

# Commissioning Coordination Committee meeting 10/01/2020

*Fernando PEDROSA*



ENGINEERING  
DEPARTMENT

# DSO tests

## LINAC4 DSO tests

Access area	DSO tests done prior to this test (YES/NO)	Access mode required for the test (GENERAL/RESTRICTED/BEAM)	Access area that may be forced as part of this test (YES/NO)	Affected area (YES/NO)	Equipment to be lockout to protect the team <b>during the test</b> (proposal that is to be cross-checked with OP requirements at the time of the tests)	Equipment to be lockout <b>after the tests</b> (proposal that is to be cross-checked with OP requirements at the time of the tests)
LINAC4	n/a	n/a	n/a	YES	L4L.TDI1187+L4L.TDI1188 then Source H-  n./a.	Convertisseur L4T.RBH.021
LINAC3	NO	n/a	n/a	n/a		
LEIR	NO	n/a	n/a	NO		
PS SWY	NO	General or Restricted	YES	YES (patrol)		
PS Ring	n/a	n/a	n/a	n/a		
TT2	n/a	n/a	n/a	n/a		
PSB	n/a	n/a	n/a	n/a		
SPS	n/a	n/a	n/a	n/a		

## LEIR DSO tests

Access area	DSO tests done prior to this test (YES/NO)	Access mode required for the test (GENERAL/RESTRICTED/BEAM)	Access area that may be forced as part of this test (YES/NO)	Affected area (YES/NO)	Equipment to be lockout to protect the team <b>during the test</b> (proposal that is to be cross-checked with OP requirements at the time of the tests)	Equipment to be lockout <b>after the tests</b> (proposal that is to be cross-checked with OP requirements at the time of the tests)
LINAC4	NO	n/a	n/a	n/a	Source L3 ou ITF.BHZ14 (not EIS)  Si tests DSO SWY H- déjà réalisés, si le SWY est en mode accès, pas de consignation supplémentaire demandée.	Si BP SWY déjà accordé, pas de consignation nécessaire.
LINAC3	n/a	n/a	n/a	n/a		
LEIR	n/a	BEAM	YES	YES		
PS SWY	NO	General or Restricted	YES	YES (Patrol)		
PS Ring	NO	n/a	n/a	n/a		
TT2	n/a	n/a	n/a	n/a		
PSB	n/a	n/a	n/a	n/a		
SPS	n/a	n/a	n/a	n/a		

# DSO tests

## PS SWY DSO tests

Access area	DSO tests done prior to this test (YES/NO)	Access mode required for the test (GENERAL/RESTRICTED/BEAM)	Access area that may be forced as part of this test (YES/NO)	Affected area (YES/NO)	Equipment to be lockout to protect the team <b>during the test</b> (proposal that is to be cross-checked with OP requirements at the time of the tests)	Equipment to be lockout <b>after the tests</b> (proposal that is to be cross-checked with OP requirements at the time of the tests)
LINAC4	YES	BEAM	YES	YES	L4L.TDI1187+L4L.TDI1188	Convertisseur L4T.RBH.021
LINAC3	n/a	BEAM	YES (door in the gallery)	YES	Source L3 ou ITF.BHZ14 (not EIS) ou IFT.STP11 + IFT.STP12 (already locked-out by BE SU since 11.12.18)	IFT.STP11 + IFT.STP12 (already locked-out by BE SU since 11.12.18)
LEIR	YES (nice to have)	BEAM	YES	YES		
PS SWY	n/a	BEAM	YES	YES		
PS Ring	NO	General or Restricted	YES	YES (patrol)		BT.BHZ10 (protège PS Ring) Si travaux non finis sur POPS, alors on consignera l'EIS-m après les tests
TT2	NO	General or Restricted	YES	YES (patrol)		
PSB	Together	Beam	YES	YES		
SPS	n/a	n/a	n/a	n/a		

## PS Booster DSO tests

Access area	DSO tests done prior to this test (YES/NO)	Access mode required for the test (GENERAL/RESTRICTED/BEAM)	Access area that may be forced as part of this test (YES/NO)	Affected area (YES/NO)	Equipment to be lockout to protect the team <b>during the test</b> (proposal that is to be cross-checked with OP requirements at the time of the tests)	Equipment to be lockout <b>after the tests</b> (proposal that is to be cross-checked with OP requirements at the time of the tests)
LINAC4	YES	BEAM	NO	YES	L4L.TDI1187+L4L.TDI1188	BTY.BVT101 (protège ISOLDE) Si travaux non finis sur POPS-B, alors on consignera l'EIS-m après les tests BT.BHZ10 (protège PS Ring)
LINAC3	n/a	n/a	n/a	n/a	Source L3 ou ITF.BHZ14 (not EIS) ou IFT.STP11 + IFT.STP12 (already locked-out by BE SU since 11.12.18)	
LEIR	YES	n/a	n/a	n/a		
PS SWY	Together	BEAM	YES	YES		
PS Ring	NO	General or Restricted	n/a	NO		
TT2	NO	General or Restricted	n/a	NO		
PSB	n/a	BEAM	YES	YES		
SPS	n/a	n/a	n/a	n/a		

# DSO tests

## PS Ring DSO tests

Access area	DSO tests done prior to this test (YES/NO)	Access mode required for the test (GENERAL/RESTRICTED/BEAM)	Access area that may be forced as part of this test (YES/NO)	Affected area (YES/NO)	Equipment to be lockout to protect the team <b>during the test</b> (proposal that is to be cross-checked with OP requirements at the time of the tests)	Equipment to be lockout <b>after the tests</b> (proposal that is to be cross-checked with OP requirements at the time of the tests)
LINAC4	YES	BEAM	NO	NO	L4L.TDI1187+L4L.TDI1188	F61.PE. SMH57 (protège Zone Est - si non installé lors des tests DSO du PS Ring, devra être consigné jusqu'au tests DSO Zone Est Primaire) PE.SMH16 (protège TT2)
LINAC3	n/a	n/a	NO	NO	Source L3 ou ITF.BHZ14 (not EIS) ou IFT.STP11 + IFT.STP12 (already locked-out by BE SU since 11.12.18)	
LEIR	YES	n/a	NO	NO		
PS SWY	YES	BEAM	YES	YES		
PS Ring	n/a	BEAM	YES	YES		
TT2	n/a	n/a	NO	NO		
PSB	YES	BEAM	NO	YES		
SPS	n/a	n/a	n/a	NO		

## TT2 DSO tests

Access area	DSO tests done prior to this test (YES/NO)	Access mode required for the test (GENERAL/RESTRICTED/BEAM)	Access area that may be forced as part of this test (YES/NO)	Affected area (YES/NO)	Equipment to be lockout to protect the team <b>during the test</b> (proposal that is to be cross-checked with OP requirements at the time of the tests)	Equipment to be lockout <b>after the tests</b> (proposal that is to be cross-checked with OP requirements at the time of the tests)
LINAC4	YES	BEAM	NO	NO	Convertisseur L4T.RBH.021 (on veut voir la sécurisation zone amont, donc l'effet sur les stoppers de la ligne de transfert L4T)	F61.PE. SMH57 (protège Zone Est - si non installé lors des tests DSO du PS Ring, devra être consigné jusqu'au tests DSO Zone Est Primaire) F16.BHZ377 (protège SPS) F16.BTI247S (protège AD-Target) FTN.BHZ403-406 (protège nTOF)
LINAC3	n/a	BEAM	NO	NO	Source L3 ou ITF.BHZ14 (not EIS) ou IFT.STP11 + IFT.STP12 (already locked-out by BE SU since 11.12.18)	
LEIR	YES	BEAM	NO	NO		
PS SWY	YES	BEAM	NO	YES		
PS Ring	YES	BEAM	YES	YES		
TT2	n/a	BEAM	YES	YES		
PSB	YES	BEAM	NO	YES		
SPS	NO	General or Restricted	YES	YES (patrol)		

# DSO tests

## SPS DSO tests

Access area	DSO tests done prior to this test (YES/NO)	Access mode required for the test (GENERAL/RESTRICTED/BEAM)	Access area that may be forced as part of this test (YES/NO)	Affected area (YES/NO)	Equipment to be lockout to protect the team <b>during the test</b> (proposal that is to be cross-checked with OP requirements at the time of the tests)	Equipment to be lockout <b>after the tests</b> (proposal that is to be cross-checked with OP requirements at the time of the tests)
LINAC4	YES	n/a	NO	NO		RBI.410010 (protège AWAKE) TED.29133 (protège TI2) TED.87765 (protège TI8) TED.210358 (protège zone Nord)
LINAC3	n/a	n/a	NO	NO	Source L3 ou ITF.BHZ14 (not EIS) ou IFT.STP11 + IFT.STP12 (already locked-out by BE SU since 11.12.18)	
LEIR	YES	n/a	NO	NO		
PS SWY	YES	n/a	NO	NO		
PS Ring	YES	n/a	NO	NO		
TT2	YES	BEAM	YES	YES	F16.BHZ377 (sera déconsigné au cours des tests pour le tester, mesure compensatoire : beam inhibit red button from CCC)	
PSB	YES	n/a	NO	NO		
SPS	n/a	BEAM	YES	YES		

## East Area Primary DSO tests

Access area	DSO tests done prior to this test (YES/NO)	Access mode required for the test (GENERAL/RESTRICTED/BEAM)	Access area that may be forced as part of this test (YES/NO)	Affected area (YES/NO)	Equipment to be lockout to protect the team <b>during the test</b> (proposal that is to be cross-checked with OP requirements at the time of the tests)	Equipment to be lockout <b>after the tests</b> (proposal that is to be cross-checked with OP requirements at the time of the tests)
LINAC4	YES	n/a	NO	n/a		ZT9.STP01, ZT9.STP02, ZT10.STP01, ZT11.STP01 (nomenclature pré-LS2)
LINAC3	n/a	n/a	NO	n/a	Source L3 ou ITF.BHZ14 (not EIS) ou IFT.STP11 + IFT.STP12 (already locked-out by BE SU since 11.12.18)	
LEIR	YES	n/a	NO	n/a		
PS SWY	YES	BEAM	NO	YES		
PS Ring	YES	BEAM	YES	YES	BT.BHZ10 (convertisseur consigné ou bloqué en polarité négative pour autoriser faisceau Isolde uniquement) ou BTP.STP10	
TT2	YES	n/a	NO	n/a		
PSB	YES	n/a	NO	n/a		
SPS	n/a	n/a	NO	n/a		

# DSO tests

## AD Target + AD Ring DSO tests (la sécurisation de AD-Ring remonte à TT2)

Access area	DSO tests done prior to this test (YES/NO)	Access mode required for the test (GENERAL/RESTRICTED/BEAM)	Access area that may be forced as part of this test (YES/NO)	Affected area (YES/NO)	Equipment to be lockout to protect the team <b>during the test</b> (proposal that is to be cross-checked with OP requirements at the time of the tests)	Equipment to be lockout <b>after the tests</b> (proposal that is to be cross-checked with OP requirements at the time of the tests)
LINAC4	YES	n/a	NO	n/a		Extraction ELENA (LNI.BHZ0510)
LINAC3	n/a	n/a	NO	n/a	Source L3 ou ITF.BHZ14 (not EIS) ou IFT.STP11 + IFT.STP12 (already locked-out by BE SU since 11.12.18)	
LEIR	YES	n/a	NO	n/a		
PS SWY	YES	BEAM	NO	YES		
PS Ring	YES	BEAM	NO	n/a		
TT2	YES	BEAM	YES	YES	F16.BTI247S (sera déconsigné une fois au cours des tests, mesures compensatoires à voir avec OP le jour même)	
PSB	YES	n/a	NO	n/a		
SPS	n/a	n/a	NO	n/a		

## nTOF target DSO tests

Access area	DSO tests done prior to this test (YES/NO)	Access mode required for the test (GENERAL/RESTRICTED/BEAM)	Access area that may be forced as part of this test (YES/NO)	Affected area (YES/NO)	Equipment to be lockout to protect the team <b>during the test</b> (proposal that is to be cross-checked with OP requirements at the time of the tests)	Equipment to be lockout <b>after the tests</b> (proposal that is to be cross-checked with OP requirements at the time of the tests)
LINAC4	YES	n/a	NO	n/a		n./a.
LINAC3	n/a	n/a	NO	n/a	Source L3 ou ITF.BHZ14 (not EIS) ou IFT.STP11 + IFT.STP12 (already locked-out by BE SU since 11.12.18)	
LEIR	YES	n/a	NO	n/a		
PS SWY	YES	BEAM	NO	YES (zone amont de TFP)		
PS Ring	YES	BEAM	NO	n/a		
TT2	YES	BEAM	YES	YES (zone amont de TFT)	FTN.BHZ403-406 (sera déconsigné une fois au cours des tests, mesures compensatoires à voir avec OP le jour-même)	
PSB	YES	n/a	NO	n/a		
SPS	n/a	n/a	NO	n/a		

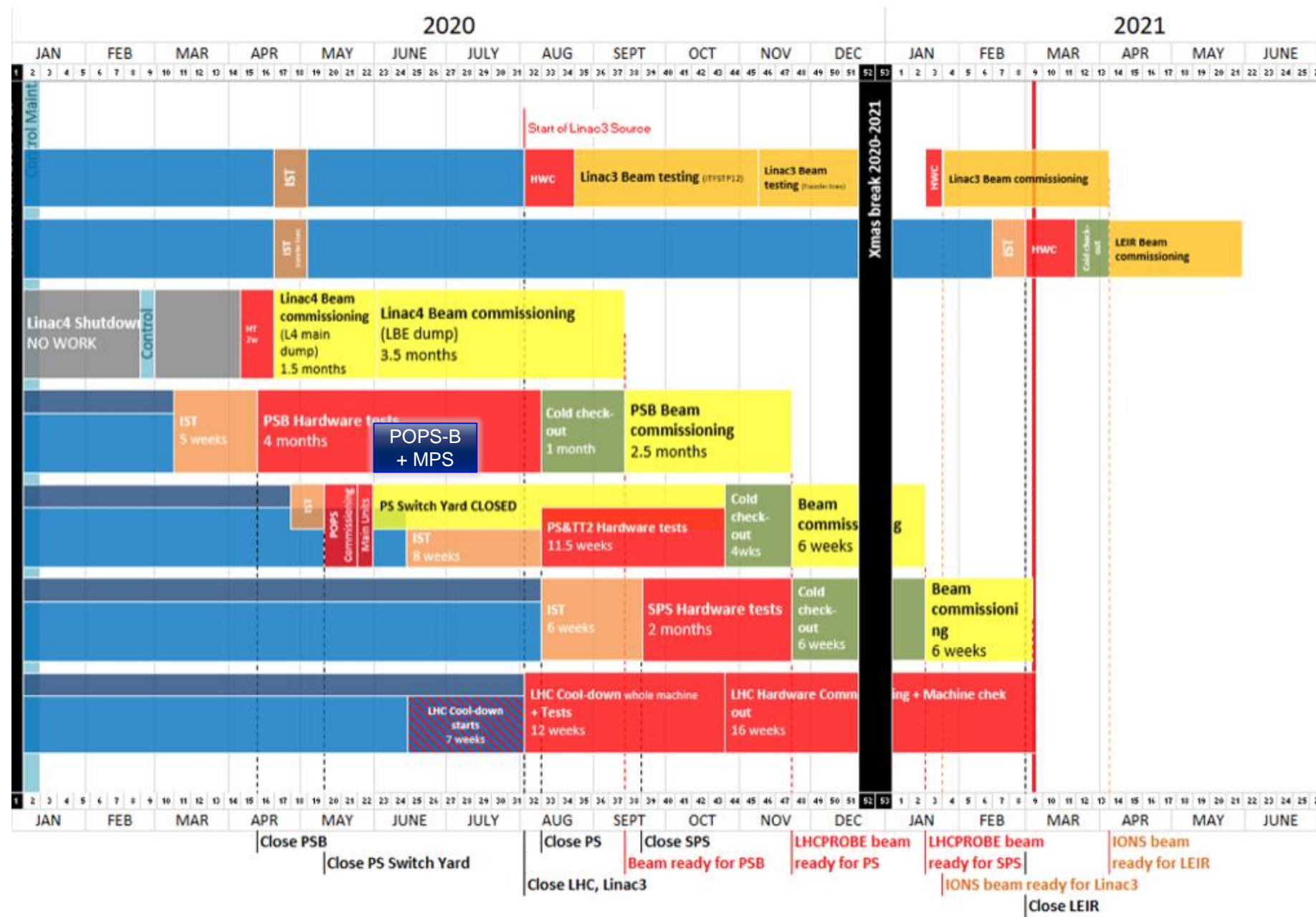


# DSO tests

Based on the information collected on these tables the scenario that would minimize the times that an access zone needs to be stopped for the DSO tests is:

- LINAC4 DSO test the 23<sup>rd</sup> of March or the 24<sup>th</sup> before the PS SWY DSO tests;
- LEIR DSO test the 23<sup>rd</sup> of March or the 24<sup>th</sup> before the PS SWY DSO tests;
- PS SWY, PSB, PS Ring and TT2 DSO tests performed together the 24<sup>th</sup> and 25<sup>th</sup> of March
  - This DSO tests should validate all the EIS BEAM and as much as possible the EIS Machine
- Having all the EIS BEAM validated would allow to perform the DSO test for the EIS machine validation later if needed (PS -> POPS, PSB-> POPS-B + MPS) faster and without affecting the adjacent areas

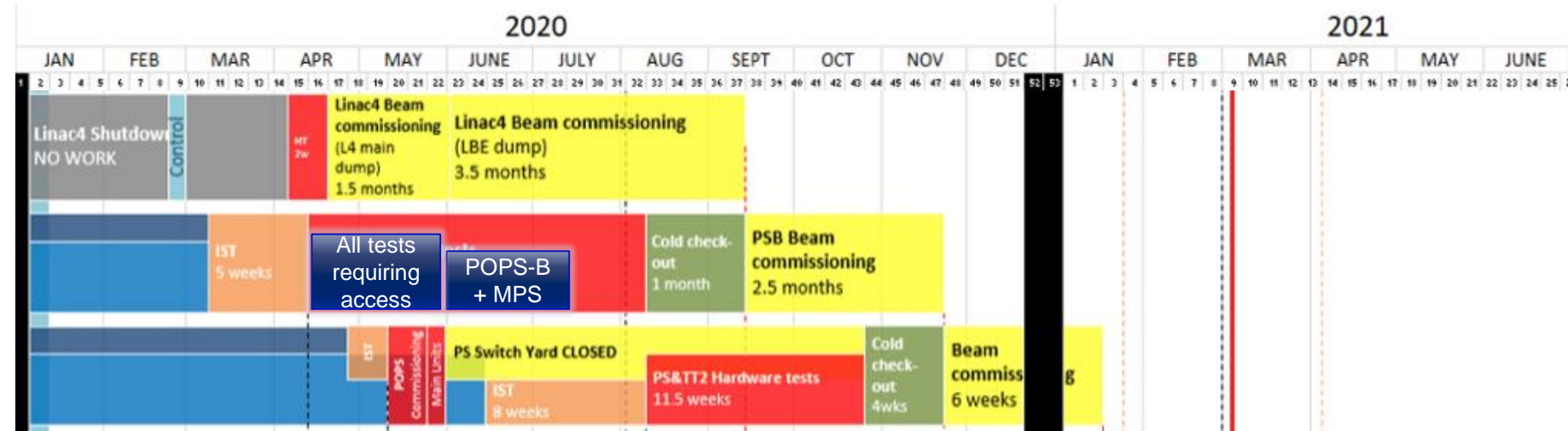
# Master Schedule





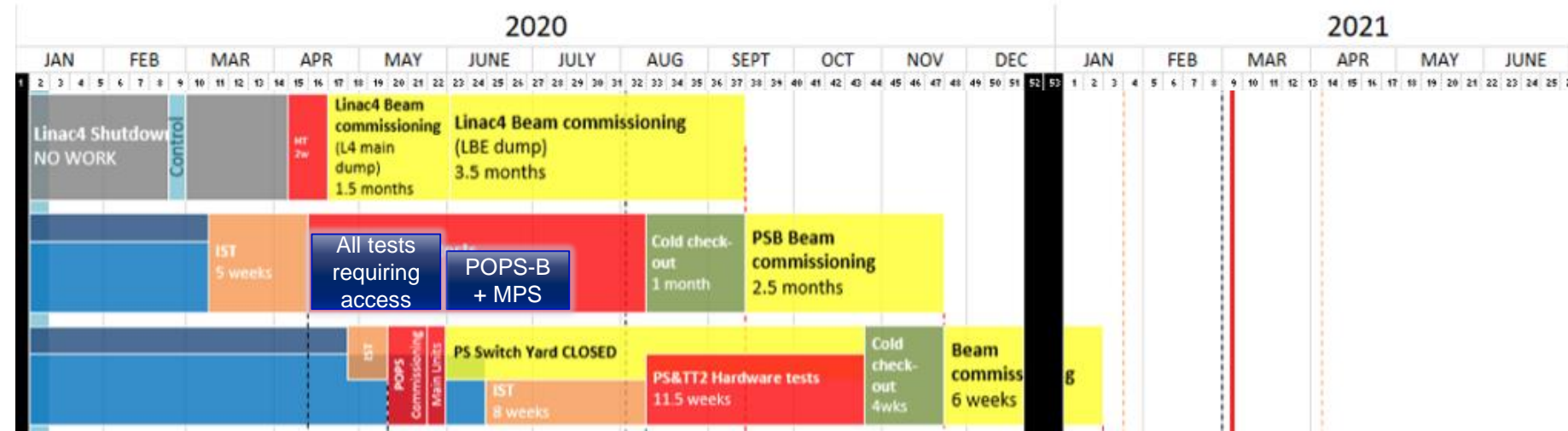


# Actual PSB Hardware commissioning planning before and during POPS-B + MPS



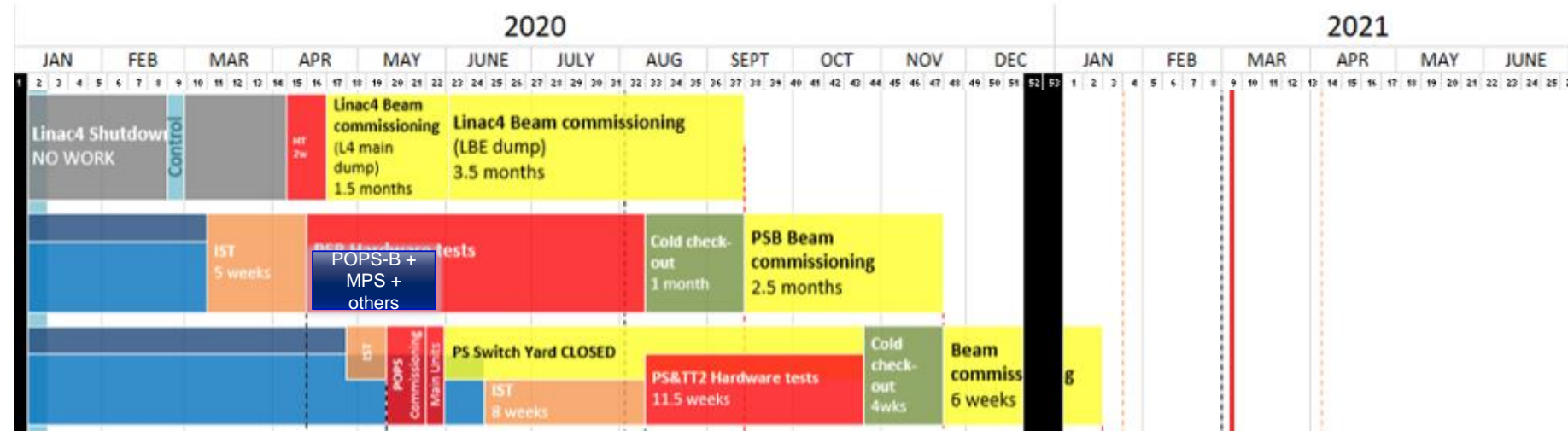
- All tests requiring access
  - MSC tests – auxiliary magnet tests + transfer lines (BI, BTP, BTM, ...)
  - ABT tests phase 3 and phase 4
  - ...

# Actual PSB Hardware commissioning planning before and during POPS-B + MPS



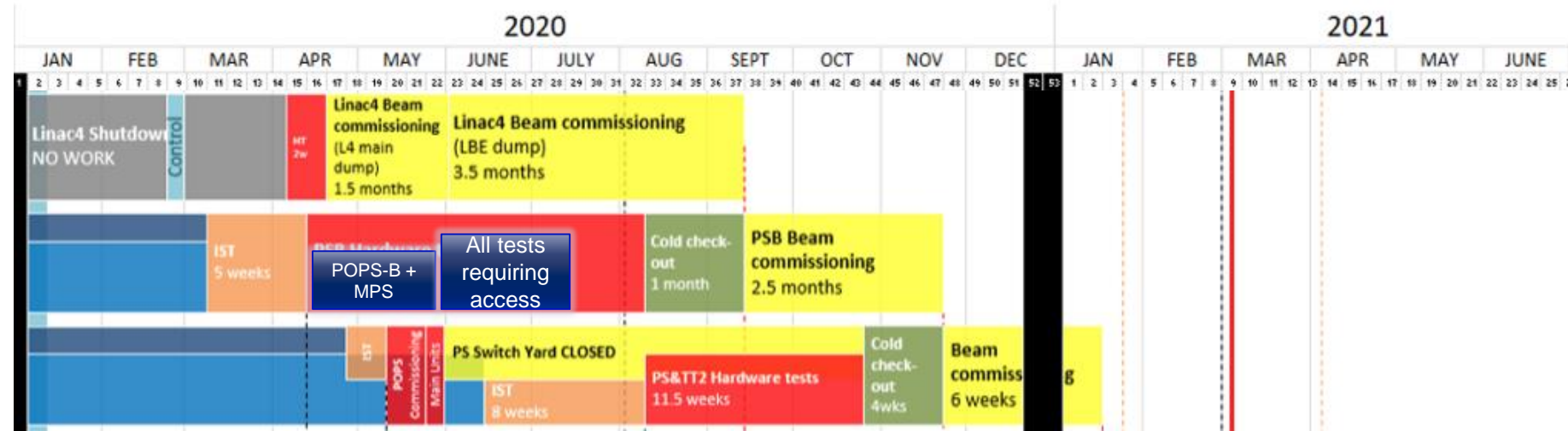
- POPS-B and MPS
  - DSO test with POPS-B for the Hardware Permit
  - 1 week at the beginning for the magnet patrol
  - 4 weeks of POPS-B tests
  - DSO test with the MPS for the Hardware Permit
  - 1 week for the MPS test
  - DSO test for the for the Beam Permit

# PSB Hardware commissioning planning before and during POPS-B + MPS with the new date



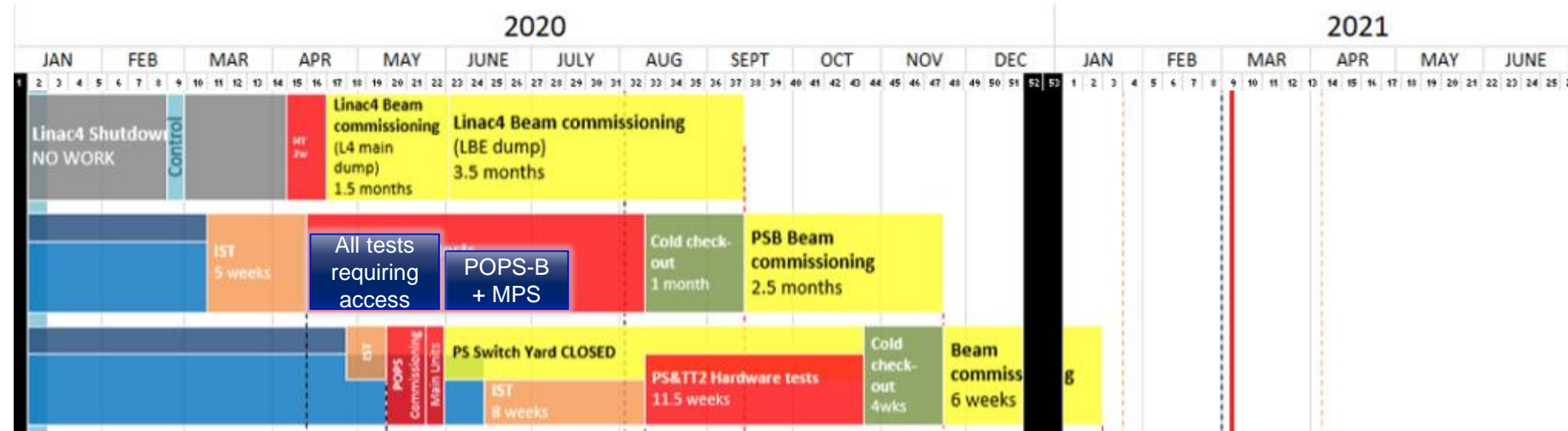
- Option 1
  - The tests that require access are performed together with POPS-B +MPS if compatible, and the POPS-B or MPS tests are stopped to allow access if needed

# PSB Hardware commissioning planning before and during POPS-B + MPS with the new date



- Option 2
  - The tests that require access are performed after POPS-B +MPS, and the LINAC4 LBE dump tests are stopped to allow access

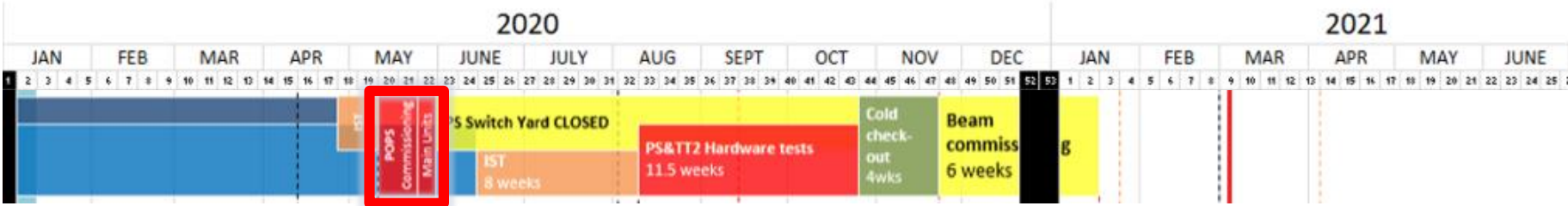
# PSB Hardware commissioning planning before and during POPS-B + MPS with the new date



- Option 3
  - POPS-B +MPS tests are kept as much as possible as planned today without affecting the availability of POPS for the 6<sup>th</sup> of July 2020



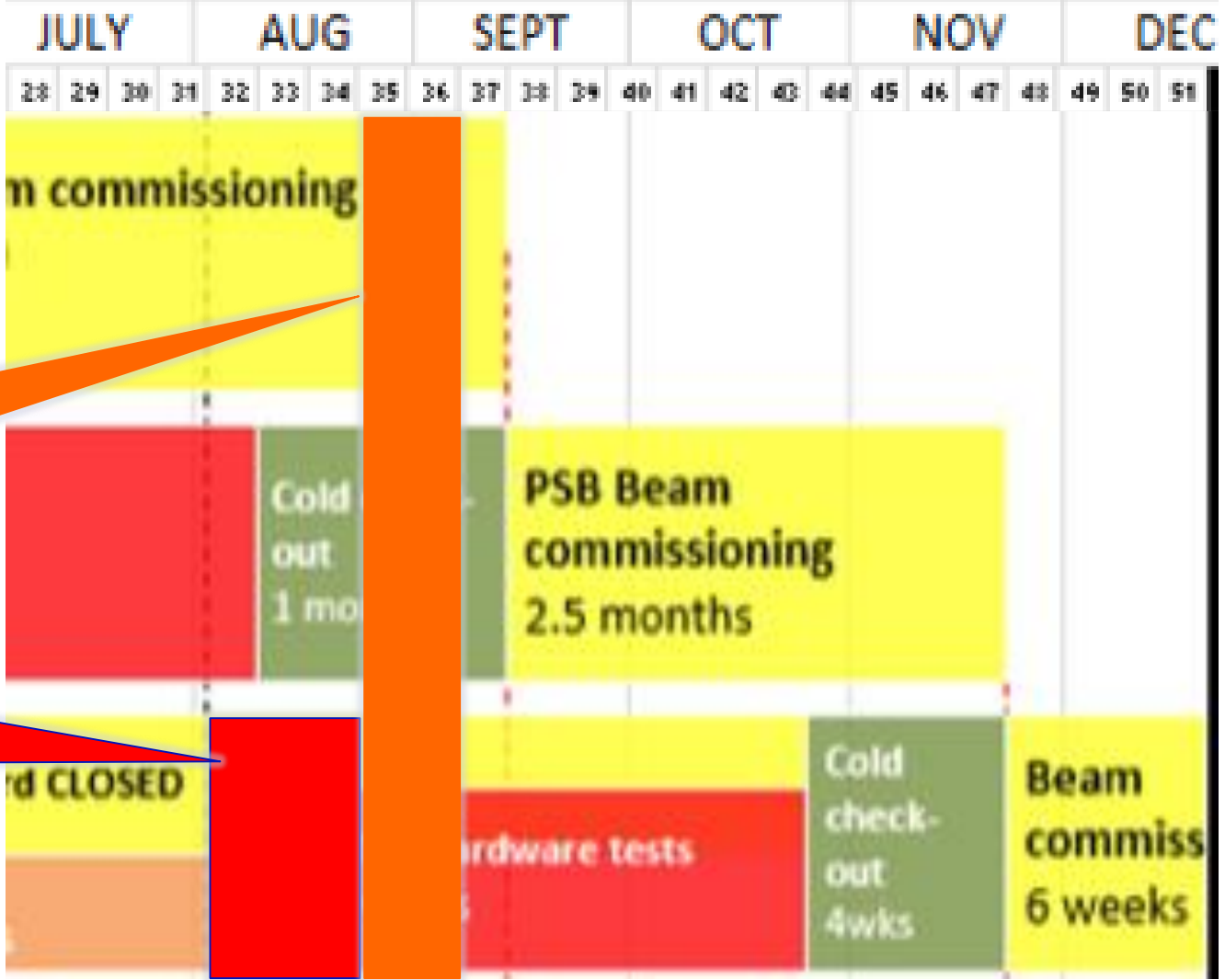
# Master Schedule



30 Apr 2020			HV test before POPS
1 May 2020			
2 May 2020			
3 May 2020			
4 May 2020			POPS + MUs
5 May 2020			
6 May 2020			
7 May 2020			
8 May 2020			
9 May 2020			
10 May 2020			
11 May 2020			POPS + MUs
12 May 2020			
13 May 2020			
14 May 2020			
15 May 2020			

16 May 2020			
17 May 2020			
18 May 2020			POPS + MUs
19 May 2020			
20 May 2020			
21 May 2020			
22 May 2020			Covers inst.
23 May 2020			
24 May 2020			
25 May 2020			Covers inst.
26 May 2020			
27 May 2020			
28 May 2020			
29 May 2020			HV test after covers installation
30 May 2020			
31 May 2020			
1 Jun 2020			
2 Jun 2020			

# New POPS commissioning schedule



9 days of full access to TE-MS

15 days of POPS tests with the MUs (LINAC4 tests stopped for access on a 1 day pre-warning notice)

# Planning options for the period before PS SWY closure

14 Mar 2020									
15 Mar 2020									
16 Mar 2020									
17 Mar 2020									
18 Mar 2020									
19 Mar 2020			Access system testing		Access system testing			Access system testing	
20 Mar 2020									
21 Mar 2020									
22 Mar 2020									
23 Mar 2020			Patrol		Patrol			Patrol	
24 Mar 2020			DSO test		DSO test			DSO test	
25 Mar 2020									
26 Mar 2020								TE-EPC tests with Magnets	
27 Mar 2020									
28 Mar 2020									
29 Mar 2020									
30 Mar 2020									
31 Mar 2020									
1 Apr 2020			SEH23 conditioning		SEH23 conditioning			TE-EPC tests with Magnets + SEH23 conditioning	
2 Apr 2020									
3 Apr 2020									
4 Apr 2020									
5 Apr 2020									
6 Apr 2020									
7 Apr 2020									
8 Apr 2020			Aux covers removal					TE-EPC tests with Magnets	
9 Apr 2020			Visual inspection						
10 Apr 2020									
11 Apr 2020									
12 Apr 2020									
13 Apr 2020									

# Planning options for the period before PS SWY closure

14 Apr 2020									
15 Apr 2020			F16 and LBS line magnet						TE-EPC tests with Magnets
16 Apr 2020									Aux covers removal
17 Apr 2020			ETL, ITE, ITH and ETP line magnets insp.						Visual inspection
18 Apr 2020									
19 Apr 2020									
20 Apr 2020									
21 Apr 2020			Aux polarity measurements						F16 and LBS line magnet
22 Apr 2020			Aux covers installation						
23 Apr 2020			Inj. Correctors inspection + Polarity			TE-EPC tests with Magnets			ETL, ITE, ITH and ETP line magnets insp.
24 Apr 2020									Aux polarity measurements
25 Apr 2020									
26 Apr 2020									
27 Apr 2020									Aux polarity measurements
28 Apr 2020						TE-EPC tests with Magnets			Inj. Correctors inspection + Polarity
29 Apr 2020									
30 Apr 2020			HV test before POPS						Aux covers installation
1 May 2020									
2 May 2020									
3 May 2020									
4 May 2020									
5 May 2020									
6 May 2020			POPS + MUs			TE-EPC tests with Magnets			
7 May 2020									
8 May 2020									
9 May 2020									
10 May 2020									
11 May 2020						TE-EPC tests with Magnets			
12 May 2020									
13 May 2020			POPS + MUs			Aux covers removal			
14 May 2020						Visual inspection			
15 May 2020						F16 and LBS line magnet			
16 May 2020									
17 May 2020									

# Planning options for the period before PS SWY closure

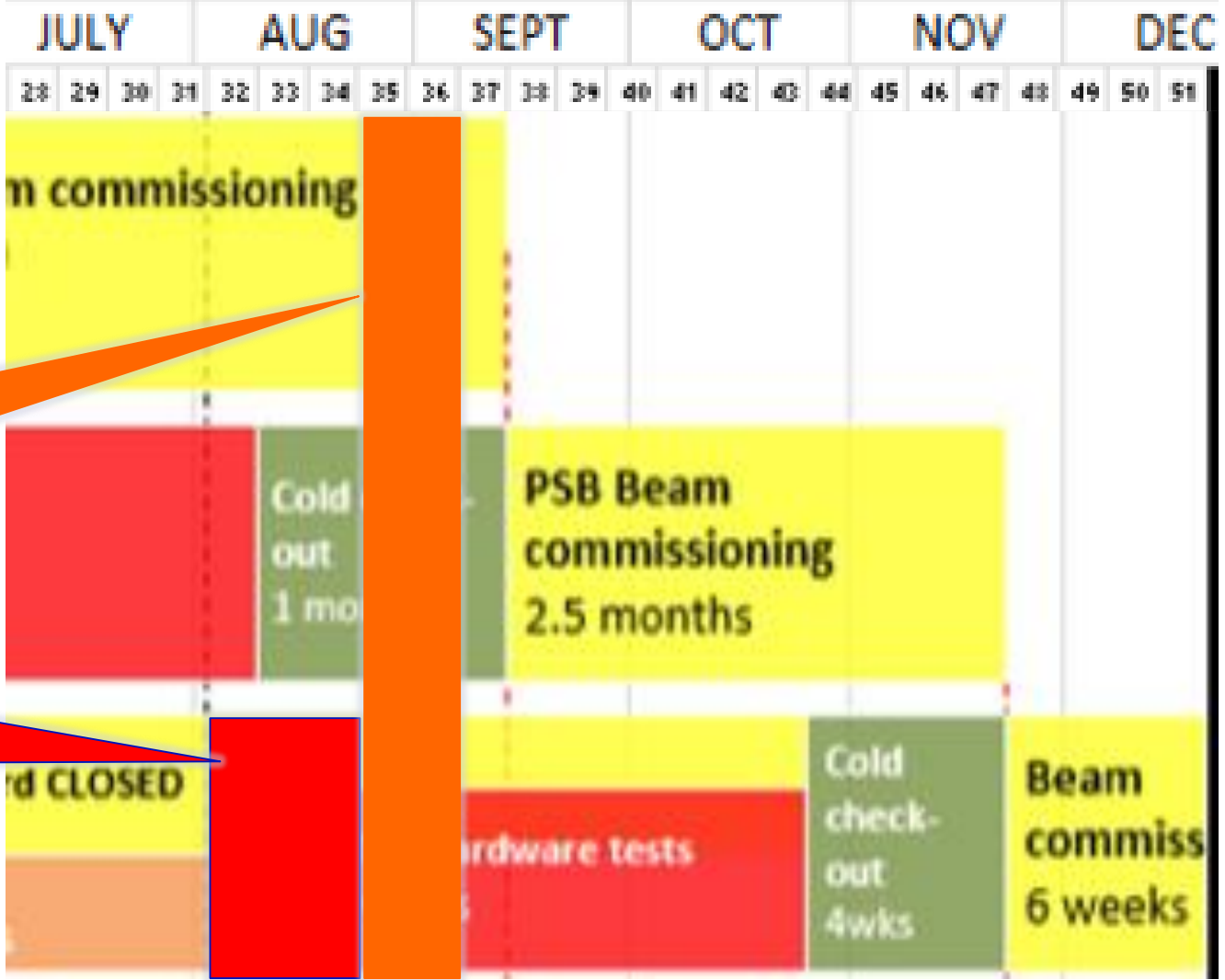
16 May 2020									
17 May 2020									
18 May 2020						F16 and LBS line magnet			
19 May 2020			POPS + MUs			ETL, ITE, ITH and ETP line magnets insp.			
20 May 2020									
21 May 2020									
22 May 2020			Covers inst.			Aux polarity measurements			
23 May 2020									
24 May 2020									
25 May 2020						Aux polarity measurements			
26 May 2020									
27 May 2020			Covers inst.			Inj. Correctors inspection + Polarity			
28 May 2020						Aux covers installation			
29 May 2020			HV test after covers installation						HV test before POPS
30 May 2020									
31 May 2020									
1 Jun 2020									
2 Jun 2020									

The two options give more time for the ISTs that require access and that have to be performed before closing the PS SWY

The 5 days removed in August 2020 to the ISTs period is compensated by the additional access time that is now recovered in May 2020 by removing the POPS tests (RF are the may systems affected and they will start their IST period in Feb 2020 already)

The 5 days removed to the LS2 shutdown period will have to be compensated by a tighter schedule, but we had already a limited number of activities in this period because we were already in the IST period

# New POPS commissioning schedule



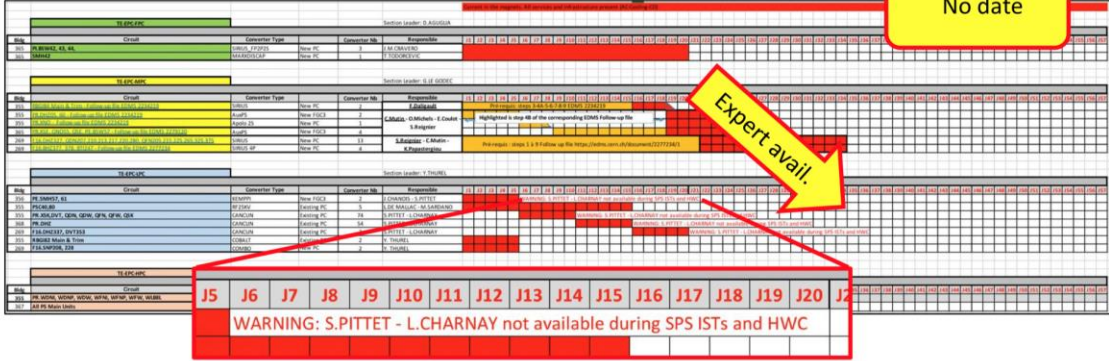
9 days of full access to TE-MS

15 days of POPS tests with the MUs (LINAC4 tests stopped for access on a 1 day pre-warning notice)



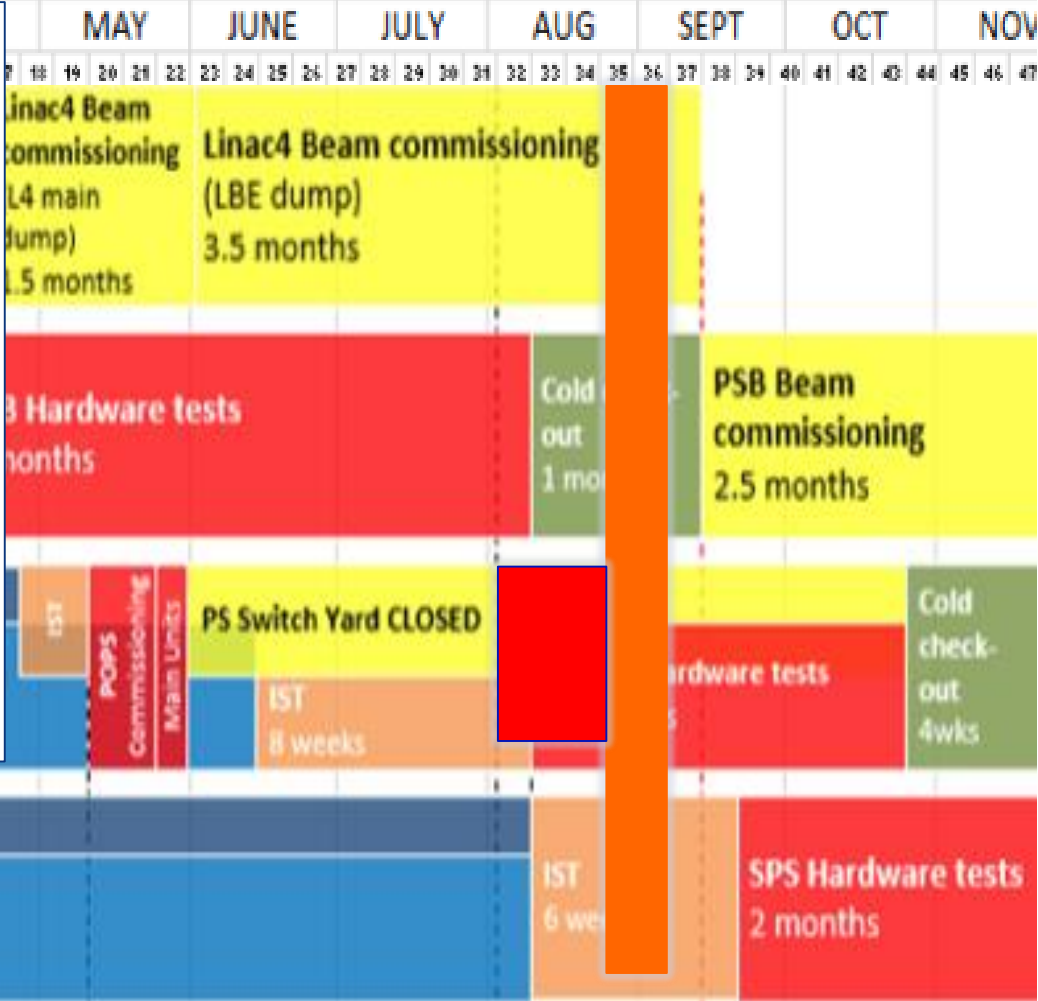
# New POPS commissioning schedule – PS HWC

## 2.2 HW tasks Planning EPC (outside Switchyard)



## Problem to be addressed

2020



# New POPS commissioning schedule – PS HWC

1 Aug 2020			
2 Aug 2020			
3 Aug 2020	PS ring closed or special Permit	PS SWY in BEAM mode	TE-EPC POPS tests
4 Aug 2020			
5 Aug 2020			
6 Aug 2020			
7 Aug 2020			
8 Aug 2020			
9 Aug 2020			
10 Aug 2020	PS ring closed or special Permit	PS SWY in BEAM mode	TE-EPC POPS tests
11 Aug 2020			
12 Aug 2020			
13 Aug 2020			
14 Aug 2020			
15 Aug 2020			
16 Aug 2020			
17 Aug 2020	PS ring closed or special Permit	PS SWY in BEAM mode	TE-EPC POPS tests
18 Aug 2020			
19 Aug 2020			
20 Aug 2020			
21 Aug 2020			
22 Aug 2020			
23 Aug 2020			
24 Aug 2020	PS (SWY + ring) in special Permit mode		TE-MS-C - MUs heat run
25 Aug 2020			
26 Aug 2020			
27 Aug 2020			TE-MS-C - Covers installation (PS SWY)
28 Aug 2020			
29 Aug 2020			
30 Aug 2020			

29 Aug 2020			
30 Aug 2020			
31 Aug 2020			TE-MS-C - Covers installation (PS SWY)
1 Sep 2020			
2 Sep 2020	PS (SWY + ring) in special Permit mode		TE-MS-C - HV test
3 Sep 2020		PS SWY in BEAM mode	TE-MS-C - Covers installation (PS Ring)
4 Sep 2020			
5 Sep 2020			
6 Sep 2020			
7 Sep 2020		PS SWY in BEAM mode	TE-MS-C - Covers installation (PS Ring)
8 Sep 2020			
9 Sep 2020			
10 Sep 2020			
11 Sep 2020			
12 Sep 2020			
13 Sep 2020			
14 Sep 2020		PS SWY in BEAM mode	TE-MS-C - Covers installation (PS Ring)
15 Sep 2020			
16 Sep 2020			
17 Sep 2020	PS (SWY + ring) in special Permit mode		TE-MS-C - HV test
18 Sep 2020			



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