# **Spallation Neutron Source Design Change Approver List**



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Neutron Science Directorate Asset Management & Engineering

## SPALLATION NEUTRON SOURCE DESIGN CHANGE APPROVER LIST

November 2024

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# APPROVALS

Robert Saethre, Design Authority, Engineering Program Manager	Date	
Brian Weston, Chief Operating Officer, Neutron Sciences Directorate	Date	
Richard Ibberson, Director, Neutron Technologies Division	Date	
Fulvia Pilat, Director, Research Accelerator Division	Date	
Jon Taylor, Director, Neutron Scattering Division	Date	

## SPALLATION NEUTRON SOURCE DESIGN CHANGE APPROVER (DCA) LIST

The Design Change Process at the Spallation Neutron Source (SNS) relies on several designated roles. This document lists the specific individuals who fill Design Change Approver (DCA) role and defines the Role, Responsibilities, Accountabilities and Authorities (R2A2) for the DCA role. Discussion is also provided on how the DCA role relates to Design Authority (DA), Design Engineer, and System Engineer roles.

#### **Design Change Approver**

The DCA ensures design changes are:

- 1. Adequately reviewed,
- 2. Formally approved, and
- 3. Properly documented

before fabrication, procurement, or making physical changes in the field.

Each DCA is responsible for design control, as final approver of the design package, and ultimate technical adequacy of the engineering design process for their respective organization, facility, and/or process. The DCA assures technical adequacy by ensuring adequate reviews and approvals by design engineers and other subject matter experts have been completed. The DCA ensures that the design change is aligned with facility priorities and is properly documented. These responsibilities are applicable whether the process is conducted fully in-house, partially contracted to outside organizations, or fully contracted to outside organizations.

The DCAs are assigned in Tables 1, 2, and 3 for each technical area for the SNS. The Roles, Responsibilities, Accountabilities, and Authorities (R2A2) for the DCA role are listed in Appendix A. Appendix B provides answers to Frequently asked questions (FAQ) and guidance for the role.

#### **SNS Design Authority**

The SNS DA is assigned by the UT-Battelle Chief Engineer. See the SBMS <u>Engineering Design</u> subject area. A Design Authority approves the design of new facilities and modifications to and within existing facilities. A list of current Design Authorities is maintained in <u>SBMS ORNL Design Authority Program</u> <u>Overview</u>. Each research/mission organization is responsible for maintaining Design Authority for their own dedicated mission equipment or for maintaining and operating such equipment in accordance with applicable requirements including the respective facility use agreements (or facility safety authorization basis).

Design Authority Representatives for SNS Site Services, including architectural, civil, structural, piping, HVAC, electrical, and fire protection, are provided in the <u>SBMS ORNL Design Authority Program</u> <u>Overview</u>.

The SNS Design Engineers are responsible within their areas of expertise for identifying and applying applicable design requirements and ensuring that design output documents appropriately and accurately reflect the design basis.

The SNS Document Control Center (DCC) is responsible for reviewing the design change notice (DCN) for completeness, ensuring accurate metadata, and verifying the DCA has approved the DCN. The DCC shall apply a stamp indicating the released state and date of release to all drawings listed on the DCN and published in the document management system.

All active and passive credited engineered controls (CEC) are configuration controlled. CECs listed in the Spallation Neutron Source Accelerator Safety Envelope (ASE), <u>102030103-ES0016</u>. The Spallation Neutron Source Credited Engineered Controls System Engineers List, <u>102030100-ES0009</u>, provides a list of individuals responsible for SNS CECs.

Table 1. Research Accelerator Division Design Change Approvers for technical areas

# TECHNICAL AREA ORGANIZATIONAL ROLE INDIVIDUAL

Accelerator Mechanical Engineering, Beam Instrumentation	Accelerator Science and Technology Section	Dave Willis
Cryogenics, Front End Systems, Electrical Power Conversion, RF Systems, Superconducting RF	Accelerator Systems Section	Sang-Ho Kim
Control Systems, Conventional Facilities and Vacuum, Cryogenics and Target, Protection Systems	Control Systems Section	Karen White
Cooling Systems, Target Systems, Vacuum Systems	Target and Mechanical Systems Section	Michael Dayton

Table 2. Neutron Technologies Division delegated Design Change Approvers for technical areas

TECHNICAL AREA	ORGANIZATIONAL ROLE	INDIVIDUAL
Neutron Technologies	Neutron Technologies Engineering Section	Mark Lyttle
Instrument Engineering	Neutron Technologies Engineering, Instrument Engineering Group	Amy Jones
Source	Neutron Technologies Engineering, Source Development and Engineering Group	Drew Winder
Data Acquisition	Neutron Instrument Technologies	Richard Ibberson
Site Services	Neutron Technologies Engineering, Site Services Section	Robert Eason

Table 3. Neutron Scattering Division delegated Design Change Approvers for technical areas.

TECHNICAL AREA	ORGANIZATIONAL ROLE	INDIVIDUAL
Sample Environment and User Labs	Neutron Scattering Division, Sample Environment and User Labs Section	Gary Lynn
SNS Beamline Operations	Neutron Scattering Division, SNS Beamline Operations Section	Kevin Hamby
HFIR Beamline Operations	Neutron Scattering Division, HFIR Beamline Operations Section	John Carruth
HFIR Fab Shop	Limited to user support fabrication scope	Jon Smith
SNS Fab Shop	Limited to user support fabrication scope	Robert Marrs

## DESIGN CHANGE APPROVER – ROLE, RESPONSIBILITY, ACCOUNTABILITY AND AUTHORITY (R2A2)

## Role:

Design Change Approvers are the delegated person to ensure compliance with the design change processes and to act as approvers within SNS.

## **Responsibility:**

The Design Change Approvers (DCAs) are responsible for ensuring design changes are:

- 1. Adequately reviewed,
- 2. Formally approved, and
- 3. Properly documented

before fabrication, procurement, or making physical changes in the field.

Each SNS Design Change Approver (DCA) is responsible for design control, as final approver of the design package, and ultimate technical adequacy of the engineering design process for their respective organization, facility, and/or process. The DCA assures technical adequacy by ensuring adequate reviews and approvals by design engineers and other subject matter experts have been completed. The DCA ensures that the design change is aligned with facility priorities and is properly documented. These responsibilities are applicable whether the process is conducted fully in-house, partially contracted to outside organizations.

The DCA is responsible for assuring that applicable design requirements are identified and applied and that design output documents appropriately and accurately reflect the design basis. Each DCA is responsible for ensuring adherence to the design control process by implementing their division's process(es) and by using, as guidance, the NScD Policy on Configuration Management, <u>800000000-CMT10002</u> and the Engineering Design Change Process in the Neutron Sciences Directorate, <u>NScD-ENG-PR-001</u>. These responsibilities are applicable whether the process is conducted fully in-house, partially contracted to outside organizations, or fully contracted to outside organizations.

#### Accountability:

The DCA is accountable to line management (division director and section head, as applicable), the NScD COO, and the SNS Design Authority.

#### Authority:

The DCA has the authority to approve design change notices (DCN).

The DCA does not approve individual drawings. They approve design packages consisting of but not limited to drawings, reviews, calculations, etc. by their signature on the DCN.

Unless the DCA has approved the DCN, associated drawing revisions may not be used for fabrication, procurement, or field work. Exceptions may be granted only by the DCA in writing with a documented basis for why the exception is warranted.

#### **APPENDIX A – FREQUENTLY ASKED QUESTIONS**

#### What is a DCA?

The DCA ensures the Design Control Process within configuration management is followed. They ensure all stakeholders are involved from the initial problem statement through to the completion of the installation and turn over to operations. The DCA should be aware of all design effort within their Sections/Groups and ensure communication with Sections/Groups that may be impacted.

What is a change?

Generally, anything that changes the configuration of a facility, system, subsystem, component, or part. The intent of the Design Change process is to capture the current configuration so staff in the future know why and what was changed from the approved configuration.

Is the Second Target Station Project a change? Yes, although it is new and has a formal project following the DOE 413B process it is a change to the SNS facility. This project will consist of many design changes that follow the design change process to establish the baseline configuration of the STS addition to the SNS facility.

Preventive maintenance or corrective maintenance with identical or "like-for-like" replacements are **NOT** considered configuration changes.

Configuration Management requirements apply when efforts are changing, or have the potential of changing the form, fit, or function of the system or equipment. The configuration of a system or piece of equipment is considered a change if the form, fit, or function is altered by the work being performed. Form, fit, and function are defined as follows:

- Form refers to the physical characteristics of a part or piece of equipment such as external dimensions, size, weight, or appearance.
- Fit refers to the capability of the part or equipment to properly interface within the existing system or larger assembly.
- Function refers to the capability of the part or equipment to perform its required purpose.



Examples of a change:

- New assembly, part, or system potentially to be used in NScD for the mission of the HFIR and/or SNS facilities. A new item is a change to the facility. The Design Change process is the method of developing, reviewing, documenting, and approving a new design.
- Replacement or upgrade of a part, assembly, or system with anything other than the approved (documented and released) item. These may be a simple design change to update the documentation to indicate the change or it may be a complete replacement of a system.
- Temporary changes that are intended to be returned to the approved configuration after a certain amount time.
- Field Engineering Changes (FEC) are used during maintenance. Uses are when there isn't an existing drawing or one that isn't easy to modify, a change to one position that is one of many and changes to the general drawings or document doesn't make sense.

- Example: a valve is replaced during maintenance and the existing valve isn't available. You wouldn't revise all valves to this configuration nor revise the drawings. The FEC tag would be applied and documented in Enterprise Asset Management (EAM) for that position.
- Documentation Changes that capture the installed configuration or errors in the documentation that doesn't change the Form, Fit, or Function
- Upgrades from the approved configuration to a new configuration.
- Removal or decommissioning.
- Capturing as-built configuration where no drawings or documentation exist or are incomplete. Generally, you should create the drawings and documentation when making a physical change in a facility. This will help future staff understand the "what, why, and how" the change occurred.

What is a Design Change Request (DCR)?

A DCR is the approval to expend time and resources on a proposal for new items or to address a problem. It is the initial state of the Design Change effort. A DCR may need some preliminary work to provide enough information for management to make an informed decision. The preliminary work should not exceed a week or two.

#### What should a DCA look for in a DCR?

The DCR should have a clear statement of the proposal for new items or problem. Why is this needed? What will happen if the proposal is rejected or if the problem is not addressed? What is the estimated effort required? Does the effort include other groups outside the design owner's organization or is it entirely within their org?

#### Who owns the DCR?

The DCR should name the Responsible Engineer, who will own the change throughout the process. A change that requires support from multiple groups should be identified to ensure all stakeholders are involved in the design effort at the appropriate time.

#### What is a Design Change Notice (DCN)?

A DCN is the releasing document that formally approves a design package. It ties all affected items together for cross reference and serves as the justification and documentation for the entire effort and change. All affected items should have the DCN noted within the document. Drawings must have a DCN number and description noted in the revision control block. This ties the whole design package together and is the justification, history, and approval for the change. Referencing the DCN on drawings, documents, and records maintains revision control. An initial release or revision of an affected item is not approved without the DCN referenced on the item.

A DCN consists of a statement of the initial problem, the description of the change, a comprehensive list of all affected items (drawings, instructions, plans, design review presentations/ reports/ action items/ records, ...), approvers (DCA, Engineer, QA, Procurement, ...). The DCN is Record and must be retained per Records Management. See the SBMS <a href="https://document/Record.point/Record.point/">Document/Record Decision Tool</a>

What does it mean when a DCA signs a DCN?

The DCA is certifying that the design change followed the process and documents approvals of deviations to the process.

The DCA is approving the design package to be released for the next state. The next state may be preliminary design drawings for procurement of prototypes for design validation, final design drawings for construction or fabrication, installation plans or guides or manuals for operations. The DCC will verify the DCA has signed the DCN and apply a stamp to all drawings listed on the DCN.

## **APPENDIX B – DESIGN CHANGE APPROVER (DCA) GUIDANCE**

Below are questions the DCA should consider when approving a Design Change Notice.

- 1. Is this worth pursuing further?
- Have all stakeholders been involved? (Controls, QA, Procurement, Operations, Installation, Compliance, F&O, Site Services, Safety, Work Control, Accelerator Physics, Scientific Associates, Management, ...)
- 3. Is this ready to move to procurement?
- 4. Has the proper engineering design process been followed? NScD- ENG-PR001, OPM 9A.3, NTD-PR0001, SEP-0200, ...
  - a. Is there a DCR?
  - b. Is there a DCN?
  - c. Does the DCN have all affected items listed?
  - d. Are the affected items in the final state? (signatures, complete list of affect items, uploaded to the DCC, ...)
  - e. Has the Change been assigned a Grade? Is it appropriate?
  - f. Has a USID been performed?
  - g. Is this software? Is there a Software Quality Assurance (SQA) Plan?
- 5. Drawings and Documentation
  - a. Have the requirements been documented?
  - b. Have the drawings been completed?
  - c. Have the right people reviewed the drawings/plan/instructions?
  - d. Are procurement plans needed?
  - e. Are installation plans or instructions needed?
  - f. Are they uploaded to DCC? Are they published and revision controlled?
  - g. Are they on the DCN as affected items?
  - h. Are there any work instructions required?
- 6. Has the design been tested and validated? Where is the evidence stored?
- 7. Were design simulations, calculations, or modeling performed?
  - a. Are these documented and saved as evidence for the design validation?
- 8. Does the design meet the requirements? Does it solve the initial problem?
- 9. Does this DCN require additional DCNs from other groups prior to installation and operations? What are the states of those?
- 10. Have there been design reviews? Conceptual, Preliminary, Final, Calculation, Drawing, Simulation?
- 11. Has anyone else technically checked the work? (More than just the engineer)

# **REVISION LOG**

0	Initial Issue
1	Added SNS and HFIR Limited to user support fabrication scope Jon Smith and Robert Marrs
	Added words to describe DCC's role and released state stamps.
2	Replaced Georg Ehlers with Richard Ibberson for Data Acquisition in NTD
2	Replaced Georg Emers with Renard recersion for Data Requisition in 101D.