DREAM update for IKON18

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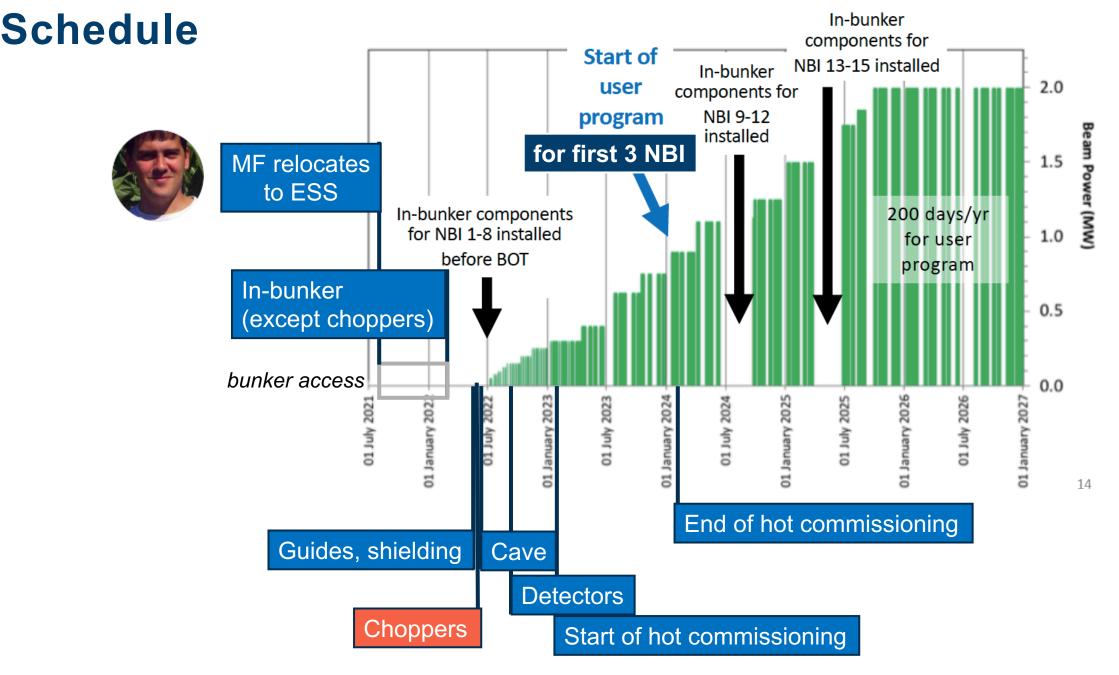






Dec'18	Mar'19	May'19	Aug'19	Nov'19	Mar '20	June '20	Oct '20	Dec'20
<u>IDR</u>	<u>Sub-TG3.1</u>	CTV	CTV	CTV	CTV	Sub-TG3.2	<u>Sub-TG3.2</u>	Sub-TG3.3
- Bi-spectral	- Bi-spectral	- Cave	- Neutron	- SEE	- T0 Chopper	- BWI	- T0 Chopper	- BC Chopper
switch	switch and	- Bunker wall	guides	(ESS	- Beam	-PSC + OC		- Neutron guides (in-
- Bunker wall	BBG optics	feedthrough	outside the	response	monitors	choppers		bunker and out-of-
feedthrough	- Detector	- Neutron	bunker	received)	- Hutch +	-Heavy Shutter		bunker)
- Detector	support	guides inside			Sample	-Beam		- Beam stop
support	structure	the bunker			preparation lab	monitors		- Instrument control
structure	- Detectors							systems (EPICS)
 Detectors 	- Sample	Sub-TG3						- Vacuum systems
- Sample	vessel	- NBOA						(ESS solution)
vessel	- Vessel							- Relevant MCA
- Vessel	support							- PSS
support								- Interface of the ESS
CTV								vacuum system
 Chopper 								- Facility infrastructure
system								connections and
(excluding T0								utilities (not yet dealt
chopper)								with)
								- Drawing package of
								complete system
								Final TG3

- Date for the Final TG3 was moved to December 2020
- New proposed scheduled allows faster manufacturing of components (i.e. choppers)
- No affect on installation process



Completion of chopper installation date (Jun-22) is later than the bunker access date (Feb-22)

Chopper system

Pulse Shaping Chopper (PSC, 308 Hz) & Overlap Chopper (OC, 14 Hz)

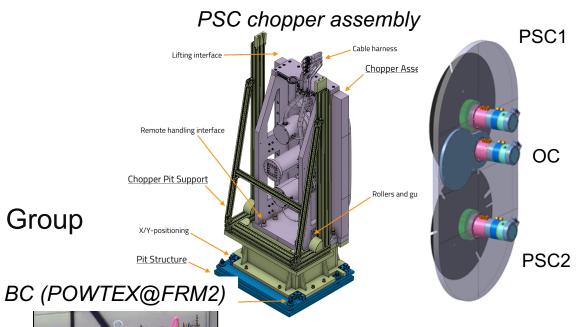
- Design accepted. Procurement completed.
- Manufacturing and installation by Jülich Chopper Group
- Interfaces with guides and ODIN are defined

Band Control Chopper (BC, 112 Hz)

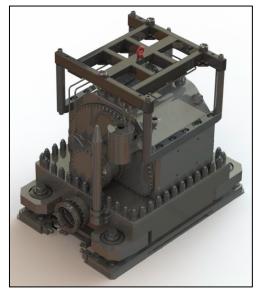
- Design accepted. Procurement completed.
- Manufacturing and installation by Jülich
- Remote handling w/o breaking guide vacuum

T0-Chopper

- ESS prototype will be used (CTV by March 2020)
- Design finalized by October 2020 (SubTG3)







PSC, OC and BC schedule

Nr.		Vorgangs	Vorgangsname	Dauer	Arbeit	Anfang	Fertig stellen	Juli	Oktob	er Januar	April	Juli	Okto	ber .	Januar	April	Juli	i	Oktober	Januar	April	Ju
	0							M E		E A M					A M	E A	M				E A	
1		3	Projekt start DREAM Choppers	0 Tage	0 Std.	Di 01.10.19	Di 01.10.19		01.10	0.												
2		3	Finalize and agree specs	2 Wochen	0 Std.	Di 01.10.19	Mo 14.10.19		<u>-5</u>													
3		3	Verify concept design vs specs	2 Monate	0 Std.	Di 15.10.19	Mo 09.12.19		*	<u> </u>												
4		₹	Procure Disks	9 Monate	0 Std.	Di 10.12.19	Mo 17.08.20			_												
5		3	Procure 3 SKF spindles	9 Monate	0 Std.	Di 24.12.19	Mo 31.08.20			4												
6		3	Concept design OC 14 Hz spindle	2 Monate	0 Std.	Di 07.01.20	Mo 02.03.20			4												
7	-	3	Update Concept design incl handling	2 Monate	0 Std.	Do 02.01.20	Mi 26.02.20															
8		3	PSC + OC Chopper (750 mm / 308 Hz + 300 mm 14H	300 Tage	1.363,2 Std.	Do 18.06.20	Mi 11.08.21					<u> </u>		_				Ψ.				
25		3	Bandwidth Chopper BC (750 mm / 112 Hz)	240 Tage	240 Std.	Do 08.10.20	Mi 08.09.21						Ψ					_				
30		3	Base frame and handling unit	280 Tage	304 Std.	Do 27.02.20	Mi 24.03.21			₩				_		₩						
33		3	Electronics	457 Tage	2.320 Std.	Di 01.10.19	Mi 30.06.21		-								_					
41		➡	Lab Commissioning and Testing	210 Tage	1.632 Std.	Do 12.08.21	Mi 01.06.22											-				₽
52		3	Shippment to ESS	200 Tage	0 Std.	Do 09.09.21	Mi 15.06.22											Ψ.				~
53		3	Base frame	2 Wochen	0 Std.	Do 07.10.21	Mi 20.10.21															
54		3	BC lower housing	2 Wochen	0 Std.	Do 09.09.21	Mi 22.09.21)			
55		3	PSC / OC Chopper	2 Wochen	0 Std.	Do 02.06.22	Mi 15.06.22															-
56		3	BC Chopper	2 Wochen	0 Std.	Do 02.06.22	Mi 15.06.22															<u>-</u>
57		\$	Installation choppers on site	2 Wochen	160 Std.	Do 16.06.22	Mi 29.06.22															■ M

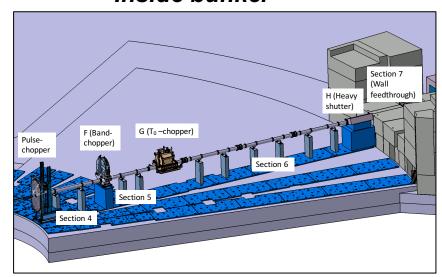
- Two steps: (i) pre-installation of the base frame and (ii) installation of disks
- Pre-installation work completed within the D01 bunker access dates
 11.08.21 22.02.22 (3-4 calendar weeks)
- Installation of disks in June 2022, after bunker is closed in Feb 2022 (2 weeks)

We seek any chance to speed up installation of choppers when the bunker is still open

Neutron guides

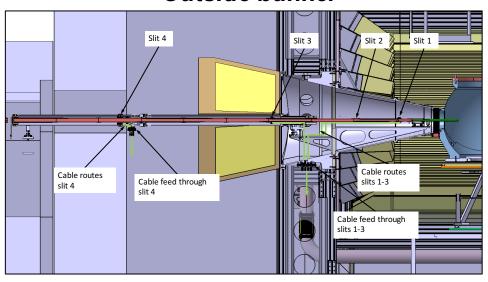
- Design accepted by ESS (CTV)
- Procurement is ongoing (quotes expected in March 2020)
- Interface with choppers and monitor inside bunker
- Interface with monitor, cave, HR-detector, shielding outside bunker

Inside bunker



Bunker access	Chopper base	In-bunker guides
Aug.21 Feb.22	Sept Oct. 2021	Sept Oct. 2021

Outside bunker



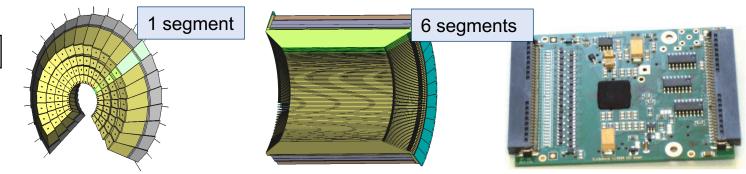
D01 available to Partners	Out-bunker guides	Guide shielding installed	Cave
03.06.2021	Nov. 21 - Mar. 22	Jun. 22	Jun.21 – Jun.22

Detectors

Complete detector coverage

HR back Nano-SANS back forward

Development of first modules and readout electronics (Sept. 2017)



- End-cap is successfully tested with neutrons (July 2019)
- Mantle & readout electronics will be tested in May (TRIGA)
- Procurement of entire system starts in Q2 2020

	back/forward	mantle	HR back
Manufactured	May - 2021	May - 2021	Apr 2022

Cave	Detector	Detectors	Detectors	Hot		
installed	support	installation	installation	commission/		
	installed	starts	completed	First science		
Jun 2022	Jun 2022	Jun 2022	Sept 2022	Jan 2023		

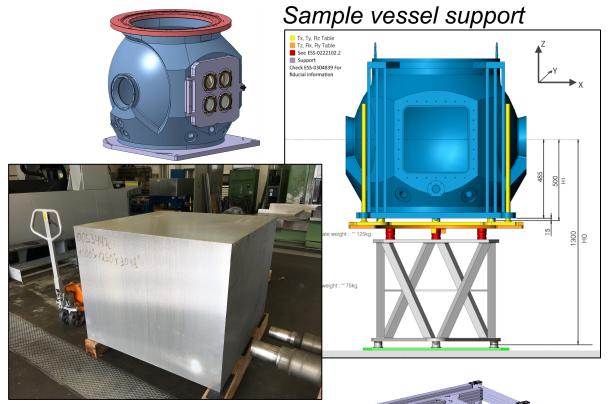
Sample vessel

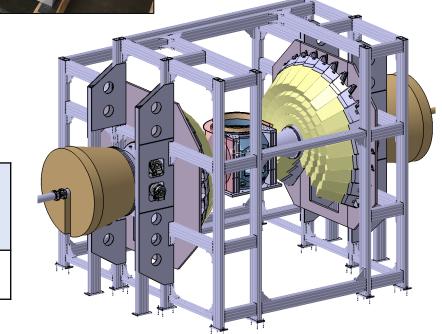
- Compatible with cryo-pump for future upgrade
- Compatible with standard SAD flanges
- Sample support (LLB)
- Downscaled prototype was manufactured
- First parts have arrived to FZJ

Detector support

- Designed for full detector coverage
- Procurement is done

Cave installed	Detector support installed	Sample vessel & support installed	Detectors installation starts	Detectors installation completed
Jun 2022	Jun 2022	Jun 2022	Jun 2022	Sept 2022



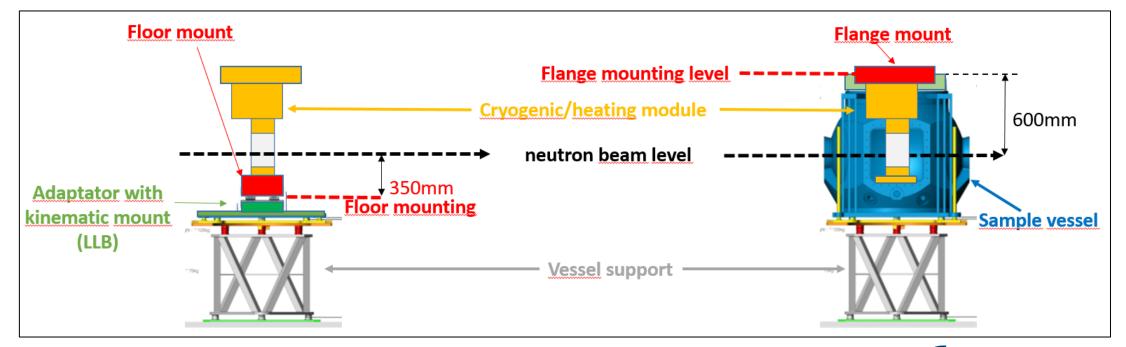


DREAM Specific SEE: Cryofurnace with Sample Changer



- T = 4K-800K
- 20 samples
- Flange & floor mounts

SEE Procured	SEE Manufactured	SEE delivered to ESS	Sample vessel & support Installed	Detectors Installation completed
Nov 2020	May - 2021	Sept 2021	Jun 2022	Sept 2022





Project risks and issues



- 1. The final installation of choppers is later than the bunker access
- 2. Final TG3 is delayed, but no effect on installation dates
- 3. Difficulties in progress of designing PSS
- 4. Cost of detectors might be exceeded

