

# Minutes of the 22<sup>nd</sup> FOM meeting held on 18.08.2009

Agenda:

- 1) Follow-up of the last meeting (K. Hanke)
- 2) Status of the machines (Supervisors)
- 3) Schedule (K. Hanke)
- 4) AOB
- 5) Recent incidents with the ISOLDE robots (R. Catherall)
- 6) Next agenda

## 1. Follow-up of the last meeting

The minutes of the 21<sup>st</sup> FOM meeting were approved.

Open actions from last FOM (short term):

- a) The commissioning of the BWS status in the CPS complex will be discussed in the next MSWG.
- b) The issue related for the ISOLDE air conditioning room to avoid flooding due to condensation during hot days will be communicated to the IEFEC.
- c) AD FTA9012 and extraction transformers problems have been solved.
- d) Tune measurements for ions in the PS. U. Raich said that the BI expert came back from the holidays and will look for a solution as soon as possible.
- e) Status of the digital video signals for the PS access system. R. Steerenberg mentioned that the video signals have been rearranged on less noisy channels at least for the most critical doors. The access experts are checking if it would be possible to improve the video network bandwidth.
- f) Freezing of the knobs of the Linac3 console - replacement of the console. The console has been replaced and the problem did not appear again.

## 2. Status of the machines

**Linac2** (C. DUTRIAT):

Linac2 had a good week. There have been three trips of the RFQ. The RF experts require a stop of one hour to change the Frank-James.

**PSB** (J. TAN):

The PSB had a good week. On Tuesday, the pumping of TT70 finally finished late after 20:00. Beam could be then delivered to ISOLDE. During Tuesday morning the transformer of BI2.SMV has been replaced by the specialist who diagnosed some breakdowns. Later, large intensity variations at injection were caused by B-field fluctuations. The specialist identified one thyristor which had to be changed. The

MPS was off for only for 5mn. The BT.QNO30 power converter was switched back to the normal device, since the day before the spare had to be connected. The down time for the intervention was about 30 minutes, but there was no consequence for the users as the PS was stopped.

On Wednesday, early in the morning, BTY.QFO148 was not following the CCV value. The operator had to go locally for resetting a CPU board. This caused a stop for the ISOLDE beams of about one hour and a half.

On Thursday, in the afternoon, the specialist has changed a power supply of BE.SMH. The beam was interrupted for 15 minutes.

On Friday, there was a suspect that the B-field was not stable at extraction, causing an intensity instability on the EAST beams. The specialists of LLRF, B-train and MPS checked all their respective relevant parameters and concluded that the B-field at extraction was stable within +/-0.5Gauss. The measurements with the samplers gave +/-0.7Gauss, proving that the magnetic field at extraction is well regulated.

In the afternoon, there was no beam for about 6 hours for an intervention in the PS. The rest of the week was very quiet.

K. Hanke added that the pumping of TT70 took more time than foreseen due to the fact that the subcontractors could not supervise the pumping during the night after the technical stop. This implied the stop of the operation. During the night, unfortunately, the water level raised again, prolonging the pumping time the day after.

#### **ISOLDE (M. ERIKSSON):**

##### **GPS:**

GPS had a good week, except for the stops due to the interventions in the PS and the HRS robot accident.

##### **HRS:**

On Thursday a faulty gauge in the RFQ section was changed by the vacuum group. Later, a target change failed after robot gripper failed to close. After a first survey of the FE, the intervention to remove by hand the target was postponed to Friday.

On Friday, the robot and target were manually separated and the target moved manually to storage shelf.

The cause for the robot problem was probably a movement of the different reference interfaces, i.e. fatigue or ground movement (1-2mm) over the last 7 years. More details of the intervention can be found the presentation of R. Catherall.

#### **ISOLDE users (A. HERLERT):**

ISOLDE had finally a good run. The yields were a bit low after the first day of running. This is probably related to the target. The specialist has been informed. The users would like to have more pulses whenever is possible. It has been agreed with RP that the limit of 2  $\mu$ A on the target can be increased, since a light target is used. The intensity limit will be then given by the air activation.

K. Hanke added that it would not be possible to increase the beam intensity, since the BLMs are already reaching their thresholds, but more pulses could be delivered during the night.

#### **PS (R. Steerenberg):**

On Tuesday, no EAST beams were delivered, so the maximum number of pulses were given to TOF, compatibly with the allowed radiation levels. A few trips of a RF-10 MHz cavity could be solved by the expert. On Wednesday, losses were observed on

BLM in SS26 on the TOF user. The reason is not yet understood, but losses could be generated either by an aperture restriction or by a rapid change of the radial position at injection.

Losses at extraction caused a certain number of radiation alarms. The losses are appearing when:

a) the supercycle changes or the SPS goes in COAST. In these cases the extraction septum is pulsing with the value of the previous cycle. The reason is probably due to a too high load on the FEC;

b) no acquisition is given by the extraction elements.

On Wednesday, wire scanner H64 BWS seemed to be blocked outside its home position. The same problem appeared later, when the BI expert diagnosed that the BWS was not at the end-switch of the home position. On Sunday, during a series of measurements on LHC25, the BWS blocked again not in the home position. Once moved back, the wire broke.

In the evening the time offsets between the PS and SPS were changed to allow the injection of the ions. During this operation, the offset was badly set due to a problem with the control system. The experts could solve the problem.

On Thursday, the EASTC beam was set up with the parasitic TOF beam. During the change of the supercycle, the UNDO button of the sequence editor changed erratically the supercycle. The expert has already checked the reason of the problem.

On Friday, a faulty network connection of ARCON required a beam stop of about 1 hour. R. Steerenberg stressed the fact that priority should be given to solve this network problem.

In the afternoon, numerous trips of one of the sextupoles of the slow extraction required the intervention of the specialist. The diagnosis was pretty difficult. Finally, a faulty thermal switch was found on the magnet of SS07, which was also loosely fixed on the magnet causing a bad contact. The switch was glued and bypassed, but the magnet could not be used until Sunday morning due to the glue hardening. The physics could restart only at about 8:00 AM. On Monday, a problem with a CT extraction kicker required the intervention of the specialist.

K. Hanke asked if the problem of the BWS H64 has been fully understood. R. Steerenberg replied that the expert was on holiday, but further investigations are ongoing. In any case, the BWS will not be exchanged to avoid a stop of the ion run due to a vacuum degradation.

#### **East Area (L. GATIGNON):**

Except the stop due to the PS magnet problem, the week was pretty good. Two rectifier problems were solved by Firstline.

#### **East Area Users (H. BREUKER):**

On Saturday afternoon, T7 was in access for about 1 hour. DIRAC is running without any problem, as T9 and T10. The CLOUD experiment on T11 is preparing for the September run.

#### **AD (T. ERIKSSON):**

The AD had a busy week. Firstline had to intervene many times. There have been again 2 water leaks in the DE0 zone.

On Monday, suddenly the intensity dropped for an unclear reason, and came back to normal without any intervention. On Wednesday, the control piquet had to intervene since the switch from one experiment to the other was not working due to a bad

timing generation. The TRIM25 suffered from control problems which are still under the CO investigation.

**AD users (H. BREUKER):**

ATRAP reports good running. ASACUSA changed the ion chamber to the Tokyo chamber. Data taken with the previous chamber were not sufficient and the experiment will be probably rescheduled for next year.

**NTOF (H. BREUKER):**

The intensity delivered is increasing towards the promised line.

**SPS (K. CORNELIS):**

The long MD went basically well. On Tuesday, an intervention on the damper was done to fix a polarity problem. During the weekend there were many trips of the RF, for the TRX2 and 3. The piquet had to intervene quite often. BLMs in LSS1 were giving spurious interlocks and an electronics rack had to be exchanged.

The ion run started with some problems, first for the mentioned offset change between the PS and the SPS, second because of safety interlocks in TT10. Since last year, to avoid injecting beams with the wrong energy into TT10, an interlock was put in place. Unfortunately, the ion case of 17.7 GeV was not included in the interlock settings. Ions were circulating in the SPS but progress needs to be done on the RF for have the acceleration.

**CNGS (E. GSCHWENDTNER):**

During the long MD, an access was done to change the piping of the sump mentioned during the last FOM. The water will be checked during the dedicated MD next week to be sure that no traces of tritium are present.

**SPS North Area (L. GATIGNON):**

The NA had no problem. There is however an interlock on a device due to a problem with a fan. The device is currently not used and the interlock is not fundamental for normal operation.

**North Area users (H. Breuker):**

On H2, the NA61 suffered of problems with their DSCs. On COMPASS the calorimeter tests are finishing. On H8, the ATLAS forward spectrometer tests were very good.

**LINAC3 (C. DUTRIAT):**

There were a few trips of the solenoid. Work is still ongoing to improve the intensity, which was about 15-16  $\mu$ A. The refilling of the oven will be done probably in week 35.

**LEIR (C. CARLI):**

LEIR restarted on Tuesday because of the technical stop.

On Wednesday morning the energy matching between LEIR and the PS was finalised. The EARLY beam has been prepared, with a bit lower intensity, as the NOMINAL.

**PS WITH IONS (R. STEERENBERG):**

The studies to understand the large horizontal emittances measured in TT2 were done. On Wednesday next week, measurements will be done to verify the injection optics to identify an eventual mismatch already between LEIR and the PS. The extraction will be also checked, to understand the dispersion mismatch observed in TT2.

Currently, to have in the same supercycle the LHCION for the EARLY beam and the MDION for the nominal beam, EPC accepted to exceed the limit of 5 MW of the MPS during day time.

**CTF3 ():**

No report.

**TI (P. SOLLANDER):**

No problem last week. F. Tarita mentioned that the repaired HV cable has been put under tension and will be put charge during the week. This should have no impact on the operation.

### **3. Schedule / Supercycle / MD planning**

A new version of the schedule 2009 schedule (V3.5) is available at:

<https://espace.cern.ch/be-dep/BEDepartmentalDocuments/BE/Schedule2009.pdf>

The supercycle composition is available at [this web page](#).

Next week there will be a dedicated MD on Wednesday. No beam will be delivered to the users, except ISOLDE. The SPS will be in access. The MD of the week 38 has been delayed to week 39 and one day has been added in week 40.

### **4. AOB**

### **5. Special topics**

R. Catherall presented a report about the recent incidents with the ISOLDE robots. The slides can be found [here](#) with the details of the incidents and the interventions.

The last two HRS accidents were the most problematic. In both cases, the robot could not grab correctly the target, the first time after the target disconnection from the FE with the risk of the target being dropped. In both cases, a manual intervention was required. The problem was traced back to a lowering of the FE by about 2-3 mm, due to ground motion.

Also GPS suffered from a problem, since the robot tried to put a target in the storage shelf in a wrong position. This was due to a bad programming of the SW managing the spaces in the shelf.

G. Roy added that the intervention, from the technical point of view was very good. However, the intervention was not done after consultation with the responsible DSO

and RSO. In case of such incidents, the DSO and the RSO must be informed immediately. R. Catherall replied that the intervention was done with a good planning to reduce the dose.

G. Roy added that a risk analysis should be done to better manage accidents like this one and being able to improve the infrastructure. It is clear that most of the problem comes from the aging of the facility.

L. Bruno added that it is clear that ISOLDE needs consolidation, but also that the intervention procedures need to be revised. A procedure to plan interventions like this will be put in place in order to optimise the collective dose and reduce the dose per person. The same procedure used for the LHC, SPS and CNGS will be extended to the PS complex.

R. Catherall will be monitored since he received most of the dose during the intervention. Any possible future intervention will be managed in a different way. By no means, personal risk should be taken if not justified.

A Memo clarifying this discussion will be issued soon.

K. Hanke asked if the robot maintenance can be improved in order to identify similar problems in advance and under radiation cold conditions. R. Catherall replied that tests are regularly done during the shutdown. A new robot system will become operational only in 2013-14 in the frame of the HIE ISOLDE project.

## **6. Next meeting**

The next meeting will be held on Tuesday, August 25th at 10:00 in 874-1-011.

Preliminary Agenda:

- Follow-up of the last meeting
- Status of the machines
- Schedule
- AOB

Minutes edited by S. Gilardoni