

Brookhaven National Laboratory/ LIGHT SOURCES DIRECTORATE			
Subject:	VACUUM PROCEDURES FOR BEAMLINE X-4C		
Number:	LS-OPS-0132	Revision:	B
		Effective:	06/10/2010
			Page 1 of 3
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*Approval signatures on file with master copy.

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

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 1C AND Be WINDOW 1C

A. Bleed-Up

1. Notify the Coordinator (Beeper 5824).
2. Close and seal Valve 1C and the Front-End Valve.
3. Hook up turbo pump to this section and isolate turbo.
4. Coordinator places Yellow Tags on Valve 1C and Front-End Valve.
5. Slowly bleed up with Boil-off N₂ while Coordinator monitors Front-End pressure.

B. Return to Operation

1. Pump to $< 2 \times 10^{-9}$ Torr.
2. Notify the Coordinator (Beeper 5824).
3. Prepare for RGA scan.*
4. Open Valve 1C 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 Tags from Valve 1C and the 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 Be WINDOW 1C AND Be WINDOW 2C

A. Bleed-Up

1. Notify the Coordinator (Beeper 5824).
2. Close and seal Valve 1C.
3. Coordinator places Yellow Tag on Valve 1C.
4. Slowly bleed up with boil-off N₂ while Coordinator monitors pressure between Be Window 1C And Valve 1C.

B. Return to Operation

1. Pump to $< 5 \times 10^{-7}$ Torr.
2. Notify the Coordinator (Beeper 5824).
3. If pressure reading is satisfactory, Coordinator removes Yellow Tag from Valve 1C.

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Subject:	VACUUM PROCEDURES FOR BEAMLINE X-4C			
Number:	LS-OPS-0132	Revision:	B	Effective: 06/10/2010
				Page 2 of 3

*** 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.**

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Number:	LS-OPS-0132	Revision:	B
		Effective:	06/10/2010
			Page 3 of 3

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LIGHT SOURCES DIRECTORATE REVISION LOG		
Document Number:	LS-OPS-0132	
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Rev	Description	Date
B	Initial release in to the Controlled Document System.	06/10/2010