Prepared By: S. Hulbert, Q.-Y. Dong	Reviewed By: J. Klug	Approved By: S. Ehrlich	Approved By: E. Hu

*Approval signatures on file with master copy.

The following procedures must be followed when bleeding up different beam line sections and when returning these sections to operation.

I. FRONT END (PROCEDURE TO BE PERFORMED BY NSLS VACUUM GROUP ONLY)

A. Bleed-Up

1. Notify the Coordinator (Beeper 5824).
2. Refer to Front End Vacuum Procedures (SLS-07.19-13-1).

B. Return to Operation

1. Notify the Coordinator (Beeper 5824).
2. Refer to Front End Vacuum Procedures (SLS-07.19-13-1).

II. SECTION BETWEEN VALVE 1A AND VALVE 2A, MONOCHROMATOR

A. Bleed-Up

1. Notify the Coordinator (Beeper 5824).
2. Close and seal Valve 1A and Front End G.P. Valve.
3. Hook up turbo pump to this section, pump out the hose and isolate turbo.
4. Coordinator places Yellow Tag on Valve 1A and Front End Valve. Turn off ion gauges/pumps in area being vented.
5. Slowly bleed-up with boil-off N_2 while Coordinator monitors the Front End pressure. In addition, monitor pressure downstream of vent section.

B. Return to Operation

1. Bake and pump to $< 2 \times 10^{-9}$ Torr.
2. Notify the Coordinator (Beeper 5824).
3. Prepare for RGA scan.*
4. Open Valve 1A into the Front End provided pressure $< 2 \times 10^{-9}$ Torr downstream of the Valve.
5. Perform RGA scan.*
6. If RGA scan or pressure reading (if no RGA scan required) is satisfactory, Coordinator removes Yellow Tag from Valve 1A and Front End Valve.
7. Remove any unprotected turbo pump from this section or valve off the turbo pump and place a Yellow Tag on the valve.**

III. SECTION BETWEEN VALVE 2A AND VALVE 3A, REFOCUSING MIRROR TANK

A. Bleed-Up

1. Notify the Coordinator (Beeper 5824).
2. Close and seal Valve 2A and Valve 1A.
3. Hook up turbo pump to this section, pump out the hose and isolate turbo.
4. Coordinator places Yellow Tag on Valve 2A and Valve 1A. Turn off ion gauges/pumps in area being vented.
5. Slowly bleed-up with boil-off N_2 while Coordinator monitors pressure between Valve 2A and Valve 1A. In addition, monitor pressure downstream of vent section.

B. Return to Operation

1. Bake and pump to < 2 x 10^{-9} Torr.
2. Notify the Coordinator (Beeper 5824).
3. Prepare for RGA scan.*
4. Open Valve 2A and then Valve 1A provided pressure < 2 x 10^{-9} Torr downstream of the valves.
5. Perform RGA scan.*
6. If RGA scan or pressure reading (if no RGA scan required) is satisfactory, Coordinator removes Yellow Tag from Valve 2A and Valve 1A.
7. Remove any unprotected turbo pump from this section or valve off the turbo pump and place a Yellow Tag on the valve.**

IV. SECTION BETWEEN VALVE 3A AND VALVE 4A, TURBO PUMP SECTION

A. Bleed-Up

1. Notify the Coordinator (Beeper 5824).
2. Close and seal Valve 3A and Valve 2A.
3. Hook up turbo pump to this section, pump out the hose and isolate turbo.
4. Coordinator places Yellow Tag on Valve 3A and Valve 2A. Turn off ion gauges/pumps in area being vented.
5. Slowly bleed-up with boil-off N_2 while Coordinator monitors pressure between Valve 3A and Valve 2A. In addition, monitor pressure downstream of vent section.

B. Return to Operation

1. Bake and pump to < 1 x 10^{-8} Torr.
2. Notify the Coordinator (Beeper 5824).
3. Prepare for RGA scan.*
4. Open Valve 3A provided pressure < 1 x 10^{-8} Torr downstream of the valve and then Valve 2A provided pressure < 2 x 10^{-9} Torr downstream of the valve.
5. Perform RGA scan.*
6. If RGA scan or pressure reading (if no RGA scan required) is satisfactory, Coordinator removes Yellow Tag from Valve 3A and Valve 2A.
7. Remove any unprotected turbo pump from this section or valve off the turbo pump and place a Yellow Tag on the valve.**

V. SECTION DOWNSTREAM OF VALVE 4A, ENDSTATION

A. Bleed-Up

1. Turn off ion gauge and all HV in the section being vented.
2. Notify the Coordinator (Beeper 5824).
3. Close and seal Valve 4A and Valve 3A.
4. Coordinator places Yellow Tag on Valve 4A and Valve 3A.
5. Turn off pumps in the section being vented.
6. Slowly bleed-up with boil-off N_2 while Coordinator monitors pressure between Valve 4A and Valve 3A.

B. Return to Operation

1. Bake and pump to < 1 x 10^{-8} Torr.
2. Notify the Coordinator (Beeper 5824).
3. Prepare for RGA scan.*

4. Open Valve 4A and then Valve 3A provided pressure < 1 x 10^{-8} Torr downstream of the valves.
5. Perform RGA scan.*
6. If RGA scan or pressure reading (if no RGA scan required) is satisfactory, Coordinator removes Yellow Tag from Valve 4A and Valve 3A.

*** NSLS POLICY FOR RGA SCANS** (24 HOUR NOTICE REQUIRED)

An RGA scan is required before returning to operation if there is a major change of hardware in the vacuum system, i.e. changing of samples, mirrors, windows, monochromator crystals or gratings, manipulators, detectors, etc., **with the following two exceptions:**

1. After UHV sample chambers have been bled up for replacing components, an RGA scan will not be required if the chamber pressure is returned to < 2×10^{-9} Torr and the Front End pressure remains < 2×10^{-9} Torr when vacuum sections upstream of the chamber are opened into the Front End.
2. If any vacuum section upstream of the bled-up section remains at a pressure of < 9×10^{-10} Torr as read using a hot-filament ion gauge, when the entire beamline is opened into the Front End, and the Front End pressure does not increase, no RGA is required.

**** NSLS TURBO PUMP POLICY**

An unprotected turbo pump is one not separated from the Front End by a beamline valve which automatically closes in the event of a power loss or a pressure increase at the turbo pump. **No unprotected turbo pump can share a contiguous vacuum with the Front End.**

Document Review Frequency	
3	Years

Review signatures on file with master copy of controlled document

LIGHT SOURCES DIRECTORATE REVISION LOG

Document Number: LS-OPS-0037

Subject: VACUUM PROCEDURES FOR BEAMLINE U-1A

Rev	Description	Date
B	Initial release into the Controlled Document System	01/01/2002
C	Beamline abandoned by Exxon, removed all statements in all sections pertaining to "procedure to be performed by Exxon PRT Operations Group." B Revision Sect.'s IV and V removed and replaced with new to reflect new configuration. Standard UHV procedures incorporated with the last two sections having a Return to Operations pressure of 1 x 10^{-8} Torr. Preparer changed from M. Sansone to S. Hulbert and Q.-Y. Dong, and Approver changed from	11/20/2009