

Physics Division Work Governance

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1. Preface

As part of its mission, JLab provides the resources necessary for international collaborations of scientists to carry out basic research in nuclear physics and related disciplines. This research, and the work associated with installing the equipment necessary to carry it out, must be conducted in a manner that ensures that Environmental, Safety and Health (ES&H) concerns are addressed at all times. The integration of ES&H activities into work planning and work activities, i.e. integrated safety management, supports the goals of the laboratory: obtaining the highest quality scientific results with efficient, safe, and environmentally responsible operation.

This document outlines how all personnel will conduct work in a safe and effective manner in *any* Physics Division Work Area. It is directed to physics users, physics staff, contractors, and both user-supported and regular JLab technical staff. It must be read, understood and followed by all persons working unescorted in any Physics Division Work Area. Experiment commissioning and running periods are not covered by this document but rather in specific Conduct of Operations documents for each hall that are enhanced with details for each experiment to be run.

It is important to note that it is a core JLab policy that **“No activity is so important or urgent that our standards for safety, health, or environmental protection are compromised.”**

2. Personnel Training

All personnel involved in any Hall activities during an installation period are required to have successfully completed and be current in the following JLab safety training:

- ES&H Orientation (SAF 100),
- Oxygen Deficiency Hazard Training (SAF 103),
- Relevant Hall Safety Awareness Walk-Through,
 - Hall A - SAF110,
 - Hall B - SAF111,
 - Hall C - SAF112,
 - Hall D - SAF113
- Current Radiation Worker Training and radiation dosimeter issued by JLab.
- Must have read and signed the current General Access Radiation Work Permit (SAF801kd).

Everyone working in a Physics Division Work Area must read and abide by the rules described in this document.

All personnel are required to wear JLab issued radiation dosimeters while performing work in the halls. The Safety Awareness Walk-Through for new staff, users, or contractors will emphasize any hazards that are peculiar to the current installation. Any personnel who find the configuration or equipment in the Hall to be substantially different than it was when they took the Walk-Through are encouraged to communicate with the Work Coordinator for guidance. It is foreseen that the Hall Safety Awareness Walk-Throughs will be updated as the various halls complete major installation work for experiments requiring major configuration changes.

All personnel are required to inform the Hall Work Coordinator, or his designated alternate, of their planned tasks in the Hall on a daily basis before commencing the work. In addition, personnel must familiarize themselves with the sections of the JLab ES&H Manual relevant for their work in any Hall. The JLab ES&H Manual addresses the need for a process of hazard analysis, identification and implementation of mitigating safety measures, and evaluation and documentation of their effectiveness for a particular task or set of tasks. Technical work documents (OSPs, LOSPs, etc.) or Task Lists (HAlist, HBlist, HClis, HDlist, etc.) may result. Access to technical work documents is available through the Hall Work Coordinator, and must be signed and followed by anyone carrying out work on relevant apparatus. Also, the JLab ES&H Manual is available at (<http://www.jlab.org/ehs/ehsmanual/index.html>). Task Lists are available at <https://www.jlab.org/listsites/>.

Minimum clothing requirements in the Experimental Halls have been determined by the Hall Leaders with input from that Hall's work coordinator to be;

Hall A

Long pants, short sleeve shirt, closed toed serviceable shoes

Hall B

Long pants, short sleeve shirt, closed toed serviceable shoes, Hard Hat

Hall C

Long pants, short sleeve shirt, closed toed serviceable shoes

Hall D

Pants, short sleeve shirt, closed toed serviceable shoes

In all Physics Division work areas, minimum clothing requirements will be subject to the task being performed, the requirements of the EHS&Q manual and the discretion of the Hall work coordinator. Attire for tours will be determined based on the tour.

All Personnel working in a Physics Division Work Area outside the Halls are required to inform the supervisor of that work area of their planned tasks on a daily basis before commencing the work. In addition, personnel must familiarize themselves with the sections of the JLab ES&H Manual relevant for their work in any Physics Division Work Area. They must also comply with the rules for technical work documents required for work in the Halls. Access to technical work documents are available through their supervisor, and must be signed and followed by anyone carrying out work on relevant apparatus.

Prior to using a ladder at Jefferson lab you are required to take **SAF 307 Ladder Safety Awareness**. If your task requires you to work from a ladder in a position other than between the ladder rails, you may be required to take the Fall Protection classes and may be required to wear a safety harness. If this is the case, please see you sponsor or supervisor.

If you have never had a class on the hazards of lead, that alone is enough reason to take the lead class. If you have taken a class on the hazards of lead you will want to learn what is required to handle it here at Jlab. Before you handle any lead, be it in the form of bricks, sheets, pellets or solder you must take **SAF 136 Lead Worker Safety Awareness**.

Prior to doing work on a piece of electronics equipment, beyond just plugging it in and turning it on/off, you are required to take **Basic Electrical Safety for Electrical Workers (ESC 001)**. This training is required so that you can make a proper hazard assessment of the work you are planning to do on the electrical equipment in question.

The list below gives a simplified mapping between the level of electrical work and the training required to perform it. If in doubt about the scope of your work, please contact the Division Safety Officer to get guidance on whom you should contact to get your question answered.

- **ESC001** - to operate electrical equipment involving more than just using a light switch, turning on/o_ appliances, or turning on/o_ common office equipment.
- **ESC002, ESC005 & ESC006** - to energize and de-energize electrical equipment at the source of electrical power (such as operation of circuit breaker, knife switch, etc.)
- **ESC003, ESC004, ESC007 & ESC008** - to work on or partner with someone who works on (maintain, repair, install, remove, disassemble, assemble) electrical equipment, either energized or de-energized.
- **ESC007 & ESC008** - when the work involves non-electrical hazardous stored energy (e.g. compressed gasses, hydraulic or pneumatic, thermal, chemical, or mechanical).

Guidelines for students working in Experimental Halls:

- No one under 18 (student or otherwise) may work in any Hall.
- No high school student may work outside regular working hours.
- Undergraduates working outside regular working hours must be pre-approved by the DSO.

- Graduate students are considered users.
- During their first three months working in conjunction with JLab or user staff, undergraduate students 18 and over may be allowed to work in the halls (following all standard rules as outlined in the Hall COO, the Hall RWP and more generally, the JLab ES&H manual) with the provisions that:
 - a) They have completed the FULL complement of standard training courses (ES&H awareness, ODH, Rad Worker I Hall specific hazard awareness and “COO” training) and any additional training that may be deemed necessary for the assigned task;
 - b) Their work in the hall is always under the supervision of a hall-authorized “buddy”, with the only non-standard condition that the buddy is NOT another undergraduate;
 - c) One of the following is true:
 - i) A permanent JLab staff member has supervisory responsibility for their work, is cognizant of the work to be done, and approves the “buddy,” or
 - ii) A fully trained user is their supervisor for the purposes of their work at JLab, is cognizant of the work to be done and approves the “buddy.”

At the end of the 3-month “trial period”, undergraduate students 18 and older who have demonstrated to the satisfaction of a JLab staff member that they are responsible and safety conscious shall be permitted to work in the halls under the same guidelines that apply to other users.

3. Organization and Administration

Overall responsibility for all activities taking place in a Physics Division Work Area is the responsibility of the assigned Hall Leader, Hall Work Coordinator or your supervisor. The functions of the Hall Work Coordinators are detailed below as well as a review of the responsibilities of support personnel, contractors and users.

3.1 Hall Work Coordinator

The Hall Work Coordinator is the primary contact for all installation work taking place in the Hall. The responsibilities of the Hall Work Coordinator are to:

- Determine if the scheduled activities in the Hall can be done safely as proposed.
- Ensure that workers are familiar with all significant hazards in the Hall and contribute to development of the Hall installation plan
- Ensure entry of all requests for cross-division work into ATLis
- Act as the single point of contact for Hall installations
- Coordinate and schedule activities in order to optimize productivity and safety.

- Be aware of all applicable work control documents associated with the project
- Remain in the local area and to be available by cell-phone/pager at all times. If temporarily unavailable, the Hall Work Coordinator must appoint a qualified Hall Staff member as his/her designate. The name of such designate should be clearly posted at the Hall entrance.
- Report on installation progress in weekly Hall meetings and to keep the installation schedule progress up-to-date.
- Keep postings at all entrances up to date.

3.2 Accelerator, Engineering and Admin support personnel

The responsibilities of non-Physics Division JLab staff members are to:

- Carry out their work in a safe and efficient manner.
- Inform the Hall Work Coordinator about any planned work in the Hall.
- Keep all their required training up-to-date.
- Read the entries posted at the safety bulletin board at the gate entrance of the Hall and be aware of changes in work plans and new work planning documentation.
- Request any modifications to the installation and/or the installation schedule through the Hall Work Coordinator.

3.3 Users and Contractors

Users and Contractors are persons whose supervisor is not a Hall staff member and are not covered under section 3.2. Users often have a member of the Hall physics staff as local sponsor, contractors often have a member of the Hall technical staff as the subcontracting officer's technical representative (SOTR). The responsibilities of each user or contractor are to:

- Carry out their work in a safe and efficient manner.
- Inform the Hall Work Coordinator in advance of any desired activities in the Hall.
- Keep all their training up-to-date.
- Read the entries posted at the safety bulletin board at the gate entrance of the Hall and be aware of changes in goals, operating parameters, and new documentation.

In addition, the responsibility of each user is to discuss requests for modifications to the installation and/or installation schedule with the Hall Work Coordinator. Based on the assessed impact of the request, approval may have to be provided by the Hall Leader or designated manager before proceeding.

4. Operating Procedures

4.1. Work Routines

Due to the large scale of typical installation work, many different groups will be involved. These include:

- 4.1.1. Hall technical staff, under the direct supervision of the Hall Work Coordinator
- 4.1.2. Hall physics staff
- 4.1.3. University user groups, students and university-supported technical personnel
- 4.1.4. Contractors
- 4.1.5. Accelerator, Engineering, Administration and Physics Division support groups.

The standard procedure for work during installation has been identified above, with the Hall Work Coordinator as the central point of contact for all work being performed in the Hall. It is important to remember that any piece of equipment that was inside a beam enclosure (e.g. hall and beam tunnel) while beam was delivered must be surveyed by Radiation Control (RadCon) and released by them before it can be removed from the hall. Also, any item tagged by RadCon as Radioactive Material (RAM) must remain as a single entity – it must not be disassembled. If disassembly is needed, contact RadCon for approval **before** taking the item apart. Finally, always check with the Hall Work Coordinator as some of the work may require special procedures – for example, working inside the racks in Hall A due to Be-7 contamination of forced air-cooled electronic equipment in those racks.

The mode of operations for requests for work and plans to do work by outside groups are further detailed in the following Sections.

4.2 Beam Line Installation and Modifications

Installation work in the Halls may require changes to the beam line, (or a completely different beam line) configuration. All beam line work must be well documented as it may affect the site boundary radiation dose and the production of airborne radioactivity, and may affect beam operations. Beam line work and beam line modifications, must adhere to the following rules:

- 4.2.1 Notify the Hall Work Coordinator or his designate before initiating work on the beam line.
- 4.2.2 Radiation Control group has assessed radiological conditions of work area and work guidance, if any necessary, has been issued.
- 4.2.3 Enter work activity description into ATLis and be sure to check optics box under "Systems" to ensure the Hall APEL is notified..

4.3 Scheduling of Work by Outside Groups

Work in the Hall and work that will affect the Hall performed by external groups such as survey and alignment, plant services, air conditioning, etc., must be scheduled so that it does not endanger personnel or equipment or interfere with the installation work. The Hall Work Coordinator is the single point of contact for any work by outside groups. To effectively schedule this work, the Hall Leader and the Hall Work Coordinator will concur on task scheduling. The Hall Work Coordinator's job is to coordinate activities in the Hall so that work can take place smoothly and safely and to insure that multiple activities do not interfere with each other.

Scientific collaboration groups from outside JLab (e.g. universities or other labs) are assigned a Hall staff contact point. In those cases, the Work Coordinator and the appropriate Hall staff will meet as needed to plan the scheduled work and develop appropriate work control documents, educational or other safety measures (such as escorts) that may be needed.

4.4 Collaboration Request for Laboratory Resources

The Hall Leader must approve requests by User Collaborations for JLab provided services. Some of the activities will require documentation such as an OSP or task list to be developed.

Appendix A

Physics Division Work Planning Requirements

The following are Physics Division requirements related to work planning, control and authorization for work projects and test set ups in division work areas across the laboratory.

For the testing and commissioning of experimental equipment the consequences/cost of said equipment should receive careful consideration when doing the risk analysis.

- Any small setup or task with total duration of less than two weeks requires an informal task hazard analysis. Informal means we can do this without formal documentation. If such an informal task hazard analysis results in a (pre-mitigated) risk code of less than 2 as determined by the risk code assignment table in chapter 3210 appendix T3 of the ESH&Q manual it can be skill of the craft, and no further documentation is needed. The risk Code Assignment table can be found at <https://www.jlab.org/ehs/ehsmanual/3210T3.htm>
- If the informal task hazard analysis from the risk code assignment table results in a risk code of 2, a minimum of a JLab Task List is required (halist, hblist, hclist, hdlist, pslist), and one should consider a written work control document (OSP, LOSP). Task lists can be found at <http://www.jlab.org/listsites/>

- Regardless of the risk code, any setup, test or task that has a total duration of more than two weeks requires an appropriate JLab Task List (halist, hblast, hclist, hdlist, pslist). A paper copy of the documentation must be posted at the work place. Once again, depending of the equipment and circumstances one should consider a written work control document (OSP, LOSP).
- Any task that has a risk code of 3 or larger **requires** a written work control document, regardless of the length of the task. See point 4 below. A paper copy of the work control documentation must be posted at the work place.
- Any experimental **system** being assembled, tested or being installed at Jefferson Lab that is destined to become base or major equipment in an experimental Hall will require an OSP prior to initial setup and testing regardless of the risk code. This OSP will include all pertinent information for the Hazards, installation, maintenance and operation of the equipment so as to be easily transferred to the Experimental Hall's operations manual.
- Any electrical work on equipment that is over 50 volts AC or 60 volts DC (Class 2 or 3 click [Here](#) for Table) that is being worked above Mode 1 (meaning exposed & energized) is required to have an Electrical Work Checklist. This checklist must be signed off by the person doing the work and another electrical worker that is qualified on that piece of equipment, preferably a supervisor. Checklists must be recorded in either a task list or in an elog. The Electrical work Checklist can be found on the task lists.
- Further useful information and steps to consider:

1. Review JLab ES&H Manual Chapter Appendix 3210 T1. The guidance provides the expectations and how we implement Integrated Safety Management System into planning and execution of work.
<https://www.jlab.org/ehs/ehsmanual/3210T1.htm>

2. Identification of work hazards and understanding their risks is an essential part of Jefferson Lab's work process. For an informal determination of the risk code associated with your work, see <http://www.jlab.org/ehs/ehsmanual/3210T3.htm>.

3. If you are unsure, complete a written Task Hazard Analysis (THA) Worksheet for the work being planned:
<https://www.jlab.org/ehs/ehsmanual/3210T1.htm> , and links therein.

4. Consider review of the Work Planning, Control and Authorization Flow Diagram:
<https://www.jlab.org/listsites/WPCFlowChart.pdf> (Appendix 3210 T1 Section 1) - Defining the Scope of Work - Analyze the Hazards - Development and Implementation of Hazard Controls - Performing Work within Controls - Feedback and Continuous Improvement.

5. When in doubt as to if a work test set up documentation is required, or you have related questions please feel free to contact the Physics Division ES&H Liaison (Bert Manzlak) or the Division Safety Officer (Ed Folts).

Appendix B

Useful links that can be found at <https://www.jlab.org/physics/workdocs>

- [Physics Division Work Planning Requirements](#)
- [Requirements for bringing equipment to JLab](#)
- [Basic OSP Writing Guide and Examples](#)
- [Physics Division Work Governance](#)
- [Area Access for Students](#)
- [Training requirements for experimental areas](#)
- [Acronyms in this document can be found here](#)

By [clicking here](#) I certify I have read and understand this content.