

8 May 2023

ACCELERATORS & EXPERIMENTAL FACILITIES STATUS

SUMMARY OF WEEK 18 - 2023

Technical infrastructure – *J. Nielsen*

Linac 4 – *L. Timeo*

PS Booster – *C. Bracco*

ISOLDE – *E. Piselli*

PS – *D. Cotte*

PS – East Area – *No report*

PS – nTOF – *N. Patronis*

AD – ELENA – *L. Ponce*

SPS – *F. Velotti*

SPS – North Area – *No report*

SPS – AWAKE – *G. Zevi Della Porta*

SPS – HiRadMat – *No report, not running*

Linac 3 – *No report, not running*

LEIR – *No report, not running*

LHC – *No report*

CLEAR – *No report*

Technical Infrastructure (TI)

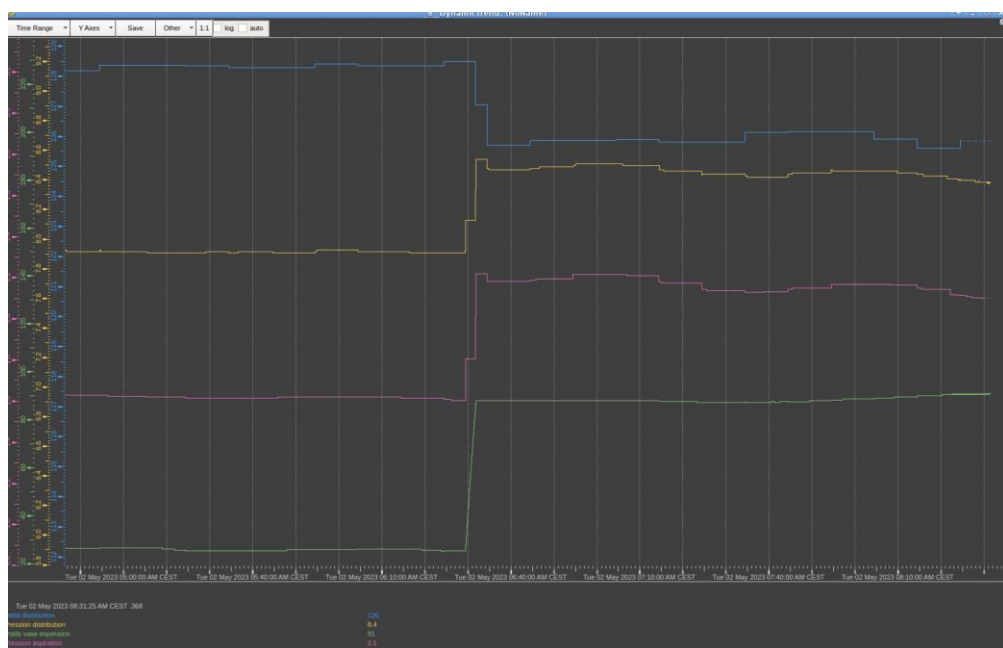
Facility Coordinator last week	Jesper Nielsen
Facility Coordinator this week	Jesper Nielsen

Statistics

Alarms				
Phone calls		Incoming		Outgoing
ODMs				

Facility Status

Tue 02/05/23 08:38: Filling of cooling water circuit for the klystron circuit caused a small dip in flow, which interlocked the RF on the user side. (Flow on blue trend)



Summary

Wed 03/05/23 13:17: 400v fault causing stop of Gigatracker detector cooling in NA62. An interlocked in DSS system wasn't working correctly and was causing this stop, the interlocked is inhibited for the moment.

Sat 06/05/23 12:00: Problem with ZORA DB that impeded access to the accelerators during 1h. TI called IT-DA-DB piquet who fixed the problem.

Sat 06/05/23 18:02: Beam dump due to problems with the BLM in LHC point 3. After investigation it is found that a fiber optic cable is making disturbances, which can be due to temp of cooling water to racks (16°C) temperature in point 4 for example is 12°C. TI calls piquet and asks to lower setpoint (now at 13°C)

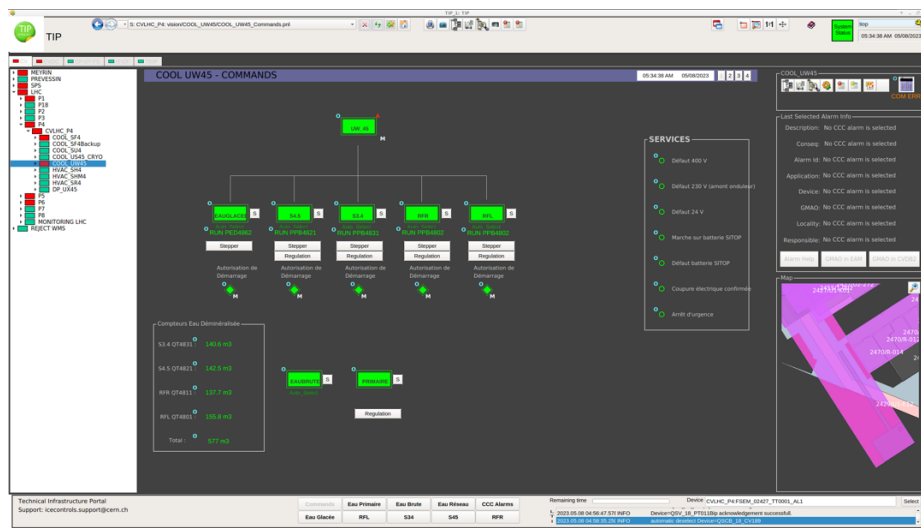
Sun 07/05/23 04:47: Electrical perturbation, tripped the SPS. EDF-RTE confirmed the perturbation on the 400 kV line ALBERTVILLE - MONTAGNY LES LANCHES

Sun 07/05/23 07:03: Electrical Glitch at 6:32AM. PS: All cavities of lost. LHC: Both beams dumped and RF lost. EDF-RTE confirmed the perturbation on the 400 kV level.

Sun 07/05/23 09:22: Electrical perturbation, PS reports they lost cavities in 10, 40 and 80 Mhz.

Mon 08/05/23 06:38: Electrical perturbation, confirmed by EDF-RTE.

Mon 08/05/23 02:33: No communication with PLC for cooling in UW45, circuits seem to be still running, but no commands/readings are possible. The cooling towers cleaning valves are blocked for now to not activate the reject. An access is being planned this morning.



Issues

Plans

Intervention Request

Yes / No	Duration	1h	Preferred date/time	Now
Reason	Replace PLC in UW45			
Impact	Stop of LHC			

Linac 4			
Machine Coordinator last week		L. TIMEO	
Machine Coordinator this week		E. GOUSIOU	
Statistics			
Availability	98.8%		
Facility Status			
Summary	Regular operation. As a follow-up to last Friday's intervention, ABP performed the source tuning in the shadow of the planned PSB access (on Wednesday) and in a parasitic way on Thursday afternoon.		
Issues	<ol style="list-style-type: none"> 1. On Tuesday morning, the solid-state amplifiers interlocked because of a flow drop in the demineralised water distribution. The operator experienced problems restarting Buncher 1. The piquet intervened on-site and adjusted the regulation valve [downtime: 01h 23min]. 2. On Tuesday night, the SIS triggered the BIC on a LEBT_SETTING_COMPARATOR because the cfv-400-allsrc was unreachable. Its reboot solved the problem. Likely, the FEC got stuck due to a subscription now stopped. A new FESA class is ready to avoid it happening again [downtime: 16min]. 3. On Wednesday night, a spark in the HV tank made the PIMS0910 interlocking. The restart worked [downtime: 8 min]. 4. On Saturday afternoon, the SIS triggered the BIC on a LEBT_SETTING_COMPARATOR because of the RPZEO.400.L4L.RCH.111 tripped: a reset sufficed [downtime: 14min]. 		
Plans	Regular operation. Yet, on Wednesday morning, source high-intensity tests with injection into PSB (4h) → no beam for any user.		
Intervention Request			
Yes	Duration	3.5 hours	Preferred date/time 24h warning
Reason	<ol style="list-style-type: none"> 1. Elevator repair. 2. In the shadow of the elevator repair. Deploy a new FESA class on cfv-400-allsrc (stop the source). 		
Impact	All proton beams stopped.		

PS Booster			
Machine Coordinator last week		C. Bracco	
Machine Coordinator this week		J-F. Comblin	
Beam Scheduled			
ISOLDE	Yes	PS	Yes
Beam Availability by Destination (AFT)			
ISOLDE	%97.5%	PS	%97.5
Facility Status			
Summary	<ul style="list-style-type: none"> All operational beams were delivered as requested. Initial version of the TOF @ 1.4 GeV ready for PS but some optimisation on PSB side still possible Work ongoing on tune flatness and resonance compensation with optimiser (very promising results) Inspection of BR.QFO11 (access on May 3rd): no worsening observed but, for the first time, CV refill needed after 2 rather than 3-4 days (to be monitored). Next fill occurred on May 6th. Simulated B-Train MD: <ul style="list-style-type: none"> B-Train experts added new fields on FESA class to allow tweaking the simulated B-Train when needed by the RF experts Other fields also introduced to have more flexibility + take into account hysteresis but not used for the moment First trial on 04/05: fibers switched from spare to operational B-Train chain → not possible to accelerate beam anymore since different white rabbit (WR) configurations of the two ports → back to nominal configuration. New test on 05/05 to allow B-Train and WR team to solve configuration issue (no fiber switching but purely software) Next attempt to switch fibers in week 20 		
Issues	<ul style="list-style-type: none"> WATERFLOW_MIN interlock on Buncher1 → solved by piquet adjusting the flow (standard maintenance) On May 2nd beam in degraded mode for ~20 minutes due to problems with BI3.BSW1L1.3. <ul style="list-style-type: none"> 'PSB injection into less than four rings' (EDMS 2390281) procedure rigorously followed BI3.BSW1L1.3 interlock masked and Injection in R3 inhibited Problem solved by adjusting BI3.BSW1L1.3 loop parameters Problem with Timing App Suite "Refresh data from LSA" not working as expected (several « clicks » to actually refresh the system). Jira issue generated and assigned but no news since 		
Plans	Deliver beams to downstream machines plus high current MD on May 10 th		
Intervention Request			
Yes	Duration	1 hour	Preferred date/time May 8 th
Reason	Regular inspection of BR.QFO11		
Impact			

ISOLDE					
Machine Supervisor last week		E.Piselli			
Machine Supervisor this week		E.Siesling			
Beam Scheduled					
GPS	Yes	HRS	Yes	HIE-ISO	No
Beam Availability by Destination (AFT)					
GPS	97.8%	HRS	97.8%	HIE-ISO	%
Facility Status					
Summary	<p>HRS: Target #791 ThC VD5 (Plasma) Beam to ISOLTRAP MR-ToF, to the tape station, to LA1 beamline to measure yields of actinide species of interest. A few new species were identified. There is plenty of data to analyze. (TISD colleagues). Target change on Monday 08.05.</p>				
	<p>GPS: Target #812 149Dy/Tb yields measurements and collections of 1 GBq 149Tb during 3 nights Excellent yields and performance.</p>				
	<p>REX/HIE-ISOLDE: - REX: Giampaolo Piccinini working on improvements for the REX RF amplifiers and recommissioning at different repetition rates. - HIE ISOLDE: Reconditioning of the SRF by Daniel Valuch over the week.</p>				
Issues	<p>EBIS issue: Work ongoing. Broken collector piece repaired in the main workshop last week. Things being reinstalled. We hope to have EBIS up and running by end of May at the latest.</p>				
	<p>The YHRS.SEPMAG60 is experiencing a non-cycling issue as a result of an interlock in its power supply. The problem was addressed by J.P. Lopez and N. David, who replaced a relay in the power supply control unit. However, the issue persists as it has recurred.</p>				
Plans	<p>HRS: Stable beam/Ti radioactive beam to COLLAPS until Monday 15.05.</p>				
	<p>GPS: On standby, target change foreseen on Thursday.</p>				
Intervention Request					
No	Duration		Preferred date/time		
Reason					
Impact					

PS							
Machine Coordinator last week		Denis Cotte					
Machine Coordinator this week		Bettina Mikulec					
Beam Scheduled							
East Area	Yes	nTOF	Yes	AD	No	SPS	Yes
Beam Availability by Destination (AFT)							
AD	-	EA N	94.9%	EA T8	94.9%	EA T9	95%
nTOF	94.9%	SPS	94.9%				
Facility Status							
Summary	<p>A very good week for the PS operation.</p> <ul style="list-style-type: none"> - Optimization of EAST AREA spills continue. We now have a very nice spill shape for all EAST AREA users. References have been taken during the weekend. - T9 is not taking the beam this week. T9 cycles have been re-assigned to the other EAST AREA users. (T8 or TN) - TOF is back to nominal intensity. (800-850e10 ppp) - Optimised TOF beam prepared and sent to nTOF since Friday (4 extraction bumpers and lower kick strength + vertical working point that no longer crosses 6.33) - Optimized BT - BTP settings propagation to all users (ongoing -> tbc) - Very first test of a 5 BP cycle in PS to measure later the ions life time. 						
Issues	<p>Main issues:</p> <ul style="list-style-type: none"> - Barrier Bucket timings (not in LSA) found enabled on MD user, killing the beam at flat bottom. Guilty timings switched disable and imported in LSA. - KFA71/79 modules continue to trip intermittently creating radiation alarms. - KFA71/79 module 12 found with a longer pulse making holes in EAST AREA spills. Solved by disabling m12 on EAST users. - Electrical glitches on Sunday: piquet HL-RF needed to restart 10MHz cavities and piquet LL-RF to restart Barrier bucket front-end. - Some of the 80MHz cavities are tripping frequently which causes some issues for the SPS. (to be followed with SY-RF) - Investigation on ejection phase jitter on LHC beams. (to be followed with SY-RF) 						
Plans	<ul style="list-style-type: none"> - Work to continue to deploy M-TOF (2 bunches): timings PEX.WEJTOF-EAR1 and PEX.WEJTOF-EAR2 not triggering on second extraction. - 4 extraction bumper settings to be rolled out on operational AD. - EAST AREA Target symmetry checks -> for T9 on the 10th/11th May - Follow up RF related issues mentioned above. 						
Intervention Request							
No	Duration	-	Preferred date/time	-			
Reason	-						
Impact	-						

PS n_TOF			
Facility Coordinator last week		N. Patronis	
Facility Coordinator this week		N. Patronis	
Beam Requested			
Yes			
Facility Status			
Summary	<ul style="list-style-type: none"> Progressing with physics programme according to planning Long interruptions in our beam request due to experimental setup changes in both EARs (Wednesday, Thursday) 		
Issues	<ul style="list-style-type: none"> Some issues with the beam spatial profile 		
Plans	<ul style="list-style-type: none"> EAR1: $^{181}\text{Ta}(n,g)$ measurement (C6D6, sTED) EAR2: Capture setup auxiliary measurements EAR3 (NEAR): spectral/Maxwellian averaged cross-section setup 		
Foreseen Beam Stop			
Yes	Duration	5h	Date/Time
			We 10/05/23 9h-14h

AD - ELENA			
Machine Supervisor last week			
Machine Supervisor this week			
Beam Scheduled			
AD	Yes/No	ELENA	Yes/No
Availability (AFT)			
AD	%	ELENA	%
Facility Status			
Summary	<ul style="list-style-type: none"> * Activities on AD ring quadrupole progressing as planned <ul style="list-style-type: none"> - Magnet reconnected and leak tested - Bake-out started on Thursday - BTV re-installed and aligned * Beam commissioning in ELENA: <ul style="list-style-type: none"> - transfer lines trajectory corrected with AEGIS magnets ON - studies of injection lines - preparation of a new cycle with e-cooler at injection for injection studies 		
Issues	<ul style="list-style-type: none"> * problem of synchronisation of RF settings (cav return) for "old" users, need to rediscuss with RF experts the settings management 		
Plans	<ul style="list-style-type: none"> * Restart HW test in AD ring during the bake-out: <ul style="list-style-type: none"> - unlock-out of AD ring on Tuesday - EPC tests (QMAIN1 and BHZ-TRIM) and C10 cavities * Access in AD target for slit and target position checks and installation of new camera on BTV 		
Intervention Request			
Yes / No	Duration		Preferred date/time
Reason			
Impact			

SPS							
Machine Coordinator last week		F. M. Velotti					
Machine Coordinator this week		A. Spierer					
Beam Scheduled							
LHC	Yes	NA	Yes	AWAKE	Yes	HiRadMat	No
Beam Availability by Destination (AFT)							
LHC	98%	NA	88%	AWAKE	95%	HiRadMat	na
Facility Status							
Summary	<p>Very good week at the SPS, with largely above average availability. This week started with the first 2023 AWAKE physics week. Rather standard for the other physics users, except a few details as reported below.</p>						
	<p>AWAKE: The experiment was rather happy about the beam quality delivered: bunch found about 20% shorter than last year (now basically back to nominal values) and with a more Gaussian distribution. Agreed on the policy for long parallel MDs: no AWAKE in the SC as agreed at the beginning of the year and increased number of extractions for about 6h the following day.</p>						
	<p>LHC: The RF team also worked on the LHC physics beam, finding that some of the problems observed may come from difference in extraction phase from the PS - now optimised. The 200 ns batch spacing was setup and now ready to test with the LHC. Many extractions are still interrupted by the SIS due to wrong assessment of the status of TIs power converters. Finally, very large intra-batch intensity spread measured on the LHC1 cycle during the weekend.</p>						
	<p>SFTPRO: The week started with increased losses on the ZS. Traced back to different angle of the ZS wrt to the beam, hence ZS was realigned as well as the crystal. Nominal losses re-established. Just a few issues but still high availability maintained.</p>						
Issues	<p>Others: HiRadMat took about 1h of extraction to evaluate the beam quality delivered in preparation for the first experiment. Evaluation of the possible changes needed for the implementation of empty bucket channelling were tested and now ready to be tested first during MD. Finally, the DSO test for the crab cavities was done on Friday and now the cooling can continue in preparation of the MDs.</p>						
	<ul style="list-style-type: none"> • Extraction phase from PS unstable. • Scraper still losing steps and difficult to control. Significant source of lossy injections into LHC. • Large intensity spread on LHC beams, mainly on 36 bunches trains. • MKE.6 RCPS problem caused long stop. • Repetitive stops induced by the SIS due to wrong state on PC of TIs. Need fix • Problem of VPJA_32 - twice blocked operation. Traced back to issue with the power supply of the vacuum pump and controller. Solved. • Long stop due to the MDLV.2505. The problem was due to the faulty circuit-breaker. Replaced and operation restarted. • Thunderstorm caused trip of the mains but without issues. 						
Plans	<ul style="list-style-type: none"> • Test of 200 ns batch spacing with the LHC – need emittance measurements to conclude on beam quality delivered. • Release of harmonic correction application including adaptive Bayesian optimization algorithm for SFTPRO spill. 						

	<ul style="list-style-type: none"> • Dedicated MD, stop for the morning (LINAC4 MD) and then non-local shadowing MD. • Still open, investigation on RQID.660404 660409 coupling (Richard Mombo', Loic de Oliveira); Confirmed issue with WIC, will wait until we change the configuration in ~1 month to make an update (409 trips when 404 trips). • Still open, request to inspect tunnel cracks once per month to measure movements (call P. Bestmann). • Still ongoing from last week, PAD/MAD Access points maintenance during the run (mode Beam) 		
Intervention Request			
No	Duration		Preferred date/time
Reason	-		
Impact	-		

SPS AWAKE			
Facility Coordinator last week		Giovanni Zevi Della Porta	
Facility Coordinator this week		-	
Facility Status			
Summary	<p>First week of proton run. SPS extractions to AWAKE per day: 1233 (M), 534 (T), 920 (W), 0 (Th), 1429 (F), 1149 (Sat), 701 (Sun)</p> <ul style="list-style-type: none"> - Monday: setup diagnostics, proton bunch self-modulation in Argon plasma, plasma density scans in Argon - Tuesday: more plasma density scans with Argon - Wednesday: streak camera scans along proton bunch - Thursday: no beam (parallel MD, then injector issues) - Friday: began work with Xenon plasma. Additional extraction (i.e. 3 cycles) for about 5 hours. Plasma density scans with narrow/wide proton optics for filamentation studies - Saturday: filamentation studies with Argon and narrow/wide proton optics. First tests with Helium - Sunday: Helium plasma density and proton bunch delay scans. Access mid-day due to plasma hardware issue 		
Issues	<p>Monday: issue with digital camera FESA, patched on Tuesday Sunday: issue with plasma source power supply, replaced with spare (no full spares left, so repair of part ongoing) SPS wire-scan not possible (only local measurement of emittance)</p>		
Plans	More protons. Change plasma length during Wednesday MD		
Foreseen beam stop			
Yes / No	Duration		date/time