Subject: VACUUM PROCEDURES FOR BEAMLINE U8B

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*Document must contain approved signatures for validity.

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 1B AND VALVES 2B/2B[1], Monochromator

A. Bleed-Up

1. Notify the Coordinator (Beeper 5824).
2. Close and seal Valve 1B and Front End Valve.
3. Coordinator places yellow tag on Valve 1B.
4. Hook up turbo pump to this section.
5. Slowly bleed-up with boil-off N_2 while Coordinator monitors front end pressure.

B. Return to Operation

1. Bake and pump to $< 2\times10^{-9}$ Torr.
2. Notify the Coordinator (Beeper 5824).
3. Prepare for RGA scan.*
4. Open Valve 1B into front end provided pressure $< 2\times10^{-9}$ Torr downstream of 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 1B.
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 VALVES 2B/2B[1] AND VALVE 3B, 6m Deflection Mirror section

A. Bleed-Up

1. Notify the Coordinator (Beeper 5824).
2. Close and seal Valves 2B/2B[1] and Valve 1B.
3. Coordinator places yellow tags on Valves 2B/2B[1] and Valve 1B.
4. Slowly bleed-up with boil-off N_2 while Coordinator monitors pressure in the Monochromator.

B. Return to Operation

1. Bake and pump to < 2×10^{-9} Torr.
2. Notify the Coordinator (Beeper 5824).
3. Prepare for RGA scan.*
4. Open Valves 2B/2B' to the Monchromator provided pressure < 2×10^{-9} Torr downstream of valves.
5. Open Valve 1B into Front End provided pressure < 2×10^{-9} Torr downstream of valve.
6. Perform RGA scan.*
7. If RGA scan or pressure reading (if no RGA scan required) is satisfactory, Coordinator removes yellow tags from Valves 2B/2B[1] and Valve 1B.
8. 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 3B AND VALVE 4B, Exit Slit section

A. Bleed-Up

1. Notify the Coordinator (Beeper 5824).
2. Close and seal Valve 3B and Valves 2B/2B[1].
3. Coordinator places yellow tags on Valve 3B and Valves 2B/2B[1].
4. Slowly bleed-up with boil-off N_2 while Coordinator monitors pressure in the 6m Deflection Mirror section.

B. Return to Operation

1. Bake and pump to < 2×10^{-9} Torr.
2. Notify the Coordinator (Beeper 5824).
3. Prepare for RGA scan. *
4. Open Valve 3B into the 6m Deflection Mirror section provided pressure < 2×10^{-9} Torr downstream of valve.
5. Open Valves 2B/2B[1] into the Monochromator provided pressure < 2×10^{-9} Torr downstream of valve.
6. Perform RGA scan. *
7. If RGA scan or pressure reading (if no RGA scan required) is satisfactory, Coordinator removes yellow tags from Valve 3B and Valves 2B/2B[1].
8. Remove any unprotected turbo pump from this section or valve off the turbo pump and place a yellow tag on the valve.**

V. SECTION BETWEEN VALVE 4B AND VALVE 5B, Refocusing mirror section

A. Bleed-Up

1. Notify the Coordinator (Beeper 5824).
2. Close and seal Valve 4B and Valve 3B.
3. Coordinator places yellow tags on Valve 4B and Valve 3B.
4. Slowly bleed-up with boil-off N_2 while Coordinator monitors pressure in the Exit Slit section.

B. Return to Operation

1. Bake and pump to < 2×10^{-9} Torr.
2. Notify the Coordinator (Beeper 5824).
3. Prepare for RGA scan. *

4. Open Valve 4B into the Exit Slit section provided pressure < 2×10^{-9} Torr downstream of valve.
5. Open Valve 3B into the 6m Deflection Mirror section provided pressure < 2×10^{-9} Torr downstream of valve.
6. Perform RGA scan. *
7. If RGA scan or pressure reading (if no RGA scan required) is satisfactory, Coordinator removes yellow tags from Valve 4B and Valve 3B.
9. Remove any unprotected turbo pump from this section or valve off the turbo pump and place a yellow tag on the valve.**

VI. SECTION DOWNSTREAM OF VALVE 5B, Experimental Chamber

A. Total Bleed-Up

1. Notify the Coordinator (Beeper 5824).
2. Close and seal Valve 5B and Valve 4B.
3. Coordinator places yellow tags on Valve 5B and Valve 4B.
4. Slowly bleed-up with boil-off N_2 while Coordinator monitors pressure in the Refocusing Mirror section.

B. Return to Operation

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

C. Partial Bleed-up (1×10^{-5} Torr Argon, 1×10^{-7} Torr Oxygen)

1. Close Valve 5B.
2. Monitor pressure in the Refocusing Mirror section during partial bleed-up.
3. Return to operation: pump to 2×10^{-9} Torr; open Valve 5B.

*** 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 $< 9\times10^{-10}$ 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.**

NSLS REVISION/REVIEW LOG	
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> See NSLS Quality Control Coordinator for review signatures <

REVISION TABLE		
Rev	**Description**	**Date**
B	Re-activation of Beamline.Initial release into Controlled Document System.	11/07/03