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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for maintenance of the glycol system on the SY Farm B-Train for the Exhauster heat exchangers.

1.2 Scope

This procedure involves inspecting the Exhauster heater system, cleaning the reservoir sight glass, cycling the glycol system valves, flushing, and adding the propylene glycol/water mixture to the Glycol Tank in the SY Farm B-Train exhauster heat exchanger:

- SY B-Train P&ID Figure 1
- SY B-Train Elevation View Figure 2.

2.0 INFORMATION

2.1 General Information

2.1.1 All valves in this procedure are preceded by Farm I.D. with the following nomenclature: SY241-VTP-V-XXX.

2.1.2 Glycol can be drained from system by using one of the following methods:

- Peristaltic pump using tubing connected to hose barb at Glycol drain valve.

    OR

- Gravity drain with tubing connected to hose barb at Glycol drain valve.

2.1.3 The Glycol system will hold approximately ten to twenty (10-20) gallons.
3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

3.1.1 Glycol tank, exposed piping and valves may be hot (120°F to 190°F). Temperature will be verified and allowed to cool below 120°F prior to working on glycol system.

3.1.2 Wear Rubber/Nitrile gloves or equivalent and safety glasses when handling propylene glycol solution. Portable eyewash station identified.

3.1.3 Utilize TVIS-SY-001 and the appropriate SEG for work in or on the exhauster. Contact IH for correct Sample Plan.

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 Protection

3.3.1 The Central Shift Office must be notified in the event of a leak or a spill in accordance with TFC-ESHQ-ENV_FS-C-01, Environmental Notifications. This includes Prestone Radiator Flush, Propylene Glycol, de-ionized water, de-mineralized water, and/or raw water.

3.3.2 Glycol heaters are listed as required abatement technology in applicable air permits for ventilation systems included in scope of this procedure and must be operable during exhauster operation. Any shutdown, bypass, or new issues identified with heater systems must be reported to the appropriate Operations shift manager and Environmental per the Environmental On-Call list.
4.0 PREREQUISITES

4.1 Special Tools, Equipment and Supplies

The following supplies may be needed to perform this procedure:

- Leather gloves
- Rubber/Nitrile gloves
- Safety glasses
- Waste container(s) capable of containing approximately 10 - 30 gallons
- Two (2) five gallon buckets for glycol transfer due to drain valve height restrictions (optional)
- Clear one (1) quart waste container
- Ground cover with absorbent pads
- Wrench (to remove 1” blind flange from drain valve)
- One, pipe flange, ½” NPT threads, class 150 or equivalent (for drain valve flange connection).
- One hose barb, ½” NPT threads or equivalent (for drain valve flange connection)
- Peristaltic Pump grade Tygon tubing; length as determined by FWS
- One, hose clamp for Tygon tubing
- Peristaltic pump (Optional)
- GFCI (with extension cord)
- Infrared Temperature Reading Gun or Thermometer °F
- Funnel
- Prestone radiator flush (GHS-SDS and/or MSDS #018682A)
- 50/50 mix of propylene glycol with corrosion inhibitors and de-mineralized water or de-ionized water for glycol system (GHS-SDS and/or MSDS #038772, GHS-SDS and/or MSDS #041791 or equivalent)
- Bag with absorbents
- Pipe cleaners and rags
- New gasket, nuts and bolts for glycol drain blind flange.
- Other tools, equipment and supplies as identified by Shift Manager/OE/FWS/User
4.1 **Performance Documents**

The following documents may be needed to perform this procedure:
- TO-100-052, Perform Waste Generation, Segregation, Accumulation & Clean-up
- TFC-ESHQ-ENV_FS-C-01, Environmental Notifications
- TO-060-245, Operate SY Tank Farm Primary Ventilation System (VTP)

4.2 **Field Preparation**

4.2.1 **NOTIFY** HPT coverage is required during system breach.

4.2.2 **REQUEST** Operations to configure the identified Train to allow performance of this procedure.

4.2.3 **LOCATE** eyewash station (identified/available).

4.2.4 **IF** desired, **PREPARE** hose barb NPT connected to flange NPT to prevent additional work in the field.
5.0 PROCEDURE

Special Instructions
Refer to Figure 1 and Figure 2 for Glycol System layout and valve locations.

5.1 B-Train - Glycol System Maintenance

Inspect Heater System and Cycle Valves

NOTE- Placing SY241-VTP-DS-201 in the “OFF” position ensures that the heater does not turn on.

5.1.1 ENSURE SY241-VTP-DS-201 is in the “OFF” position.

5.1.2 VISUALLY INSPECT the following Glycol system external components for damage, corrosion, etc.
- Pump
- Piping
- Instrumentation and Controls.

5.1.3 RECORD inspection results on “B Train” Data Sheet.

5.1.4 CHECK drain valve V-205 on Glycol system is capped/plugged AND IF not, PLACE cap/plug on drain valve.

5.1.5 IF open, CLOSE valve V-205.

5.1.6 RECORD the As Found valve(s) positions on the on “B Train” Data Sheet.

5.1.7 CYCLE valves V-201, V-202, V-203, and V-204 manually two (2) to three (3) times. DO NOT CYCLE valve V-205.

5.1.8 RETURN valves to As Found position.

5.1.9 RECORD any discrepancies and/or comments on “B Train” Data Sheet.
5.1 B-Train - Glycol System Maintenance (Cont.)

Drain Glycol Tank

5.1.10 CONFIRM at HMI that glycol heater pump is OFF.

NOTE - Depending on temperature, it could take up to 24 hours for glycol to cool below 120°F.

5.1.11 CHECK Glycol temperature inside expansion tank using infrared thermometer.

5.1.11.1 IF glycol temperature is above 120°F, ALLOW cooling until the temperature is below 120°F.

5.1.12 INSTALL ground cover with absorbent pads under glycol waste container(s), glycol reservoir tank and glycol tank drain valve.

5.1.13 DON appropriate PPE per Step 3.1.2.

5.1.14 IF closed, OPEN glycol valves V-201, V202, V203, and V204.

5.1.15 OPEN Fill Cap/Vent AND SIMULTANEOUSLY APPLY wet rag to vent.

5.1.16 IF installed, REMOVE blind flange from glycol “Drain” valve V-205 AND SIMULTANEOUSLY APPLY wet rag to drain valve.

5.1.17 IF using Peristaltic Pump to drain glycol from tank, GO TO Step 5.1.23.

5.1.18 ATTACH flange with hose barb on drain valve V-205.
5.1 B-Train - Glycol System Maintenance (Cont.)

NOTE - Five gallon bucket(s) may be required for glycol transfer due to drain valve height restrictions.

5.1.19 CONNECT Tygon drain hose to V-205, glycol drain valve hose barb AND

ROUTE drain hose into an appropriate waste container(s).

5.1.20 OPEN glycol tank drain valve V-205 until system is considered drained by FWS/Engineering.

5.1.21 CLOSE glycol tank drain valve V-205.

5.1.22 VISUALLY INSPECT drained glycol AND

RECORD any discoloration, sediment, etc. on “B Train” Data Sheet.

Drain Glycol using Peristaltic Pump

5.1.23 DRAIN Glycol tank using Peristaltic Pump as follows:

5.1.23.1 IF installed, REMOVE blind flange from glycol “Drain” valve V-205 AND

SIMULTANEOUSLY APPLY wet rag to drain valve.

5.1.23.2 INSTALL flange with hose barb on drain valve V-205.

5.1.23.3 CONNECT Tygon drain hose to V-205, glycol drain valve hose barb and to inlet of peristaltic pump.

5.1.23.4 INSTALL end of drain hose, to outlet of peristaltic pump AND

ROUTE into an appropriate waste container(s).

5.1.23.5 OPEN glycol drain valve V-205.

5.1.23.6 PLUG GFCI to peristaltic pump and 120 volt receptacle (using extension cord if needed) AND

TURN peristaltic pump switch on to drain glycol tank.
5.1 **B-Train - Glycol System Maintenance (Cont.)**

5.1.23.7 **AFTER** system is fully drained (observed by no more fluid draining from tank as considered by FWS/Engineer), **PERFORM** the following:

a. **DE-ENERGIZE** peristaltic pump

b. **CLOSE** glycol vent valve V-205.

5.1.24 **VISUALLY INSPECT** drained glycol AND **RECORD** any discoloration, sediment, etc. on “B Train” Data Sheet.

**Flush the Glycol Tank**

**NOTE** - The glycol system holds approximately ten to twenty (10-20) gallons.

5.1.25 **ADD** required quantity of flush solution per manufacturer’s instructions (Prestone Radiator Flush/De-ionized water) into glycol reservoir tank Fill Port until level indicator reads approximately 65-85%.

5.1.26 **CLOSE** Fill Port located on top of glycol reservoir tank.

5.1.27 **REQUEST** operations to **START** the glycol pump per system operating procedure TO-060-245 (to cycle the flush solution throughout system).

5.1.28 **RUN** glycol pump for 2 hours (minimum) to achieve flush.

5.1.29 **WHEN** flush is complete, **REQUEST** operations to **STOP** glycol pump per operating procedure TO-060-245 Operate SY Tank Farm.

5.1.30 **IF** using Peristaltic Pump to drain flush solution, **GO TO** Step 5.1.37

5.1.31 **OPEN** fill cap/vent.

5.1.32 **ENSURE** drain hose is still connected to glycol drain valve.

5.1.33 **ENSURE** other end of drain hose is still placed into waste container(s).
5.1 B-Train - Glycol System Maintenance (Cont.)

5.1.34 OPEN glycol system drain valve V-205.

5.1.35 AFTER system is fully drained (observed by no more fluid draining from valve) CLOSE V-205.

5.1.36 GO TO Step 5.1.43

Drain Flush Solution using Peristaltic Pump

5.1.37 IF REMOVED, INSTALL flange with hose barb on drain valve V-205.

5.1.38 CONNECT Tygon drain hose to V-205, glycol drain valve hose barb and to inlet of peristaltic pump.

5.1.39 INSTALL end of drain hose, to outlet of peristaltic pump AND ROUTE into an appropriate waste container(s).

5.1.40 OPEN glycol drain valve V-205.

5.1.41 PLUG GFCI to peristaltic pump and 120 volt receptacle (using extension cord if needed) AND TURN peristaltic pump switch on to drain glycol tank.

5.1.42 AFTER system is fully drained (observed by no more fluid draining from tank as considered by FWS/Engineer), PERFORM the following:

5.1.42.1 DE-ENERGIZE peristaltic pump

5.1.42.2 CLOSE glycol tank drain valve V-205.

Rinse the Glycol Tank

5.1.43 IF not already open, OPEN Fill Port located on top of glycol reservoir tank.

5.1.44 ADD the required quantity of De-ionized water into glycol reservoir tank Fill Port until level indicator reads approximately 65-85%.
5.1 B-Train - Glycol System Maintenance (Cont.)

5.1.45  CLOSE Fill Port located on top of glycol reservoir tank.

5.1.46  REQUEST operations to START the glycol pump per system operating procedure, TO-060-245 (to cycle the rinse solution throughout system).

5.1.47  RUN glycol pump for 2 hours (minimum) to achieve rinse.

5.1.48  WHEN rinse is complete, REQUEST operations to STOP glycol pump per system operating procedure TO-060-245 Operate SY Tank Farm.

5.1.49  IF using Peristaltic Pump to drain flush solution, GO TO Step 5.1.56

5.1.50  OPEN glycol vent valve V-203.

5.1.51  ENSURE drain hose is still connected to glycol drain valve.

5.1.52  ENSURE other end of drain hose is still placed into waste container(s).

5.1.53  OPEN glycol system drain valve V-205.

5.1.54  AFTER system is fully drained (observed by no more fluid draining from valve as considered by FWS/Engineer) CLOSE the following valves:
  • Glycol system vent valve, V-205

5.1.55  IF rinse results for Glycol Tank is not satisfactory, REPEAT Steps 5.1.43 through 5.1.48 AND

  IF unable to obtain satisfactory rinse results, NOTIFY FWS for resolution.
5.1 B-Train - Glycol System Maintenance (Cont.)

**Drain Rinse Solution using Peristaltic Pump**

5.1.56 *IF REMOVED, INSTALL* flange with hose barb to drain valve V-205.

5.1.57 *CONNECT* Tygon drain hose to V-205, glycol drain valve hose barb and to inlet of peristaltic pump.

5.1.58 *INSTALL* end of drain hose, to outlet of peristaltic pump *AND ROUTE* into an appropriate waste container(s).

5.1.59 *OPEN* glycol drain valve V-205.

5.1.60 *PLUG GFCI to peristaltic pump and 120 volt receptacle (using extension cord if needed) AND TURN* peristaltic pump switch on to drain glycol tank.

5.1.61 *AFTER* system is fully drained (observed by no more fluid draining from tank as considered by FWS/Engineer), *PERFORM* the following:

5.1.61.1 *CLOSE* glycol vent valve V-205.

5.1.62 *IF* rinse results for Glycol Tank is not satisfactory, *REPEAT* Steps 5.1.43 through 5.1.48 *AND* *IF* unable to obtain satisfactory rinse results, *NOTIFY* FWS for resolution.
5.1 B-Train - Glycol System Maintenance (Cont.)

Clean Glycol Reservoir Tank Sight Glass

NOTE - Sight glass is clean if liquid level is clearly visible and glass appears in acceptable condition as determined by FWS/Engineer.

5.1.63 INSPECT Glycol Reservoir Sight Glass for cleanliness.
5.1.64 IF clean, RECORD sight glass cleaned on Data Sheet.
5.1.65 IF not clean, PERFORM the following steps below:
5.1.66 PLACE a bag with absorbents under glycol tank sight glass LG-201.
5.1.67 DISASSEMBLE sight glass assembly.
5.1.68 CLEAN sight glass with pipe cleaners, rags, etc.
5.1.69 IF parts are worn, REPLACE with new parts AND RE-ASSEMBLE sight glass assembly.

Fill Glycol Reservoir Tank

NOTE - The glycol system holds approximately ten to twenty (10-20) gallons.

5.1.70 IF open, CLOSE V-205.
5.1.71 IF Fill Port on glycol reservoir tank is closed, OPEN Fill Port.
5.1.72 ADD a mixture of 50% de-ionized water and 50% propylene glycol with corrosion inhibitors to glycol expansion tank until glycol level indicator reads approximately 65-85% (preferred 75%).
5.1.73 CLOSE Fill Port.
5.1 B-Train - Glycol System Maintenance (Cont.)

5.1.74 REQUEST operations to START the glycol pump per system operating procedure, TO-060-245 (to cycle glycol solution throughout system) AND RUN glycol pump for \( \geq \) ten (10) minutes to disperse glycol through system.

5.1.75 WHILE pump is running, CHECK for leaks AND TIGHTEN/REPAIR any leaks found.

5.1.76 WHEN run time is complete, REQUEST operations to STOP glycol pump per system operating procedure TO-060-245 Operate SY Tank Farm.

5.1.77 ALLOW approximately 10 minutes for glycol levels to equalize.

5.1.78 IF glycol level indication is \( > 65\% \) GO TO Step 5.1.80.

5.1.79 IF glycol level indication is \( < 65\% \),

5.1.79.1 ADD glycol mixture per Step 5.1.70 to bring level up to \( 65\% - 85\% \) (preferred 75%).

5.1.80 ENSURE glycol Fill Port is closed.

5.1.81 RECORD As-Left valve positions on data sheet and ensure they match As-Found positions.

5.1.82 RECORD volume of glycol mixture added on Data Sheet.

5.1.83 RECORD glycol reservoir tank fluid level As-Left reading (approximate) on “B Train” Data Sheet.

5.1.84 DISCONNECT AND REMOVE hose from drain valve, V-205.

5.1.85 IF installed per this procedure, DISCONNECT flange with hose barb from drain valve.

5.1.86 IF removed, RE-INSTALL blind flange to glycol drain valve.
5.2 Restoration

5.2.1 IF any de-ionized water or propylene glycol is spilled, NOTIFY Shift Manager to contact Environmental per on-call list to inform them of event and amount.

5.2.2 IF not already installed, INSTALL blind flange on drain valve.

5.2.3 IF any problems were encountered, INFORM FWS.

5.2.4 DISPOSE of fluids in waste container per TO-100-052 and waste planning checklist.

5.2.5 REMOVE ground cover.

5.2.6 DISPOSE of bag with absorbents per TO-100-052 and waste planning checklist.

5.2.7 ENSURE SY241-VTP-DS-201 in in the “ON” position.

5.2.8 NOTIFY Operations that testing is complete and system may be returned to desired configuration.

5.3 Acceptance Criteria

Acceptance Criteria has been met when Steps in this procedure have been satisfactorily performed and As-Left values meet the specifications and tolerance(s) per the Data Sheets.

5.4 Review

5.4.1 INFORM FWS test is complete.

5.4.2 FWS REVIEW AND ENSURE the following:
  - Completed Data Sheets meet the acceptance criteria.
  - Comments sections are filled out appropriately.
  - Work requests needed as a result of this procedure are identified and generated.
  - Work request number(s) of any work documents generated as a result of this procedure, are recorded in the Comments/Remarks section of the Data Sheet.
5.5 Records

This procedure is performed within a work package, as such, the procedure in its entirety will be maintained as a record per the Work Control process.

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 – SY B Train Glycol System P&ID

Excerpt from H-14-020131 Sheet 2
Figure 2 – SY B-Train Glycol System Elevation View

Excerpt from H-14-104823 Sheet 1