

ISOLDE AND NEUTRON TIME-OF-FLIGHT EXPERIMENTS COMMITTEE (INTC)

Minutes of the Fifth Meeting on
Monday 25 September, 2000

OPEN SESSION

The Chairman opened the meeting with a few brief words of welcome, after which M. Lindroos / PS, discussed the present technical status of the ISOLDE facility. He reported that the HRS front-end was successfully installed in week 20, achieving a resolution $M/\Delta M = 4200 \pm 400$ and that the first experiment was done with it in week 22. However, mechanical problems with the extraction electrode subsequently caused the cancellation of the next (UC target) run. A recent contamination incident has resulted in a revision of the radiation safety status of ISOLDE. A two-year plan will require the target area being treated as a 'class A' area and the experimental area as a 'class C' area. Furthermore a spare front-end is expected within the next year and a new generation of front-ends within a three-year consolidation period. M. Lindroos also described briefly the status of the neutron converter and other targets.

T. Nilsson then presented a status report on the ISOLDE scientific programme. So far 185 experimental and 25 test shifts of radioactive ion beams have been delivered. The General Purpose Separator and PS Booster have been stable and the target performance good. On the other hand, in addition to the HRS problem mentioned above, a CeO target run has had to be cancelled owing to technical problems with the robot. A further 120 RIB beam shifts are nevertheless expected on the GPS before the end of 2000, and 50 additional HRS shifts are also scheduled. A test of 600 MeV PS Booster operation is being discussed which may benefit several experiments through increased yields for some isotopes.

E. Radermacher then presented a Status Report for the nTOF facility. The nTOF was ready to run on August 2, but reliability questions about the target water cooling systems and target remote handling were raised by TIS. The requisite modifications are under way and the first beam is now expected at the end of October.

P. Pavlopoulos, presenting the scientific status of the nTOF, pointed out that in measuring neutron cross-sections its general aims are threefold: 1) a better understanding of Stellar Nucleosynthesis, 2) applications in nuclear technology and Dosimetry, and 3) studies of nuclear physics and neutron properties. He outlined the status of both the already submitted proposals, and those expected up to the September 2001 session of the INTC. An integrated intensity of 2×10^{19} protons on target per year is the eventual aim. He indicated in addition that a TDR providing a detailed description of the experimental hall and equipment, as well as a plan for the construction of these, will be submitted to the INTC for its next session. Concerning questions about the responsibilities for individual experiments, C. Détraz pointed out that the nTOF is intended to become a general facility, and that spokesmen will eventually be designated for each experiment carried out on it.

D. Habs then presented a report on the status and perspectives of the REX-ISOLDE facility, first describing the situation concerning various components of the accelerator and then the tests of the Ge miniball detectors, PPAC etc. that have been taking place in Cologne. A first test experiment at ISOLDE is now expected between 20 November and 25 November this year. This will be devoted to measuring charge breeding yields for ions and molecules and to light mass RIB intensities, but will also include beam, target and detector tests.

A presentation was then made of the proposal:

P130 (INTC 2000-029): Measurement of Moments and Radii of Light Nuclei by Collinear Fast-Beam Laser Spectroscopy and β -NMR Spectroscopy.

CLOSED SESSION

Present: B.W. Allardyce, J. Aystö, C. Détraz, J. Eades (Secretary), H. Flocard (Chairman), K-L. Kratz, M. Lindroos, T. Nilsson, J-P. Riinaud, B. Rubio, W. Scobel, R. Voss, P. Walker, K. P. Lieb, K. Langanke, E. Migneco.

Apologies: H. Ravn, P. van Isacker, C. Rossi-Alvarez, J-P. Duraud.

The minutes of the fourth meeting were first approved with the exception of the typographical error that made 1:6000 appear as 16000 in discussions concerning the HRS resolution.

The Committee first discussed the various technical and scientific progress reports as follows:

1. nTOF Technical Report

The Committee took note of the situation reported by E. Radermacher in his open meeting presentation and hopes that in spite of the delay related to CERN TIS division's reliability concerns, full commissioning and calibration of the nTOF facility will be possible this year.

2. External Referee's Report on nTOF TDR

Following the last meeting, the external referee, G. Bauer, had prepared a list of questions concerning this report. His conclusion was that the collaboration had been very cooperative in answering these, and that the nTOF would certainly work at the intensity required for proposed and forthcoming experiments during the next year at least. Nevertheless he felt that there was still a need for a single coherent document giving a complete description of the facility, rather than the collection of reports and papers presented in support of the TDR (CERN/INTC/2000-004, 11 February 2000). The Committee therefore accepts the TDR with the proviso that such an overall document be presented during the course of the next year. C. Détraz also pointed out that this approval represents a milestone for the nTOF, since it is now well on the way to becoming a general facility. This means that the responsibility for operations up to a suitable point before the detector area will shortly fall on CERN. The INTC will from that time onward concentrate on questions concerning the experimental proposals.

3. Referee's Review of nTOF Proposals

This concerned mainly the experimental proposal P123 (Determination of the neutron fluence, the beam characteristics and the backgrounds at the CERN-PS TOF Facility) presented in the February meeting regarding the commissioning of the nTOF. The Committee had then requested further details on the planning and implementation of these studies. W. Scobel has had extensive contacts with the nTOF group. The delay of the nTOF commissioning previously scheduled for June/July has provoked some rethinking and a full TDR on the experimental hall and the experimental apparatus is now eagerly awaited by the INTC. In the meantime, W. Scobel will raise with the nTOF group the questions outlined in his review. It is clear that closely related questions concerning proposal P124 (The importance of $^{22}\text{Ne}(\alpha,n)^{25}\text{Mg}$ as *s*-process neutron source and the *s*-process thermometer ^{151}Sm ., discussed in the May meeting) may usefully be addressed at the same time.

4. ISOLDE Technical Report

The Committee took note of the points raised in M. Lindroos' report, especially concerning the need for a spare front-end immediately and for a new generation of front-ends over a three year timescale.

5. ISOLDE Scientific Report

The Committee noted with satisfaction that the number of shifts delivered to the experiments this year is already equal to the number delivered during the whole of last year, and that 50 additional HRS shifts are planned. The Committee also strongly supports the proposed tests with 600 MeV Booster energy, although it understood that 600 MeV operation, if successful, can only be done when the Booster is reserved for ISOLDE alone.

6. REX ISOLDE Report on Status and Perspectives

The Committee took note of the progress made on REX-ISOLDE and looks forward to seeing results of the expected November and winter tests by the February meeting.

The presentation of proposal P130 (Measurement of Moments and Radii of Light Nuclei by Collinear Fast-Beam Laser Spectroscopy and β -NMR Spectroscopy) was then discussed. The Committee agreed on the importance of the Ne and Li studies. It therefore will recommend to the Research Board that the 30 RIB and 15 stable beam shifts be allocated for these studies. However, the case for the Ar studies was not thought to have been demonstrated in a convincing manner yet, and will not therefore be supported.

Following the Committee's earlier criticism of P85 Add 1 (Investigations of deep-level Fe-centres in silicon by Mössbauer spectroscopy) the authors have submitted a revised addendum (Investigations of deep-level Fe-centres in silicon by Mössbauer spectroscopy; INTC 2000-031/P85 Add 2). This has convinced the Committee that the proposed studies will clarify an important process that may be used in semiconductor technology, and will recommend the 10-shift allocation of beam time to the Research Board.

OTHER BUSINESS

P87 Add 1 (Letter M. Hass, Spokesman IS303 - proposals 91-11/P8 and 96-31/P87):

This was one of the backlogged experiments (IS303) discussed in a previous meeting of the INTC. As the group now expects to bring to CERN the superconducting cryostat that was causing the delay, and to provide the manpower to test it during the winter, it was felt that the outstanding shifts can be reallocated, provided that the experiment is finished next year as promised.

The next INTC meeting is on **Monday, November 27**, for which the deadline for submission of proposals will be **Friday, November 3, 2000**.

The dates of the INTC meetings for 2001 are:

February, 26-27
April 23-24
September 24-25
November, 26-27.

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