Ethanolamines/Glycol Ethers
Tier 3 Procedure

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Title: Helium Leak Testing
References: Glossary Of Equipment Identification (Text # 114)

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1714 Helium Leak Testing

1.0 Objective:
1.1 To safely execute an equipment leak testing procedure that will ensure personnel safety, process stability, and that equipment will not be damaged.

2.0 Responsibility:
2.1 It is the responsibility of the operations supervisor and the senior operations specialist to ensure that this procedure is fully complied with.

2.2 It is the responsibility of the senior operations specialist and the operations specialist to execute this procedure in a safe and efficient manner and assist MTS in the actual leak testing.

3.0 Method:
3.1 Helium is introduced into a given area (flanges, PSV outlets, bottoms pumps, or any service that is under vacuum) and detected at some vent point to determine that a leak exists or the amount of a leak. (This is accomplished by use of a leak detector device purchased especially for this purpose).

3.2 Helium can also be introduced into a pressure service to determine leakage in a similar manner, using the same device.

4.0 Safety Notations:
4.1 Required block safety equipment.

4.2 Tubing needs to be able to handle pressures of the various systems to which it is attached.

5.0 Special Notations:
5.1 MTS will conduct all helium leak testing.

6.0 Procedure:

6.1 Vacuum services:

6.1.1 For vacuum services (like distillation towers) connect the leak detection device to a 110 volt outlet in the field using a ground fault circuit interrupter. Follow the instructions on the leak detector to power it up for use.

6.1.2 One end of the 1/8 inch tubing is attached to a fast sniff pump on the detection device. Connect the other end to the ejector vent. Do not use the vacuum pumps. The vacuum pumps do not pull a volume sufficient for the test.

6.1.3 Hook 30 psig helium to area to tested. Do not introduce helium to the system yet. When introduced, introduce it into one area at a time.

6.1.4 Remove plug in test port on top of unit (labeled "Install Sniffer Here") prior to start. DO NOT INSTALL SNIFFER UNTIL STEP 8.

6.1.5 Operation of Varian Portatest II (Startup and Calibration Procedures)

1. Plug in unit to 110V electrical outlet using GFCI
2. Turn on main Switch on back of unit
3. Open control panel on front left side and press SCRAM to start unit
4. Allow 7-10 minutes for unit to warm up (programmer in unit will count done and print SYSTEM READY)
5. Press START button when system is ready
6. Press CAL (#2) for auto-tune (take 90 seconds)
7. Press LEAK (#3). Value of 1 to 2 x 10-7 will appear if calibrated. Press LEAK again to stop this step.
8. Press VENT. VENT light will appear in display. KEEP THE MACHINE IN VENT STATUS WHEN NOT SNIFFING! Install Sniffer on top port of unit. Attach tubing from ejector to port on left side of sniffer unit.

Once tubing is hooked up, push the START button and allow the display to level out at 10-7. After the display is steady, began introducing helium into the system for 4-8 minutes. Watch the display once the helium has been turned on. Any downscale changes indicate a leak in

the system. Baseline is 10-7, a border line leak will be 10-6. and the maximum leak reading is 10-4.

9. Once sniffing is finished, press VENT, then SCRAM. Wait for the pump to stop and the system to cool down. The programmer will indicate when the unit can be turned off and unplugged.

10. Replug test port on top of unit.

6.2 Pressure Service:

6.2.1 For pressure service or vessels like the shell side of a heat exchanger with a suspected tube leak great care should be taken not to over pressure any vessel downstream of the shell side with large amounts of helium. Make sure that the helium does not go anywhere else other than to the designated shell or back up the steam to the shell especially if the test is to be performed on line.

6.2.2 Be sure to use a flex hose and piping that are adequate for high pressures to introduce helium into pressure services. When checking glycol ethers reboiler, condensate should be dumped or put to DV-511, to prevent helium buildup in E-220 & E-230. Do not send to D-510.

6.1.3 Once all these precautions and those specific to the task at hand have been considered the actual hook up and testing is just as in the vacuum service section of this procedure. (refer to 6.1.2-6.1.5 of this procedure)

7.0 Revisions:

Revision No 1	02-02-96	Altered 5.1 & 2.2 Added last sentence to 6.1.3