Minutes of the 31st FOM meeting held on 04.11.2014

Agenda:

1) Follow-up of the last meeting
2) Status of the Machines
3) Schedule Updates
4) AOB

1 Follow-up of the last meeting

The minutes of the 30th FOM meeting were approved.

Pending actions:

There was an open action concerning the recombination kicker rise-time in the PSB. Beam-based test took place the last week and investigations are continuing.

2 Status of the Machines

Linac2 (R. Scrivens)

During the Technical Stop, amongst other works the following interventions were performed:

- Intervention on the vacuum controls for pumping groups.
- Source gas bottle exchange.
- The source controls hardware was fixed.

The restart was delayed due to the temporary unavailability of the filters on the electrical distribution. J. Nielsen explained that the maintenance of the electrical system lasted longer than foreseen. Once the conditions to restart the machine were back, Linac2 could be restarted in few minutes.

On Thursday it was found that one RF system was not at the correct level, while another one had been incorrectly set since the electrical blackout of 16th of October. After putting back the nominal values and tuning the debuncher, the beam was delivered at a new nominal energy for the PSB.

A communication problem with the timing was observed at the end of the day. CO programmed an exchange of a CTRV card on Friday morning.

Concerning the instrumentation the LBE SEM grids were calibrated and the BLMs were put back into operation (still only from the local control room).

PSB (E. Benedetto)

On Wednesday at 17h50 the recovery from the Technical Stop started, but at 18h30 BT.BHZ10 went in fault; it was impossible to reset it. It took one hour to reach the EPC Piquet and have him

on site (problem with the phone). The change of the CPU card of the power converter solved the issue.

On Thursday afternoon, Ring 2 was affected by losses at capture on all high-intensity users. After two hours of investigations, a reboot of the Ring 2 LLRF front-end solved the problem. Experts could not find out the source of the issue.

An extraction BLM was found disabled on LASER twice this week.

A bad condition on the new external condition B.DMP_FAN (the dump ventilation) cut all the beams going to the dump, but allowed those sent to ISOLDE or PS. The fan was working correctly, and external condition came back after half an hour. The origin of the problem was not understood.

There are some issues of the B-field at extraction (configuration of the GFA function). The PPM copy and the LLRF samplers are not working. S. Hancock asked when the problem would be addressed. B. Mikulec answered that the specialist will try to solve the issue during the following days.

During the week the beam setting-up and optimization continued. LHCINDIV was prepared. The intensity is successfully controlled down to 1e11 ppp with the C16 voltage knob. The stability still needs to be checked.

ISOLDE requested STAGISO with a low intensity (40e10 ppb), but large beam emittance.

Some adjustments on the SFTPRO splitting were performed.

On LHC25ns there were adjustments of emittances and intensity. Trajectories at extraction are still not stable. The problem is presently followed up.

Orbit corrections have been systematically checked and applied on all the users after RP confirmed a hot spot in section 10. The COD is still very large (a realignment campaign is being investigated). The COD in Period 10 is reduced with the orbit correction, but the trajectories at extraction have to be re-steered. Helmut Vincke asked more details on this topic. B. Mikulec explained that there would be a dedicated meeting in the afternoon together with RP.

On Thursday, after the retuning of the RF of Linac2, an optimization of the injection frequency took place. The injection frequencies were homogenized for all users keeping some small differences between the four rings.

ISOLDE (L. Fadakis)

The latest INCA update was transparent for ISOLDE.

A new Access box was installed and tested on Wednesday, but more tests are needed. For the moment the access procedure remains unchanged. The new Access box will ease the access procedure. To finalize it some modifications on the cooling and ventilation system have to put in place. B. Mikulec asked about the schedule for these modifications. S. Deleval informed that the system modifications are foreseen for week 51.

GPS: There was stable beam set up on Tuesday for the target #520. Yield checks took place on Wednesday and then STAGISO beam was delivered until Saturday. On Monday morning a target change took place.

HRS: ISOLTRAP is working with stable beam and with protons. Some tests for the automatic setup applications were done on Wednesday and beam was transported until the RFQ. Stable beam tests were performed by the target group. On Thursday a test irradiation of TiC on MEDICIS station was performed. Also the latest version of the FESA class, controlling the cycling of both HRS magnets, was tested. The FESA class seems stable, but further tests need to be completed. ISOLTRAP continues taking beam. CRIS performed stable beam tuning. On Saturday there were some problems with the line heating where an open circuit was discovered. E. Siesling commented that users continued to take beam in a degraded mode by heating the mass markers. On Sunday CRIS performed stable beam tuning in bunch mode.

ISOLDE Users ()

There were no news.

PS (A. Guerrero)

The week was marked by a long and difficult recovery from the Technical Stop with a total downtime of 20 h and a weekly total of approximately 30 hours.

On Wednesday, beams were stopped at 04h00 and the access started at 08h00. During the stop a water leak in F16.QDE245 and FTA.QDE9030 was detected. Once the access finished the DSO tests for BT.BHZ10 were done. By 18h00 POPS was again pulsing and many problems came up. The power supply of BT.BHZ10 was not pulsing anymore, so no protons could be injected. The RP piquet was contacted due to a radiation monitor fault. The problem repeated during the night with another radiation monitor. Since these monitors were not critical they could be disconnected from the alarm surveillance. Regarding the ions they could not be accelerated due to a RF problem that was traced back to a circuit breaker. Several RF crates including the generation of the harmonic number were not powered and no 10 MHz cavity could follow the program. When the protons returned, no beam could be injected into the machine due to a faulty power supply on a quadrupole, RF and control issues. One by one the beams were put back in service, and by midnight all beams were back.

On Thursday two interventions were organized to repair cavity C11 (1 h downtime) and afterwards to repair the power supply of F16.QFO215 (3 h 30 min downtime). Other equipment, namely, several low energy quads, skew quadrupoles and sextuples do not pulse correctly and investigations will continue this week. The same problem occurred on F61.DHZ01. G. Métral asked for some more information concerning the problems with the low energy orbit correctors. A Guerrero replied that on Friday S. Pittet investigated the issue, but that there was not yet an explanation. The problem is being followed up.

On Friday there was another wire breakage in the PS, which allowed identifying the problem causing the breakage. The breakages were produced by a software error in the wire scanner initialization sequence. This problem affected all the machines except the LHC wire scanners.

This morning POPS tripped twice. F. Boattini solved the problem by changing a card.

During the week significant progress was made regarding the B-train jitter correction at injection energy.

Both the LHC25ns and LHC50ns are ready for this week's SPS scrubbing run. The work on the LHC25ns beam is still ongoing to address intra-bunch oscillations at injection energy.

Calibrations were performed for the instrumentation of the new T8 area.

All other operational beams have been delivered normally within the constraints of this week.

S. Gilardoni informed that the MTE kickers are now back in operation. The TE-ABT colleagues were acknowledged.

Helmut Vincke asked when the broken WSs would be replaced. A. Guerrero answered that they will be replaced during the Christmas stop.

East Area (L. Gatignon)

In general the running of the North branch was stable and smooth.

On Monday T9 complained about the low electron content of the secondary beam. The North target was found out of position and was put back by the EN-STI expert. A new control program is under development and will be made available for BE-OP as soon as possible. For the moment the knob does not show the problem and the only indication is on the East Area Vistar display.

In the IRRAD and CHARM facility tests of the ventilation system are underway and first results seem to indicate that its performance meets the needs. This week more work is going on for the access system interface. In parallel the repair on the rollers of the mobile shielding are ongoing, as well as the installation of the last layer of 40 cm thick shielding blocks above CHARM. After these interventions, IRRAD will be able to run at nominal intensity from next week.

Last Friday, with the help of R. Steerenberg, a low-intensity calibration of the SEC could be done with intensities as low as 5 10^9 per spill. Next week a calibration of the SEC with respect to a BCT using a fast extracted beam will be performed.

East Area Users (H. Wilkens)

The users are satisfied with the beam conditions and there was good progress. DAMPE is collecting good quality datasets.

nToF ()

There was no report.

CTF3 (L. Navarro)

During the week the drive beam operation continued until Thursday. On Friday DSO tests of the CLEX (CLIC EXperimental area) took place in preparation for the commissioning next week.

From Friday afternoon to Monday morning the beam was delivered to the dogleg experiment with the support of the PS operators. The PS-OP team was acknowledged.

There were minor issues hampering the operation.

The CVORG waveform problem is still not solved, but S. Jensen is working on it. This FESA class is important to regulate the klystron output power.

Some local software recompilations after the controls upgrade of Wednesday were necessary.

There are still problems with the AQN values not updating for the SKSU class in the knob and in the working set. The AQN is correctly updated in the JAPC/RDA diagnostic tool. The error has been reported.

At the moment it is not possible to create issues from WIN PCs elogbook. The error has been reported.

AD (B. Lefort)

Two turbo-molecular pump ball bearings were damaged by the magnetic fringe fields. New pumps were installed further away from the magnets and one of the damaged pumps was replaced by a new ionic pump.

Beam is jittering in the ejection line by 10 mm peak-to-peak perturbing the data acquisition. The analysis of the problem is ongoing. It has been observed that the orbit of the machine has changed since the 22 October. Observation shows that the beam is moving horizontally at GEM7015. The Orbit at FT4A is stable. The Orbit at FT4B is also stable, but larger than the reference. To diagnose the problem an experimental installation has been set up and proved to be very efficient for the debugging. Unfortunately there are interferences with the RF system. Discussions are ongoing between AD-OP and BE-RF to solve the issue.

During the Technical Stop the BCTs were checked, the sewage pumps fixed and first inspections for the shielding improvement in the AEGIS area were done.

Operation is hampered by the problem with the electron cooler cathode (1 out of 10 pulses is out of specification and the beam is lost) and the injection problem. It seems that it has something to do with the super-cycle re-synchronization process, but this still needs to be proven.

AD Users (H. Wilkens)

After having monitored the consumption of liquid He from ALPHA during the past week it was concluded that, in that respect, the situation is under control.

SPS (Y. Papaphilippou)

It was a busy but fairly good week for the SPS with no major faults. It included the delivery of coasting beams for the UA9 experiment, the Technical Stop, starting the optimization of Argon beams for fixed target physics and the preparation for the scrubbing run of next week.

On Tuesday morning, the beam was given for 24 h to the UA9 experiment (coasts at 270 GeV). Apart from a difficult start (TT10 line MDLH1028 magnet fault due to a circuit breaker, exchanged afterward by the First Line piquet), the experiment ran quite smoothly.

On Wednesday, the beam was stopped at 06h00 for the Technical Stop. Giving access to the different teams became a quite laborious enterprise due to the interphone malfunctioning in several access points. At the end of the Technical Stop at 13h00, several areas had to be re-patrolled, before being ready for beam at around 17h00. B. Mikulec asked if the problem with the interphone was solved. Y. Papaphilippou answered that the specialists understood and solved the problem.

On Thursday during the early afternoon and in the shadow of the beam cut from the PS, there was a problem with the water-cooling of BA1, which was solved by the specialist (changing the level in the leak detection surveillance software).

On Friday afternoon, beams had to be stopped for 50 min, for giving access to the vacuum team, which had to open a valve in the cooling circuit of COLDEX. This enabled the normal cool-down of the device, necessary for being operational during the scrubbing run.

No particular problems occurred during the weekend apart from various resettable trips of the RF transmitters. In one particular case, on Saturday evening, the overheating of TRX3 triggered a fire alarm, which mobilized the fire brigade and the RF power piquet, but without any particular issue for the equipment or the beam delivery. Helmut Vincke asked if there was smoke in BA3. Y. Papaphilippou answered that there was no smoke and it was an alarm triggered by a sensor indicating an overheating of a RF component. D. Manglunki added that the issue is known and recurrent. It is transparent for the beam and the operations team. The alarm is sent directly to the Fire Brigade.

The scrubbing run started this week and it is running smoothly. H. Bartosik confirmed that the number of bunches injected into the machine steadily increased in the last two days.

North Area (L. Gatignon):

In general stable running apart from a large number of patrols and a few issues after some work on the access system PLCs.

There is still some inconsistency between the intensities shown by the T4 and T10 monitors. The P42 beam is well steered and the new optics is behaving well. The full characterization of the incoming beam, including the monitor calibration and the emittance of the beam at T4, has still to be completed.

North Area Users (H. Wilkens):

All test beams are progressing smoothly apart from few hiccups with the access system. After the Technical Stop there were some issues, but they are now solved.

IONS

Linac3 (R. Scrivens)

During the week, it was observed that the spare source HT supply (installed for the MD on Monday, 23rd October) does not provide identical beam performance, and the operational supply was put back on Wednesday.

During the Technical Stop work was done on the electrical transformer for Linac3, as well as some tests of magnets for 5 Hz operations. At the restart, a poor connection in the RF system was discovered (affecting the beam performance), and beam was supplied only at 18h00 to LEIR.

This week the beam will be off during three days for maintenance work on the ion source. The pepper-pot installation (initially foreseen during this week) was postponed, after TE-VSC demonstrated that it leaks when the water circuit is pressurized for an extended period.

LEIR (M. Bodendorfer)

During this week a strong dependency is observed between the ion beam position in the ITE, ETL and ETP transfer lines and the PS super cycle. Further investigations are ongoing.

Since LS1, 37 virtual devices were not reporting error messages to the LASER console. The issue is corrected and all devices are now set to send error messages in case of malfunctioning. This will ease significantly the machine operation.

The longitudinal emittance has been improved from 2.2 eVs to 1.8 eVs and finally to 1.47 eVs to fit the specifications of the PS (1.5 eVs) by orbit corrections, electron cooler tuning and RF-capture parameters.

On Tuesday the problem with the 50 Hz oscillations on the ETL power converters observed by the OASIS application was fixed by BE-CO (direct measurements on the power converters do not show the observed OASIS noise). The problem was due to a missing earth connection.

On Wednesday the Technical Stop took place. It was requested to remove a bramble between PS and LEIR. D. Manglunki added that this was not done during the Technical Stop due to a gardening service internal communication problem. This intervention will be done during the Christmas stop. As gardeners have no dosimeter they cannot access the machine for the plant removal.

The Ar ion beam was back in LEIR by 17h30. The LEIR ion beam was ready for the PS at 18h00 and by 20h00 the ion beam was injected in the PS, but not yet accelerated due to the lack of RF confinement.

On Friday Ar ion beam circulated in the SPS with a very good lifetime. LEIR is sending to the PS about 1.8E10 charges per pulse, with 1.8 eVs longitudinal emittance. No RF-MD could be carried out because of a strong interaction between the Linac3 to LEIR transfer line with the super cycle affecting LEIR reproducibility.

On Saturday, after some fine-tuning of the ITE quadrupoles, the LEIR electron cooling and the LEIR RF capture, the Ar ion is captured, cooled and delivered to the PS within longitudinal emittance specifications.

On Sunday evening LEIR was put into access mode in order to start the correct switch-off procedure. All LEIR vacuum valves were closed, the main magnets and quadrupoles, the electron cooler and the RF cavity were switched off subsequently.

PS (A. Guerrero)

The injection trajectories of LEIR were corrected.

SPS (T. Bohl)

On Thursday, the setting up of the Ar beam for fixed physics started, after having solved an issue with the injection kicker delay.

On Friday the first double injection was carried out in a reliable way. T. Bohl underlined that next year the lead run will fully profit from all the efforts devoted to the Ar commissioning this year.

TI (J. Nielsen)

It was a busy week for TI.

On Tuesday there was a problem of high temperature with the COMPASS experiment. Investigations on-site showed that a PLC stopped, stopping all cooling circuits in BA82.

Wednesday was a very busy day. TI received 700 calls.

On Thursday there was a problem with the SPS BA1 circuit to a leak alarm triggered by the new leak detection procedure.

On Sunday there was a problem with the PS ventilation due to a problem with the PLC. The problem was solved by a local reset.

3 Schedule Updates

The Injector Schedule (v1.7) is available at

https://espace.cern.ch/be-dep/BEDepartmentalDocuments/BE/Injector_Schedule_2014.pdf

There are no updates with respect to the schedule. R. Scrivens noted that the Linac3 maintenance started on Monday and will be completed by Wednesday (not from Tuesday to Thursday as stated on the schedule).

4 AOB

S. Deleval presented a preliminary schedule for the CV maintenance during the Christmas stop for the injection complex.

The slides can be founded at:

https://espace.cern.ch/be-dep/FOM/Presentations 2014/Forms/AllItems.aspx

F. Boattini commented that the POPS maintenance would be performed from Monday morning (15 December) to Wednesday evening (17 December). The controls test with the PFW and the Figure-of-8-loop will be done from Monday 15 December to Tuesday 16 December.

Concerning the CV maintenance and the intervention on the AD systems, the actual schedule is under discussion with the users.

B. Mikulec informed that the final version of the CV schedule would be presented the week before the Christmas stop. During the stop the machines will be switched off. R. Steerenberg added that the access to the machines would be granted from the CCC (restricted access mode) to maintain the patrols.

D. Mcfarlane anticipated that there will be inspection requests in week 51 for the SPS.

B. Mikulec informed that there will be a maintenance of the door YEA01.ADT=853 (ex D.311) on the 5th and 6th of November. T. Eriksson asked about the impact of the intervention. B. Mikulec explained that the access door maintenance is transparent for the operation, but if an access would be needed or requested, the door has to be put in normal mode, and this takes about 30 min. Helmut Vincke informed that the intervention was approved by RP.

M. Gourber-Pace requested to approve the following upgrades:

1. LASER upgrade: Wednesday, 12th November between 13:00 and 14:00
2. ACCON upgrade: Wednesday, 12th of November, at 19:00.

The upgrades will not affect any other LASER interface and in particular the LASER Console will continue working during the upgrade. The LASERDB will continue running during the upgrade as well. The LASER editor (specialist function) will not be available. The FOM endorsed the interventions.

The next FOM meeting will be held on the 11th November. The agenda will be communicated in due time.

Minutes edited by G. Sterbini.