18 September 2023

ACCELERATORS & EXPERIMENTAL FACILITIES STATUS

SUMMARY OF WEEK 37 - 2023

Technical infrastructure – *R. Ledru*

Linac 4 – *J.-L. Sanchez*

PS Booster – *R. Murillo Garcia*

ISOLDE – *S. Mataguez*

PS – *A. Lasheen*

PS – East Area – *N. Charitonidis*

PS – nTOF – *N. Patronis*

AD – ELENA – *L. Ponce & L. Joergensen*

SPS – *V. Kain*

SPS – North Area – *N. Charitonidis*

SPS – AWAKE – *G. Zevi Della Porta*

SPS – HiRadMat – *Not running, no report*

Linac 3 – *R. Wegner*

LEIR – *M. Bozzolan*

LHC - *M. Solfaroli, S. Redaelli, J. Wenninger*

CLEAR – V. Rieker & 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	***Mon 11/09/23 08:33:*** Electrical breaker (EOD147*25A)for RF tripped, due to a faulty equipment. TI confirm with Booster Operator around the same time there was a trip that prevent the Booster to accelerate the beam. TI on-site to re-power the breaker, which made communication to the equipment come back, however it still didn't work. RF was contacted, since the problem was with the RF equipment. ***Wed 13/09/23 11:26:*** Electrical disturbance on the 400kV line "Albertville - Montagny les Lanches", confirmed by EDF-RTE as a lightning strike. Trip of SPS mains, Linac3 ion source, and RF cavities on the PS. At CERN the perturbation was measured at -12.6% of nominal for 70ms. ***Sun 17/09/23 08:53:*** Leak on water cooled cables for RF in the AD was detected by TI due to a leak warning alarm on the water station. On-site the leak was confirmed and the valves on the user site were closed. RF specialist and AD coordinator contacted. ***Sun 17/09/23 21:40:*** A fault on the flaps of the inlet for the ventilation in ISOLDE caused half of the flaps to remain closed. Agreement with CV, RP and Isolde on-call to monitor the situation (in particular the humidity) and wait until working hours to intervene.				
Plans					
Intervention Request					
Yes / No	**Duration**		**Preferred date/time**		
Reason					
Impact					

Linac 4				
Machine Coordinator last week	J-L Sanchez Alvarez			
Machine Coordinator this week	Luca Timeo			
Statistics				
Availability	98%			
Facility Status				
Summary	2 interventions on Wednesday: - CCDTL3-4: The ring (corona) on the two cathodes has been replaced by a small tube to increase the distance between parts on 110 KV potential difference. (4hours) - Source : Calibration on the 2MHz amplifier			
Issues				
Plans				
Intervention Request				
No	***Duration***		***Preferred date/time***	
Reason				
Impact				

PS Booster				
Machine Coordinator last week	Raul Murillo Garcia			
Machine Coordinator this week	Federico Roncarolo			
Beam Scheduled				
ISOLDE	Yes		***PS***	Yes
Beam Availability by Destination (AFT)				
ISOLDE	97.1%		***PS***	97.2%
Facility Status				

Summary	• Quite week with high availability of the machine.
	• All operational and MD beams were delivered as requested. Validate STAGISOGPS for next week's ISOLDE and beam for the next LHC MD session.
	• Wednesday at 13:30: stop scheduled due to LN4 intervention.
	  • Water leak inspection.
	  • Replaced the faulty VXS power supply in R1 and changed the fuses. The spare VXS and the NIM crates were connected to the UPS.
	  • Todor verified all the connections of the BI.BSW converters.
	  • 17:30: beam back after LN4 intervention is finalized.			

Issues	• Wednesday: trip of BI.DIS10 (11m) and BTY.QFO210 (14m). • Friday: ISOLDE watchdog tripped twice due to BT.KFAs pulse stability loss. • Saturday: two PAXB101 radiation alarms due to trip of an ejection kicker module. BE.SMH15L1 tripped (7m)..			
Plans				
Intervention Request				
Maybe	***Duration***		***Preferred date/time***	
Reason				
Impact				

ISOLDE

Machine Supervisor last week	Simon Mataguez
Machine Supervisor this week	

Beam Scheduled					
GPS	Yes	***HRS***	Yes	***HIE-ISO***	Yes/No
Beam Availability by Destination (AFT)					
GPS	94.1%	***HRS***	88.2 %	***HIE-ISO***	%

Facility Status

Summary

HRS

- Set-up of HRS separator to deliver stable beam to COLLAPS 11-12.09
- Proton scan (12.09).
- 12.09 21.00 HTFactory.HT1, YHRS.ISOLA-TRAFO, YHRS.TARGET-HEAT, YHRS.LINE-HEAT tripped – not able to restart HTFactory.HT1. Intervention needed.
- 13.09 14.00-16.00 HTFactory.HT1 intervention in HT room (Shadow Booster intervention)
- 13.09 17.00 Stable beam to COLLAPS and ROC
- 14.09 Start set-up, and Target irradiation to get more 133Cs.

GPS

- GPS setup and Physics with Mn beams to GLM Mossbauer chamber. IS630 IS681 IS683 (12.09)
- RILIS laser setup for Mn (12.09)
- 12.09 2.00 YGLM.ZDP.0100 is stuck, remotely Expert put out the deflector – intervention planned 14.09 at 10.00 on GPS separator side.
- 13.09 GLM20 vacuum reading is stuck.
- 13.09 22.00 RILIS intervention, laser signal has dropped.
- 14.09 Driver of YGLM.ZDP.0100 exchanged. Stable beam checked to GLM. Proton scan done and Yield measurement done.
- 14.09 Restart physics

REX/HIE-ISOLDE:

- 14.09 and 15.09 in preparation for IS656 (144Cs37+ @4.7Mv/u) experiment setup of the REX/HIE-ISOLDE linac. Stable A/q=4 to Miniball and Set-up HRS 133Cs+ to TRAP, TRAP+EBIS setup for 133Cs from HRS

Issues

HTFactory.HT1 failure 12 hours down time – thanks to T. Gharsa SY/ABT for his intervention and to reduce the impact.

Driver of the deflector plates YGLM.ZDP.0100 - Thanks to Eloise Matheson BE/CEM for her quick intervention and put a workaround to allow physics to continue.

Trouble with GLM20_VGF1 gauge
15.09 21.15 and 16.09 9.45 HT trips
16.09 04.20 and 17.09 21.45 YGPS.LINE-HEAT trips
17.09 22.00 Isolde target dehumidification flap closed (TI called)

Plans

HRS and REX/HIE-ISOLDE:

- IS656 scheduled to start Tuesday 29/09 17.00

GPS:

- IS630 IS681 IS683 (12.09) stopped Tuesday 19/09 8.30

REX/HIE-ISOLDE:

- Stable A/q=4 to Miniball for calibration tbc (18/09)

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

PS

Machine Coordinator last week	Alexandre Lasheen
Machine Coordinator this week	Rubén García Alía

Beam Scheduled

East Area	Yes	***nTOF***	Yes	***AD***	Yes	***SPS***	Yes

Beam Availability by Destination (AFT)

AD	95,7 %	***EA N***	95,9 %	***EA T8***	95,9 %	***EA T9***	95,9 %
nTOF	95,9 %	***SPS***	95,7 %				

Facility Status

Summary	- Good availability in the PS with small number of faults over the week. Issues from W36 with water flow on internal dumps (TDIs) fixed. - Improvements at LEIR-PS transmission, increasing transmission from 85% to 95% by moving the injection septum position and angle at 5e10 charges. Transmission is now 89% after intensity increase from LEIR to 8e10 charges (6.5e10 charges extracted from PS). - Improvements of EAST spill quality with high intensity parasitic TOF (350e10 ppp) by adding a longitudinal controlled emittance blow-up on the arrival to the EAST top energy plateau. - Successful commissioning of heavy ion beam to CHARM for HEARTS/CHIMERA run (RFKO slow extraction, variable energies, 3.3e10 charges). - Delivery of beam to EAST T8 for the RF run at CHARM/CSBF (varying bunch intensity). - MDs with transfer of high intensity SFTPRO beams (3000e10 ppp) and LIU beams (2.6e11 ppb) to the SPS
Issues	- 2h downtime on Sunday morning due to two KFA45 modules requiring the intervention of ABT piquet/expe
Plans	- Improvements of beam quality of LIU beams for SPS long parallel MDs.

Intervention Request

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

PS East Area							
Facility Coordinator last week	N. Charitonidis						
Facility Coordinator this week	M. Van Dijk						
Beam Scheduled							
T8	Yes/No	***T9***	Yes/No	***T10***	Yes/No	***T11***	No
Beam Availability by Destination (AFT)							
Running T8	95.8%	***T9***	94.9%	***T10***	95.8%	***T11***	NA
Facility Status							
Summary	T09: Beam files tuned for VLAST. Scaffolding installed around the user setup on Friday as there was some roof leakage after rain. Visit done with SCE. The location of the leak is still to be located precisely, solution and fix will be done as soon as this is done. Until then a scaffolding will be adapted for the user setups. T10: Continued (minor) issues with magnet T10.BHZ027, otherwise good operation. T11: Shutter opened and beamline checked in preparation for CLOUD run.						
Issues	T9: There was a veto condition coming from the access system on the beam stopper which caused about 1 hr downtime.						
Plans	T9: VLAST → ALICE PHOS T10: BL4S continues. T11: CLOUD run will start next week.						
Intervention Request							
Yes / No	***Duration***		***Preferred date/time***				
Reason							
Impact							

PS nTOF				
Facility Coordinator last week	Nikolas Patronis			
Facility Coordinator this week	Nikolas Patronis			
Beam Requested				
Yes				
Facility Status				
Summary	Physics programme according to schedule			
Issues	No issues			
Plans	• **EAR1:** The transmission test measurement just started. Transmission on different isotopes will be tested for the next 4 weeks. • **EAR2:** ^{26}Al(n,p/a) measurement in data taking for two weeks. • **NEAR:** no interventions for this week			
Foreseen Beam Stop				
No	***Duration***		***Date/Time***	

AD - ELENA				
Machine Supervisor last week	Laurette Ponce / Lars Joergensen			
Machine Supervisor this week	Bertrand Lefort			
Beam Scheduled				
AD	Yes	***ELENA***	Yes	
Availability (AFT)				
AD	91.6%	***ELENA***	91.7%	
Facility Status				
Summary	Antimatter Factory generally running well all week with the exception of the two issues noted below. Those issues will, however, take time to make a permanent fix. Until a new cooling water hose is installed, the AD can only run in reduced intensity mode.			
Issues	Q-Main still trips regularly, Huge water leak on C10-25 Generator. Fire brigade on site, A. Jibar made sure HV was safe. No possibility to fix problem before Monday at earliest. Running in reduce intensity mode with just one C10 cavity working since ~18.30 Sunday evening.			
Plans				
Intervention Request				
No	***Duration***		***Preferred date/time***	
Reason				
Impact				

SPS							
Machine Coordinator last week	Verena Kain						
Machine Coordinator this week	Giulia Papotti						
Beam Scheduled							
LHC	Yes	***NA***	Yes	***AWAKE***	Yes	***HiRadMat***	No
Beam Availability by Destination (AFT)							
LHC	~85 %	***NA***	~83 %	***AWAKE***	%	***HiRadMat***	n.a.
Facility Status							
Summary							
Issues	- Not clear which Transverse Damper expert to call in SPS in case of issues or for commissioning						
Plans	AWAKE had one more day of run on Monday in week 37. The issue of bad transmission through the ramp due issues in the longitudinal plane could be solved. It had been introduced on Sunday before when slowly increasing the voltage on cavity 1. And this led to a wrong synchrotron tune for the long. damper due to a broken settings hierarchy. On Tuesday LHC ion commissioning continued – in the morning in parallel to fixed target beam and in the afternoon dedicated. In the morning extraction was set up on the ion single bunch cycle while continuing with polishing slip stacking on LHCION3 (2 4-bunch injections). Late in the afternoon slip stacking with the 14 injections was successfully achieved, still with phase loop off during the manipulation. The transverse damper is on during the injection plateau and the batch spacing is 150 ns. LHC successfully started taking ions on Wednesday, so far only single bunches. Unfortunately Tuesday evening the series of injection kicker issues started with various issues of broken TMRs on generator 3 and broken thyratron on generator 1. Fixing generator 3 together with a longer than foreseen RF firmware upgrade (4 h instead of 2 h) on Wednesday were the reason such that LHC ion commissioning on Wednesday could not be finished and will therefore need to continue in week 38. The MKP issues were also affecting the weekend badly. No beam was available from about 8:00 to 19:45 on Saturday because of another issue with the TMR on generator 3. In total the injection kicker issues amounted to more than 18 h downtime this week not counting the TMR exchange during the RF upgrade on Wednesday. Another longer lasting kicker issue (~3 h) occurred Sunday morning – this time however it was a kicker system in the PS. As the transfer lines are now set up for Q26 for the ion run, the proton beams for the high-beta run in the LHC are also using Q26 with pilot and INDIV beam on the same cycle (and the resulting manual setting adjustments for attenuation for RF signals etc when switching). After the first tests with ions the LHC went back to high beta run for the end of the week. One of the highlights this week was also the LHC high intensity long parallel MD that was introduced on Friday instead of the LHC MD preparation. Bunch intensities of >2.2e+11 ppb at 1.65 ns bunch length could be easily achieved without any degradation from the magnet exchange from the week before. Vacuum activity is still visible in the interconnects around the exchanged MBB, but no lifetime degradation. The MBB had been coated. The 100 Hz spill ripple UCAP controller did not correct anymore from Sunday at about 1:50am to about 5pm, when it was noticed due to too high 100 Hz amplitudes. The problem had been caused by sharing the GPU with another process that had taken too much memory. A fix for these situations is being discussed.							

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

SPS North Area

Facility Coordinator last week	N. Charitonidis
Facility Coordinator this week	M. Van Dijk

Beam Scheduled

H2	Yes	***H6***	Yes	***K12***	Yes	***P42***	Yes
H4	Yes	***H8***	Yes	***M2***	Yes	***TT20***	Yes

Beam Availability by Destination (AFT)

H2	80.3 %	***H6***	80.3 %	***K12***	79.7 %	***P42***	79.7%
H4	80.3 %	***H8***	80.3 %	***M2***	79.6 %	***TT20***	79.7%

Facility Status

Summary	H2: Normal operation. H4: Normal operation. H6: No issues. H8: Target changed on Wednesday, back to 40mm. Normal operation. M2: Beam tuned for AMBER for 100 GeV/c muons. . P42/K12: Normal operation.
Issues	H2: Moving beam issue still not understood, test to be repeated on Thursday 21.09 @ 16h00. M2: Q34 power supply fault on 11th Sep causing 1 hr downtime. First line was called. P42/K12: A few power supply failures, required first-line interventions cost some beam time, but nothing out of the ordinary.
Plans	M2: AMBER continues H2 : NA65 → NA61 H4: CMS HGCAL continues H6: ATLAS ITK PIXEL, ATLAS AFP TOF continue; CMS PIXEL → CMS MTD H8: UA9-STI (main), LCHb RICH, CMS MTD, TOTEM, LCHb SciFi → Same users, change of main user to CMS MTD. Sharing: 50 (T2), ~37 (T4), 50 (T6) except Tue 19th Sep : a high intensity hadron beam test is scheduled for which 100 units on T6 will be needed between 9:00 and 18:30. At 18:30 switch back to 50 units.

Intervention Request

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

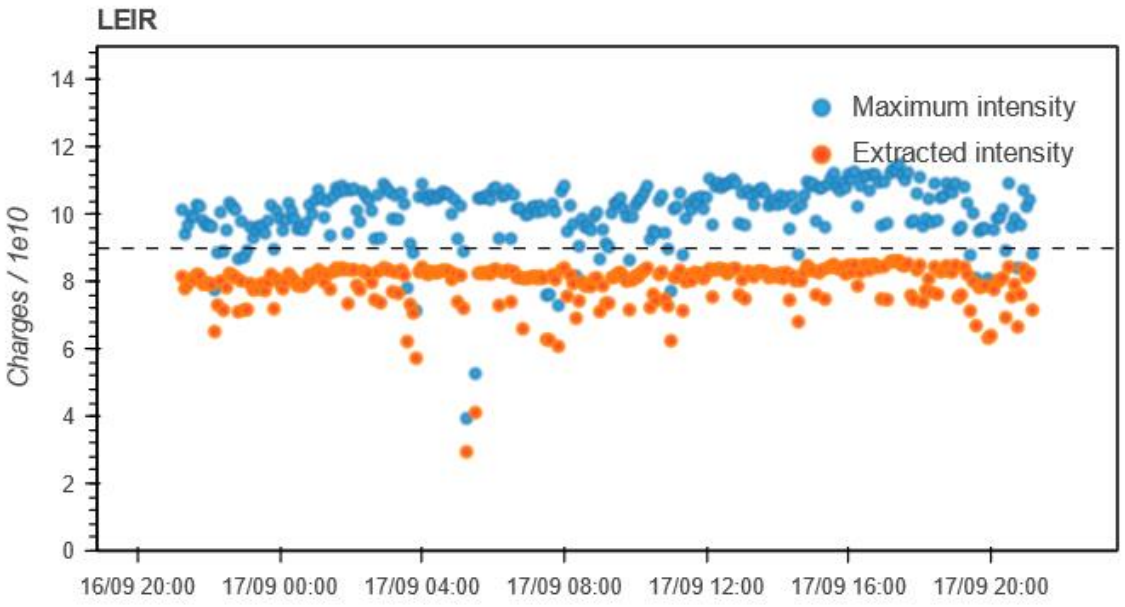
SPS AWAKE					
Facility Coordinator last week	Giovanni Zevi Della Porta				
Facility Coordinator this week	-				
Facility Status					
Summary	Last day of protons (Monday) • 889 SPS extractions, 7.4 hours of beamtime • SPS RF: Proton losses during SPS ramp solved by enabling the phase loop up to the flat top • SPS RF: extraction time jitter solved by disabling longitudinal damper • Vacuum interlock issue: vacuum experts swapped from penning to pirani gauge Friday: UV laser enabled to work on electrons (although this still prevents high-quality plasma)				
Issues	• UV laser (for electron gun) incompatible with no-pre-pulse configuration. To be addressed before October run • Vapor source OTC circuit failure on Thursday, despite another intervention by contractors on Tuesday/Wednesday • Penning gauge to be fixed/replaced				
Plans	3 more weeks of access: solve issues above, refurbish laser, install μ-metal to shield Earth's B field.				
Foreseen beam stop					
Yes / No	***Duration***		***date/time***		

LHC				
Machine Coordinator last week	M. Solfaroli, S. Redaelli, J. Wenninger			
Machine Coordinator this week	D. Nisbet			
Statistics				
Availability	50%		***Stable Beam Ratio***	24%
Facility Status				
Summary	The high-beta run, which had accumulated 0.1 out of 0.3 nb-1, was interrupted Monday afternoon when a cryo problem in ATLAS lead to fast abort on the ATLAS solenoid. In parallel a second vacuum leak appeared on TDIS8 in jaw A, again on a bellow. The leak was localized and varnished on Tuesday, the jaw was blocked in out position. In parallel the shielding in point 1 was removed to be able to exchange the TDIS if it would become necessary. FLUKA studies indicate that the load on the remaining metallic jaw of the TDIS is acceptable for the nominal ion beam. For protons up to 8 individual bunches are acceptable. The LHC efficiency over the week was very poor, hampered by access system issues in point 5 (4 spurious cabled loop interruptions, the cause of which could not be identified), water flow on RD2.LR8 and an erratic firing of a dilution kicker. Due to the low availability, progress on the ion setup was limited to the completion of the optics corrections at flat top and to capture of ion bunches in both rings using the Q26 optics cycle in the SPS. The high beat run resumed on Thursday afternoon and proceeded through the weekend. Interrupted on Friday by the erratic firing of a B2 dilution kicker, on Saturday but a problem on the SPS injection kicker and on the ITL1 cryogenics and on Sunday by a problem on a CPS kicker and ALICE cooling.			
Issues	Erratic on B2 dilution kicker (2nd time on same magnet)			
Plans	Complete HB run Ion commissioning and cryogenic system reconfiguration Ion source refill to be re-scheduled (pre-warning from LINAC3 team)			
Intervention Request				
Yes / No	***Duration***		***Preferred date/time***	

Linac 3				
Machine Supervisor last week	R. Wegner			
Machine Supervisor this week	R. Scrivens			
Statistics				
Availability	Generally good, rather difficult on Tuesday and Wednesday			
Facility Status				
Ion species	lead			
Summary	• Good running on Monday. • On Tuesday and Wednesday, the beam intensity out of the source dropped unexpectedly as oven 1 delivered less lead. Oven 2 had to be powered up. It was quite complicated to stabilise the source in intensity and stability – several adjustments and beam measurements had to be done. Unfortunately, this situation occurred during the dedicated MD time in SPS. • Good beam quality was reached on Wednesday afternoon again. • The source tripped early Friday morning. It took some time and effort to reestablish a good working point. A very good intensity of nearly 40 µA out of Linac3 was delivered since Friday 10h continuously. • Many thanks to Detlef and Richard for the intensive source-tuning !			
Issues	• Source issues, please see summary above			
Plans	continue stable beam production			
Intervention Request				
Yes / No	***Duration***		***Preferred date/time***	
Reason				
Impact				

LEIR					
Machine Supervisor last week	M. Bozzolan				
Machine Supervisor this week	C. Carli				
Statistics					
Availability					
Facility Status					
Ion species	Pb				
Summary	Improved regulation of injection dipoles and worked on optimization of nominal Extracted intensity now above 8e10				
Issues	Few trip of magnets				
Plans	Improve cooling and capture				
Intervention Request					
Yes / No	***Duration***		***Preferred date/time***		
Reason					
Impact					

NOMINAL BEAM INTENSITY last 24h



CLEAR	
Facility Coordinator last week	Vilde Rieker & Pierre Korysko
Facility Coordinator this week	Pierre Korysko
Facility Status	
Summary	This week is dedicated to two experiments: - Irradiation of **Alanine Pellets for VHEE Passive Dosimetry studies** (with PTB, the Physikalisch-Technische Bundesanstalt). - Irradiation of **PMMA Cuvette for Real-Time VHEE Dosimetry studies** (with the University of Strathclyde).
Issues	No major issue.
Plans	This week is dedicated to two experiments: - **Beam Loss Monitor** studies using an **Optical Fiber** and two **Silicon PhotoMultipliers** (with CERN-BI). - CLEAR **Machine Development**. - Installation of 3+1 15 GHz **CLIC Cavity-BPMs** (with RHUL and CERN).