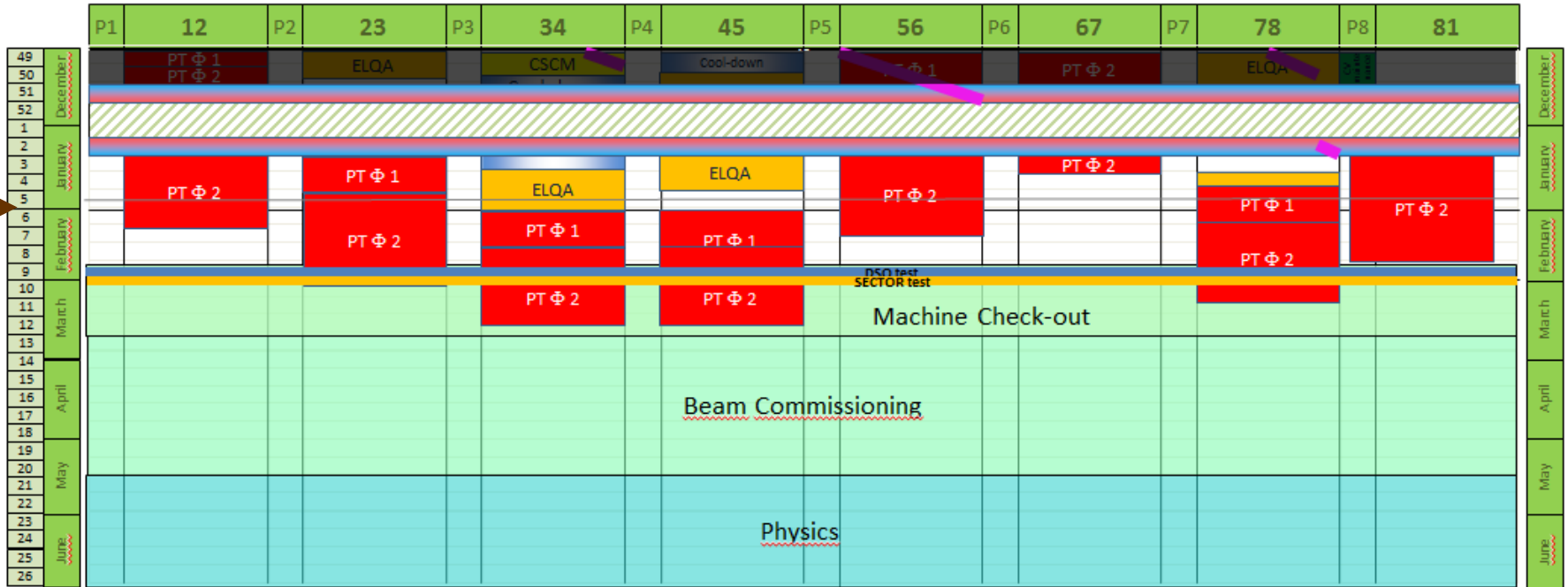




MPS commissioning procedures – Status and next steps

M.Zerlauth, D.Wollmann, J.Wenninger et al

Next months towards cold checkout and Beam commissioning



DSO & access system tests: Thursday 26th and Friday 27th February

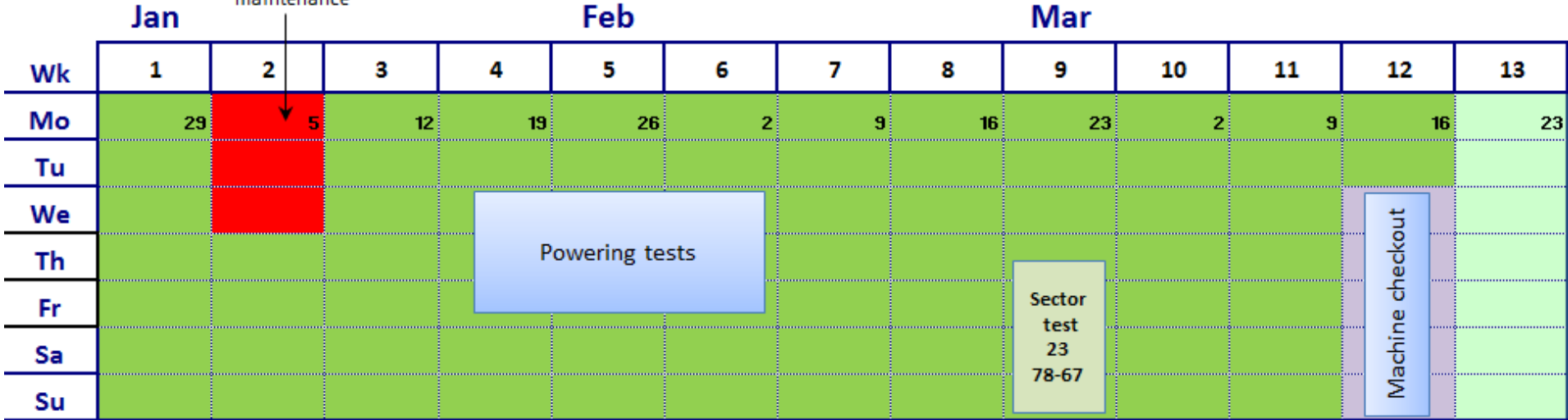
SECTOR test: Saturday 28th and Sunday 29th February

Courtesy M.Lamont @LMC

2015 Q1

Minimum delay option

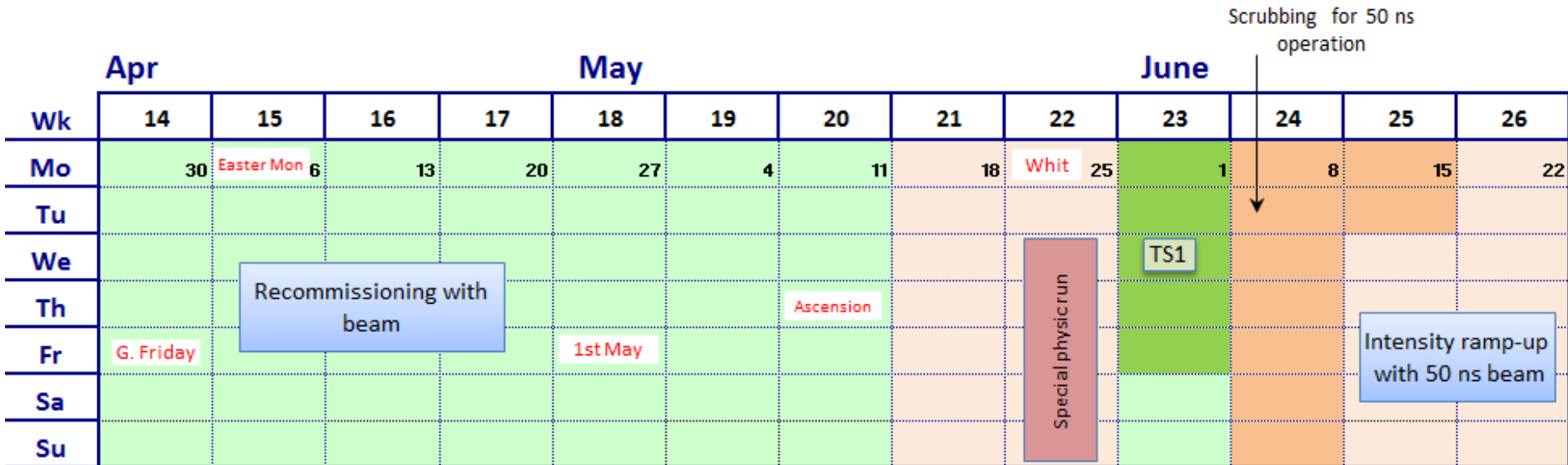
Controls maintenance



Courtesy M.Lamont @LMC



2015 Q2



- 8 weeks beam commissioning
- LHCf and VdM still before TS1
- TS1 shifted by a week

Courtesy M.Lamont @LMC

Status of MPS commissioning procedures

- New template: http://lhc-mpwg.web.cern.ch/lhc-mpwg/MPP-Meetings/No84-13-12-2013/MPS_Template.doc

MPS System	Current Author/responsible	New responsible	MPP presentation	EC	Approved
Collimation System Commissioning	R.Assmann, S.Redaeli	B.Salvachua Ferrando	13.05.2014	Ongoing since Sep 2014	
Injection Protection System Commissioning	V.Kain, J.Wenninger	W.Bartmann, J.Uythoven	24.10.2014		
Beam Interlock System Commissioning	B.Todd, B.Puccio	S.Gabourin, C.Martin	25.04.2014		
Powering Interlock System Commissioning	A.Castaneda, I.Romera	I.Romera	31.01.2014		
Vacuum System Commissioning	J.C.Billy	G.Pigny	31.10.2014		
Beam Dump System Commissioning	B.Goddard	C.Bracco, J.Uythoven	21.03.2014/13.05.2014		
FMCM Commissioning	M.Zerlauth, T.V.Jevard	I.Romera	31.01.2014		
BLM System Commissioning	L.Ponce, B.Dehning	B.Holzer	24.10.2014		
Warm Magnet Interlock System Commissioning	P.Dahlen, I.Romera	R.Mompo, M.Zerlauth	21.02.2014	Ongoing since Aug 2014	
Safe Machine Parameter System		S.Gabourin	25.04.2014		
Software Interlock System		J.Wenninger	31.01.2014	Ongoing since Aug 2014	
Beam Current Change Monitor		D.Belohrad	30.01.2015		

Filling in the holes...Machine checkout

Wednesday	8:00	6	Timing	LHC request	start testing the LHC request
	8:00	6	BIS	BIS loop closing	connection to beam dump etc
	9:00	5	Vacuum	Valves interlock test	Beam LOOP Closed
	13:00	10	LBDS/MKI	BIS loop closed LBDS Test	debugging with everything connected - as prerequisite, plus experiments, connection to beam dump etc
	23:00	9	OP	Full machine cycle	All circuits at 6.5 TeV
	23:00	8	BLM	BLM //	Threshold triggering & HV modulation tests LOOP OPEN
Thursday	8:00	5	Vacuum	Valves Interlock tests	Beam Loop closed
	8:00	8	PIC	Outstanding Interlock MPS tests	Sector without faults (4 hrs * sector)
	16:00	10	OP	Pre-cycle and full sequence tests	Power converters, collimators, RF, Injection, Beam Instrumentation
	23:00	8	PIC	Outstanding Interlock MPS tests ?	Sector without faults/(4 hrs * sector)
	23:00	8	BLM	BLM // Finished?	Threshold triggering & HV modulation tests
	23:00	9	OP	Full machine Operational cycle	Full machine
Friday	8:00	8	OP	LHC Access if needed	
	8:00	8	PIC	Outstanding Interlock MPS tests	Sector without faults/(4 hrs * sector)
	16:00		OP	Pre-cycle and full sequence tests	Power converters, collimators, RF, Injection, Beam Instrumentation
	23:00		OP	Full machine Operational cycle	Full machine

Adapted table of contents

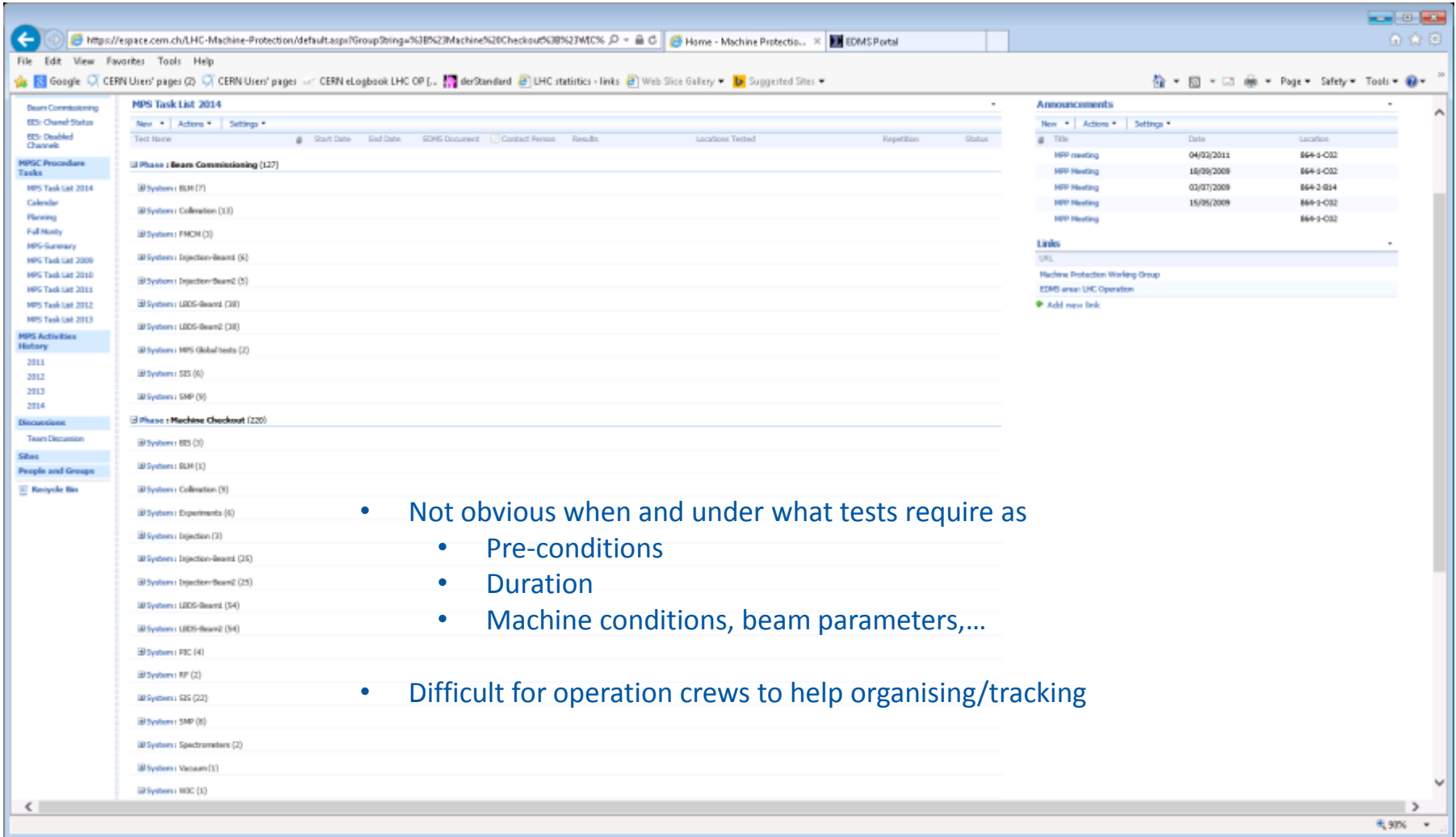
N	Not to be repeated (eventually only executed at beginning of run, but not after Christmas or technical stops)
S	To be repeated only after longer shutdowns during a run (e.g. Christmas stops)
T	To be repeated after every Technical Stop (including longer shutdowns during a run)
P	Periodical repetition required, like 1 x per month; details to be defined in text
O	To be repeated when LHC optics/crossing scheme is changed

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- Plan the different steps of MPS commissioning at best (earliest) within the available time (which will be short)!!
- Clearly identify dependencies and eventual synergies!!!

MPS commissioning web-site



The screenshot displays the MPS commissioning web-site interface. The main content area shows a table titled "MPS Task List 2014" with columns for Test Name, Start Date, End Date, SONG Document, Contact Person, Results, Locations Tested, Repetition, and Status. The table is organized into two phases: "Phase : Beam Commissioning (127)" and "Phase : Machine Checkout (220)".

Phase : Beam Commissioning (127)

System	Count
System : BLM	7
System : Collimation	13
System : FMCH	2
System : Injection-Beam2	6
System : Injection-Beam2	5
System : LIDOS-Beam2	28
System : LIDOS-Beam2	28
System : MPS Global tests	2
System : SES	6
System : SMP	9

Phase : Machine Checkout (220)

System	Count
System : BES	2
System : BLM	1
System : Collimation	9
System : Experiments	6
System : Injection	7
System : Injection-Beam2	2
System : Injection-Beam2	25
System : LIDOS-Beam2	5
System : LIDOS-Beam2	5
System : FFC	1
System : RF	2
System : SES	2
System : SMP	6
System : Spectrometers	2
System : Vacuum	1
System : WDC	1

Announcements

Title	Date	Location
MPP meeting	04/02/2011	844-3-C02
MPP Meeting	18/09/2009	844-3-C02
MPP Meeting	02/07/2009	844-3-014
MPP Meeting	15/06/2009	844-3-C02
MPP Meeting		844-3-C02

Links

URL

Machine Protection Working Group
EDMS area: LHC Operation
Add new link

- Not obvious when and under what tests require as
 - Pre-conditions
 - Duration
 - Machine conditions, beam parameters,...
- Difficult for operation crews to help organising/tracking

The ACCTESTing way of test tracking



..works already for non HWC tests...

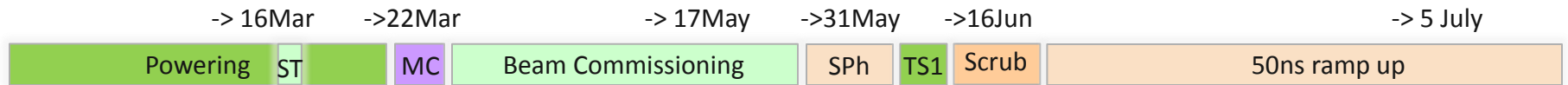
The screenshot displays the 'Accelerator Testing - pro' software interface. At the top, there is a status bar with 'Campaign [Active]: Recommissioning post LS1' and '13 Systems, 110 Tests, 0 Successes, 0% Successful'. Below this is a navigation bar with icons for Test Plan, Execution basket, Analysis basket, Signing basket, Schedule Plan, Statistics, and Reporting.

The main area contains a table with columns: System name, Active Io..., Pie Chart, and The tests for the system. The table lists several systems, each with a set of test buttons. The system 'LHC.BTVSE.A4L6...' is highlighted in red, indicating a failed test. The system 'LHC.BTVM.6L4.B1' is highlighted in yellow, indicating a pending test. The system 'LHC.BTVM.7L3.B1' is highlighted in grey, indicating a successful test.

On the left side, there are several panels: 'Table actions' (Select all systems, Deselect all systems), 'System actions' (Unlock systems, Lock systems), 'Selected tests actions' (Run selected tests, Sign selected tests), 'Sign Only Test' (Sign only tests visible), 'Displayed Test Filter' (RUNNING, FAILED, ANALYSIS_PENDING, SIGNING_PENDING, NOT_STARTED, EXCLUDED, SUCCESSFUL), and 'Column options' (System, Key).

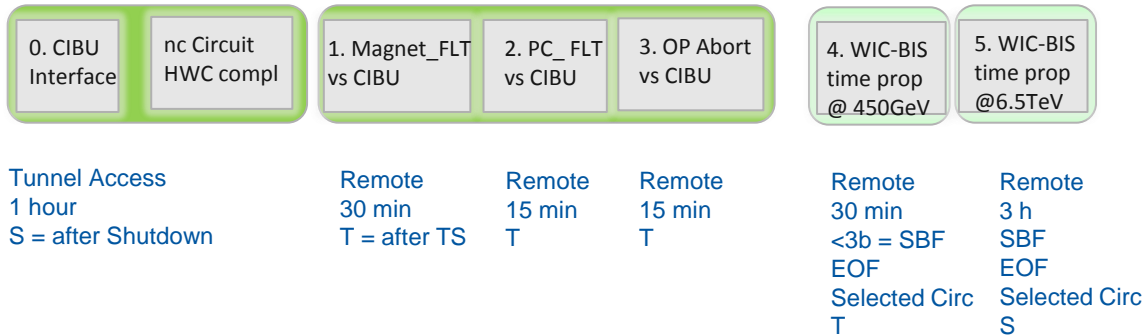
At the bottom, a green status bar shows '17:31:45 - updateData: Systems added: 13 | Systems refreshed: 0'.

Use Case WIC + FMCM + BLM



Systems

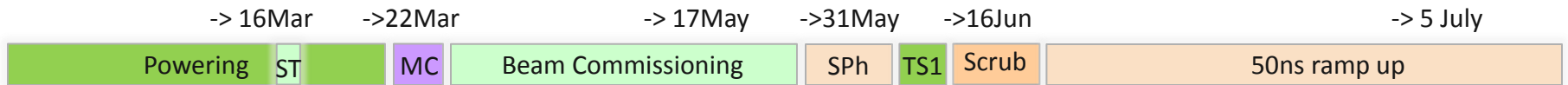
CIW.US15.LR1
...
CIW.UA83.LR8



- Each test will be assigned 'properties'
 - Pre-conditions (e.g. UPS power, Wireless,...)
 - Access requirements
 - Estimated test duration
 - Synergies
 - Beam parameters (probe, 1 nom b, trains,...)
 - Fill conditions (dedicated fill, EOF,..)
 - ...

LHC-OP-MPS-0010

Use Case WIC + FMCM + BLM

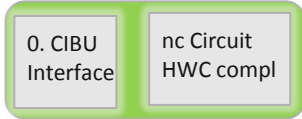


Systems

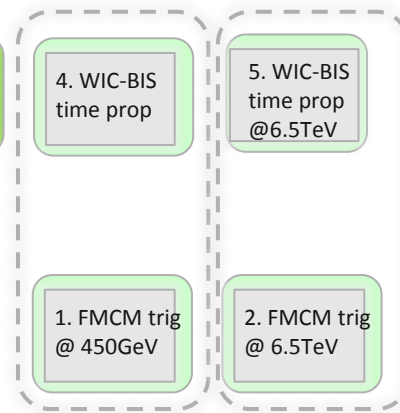
CIW.US15.LR1
...
CIW.UA83.LR8



CIF.US152.RD1
...
CIF.SR7.RD34



Tunnel Access
1 hour
S = after Shutdown

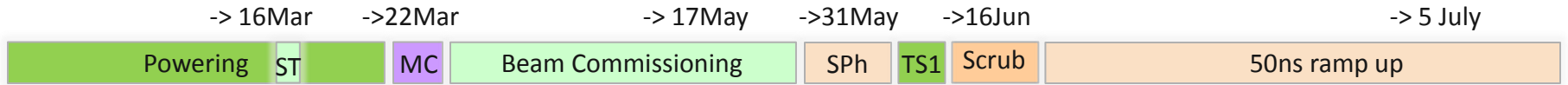


Remote
30 min
<3b = SBF
EOF
Selected Circ
T

Remote
3 h
SBF
EOF
Selected Circ
S

LHC-OP-MPS-0008
LHC-OP-MPS-0010

Use Case WIC + FMCM + BLM

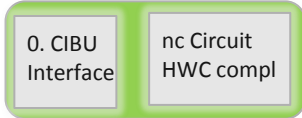


Systems

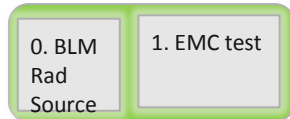
CIW.US15.LR1
...
CIW.UA83.LR8



CIF.US152.RD1
...
CIF.SR7.RD34



BLMQI.B1R1
....
x4000
....
BLMQI.B1L1



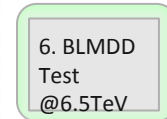
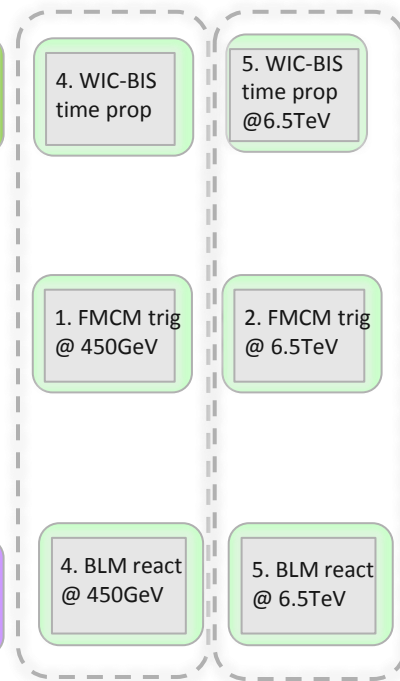
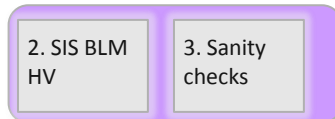
cfv-us15-blecs1

....
x25

....

....

cfv-ua83-blecs25



LHC-OP-MPS-0008
LHC-OP-MPS-0009
LHC-OP-MPS-0010

Conclusions

- (Draft) MPS documents urgently needed to pour it into reasonable MPS commissioning plan
 - MPP team will help to digest documents into comm plan
- Time will be short, need to identify synergies to efficiently execute all needed tests, especially for beam test
- Many tests can already start now, no need to wait Machine Checkout phase!
- Preparatory work for 2015 commissioning plan will ease a lot the final integration in ACCTEST