Diagram

A = Control Panel  1 = Fuel Tank Valve  
B = Boiler  2 = Fill Pump Valve  
C = Fuel Line  3R = Glycol Return Valve  
D = Circulation Pump  3S = Glycol Supply Valve  
E = Manifold  4S = Main Glycol Supply Valve  
F = Hose Reel  6 = Expansion Tank Valve  
H = Beckett Burner & Pressure Gauge  
J = Glycol/Water Tank  
K = Clutch/Foot Pedal  
L = Temperature Indicator  
M = Temperature Control

Optional Remote
Manifold  
Supply Hose  Return Hose  
120 VAC/20 A GFCI
Figure 2 - Portable Remote Manifold Diagram

From Thawzall Trailer

Supply

Temperature Control Valve

Hot

Cold

Return

To Thawzall Trailer

Supply

Header

Return Header

FM

TI

To Thawzall Trailer
## Data Sheet 1 - Thawzall Daily Inspections

<table>
<thead>
<tr>
<th>SYSTEM EQUIPMENT</th>
<th>INSPECTION</th>
<th>Check if OK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ELECTRICAL EQUIPMENT</td>
<td>Signs of degradation or damage.</td>
<td></td>
</tr>
<tr>
<td>2. LIGHTS</td>
<td>Signs of degradation or damage.</td>
<td></td>
</tr>
<tr>
<td>3. HOSE REEL</td>
<td>Signs of degradation, damage or loose.</td>
<td></td>
</tr>
<tr>
<td>4. HOSES</td>
<td>Signs of degradation, damage or wear.</td>
<td></td>
</tr>
<tr>
<td>5. GAUGES</td>
<td>Signs of degradation or damage.</td>
<td></td>
</tr>
<tr>
<td>6. PIPING AND VALVES</td>
<td>Signs of damage or leakage.</td>
<td></td>
</tr>
<tr>
<td>7. FUEL LEVEL OK?</td>
<td>(&gt; (\frac{1}{2}) Tank)</td>
<td></td>
</tr>
<tr>
<td>8. BOILER OPERATING PRESSURE OK?</td>
<td>(10 to 30 psig)</td>
<td></td>
</tr>
<tr>
<td>9. REMOTE MANIFOLD TEMPERATURE BETWEEN 150°-165°F</td>
<td>Check temperature gauge.</td>
<td></td>
</tr>
</tbody>
</table>

Operator: __________________________ / ______________________ / __________

Signature | Print (First & Last) | Date

OE Review: __________________________ / ______________________ / __________

Signature | Print (First & Last) | Date

Comments:
Comment Sheet 1

(This page may be reproduced as necessary)
Record any comments below encountered during performance of procedure.

Date: _______________