EUROPEAN
SPALLATION
SOURCE

DREAM Personnel Safety System

DREAM Instrument Safety Readiness Review (2026-03-26)

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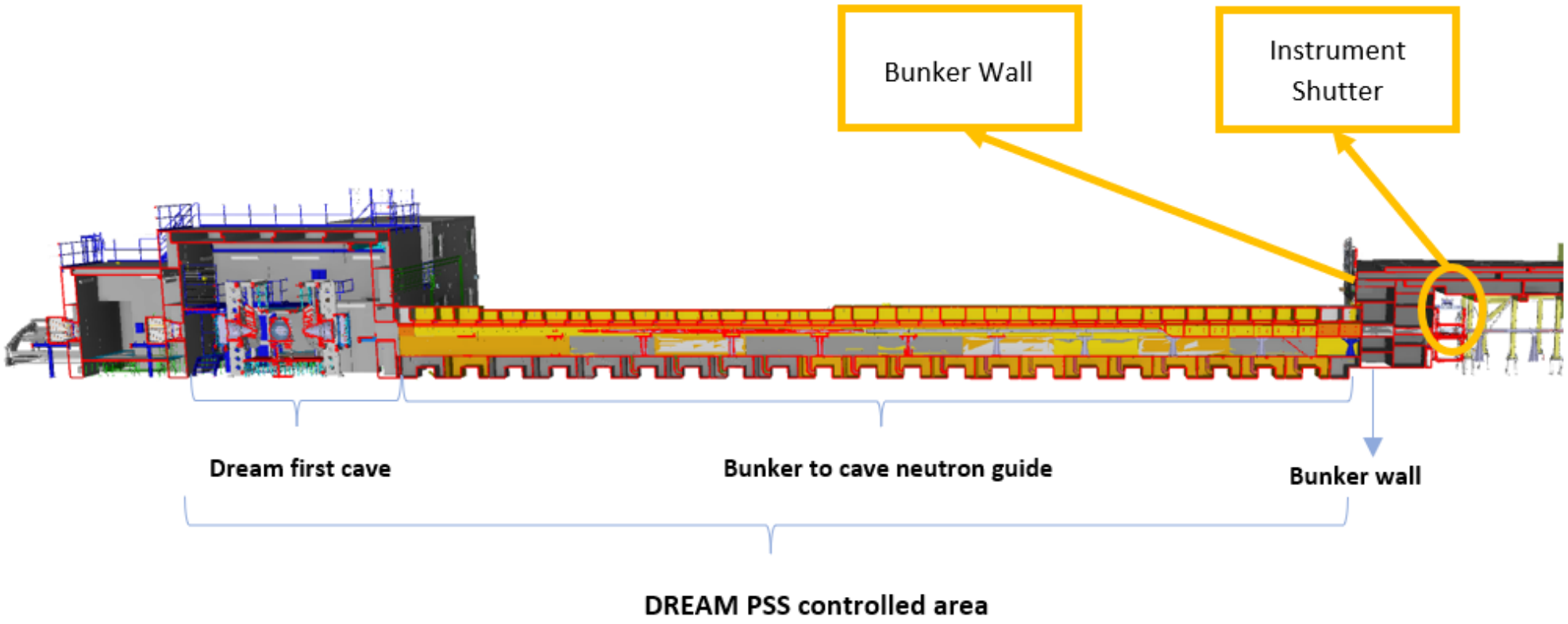
2026-03-19

DREAM PSS: Overview

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

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

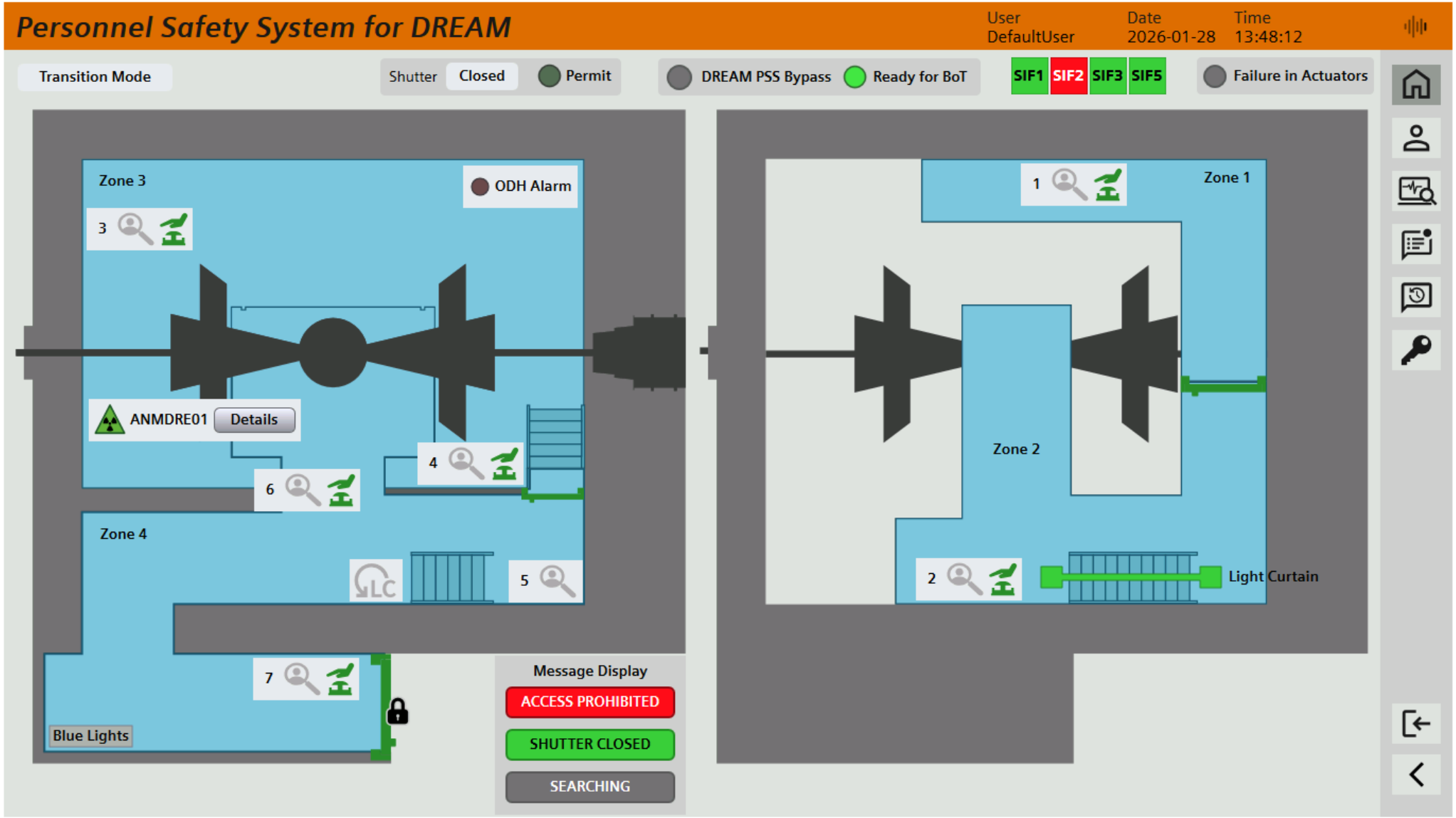


DREAM PSS: WRSFs

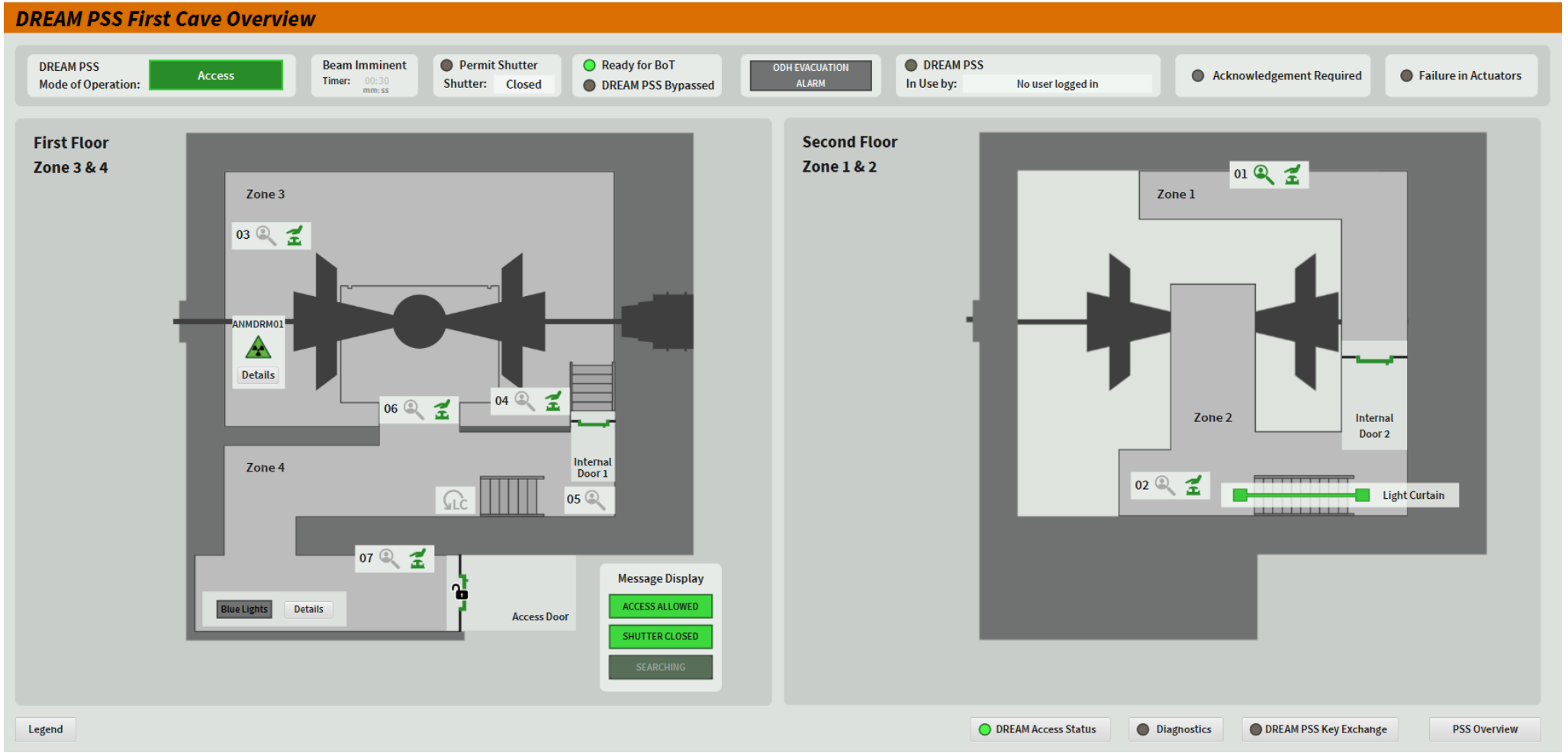
DREAM PSS is the safety interlock system that implements the following Worker Radiation Safety Functions (WRSFs):

WRSF/RSF	Description	SSCs that implement the WRSF
WRSF-P-NSI-L2-021_Prevent flux	Prevents inadvertent opening of the instrument shutter if the DREAM PSS controlled area is not searched, and locked.	DREAM PSS (=ESS.NSS.H01.DREAM.F01)
WRSF-P-NSI-L2- 022_Grant/prevent human presence	• Prevent access to the DREAM PSS controlled area by locking the access door and the cave roof hatch shielding blocks in a closed position • Prior to permitting access to the DREAM PSS controlled area, a radiation monitor verifies the shielding integrity of the instrument shutter, If the radiation monitor detects elevated dose levels, the DREAM PSS prevents access	DREAM PSS (=ESS.NSS.H01.DREAM.F01)
WRSF-P-NSI-L3-024_Stop flux **WRSF-P-NSI-L3-025_Stop flux**	Detect intrusion to the DREAM 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	DREAM PSS (=ESS.NSS.H01.DREAM.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	DREAM PSS (=ESS.NSS.H01.DREAM.F01) Accelerator PSS (=ESS.ACC.F01)
WRSF-P-NSI-L2-021_Prevent flux	If the DREAM PSS receives a high radiation alarm from the designated radiation monitor downstream the instrument shutter when the DREAM PSS controlled area is accessible, the DREAM PSS requests the Accelerator PSS to switch OFF the proton beam to Target	DREAM PSS (=ESS.NSS.H01.DREAM.F01) Accelerator PSS (=ESS.ACC.F01)

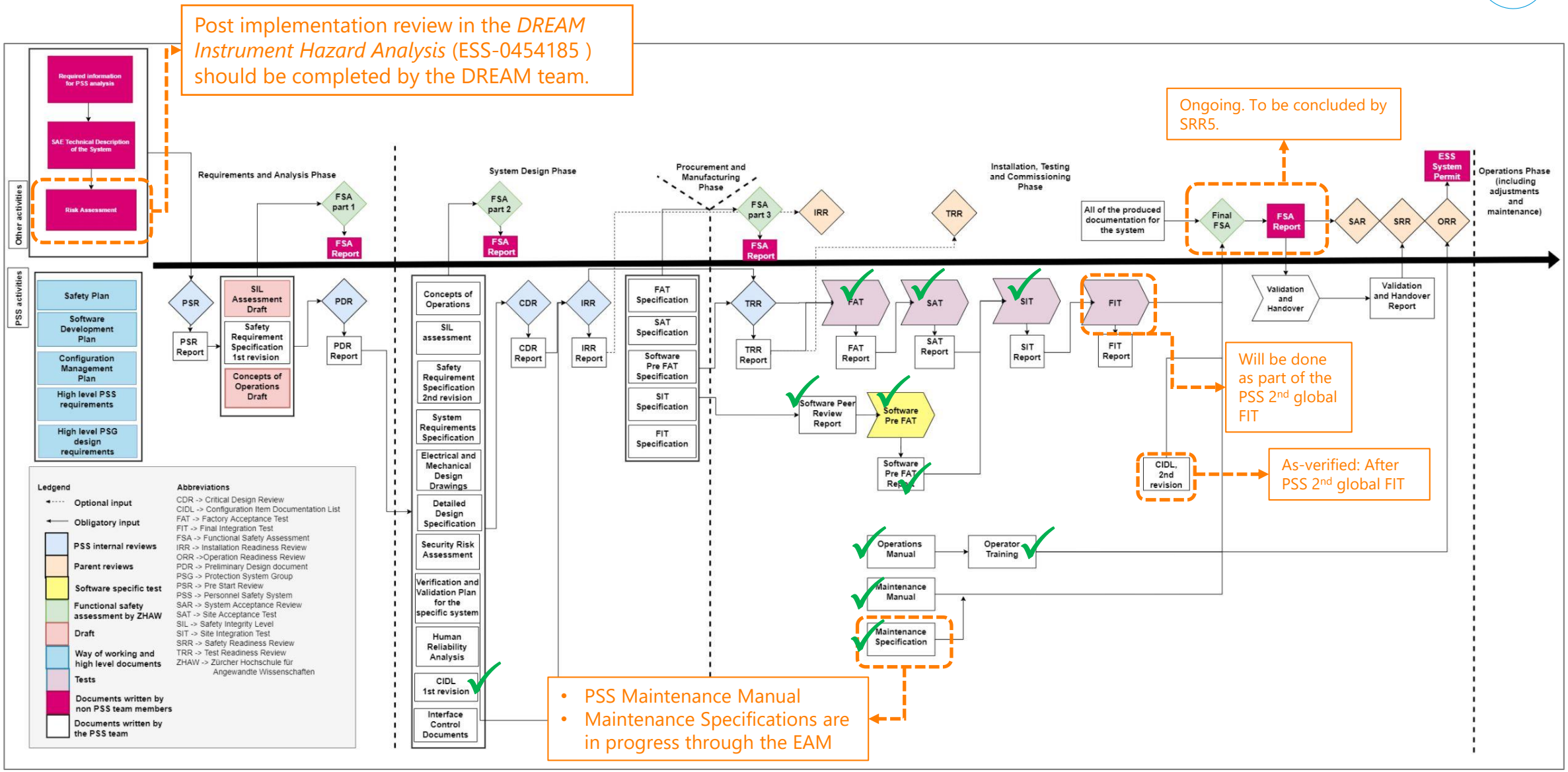
DREAM PSS: HMI overview



DREAM PSS: OPI overview



DREAM PSS: current status



DREAM PSS: Remaining work

ESS-5662096 - Non-compliance report for DREAM PSS

Item	Comment
Blue light	Visibility of the blue light in DREAM cave needs to be enhanced.
Interface with D01 Gas Detection System	Interface is not in place, as the system is not ready. A standalone ODH monitor is provided temporarily.
Test DREAM PSS with ACC PSS	Part of PSS 2nd global FIT

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)
DREAM 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