Minutes of the 5th FOM meeting held on 05.02.2013

Agenda:

1) Follow-up of the last meeting
2) Status of the machines
3) Schedule and quick look at the machines running during LS1
4) AOB
5) Next agenda

1 Follow-up of the last meeting

The minutes of the 4th FOM meeting were approved.

Pending actions:

There are no pending actions.

Linac2 (J.-B. Lallement):

It was a good week for Linac2. There were three short stops of 3 min each: two stops were related to vacuum issues and a third one to an RF problem.

Linac3 (D. Küchler):

On Wednesday the oven was refilled. The intervention started at 08h45 and the beam was back at 16h15. Some additional tuning of the source was needed in the evening.

During Thursday and Friday the SEM grid (ITF.MSG03) started to behave strangely: it seemed to charge up and to have a steering effect on the beam. The issue can only be further investigated when the LEBT is vented the next time.

On Sunday some power converters froze again.

On Monday evening the oven needed to be retuned.

Today (Tuesday 5th February) the stripper was changed (from stripper 1 to stripper 3). There was a reduction of the beam current from Linac3, but overall improvements were observed in the LEIR ejected beam.

Regarding the on going test on the BCTs some improvement was observed but further modifications are needed.

D. Küchler asked who can be contacted during the Argon test run (from March to June 2013) in case of problems with the control system or the power supplies. K. Hanke answered that

piquets will not be available and support will be available on a best-effort basis only.

PSB (K. Hanke):

On Tuesday a timing error on kicker BT2.KFA20 could be tracked down to a bad contact.

On Wednesday a planned stop to fix the water station and the PSB lift took place (the lift is now operational again). On the same day strange beam loss could be fixed by cleaning with contact spray some patch panels of the LLRF.

On Thursday there was 30 min down time due to BT.QNO10 (fixed by EPC piquet).

On Saturday at 01h43 there were again problems with BT.QNO10 (the quadrupole was pulsing at the wrong value). The EPC piquet had to come back. The power supply was put in local mode and forced to the right value in order for the LHC to be filled, once this was done investigations continued and the problem was fixed 07h30.

Later on Saturday the BCT of Ring4 failed, the equipment expert came in and performed a demagnetization of the instrument.

The steerer BTP.DVT40 had to be reset 5 times during the week. K. Hanke asked C. Mugnier to follow this up, in particular since there was another trip of the same equipment this morning.

Regarding the CO/EPC collaboration to address the Mil1553 issue, C. Mugnier reported that the main hypothesis for this malfunctioning its related to some delay problem. The problem is not completely understood but the team will continue its investigation.

LEIR (D. Manglunki):

On Wednesday the source was stopped for the oven refill. Around 16h30 the Linac3 beam was available again. It was immediately injected, accelerated and extracted without any problem.

Operation went fine until the weekend: on Sunday at 0:15 the injection became erratic. Cycling the ITH magnets did not help. After several hours of investigation (vacuum, electron cooler, Linac3 RF and steering, stripper…), during which the situation continued degrading with more frequent bad shots, the problem disappeared at the same time as the transverse damper was being switched off and back on. The fault was therefore attributed to the damper. This allowed refilling the LHC and the problem seemed cured. But the same problem reappeared at 09h00. A. Findlay was called on site and he determined that the damper was behaving as expected. Investigations continued during the day, until 14h00 when the power supply of ER.QDN1030 (main defocussing quads in odd straight sections) started to trip repeatedly. EPC piquet was called on site and diagnosed a noisy reference sent from the function generator. CO piquet found finally a faulty DAC card in the CVORB crate and the problem disappeared after replacing it. The total down time was about 12 hours. It is now believed that the same faulty card was the origin of the problem on Monday (28th February).

Since 15h30 on Sunday, LEIR is delivering 1.4E10 and 5.5E10 charges per pulse (respectively for EARLY and NOMINAL) to PS.

During the week the main bending ER.BHN tripped on a resettable fault several times per day. On Sunday a faulty contact on the magnet temperature interlock was found by the system specialist and the EPC piquet.

Yesterday (Monday 4th February) the SEM grid in ETL (ETL.MSF10) was repaired (it required an intervention inside the PS tunnel) and LEIR switched back to six injections (there were seven injections before and they should be five for the nominal cycle). The beam intensity decreased by 5% but the emittances improved by 20% at SPS flat top.

Today (Tuesday 5th February) LEIR recovered the beam intensity loss (due to the reduced injection number) thanks to the Linac3 new stripper.

K. Cornelis commented that the 12 hours spent in LEIR to diagnose the problem with the erratic injection prove that the machine diagnostic is not sufficient for daily operations. D. Manglunki confirmed that LEIR should have equipment similar to the one available in the SPS. S. Gilardoni and K. Hanke suggested including this request in the LEIR consolidation framework. D. Manglunki will follow it up.

PS (R. Steerenberg):

The PS had a very good week for the delivery of the physics and the many MD beams. There were mainly only minor interruptions that were solved by simply resetting the equipments.

Two longer stops occurred on Tuesday and on Wednesday.

On Tuesday the PAX42 radiation monitor kept providing alarm even without beam. The RP piquet was called. The alarms was changed from PAX42 to PAX301 and at the same time the PAX42 threshold was raised (1 h beam down time).

On Wednesday a planned stop started at 08h45. The stop was asked in order to repair the PSB-TT2 water cooling station, to change the KFA21 polarity in view of MTE tests and to repair the BPM20. The stop took longer than initially planned (2 h in total instead of 1 h). In the shadow of it a part of the CVORB + FESA test was performed on the PFWs. It was successfully, nevertheless an issue was found with the asynchronous enabling/disabling of the function generators. It will be solved and tested after the 13th February (without beam).

Throughout the week, and already since longer, there were problems with incoherence between working sets and some of the machine settings. The particular example that was investigated in more detail was the gain control of the BPMs. These inconsistencies are due to the fact that the working does not allow visualizing arrays. After it will support FESA arrays.

The LHC 50 ns low emittance beam has been set up to make comparative measurement on cycles with the working point generated by PFWs only or by a combination of low energy

quadrupoles and PFWs. Some MTE related studies would be done in this last week. The PS will also provide beam to the LHC using the new extraction bump, which was already tested in combination with the SPS.

During the week regular trips of the 80 MHz ions cavity occurred. Thanks to SIS it was found a clear correlation between it and the absence of the Tfid from the SPS.

SPS (K. Cornelis):

SPS continued with the heavy ion fixed target program in H2 and H8 and delivered ions and protons to the LHC.

On Wednesday the ion source was refilled and during this time proton MDs took place (coasting beams for collimator studies).

On Thursday night several hours were lost due to a problem with the pre-pulse of the proton inflector. The diagnostic of this problem is delicate. The expert on the emitting side (RF) and the receiving side (kickers) had to be called in order to conclude that the problem was in the transmission. Finally a faulty repeater box in BA1 could be identified and rebooted. The experts concluded that some consolidation work in needed on the equipment.

Friday night SPS OP was informed that, due to the heavy rain and snow fall, water was again penetrating under the false floor of BA2. The pumping speed was high enough to keep things under control. J. Nielsen commented that IT is aware of the problem and is addressing it.

On Sunday the SPS was unable to deliver ion beams for several hours due to a problem in LEIR.

During the week there were several MDs going on in the SPS, mainly with single bunch protons but also to study the de-bunching/re-bunching with ions for future fixed target physics.

Today (Tuesday 5th February) SPS will lower the ion energy.

North Area (H. Breuker and A. Fabich):

The experiments are satisfied.

NA61 is running at 30 AGeV/c. On H8, the Calet experiment will run during the first part of this week and afterward H8 will be dedicated to the NUCLEON experiment.[1]

D. Manglunki informed that there are proposals to stop the ion fixed target program on Wednesday 13th February instead that on Monday 11th February. M. Lamont commented that

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[1] H. Breuker informed after the meeting that H8 was switched to the NUCLEON experiment on Thursday morning.

this proposal has to be presented to the IEFC and to the Department Leader. K. Hanke asked to report to the FOM meeting the IEFC decision on the subject.[2]

LHC interface with injectors (M. Lamont):

It was a difficult week for the LHC. After having changed the direction of the ions in the LHC ring, beam loss issues occurred during the cogging and the squeeze phase. The number of bunches had to be lowered impacting negatively on the total delivered luminosity during the week.

K. Hanke asked some more details about the beam request of the LHC for the final week of the run. M. Lamont answered that the p-p run will require 50 ns beam with around 1.2e11 ppb. The BSRT test (4 h) will require 50 ns beam with a maximum of 1.5e11 ppb.

The five quench tests scheduled for 48 hours starting on Monday 06:00 will require from 5E9 to 1.2e11 ppb.[3]

CTF3 (F. Tecker):

The first part of the CTF3 linac is now being re-commissioned with beam. There is a problem with the septum in the combining ring. Investigations are ongoing. The safety chain on the combining ring is going to be put in place.

TI (J. Nielsen):

There is nothing to report.

2 Schedule / Supercycle / MD planning

The 2013 schedule (V1.3, old schedule see footnote) is available at:

https://espace.cern.ch/be-dep/BEDepartmentalDocuments/BE/LHC_Schedule_2013.pdf

All planned interventions for the injector complex are available via IMPACT at:

http://impact.cern.ch

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[2] After the FOM, D. Manglunki informed that IEFC decided to cancel the ion quench test in the LH and the ion source will therefore stop on Wednesday 13/2 at 8:00. Ion beam will be delivered to the North Area with lower priority with respect to LHC fillings and machine developments in the injector chain.

[3] After the FOM meeting the CERN complex schedule was modified. The LHC proton-ion program will run until 06:00 on Sunday 10th February. Four days with proton-proton intermediate energy run (1.38 TeV) will follow from Sunday morning to 06:00 Thursday 14th February. Finally 48 h quench test program will run until 06:00 on Saturday 16th February.

During the LS1, Linac3, Linac4 3 MeV test stand, ISOLDE and CTF3 will continue operations.

The details on the different schedules can be retrieved from:

https://espace.cern.ch/be-dep/FOM/Presentations 2013/Forms/AllItems.aspx

Linac3 will run its Argon test from the 11th March 2013 to 7th June 2013.

Linac4 3 MeV test stand commissioning will continue up to May 2013. During summer, the hardware will be moved into the Linac4 tunnel and the commissioning will be resumed there on September 2013.

Regarding ISOLDE the HIE-ISOLDE MD in preparation of the SC linac commissioning will take place until the 15th February. There will be some tests of the REXEBIS during 2013 and the agreement is to adapt them to the LS1 schedule. HIE-ISOLDE commissioning will take place either at the end of 2014 or the beginning of 2015 depending on the availability of the cryo plant.

CTF3 will have 3 running periods on 2013. First running period will take place from week 4 to week 20. The second period will take place from week 28 to week 33 (with only klystrons up to MKS07 in the linac and the klystron MKS30 for CALIFES line). The third running period will extend from week 34 to week 51. F. Tecker asked how the information of the LS1 activities will be circulated. B. Salvant answered that there will be a weekly LS1 meeting in discussing and reporting the different planned intervention.

A. Bland informed that on the 8th July recabling activities around the CCC could potentially produce perturbations.

R. Brown informed that during the 23rd and 24th February emergency stop tests will take place.

3 AOB

C. Vollaire presented the MD proposal for the RP Survey to allow the Switchyard Operation (access part of the PS tunnel while there is beam in PSB, e.g. to deliver beam to ISOLDE).

The slides can be retrieved from

https://espace.cern.ch/be-dep/FOM/Presentations 2013/Forms/AllItems.aspx

The goal is to assess the radiological conditions in case of beam losses at critical locations and then to define the accessible areas of the PS tunnel. In order to do that benchmarking of the FLUKA simulations is needed: some beam losses have to be produced at the end of Linac2 and at the PSB injection region (50 MeV) and in the PSB extraction region and BTP.STP dump (1.4 GeV). For the losses at 1.4 GeV the proposal is to reproduce the measurements done by RP in 2000 MD (3e13 ppp over 100 pulses at 1.4 GeV) and to send

10 pulses to the dump (pending approval from EN-STI).

D. Küchler commented that the Linac2 watchdog has to be bypassed to produce losses at the end of Linac2 (this has to be authorized by the Linac2 supervisor).

K. Hanke commented that the MD should start with the lowest useful beam intensity and increase gradually if the signal on the special RP monitor installed for the MD is considered not sufficient.

After discussions, it was pointed out that, for the losses in the Linac2 region/PSB injection, there is the risk to hit a bellow and to vent Linac2. The FOM did therefore not approve the Linac2 part of the MD proposal. The loss studies at the extraction of the PSB were endorsed, stressing that they should be done with the lowest possible beam intensity. The MD proposal (PSB part) will be presented to the next IEFC for final approval.

A. Bland informed that the activity related on the removal of virtual class B networks on the technical network has been moved from April to March 25th.

4 Next agenda

The next meeting (6th FOM) will be held on Tuesday, 12th February at 10:00 in 874-1-011.

Preliminary Agenda:

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Minutes edited by G. Sterbini.