SPS AND PS EXPERIMENTS COMMITTEE

Decisions taken at the 68th meeting
held on Tuesday, 6 July 2004

OPEN SESSION

Status report from CNGS1 / OPERA: Y. Déclais
Status report from PS214 / HARP: J. Panman
Status report from CAST: D.H.H. Hoffmann

CLOSED SESSION

Present: R. Batley, H. Bialkowska, J-J. Blaising, I. Brock,
J. Dainton (Chairman), M. De Jong, M. Doser, J. Engelen,
S. Forte, G. Hamel de Monchenault, M. Hauschild,
L. Kluberg, J. Knobloch, S. Kox, M. Mannelli, M. Piccolo, J. Ritman,
A. Schäfer, U. Stösslein, H. Taureg (Secretary), D. Wark

Apologies: G. Altarelli, L. Gatignon, J-P. Riunaud,

1. MINUTES OF THE LAST MEETING

The minutes of the 67th meeting were approved without amendments.

2. REPORT FROM THE 168TH MEETING OF THE RESEARCH BOARD

The Chairman reported back from the 168th meeting of the Research Board. His report to the Research Board included the outcome of the annual SPSC reviews of COMPASS and DIRAC. It pointed out that

1. it is now clear that it will not be possible for COMPASS to complete its muon data taking by the end of 2004;
2. COMPASS requested three weeks of running time at the end of 2004 for first hadron data taking, which the SPSC would consider at SPSC68 when further information concerning data taking in 2004 was available;
3. DIRAC submitted an addendum to their first proposal requesting a test run in 2004, which the SPSC recommends for approval;
4. DIRAC submitted a proposal for a new physics program focused on $K\pi$ atoms which would run after 2005; this proposal will be considered at SPSC68.

The Research Board noted 1 and 2, confirmed the recommendation in 3, and noted 4.
The CERN Directorate and the Research Board supported strongly the policy of the SPSC to follow the progress of data taking in 2004 with a view to optimizing the physics output from NA48 and NA60, given the “fallow” year for data in 2005.

M. Hauschild reported to the Research Board on the difficulties at the beginning of the 2004 running period and the corrective measures initiated. There is now no spare for the PS extraction septum which failed at the start of the 2004 running period.

3. REPORT FROM THE SPL WORKSHOP

With reference to the planning of the SPSC Villars Workshop in September, V. Palladino summarized the SPL workshop held at CERN in May 2004. The workshop addressed the physics potential of multi-MW proton beams, and considered the physics opportunities of such an intensity-driven research frontier. There is considerable synergy across a wide range of nuclear, hadron, flavour, and neutrino physics. Substantial accelerator R&D continues globally. Opportunities for CERN were considered.

There will be a contribution to the Villars meeting concerning the conclusions of this Workshop.

4. INFN REVIEW ON HIGH INTENSITY PHYSICS IN THE FUTURE

With reference to the planning of the SPSC Villars workshop in September, F. Cervelli reported on the Workshop at Elba in June 2004 concerned with opportunities for physics at high intensity. The workshop reviewed the physics potential of existing facilities in Europe, their possible and planned expansion, and the new opportunities at future facilities, including the SPL at CERN. These opportunities include important issues in both particle and nuclear physics.

There will be a contribution to the Villars meeting concerning the conclusions of this Workshop.

5. STATUS OF THE ACCELERATORS

R. Bailey reported the major difficulties to date in the accelerator operations this year. They include:

- water leaks at the booster in April
- a problem in May with a PS extraction septum
- transfer line problems at the SPS, and
- electron cooling problems at the AD.

R. Bailey also reported that the PS extraction septum, which replaced the one failing in May, had on the previous day July 5th 2004 developed a leak in the cooling circuit into the PS vacuum. No working spare exists. An attempt will be made to seal the cooling circuit and to run without cooling until the other septum is repaired and in an operational condition. There will be no beam for AD and nTOF during this period. Subsequently, it was learned in the meeting that the SPS can receive beam at 50% nominal intensity by operating the faulty septum without cooling. No beam will be available for one week while the replacement septum is installed.
The SPSC expressed its appreciation to all concerned with accelerator operations for their dedication in attempting to maximize beam delivery and quality in the face of these failures, and records its concern that such failures continue to occur.

6. STATUS OF THE EXPERIMENTAL AREAS
I. Eftymiopoulos stated that the experiments and test beams are working well. NA48 and COMPASS have developed new operating procedures to increase their data taking efficiency. The first 25 nsec run was successfully completed. Broadly speaking, all users suffered equally from the substantial losses of beam time.

7. STATUS OF THE EXPERIMENTS AND SCHEDULE
The SPS coordinator M. Hauschild summarized the losses in beam time to July 5th 2004. M.Hauschild listed the expected running time of the experiments and commented on their status. He also again noted the new problem arising on July 5th with the cooling of the PS extraction septum (see 5 above). The emergency repair and installation of the septum, which was removed in May and which now has to be repaired before normal operation can be resumed, will take three weeks.

In view of the difficulties experienced in data taking so far, an extension of accelerator operations by two weeks until mid-November 2004 was proposed by the SPSC for consideration by the Research Board.

8. OUTSTANDING ISSUES FROM THE EXPERIMENTS
The Committee evaluated the consequences of the beam losses for the experiments assuming that the Research Board would grant the proposed prolongation of two weeks for accelerator operation in 2004:

- COMPASS hadron run
  The SPSC recommends a hadron run of three weeks.
- NA48/NA60 running periods
  The SPSC recommends that the change-over between NA48 and NA60 be moved later by two weeks.
- NA60 158 GeV run
  The SPSC recommends a run of one week for NA60 at 158 GeV.

The details of the scheduling are referred to the Directorate and the Research Board in consultation with the experiments.

The SPSC received satisfactory answers to a number of questions to the DIRAC experiment concerning their proposal for physics in 2006 and beyond. The SPSC recommends for approval the addendum to the DIRAC proposal for 1 year of setting-up (2006) and two years of data taking (2007 and 2008). The referee will establish a list of milestones with the Collaboration.

9. STATUS REPORT FROM PS214 / HARP
The referee reminded the SPSC of the aim of the experiment and of the experimental set-up. He summarized the progress since the last status report and outlined the difficulties encountered with the detector calibration and data analysis.

The SPSC congratulates the Collaboration on its progress, which includes substantial achievements in calibration of detectors and the first presentation of physics results. The SPSC looks forward to the completion of the ‘forward data’ analysis, to the completion of the challenging work on the precision calibration of the TPC, and to the
physics results with the large angle data. It urges the CERN management to continue to support as strongly as possible the CERN group in all its important work in the collaboration, and it urges the outside groups to maintain, and if possible enhance, their commitment to the completion of the experiment.

The SPSC reaffirms its encouragement to the collaboration to work rapidly towards the publication of physics results, which it considers to be of great importance for neutrino physics globally. It anticipates hearing from the referee at SPSC69 on progress towards cross section measurements.

10. STATUS REPORT FROM CNGS1 / OPERA

The referee reported on the progress in construction and installation of the detector. The referee expressed concern with progress on software development and simulation.

The SPSC congratulates the Collaboration on progress in the construction and the installation of the detector and on achieving the required scanning speed of emulsions with the microscope method. The SPSC looks forward to a demonstration that there exists in the collaboration the required scanning capacity. In view of the experiment schedule and its importance for the future competitiveness of the experiment, the SPSC voiced concern about the recent change of the brick design, about the lack of a timely start of brick series production, and about the funding of the second tracker station.

11. STATUS REPORT FROM CAST

The referee summarized the achievements of the CAST experiment in the last year. The Collaboration has produced the best limits to date on the production of axions. Further, the SPSC is convinced that an important and substantial enhancement in sensitivity can be achieved in the future by taking data with a $^3$He and $^4$He gas fill.

The SPSC congratulates the Collaboration on the new limits for the production of solar axions. The Committee recommends for approval an extension of the run in 2006 and 2007 with helium subject to demonstration as soon as possible of safe and adequate operational conditions in the magnet bore.

12. A.O.B.

The SPSC agrees with the NA49 collaboration on the importance of copying its raw data to a modern data storage medium, regards the means by which this will be achieved with CERN IT as wholly acceptable, and looks forward to completion as soon as possible.

13. DOCUMENTS RECEIVED

- Expression of Interest in Design and Construction of an Experiment to Search for $\mu + N \to \tau + N$ Conversion with the intense CERN SPS muon beam; CERN/SPSC 2004-016/EOI-004.
- NA49 Status and Computing; SPSC 2004-017/M716.
- Status Report of the CAST Experiment; SPSC 2004-019/M718.

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