NSS
Shielding & Safety systems

Deviations & Changes

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11/12/2025

Agenda

1 Changes

2 Deviations

Changes

Changes

Change requests & decisions

Are all changes completed with updated documentation in CHESS? If no, argue why this is not impacting the upcoming commissioning?

All changes to systems within the scope of the SOI have been integrated and documented.

- Bunker: Yes
- TBS: Yes
- Beamline Shielding: Yes
- Shutters: Yes
- Fire safety: yes
- PSS: Yes

However, the following changes in interfacing systems have been identified and are being processed as CRs

ESS-5657065 Additional card readers bunker staircases CFPRO-1680

ESS-5290838 Sealing between D02 basement and bunker

ESS-5876282 Change the UPS units and settings in the PSS and GDS cabinets

ESS-5628912 Monolith Insert in the position E5, opening new beamline (replace the plug with a NBPI)

In addition, recent proposition to increase the proton beam energy during the early stages of commissioning documented in ESS-0420218 Rev 5 Early operations of ESS and prerequisites for first scientific results are under evaluation.

Changes

Change requests & decisions

Since rebaseline (January 2022) there have not been any Change Requests related to the design of Bunker, Shielding, nor Shutters. These CRs relate to budget matters.

Relevant CR's related to the system are listed as follows:

CR number	Year	Description
CR 13.4	2014	Major update on bunker plans
CR 13.34	2015	Mentions the reduction of the NSS budget because of the reduction of the monolith shroud
CR 13.42	2016	Bunker floor to CF
CR 13.51	2016	Bunker floor thickness
CR 13.58	2016	Bunker costing (includes some information about the decision to reduce the South bunker size)
CR 13.96	2017	Updated bunker costing
CR 13.109	2018	Updated bunker budget
CR 13.121	2019	Use of Na-float-glass substrates in the Bunker

CRs related to changes in the beamports assigned

CR number	Year	Description
CR 13.78	2016	SKADI moving from beam port E3 to E5
CR 13.47	2016	ESTIA moving from E1 to E2
CR0467	2024	Moving the E6 insert to beam port E5

Deviations (NCRs)

Deviations

List of Open NCRs

NCR	Description	Status	Equipment	Equipment Description	Type	Type Description	Severity
10626	NCR for the inclination of Bunker's R6 pillars (ESS-5878227)	In Progress	NSS.F01.F01.U01	Bunker- Structural Frame Assy.	NCT_0002	Deviation from Directive/Standard	Minor
10588	Measurement of grounding resistance bellow requirement of East bunker floor	In Progress	NSS.F01.F01.F05.F06	Bunker Racks false Flooor - East	NCT_0003	Deviation from Requirement	Minor
10534	Combustibles Inside the bunker	In Progress	NSS.H01	Instrument Systems	NCT_0006	Other	Minor
10492	Absence of Fire Safety Verification	In Progress	SKADI.A01.R03.R01	Instrument Shutter 1 (Heavy)	NCT_0005	Deviation from Technical Documentation	Minor
10486	Installation of absorber unit on Heavy Shutter T-REX	In Progress	T-REX.A01.R03.R01	Instrument Safety Shutter	NCT_0005	Deviation from Technical Documentation	Minor
10479	Absence of Fire Safety Verification	In Progress	T-REX.A01.R03.R01	Instrument Safety Shutter	NCT_0005	Deviation from Technical Documentation	Minor
10467	Evaluate design fix done in situ.	In Progress	DREAM.A01.R03.R01	Instrument Safety Shutter 1	NCT_0005	Deviation from Technical Documentation	Minor

Deviations

List of Open NCRs

NCR	Description	Summary
10626	NCR for the inclination of Bunker's R6 pillars (ESS-5878227)	Verticality of the Bunker's R6 pillars exceeds the amount allowed by the standard, but pillars were designed to compensate for large verticality deviations (pivot points at the bottom and top of the pillars). The Analysis of Bunker Concrete Block and R6 Columns Resistance (ESS-5758596) shows that a verticality deviation of up to 10 mm/m is safe and has no negative impact on the structural integrity of the Bunker Frames.
10588	Measurement of grounding resistance below requirement of East bunker floor	The result of the measurement of grounding resistance of East bunker false floor was under the required values. The required value is 1.0 MΩ at 500V, the measured value was 0.57 MΩ at 500V. The project proposes to use the floor as it is without any other modifications. An evaluation from the ESS electrical engineers is needed to validate the proposal of the project to deviate from the requirement.
10534	Combustibles Inside the bunker	We are going to release a declaration of conformity/combustible inventory for each instrument before bunker SAR. Update 11 November: We have released declarations for 11 instruments and have 5 in review.
10486	Installation of absorber unit on Heavy Shutter T-REX	The installation of the absorber has been successful.
10479	Absence of Fire Safety Verification	The TREX instrument shutter does not have a Fire safety requirements compliance document. This will be resolved within the next 30 days.
10472	Absence of Fire Safety Verification	The SKADI instrument shutter does not have a Fire safety requirements compliance document. This will be resolved within the next 30 days.
10467	Evaluate design fix done in situ.	During testing of the DREAM shutter it was found two screws missing and a design fault resulting in a part potentially coming loose. By decision from Gabor Laszlo two new holes were made at the time. This design change needs to be validated as sufficient and the now four screws missing to be mounted.

Deviations

Open NITs-To be resolved before SAR approval

Key	Status	Summary	Instrument	Issue source	To be resolved before
NIT-520	To Do	Link to NCR 10534 Combustibles Inside the bunker		Installation/SAT	S&SS SAR
NIT-519	To Do	Link to NCR 10534 Combustibles Inside the bunker		Installation/SAT	S&SS SAR
NIT-518	To Do	LInk to NCR 10644 Fire alarm system in Bunker D03		TG5/SAR	S&SS SAR
NIT-488	To Do	Release of System Validation plan for SaSS SAR ESS-1104057		Other	S&SS SAR
NIT-487	To Do	Release of Overall commissioning plan for SaSS SAR ESS-5911601		Other	S&SS SAR
NIT-486	To Do	Release of SaSS Concept of Operations-ESS-5855849		Other	S&SS SAR
NIT-485	To Do	SaSS: Establish Commisioning plan for Hot commisioning activities		Other	S&SS SAR
NIT-475	To Do	DOC: Write: LSS operation communication proceedure	Shielding and Safety Systems		S&SS SAR
NIT-458	In Review	Attachment Method for Borated Layer (Bunker D01 and D03, temporary beamstops)	Bunker	Q-gate/FAT	S&SS SAR
NIT-447	To Do	MIRACLES BWI Installation finalization	MIRACLES	Other	S&SS SAR
NIT-427	To Do	Installation of fire safety features T-Rex shutter	T-REX	Q-gate/FAT	S&SS SAR
NIT-426	To Do	Absence of Fire Safety Verification	T-REX	Q-gate/FAT	S&SS SAR

Deviations

Open NITs-To be resolved before SRR5

Key	Status	Summary	Instrument	Issue source	To be resolved before
NIT-467	To Do	Bunker D03 SAT - punch list	Bunker	Other	SAR5
NIT-513	To Do	Maintenance requirements to be logged in the EAM system	Shielding and Safety Systems	Other	SRR5
NIT-498	To Do	SaSS: Clarify requirements of the physical access control function of Bunker PSS areas	Bunker	Other	SRR5
NIT-497	To Do	SaSS: Install radiation area signage.	Bunker	Other	SRR5
NIT-424	To Do	BUNKER D03: SAT compliment	Bunker	Other	SRR5
NIT-417	To Do	BUNKER D03: Pre closure clean up.	Bunker	Other	SRR5
NIT-415	To Do	BUNKER D03: Closure and Verification of shielding	Bunker	Other	SRR5
NIT-414	To Do	BUNKER D01: Pre closure clean up.	Bunker	Other	SRR5
NIT-413	To Do	BUNKER D01: Closure and Verification of shielding	Bunker	Other	SRR5

Finish presentation