

**ACCELERATOR TEST FACILITY  
GUIDELINES FOR BEAM LINE REVIEW**

## **ACCELERATOR TEST FACILITY**

### **GUIDELINES FOR BEAM LINE REVIEW**

1. Description of Experiment
2. Drawings
3. Safety
4. Vacuum
5. Space & Facility Requirements

1. DESCRIPTION OF EXPERIMENT

A brief description of the experiment should include the major pieces of equipment and how they are used. Of importance is such information as the pressures and temperatures at various locations, the duration of a typical experiment, the constituents of the atmosphere in components, target materials, etc.

2. DRAWINGS

- a. Overall beam line layout showing
  - beam line equipment and isolation valves
  - beam line radiation shields
  - location of support equipment, i.e., racks, tables, computer, etc.
  - "stay clear" areas
  - plan and elevation views
- b. Assembly drawings of major components such as mirror boxes, experimental chambers, etc, with enough detail to understand their size, general function and materials of construction.
- c. Assembly drawings and detail drawings (if required) of any safety-related item such as laser photon shutters, cryogenics or hazardous gas systems, etc.

3. SAFETY

3.1 Radiation

Must conform to BNL radiation standards as given in the safety manual.

- a. Radioactive samples or sources: activity, physical state, containment, storage.
- b. Passive shield for line-of-sight radiation.
- c. Lead Collars.
- d. Laser radiation or photon radiation.

3.2 Toxic Materials

- a. Toxic, explosive, flammable samples or materials used in connection with or generated by experiments: Quantity, physical state, how stored, how contained, how removed, how identified.

3.3 Fire

- a. Materials of construction.
- b. Flammable chemicals and solvents: quantity, storage.
- c. Escape aisles around experiments and ladders for large elevated platforms.

3.4 Electrical

Each experiment will be provided with a 110/208V 100A panel adjacent to or attached to the shield wall. Experimenters will connect their equipment to the power panel using a cable tray where possible.

Experiment equipment must be designed and installed according to the National Electrical Code and ANSI national Safety Codes. Users are asked to discuss any exceptions to these codes at the safety review.

3.5 Cryogenic

- a. Types, quantities, and storage of compressed gases.
- b. Overpressure protection.
- c. Asphyxiation protection in enclosed spaces.

3.6 Structural

- a. Stability of heavy objects.
- b. Platforms and walkways.
- c. Pressure vessels.

3.7 Other

- a. Alarms and interlocks for water flow and major water leaks.
- b. Protection of electrical equipment from water leaks.
- c. Protection of personnel from thermally hot objects.

4. VACUUM

Must conform to "REQUIREMENTS AND GUIDELINES FOR NSLS EXPERIMENTAL BEAMLINE VACUUM SYSTEMS", BNL 28073/NSLS Bulletin 80-2. Exceptions to these guidelines shall be approved by ATF management.

Drawings and/or specifications to show:

- a. Vacuum components.
- b. Materials of construction.
- c. Conductance limitations and differential pumping details, conductances, locations, pumping speeds.
- d. Gases used in gas phase experiments, gas and flow rate.
- e. Window design details, mechanical, thermal, gas permeability.
- f. Interlocks, fast valve sensor locations, UHV valve interlocks type and location.

5. SPACE AND FACILITY REQUIREMENTS

5.1 Your space requirements on the experimental floor should be covered in the drawings you prepare for Item 2a. Requirements for laboratory, trailer and storage space will be covered elsewhere.

5.2 Utilities:

Water: GPM, temperature requirements.

Power: 110/208V, 100 Amp.  
service to each port to  
be shared by two or  
more beam lines on the  
port.

Air: Anticipated use.

LN: Anticipated use.

He: Anticipated use.

Exhaust: Anticipated use.

- 5.3 Will you have vibrating equipment that could affect floor stability? Do you anticipate heavy floor loading that will be shifted frequently?

6. NSLS EXPERIMENT SAFETY APPROVAL FORM

- 6.1 Approved experiments are still subject to an Experimental Safety Review prior to the experiment commencing.

Experimenters are required to complete the attached NSLS Experiment Safety Approval Form and to have it signed by NSLS Safety Staff prior to starting an experiment at the ATF.

# NSLS EXPERIMENT SAFETY APPROVAL FORM

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SAF ID# : \_\_\_\_\_ (To be completed by NSLS or Beamline Staff; see page 6.)

The intent of this form is to document your experiment. Complete ALL the numbered questions; type "not applicable" or "none" where appropriate. Once approved, this form may be used for one year. If your experiment changes before the form expires, you must notify the Operations Coordinator. Most changes are easily accommodated and should not result in significant delay. YOU MUST SUBMIT THIS FORM AT LEAST ONE WEEK BEFORE YOUR EXPERIMENT STARTS!

- 1. Beamline:** **Expected Start Date:**  
For X-Ray and VUV Beamlines, put the complete beamline name (e.g X7A or U2B, not X7 or U2).  
For ATF, put the beamline (ATF0, ATF1, ATF2, or ATF3) or ATF-CO2 . For SDL, put SDL .
- 2. Experiment Title:**
- 3. List the Experimenters** who will be working *at the NSLS* and will know the technical details. Include beamline personnel who can help in answering questions.

First Name and Last Name	Affiliation	Phone Number
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Continued on attachments.

Name of person who completed this Safety Approval Form:

Phone #:

\*\*\*\*\* THIS PORTION TO BE COMPLETED BY NSLS SAFETY STAFF \*\*\*\*\*

**HAZARD FLAGS:**     biological     chemical     physical     none

- Approved for Operation.
- Approved, requires notification.
- Safety Officer/Designee review required.
- Other comments or precautions - see following sections: \_\_\_\_\_
- Other attachments/approvals (human studies, virus, radiation, etc)

Safety Officer/Designee Approval: \_\_\_\_\_ Date: \_\_\_\_\_

SAF EXPIRATION DATE (month / day / year): \_\_\_\_\_

**NSLS EXPERIMENT SAFETY APPROVAL FORM - page 2 of 6**

**4. Materials to be Used**

List all the materials to be used for your experiment. Include sample materials, chemicals, gases, etc. (\*NOTE: Leave the last column blank - NSLS Safety Staff will complete this column. If checked by Safety Staff, you will need to obtain a Bar Code by calling x2028 or 4935.)

Name of Material	Quantity	Return to home institution?	Storage Location (Beamline number, room number, lab, etc)	*Check if Bar Code Required
		<input type="checkbox"/> yes <input type="checkbox"/> no		
		<input type="checkbox"/> yes <input type="checkbox"/> no		
		<input type="checkbox"/> yes <input type="checkbox"/> no		
		<input type="checkbox"/> yes <input type="checkbox"/> no		
		<input type="checkbox"/> yes <input type="checkbox"/> no		
		<input type="checkbox"/> yes <input type="checkbox"/> no		
		<input type="checkbox"/> yes <input type="checkbox"/> no		
		<input type="checkbox"/> yes <input type="checkbox"/> no		
		<input type="checkbox"/> yes <input type="checkbox"/> no		
		<input type="checkbox"/> yes <input type="checkbox"/> no		
		<input type="checkbox"/> yes <input type="checkbox"/> no		
		<input type="checkbox"/> yes <input type="checkbox"/> no		
		<input type="checkbox"/> yes <input type="checkbox"/> no		
		<input type="checkbox"/> yes <input type="checkbox"/> no		
		<input type="checkbox"/> yes <input type="checkbox"/> no		

Continued on attachments.

**5. Equipment**

List equipment that will be used which is not a permanent part of the beamline. Include pressure chambers, gas manifolds, heating apparatus, lasers (specify laser class), cooling apparatus, cryogenic equipment, items which will be inserted into the beamline vacuum, etc.

## **NSLS EXPERIMENT SAFETY APPROVAL FORM - page 3 of 6**

### **6.a) Task and Hazard Analysis**

Outline the procedures involved in your experiment. Include task locations, quantities of materials to be used, and equipment requirements. Provide sufficient information to illustrate what will be done, who will do it, and where procedures will occur. Include work involving, chemicals, compressed gasses, biological materials, and physical hazards (cryogenics, radioactive materials, electrical concerns, stored energy concerns). Describe how the materials and equipment listed above will be used. Include any precautions you plan such as requirements for: personal protective equipment, posting, process restrictions, and material containment, transport and quantity limitations. If there are no risks presented by your experiment, provide a simple description of your planned activities. Please be concise. Typical outlines require a single paragraph (<200 words).



**NSLS EXPERIMENT SAFETY APPROVAL FORM - page 5 of 6**

**8. USER COMMENTS**

Please provide any additional information, comments, issues and concerns that would help NSLS Safety Staff evaluate your experiment and assist you in its safe operation.

**9. EXPERIMENT TYPE - Check one of the boxes below:**

- NSLS General User Proposal
- ATF Experiment
- SDL Experiment
- PRT Experiment or Collaboration
- Beamline diagnostics or development

Proposal Number: (if applicable)

Does this experiment involve proprietary work?

Proprietary means your institution will own the data and does not plan on publishing the results in open literature.  No  Yes: Proprietary Proposal Number:

Does this experiment involve Supported Services work? Supported Services includes analytical work or beam for manufacturing supported by the NSLS.

No  Yes: Supported Services Proposal Number:

**10. FUNDING SOURCES for this experiment: check all that apply.**

- DOE, Office of Basic Energy Sciences
- DOE, Office of Health and Environmental Research
- DOE, Office of High Energy Physics
- DOE, other - specify here:
- DOD - specify here:
- Other US Government - specify here:
- Other - specify here:
- NSF
- NIH
- NASA
- USDA
- Industry
- Foreign

**11. SUBJECT of this experiment or service: check all that apply.**

- Materials Sciences (including condensed matter physics and materials chemistry)
- Physics (excluding condensed matter physics)
- Chemistry (excluding materials chemistry)
- Polymers
- Medical Applications
- Biological and Life Sciences (excluding medical applications)
- Earth Sciences
- Environmental Sciences
- Optics
- Engineering
- Instrumentation or technique development related to user facilities
- Particle Accelerator R&D
- Radiation Source R&D
- Purchase of specialty service or material (including Supported Services)
- Other - specify here:

