

Brookhaven National Laboratory/ LIGHT SOURCES DIRECTORATE				
<b>Subject:</b>	<b>VACUUM PROCEDURES FOR BEAMLINE X-16A</b>			
<b>Number:</b>	LS-OPS-0116	<b>Revision:</b>	A	
		<b>Effective:</b>	12/22/08	
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\*Approval signatures on file with master copy.

The following procedures must be followed when bleeding up different beamline sections and when returning these sections to operation (refer to Beamline Layout Drawing).

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### **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 Be WINDOW 1A, BEAMPIPE STRAIGHT SECTION**

#### **A. Bleed-Up**

1. Notify the Coordinator (Beeper 5824).
2. Hook up turbo pump to this section.
3. Close and seal Valve 1A and the Front-End High Vacuum Valve.
4. Coordinator places Yellow Tags on Valve 1A and the Front-End High Vacuum Valve.
5. Slowly bleed-up with boil-off N<sub>2</sub> while Coordinator monitors pressure upstream of Valve 1A (Front-End).

#### **B. Return to Operation**

1. Pump to 2.0 X 10<sup>-9</sup> Torr.
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 1A and the Front-End High Vacuum Valve.
5. 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 Be WINDOW 1A and VALVE 2A, MIRROR & SLIT TANK**

#### **A. Bleed-Up**

1. Notify the Coordinator (Beeper 5824).
2. Close and seal Valve 1A.
3. Close and seal Valve 2A to preserve downstream vacuum.
3. Coordinator places Yellow Tag on Valve 1A.
4. Slowly bleed-up with boil-off N<sub>2</sub> while Coordinator monitors pressure between Be

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Window 1A and Valve 1A.

### **B. Return to Operation**

1. Pump to  $< 1 \times 10^{-3}$  Torr.
2. Notify the Coordinator (Beeper 5824).
3. If pressure between Be Window 1A and Valve 2A is  $< 1 \times 10^{-3}$  Torr and pressure upstream of Valve 1A is  $\leq 2 \times 10^{-9}$  Torr, Coordinator removes Yellow Tag from Valve 1A.
4. Open Valve 2A.

## **IV. SECTION BETWEEN VALVE 2A and VALVE 3A, BEAMPIPE STRAIGHT SECTION**

### **A. Bleed-Up**

1. Notify the Coordinator (Beeper 5824).
2. Close and seal Valve 2A.
3. Close and seal Valve 3A to preserve downstream vacuum.
3. Coordinator places Yellow Tag on Valve 2A.
4. Slowly bleed-up with boil-off  $N_2$  while Coordinator monitors pressure between Valve 2A and Be Window 1A.

### **B. Return to Operation**

1. Pump to  $< 1 \times 10^{-3}$  Torr.
2. Notify the Coordinator (Beeper 5824).
3. If pressure between Valve 2A and Valve 3A is  $< 1 \times 10^{-3}$  Torr and pressure between Valve 2A and Be Window 1A is  $< 1 \times 10^{-3}$  Torr, Coordinator removes Yellow Tag from Valve 2A.
4. Open Valve 3A.

## **V. SECTION BETWEEN VALVE 3A and Be WINDOW 2A, MONOCHROMATOR**

### **A. Bleed-Up**

1. Notify the Coordinator (Beeper 5824).
2. Close and seal Valve 3A and Valve 2A.
3. Coordinator places Yellow Tags on Valve 3A and Valve 2A.
4. Slowly bleed-up with boil-off  $N_2$  while Coordinator monitors pressure between Valve 3A and Valve 2A.

### **B. Return to Operation**

1. Pump to  $< 1 \times 10^{-3}$  Torr.
2. Notify the Coordinator (Beeper 5824).
3. If pressure between Valve 3A and Be Window 2A is  $< 1 \times 10^{-3}$  Torr and pressure between Valve 2A and Valve 3A is  $< 1 \times 10^{-3}$  Torr, Coordinator removes Yellow Tags from Valve 3A and Valve 2A.
4. Open Valve 3A.

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

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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

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