

Brookhaven National Laboratory/National Synchrotron Light Source			
Subject:	VACUUM PROCEDURES FOR BEAMLINE U-15A		
Number:	LS-OPS-OO79	Revision:	B
		Effective:	09/29/04
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*Approval signatures on file with master copy.

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

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 VALVE 2A, TGM SECTION

A. Bleed-Up

1. Notify the Coordinator (Beeper 5824).
2. Close and seal Valve 1A and Front End G.P. Valve.
3. Hook up turbo pump to the TGM.
4. Coordinator places yellow tag on Valve Valve 1A and the Front End G. P. Valve.
5. Slowly bleed-up with boil-off N₂ while Coordinator monitors front-end pressure.

B. Return to Operation

1. Bake and pump to $< 2 \times 10^{-9}$ Torr.
2. Notify the Coordinator (Beeper 5824).
3. Prepare for RGA scan.*
4. Open Valve 1A into front end 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 tag from Valve 1A and the Front End G. P. 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 VALVE 2A AND VALVE 3A

A. Bleed-Up

1. Notify the Coordinator (Beeper 5824).
2. Close and seal Valve 2A and Valve 1A.
3. Hook up Turbo Pump to this section.
4. Coordinator places yellow tags on Valve 2A and Valve 1A.
5. Slowly bleed-up with boil-off N₂ while Coordinator monitors pressure between Valve 2A and Valve 1A.

B. Return to Operation

1. Bake and pump to $< 5 \times 10^{-8}$ Torr. If necessary, bake out section between Valve 2A and Valve 3A.

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2. Notify the Coordinator (Beeper 5824).
3. Prepare for RGA scan.*
4. Open Valve 2A provided pressure $< 5 \times 10^{-8}$ Torr downstream of valve. Open Valve 1A 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 2A and Valve 1A.
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 3A AND VALVE 5A

A. Bleed-Up

1. Notify the Coordinator (Beeper 5824).
2. Close and seal Valve 3A and Valve 2A.
3. Hook up turbo pump to this section.
4. Coordinator places yellow tags on Valve 3A and Valve 2A.
5. Open Valve 4A, which contains a thin Al window.
6. Slowly bleed-up with boil-off N₂ while Coordinator monitors pressure upstream of Valve 3A.

B. Return to Operation

1. Verify that Valve 4A, which contains a thin Al window, is open.
2. Pump to $< 5 \times 10^{-8}$ Torr.
3. Notify the Coordinator (Beeper 5824).
4. Prepare for RGA scan.*
5. Optionally close Valve 4A, which contains a thin Al window.
6. Open Valve 3A provided pressure $< 5 \times 10^{-8}$ Torr downstream of valve.
7. Open Valve 2A provided pressure $< 5 \times 10^{-8}$ Torr downstream of valve.
8. Perform RGA scan.*
9. If RGA scan or pressure reading (if no RGA scan required) is satisfactory, Coordinator removes yellow tags from Valve 3A and Valve 2A.
10. Remove any unprotected turbo pump from this section or valve off the turbo pump and place a yellow tag on the valve.**

V. SECTION DOWNSTREAM OF VALVE 5A, SAMPLE CHAMBER

A. Bleed-Up

1. Notify the Coordinator (Beeper 5824).
2. Close and seal Valve 5A and Valve 3A.
3. Hook up turbo pump to this section.
4. Coordinator places yellow tags on Valve 5A and Valve 3A.
5. Slowly bleed-up with boil-off N₂ while Coordinator monitors pressure upstream of Valve 5.

B. Return to Operation

1. Bake and pump to $< 5 \times 10^{-7}$ Torr.
2. Notify the Coordinator (Beeper 5824).
3. Prepare for RGA scan.*
4. Open Valve 5A provided pressure $< 5 \times 10^{-7}$ Torr downstream of valve.
5. Open Valve 3A provided pressure $< 5 \times 10^{-8}$ Torr downstream of valve.

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6. Perform RGA scan.*
7. If RGA scan or pressure reading (if no RGA scan required) is satisfactory, Coordinator removes yellow tags from Valve 5A and Valve 3A.
8. Remove any unprotected turbo pump from this section or valve off the turbo pump and place a yellow tag on the valve.**

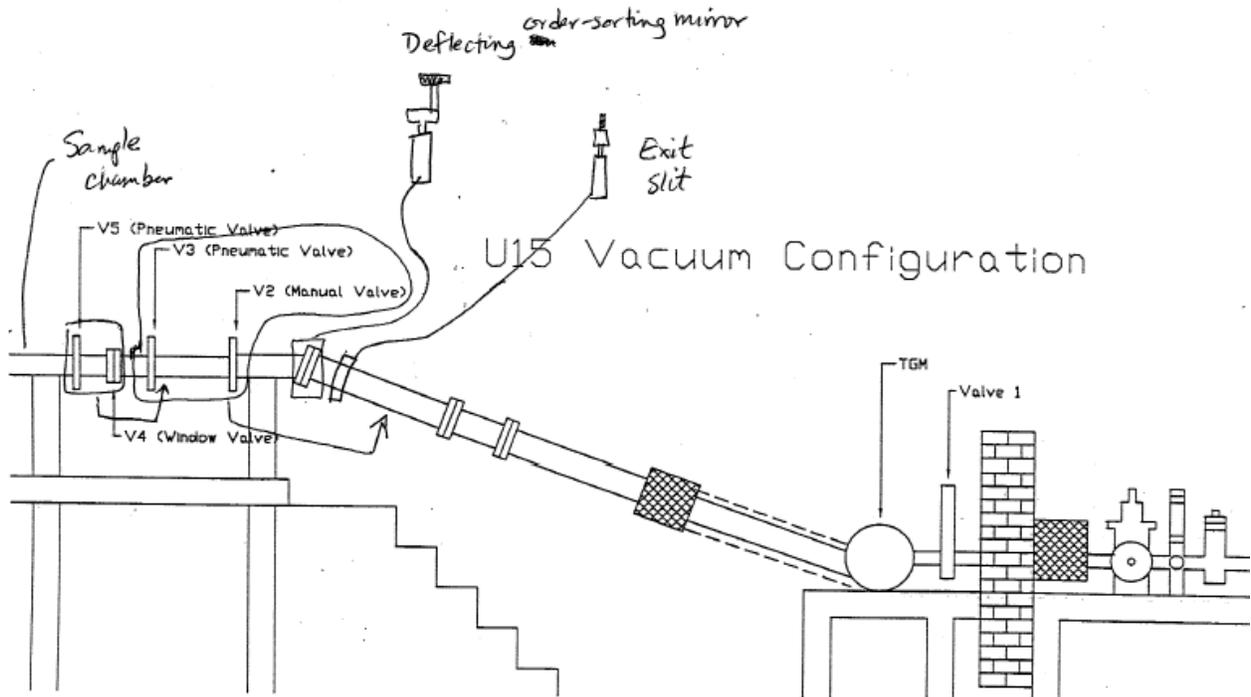
*NSLS POLICY FOR RGA SCANS

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 2×10^{-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 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	Initial release into controlled document system.	09/29/04