



Status & Planning of HIE-ISOLDE Phase 2

Y. KADI & W. Venturini Delsolaro
for the HIE-ISOLDE Project Team

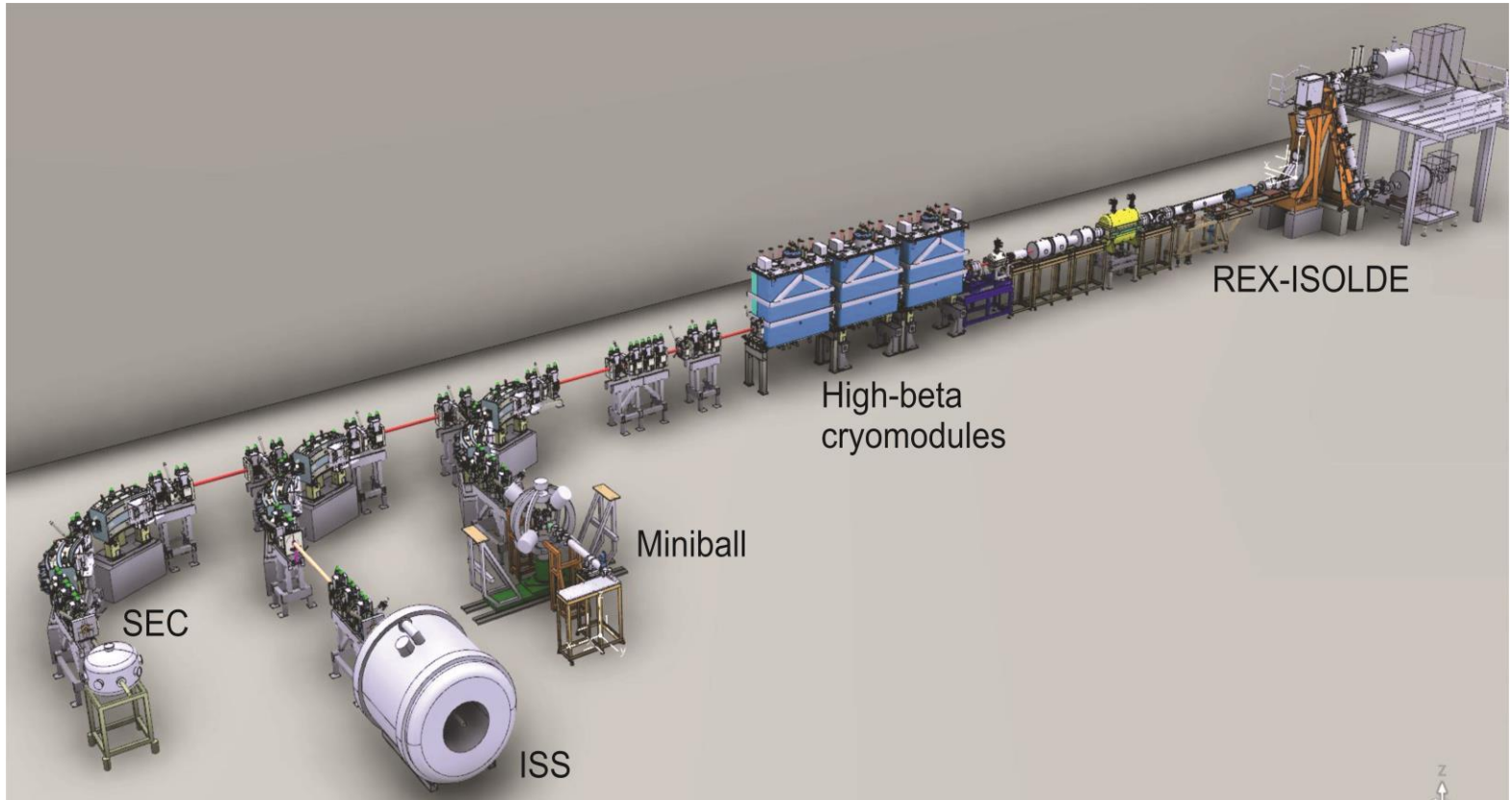
79th ISOLDE Collaboration Committee Meeting
CERN, 27 June 2017



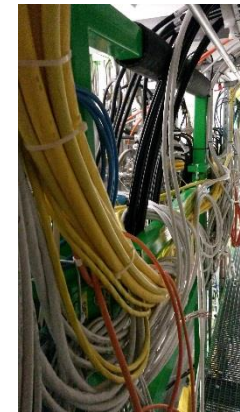
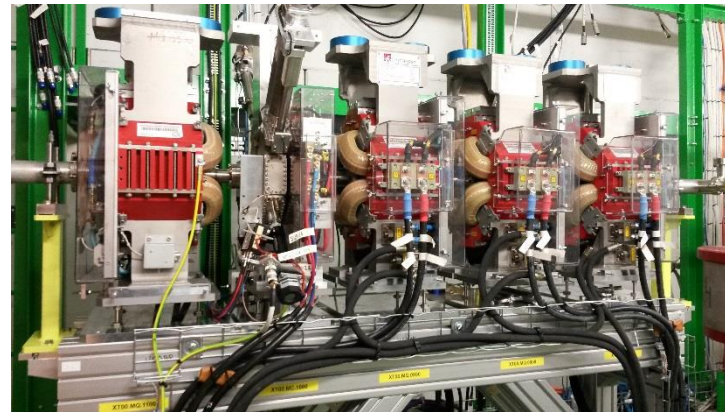
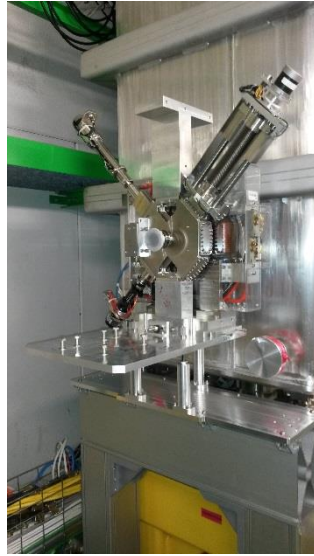
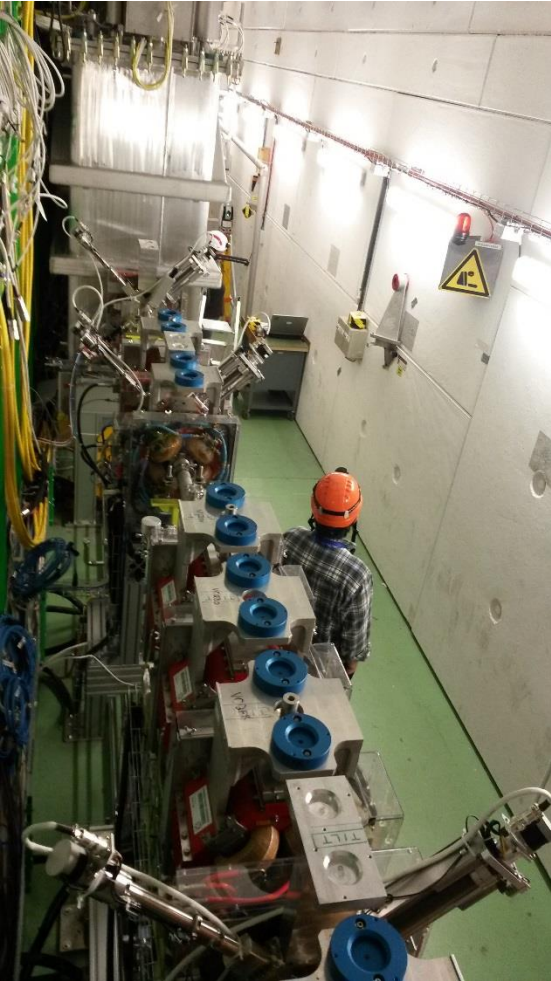
OUTLINE

- Phase2a Installation
- Cavities for Phase 2
- CM4 Assembly
- CM4 Bunker Test
- Schedule 2018
 - ✓ Physics @ 10 MeV/u with 4 CMs
- Summary

Phase 2a & 2017 Operation

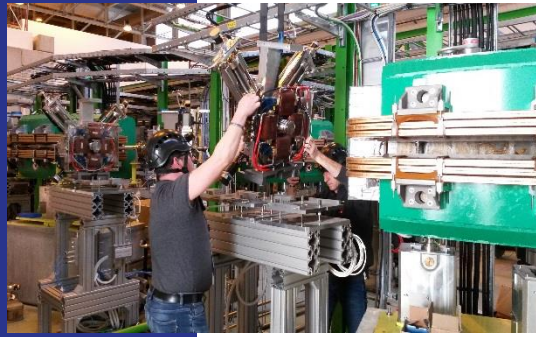


Final tunnel installation work



- XLN5 intertank sector in place and vacuum closed. BCAM cameras in place.
- All elements connected and aligned beginning of March.
- Cryo tubing on the top-plate and outside on the tunnel roof finished. CM cabling all done. Tunnel closed on the 17th March ready for CM3 hardware commissioning.

Installation XT00/03



February – May:

- XT03 supports and tables in place and re-aligned immediately after the installation of ISS.
- Installation of the dipoles followed by the Dbox units
- Quadrupole vac chambers arrived with a delay: Welding in the hall to avoid more delay.
- All elements aligned.
- Vacuum connections, gauges and valves in place. Sectors leak tight.
- All DC, water, interlocks and instrumentation connected.

Ready for Hardware Commissioning as of 8th May

ISS connected to XT02



OUTLINE

● Phase2a Installation

● Cavities for Phase 2

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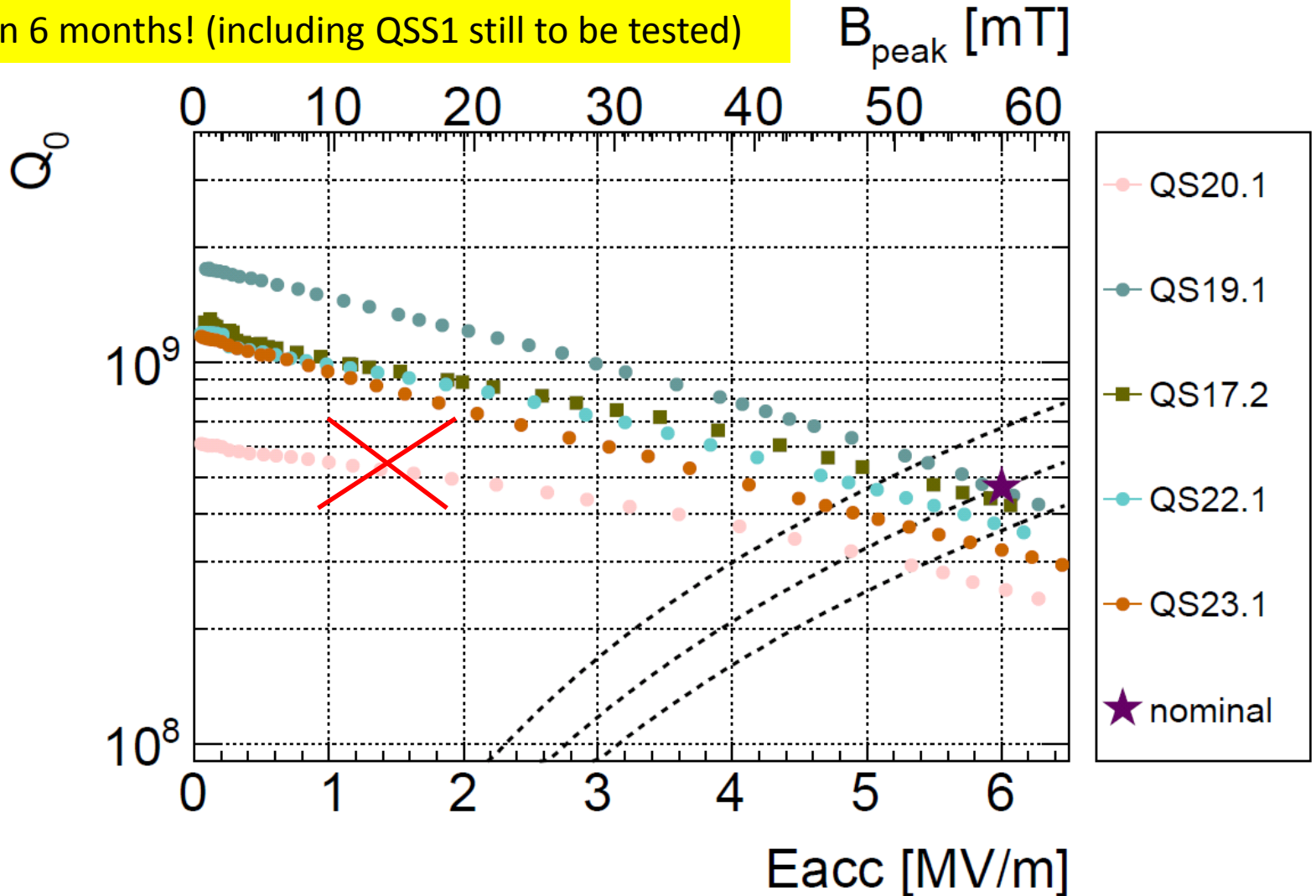
● Schedule 2018

✓ Physics @ 10 MeV/u with 4 CMs

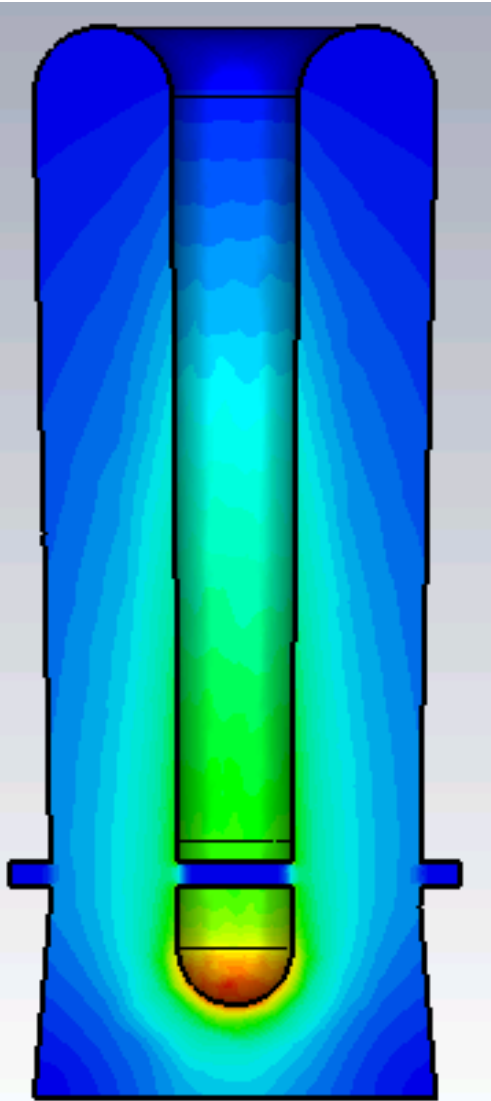
● Summary

SRF Cavities for Phase 2

6 cavities in 6 months! (including QSS1 still to be tested)



Status of seamless cavities



- Design reviewed end April 2016
- Full scale “prototype in July 2016: tolerances met → manufacturing method demonstrated
- RF design optimized and beam dynamics simulated
- Final design documented in EDMS
- Order placed in industry for 2 cavities + 1 in option

- First cavity (QSS1) delivered February, coated last week
- QSS1 cold test next week
- QSS2 delivered in April, blank assembly this week



CM4 Assembly

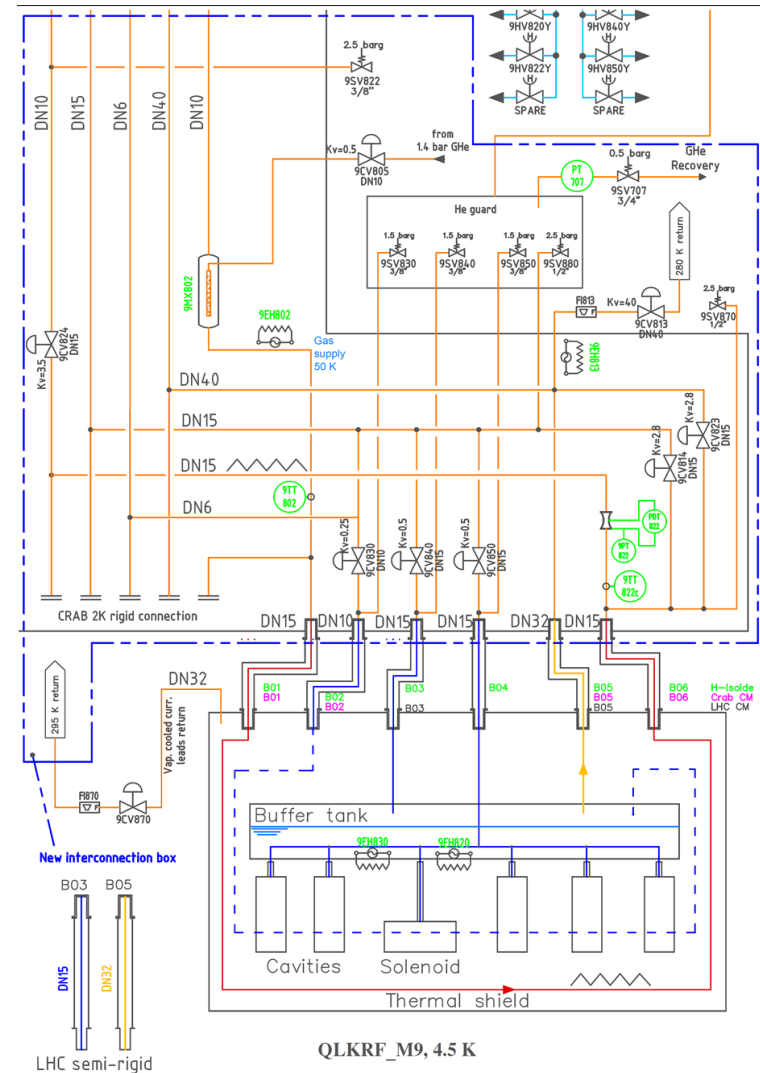
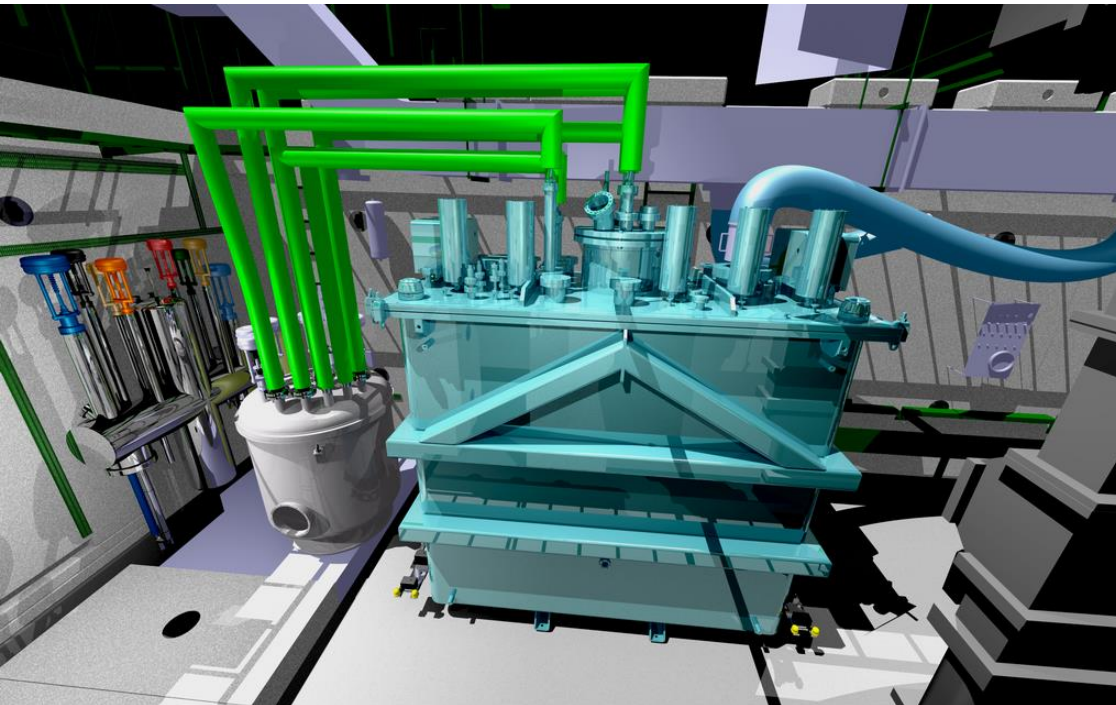
- Same assembly team as for CM1 to CM3
- Same duration as for CM3 :
 - 27 weeks in clean room
 - + 2 weeks qualification tests outside of clean room

- **Planning is shifted by 7 weeks to ensure the best set of active elements:**
 - + 7 weeks to get solenoid #5 (preferred wrt solenoid #4)
 - Window for cavity production for CM4 prolonged by 5 weeks
 - CM4 assembly will pause in week 22
 - Solenoid #5"
 - Arrival at CERN: delayed from w18 to w27
 - Ready for installation: w29
 - **5 cavities ready for the installation in w33**
 - **CM4 finished and tested at warm: w42**

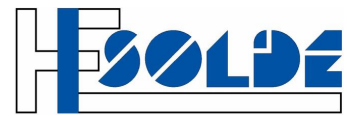
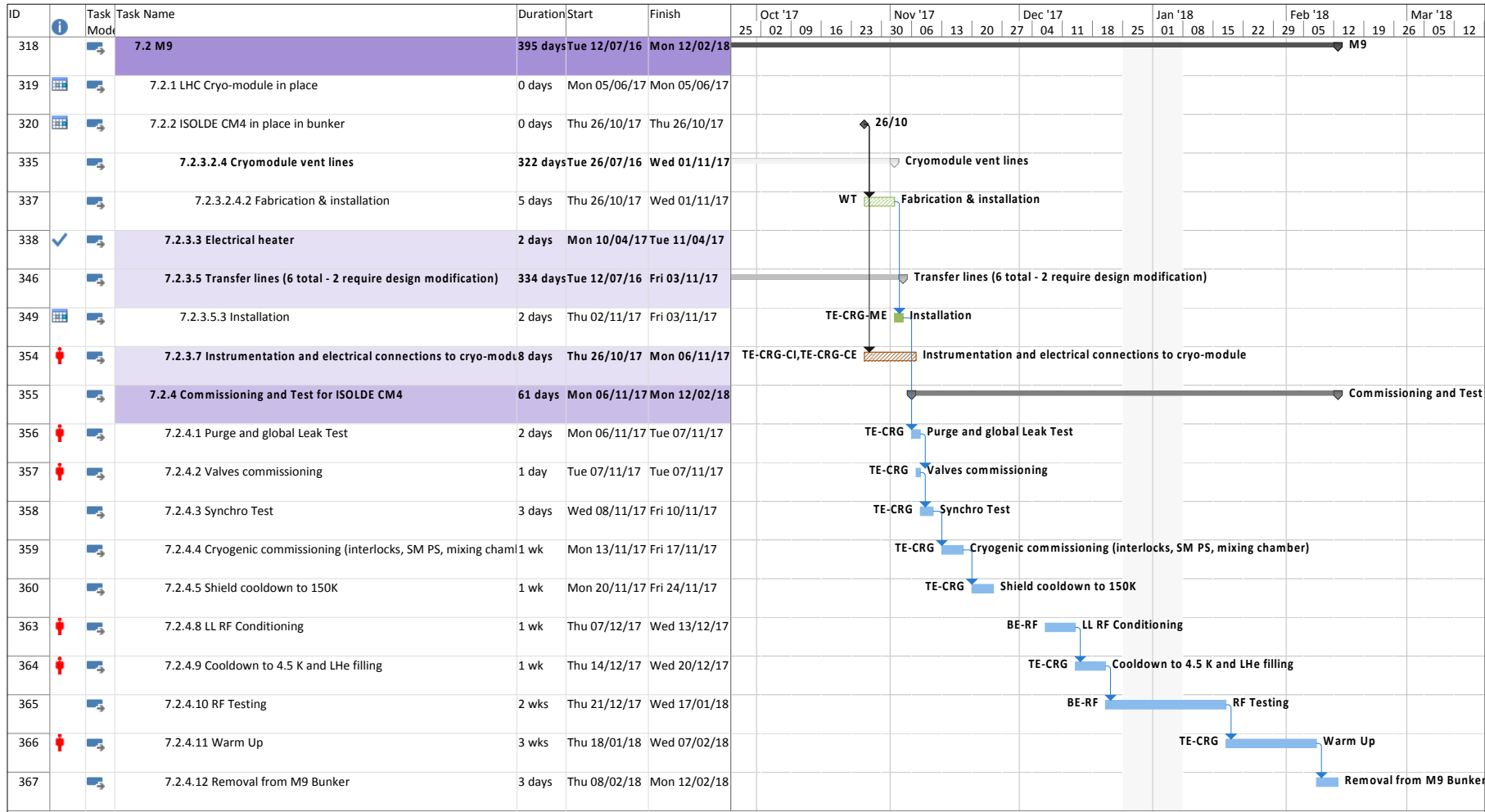


CM4 Bunker Test

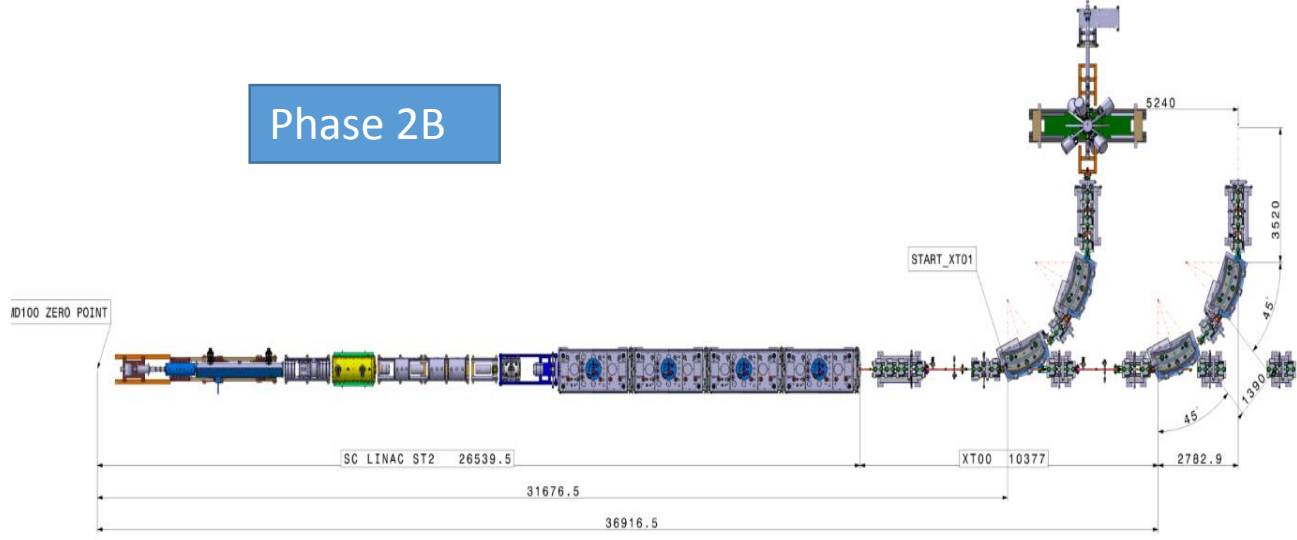
- Integration study still valid
- Transport tools available
- Cryogenics (valve box) installed
- RF racks installed and cabled
- Solenoid rack to be recovered from DANFISYK
- Procedures will be adapted from those used for the linac (some tests can be skipped)
- Space management: LHC cryomodule sitting in M9



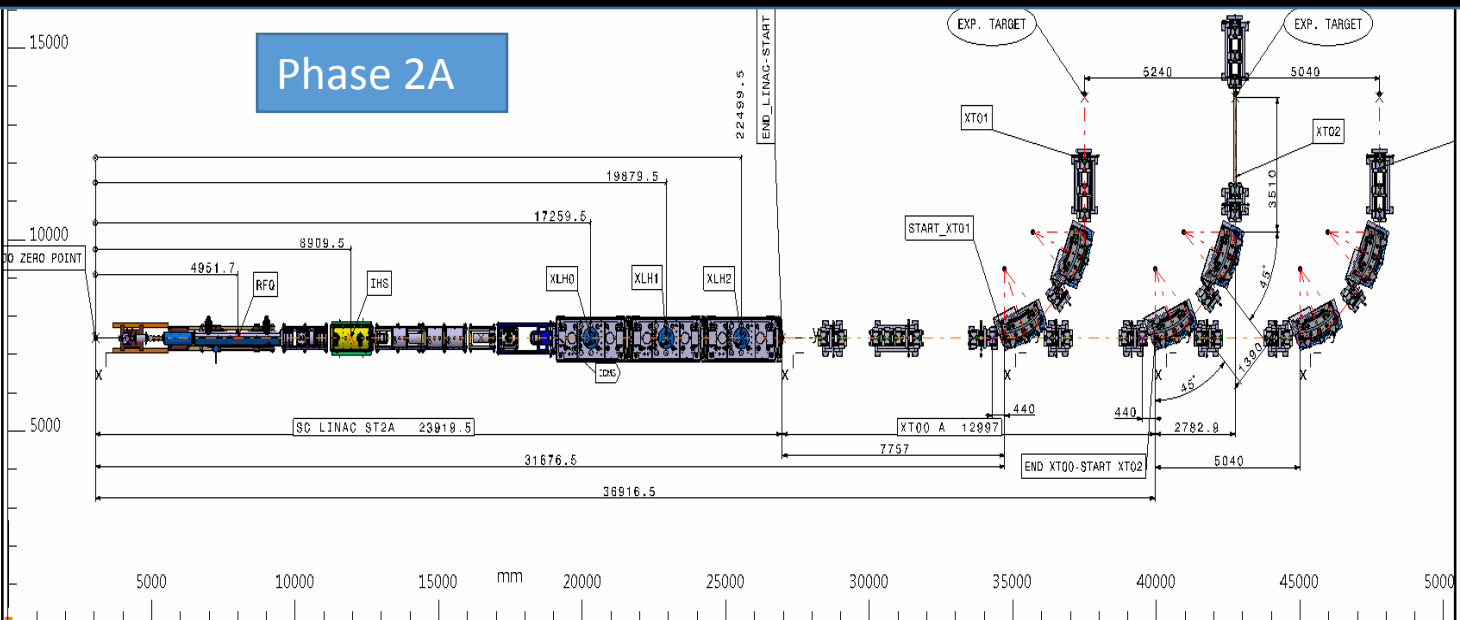
CM4 Bunker Test Schedule



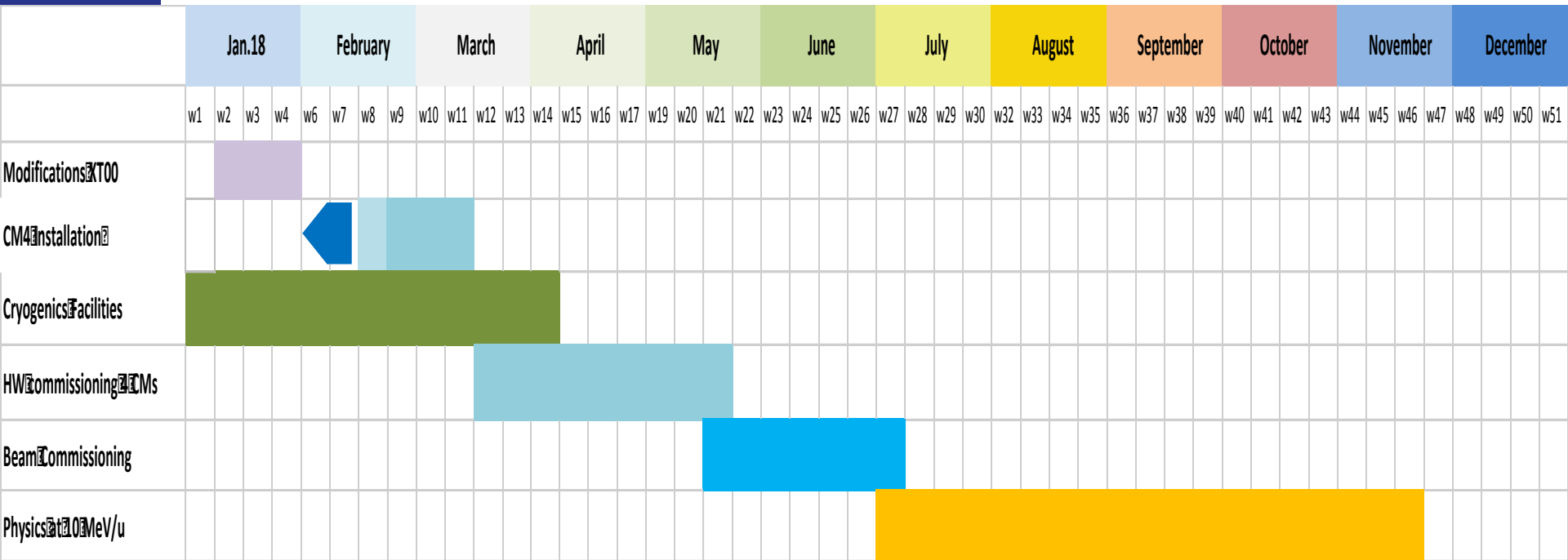
Phase 2B



Phase 2A



2018 Schedule



Overall Summary

- **CERN strategy on cavities for phase 2 being implemented**
 - ✓ Last RI cavity *performance improved* after change of weld parameters
 - ✓ CERN produced cavities (QS22 and QS23) finished
 - ✓ Production Seamless cavities also progressing well: to be tested week 27
- **CM4 Assembly**
 - Will use the best available cavities and solenoid
 - Schedule adjusted, matching end of cryo-shutdown in SM18
 - Bunker test is scheduled for the end of the year => *Management decision solicited to go ahead or not*, considering all facts
- **Spares**
 - Baseline: complete set of cavities (5xQS+ 1xQSS) and solenoids (1+coil)
 - Possible future option: “hot spare”
 - Infrastructures and know-how anyway to be preserved by CERN



Thank you!

