

11 September 2023

ACCELERATORS & EXPERIMENTAL FACILITIES STATUS

SUMMARY OF WEEK 36 - 2023

Technical infrastructure – *J.Nielsen*

Linac 4 – *J.-B. Lallement*

PS Booster – *J.-F. Comblin*

ISOLDE – *Alberto Rodriguez*

PS – *D. Cotte*

PS – East Area – *L. Nevay*

PS – nTOF – *M. Bacak*

AD – ELENA – *L. Ponce*

SPS – *V. Kain*

SPS – North Area – *L. Nevay*

SPS – AWAKE – *G. Zevi Della Porta*

SPS – HiRadMat – *Not running, no report*

Linac 3 – *G. Bellodi*

LEIR – *T. Argyropoulos*

LHC – *E. Metral*

CLEAR – *P. Korysko*

Technical Infrastructure (TI)					
Facility Coordinator last week		Jesper Nielsen			
Facility Coordinator this week		Ronan Ledru			
Statistics					
Alarms	3092				
Phone calls	478	Incoming	320	Outgoing	158
ODMs	78				
Facility Status					
Summary	<p>Monday 04/08/23 - 02:08 Trip of Alice due to overheating in SR2 During the night the ventilation of the SR2 has been stopped 2 times because of fire alarms. The temperature of the SR2 has increased until the trip on high temperature of the "redresseur pont B" which has interlocked the Alice dipole - see event</p>				
	<p>Monday 04/08/23 - 11.06 Stop of the septa cooling circuit in BA2 due to "interlock utilisateur" fault. At the same time some datas were in invalid state. Circuit has been restarted by the TI operator an EN-CV is still investigating - see event</p>				
	<p>Saturday 09/07/23 - 21.19 Stop of the cooling tower b.279 due to a false information from the low level sensor. This has stop cool Fair and cryo WAT. The level has been simulated by the piquet and the cooling tower has been restart 10 minutes after the trip. see event</p>				
	<p>Sunday 10/07/23 – 20 :03 Trip of the 400V EOD147*25A (RF supply). At the same time, Booster was unable to accelerate the beam. TI operator went onsite and re powered the breaker. RF piquet called by the Booster operation to investigate on the interlock.</p>				
Issues					
Plans					
Intervention Request					
No	Duration		Preferred date/time		
Reason					
Impact					

Linac 4			
Machine Coordinator last week		Jean-Baptiste Lallement	
Machine Coordinator this week		Jose Sanchez	
Statistics			
Availability	99.3%		
Facility Status			
Summary	Pretty good week with only few minor faults. <ul style="list-style-type: none"> • Monday: High intensity sent on the 3 MeV dump induced outgassing and vacuum valves closed – 11 mins. • Thursday & Friday: 2 CCDTL 3-4 trips. Reset with sequencer – 14 + 25 mins. • Sunday: RFQ trip. Reset with sequencer – 6 mins. • Another CCDTL 3-4 trip last night – 14 mins. RF experts are now having a look at the CCDTL3-4 trips reason.		
Issues	/		
Plans	Keep on going.		
Intervention Request			
Yes / No	Duration		Preferred date/time
Reason			
Impact			

PS Booster			
Machine Coordinator last week		JF Comblin	
Machine Coordinator this week		R. Murillo Garcia	
Beam Scheduled			
ISOLDE	Yes	PS	Yes
Beam Availability by Destination (AFT)			
ISOLDE	98.7 %	PS	98.5 %
Facility Status			
Summary	<ul style="list-style-type: none"> Excellent and quiet week for the Booster with high availabilities. All operational and MD beams delivered to the users as requested. 		
Issues	<ul style="list-style-type: none"> Wednesday afternoon, POPS-B tripped because someone opened the door of the configuration switch room in building 271, which is interlocked. Downtime: 24 minutes. Sunday around 8 PM, the beam was cut by BIS because a low-level RF front-end tripped. At the same time, TI received an alarm on an UPS in the Booster. After rearming a circuit breaker, the front-end could be restarted. Downtime: 1h22 minutes. Unfortunately, after the restart of the front-end, the beam was still not accelerated in ring 1. The piquet was called but the problem needed more investigations from specialists. It was fixed Monday early morning. 		
Plans	<ul style="list-style-type: none"> Routine operation and MDs 		
Intervention Request			
Yes	Duration	1h	Preferred date/time Wed. 13 th September
Reason	Regular inspections of BR.QFO11.		
Impact	No beam for all downstream machines and experiments.		

ISOLDE					
Machine Supervisor last week		J. Alberto Rodriguez			
Machine Supervisor this week		Simon Mataguez			
Beam Scheduled					
GPS	Yes	HRS	No	HIE-ISO	Yes
Beam Availability by Destination (AFT)					
GPS	n.a.	HRS	%	GPS+ HIE-ISO	79.3 %
Facility Status					
Summary	<ul style="list-style-type: none"> ▪ Target #780 installed in GPS front-end and target #816 in HRS front-end (04.09). ▪ Physics using GPS and the REX/HIE-ISOLDE linac (IS557: $^{80}\text{Zn}^{21+}$ at 4.75 MeV/u to Miniball) until 05.09 morning. ▪ Physics using GPS and the REX/HIE-ISOLDE linac (IS646: $^{79}\text{Zn}^{20+}$ at 4.0 MeV/u to Miniball) since 05.09 late afternoon and until 09.09 when target failed. <ul style="list-style-type: none"> ▪ Beam energy adjusted using an $A/q=4.0$ pilot beam. ▪ Injection into Miniball optimized. ▪ REX-EBIS charge breeder optimization using $^{64}\text{Zn}^{20+}$ beam from GPS front-end. ▪ Linac setup and delivery of stable $^{22}\text{Ne}^{8+}$ at 4.0 MeV/u to Miniball from 09.09 until 11.09. ▪ MEDICIS target irradiation since 09.09. 				
Issues	<ul style="list-style-type: none"> ▪ Multiple trips of the RFQ (04-05.09). Problem solved after amplifier's tube was replaced on 05.09 by RF experts (~9h15m). ▪ Trips (x3) of target and line heating (~4h10m). ▪ RILIS laser intervention (~1h). ▪ Target #780 failed (~18h). 				
Plans	<ul style="list-style-type: none"> ▪ HRS separator setup and stable beam to COLLAPS. ▪ GPS setup and Physics with Mn beams at the solid-state physics experimental stations. ▪ Setup of the REX/HIE-ISOLDE linac in preparation for IS656 experiment next week. 				
Intervention Request					
Yes / No	Duration		Preferred date/time		
Reason					
Impact					

PS							
Machine Coordinator last week		Denis Cotte					
Machine Coordinator this week		Alexandre Lasheen					
Beam Scheduled							
East Area	Yes	nTOF	Yes	AD	Yes	SPS	Yes
Beam Availability by Destination (AFT)							
AD	97.3%	EA N	97.3%	EA T8	97.3%	EA T9	97.3%
nTOF	97.3%	SPS	97.3%				
Facility Status							
Summary	<ul style="list-style-type: none"> A water flow issue on PS internal dump was interlocking both dumps. An access was needed on Wednesday to put back TDIs in operation. With both dump interlocked, we had to stop the production of parasitic TOF beam on EAST cycles. IEAST commissioning continued, beam successfully sent to T8 line on Wednesday. BGI team continued measurement campaign. A variant of CHIMERA cycle with a longer spill(1s) was tested during the week-end. 						
Issues	<ul style="list-style-type: none"> Very good beam availability this week, higher than 97%. Main downtime was because of the access on Wednesday noon to repair TDI47 and TDI48 (1h30 downtime) Few cavity resets over the week (<2minutes each) Radiation alarm because of missing TFID from SPS (<2 minutes) 						
Plans	<ul style="list-style-type: none"> Work on LEIR to PS transmission (still around 85%) 						
Intervention Request							
No	Duration		Preferred date/time				
Reason							
Impact							

PS East Area							
Facility Coordinator last week		L. Nevay					
Facility Coordinator this week		N. Charitonidis					
Beam Scheduled							
T8	Yes	T9	Yes	T10	Yes	T11	No
Beam Availability by Destination (AFT) General:97.3%							
Running T8	97.3%	T9	97.3%	T10	96.0%	T11	N/A
Facility Status							
Summary	T09/T10: Good operation week. T11: No user.						
Issues	T10: Brief downtime from magnet BHZ027.						
Plans	T09: HERD → VLAST T10: MPGDCAL → RE7 GAMMA MEV						
Intervention Request							
Yes	Duration	15 minutes	Preferred date/time	13 th Sep 8:30			
Reason	Move out shutter for T11 in the mixed area.						
Impact	No PS extraction to East. Done in the shadow of T08 access.						

PS nTOF			
Facility Coordinator last week	Michael Bacak		
Facility Coordinator this week	Nikolas Patronis		
Beam Requested			
YES			
Facility Status			
Summary	Progressing with physics programme according to planning. • EAR1: 12C(n,cp) using SADR and DDX till Friday(15/9). • EAR2: 26Al(n,p) and (n,a) for Astrophysics • NEAR: SiC detector irradiation till Wednesday (13/9)		
Issues	No issues		
Plans	<ul style="list-style-type: none"> Monday 11/9: Short stop (1-2h) at ~10h00 to remove the 12C sample as to start calibration and auxiliary measurements @ EAR1 Wednesday 13/9: Long stop (~7h) at ~08h00 to access NEAR as to remove SiC detector and to replace SADR with DDX @EAR1 Friday 15/9: Long stop (6-8h) at ~09h00 to change experimental setup from charged particle detection to transmission measurement setup (PTB chamber, uMegas, capture setup) 		
Foreseen Beam Stop			
Yes	Duration	7-8 h in both cases	Date/Time
			Wednesday 13/9 at 08h00 Friday 15/9 at 09h00

AD - ELENA			
Machine Supervisor last week		Laurette Ponce	
Machine Supervisor this week		Lars Joergensen	
Beam Scheduled			
AD	Yes/No	ELENA	Yes/No
Availability (AFT)			
AD	%	ELENA	%
Facility Status			
Summary	<ul style="list-style-type: none"> * daily fluctuation of the pbar yield back this week, monitoring of the evolution of the angle of proton beam on target by inserting BTV behind the target once per hour (5% intensity loss). * Machine development on Wednesday interrupted by a problem with RF setting in AD. Reference measurement of emittances in AD, reference trajectory in FTA and DI using the BTVs, study of emittance growth during ramp 2 to be continued * optics study on the ELENA ion source and ion injection line (LNS) 		
Issues	<ul style="list-style-type: none"> * Beam not decelerated in AD due to a bit in the GuruSetting of the FESA class overwritten by RF specialist working on ObsBox * trip of AD horn needed experts restart * trip of DR.QUAD * ELENA fast valves closure due to vacuum interlock in LNE07 line: investigation with EPC and ABT on possible sparking in electrostatic element * DR.BHZTR45-46 intermittent oscillations causing bad cooling at 100 MeV plateau and strongly degraded beam to users, exchange of the VERO power supply by firstLine * degraded mode due to missing 1 BOOSTER ring 		
Plans	* Access in AD ring Wednesday morning to prepare a test on ejection septum to investigate the beam oscillation source		
Intervention Request			
Yes / No	Duration		Preferred date/time
Reason			
Impact			

SPS								
Machine Coordinator last week		Verena Kain						
Machine Coordinator this week		Verena Kain						
Beam Scheduled								
LHC	Yes	NA	Yes	AWAKE	Yes	HiRadMat	No	
Beam Availability by Destination (AFT)								
LHC	81%	NA	81%	AWAKE	93.4%	HiRadMat	n.a.	
Facility Status								
Summary	<p>An eventful week 34 in the SPS with the focus on ion commissioning, AWAKE run next to proton FT physics.</p> <p>Several long-lasting faults occurred this week starting already on Monday. Monday afternoon the repair of an MKDH connector took more than 4 h in the evening, and on Wednesday at about 7am the SFTPRO beams could not be accelerated anymore due to losses. Investigations finally revealed that an interturn short had developed in MBB.43550. The replacement was launched at about 11:00am the same day and beam was back at about 11:00 am the day after. Thanks a lot to all the teams involved – great effort. Thursday was spent resetting up all the beams, which was rather smooth, and scrubbing with the scrubbing long injection plateau cycle. Scrubbing took place in the afternoon, starting with more focus at about 16:00, with 72 bunch batches. We stopped at 21:00 – 4 x 72 bunches, batch spacing 250 ns. Vacuum was no issue, transmission was however rather bad until the end (< 80% until end of flat bottom).</p> <p>The stop due to the magnet replacement also hampered the dedicated ion commissioning on Wednesday. It was therefore decided to continue with parallel ion commissioning on Friday. And on Friday the RF experts could indeed debug the slip stacking procedure for LHCION3. They managed to successfully slip stack two injections of 100 ns to 50 ns bunch spacing and accelerate the beam to flattop with relatively good transmission.</p> <p>The 14-injection ion cycle was also taken Tuesday afternoon and set up without slip stacking all the way up to flattop. Extraction setting up still needs to come.</p> <p>AWAKE was running whenever requested with good availability and duty cycle adjusted when possible. Fixed target was running smoothly. The n x 50 Hz correction controllers are now running successfully on UCAP.</p>							
	Issues	<ul style="list-style-type: none"> At the beginning of the week BCT4 used as input to the probe beam flag gave to noisy a signal. It was disabled for the probe beam flag input generation. Only BCT5 was used. To be further followed up. On the weekend an issue with the FMCM on the MSE LSS4 started occurring. MPE and EPC intervened (changed isolation voltage amplifier in BB4). To be seen whether the crate needs to be exchanged. 						
	Plans	Next to FT physics and parallel MDs on Monday and Thursday, the main objective of this week is to continue and potentially finalise the LHC ion commissioning and start with the FT ion commissioning. On Friday the beams will be tested for the LHC MD.						
Intervention Request								
No	Duration		Preferred date/time					
Reason								
Impact								

SPS North Area							
Facility Coordinator last week		L. Nevay					
Facility Coordinator this week		N. Charitonidis					
Beam Scheduled							
H2	Yes	H6	Yes	K12	Yes	P42	Yes
H4	Yes	H8	Yes	M2	Yes	TT20	Yes
Beam Availability by Destination (AFT) General: 85.3%							
H2	82.1%	H6	85.1%	K12	85.3%	P42	85.3%
H4	85.3%	H8	85.3%	M2	85.2%	TT20	85.3%
Facility Status							
Summary	<p>H2/H4: Smooth operation. H6/H8: Smooth operation. M2: Smooth operation. P42/K12: No issues on the beamlines. Sharing: From Monday, 11.09.23: 50 (T2) - 55 (T4) - 50 (T6). From Wednesday, 13.09.23: 50 (T2) - 37 (T4) - 50 (T6) and change back T4 to 40 mm target head. Note: T4 always to be adapted to give 22 on T10.</p>						
Issues	<p>Moving magnet issue still present, next test slot 21.09. 16:00 as agreed with the SPS coordinator. H2: A few power supply issues (regulator cards of NR12_002, NR22_030 & NR22_033) that necessitated first-line to intervene. H6/M2: Some magnet resets.</p>						
Plans	<ul style="list-style-type: none"> • H2: No change. • H4: ALICE FOCAL → CMS HGCAL • H6: No change. • H8: Atlas TileCal → UA9 (main), LHCb, CMS MTD, TOTEM • M2: MUonE → AMBER 						
Intervention Requests							
No	Duration		Preferred date/time				

SPS AWAKE

Facility Coordinator last week Giovanni Zevi Della Porta

Facility Coordinator this week -

Facility Status

Summary	Week summary: <ul style="list-style-type: none"> Continued exploring plasma density step configurations 							
		M	T	W	Th	F	S	S
	SPS extractions	708			202	1248	1121	1298
	Hours of beam to AWAKE	5.8			3.1	9.1	7.1	8.6
	Hours without beam (including density step changes)	2			2.2	0.4	1.2	0.1
Issues	Daily summary: <ul style="list-style-type: none"> Monday: difficult beam conditions (NA Damper issue in the morning, then MD-related instability, then SPS access). Proton-laser timing scans with 3% density step at 1.75m Tuesday-Wednesday: no beam (lead commissioning in SPS) Thursday: almost no beam (SPS recovering from magnet exchange) Friday: Good beam. Proton-laser timing and proton intensity scans with 0%, 3% and 6% density steps at 1.75m Saturday: septum current monitor interlock (FMCM) issue solved at 12.30. Then good beam. 0% and 3% steps at 1.75 m Sunday: Good beam until 3pm, then frequent losses during ramp. Proton-laser timing scans with 0%, 1.5%, 3%, 4.5% steps at 1.75m 							
	<ul style="list-style-type: none"> 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 SPS: MSE FMCM, solved by Piquet SPS: losses during ramp starting Sunday 3pm 							
	Plans							
	Last day of protons (Monday), then 4 weeks of access: recover UV, fix OTC, refurbish laser, install μ -metal to shield Earth's B field.							
	Foreseen beam stop							
Yes / No	Duration			date/time				

LHC			
Machine Coordinator last week	E. Metral		
Machine Coordinator this week	S. Redaelli		
Statistics			
Availability	79.0% (from MO 04/09/23 at 09:30 till SU 10/09/23 at 19:40)	Stable Beam Ratio	16.7% (from MO 04/09/23 at 09:30 till SU 10/09/23 at 19:40)
Facility Status			
Summary	<ul style="list-style-type: none"> - Loss maps for VDM cycle were validated. - Aperture measurements in IR1/5 at 30 cm (nominal cycle) were done: all bottleneck locations as expected, aperture values OK. - High-beta cycles for collimator setup and RP alignment (background test). Beam instability when beams collide going to 120 m. The problem was cured by keeping the separation on until the end of the squeeze at 3/6 km (after recommendation by CEI section with Xavier Buffat), despite the very small separation. This improved the situation, but losses still started at around 1 km. This was cured by applying the tune change at the start of the squeeze to 3/6 km. - Unfortunately the three first background test fills were dumped by ATLAS BCM while moving collimators into position and a fourth one by losses in the machine when inserting RPs in point 5. - After the access on Wednesday (during which all the power converters which needed to be exchanged were exchanged and tested + a card needed to be changed in UX45 + access needed in US15), a stop of ~ 24h took place to exchange a magnet in SPS (inter-turn short). - VDM scan fill for ALICE and LHCb (with ATLAS low mu) Thursday afternoon until early morning on Friday. - On Friday, another attempt to perform the high-beta background test over two fills. The collimator hierarchy and the crystal were re-optimized and re-aligned. - 2 high-beta fills done with 2nd one dumped by LBDS self-trigger (erratic on the MKBH) - Loss maps at high energy done also on nominal cycle for reference - Ion cycle test with pilots - Note: the 1st fill of the week was #9112 and the last one (on SU 10/09/23 at 19:40) was #9135. 		
Issues	<ul style="list-style-type: none"> - 3 beam dumps due to ATLAS BCM. - Transverse beam instabilities on several fills. - LBDS self-trigger (erratic on the MKBH). 		
Plans	Continue/finish high-beta run and pp-ref run at 2.68 TeV: 1) MKI & TCLIAandB preparation; 2) intensity ramp-up in number of bunches (12,75,400,900,1200,1800) for the pp-ref run; 3) pp-ref run		
Intervention Request			
No	Duration		Preferred date/time

Linac 3			
Machine Supervisor last week		G. Bellodi	
Machine Supervisor this week		R. Wegner	
Statistics			
Availability	100%		
Facility Status			
Ion species	lead		
Summary	<ul style="list-style-type: none"> Stable beam production of 35uA on average on ITF.BCT25 		
Issues	<ul style="list-style-type: none"> Tank2 and Tank3 RF pulse length increased by 50us and moved to start 25us earlier (it was noticed that the amplifiers settling time of 25-30us interfered with the start of the beam pulse as the loop was not correctly regulating). This gives better synchronization with the beam pulse. 		
Plans	continue stable beam production		
Intervention Request			
Yes / No	Duration		Preferred date/time
Reason			
Impact			

LEIR			
Machine Supervisor last week	Theodoros Argyropoulos		
Machine Supervisor this week	Michele Bozzolan		
Statistics			
Availability	Beam Commissioning		
Facility Status			
Ion species	Pb		
Summary	<ul style="list-style-type: none"> - Optimization of the e-cooler and phases of Ramp and Debunch cavities in LINAC. - NOMINAL beam commissioning finished. Reached $\sim 8\text{-}9 \times 10^9$ c at flat-top. - EARLY beam optimized to $\sim 2 \times 10^{10}$ c at flat-top 		
Issues			
Plans	-Continue improving the beams (scan of RAMP and DEBUNCH cavity phases, e-cooler etc.).		
Intervention Request			
Yes / No	Duration		Preferred date/time
Reason			
Impact			

CLEAR	
Facility Coordinator last week	Pierre Korysko
Facility Coordinator this week	Pierre Korysko
Facility Status	
Summary	<p>Last week was dedicated to two experiments:</p> <ul style="list-style-type: none"> - AWAKE ChDR BPM measurements (with Univ. of Oxford and CERN-BI). - Chemistry studies with Very High Energy Electrons (VHEE) at Ultra High Dose Rate (UHDR) to observe the FLASH Effect (with CHUV).
Issues	<ul style="list-style-type: none"> - Issue with the cooling system of the CLEAR laser amplifier. Fixed by laserists. - Issue with the water station in the CLEAR klystron gallery. Fixed by EN-EL. - Issue with the powersupply of a CLEAR ion pump. Fixed by TE-VSC.
Plans	<p>This week is dedicated to two experiments:</p> <ul style="list-style-type: none"> - 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).