

**NCSX**  
**Training Plan**  
**NCSX-PLAN-TRNG-02**  
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# NCSX Training Plan (NCSX-PLAN-TRNG-02)

## Record of Revisions

Revision	Date	Description of Changes
0	11/23/2004	Initial Issue
1	12/6/2004	Incorporated Construction Engineer comments.
2	3/9/2006	Revised and deleted appendices since they are issued separately

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# **NCSX Training Plan (NCSX-PLAN-TRNG-02)**

## **1 INTRODUCTION**

### **1.1 Purpose**

The National Compact Stellarator Experiment (NCSX) is a proof-of-principle-scale facility for studying the physics of compact stellarators, an innovative fusion confinement concept. The facility will include the stellarator device and ancillary support systems. NCSX is a joint project of the Oak Ridge National Laboratory (ORNL) Fusion Energy Division and the Princeton Plasma Physics Laboratory (PPPL) Advanced Projects Department.

Quality assurance requirements for DOE non-nuclear facilities are described in the DOE Order on quality assurance, DOE O 414.1. The NCSX Quality Assurance Plan (QAP) documents how the project will satisfy the requirements of this Order. Specifically, Criterion 2 of this order contains the following training requirements:

- “Personnel must be trained and qualified to ensure they are capable of performing their assigned work.”
- “Personnel must be provided continuing training to ensure that job proficiency is maintained.”

The purpose of this plan is to provide the general training requirements framework of the NCSX training program and how this training program will be implemented during the design, fabrication, and construction phases of the project. At the same time, this plan will address how QA criterion will be satisfied. Operational training requirements will be addressed at a later time.

### **1.2 Applicable Documents**

This Training Plan implements the requirements of the documents listed below (latest issues):

#### DOE Documents

- DOE O 414.1, Quality Assurance

#### PPPL Documents

- PPPL Institutional Quality Assurance Plan
- P-008, Staff Training and Development
- P-028, Subcontractor Training Requirements
- P-087, Roles and Responsibilities in PPPL Organizations
- TR-001, Laboratory Training Program
- ESH-004, Job Hazard Analysis
- ENG-030, PPPL Technical Procedures for Experimental Facilities
- ENG-032, Work Planning Procedure

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## NCSX Documents

- NCSX Quality Assurance Plan (NCSX-PLAN-QAP)

### **1.3 NCSX Training Web Page**

NCSX training information is included on the NCSX Training Web Page:

[http://ncsx.pppl.gov/SystemsEngineering/Training/NCSX Training Index.htm](http://ncsx.pppl.gov/SystemsEngineering/Training/NCSX_Training_Index.htm)

This web page includes:

- A link to the latest revision of this NCSX Training Plan;
- Links to NCSX project, engineering, safety, and task-specific training matrices;
- Links to the NCSX Training Modules; and
- A link to the Human Resources Training Page

## **2 RESPONSIBILITIES AND TYPES OF TRAINING**

### **2.1 The PPPL Training Program**

The Human Resources Training Office is the coordinator of all training programs at the Laboratory. They are responsible for ensuring that proper training requirements are defined and that proper training records are maintained for each individual performing work at the laboratory. In addition, the Training Office assists projects such as NCSX by providing PPPL courses and working with the respective project to develop project specific courses and training opportunities.

### **2.2 Responsibilities**

*Training is a line management responsibility.* It is the direct responsibility of each line manager to define and ensure that each of the personnel assigned under him or her, whether from PPPL, ORNL, or a subcontractor, is properly trained, including familiarization and understanding of PPPL and NCSX Project plans, processes, and procedures, as relevant to the work, before granting access or assigning work in specific areas of the laboratory that requires specialized training. Line management includes both home organization and specific NCSX Project management and supervision (e.g., design, fabrication and assembly, etc.).

NCSX line management is responsible to confirm that all individuals have the appropriate related training, whether the responsibility of the home organization or the Project, prior to actually doing work. For NCSX fabrication, this responsibility is assigned to the engineer having lead responsibility for the fabrication. For NCSX construction in the NCSX Test Cell, this responsibility is assigned to the NCSX Construction Manager. For NCSX construction outside the NCSX Test Cell (e.g., the Modular Coil Manufacturing Facility, etc.), the respective RLM will be assigned responsibility. For NCSX design, the responsibility is assigned to the associated WBS manager.

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The NCSX Cognizant Engineer and Responsible Line Manager are responsible to assure that necessary training requirements specific to a planned work activity have been identified and documented in the technical procedures and that involved personnel have completed the required training.

The Home organization, in consultation with the Human Resources Training Office and the NCSX Project Team, will decide on the appropriate media for the training (e.g., classroom, read only, in field, etc.).

### **2.3 Categories of Training**

There are three general categories of training that impact personnel assigned to the NCSX Project. While this Training Plan will focus details on the NCSX-specific training programs, the other two categories of training are include in summary format to provide a complete picture of the overall training of NCSX personnel. These are:

#### **2.3.1 General Site Access Training**

Everyone working on-site at PPPL for more than 40 hours per year must take General Employee Training (GET). For the NCSX project, ORNL personnel, as part of the project partnership, will physically work at both ORNL and PPPL on project work activities. When working at PPPL, a manager at PPPL must be assigned the responsibility to assure that the GET training is completed. For subcontractors, the PPPL technical representative is assigned this responsibility. This training plan focuses only on the training required of all personnel working at the PPPL site and includes the general overview of the administrative, safety, and security regulations and policies for PPPL. It is generally administered and/or coordinated by Human Resources. *This NCSX Training Plan will not address these requirements as they are covered elsewhere in PPPL policies and procedures.* The table below provides some additional information on the GET training requirements:

<b>Module</b>	<b>Title</b>	<b>Attendees</b>	<b>Topic Matter</b>
General Site Access Training	General Employee Training	All Project Personnel and Subcontractors working on site for more than 40 hours per year	General overview of the administrative, safety and security regulations, and the policies outlined for PPPL

#### **2.3.2 Department/Division Training**

Line managers, are responsible to assure that individuals assigned to their departments and divisions are trained to perform their typical PPPL work activities. The requirements for training are usually dictated by the specific site location, experiment safety requirements, and/or tasks or functions the individual may perform. These line managers work with the staff of Human Resources in defining, creating, and delivering this home line organization-specific training. These training requirements are usually documented

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in PPPL qualification procedures, training matrices or training plans, which are maintained by the Human Resources Training Office. Matrices are periodically updated. *This NCSX Training Plan will not address these requirements as they are covered elsewhere in PPPL policies and procedures.*

The table below provides general information on the Department/Division training:

Module	Title	Attendees	Topic Matter
Module			
Department/Division Training	Required training, and qualification requirements. Defined in home organizations training plans, matrices, or procedures	Personnel Assigned to NCSX Project	<ul style="list-style-type: none"> <li>• Access training</li> <li>• PPPL procedures training</li> <li>• Formal courses and/or on-the-job training determined by department and/or division head</li> <li>• Courses designed to enhance or maintain job skills needed (may include new courses such as metrology and cryogenic safety)</li> <li>• Department/Division Procedures and operating procedures training</li> </ul>

### 2.3.3 NCSX Specific Training

#### 2.3.3.1 Overview

Home organizations are responsible to assure that individuals within their organizations matrixed to the NCSX project are trained to perform their typical PPPL work activities. In addition, the NCSX Project is responsible for defining specific NCSX Project training needed by personnel assigned to the Project. This may take the form of providing training to understand the processes and procedures to be used in the design and construction phases of NCSX and NCSX-specific technical procedures to perform installation, manufacturing, and testing activities for the Project. The project specific training falls into one of two general categories: training on the NCSX processes, in general, such as the use of IntraLink, and training required for a specific work activity, such as performing the winding of the modular coils.

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### **2.3.3.2 NCSX Processes and Procedures**

The NCSX Engineering Web page ( [http://ncsx.pppl.gov/NCSX\\_Engineering/](http://ncsx.pppl.gov/NCSX_Engineering/) ) is the site where the vast majority of the guidelines and requirements for the NCSX Project are contained. The NCSX Processes are generally outlined in the set of NCSX-specific plans and procedures. All NCSX engineering personnel will be trained in the content and on how to navigate the NCSX Engineering Web page. *This NCSX Training Plan will focus on this category of training.*

### **2.3.3.3 NCSX Technical Procedures**

PPPL Engineering Procedure ENG-030, *PPPL Technical Procedures for Experimental Facilities*, defines the lab-wide requirements for the format and content of several types of technical procedures, including, installation and test procedures, etc. The NCSX Project will comply with the requirements contained in ENG-030, including the requirements to identify in detail the type and method of training necessary for the personnel assigned to perform the specific task or job. *This NCSX Training Plan will not address these requirements as they are covered elsewhere in PPPL policies and procedures.*

### **2.3.4 Training on NCSX Processes and Procedures**

Like many projects, NCSX has specific ways in which the NCSX Project does its business. NCSX is responsible to assure that personnel working on the project have training that is specific to the project, as applicable to their work. This responsibility covers all NCSX specific processes and procedures. This may include administrative plans and procedures or specific technical procedures unique to the project. The Project is responsible for working with the staff of the Human Resources Department to define what project-specific training is needed, to determine the best methods of delivery, to create the training course content, and to deliver the material.

Included in this category is specific training on the contents and processes outlined on the NCSX Engineering Web page:

[http://ncsx.pppl.gov/NCSX\\_Engineering/](http://ncsx.pppl.gov/NCSX_Engineering/)

## **2.4 Requirements for NCSX Training**

Personnel assigned to work on the NCSX Project are expected to be fully trained to perform the tasks assigned to them. To achieve this goal, personnel will be required to complete the necessary training identified above: General Site Access Training, Safety Training, Home Organization Training, and NCSX Project-specific Training. The Human Resources Training Department will work with NCSX Project management team personnel to identify training requirements for each person assigned to NCSX. The NCSX Project has developed series of NCSX Training Matrices to define the training requirements for personnel assigned to the Project. Project training requirements are

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reviewed on an annual basis as per PPPL procedures. There exists an overview listing of training requirements that are approved by the NCSX Project Manager and more detailed task-specific training matrices associated with manufacturing and assembly operations. These training matrices are located on the NCSX Engineering Web at:

[http://ncsx.pppl.gov/SystemsEngineering/Training/NCSX\\_Training\\_index.htm](http://ncsx.pppl.gov/SystemsEngineering/Training/NCSX_Training_index.htm)

### **2.5 Training Records**

NCSX Project Training records for NCSX processes and procedures are maintained by the NCSX Project on the NCSX Engineering Web at:

[http://ncsx.pppl.gov/SystemsEngineering/Training/NCSX\\_Training\\_index.htm](http://ncsx.pppl.gov/SystemsEngineering/Training/NCSX_Training_index.htm)

Individual training records for both PPPL and specific NCSX manufacturing and assembly operations are maintained by Human Resources.