

Brookhaven National Laboratory/National Synchrotron Light Source							
Subject:	VACUUM PROCEDURES FOR BEAMLINE X-27A						
Number:	LS-OPS-0080	Revision:	D	Effective:	02/11/2010	Page 1 of 3	
Prepared By:	G. Nintzel and R. Smith	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 Be WINDOW 1A

A. Bleed up

1. Notify the Coordinator (Beeper 5824).
2. Close and seal Valve 1A and Front-End HV Valve.
3. Hook up turbo pump to this section and isolate turbo.
4. Coordinator places Yellow Tags on Valve 1A and the Front-End HV Valve.
5. Turn off IP #1 (the 20l/sec ion pump) and Ion Gauge.
6. Slowly bleed up with boil-off N₂ while Coordinator monitors Front-End pressure.

B. Return to Operation

1. Pump to $<2 \times 10^{-6}$ Torr.
2. Turn on IP#1 (the 20l/sec ion pump).
3. Pump to $< 2 \times 10^{-9}$ Torr.
4. Notify the Coordinator(Beeper 5824).
5. Prepare for RGA scan.*
6. Open Valve 1A provided pressure $<2 \times 10^{-9}$ downstream of the valve.
7. Perform RGA scan.*
8. If RGA scan or pressure reading (if no RGA scan is required) is satisfactory, Coordinator removes Yellow Tag from Valve 1A and the Front-End HV Valve.
9. 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 Be WINDOW 2A

A. Bleed up

1. Notify the Coordinator(Beeper 5824).
2. Close and seal Valve 1A.
3. Hook up turbo pump to Monochromator section and isolate turbo.
4. Turn off Ion Pump and Ion Gauge in section.
5. Coordinator places Yellow Tag on Valve 1A.
6. Coordinator monitors pressure at IP#1(pressure should stay $< 6 \times 10^{-8}$ Torr).
7. Open IP #2 valve and slowly bleed up while Coordinator monitors Front-End pressure and IP #1 pressure.

Subject:	VACUUM PROCEDURES FOR BEAMLINE X-27A					
Number:	LS-OPS-0080	Revision:	D	Effective:	02/11/2010	Page 2 of 3

B. Return to Operation

1. Pump to $<2 \times 10^{-7}$ Torr (as read at IP #2). Turbo to 2×10^{-6} Torr and then turn on ion pumps and isolate turbo.
2. Notify the Coordinator (Beeper 5824).
3. Check IP #1 pressure (should be $< 2 \times 10^{-9}$ Torr).
4. Open Valve 1A into the Front-End provided pressure $< 2 \times 10^{-9}$ Torr downstream of the valve.
5. If pressure is satisfactory, Coordinator removes Yellow Tag from Valve 1A.
6. Remove any unprotected turbo pump from this section or valve off the turbo pump and place a Yellow Tag on the valve.**

*** 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.**

Brookhaven National Laboratory/National Synchrotron Light Source				
Subject:	VACUUM PROCEDURES FOR BEAMLINE X-27A			
Number:	LS-OPS-0080	Revision:	D	Effective: 02/11/2010
				Page 3 of 3

Document Review Frequency
3Years

Review signatures on file
with master copy of
controlled document

LIGHT SOURCES DIRECTORATE REVISION LOG		
Document Number:	LS-OPS-0080	
Subject:	VACUUM PROCEDURES FOR BEAMLINE X-27A	
Rev	Description	Date
B	Initial release in to the Controlled Document System.	11/30/2004
C	Sect. III,Line 1 changed from $< 2 \times 10^{-8}$ Torr to $>2 \times 10^{-7}$ Torr.	02/16/2007
D	Changed Preparer from J. Ablett to G. Nintzel and R. Smith. Changed Approver from C. Foerster to E. Hu. Added "and Ion Gauge" to Sect. II, Step 5, added "turn off Ion Pump and Ion Gauge in section." To Section III, Step 4.	02/11/2010