

LHC start-up 2018 update

J. Wenninger, R. Giachino, M. Albert,
M. Pojer, M. Solfaroli

2018 start-up schedule



- ❑ Powering tests are completed.
- ❑ Cryo plant test in point 8 ~ Wed-Fri – no powering tests in 78 and 81.
- ❑ Checkout will start middle of this week (w12), **opening of CMS vacuum valves is expected** Thu 29th March.
 - No BIS, MKI and full LBDS tests possible as long as CMS valves closed.
 - **T12/8 test** week 13 – advance first attempt to Tuesday afternoon.
- ❑ **Official first beam** in the middle of week 14.

	Jan				Feb				Mar					
Wk	1	2	3	4	5	6	7	8	9	10	11	12	13	
Mo	1	8	15	22	29	5	12	19	26	5	12	19	26	
Tu		Controls Maintenance												
We					Technical stop (YETS)									
Th														
Fr										DSO test				G. Fri.
Sa														
Su														

~ powering tests completed

~ CMS vac valves open

First official beam

	Apr			May				June								
Wk	14	15	16	17	18	19	20	21	22	23	24	25	26			
Mo	Easter	2	9	16	23	30	7	14	Whitsun	21	VdM run	28	4	11	18	25
Tu	Machine checkout			Scrubbing	1st May											
We		Recommissioning with beam													TS1	
Th					Interleaved commissioning & intensity ramp up			Ascension								
Fr			CMS testbed work													
Sa											MD 1					
Su																

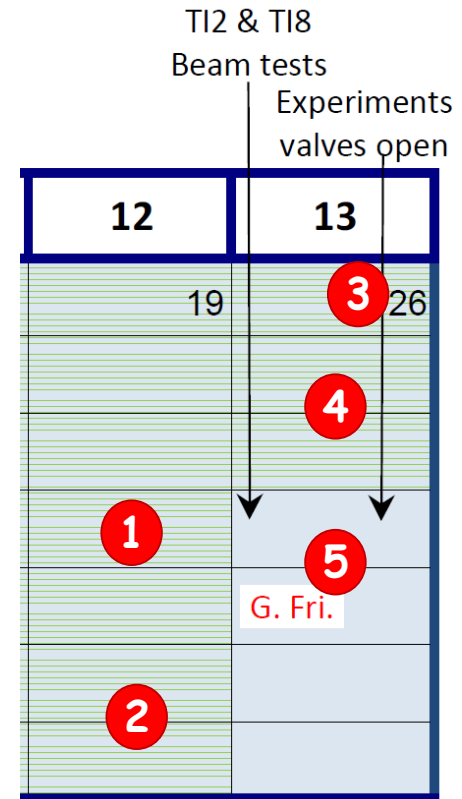


□ Week 12:

- Last powering tests,
- Start of checkout – ramp up during the week,
- **Th 22.3: handshake & signal exchange tests.** ①
- **Week-end:** LBDS BETS* tests, machine cycles, heat runs. ②

□ Week 13:

- **Mo 26.3** : LBDS UPS tests, connection of LBDS to BIS loop. ③
 - Possibility to advance to Fr 23.3 – tbc.
- **Mo 26.3-We 28.3:**
 - LBDS BETS* (backup).
 - Experiments handshake tests (backup).
 - Tests for SMP (energy, beta*).
- **Tu 27.3:** TI2/TI8 tests to **downstream TEDs** ④
 - First attempt, retry Wed & Thursday.
 - Thursday beam to TED + MKI pulsing.
- **Th 29.3 – Fr. 20.3:** All experiments vacuum valves opened. ⑤
 - Arm BIS loop and LBDS.
 - MKI pulsing (w/wo test key).
 - BIS and LBDS commissioning tests.



... and many activities in //



□ Week 14:

- **Mo 2.4:** if we progress well we may attempt **first beam injections ~ Easter Monday**.
 - Potentially even as early as Easter Sunday.
- **Tu 3.4 - We 4.4:** Complete BIS and LBDS commissioning without beam, and missing checkout tests.
 - Very likely some accesses to fix issues identified over the Easter weekend.
 - Complete missing checkout / MPP tests.
 - Beam in evenings / nights (if beam was injected over Easter).
- **Th 5.4:** Start of beam commissioning.
 - May be advanced to Wednesday if good progress over Easter.

5
6

Start Beam Commissioning

Wk	14		
Mo	Eas 5	2	
Tu	Machine checkout 6		
We			
Th			
Fr			
Sa			
Su			

Apr



- With the latest schedule updates it is again likely that we may be ready for beam over Easter.
- Rather than cycling the machine over and over without learning anything new, in agreement with the ATS management and if conditions for beam are established, we would attempt to inject and circulate beam over Easter.
 - **OP with best effort by support teams,**
 - Considered to be a bonus for the commissioning (some gain in time),
 - **Nobody should be blamed because he cannot provide support.**
- The beam intensity envelope will depend on the MPS test advancement (mainly BIS & LBDS). To be agreed with rMPP, but the maximum would be:
 - Probe at injection and flat top (no squeeze),
 - Nominal bunch at injection (without ADT etc).