Brookhaven National Laboratory/ LIGHT SOURCES DIRECTORATE

Subject:	**VACUUM PROCEDURES FOR BEAMLINE X-20A**				
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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 BE WINDOW 1A AND VALVE 1A

This section should NOT be bled-up. If necessary, see Local Contact or Spokesperson.

III. SECTION BETWEEN VALVE 1A AND VALVE 3A

** This section should be bled up as a unit so that the monochromator turbo pump is included**

A. Bleed-Up

1. Notify the Coordinator (Pager 5824).
2. Close Valve 1A, Valve 3A and Valve 4A; Valve 2A must be open.
   ** Make sure Valve 3A is closed to isolate from X20B **
3. Coordinator places yellow tags on Valve 1A and Valve 3A controls.
4. Slowly bleed-up with boil-off N_2 while Coordinator monitors pressure between Be Window 1A and Valve 1A.

B. Return to Operation

1. Pump down to $< 1 \times 10^{-5}$ Torr.
2. Notify the Coordinator (Pager 5824).
3. Open Valve IA provided pressure $< 1 \times 10^{-5}$ Torr downstream of valve.
4. Coordinator removes yellow tags from Valve lA and Valve 3A controls.

IV. SECTION BETWEEN VALVE 2A AND VALVE 3A (MONOCHROMATOR)

A. Bleed-Up

1. Notify the Coordinator (Pager 5824).
2. Close Valve 2A, Valve 3A and Valve 4A.
** Make sure Valve 3A is closed to isolate from X20B **
3. Coordinator places yellow tags on Valve 2A and Valve 3A controls.
4. Slowly bleed-up with boil-off N_2 while Coordinator monitors pressure between Be Window lA and Valve 2A.

B. Return to Operation

1. Pump to $< 1 \times 10^{-5}$ Torr.
2. Notify the Coordinator (Pager 5824).
3. Open Valve 2A provided pressure $< 1 \times 10^{-5}$ Torr downstream of valve.
4. Coordinator removes yellow tag from Valve 2A and Valve 3A controls.

V. SECTION BETWEEN VALVE 2A OR VALVE 3A AND Be WINDOW 2A

*** This section shares vacuum with Beamline X20B and requires the closing of X20B valve. It may be bled-up as a unit so that the X20A monochromator turbo pump is included. ***

A. Bleed-Up

1. Notify the Coordinator (Pager 5824).
2. Close Valve 3B on Beamline X20B after notification of X20B personnel.
3. Close Valve 2A and Valve 4A **or** Valve 3A; Valve 3A should be open if X20A turbo pump will be used.
3. Coordinator places yellow tag on Valve 2A or Valve 3A and Valve 3B controls.
4. Slowly bleed-up with boil-off N_2 while Coordinator monitors pressure in the X20B monochromator and either between Be Window lA and Valve 2A on X20A (if Valve 3A is open) or between Valve 2A and 3A (if Valve 3A is closed).

B. Return to Operation

1. Pump to $< 1 \times 10^{-5}$ Torr.
2. Notify the Coordinator (Pager 5824).
3. Open Valve 2A or Valve 3A provided pressure is $< 1 \times 10^{-5}$ Torr downstream of this valve.
4. Coordinator removes yellow tags from Valve 2A or Valve 3A control and Valve 3B control.

* 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

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controlled document

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