

# Minutes of the 18th FOM meeting held on 21.07.2009

## Agenda:

- 1) Follow-up of the last meeting (B. Mikulec)
- 2) Status of the machines (supervisors)
- 3) Schedule (B. Mikulec)
- 4) AOB
- 5) Preliminary list of activities for the next technical stop (V. Chohan)

## 1. Follow-up of the last meeting

The minutes of the 17th FOM meeting were approved.

Open actions from last FOM:

- a) the commissioning of the BWS is ongoing. The degradation of the measurement results (compared to the SEM grids) that was observed in the PSB has also been confirmed now in the PS. The campaign of measurements will continue in both machines and on the BI test bench;
- b) the problem with the SPS BWS414 is still not solved. This requires an intervention in the tunnel that will probably take place during the next technical stop;
- c) in view of the technical stop, the collaborators are reminded to send eventual interventions to the machine superintendents.
- d) Coherence of equipment AQN refreshment in the PS for supercycles longer than 30 bp (CO).

K. Kostro reports no news on the subject. S. Hancock brings up an existing problem with a TSM (time surveillance monitor) in the PS: an OP issue was launched, but it faded away and has not been solved as yet. K. Kostro is not aware of the problem but will follow it up.

## 2. Status of the machines

### LINAC2 (F. GERIGK):

It was a quiet week apart from the storm on Thursday night.

On Monday the HT column was cleaned. On Friday morning, as consequence of the storm overnight, there was a vacuum problem in the linac and source, solved by the vacuum piquet. Interlocks on the dump, BHZ30 and tank3 cooling water were on, and the demineralised water was off.

By 7am both vacuum and source were ok. At 8:20 an access was made in the Linac2 tunnel to check on dump interlock and tank3 flow meter (flow was slightly increased). There was a problem with the tunnel access system (not the first time it happens) that was eventually solved by Didier Chapuis (possibly a CCC communication problem with the access system). The linac was back in operation by 9am.

On Saturday there was a problem with the LP.VPG1 pumping group, with the vacuum level increasing to  $1E-3$  for 5 minutes, in coincidence with a source flashover: gas, cathode and arc went down at the same time, then they came back to normal, but the source high voltage had to be reset locally. The source was left running on one turbo pumping group, and the primary of the second pump was exchanged on Monday.

### **PSB (A. FINDLAY):**

After a fairly good start of the week, on Thursday the CNGS beam was found to be unstable in the extraction line: BT4.SMV10 showed up to 100 A fluctuations from shot to shot. The expert was called in and found that when replacing the card for the active filter the previous Saturday, the fine adjustment of the card had not been performed. Once done, the current fluctuation was reduced to 2 A and the extraction fluctuations disappeared.

On Friday night the machine was brought down by storms after several hits. By noon all 4 rings were back in production.

On Saturday the BI4.DISP started dropping out regularly, but would come back with a reset. On Sunday however this became more frequent (every  $\frac{1}{2}$  hour), so an expert was called in and a thyatron was replaced (one hour intervention). After that the distributor restarted working well again.

On Monday the first line was called to fix BTY.QF0108 and BTY.DVT324 which killed the ISOLDE beam for 1h20.

N. De-Metz-Noblat, who identified the initialisation of the magnet with PS cycles to be the problem, fixed BTY.BHZ301.

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

GPS: Two ASTEC high voltage power supplies broke down (including the spare): an intervention was carried out on Tuesday to put in place a new power supply. As it is different than the previous versions, some software adaptation and curve fittings had to be done.

On Wednesday the beam was taken to the IS456 (Polonium run), which ran successfully until being killed (a few hours short of the scheduled end) by the Friday night storm. Users were very happy with their run as they managed to measure a large amount of Po-isotopes during the last 2 weeks.

GPS had a target change yesterday. While picking up the used target, the robot tried to place it in the storage position of another target. A second attempt was made, with the same result. Since it was already late it was decided to block the scheduled position and use a different one, but this required manual intervention.

HRS: On Wednesday/Thursday some water flooding was found above the ISOLDE control room (condensation water). S. Deval sent some people to clean up (water level  $\sim 1$  cm). The problem occurred already in the past when the outside temperature rises, but no permanent fix has ever been taken. B. Mikulec said that an action should be taken as there seems to be also electrical equipment standing on the floor.

On Thursday there was a target change (from UC to UC target), which left very little time on Friday for beam setting up after recovery from the overnight storm. ISOLTRAP took stable beam all weekend. On Monday a proton scan and yield checks took place and the experiments took radioactive beam.

Last night the H3 vacuum sector tripped; the expert was called in and the sector was brought up just before the meeting.

M. Benedikt enquires about the robot problem, asking if it risks to be a recurring issue. ME replies that no problem was found during the standard shutdown tests and more checks will be performed during next shutdown, but currently one cannot exclude a risk that the problem will reoccur at the next target changes. After having manually lowered the last ‘problematic’ target to the floor (40  $\mu$ Sv were taken in the 10s of operation), the target could be placed with the robot on a shelf at a different level without problems. Detailed checks can only be done during the shutdown after a long cool-down period. A manual control of the robot is extremely difficult because 6 lever arms need to be operated and the precision is not great. Forcing the target into a certain position comes with the risk of the target getting stuck or the controller card of the robot being broken. B. Mikulec mentions that this issue will be treated in detail this afternoon in the ISOLDE technical meeting to identify tests that can be done to test the system before the next target change.

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

The users are very happy even if they were stopped earlier by the storm, since the run and the target performance was very good. For this week, there might be some contamination from the plasma source, and it is hoped that vacuum problems will not be an issue.

#### **PS (Y. PAPAPHILIPPOU):**

The PS had a fairly good week apart from the storm-related problems.

In the first part of the week a 15bp long supercycle was delivered for the MDs, followed by a 33bp long one during the rest of the week.

On Thursday beam was off for 30’ because of an electrical cut affecting the network equipment of the ARCON system.

During the night about 300 equipments were brought down by the storm: there were several problems of power converters in external fault, triggered by water flow problems since the water stations were down. Magnets needed a local reset, so the first line was called and beam was back by midday the next day.

On Monday night the quadrupole doublet for the transition jump tripped and had to be reset by the power piquet. During the week there was a problem with wrong ejections of the CNGS beam giving alarms on the PAX35 radiation monitor. This was linked to the wrong pulsing of the QKE (1400 A instead of 300 A); the problem is being followed up with the controls piquet.

For BI, more measurements were carried out with the wire scanners, with problems now appearing both in the horizontal and vertical planes. In the vertical plane there is no agreement in the TT2 line between FWS and SEM measurements and also between FWS measurements taken at different velocities. The optics needs to be checked, but since the slope between FWS and SEM measurements is different, it is not expected to be the reason for the discrepancy. The same performance degradation was also observed in the PSB. B. Mikulec mentions that the campaign of measurements will continue and first conclusions will be drawn beginning of August before the technical stop.

**East Area and Users (H. BREUKER for L. GATIGNON):**

DIRAC is running smoothly. T9 is on hold, because the next user (MICE) won't be ready before the weekend.

T10 (ALICE) is finishing on Thursday and the data quality is fine.

T11 CLOUD will not start until September, but tests to understand the new beam will be performed soon with scintillator hodoscopes.

Users are happy.

**AD (P. BELOCHITSKII):**

It was a good week for AD.

On Tuesday the magnetic horn went off and was reset.

On Wednesday there was an intervention in the ASACUSA zone to take away parts of the MWPC (full of water) that lasted for 8 hours. It will have to be reinstalled, but no date has been fixed yet for this intervention (due to vacuum constraints no beam can be delivered to other users during the intervention).

After the storm beam was back only on Friday afternoon because of problems in the injection line with a fault on DI.BHZ65 solved by the PO expert. A discrepancy between CCV/AQN values on DE0.QN90 in the ALPHA extraction line was also fixed on Friday. Parasitically a significant reduction of jitter in the extraction beam was achieved by A. Findlay (from 50 ns down to 15 ns).

On Saturday an injection kicker had to be reset.

On Monday the TFA7049 transformer in the AD extraction line, common to all experiments, was brought back in operation.

Since the end of last week the intensity improved at injection from the PS. Before only 60-75% of the nominal intensity could be reached. The PS was asked to check what had been changed, but no difference was found. It might be that some correction was eliminated and things went fine after that. Y. Papaphilippou enquires whether there could be any links to the MD schedules. PB replies that this is unlikely since the situation improved last Thursday. It looks like it could be linked to some steering issue between PS ejection and AD target.

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

All experiments are doing fine. ASACUSA is in the process of finishing the spectroscopy of antiprotonic Helium and switching to a different physics project.

NTOF is also fine. Users are happy with the intensity after the shielding improvements.

**NTOF ():**

No report.

**SPS (D. MANGLUNKI):**

There was dedicated SPS MD time until Thursday (which went very smoothly) and normal physics resumed after that. The North Area suffered from CO problems linked to network router

changes, which were solved by Thursday noon. In the afternoon the CNGS beam was stopped for MOPOS problems, with data being given for wrong cycle times and for the wrong cycle. After long investigations replacing a sequencer card solved the problem.

Since the storm-related power cut was on the Meyrin side, the SPS was not affected too much: some 18 kV equipment and a power supply in the Faraday cage dropped, but the main infrastructure stayed up and running. Beam was back by Friday noon.

At the weekend some fast extraction interlock (FEI) problems due to changes in FESA affected the CNGS performance. Problems were under control by Saturday noon, briefly came back on Monday, but are believed to be OK now.

Since then the SPS has been running smoothly with stable fixed target and CNGS production rate.

On Sunday a problem on the transmitter TRX1 needed intervention of the RF piquet.

On Monday morning there were trips of the MPS.

Then on Tuesday morning, while setting up the 120 GeV/c beam for the MD, problems were found with the dump kickers. They are working pulsing at 400 GeV/c, but going to 450 GeV/c could cause some damage. Spare parts are in the course of being obtained for an intervention on July 29<sup>th</sup> (PS MD); until then no 450 GeV/c operation with the LHCFAST cycle will be possible, hence the need for some reshuffling of the MD program.

K. Kostro asks DM to inform the SPS crew to make use of the OP issue-reporting tool as he is often not aware of some CO problems occurring in the SPS. DM replies that the tool was not working from the elogbook. This will be checked after the meeting.

### **CNGS ():**

No report.

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

On H2, CMS HCAL has several different test structures on the beam.

NA61 is setting up for a long physics run starting next Monday for several months. The new readout is much faster.

On H4 DREAM is running fine. An Italian/US collaboration are testing the calorimeter.

On H6 there was a short notice switch to STRAW (from H8).

On H8 ATLAS GOSSIP started today.

COMPASS is running fine.

### **LINAC3 (F. GERIGK):**

There were several trips of tank1 and ITF.BHZ12 during the week, all of which have been solved. On Thursday the current was up to 22  $\mu$ A on TRA25. On Friday the storm-related machine downtime was used to refill one of the ovens (one week earlier than scheduled). On Monday there were some RFQ problems in the morning, then ITF.QDN05 came down and the power piquet had to intervene. Beam was back by 2pm.

**LEIR (S. PASINELLI):**

Work has started on the nominal beam and improvements on the early beam have been made with transverse feedback studies from the RF specialists.

Injection parameters were checked at PS entrance for the early beam.

There were some LSA issues with the impossibility to control GM equipment, all of which have been solved now.

A bad contact was found on the 1553 loop controlling the PS injection. In the aftermath of the storm the power supply of an ion pump was replaced yesterday.

Following a request from the vacuum group, the beam has been prepared and is ready for the tests to decide whether sublimation is required or not. This has to be done before starting the ion run.

C. Carli brought up the problem of the low current coming from the Linac3 source, significantly below 2007 levels (average current about 15 uA compared to ~25 uA; design current of the source 50 uA). More tuning of the source is solicited (source experts are already aware of the situation). In the meantime LEIR cannot produce the required beam intensity with one shot only, but would need to accumulate over two shots, for which a special cycle would have to be prepared.

**PS WITH IONS (D. MANGLUNKI):**

Ion cycles have been prepared. A MDION cycle will be inserted in the supercycle today or tomorrow to start testing injection in the PS and to be used for the lifetime measurements (to take a decision on vacuum sublimation) scheduled for Friday this week.

**CTF3 (F. TECKER):**

The main goal last week was to set up Delay Loop recombination in CTF3; 1.5 GHz beam was established through the Delay Loop with good transmission.

Friday was dedicated to the recovery from the power cut. One of the three travelling wave tubes (TWT) for the 1.5 GHz sub-harmonic bunching system tripped and is broken. No spare is available and the repair possibilities have to be studied. As this excludes combination in the Delay Loop without a completely new beam setup with only two TWT, it was decided to work with 3 GHz circulating beam in the Combiner Ring on Friday afternoon.

In addition to this, beam was sent earlier last week to the TBTS line to test the 12 GHz PETS power production, and to the CRM line for the CDR (Coherent Diffraction radiation) experiment.

A thyatron heater power supply that led to frequent trips of MKS06 was fixed by PO on Wednesday morning and works well since.

**TI (P. SOLLANDER):**

The main event of the week was the thunderstorm: the main EDH5 transformer was back on Friday.

An intervention on the GSM system will take place on Wednesday 22<sup>nd</sup> from 6pm to 8am the following morning. All networks will be unavailable in short periods at a time. A. Bland reports

that following discussions with G. Roy, as a safety precaution, it was decided to only allow people into the tunnels during the intervention if working in pairs. B. Mikulec reminds the machine responsible to add this information to the consignes.

A second intervention on the phone system is scheduled for next Wednesday (29<sup>th</sup>) with an upgrade taking place between 8pm and midnight. Some of the fixed line phones in the CCC islands will always be available.

### 3. Schedule / Supercycle / MD planning

The 2009 schedule (V3.4) is available at:

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

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

The schedule of the MD can be found on the MD web page.

The programme for next week (31) sees ion beams being sent to the PS, a dedicated PS MD on Wednesday and an SPS machine access on the same day from 8am to 4pm.

The planned interventions during the injector stop on the 10<sup>th</sup> of August should be sent to the machine superintendents.

### 4. AOB

A. Bland enquires whether the PS radiation alarms are working reliably, and Y. Papaphillipou answers affirmatively. A. Bland then mentions some reports on the SPS access system disconnecting and D. Manglunki replies that he will follow it up.

### 5. Injector stop interventions (V. Chohan)

V. Chohan presented a list he collected of the interventions scheduled to be carried out during the next injector stop on Monday, August 10<sup>th</sup>. The slides of the presentation can be found [here](#).

PS complex interventions include: RF bypass measurements, an LTB inspection of the vacuum chamber next to the PSB sieve, an inspection of all magnets in Linac2, PSB, PS and TT2, inspection of the SMH16, SMH42 and SEH23 septa and replacements as required. For the RF there will be an inspection of the 10 MHz cavities and measurements, possibly on cavity 81.

In the list of non-tunnel interventions there will be a global inspection of the PS MPS with exchange of the 24V PLC surveillance module and update of the program in FGC. In Bldg 359 there will be an installation of demineralised water cooling pipes under the false floor.

For the Booster specific interventions there will be an exchange of the H2 FWS (to be confirmed) and BLM checks in the ring, BT and BTP lines.

In the SPS there will be inspections, maintenance will be carried out on the lifts and interventions done on the equipments of UA9.

A list of the people requiring access is being put together.

A final presentation of all interventions scheduled to take place will be given one week before the date of the injector stop.

A. Bland reports there will also be a significant IT-CS intervention on the general and technical network scheduled to take place on the injector stop day. This is being planned to start at 7am in order to avoid disruption to all interventions starting later.

Alastair asks for confirmation that access during the technical stop is scheduled to start at 8am and not earlier.

B. Mikulec (after the meeting) confirms that the technical stop is planned from 8am to 4pm, with beams being stopped at 7am for cool-down.

CTF3 will keep running on August 10<sup>th</sup>, but in principle the IT intervention should not affect its operations if all goes well.

In addition, the migration of a network service that hasn't been moved yet to the new router module will take place on August 10<sup>th</sup>, with the service being unavailable for some time (a few seconds cut).

## **6. Next meeting**

The next meeting will be held on Tuesday, July 28<sup>st</sup> at 10:00 in 874-1-011.

Preliminary Agenda:

1. Follow-up of the last meeting
2. Status of the machines
3. Schedule
4. AOB

Minutes edited by G. Bellodi