

CMS LS2 upgrade

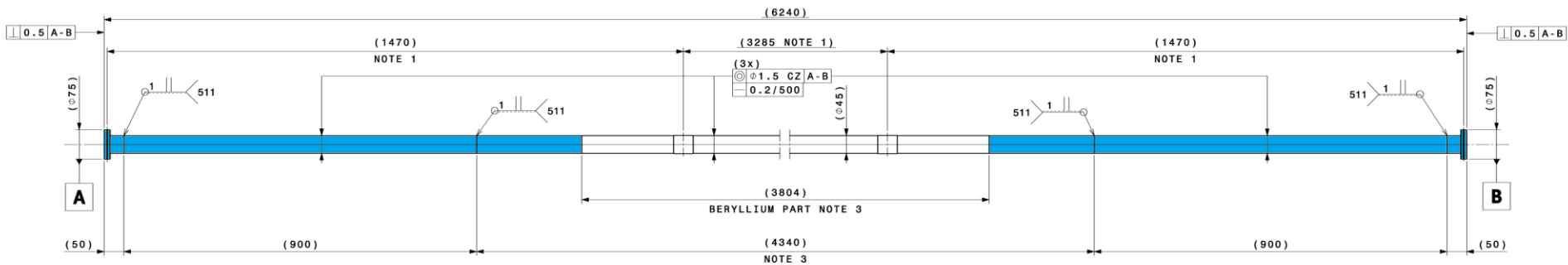
Experimental beam vacuum

03rd of July 2019

Josef Sestak TE-VSC-BVO

Central chamber project

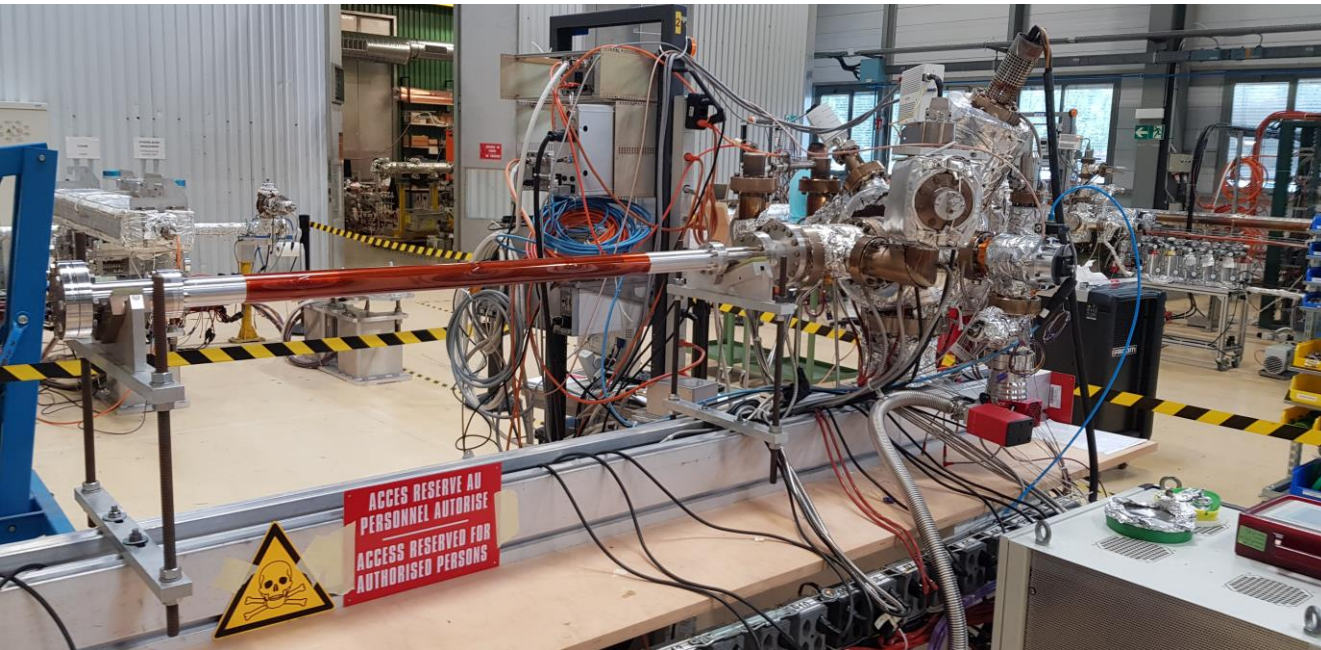
- New central chamber (LHCVC5C_0038)
 - OD 45mm; L_{Be} 3804 mm; L_{Tot} 6240 mm



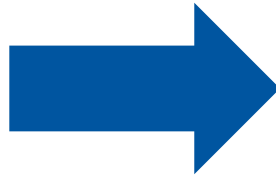
Mock-up chamber (AW2219 + Be)

Central chamber project

- Mock-up chamber for NEG coating qualification

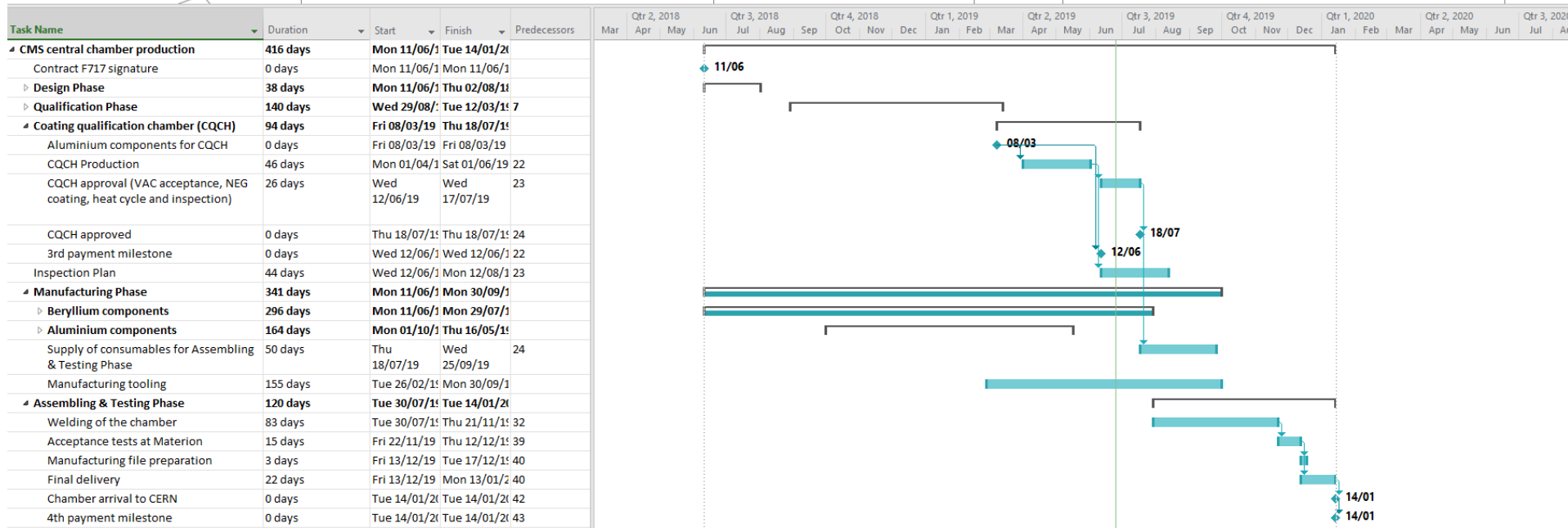
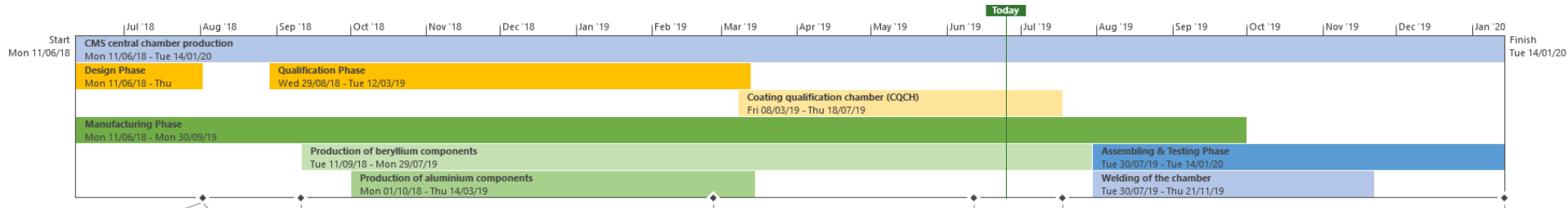


Vacuum acceptance completed
(leak detection; bake-out and
measurement of residual gas composition)



NEG coating process ongoing

Central chamber project plan



Still on schedule with delivery by November 2019 - January 2020

Chamber post-processing at CERN takes \approx 2 – 3 months

Forward layout production

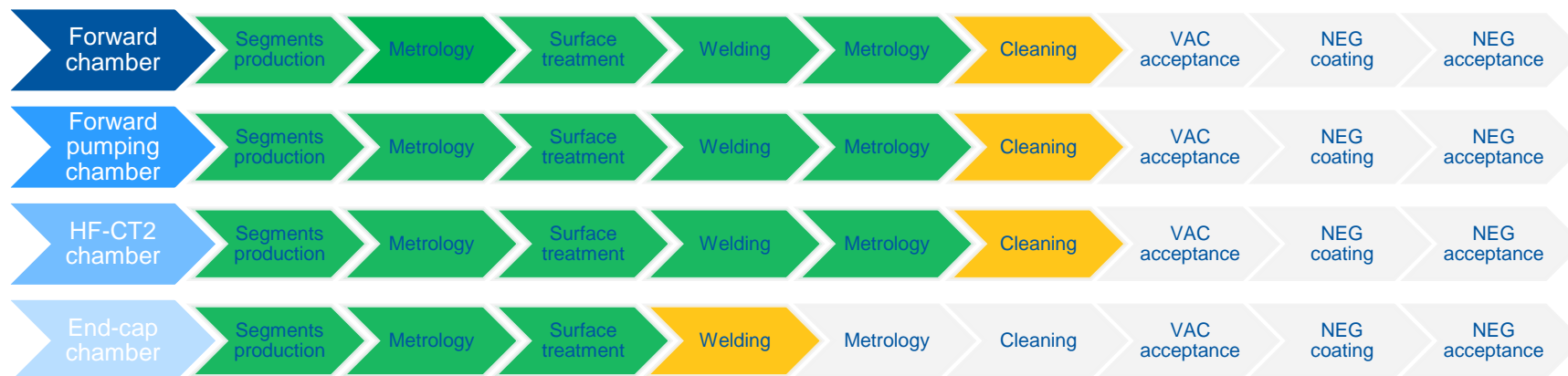
- Forward chambers
- Forward pumping chambers
- HFCT2 chamber

Each type
2+1 spare

Production completed – ready for surface treatments




Forward layout Production status



Foreseen production readiness dates:

- Forward chambers Q4 2019
- Forward pumping chambers Q4 2019
- HF-CT2 chambers Q1 2020
- End-cap chambers Q1 2020
- Central chamber Q1 2020

Removal phase

- FIN activities (June 2020) 
 - Disconnection of the VC5FR/L services.
 - Removal of VC5F and VC5FR/L.
 - Removal of support beam on FIN (LHC VH5__0016).

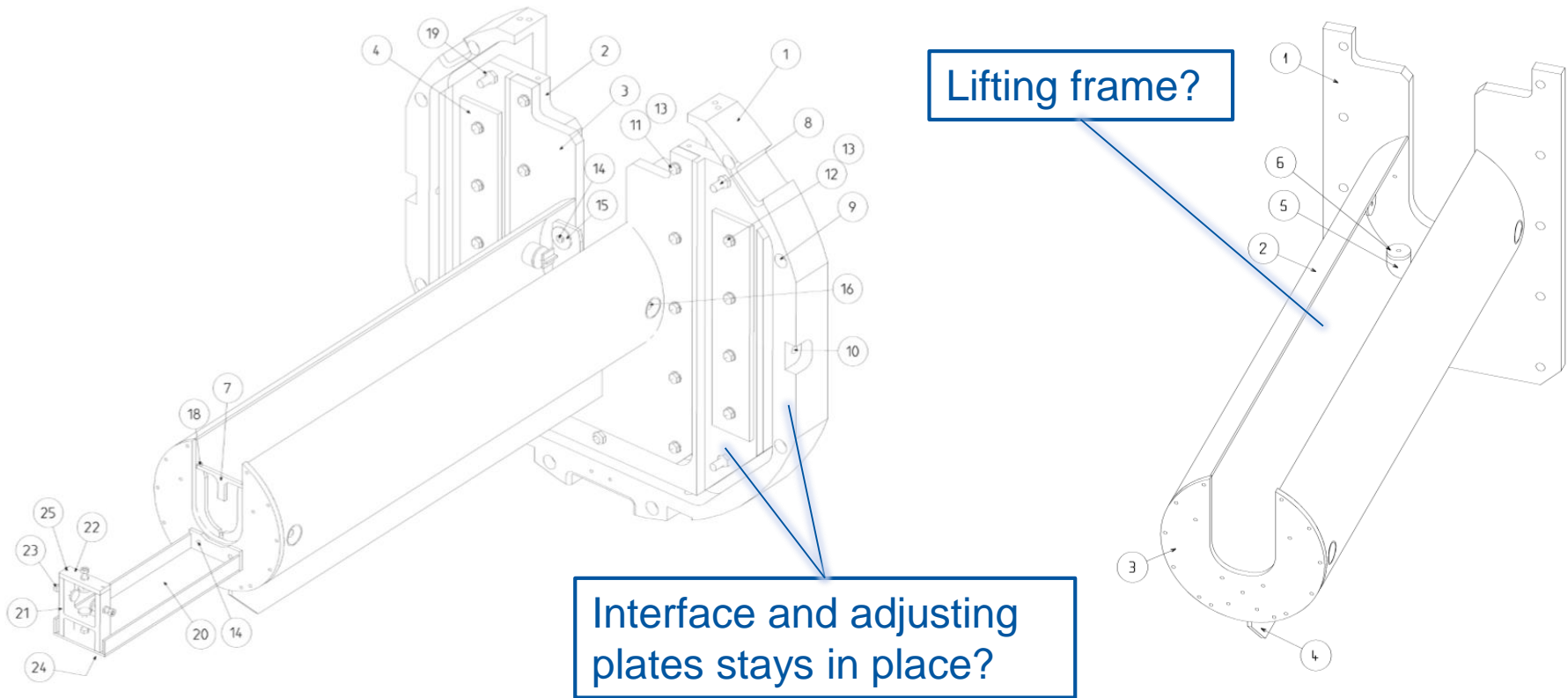
Comment on schedule:

- Activities are currently foreseen by week 26/2020.
- Contingency with the installation slot only 5 weeks.
- Vacuum chambers and support removal are independent actions.
- Zone with probability of multiple faults (bake-out and related cabling).

- What is the actual dose rate? What is the expected reduction?
- What is the configuration of the CMS for this intervention?
- Additional RP storage space requirements, or already foreseen?

Removal phase

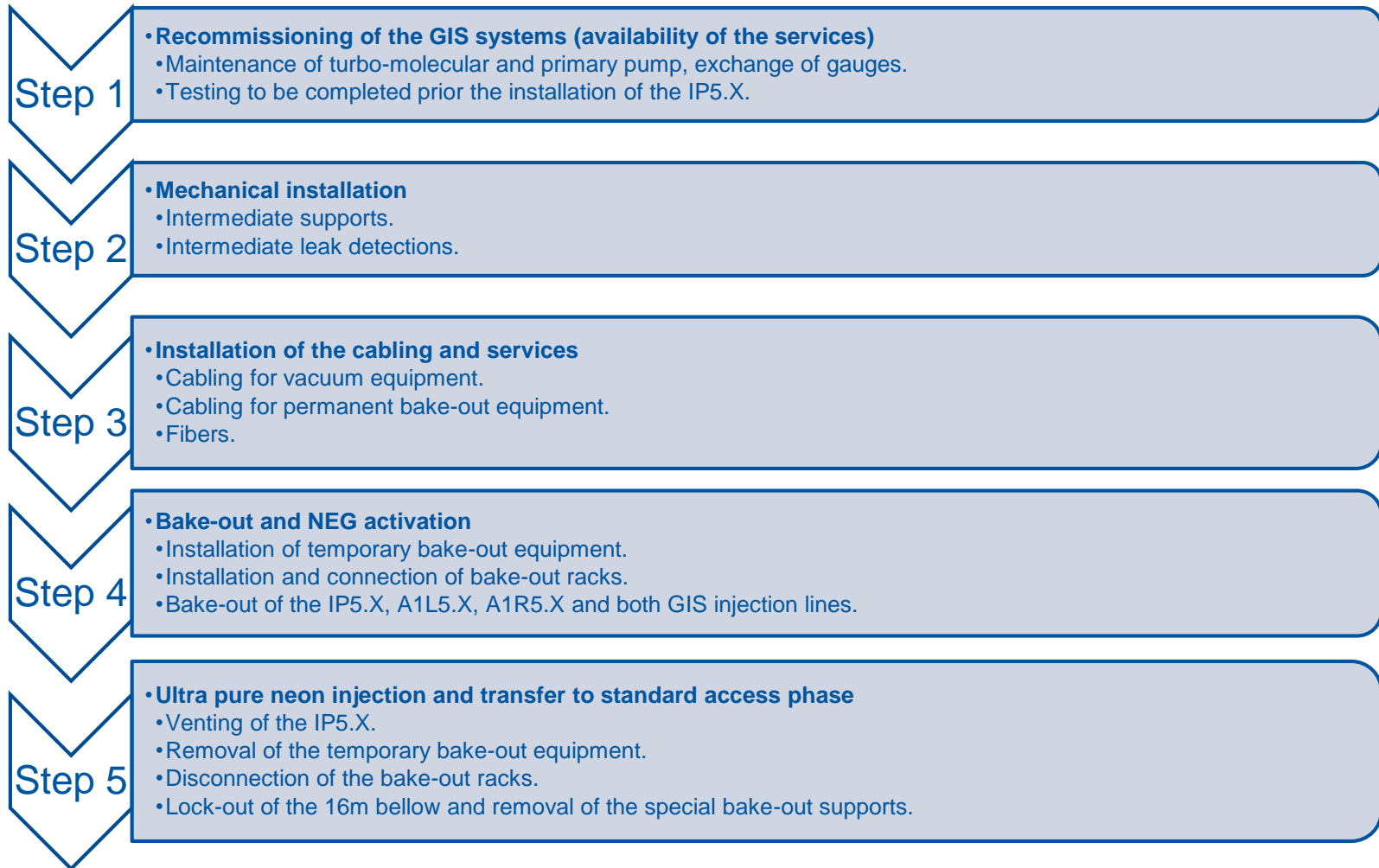
- FIN activities (June 2020) 



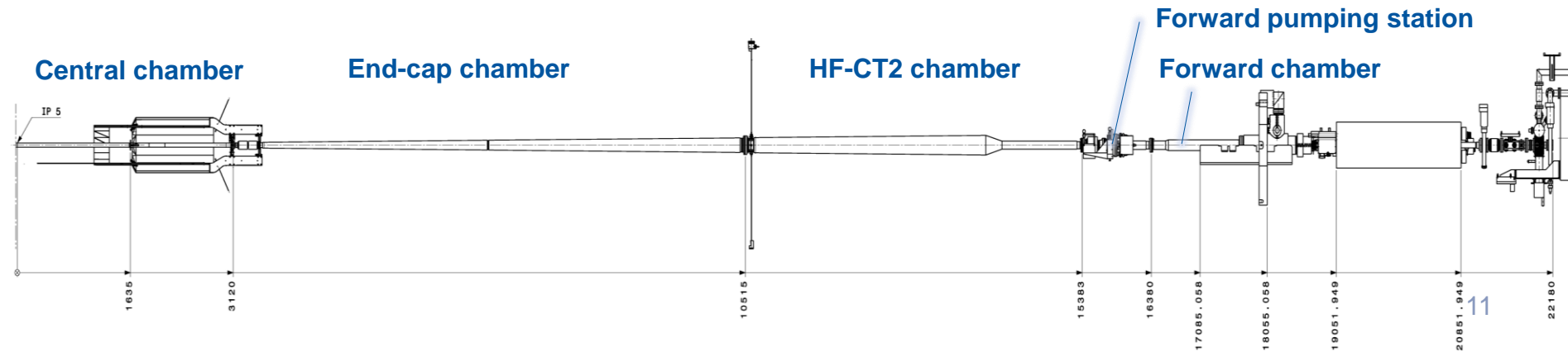
LS2 installation scenario

- Preliminary dates:
 - Installation; weeks 31 – 40 (Aug - Sept 2020).
 - Bake-out & activation; weeks 41 – 43 (Oct 2020)
 - Followed by Ne venting and standard opening.

LS2 installation scenario



Sequence for mechanical installation



1. Central chamber
2. Forward assembly – part 1 (platform 16-18m)
3. Forward assembly – part 2 (with bellow module)
4. HFCT2 chamber
5. End-cap chamber

Update on supports

- 1.6m ST0872714 – Ongoing
- 3.2m ST0872149 – To be checked
- 3.5m ST0870206 – To be checked
- 15.8m ST1008304 – To be checked
- 16-18m ST1133224 – Ongoing

Platform for 16 -18m equipment

Independent installation frame
Compatible with HL VAX box
Lifting frame to be adjusted

