



*Minutes of the 99th Meeting of the ISOLDE Collaboration Committee  
held on February 21<sup>st</sup> 2024*

Present: J. Cederkall, L. Fraile, S. Freeman, G. Georgiev, S. Gilardoni, A. Herzan, H. Heylen, M. Kowalska, K. Lynch, A. Nannini, J. Pakarinen, M. Pfützner, I. Martel, C. Mihai, J.A. Rodriguez, L. Schweikhard, N. Severijns, J. Vollaire

Excused: J. Pakarinen, G. Rainovski, E. Siesling, N. van der Meulen

Absent: H. Fynbo, A. Lagoyannis, S. Siem, D. Naidoo

The meeting starts via Zoom at 09:00 h

### **1. Introductory remarks**

The new ISCC Chairperson, L. Fraile, opens the meeting and welcomes the committee members.

The committee expresses its shock and sadness at the sudden passing of Bruce Marsh who, both professionally and personally, brought a lot of light to the facility. A moments silence is observed in remembrance. A memorial article for the CERN Courier is being prepared by M. Calviani (SY-STI); S. Freeman will contact him so that a text from the ISOLDE Collaboration can be incorporated. It is also planned to remember Bruce in the EP Newsletter and a memorial session at this year's ISOLDE workshop is something that could be considered.

### **2. Approval of the Minutes of the last meeting of November 17th 2023 and the meeting agenda**

The agenda of the meeting and the minutes from the previous meeting are approved.

### **3. Update on YETS Activities and Improvements Programme – *J. Vollaire***

Activities that have been completed and those still taking place during the present Year End Technical Stop (YETS) are summarized. All activities are on schedule to allow stable beam commissioning to start on 18<sup>th</sup> March and BTY line commissioning with protons to commence before Easter. The transport of targets has been completed with 16 sent to the ISR storage area for final disposal and 17 of those used in 2023 stored on the MEDICIS shelves for possible re-use or to serve as back-up units. The committee are told that 40 targets were produced and operated in 2023 although only 50% of these were used at the ISOLDE facility while the rest were used offline and at MEDICIS. During 2023, 37 non-actinide targets were dismantled and a pilot batch of 14 units, that had been dismantled in 2022, were sent to PSI for elimination. Maintenance of the target stations has been completed. It is noted that, as it is not planned to replace the frontends until LS4, the dose given to them should be optimised especially if they are going to be operated at higher energies. The beam instrumentation interventions that have taken place and the work carried out in the HV room and separator areas are briefly presented.

The committee are told that preparatory work for the building 197 extension started in November with construction planned to start in the 3<sup>rd</sup> quarter of 2024 and installation of cooling and ventilation equipment in 2025. All outside activities, such as the HV cabling to cryo-systems for HIE ISOLDE are on schedule for the restart of the facility.

J. Vollaire then updates the committee on the status of the ISOLDE improvement programme. A cost, scope and schedule review took place in December 2023 where equipment groups were asked to present their plans regarding budgets, resources and schedule to address the list of improvements identified and summarized in the LOI written by S. Freeman in January 2023. It is clarified that the ISOLDE fire safety improvement was included in CERNs MTP2023 while the new beam dumps (12.9M CHF) and the energy/intensity upgrade (2.5M CHF) including the BTY line have been requested as two new lines in MTP2024. Other items related to infrastructure or obsolescence will be collected and put forward as consolidation requests with clear scope and deliverables; once this list is established it will need to be endorsed and prioritised by the INTC, ISCC and IEF. The committee are informed that a Superconducting Linac task force, coordinated by E. Siesling, has been set up with the short-term objective to provide technical solutions to maintain performance of the SC cavities. During the coming months the strategy for the normal conducting Linac will be re-evaluated and defined for LS3 and beyond by BE-OP, BE-ABP and SY-RF.

The funding requirements for the different sections of the improvement programme are briefly summarised. In total, the funding for the proposed improvements totals around 25 MCHF. In 2023, funding was allocated towards the FIRIA implantation (3.7 MCHF ventilation upgrade for primary areas) and the purchase of new power converters (around 2 MCHF) for the BTY line upgrade. Additionally, 2.1 MCHF has been approved from a consolidation budget for 2025-2027 for REX RF amplifiers. The remaining funding for the rest of the improvement programme is yet to be approved and requests will be made to the MTP (around 15 MCHF requested) and to the consolidation budget (around 2.5 MCHF requested). The MTP strategy has been discussed by the ATS management board and, if approved, will then go to the CERN Directorate and Council for final approval in spring. The consolidation requests have also been made.

In order to undertake the beam dump replacement during LS3, a final decision will need to be received by April/May 2024. S. Gilardoni assures the committee that, especially after the impressive presentation given by S. Freeman at the recent Chamonix Workshop, the CERN management understand the physics need at ISOLDE. The technical work required and the physics justification, as well as the goodwill, is all in place so the decision will come down to finances. S. Freeman's Chamonix presentation, that has received such positive feedback, as well as that given by C. Duchemin, will be made available to the committee.

#### **4. Cryotests for HIE-ISOLDE – A. Rodriguez**

On behalf of E. Siesling, A. Rodriguez explains the motivation behind the planned cryo/SRF liquid nitrogen tests. Since the start of HIE-ISOLDE in 2015, the SRF cavities show signs of degradation with the overall performance of the machine in terms of accelerating gradient going down to 70% of nominal values in 2023. The main cause of this degradation is thought to be the yearly warm-up/cool-down cycle of the facility affecting the Nb layers of the SRF cavities. However, the present infrastructure and cryo-plant do not allow the facility to operate for 365 days a year and requires a full thermal cycle and recommissioning of the SC linac. The redesign of the cryo-plant and associated infrastructure would be very expensive so a possible alternative could be to permanently cool the cryo-module thermal shields using liquid nitrogen.

The committee is informed that tests were conducted at the end of the 2023 running period that gave insight into the temperature behaviour of the cryo-modules, but there had not been enough time to characterise the RF performance of the SRF cavities. Hence, it is hoped to perform further cryo/SRF

liquid nitrogen simulation tests, for a period of approximately 5 weeks, during this year's cooldown. Due to optimisation of the cool-down sequence as well as the introduction of a new SRF conditioning procedure by the cryo and RF specialists, it is, in principle, possible to include the planned tests in the HIE-ISOLDE start-up planning such that the date for the start of beam commissioning, as well as that of HIE-ISOLDE physics, can be maintained. However, this depends on the availability of the required cryo and RF specialists; validation of the planning with the groups concerned is in progress.

If the outcome of the tests is positive and a liquid nitrogen system is implemented there would be no need for a full thermal cycle which would prevent mechanical stress on the cryo-module components and reduce degradation of the SRF cavities. There would also be better overall vacuum conditions leading to the elimination of pollution installing on Nb layers and, ultimately, the shorter cryo and SRF commissioning time required would result in a longer physics run.

J. Rodriguez explains that the results of the tests will determine the strategy regarding the 5<sup>th</sup> cryo-module as they may indicate that the design should be adapting.

The best scenario for the planning of these tests is presented.

## **5. Collaboration Matters to include finances and succession planning for Section Leader and Collaboration Spokesperson – *S. Freeman***

The committee is told that no official feedback has yet been received from the AGATA steering committee regarding the information sent to them in response to their inquiry about the possibility of housing AGATA at the ISOLDE facility at some point in the future. However, according to P. Reiter, the steering committee understands the challenges of locating the detector at ISOLDE.

S. Freeman informs the committee that he has been invited to be a member of the 1<sup>st</sup> RAON PAC and so will be travelling to South Korea in March. The committee also hears that Quentin Vuillemin has been appointed as the Research Fellow for the ISOLDE optics studies in the ABT group and will take up the post on May 1<sup>st</sup>.

A short discussion takes place about Open Data Policy after the committee is told that the ISOLDE policy seems to be taking effect since the information compiled for EURO-LABS shows that almost all experiments running at ISOLDE will use Zenodo to store their data and will make it publicly accessible after publication. It is clarified that it is the responsibility of the Spokesperson of each experiment to decide what level of data to make available and which information and tools to supply in order for the data to be usable. Guidelines can be found appended to the ISOLDE Open data Policy and these can be updated in the future if required; committee members with suggestions on this issue are invited to send them to the ISOLDE Physics Section leader.

The committee is informed that, in December 2023, CERN Council decided to “terminate the International Cooperation Agreement between CERN and the Russian Federation, together with all related protocols and addenda, with effect from 30 November 2024” and to terminate, *mutatis mutandis*, all other agreements and experiment memoranda of understanding allowing the participation of the Russian Federation and its national institutes in the CERN scientific programme, with effect from 30 November 2024.” This means that the long-standing collaboration with the Kurchatov Institute on RILIS will be terminated. However, the agreement with the international laboratory JINR Dubna will be considered at the next Council Meeting.

Regarding the recruitment of the next ISOLDE Physics Section Leader and Collaboration Spokesperson, S. Freeman refers to the draft recruitment process document circulated to committee members two weeks previously. The proposed process still requires approval from CERN EP and HR departments, but it is similar to the previous approach and without radical change. It is clarified that a formal CERN interview will take place after ISCC selection. The document is approved by the

committee. It is noted that a discussion will be necessary on how ISCC members solicit feedback from their communities in a way consistent with applicant confidentiality.

S. Freeman then summarises the following issues related to membership of the Collaboration:

- Switzerland signed the MoU at the beginning of 2024 so are now a member of the ISOLDE Collaboration.
- Following ISCC support in November 2023, IPEN in Brazil have decided to proceed with institutional membership so an agreement is being prepared.
- South Korea is discussing their possible collaboration membership with their funding agency.
- There has been no communication with Greece since March 2023 when the MoU requirements for withdrawal from the Collaboration were explained and in April 2023, after the FRC meeting, when the decision that no compensation would be sought was relayed. No payment has been received for the invoice sent for the 2023 contribution. This will be pursued with the help of CERN management, although it may need to be written off at some point in the future.

The committee is told that H. Meinhard is overseeing agreements and MoUs for the Director of Research and computing, in a more consistent and uniform way. It is likely that new agreements (institutional membership, Third Party Accounts etc.) will be set up as an addendum to the MoU rather than a separate document.

S. Freeman presents an overview of the Collaboration expenditure in 2023, which includes the final HIE-ISOLDE loan payment, followed by the evolution of the account balance since 2010. The positive account balance shows that savings are available for ISOLDE improvements. The proposed budget for 2024 is shown to the committee. The estimated cost of a technician, managed by SY, to give technical support to ISOLDE Users is included in the proposed expenditure. The technician position would be a 5+3 year CERN LD post. In addition to technical support for users this post could also solve the supervisor issue for the workshop in building 508 as well as reduce the workload of the ISOLDE Physics Coordinator by taking over the task of material storage and management. However, the post would not have high level safety responsibility associated with it. The committee is positive towards the idea as it fits well within the scope of maintenance and operation of the facility. S. Freeman and J. Vollaire are asked to develop the job description to ensure that it is explicitly written that the core task would be the support of ISOLDE Users and to try to make the requested skills set of the technician as wide as possible consistent with CERN requirements and recruitment strategy. The committee is told that the proposed budget for 2024 also includes estimated costs related to the installation of a liquid nitrogen tank that could be rented by the collaboration in order to avoid problems faced by experimental setups caused by the unreliable nature of liquid nitrogen delivery. Liquid nitrogen needs and siting and civil engineering requirements for the tank as well as costs and logistics are being put together by C. Schweiger in order to develop a firm plan so that approval can be secured from all the relevant stakeholders, in particular HSE. This plan has received universal support from the permanent set-ups at ISOLDE. The committee is positive towards the idea of installing and renting a liquid nitrogen tank and thanks C. Schweiger for the effort he has put into this project. The proposed Collaboration budget for 2024 is approved by the committee.

An overview of the costs associated with the proposed MTP consolidation and improvements is presented, grouped into the three categories beam dumps, Intensity and Energy upgrade and consolidation. Certain items, other than beam dumps and fire safety, could be considered for Collaboration funding if they are not integrated into CERN's MTP. However, if the improvement programme is fully supported in the MTP then new investment by the Collaboration becomes possible. S. Freeman shows how the Collaboration's account balance would evolve if a yearly saving of 400 kCHF, the same amount previously required to repay the HIE-ISOLDE loan, is made. It is noted that future expenditure will have to include an increased cost for User Support as any

replacement for J. Weterings would have to be done via a CERN LD post and the Collaboration will most likely want to reintroduce User funding after the EURO-LABS project has finished. Committee members are asked to consider possible future investment projects for the facility and inform S. Freeman before the next meeting when a discussion on this topic will be scheduled. The implementation of any proposed projects will have to be considered carefully with respect to available manpower, logistics with MTP improvements etc.

S. Freeman explains that, following the incident last year, EP management have asked that procedures for all activities in the ISOLDE hall with elevated risk be reviewed by EP safety before the activity is undertaken. This task is mainly being taken care of by the local contacts for beamline instruments, except for TAS and WISArD. The committee is told that no information has yet been received regarding the planned HSE review of safety at ISOLDE, but many useful conversations are already taking place. HSE will review past incidents but will also look at organisation of safety at ISOLDE. The committee expresses its support for and willingness to do what it can to work with EP Safety to improve safety at the facility. S. Freeman would welcome any helpful suggestions or observations from the ISCC about how to improve safety at ISOLDE as well as awareness of the issue.

The committee is shown how building 275 has been transformed and now complies with all the aspects covered by the safety inspection (except for some infrastructure work) that took place in autumn 2023. L. Vazquez Rodriguez, the TSO of building 275, and all the teams involved are thanked for their hard work. S. Freeman informs the committee that intensive cleaning of the ISOLDE hall is now in progress.

The committee is told that the second Financial Review Committee, organised by the office of the Director of Research and Computing, is scheduled for 2pm on 12<sup>th</sup> April 2024. ISCC members are requested to check who will represent their country at this meeting and inform S. Freeman of any changes to the list presented. S. Freeman explains that there is now a common format for the financial information that is at a very high level. The Third-Party accounts of ISS, IDS, MINBALL, CRIS and COLLAPS will also be reviewed during the meeting so these collaborations have been contacted for assistance in preparing the presentation to be given by S. Freeman and there may be a need to invite more FRC members if funding comes from different sources to that of the ISOLDE Collaboration contribution.

S. Freeman tells the committee that he was invited to give a talk on the future of nuclear physics programmes at CERN for the next 10-20 years at the recent CERN Chamonix workshop <https://indico.cern.ch/event/1343931/contributions/5672275/attachments/2789874/4865091/Chamonix-SJF-3.pdf>. This is a meeting for the ATS sector as well as the Director General, other Directors and department heads. The presentation not only covered ISOLDE but n\_TOF, AD, NA60+ and NA61/SHINE as well. The topics included in the talk regarding ISOLDE are briefly summarised as well as the discussions that took place afterwards; the technical details of the MTP improvement programme were included in the talk given by C. Duchemin (SY). The committee are shown a comparison between the performance of the ISOLDE facility and that of FRIB/REA both at present and in the future. This was used at the Chamonix meeting to show that ISOLDE is a unique facility. S. Freeman tells the committee that the feedback after his talk has been very positive, and that the audience were impressed by the strong collaboration between the user community and the technical group, a unique feature of the ISOLDE facility. The committee congratulates S. Freeman on the presentation given at the Chamonix workshop.

The next "Physics Beyond Colliders Annual Workshop" will take place at CERN from 25<sup>th</sup> to 27<sup>th</sup> March 2024. M. Kowalska explains that, two years ago, she and G. Neyens were asked to represent ISOLDE in the "Physics Beyond Colliders" working group that considers the funding of smaller projects in fundamental physics complementary to the LHC. However, despite project suggestions being put forward, no new funding has yet been allocated to ISOLDE. The committee concludes that

it is important for ISOLDE to continue to be part of this working group. A. Rodriguez is part of the accelerator side of the working group.

S. Freeman reminds the committee that the deadline for submitting articles for this year's ISOLDE Newsletter is 10<sup>th</sup> March.

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

The committee is informed that at the recent INTC meeting all the proposals submitted for ISOLDE were either fully or partially endorsed with 206 out of 240 shifts approved. Before the INTC meeting the ISOLDE backlog was approximately 1300 shifts for 150 experiments. The distribution of the backlog shifts by topic is presented showing the highest percentage (35%) being for HIE ISOLDE. H. Heylen notes that, despite this backlog, as in previous years, it has not been easy to find experiments willing to run at the start of this year's physics run in April.

An overview of the ISOLDE physics schedule in 2023 is shown. Protons were available to ISOLDE from 10<sup>th</sup> April to 30<sup>th</sup> October making the running period 20% shorter than in 2022 due to energy considerations. There were also three weeks of winter physics in November; the outcomes of both IS672 and IS725, that ran during this period, are briefly summarised. The committee are told that during 2023 there were a total of 64 physics runs, giving beam to 46 INTC approved experiments of which 10 were HIE-ISOLDE experiments. A total of 493 shifts were delivered, reducing the backlog by 426. The remaining 67 shifts were available for ad-hoc opportunities such as extension of beamtimes, alternative measurements in case of failures etc. The distribution of the shifts between difficult types of physics is presented.

H. Heylen informs the committee that three separator courses took place in November with a total of 39 participants. M. Benito and E. Fadakis are thanked for hosting these courses.

The committee hears that in 2024 the start of low energy physics will be 8<sup>th</sup> April and HIE-ISOLDE physics is scheduled to start on 11<sup>th</sup> July. At present the date for the end of protons is 28<sup>th</sup> October but this may change.

Regarding the clean-up campaign at ISOLDE, the committee are told that, as well as the great efforts of L. Vazquez Rodriguez in building 275, the removal of NICOLE is on-going and efforts to tidy up the ISOLDE hall are progressing well with generally good cooperation from the groups involved. To assist with this task, a temporary storage area in building 263 has been made available to ISOLDE by the SY department for the next 6 months.

H. Heylen tells the committee that all experiments seem to be taking action regarding their safety files but it is stressed that if an experiment does not have up-to-date files then it will not be able to run.

#### **7. 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), Jessica Warbinek – CRIS (January 2024 – December 2025), Monika Piersa-Silkowska - VITO (February 2024 – July 2024 (Previously Marie-Curie Fellow Feb. 2022 – Jan. 2024)).
- Applied Fellows = “Research Fellowship In Applied Physics And Engineering (Category 2)”: Carlotta Porzio – MINIBALL (March 2024 – February 2026), 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), Nikolay Azaryan – VITO/ATLAS (December 2023 – November 2025) .

- QUEST Fellows = like an Applied Fellow – “project graduate”: Amy Sparks – VITO/medical imaging (May. 2023 – Nov. 2024),
- Scientific Associates: None
- Corresponding Associate: Pedro Miguel da Rocha Rodrigues (January 2024 for 3 months).
- Doctoral Students: Marcus Jankowski (CERN via Gentner Doctoral Program) (January 2021 to June 2024), Tim Lellingner (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- )

The next deadline for Research fellowship applications is March 5<sup>th</sup> 2024.

### **8. Dates of the next meeting**

The date of the next two ISSC meetings are fixed:

- Friday 21<sup>st</sup> June - online
- Wednesday 6<sup>th</sup> November - in-person (meeting to select next ISOLDE Physics Group leader/Collaboration Spokesperson)

Meeting ends at 13:00.

N.B. The above presentations can be found via <https://indico.cern.ch/event/1382197/> .