13 November 2023

ACCELERATORS & EXPERIMENTAL FACILITIES STATUS

SUMMARY OF WEEK 45 - 2023

Technical infrastructure – *C. Pruneaux*

Linac 4 – *J-L. Sanchez Alvarez*

PS Booster - *G.P. Di Giovanni*

ISOLDE – *S. Mataguez*

PS – *A. Huschauer*

PS – East Area – *No report, not running*

PS – nTOF - *No report, not running*

AD – ELENA - *B. Lefort*

SPS – *No report, not running*

SPS – North Area - *No report, not running*

SPS – AWAKE – *G. Zevi Della Porta*

SPS – HiRadMat - *No report, not running*

Linac 3 - *R. Wegner*

LEIR – *M. Slupecki, R. Alemany, T. Argyropoulos*

LHC - *No report, not running*

CLEAR – *A. Malyzhenkov*

Technical Infrastructure (TI)

Facility Coordinator last week	Clément Pruneaux
Facility Coordinator this week	Jesper Nielsen

Statistics

Alarms					
Phone calls		***Incoming***		***Outgoing***	
ODMs					

Facility Status

Summary	Quite busy week with a lot of interventions and YETS activities starting. Several events with impact on the accelerators and a big water leak in building 52 required some extensive repairs of IT infrastructure, in particular the Science Gateway and access to the site was impacted.
Issues	***Tue 07/11/23 15:31:*** Evacuation in SPS BA6, during an intervention of RF where an electrical supply was cut that powered also a PLC for the EIS. The EIS triggered the evacuation alarm. See event ***Tue 07/11/23 21:23:*** An internal IGBT fault caused a trip of POPS. There was an intervention with EN-CV at the same time, but it was confirmed by both EN-CV and SY-EPC that it was not connected to the trip of POPS. See event ***Wed 08/11/23 14:59:*** Water leak in building 52, and when the electrical breaker was cut it cut also infrastructures for the gates, wifi and network for the science gateway. Crisis team was activated. IT racks were replaced during the evening, and power back at 19h41. See event 
Plans	

Intervention Request

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

Linac 4				
Machine Coordinator last week	José-Luis Sanchez Alvarez			
Machine Coordinator this week	IST			
Statistics				
Availability	97,6%			
Facility Status				
Summary	Very good week with 97.7% availability, mainly due to RF issues.			
Issues	• Monday: CCDTL3 HV trips (7 minutes). • Tuesday: RFQ tuning problem - cross-talk between the LLRF from RFQ2 in the test stand and the RFQ in Linac 4 (one hour). • Friday: RFQ breakdown protection triggered. Level1 recovery (7 minutes) • Saturday: Issue with klystron cooling on PIMS0910 and then PIMS0102. The chiller operating hours counter reached the limit, causing a fault. This limit has been reset on all Linac4 cavities. (Two and a half hours) • Sunday : L4L.RCV.371 trips (11 minutes)			
Plans	IST			
Intervention Request				
Yes / No	***Duration***		***Preferred date/time***	
Reason				
Impact				

PS Booster				
Machine Coordinator last week	G.P. Di Giovanni			
Machine Coordinator this week	M. Albert (EN-ACE)			
Beam Scheduled				
ISOLDE	No		***PS***	Yes
Beam Availability by Destination (AFT)				
ISOLDE			***PS***	96.5%
Facility Status				
Summary	Last week of the year delivering protons for the AD extended run.			
Issues	Most of the total downtime due to a few issues in Linac4. On Wednesday afternoon all BI.SMV10 tripped. At first the reset did not work, so PiPO was called. Finally, this is a well-known issue related to the septa family of PCs and happening when the repetition rate is very low in the SC (in this case 1 cycle every 48 bps). With low repetition rate the capacitor banks never reach the desired voltage to produce the pulse in the played cycles. To solve the issue, we add one MD cycle without beam (i.e., to pulse the machine). On Thursday, after the intervention in the PS, about 20 minutes delay to get the beam going. It was not possible to remotely control the L4L and BTP beam stopper via WS. The issue was tracked down to an upgrade of the PS working set. They were moved to REST communication, but the LEIR server had not been updated. And the specific WS contained several LEIR devices, so the control was lost on all of them. The OP crew managed to work around it and, later on, CSS experts redeployed the LEIR INCA server to resolve the issue. On Sunday evening at around 22h20 we had issues producing beam from the external chains in R1 and R4. The piquets diagnosed the issue coming from the WhiteRabbit switch ctdwa-361-cbts2pb. Operator went onsite to reboot the frontend. During this time (about 2h), the PSB produced beam for AD with 3/5 of the intensity.			
Plans	Stop of all protons. (E)YETS started. Thanks to all experts and piquet services for another great year in the PSB!			
Intervention Request				
No	***Duration***		***Preferred date/time***	
Reason				
Impact				

ISOLDE

Machine Supervisor last week	Simon Mataguez
Machine Supervisor this week	Alberto Rodriguez Rodriguez

Beam Scheduled

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

Beam Availability by Destination (AFT)

GPS	99.6%	***HRS***	100.0%		

Facility Status

Summary Week 45	Winter physics at ISOLDE GPS: - 06.11 08.00 End of IS692 - ^{7}Be collection in GLM (06.11). - Target (#845) installation (07.11). - Setup and physics with ^{110m}Ag at GLM (IS672) starting on 08.11. HRS: - 06/11 HRS: Preparation and physics at CRIS (IS663) using 238U+16O+16O. - 09/11 YHRS.SEPMAG90DEG / 60DEG access for tests performed by TE-MSC to confirm that the current can be increased from 480 to 500A. - 09/11 New set-up needed as intensity increased. CRIS switch to RaF (226Ra+19F) REX/HIE-ISOLDE: - End of IS692 on 06.11. Tests SRF cavities, REX-TRAP and cryo. Machine warm up. - 07/11 HT and steering reference settings for the EBIS and the separator performed by BE/ABP (FW) - 09/11 RF & HIE-ISOLDE – Beam Permit, suspended
Issues	- 08/11 During set-up, Target#845 Line set to 250A from 10.00am to 10.45am with electrode in garage position, GPS_VVS1 close and laser On – When electrode set to 60, and Valve opened, YGPS.BFC4900 40pA with 110Ag. consequences on viewport and valve still not known. - 08/11 2 GPS -HTFactory.HT2 tripped – interlock sparking. - 09/11 GPS -HTFactory.HT2 tripped – Safety interlock (coming from door or cane) - 09/11 23.00 CRIS drop in beam current time to time, no explanation
Plans	REX/HIE-ISOLDE: - the CMs temperature is now around 45K. Wednesday/Thursday all tuner plates will be put in relaxed positions. the CM vacuum sector valves' control cables will be disconnected before warming up completely. GPS: - 14.11 08.00 End of IS672 ^{110m}Ag at GLM finishes. - Target change (#817) on 14.11. - 15.11 Setup for 226Ra collections at GLM and beams to user (IS725) - 20.11 08.00 End of IS725 - 20.11 11.00 Target change (#837) HRS: - physics at CRIS continues with the RaF run. IS663 - 20.11 08.00 End of IS663 - 20.11 11.30 Target change (#786)

Intervention Request

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

PS							
Machine Coordinator last week	Alex Huschauer						
Machine Coordinator this week	-						
Beam Scheduled							
East Area	No	***nTOF***	No	***AD***	Yes	***SPS***	No
Beam Availability by Destination (AFT)							
AD	86%	***EA N***	%	***EA T8***	%	***EA T9***	%
nTOF	%	***SPS***	%				
Facility Status							
Summary	• Beam production for AD • Successful test with oxygen ions (extracted to D3)						

Issues	• POPS tripped on cooling issues and operated in degraded mode during the night from Tuesday to Wednesday, fixed Wednesday morning
	• Several issues with 10 MHz cavities during the week (amplifiers, fans, pre-driver) requiring expert and piquet interventions and accesses
	  • Additionally, several periods of degraded operation (lower intensity with 8 cavities, longer bunches with 9 cavities)
	  • running without spare C10 since Thursday
	• Struggling with AD repetition rate, which suddenly became irregular despite constant super cycle programming (with only one AD in SC)
	  • investigations by timing experts ongoing, but issue not yet understood
	  • mitigated by programming many AD cycles into the super cycle
	• operating at ~half the nominal intensity during Sunday night due to a PSB front end issue						

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

AD - ELENA				
Machine Supervisor last week	B. Lefort			
Machine Supervisor this week	N/A			
Beam Scheduled				
AD	Yes		***ELENA***	Yes
Availability (AFT)				
AD	90%		***ELENA***	90%
Facility Status				
Summary	Last week of PBAR for AD/ELENA. It was a bumpy week due to the PS Cavities issues and also due to the repetition rate, that was fluctuating with no obvious reason (as we were alone in the super cycle). Many hours were lost so it was not such good week for the users that even have tried to get an extension of run to compensate the time lost.			
Issues	PS Cavities (Main and Spares) failing, rep-rate issues, and finally, on Sunday night, a white rabbit frontend that've decided to go back to wonderland, without asking.			
Plans	Be ready for March			
Intervention Request				
Yes / No	***Duration***	N/A	***Preferred date/time***	N/A
Reason	N/A			
Impact	N/A			

SPS AWAKE				
Facility Coordinator last week	Giovanni Zevi Della Porta			
Facility Coordinator this week	-			
Facility Status				
Summary	• EPC tests, limited access • Cabling campaign in TAG41 • Installation of new optics and optical table for laser-plasma experiments • Continue laser-plasma experiments in TCC4			
Issues				
Plans	Last week of laser-plasma experiments in TCC4			
Foreseen beam stop				
Yes / No	***Duration***		***date/time***	

Linac 3					
Machine Supervisor last week	R. Wegner				
Machine Supervisor this week	YETS: ABP + FC				
Statistics					
Availability	99.5%				
Facility Status					
Ion species	Oxygen				
Summary	Source run with good stability. The source vacuum level was slightly worse and unstable than expected (potential outgassing) but did not degrade beam quality. RF and transfer line settings were optimised on Monday and Tuesday. On Wednesday (8 Nov.) beam was passed to LEIR. From then onwards stable beam production of about 80 µA out of the Linac.				
Issues	Acquisition of ITL.DVT02 got stuck, ccv setting had to be changed after power cycle to recover the beam intensity. Short trip (~30 min) of RFQ and Tank1 amplifiers on Thursday evening.				
Plans	Keep the Linac in good shape for 2024.				
Intervention Request					
Yes / No	***Duration***		***Preferred date/time***		
Reason					
Impact					

LEIR				
Machine Supervisor last week	Maciej Slupecki, Reyes Alemany, Theodoros Argyropoulos			
Machine Supervisor this week	-			
Statistics				
Availability				
Facility Status				
Ion species	O4+			
Summary	• 6-7th Nov: recovery after power glitch (?) during weekend • 8th Nov: beam delivered from Linac3 according to schedule, beam went through the transfer line and circulated in LEIR, injection optimization • 9th Nov: beam accelerated, intensity optimization, work on orbit corrections, tune, reached maximum intensity at extraction 2.5E10 *e* (target for next year: 3.5E10 *e*), work on ECOOLER, first extraction towards PS • 10th Nov: access to investigate one malfunctioning extraction kicker 31, ECOOLER and IPM tests, activate and optimize second RF harmonics, tune and orbit at ramp, extracting 3E10 *e*			
Issues	• Difficulties to cool the beam with ECOOLER, weak signal from IPM • Injection efficiency drops in coincidence with PS magnets pulsing			
Plans				
Intervention Request				
Yes / No	***Duration***		***Preferred date/time***	
Reason				
Impact				

CLEAR	
Facility Coordinator last week	Alexander Malyzhenkov
Facility Coordinator this week	To be defined
Facility Status	
Summary	• The PSI Positron Production (P^3 or P-cubed) project is a e+ source demonstrator for the Future Circular Collider Study, to be installed at the SwissFEL facility at PSI. • The beam time at CLEAR was devoted to the testing of one key instruments for P-cubed: the broadband pick-ups (BBPs). The BBPs consist of an arrangement of four pick-ups with large broadband response to measure the time structure of consecutive, non-gaussian electron and positron bunches of roughly 33 ps length and around 167 ps apart from each other. • Continuing measurements with both BBPs • Acquiring a lot of data including position, bunch length and charge scans • Commissioning of the uniform beams at CLEAR with double-scatterer in combination with the dosimetry tool and preparing it for the experiments in two weeks
Issues	No issues
Plans	Experiments with Secondary Electron Emission (SEE) Beam Profile Monitors (BPMs)