

Job Hazard Analysis Form

Job Title: ArgoNeuT Filter Replacement

Date of Analysis: June 19, 2008

Reviewed By (optional):

Approved By (Supervisor/Task Manager):

Job Location: Proton Assembly Building

Job Description:

The ArgoNeuT system will contain two TRIGON argon filters, which will periodically need to be replaced when saturated. The filters are positioned in parallel, with only one in use at a time, allowing for replacement to occur without affecting operation of the system.

Personal Protective Equipment:

- Face shield
- Cryogenic Apron
- Cryogenic Gloves
- Protective Shoes

Equipment Required for Job:

Work Plan History Information: (List any lessons learned from this job, tips from previous jobs.)

The operators performing the filter swap should be aware of the hazards listed in the following table, and the necessary procedures to mitigate these hazards.

Hazard Analysis		
STEP	HAZARD	PRECAUTIONS/SAFETY/PROCEDURE
Attach/Disconnect Piping	Burns	Wear Cryo gloves/apron/mask
	Contamination	Check valves before/after procedure. Pump out lines according to procedure.
	ODH	The ArgoNeuT system is hooked into a vent line that runs outside of PAB. The system is also equipped with 2 ODH monitors.
	Overpressure	Monitor pressure gauges during procedure.
Remove Filter	Falling	Use lift. Operator must have training.
	Drop Filter	Wear protective shoes. Clear area below work site.

5. Close MV-33-Ar.
6. Disconnect exhaust of trapped volume relief on filter. Depending on which filter is installed, the valve tag could be SV-32-Ar or SV-42-Ar or SV-92-Ar. Leave the exhaust of the relief valve open. But cap the ? vent line it was connected to. Disconnect cable to thermalcouple on filter.
7. Close the top isolation valve on the filter. Depending on which filter is installed, the valve tag could be MV-31-Ar or MV-41-Ar or MV-91-Ar.
8. Close the bottom isolation valve on the filter. Depending on which filter is installed, the valve tag could be MV-30-Ar or MV-40-Ar or MV-90-Ar.
9. Open MV-37-Ar and MV-38-Ar to release pressure.
10. Carefully disconnect VCR fittings on top and bottom of filter.
11. Remove filter.
12. Install replacement filter and connect VCR fittings on top and bottom of the filter.
13. Connect exhaust of trapped volume relief on filter. Depending on which filter is installed, the valve tag could be SV-32-Ar or SV-42-Ar or SV-92-Ar. Connect cable to thermalcouple on filter.
14. Purify the filter inlet and outlet connections by vacuum pumping and back filling with clean argon gas through valves MV-37-Ar and MV-38-Ar.
15. Open the top isolation valve on the filter. Depending on which filter is being installed, the valve tag could be MV-31-Ar or MV-41-Ar or MV-91-Ar.
16. Open the bottom isolation valve on the filter. Depending on which filter is being installed, the valve tag could be MV-30-Ar or MV-40-Ar or MV-90-Ar.
17. Replace insulation around top and bottom isolation valves of filter. Install clamps on insulation. Open nitrogen purge valve MV-81-N.
18. Turn on the cryocooler and put PID loop for heaters HTR-15-Ar in Automatic. and HTR-52-Ar

Cu Filter #2 Changing Procedure

1. Shutoff cryocooler and heaters HTR-15-Ar and HTR-52-Ar.
2. Open MV-33-Ar and MV-34-Ar.

3. Make sure MV-43-Ar is open. Close MV-44-Ar. Wait 1 minute for liquid to drain from filter.
4. Loosen clamps on insulation. Remove insulation around top and bottom isolation valves of filter. Close nitrogen purge MV-82-N.
5. Close MV-43-Ar.
6. Disconnect exhaust of trapped volume relief on filter. Depending on which filter is installed, the valve tag could be SV-32-Ar or SV-42-Ar or SV-92-Ar. Leave the exhaust of the relief valve open. But cap the ? vent line it was connected to. Disconnect cable to thermocouple on filter.
7. Close the top isolation valve on the filter. Depending on which filter is installed, the valve tag could be MV-31-Ar or MV-41-Ar or MV-91-Ar.
8. Close the bottom isolation valve on the filter. Depending on which filter is installed, the valve tag could be MV-30-Ar or MV-40-Ar or MV-90-Ar.
9. Open MV-47-Ar and MV-48-Ar to release pressure.
10. Carefully disconnect VCR fittings on top and bottom of filter.
11. Remove filter.
12. Install replacement filter and connect VCR fittings on top and bottom of the filter.
13. Connect exhaust of trapped volume relief on filter. Depending on which filter is installed, the valve tag could be SV-32-Ar or SV-42-Ar or SV-92-Ar. Connect cable to thermocouple on filter.
14. Purify the filter inlet and outlet connections by vacuum pumping and back filling with clean argon gas through valves MV-47-Ar and MV-48-Ar.
15. Open the top isolation valve on the filter. Depending on which filter is being installed, the valve tag could be MV-31-Ar or MV-41-Ar or MV-91-Ar.
16. Open the bottom isolation valve on the filter. Depending on which filter is being installed, the valve tag could be MV-30-Ar or MV-40-Ar or MV-90-Ar.
17. Replace insulation around top and bottom isolation valves of filter. Install clamps on insulation. Open nitrogen purge valve MV-82-N.
18. Turn on the cryocooler and put PID loop for heaters HTR-15-Ar in Automatic. and HTR-52-Ar