

ESS: Current Status

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Chief Instrument Project Engineer

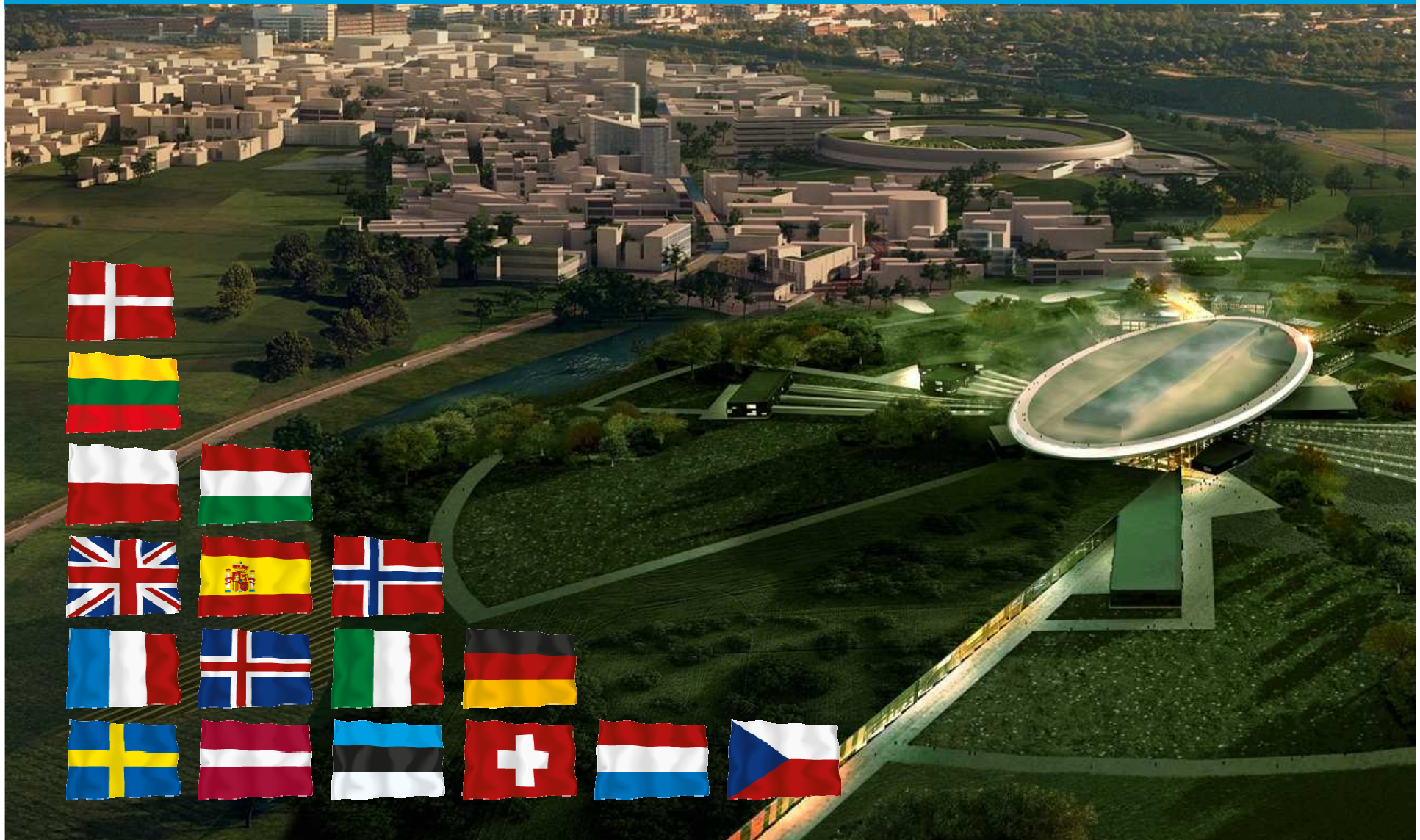
www.europeanspallationsource.se
September, 2014

Outline



- Political and Funding
- Facility Update
- Instrument Proposals and Projects
- Construction site update

A European Big Science Project



European Research Infrastructure Consortium (ERIC)



31 August 2015

European Spallation Source ERIC is established

- Replaces the European Spallation Source, ESS AB a Swedish limited company owned by the governments of Sweden and Denmark
- A recognized legal entity it allows for all of the national governments (not just EU) and other organizations to participate and contribute.

note: NOT ESS AB (name held by the European Social Survey)

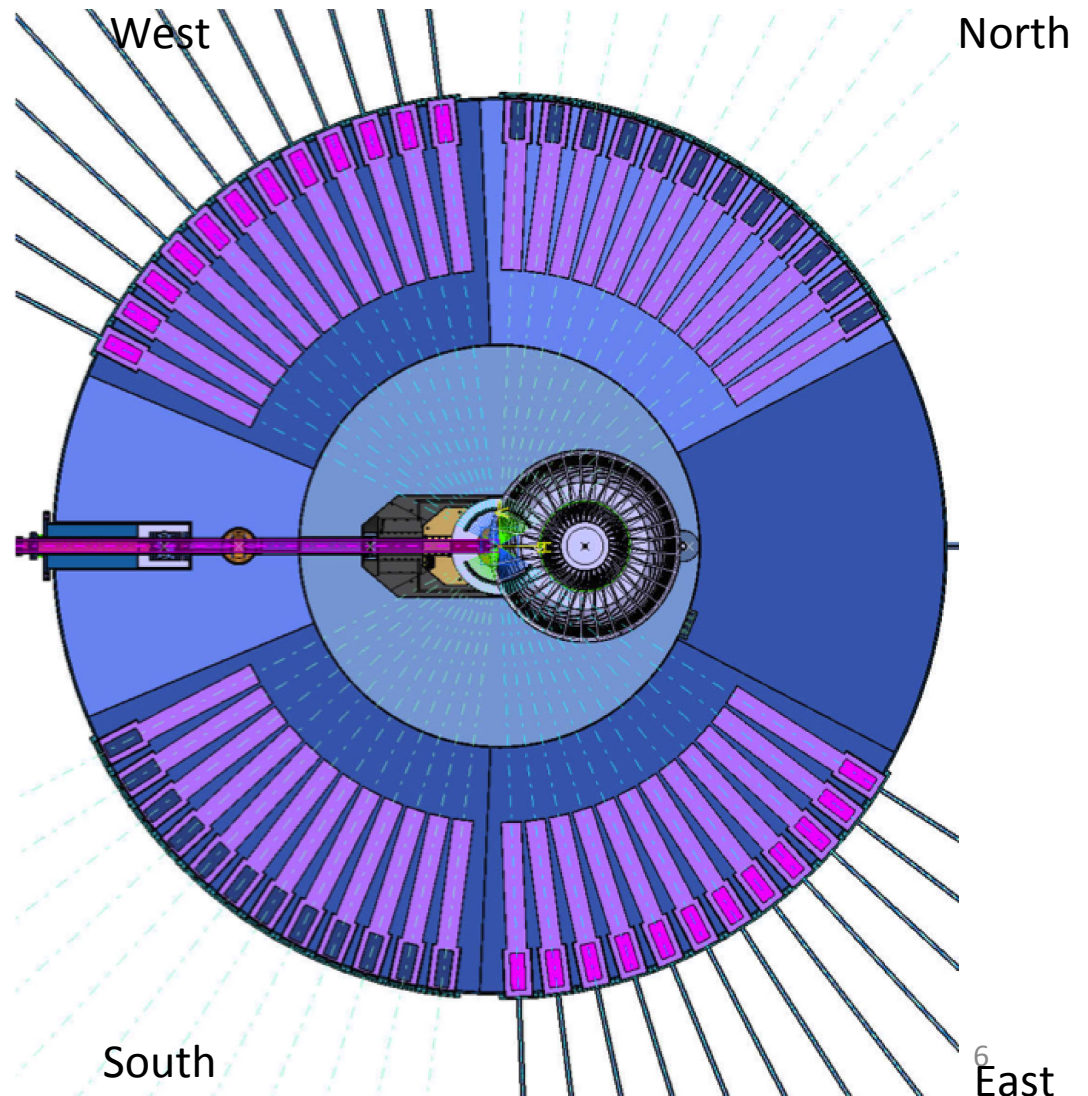
Funding



- European funding bodies have been waiting for the establishment of the ERIC
- This has led to delays in starting new instrument projects and similar problems in other portions of ESS
- Site construction is funded directly by the host nations and has been continuing without delay

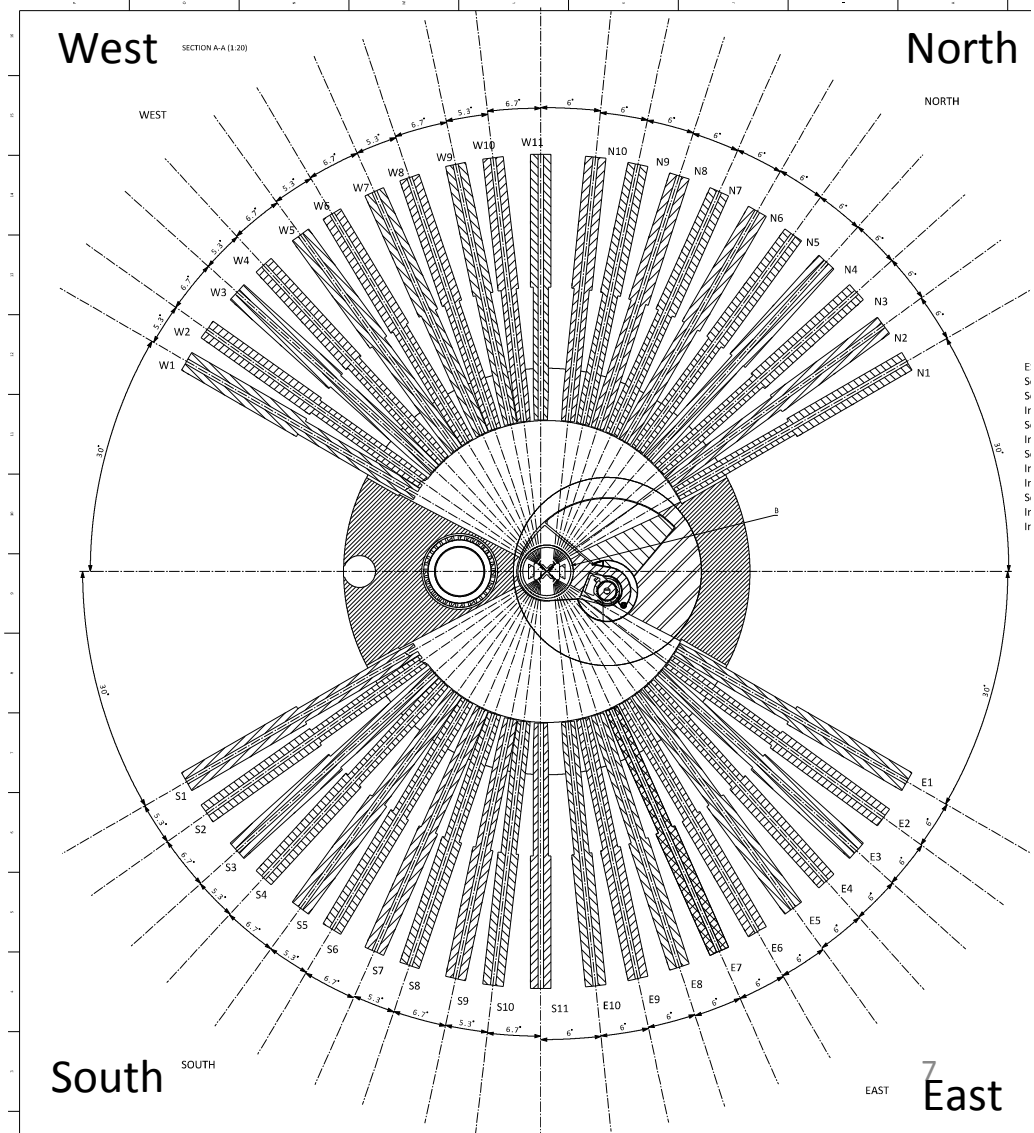
Angular Separation

TDR baseline:
48 ports,
uniform
separation of
 5°



Angular Separation

New: 42 ports, uniform 6° in the North and East sectors, and alternating 5.3° and 6.7° for the ports in the West and South sectors.



Change 1 – Angular Separation



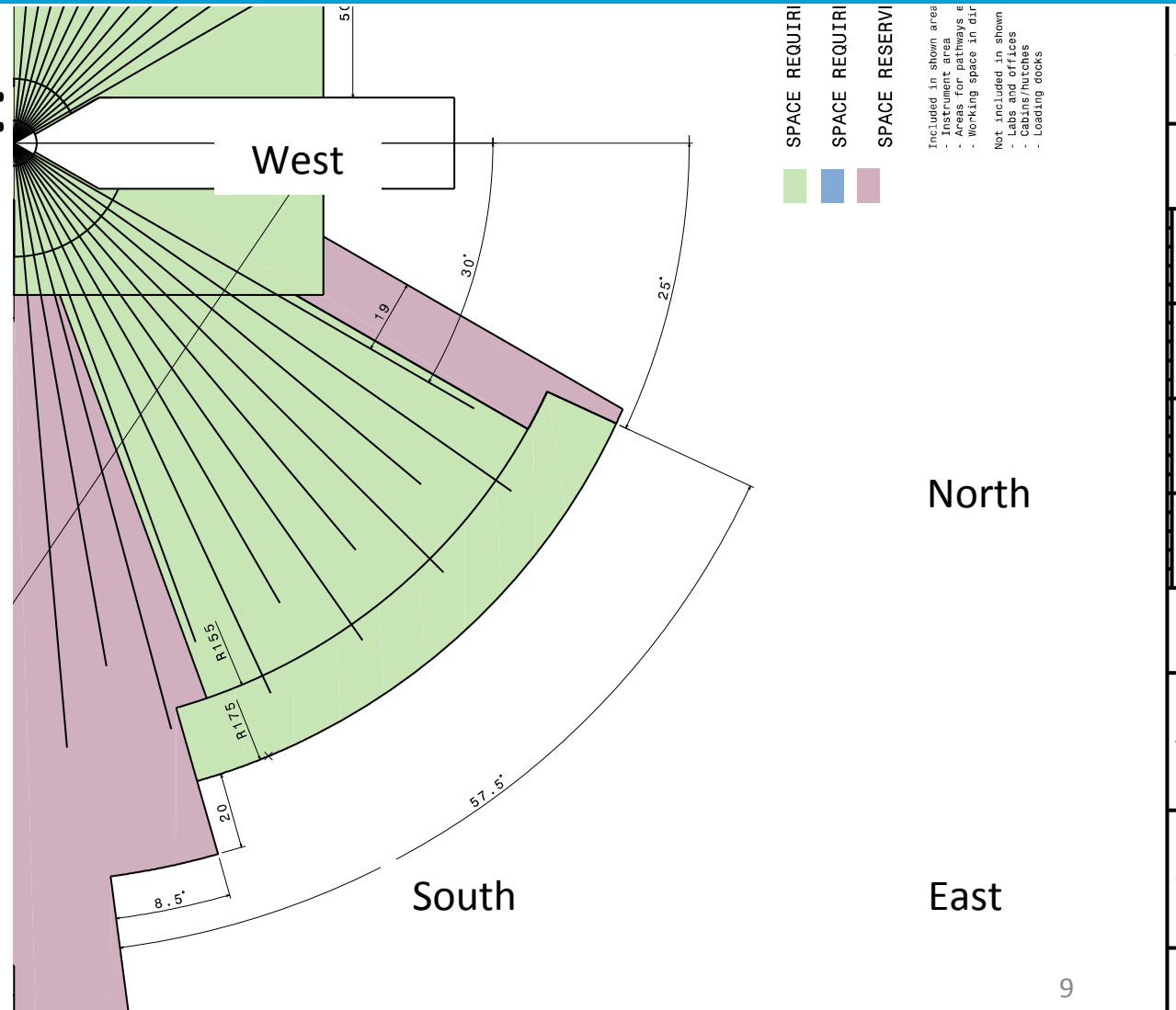
New: 42 ports, uniform 6° in the North and East sectors, and an alternating 5.3° and 6.7 for the ports in the West and South sectors.

Beamport	Angle	Beamport	Angle
N1	30.0°	E1	-30.0°
N2	36.0°	E2	-36.0°
N3	42.0°	E3	-42.0°
N4	48.0°	E4	-48.0°
N5	54.0°	E5	-54.0°
N6	60.0°	E6	-60.0°
N7	66.0°	E7	-66.0°
N8	72.0°	E8	-72.0°
N9	78.0°	E9	-78.0°
N10	84.0°	E10	-84.0°
W11	90.0°	S11	-90.0°
W10	96.7°	S10	-96.7°
W9	102.0°	S9	-102.0°
W8	108.7°	S8	-108.7°
W7	114.0°	S7	-114.0°
W6	120.7°	S6	-120.7°
W5	126.0°	S5	-126.0°
W4	132.7°	S4	-132.7°
W3	138.0°	S3	-138.0°
W2	144.7°	S2	-144.7°
W1	150.0°	S1	-150.0°

Change 1 – Angular Separation

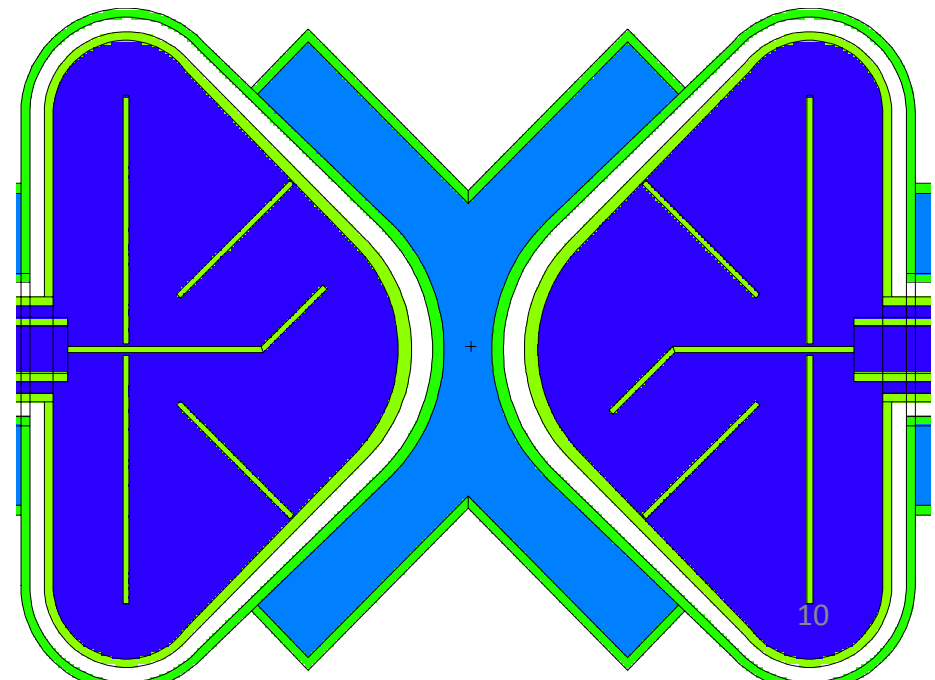
Changes to CF:
new layout of
instrument
supporting
piling in the
Guide Hall

OLD



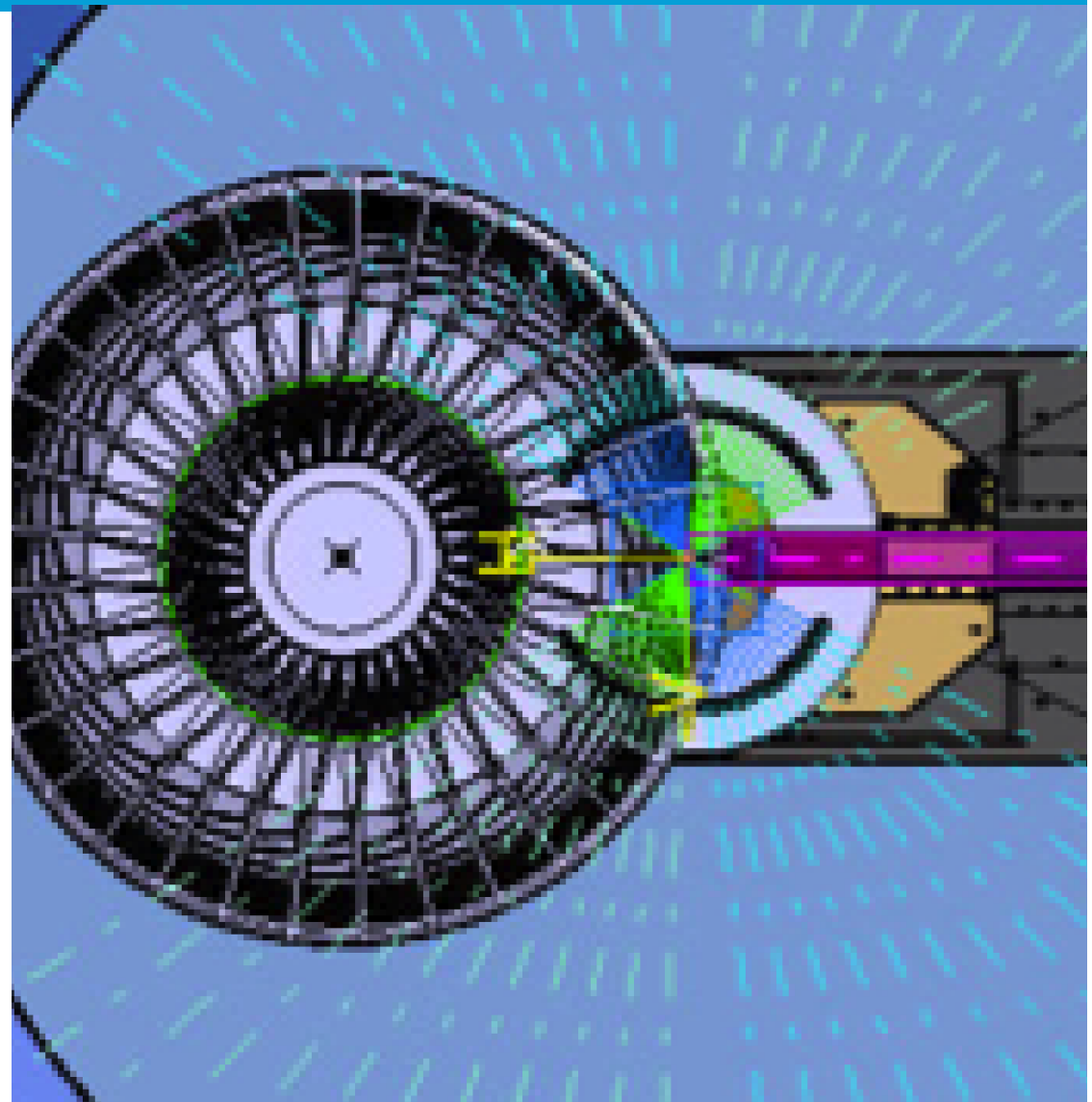
Moderator/Reflector

- Change from Pancake to Butterfly Style
 - Upper Moderators are 3 cm tall
 - Lower Moderators are 6 mc tall
- Preliminary Design Review held in June 2015
 - Neutronic Report
 - Shielding System
 - Handling
 - Cryoplant
 - Interfaces



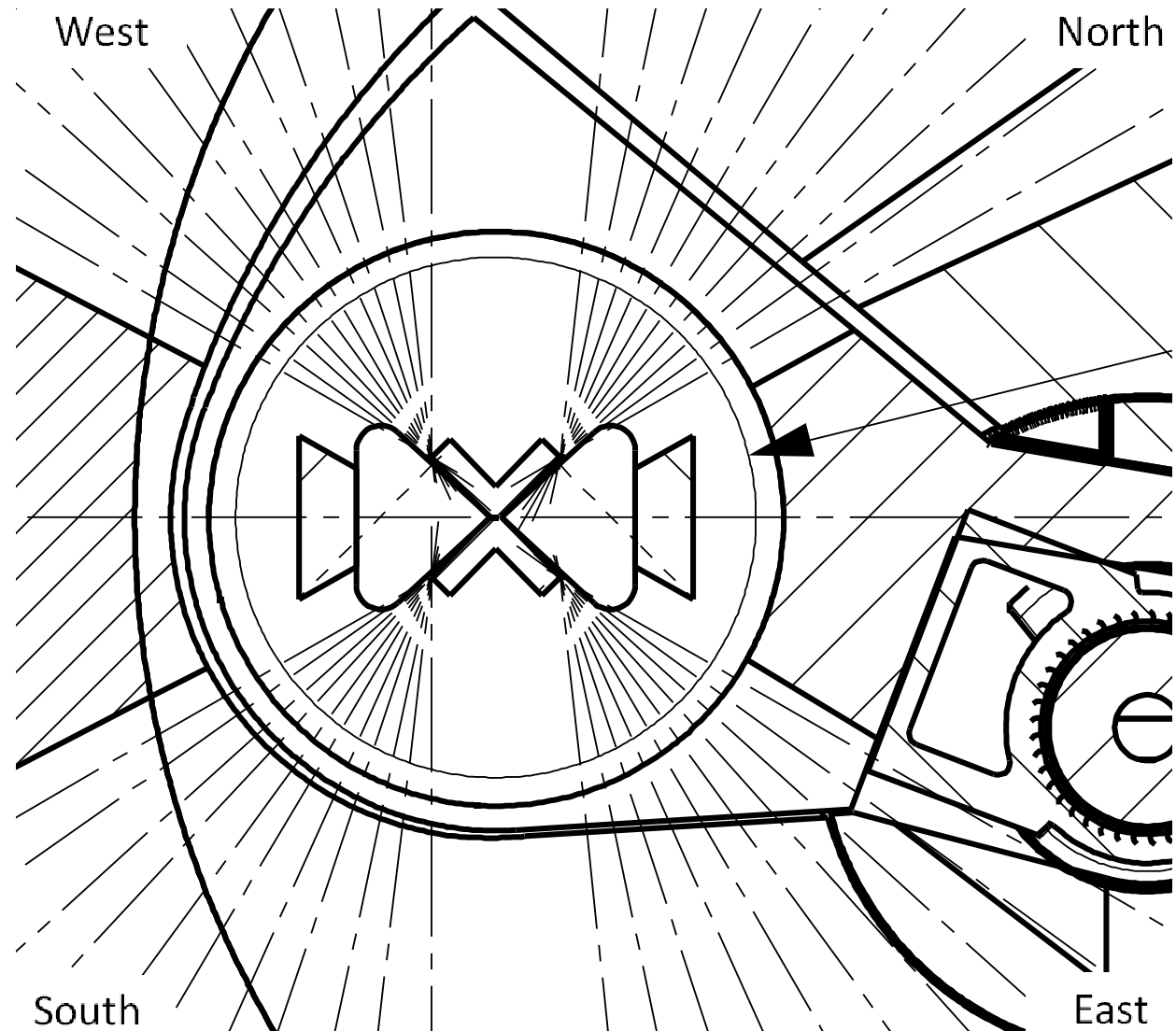
Beam Extraction

TDR baseline:
A single focal
point for all
ports



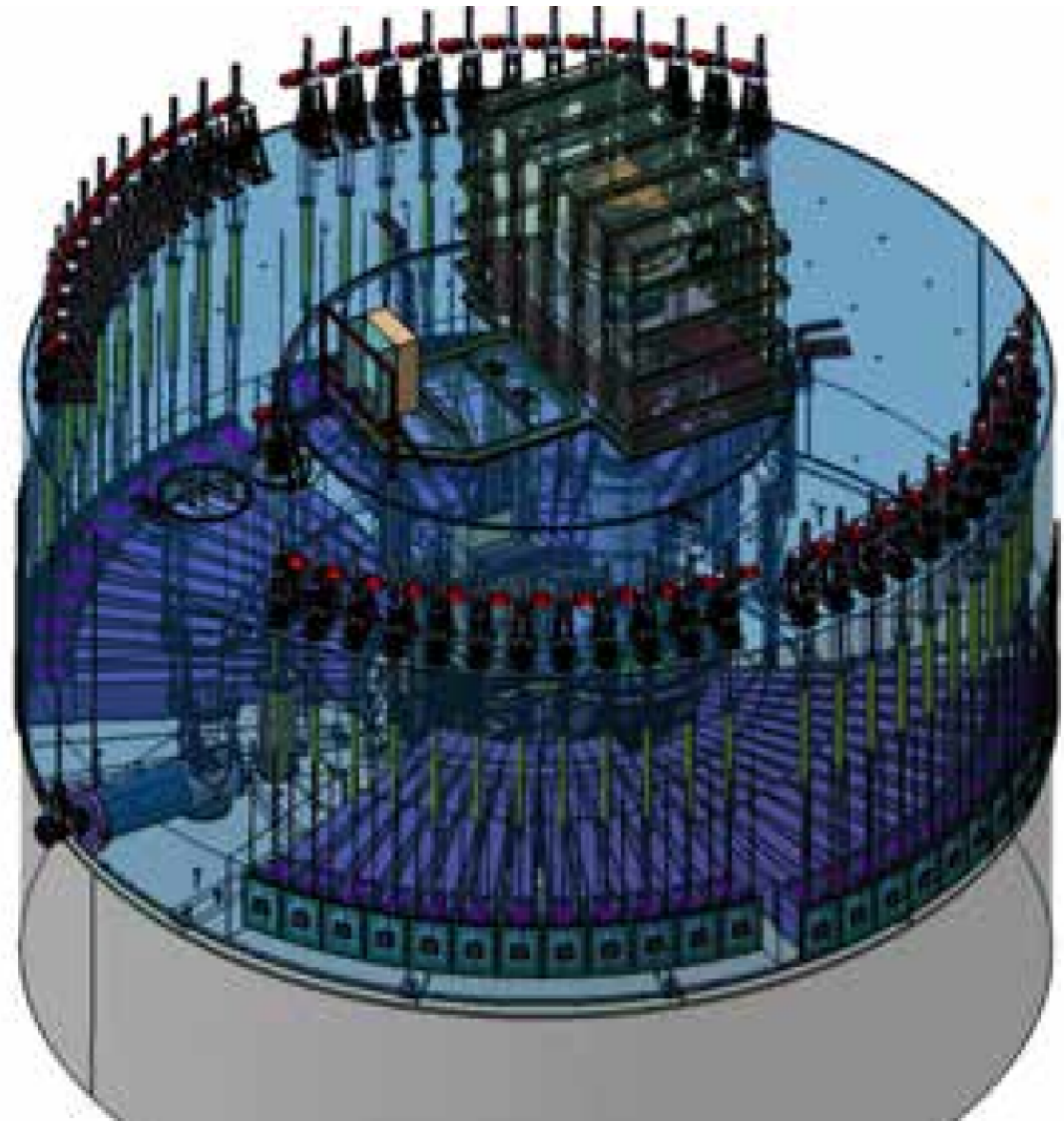
Updated Beam Extraction

New: four focal points, one for each sector



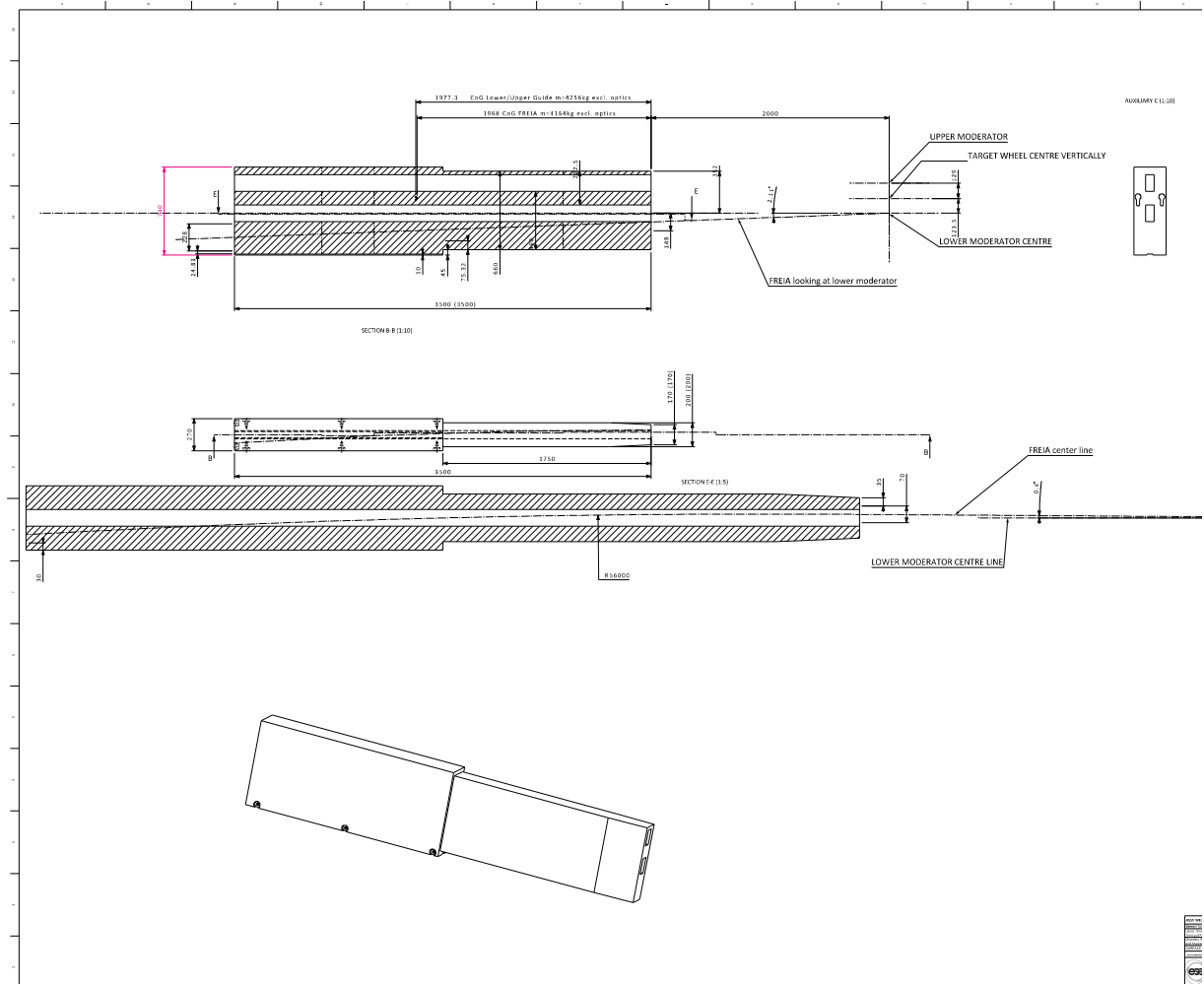
Change 2 – Beam Extraction

TDR Tooling:
each insert
views either
the top or
bottom
moderator,
grouped by
sector

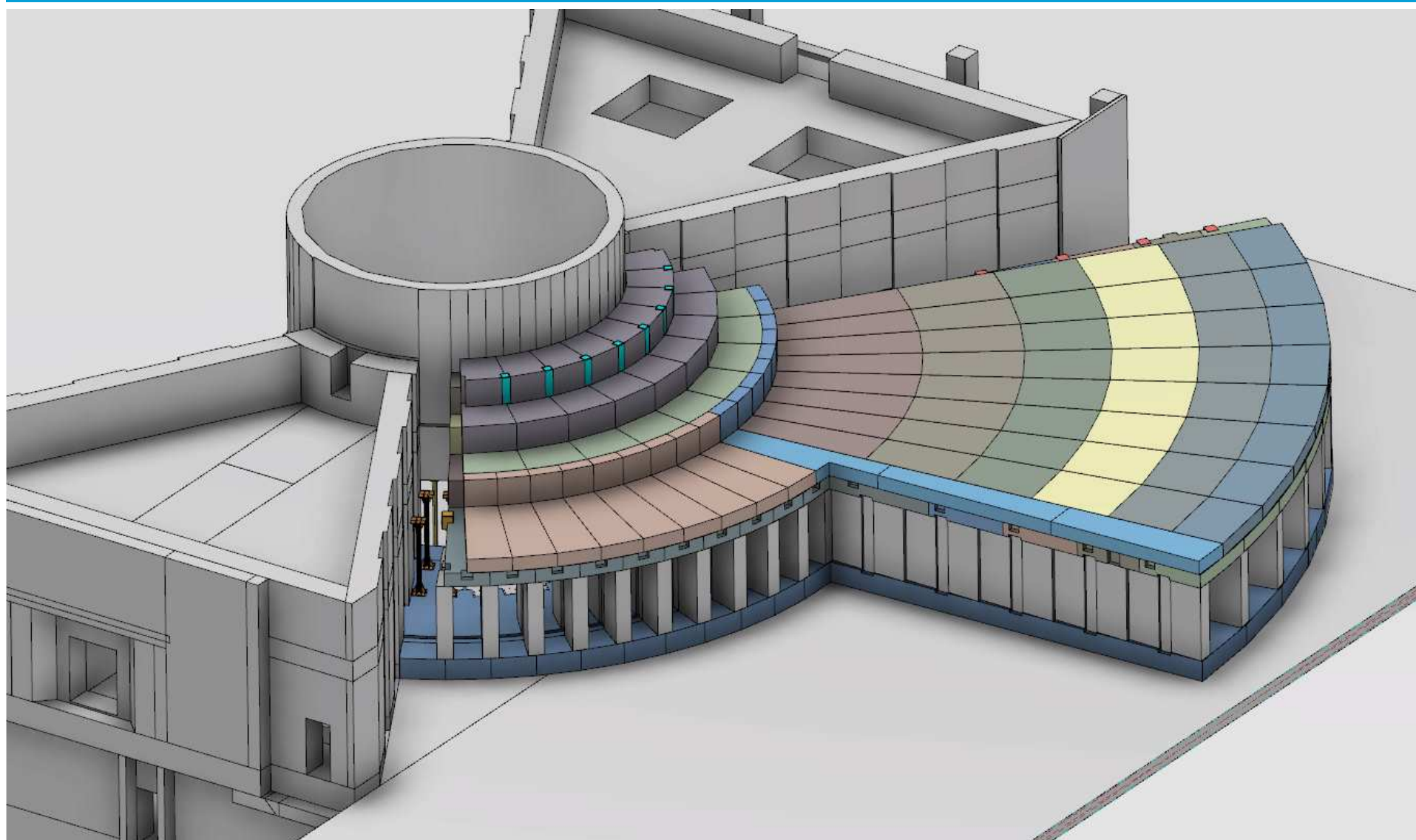


Change 2 – Beam Extraction

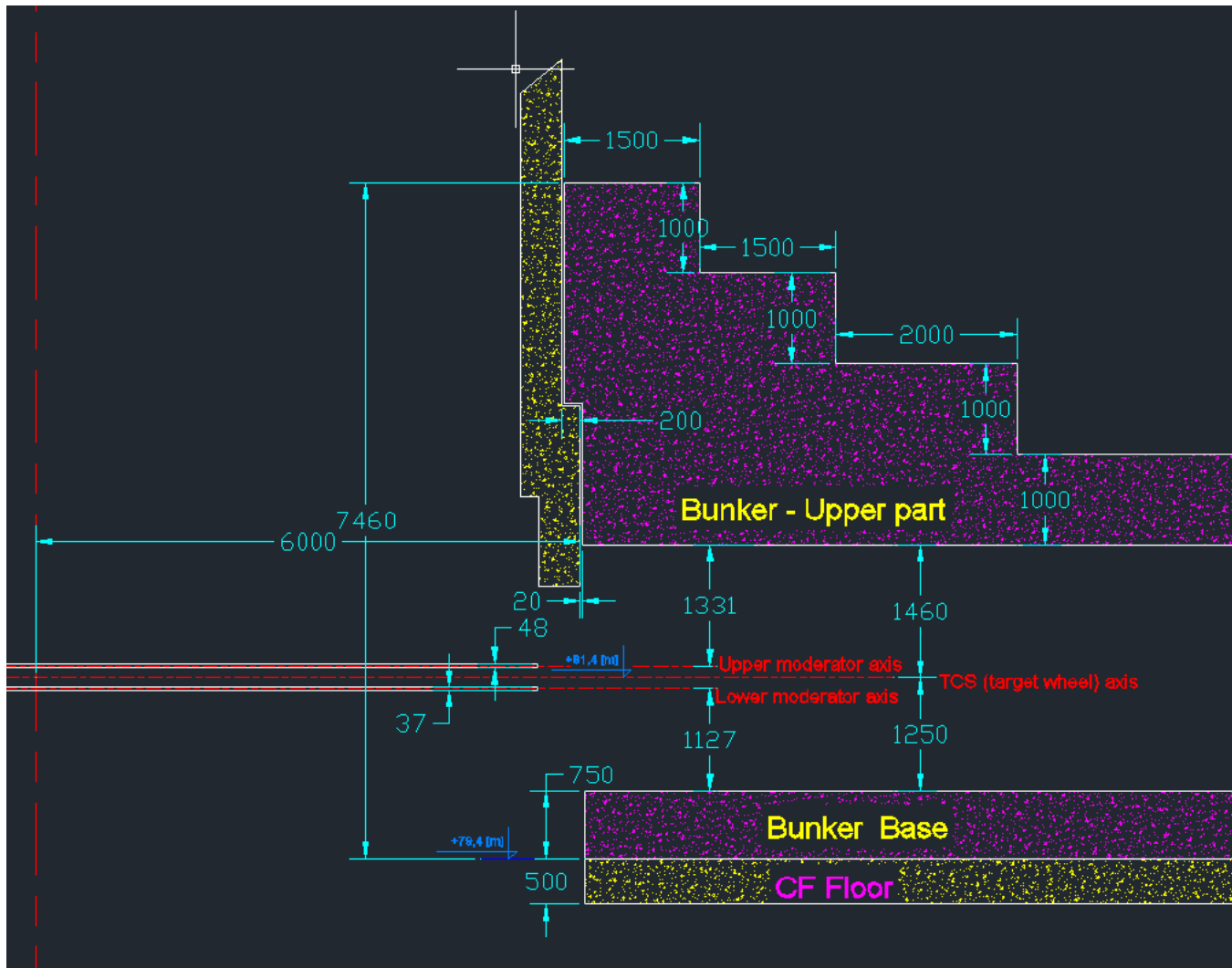
New Tooling:
each “double
decker”
insert views
the top or
bottom
moderator,
independent
of sector.



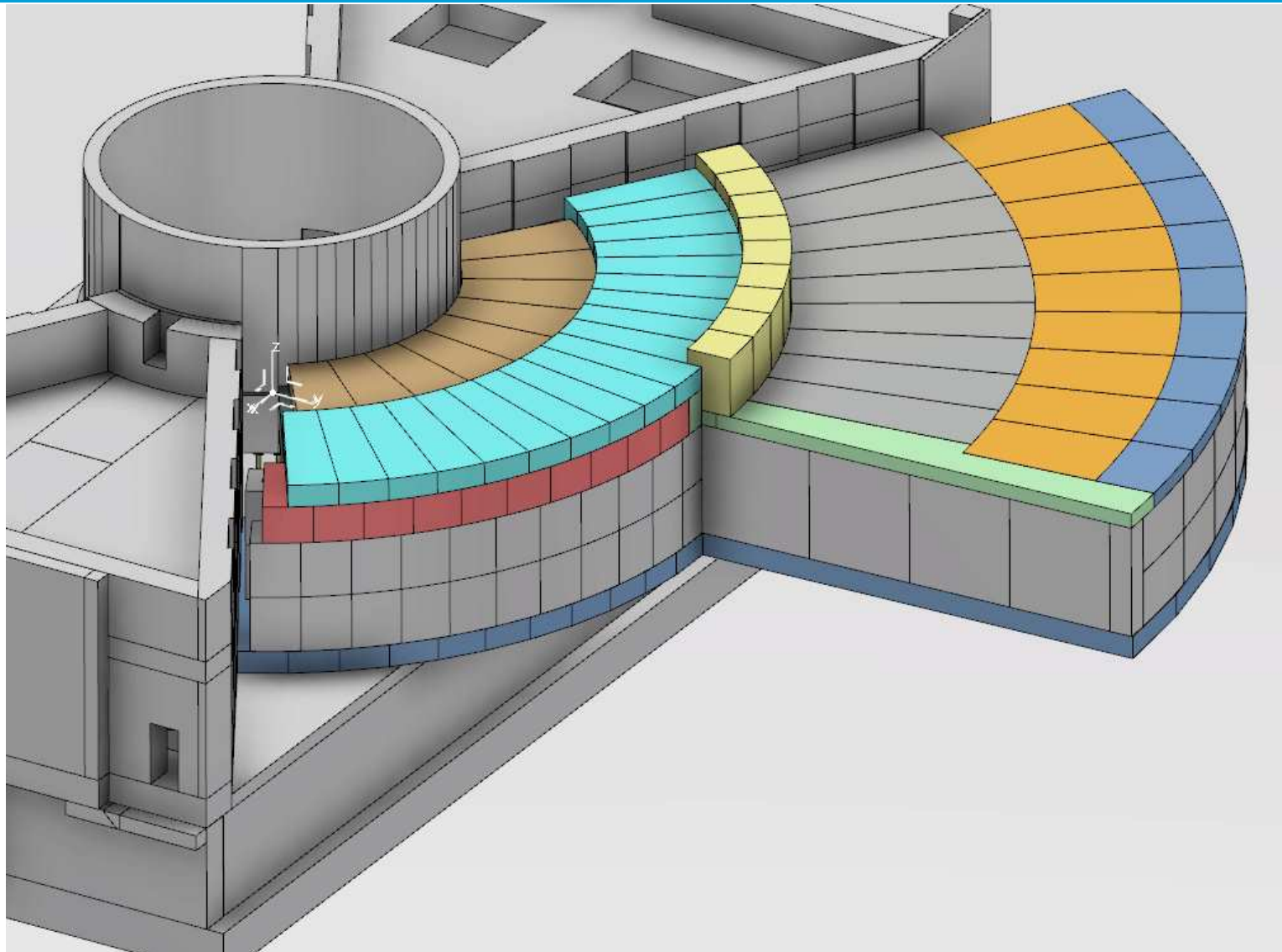
Bunker - Model A



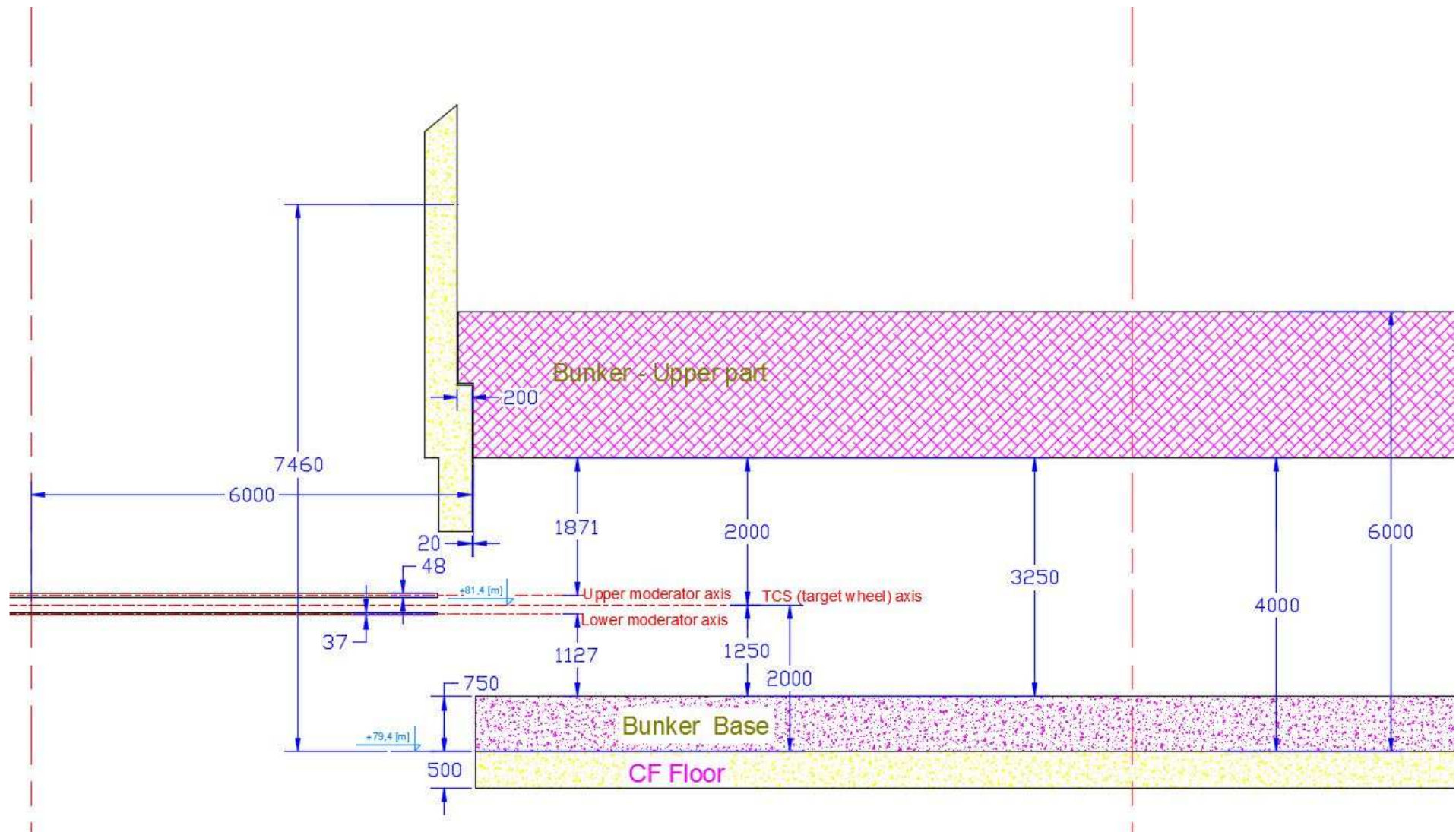
Bunker - Model A



Bunker - Model B



Bunker - Model B



Instrument Projects Current status

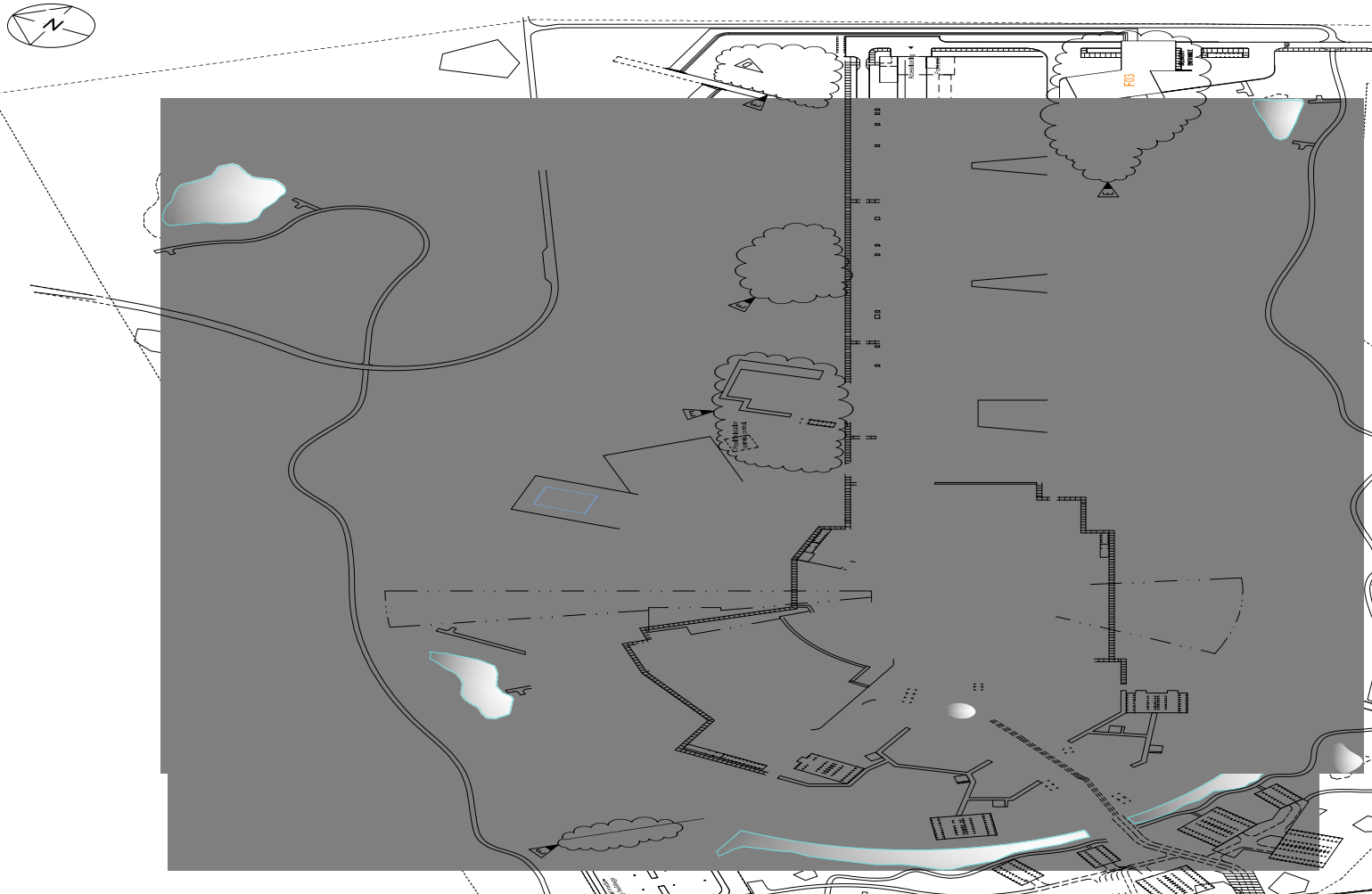


- 2 instruments successfully passed Tollgate 2 - NMX & LoKI, now working on resource plans
- 1 Instrument continues in Phase 1 (ODIN)
- Planned to start 5 new instruments in Phase 1 in 2015 – funding issues have delayed these plans
- Working to develop resource plans for other instrument projects

Construction Progress

Site Overview

see respective drawing sets



Site Construction Status - 2013



Site Construction Status - March 2014



Site Construction Status – July 2014



Site Construction Status – August 2014



Site Construction Status – September 2014



Site Construction Status – October 2014



Site Construction Status – December 2014



Site Construction Status – January 2015



Site Construction Status – March 2015



Site Construction Status – April 2015



Site Construction Status – May 2015



Site Construction Status – June 2015



Site Construction Status – July 2015



Site Construction Status – August 2015



Site Construction Status Accelerator Tunnel April 2015



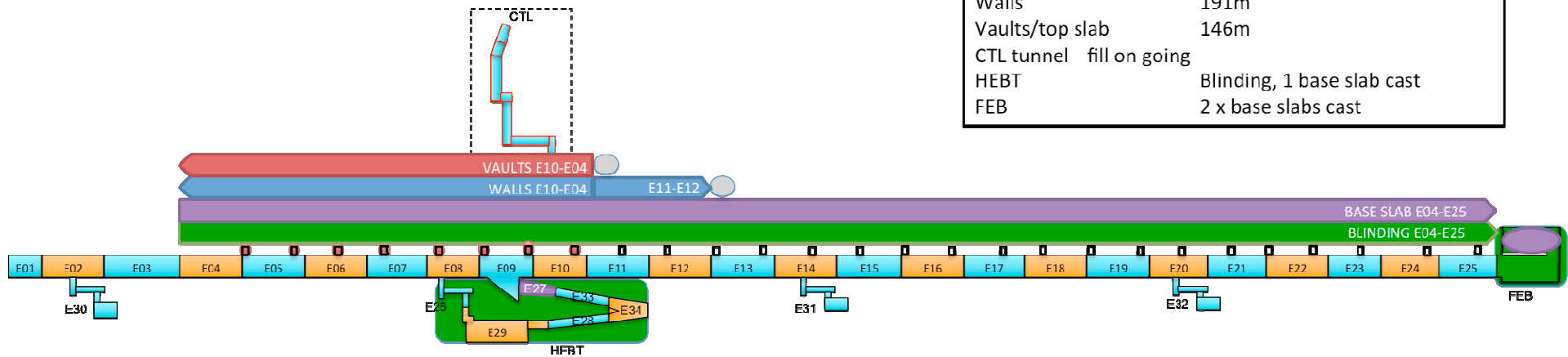
Site Construction Status

Accelerator Progress Chart July 2015



Accelerator Tunnel 20150703

G01	
Blinding	474m
Base slab	474m
Walls	191m
Vaults/top slab	146m
CTL tunnel	fill on going
HEBT	Blinding, 1 base slab cast
FEB	2 x base slabs cast



Site Construction Status Inside the Accelerator Tunnel



Site Construction Status Target & Experimental Halls Foundation



Site Construction Status Target and Experimental Halls Piling



Construction Timeline (Instrument Focus)



Bunker Base Construction begins	December 2016
Instrument Construction begins	March
2018	
First Neutrons	2019
Hot Commissioning 1 st Instruments	2020
User Program (8 Instruments)	2023
16 Instruments	2025
22 Instruments	2028

Questions?