

PS Hardware Commissioning

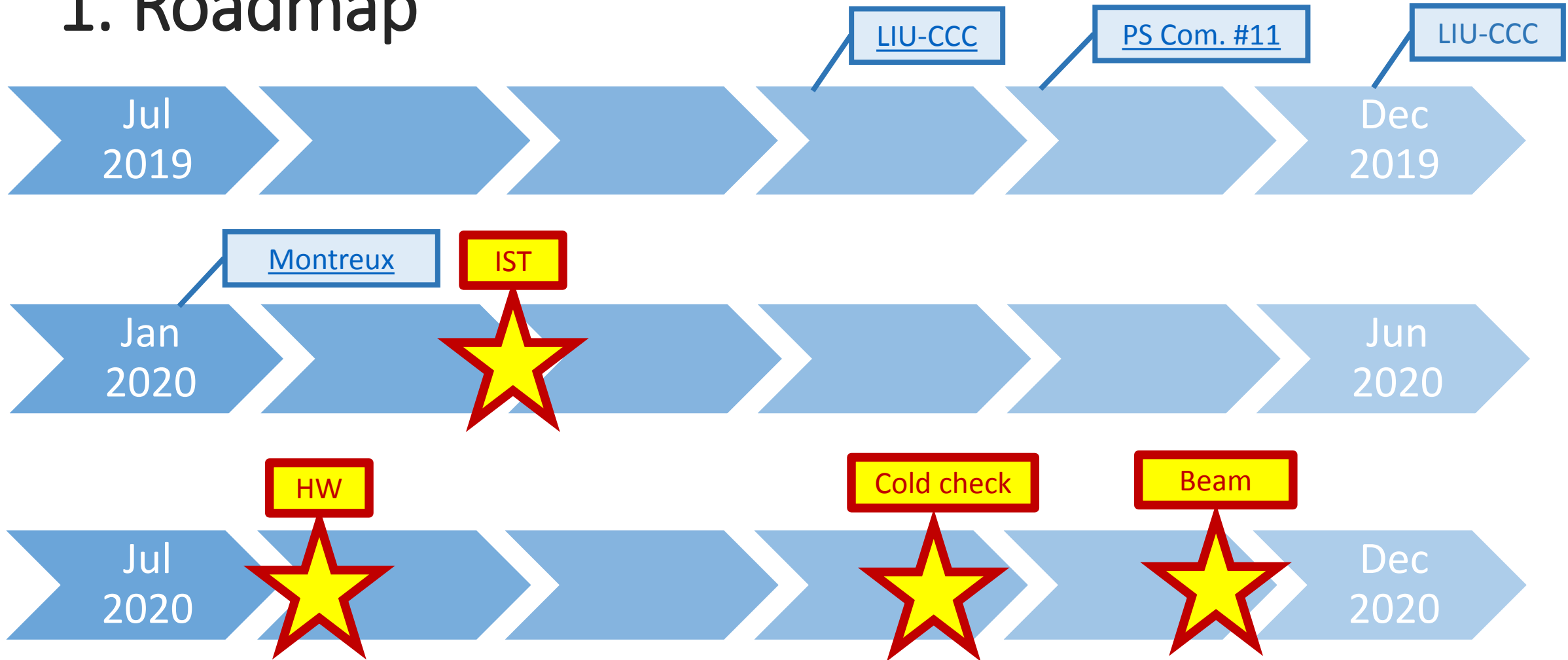


Many thanks to: Fernando, Denis, Franck, Fabrice, Abdel, Marc, Stephane, James, Yves, Carlo, Heiko, Alexandre, Solve, Laurette

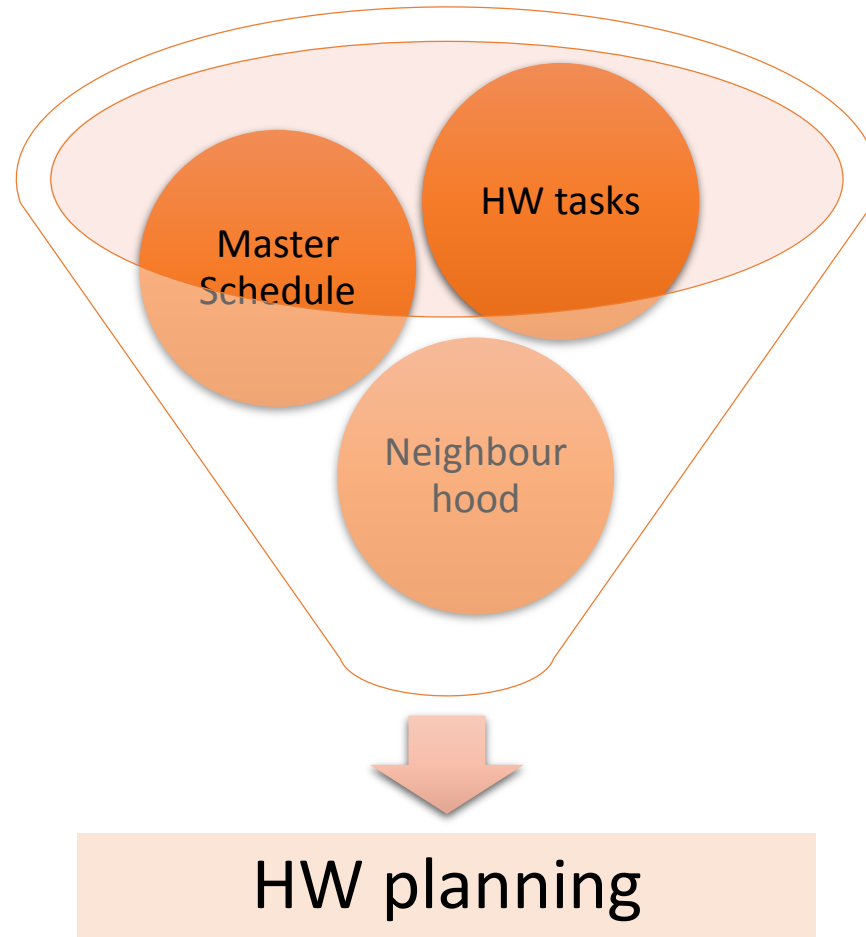
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1. Roadmap



2. HW Planning Manufacturing



2.2 HW tasks

RF-HL

System	Test	Requirements	Risk	Date	Duration	Access
10 MHz cavity	Pulsing/Tuning	EL, CV, HV, CO	Electrical	Start HW	All HW	No
20 MHz cavity	Tuning	POPS, EL, CV...	Electrical	With POPS		No
20 MHz cavity	Pulsing	EL, CV, HV, CO	Electrical	Start/End HW	2 x 2 weeks	No
40MHz cavity	AVC calibration	POPS, EL, CV...	Electrical	Start HW	2 weeks	No
40 MHz cavity	Autotuning	POPS, EL, CV...	Electrical	After AVC	2 weeks	No
40 MHz cavity	Reliability Run	POPS, EL, CV...	Electrical	After Auto.	2 x 2 weeks	No
80MHz cavity	AVC calibration	POPS, EL, CV...	Electrical	Start HW	2 weeks	No
80 MHz cavity	Autotuning	POPS, EL, CV...	Electrical	After AVC	2 weeks	No
80 MHz cavity	Reliability Run	POPS, EL, CV...	Electrical	After Auto.	2 x 2 weeks	No
80 MHz cavity	Fast Tuner	POPS, EL, CV...	Electrical	September	4 weeks	Yes
200 MHz cavity						
Finemet	Reliability Run	POPS, EL, CV...	Electrical	Start/End HW	4 / 2 weeks	No

2.2 HW tasks

RF-LL

System	Test	Requirements	Risk	Date	Duration	Access
10 MHz cavity	Check cavity controller	B-train, timing, CO	Electrical	Before RF-HL	2 days	No
10 MHz cavity	Phasing, 1-turn delay	B-train, timing, CO	Electrical	With RF-HL	2 days	No
20 MHz cavity	Check cavity controller	B-train, timing, CO	Electrical	Before RF-HL	2 days	No
40 MHz cavity	Check cavity controller	B-train, timing, CO	Electrical	Before RF-HL	2 days	No
80 MHz cavity	Check cavity controller	B-train, timing, CO	Electrical	Before RF-HL	2 days	No
200 MHz cavity	New cavity controller	B-train, timing, CO	Electrical	With RF-HL	5 days	No
RF trains	Reception / distribution	B-train, timing, CO, SC	Electrical	Before loop com.	1 day	No
RF trains	New train distribution	B-train, timing, CO, SC	Electrical	Before loop com.	2 days	No
10 MHz measurements	RF meas. system	B-train, timing, CO, SC	Electrical	With RF-HL	2 days	No
Pre-LS2 beam loops	All loops, all cavities	B-train, timing, CO, SC	Electrical	With RF-HL	13 days	No
New beam loops	All cavity pulsing	B-train, timing, CO, SC	Electrical	With RF-HL	14 days	No
Finemet	Coupled bunch feedback	B-train, timing, CO, SC	Electrical	With RF-HL	2 days	No

2.2 HW tasks

ABT

System	Test	Requirements	Risk	Date	Duration	Access
KFA45	Phase 3	EL, CV, HV, CO	Electrical	10/08	3 weeks	No
KFA45	Phase 4	EL, CV, HV, CO	Electrical	05/10	1 week	No
KFA79	Phase 4	EL, CV, HV, CO	Electrical	17/08	1 week	No
KFA71	Phase 4	EL, CV, HV, CO	Electrical	17/08	1 week	No
KFA4	Phase 4	EL, CV, HV, CO	Electrical	17/08	1 week	No
BFA9	Phase 4	EL, CV, HV, CO	Electrical	17/08	1 week	No
DFA242	Phase 4	EL, CV, HV, CO	Electrical	24/08	1 week	No
DFA245	Phase 4	EL, CV, HV, CO	Electrical	24/08	1 week	No
SMH42 / BSW42	Phase 3a	DSO, EL, CV, HV, CO	Electrical	12/08	1 day	Yes
SMH57	Phase 3a	DSO, EL, CV, HV, CO	Electrical	11/08	1 day	Yes
SMH61	Phase 3a	EL, CV, HV, CO	Electrical	10/08	1 day	Yes

2.2 HW tasks

MSC (estimated)

System	Test	Requirements	Risk	Date	Duration	Access
PSR aux. magnets	Audio/Visual Patrol	Magnets pulsing	Electrical	After EPC Com.	1 day	Yes
PSR aux. magnets	Heat Run	Magnets pulsing	Electrical	After audio/visual patrol	2 days	Yes
PSR aux. magnets	Polarity	Magnets pulsing	Electrical	After Heat Run	3 days	Yes
PSR aux. magnets	Covers			After Polarity	2 days	Yes
F12/16 magnets	Audio/Visual Patrol	Magnets pulsing	Electrical	After EPC Com.	1 day	Yes
F12/16 magnets	Heat Run	Magnets pulsing	Electrical	After audio/visual patrol	2 days	Yes
F12/16 magnets	Polarity	Magnets pulsing	Electrical	After Heat Run	1 days	Yes
F12/16 magnets	Covers			After Polarity	2 days	Yes
FTA/FTN magnets	Audio/Visual Patrol	Magnets pulsing	Electrical	After EPC Com.	1 day	Yes
FTA/FTN magnets	Heat Run	Magnets pulsing	Electrical	After audio/visual patrol	2 days	Yes
FTA/FTN magnets	Polarity	Magnets pulsing	Electrical	After Heat Run	1 days	Yes
FTA/FTN magnets	Covers			After Polarity	2 days	Yes

2.2 HW tasks

FTS

System	Test	Requirements	Risk	Date	Duration	Access
Magnets	EPC / MSC com.		Electrical	21/09 – 28/09	8 days	Yes
Magnets	Polarity		Electrical	16/11	1 day	Yes
BIC slave	Functional Test			04/12 – 08/12	5 days	No
BIC Master	Functional Test			04/12 – 08/12	5 days	No
Access	Functional Test			24/08 – 28/08	5 days	Yes
Safety	Patrol			15/09	1 day	Yes
Safety	DSO HW			16/09	1 day	Yes
Safety	DSO Beam			13/01	1 day	Yes

2.2 HW tasks

F61

System	Test	Requirements	Risk	Date	Duration	Access
WIC	Commissioning		Electrical	06/10 – 12/10		Yes
EPC	Commissioning		Electrical	12/10 – 26/10		Yes
Magnet	Commissioning		Electrical	16/10 – 22/10		Yes

BI

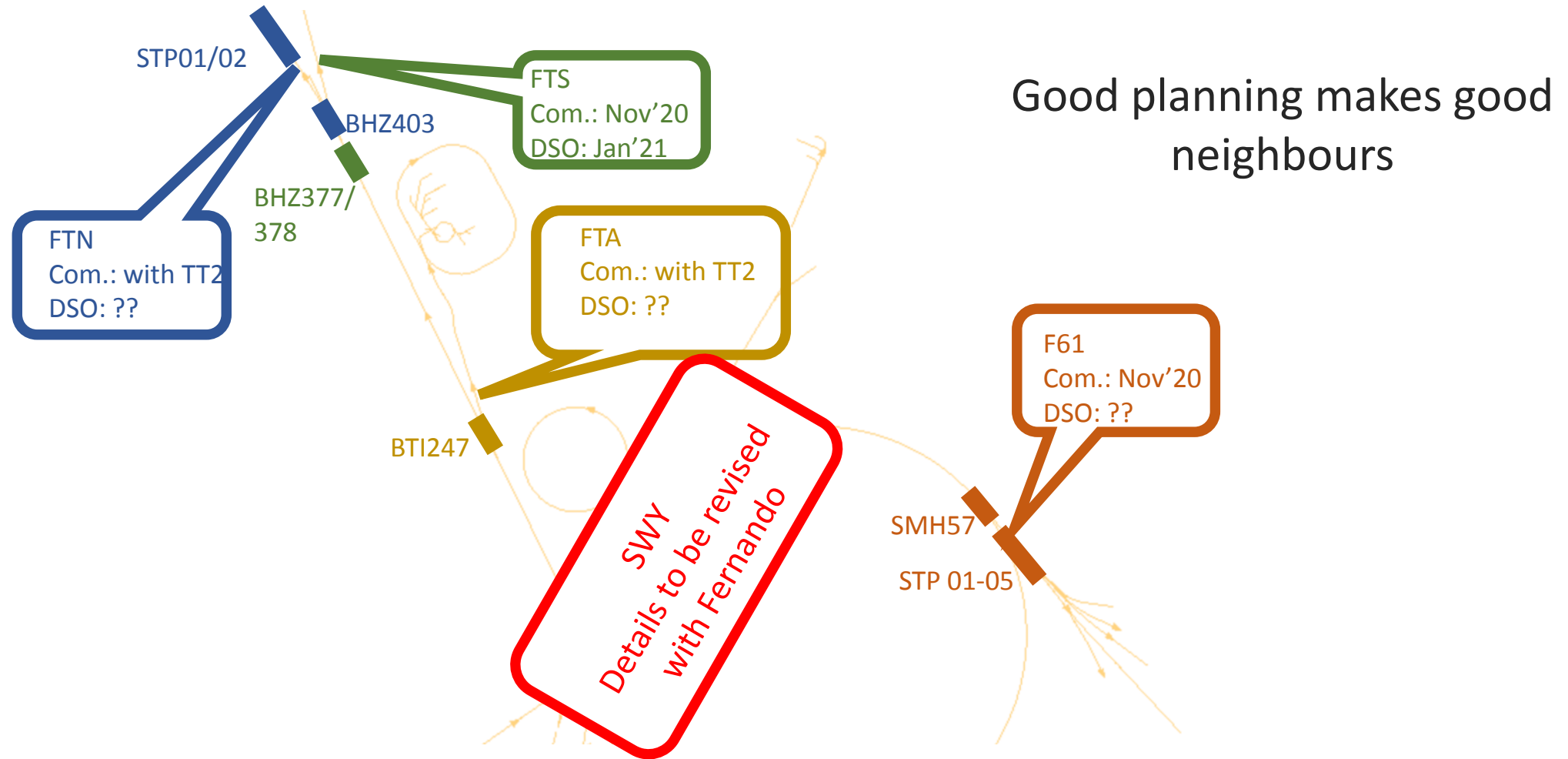
System	Test	Requirements	Risk	Date	Duration	Access
All PS BI equipment	1 st full functional test	CO, EL,	Electrical	14/10– 15/10	2 days	No
All PS BI equipment	2 nd full functional test	CO, EL,	Electrical	09/11 – 10/11	2 days	No

2.2 HW tasks

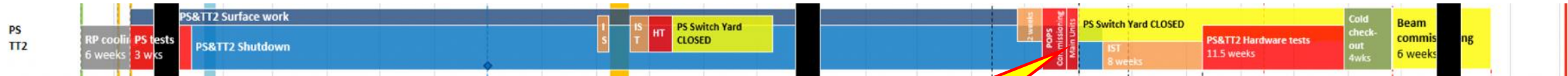
STI

System	Test	Requirements	Risk	Date	Duration	Access
Dump D3	Temperature Probe					Yes
F61 STP	Commissioning Phase 1	CO, compressed air, EL			1 day	Yes
FTN STP	Commissioning Phase 1	CO, compressed air, EL			1 day	Yes
F61 STP	Commissioning Phase 2	CO, compressed air, EL	DSO, BE-ICS required!		1 day	Yes
FTN STP	Commissioning Phase 2	CO, compressed air, EL	DSO, BE-ICS required!		1 day	Yes

2.3 Immediate Neighbourhood

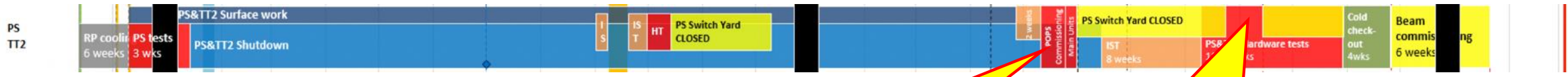


2.3 Master Schedule



v0.2 (EDMS1687788)
SCENARIO I

All SWY EPC commissioning are included in IST



Denis, LIU-CCC
25/02/2019
SCENARIO II

POPS and MU commissioning are included in IST?

SWY aux. EPC and magnets commissioning are in HW?

3. Two scenario planning

	PSR Sector 0-1	SWY	PSR Sector 5-10	FT12-16	FTA	FTS	FTN	F61
10-Aug-20	10 MHz 40/80 MHz Finemet	PC Bat 368	KFAS Phase3 SMH61 SMH57 SMH42 10/20MHz 40/80 MHz	PC Bat 356 PC Bat 368 PC Bat 269				
17-Aug-20	10 MHz 40/80 MHz Finemet	KFAS BF49 PC Bat 355 PC Bat 365	10 MHz 20 MHz 40/80 MHz	KFAS Phase3 KFAS BF79 PC Bat 355 PC Bat 365	PC Bat 269			
24-Aug-20	10 MHz 40/80 MHz Finemet	PC Bat 355 PC Bat 365	10 MHz 20 MHz 40/80 MHz	KFAS Phase3 PC Bat 355 PC Bat 365	PC Bat 269	TTZ - DFA		BE-IC3
31-Aug-20	10 MHz 40/80 MHz Finemet	PC Bat 368	20 MHz 10 MHz 20 MHz 40/80 MHz	PC Bat 368	Mag. Patrol Heat Run Heat Run Polarity Covers	Mag. Patrol Heat Run Heat Run Polarity Covers	Mag. Patrol Heat Run Heat Run Polarity Covers	
07-Sep-20		Mag. Patrol Heat Run Heat Run Polarity		Mag. Patrol Heat Run Heat Run Covers STI D3				
14-Sep-20	Fast Tuner 40/80 MHz					Patrol DSD HW		
21-Sep-20	10 MHz Fast Tuner 40/80 MHz		10 MHz 40/80 MHz			FTS EPC and MSC com.		
28-Sep-20	10 MHz Fast Tuner 40/80 MHz		10 MHz 40/80 MHz					
05-Oct-20	10 MHz Fast Tuner		10 MHz KFAS Phase4					WIC
12-Oct-20	10 MHz 40/80 MHz Finemet	BI - DR 1st BI - DR 2nd	10 MHz 20 MHz 40/80 MHz	BI - DR 1st BI - DR 2nd	BI - DR 1st BI - DR 2nd	BI - DR 1st BI - DR 2nd	BI - DR 1st BI - DR 2nd	BI - DR 1st BI - DR 1st
19-Oct-20	10 MHz 40/80 MHz Finemet		10 MHz 20 MHz 40/80 MHz					EPC com. Magnet com.
COLD CHECKOUT								

v0.2 (EDMS1687788)
SCENARIO I

	PSR Sector 0-1	SWY	PSR Sector 5-10	FT12-16	FTA	FTS	FTN	F61
10-Aug-20	10 MHz 40/80 MHz Finemet	PC Bat 368	KFAS Phase3 SMH61 SMH57 SMH42 10/20MHz 40/80 MHz	PC Bat 356 PC Bat 368 PC Bat 269				
17-Aug-20	10 MHz 40/80 MHz Finemet	KFAS BF49 PC Bat 355 PC Bat 365	10 MHz 20 MHz 40/80 MHz	KFAS Phase3 KFAS BF79 PC Bat 355 PC Bat 365	PC Bat 269			
24-Aug-20	10 MHz 40/80 MHz Finemet	PC Bat 355 PC Bat 365	10 MHz 20 MHz 40/80 MHz	KFAS Phase3 PC Bat 355 PC Bat 365	PC Bat 269	RP Cookdown Mag. Patrol Heat Run	TTZ - DFA	BE-IC3
31-Aug-20	10 MHz 40/80 MHz Finemet	PC Bat 368	20 MHz 10 MHz 20 MHz 40/80 MHz	PC Bat 368	Heat Run Polarity Covers	20 MHz 10 MHz 20 MHz 40/80 MHz	PC Bat 368	
07-Sep-20	Fast Tuner 40/80 MHz	PC Bat 355 PC Bat 365		40/80 MHz PC Bat 355 PC Bat 365	STI D3	Patrol/DSO		
14-Sep-20		Mag. Patrol Heat Run Heat Run Covers			Mag. Patrol Heat Run Heat Run Polarity Covers			Patrol DSD HW
21-Sep-20	10 MHz Fast Tuner 40/80 MHz		10 MHz 40/80 MHz					FTS EPC and MSC com.
28-Sep-20	10 MHz Fast Tuner 40/80 MHz		10 MHz 40/80 MHz		Mag. Patrol Heat Run Heat Run Polarity Covers	Mag. Patrol Heat Run Heat Run Polarity Covers		Mag. Patrol Heat Run Heat Run Polarity Covers
05-Oct-20	10 MHz Fast Tuner		10 MHz KFAS Phase4					WIC
12-Oct-20	10 MHz 40/80 MHz Finemet	BI - DR 1st BI - DR 2nd	10 MHz 20 MHz 40/80 MHz	BI - DR 1st BI - DR 2nd	BI - DR 1st BI - DR 2nd	BI - DR 1st BI - DR 2nd	BI - DR 1st BI - DR 2nd	BI - DR 1st BI - DR 1st
19-Oct-20	10 MHz 40/80 MHz Finemet		10 MHz 20 MHz 40/80 MHz					EPC com. Magnet com.
COLD CHECKOUT								

Denis, LIU-CCC
25/02/2019
SCENARIO II

4. Shift Planning

PSB

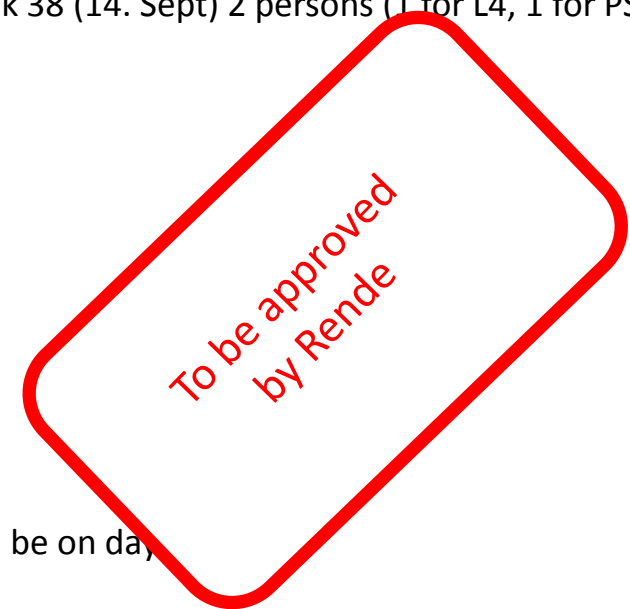
- 13.4. start M/A with 1 person
- From the following week and until PSB beam commissioning week 38 (14. Sept) 2 persons (1 for L4, 1 for PSB)
- From 14. September full shifts 24/7

PS

- From 23 Mars until 4 May day-time presence (ISTs)
- From 4 May until POPS start M/A shifts
- During HW commissioning and cold check-out M/A
- From 23 November PS beam commissioning (full shifts 24/7)

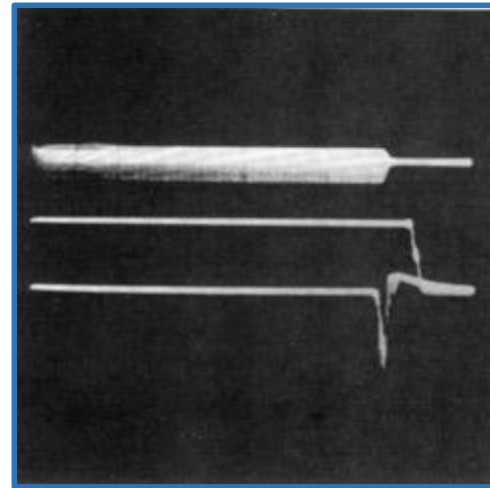
Additional Constraints:

- From 20.4. an additional person day-time on PSB
- Training of PS shift leaders on Linac4
- For PS HW commissioning from 8 August HW commissioners shall be on day

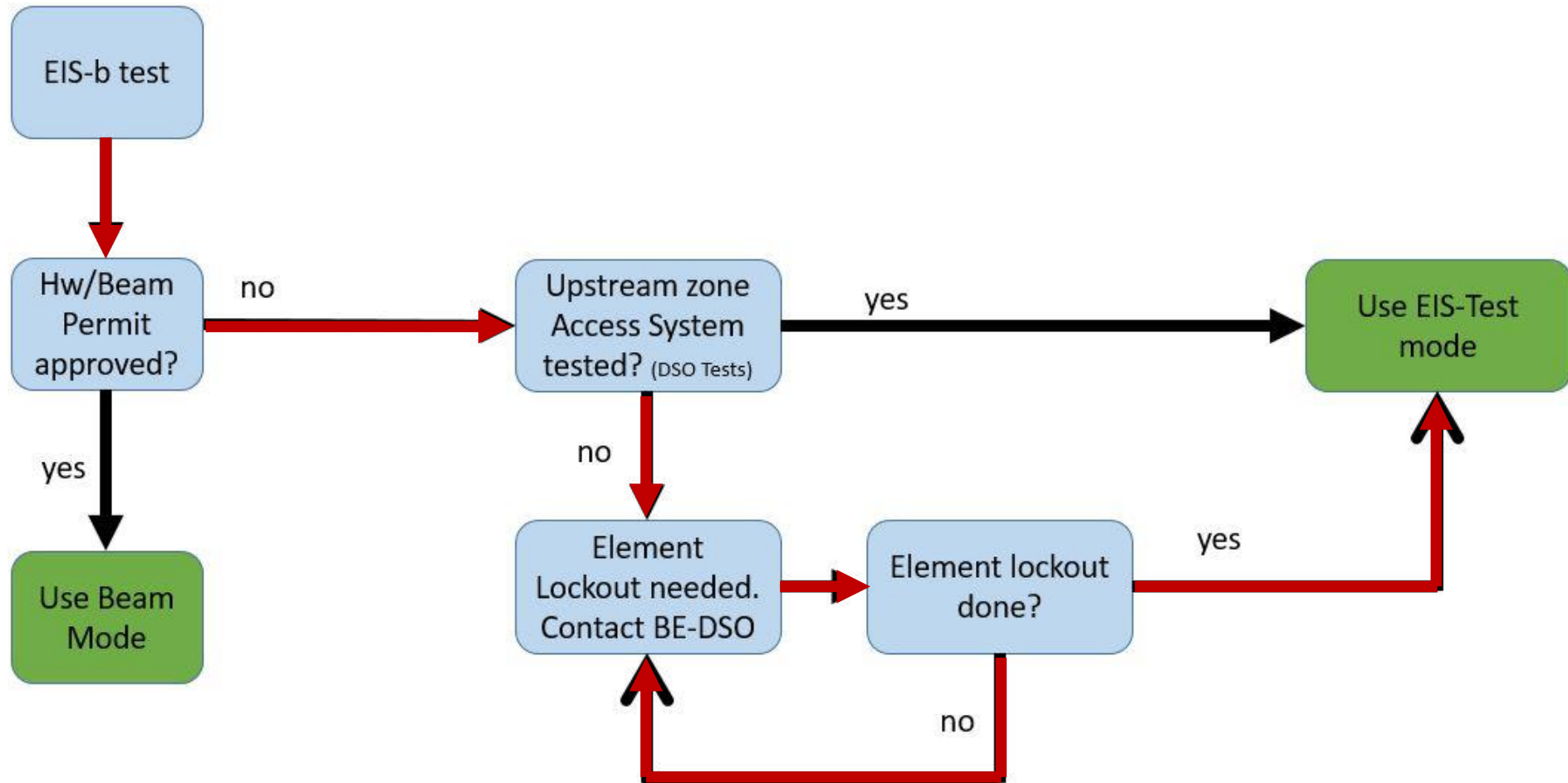


5. Conclusion

- Collected HW tasks from major HW stakeholders, few are missing
- Two scenarios were tested, both are ok
- No show stopper for Cold Checkout and Beam Commissioning
- Could we present a more solid HW planning at Montreux?



Spare Slide: EIS-f Test procedure



Spare Slide: Collecting information from databases

The image shows two overlapping screenshots from a database interface. The top-left screenshot is titled "TE-EPO DATABASES Equipment Report" and displays details for installation "RPADH.355.PR.RXNO". The top-right screenshot is titled "Controls Configuration Data Browser" and shows a table of device details for "PR.XSE". A red box highlights the text "FGC in LS2" in the table. The bottom screenshot is titled "NORMA DATABASE" and shows a magnet ID card for "PXMQNCCHAWP-TE000003". A red box highlights the text "Removed in LS2" on the card. A table in the bottom-left screenshot has a red box around the entry "ERD14*6".

Device Name	Alias	Acc Zone	Timing domain	Subsystem	Device Name	Classname	Description	Bus type	PPM	Alarms	Install classversion	Has LSA settings	Responsible	State
PR.XSE	-	CPS	PS Ring	CPS	-	PowM1553	-	-	YES	YES	4.0.0	YES	te-dep-epc-piquet-controlsupport	operational

From	Sort Code	Supply Name	Comments	Full Supply Name	Condemnations
RPADH.355.PR.RXNO	BT	ERD14*6		EBD4.05*6-ERD20.01*6-ERD20.06*6	DR04273 ; PA14499