Minutes of the 88th Meeting of the SPSC  
Held on Thursday and Friday 4th and 5th September 2008

OPEN SESSION:

1. NA49 H. Stroebele
2. NA61 M. Gazdzicki

CLOSED SESSION

Present:


1. MINUTES OF THE 87th MEETING OF THE SPSC, HELD ON July 15th and 16th, 2008

Approval of the Minutes was postponed to the next meeting of the SPSC.

2. REPORT FROM THE CHAIRMAN

The Chairman reported on the Research Board meeting, RB185.

The following points were presented and, where necessary, discussed:

1. the appreciation by the SPSC of the establishment of good beam delivery for all data-taking, fixed-target, experiments in 2008;
2. the substantial progress in deep-inelastic $\mu p$ spin physics by the COMPASS experiment, in particular towards the publication of the measurements of the polarisation asymmetry in the accessible kinematic domain;

3. the interesting new results concerning the spin-parity analysis of forward diffractive meson production on a heavy nucleus using hadron beam data by the COMPASS experiment, and their indication of good prospects for similar analysis in central production;

4. the appreciation by the SPSC of the huge and successful efforts by both the CNGS crew and the OPERA experiment to establish data-taking in 2008 with an almost complete target mass; henceforth the SPSC considers it to be of top priority to now pursue the maximum delivery of neutrinos to LNGS in the foreseeable future;

5. the impressive progress to establish the T600 LAr module in LNGS and the importance now of securing the remaining infrastructure from industry and LNGS in a timely fashion; and

6. the recommendation for approval by the SPSC of the crystal collimation proposal P335.

The Research Board noted points 1 through 5 above and confirmed the recommendation in point 6 for approval subject to the availability of resources.

The following issues concerned with the CERN fixed-target programme were discussed, agreed and/or noted at RB185:

- CERN funding for the P326 Gigatracker was confirmed for 2008/9.
- A draft of a report on infrastructure required to operate the AD to 2012 was presented.
- In the light of unforeseeable difficulties with beam delivery at the AD this year 2008, it was agreed to run the AD on beyond the foreseen end-date into December 2008.

3. STATUS OF ACCELERATORS

The Status of the Accelerators was presented by L. Gatignon, on behalf of S. Baird who had sent his excuses.

Highlights are since the last SPSC on the 15th of July are:

The successful LHC synchronization tests for beams 1 and 2, and the CNGS intensity, which has now reached 4.2e13 per cycle (2.1 e13 per shot). However, the overall integrated intensity (5.7e18) sent to CNGS so far is still below the initial estimates.

For the LHC synchronisation tests it should be noted that the first test on 8th, 9th & 10th August was done with no physics beams present in the SPS due to a PS septum problem. The second test on 23rd, 24th and 25th August, however, was completed in parallel with both North area and CNGS physics, with minimal interference.
Other issues are:

After the change of Main Magnet Unit 25 in the PS, due to a failed connection of the “figure of 8” loop (as mentioned at the last SPSC), the ion injection from LEIR to PS was not re-installed. This will be done during the coming shutdown.

In July and August the series of PS problems has continued... On the 27\textsuperscript{th} of July there was a fire alarm in the PS Main Power Supply building. This was caused by a spark-gap detector failure (it had exploded). The gap is in place to protect the PS main magnets against a possible power supply over-voltage. After the clean up, it was decided to replace the failed gap with an analog voltage protection system, which was successfully implemented. On the 8\textsuperscript{th} August, just hours before the first LHC injection test, a second fire alarm occurred in the PS tunnel itself. A failed bearing on a large ventilation fan caused this. The bearing could not be replaced and this part of the ventilation system has been left off. It will be replaced during the next Technical Stop in November. This has resulted in an increase in temperature of about 4 degrees over one quarter of the PS tunnel, which is not ideal but is acceptable. The LHC beam start was not delayed but, during the re-start that evening, increased beam losses were seen around the electrostatic extraction septum (SEH31). This is used to supply the CNGS and North area beams to the SPS, but NOT the LHC beam. The leakage current on the device and the vacuum levels had also increased significantly. After further investigation, it was agreed that the septum would have to be changed, which was done the following Monday, after the LHC synchronisation test.

Towards the end of July, at the SPS, there were an alarming number of faults on the SPS 18kV loop and the 18kV supply to TI8 and CNGS. These faults were traced to a faulty cable splicing technique that had been used by the contractor during a recent replacement of the cable. This was found to concern 39 splices. Thanks to a very big effort from TS/EL these suspect splices have now all been replaced. It should also be noted that the high intensity CNGS beam causes repeated trips of the SPS RF system due to the high beam loading. This will need further investigation during the shutdown.

Early in August the AD beam developed some unusual losses (30-40\%) at the low energy part of the cycle. This was eventually traced to a vacuum leak on a beam scraper. In order to minimize the repair time, a secondary vacuum has been established around the leak and it will be repaired during the shutdown. It should be noted that although the AD is running well, current performance is around 10-20\% below the best levels from 2007. This seems to be due to reduced antiproton intensity at injection.

The PS MTE extraction hardware has all been successfully commissioned with beam, but repeated problems with several PS beam diagnostic and measurement systems (for trajectory, tune and profile measurement) have meant that the MTE cannot be put into physics operation. It is still hoped to use the MTE system for at least a few weeks at the end of September for the SPS North area beam.

At the next SPSC, at the beginning of November, S. Baird will present the main shutdown activities for the accelerators.
4. STATUS OF EXPERIMENTAL AREAS

L. Gatignon reported on the status of the Experimental Areas.

Apart from the machine interruptions mentioned above, the East and North Areas have been running smoothly. In the East Area DIRAC has been taking data regularly since early August with quite a large number of spills available for them. The proton rate per spill was lower than in 2007, about 1e11 ppp, but with the new target the event rate was essentially similar. Over the weekend of September 15th about a day was lost due to ventilation problems in their barrack. The North branch has served quite some users successfully, before it stopped as planned on the 4th of August to leave a maximum amount of cycles available for DIRAC and the T7 Irradiation facility. It resumed operation on the 3rd of September. Just before the stop, the increased beam spot for CLOUD in the T11 beam could be measured, after having increased the gap of the last vertical dipole magnet.

In the North Area COMPASS took data smoothly and the recurrent problem with the access control was finally resolved by mid August. Preparations for the start of the NA62/P326 run, scheduled for the 11th of September, are well under way. Otherwise a large amount of user groups were served with good efficiency of the secondary beams.

Since its physics start on the 1st of July, the AD has been running smoothly until a cryo-pump compressor stopped in early August. After this was repaired, a leak was found on one of the bellows of a scraper. A temporary fix was made, but all four bellows must be replaced over the shutdown. The AD intensity is still a bit lower than the best values reached in 2007: the reason for this is still under investigation.

CNGS runs routinely at more than 4*10^{13} protons per CNGS spill. The integrated proton flux is still low, mainly limited by machine efficiency. Just a few days before the meeting, the filter of the horn water-cooling system had to be swapped to the spare one and the hadron stop sump emptied. This took about two days. The integrated proton flux on the CNGS target at the time of the meeting was about 5.7e18.

5. PS, SPS AND AD SCHEDULES

E. Perez summarised the schedule issues for the PS, SPS and AD.

A series of unlucky events affected the accelerator complex and the users since the last SPSC meeting. Following a magnet incident at the PS mid-July, one week was lost for all users. Early August, a problem with a PS septum prevented the CT extraction, and several days were lost for fixed target physics at the SPS and for CNGS. CNGS suffered from additional down time due to faulty 18kV cables. The users acknowledge the fact that the AB, AT and TS teams did their very best when facing these problems, and that the recoveries were reasonably fast. Re-arrangements and reshuffling of the users schedules for the test beams had to be done. The various groups helped each other such that this reshuffling worked fine.
All in all, most groups were nevertheless able to carry out the most of their foreseen programme.

Updated versions of the PS and SPS schedules are provided regularly, taking into account cancellations and requests for more beam time.

At the PS, the DIRAC experiment started their data taking at full speed on August 5. Beam spot measurements were done at T11 for the CLOUD experiment, which will run next year.

At the SPS, NA61 is completing the installation of their new electronics and testing their PSD. COMPASS completed their calibration and the commissioning of their trigger in early August, and is now in regular data taking mode at essentially nominal intensity with stable and fully optimized conditions.

CNGS runs with nominal intensity, more than 4e13 protons per CNGS cycle. About 0.6e19 protons on target have been collected so far.

AD made a request at the last Research Board (September 3rd) for an extension of their 2008 run, because of a rather inefficient start-up this year (the start-up was delayed because of a magnet problem; AD beam intensities were low at the beginning; and AD suffered as other users from the PS incidents). An extension was granted as long as the PS continues operation for LHC injection.

6. DISCUSSION OF THE OPEN SESSION

6.1 STATUS REPORT OF THE WORKING GROUP ON FUTURE IRRADIATION FACILITIES AT CERN

CERN’s high energy and high intensity beams are fundamental to carry out a broad range of essential radiation related studies.

The SPSC notes the progress of the Working Group, towards a detailed proposal for the implementation of a set of irradiation facilities, well matched to the requirements of the user community.

6.2 NA49

The SPSC notes with pleasure that, since its last Annual Review NA49 has maintained a vigorous analysis program, to fully exploit the physics content of their data set. A number of new results have been published, which contribute significantly to field, and several more analyses are ongoing.

In the light of this, the SPSC encourages NA49 to continue with their plans for publication of p+p, p+A and A+A results.

The SPSC recommends continued support for the NA49 data analysis.
6.3 NA61

The SPSC notes with pleasure that the NA61 Collaboration has had a successful pilot run in 2007, and are progressing well with the analysis. The SPSC looks forward to the first physics results from that run.

The SPSC notes the efforts of NA61 to install and commission the necessary upgrades in time for the 2008 run.

7. FOLLOW UP ON EXPERIMENTS AND PROPOSALS

CNGS1 / OPERA

The SPSC congratulates the CNGS team for the successful delivery of high intensity neutrino beam to the LNGS.

The SPSC notes with pleasure the efforts of OPERA to take full advantage of the beam and process their data promptly.

8. ANY OTHER BUSINESS

SPSC Dates for 2009:
The dates for SPSC 90, the first meeting in 2009 are Tuesday and Wednesday 27 and 28 January 2009.
The dates for the other meetings of the SPSC in 2009 will be set at the next meeting, SPSC 89.
9. DOCUMENTS RECEIVED

1. Minutes of the 87th Meeting of the SPSC Held on Tuesday 15 and Wednesday 16 July, 2008; CERN-SPSC-2008-021/SPSC-087.


