

National Compact Stellarator Experiment

NCSX

DOCUMENTS & RECORDS PLAN

NCSX-PLAN-DOC-01

February 11, 2004

Prepared by: _____
R. Simmons, NCSX Systems Engineering Support Manager

Concurrences:

T Brown, NCSX Design Integration
Manager

A. vonHalle, Electrical Systems
Project Engineer

B. Nelson, Stellarator Core Systems
Project Engineer

L. Dudek, Ancillary Systems
Project Engineer

E. Perry, Assembly Operations
Project Engineer

J. Malsbury, QA Manager

Approved by: _____
W. Reiersen, Engineering Manager

Controlled Document

THIS IS AN UNCONTROLLED DOCUMENT ONCE PRINTED. Check the
NCSX Engineering Web prior to use to assure that this document is current.

NCSX DOCUMENT AND RECORDS PLAN

RECORD OF REVISIONS

Revision	Date	Originator	Description of Change
0	3/21/03	Simmons	Initial issue.
1	2/11/04	Simmons	Revised to incorporate observations 8a-8e concerning handling and storage of legacy drawings per PPPL Audit # 0308 and NCSX Audit #0314. <u>Changes from Revision 0 underlined.</u>

TABLE OF CONTENTS

1.0	PURPOSE.....	1
2.0	DEFINITIONS.....	1
3.0	RELATED DOCUMENTS.....	1
4.0	RECORDS RETENTION REQUIREMENTS.....	2
5.0	DOCUMENTS AND RECORDS.....	3
5.1	GENERAL.....	3
5.2	IDENTIFICATION SCHEMES.....	4
5.2.1	Project Definition Agreements, Plans, and Procedures.....	4
5.2.2	Specifications.....	5
5.2.3	Drawings and Models.....	5
5.2.4	Analyses and Calculations.....	7
5.2.5	Other Documents.....	7
5.3	DOCUMENT AND RECORD TYPES.....	8
5.3.1	Project Definition Agreements.....	8
5.2.4	Project Plans and Procedures.....	8
5.3.3	Requirements Documents.....	12
5.3.4	Design Support Documentation.....	16
5.3.5	NEPA Documentation.....	18
5.3.6	Quality Assurance Records.....	19
5.3.7	Training Records.....	20
5.3.8	Procurement Deliverables.....	20
5.3.9	Other Documents.....	21

NCSX DOCUMENT AND RECORDS PLAN

1.0 PURPOSE

This document defines the official documents and records for the design, fabrication, and construction stages of the NCSX Project, including commissioning prior to first plasma. This document defines the purpose, content, format, approval level, records retention requirements, and file/document naming convention for each document and record. This document meets the requirements of PPPL Policy P-015, Records Management, and GEN-023, Records Management.

Provisions for the retention, protection, preservation, revision, traceability, accountability, and retrievability of these documents and records are described in the NCSX Data Management Plan (NCSX-PLAN-DMP) and the NCSX Configuration Management Plan (NCSX-PLAN-CMP).

2.0 DEFINITIONS

Document	Recorded information that describes, specifies, reports, certifies, requires, or provides information, data or results. A document is not a record until it meets the definition of record.
Calculations	Results obtained from mathematical processes used in design, operation, etc.
Guides	A document that provides additional information to NCSX project staff. Examples might be users' guides or documents that describe possible techniques for analysis.
Procedure	A document that provides an orderly, detailed method of accomplishing tasks within the applicable Laboratory and NCSX guidelines and with established responsibilities and actions.
Record	A completed document or other media that provides objective evidence of an item, service, or process.
Standard	A document that defines the minimum quality and performance outcome of a process.

3.0 RELATED DOCUMENTS

This DOC draws on the documents listed below. Documents referenced are the latest issues of the:

- NCSX Project Execution Plan (NCSX-PLAN-PEP)
- NCSX Systems Engineering Management Plan (NCSX-PLAN-SEMP)
- NCSX Quality Assurance Plan (NCSX-PLAN-QAP)
- NCSX Configuration Management Plan (NCSX-PLAN-CMP)
- NCSX Data Management Plan (NCSX-PLAN-DMP)

NCSX DOCUMENT AND RECORDS PLAN

- PPPL Pro/INTRALINK Users Guide (ES-DRFT-002)
- PPPL Policy 015, “Records Management”
- PPPL General Procedure 023, “Records Management”

4.0 RECORDS RETENTION REQUIREMENTS

The contract between Princeton University and the Department of Energy requires that a records management and retention program be established and implemented at PPPL that meets the requirements of DOE O 200.1. Procedure GEN-023 provides the overall laboratory plan for complying with this requirement. The purpose of this section is to identify key NCSX documents and how they fit into the overall scheme. This section focuses on documentation relevant to the design and documentation of NCSX. Documentation associated with other stages, such as operations or decommissioning and dismantlement will be identified in later versions.

The design and requirements documents and records that define and substantiate the design, fabrication, modification, and operation of the NCSX device or define and document the management approaches and procedures that govern how the Project is managed, typically include the following:

- Project Definition Agreements
- Project Plans and Procedures
- Project Requirement Documents
- Design Support Documentation
- NEPA Documentation
- Quality Assurance Records
- Training Records
- Procurement Records
- Other Documents

NCSX DOCUMENT AND RECORDS PLAN

Crosscutting this documentation organization are the DOE guidelines and PPPL Procedure GEN-023, which defines retention requirements by DOE record type. Table 4-1 below provides the document retention requirements by type of record:

Table 4-1
Document Retention Requirements

Type of Record	NCSX Record Key	DOE Record Retention Schedule (GEN-023)	Retention Requirement (GEN-023)
Initial planning documents	DC1	14	Until construction project completion
NEPA documentation and other records	DC2	E	25 years – need DOE approval to dispose of
Other technical information and/or data prepared for outside (of DOE) agencies	DC3	O	10 years – need DOE approval to dispose of
Design requirements/design and operations documentation records and demonstrating capability for safe design, fabrication, modifications, and operations	DC4	14	Until dismantlement or disposal
Project decommissioning and dismantlement records	DC5	E	75 years after decommissioning and dismantlement
Project management records	DC6	A16	1 year after end of NCSX experimental operations
Miscellaneous records supporting, but not required for project record purposes	DC7	14	Until construction project completion or superseded

5.0 DOCUMENTS AND RECORDS

5.1 General

A list of official documents and records is provided in this section. This list represents an initial definition of those documents currently envisioned during the conceptual design and initial part of the preliminary design phases. Other documents will be defined and added as the project progresses.

For each document or record, the following is given:

- Purpose - This gives the purpose of the document. If relevant, this also defines the circumstances under which the document may serve as an official NCSX record.
- Preparation and Approval - This defines the individuals responsible for preparing and approving the specified document. The individual with approval authority is also responsible for ensuring that ALL appropriate personnel have formally reviewed the document and that comments have been properly treated prior to approving the document. The NCSX philosophy is to limit the number of

NCSX DOCUMENT AND RECORDS PLAN

approvals within the NCSX Project to as few as possible. Revisions are uniquely identified and undergo the same approval process as the original document.

- **Format** - This indicates where the required format for the document is specified. Documents that are unique, i.e. only one is expected to be generated for the project, may have no specified format. The format selected should be that most appropriate to the document.
- **Naming Convention** - This specifies both the identifier for the document and the name of the file containing the document.
- **Storage Location** – either the NCSX Engineering Web page <http://ncsx.pppl.gov/NCSX_Engineering/>, the Pro/INTRALINK database, or in hardcopy format in the PPPL Operations Center or PPPL Drafting Center. Documents posted on the Engineering Web page will be in a pdf format and drawings and models residing on the Pro/INTRALINK database will be posted as ProEngineer drawings and models if created in the ProEngineer software, in AutoCAD if created in AutoCAD, or in other Project-approved electronic drawing software programs. Drawings released for fabrication will be stored in a special Released Drawings folder within the Pro/INTRALINK database in pdf format. Documents stored in hardcopy in the PPPL Operations Center or PPPL Drafting Center will be accepted in whatever format supplied.
- **Document Retention Classification** – The document retention classification is defined for each document. Retention requirements are specified by document retention classification in Table 4-1.

The NCSX Project will store all pertinent design and management documents electronically in accordance with processes defined in the NCSX Data management Plan (NCSX-PLAN-DMP) and the NCSX Configuration Management Plan (NCSX-PLAN-CMP) and subordinate procedures. Project participants will have access to these documents through the Internet.

5.2 Identification Schemes

5.2.1 Project Definition Agreements, Plans, and Procedures

File names for controlled project definition agreements and plans should be the same as the document name followed by an appropriate descriptor. This document name shall consist first of the following information, separated by hyphens (no spaces). For example, NCSX-PLAN-YYY-ZZ where:

- NCSX indicates the NCSX Project
- PLAN indicates that this document is either a project definition agreement or plan and PROC indicates that this is a procedure.
- YYY is a three or four letter shorthand name of the project definition agreement or plan (e.g., SEMP for the Systems Engineering Management Plan, CMP for the Configuration Management Plan, DOC for the Document and Records Plan, etc.). For a procedure, this shorthand name for the procedure is replaced by a numerical identifier for that procedure (e.g., 001, 002, etc.).
- ZZ indicates the revision level of the document (e.g. 00 for revision 0)

NCSX DOCUMENT AND RECORDS PLAN

This naming convention is then followed by an underscore (_) and the appropriate state of approval descriptor (e.g., dA indicates Draft A of the revision level or Signed indicates a signed/approved version of the document).

5.2.2 Specifications

As indicated in the Systems Engineering Management Plan (SEMP), there is a hierarchy of 5 specification levels starting at the top-level General Requirements Document (GRD). In systems engineering terms, this is the ASPEC. This top-level specification is then followed by a specification tree consisting of Developmental (or “design to”) specifications (BSPECs) and a series of “build to” specifications consisting of Product (CSPECs), Process (DSPECs) and Material (ESPECs). The naming convention for specifications shall first consist of the following information, separated by hyphens (no spaces). For example, NCSX-STYPE-WBS-###-XX where:

- NCSX indicates the NCSX Project
- STYPE indicates the level of specification (e.g., ASPEC for the GRD, BSPEC for the “design to” specification, and CSPEC, DSPEC, or ESPEC for “build to” specifications)
- WBS indicates the three digit WBS number identifier
- ### indicates the three digit numerical number of the specification (e.g., 001, 002, etc.)
- XX indicates the revision level of the document (e.g. 00 for Revision 0)

This naming convention is then followed by an underscore (_) and the appropriate state of approval descriptor (e.g., dA indicates Draft A of the revision level or Signed indicates a signed/approved version of the document).

5.2.3 Drawings and Models

5.2.3.1 Electronic Drawings and Models

The vast majority of NCSX models and drawings will exist in electronic form. The Pro/INTRALINK Users Guide provides the details for numbering electronic drawings and models. Drawings and models are created and maintained electronically using NCSX Project approved drawing software packages. For Mechanical and Facility drawings and models (in either 2D or 3D), the Project standard is Pro/Engineer. For Electrical drawings and models (usually only in 2D), the Project standard is AutoCAD. As approved by the Project on a case-by-case basis, other electronic drawing software packages may be utilized.

Since the NCSX Project is a national project involving both PPPL and ORNL, a flexible identification scheme has been developed for drawings and models that recognize the specific requirements of each laboratory, while still providing a standardized approach. The NCSX drawings will evolve from a concept stage through release for fabrication. During the conceptual design phase, an additional concept identifier is added to the standardized drawing number. In all cases, the drawing/model numbers will take a form that follows the NCSX WBS structure.

NCSX DOCUMENT AND RECORDS PLAN

Several specific drawing types have unique drawing identifiers to set them apart from “regular” drawings. These are sketches, prototype, and as-built drawings. Specifics on the drawing numbering scheme for each is outlined in the Pro/INTRALINK Users Guide (ES-DRFT-002), however a brief description of each is described below:

- Sketches have a special numbering scheme. Sketch numbers are assigned for ideas still in the early developmental stages, e.g., before a concept approach has been decided.
- Prototype drawing numbers will be assigned for every prototype drawing since, typically, the prototype model is not expected to represent the final production unit. Prototype drawings and models will have a special designation “P” placed at the end of the standard drawing number. Should a prototype eventually be designated as a final production unit, the prototype drawing will be converted to a regular drawing that will undergo the normal FDR process before being released for final fabrication. PPPL Engineering Procedure ENG-033, as supplemented by NCSX Procedure 004 outlines the design review processes.
- As-Built drawings are only assigned when the physical model needs to be revised because the non-conformance impacts a primary interface. Non-conformances that do not impact other component or system interfaces do not result in a revised drawing although the higher-level model will be annotated with a drawing note to indicate that a specific NCR exists. If a drawing needs to be modified to reflect this non-conformance, a new drawing will be created with the designator “AB” placed at the end of the drawing number to identify those parts revised.

In addition to the basic drawing number, there are three other bits of information that clearly identify the unique drawing. Until a drawing is released for fabrication, it will not be assigned a revision number. However, once the drawing is approved and released for fabrication, a revision number will be assigned in the drawing title block; until that occurs, the revision block on the drawing will be blank. However, the evolution of the drawing will be tracked by the version number that appears in an ancillary design status block separate from the drawing main title block. In addition, this ancillary design status block will identify the stage of the design of the drawing (e.g., conceptual, preliminary, or final) so that a user might understand the level of design evolution shown on the drawing.

5.2.3.2 Legacy Drawings

The NCSX Project will utilize a significant amount of PPPL legacy equipment and systems. The drawings are primarily only available in a hard copy vellum or other physical medium. They will be maintained in this format and be utilized by NCSX, maintaining the original numbering system. Several important cautions must be observed when utilizing these drawings.

As part of the preparations of C-Site to accommodate the NCSX device, a significant amount of demolition and modifications to existing PPPL systems and infrastructure was accomplished. Prior to utilizing existing legacy drawings, the WBS Manager must first assure that the current legacy drawings accurately reflect the current as-built status of those systems. If not accurate, the decision needs to be made as to whether or not to

NCSX DOCUMENT AND RECORDS PLAN

modify existing legacy hard copy drawings or to create new drawings in an electronic format.

Prior to discarding legacy hard copy drawings for legacy systems removed or modified in preparation for the NCSX, knowledgeable personnel from the NCSX Project and the PPPL Engineering Department need to review the drawings to determine their disposition and/or the need to modify existing drawings or to create new drawings for use on NCSX.

5.2.4 Analyses and Calculations

File names for analyses and calculations shall follow a standard format to facilitate filing and sorting. Analyses and calculations should be formally approved as per PPPL Engineering Procedure, ENG-033, "Design Verification." The format for analyses and calculations should be as follows: NCSX-CALC-XXX-YY where:

- NCSX represents the NCSX Project;
- CALC represents the type of analysis performed;
- XXX represents the appropriate WBS number (e.g., 142, etc.); and
- YY represents the sequential analysis report number.

5.2.5 Other Documents

File names for memos and other documents shall follow a standard format to facilitate filing and sorting. The format should be as follows: YYMMDD_Subject_XXX_ZZZ.ext where:

- YYMMDD is the date of issue (e.g., 021127 indicating a date of issue of November 27, 2002)
- Subject is a brief description of the topic covered in the memo, calculation, etc.=> no blanks permitted, use underscores (_) to separate text.
- XXX is the 3-digit numeric ID for the most appropriate WBS element. If a 1-digit or 2-digit WBS element is most appropriate, then the single/two digit(s) should be followed by 0 (e.g., 10 for WBS 1, 120 for WBS 12, etc.)
- ZZZ are the author's initials => should be at least 2 letters, but three letters are preferred.

To the extent feasible, all NCSX records other than drawings and models will be stored electronically on a secure NCSX web page. As indicated in the NCSX Data Management Plan (DMP), drawings and models will be stored electronically in the Pro/INTRALINK database.

NCSX DOCUMENT AND RECORDS PLAN

5.3 Document and Record Types

5.3.1 Project Definition Agreements

5.3.1.1 Acquisition Execution Plan - unique document

Purpose	Describes the acquisition strategy and business plans to be used in the execution of the NCSX Project
Review and Approval	Prepared by: NCSX Systems Engineering Support Manager Concurrences by: NCSX Project Management, PPPL and ORNL Lab Management, DOE Federal Project Manager, DOE Manager Princeton Area Office and Contracting Officer, DOE OFES Program Manager, OFES Associate Director for Fusion Energy Sciences, Director Office of Science, and DOE Director of Office of Construction and Engineering Management (OECM) Approved by: DOE Under Secretary for Energy, Science, and Environment
Format	--
Naming Convention	NCSX-PLAN-AEP-XX_YY where XX is the revision number and YY is the level of approval (e.g. draft [dA] or approved [signed])
Storage Location	NCSX Engineering Web Page
Document Retention Key	DC1

5.2.4 Project Plans and Procedures

5.3.2.1 Project Execution Plan (PEP) - unique document

Purpose	Describes management methodology to be applied during the design and fabrication stages of the NCSX project.
Review and Approval	Prepared by: NCSX System Engineering Support Manager Concurrences by: NCSX Project Control Manager, NCSX Project Engineering and Management, PPPL and ORNL Lab Management, DOE Federal Project Manager, OFES Program Manager, DOE Director Construction Support Division, DOE Manager Chicago Operations Office Approved by: DOE Associate Director of Fusion Energy Sciences
Format	--
Naming Convention	NCSX-PLAN-PEP-XX_YY where XX is the revision number and YY is the level of approval (e.g. draft [dA] or approved [signed])
Storage Location	NCSX Engineering Web Page
Document Retention Key	DC6

NCSX DOCUMENT AND RECORDS PLAN

5.3.2.2 Quality Assurance Plan - unique document

Purpose	Provides matrix of PPPL quality requirements to implementing plans and procedures
Review and Approval	Prepared by: NCSX QA Manager Concurrences by: PPPL ES&H/IS Department Head, NCSX Engineering Manager, NCSX Project Manager, NCSX Deputy Project Manager for Program, and PPPL Engineering Department Head Approved by: PPPL Director
Format	--
Naming Convention	NCSX-PLAN-QAP-XX_YY where XX is the revision number and YY is the level of approval (e.g. draft [dA] or approved [signed])
Storage Location	NCSX Engineering Web Page
Document Retention Key	DC6

5.3.2.3 Systems Engineering Management Plan (SEMP) - unique document

Purpose	Describes engineering management methodology and systems to be applied during the design and fabrication stages of the NCSX project.
Review and Approval	Prepared by: NCSX Engineering Manager Concurrences by: NCSX Systems Engineering Support Manager, NCSX Project Engineers, NCSX QA Manager, and NCSX Deputy Project Manager for Engineering Approved by: NCSX Project Manager
Format	--
Naming Convention	NCSX-PLAN-SEMP-XX_YY where XX is the revision number and YY is the level of approval (e.g. draft [dA] or approved [signed])
Storage Location	NCSX Engineering Web Page
Document Retention Key	DC6

5.3.2.4 Configuration Management Plan - unique document

Purpose	Provides a description of the processes that will be used to effect configuration management on the NCSX Project
Review and Approval	Prepared by: NCSX Systems Engineering Support Manager Concurrences by: NCSX Project Control Manager, NCSX Deputy Project Manager for Engineering, NCSX QA Manager, NCSX Physics Manager, NCSX Project Engineers, and NCSX Engineering Manager Approved by: NCSX Project Manager
Format	--
Naming Convention	NCSX-PLAN-CMP-XX_YY where XX is the revision number and YY is the level of approval (e.g. draft [dA] or approved [signed])
Storage Location	NCSX Engineering Web Page
Document Retention Key	DC6

NCSX DOCUMENT AND RECORDS PLAN

5.3.2.5 Project Documents & Records Plan - unique document

Purpose	Describes the official documents and records of the NCSX project. (This document)
Review and Approval	Prepared by: NCSX System Engineering Support Manager Concurrences by: NCSX Design Integration Manager, NCSX Deputy Project Manager for Engineering, NCSX Project Engineers, and NCSX QA Manager Approved by: NCSX Engineering Manager
Format	--
Naming Convention	NCSX-PLAN-DOC-XX_YY where XX is the revision number and YY is the level of approval (e.g. draft [dA] or approved [signed])
Storage Location	NCSX Engineering Web Page
Document Retention Key	DC6

5.3.2.6 Interface Control Management Plan - unique document

Purpose	Provides a description of the processes that will be used to effect interface control on the NCSX Project
Review and Approval	Prepared by: NCSX System Engineering Support Manager Concurrences by: NCSX Deputy Project Manager for Engineering, NCSX Project Engineers, and NCSX QA Manager Approved by: NCSX Engineering Manager
Format	--
Naming Convention	NCSX-PLAN-ICMP-XX_YY where XX is the revision number and YY is the level of approval (e.g. draft [dA] or approved [signed])
Storage Location	NCSX Engineering Web Page
Document Retention Key	DC6

5.3.2.7 Data Management Plan - unique document

Purpose	Provides a description of the processes that will be used to effect document and drawing control on the NCSX Project
Review and Approval	Prepared by: NCSX System Engineering Support Manager Concurrences by: NCSX Project Engineers, and NCSX QA Manager Approved by: NCSX Engineering Manager.
Format	--
Naming Convention	NCSX-PLAN-DMP-XX_YY where XX is the revision number and YY is the level of approval (e.g. draft [dA] or approved [signed])
Storage Location	NCSX Engineering Web Page
Document Retention Key	DC6

NCSX DOCUMENT AND RECORDS PLAN

5.3.2.8 Test and Evaluation Plan - unique document

Purpose	A Test and Evaluation Plan (TEP) establishes how integrated system testing will be performed and managed. The TEP will include an overview and schedule of the integrated system test program and the purpose, scope, and objective of each system test; test configurations; and test responsibilities.
Review and Approval	Prepared by: NCSX Construction Manager Concurrences by: NCSX Deputy Project Manager for Engineering, NCSX Project Engineers, NCSX QA Manager, and PPPL Engineering Department Head Approved by: NCSX Engineering Manager
Format	--
Naming Convention	NCSX-PLAN-TEP-XX_YY where XX is the revision number and YY is the level of approval (e.g. draft [dA] or approved [signed])
Storage Location	NCSX Engineering Web Page
Document Retention Key	DC6

5.3.2.9 Mission, Experimental Plan, and Preparations - unique document

Purpose	Provides an overview of the planned phases of NCSX operation
Review and Approval	Maintained by: NCSX Physics Head <i>Uncontrolled document</i>
Format	--
Naming Convention	NCSX-PLAN-EXP-XX_YY where XX is the revision number and YY is the level of approval (e.g. draft [dA] or approved [signed])
Storage Location	NCSX Engineering Web Page
Document Retention Key	DC6

5.3.2.10 Reliability, Availability, and Maintainability Plan – unique document

<u>Purpose</u>	<u>Provides an overview of the reliability, availability, and maintainability program for the NCSX Project.</u>
<u>Review and Approval</u>	<u>Prepared by: NCSX System Engineering Support Manager Concurrences by: NCSX Project Engineers, and NCSX QA Manager Approved by: NCSX Engineering Manager.</u>
<u>Format</u>	--
<u>Naming Convention</u>	<u>NCSX-PLAN-RAM-XX_YY where XX is the revision number and YY is the level of approval (e.g. draft [dA] or approved [signed])</u>
<u>Storage Location</u>	<u>NCSX Engineering Web Page</u>
<u>Document Retention Key</u>	<u>DC6</u>

NCSX DOCUMENT AND RECORDS PLAN

5.3.2.11 NCSX Procedures

Purpose	Provides clarifying guidance and instructions on preparing specific NCSX documents and/or terms. Intended to supplement existing PPPL engineering procedures.
Review and Approval	Prepared by: NCSX System Engineering Support Manager Reviewed by: WBS Managers, NCSX Project Engineers, NCSX QA Manager, NCSX ES&H Engineer and other appropriate NCSX impacted individuals Approved by: NCSX Engineering Manager
Format	--
Naming Convention	NCSX-PROC-###-XX_YY where ### is the numerical number of the procedure, XX is the revision number and YY is the level of approval (e.g. draft [dA] or approved [signed]). Document name provides the scope of the procedure.
Storage Location	NCSX Engineering Web Page
Document Retention Key	DC6

5.3.3 Requirements Documents

5.3.3.1 General Requirements Document (ASPEC) - unique document

Purpose	The General Requirements Document (GRD) is a system (top) level specification which states the technical and mission requirements for the entire system (WBS Level 1), allocates requirements to functional areas (WBS elements), document design constraints, and defines interfaces between or among functional areas
Review and Approval	Prepared by: NCSX Project Engineer Concurrences by: NCSX Physics Manager, NCSX Project Engineers, NCSX QA Manager, NCSX ES&H Manager. Approved by: Project Manager
Format	ENG-006 or equivalent Project standard
Naming Convention	NCSX-ASPEC-GRD-XX_YY where XX is the revision number and YY is the level of approval (e.g. draft [dA] or approved [signed])
Storage Location	NCSX Engineering Web Page
Document Retention Key	DC4

NCSX DOCUMENT AND RECORDS PLAN

5.3.3.2 Development Specifications (BSPEC) - many documents

Purpose	Development (“design to”) specifications are documents below the system (top) level that state performance, interface, and other technical requirements in sufficient detail to permit design, engineering for service use, and evaluation. Development specifications are intermediate, between the system specification and product specification(s).
Review and Approval	Prepared by: Cognizant WBS Manager Concurrences by: Cognizant Project Engineer, NCSX QA Representative Approved by: NCSX Engineering Manager
Format	ENG-006 or equivalent Project standard
Naming Convention	NCSX- BSPEC-WBS-###-XX_YY where WBS is the three digit WBS identifier, ### is the numerical identifier for that specification within the WBS, XX is the revision number and YY is the level of approval (e.g. draft [dA] or approved [signed]). (Document names assigned by cognizant WBS Manager per prescribed convention)
Storage Location	NCSX Engineering Web Page
Document Retention Key	DC4

NCSX DOCUMENT AND RECORDS PLAN

5.3.3.3 Product Specifications (CSPEC)- many documents

Purpose	<p>Product specifications are applicable to production items below the system (top) level. All procurements below the system level should be based on product specifications. Product (“build to”) specifications may be oriented towards procurement of a product through specification of primarily functional (performance) requirements or primarily fabrication (detailed design) requirements.</p> <p>A product <i>functional</i> specification states (a) the complete performance requirements of the product for the intended use, and (b) the necessary interface and interchangeability characteristics. It covers form, fit, and function. Complete performance requirements include all essential functional requirements under service environmental conditions or under conditions simulating the service environment. Quality assurance provisions for hardware include one or more of the following inspections/tests: qualification evaluation, pre-production, periodic production, and quality conformance.</p> <p>A product <i>fabrication</i> specification states (a) a detailed description of the parts and assemblies of the product, usually by prescribing compliance with a set of drawings, and (b) those performance requirements and corresponding tests and inspections necessary to assure proper fabrication, adjustment, and assembly techniques. Tests are normally limited to acceptance tests in a shop environment.</p>
Review and Approval	<p>Prepared by: Cognizant WBS Manager or Technical Representative Concurrences by: Cognizant WBS Manager (if not the author), Cognizant Project Engineer, NCSX QA Representative Approved by: NCSX Engineering Manager</p>
Format	ENG-006 or equivalent Project standard
Naming Convention	<p>NCSX- CSPEC-WBS-###-XX_YY where WBS is the three digit WBS identifier, ### is the numerical identifier for that specification within the WBS, XX is the revision number and YY is the level of approval (e.g. draft [dA] or approved [signed]). (Document names assigned by cognizant WBS Manager per prescribed convention)</p>
Storage Location	NCSX Engineering Web Page
Document Retention Key	DC4

NCSX DOCUMENT AND RECORDS PLAN

5.3.3.4 Process Specifications (DSPEC) - many documents

Purpose	This type of (“build to”) specification is applicable to a process which is performed on a product or material. Examples of processes are: heat treatment, welding, plating, and marking. Process specifications cover manufacturing techniques which require a specific procedure in order that a satisfactory result may be achieved. Where specific processes are essential to fabrication or procurement of a product or material, a process specification is the means of defining such specific processes.
Review and Approval	Prepared by: Cognizant WBS Manager Concurrence by: (Determined by WBS Manager – usually someone with expertise in the particular process) Approved by: NCSX Project Engineer
Format	ENG-006 or equivalent Project standard
Naming Convention	NCSX- DSPEC-WBS-###-XX_YY where WBS is the three digit WBS identifier, ### is the numerical identifier for that specification within the WBS, XX is the revision number and YY is the level of approval (e.g. draft [dA] or approved [signed]). (Document names assigned by cognizant WBS Manager per prescribed convention)
Storage Location	NCSX Engineering Web Page
Document Retention Key	DC4

5.3.3.5 Material Specifications (ESPEC) - many documents

Purpose	This type of (“build to”) specification defines the required qualities or condition of raw or semi-fabricated material (e.g., electrical cable, copper tubing) used in fabrication
Review and Approval	Prepared by: Cognizant WBS Manager Concurrence by: (Determined by WBS Manager – usually someone with expertise in the particular material properties) Approved by: NCSX Project Engineer
Format	ENG-006 or equivalent Project standard
Naming Convention	NCSX- ESPEC-WBS-###-XX_YY where WBS is the three digit WBS identifier, ### is the numerical identifier for that specification within the WBS, XX is the revision number and YY is the level of approval (e.g. draft [dA] or approved [signed]). (Document names assigned by cognizant WBS Manager per prescribed convention)
Storage Location	NCSX Engineering Web Page
Document Retention Key	DC4

NCSX DOCUMENT AND RECORDS PLAN

5.3.4 Design Support Documentation

5.3.4.1 Electronic Design Drawings and Models – many documents

Purpose	Drawings and models represent the physical configuration of the Project in either 2D or 3D.
Review and Approval	Prepared by: Designer or Cognizant Engineer Reviewed by: Cognizant Engineer (if not the creator of the drawing, WBS Manager, and Design Integration Manager) Approved by: Cognizant Project Engineer and PPPL Drafting Supervisor
Format	PPPL or ORNL Drawing Standards using ProEngineer, AutoCAD, or other Project-approved drawing software package.
Naming Convention	As indicated in paragraph 5.2.3 of this Document and Records Plan
Storage Location	Pro/INTRALINK Database
Document Retention Key	DC4

5.3.4.2 Legacy Drawings – many documents

<u>Purpose</u>	<u>Physical hard copy drawings representing PPPL legacy equipment and systems.</u>
<u>Review and Approval</u>	<u>Prepared by: Designer or Cognizant Engineer</u> <u>Reviewed by: Cognizant Engineer (if not the creator of the drawing, WBS Manager, and Design Integration Manager)</u> <u>Approved by: Cognizant Project Engineer and PPPL Drafting Supervisor</u>
<u>Format</u>	<u>PPPL Drawing Standards</u>
<u>Naming Convention</u>	<u>As indicated in paragraph 5.2.3 of this Document and Records Plan</u>
<u>Storage Location</u>	<u>PPPL Drafting Center</u>
<u>Document Retention Key</u>	<u>DC4</u>

5.3.4.3 Interface Control Documents – many documents

Purpose	ICDs define the physical interfaces between two separately deliverable items when the mutual boundary area is not controlled by a single developmental (“design to”) specification (BSPEC).
Review and Approval	Prepared by: WBS Manager on one side of the interface Reviewed by: WBS Manager on the other side of the interface and cognizant Project Engineers Approved by: NCSX Systems Engineering Support Manager (facilitates reaching agreement)
Format	NCSX Procedure 003 (NCSX-PROC-003), Interface Control.
Naming Convention	As indicated in the above procedure
Storage Location	NCSX Engineering Web Page
Document Retention Key	DC4

NCSX DOCUMENT AND RECORDS PLAN

5.3.4.4 Calculations and Analyses – many documents

Purpose	Calculations and analyses provide confirmatory evidence of the soundness of the proposed design
Review and Approval	Prepared by: Cognizant Engineer Checked by: Assigned individual assigned to check the calculation by the responsible WBS Manager
Format	Per PPPL Engineering Procedure 033, Design Verification.
Naming Convention	As indicated in paragraph 5.2.4 of this Document and Records Plan.
Storage Location	NCSX Engineering Web Page
Document Retention Key	DC4

5.3.4.5 Design Memoranda - many documents

Purpose	General means of providing design basis information that does not fit into one of the other established documentation/record types.
Review and Approval	Prepared by: Assigned responsible individual Approved by: None
Format	--
Naming Convention	As indicated in paragraph 5.2.5 of this Document and Records Plan.
Storage Location	NCSX Engineering Web Page
Document Retention Key	Determined by the content of the memorandum in accordance with Table 4-1

5.3.4.6 Field Activity Documents

Purpose	This category refers to a variety of documentation used to guide or document work occurring in the field. Most field work is governed by procedures, sometimes called a traveler document. Examples of such field activity documents are: <ul style="list-style-type: none"> • Installation procedures – governed by ENG-030 • Hydrostatic testing results – governed by ENG-014 • Lift data sheets – governed by ENG-021 In addition, unique field activity documents may be developed for NCSX for special purposes not covered by lab-wide procedures.
Review and Approval	If governed by an existing PPPL procedure, the applicable procedure specifies the review and approval requirements. If a unique NCSX document not governed by existing procedures, the WBS Manager determines the review and approval requirements.
Format	If governed by an existing PPPL procedure, the applicable procedure specifies the format requirements. If a unique NCSX document not governed by existing procedures, the WBS Manager determines the format requirements.
Naming Convention	As determined by the applicable procedure or by the WBS if not governed by a particular procedure, consistent with the NCSX-specific requirements outlined in this Document and Records Plan.
Storage Location	PPPL Operations Center
Document Retention Key	Determined by the content of the memorandum in accordance with Table 4-1

NCSX DOCUMENT AND RECORDS PLAN

5.3.4.7 Design Review Records – many documents

Purpose	These documents provide the basis for design decisions made at specific monitoring points in the development of the design (e.g., preliminary, final)
Review and Approval	Prepared by: NCSX WBS Manager Reviewed by: Design Review Committee members Approved by: Engineering Manager
Format	Per appropriate PPPL and NCSX procedures and guidelines.
Naming Convention	Per type of record.
Storage Location	NCSX Engineering Web Page for all technical records with the exception of drawings. Drawings will be stored in the Pro/INTRALINK database.
Document Retention Key	DC4

5.3.4.8 Engineering Change Proposals – many documents

Purpose	These documents describe the authorized changes to the technical, cost and schedule baseline
Review and Approval	Prepared by: NCSX Cognizant Engineer Reviewed by: WBS Managers, Project Engineers, QA Manager, Physics Manager (if impacted), Engineering Manager, Project Control Manager, ES&H Representative Approved by: NCSX Project Manager or DOE (depending on ECP Level)
Format	Per CMP
Naming Convention	Per CMP
Storage Location	NCSX Engineering Web Page
Document Retention Key	DC4

5.3.5 NEPA Documentation

5.3.5.1 Environmental Assessment (EA) – unique document

Purpose	This document provides an overview of the environmental impact of the NCSX Project
Review and Approval	Prepared by: NCSX ES&H Engineer Approved by: DOE
Format	General EA content requirements specified in 10CFR1021 and 40CFR1508.9
Naming Convention	DOE/EA-1437 (DOE assigned designator)
Storage Location	NCSX Engineering Web Page
Document Retention Key	DC2

NCSX DOCUMENT AND RECORDS PLAN

5.3.5.2 NEPA Planning Form – many documents

Purpose	This document provides an assessment of the environmental impact of a proposed project/modification.
Review and Approval	Prepared by: Cognizant Engineer Reviewed by: NCSX RLM Approved by: PPPL NEPA Compliance Officer
Format	ESH-014 or equivalent Project Standards
Naming Convention	PPPL NEPA Compliance Officer assigns unique sequential number to each document. Ability to sort to obtain only those addressing NCSX.
Storage Location	Retained by Cognizant Engineer and the NEPA Compliance Officer.
Document Retention Key	DC2

5.3.5.3 Safety Assessment Document – unique document

Purpose	This document provides an overview assessment of the as-built project on the environment and its impact the safety of the public.
Review and Approval	Prepared by: NCSX ES&H Engineer Approved by: PPPL Safety Review Committee (SRC)
Format	PPPL ESHD – 5008, Section 11
Naming Convention	NCSX-SAD- -XX_YY where XX is the revision number and YY is the level of approval (e.g. draft [dA] or approved [signed]
Storage Location	NCSX Engineering Web Page
Document Retention Key	DC2

5.3.6 Quality Assurance Records

5.3.6.1 Quality Assurance Records - many documents

All records are maintained and controlled per Quality Assurance internal document, QP-002, Quality Assurance Records.

Record Type	Purpose	Applicable Procedure
Audits	Document results of audits and surveillances on NCSX, the findings, and the corrective action taken to resolve the findings.	QA-002
Risk Acceptance Plan	Documents inspection plan for an activity.	QA-004
Nonconformance Report	Documents nonconformances and their resolution. The definition of nonconformance from QA-005 is: "Any deficiency in characteristic, documentation, design, function, or procedure that renders the quality of an item or activity unacceptable or indeterminate."	QA-005
Storage Location	PPPL QA Files	
Document Retention Key	Specified in QP-002	

NCSX DOCUMENT AND RECORDS PLAN

5.3.7 Training Records

5.3.7.1 Training Records - many documents

Record Type	Purpose	Applicable Procedure
Course Content	Document content of training programs.	TR-001, Laboratory Training Program
Training attendance and completion	Document the individuals who completed each training program.	Same
Storage Location	PPPL Training Records maintained by the PPPL Training Office in Human Resources.	
Document Retention Key	As specified by the PPPL Human Resources Department.	

5.3.8 Procurement Deliverables

5.3.8.1 Procurement Deliverables - many documents

Purpose	<p>This includes records provided to NCSX by a supplier as a result of contractual requirements. They provide evidence of the quality of procured items. Examples of such records are:</p> <ul style="list-style-type: none"> • Contracts • Statements of Work (see Section 5.3.8.2 below) • Manufacturing, Inspection, and Test (MIT) Plan • Reliability and Maintainability Documents • Workmanship Standards • Completed Release for Shipment Form • Process History, which includes Certificates of Compliance, Material Certifications, Planning & Control Documents, Inspection Reports, Test Reports, Supplier NCRs, and Personnel Qualifications and Certifications • Quality Assurance Plan • Quality Assurance Program Manuals
Review and Approval	<p>Prepared by: Supplier Approved by: Supplier or NCSX, as specified in the contract</p>
Format	Supplier specified
Naming Convention	As specified in contract – should relate to specific contract.
Storage Location	<ul style="list-style-type: none"> • PPPL Procurement Files for direct contracts. • NCSX Engineering for SOWs • All the other documents are stored per QA-003 in the PPPL Operations Center.
Document Retention Key	DC7

5.3.8.2 Statements of Work – many documents

Purpose	These documents detail work requirements.
Review and Approval	<p>Prepared by: NCSX Contract Technical Representatives Concurrences by: WBS Manager and NCSX QA Representative Approved by: NCSX Engineering Manager (or designee)</p>
Format	PPPL Procedure ENG-006 as modified by specific NCSX requirements.
Naming Convention	NCSX-SOW-wbs#-sow#-rev# (Document names assigned by cognizant WBS Manager per prescribed convention)
Storage Location	PPPL Procurement Files
Document Retention Key	DC4

NCSX DOCUMENT AND RECORDS PLAN

5.3.9 Other Documents

5.3.9.1 Memoranda - many documents

Purpose	General means of providing information that does not fit into one of the other established documentation/record types.
Review and Approval	Prepared by: Assigned responsible individual Approved by: None
Format	
Naming Convention	As indicated in paragraph 5.2.4 of this Document and Records Plan.
Storage Location	Retained by author – may also be posted on the Engineering Web Page
Document Retention Key	Determined by the content of the memorandum in accordance with Table 4-1

5.3.9.2 WBS Dictionary – unique document

Purpose	A product-oriented family tree composed of hardware, software, data, facilities, and services that result from systems engineering efforts during the development and production of system elements. Displays and defines the product(s) to be developed or produced, and relates the elements of work to be accomplished to each other and to the end product. Provides structure for guiding multi-disciplinary team assignment and cost tracking and control.
Review and Approval	Prepared by: NCSX Systems Engineering SupportManager Concurrences by: Impacted WBS Managers, Cognizant Project Engineer, and Engineering Manager. Approved by: NCSX Project Manager
Format	
Naming Convention	NCSX-WBS-rev#
Storage Location	NCSX Engineering Web Page
NCSX Record Key	DC-1

5.3.9.3 Milestone Dictionary – unique document

Purpose	Provides the definition and completion criteria for each DOE milestone.
Review and Approval	Prepared by: NCSX Systems Engineering SupportManager Approved by: NCSX Project Manager
Format	
Naming Convention	NCSX-MILE-rev#
Storage Location	NCSX Engineering Web Page
NCSX Record Key	DC-1

NCSX DOCUMENT AND RECORDS PLAN

5.3.9.4 Cost and Schedule Documents – many documents

Purpose	These documents provide the chronological development of the cost and schedule baselines
Review and Approval	Prepared by: NCSX Project Control Manager Concurrences by: WBS Managers, Project Engineers, and Engineering Manager Approved by: NCSX Project Manager or DOE (depending on level of information)
Format	Utilize the P3 database
Naming Convention	
Storage Location	Details maintained on the P3 database kept by the Project Control Manager, but summary information posted on the NCSX Engineering Web Page
NCSX Record Key	DC6

5.3.9.4 Milestone Dictionary – unique document

Purpose	Describes the milestone meaning and completion criteria
Review and Approval	Prepared by: NCSX Systems Engineering Support Manager Approved by: NCSX Project Manager
Format	
Naming Convention	NCSX-MS-rev#
Storage Location	NCSX Engineering Web Page
NCSX Record Key	DC-1