EUROPEAN
SPALLATION
SOURCE

ODIN Personnel Safety System

ODIN Instrument Safety Readiness Review (2025-12-18)

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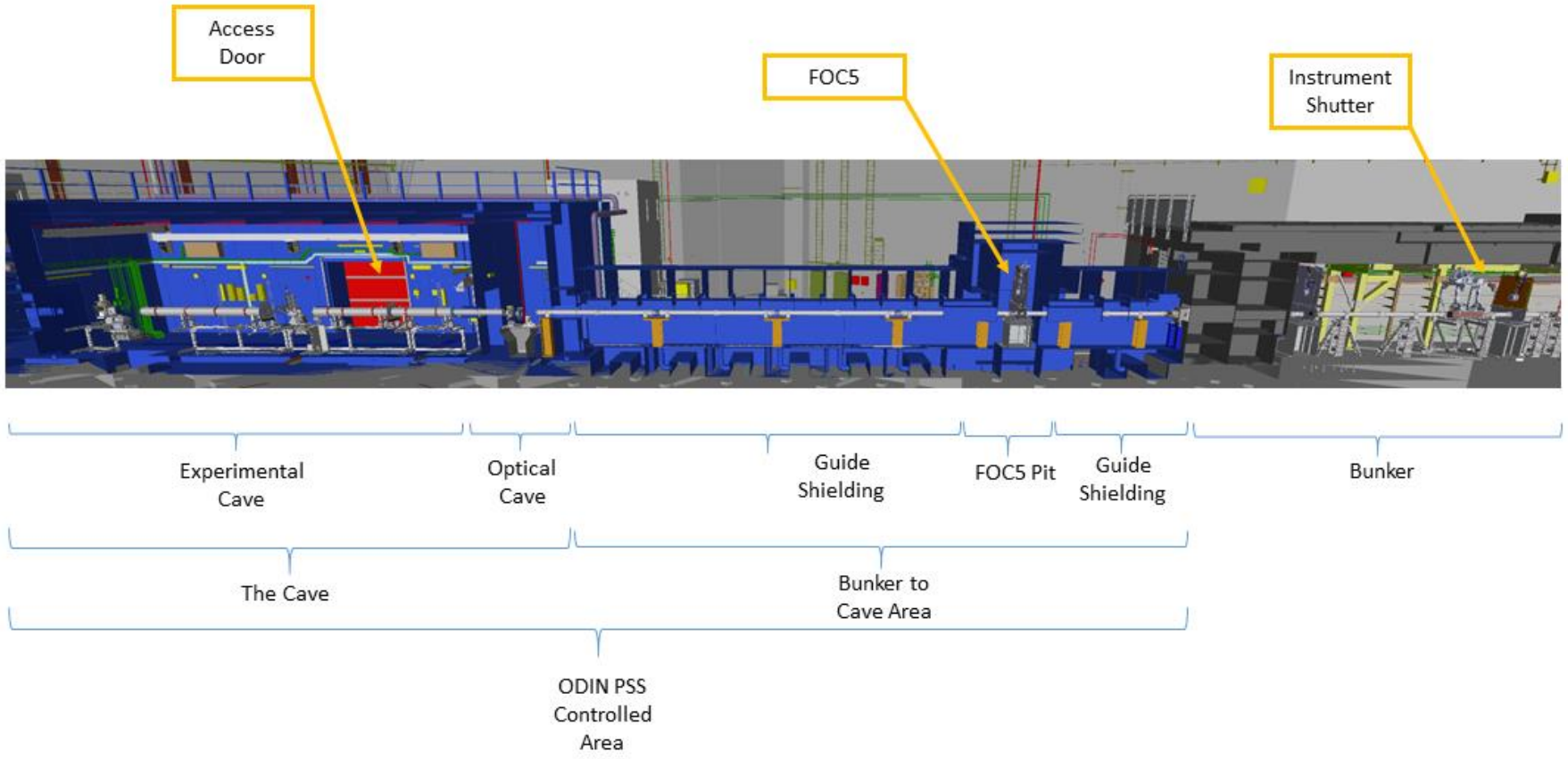
2025-12-17

ODIN PSS: Overview

The **ODIN PSS** is the safety interlock system that ensures safe access for personnel to the ODIN PSS controlled area.

The ODIN PSS mitigates the Radiation hazards (mainly prompt ionising radiation from the neutron beam)

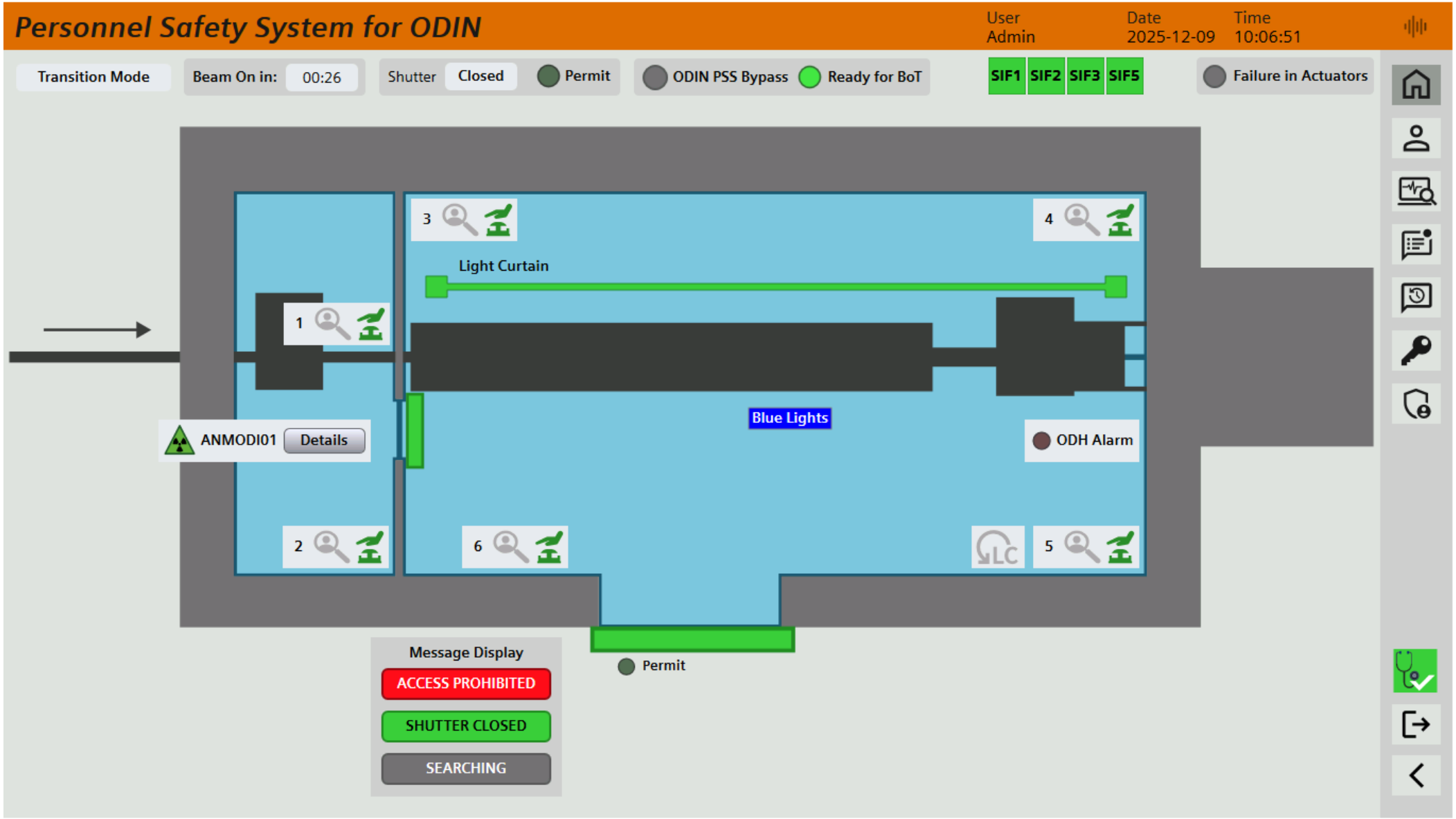


ODIN PSS: WRSFs

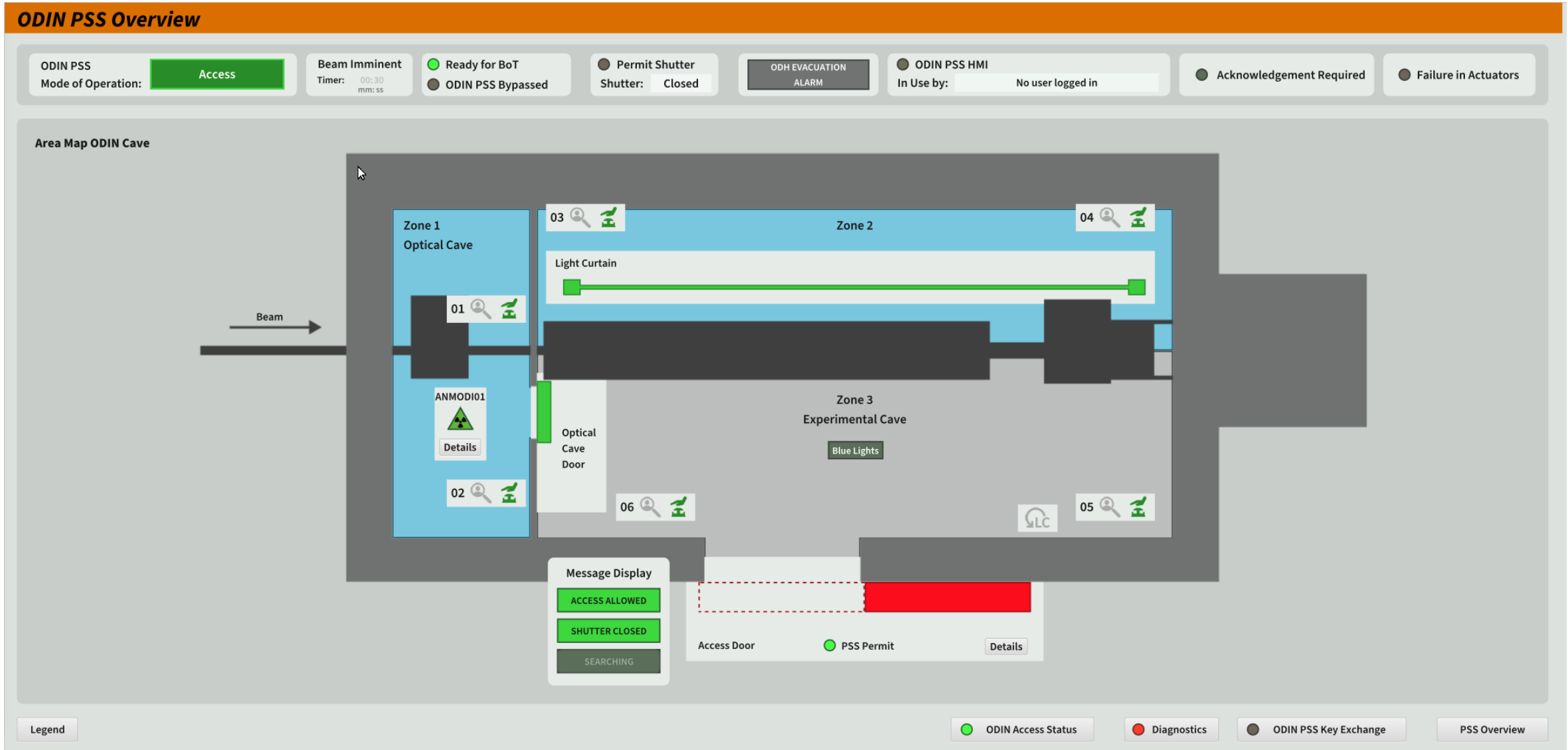
ODIN PSS is the safety interlock system that implements the following Worker Radiation Safety Functions (WRSFs):

WRSF/RSF	Description	SSCs that implement the WRSF
WRSF-P-NSI-L2-021_Prevent flux	Prevents inadvertent opening of the instrument shutter if human presence in the ODIN PSS controlled area	ODIN PSS (=ESS.NSS.H01.ODIN.F01)
WRSF-P-NSI-L2- 022_Grant/prevent human presence	• Prevent access to the ODIN PSS controlled area by locking the access doors and interlocking the cave roof hatch drive system in a closed position • Prior to permitting access to the ODIN PSS controlled area, a radiation monitor verifies the shielding integrity of the instrument shutter, If the radiation monitor detects elevated dose levels, the ODIN PSS prevents access	ODIN PSS (=ESS.NSS.H01.ODIN.F01)
WRSF-P-NSI-L3-024_Stop flux **WRSF-P-NSI-L3-025_Stop flux**	Detect intrusion to the ODIN PSS controlled area: • Interlocks the instrument shutter • Requests the Accelerator PSS (=ESS.ACC.F01) to switch OFF the proton beam to Target, if the instrument shutter is not detected closed within the designated time	ODIN PSS (=ESS.NSS.H01.ODIN.F01) Accelerator PSS (=ESS.ACC.F01)
WRSF-P-NSI-L3-026_Stop flux **WRSF-P-NSI-L3-027_Stop flux**	Detect the alarm and manually stop (ESOB) : • Interlocks the instrument shutter • Requests the Accelerator PSS (=ESS.ACC.F01) to switch OFF the proton beam to Target, if the instrument shutter is not detected closed upon pressing the ESOB	ODIN PSS (=ESS.NSS.H01.ODIN.F01) Accelerator PSS (=ESS.ACC.F01)
WRSF-P-NSI-L2-021_Prevent flux	If the ODIN PSS receives a high radiation alarm from the designated radiation monitor downstream the instrument shutter when the ODIN PSS controlled area is accessible, the ODIN PSS requests the Accelerator PSS to switch OFF the proton beam to Target	ODIN PSS (=ESS.NSS.H01.ODIN.F01) Accelerator PSS (=ESS.ACC.F01)

ODIN PSS: HMI overview

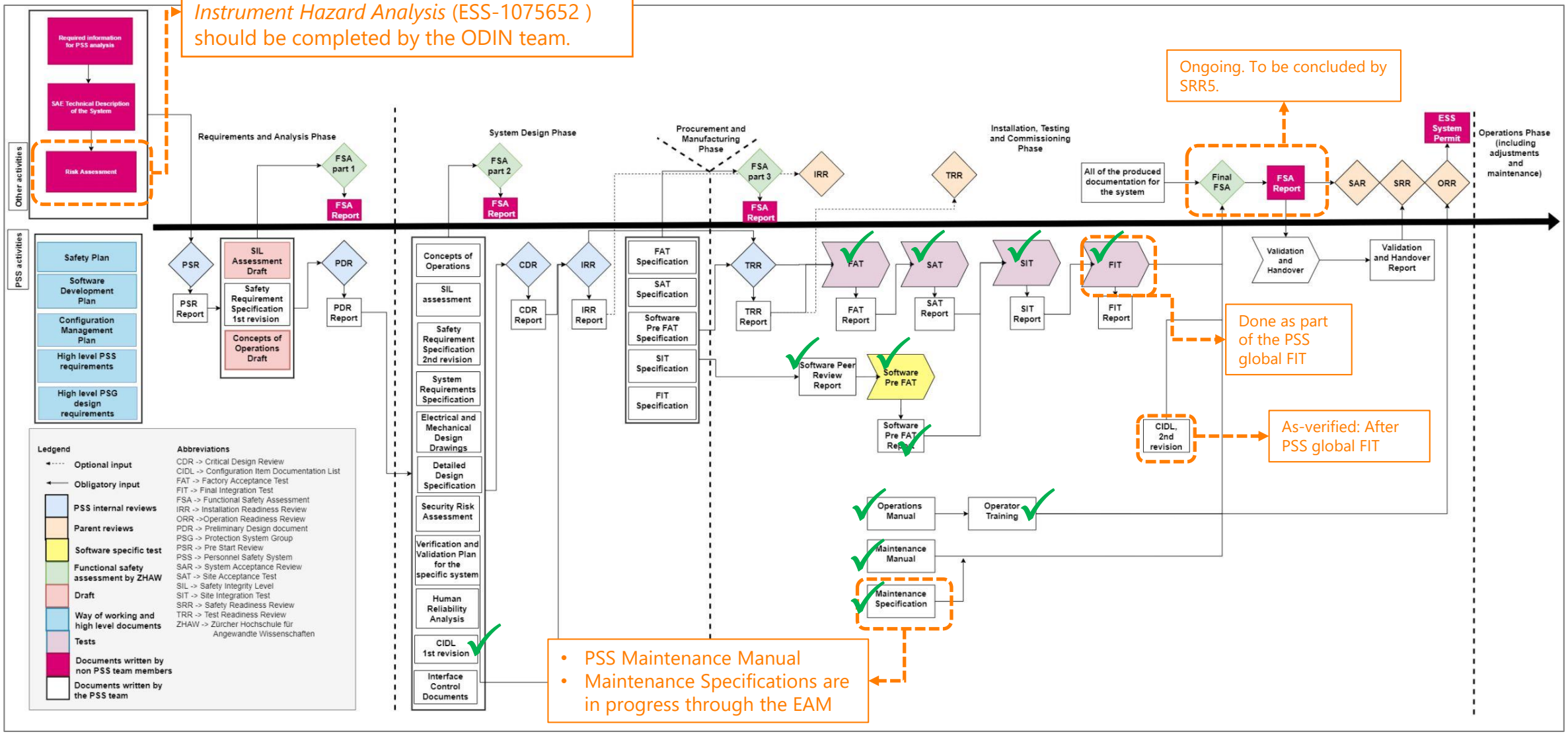


ODIN PSS: OPI overview



ODIN PSS: current status

Post implementation review in the *ODIN Instrument Hazard Analysis* (ESS-1075652) should be completed by the ODIN team.



Ongoing. To be concluded by SRR5.

Done as part of the PSS global FIT

As-verified: After PSS global FIT

- PSS Maintenance Manual
- Maintenance Specifications are in progress through the EAM

ODIN PSS: Remaining work

ESS-5763970 - Non-compliance report for ODIN PSS

Item	Comment
Mirror	A mirror should be added in the optical cave to facilitate easier formalised search
ODH interface	Interface with the ODH system is not in place because of the standalone ODH monitor.
Further improvement of the alarm framework	The structure and content of the Instrument PSS Alarm tree (part of CSS Phoebus) should be adjusted to the needs of the Instrument control hutch and MCR, as soon the needs are better understood by the relevant stakeholders.

Thank you!

Questions?

Back-up slides

PSS global FIT

PSS SITs
ACC PSS SIT
TS PSS SIT
NWB SIT
SEB PSS SIT
TBL PSS SIT (iSRR)
LoKI PSS SIT (iSRR)
ODIN PSS SIT (iSRR)
ODIN PSS SIT (iSRR)

PSS global FIT		
Nexus PSS HW SAT	Nexus PSS SIT	ESS PSS FIT (needed for SRR5)
Loop check from each PSS to Nexus	Integrated test between each PSS and Nexus	Integrated test from each PSS to Nexus and to ACC PSS
No access restrictions to PSS controlled areas is imposed by this test.	No access restriction and no impact on ACC PSS	• Access restrictions to the tunnel as ACC PSS shall be in Beam On mode. • Only impacting the ISrc and Bending Magnets (no impact on RF systems)
Potentially minimal disruptions to ACC PSS operation only during Nexus-ACC PSS loop check.	Access restrictions to TS PSS, Bunkers staircases, and instrument caves during parts of the test. (one area at a time)	Access restrictions to the areas listed in each of the following tests • TS PSS to ACC PSS test • NWB PSS to ACC PSS test • SEB PSS to ACC PSS test • Instrument PSS, TS PSS, NWB PSS, SEB PSS to ACC PSS test (only one instrument at a time)
Estimated time: 1 week	Estimated time: 2 weeks	Estimated time: 1 week