DOCUMENT ID:	3130 Appendix T1 Accelerator Science Experiment Safety Assessment Document (ESAD) Instructions

1.0 Purpose

This form ensures that procedures, technical requirements of the experiment, and the actual work performed are coordinated and performed safely.

2.0 Scope

For subsequent experiments that use base equipment that is already established, reviewed, and approved, the original ESAD need only be amended to include any changes to materials, operating parameters, etc. The same rigor of review and approval applies, as if the document had been written as new.

The process steps for this procedure are performed in coordination with ES&H Manual Chapter 3130 Accelerator Science Experiment Review Process.

3.0 Responsibilities

NOTE: Management authority may be delegated to a task qualified Jefferson Lab employee at the discretion of the responsible manager.

3.1 Associate Director of Accelerators

- Review all accelerator experimental programs
- Approves Accelerator Science experiments to be conducted at accelerators

3.2 Experiment Facility Leader - Director of Accelerator Operations (CEBAF), LERF Operations Coordinator, UITF Facility Manager

- Provide accelerator operations oversight, including participation in program development and scheduling, and authorization of beam operations at the CEBAF, LERF and UITF accelerators.
- Ensure the appropriate SMEs have reviewed and accepted the experiments ESAD.
- Review and accept the ESAD before sending to Division Safety Officer for approval.
- Once the ESAD is approved, authorize CEBAF, LERF or UITF operations by making entries in the Beam Authorization Tool (BAT). These entries define acceptable beam destinations, describe any operating constraints, and specify whether or not beam delivery is approved.

3.3 Experimental Lead Scientist

- Serve as the designated spokesperson for each experiment.
- Work with the Experiment Facility Leader to prepare the required work plan documents for experiments as required, to comply with Jefferson Lab's ES&H program.
- Organize development of a final Experiment Safety Assessment Document (ESAD) ES&H Manual Chapter 3130 Appendix T1, as required by Section VII, Preparation for Running the Experiment (see Experiment Readiness Review Process - Flowchart). The final document is submitted for review and approval by Jefferson Lab's Division Safety Officer (DSO) before release of the experiment.

3.4 Division Safety Officer (DSO)

- Assign appropriate Subject Matter Experts (SMEs) to review identified hazard issues and mitigation techniques.
- Submit the ESAD document to the appropriate SME for acceptance.
- Review, approve, and distribute the accepted ESAD as appropriate.
- Review the experiment for Unreviewed Safety Issues (USI).

3.5 Laser System Supervisor (CEBAF, LERF, or UITF)

- Review ESAD for laser safety requirements and provide assistance as per ES&H Manual 6410.
- Review and accept ESAD or justify the need for revision/re-submittal before authorizing the use of lasers to users at the experiment facility.

Click
for
Experiment Safety Approval Form

4.0 Process Steps

Accelerator Science Experiment ID Number:
Contact the following for a unique experiment ID number:

- Director of Accelerator Operations (for CEBAF experiments)
- LERF Hall Leader (for LERF experiments)
- UITF Hall Leader (for UITF experiments)

Number 1 through 6 – Introduction:

- Provide requested experiment and contact information.

Number 7 – Experiment Overview:

- Provide a brief description and the approximate duration of planned activities.
- If the experiment involves modification(s) to the basic optical beam delivery system, describe the modification(s).

Number 8 – Task Hazard Analysis (THA):
No work at Jefferson Lab is completely without risk. All work, including experiments, require forethought, planning, and authorization. The DSO will use the information provided to determine the appropriate SMEs who will provide the supplemental technical validations.

- **Instructions:** Answer all the questions. When answers indicate a hazard may exist – document your resolution(s) and hazard mitigation techniques.

Number 9 – Experimental Details:

- List all materials (and quantities) to be used in the experiment (include chemicals, gases, sample material, etc.)
- Describe any airborne contaminants that may be produced. Include its expected composition/decomposition; the method of exhaust; fixture description; and expected interaction with any Optical beam.
- Describe the Optical beam stop construction and its ability to handle power.
- List the personal protective equipment required.
- Provide any additional precautions needed to ensure personnel, equipment, and environmental safety.

Number 10 – Additional Laser Usage:
Describe any additional lasers used in the experiment. Jefferson Lab has determined that Class 3 and Class 4 laser light poses an unmitigated Risk Code>2; therefore, in

accordance with ES&H Manual Chapter 3210 Work Planning, Control, and Authorization Process, a separate work control document is required for any additional or alteration to equipment or system. See ES&H Manual Chapter 6410 Appendix T1 Laser Operational Safety Procedure.

Number 11 – Outline Experiment Procedures:

- Provide a layout of the equipment and room set-up, including a brief description of any special requirements and/or overhead floor plans.
- List general experiment procedures to use. **BE CONCISE**. Provide sufficient information to illustrate what is done, who will do it, and where the procedures will occur. You may refer to the particular lab's LOSP, its hardware, and procedures.
- A specific Test Plan for your experiment is required before technical and safety approvals have been received and scheduling has been assigned.
- Residual Hazards (i.e. contaminants, disposal, safe disassembly, …)
- Other Safety Considerations (i.e. heavy equipment, industrial hazards, effluent, electrical safety, …)

Number 12 – Regulatory Requirements:

Certain biological, radioactive, and chemical materials can be extremely hazardous and are strictly regulated. Jefferson Lab is required to enforce these regulations and has developed additional procedures to ensure the safety of its people, equipment, and the environment. Full disclosure, so mitigation can be established, will expedite this experiment safety approval process.

Number 13 – Environmental Management Information:

(See EMP-04 Project/Activity/ Experiment Environmental Review)

- If this is a water-based project, provide details.
- If the experiment will generate waste, provide anticipated quantities and disposal methods.

Number 14 – Decommissioning/Shutdown Procedure (if necessary):

Provide guidelines or process steps, which outline closeout actions that will ensure the laboratory is left in a safe and clean state after the experiment.

The final two steps are to be performed by Jefferson Lab Staff:

Step 1: Supplemental Technical Validations:

Jefferson Lab requires that the information provided on this form be reviewed and approved by Subject Matter Experts (SMEs) to ensure:

- The safety of people, equipment, and the environment.
- Compliance with applicable City, State, and Federal laws.

Often experiments involve hazard issues in addition to lasers. Those who approve this form are to determine the additional SMEs that need to review and accept that hazard issues are adequately addressed.

Step 2: Approval Signatures:

Upon completion of the form, the Lead Scientist submits it to the Experiment Facility Leader for review and acceptance before it is passed to the DSO for approval.

5.0 Revision Summary

Revision 2.0 – M/D/19 – Periodic Review; updated for Inclusion in LERF documentation
Revision 1.0 – 11/23/10 – Updated to reflect current laboratory operations

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