26 February 2024

ACCELERATORS & EXPERIMENTAL FACILITIES STATUS

SUMMARY OF WEEK 8 - 2024

Technical infrastructure: R. Ledru

Linac 4: A. Topaloudis

PS Booster: G.P. Di giovanni

ISOLDE: A. Rodriguez

PS: D. Cotte, A. Huschauer

PS – East Area: No report

PS – nTOF: No report

AD – ELENA: No report

SPS: J. Ridewood, J. Dalla Costa, S. Cettour Cave

SPS – North Area: No report

SPS – AWAKE: G. Della Porta

SPS – HiRadMat: No report

Linac 3: No report

LEIR: No report

LHC: G. Trad, A. Calia

CLEAR: P. Korysko

Technical Infrastructure (TI)						
Facility Coordinator last week	Ronan Ledru					
Facility Coordinator this week	Jesper Nielsen					
Statistics						
Alarms						
Phone calls	-	***Incoming***	-	***Outgoing***	-	
ODMs						
Facility Status						
Summary						
Issues	**Tue 20/02/24 04:17** Building 195 fire alarm, fire-brigade went on-site where they found a suspicious odour. They triggered the AUL but could not find the cause of the smell at first. Information after the event from AD confirmed that the smell came from the Magnetic horn interlock system acquisitions showed that the current was too high and an inspection of the cables has confirmed that a short circuit was in one of the cables. The plug is severely damaged, and it is very likely that it has generated some smoke during the short circuit. **Tue 20/02/24 11:23** Main Magnet cooling circuit in BA3 over heated and caused high temperatures on several magnets. EN-CV intervened on the circuit and found rubber in the filters that most likely come from an old joint. A valve was replaced around the same time, and most likely some parts of the old, dry joint has fallen into the pipes when replacing this valve.					
Plans	**Tue 27/02/24** IT switch P2465-R-IPZ-SHP2M-1in LHC4 will be replaced, CRYO will loose their SCADA for a few minutes, but no incident on the process.					
Intervention Request						
Yes / No	**Duration**		**Preferred date/time**			
Reason						
Impact						

Linac 4				
Machine Coordinator last week	A. Topaloudis			
Machine Coordinator this week	G. Bellodi			
Statistics				
Availability	87.8%			
Facility Status				
Summary	A good week			

Issues	• RF setting difference in HW and LSA (found while cloning a cycle on Tuesday 20/02 - afternoon).
	• No night shifts on Wednesday (21/02) & Thursday (22/02) (8h each)
	• Interference with the readings of 3 fBCTs – access on Friday morning (23/02) didn't solve the issue. Experts need more iterations to identify the source of interference (2h 15').
	• Two issues after restarting from Friday's morning access:
	  ○ Issue restarting Klystron modulators – LLRF and EPC-CO piquet were called, and problem solved after clearing FGC logs (1h 20').
	  ○ Issue with the debuncher (wasn't locking) because software threshold was set too low (14').
	• RFQ modulator tripped twice during Friday (23/02) night (15' & 10')			

Plans	Normal operation / inject high current beam in the PSB on Monday (26/02)			
Intervention Request				
Yes	***Duration***	2h	***Preferred date/time***	
Reason	Continue the fBCT investigation			
Impact	No beam			

PS Booster

Machine Coordinator last week	G.P. Di Giovanni
Machine Coordinator this week	F. Roncarolo

Beam Scheduled

ISOLDE	No	***PS***	Yes

Beam Availability by Destination (AFT)

ISOLDE	%	***PS***	84.9%

Facility Status

Summary	Not a good availability week for the PSB, but still with steady progress on the setting up of the various beams. A first version of all operational beams has been prepared. The list of beams include AD, BCMS, EAST, LHC 25 ns, LHCINDIV, ISOHRS, ISOGPS and their STAGISO versions, MTE, TOF. Few exotic beams setup: - LHINDIV with low intensity and low longitudinal emittance for SPS RF calibration ready. - A version of TOF with 4 rings to be used to optimize the extraction and transfer line trajectories completed. - Setting up of the ISOLDE at 1.7 GeV progressing well. Additional work needed to clean-up the cycle. General: - Feedforward correction developed last year for simulated B-Train made operational for 1.4 GeV and 2.0 GeV cycles. PSB RF uses sim B-Train as an input. - Updated B-Train regulation tested on a few more beam types (LHC, ISOLDE, 160 MeV flat-bottom). It seems to work fine, so it will be propagated to all users. - New HW for tomography validated for all operational intensities. - LIU WS resolution issue fixed. - Resonance compensation studies to optimize the correction in 2024 started. - PSB B-field at extraction changed for beams with destination PS following the energy matching done at PS injection.
Issues	- Longest stop due to operation and the impossibility to cover the night shifts on Wednesday and Thursday night (8h x 2). - Access needed to replace an electrovalve on the BT4.SMV10 on Friday morning, for a total of ~3h30m stop. - A few beam stops due to Linac4 due to access and recovery from access, and a couple of RFQ breakdowns. - A couple of 25 mins stop for ABT experts to address an issue with the aqn of the BT1.KFA10 Pfn voltage. Fixed. - A few distributors trip this week, always quickly reset. ABT experts monitoring the equipment. Issue seems related to watchdog timeout, so not a generator issue but more control one.
Plans	Continue PSB beam setting up. Deliver beam to PS.

Intervention Request

Yes/No	***Duration***		***Preferred date/time***	
Reason				
Impact				

ISOLDE

Machine Supervisor last week	Alberto Rodriguez
Machine Supervisor this week	Miguel Lozano

Beam Scheduled

GPS	Yes/No	***HRS***	Yes/No	***HIE-ISO***	Yes/No

Beam Availability by Destination (AFT)

GPS	%	***HRS***	%	***HIE-ISO***	%

Facility Status

Summary	▪ Cooling water back a few days ahead of originally planned. ▪ **Hardware commissioning on-going:** ○ Unlocked and tested most of the electrostatic power converters in the low energy beam lines (GPS, GLM, GHM, HRS, CA0, CB0, CC0, CD0, RC0, LA0, LA1, LA2, RC3). ○ Unlocked and tested both the GPS and HRS separator power converters and field regulation. ○ Vacuum sector valves.
Issues	▪ Minor problems with the equipment arrays files and the power converter range definition. ▪ First line replaced two faulty power converters (YHRS.QP550-NEG/POS). ▪ Light in the cooler/buncher high voltage cage had to be replaced.
Plans	▪ Continuation of hardware commissioning: ○ Continuation of the tests of the electrostatic power converters (GPS10, HRS10, cooler/buncher, RC2, RC4, LA3, RB0) ○ Cooler/buncher (HT, gas injection and regulation…) ○ Deflector in GLM and GHM lines. ▪ DSO tests: Linac on 01.03 at 10:00, target area on 04.03 at 13:30.

Intervention Request

Yes / No	***Duration***		***Preferred date/time***	
Reason				
Impact				

PS							
Machine Coordinator last week	Denis, Alexander						
Machine Coordinator this week	Alexander, Denis						
Beam Scheduled							
East Area	No	***nTOF***	No	***AD***	No	***SPS***	No
Beam Availability by Destination (AFT)							
AD	--	***EA N***	--	***EA T8***	--	***EA T9***	--
nTOF	--	***SPS***	--				
Facility Status							
Summary	Good start of PS beam commissioning thanks to the good progress of hardware tests and the availability of Booster beam ahead of schedule ! This has allowed us to diagnose several issues requiring accesses in the machine: internal dump (solved), injection SemGrid42 (solved), ring pickup47 (solved), and a problem with a bumper in SS59. Good progress on both beams required for the SPS on Friday (LHCINDIV and MTE_Core). Additionally, on Friday, we commenced the setup for the LHC25 standard beam. Several DSO tests for TOF, AD areas with no beam to TT2 during the test.						
Issues	_No issues to report on the various kick responses, energy matching and on the new ALPS system for TT2 BPMs. The only problem came from a bumper57-59. A new access is needed on Monday 26/02 to check the configuration of this magnet. _Frequent trip of SMH16 with the new CPU card. some other minor issues that do not need to be reported.						
Plans	Continue beam commissioning including checklist and RF clean-up. We will focus now on MTE barrier bucket 5 turns, LHC25 multi-bunches beam and we will start EAST beam setup soon.						
Intervention Request							
Yes / **No**	***Duration***		***Preferred date/time***				
Reason	PS Access during DSO test on Monday 26 February.						
Impact	No impact (PS standalone beam commissioning)						

SPS							
Machine Coordinator last week	James, Johan, Stephane						
Machine Coordinator this week	James, Johan, Stephane						
Beam Scheduled							
LHC	No	***NA***	No	***AWAKE***	No	***HiRadMat***	No
Beam Availability by Destination (AFT)							
LHC	--	***NA***	--	***AWAKE***	--	***HiRadMat***	--
Facility Status							
Summary	It's been a hectic and stressful week, but one that ended on a positive note on Friday. During the first MPS pulse test, we were stopped by an overheating lockout on 2 magnets in the BA3- half sextant. After a little research, we found an obstruction in the cooling circuit of the two magnets, which we were able to remove. We tried again to pulse the MPS with a magnet expert inside with a thermal camera. Unfortunately, he found other magnets with high temperatures that were unfortunately hidden by the first defect. After some discussion with EN-CV, we realized that the pollution was coming from a one-way valve between two pumps in the main magnet circuit. We decided to flush the high-pressure supply hose of the whole sextant, and to dismantle and clean all the filters of sextant 3 (~110 filters), we found a significant amount of pollution inside the filters. The affected circuit feeds the main dipoles, main quads, sextupoles, octupoles and water-cooled cables. Many thanks to Haavard and his TE-MSC team, Hassane, Bill and the EN-CV team and the SPS operational team for their hard work (much of it outside their normal working hours) to resolve this difficult problem as quickly as possible. After that, we were able to pulse the MPS in the late afternoon, and Haavard inspected the entire sextant 3 with a thermal camera and found no problems. We continued to pulse the MPS for about 1.5 hours, then the MPS stopped due to a lockout on the BA5 cooled cables. An investigation was carried out the next day and the cables were no hotter than normal on the thermal camera, after a heating cycle. For the time being, it has been concluded that this was a minor fault. And finally on Friday we were able to keep the MPS pulsating all day long. We were able to test that MPS features such as full economy, dynamic economy, switching to full economy on EDF demand and Coast were still working with the new version of the FGCs. We were also able to perform the following tests: Checking of all PCs in TI8 and TI2 including FEI Starting setup of cavities 200 MHz by RF expert Continued testing from checklist Tested BIS (TED interlock) Full closure of ring BICs We armed the SBDS Ready for DSO tests W9						
Issues	There are still a few problems to be solved with the MPS: Reading the actual current flowing through the load Current ripple qualification adjustment of control parameters control of autotune laslett operation Injection BLMs - discovered an issue on injection BLM interlocking Software release solved a part of problem but not yet fully. Another update scheduled for Monday should allow 100% operation.						
Plans	MPS setting up regulation Continue setup cavities by RF expert (800MHz)						

	Continue testing from checklist Mains tripped interlock reactivity test DSO tests East and West extraction, SPS ring, TT20 extraction and North transfer Test intensity published on SMP Beam injected in SPS Friday morning			
Intervention Request				
Yes / No	***Duration***		***Preferred date/time***	
Reason				
Impact				

SPS AWAKE				
Facility Coordinator last week	Giovanni Zevi Della Porta			
Facility Coordinator this week	-			
Facility Status				
Summary	• SPS hardware commissioning on AWAKE line • Quantum Efficiency measurement of electron gun photocathode			
Issues				
Plans	• Continue commissioning electron beam and instrumentation			
Foreseen beam stop				
Yes / No	***Duration***		***date/time***	

LHC				
Machine Coordinator last week	Georges Trad, Andrea Calia			
Machine Coordinator this week	Matteo Solfaroli, Jorg Wenninger			
Statistics				
Availability	%-		***Stable Beam Ratio***	%-
Facility Status				
Summary	Successful start of the HW commissioning in the LHC. Very good advancement in the available circuits released to be tested: +Executed all tests on 60A, 80-120A circuits. +Completed ~85% of 600A circuits. +All available IPQ/IPD commissioned to nominal. +Main quads at nominal in S34, S45, S56, S78, S81. +Main bends at nominal in S34, S45, S56, S78. Vacuum activities (Warm modules) completed in IR1 and IR5L. All collimators (except TDIS) went through system tests successfully.			
Issues	Various activities (not related to powering campaign) requesting access to the LHC. HW issues to be followed up by experts in week 9: + QPS Issues in RQD/F A67. + Energy extraction system issues in RB.A81 and RB.A67. A substantive number of circuits still to be released by TE-MPE: IPQs, IPDs and RB RQD/RQF in A12, and A23.			
Plans	Complete HW commissioning activities. IP8 cryo plant test to check available margin. Prepare ground for checkout activities foreseen to start in week 10. XRAYs in LSS5L to validate vacuum intervention on warm modules. MPS tests on collimators			
Intervention Request				
Yes / No	***Duration***		***Preferred date/time***	

CLEAR	
Facility Coordinator last week	Pierre Korysko
Facility Coordinator this week	Pierre Korysko
Facility Status	
Summary	- Hood and pipes installed in the CLEAR tunnel for a future experiment. - Old dump pieces and cables removed from the tunnel. - DSO tests done and passed.
Issues	- Some issues with a few CLEAR timing signals (klystrons & RF).
Plans	- Solve the issues with the CLEAR timing signals. - CLEAR Laser Commissioning. - CLEAR RF Commissioning.