



*Minutes of the 98th Meeting of the ISOLDE Collaboration Committee  
held on November 17th 2023*

Present: J. Cederkall, S. Freeman, H. Fynbo, S. Gilardoni, A. Herzan, H. Heylen, V. Ingeborg (replacing S. Siem), M. Kowalska, K. Lynch, D. Naidoo (via Zoom), A. Nannini, G. Neyens, J. Pakarinen, M. Pfützner, I. Martel, C. Mihai, G. Rainovski, J.A. Rodriguez (via Zoom), L. Schweikhard, N. Severijns(via Zoom), E. Siesling, J. Vollaire, D. Yordanov (replacing G. Georgiev)

Absent: A. Lagoyannis

Invited: N. Bidault (P.T.)

The meeting starts via Zoom at 09:00 h

### **1. Introductory remarks**

G. Neyens opens the meeting and, after welcoming the members of the committee, informs them that D. Yordanov is replacing G. Georgiev at this meeting. K. Lynch and I. Martel are introduced as the new representatives from the United Kingdom and Spain respectively. The chairperson welcomes H. Heylen, who has replaced K. Johnston as the ISOLDE Physics coordinator, to the committee.

### **2. Approval of the Minutes of the last meeting of June 15<sup>th</sup> 2023**

The minutes from the previous meeting are approved.

### **3. Update on Improvements Programme—*J. Vollaire***

The committee is reminded that the objectives of the ISOLDE Consolidation and Improvements programme are to firstly integrate the different consolidation activities led by the equipment owners and identify opportunities to enhance the capacities and capabilities of the facility and secondly to address safety concerns as well as limitations of the infrastructure or beam line systems inherent to an aging facility. Capacities and capabilities enhancement opportunities were identified during the two EPIC workshops (2019 and 2022) as well as the Mini-Workshop on ISOLDE Consolidation and Improvement in October 2022 <https://indico.cern.ch/event/1208149/>. Subject to approval, the components of the programme were defined as:

- Upgrade of the BTY line to deliver protons of 1.4 GeV or 2.0 GeV from the PS Booster to the two ISOLDE target stations. The proposal should also include a review of the beam line reliability and spares management.
- Replacement of the two ISOLDE beam dumps for the GPS and HRS target stations with actively cooled and instrumented systems. Consolidate the shielding (or reserve the space) to ensure safe operation with an increased beam power in the future. Construct a technical building on top of the target area to access the dumps and the surrounding shielding and host targets and beam dumps related subsystems.

- Modernization of the primary areas ventilation to address the recommendations from the FIRIA review exercise. The recommendations include the implementation of fire dampers and charcoal filters for the target area ventilation.
- Definition of a plan to ensure the availability of the REXTRAP and REXEBIS and enhance the performance and reliability of the systems according to the needs of the HIE ISOLDE users. The defined plan includes improvements of the existing setup that will be implemented before Run4. In parallel, the need to define a spare strategy for the REXEBIS and REXTRAP solenoid magnets has been identified. EDMS 2975844
- Definition of a plan to ensure the availability and reliability of the normal conducting section of the REX-LINAC and its related systems.
- Definition of a plan to ensure the long-term availability and performances of the SC part of the HIE ISOLDE Linac. The solutions identified during the Mini-Consolidation workshop include the production of a spare cryo-module as well as the implementation of a liquid nitrogen supply to keep the cryo-module shields cold during the entire year.
- Review and consolidation of the ISOLDE target systems and low energy beam lines equipment (including timing and ISCOOL RFQ cooler buncher). Upgrade of the power supplies for the electrostatics elements to allow for beam switching of the central beam line elements for simultaneous beams delivery from GPS and HRS.
- Review of the infrastructure status and space allocation. Proposal to rationalize use of space.

J. Vollaire then briefly summarizes the status of certain components of the programme. A working group for the upgrade of the BTY line has been in place for a year and a proposal is now in place. This includes consolidation of the power converters for the magnets of the PSB-BTY line so that they will be compatible with 2GeV and the identification of the magnets that will need to be replaced for operation at this energy. The estimated cost of the new magnets is between 500 and 900kCHF depending on the solution chosen. However, the lead time for the design, tendering and manufacture of the magnets is 2.5 to 3 years from the approval of the project so a decision is needed in early 2024.

As follow-up to FIRIA (Fire-Induced Radiological Integrated Assessment) recommendations, the building 197 extension will include new ventilation hardware and there will be a review of fire safety in the separator zones. Construction and installation of equipment is anticipated during Run 3 but final connection will only take place during LS3. Work on relocation of services has already started with careful planning so as not to impact physics.

The committee is told that the Beam Dump Replacement Study is still ongoing with an optimisation of the costs of the beam dump removal now taking place. The activity can only take place during a long shutdown so a decision is needed to secure the commitment of support groups. The preferred Flexi option includes a building on top of the target area to provide new access to the HRS separator area and the target area. The committee is reminded that funding for the beam dump replacement study was secured but funding for implementation has not yet been identified.

A concept for a new target station post LS3 is presented which would include a nuclear ventilated room in the new FLEXI building and a new passage for services.

J. Vollaire explains that the outcome of the Mini-workshop on ISOLDE Consolidation and Improvements in 2022 was reported at different meetings (IEFC/JAPW) and helped the equipment group to ISOLDE Accelerator Consolidation requests accepted. These included the BTY line power converter, PS for electrostatic elements, HV platform and target/line heating, solid state amplifiers for REX, and spare CM production. Extra budget was made available to cover additional costs related to Performance Improving Consolidation (making certain upgrades compatible with 2GeV), for example 1.4 MCHF for the BTY line power converter, justified by obsolescence, and 400 kCHF for 2 GeV compatibility. In addition, 3.5 MCHF has already been allocated for urgent orders and studies as well

as the Building 197 extension. The committee is told that studies are ongoing to define possibilities, scope of works and refine budget requirements while a Cost, Schedule and Scope review will take place on 12<sup>th</sup> December 2023 to clarify the scope of work until LS3 and beyond, collect budget requirements for MTP204 preparation as well as to confirm availability of resources (support group, infrastructure....).

S. Freeman tells the committee that no request has yet been received asking the ISOLDE collaboration to contribute financially to this programme.

Everyone involved in the consolidation and improvements programme is thanked for their hard work.

#### **4. Report on fellowship activities– N. Bidault**

The presentation begins with a brief overview of the work already presented at the ISCC meeting in November 2022 and then N. Bidault summarises the results of the work completed since then. The main activities of the fellowship were the optimization of the design of beam transport elements for future ISOLDE low-energy upgrades, beam dynamics simulations and emittance measurements at ISOLDE and OFFLINE2. Other activities included the implementation of the GeOFF Optimizer at ISOLDE, preparing for the use of AccTESTING at ISOLDE after LS3 and taking part in EBIS studies. Where necessary, documentation has been produced and training completed to ensure knowledge transfer.

The committee thanks N. Bidault for his hard work and commitment during his fellowship and wishes him the best for the future.

#### **5. ISCC Chair discussion followed by voting– G. Neyens**

The process agreed at the June meeting for the selection of the ISCC chair had been followed. All current members of the ISCC were able to submit an expression of interest. In addition, a Search Committee was formed to seek potential candidates beyond the ISCC. The Search Committee was composed of M. Pfützner and J. Cederkall, who contacted a number of potential candidates. Expressions of interest were received from two very good candidates and circulated to the committee before the meeting. L. Fraile is elected as the next ISCC Chair via a secret ballot. S. Freeman will inform the two candidates of the decision.

#### **6. Collaboration Matters – S. Freeman**

Firstly, H. Heylen, who has hit the ground running as the new ISOLDE Physics Coordinator, is welcomed to ISOLDE and then S. Freeman presents some reflections on the first half of his time as the ISOLDE Physics Section Leader. CERN structures are long and deep, oiled by good relationships and “influencing”. While there is much support and good will for ISOLDE at CERN, a lot of time is spent explaining and re-explaining the scientific and operational culture at ISOLDE, up and across the management structures. There are impressive collaborations at ISOLDE between operations, target and ion-source, and RILIS teams that ensure excellent overall delivery of the facility. However, technical and physics coordinators and user support are critical links. The physics group is youthful, energetic and talented but often needs support with soft/personal skills. Acting as an advocate for health and safety at the facility is also taking a more prominent role.

A number of issues are raised that will require attention in the coming months and years. Firstly, the search for the next ISOLDE Collaboration Spokesperson and Physics Section Leader needs to start in mid 2024 to allow interviews to take place in November for a contract starting in July 2025. Details of the selection process will be brought to the ISCC for approval in February. Secondly, the committee needs to consider succession planning for User Support; current employment arrangements are complicated/difficult and the workload has increased over the years. Finally, if the improvement programme is fully supported in MTP 2024, new investment becomes possible so the committee

should think about what could be possible and of interest to the physics community. Potential investments might include a modest hall extension, further improvement to existing infrastructures in LS4 or a superconducting separator.

S. Freeman tells the committee that ISOLDE has been allocating EURO-LABS TNA support to users from the very first day of the project, 1st September 2022. This support is generally directly at early-stage researchers and first-time users of the facility. During the first EURO-LABS reporting period from September 2022 to August 2023, ISOLDE allocated EURO-LABS support to 44 experiments with a total of 157 researcher-visits receiving subsistence payments. The distribution of the support among institute countries is presented. The grant agreement states that “Access for user groups with a majority of users not working in an EU Member State or Horizon Europe associated country is limited to 20% of the total amount of units of access provided under the grant.” The current position for EURO-LABS is that the UK is still treated as not being associated with Horizon Europe despite the recent agreement between the UK and the EU because funding for the project is taken from the 2021 budget. However, even though ISOLDE has a lot of UK participation this is not necessarily a problem because other facilities do not and the 20% applies at project level. CERN and ISOLDE open publications and open data policy is consistent with EU requirements, but records need to be kept for reporting to the EU. Committee members are asked to remind their communities that publications resulting from experiments that have received EURO-LABS support must acknowledge the fact using the phrase “This project has received funding from the European Union’s Horizon Europe Research and Innovation programme under Grant Agreement No 101057511”. This information can be found on the EURO-LABS page of the ISOLDE website.

S. Freeman reminds the committee that, at the beginning of October, a request was received from A. Bracco (AGATA Steering Committee) for information regarding the possible siting of AGATA at ISOLDE during the period 2026 to 2030. As the deadline given for feedback was very short, a draft response was emailed to the ISCC members on 3rd October asking for comments. A reply was then sent to A. Bracco on behalf of the collaboration clarifying that there are significant differences between CERN and other potential host national laboratories that need careful consideration. There are also a number of practical matters as well as political concerns. The reply was without commitment, covering aspects that are clear as well as noting items that need more discussion before any decisions can be made. It was made clear in the reply that there had not been an opportunity to discuss the matter properly with the ISCC. No response has yet been received from the AGATA Steering Committee. S. Freeman will contact them to see if there is any feedback. The main themes that would need to be considered by the ISCC before any approval of siting AGATA at ISOLDE could be given are then presented to the committee; the earliest that it would be feasible to welcome AGATA to ISOLDE would be after LS3.

The committee is informed that the formal signing of the addendum to facilitate Swiss membership of the collaboration is underway. The delay was associated with clarification of national membership in the main 2016 MoU. The committee approves the addition of the Swiss information to the MoU annexes, as well as the change of the CERN, United Kingdom and Spanish representatives. The update of the ISOLDE Physics Coordinator and ISCC Chair in the document is also approved. The approved updated annexes now have to be sent to the office of the CERN Director of Research, so it is now planned to ask for approval of updates at the November ISCC meeting each year and then send the new updated document to H. Meinhard at the same time each year.

S. Freeman explains that after being verbally informed by the Greek funding representative during council week in March that Greece would leave the collaboration due to a shift in research focus, they were informed of the formal steps they would need to take, i.e. the MOU requires a formal letter giving one year notice of leaving and it also gives provision for compensation. They were informed a second time after the FRC and then they were told that the collaboration would not request

compensation after this was decided at the June ISCC meeting. However, there has been no communication from them since March so it is likely that the ISCC will have to formally end Greek membership at the meeting in February 2024 and make a recommendation to the FRC to write off the Greek 2023 financial contribution.

The committee is reminded that Spain never actually signed the 2016 MoU but have recently requested the latest version of the document as there is a possibility that it could again be considered for signature.

S. Freeman informs the committee that a request has been received from South Korea about possible membership of the collaboration. The committee approves the follow up of this request but emphasises that it should be made clear that it is a physics collaboration and that agreements for technical collaboration have to be made with the relevant CERN departments, particularly SY. The committee also approves the follow up of a request from IPEN in Brazil for institute membership as long as it is clarified that this would not allow them to be spokespersons of an experiment.

The status of membership contributions for 2023 is presented as well as the main collaboration expenditure, a detailed report of which will be given at the next ISCC meeting.

The committee is informed that analysis and review of the very serious health and safety incident that occurred at VITO in October is on-going and should be completed along with the clarifying of processes early in 2024. At present, it is not allowed to empty or fill a charged exchange cell, but EP is aware that both COLLAPS and CRIS have cells that need emptying. A derogation will be made in order to facilitate these. The frequency of incidents has triggered HSE to set up a wider review of ISOLDE to look for possible improvements across the board. However, committee members are asked not to wait for the recommendations from the incident and the broader review, but to already start raising awareness of health and safety issues within their national communities. It must be ensured that all written procedures are followed to the letter and their used as check list as the procedure is performed is suggested. If procedures present issues (either matters of safety or ease of undertaking the activity) then EP Safety is more than happy to discuss modifications, but nothing should be changed until approval is given. There is also the need to ensure PPE and other requirements in the hall are adhered to.

S. Freeman explains that the workshop in building 508 has had to be temporarily closed while the machines are being checked and repaired and a someone with the correct CERN mandate is identified to act as the workshop supervisor. One option might be for the collaboration to support, fully or partially, a technician post to act as supervisor, but with a substantive role to support users with technical tasks. Before LS2, 0.5 FTE technical support had been made available. The committee expressed interest in this option.

The committee are reminded that the ISOLDE Workshop and Users Meeting will take place at CERN from 29<sup>th</sup> November to 1<sup>st</sup> December. More abstracts than in previous years have been submitted which has meant that more have had to be shifted to posters. At the time of this meeting there are 143 in person registrations and 55 online, but this is expected to increase closer to the event. The local team helping with the organisation of the workshop are thanked for their efforts. The dates of the 2024 edition of the ISOLDE Workshop and Users Meeting have already been fixed as Wednesday 27<sup>th</sup> November to Friday 29<sup>th</sup> November.

Regarding Open Science, S. Freeman informs the committee that the ISOLDE Open Data Policy, approved at the previous meeting, has now been distributed to the collaboration and appears on the ISOLDE website. The EURO-LABS project requires the Data Management Policy of each experiment that receives TNA funding to be recorded and most spokespersons are intending to use the CERN Zenodo platform after the point of publication. The committee is told that in August, with the help of the CERN library, it was found that there was a good compliance with the CERN requirement

to make all publications resulting from experiments at ISOLDE Open access but 10% still did not have any type of Open Access. Hence, there is still work to do on so the members of the committee are asked to remind their national communities of this requirement. Useful advice about how to make publications Open Access was recently distributed to the collaboration including the particular importance of flagging ISOLDE-CERN in submissions to some journals to ensure automatic treatment for Gold Open Access.

### **7. News from the ISOLDE coordinator– H. Heylen**

The outcome of the recent INTC meeting is summarised. There were 21 documents received requesting a total of 301 shifts of which 175 were approved. The distribution of the submitted documents by search area is presented with the highest number being for HIE ISOLDE. H. Heylen then summarises the shift backlog which now stands at 1298 of which about 40% are for HIE ISOLDE experiments.

The committee are shown the key dates for the yearly technical stop and the 2024 restart. ISOLDE winter physics will end on 20<sup>th</sup> November 2023 and low energy physics is scheduled to start again on 8<sup>th</sup> April 2024. HIE ISOLDE physics is due to begin on 11<sup>th</sup> July and protons to ISOLDE will end on 28<sup>th</sup> October.

The ISOLDE physics schedule for 2023, that ran from 10<sup>th</sup> April to 30<sup>th</sup> October, is presented. Even though the running time was 20% less than in 2022 due to energy considerations, 59 experiments were scheduled with 470 shifts for physics and beam development. This included a total of 122 HIE ISOLDE shifts for 10 experiments. The winter physics programme will also be busy with 3 targets irradiated cold in October and an external Ag sample from PSI. Runs at MIRACLS, COLLAPS, IDS VITO and ISS are briefly summarised as well as results from a few SSP runs. The committee is told that the new MIRACLS set-up is operational in the hall and that MULTIPAC is now ready to move into the experimental hall but, at present, no space is available.

Target and beam development activities during 2023 are briefly summarised. The highlights of which were the production of the nuclides, neptunium and plutonium from uranium carbide and the production and purification of <sup>225</sup>Ac for medical applications.

H. Heylen explains that during 2023 REX/HIEISOLDE experienced issues with nearly all aspects of the post accelerator. The knock-on effect was that there was very little commissioning time which meant no reference files could be produced. However, the planned experiments were still able to be maintained. During the year machine development has been on-going with promising results from an investigation into the use of ISCOOL in case of REXTRAP failure. New methods of rephasing the HIE LINAC in case of a failure or running at reduced gradient SRF cavity have been found to reduce the necessary rephasing time from days to hours. Important tests have also taken place to see if it is possible to run without the first cavity in CM1 so that the beam can be caught directly from REX into the 2<sup>nd</sup> cavity.

The committee acknowledges the very impressive physics programme in 2023 despite the issues that were faced. The ISOLDE operators and technical team are thanked for their excellent efforts.

### **8. News from the 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)”: Zoe Favier -IDS (March 2022 – February 2024), Simon Lechner – MIRACLS/PUMA (Nov. 2022 – Oct. 2024), Louis Lalanne – CRIS (February 2023 – January 2024).

- Applied Fellows = “Research Fellowship In Applied Physics 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), Lukas Nies – MR-TOFs/PUMA (Sept. 2023 – Aug. 2025).
- QUEST Fellows = like an Applied Fellow – “project graduate”: Amy Sparks – VITO/medical imaging (May. 2023 – Nov. 2024),
- Marie-Curie Individual Fellow: Monika Piersa-Silkowska (Feb. 2022 – Jan. 2024)
- Scientific Associates: Georgi Georgiev (6 months extended by 6 months, August 2022 to July 2023), Andrei Andreyev (12 months extended by 3 months, October 2022 to December 2023).
- Corresponding Associate: None.
- Doctoral Students: Marcus Jankowski (CERN via Gentner Doctoral Program) (January 2021 to January 2024), Tim Lellinger (CERN via Gentner Doctoral Program) (March 2021 – July 2024), Mateusz Chojnacki (CERN-ERC Betadrop) (July 2021 – June 2024), Ilaria Michelon (CERN via VITO EU+EP Quota) (April 2023 – February 2026), Daniel Paulitsch (CERN via Gentner Doctoral Program) (August 2023 – July 2026) .
- Staff Members: Sean Freeman (Physics Group Leader) (August 2021 to July 2025), Magdalena Kowalska (CERN staff member- Senior Research Physicist) (January 2020 -), Mark Bissell (Research Physicist LD)(September 2022 to August 2025), Hanne Heylen (Physics Coordinator) (September 2023 to August 2026).
- User: Jenny Weterings (User Support) ISOLDE Collaboration & University of Oslo (2002- )

S. Freeman notes that a number of fellows have recently come to the end of their contracts and more will leave ISOLDE in the near future; some of these are going to permanent positions which is very impressive. The committee is told that many more applications than normal for fellowships at ISOLDE were considered at a recent by the fellow selection committees and official notification of the committee’s decisions is expected soon.

M. Kowalska is congratulated on her recent promotion to Senior Research Physicist at CERN.

The committee thanks G. Neyens for her time as the ISCC Chairperson and is wished well in her new role at KU Leuven.

## 9. A.O.B.

- M. Pfützner explains that 40% of the INTC shift backlog is for HIE-ISOLDE which can only provide a maximum of 150 shifts a year, usually less. At the beginning of 2026 all INTC accepted shifts will be set to zero and new proposals will have to be submitted. Hence careful consideration should be given to which experiments are scheduled before LS3. The collaborations running at HIE-ISOLDE will be asked to consider which experiments will practically not be able to run before LS3 and which will make a first cut in the number of shifts waiting to be scheduled. If a further reduction is required the INTC may decide to only accept the submission of a certain type of physics proposal at certain INTC meetings until LS3. Collaborations are asked to filter proposals sent to the INTC to prioritise what can be scheduled before LS3.
- J. Pakarinen informs the committee that the review of Finnish activities at ISOLDE was extremely positive so involvement activities at the facility will continue for the coming years.

## 17. Dates of the next meeting

The date of the next ISSC meeting will be decided after consultation with the new ISSC Chairperson.

Meeting ends at 13:00.

N.B. The above presentations can be found via <https://indico.cern.ch/event/1336672/> .