# Minutes of the 1st FOM meeting held on 19.01.2010

## ***Agenda:***

1) Follow-up of the last meeting (B. Mikulec)

2) Status of the machines (machine superintendents)

3) Water leak in building 354 and implications (K. Hanke, R. Morton, S. Deleval)

3) Schedule (K. Hanke)

4) AOB

## 1. Follow-up of the last meeting

The minutes of the 39th FOM meeting from 2009 were approved.

Open actions from last FOM:

There is only one pending action from 2009 concerning the radiation alarms in the PS/Linac3 hall linked to CT/MTE extraction. This problem will be addressed by the construction of a shielding wall in the PS tunnel between septum 16 and the Linac3 hall (see PS report). The action can be closed, although the efficiency of the shielding will have to be checked.
Open actions from 2009 ATOP days to be followed up in the FOM:

a) PSB BLMs (whole chain to CCC) to be checked; test procedure to be revised.

   close; OP and BI have agreed on common tests with beam each start-up in addition to the regular BI detector checks.

b) Specific requests for ongoing SPS BPM renovation?

   close; the SPS BPM renovation is a longer term project followed up by BI and the SPS OP team. The SPS is pushing to scale the project in the direction of a full renovation instead of punctual improvements.

c) Study how to inhibit nTOF beam to EAST area in parasitic cycles.

   close; this study has been completed by R. Steerenberg.

d) Provide procedures how to operate new interlocks (PSB elevator, ISOLDE ventilation alarm, Linac4 construction…).

   close; this is done on a regular basis.

e) Testing of failure scenarios for new equipment; interlock functionalities to be reviewed in view of InCA.

   close; this will be part of the projects.

f) ISOLDE operation beyond limits defined in 1993, or modifications with RP impact to be assessed and approved by RF (idem for other installations).

   transfer to IEFC; D. Forkel-Wirth has confirmed that RP will follow up this issue and work on a new study in 2010.

g) Procedures to be prepared in case of ARCON failure.

close; M. Widorski commented that a written procedure was existing and can be consulted at http://cern.ch/rp-ps (under 'Radiation Monitoring' → 'Monitor and Alarm Configuration') for the PS complex, and at ARCON_proceduresForSPS.pdf for the SPS. He proposed to add this topic to the shutdown lectures. K. Hanke has contacted M. Benedikt on this subject.

h) Fast access to RAMSES from CCC.

close; this has been assured. A. Bland explained that there are dedicated workstations in the CCC for this purpose.

i) Radiation related nTOF matters (ventilation, alignment).

close; many actions have been taken, which have addressed all open RP issues.

# 2. Status of the machines

### LINAC2 (R. SCRIVENS):

The shutdown work is progressing according to schedule.

At the end of 2009, 3 RFQ ion pumps have been changed. The change was fast as well as the pump-down, but the conditioning of the pumps was slower. Due to this reason the window was missed to try to restart the RF before the lab closure. There is little risk for the restart, but it was not possible to take the opportunity to evaluate the full duration of such an intervention.

The proton source is installed, and conditioning has started. Everything looks fine, but more time is needed and close surveillance of the source before it can be confirmed that the source is running as expected.

After the many CO interventions debugging of controls and diagnostics has already started (some problems with the beam intensity measurement have been seen).

The 'bouchon' has been removed (allowing normal access to the Linac2 tunnel), and it is not planned to reinstall it. Discussions with RP will continue on the level of the radiation monitor to be set to protect the Linac4 construction site, while at the same time avoiding an excessive number of beam stops.

After the meeting it has been discovered that the RFQ RF window was damaged by some RF break-downs and will require vacuum intervention. It should be possible to complete the repairs with no delay for the start-up.

R. Scrivens raised the question how to proceed with accesses during the coming week. It has been agreed that during that week (=hardware testing week) a list of people that need to access has to be provided for each machine to the CPS and SPS access teams in the CCC.

### PSB (D. MCFARLANE):

The shutdown work went smoothly and without major problems.

Standard maintenance work could be concluded by the various equipment specialists and cabling is almost finished.

The broken fast wire scanner on ring 3 has been replaced, but contrary to what had been foreseen the photomultipliers on rings 1, 3 and 4 have not been exchanged with the same type as installed on ring 2. BI has sent the information that this is planned for the 2010/2011 shutdown.

Originally a replacement of the quadrupoles BTP.QNO20 and BTP.QNO30 was on the planning after survey. During this intervention a vacuum leak was discovered on BTP.QNO60, due to which the magnets BTP.QNO30 and 60 were exchanged instead of 20 and 30. After the exchange a problem occurred with BTP.QNO60 and was traced back to a wrong flange. This flange has now been substituted. In addition the survey of the BTP line showed large excursions of several elements; only a selection of those affected will be realigned. All interventions related to the BTP line should be finished by tomorrow.

The machine should be ready on Friday for the hardware tests, but the magnet covers will still be off to allow for a visual inspection at the beginning of next week. The covers will be put back middle of next week.

Some maintenance work on an access point is still required on Monday.

K. Hanke reminded everybody that the information about the current machine safety hazards has to be transferred to people who still have to access the machine.

### PS (R. BROWN):

R. Brown presented a list of PS interventions (please consult Shutdown_2009_10_FOM.pdf for more details). The exchange of 4 septa (SMH16, SMH57, SEH23 and SEH31) went without problems. SMH16 and SMH57 have been baked out and the vacuum is recovering well. Unfortunately a short circuit on the RF bypass/flange on SMH57 has just been discovered; it is hoped that no additional bake-out will be required as this would mean running into the next week.

3+1 RF vacuum chamber flange bypasses were found to have failed. All were of the new type, and it was therefore decided to replace all 24 of the new type with the original old type.

The wire scanner in SS54 was replaced and a new electron cloud chamber installed in SS84.

Following frequent radiation alarms last year in the Linac3 hall, measurements have been made end of last year by OP and RP. It has been seen that the losses at the septum SMH16 exceed acceptable levels for MTE (less integrated losses in the PS, but losses concentrated at SMH16), but even for CT extraction the losses are too high in that region. A small working group has studied this issue and has decided to install a shielding wall in the region around SMH16 along the PS wall at 80 cm distance to protect personnel working in the Linac3 hall. Civil engineering are following closely the work to assure that the floor can support the weight of the wall. A decision on the wall material (iron or concrete) will be taken by RP tomorrow. Iron is denser and would shield better, but will become more activated than concrete; in addition it was mentioned that concrete would spread better the weight. It will be attempted to finish the installation of the wall by Friday 29$^{th}$, but it might be necessary to use the upcoming technical stop(s) to finish off this construction. The remark was made that MTE beams will be required almost immediately after start-up, but in the worst case it could also be considered to switch to CT extraction when people will be working in the Linac3 hall.

Additional information after the meeting by S. Gilardoni (email from 22/01/2010): “Today it was finally decided to install a concrete wall near the septum 16 to reinforce the existing shielding. It should be considered as a temporary solution, with the idea to investigate a more definitive solution during the current run to be implemented during the next long shut-down. The installation is compatible with the restart of the machine according to the current schedule.”

As hardware tests are starting next week, it was again mentioned to give proper instructions to the transport people building the shielding wall and to fence off equipment under power.

### SPS (K. CORNELIS):

Also in the SPS numerous interventions took place, and everything is on the right track.

Several magnets have been exchanged and water leaks repaired.

There was quite some vacuum work done for UA9.

It was known that there was a systematic beam deviation in TT41; this could be confirmed by the survey people who performed a corresponding realignment.

Maintenance of the RF amplifiers could be completed.

A HV leak to earth has been discovered on the main magnets. A bus-bar problem could be identified as the reason for that and subsequently be repaired.

After the power cut during the Christmas break it will be necessary to condition some cavities, which is now on the critical path.

Machine cold checkout is foreseen for next week, but some additional accesses will be necessary, which will be planned on a daily basis.

DSO tests are on the list for the 3rd of February, after which the SPS should soon be ready for beam.

### North Area (S. GIROD):

S. Girod mentioned that the North Area and more precisely H8 was currently not ready for the AMS request to take data in the first week of February (see Schedule). The cooling water circuits have been emptied after the Christmas break and maintenance work has not yet started (~3 weeks required) as the personnel was busy in higher priority areas. Also the power converter restart might prove difficult. DSO tests will also be required for the North Area before beam can be sent there.

S. Deleval finally proposed to refill again the North Area towers and to skip for the moment all maintenance work on the North Area cooling circuits to make the AMS run possible. This would allow the North Area to be ready on the 6th of February earliest date.

K. Hanke will contact the relevant persons to try to move the restart of the North Area (concerns mainly COMPASS) in order to allow for the cooling water maintenance after the AMS run. → **action K. Hanke**.

T. Bohl had reservations concerning the readiness of the SPS as the 200 MHz cavities and the RF power amplifiers can be handed over to the SPS LL RF team only on the 1st of February (conditioning requires usually 2 weeks). K. Cornelis replied that the SPS will do their best to deliver some beam to AMS, even if it will not have the usual high beam quality.

### TI (P. SOLLANDER):

Maintenance work is ongoing as planned and will be continued on the 400 kV transformers this week. Full power should be available by the end of this week.

# 3. Water leak in building 354 and implications

During the Christmas break it happened twice that some pipes burst flooding the CMS control room in Meyrin and the underlying old MCR. On Monday the 18th a meeting has been organised to evaluate the damage in the presence of an assurance expert.

B-train racks have been affected.

CO confirmed that all the front-ends in this room were OK, but it has been strongly suggested to do additional checks. S. Hancock mentioned that there were approximately 20 pulse repeaters in this room distributing all the RF trains as well as OASIS racks. → **action for CO** to re-verify the correct functioning of this equipment before start-up.

C. Carli will check if LEIR connections/equipment was damaged.

L. Soby mentioned that the equipment for the DCCT and the wall current monitor seemed to be OK, but that a BI power supply broke and had to be exchanged.

Hardware marked 'internal dump' was also spotted in this room, but it was presumed to be obsolete equipment. R. Steerenberg volunteered to verify.

R. Morton asked everybody to check carefully their equipment and to report any damage related to the water leak to him as soon as possible such that it can be included in the assurance claim. He pointed out as well that interconnects could become corroded over time.

The question was asked if the underlying reason for this leak has been fixed and the risks eliminated. R. Morton replied that measures have been taken, but work needs to continue with no full guarantee of complete risk elimination.

# 4. Schedule

The accelerator schedule for 2010 can be found here.

K. Hanke announced the AMS request to take beam from 5th-12th February. As it has been declared a top CERN priority, every effort will be taken to try to comply with this request. The North Area should be ready by the 6th of February.

The LHC restart date is still maintained for the 15th of February.

K. Cornelis added that the SPS will do their usual beam-based realignment of the line towards the North Area only after the AMS run, but measurements will be taken in parallel to prepare the realignment.

K. Hanke has laid out the basic steps of the 2010 machine restart in the Excel file 2010_restart_v5.xlsx.

# 5. AOB

No AOB.

## 6. Next meeting

The next meeting will be held on Tuesday, January 26th at 10:00 in 874-1-011.

Preliminary Agenda:

1) Follow-up of open actions
2) Status of the machines (machine superintendents)
3) Problem with the motor-generator set of the PS MPS (R. Steerenberg)
4) Schedule
5) AOB

Minutes edited by B. Mikulec