Minutes of the 96th Meeting of the ISOLDE Collaboration Committee

held on March 9th 2023

Present: J. Cederkall (via Zoom), S. Freeman, H. Fynbo (via Zoom), L. Gaffney, G. Georgiev, S. Gilardoni (via Zoom), A. Herzan, A. Korgul (replacing M. Pfützner), M. Kowalska, R. Lica (replacing C. Mihai), E. Nacher, D. Naidoo (via Zoom), A. Nannini, G. Neyens, J. Pakarinen (via Zoom), G. Rainovski, J.A. Rodriguez (via Zoom), L. Schweikhard, N. Severijns (via Zoom), E. Siesling, J. Vollaire

Absent: A. Lagoyannis, S. Siem

Excused: C. Mihai, M. Pfützner

Invited: N. van der Meulen

The meeting starts at 09:30 h

1. Introductory remarks

G. Neyens opens the meeting and welcomes the members of the committee. R. Lica is replacing C. Mihai at this meeting and A. Korgul replaces M. Pfützner. M. Kowalska is now the official CERN representative on the ISOLDE Collaboration committee and the ISOLDE Physics Section leader, S. Freeman, becomes an ex-officio member; this is because the resource manager should not be a voting member of the ISCC.

2. Approval of the Minutes of the last meeting of November 7th, 2022

The minutes from the previous meeting are approved.

3. Update on YETS Activities – *J. Vollaire*

The committee is informed that CERN's decision to bring forward the start of the 2022 end of year shutdown (YETS) as an energy saving measure did not impact physics at ISOLDE. After proton delivery ended, one week of winter physics, with minimal electricity consumption, was supported with beam delivered from the HRS frontend using a pre-irradiated target.

J. Vollaire explains that ventilation consolidation of primary areas meant there was an interruption of the ventilation system between 12th December 2022 and 20th February 2023 during which time there was no possibility to schedule interventions and standard YETS activities could only start when ventilation was restored. However, the major effort made by the EN-CV group to deliver and test the system on time means the ISOLDE target areas now benefit from a more robust and maintainable ventilation system.

The committee hears that, in preparation for the ventilation stop, radioactive targets were transferred to the MEDICIS storage area in early December. A standard transfer to the ISR of 26 targets then took

place in January. Some targets are kept for possible re-use while others, on agreement with external authorities, are dismantled.

The YETS maintenance activities are then summarised. As well as the standard activities, a visual inspection of the two beam dumps' front faces took place and thermocouples were installed to study how the temperature changes with beam intensity and compare with modelling produced as part of the beam dump replacement study.

Yearly maintenance of the HIE-ISOLDE cryo-plant is ongoing with cool down of the cryomodules due to start 22nd March as planned. A compressed air back-up system has been installed to avoid a cryo plant stop due to loss of pressure as happened when there when there was a CERN wide compressed air stop in the summer of 2022. As part of possible future improvements to the cryo-plant, tests were performed by the cryo-group (TE-CRG) during the 2022 warm up phase; Helium was circulated at LN2 temperature in the cryomodule thermal shields to study the possibility of maintaining LHe or LN2 circulation in the shields in order to keep the cryomodules below 100K and hence reduce the impact of unexpected cryo-plant stops and planned maintenance on the SRF cavities. If these benefits are confirmed, TE-CRG will perform a pre-study to validate the feasibility of this action and propose an implementation plan. However, changes to the cryomodules' shielding would be required so it is not something that would be available this year.

The committee is informed that the REX-EBIS has been successfully repaired and F. Wenander, along with J. Bremer (TE-CRG), is now looking into the implementation of a cryo-cooler on the EBIS to reduce the use of He and increase the reliability and lifetime of the machine.

J. Vollaire confirms that all REX / HIE-ISOLDE activities are on track and the recommissioning plan in place to deliver stable beam to experiments from 30th June to 12th July and then the start of HIE-ISOLDE physics as of 19th July.

The committee expresses its thanks to C. Gagliardi for providing excellent support for REX RF systems throughout the duration of his contract; S. Freeman will write a letter to C. Gagliardi with a copy to his supervisors to convey the committee's appreciation.

4. Discussion of 508 Laboratories – *M. Kowalska*

A request is made for independent space for a dedicated VITO laser system. M. Kowalska explains that, until now, VITO has been able to run successfully using its own pump laser plus a COLLAPS tuneable laser all situated in the COLLAPS laser laboratory, even though access to the laboratory was only possible when COLLAPS was not running and MIRACLS not setting up. However, in order to extend the VITO research programme, laser schemes needing more set up time will be required as well as a free optical path to VITO; both these requirements are not feasible using the COLLAPS laboratory. Also, the present VITO ERC grant allows for the purchase of more lasers for VITO but, with the COLLAPS laser system also being expanded, there will not be enough room for all this new equipment in the COLLAPS laser laboratory. Hence, as the MIRACLS proof-of-principle setup will vacate room 508-R-015 this spring, M. Kowalska proposes that this space be converted into a Designated Laser Area (DLA). VITO would only use half the space so the remainder would be available to other experiments. The work required to convert the space into a DLA, the majority of the cost of which would be covered by VITO, is summarised along with a possible timetable. M. Kowalska clarifies that the metal laser transfer tube from the DLA to the VITO setup would not interfere with crane access to the experiments underneath and agrees that all work required at height should be planned together as specialist teams are required and that the transfer tube should be made of removable sections so it can be temporarily removed if necessary. M. Kowalska is also aware that the impact of these plans must be discussed with the other experiment set-ups in the ISOLDE hall. The ISCC approve the plan for 508-R-015.

A discussion takes place about the efficient use of space to best support experiments. It is suggested that the present PL (Photo Luminescence) laboratory in building 275, that is presently only used for about one week a year, could be developed as a clean space for working on detectors. The laboratory would require permanent infrastructure, requests for which could be made to the collaboration, and users should be made aware that this space is available.

5. Collaboration Matters – *S. Freeman*

With regard to Swiss membership of the collaboration, S. Freeman informs the committee that the required document has now been sent to PSI for checking and signature so the Swiss representative, N. van der Meulen has been invited to attend this meeting.

The committee is told that, after discussions between CERN, ISOLDE and Spanish institutes and authorities the Spanish Covid recovery funds that were moved to CERN in 2021 have been transferred to CIEMAT in Spain who will distribute the money to the Spanish institutes concerned. The funds will still be used to support an R&D programme for a superconducting separator (approx. 3M€) and a fast timing array (approx. 1M€) for ISOLDE amongst other CERN projects.

S. Freeman informs the committee that the office of the CERN Director of Research and Computing will take care of the formal organisation of the FRC meeting, which will probably take place on 20th April, last around one hour and include short presentations from the ISOLDE Physics Section Leader and the CERN Finance department. A list of the names of FRC representatives received so far is presented.

The updates made to the ISOLDE MoU annexes since the last ISCC meeting are explained and the committee gives its approval. For future reference, it is noted that the addition of a new collaboration member requires an addendum to the MoU. Also, the creation of such an addendum for Switzerland brought attention to a few things in the main MoU to be aware of for the future such as the fact that the document does not mention that members of the collaboration are countries and not institutes.

The EURO-LABS project started on 1st September 2022 and transnational access funds were available to experiments scheduled at ISOLDE from the very first day of the project. For the running period from 1st September to 4th December 2022, 57 participants of 17 experiments received TNA support covering 235 days of subsistence at 138CHF per day. The distribution of these funds by country during this period, that included a number of ISS experiments, is presented. The committee is reminded that experiments that receive EURO-LABS support have the following obligations:

- The funding must be acknowledged in any publications using the phrase “This project has received funding from the European Union’s Horizon Europe Research and Innovation programme under Grant Agreement No 101057511.”
- All publications must be Open Access.
- Open Data: The experiment must have a data management plan.

S. Freeman informs the committee that the 2022 ISOLDE Workshop and Users meeting had a total of 221 registered participants from 28 different countries with 121 attending in person and 100 online. The workshop was again sponsored by CAEN who donated prizes for the best posters and the best young speakers. In 2023, the event will take place at CERN from 29th November to 1st December.

The committee is told that a CERN Council statement made in June 2022 declared that it intends to terminate CERN’s International Cooperation Agreements with the Russian Federation and the Republic of Belarus at their expiration dates in 2024. The Council will also review CERN’s future cooperation with the Joint Institute for Nuclear Research (JINR) well in advance of the expiration of the current ICA in January 2025. CERN management also supports a recent decision by the four large LHC collaborations to adopt the so-called “Option C” (see below) regarding publications:

- Authors affiliated with Russian or Belarussian institutes, or with JINR, sign the Collaboration's scientific publications with their names and ORCID identifiers (where available), and the institute affiliation is replaced, respectively, by the reference:"Affiliated with an institute [or an international laboratory] covered by a cooperation agreement with CERN."
- The complete author list including all institute affiliations is made available to the journal in a non-public form for the purpose of machine-readable analysis or as historical data.
- The publication committees of the collaborations (at ISOLDE this would correspond to the experiment spokespersons and the corresponding authors) will be charged with investigating the technical implementation details with the journals.
- No acknowledgement to the Russian and Belarussian funding agencies and JINR is made.
- On request, the experiment management will release a certificate attesting the contribution of the aforementioned institutes and funding agencies, or of JINR, to the work presented in the publication.

The committee agrees to adopt this policy so S. Freeman will inform J. Mnich of this decision and verify with him the contents of an email that will be sent to the ISOLDE mailing list to inform Users of this decision. S. Freeman explains that the CERN Research Board, at its meeting on 13th March, will discuss how to treat new INTC proposals with Russian, Belarusian or JINR affiliations.

A brief report is given on the ISOLDE Physics Coordinator selection process. The application documents were shared with the ISCC for input into shortlisting and 9 responses were received from the 16 ISCC members with 3 conflicts of interest registered; there was a good consensus on the short list. The four chosen candidates were interviewed by the Appointment board (S. Freeman, G. Neyens, M. Pfützner, J. Vollaire, R. Hawkings (Deputy Head EP) and M. Bott (recruitment specialist from HR)) following CERN HR policies and rules. Hanne Heylen was the candidate selected for the post and has accepted the position with a starting date of 1st September 2023. This will give one month of overlap with the present Physics Coordinator but weekly meetings will take place from now on. A discussion takes place about the selection procedure and about how it might be improved. It was noted that, in particular, ISCC members could meet via zoom to prepare the short listing.

The decision timeline for the ISOLDE Improvement program is presented. The LOI, the draft of which was circulated to the ISCC in January, that was written to re-state the physics program and quantify the interest in 2GeV was approved by the INTC in February and will be presented to the Research board in March along with the conclusions from the IEFC about technical implementation. A brief overview is given of the proposed consolidation and improvements for HIE-ISOLDE and the beam dumps as well as other ISOLDE improvements along with their timescale and physics consequences. S. Freeman discusses the on-going strategy for the approval process and informs the committee that the estimated cost for the whole improvement programme is around 20MCHF although in some areas there is still work to do to define the full costs. Assuming a favourable response from the Research board, ATS management will then consider how the plans can be incorporated into either the 2023 or 2024 MTP. The collaboration may still be requested to contribute to these improvements however, if it is not, once the inclusion of improvement programme in the MTP is finalised, the collaboration may be able to use its funds for other projects such as a hall extension.

The collaboration expenditure for 2022 is summarised as well as the evolution of the account balance since 2010. The proposed budget for 2023 is presented by S. Freeman and approved by the committee. Regarding future planning, the committee hears that, if similar expenditure is assumed, by 2028 yearly savings of about 100 kCHF plus the 400 kCHF liberated by the end of HIE-ISOLDE payments would make possible a contribution of up to approximately 4 MCHF towards the improvement and consolation project. In June more should be known about the amount required from

the collaboration for this project. After this, if funds are still available, a more formal plan for the future using ISCC funds should be formulated.

S. Freeman then discusses the status of defining an Open Data Policy for ISOLDE which is now required for many funders including the EU. A draft document, already been circulated to the ISCC, was prepared by consulting CERN and LHC policies, however, arrangements for a single mission experiment with common authors, styles and formats of data etc. do not necessarily transfer well to ISOLDE where data is as diverse as the science. At ISOLDE the individual spokespersons seem best placed to hold responsibility for their data using FAIR principles (Findable, Accessible, Interoperable, Reuseable) which is consistent with the EU approach. Each experiment would be expected to have a data management (DMP) plan in place by the time of beam request when a short summary should be provided. The information the DMP should include are briefly discussed. It is hoped to have the ISOLDE Open Data Policy document finalised for the ISCC meeting in June. The document would then be sent to the ISOLDE mailing list, added to the call for beam requests and put on the ISOLDE website.

The committee is asked to encourage the submission of articles for the 2023 edition of the ISOLDE Newsletter. The deadline is 15th March.

6. Discussion of ISOLDE Physics Section Leader and Collaboration Spokesperson – *G. Neyens*

The contract of the present ISOLDE Physics Section Leader, S. Freeman currently ends in summer 2024 which would mean the hiring process of a successor would need to start at the latest in summer 2023. The committee decides to ask S. Freeman if he would be interested in extending his contract by one year until summer 2025.

7. News from ISOLDE group – *S. Freeman*

The present manpower situation in the ISOLDE Physics Group is summarised by S. Freeman:

- Research Fellows = “Senior Research Fellows Experimental and Theoretical Physics (Category 1)”: Erich Leistenschneider (April 2021 – May 2023), Zoe Favier -IDS/Miniball (March 2022 – February 2024), Simon Lechner – VITO/PUMA (Nov. 2022 – Oct. 2024, Louis Lalanne – CRIS (February 2023 – January 2024*).

- Applied Fellows = “Research Fellowship In Science And Engineering (Category 2)”: Frank Browne – MINIBALL (Sept. 2021 – December 2023), Patrick Macgregor – HIE-ISOLDE (Nov. 2022 to Oct. 2024), Michael Pesek - VITO (November 2022 – October 2024).

- Marie-Curie Individual Fellow: Monika Piersa-Silkowska (Feb. 2022 – Jan. 2024), *Louis Lalanne (February 2024 – January 2026)

- Scientific Associates: Georgi Georgiev (6 months extended by 6 months, August 2022 to July 2023), Andrei Andreyev (12 months, October 2022 to September 2023).

- Corresponding Associate: None.

- Doctoral Students: Lukas Nies (CERN via Gentner Doctoral Program) (November 2019 - special extension due to COVID to April 2023), Franziska Maier (CERN-MIRACLS via Gentner Doctoral Program) (February 2020 – special extension due to COVID to March 2023), Michail Athanasakis (CERN EP-SME) (Sept. 2020 – Aug. 2023), Marcus Jankowski (CERN via Gentner Doctoral Program) (January 2021 to December 2023), Tim Lellinger (CERN via Gentner Doctoral Program) (March 2021 – February 2024), Mateusz Chojnacki (CERN-ERC Betadrop) (July 2021 – June 2024).

- Staff Members: Karl Johnston (Physics Coordinator) (October 2015 to September 2023), Sean Freeman (Physics Group Leader) (August 2021 to July 2024), Magdalena Kowalska (CERN staff member) (January 2020 -), Mark Bissell (Research Physicist LD)(September 2022 to August 2025).

- User: Jenny Weterings (User Support) ISOLDE Collaboration & University of Oslo (2002-)

The committee is told that a locally funded PhD student position could become available in the summer if a good candidate is found.

8. News from the ISOLDE coordinator – *K. Johnston*

The final version of the 2022 ISOLDE schedule is shown. Low energy experiments started on 28th March while HIE ISOLDE experiments began on 20th July. Delivery of protons ended on 28th November followed by one week of winter physics for laser spectroscopy of long-lived radioactive molecules until 5th December. In 2022 there were 252.33 days available for physics at ISOLDE and, in total, 52 experiments were performed with no runs cancelled. For the first time regular blocks were made available for machine and target development and a total of 465.5 shifts were delivered for physics and development. The distribution of these shifts between types of physics is presented.

K. Johnston briefly summarises the technical issues encountered during 2022. Cooling in the cryoplant being lost three times and instabilities in the REX accelerator affected HIE ISOLDE beam commissioning which meant there was no time available for a test programme before physic started. A problem with the 7gap3 almost cost a physics run just before the end of protons while the REX EBIS solenoid experienced rapid LHe boil-off in July and numerous magnet quenches in August leading to the repair of this unit during the present YETS. The issues encountered would not have been solved and physics runs would have been lost if it wasn't for the commitment and hard work of all the experts involved.

The committee hears that 24 new target units were used in 2022 with many complex units needed to meet physics requirements. Mostly excellent performance was seen with several yields exceeding expectations especially for HIE ISOLDE physics. RILIS had a very busy year with 22 elements delivered for physics and development and operation for 29 out of the 36 weeks. It was the first year that LIST/PI ran regularly for physics; significant setting up time was required but the runs were very successful.

K. Johnston explains that the IS717 experiment that aimed to determine the difference in ion beam productions yields between using 1.4 and 1.7 GeV protons has shown there is a clear increase in yield at 1.7 GeV which verified calculations. Hence 2 GeV protons will open new possibilities for physics with experiments being done in a shorter time and with new isotopes.

The committee is informed that 27 ISOLDE related documents were submitted to the INTC meeting in February and 209 out of the 329 shifts requested were approved. The next INTC meeting will be held from 31st May to 1st June 2023. An overview of the present shift backlog is presented with 1389.5 shifts still on the books for 137 experiments. HIE ISOLDE experiments make up about 40% of the backlog.

The injector accelerator schedule for 2023 is shown and the committee told that protons are due to be available for physics at ISOLDE from 10th April until 30th October. Energy cost considerations at CERN mean that all accelerators will run approximately 20% less than in 2022 making the ISOLDE running period with protons relatively short in 2023. The beam requests received so far have requested 925 shifts but this will increase. EURO-LABS TNA funding will be available to scheduled experiments and spokespersons will be contacted when the schedule is released. K. Johnston presents the ISOLDE experiment schedule for weeks 14-24 and explains that it was a challenge to put together

due, amongst other things, to the reluctance of experiments to run early. S. Freeman requests that in the future users are more flexible regarding the scheduling of shifts.

The status of experiment set-ups at ISOLDE is briefly summarised. The Multipac set-up is now in building 275 along with the refurbished ASPIC set-up that has been unpacked and checked; neither set-up has a permanent location identified. The MIRACLS setup at LA2 has been making great progress and should be ready for beam in about 2 weeks while the local CRIS team will have their beamline ready for tests around mid-April. Preparations for beam transport to PUMA at RC6 are ongoing and the new IDS frame will be installed in the next 2 to 3 weeks.

K. Johnston explains the present situation regarding training courses for ISOLDE users. Both the hands on RP and electrical training courses still take place on Tuesdays but the time has increased. The EP courses runs from 08:30 to 12:30 while the RP course is from 14:00 until 16:30. If less than 3 people are registered for the courses 15 days before the date of the course then it will be cancelled by CERN safety training. Taking all the online courses will, for the moment at least, grant the required electrical training ranks but anyone who will work on an experiment set-up must take the hands-on course. If you don't go into the experiment hall then, at the moment, you don't have to pass the hands-on electrical course. Having blanket imposed safety courses for all ISOLDE users is not efficient so discussions are ongoing with safety training to target courses. An extra training for CERN fellows that inspects their experiment set-up work places is being considered.

The committee is informed of a recent series of academic training lectures, available online, given by members of the ISOLDE technical groups.

The committee thanks K. Johnston for the efficient planning last year and all the technical groups who contributed to the successful physics runs during 2022.

9. A.O.B.

- L. Gaffney informs the committee that the next meeting will be his last as the United Kingdom representative.

17. Dates of the next meeting

The next ISSC meeting will be held at CERN on Thursday 15th June 2023.

Meeting ends at 15:45.

N.B. The above presentations can be found via https://indico.cern.ch/event/1254832/ .