

Diffraction STAP April 2026 - DREAM final update

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DREAM instrument

Partners: FZJ 76%, LLB 20%, ESS 4%

TG5-iSRR: 25-26th March 2026

Detectors (FZJ)

- **Detector LSAT: Nov. 25 – March 26**
- **Detector iSAT: March 26**
- **Gas system (ESS): SAT March 26**

Experimental cave (LLB)

- Installed, SAT 24

PSS: PSSiT: March 26

PSC & BC Disk choppers (FZJ)

- ISAT Nov. 25

T0 Chopper (ESS)

- ISAT Nov. 25

Bi-spectral switch

NBOA (FZJ)

- Installed

Beam monitors & services

- **Gas system (ESS): Provisional**
- **Monitors: LSAT – iSAT March 26**

Sample vessel (FZJ)

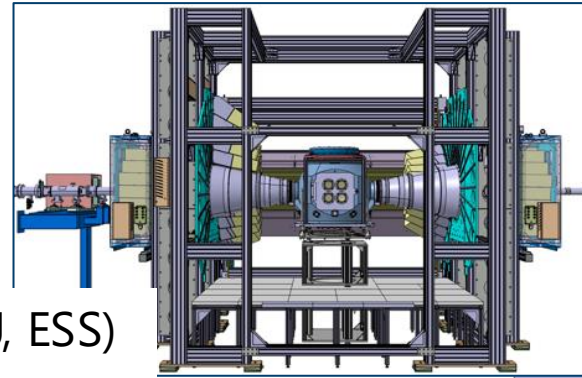
Vessel support (LLB)

- Installed

Guides & Shielding (FZJ, ESS)

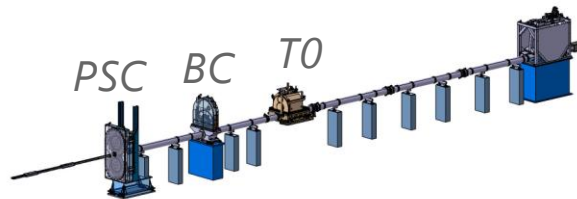
- Installed, verified

Slits: LSAT – iSAT Feb-March. 26



Control hutch & sample prep. lab (FZJ)

- Fire suppression Mar. 25



Heavy Shutter

- **iSAT March. 25**

LSAT: Local SAT (local device control)

iSAT: Integrated SAT (Nicos+Kafka)

PSSiT: Personal Safety System integrated Test

DREAM iSRR-SAR meeting – March 25-26th 2026



System Acceptance & Instrument Safety Readiness Reviews Meeting for DREAM

Date: 26 March 2026

Location: ESS, Lund, Sweden

Time: 09:00 – 18:30

Meeting Room: Platinum; Zoom

AGENDA

Participants:

DREAM Team:

Florence Porcher (Lead Instrument Scientist)

Peter Harbott (Lead Engineer FZJ)

Sylvain Desert (Lead Engineer LLB)

Anna Fornell (Instrument Operation Engineer)

Paulo Brant Carvalho (Commissioning Scientist)

Andreas Poqué (Instrument Engineer FZJ)

Werner Schweika (Instrument Scientist)

Review Committee

Mikhail Feygenson (Chair, Head of Diffraction & Imaging Division)

Giuseppe Aprigliano (NSS Engineering Representative)

Robert Connatser (Head of NSS Division)

Per Roos (RP Representative)

Helen Boyer (OHS Representative)

Sofie Ossowski (NSS Subproject Representative)

Mattias Skafar (Quality Representative)

Kazim Raza Syed (Radiation Safety Representative)

Günter Muhrer (Shielding Coordinator)

Instrument Partners

Andreas Wischnewski, Tania Claudio-Weber (FZJ)

Arnaud Desmedt (LLB)

Tsitohaina Randriamalala (FZJ)

Observers

Lali Tchelidze (Head of Operations Division)

Peter Rådahl (Chief Engineer /Technical Office Manager)

Andreas Jansson (Facility Commissioning Coordinator)

Annika Nordt (Protection Systems Group Leader, ICS)

Thomas Hansson (Radiation Safety Representative)

Charge for the SAR:

- Validate that all system components are installed.
- Validate that documentation is in CHES and linked to the FBS structure.
- Review the integrated cold commissioning reports and check the test of the instrument systems is complete and satisfying
- Review the operating processes of the instrument and the Hot Commissioning plan.
- Review the list of non-conformities and actual or proposed resolutions

Charge for the iSRR:

- Check that Safety systems are installed and operational
- Check that Safety systems are adequately documented
- Check that the shielding is installed and correctly configured
- Check that Safety systems are ready for hot commissioning and operations
- Check that the necessary operations procedures in place

➔ **Review report**

DREAM iSRR-SAR meeting – March 25-26th 2026

System Acceptance Review		
09:00 – 09:05	Welcome / Meeting Rules (Mikhail Feygenson)	(I)
09:05 – 09:20	Scientific Overview of Instrument (Florence Porcher)	(I)
09:20 – 10:00	Instrument Components Overview (Peter Harbott)	(I)
10:00 – 10:05	CIDL and interfaces (Joakim Meyer)	(I)
10:05 – 10:25	Overview of NCR/NIT (Sylvain Desert)	(I)
10:25 – 10:55	Coffee break	
10:55 – 11:05	Choppers (Erik Nilsson)	(I)
11:05 – 11:15	Motion Control and Automatization (Hussein Al-Sallami)	(I)
11:15 – 11:30	Detectors & Beam monitors (Irina Stefanescu & Ioannis Katsioulas)	(I)
11:30 – 11:40	ICS (Johan Christensson)	(I)
11:40 – 11:50	ECDC (George Kontogiorgos)	(I)
11:50 – 12:00	DMSC: Data visualization / Reduction software (Celine Durniak)	(I)
12:00 – 13:00	Lunch break	
13:00 – 13:20	Integrated Test Results (Florence Porcher)	(I)
13.20 – 13.35	Scientific Hot Commissioning Plan (Florence Porcher)	(I)

Instrument Safety Readiness Review		
13:40 – 13:45	Welcome / Meeting Rules (Mikhail Feygenson)	(I)
13:45 – 14:05	Summary of DREAM and General Safety (Anna Fornell)	(I)
14:05 – 14:20	Operations and maintenance documents status (Anna Fornell)	(I)
14:20 – 14:35	Shielding Calculations (Tsitohaina Randriamalala)	(I)
14:35 – 15:00	Coffee break	
15:00 – 15:15	Overview of Radiation Safety Assessment (Florence Porcher)	(I)
15:15 – 15:30	Overview of Instrument Hazard Analysis (Florence Porcher)	(I)
15:30 – 15:40	Personnel Safety System (Donya Daryadel)	(I)
15:40 – 15:50	Motion Safety System (Jacob Gillies)	(I)
15:50 – 16:00	REMS presentation (Ana Cintas)	(I)



DREAM iSRR-SAR meeting – March 25-26th 2026



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DREAM INSTRUMENT SYSTEM ACCEPTANCE REVIEW REPORT



	Name	Role/Title
Owner	Mikhail Feygenson	Head of Diffraction & Imaging Division (chair)
Author	Nelly Elvirsson Mikhail Feygenson	Documentation Engineer Head of Diffraction & Imaging Division
Reviewer	Helen Boyer Mattias Skafar Giuseppe Aprigliano Sofie Ossowski Robert Connatser Per Roos Kazim Raza Syed Günter Muhrer	OHS Representative Quality Representative NSS Engineering Representative NSS Subproject Representative Head of NSS Project Division Radiation Protection Representative Radiation Safety Representative Shielding Coordinator
Approver	Giovanna Fragneto	Science Director

OPY: ESS-6032020, Rev. 1, Released, 2026-04-09, Internal, 1 file, , page (1/20)
ess.esss.lu.se/enovia/link/ESS-6032020.1/21308.51166.8535.32098

Conclusions:

- SAR: Not recommended for acceptance
- iSRR: Not recommended for acceptance and issuance of a System Permit
(Same outcome as preceding instruments)

Exhaustive list of points to correct

- for SAR acceptance (as early as possible)
- for Hot Commissioning (before BOT)
(Numerous tasks rely on ESS teams)
- Documentation (EPL, ...)
- Formalize verifications (Crane, valves, energization)
- Complete installations (Manifolds, Monitor gas, Detector gas Exhaust)
- Correct defaults (Detector modules, detector readout)

Expected completion before Oct. 2026

Requirements from DREAM iSRR-SAR report

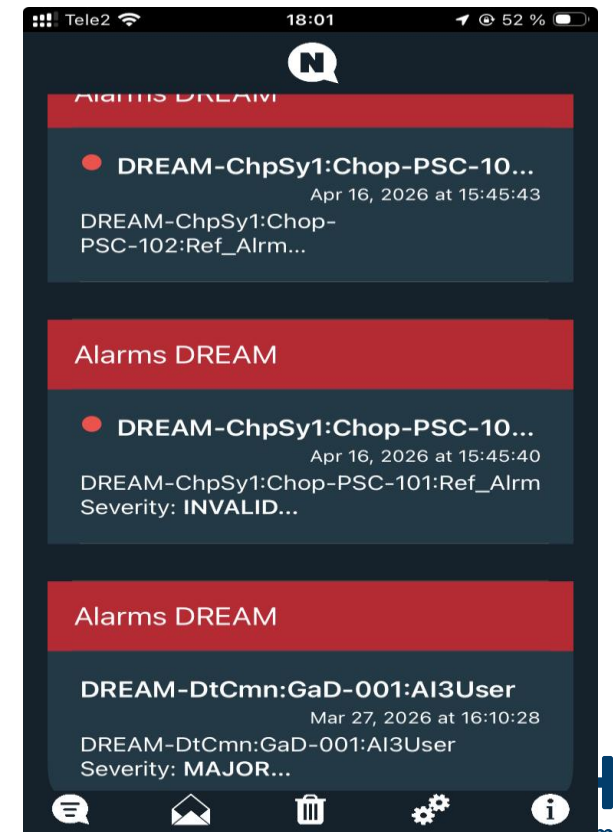
Pages / DREAM
 DREAM Post iSRR-SAR tasks
 Created by Florence Porcher, last updated by Sylvain Desert on Apr 17, 2026 • 8 minute read

Requirements

ID	NIT	Required Action	Completion Criteria	Completion Confirmed (Yes/No/Cancelled)	Assignee
1	NIT-667	False floor - Distribution board	TG5/iSRR	No Create NCR (see Conclusions)	Sylvain Desert
2	NIT-800	Detector rack raised floor	TG5/iSRR	Yes	
3	NIT-801	NCR 10467 - Evaluate design fix done in situ. (shutter)	TG5/iSRR	Yes	
4	NIT-893	Isolate grounding detector from MCA	TG5/iSRR	16 Apr 2026 Closed	Sylvain Desert
5	NIT-436	Change request for CUP - DREAM detector gas exhaust	TG5/iSRR	No	Jesper Ringnér
6	NIT-800	Dream shutter NCR 10466 Absence of CE marking, or related documentation	TG5/iSRR	Yes	
7	NIT-7	BM gas lines for Dream in bunker	TG5/iSRR	Yes	
8	NIT-5	Check DREAM Shock absorbers	TG5/iSRR	Yes	
9	NIT-4	Verify the DREAM Shutter optics orientation	TG5/iSRR	Yes	
10	NIT-700	DREAM: Calculate the step size of piezo stages in open-loop	TG5/iSRR	14 Apr 2026 Closed	Andre de Oliveira Favoto
11	NIT-699	DREAM: PZ14 not referenced	TG5/iSRR	No	Hussein Al-Sallami
12					
13	NIT-676	DREAM: Corrections on Goods lift after yearly inspection	TG5/iSRR	14 Apr 2026 Closed	Anna Fornell
14	NIT-672	DREAM Ar-CO2 gas pressure at detector and related alarm	TG5/iSRR	Yes	
15	NIT-760	DREAM EPL corrections and update	TG5/SAR	No	Sylvain Desert
16	NIT-768	Missing compliance evaluation for false floor fire suppression	TG5/iSRR	No ==> 14 Apr 2026 on going	Tahere Rostami
17	NIT-778	Improve labelling of Emergency Stops	TG5/iSRR	No ==> 14 Apr 2026 on going	Anna Fornell
18	NIT-691	DREAM: Firmware delivers data with negative rTOFs	TG5/iSRR	No	Torbjörn Graham
19	NIT-688	DREAM HikVision cameras	TG5/iSRR	No ==> 14 Apr 2026 on going	Sylvain Desert
20	NIT-687	DREAM: Gas panel for the beam monitors	TG5/iSRR	No	Jesper Ringnér Same as NIT-758 and NIT-704?
21	NIT-686	DREAM: Reinstallation of instrument manifolds for cooling	TG5/iSRR	No	Jesper Ringnér Same as NIT-755?
22	NIT-651	DREAM: CIPIX error, SUMOS, Ring 1 / FEN1 (EndCap BW, Sector 9)	TG5/iSRR	No	Irina Stefanescu
23	NIT-680	DREAM EPL model to be completed	TG6/ORR	No	Sylvain Desert
24	NIT-627	DREAM: HV issues for the detectors	TG5/SAR	No	Irina Stefanescu
25	NIT-625	DREAM: Spurious signals observed in the EndCap detector modules	TG5/SAR	09 Apr 2026 In Review	Irina Stefanescu

Follow-up web page

- To-do 
- Ongoing 
- Done 



Requirements from DREAM iSRR-SAR report

ID	NIT	Required Action	Completion Criteria	Completion Confirmed	Assignee
1	NIT-667	False floor - Distribution board	TG5/iSRR	No	Sylvain Desert
5	NIT-436	Change request for CUP - DREAM detector gas exhaust	TG5/iSRR	No	Jesper Ringnér
11	NIT-699	DREAM: PZ14 not referenced	TG5/iSRR	No	Hussein Al-Sallami
15	NIT-760	DREAM EPL corrections and update	TG5/SAR	No	Sylvain Desert
16	NIT-768	Missing compliance evaluation for false floor fire suppression	TG5/iSRR	On going	Tahere Rostami
17	NIT-778	Improve labelling of Emergency Stops	TG5/iSRR	On going	Anna Fornell
18	NIT-691	DREAM: Firmware delivers data with negative rTOFs	TG5/iSRR	On Going	Torbjörn Grahm
19	NIT-688	DREAM HikVision cameras	TG5/iSRR	On going	Sylvain Desert
20	NIT-687	DREAM: Gas panel for the beam monitors	TG5/iSRR	No	Jesper Ringnér
21	NIT-686	DREAM: Reinstallation of instrument manifolds for cooling	TG5/iSRR	No	Jesper Ringnér
22	NIT-651	DREAM: CIPIX error, SUMO5, Ring 1 / FEN1 (EndCap BW, Sector 9)	TG5/iSRR	No	Irina Stefanescu
23	NIT-680	DREAM EPL model to be completed	TG6/ORR	No	Sylvain Desert
24	NIT-627	DREAM: HV issues for the detectors	TG5/SAR	No	Irina Stefanescu
25	NIT-625	DREAM: Spurious signals observed in the EndCap detector modules	TG5/SAR	In Review	Irina Stefanescu

Detector

Common Utilities

Others (Documentation mainly)

Recommendations from DREAM iSRR-SAR report

ID	NIT	Required Action	Completion Criteria	Completion Confirmed	Assignee
2	NIT-704	Single gas supply line feeding the DREAM bunker beam monitors. Current and future.	TG6/ ORR	No	Jesper Ringnér
3	NIT-703	DREAM Safety test TA701/2/3 STO not validated	TG6/ ORR		Unassigned - Task to clarify
6	NIT-677	Iseg HV modules have unstable operation	TG6/ ORR	No	Irina Stefanescu
7	NIT-674	DREAM Live data display of detectors using logical coordinates	TG6/ ORR	No	Vincent Hardion (Simon Heybrock)
8	NIT-673	DREAM Live data display of HR and SANS detectors using logical coordinates	TG6/ ORR	No	Simon Heybrock
10	NIT-668	DREAM visual inspection of slits	TG6/ ORR	On going	Sylvain Desert
11	NIT-660	NCR 10635 Oversized gaps in the DREAM Guide Shielding	TG6/ ORR	No	Ana Cintas
12	NIT-640	SAT+ iSAT of DREAM polarizer translation stage	TG6/ ORR	No	Florence Porcher
13	NIT-633	DREAM: Test the RMM with MRF timing	TG6/ ORR	No	Nicklas Holmberg (Irina Stefanescu)
14	NIT-632	DREAM: CDRE boards overheating	TG6/ ORR	To be closed?	Irina Stefanescu
15	NIT-629	DREAM: detector data format is not according to the ICD	TG6/ ORR	No	Morten Jagd Christensen (Irina Stefanescu)
17	NIT-626	DREAM: EPICS integration of the Iseg HV power supply	TG6/ ORR	No	Nicklas Holmberg (Irina Stefanescu)
20	NIT-75	Replace the upstream interface plate for the shutter	TG6/ ORR	On going	Gabor Laszlo
29	NIT-742	Lift - missing full energization	TG6/ ORR	No	Hooman Shahrooz
30	NIT-743	Control hutch - missing full energization	TG6/ ORR	No	Hooman Shahrooz
31	NIT-744	Crane - missing full energization	TG6/ ORR	No	Hooman Shahrooz
32	NIT-745	Sliding platform missing full energization	TG6/ ORR	No	Hooman Shahrooz
33	NIT-747	Cave AC unit 1 not energised	TG6/ ORR	No	Hooman Shahrooz
34	NIT-748	Cave AC unit 2 is not energised	TG6/ ORR	No	Hooman Shahrooz
35	NIT-750	Cave 1 Ventilation not fully energised	TG6/ ORR	No	Hooman Shahrooz
36	NIT-751	Cave 2 ventilation is not fully energised	TG6/ ORR	No	Hooman Shahrooz
37	NIT-753	Update maintenance manual with correct links	TG6/ ORR	No	Anna Fornell
38	NIT-754	CUP SAT report missing	TG6/ ORR	No	Jesper Ringnér
39	NIT-755	Cooling water manifold missing	TG6/ ORR	No	Jesper Ringnér
40	NIT-756	Containment ventilation valve is still closed	TG6/ ORR	No	Jesper Ringnér
41	NIT-757	DIW connection is not active	TG6/ ORR	No	Jesper Ringnér
42	NIT-758	Beam monitor distribution lines and connection	TG6/ ORR	No	Jesper Ringnér
43	NIT-759	Missing connection for IAR PoU in cave2	TG6/ ORR	No	Jesper Ringnér
44	NIT-698	DREAM: Piezo Kapton cables	TG6/ORR	To be closed?	Peter Harbott
45	NIT-60	Remote handling accuracy out of range for the DREAM shutter.	TG6/ORR	No	Gabor Laszlo
		Create NIT for the delay on the Live data display for detectors when using Kafka		No	Florence Porcher / Simon Heybrock

Documentation

Detector

Common Utilities

Firmware

Others (Documentation mainly)

Preparation of Hot Commissioning



Document Type: Verification Plan
 Document Number: ESS-5552102
 Date: Mar 16, 2026
 Revision: 1
 State: Released
 Confidentiality Level: Internal
 Page: 1 (28)

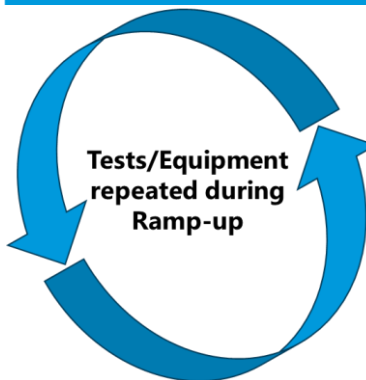
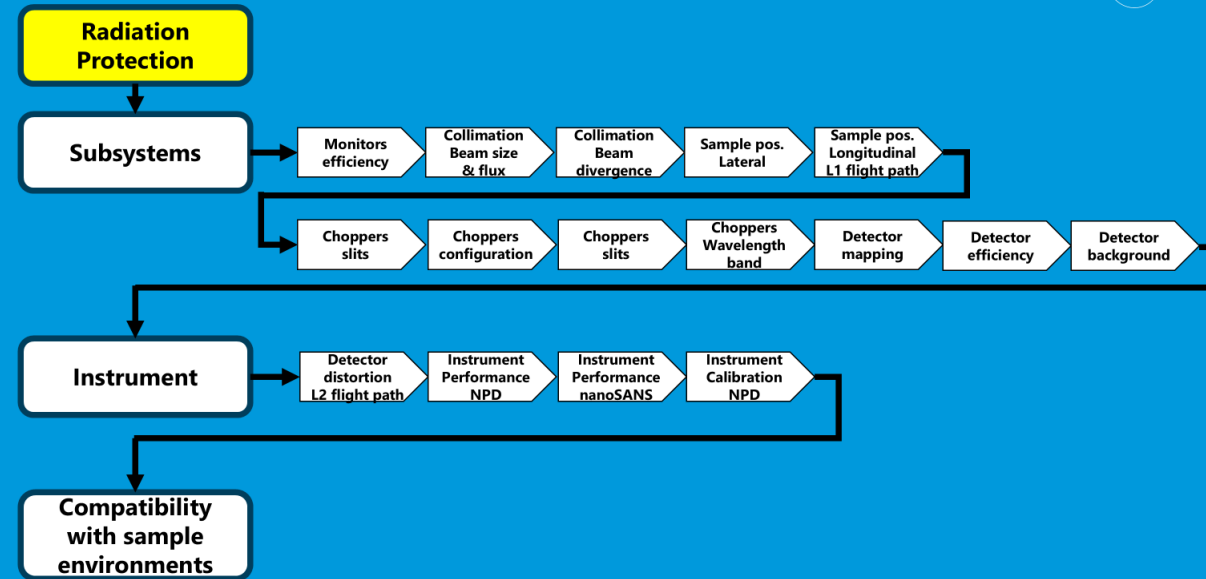
DREAM - SYSTEM VERIFICATION AND VALIDATION PLAN



ILLUSTRATION: ESS-5552102, Rev. 1, Released, 2026-03-16, Internal, 1 file, page (1/28)
<https://cic.hess.eess.lu.se/enovia/links/ESS-5552102-1/21300851166.1467156146>

	Name	Role/Title
Owner	Anna Fornell	DREAM Instrument Operation Engineer
Authors	Paulo H.B. Brant Carvalho Florence Porcher	DREAM Commissioning Scientist DREAM Lead Scientist
Reviewer	Werner Schweika Celine Durniak Per Roos Helen Boyer Hanna Wacklin-Knecht Torben Roland Nielsen Vincent Hardion Irina Stefanescu	Instrument Scientist Instrument Data Scientist Radiation Protection Group Leader Occupational Health and Safety Group Leader Head Scientific Support Division DRAM Group Leader (DMSC) Experiment Control and Data Curation Group Leader Detector Scientist (representing Detector Group)
Approver	Mikhail Feygenson	Head of Diffraction and Imaging Division

Hot commissioning - overview



Concept of Operations (ESS-0135206)

- Data collection up to $Q_{max}=25\text{\AA}^{-1}$.
- Data collection down to $Q_{min}=0.2\text{\AA}^{-1}$ (with nanoSANS, $Q_{min}=0.01\text{\AA}^{-1}$).
- Flexible choice between high resolution and high intensity, resolution from $\sim 10^{-2}$ ms to \sim ms.
- Best resolution $\Delta d = 0.00035\text{\AA}$ near backscattering

Preparation of Hot Commissioning

Single system calibrations

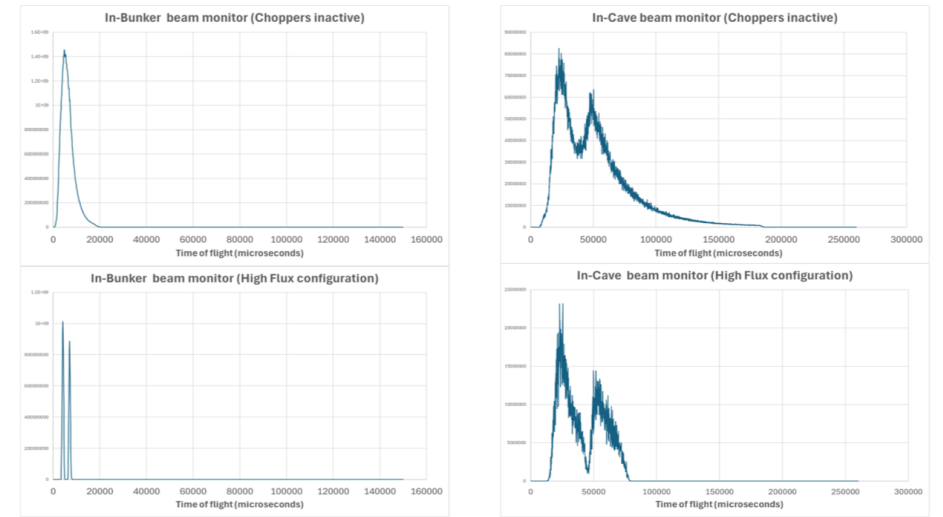
- Specific equipment (detectors, stages)
- Integration (shared with other instruments)
- Ad hoc samples (gold foil, Bragg edge)
- Specific data flows

Integrated System calibration

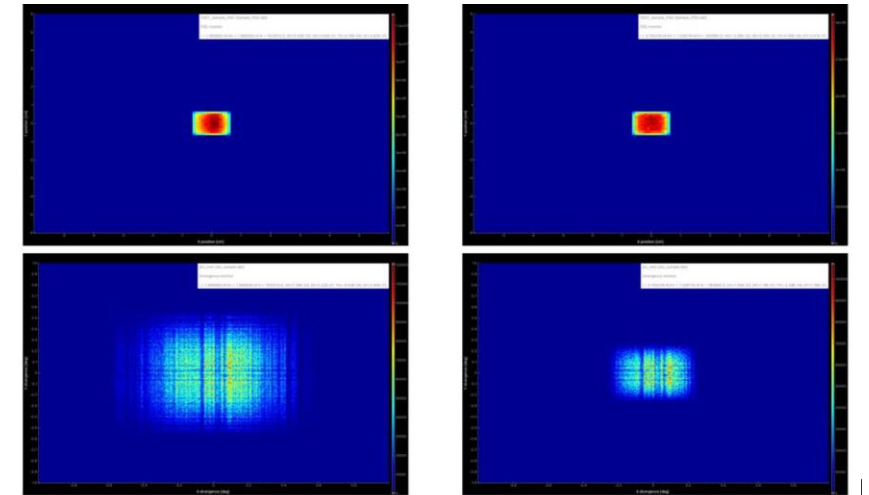
- Reference samples
- Specific data reduction (distortion, efficiency)

Verification experiments

- NPD
- PDF
- nanoSANS (monitor needed)
- SXD (goniometer + integration needed)



McStas simulations showing the TOF spectra at beam monitors M1 and M3 without (upper row) or with (lower row) choppers running.



Effect of the slits set on beam size (upper row) and divergence (lower row). The slits are in OPEN (left) and CLOSE (right) configurations

Preparation of Hot Commissioning

Pending tasks

- McStas simulations of relevant tests (Choppers, slits, samples...)
- XRD Characterization and database for reference samples (ESS PXRD + SXD lab.)
- Integration and local testing of cryofurnaces, furnace, N₂ blower

- Detector corrections processing (*task delayed because of issue with voxel IDs*)
- Powder diffraction workflow tested during the HERCULES school (*NeXus files, Reduction, ess live data, VISA*)
- More analysis software available on VISA (*diffpy-cmi, Jana2020, pdfgui (WIP), TOPAS academic (WIP)*)
- Parts of data processing pipeline tested during integrated tests (*ESS live data, NeXus file, Scicat, Scipp (load & plot)*)
- PDF reduction workflow (WIP)
- SANS reduction workflow (WIP)
- Single Crystal Diffraction reduction (will adapt what has been done for MAGIC)

- Polarizer to be delivered and integrated (out of scope)
- Restart the prospection for a cryofurnace sample exchanger...
- Anticipate the rescoping (Full detector coverage) when schedule better known

- Collimation system (design? budgeting?) for sample environment ???

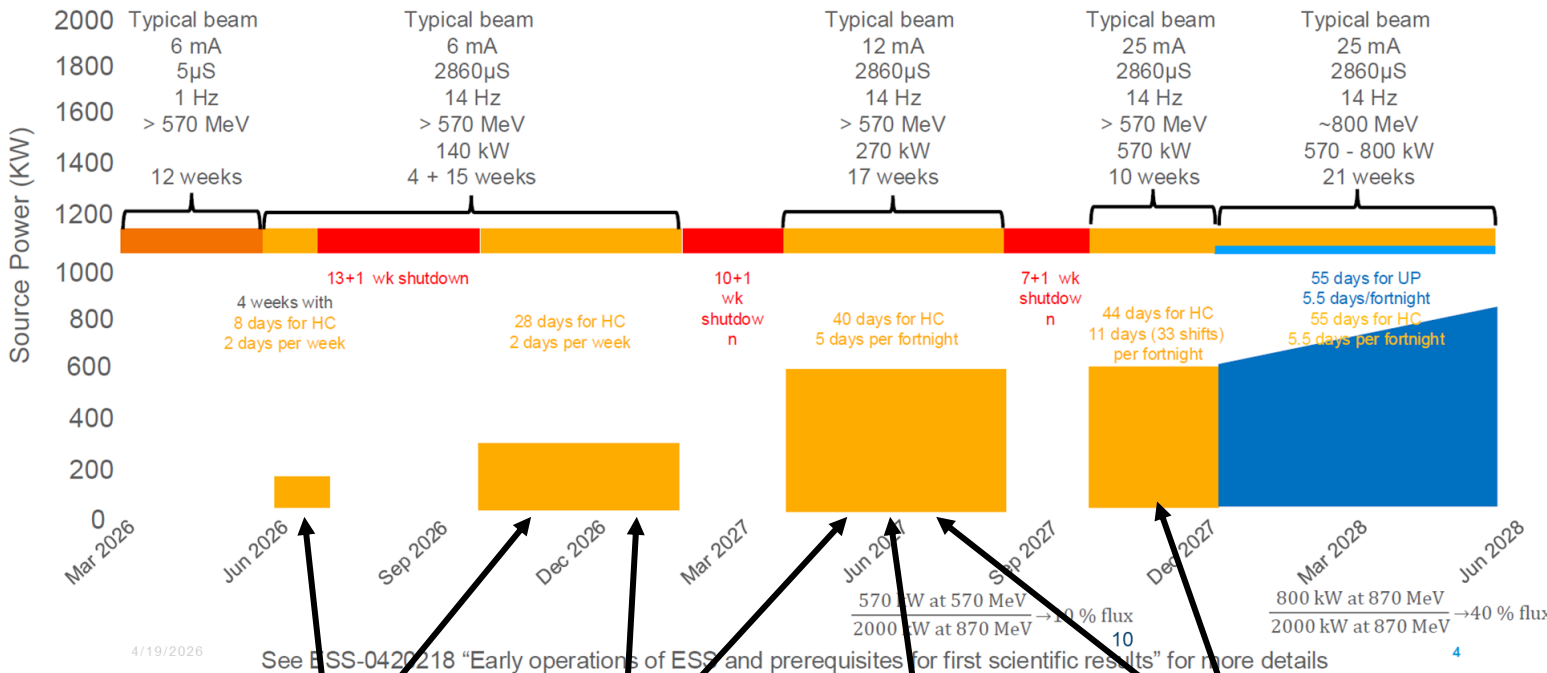
Preparation of Hot Commissioning

ESS Ramp Up

Assuming BOT Feb 2026

**Indicative schedule
to be updated (BOT Jan. 2027)**

- Accelerator commissioning & TBL
- Hot commissioning
- Shutdown
- Users



- Single systems validations?
- Integrated system validation?
- Verification experiments?
- First Science?

Test of minimal procedure (HC)

- Instrument Control
- Live View
- NeXus files
- Data Reduction scripts
- Sample Environment



Test of ESS User "experience"

- Proposal (sample, schedule, access)
- Sample handling (before, after)
- Safety
- Instrument control
- Data storage
- Data access (SciCat)
- Data analysis (VISA)