MINUTES OF THE 152nd MEETING OF THE RESEARCH BOARD
HELD ON THURSDAY, 5 April 2001


Items
1. Procedure
2. Reports and matters arising from the INTC Meeting of 26 February 2001
3. Reports and matters arising from the SPSC Meeting of 20 March 2001
4. Reports and matters arising from the LHCC Meeting of 21-22 March 2001
5. Procedure for monitoring the status of Recognized Experiments.
6. Any other business
1. **PROCEDURE**

The Minutes of the Research Board held on 15 February 2001 [1] were approved without amendment.

2. **REPORT AND MATTERS ARISING FROM THE INTC MEETING OF 26 FEBRUARY 2001**

H. Flocard reported on the INTC meeting held on 26 February 2001. He first pointed out that further analysis of the data accumulated in November 2000 confirmed the first positive impression on the nTOF performance. Ten more days of commissioning were approved for the beginning of April 2001 to be followed by the calibration of the facility (nTOF2). The INTC requested a joint status report by nTOF2 and the nTOF commissioning group on the updated technical specifications of the facility and on its measured performance. The Research Board looks forward to this report which should be available by summer 2001. The approved and expected experiments will require about $2.0 \times 10^{19}$ protons, in excess of the $1.5 \times 10^{19}$ available. In order to plan better the nTOF programme it was decided to include M. Hauschild as ex-officio member of the INTC.

The chairman of the INTC then went on to present two new nTOF experiments proposed for approval. He first discussed **P125**, The Re/Os Clock revisited [2], which proposes to measure neutron capture data needed to compute stellar reaction rates and hence improve on the evaluation of the age of the universe. The INTC recommended this experiment for $1.4 \times 10^{18}$ protons. The Research Board concurred with this recommendation. The experiment will be known as **nTOF4**.

He then presented **P124**. The importance of $^{22}$Ne($\alpha$,n)$^{25}$Mg as s-process neutron source and the s-process thermometer $^{151}$Sm [3]. This proposal had been pending, awaiting clarification on the technical performance of the nTOF facility. The INTC was satisfied that new information obtained on the facility since November 2000 had addressed these questions and therefore recommended the experiment for a total of $3.3 \times 10^{18}$ protons. The Research Board concurred with this recommendation. The new experiment will be known as **nTOF3**.

The discussion moved onto the subject of the identification of a spokesperson and a contactman for each nTOF experiment. This is a request of the INTC in line with a previous decision of the Research Board that nTOF cannot be viewed as a single experiment but rather as a facility at which experiments with distinct scientific motivations are to be performed, much as happens now at ISOLDE. In this respect, it appears that the names proposed by P124 and P125 do not match well the functions of spokesperson and
contact person of these two experiments. This point should be clarified by the next Research Board meeting.

The chairman of the INTC then presented four ISOLDE proposals. **P131**, The structure of the heavy calcium isotopes and the effective interaction in the sd-fp shell [4], intends to improve the knowledge of shell model matrix elements. The INTC recommended this experiment for 15 shifts. The Research Board **approved** the experiment, which will be known as **IS392**. **P135**, Beta-decay study of very neutron-rich Cd isotopes with a chemically-sensitive laser ion source [5], proposes to improve data relevant to the r-process in the cadmium region, for which the INTC recommends an allocation of 6 shifts. The request for additional running time for measurements on $^{131}$In was left pending until the optimal method to perform them is clarified. The Research Board **concurred** with this decision and the experiment will be referred to as **IS393**. **P137**, Nuclear binding around the rp-process waiting points $^{68}$Se and $^{72}$Kr [6], intends to study decay properties of nuclei at the waiting points in the rp-process as well as of adjacent nuclei. The INTC recommended approval of the 11 shifts needed to study the masses of $^{68-71}$Se and $^{72}$Kr and of the additional 11 shifts needed to study $^{69}$Kr. The allocation of further shifts needed to study $^{73}$Sr will have to await results from these first measurements. The Research Board **concurred** with this recommendation. The experiment will be known as **IS394**. Lastly, he presented **P139**, $^{31}$Si Self-diffusion in Si-Ge alloys and Si-(Bi-)C-N Ceramics and diffusion studies for Al and Si beam developments [7]. The INTC only recommended for approval the 6 shifts needed to perform the Si-Ge self-diffusion studies. The case for the study of Ceramics was not sufficiently well established and the diffusion studies for Al and Si Beam developments would have to be considered on their own merits. The Research Board **concurred** with this decision and the new experiment will be known as **IS395**. Addenda to IS368 and IS383 will be presented at the next Research Board.

D. Miller pointed out that any industrial applications of research of this type, even some years hence, should be carefully monitored. He was answered that one of the task of the ETT Division was to take care of just this type of problem. M. Delfino worried that since industry used data bases different from the ones in our field, references to the original publications referring to CERN could eventually be lost.

Finally, J-P. Delahaye pointed out that the single spare Front-End had to be used for the HRS recently. As it will be extremely difficult to build a new spare before the end of 2001 a further Front-End failure could jeopardize half of the ISOLDE shifts foreseen for this year.
3. REPORT AND MATTERS ARISING FROM THE SPSC MEETING OF 20 MARCH 2001

K. Königsmann reported on the meeting of the SPSC held on 20 March 2001, in particular on the Heavy Ion programme.

**NA45 (CERES).** This experiment collected about 8 million events in 1999 at 40 A GeV, resulting in 160 e⁺e⁻ pairs. The new TPC now makes them much more effective for hadronic studies. In 2000 they collected 32 million events at 160 A GeV which should result in 7500 e⁺e⁻ pairs and 0.5 million events at 80 A GeV. The Collaboration intends to study the enhancement of e⁺e⁻ pairs below the ρ which cannot be explained by known sources. With their improved mass resolution they expect to separate the ρ from the ω and thus be able to study shifts in mass and width. They are also interested in the 20 and 30 A GeV runs in 2001.

**NA49.** They have π,K,p identification over the whole rapidity range. This experiment will be reviewed at the next SPSC due to the absence of the referee.

**NA50** searches for evidence of QGP in dimuon production. The replacement of the target with a thinner one resulted in 110K J/ψ events, fewer than in their previous sample but free of reinteractions. They investigated J/ψ suppression which seems to increase as a function of energy density. They also investigated the origin of the excess of dimuons below the J/ψ. This could due to thermal photons or to an enhancement in charm production. This excess increases as a function of participants in the collision.

**NA57** searches for QGP through strangeness production and in particular hyperons. A 25% larger yield of Σ than observed in WA97 is still to be understood. They are extending their centrality studies to lower number of “wounded nucleons” (about 50). The study of Λ and Λ̅ production shows nothing abnormal in going down from 160 to 40 A GeV. They are interested in studying what happens at 20 and 30 A GeV.

**NA60** is a development based on NA50. Its programme is the investigation of the origin of the dimuon excess below the J/ψ. It was comforting to note that the beam telescope continues to provide the beam position with the required 20 μm precision after an exposure of 40 Grad. However the ALICE pixel chip has not achieved the specifications required for NA60. Consequently, silicon microstrips will be used instead this year during the proton run. Nonetheless the pixels are needed for the ion runs but the rate of development of the ALICE (and LHCb) chip may end up not being compatible with its earlier use in NA60. The collaboration is considering the development of an alternative chip although it is not clear whether the finances and time scale of this alternative make it viable. They are approved to run with lead ions in 2002 and with Indium in 2003. A lack of human and financial resources has been identified and the collaboration is requesting further support
from CERN and other institutes. In the ensuing discussion on NA60 several members of the Research Board expressed their concern about the pixel situation including the additional systematic uncertainty introduced by the use of microstrips in the proton run and of pixels in the ion run. The Research Board expressed its worries and requested a report on this situation by its next meeting.

During a short discussion on CORAL the DG pointed out, as he already had at the SPC, that, due to the already severe strain on the CERN resources, the Management sees no way to make any addition to the existing scientific programme of CERN. Even the pursuit of a major discovery would entail the cancellation of part of the already approved programme.

4. REPORT AND MATTERS ARISING FROM THE LHCC MEETING OF 21-22 MARCH 2001

J. Engelen reported on the meeting of the LHCC held on 21-22 March 2001, limiting himself to the presentation of the CMS Level-1 Trigger TDR [8]. This trigger is implemented using information from the muon systems and the three calorimeters (forward, electromagnetic and hadronic). It triggers, with adjustable thresholds, on photons, leptons, jets and missing energy. It selects events relevant to the CMS physics programme with high efficiency and low background. In order to introduce a margin of safety, it was designed such as to yield, in simulations, a trigger rate equal to 1/3 the maximum acceptable rate. Some questions still have to be answered quantitatively on the sensitivity of the trigger to B-physics. Following the failures of some of the RPC’s used in BABAR, worries have been expressed about the use of RPC’s by the LHC experiments. An extensive programme of tests is in progress. In CMS, it had been assumed that the main source of noise would be the neutron background, whereas the intrinsic RPC noise seems to dominate. This will require some redesign of the trigger electronics. The proposed trigger system still needs to be costed more firmly. The Level-1 Trigger, as described in the TDR, being well suited to the physics goals of the experiment, the LHCC recommended general approval of the CMS Level-1 Trigger TDR, pending a final cost evaluation. The Research Board approved the submitted TDR, pending a final cost evaluation, under the LHCC formulation, which allows the Committee to monitor further progress of this project through the implementation of schedules and milestones listed in the ancillary document.
5. **PROCEDURE FOR MONITORING THE STATUS OF RECOGNIZED EXPERIMENTS**

Recognized experiments are approved for three years, after which they must be reviewed in order to continue to be recognized. The first ones to be approved are now reaching this time limit. Most of the CERN recognized experiments are concerned with astrophysics. It was decided to set up a small advisory committee, reporting to the Research Board, to review these astrophysics experiments. In due course this committee will also deal with the recognition of new experiments, if appropriate, and with the approval of experiments using the CERN facilities but not its accelerators. The exception to the above, will be EXPLORER, the gravitational wave experiment. It will be reviewed by the Research Board at its next meeting given that it has been running for a very long time.

6. **OTHER BUSINESS**

C. Détraz introduced the matter of the status of experiments after completion of data-taking. At present, after one year, they are classified as “completed” and are entered in a different category in the “Grey Book” of experiments at CERN. This makes it difficult to find experiments that could still be active in analysis and publications. It was decided to increase to two years the period during which an experiment, although classified as completed, is still listed with the active experiments. Furthermore, upon request to the appropriate scientific committee, this period could be extended for another year if justified by a continued analysis activity.

B. Gavela asked whether the fact that fundamental research as opposed to experiments leading to industrial applications must remain the primordial task of CERN has been emphasized and discussed. The Director General replied that indeed documents to this effect [9] are available.

The next meeting of the Research Board will take place on **Thursday, 7 June 2001.**
ENCLOSURES

[1] Minutes of the 7th INTC meeting held on 26 February 2001 (INTC 2001-013/INTC 7)


REFERENCES


[3] The importance of $^{22}\text{Ne}(\alpha,n)^{25}\text{Mg}$ as s-process neutron source and the s-process thermometer $^{151}\text{Sm}$ (INTC 2000-017/P124).


[6] Nuclear binding around the rp-process waiting points $^{68}\text{Se}$ and $^{72}\text{Kr}$ (CERN/INTC 2001-009/P137).

