



ACE

COORDINATION UNIT

Facility, Site & Safety coordination

YETS 2017-2018

Activities in the PS Booster

FOM 20/02/2018

D. Hay On behalf of the EN-ACE Coordination unit & BE-ABP coordinators

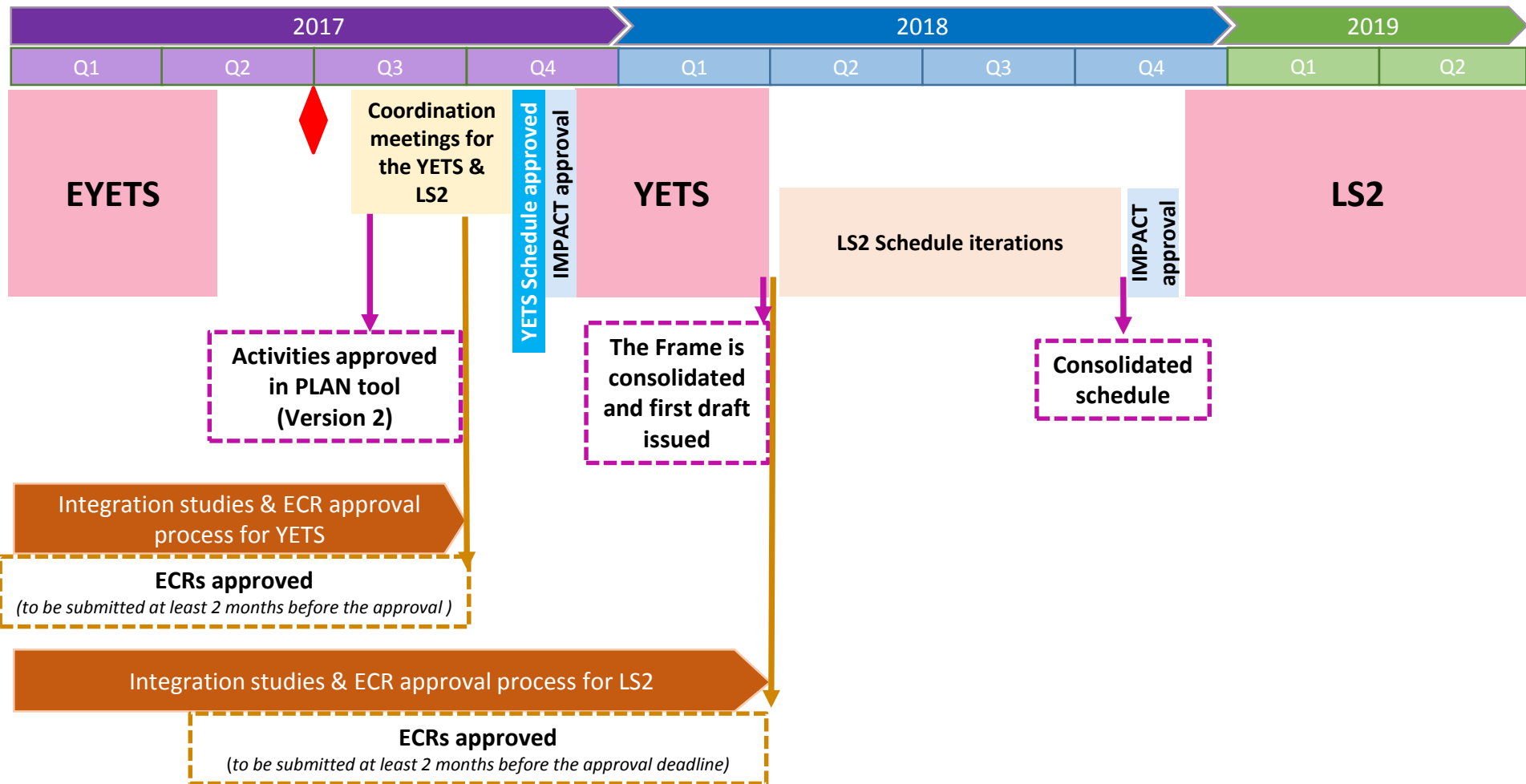


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PS Booster YETS motivation and objectives

- Preventative and Corrective Maintenance
- Removal of obsolete cables
- Installation of new cables (LIU and consolidation)
- Advance where possible LIU related projects ahead of LS2.
- Consolidate and upgrade of existing installations.
- An electrical **network separation (lock-out) for “general access”** will be tested on the PSB during YETS 2018

Roadmap towards LS2

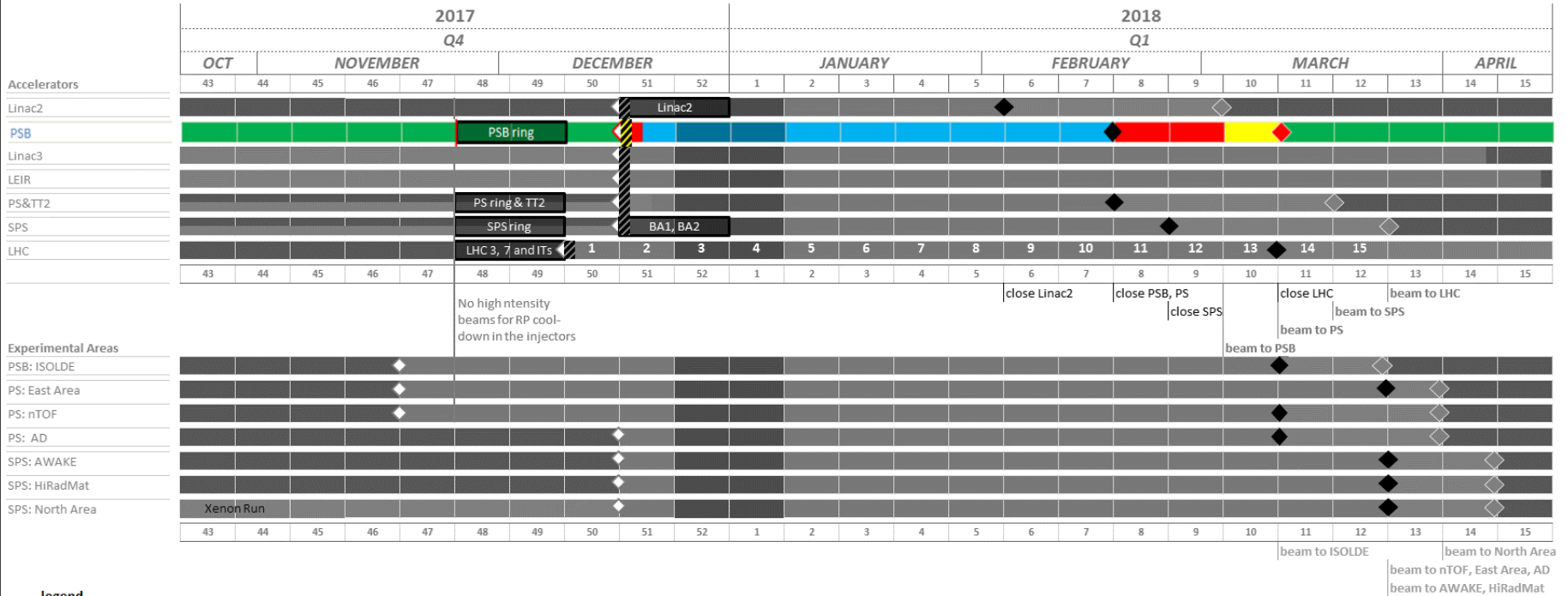


Year-End Technical Stop 2017-2018

References:

- 15 weeks beam to beam stop for the LHC
- Xenon physics for the North Area
- 5 weeks for commissioning (hardware tests + cold check-out + beam commissioning) in the injectors (PSB, PS, SPS) before beam ready for the LHC
- 2 to 3 days of diagnostic tests in the injectors with machine closed

Machines	Machine access (weeks) (not including the 2 weeks of annual closure)
LINAC2	4
PSB	6.5
PS	6.5
SPS	7.5
LHC	11

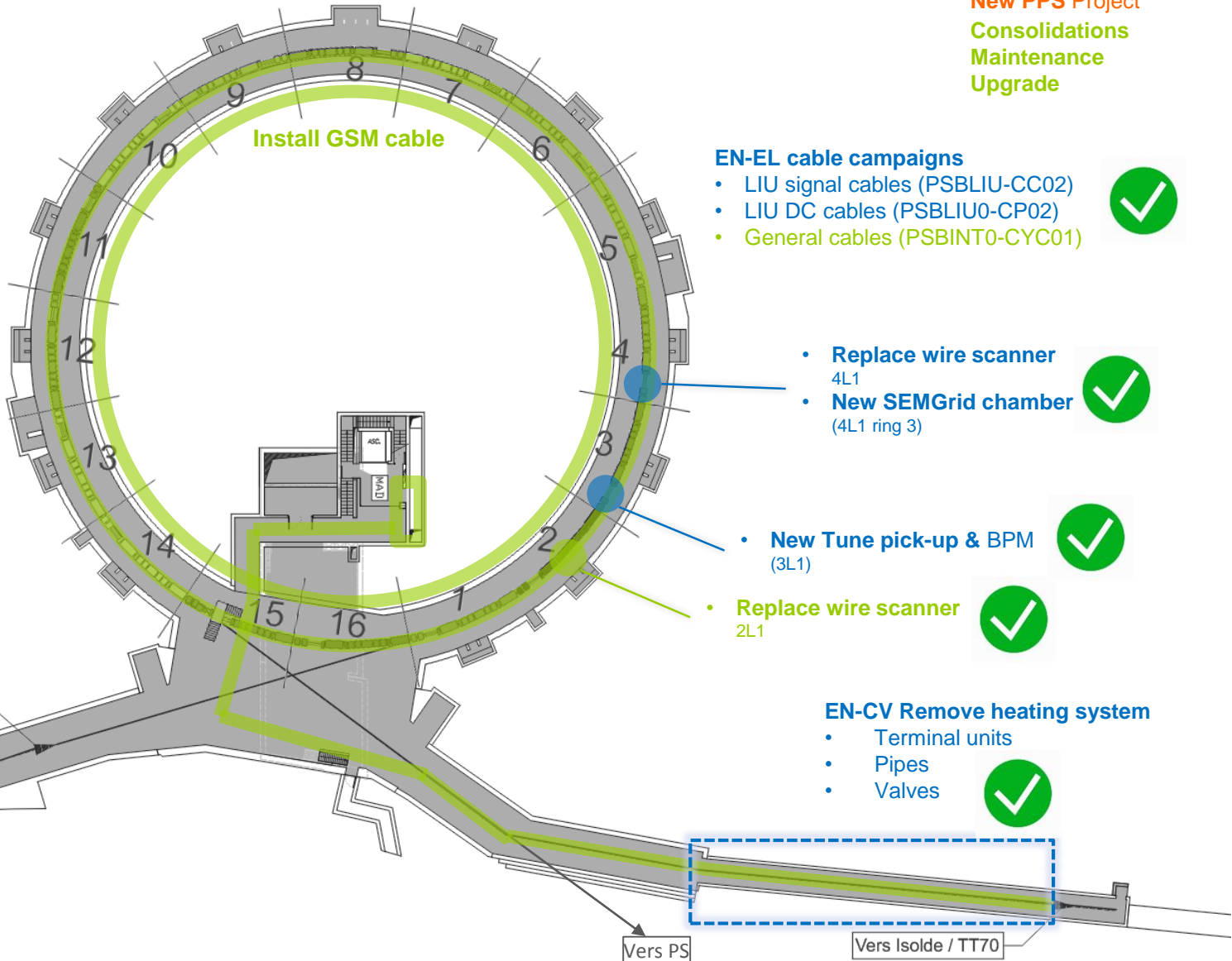


- Legend**
- ◊ stop of the beam
 - ◆ closure
 - ◈ beam
 - ▨ RP survey before access
 - protons operation
 - ions run
 - area
 - rp cooling time before access
 - technical stop (access to be defined)
 - hardware commissioning + cold check-out
 - beam commissioning
 - ▨ Training quench in the LHC

Overview of the activities

LIU Project
 Injectors De-cabling Project
 HL-LHC Project
 Fire Safety Project
 New PPS Project
 Consolidations
 Maintenance
 Upgrade

- EN-EL Consolidation.
- Lighting
- Power
- New EBD switchboard



EN-EL cable campaigns

- LIU signal cables (PSBLIU-CC02)
- LIU DC cables (PSBLIU0-CP02)
- General cables (PSBINT0-CYC01)



- Replace wire scanner 4L1
- New SEMGrid chamber (4L1 ring 3)



- New Tune pick-up & BPM (3L1)



- Replace wire scanner 2L1



EN-CV Remove heating system

- Terminal units
- Pipes
- Valves

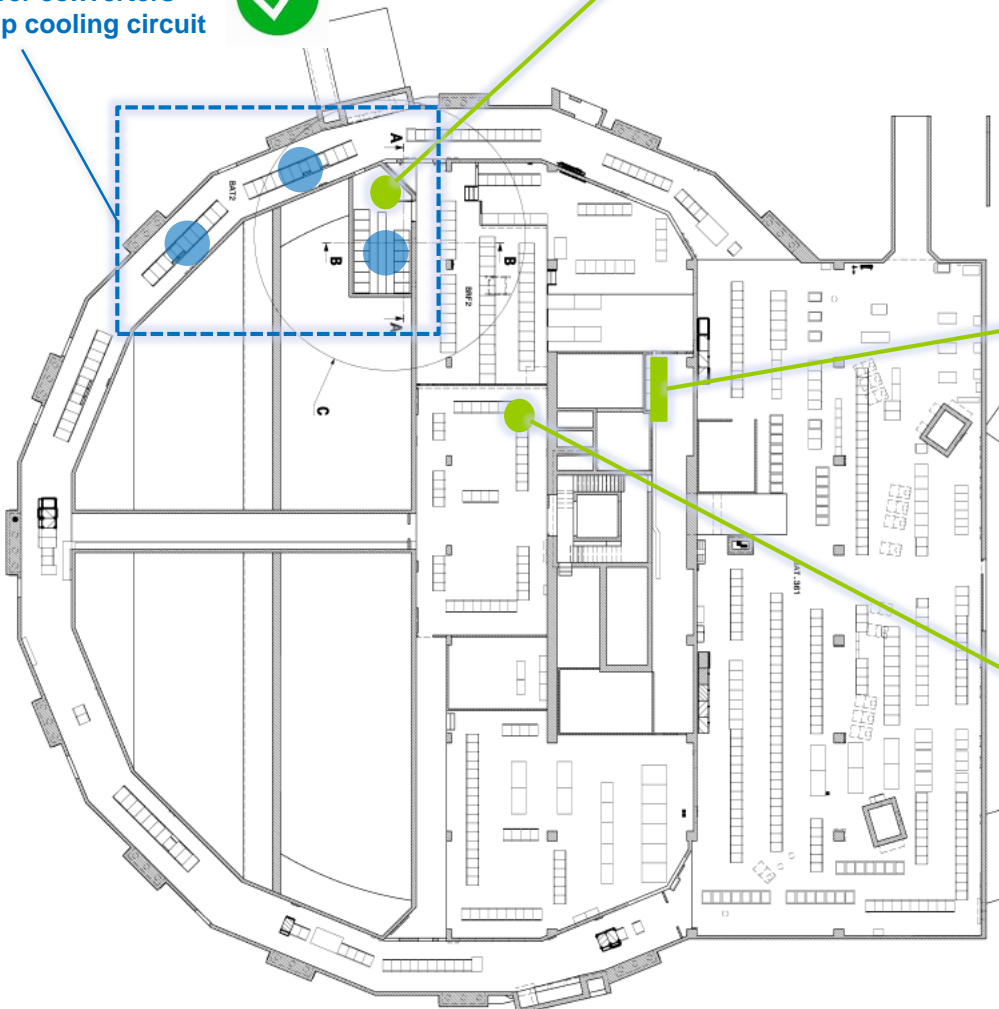


Overview of the activities

- Install pulse transformers
- Install power converters
- Install temp cooling circuit



EN-HE Install transformer lifting beam



Cabling campaigns

- LIU signal cables (PSBLIU-CC02)
- LIU DC cables (PSBLIU0-CP02)
- POPS-B cables (PSBLIU0-CC05 & CP02)
- General cables (PSBINT0-CYC01)



EN-EL Consolidation Lighting

- Power
- New EBD switchboard

- Install 2 new racks for the BIC system.



- Wi-Fi consolidation
- Star point consolidation



- **Activities completed**

- Replace damaged wire scanners in 2L1 & 4L1
- Install new SEMGrid Tank in 4L1
- Install new tune pick up stack in 3L1
- Install new BIS racks BOR 779 & 780
- WIC modifications - POPS B & Q Strip power converters
- Modify Injection area shaft barriers.
- Septa controls and data acquisition modifications
- Installation of the remaining BSW power converters, transformers & cooling (Alcove + BAT)
- Consolidation of the machine lighting and power.
- New fibres for IT-CS, EPC, RF, CO & MSC
- Install GSM leaky feeder cables
- Cabling campaigns (surface and machine)
- Removal of the EN-CV heating equipment (BTM line)
- Installation of the new access control system (surface buildings (SUSI))

- **Activities during HWT period**

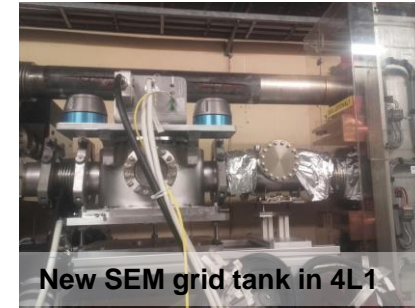
- **Installation of the auxiliary cables and power supplies for the BSW power converters located in the BRF2**
- **Terminate the Installation of the auxiliary power cables needed for POPS-B testing (bg 271)**



Removal of the heating systems



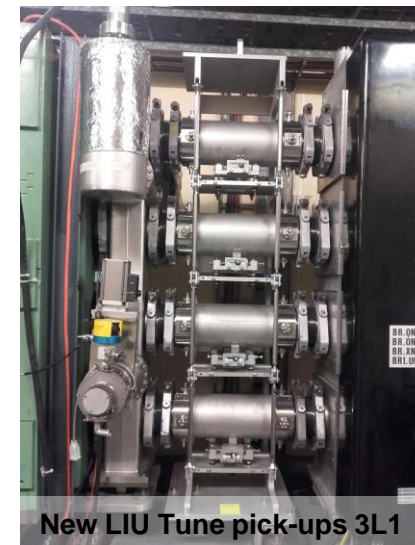
New transformers



New SEM grid tank in 4L1



New septa controls



New LIU Tune pick-ups 3L1

PS Booster Engineering Change Requests

Facility	Scope	Period	Description	Group	Space Reservation Request	Engineering Change Request
PS Booster	LIU-PSB	17/18 YETS	Installation of 4 new Tune pick-ups	BE-BI		PSB-BPMTA-EC-0001 v.1.0 [Released]
PS Booster	LIU-PSB	17/18 YETS	New SEMGrid (x1) in the PSB 4L1	BE-BI	PSB-LJ-EC-0004 v.1.0 [Released]	PSB-BSG-EC-0002 v.0.1 [Under Approval]
PS Booster	Consolidation	17/18 YETS	New Lighting System for the PS Booster Accelerator Tunnel	EN-EL		PSB-E-EC-0001 v.1.0 [Released]
PS Booster	Maintenance & Operation	17/18 YETS	Replacement of a Telecom Radiating Cable in the PS Booster	IT-CS		PSB-CC-EC-0001 v.1.0 [Released]

Extraction from new EN-ACE tool [Track-it](#)

TRACKS	Status	Scope	Facility	Location	Period	Description	T	N	L	C	SRR	ECR	Integration Study		
10536	In Progress	Consolidation	PS Booster	PS Booster Tunnel	17/18 YETS	New Lighting System for the PS Booster Accelerator Tunnel	..	4	1	0		ECR PSB-E-EC-0001	Released IS	Completed	EN
10019	In Progress	LIU-PSB	PS Booster	4L1 (ring 3)	17/18 YETS	New SEMGrid (x1) in the PSB 4L1	3	3	5	6	SRR PSB-LJ-EC-0004	Released	Under Approval IS	Validated	BE
10016	In Progress	LIU-PSB	PS Booster	Period 3 L1 (4 rings)	17/18 YETS	Installation of 4 new Tune pick-ups	6	2	2	3		ECR PSB-BPMTA-EC-0001	Released IS	Completed	BE
10614	In Progress	Maintenance & Operation	PS Booster	Rings, Building	17/18 YETS	Replacement of a Telecom Radiating Cable in the PS Booster	..	2	1	0		ECR PSB-CC-EC-0001	Released IS	Completed	IT
10658	In Progress	LIU-PSB	PS Booster	injection/extraction area	17/18 YETS	removal of the heating systems in the PS Booster	1	1	0	0		No	IS	In Progress	EN



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Thank you Q's?

PSB – YETS 2018

- A **network separation pre-requisite** for “general access” will be tested on the PSB during YETS 2018
 - **Network separation request by PSB facility coordinator of all equipment with accessible live parts**
 - All TE-MSC equipment
 - **Network separation request by PSB facility coordinator of all equipment with non accessible live parts which are not performing hardware tests during “general access”**
 - Convertors (TE-EPC)
 - RF equipment (BE-RF)
 - Septum (TE-ABT)
 - Kickers TE-ABT
 - <https://indico.cern.ch/event/683748/>

PS BOOSTER - Copper cabling 1/2

- LIU signal cables installation – PSBLIU0-CC02:

PLAN	Description of task	Responsible	Group	DIC	NO cables to be pulled	DIC L [m]
10438	New wire scanners periods 4&11	J. Emery	BE-BI	Received	26	1550
10675	Vacuum equipment	J. De La Gama	TE-VSC	Received	51	1504
	Transverse damper kickers & pickup	A. Blas	BE-RF	Received	48	1620
10488	BLMs	C. Zamantzas	BE-BI	Received	56	6700
10290	BI.SMV: 3 transformers	S. Pittet	TE-EPC	Received	4	60
10297	BI.BSW power	S. Pittet	TE-EPC	Received	20	345
10071	Matching monitor	F. Roncarolo	BE-BI	Received	132	3300
11095	Beam Interlock System	C. Martin, S. Gabourin	TE-MPE	Received	14	772

Total 351 15851

- LIU DC cables installation – PSBLIU0-CP02:

Description of task	Responsible	Group	DIC	NO cables to be pulled	DIC L [m]
Q-strip converters test cable	G. Georgiev	EN-EL	N/A	1	30
BI.BSW power DC cables	G. Georgiev	EN-EL	N/A	28	550

Total 29 580

- Replacement of two racks Beam Interlock System (BOR779 & BOR 780).

PS BOOSTER - Copper cabling 2/2

- Not LIU cables installation – PSBINT0-CYC01:

- 1 cable, MTG PSB BRF2 RF, BE-CO, Benjamin NINET;
- 4 cables, Remote reset, BE-CO, Benjamin NINET;
- 4 cables, EV, TE-ABT, Marco PIMENTEL;
- 28 cables, Triger OASIS, BE-CO, E. Said.

Slides 5 &6 - PSBLIU0-CC02, PSBLIU0-CP02, PSBINT0-CYC01:

- WDP ongoing;
- Detailed planning by area will be provided to the coordination;
- Total execution time - 6 week.