APPENDIX I - INSPECT OXFORD CRYOSTAT AND CURRENT PROBE FOR ICE BUILDUP

TABLE OF CONTENTS

I-1 INSPECT OXFORD CRYOSTAT AND CURRENT PROBE FOR ICE BUILDUP

This check can prevent the need for serious magnet de-icing as air-leaks into the helium vessel are a common problem associated with the seals used in the Oxford design. On Mobiles, the O–ring seals in the High Efficiency Ramp Probe can chafe and be rubbed down in size due to motion during transit. Helium fill baffle seals are commonly not put back together properly following a helium fill. The helium burst disk can crack without anyone knowing it for any number of reasons. Any of these problems will show up as “ice building” inside the vertical penetration of the magnet and present a serious service problem. Problems associated with an ice built–up range from minor difficulty, with insertion of the helium transfill line in mild cases to the more serious threat of magnet loss. As the ice grows, it presents heat to the fluid leaving the transfill line in the magnet. Transfill efficiency can be greatly reduced and may lead to a magnet quench during attempted helium transfill. With worse case situations, ice build–ups can prevent escape of exhaust vapor creating a pressure build–up inside the helium vessel which could cause a rupture.

WARNING!

WEAR EYE AND FACE PROTECTION AND SAFETY GLOVES. YOU MAY BE EXPOSED TO JETS OF CRYOGENIC VAPOR.

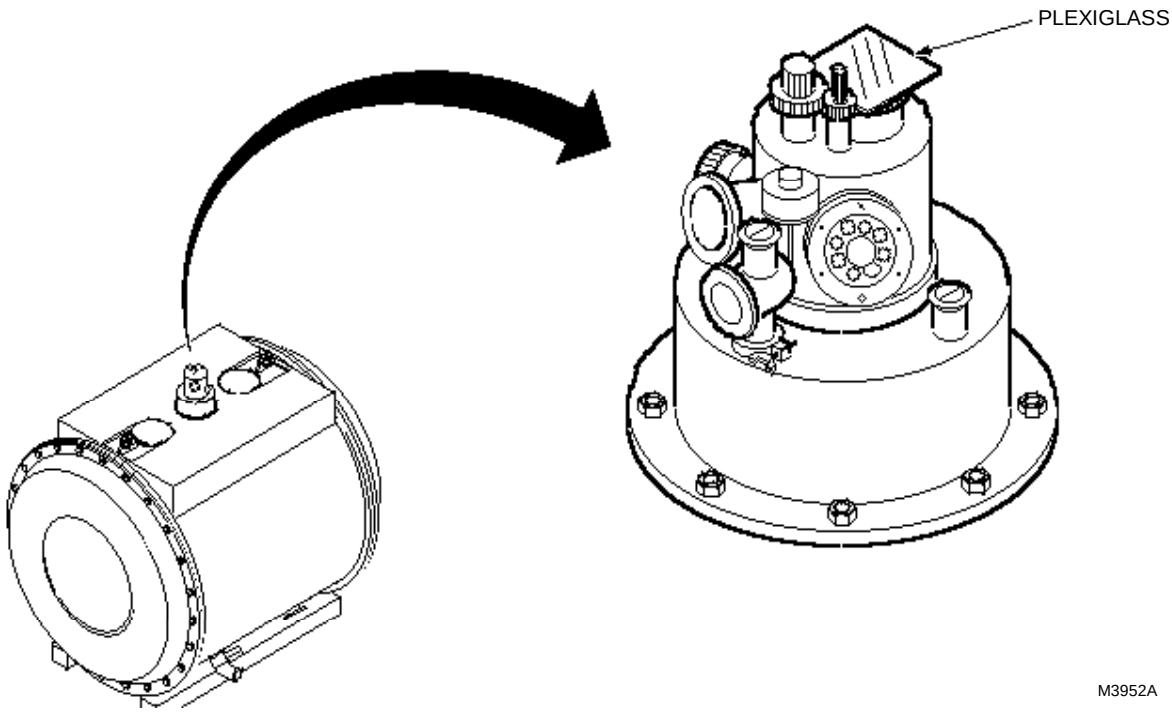
Note

Small amounts of frost around walls of magnet current lead entry port of helium fill port are **not** serious.

1. Place a piece of plexiglass first over helium fill port and then over current probe port. See Illustration I-1.

2. Use flashlight to check for ice or frost build–up in ports. If no build–up is found, go to Step 14. Otherwise, go to Step 3.

I-1 INSPECT OXFORD CRYOSTAT AND CURRENT PROBE FOR ICE BUILDUP (continued)



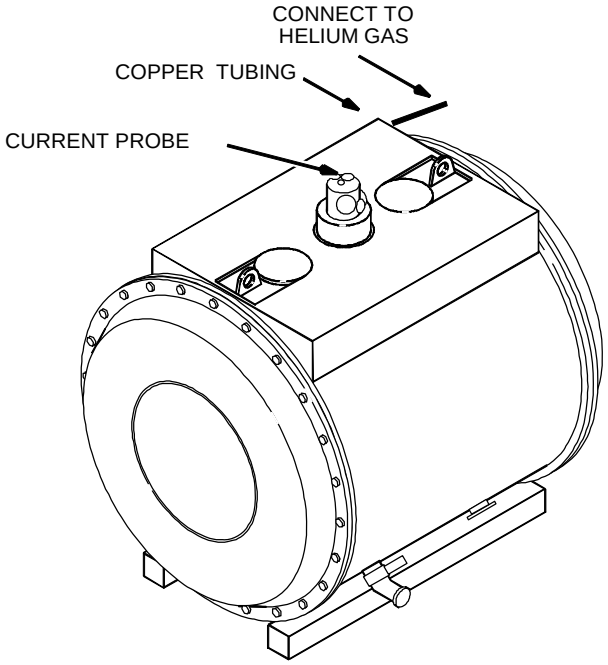
FILL AND PROBE PORTS
ILLUSTRATION I-1

I-1 INSPECT OXFORD CRYOSTAT AND CURRENT PROBE FOR ICE BUILDUP (continued)

WARNING!

DO NOT USE A HEAT GUN TO REMOVE ICE BUILD–UP IF MAGNET IS AT FIELD. HEAT GUN COULD WARM MAGNET COILS AND CAUSE A QUENCH. IF MAGNET IS NOT AT FIELD, A HEAT GUN CAN BE USED TO HEAT COPPER TUBE (THUS HEATING HELIUM GAS).

3. Attach a copper tube to gas line from a cylinder of warm helium gas. Do not turn gas on at this point.
4. Remove plexiglass from current probe port and insert copper tube. See Illustration I-2.



HELIUM GAS CONNECTION
ILLUSTRATION I-2

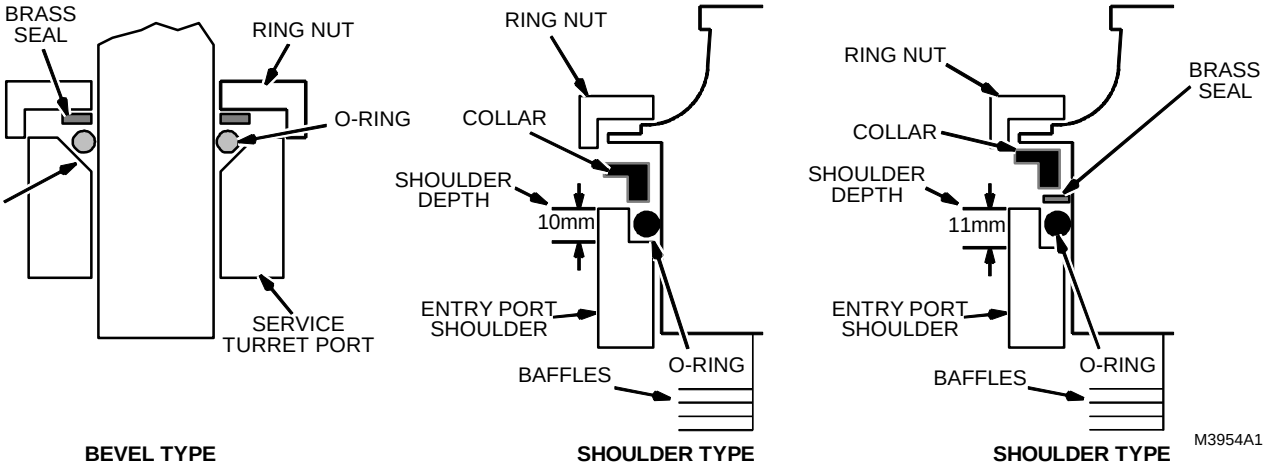
5. Blow helium gas towards ice build–up. Use bursts of 3 to 4 seconds at 3 psi or less at a time. Allow 10 to 20 seconds between bursts to help keep magnet structures cool and reduce chances of a quench.
6. Remove copper tube and cover current probe port with plexiglass. Use a flashlight to check again for presence of ice. Repeat procedure until ice build–up has been cleared.

Note

The above procedure does **not** remove ice but moves it outside baffle area. To remove ice, magnet must be ramped down and service turret removed. Amount of ice accumulation that makes this necessary is a judgement call. If transfill efficiencies are impaired, ice must be removed.

I-1 INSPECT OXFORD CRYOSTAT AND CURRENT PROBE FOR ICE BUILDUP (continued)

7. If ice was found, O–ring seals must be checked for proper size and assembly. Check that dewar O–rings have **not** been substituted for helium fill–port O–rings. Dewar O–rings are thinner and do **not** seal properly.
8. Remove locking collar of helium fill port. See Illustration I-3.



BEVEL TYPE **SHOULDER TYPE** **SHOULDER TYPE**

SERVICE TURRET PORTS (TYPICAL)
ILLUSTRATION I-3

SERVICE TURRET ENTRY PORT - BEVEL TYPE (See Illustration I-3.)

Current Probe Port

Oxford Part Number	GE Part Number	Description
623.2164	46-235706P815	RING NUT (M55)
623.0705	46-235706P576	BRASS SEAL
312.2150	46-307468P3	O-RING
623.0654	46-235706P814	PLUG/BAFFLE ASSEMBLY

Diagnostic Port

Oxford Part Number	GE Part Number	Description
623.2460	46-235706P817	RING NUT (M35)
623.0245	46-235706P596	BRASS SEAL
312.2122	46-307468P7	O-RING
623.0226	46-235706P816	PLUG/BAFFLE ASSEMBLY

Helium Fill Port

Oxford Part Number	GE Part Number	Description
623.2462	46-235706P819	RING NUT (M25)
623.0246	46-235706P591	BRASS SEAL
312.2120	46-307468P11	O-RING
623.0227	46-235706P818	PLUG/BAFFLE ASSEMBLY

I-1 INSPECT OXFORD CRYOSTAT AND CURRENT PROBE FOR ICE BUILDUP (continued)

SERVICE TURRET ENTRY PORT - DEEP SQUARE SHOULDER TYPE >11 MM (See Illustration I-3.)

Current Probe Port

Oxford Part Number	GE Part Number	Description
623.2164	46-235706P815	RING NUT (M55)
623.0705	46-235706P576	BRASS SEAL
312.2150	46-307468P3	O-RING
623.1504	46-307468P2	COLLAR
623.0654	46-235706P814	PLUG/BAFFLE ASSEMBLY

Diagnostic Port

Oxford Part Number	GE Part Number	Description
623.2460	46-235706P817	RING NUT (M35)
623.0245	46-235706P596	BRASS SEAL
312.2122	46-307468P7	O-RING
623.1503	46-307468P6	COLLAR
623.0226	46-235706P816	PLUG/BAFFLE ASSEMBLY

Helium Fill Port

Oxford Part Number	GE Part Number	Description
623.2462	46-235706P819	RING NUT (M25)
623.0246	46-235706P591	BRASS SEAL
312.2120	46-307468P11	O-RING
623.1502	46-307468P10	COLLAR
623.0227	46-235706P818	PLUG/BAFFLE ASSEMBLY

I-1 INSPECT OXFORD CRYOSTAT AND CURRENT PROBE FOR ICE BUILDUP (continued)

SERVICE TURRET ENTRY PORT - SHALLOW SQUARE SHOULDER TYPE 10 MM (See Illustration I-3.)

Current Probe Port

Oxford Part Number	GE Part Number	Description
623.2164	46-235706P815	RING NUT (M55)
312.2150	46-307468P3	O-RING
623.1504	46-307468P2	COLLAR
623.0654	46-235706P814	PLUG/BAFFLE ASSEMBLY

Diagnostic Port

Oxford Part Number	GE Part Number	Description
623.2460	46-235706P817	RING NUT (M35)
312.2122	46-307468P7	O-RING
623.1503	46-307468P6	COLLAR
623.0226	46-235706P816	PLUG/BAFFLE ASSEMBLY

Helium Fill Port

Oxford Part Number	GE Part Number	Description
623.2462	46-235706P819	RING NUT (M25)
312.2120	46-307468P11	O-RING
623.1502	46-307468P10	COLLAR
623.0227	46-235706P818	PLUG/BAFFLE ASSEMBLY

I-1 INSPECT OXFORD CRYOSTAT AND CURRENT PROBE FOR ICE BUILDUP (continued)

9. Check for compression of helium fill port O–ring. Depending on type, O–ring is compressed by either a brass flat washer or a brass bushing.
10. Some shoulder type systems also require a brass spacer below O–ring to insure O–ring is compressed. Otherwise, if O–ring is undersized, or if components are missing from baffle seal, flange will rest on lip of port, preventing O–ring compression and establishment of a proper seal.
11. Replace broken or undersized O–rings.
12. Replacement brass flat washer, flange or ring nut may be ordered from Oxford (Call (201) 541-1300 and ask for parts department).
13. If brass spacer is missing, purchase or fabricate locally.
14. If fill port seals were OK, check all remaining service turret ports for proper seals.
15. If service turret parts were OK, inspect burst disk for leaks.
16. If magnet continues ice buildup and is a "True Mobile" magnet with High Efficiency current probe permanently installed, temporarily install standard current probe until $^{1}/_{3}$ psi check valve replacement for current flapper check valve is available through FMI activity. Verify if the Mobile routing now includes elevation changes approaching 4,000 ft. If so, refer to the Mobile Oxford Vent FMI 60306 or 60341 for directions on changing the 0.3 psi check valve to a 1.0 psi check valve. The 1.0 psi check valves were delivered to the mobile units via these FMI's. If your mobile unit does not have the indicated Vent FMI installed, check with your FMI coordinator ASAP for appropriate materials to update your system.

    If magnet is not a "True Mobile," contact you MAC Team Leader (MR RSE) or OLC's 24 hour Magnet Support line (1-800-321-7937).
17. Inspect service turret for ice formation. If ice formations are present, check for secureness of turret hardware.