Jefferson Lab

MEMORANDUM

To: Distribution

From: Camille Ginsburg

Subject: LERF Operations Directives

Date: May 15, 2020

Ken Baggett, Steve Benson, Shawn Frierson, Tom Oren, Steve Suhring, Paul Vasilauskis, and I have completed the latest revision of our LERF Operations Directives. These directives are written for use by the Operations and support staff and all those who must interface with LERF operations activities during the course of their work or research here. The new directives reflect all changes that have taken place in LERF operations since the previous revision issued in October 2015. These directives define how we:

- schedule time for experimental nuclear physics experiments, non-nuclear physics experiments, and accelerator development activities,
- operate the LERF safely and within established limits,
- apply configuration management principles to establish and maintain consistency between the physical LERF configuration and the tools used to operate it,
- conduct LERF operations activities from the MCC and the LERF control room,
- maintain the necessary records of all LERF operations,
- repair and maintain the LERF, and
- track hardware failures to improve availability.

These new LERF Operations Directives, which become effective on May 15, 2020, supersede and cancel the previous LERF Operations Directives, which became effective in October 2015. These new directives will remain in effect until superseded, and will be reviewed in approximately two years by a team composed of the LERF Facility Spokesperson, LERF Facility Manager, Operability Group Leader, Operations Group Leader, Matrixed Engineering Support Group Leader, MCC Documentation Coordinator, and the Director of Accelerator Operations. All requests for changes or corrections to these directives should be referred to Tom Oren, who maintains the master copy.

The primary means of document distribution is electronic; however, hard copies will be distributed to the recipients listed at the end of this document when they become available. The on-line version, which is available at the following URL, is considered to be the most up to date and supersedes any printed version when there is a difference.

http://opsdocs.acc.jlab.org/ops_docs/online_document_files/LERF_online_files/LERF_Operations_Directives_twosided.pdf

The following table summarizes the most significant changes made during this review cycle.

Table 1: 2020 LOD Revision Summary

Revision	AOD Section
Program Scope Definition Process – There are now three types of potential experiments/activities and associated safety reviews as defined in the *ES&H Manual*: 1.) nuclear physics experiments/major installations [*Section 3120*], 2.) accelerator experiments and smaller installations [*Section 3130*], and 3.) small-scale/routine activities [*Section 3310*]. Previously there were only nuclear physics proposals and outside-funded proposals. Experiments/activities are now categorized using other criteria, eliminating the "outside-funded" designation.	Section 1.1.1, p. 1-3
Final Program Development – Altered the process to specify the LERF Facility Spokesperson submits for approval a draft *LERF Long Term Schedule* to the Director of Accelerator Operations, who may choose to convene the LERF Scheduling Committee for additional discussion.	Section 1.1.1.4, p. 1-5
LERF Lasing Capability – Removed references and roles associated with the lasing capability of the LERF throughout the document as major components associated with this capability have been removed from the LERF beamline.	Section 1.1.2, p. 1-5
JLab FSAD and ASE Descriptions – Revised the descriptions of the Final Safety Assessment Document (FSAD) and Accelerator Safety Envelope (ASE) to match the summary descriptions contained within the latest revisions of those documents.	Section 1.1.2.1, p. 1-5
Credited Controls – Revised the list of credited controls to match the current version of the ASE.	Section 1.1.4.1, p. 1-6
Program Feedback – Added reference to the Downtime Manager as a means of recording downtime event information for later analysis.	Section 1.1.6, p. 1-9
Beam Authorization Tool – Added the Beam Authorization Tool as the mechanism the Director of Accelerator Operations uses to make a *Beam Authorization* entry in the *LERFLog*.	Section 1.2, p. 1-11
LERF Experiment Principal Investigator Appointments – The Director of Accelerator Operations appoints all LERF Experiment Principal Investigators in consultation with the LERF Facility Spokesperson.	Section 1.3.1, p. 1-12
Position Reorganizations – Revisited the LERF organization first defined in the 2015 edition of the *LERF Operations Directives*, redistributing the responsibilities of the LERF Hall Leader, Experiment Lead Scientist, LERF Operations Coordinator, LERF Run Coordinator, LERF Work Coordinator, and LERF Geographic Integrator among the following new position titles: LERF Facility Spokesperson, LERF Facility Manager, LERF Experiment Principal Investigator, and LERF Program Deputy. Specific responsibilities are listed in the new position descriptions, which have been incorporated throughout the balance of the document. The Laser System Supervisor and FEL Laser Operator positions were eliminated as the LERF beamline hardware presently does not support lasing.	Section 1.3, p. 1-11
LED/Songsheet Integration – Added songsheet updates to the list of specific tools that rely on the LERF Element Database (LED) for information updates.	Section 2.1, p. 2-1

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Revision	AOD Section
LED Update Responsibility – Assigned specific responsibility for making timely LED additions and modifications to the System Support Groups.	Section 2.1.2, p. 2-3
Crew Chief/LERF Operator Radcon Checklist Responsibilities – Removed mention of the Radcon Checklist, which is now incorporated as a line item in the *LERF Beam Operations Authorization* tool.	Section 3.2.1.1, p. 3-2 Section 3.2.1.3, p. 3-4
Crew Chief System Readiness Responsibilities – Added responsibility for issuing System Readiness Tool "Crew Chief Masks" for short-term component failures that do not halt the program.	Section 3.2.1.1, p. 3-2
LERF Scientist on Shift (LSOS) – Eliminated the LSOS role. Control system interaction by non-LERF control room staff is defined in Section 3.2.1.7, p. 3-9, with the approach paralleling that used during CEBAF operations.	Section 3.2.1.7, p. 3-9
Safety System Operator (SSO) – Removed reference to "LERF SSOs" as all Crew Chiefs and LERF Operators qualify as SSO for both the LERF and CEBAF.	Section 3.2.1.5, p. 3-8
Assigned Radiation Monitor (ARM) – Revised the ARM description to describe their new, more limited, primary role as radiological escorts for Controlled Access entries as defined in the *ARM Standing Radiation Work Permit* (ASRWP).	Section 3.2.1.6, p. 3-8
LERF Documentation Coordinator – Eliminated this role as the Operations LERF Liaison is now tasked with coordinating procedure changes, working in cooperation with the MCC Documentation Coordinator.	
Operations LERF Liaison – Provided additional detailed position responsibilities in a bullet format.	Section 3.2.1.9, p. 3-9
Crew Chief and LERF Operator Training – Added detail about training specifics.	Section 3.3, p. 3-10
Safety Envelope Violations – Added the ES&H Reporting Officer to the safety envelope violation notification list.	Section 3.4.1, p. 3-11
Electron Beam Strike Events – Added an exception to the beam-strike definition to exclude any 1.0 R/hour radiation measurements "associated with beamline components activated by cryomodule field emission". Also added the requirement for a Repair Investigation Team to investigate and report on beam-strike events.	Section 3.4.5, p. 3-13
Emergency Response – Updated to include changes to the JLab response protocol, which defines the interaction between the local Internal Incident Commander (a Crew Chief or operator) and the Incident Commander (from an outside agency). Also added flammable gas leak, flood, and tornado response to the list of available accelerator-site emergency response procedures.	Section 3.4.6, p. 3-13

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Staffing Requirements for Operations – Reformatted the staffing table to be consistent with the CEBAF version. Added additional detail to the Beam On/ Beam Off explanations, including possibilities for locking out vacuum valve VBV0F01 or the gun high-voltage power supply. Expanded the accelerator-site definition to include the TEDF building for access to spares and the sluice gate area, which is outside the accelerator fence and might require access during a spill event. The LERF proper now includes the RF gallery and the walkways between areas within the LERF. Specified that an SSO must be within the accelerator site when the LERF is in Power Permit.	Section 3.5.2.1, p. 3-16
Shift Schedules – Added the Ops Scheduler as sharing responsibility for scheduling LERF control room staffing assignments.	Section 3.5.2.2, p. 3-18
Downtime Manager – Added a description of the Downtime Manager, which is used to document program interruptions.	Section 3.5.5.4, p. 3-22
Radiation Survey Log – Added references to the *ARM Standing Radiation Work Permit* and any other applicable Radiation Work Permits, which specify when a full radiation survey of the LERF is not required.	Section 3.5.5.7, p. 3-22
Opportunistic Maintenance – Changed "Standby Maintenance" to "Opportunistic Maintenance" throughout the document.	Many instances
LERF Work Coordination – Deleted the LERF Work Coordinator role, and instead referred to the LERF Facility Manager, who is responsible for work coordination within the LERF.	Section 4.1.2, p. 4-2
LERF Geographic Integration – Deleted the LERF Geographic Integrator role, and instead referred to the LERF Facility Manager, who is responsible for working with the Engineering Liaison to coordinate system integration and readiness within the LERF.	Section 4.1.3, p. 4-2
Performance Integrators – Added this position description. Performance Integrators provide oversight of specific accelerator systems and/or the performance characteristics of those systems (e.g., magnets, SRF gradient, beam diagnostics).	Section 4.1.4, p. 4-2
Accelerator Support Groups – Changed the name from "System Owners" to "System Support Groups" throughout the document and further defined the role.	Section 4.1.5, p. 4-3
Operations Project-Review Process – Added a new section that defines a series of Operations-centric reviews intended to supplement other review processes already in place. These reviews are implemented using a graded approach, depending on the project complexity and potential impact to LERF operations.	Section 4.2.2, p. 4-4
Repair Escalation – Specified that, during LERF running, before repairs are deferred and the scheduled program altered, the Director of Accelerator Operations, Operability Manager, and LERF Program Deputy must be notified.	Section 4.2.5.2, p. 4-8

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System Readiness – Added a new section that describes how a system's "readiness" to support the scheduled LERF program is tracked using the System Readiness Tool. Formerly this tracking tool was called the Hot Checkout Tool, and it's focus was post-shutdown system readiness leading up to a physics run. The functionality has been extended to track system readiness during accelerator running, and this new section describes that process as well as the hot checkout process.	Section 4.2.6, p. 4-9
Bypassing System Interlocks – Deleted the detailed process used to bypass system interlocks as this is now defined in the *ES&H Manual*.	Section 4.2.7, p. 4-11
Repair Assessment Reporting – Modified the repair reporting process to describe a new four-level, graded approach. Longer repair events require more in-depth investigation and reporting.	Section 4.2.8, p. 4-12

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