

FEL Personnel Safety System Operator Training

FEL PSS Operator Training

Feb 2011

Table of Contents

| | |
|---------------------------------------|-----------|
| Introduction | 3 |
| Course Goals | 4 |
| Course Objectives..... | 5 |
| Safety System Operations..... | 7 |
| SSO Duties..... | 8 |
| Main SSO Responsibilities..... | 9 |
| SSO Qualifications..... | 11 |
| Administrative Policies..... | 13 |
| SSO Reference Material..... | 16 |

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Feb 2011

Introduction

FEL PSS Operator Training

Feb 2011

Course Goals

The goal of the safety systems operator training is to convey the knowledge required to operate the FEL Personnel Safety System.

FEL PSS Operator Training

Feb 2011

Course Objectives

It is the objective of this set of course materials to familiarize the SSO candidate with the theory and operation of the FEL Personnel Safety Systems to the point that they can follow PSS, AOD, and Operations department procedures. At the completion of the course the SSO candidate should:

- Know PSS administrative procedures for personnel entry and exit from the accelerator enclosure.
- Recognize the lines of authority of the SSO and his/her duties as part of an operations crew.
- Know the requirements for safety system operation and the SSO position as outlined in the AOD, FEL ODS, and other relevant documents.
- Be able to configure the FEL PSS system for accelerator operations without causing undue drops or down time to the program.
- Be able to carry out PSS access procedures without endangering personnel.

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Feb 2011

Course Objectives (cont.)

- Be able to identify primary cause of PSS drops.
- Be able to determine if an unknown or indeterminate state of the PSS or one of the devices controlled by the PSS represents immediate danger to personnel in or around the accelerator.
- Be able to identify conditions that may warrant operation of the emergency shutdown (crash) systems.
- Be able to respond to PSS alarms.

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Feb 2011

Safety System Operations

Operations of the Safety System Include:

- Directing the tunnel Sweep procedure
- Directing a tunnel Controlled Access
- Changing the state of the PSS
- Monitoring the status of the PSS
- Maintaining the Safety System log book
- ODH alarm response (limited for FEL SSO)

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Feb 2011

SSO Duties

The Safety System Operator plays a crucial part in ensuring that personnel remain safe during accelerator operations.

The SSO has to know enough about the safety system to be able to:

- Know and follow procedures for operating the safety system
- Know how to configure the PSS for the various accelerator modes without dropping out the machine, causing lost beam time.
- Know enough about how the safety system works to be able to recognize abnormal or unsafe PSS status.
- Be able to diagnose the cause of a safety system fault or drop (limited for FEL SSO).

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Feb 2011

Main SSO Responsibilities

- Ensure that personnel entering the tunnel do so safely.
- Ensure that the tunnel is properly swept and the sweepers are out of the tunnel before allowing hazardous equipment to operate.
- Understand the various PSS modes and how they affect safety of personnel.
- Keep records of personnel entering and exiting the enclosure, and changes in the state of the PSS.
- Never leave the FEL safety system unattended while in Sweep or Controlled Access modes.
- Ensure that the Crew Chief or the signed-in FEL Duty Officer is kept informed of the status of the PSS operations.

FEL PSS Operator Training

Feb 2011

Main SSO Responsibilities (cont.)

- Make announcements for change of status of the beam enclosure.
- Report suspected malfunctions or inconsistencies in the PSS to the on-duty Crew Chief or the signed-in FEL Duty Officer.

FEL PSS Operator Training

Feb 2011

SSO Qualifications

To be qualified as an SSO one must complete the following steps:

- Complete this training – SAF141F
- Achieve a score of 80% or better on a written Safety System Operator Test. A requalification test is given every 2 years.
- Demonstrate an ability to operate the safety system through a period of on the job training under the guidance of a qualified safety system operator.
- Learn proper use of the PSS Electronic Log

FEL PSS Operator Training

Feb 2011

The FEL SSO may perform the following operations:

- ★ • Safety System Operation during a Sweep of the FEL beam enclosure.
- Safety System Operation during a Controlled Access of the FEL beam enclosure.
- Change the status of the FEL PSS from Restricted Access through Beam Permit.

The FEL SSO may NOT:

- ⊘ • Serve as SSO for a Sweep or Controlled Access for any other area than the FEL.
- Operate or change the status of any PSS segment other than the FEL.
- Respond to oxygen deficiency alarms.
- Qualify other personnel to operate the FEL safety system.

FEL PSS Operator Training

Feb 2011

Administrative Policies

Final Safety Assessment Document

CEBAF and FEL Operations Staffing – Sweep and Controlled Access

"It is necessary to verify that no personnel remain in beam enclosure areas before starting beam operations. The sweep procedures facilitate this verification process. At other times workers must access these areas to verify or adjust the condition of equipment as needed between periods of beam operation and must each be accounted for as they enter and exit the exclusion areas. This is referred to as controlled access. The PSS guides the procedural steps for both sweeps and controlled accesses, and therefore, an authorized Safety Systems Operator must be present to operate the PSS during these events in accordance with the AOD and FELODS. "

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Feb 2011

Accelerator Operation Directive

SSO Responsibilities can be found in various locations in the AOD

Specific chapters -

2.1.1.5 Safety System Operators (SSOs):

All text

2.4.2.1 Staffing Requirements for Operations:

A qualified SSO must be in the MCC whenever:

- Any PSS segment is in Sweep Mode
- Any PSS segment is in Sweep Complete Mode
- Any PSS segment is in Controlled Access Mode

FEL PSS Operator Training

Feb 2011

FEL Operations Directive Supplement to the Accelerator Operations Directives

Primarily sections 3 and 4

FEL PSS Operator Training

Feb 2011

SSO Reference Material

This presentation -

http://www.jlab.org/accel/ssg/Training/FEL_SSO_Training_Intro.pdf

http://www.jlab.org/accel/ssg/Training/FEL_SSO_Training_1.pdf

http://www.jlab.org/accel/ssg/Training/FEL_SSO_Training_2.pdf

Controlled Access Procedure -

http://opsntrsrv.acc.jlab.org/ops_docs/online_document_files/MCC_online_files/PSS_controlled_access_proc.pdf

Sweep Procedure -

http://opsntrsrv.acc.jlab.org/ops_docs/online_document_files/MCC_online_files/PSS_sweep_procedure.pdf

State Change Procedure -

http://opsntrsrv.acc.jlab.org/ops_docs/online_document_files/MCC_online_files/PSS_state_change_proc.pdf

Log Entry and Screen Capture Procedure -

http://opsntrsrv.acc.jlab.org/ops_docs/online_document_files/MCC_online_files/PSS_log_entry_and_screen_capture_proc.pdf

FEL PSS Operator Training

Feb 2011

SSO Reference Material (cont.)

PSS Elog Stamp User's Guide -

http://opsntsrv.acc.jlab.org/ops_docs/online_document_files/MCC_online_files/PSS_Elog_stamp_user_guide.pdf

Video Multiplexer Users Guide -

http://opsntsrv.acc.jlab.org/ops_docs/online_document_files/MCC_online_files/PSS_video_multiplexer_users_guide.pdf

Accelerator Operations Directives -

http://opsntsrv.acc.jlab.org/ops_docs/online_document_files/ACC_online_files/accel_ops_directives.pdf

Free Electron Laser Operations Directives Supplement -

<https://jlabdoc.jlab.org/docshare/dsweb/Get/Document-20909>