

LCLS DIRECTORATE
Experimental Facilities Division


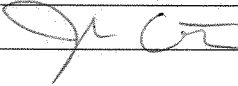
NEH Hutch 1 User Safety Orientation Guidebook

SLAC-I-030-50500-002



<http://lcls.slac.stanford.edu>

NEH Hutch 1 User Safety Orientation Guidebook

XFDSO approval (signature/date):	 8/10/09
XFD Operations approval (signature/date):	 8/10/09

Revision Record

Revision	Date Revised	Section(s) Affected	Description of Change
R000	Aug 10 th , 2009	ALL	Original Release

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Preface

This guidebook provides safety information specific to use of the AMO instrument in Near Experimental Hall (NEH) Hutch 1. Upon arrival at the hutch, all users must attend a safety training provided by the instrument scientist, which will cover the information found in this guidebook. Users may wish to read this guidebook before arrival at SLAC to familiarize themselves with the safety policies, procedures, and equipment that they will be required to use and comply with while they perform work at the NEH Hutch 1, and may wish to refer back to this guidebook during their visit to the NEH Hutch 1.

1.0 Facility Orientation

In the Event of an Emergency

Dial 911 from a safe location, and report the nature of the emergency. As soon as possible after the 911 call, notify the Floor Coordinator that the call was made.

Exit Routes: The primary exit routes from the NEH Hutch 1 area are the two staircases at the east and west ends of the Near Experimental Hall. If these exit routes are blocked, the PPS door to the electron dump enclosure may be used as an emergency egress. **DO NOT** use the door to the electron dump enclosure as an exit under any circumstances other than an emergency. Opening of this door will trip interlocks that will turn off the electron beam, and following such a trip, require significant time to recover beam. Entry to the dump enclosure under any circumstances other than for use as an emergency egress also requires radiation safety training above the level provided to most users. **DO NOT** attempt to use the door to the Front End Enclosure as an emergency egress. The Front end enclosure is a dead end, with no egress door connecting it to the dump enclosure or NEH. **DO NOT** use the elevator during an evacuation.

Assembly Points: The NEH emergency assembly point is in the parking lot just north of the FEE building (northwest of the NEH). The Floor Coordinator will take attendance at the emergency assembly point. In the event of an evacuation, assist the Floor Coordinator in determining who was in the building at the time of the evacuation, in order to determine whether anyone may have failed to evacuate. **DO NOT** leave the emergency assembly point until the Floor Coordinator has accounted for you. If you do leave the emergency assembly point, check out with the Floor Coordinator. **DO NOT** re-enter the NEH building until the Floor Coordinator has informed you that it is safe to re-enter.

2.0 Safety Contact People

User Supervisor

User supervisors have been assigned to each user before the arrival of the user on the SLAC site. Typically one of the instrument scientists for the instrument where the user experiment is taking place is assigned as the user supervisor. At SLAC, line management is responsible for safety. The user supervisor is the primary contact person for safety questions or concerns that may arise during the user's time at LCLS. If you do not know who your supervisor is, the User Administration office, any AMO Instrument Scientist, or a Floor Coordinator should be able to provide that information to you.

The user supervisor is responsible for determining safety training requirements, reviewing the safety of planned experimental procedures and work, and providing work authorization to users when training and other safety requirements have been met. Work authorization paperwork for the experiment can be found in the *Experiment Specific Safety Binder* located at the beamline. Note that work authorization is necessary, but not sufficient for work to begin. Work release is also required for work to begin.

Floor Coordinator

There are Floor Coordinators on duty 24 hours a day, 7 days a week during user operations. During times when the user supervisor is not present, the Floor Coordinator should be contacted regarding any safety questions or concerns that arise. The Floor Coordinator may resolve the issue independently, or may contact the User Supervisor, Experimental Facilities Division Safety Officer, or other SLAC safety staff as warranted by the situation.

The floor coordinator will make periodic rounds of LCLS experimental facilities, and will observe user activities to ensure that SLAC safety policies and procedures are being followed. The floor coordinator (and all other SLAC staff) have stop work authority, and may, at any time, instruct a user or other worker to discontinue an activity that they believe may be unsafe. **If you are instructed to stop work, you are required to comply with this instruction.**

The Floor Coordinator has the authority to turn hutches online and offline, thus controlling user ability to operate x-ray shutters.

The floor coordinator provides hutch search training, and should be contacted immediately if any malfunction in the Hutch Protection System (HPS) or Laser Safety System (LSS) is suspected, or if the HPS security violation audible alarm sounds at the HPS user panel.

The Floor Coordinator provides work release for user work at the experimental hutch. Floor Coordinator initials on all items pertaining to a particular task on the set-up phase safety checklist constitute work release during the setup phase of the experiment. Floor Coordinator completion of the

'online' signature block of the Online/Offline Checklist constitutes work release for user work during the x-ray phase of an experiment. Work release is necessary but not sufficient to begin user work; work authorization must also be provided by the user supervisor.

XFD Safety Officer

The Experimental Facilities Division Safety Officer (XFDSO) provides safety support to other XFD staff. The XFDSO assists the user supervisors in determining appropriate training requirements for individual users, works with Instrument Scientists and SLAC safety subject matter experts to develop the hazard controls and Safety Checklist items required for each experiment, and conducts periodic safety walkthroughs of the LCLS experimental areas. The XFDSO signature at the top of the Set-up Phase and X-ray Phase Safety Checklists constitutes approval for the experiment to proceed within the bounds of the hazard controls specified on those checklists.

3.0 Facility Safety Documents

Building Emergency Plan

The Building Emergency Plan can be found in the *Area Specific Safety Binder* at the hutch. There are also posted maps showing building exit routes.

Area Hazard Analysis

The *Area Hazard Analysis* (AHA) document for the Near Experimental Hall can be found in the *Area Specific Safety Binder* at the hutch. This document lists all special hazards in the NEH area, and associated recommended hazard controls and actions for each hazard.

4.0 Emergency Equipment

The trainer giving the on-site hutch safety orientation will point out the location of each of the following safety items in the vicinity of the hutch:

- Telephones
- Fire alarm pull handles
- Fire extinguishers
- Eyewash station

5.0 Alarms that may sound, and how to respond

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Type of Alarm	Audible/Visual Alert	How to respond
<p><u>Fire Alarm</u></p> <p>Indicates detected smoke, or fire alarm pull-box actuation</p>	<ul style="list-style-type: none"> • An audible alarm and announcement indicating the location of the fire alarm will be heard. • Visual Strobes will flash 	<p>Evacuate the building. Go to the designated emergency assembly point.</p>
<p><u>Oxygen Deficiency Monitor</u></p> <p>Indicates oxygen concentration below 19.5%.</p>	<p>An audible alarm will come from one of the portable ODMs located in the AMO Hutch.</p> <p><i>Note: Site Safety Orientation trainer will point out the location of these monitors.</i></p>	<p>Evacuate the hutch. Evacuation to the NEH corridor just outside the hutch is sufficient. Contact the Floor Coordinator immediately.</p>
<p><u>HPS Security Violation</u></p> <p>Indicates loss of ‘search secure’ status through means other than normal entry procedure, or loss of ‘stopper in’ status when the hutch is open for entry.</p>	<p>Audible alarm coming from the HPS User Panel.</p>	<p>Contact the Floor Coordinator. Do not attempt to operate the HPS.</p>
<p><u>HPS Radiation Warning</u></p> <p>Indicates that the hutch has been searched, and and the x-ray beam is about to come on.</p>	<ul style="list-style-type: none"> • An audible alarm in the Hutch • Flashing strobe over the personnel door • Red light with the words “Radiation Warning” over the door. 	<p>During the search, this warning begins when the fourth preset has been actuated. If you are a member of the search team, exit the hutch as specified in the search procedure.</p> <p>If you are not a member of the search team, and you experience this warning:</p> <ul style="list-style-type: none"> • Press the nearest emergency off button. • Exit the hutch, using the emergency egress handle, if necessary. • Contact the Floor Coordinator.

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<p><u>Laser Safety System</u></p> <p>Indicates that that the laser is about to come on in class 4 mode.</p>	<p>Laser Safety System strobe light and audible alert within the hutch.</p> <p><i>Note: The LSS may not be in use during early commissioning. Site Safety Orientation trainer will provide information on the current status of laser operations in the hutch, and associated Laser Safety Systems.</i></p>	<p>If you are inside the hutch when this alert occurs, and are not trained and qualified to work in the hutch in class 4 mode, or being escorted by a trained and qualified laser operator, press the nearest emergency off button and contact the Floor Coordinator.</p>
<p><u>FEE Radiation Warning</u></p> <p>Indicates that the Front End Enclosure has been searched, and beam is about to come on in that area.</p>	<p>Audible alert coming from within the FEE: “Attention, the beam is about to come on – Press the nearest emergency off button and call extension 2151 immediately.”</p>	<p>Although this may be audible in the NEH, it is meant to alert anyone left in the FEE tunnel following a search. If you are outside the FEE, disregard this warning. If you are unsure, it is always safe to press an emergency off button.</p>

6.0 Special Area Hazards

General Industrial Area

- Abide by all signs and postings.
- Be aware of your surroundings. Look for water on the floor and trip hazards. Clean up spills and remove trip hazards, or contact the Floor Coordinator to do so.
- Use bump caps or hard hats for areas with head bump hazards.
- Closed-toed shoes are required in the NEH hutches.

Lasers

The Hutch Safety Orientation trainer will provide the most recent information on the lasers operating in the hutch at the time of this training, and provide copies of Laser SOPs for any lasers operating in the hutch. When the engineered laser safety system for the hutch laser is completed, a document will be provided which will describe the features of that system, and the modes of operation under which users without ‘Qualified Laser Operator’ status may enter the hutch.

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Laser safety enclosures and devices are labeled. DO NOT tamper with, penetrate, or defeat any laser safety device or enclosure. Abide by all laser safety postings.

Oxygen Deficiency

If you witness a catastrophic cryogen dewar failure, evacuate the NEH immediately, pulling the fire alarm on the way out. Do not wait for oxygen deficiency monitors to sound.

The use of cryogen dewars and compressed oxygen displacing gases can cause an oxygen deficiency hazard in NEH Hutch 1. Proper ventilation is necessary to mitigate the oxygen deficiency hazard. DO NOT enter or work in the hutch if the ventilation system is not operational. Look for the flags on the ventilation grate when you enter the hutch. If you find the ventilation system off, notify the floor coordinator.

There are portable Oxygen Deficiency Monitors (ODMs) in use in the hutch. The Hutch Area Safety Orientation trainer will show you the locations of those ODMs and the location of the procedure requiring their use. If any ODM alarm sounds, evacuate the hutch and notify the floor coordinator. Evacuation to the NEH corridor is sufficient.

DO NOT accompany cryogen dewars in the closed elevator car. If cryogens must be transported in the elevator, contact the floor coordinator for assistance, and the applicable procedure.

Electrical Hazards

Users are trained and qualified to operate R&D electrical equipment, but are not authorized to construct, maintain, or install R&D equipment with electrical or other hazards, except under direct supervision of a qualified SLAC staff member, and with supervisor authorization. Under no circumstances are Users authorized to operate electrical circuit breakers. Contact a SLAC staff member (Floor Coordinator or Instrument Scientist) for assistance with any task you are not authorized to perform.

Experimental Hutches

Hutch areas are protected from access during x-ray operation by the Hutch Protection System (HPS). Heed HPS signs and lights. Do not attempt to enter the hutch until stoppers are in. DO NOT tamper with, remove, or disable any devices labeled as a "Radiation Safety Item" or as a "PPS" or "HPS" device. These devices are in place to protect personnel from radiation.

Only trained and qualified personnel may participate in searches. Search training will be provided by a Floor Coordinator following this Hutch Safety Orientation. DO NOT evade the search. If you experience the radiation warning (except during execution of the search procedure), press the nearest emergency off button, exit the hutch, and contact the floor coordinator.

NEVER lock anyone in the hutch. The sliding personnel door should remain in the open position whenever it is unlocked.

The maximum hutch occupancy is 10 unless the roll-up equipment door is locked open. If you need the roll-up equipment door opened, contact the Floor Coordinator.

Vacuum and Pressurized Gas Systems

Vacuum and pressurized gas systems in use in the hutch have been designed with pressure safety in mind. There are engineered burst discs and pressure relief valves integrated into vacuum and pressurized gas systems.

Users are authorized to operate vacuum and pressure systems only when using a SLAC approved procedure. The Safety Orientation trainer or your supervisor will provide applicable procedures, and training on the execution of those procedures. Users are NOT AUTHORIZED to Fabricate, maintain, or modify vacuum or pressurized gas systems, or vacuum or pressurized gas systems outside of the scope of the SOPs they have been trained to use.

Exercise caution around ion pump feedthroughs and viewports. Keep viewports covered when not in use.

Hazardous Materials

Be familiar with the hazards associated with each chemical you are handling, and insure that the appropriate MSDS is available in the experiment specific safety binder or the SLAC HAAS database. Comply with material related safety checklist items. Work involving a hazardous material is only released when all safety checklist items pertaining to it are completed by the Floor Coordinator. No eating or drinking in areas where chemicals are used. Do not bring hazardous chemicals into the hutch control room. Label and store all hazardous materials properly.

If hazardous materials must be transported in the NEH elevator, in the work planning process, consider the possibility of being trapped in the closed elevator car with that material. Particularly consider the possibility of the material's containment being compromised in the event of an earthquake. If it is determined that the material must not be accompanied in a closed elevator car by a person, contact the Floor Coordinator for the procedure for transporting the material by elevator.

Crane

Users are not authorized to operate the crane. For assistance, contact the Instrument Scientist or Floor Coordinator.

Elevator

The elevator is for freight transport only. Personnel may only use the elevator if they are accompanying equipment. Heed postings, and stand clear of the closing doors. Use the required procedure for transporting cryogenics or hazardous materials that must not be accompanied by a person in the elevator.

Construction Areas

Some areas in the NEH are posted as construction areas. Do not enter construction areas without proper PPE and training (or a trained escort). For unescorted access to construction areas, Construction Safety Orientation training course # 375 is required.