LOKI INSTRUMENT SYSTEM ACCEPTANCE REVIEW REPORT

	Name	Role/Title
Owner	Mikhail Feygenson	Head of Diffraction & Imaging Division (chair)
Reviewer	Helen Boyer Mattias Skafar Giuseppe Aprigliano Sofie Ossowski Robert Connatser Per Roos	OHS Representative Quality Representative NSS Engineering Representative NSS Subproject Representative Head of NSS Project Division RP Representative
Approver	Giovanna Fragneto	Science Director

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1. SCOPE

This report is intended to provide a consistent framework for the conduct and reporting of System Acceptance Reviews (SAR) within the NSS sub-project.

It is an annex of the NSS GUIDELINE FOR INSTRUMENT CONSTRUCTION PROJECTS - INTEGRATED TESTING (COLD COMMISSIONING), SYSTEM ACCEPTANCE REVIEW (TOLLGATE 5), AND INSTRUMENT SAFETY READINESS REVIEW ESS-0177447

This document is applicable to system acceptance reviews conducted within the NSS sub-project.

Note! that the content of the report is mandatory. Do not remove any checks, use the N/A instead. It is allowed expand it as needed.

This report concerns the LoKI System of Interest defined by the CIDL OS-0000111

Project/System(s): LoKI	**LBS tag(s) of Area(s) affected:** =ESS.NSS.H01.LOKI	**SAR Id:**
SAR Chairperson: Mikhail Feygenson	**SAR Participants:** Andrew Jackson Clara Ines Lopez Hannah Burrall **Committee members:** Helen Boyer Mattias Skafar Giuseppe Aprigliano Sofie Ossowski Per Roos Robert Connatser	**Date:** 19.09.2025

2. CONTRIBUTORS

The review committee shall comprise:

- *Committee chair*
- *NSS Engineering representative*
- *NSS subproject representative*
- *Quality representative*
- *OHS representative*
- *A RP representative.*

3. ISSUING ORGANISATION

Science Directorate of the European Spallation Source, ERIC.

4. INTRODUCTION

The charge for the committee is:

1. Validate that all system components, as defined by the Instrument FBS, are present and installed. This ensures that all project scopes have been delivered.
2. Validate that all system documentation has been delivered and is in CHESS.
3. Validate that all technical documentation has been delivered, stored in CHESS, and is appropriately linked to the FBS structure.
4. Review the integrated cold commissioning report and ensure that it represents a sufficient test of the instrument systems, showing that all requirements that are testable during cold commissioning have been addressed.
5. Confirm that the performed testing has verified performance against the requirements that are testable during the cold commissioning.
6. Review the operating processes of the instrument and Hot Commissioning plan.
7. Review the list of non-conformities and their actual or proposed resolution and determine if they are appropriate.
8. Prepare a review report

5. CONTEXT (ASSUMPTIONS)

Before commencing review the following things are assumed to be true

- All SAR-Pre-requisites as per *NSS Guideline for Instrument Construction Projects - Integrated Testing (Cold Commissioning), System Acceptance Review (Tollgate 5), and Instrument Safety Readiness Review* (ESS-0177447) [1] have been fulfilled
- Integrated Testing has been completed, test results have been documented,
- Punch item lists and non-conformities and their resolutions documented.

6. REVIEW CHECKLIST

The review checklist items are marked as to whether the question can be answered at SAR or iSRR in the case where these are split for a given instrument. In the case of a split review, the SAR report release shall have the iSRR items marked as NA.

6.1. System Status (SAR)

Evaluation of the system completeness, technical maturity and status.

6.1.1.System status

ID	Review	Description	Yes	No	NA	Comment
1	SAR	Is the baseline scope of physical and non-physical deliverables documented and agreed by both parties?	☒	☐	☐	
2	SAR	With respect to baseline, are all changes of scope documented in change requests and approved?	☒	☐	☐	
3	SAR	With respect to baseline, are all deferrals of scope documented in deferral requests and approved?	☒	☐	☐	*Beam Monitors deferral approved. CHESS* ESS-5808045
4	SAR	Has the totality of agreed scope not subject to deferral been delivered to site and or cold commissioned?	☒	☐	☐	*Discrepancy for Sample Environment for LOKI. The cell holder and rotating system was ready for Cold Commissioning, as agreed in the CR13.09, but remaining Sample Env., (for example NURF) should according to NSS CR13.09 be ready for HC, but will now be ready for SOUP. Discrepancy noted and accepted.*
5	SAR	Have required documents been received and uploaded into the appropriate ESS systems?	☒	☐	☐	

6.1.2.Deviations and changes

Evaluation of quality related deviations or changes from specification,

ID	Review	Description	Yes	No	NA	Comment
6	SAR	For all outstanding quality related NCRs are treatments agreed and documented?	☒	☐	☐	
7	SAR	Have all systems demonstrated compliance with ESS strategy for CE marking?	☐	☒	☐	*Discussions with QD ongoing. CE-marking of heavy shutter is not done*
8	iSRR	Have all incident investigations been completed with their decisions implemented?	☐	☐	☒	*< In case of No: detail recommendations and/or requirements in section 7 and reference here >*
9	SAR	Is the equipment's overall quality assessed as sufficient to conclude the cold commissioning and to commence hot commissioning?	☐	☒	☐	*Detector failure is the main concern, see section 7.2*

6.1.3.Status following cold commissioning (tests without spallation neutrons)

Evaluation of functionality and performance, related deviations or changes from specification.

ID	Review	Description	Yes	No	NA	Comment
10	SAR	Have all cold commissioning activities, as defined in the V&V plan, been successfully completed?	☐	☒	☐	*See section 7.2*
11	SAR	Have deferred tests been documented, included in hot-commissioning plans and released?	☒	☐	☐	
12	SAR	Have all performance related issues from testing been resolved or have deferred treatment documented and agreed?	☐	☒	☐	*See section 7.2*

13	SAR	Is the equipment's overall functionality and performance assessed as sufficient to conclude the cold commissioning and to commence hot commissioning?	☐	☒	☐	*See section 7.2*

6.2. Activity Preparation

Evaluation of teams and support organisations preparedness to conduct the next phase of activities.

6.2.1.Planning

Activities

ID	Review	Description	Yes	No	N/A	Comment
14	SAR	Have a hot commissioning plan(s), compliant with the V&V plan, been released?	☒	☐	☐	
15	SAR	Do plans include identified deferred tests, treatments and appropriate control points?	☒	☐	☐	
16	SAR	Have resources and equipment allocations require to support the plan been identified and agreed with stakeholders?	☒	☐	☐	
17	iSRR	Are the released versions of operation manuals, sufficient to safely conduct hot-commissioning activities?	☐	☐	☒	*< If No: detail recommendations and/or requirements in section 7 and reference here >*
18	SAR	Have plans to resolve outstanding pre-start items been released.	☒	☐	☐	*The plan for the detector recovery from the failure was released after the meeting*

6.2.2.Organization

Organizational preparedness

ID	Review	Description	Yes	No	N/A	Comment
19	SAR	Has a commissioning team been established with roles and responsibilities assigned?	☒	☐	☐	
20	iSRR	Have member training and access needs been identified and fulfilled?	☐	☐	☒	*< If No: detail recommendations and/or requirements in section 7 and reference here >*
21	iSRR	Have requests for out of hours work and on-call support been made and provisions established?	☐	☐	☒	*< If No: detail recommendations and/or requirements in section 7 and reference here >*

6.3. Occupational Health & Safety and Radiation Protection

6.3.1. Conventional safety

ID	Review	Description	Yes	No	N/A	Comment
22	iSRR	Has required area-based risk assessment for worker conventional safety, be conducted and released?	☐	☐	☒	*< If No: detail recommendations and/or requirements in section 7 and reference here >*
23	iSRR	Have required task-based risk assessment for hot commissioning activities been conducted and released?	☐	☐	☒	*< If No: detail recommendations and/or requirements in section 7 and reference here >*
24	iSRR	Have all safety measures identified been implemented or planned?	☐	☐	☒	*< If No: detail recommendations and/or requirements in section 7 and reference here >*
25	iSRR	Has a security assessment for these systems and activities been conducted, and the measures implemented?	☐	☐	☒	*< If No: detail recommendations and/or requirements in section 7 and reference here >*

6.3.2.Radiological safety

ID	Review	Description	Yes	No	NA	Comment
26	iSRR	Will activities require human presence in radiologically Supervised or Controlled work areas?	☐	☐	☒	*< If No: detail recommendations and/or requirements in section 7 and reference here >*
27	iSRR	Is hands on work on potentially activated components planned or a risk?	☐	☐	☒	*< If No: detail recommendations and/or requirements in section 7 and reference here >*
28	iSRR	Where applicable, have provisions for the handling and/or storage of active components been made?	☐	☐	☒	*< If No: detail recommendations and/or requirements in section 7 and reference here >*
29	iSRR	Has a radiological safety analysis been performed and released?	☐	☐	☒	*< If No: detail recommendations and/or requirements in section 7 and reference here >*
30	iSRR	Have protective measures and controls been incorporated into planned activities?	☐	☐	☒	*< If No: detail recommendations and/or requirements in section 7 and reference here >*
31	iSRR	Are pre/post start activities requiring RP support identified, planned and agreed?	☐	☐	☒	*< If No: detail recommendations and/or requirements in section 7 and reference here >*

6.4. Quality control aspects

6.4.1. Pressurized Devices

Have regulatory requirements for operating pressurized systems according to AFS 2017:3 **Error! Reference source not found.** been addressed?

ID	Review	Description	Yes	No	N/A	Comment
32	SAR	Has a risk assessment for the planned activities been performed, using template [ref], and released?	☐	☒	☐	*It will be done by iSRR*
	Questions below only applies inspection class MQC4A and MQC4B					

33	SAR	Are pressurised equipment registered as an asset in EAM?	☐	☐	☒	*< If No: detail recommendations and/or requirements in section 7 and reference here >*
34	SAR	Are work instructions for pressurized systems available and released?	☐	☐	☒	*< If No: detail recommendations and/or requirements in section 7 and reference here >*
35	SAR	Are continuous supervision routines (FLT) documented and available at the workplace?	☐	☐	☒	*< If No: detail recommendations and/or requirements in section 7 and reference here >*
36	SAR	Where applicable, have "first inspections" been performed by accredited inspection body (e.g. DEKRA)?	☐	☐	☒	*< If No: detail recommendations and/or requirements in section 7 and reference here >*

6.4.2. Electrical devices

Have regulatory requirements for operating energized systems been sufficiently addressed?

ID	Review	Description	Yes	No	N/A	Comment
37	SAR	Where applicable, have Energisations Permits been obtained for systems under test?	☒	☐	☐	
38	SAR	For electrical systems have Preventative Maintenance Schedules been implemented in EAM?	☒	☐	☐	

6.4.3.Status of systems with respect to ATEX regulations

ID	Review	Description	Yes	No	NA	Comment
39	iSRR	Has system been assessed for the presence of flammable substances required for operation?	☐	☐	☒	*< If No: detail recommendations and/or requirements in section 7 and reference here >*
40	iSRR	If case of ATEX classification, have zones been defined and requirements identified?	☐	☐	☒	*< If No: detail recommendations and/or requirements in section 7 and reference here >*

41	iSRR	Are systems subject to ATEX regulations, compliant and have documentation released?	☐	☐	☒	*< If No: detail recommendations and/or requirements in section 7 and reference here >*

6.4.4. Maintenance preparations

Have required maintenance/periodic supervision been sufficiently planned and prepared?

ID	Review	Description	Yes	No	N/A	Comment
42	SAR	Are the released versions of maintenance manuals, sufficient to safely conduct the next phase of activities?	☐	☒	☐	*Update the manual for replacing the det module (action item for TG6)*
43	SAR	For all SSCI2S have operations and maintenance manuals been released?	☐	☒	☐	*Shielding bunker to cave manual to be delivered by ISIS (action item for iSRR)*

6.5. Local Control Room (Instrument Control Hutch) Status

Have operations related to the local control room (instrument control hutch) been sufficiently prepared?

ID	Review	Description	Yes	No	N/A	Comment
44	iSRR	Have system Operational Limits and Conditions, appropriate to hot commissioning been documented and released?	☐	☐	☒	*< If No: detail recommendations and/or requirements in section 7 and reference here >*
45	iSRR	Have instructions sufficient to operate the system and conduct commissioning activities, been released?	☐	☐	☒	*< If No: detail recommendations and/or requirements in section 7 and reference here >*
46	iSRR	Where SSCI2S are present, have appropriate operating instructions been released?	☐	☐	☒	*< If No: detail recommendations and/or requirements in section 7 and reference here >*
47	iSRR	Are provisions for the safe and secure conduct of remote communication or				*< If No: detail recommendations and/or requirements in section 7 and reference here >*

		control documented and released?				

Have operations related to the Main control room been sufficiently prepared?

ID	Review	Description	Yes	No	N/A	Comment
48	iSRR	Have communication interfaces and protocols between instrument and MCR (eg alarms and mode changes) been documented and released.	☐	☐	☒	*< If No: detail recommendations and/or requirements in section 7 and reference here >*
49	iSRR	Have protocols for the MCR control of system important to commissioning (eg PSS and LSS), been documented and released?	☐	☐	☒	*< If No: detail recommendations and/or requirements in section 7 and reference here >*
50	iSRR	Have protocols the monitoring of instrument systems by the MCR been documented and released?	☐	☐	☒	*< If No: detail recommendations and/or requirements in section 7 and reference here >*
51	iSRR	Has the MCR participation in commissioning activities been defined and communicated?	☐	☐	☒	< In case of no: pre or post start item?>

6.6. Site status

Is the relevant site area ready for commissioning?

ID	Review	Description	Yes	No	N/A	Comment
52	SAR	Are all building and infrastructure support functions required by activities identified and confirmed?	☒	☐	☐	
53	SAR	Are access control measures, to the affected area and relevant building, identified and planned?	☒	☐	☐	

6.7. Other

Under this section other subjects or comments can be noted.

ID	Review	Description	Yes	No	N/A	Comment
54	....	.....	☐	☐	☐	

7. REVIEW OBSERVATIONS

7.1. General Observations

Overall, the maturity of the project and readiness for the hot commissioning were clearly demonstrated. Most of the integrated tests were successful, the reduction data pipeline exists and is ready to be used, and the sample environment is in an adequate state. The hot commissioning plan is solid and it covers every aspect of SANS instrument characteristics with a neutron beam. Several hardware/software issues need to be addressed (Section 7.2). The list of required actions before accepting SAR is comprehensive, with the biggest issue being the failure of detector module 6 (Section 7.3).

The NIT list was created by the time of the meeting on 19.09.2025. Any new NITs created after that date will be reflected in the final release/acceptance of this SAR report.

7.2. Recommendations

The list of recommendations is mostly related to the controls, ECDC and NICOS. They are not critical to success; however, they have to be taken seriously and the progress has to be traced. Without those items in place, the long-term operational aspects of the LoKI instrument will be compromised.

ID	NIT	Required Action	Completion Criteria	Completion Confirmed (Yes/No/ Cancelled)
1	NIT-175	Change FOC Chopper Device Name in NICOS	Updated NICOS interface by TG6/ ORR	
2	NIT-176	Resolver angle offset for NICOS visualization	Updated NICOS interface by TG6/ ORR	
3	NIT-177	Update chopper window selection for LoKI	Updated NICOS interface by TG6/ ORR	
4	NIT-180	Implement individual levitation commands for chopper disk in NICOS	Updated NICOS interface by TG6/ ORR	
5	NIT-181	MAGIO Julabo integration into the LoKI instrument network	Report released in chess by TG6/ ORR	

6	NIT-182	Integration of SEE into the LoKI instrument network	Report released in chess by TG6/ ORR	
7	NIT-184	Missing "Jogging" Functionality in NICOS for Rotating Sample Holder Operations	Updated NICOS interface by TG6/ ORR	
8	NIT-186	Rename Temperature PVs from "s_temp_#" to "temp_#"	Updated NICOS interface by TG6/ ORR	
9	NIT-188	Define Fast Shutter Naming Standards and State Assignment Level	Updated NICOS interface by TG6/ ORR	
10	NIT-189	NICOS Speed Parameter Display Not Updating When Auto-Limited	Updated NICOS interface by TG6/ ORR	
11	NIT-194	Check and Calibrate Detector Positions Relative to Sample	V&V report updated by TG6/ ORR	
12	NIT-203	Implement NICOS-defined beam monitor/beamstop center position	Updated NICOS interface by TG6/ ORR	
13	NIT-204	Ensure interlock error messages are written to NICOS output	Updated NICOS interface by TG6/ ORR	
14	NIT-205	Fix filewriting status display	Updated NICOS interface by TG6/ ORR	
15	NIT-207	Adjust Default Motor Speed to Maximum Value	Updated NICOS interface by TG6/ ORR	
16	NIT-208	Macro for Slit Height/Width	Scipp script released by TG6/ ORR	
17	NIT-209	Develop detector distance transform	User manual updated TG6/ ORR	
18	NIT-216	Create Device for Sample Stack in NICOS	Updated NICOS interface by TG6/ ORR	
19	NIT-220	Verification of sample mapping metadata incomplete	Report from DMSC by TG6/ ORR	
20	NIT-221	Sample Changer Config & Position in NeXus File	User manual updated TG6/ ORR	
21	NIT-222	Refurbish SKID	SAT report released in chess by TG6/ ORR	
22	NIT-225	Troubleshooting Module 9 - Bank 0 Power Supply Issues	SAT released in chess TG6/ ORR	
23	NIT-312	Mouse pointer offset on NICOS detector image plot	Updated NICOS interface by TG6/ ORR	
24	NIT-314	Input offset value for centre of moderated neutron pulse	Updated NICOS interface by TG6/ ORR	

25	NIT-315	Live detector/monitor counts should start upon run/filewriter start	TG6/ ORR	
26	NIT-316	Live count rate display should be visible in NICOS	Updated NICOS interface by TG6/ ORR	
27	NIT-317	Scripts/tools to confirm all EFU events are recorded to file	Scipp script released by TG6/ ORR	
28	NIT-318	justbinit device and plots randomly stopping	Updated NICOS interface by TG6/ ORR	
29	NIT-333	Update LOKI MCC2 ePlan	Updated by TG6/ ORR	
30	NIT-335	LOKI MCC3: As-built ePlan drawings	Updated by TG6/ ORR	
31	NIT-336	LOKI MCC4: As-built ePlan drawings	Updated by TG6/ ORR	
32	NIT-340	LOKI MCC5: Detector motion systems cabling management	Updated by TG6/ ORR	
33	NIT-344	Set precision parameter in twincat for LoKI Slits	Updated by TG6/ ORR	
34	NIT-348	Test Detector Motion/HV interlock	Updated by TG6/ ORR	

7.3. Requirements

LoKI team and NSS groups have demonstrated a good level of readiness for the hot commissioning; however, there is still a number of outstanding issues listed below

ID	NIT	Required Action	Completion Criteria	Completion Confirmed (Yes/No/ Cancelled)
1	NIT-41	Solve Punch list for LoKI Heavy shutter	SAT released by TG5/ SAR	
2	NIT-52	Beam Monitors (M0, M1) electrical compliance	Report released TG5/ SAR	
3	NIT-84	Loki shutter NCR 10482 Absence of CE-marking on equipment	NCR resolved byTG5/ SAR	
4	NIT-178	Limit Chopper Set Speed	Updated NICOS interface by TG5/ SAR	
5	NIT-179	Display chopper alarm, error, or warning messages in NICOS	Updated NICOS interface by TG5/ SAR	
6	NIT-183	Rotation Speed Configuration in NICOS (RPM vs. Motor deg/sec)	Updated NICOS interface by TG5/ SAR	

7	NIT-185	Missing Error Message Mapping for Experiment Shutter in EPICS and NICOS	Updated NICOS interface by SRR	
8	NIT-187	Clarify the gate valve interlock status PV.	PSS manual released by SRR	
9	NIT-195	Default Beamstop Arm Limits to Match MCA/TwinCAT	Report released by TG5/ SAR	
10	NIT-196	Implement NICOS Beam Center Position for beamstop_y motor	Updated NICOS interface by TG5/ SAR	
11	NIT-197	Ensure Automatic Sync of beamstop_x User and Absolute Limits	Updated NICOS interface by TG5/ SAR	
12	NIT-198	NICOS user limits for beamstop_x should NOT be configurable	Updated NICOS interface by TG5/ SAR	
13	NIT-199	Add "park" position for beamstop_x at 1.0	Updated NICOS interface by TG5/ SAR	
14	NIT-200	Clarify beamstop_x status	Updated NICOS interface by TG5/ SAR	
15	NIT-201	NICOS routine for selecting and positioning the beamstop arm	Updated NICOS interface by TG5/ SAR	
16	NIT-202	Update beamstop_selector park position logic	Updated NICOS interface by TG5/ SAR	
17	NIT-214	Missing Error Message Mapping for Window Guard in EPICS and NICOS	Updated NICOS interface by SRR	
18	NIT-215	Replace encoder reading scale on sample stack Z-axis	Updated NICOS interface by TG5/ SAR	
19	NIT-217	Missing Error Message Mapping for Safety Shutter in EPICS and NICOS	Updated NICOS interface by SRR	
20	NIT-218	Resolve inconsistent display of error/warning messages in NICOS	Updated NICOS interface by TG5/ SAR	
21	NIT-219	Resolve error with sample_stack_positioner	Updated NICOS interface by TG5/ SAR	
22	NIT-309	LOKI Detector Module 6 Bank 0 failure	Plan for recovery released by TG5/ SAR	
23	NIT-311	LOKI Operation and control manuals	SRR	
24	NIT-361	LOKI EPL - Issue in Beam Validation System	Updated by TG5/ SAR	
25	NIT-362	LOKI EPL - Issue in Chopper system	Updated by TG5/ SAR	

26	NIT-363	LOKI EPL - Issue in Sample Exposure system	Updated by TG5/ SAR	
27	NIT-364	LOKI EPL - Issues in Supply Systems	Updated by TG5/ SAR	
28	NIT-365	LOKI EPL - Issues in Scattering Characterization system	Updated by TG5/ SAR	
29	NIT-366	LOKI EPL - Issues in Vacuum system	Updated by TG5/ SAR	
30	NIT-367	LOKI EPL - Issues in Instrument Automation Control System	Updated by TG5/ SAR	

8. CONCLUSIONS

Based upon the assessment of the information presented, discussion and outcomes during the review, committee judgement is the following:

8.1. System Acceptance Review Conclusions

The system is recommended for acceptance	☐
The system is recommended for acceptance with required actions.	☐
The system is not recommended for acceptance	☒
Comments	
The detector failure was understood and corrected actions are agreed (https://confluence.ess.eu/display/loki/2025-09-30+Plan+for+Addressing+M6+Failure), however there is a number of outstanding issues mostly related to NICOS that have to be resolved before I can recommend the approval. The follow-up meeting with the team will be scheduled to track the progress.	

8.1. Instrument Safety Readiness Review Conclusions

The system is recommended for acceptance and issuance of a System Permit	☐
The system is recommended for acceptance and issuance of a System Permit with required actions.	☐
The system is not recommended for acceptance and issuance of a System Permit	☐
Comments	
_____ _____ _____	

9. ACTIONS

< The reviewed project is required to provide written response to any Post SAR actions listed below. Note that recommendations made by representatives from, Operation safety, Engineering lead or Quality Division must be approved in person>

9.1. Recommendations

Things that should be done

9.1.1. To be addressed before iSRR

<req_id: ><text>

9.1.2. To be addressed before Facility SAR

<req_id: ><text>

9.1.3. To be addressed during Commissioning or at later date

<req_id: ><text including expire date/event for implementation>

9.2. Required post-SAR actions

Things that shall/must be done

9.2.1. To be addressed before iSRR

<req_id: ><text>

9.2.2. To be addressed before Facility SAR

<req_id: ><text>

9.2.3. To be addressed during Commissioning or at later date

<req_id: ><text including expire date/event for implementation>

9.3. Required post-iSRR actions

Things that shall/must be done

9.3.1. To be addressed before Facility SRR

<req_id: ><text>

9.3.2. To be addressed before system permit

<re_id: ><text>

9.3.3. To be addressed before Beam Authorization

<req_id: ><text>

9.3.4. To be addressed during Commissioning or at later date

<req_id: ><text including expire date/event for implementation>

10. GLOSSARY

Term	Definition
SANS	Small-angle neutron scattering
CIDL	Configuration Item Documentation List
CC	Cold Commissioning
HC	Hot Commissioning (with neutrons)
V&V	Verification and Validation Plan
IHA	Instrument Hazard Analysis
RAMS	Risk Assessment and Method Statements
NIT	NSS Issue Tracker
iSRR	Instrument Safety Readiness Review
BoT	Beam on Target
NCR	Non-Conformity Report
RP	Radiation Protection
ES&H	Environment, Safety, and Health
ICS	Instrument Control Systems
MCA	Motion and Automatization Control
ECDC	Experimental Control and Data Curation
DMSC	Data Management and Software Center
CUP	Common Utility Project
CEP	Common Electrical Project
FBS	Functional Breakdown Structure
BWI	Bunker Wall Insert
SSCI2S	Structure System Component Important to Safety
NICOS	Networked Instrument Control System

11. REFERENCES

[1] NSS Guideline for Instrument Construction Projects - Integrated Testing (Cold Commissioning), System Acceptance Review (Tollgate 5), and Instrument Safety Readiness Review (ESS-0177447)

DOCUMENT REVISION HISTORY

Revision	Reason for and description of change	Author	Date
1	First issue	Mikhail Feygenson	2025-09-22
	<<Keep only full number revisions when approving document>>		