

Brookhaven National Laboratory National Synchrotron Light Source		Number: LS-OPS-0056	Revision: C
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Subject: VACUUM PROCEDURES FOR BEAMLINE X11-B			
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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. BEAM TRANSPORT TUBE SECTION (BETWEEN VALVE 1B & 2B)

A. Bleed-Up

1. Notify the Coordinator (Beeper 5824).
2. Close and seal Valve 1B and Valve 2B, Safety coordinator closes and seals Front-End Valve.
3. Hook up turbo pump to this section.
4. Coordinator places Yellow Tag on Valve 1B and the Front End Valve.
5. Bleed-up to boil-off N₂ while coordinator monitors pressure in Front-End..

B. Return to Operation

1. Evacuate beamline to $<2 \times 10^{-9}$ Torr as indicated on IG1.
2. Notify the Coordinator (Beeper 5824).
3. Prepare for RGA scan .*
4. If RGA scan or pressure reading (if no RGA scan required) is satisfactory, Coordinator removes Yellow Tags from Valve 1B and the Front End Valve.
5. Coordinator monitors pressure in Front End while Valve 1B is opened.
6. Remove any unprotected turbo pump from this section or valve off the turbo pump and place a Yellow Tag on the valve. **

III. VERT. & HORZ. SLIT SECTION (BETWEEN VALVE 2B & VALVE 3B)

A. Bleed-Up

1. Notify the Coordinator (Beeper 5824).
2. Close and seal Valve 1B, Valve 2B and Valve 3B.
3. Hook up turbo pump to this section.
4. Coordinator places Yellow Tags on Valve 2B and Valve 1B.
5. Coordinator monitors pressure between Valve 1B and 2B as section is bled up to boil-off N₂.

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B. Return to Operation

1. Evacuate beamline to $<2 \times 10^{-9}$ Torr as indicated on IG2.
2. Notify the Coordinator (Beeper 5824).
3. Prepare for RGA scan. *
4. If RGA scan or pressure reading (if no RGA scan required) is satisfactory, Coordinator removes Yellow Tag from Valve 2B and Valve 1B.
5. Coordinator monitors pressure between Valve 1B and Valve 2B while Valve 2B is opened.
6. Remove any unprotected turbo pump from this section or valve off the turbo pump turbo pump and place a Yellow Tag on the valve. **

IV. INSTRUMENTATION TEE (BETWEEN BERYLLIUM WINDOW & VALVE 3B)**A. Bleed-Up**

1. Follow procedure for **Section III**

B. Return to Operation

1. Follow procedure for **Section III**

V. MONOCHROMATOR & PHOTON SHUTTER (BETWEEN VALVES 3B & 4B)**A. Bleed-Up**

1. Notify the Coordinator (Beeper 5824).
2. Close and seal Valve 2B, Valve 3B, and Valve 4B.
3. Coordinator places Yellow Tag on Valve 3B.
4. Bleed-up to boil-off N_2 while coordinator monitors between Valves 2B & 3B.

B. Return to Operation

1. Evacuate beamline to $<5 \times 10^{-7}$ Torr as indicated on IG4.
2. Notify the Coordinator (Beeper 5824).
3. Coordinator monitors pressure between Valves 2B & 3B when Valve 3B is opened.
4. If pressure is satisfactory, Coordinator removes Yellow Tag from Valve 3B.

VI. BEAM TRANSPORT TUBE & INSTRUMENTATION SECTION (BETWEEN VALVES 4B & 5B)**A. Bleed-Up**

1. Notify the Coordinator (Beeper 5824).
2. Close and seal Valve 3B, Valve 4B and Valve 5B.
3. Coordinator places Yellow Tag on Valve 4B.
4. Bleed-up to boil-off N_2 while coordinator monitors pressure between Valves 3B and Valve 4B.

B. Return to Operation

1. Evacuate beamline to $<5 \times 10^{-6}$ Torr as indicated on IG5.
2. Notify the Coordinator (Beeper 5824).
3. Coordinator monitors pressure in between Valves 3B and Valve 4B while Valve 4B is opened.

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4. If pressure is satisfactory, Coordinator removes Yellow Tag from Valve 4B.

VII. HARMONIC REJECTION MIRROR SECTION (BETWEEN VALVE 5B & Be Window)

A Bleed-Up

1. Notify the Coordinator (Beeper 5824).
2. Close Valve 4B, Valve 5B.
3. Coordinator places Yellow Tag on Valve 5B.
4. Bleed-up to boil-off N₂ while coordinator monitors pressure between Valve 4B and Valve 5B.

B. Return to Operation

1. Evacuate beamline to $<5 \times 10^{-6}$ Torr as indicated on IG6.
2. Notify the Coordinator (Beeper 5824).
3. Coordinator monitors pressure between Valves 4B and 5B while Valve 5B is opened.
4. If pressure is satisfactory, Coordinator removes Yellow Tag from 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 $< 2 \times 10^{-9}$ Torr and the Front End pressure remains $< 2 \times 10^{-9}$ 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 $< 9 \times 10^{-10}$ 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

NLS REVISION LOG	
Document Number:	LS-OPS-0056
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> See NLS Quality Control Coordinator for original revision and review signatures <

REVISION TABLE		
Rev	Description	Date
C	<p>CHANGED SECT. VIB LINE 1 FROM 10-7 TO 10-6.</p> <p>CHANGED SECT. VII HEADER WORDING FROM (BETWEEN VALVE 5B & VALVE 6B) TO (BETWEEN VALVE 5B AND Be WINDOW).</p> <p>REMOVED FROM SECT VIIA: (Note: <i>Valve 6B is a beryllium window valve (in the closed position) located at the end of the beamline in the X11-B hutch which has been disabled from operating.</i>)</p> <p>CHANGED SECT VIIB LINE 1 FROM 10-7 TO 10-6.</p>	