

31 July 2023

ACCELERATORS & EXPERIMENTAL FACILITIES STATUS

SUMMARY OF WEEK 30 - 2023

Technical infrastructure - *Ronan Ledru*

Linac 4 - *J.B. Lallement*

PS Booster - *S. Albright*

ISOLDE - *S. Mataguez*

PS - *B. Mikulec*

PS - East Area - *N. Charitonidis*

PS - nTOF - *N. Patronis*

AD - ELENA - *L. Bojtar*

SPS - *M. Schenk*

SPS - North Area - *N. Charitonidis*

SPS - AWAKE - *G. Zevi Della Porta*

SPS - HiRadMat - *Not running, no report*

Linac 3 - *R. Scrivens*

LEIR - *Not running, no report*

LHC - *J. Wenninger*

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		Rather quiet week, no major incidents.			
Issues		<p>Mon 24/07/23: Some water pollution alarms during the day, most likely due to the rain.</p> <p>Wed 26/07/23 21:57: Problem with roughly 700 computer accounts, user login was not valid due to a LMS course with a wrong validity date.</p> <p>Sat 29/07/23 15:47: Blowdown valve blocked on cooling tower in building 234. TI on-site to rearm the breaker and restart the installation.</p>			
Plans					
Intervention Request					
Yes / No	Duration			Preferred date/time	
Reason					
Impact					

Linac 4			
Machine Coordinator last week		Jean-Baptiste	
Machine Coordinator this week		Piotr	
Statistics			
Availability	97.9%		
Facility Status			
Summary	A good week sponsored by L4L.RCH.111 and PIMS 9-10...		
Issues	<p>Few trips of PIMS 9-10: To be followed-up.</p> <ul style="list-style-type: none"> • Monday morning – 23 mins. • Thursday afternoon – Klystron ion pump to be reset – 53 mins. • Friday morning – Klystron ion pump again – 24 mins. <p>As the previous week, first horizontal LEBT steerer, L4L.RCH.111 trips.</p> <ul style="list-style-type: none"> • Monday morning and afternoon – 12 mins. • Tuesday morning – 35 mins. • Tuesday afternoon – 1h05. Intervention of Piquet. A power supply module was replaced... Recurrent issue should be sorted-out. 		
Plans	Regular operation		
Intervention Request			
Yes / No	Duration	4 hours	Preferred date/time Not urgent
Reason	Bdg. 400 elevator repair.		
Impact	Machine in access mode – No beam		

PS Booster			
Machine Coordinator last week		S. Albright	
Machine Coordinator this week		J. F. Comblin	
Beam Scheduled			
ISOLDE	Yes	PS	Yes
Beam Availability by Destination (AFT)			
ISOLDE	97.4%	PS	95.1%
Facility Status			
Summary	<ul style="list-style-type: none"> • Mostly excellent week, with only a few stops of notable duration. • The periodic leak inspection was carried out on Thursday AM, there was no noticeable change. During the inspection, a radiation hard camera was installed, which will allow better remote monitoring as well as an intervention on the cooling towers. • The typically varied and busy MD schedule proceeded well, with a broad range of topics covered. • A lot of work was done over the weekend to reduce the level of mismatch in the LSA online check. 		
Issues	<ul style="list-style-type: none"> • There was a typical selection of short interruptions for equipment and watchdog/interlock resets. • There were a couple of approximately 1 hour stops for problems in Linac4. • After longer beam stoppages, the acquisition of BT2.KFA20 diverges from the setpoint. An intervention by ABT has reduced the problem, but a better solution will come during a beam stop. • On Sunday afternoon, a problem BT4.SMV10 required an intervention by the ABT piquet to replace a valve. 		
Plans			
Intervention Request			
No	Duration		Preferred date/time
Reason			
Impact			

ISOLDE					
Machine Supervisor last week		Simon Mataguez			
Machine Supervisor this week		Miguel Luis Lozano Benito			
Beam Scheduled					
GPS	Yes	HRS	Yes	HIE-ISO	Yes
Beam Availability by Destination (AFT)					
GPS	93.3%	HRS	96.2%	HIE-ISO	95.4%
Facility Status					
Summary	<p>GPS:</p> <ul style="list-style-type: none"> - beams to GLM physics (IS688) using Target #812 Dy. 149tb providing overnights at GLM. - 28/07 Target installation (#824), for ISS Ca run preparation. <p>HRS:</p> <ul style="list-style-type: none"> - #827 UC Ta (new): Physics at VITO (IS733) K isotopes. (Resonances of K ions in DNA complexes) <p>MEDICIS:</p> <ul style="list-style-type: none"> - 25/07-26/07 Target irradiation low trolley and 28/07- 31/07 parasitic mode. <p>REX/HIE-ISOLDE:</p> <ul style="list-style-type: none"> - Preparation of reference set-up for physics with ^{49,50}Ca beams at ISS. (Starting 03/08) - Monday Stable beam from EBIS to XT01 (Miniball) 22Ne6+ 3,5MeV/u - Rephasing and set-up of the linac 2 Times - The SRF02 (XLL2.CAV2) degraded on 26.07 which forced the rephasing of the linac the 28/07 using 40Ar 13+ 				
Issues	<p>GPS:</p> <ul style="list-style-type: none"> - 26/07 HT2 trips often and not worked at 30 kV. From 3.00 to 5.30. HT2 had to be readjusted by expert. - 26-07-2023 00:24:34 While moving GLM.ZDP.0100 electrostatic deflector got stuck, Expert called. - 26-07-2023 03:21:10 YGPS.Line.Heat tripped - 28-07 11.00 Vacuum lost for the all low energy part of ISOLDE. The new target installed, was not clamped and when vacuum pump has been started, all pumps stopped working. <p>REX/HIE-ISOLDE:</p> <ul style="list-style-type: none"> - 27/07 SRF02 (XLL2.CAV2) strong vibrations at frequencies 96, 126 and 200 Hz in spectrum of all cavities in XLL2 cryomodule. RF expert (Daniel Valuch) and Cryo Expert (Samo Kacej) decided to slightly modify the setpoint and lower the helium level in XLH3 reservoir from 50% to 47%. Vibrations seem also be bit quieter, but not enough for operational beam. SRF02 has been by-passed. - 31/07 9.00 instabilities of the IH structure: In order to get the same power we had on Friday with IHS (PFW ~ = 23.6 kW), we have increased XRF.IHS from 1315.00 mV to 1494.00 mV. 				
Plans	<p>GPS:</p> <ul style="list-style-type: none"> - Stable Setup of separator and RA0-TRAP line. (RILIS) - Physics at ISS (IS727) scheduled for 03.08. <p>HRS:</p> <ul style="list-style-type: none"> - MEDICIS target irradiation (31.07-01/08). low trolley - VITO (IS733) stopped Monday at 8.30 (31/07). Target in standby. <p>REX/HIE-ISOLDE:</p> <ul style="list-style-type: none"> - Preparation beam to ISS with ^{49,50}Ca beams at 7.5MeV/u 				
Intervention Request					
Yes / No	Duration		Preferred date/time		
Reason					
Impact					

ISOLDE					
Machine Supervisor last week		Simon Mataguez			
Machine Supervisor this week		Miguel Luis Lozano Benito			
Beam Scheduled					
GPS	Yes	HRS	Yes	HIE-ISO	Yes
Beam Availability by Destination (AFT)					
GPS	93.3%	HRS	96.2%	HIE-ISO	95.4%
Facility Status					
Summary	<p>GPS:</p> <ul style="list-style-type: none"> - beams to GLM physics (IS688) using Target #812 Dy. 149tb providing overnights at GLM. - 28/07 Target installation (#824), for ISS Ca run preparation. <p>HRS:</p> <ul style="list-style-type: none"> - #827 UC Ta (new): Physics at VITO (IS733) K isotopes. (Resonances of K ions in DNA complexes) <p>MEDICIS:</p> <ul style="list-style-type: none"> - 25/07-26/07 Target irradiation low trolley and 28/07- 31/07 parasitic mode. <p>REX/HIE-ISOLDE:</p> <ul style="list-style-type: none"> - Preparation of reference set-up for physics with ^{49,50}Ca beams at ISS. (Starting 03/08) - Monday Stable beam from EBIS to XT01 (Miniball) 22Ne6+ 3,5MeV/u - Rephasing and set-up of the linac 2 Times - The SRF02 (XLL2.CAV2) degraded on 26.07 which forced the rephasing of the linac the 28/07 using 40Ar 13+ 				
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Intervention Request					
Yes / No	Duration		Preferred date/time		
Reason					
Impact					

PS							
Machine Coordinator last week		B. Mikulec					
Machine Coordinator this week		M. Fraser					
Beam Scheduled							
East Area	Yes	nTOF	Yes	AD	Yes	SPS	Yes
Beam Availability by Destination (AFT)							
AD	90%	EA N	92.2%	EA T8	90.6%	EA T9	92.1%
nTOF	91.6%	SPS	90.8%				
Facility Status							
Summary	<p>Quite good week, increasing the understanding of our machine.</p> <ul style="list-style-type: none"> - Investigating influence of AD cycle on the EAST asymmetry for EAST cycles following AD. Found out that it was linked to the figure-of-eight loop (W8L). The effect can be compensated with a proper degaussing cycle of W8L. Issue also present for LHC-type cycles (25.5 GeV FT as for AD), but there we do not have sufficient time to extend the FT for a W8L degaussing. - MTE: increased separation of islands that had drifted and reduced TFB gain → reduced emittance of core. Emittance of core is in SPS higher in both planes than for the islands. SPS measurements: H emitt for core ~7.5 um (4 um for islands), V emitt ~2.6 um for core (~2.3 um for islands); in the PS the core was measured at ~5 um in H. We found a knob with PR.ODN to decrease overall the emittances. SPS currently assembling specification table as a function of intensity, but V emittance should probably be increased in the PSB. - Revived BCMS cycle for SPS MD on Wednesday: emittance is ~1.27 um in both planes for 2.1e11 p/b. - BGI MDs for benchmarking with wire scanners ongoing with SY-BI team. - B. Woolley worked on 80 MHz cavities to avoid them tripping on single-bunch LHC beams. - Special TOF test Thursday afternoon for a calibration run with different intensity cycles in 1 supercycle. 						
Issues	<ul style="list-style-type: none"> - KFA71/79: during investigations of module trips, C. Boucly found the HV cables under water; intervention of fire brigade. The problem seems to come from condensation from a ventilation unit in b359; intervention of EN-CV. - Following the access on Thursday (where nothing worrying was found for the PS main units), 2h of downtime due to White Rabbit communication issue. - MTE BB: 3 times during this week the h16 barrier bucket controller was not correctly injecting the frequency bump. NIM module exchange and hard reboots of core parts of the beam control required. - A few trips of W8L and POPS during investigations of W8L degaussing. - C10-91 tripped over the weekend, C10-11 in addition Monday morning. Access Monday over lunch for C10-11 amplifier exchange. 						
Plans							
Intervention Request							
No	Duration		Preferred date/time				
Reason							
Impact							

PS East Area							
Facility Coordinator last week		N. Charitonidis					
Facility Coordinator this week		D. Banerjee					
Beam Scheduled							
T8	Yes	T9	Yes	T10	Yes	T11	No
Beam Availability by Destination (AFT) General: 90.5%							
Running T8	90.5%	T9	90.5%	T10	90.5%	T11	N/A
Facility Status							
Summary	T09: No issues. T10: DWC replaced for BL4S, timing adjustment on XCET signals, HV on scintillator adjusted. Otherwise good beam. Users report repeated problems using CESAR for XCET scans. T11: No user.						
Plans	<ul style="list-style-type: none"> T09: WCTE → TechnoCLS T10: BL4S → ALICE TOF 						
Intervention Request							
Yes	Duration	2 hrs		Preferred date/time	Wednesday starting 8:00		
Reason	T09 changeover to normal configuration for TechnoCLS. Access needed in the mixed area for 2 hours starting flushing at 8:00 for access at 8:45.						
Impact							

PS nTOF			
Facility Coordinator last week		Nikolas Patronis	
Facility Coordinator this week		Michael Bacak	
Beam Requested			
Yes			
Facility Status			
Summary	Progressing with physics programme according to planning		
Issues	On Saturday night we had a vacuum pump failure at the EAR2 beam dump. No backup pumps. We decided to continue because the pressure was at 2mbar (not that high for our purposes).		
Plans	<ul style="list-style-type: none"> • EAR1: 243Am(n,f) In stable data taking mode since. This measurement will stay for about 3 weeks. RP-veto in the area. • EAR2: 64Ni(n,g) also running nicely and smoothly. This measurement will stay ~1 week more. • NEAR: 2nd Diamond detector test using a few pulses. This test will take place on Wednesday 		
Foreseen Beam Stop			
Yes	Duration	8h	Date/Time WED 02.08.23; 08h00

AD - ELENA			
Machine Supervisor last week		Lajos Bojtar	
Machine Supervisor this week		Pierre Freyermouth	
Beam Scheduled			
AD	Yes	ELENA	Yes
Availability (AFT)			
AD	97%	ELENA	97%
Facility Status			
Summary	Relatively good week with some improvement in the injection intensity due to improved AD ring acceptance.		
Issues	The main issue of the week was the C02 cavity indicated water flow error. There was an intervention during the week to increase the limit. Another fault happened Saturday early morning. Unfortunately AD has no support outside working hours for the HL RF, not even best effort. The issue has been solved remotely by the expert Saturday morning anyway. Another issue of the week has the BHZ main going down several times, but not too often, so it was reset each time. We had also sparking in the ELENA ion switch which was fixed by the expert.		
Plans	Operation as usual.		
Intervention Request			
Yes / No	Duration		Preferred date/time
Reason			
Impact			

SPS							
Machine Coordinator last week		Michael SCHENK					
Machine Coordinator this week		Francesco Maria VELOTTI					
Beam Scheduled							
LHC	No	NA	Yes	AWAKE	No	HiRadMat	No
Beam Availability by Destination (AFT)							
LHC	- %	NA	81 %	AWAKE	- %	HiRadMat	- %
Facility Status							
Summary	<p>Good week at the SPS mainly with beam to the North Area (NA), preparations for the upcoming AWAKE run, various dedicated MDs on Wednesday and a short parallel MD on Tuesday. Main downtime was caused by injector faults and a long stop on Thursday with both, planned and unforeseen, interventions (<i>details below</i>).</p> <ul style="list-style-type: none"> • SFTPRO: <ul style="list-style-type: none"> ○ Successfully implemented improved rf phase jump settings to flatten / widen the energy distribution. ○ Investigated transverse emittance differences between core and islands together with PS. • AWAKE: preparation of 1E11 p and 3E11 p variants with bunch rotation ON. Extraction to TED on Friday. Beam parameters according to specs. • HiRadMat: removal of previous setup and installation of new experiment. • MDs: various dedicated Wednesday MDs (crab cavity measurements with 8b4e & standard beams; brightness measurements and working point studies with high-intensity BCMS & 8b4e beams; crystal shadowing in LSS4 for fixed target beam), and a short parallel MD on instability studies in presence of space charge. 						
Issues	<ul style="list-style-type: none"> • Long stop on Thursday (07:30 – 17:30). Originally foreseen and approved by FOM from 07:30 – 12:00 to allow for 4 h cool-down to perform intervention in NA (TCC2). Had to be extended well into the afternoon to replace broken MKDH2 high voltage (HV) cable, discovered only during access (reason for MKDH trips during night from Wednesday to Thursday). • Interventions / tests carried out on Thursday: <ul style="list-style-type: none"> ○ NA: TCC2 (electro-valve replacement); TT83. ○ MKDH2 HV cable repair. ○ 200 MHz Philips amp replacement. ○ FESA beam control upgrade and 200 MHz pick-up frontend exchange (extra filter for ion beams). ○ Other: MST / MSE intervention and measurements; tests with 800 MHz beam control for Coast mode; 3D scan at BA81; ED pump replacement in BB3; attempt to repair BA5 personnel lift (pending). • Occasional 800 MHz “trips” during slow extraction on SFTPRO producing non-uniform spill structure. • Various 200 MHz cavity 1 trips throughout the week. • Two MSI.1183.M trips requiring Piquet interventions during weekend. 						
Plans	<ul style="list-style-type: none"> • SFTPRO: further investigate reason for 800 MHz “trips” during extraction; plan operational implementation of empty bucket channelling together with NA62 (back in normal run mode from Monday, 31.07.). • AWAKE Run 2. Ongoing discussions for dedicated beam time (Friday, 04.08.). • MDs: dedicated Wednesday MD on crystal shadowing (LSS4); no short parallel MD requests. 						
Intervention Request							
No	Duration		Preferred date/time				
Reason							
Impact							

SPS North Area							
Facility Coordinator last week		N. Charitonidis					
Facility Coordinator this week		D. Banerjee					
Beam Scheduled							
H2	Yes	H6	Yes	K12	Yes	P42	Yes
H4	Yes	H8	Yes	M2	Yes	TT20	Yes
Beam Availability by Destination (AFT) General: 74.3%							
H2	59.2%	H6	74.3%	K12	74.3%	P42	74.3%
H4	74.3%	H8	74.3%	M2	73.8%	TT20	74.3%
Facility Status							
Summary	<p>H2: instabilities of beam position in NA61. They seem correlated with the changes of beam files in H4. Reason not yet 100% clear, to be followed up with SY/EPC team.</p> <p>H4: Standard operation, CMS-ECAL program continues.</p> <p>H6: PPE156 linked with PPE146 for higher intensity week. Smooth changeover with good rates for EP PIXEL.</p> <p>H8: New tertiary optics deployed for H8B, allowing smaller beam and higher rate for the users. Good operation with low-energy electrons.</p> <p>M2: Vacuum and issue with local electronics in the profile monitors in TT83 was fixed during the Thursday intervention. Beam checked for muons, hadrons and electrons for NA64mu.</p> <p>P42/K12: Stable running in beam dump mode with one day of Kaon running interleaved.</p> <p>T2/T4/T6 Sharing: NA62 beam dump run is planned to continue until Monday, 31.07.23, 16:00. Then change of T4 target head to 180 mm or 300 mm. We would kindly request to lower the intensity then on T4 to reach the 28 units on T10 requested by NA62 for normal Kaon running, most probably 50 (T2) – 70-90 (tbc, T4) – 35 (T6).</p>						
Issues	<p>H2: Fluctuating vertical beam position for NA61 observed during the weekend, After investigation seems like it is connected with the frequent beamfile changes in H4. Mitigated with communication between users, to be followed up. Issue with the VTX1 magnet cryo was solved last weekend. PM1+2 of CEDAR-W readout problems were also corrected during the week by the SY/BI team, the HV of the CEDAR PMs will be checked tomorrow.</p> <p>H8: No issues to report.</p> <p>M2: XTAX.061052 was stuck for about 1 hr in dump position. CEM piquet checked the controls and the issue was fixed.</p> <p>P42: Vacuum electrovalve broken and replaced during access on Thursday. Continuing issues with the ECN3 PAD/MAD access system (about 3 h downtime during the Wednesday MD).</p>						
Plans	<ul style="list-style-type: none"> • H2: NA61/SHINE continues. • H4: CMS ECAL → CMS HGCAL • H6: EP PIXEL, MONOLITH, ALICE ITS2 → ATLAS ITK. • H8: POKER → QFIB. Straw Tracker R&D continues. • M2: NA64mu continues. 						
Intervention Requests							
No	Duration		Preferred date/time				

SPS AWAKE

Facility Coordinator last week	Giovanni Zevi Della Porta		
Facility Coordinator this week	-		
Facility Status			
Summary	Continue commissioning of new Plasma Source. BTV and spectrometer cameras alignment. Aligned laser beam on proton trajectory. Patrol. Cavern clean-up		
Issues			
Plans	Complete commissioning of new Plasma Source, install Rubidium density diagnostics, fill Rubidium reservoirs, begin proton run.		
Foreseen beam stop			
Yes / No	Duration		date/time

LHC			
Machine Coordinator last week		J. Wenninger	
Machine Coordinator this week		E. Bravin / J. Wenninger	
Statistics			
Availability	0%	Stable Beam Ratio	0%
Facility Status			
Summary	<p>Monday morning depressurization the QRL and opening the Q1-Q2 interconnect. The leak was quickly localized on the bellow of the M2 line (instrumentation) with injection of dry air into the cold mass.</p> <p>Tuesdays the damaged bellow of the M2 line (instrumentation wires) was removed.</p> <p>The Q2-Q3 interconnect was opened to check the straightness of the lines which were found to be good. On the Q1-Q2 interconnection, some lines had evident kinks. During a survey of the CM positions with respect to the fiducials, the longitudinal positions of the cold masses of Q1 and Q2 were found to be within ~1 mm of the references.</p> <p>The PIMs vacuum interconnection of the vacuum chamber were inspected by endoscopy and found to be conform.</p> <p>During installation of the new bellow on the M2 line one voltage tap was initially lost, but it could be repaired. A first welding of a new bellow was not successful. A ring piece was designed and manufactured to achieve a better surface to weld the bellow. The second attempt was successfully completed Friday morning. One temperature sensor was however lost during the closing manipulation (there is redundancy).</p> <p>On Friday evening the interconnection was closed, insulation vacuum pump down over the weekend, progressing according to plan. In parallel purging of the cold mass by the cryo team.</p>		
Issues			
Plans	<p>Aim for cooldown of S78, LSS8L and ITL8 towards the middle of the week.</p> <p>Preliminary estimate for beam in LHC is the start of week 37. LHC TS2 is cancelled, the activities will be performed during the current stop.</p>		
Intervention Request			
Yes / No	Duration		Preferred date/time

Linac 3			
Machine Supervisor last week	R. Scrivens		
Machine Supervisor this week	R. Wegner		
Statistics			
Availability	N/A% - Beam commissioning		
Facility Status			
Ion species	Pb		
Summary	<p>Source very stable for beam commissioning.</p> <ul style="list-style-type: none"> - Tests made on spare source klystron – requires a cable to be replaced (now on order). <p>Beam commissioning through RF systems possible.</p> <ul style="list-style-type: none"> - Many trips. - Hampered by FESA class issues, expert has an update for Monday. - Cavity3 amplifier needed 1 day repair on Friday. - Nevertheless beam set up looks ok by the end of the week, beam to 4.2MeV and transmission good. <p>Dry run test to LBS line was made, beam test to LBS will be in 2 weeks. Beam stripped to Pb54+, stripper positions checked.</p>		
Issues	See above		
Plans	Charactization of ramping cavity, stripper beam energy and transport of beam to ITH line.		
Intervention Request			
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 <u>three experiments</u>:</p> <ul style="list-style-type: none">- Irradiation of ZFE with Very High Energy Electrons (VHEE) at Ultra High Dose Rate (UHDR) to observe the FLASH Biological Effect (with CHUV).- Real-Time Dosimetry studies for Medical Application using an array of optical fibers and a digital camera (with the University of Oxford).- Uniform Beam Generation using the CLEAR RF GUN and Solenoids.
Issues	No major issue.
Plans	This week CLEAR won't run to work on the installation of the new beam line .