SNS-OPM 9.A-1
SNS Configuration Management Policy

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SNS Operations Manager — Date

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SNS-OPM Editor

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1. Purpose

1.1. This procedure describes a policy for establishing and maintaining consistency of a configuration control at the SNS. This procedure applies to ISD, CEMD, BSMD, QCMD, NDAV, RAD and Site Services.

2. Responsibilities

2.1. All ISD, CEMD, BSMD, QCMD, NDAV, RAD and Site Services personnel shall follow this policy and the procedures referenced below.

3. Prerequisites

3.1. None

4. Precautions

4.1. None

5. Configuration Control Policy

1. Introduction

Configuration management (CM) is defined as a process for establishing and maintaining consistency of a configuration item's performance, functional and physical attributes, and its documented configuration with its requirements, design and operation information throughout its lifetime.

This Configuration Management policy shall apply to all SNS systems, structures, components and software (SSCS) of the Spallation Neutron Source (SNS), including the documentation describing these SSCS.

The Configuration Management Program outlined in this Policy and the accompanying Procedures has the following objectives:

- To document and provide full evidence of an SSCS's previous history (when available) and present configuration including the status of compliance of an item to its physical and functional requirements.
- To ensure that staff who operate, use, repair or maintain an SSCS or who have the

potential to affect its configuration use correct, accurate, and current documentation.

- To ensure that new designs for systems, structures, components and software utilize best engineering practice, follow from an approved set of specifications, and are appropriately documented.
- To ensure that changes to existing systems, structures, components and software utilize best engineering practice, follow from an approved design change, and are appropriately documented.
- To ensure that the deployment of a new SSCS or a change to an existing SSCS is authorized.
- To ensure that the impact on performance due to the deployment of a new SSCS or a change to an existing SSCS is fully understood, and that the risks associated with the deployment are considered.

Policy for configuration management in the SNS consists of a multi-layered structure - policy, process, and procedures, with each layer providing an increasing level of detail. This structure provides high-level configuration management requirements, and the detail for how these requirements are to be met. Policy, process, and procedures shall be followed unless specifically designated as optional or discretionary.

Responsibility for Configuration Control of SSCS resides with the System Engineer.

Configuration management control begins with baselining of requirements, the Design Criteria Document (DCD) process, and ends with decommissioning of equipment in the operational SNS.

Configuration management discipline shall be applied to hardware, software, firmware, documentation, test and support equipment, spares, training and manuals. A Configuration Control Committee (CCC) shall review and approve new systems and approve changes to existing SNS systems based on a tailored approach and ensure that documentation is updated to reflect the appropriate Reference Design as is required by the SNS Quality Manual (Ref. 1). Affected documentation may include Drawings, Schematics, Source Code, Training Material, Maintenance Management System Records and other support documentation.

The activities that constitute the configuration management discipline include: planning and management, configuration identification, change management, status accounting, and configuration verification and audit. Groups, staff, contractors and others including the appropriate Safety and Configuration Control Committees, shall assist in the planning, identification, design control, change control, status accounting and audit activities.

2. CM Planning and Management

This activity includes planning, coordinating, and managing all tasks necessary to implement configuration management principles, policies and procedures and to conduct configuration management activities. CM planning and management occurs throughout the full lifecycle of

the facility. Documentation of the planning process and execution of the Configuration Management Procedures formalizes involvement and ensures continuity of configuration management practices at all levels of management.

3. Configuration Identification

Staff shall identify systems, structures, components and software for configuration control based on a tailored approach and shall develop appropriate configuration documentation to define each. This activity includes the development of a system top-down structure that summarizes the total units and configuration documentation for the system or component and the assignment of unique identifiers, which identify units, and groups of units, in a system. Configuration identification and system information shall be maintained and readily available to all SNS Staff. Reference design documentation shall be maintained in the Maintenance Management and Document Control Systems. Where the documentation is in the form of Source Code, the code shall reside in an approved source code repository (see Attachment B) with appropriate tags and comments. This information shall be available to all SNS Staff. Management shall be responsible for providing the necessary facilities and electronic tools to document and monitor Configuration Management information.

The design of a new SSCS and establishment of its reference design configuration shall be carried out in accordance with the "SNS Design Development Procedure" (SNS-OPM 9.A-02).

4. Configuration Change Management

Changes to existing SSCSs shall be carried out in accordance with the OPM 09.A-03 "SNS Design Change Procedure" which is a component of the configuration management policy. The implemented change process shall ensure proposed changes are properly identified, prioritized, documented, coordinated, evaluated, and approved or disapproved. Approved changes shall be properly documented, implemented, verified, and tracked to ensure incorporation in all systems and spares.

Configuration Control Committees (CCCs) with approved charters and Operating Procedures may be established for an Organizational Entity, Division, Area of responsibility etc., at the SNS. These committees shall be the official forum used to establish configuration management reference designs for those Entities to approve/disapprove subsequent changes to their reference design configurations. An example of an entity's Configuration Control Committee is the Accelerator Configuration Control Committee, described in Appendix 1.

The CCC Charters will be approved by the SNS Division Directors and shall be maintained to reflect the addition of new requirements. Membership selection to the CCCs shall be determined by the SNS Division Directors.

5. Configuration Status Accounting

Staff shall develop and maintain configuration information for their systems and components in a systematic and disciplined manner in accordance with this policy and SNS Division Policies, Processes and Procedures. Status accounting information includes developing and maintaining configuration data and the incorporation of data on changes to systems and components. This configuration information must be available to SNS Staff over the lifecycle of the system or component.

6. Configuration Verification and Audit

Staff shall verify that a delivered or modified system or component's design and implementation meets the requirements and that it has been accurately documented before the system or component's configuration becomes the reference design. Verification takes the form of a functional configuration audit and a physical configuration audit. The functional configuration audit provides a systematic comparison of requirements with the results of tests, analyses, or inspections. The physical configuration audit determines whether the system is consistent with its design and reference design documentation. In addition, operational systems must be periodically validated to ensure consistency between the preset configuration and its current reference design documentation. Verification of the incorporation of modifications is a critical function of this activity. The functional configuration audits are the responsibility of the System Engineer and the physical configuration audit is the responsibility of the Operation Engineer. Both audits will take place with periodic independent oversight by Division QA.

7. Commercial Off-The-Shelf, Non-Developmental Items, and Commercially Available Software

After SNS acceptance, Commercial Off-The-Shelf (COTS), Non-Developmental Items (NDI), and Commercially Available Software (CAS) systems shall be maintained under configuration control. This control shall entail the management of a performance specification, and a data package, if available. Control will require the establishment and maintenance of records indicating the version of and documentation for COTS / NDI / CAS in the Maintenance Management and Document Control Systems. When identifying COTS as a proposed solution, Staff shall analyze and consider the impacts of vendor modification of COTS / NDI / CAS systems and on routine vendor maintenance. Appropriate constraints and notification requirements of vendor changes shall be incorporated into purchase agreements to enable management of system changes to the maximum extent possible.

8. Roles and Responsibilities

Roles are identified in the SNS Design Development Procedure (Ref. 2), the SNS Design Change Procedure (Ref. 3) and in the SNS Work Control Procedure (Ref. 4). These roles appear, by Division in the SNS Division Roles Table (Ref. 5). The personnel assigned to these roles are identified in the SNS Operations Administration System and can be viewed in the Notes column of the Call-Down List;

http://snsapp1.sns.ornl.gov/pls/prod/f?p=107:20:2734650161820145::NO

These roles include System Engineer, Lead Engineer and Operation Engineer. The System Engineer, Lead Engineer and Operation Engineer could be in different Divisions, the same Divisions, or in some cases the same person.

The Roles, Responsibilities, Accountabilities, and Authorities (R2A2s) as specified by ORNL SBMS are available in the directory:

\\ORNL\NSCD\Groups\SNS\Management\ConfigurationControl\R2A2s.

9. Procedures for Design Development and Design Change

The procedures for Design Development and Design Change are referenced below in section **1. References.** They include:

- SNS-OPM 9.A-02 SNS Design Development Procedure
- SNS OPM 9.A-03 SNS Design Change Procedure

References

1. SNS Quality Manual SNS-QA-P01 (SNS 102040000-QA0001)
2. SNS-OPM 9.A-2 “SNS Design Development Procedure” http://ns-staff.ornl.gov/operations/SNS-OPM/09-A-02.pdf
3. SNS OPM 9.A-3 “SNS Design Change Procedure Spallation Neutron Source" http://ns-staff.ornl.gov/operations/SNS-OPM/09-A-03.pdf
4. SNS Work Control Procedure, SNS 1080000000-PR0061
5. ORNL SBMS Subject Area: Configuration Management http://sbms.ornl.gov/sbms/sbmsearch/subjarea/configman/sa.cfm

Revision History

- Rev. 01.1 February 10, 2015 – Triennial Review. Removed all signature blocks except SNS Operations Manager on signature page. Updated Division names for NFDD and NSSD to reflect current Division names. Minor editorial changes to format. Added **Revision History**.

Appendix 1 Accelerator Configuration Control Committee

An Accelerator Configuration Control Committee (ACCC) with an approved Charter and Operating Procedures shall be the official forum used to establish configuration management reference designs for the SNS Accelerator Complex and to approve/disapprove subsequent changes to those reference designs. Proposed changes to configuration management reference designs must be submitted to the Accelerator Configuration Control Committee. Details of the ACCC involvement in the Development and Change process are in SNS-OPM 9.A-02 SNS Design Development Procedure and SNS OPM 9.A-03 SNS Design Change Procedure.

Appendix 2 Applicability to the Neutron Scattering Science Division