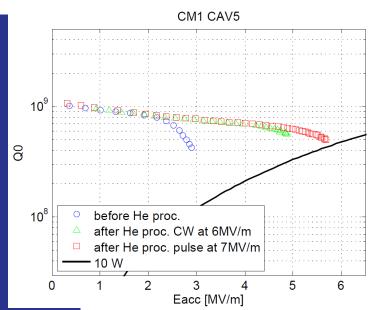


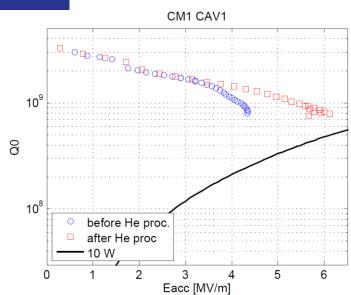
# Planning of HIE-ISOLDE Phase 2 Until Completion

Y. KADI
for the HIE-ISOLDE Project Team
ISOLDE Collaboration Committee Meeting
CERN, 7 February 2017



### **Phase 1: Re-Commissioning**



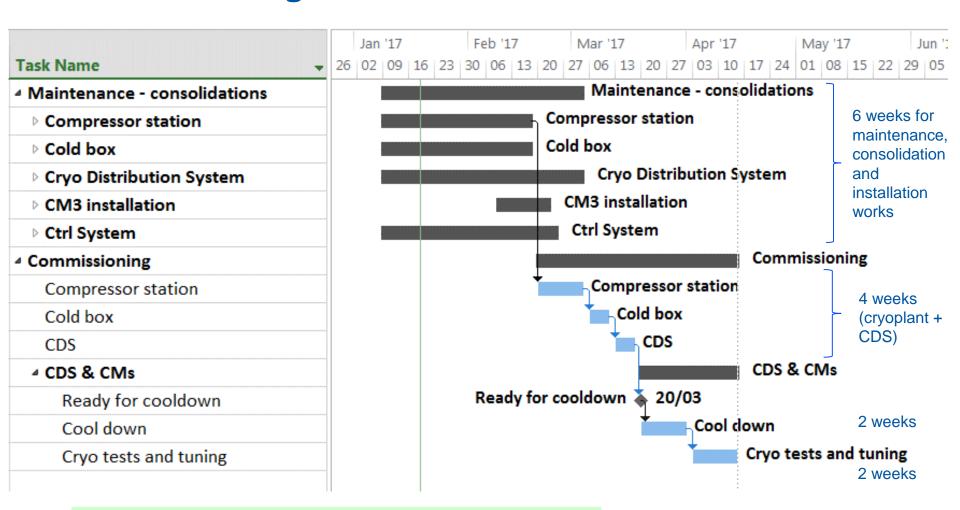


Re-commissioning work after the physics run:

- ✓ He processing in situe of the two "sick" cavities was demonstrated
  - No need to remove CM1
- ✓ Cryogenic heat load measurements
  - Nominal flow was reached ~156 g/s (instead of 140 g/s)
  - Patches to the ctrl system to cope with warm-up phase and CP limitation
  - Commissioning of LHe level gauges in each CM
  - CMs static heat load test
  - Capacity test with max heating in CMs
  - Dewar filling test
- ✓ Leak detection of CM2 (at warm)
  - No leak was found



#### **EYETS Planning**



https://indico.cern.ch/event/596173/

### Actions plan for EYETS – Cryo Tests/Commissioning

Recommissioning of the cryo-plant (compressor station and refrigerator) including a capacity test

- Commissioning of the Cryo Distribution System (CDS):
  - Shield cooling
  - Heat load evaluation

- Commissioning of the CDS with 3 CMs and the dewar :
  - Cooling and filling of the 3 CMs and dewar
  - Capacity test with maximum heating power in the 3 CMs
  - => will allow to assess the operation with a 4th module or help to draft a necessary consolidation plan



### Issues emerged during the cooldown process

- Several pollution issues at the restart of the compressor station
  - H<sub>2</sub>O pollution
  - Air leaks
  - Compressor stopped to renew gear box oil
- Automatic cooldown processes had not been fully commissioned last year
   → we were mostly running in manual mode (with one dedicated operator)
- The TE-CRG operation team requested some modifications to the automatisms in order to ensure the safety of the cryo-modules
- These modifications were implemented and needed to be tested
- Cool down of the 4.5 K circuits (including cavities) started in week 25
- Cold mass was < 15 K on Friday 25 June.</li>
- Still problems stabilizing the system during filling 2 cryomodules with liquid
- ...
- These issues so far caused 4 weeks delay on the planning

## **2017 Overall Planning**

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Shut down 2016-2017 BASELINE					Ţ	ODA'	1																																		
1 XT00 MODIFICATION																																									
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3 XT03 ISS PASSAGE & INSTALLATION					ISS																																				
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5 ISS EXPERIMENT INSTALLATION																																									
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7 CM3 INSTALLATION																																									
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11 CRYOGENICS ACTIVITIES										COC	L&T	EST																													
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13 H/W COMMISSIONING WITH 3 CMs										WA	RM			C	COLD																										
14 BEAM COMMISSIONING REX & HIE														NEA				Н	IE																						
15																																									
16 PHYSICS WITH 3 CMs																						RUNI	VITH 3	CRY	0M0	DUL	S														



## HW commissioning sequence

**CERN** CH1211 Geneva 23 Switzerland



Date: 2015-01-14

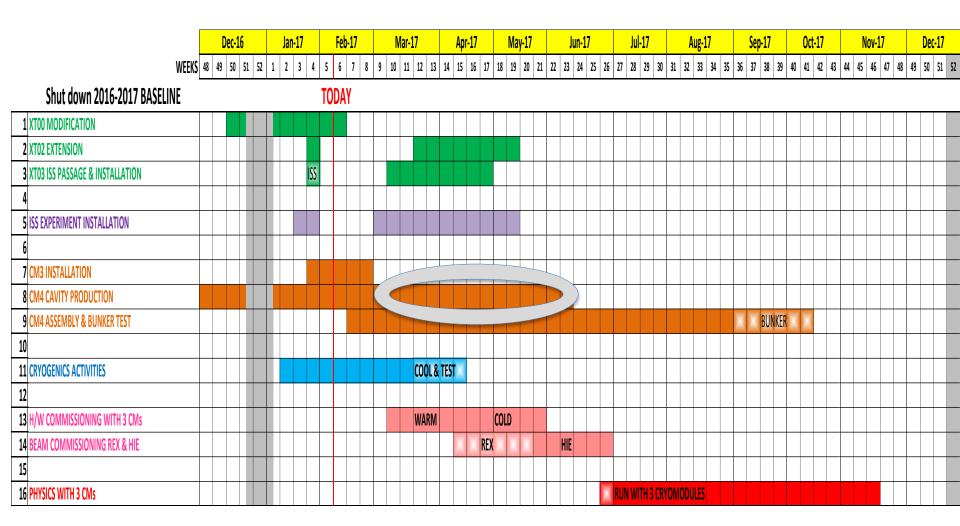
Hardware Commissioning Procedure

### Hardware Commissioning Procedure for the HIE-ISOLDE cryomodules

This document describes the sequence of tests and the parameters to be recorded for the hardware commissioning of the HIE-ISOLDE cryomodules.

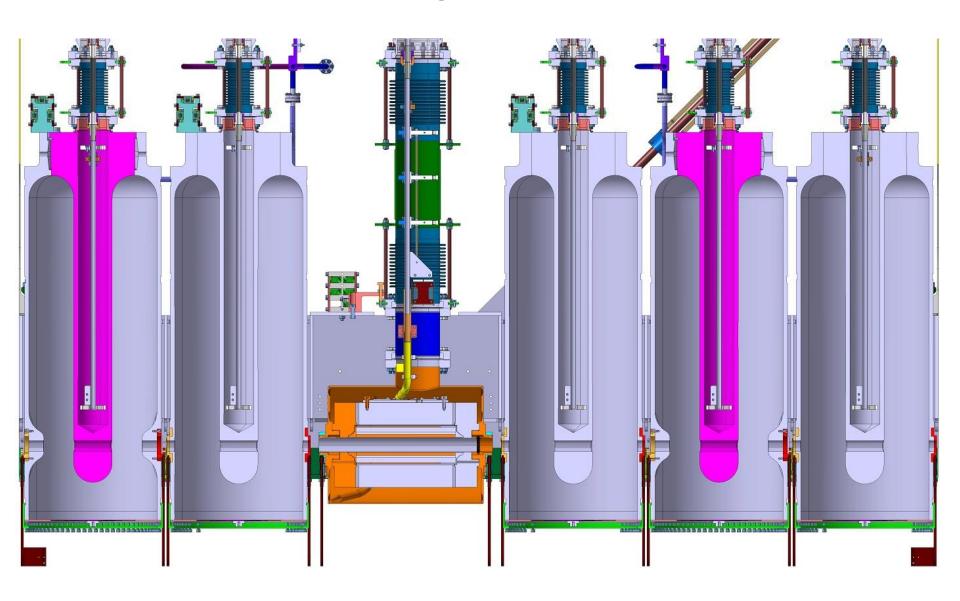
- 4.1. INTERLOCK TESTS
- 4.2. PUMP DOWN PROCEDURES
- 4.3. RF, INSTRUMENTATION AND ELQA CHECKS BEFORE COOL DOWN
- 4.4. II RE TESTS
- 4.5. COOL DOWN PROCEDURES
- 4.6. ALIGNMENT MONITORING AND CORRECTION
- 4.7. RF CONDITIONING ABOVE TC
- 4.8. RF TESTS AT COLD
- 4.9. SOLENOID TESTS
- 4.10. HEAT LOAD MEASUREMENTS
- 4.11. THERMAL CYCLES

## 2017 Overall Planning



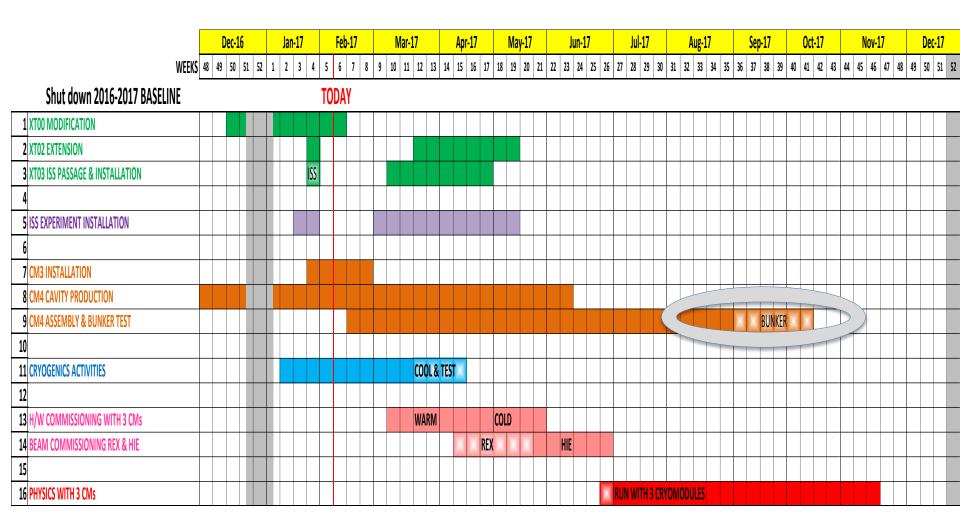


## CM4 configuration

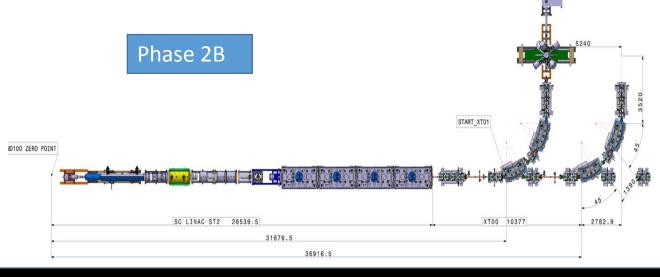


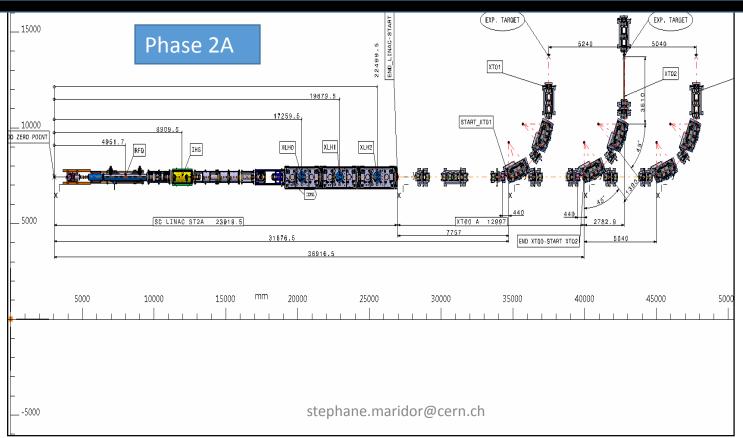
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Spares		W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14	W15	W16	W17	W18	W19	W20	W21	W22	W23	W24	W25	W26	W27	W28	W29	W30	
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From RI	QS19.1				degre asing	2x 40' SUBU	20' SUBU + assem bly	coati ng QS19. 1	riiisiiig		RF test																					
CERN	Q\$22.1				metro logy	recept ion trimin g		degre asing	2x 40' SUBU mount ing	20' SUBU + assem bly	coati ng QS21. 1	dismo unt rinsing	RF prep.	RF test																		
CERN	Q\$23.1				metro logy	recept ion trimin g				•													degre asing	2x 40' SUBU mount ing	20' SUBU + asse mbly	coati ng QS21. 1	dismo unt rinsing	RF prep.	RF test			
Seamle ss	QSS1						recept ion?	metro logy		trimin g	degre asing	2x 40' SUBU mount ing	20' SUBU + assem bly	coatin g QSS1	dismo unt rinsin g	RF prep.	RF test															
Seamle ss	QSS2									recepti on?	metro logy		·				trimin g	degre asing	2x 40' SUBU moun ting	20' SUBU + asse mbly	coati ng QSS2	dismo unt rinsin g	RF prep.	RF test								
Spare? 2nd coating	Q\$17.2					optical inspec tion																										
Spare	Q\$18																															
Spare seamle ss	QSS3?																															
Spare	QS21 no antenna?																															
Cmarra	QS6 laser treated!																															
Spare	QS15 (?) cracks!																															

## 2017 Overall Planning









### **Overall Summary**

- Phase 1 is now completed.
- Quite successful Physics Run in 2016
- Schedule for 2016/2017 Shutdown:
  - ✓ Installation of CM3
  - Installation of 3<sup>rd</sup> beam line + ISS magnet on XT02
  - Cryogenics maintenance & consolidation
- Remaining Phase 2 activities:
  - Hardware and Beam commissioning with 3 CMs
  - Process CM4 cavities & spares
    - ✓ Last RI cavity meets specs after change of weld parameters all remaining cavities now at CERN
    - ✓ CERN produced cavities (QS22 and QS23) almost finished
    - ✓ Production Seamless cavities also progressing well
  - CM4 assembly started





