



Update on YETS Activities

96th ISOLDE Collaboration Committee meeting– 8th of March 2023

Joachim Vollaire (Technical Coordinator) on behalf of ISOLDE Technical Teams

Outline

- **End of year 2022 – YETS preparation**
- **Main activities in the primary areas (target area / separator zones)**
- **REX/HIE ISOLDE Status**
- **Other news**

ISOLDE 2022 – end of run

GPS schedule 2022									
October					November				
40	41	42	43	44	45	46	47	48	
3	#779 LaC 10	#782 UC V07 17	24	31	#784 UC W 7	14	#619 or #771 Pb	21	28
TBC UC		IS711 92, 94Kr @ 7.5MeV/u		#534 Sn	IS697: 131Sb, 133Sb @ 4 MeV/u	IS587: 68Ni @ 5MeV/u			
IS668 + collis	IS716	IS711 92, 94Kr @ > 7MeV/u	IS691	IS647 IS652 IS679 IS703			IS563: 182, 184Hg @ 4MeV/u		
RILIS: Sn	1.7GeV	Kr beams	Xe beams	111Cd	RILIS: Sb	RILIS: Ni			Hg beams

HRS schedule 2022									
October					November				
40	41	42	43	44	45	46	47	48	
3	10	17	#782 UC VADUS 24	31	7	14	21	28	
			TISD	IS702: 130Sn @ 4.4MeV/u	#754 UC		#751 UC VDS		
#751 UC VDS				Sn beam		IS666		IS706 (Winter)	
						37K		AcF beams	

- Physics with protons not impacted by CERN decision to anticipate the start of the YETS (energy saving measure)
- One week of winter physics supported (minimal electricity consumption) with beam delivered from the HRS Frontend using a pre-irradiated target
- RILIS scheme development in parallel with the GPS Frontend
- Beam to RC6 for emittance measurements (PUMA) using new emittance meter

YETS preparation – Ventilation Consolidation

- For the primary areas, the main constraint was the ventilation consolidation (new UNICOS controls, new sensors and actuators, new power cubicle, new control cubicle). Activity started end of LS2 but not completed.
- Interruption of the ventilation system between the 12/12/2022 and 20/02/2023 (no air renewal, so no possibility to schedule interventions)
- Radioactive targets were transferred to the MEDICIS storage area (nuclear ventilation of Building 179) early December
- Standard YETS activities started on the 20/02/2023

EDMS No.: 2723269
Contract B1676/EN

Task Name	Deadline
Launch of the Quotation Request	03 June 2022
Preliminary Site Survey Visit	13 June 2022
Quotation Folder Received	24 June 2022
Release Order	11 July 2022
Delivery of the Design Documents / Drawings	22 August 2022
Delivery of documents to submit before starting on-site installation as per § 5.1.3 of technical specification of contract B1676/EN	14 November 2022
Start of on-site installation	12 December 2022
Delivery of documents to submit before software implementation as per § 5.1.4 of technical specification of contract B1676/EN	15 January 2023
Project ready for commissioning	18 January 2023
End of commissioning	20 February 2023
Delivery of documents to submit prior to acceptance as per § 5.1.5 of technical specification of contract B1676/EN	08 March 2023
Delivery of documents to submit on completion of the work (resolution of nonconformities) as per § 5.1.6 of technical specification of contract B1676/EN	14 March 2023
Acceptance	15 March 2023

CERN
CH-1211 Geneva 23
Switzerland

EDMS NO. 2256828 REV. 1.0 VALIDITY DRAFT

REFERENCE EN-CV-2019-308

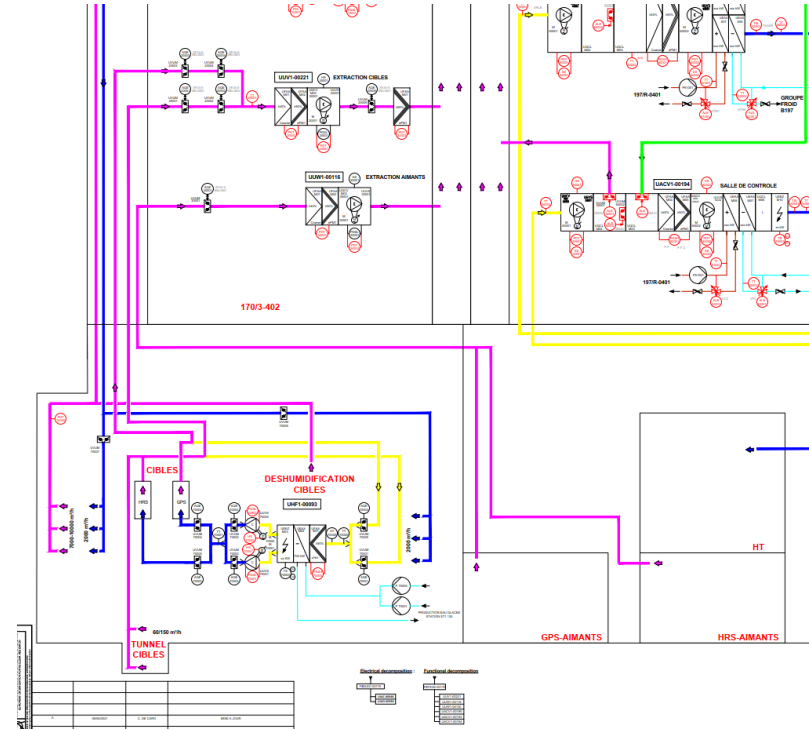
Date: 2019-10-16

CONSOLIDATION WORK UNIT DESCRIPTION

**Consolidation of Isolde ventilation
PS-CONS
EN-CV**

ABSTRACT:
In order to improve the operability, reliability, availability, maintainability and safety of the Isolde ventilation, this system is proposed for consolidation. This document describes the scope, impact and resource estimate of the proposed consolidation action and contains also a related risk analysis. This document is used to request funding in the framework of the ATC Accelerator Consolidation Program and it serves for analysis and

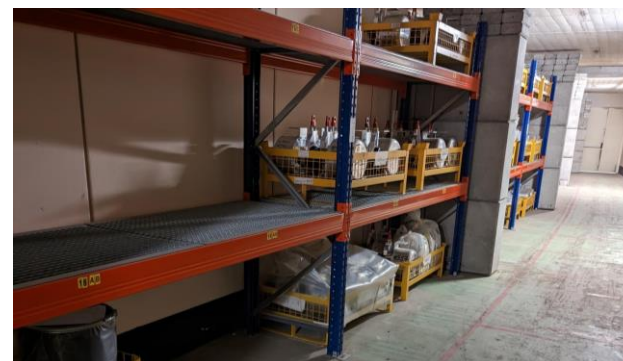
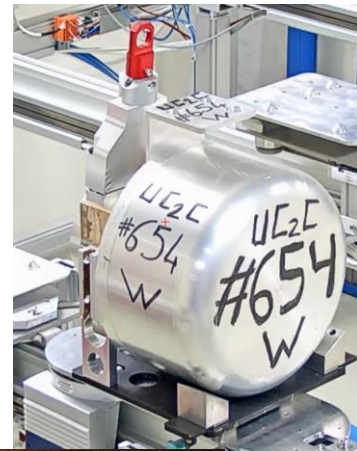
Ventilation work



- Ventilation system ensures several key safety and operational functions (dehumidifier for the Faraday Cages, dynamic confinement interfaced to the safety systems, flush before access, air renewal, filtration....)
- Safety functions validated during the DSO tests (annual recertification)
- More robust and maintainable system now available

ISOLDE Targets Transfer

- December: transfer to MEDICIS storage (almost fully remote)
- January: standard transfer to the ISR in January (26 targets)
- Targets from previous years kept for possible re-use



Storage ok until LS3 only -
Elimination campaign in parallel !

Maintenance activities

- Standard maintenance: Exchange of extraction electrodes, cleaning of insulators, greasing of movable parts, check of robot trajectories, visualization systems, vacuum pumps maintenance (every 2 years), laser windows exchange...
- Replacement of the two compressed air jacks for the coupling tables (upgraded design extensively tested). Problems encountered during target changes (lack of force).
- Upgrade to better control the gas injection into the RFQ. Improvement on the patch panel....

Maintenance activities (in pictures)

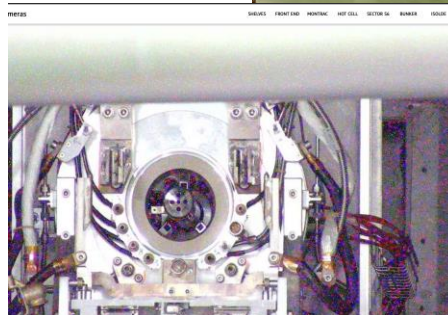
Target area – in-situ measurements and inspection in December



Test bench (new design)



Extraction Electrode exchange



Insulator cleaning – BE-OP-ISO help: dose sharing + opportunity to see the target area !



Less standard activity (STI-TCD + BE-CEM)

- Visual inspection of the two beam dumps (front faces)
- Installation of thermocouples



YETS REX/HIE ISOLDE activities (1/3)

HIE ISOLDE Cryo plant yearly maintenance (N. Guillotin, T. Dupont TE/CRG)

- Progressive restarting of the Compressor station and Cold Box as of this week followed by the Cold Transfer Line
- Cryo Modules cooldown starts as of 22nd March, as per planning
- Compressed air back-up system has been installed and is being tested – to avoid a cryo plant stop due to loss of pressure (CERN wide comp. air stop summer 2022)



Cryo possible future improvement

- The Cryo group has improved the controls and regulation (cooldown and stability) of cryo system processes (at PLC level)
- Tests were performed during the '22 warm-up phase with LHe at LN2 temperature circulating in the shields in the frame of a study to maintain LHe or LN2 circulation in the CM thermal shields keeping the CMs below 100K. During an unexpected cryo plant stops as well as maintenance this would reduce the impact on the SRF cavities (possible gain for commissioning time, thermal stresses, long term machine performance....)
- TE/CRG will perform a pre-study if benefits are confirmed to validate the feasibility and propose an implementation plan (resources and schedule)



E. Siesling slide

YETS REX/HIE ISOLDE activities (2/3)

REX EBIS repair (F. Wenander BE/ABP, J. Thiboud et al.)

- The intervention on the REXEBIS solenoid has been finished and the solenoid was cooled down successfully last week. The LHe boil-off rate seems to be good. The magnet has been energized to nominal (full field) without a quench.
- The magnetic shielding has been reinstalled and the magnetic field aligned. Next steps are insertion of a fresh IrCe cathode, new NEG's and reinstallation and aligning the extraction line elements
- Tests so far have been satisfactory and a swap for the Twin EBIS will not be necessary. Preparations were ongoing in parallel and modifications to the cage will be carried out anyway (for possible future access and change)
- Test of the Chinese cathode (BJUT) has been abandoned (time constraints)
- Beam commissioning of REX/HIE with EBIS beam foreseen as of 15th May and first stable beam to HIE users foreseen as of 30th June – as per planning



EBIS development

- F. Wenander BE/ABP with the Cryo group (J. Bremer TE/CRG) are 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 (no more EBIS warm-up cycles). Foreseen for the YETS '23-'24

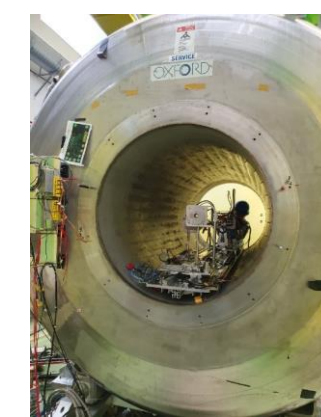


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YETS REX/HIE ISOLDE activities (3/3)

REX/HIE ISOLDE restart:

- All REX/HIE ISOLDE YETS activities on track
- Last verification of the CMs alignment done. Ready for tunnel closure and cooldown
- HIE ISOLDE CMs cooldown as of 22nd March
- SRF conditioning at cold as of 27th April
- Start of REX/HIE beam commissioning with beam from REXEBIS as of 15th May: Recommissioning REX separator, RFQ, magnets and beam instrumentation
- REX RF and HIE SRF recommissioning finished by 24th May
- Drift beam through HIE as of 24th May
- REX/HIE beam commissioning until 30th June – machine ready
- Stable beam to the HIE experiments (Miniball, ISS) until 12th July followed by setting up of the first HIE experiment
- HIE ISOLDE Physics start as of 19th July



HIE experimental setups:

- Miniball and ISS getting ready for the summer

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Others

- Other activities in the hall: IDS floor repair (ongoing)
- To come: restroom demolition (to relocate the power supplies for the electrostatic elements)
- OP team would like to express a special thanks to Cristiano Gagliardi who has been providing an excellent support for REX RF systems
“The successful HIE ISOLDE experiments are for a great deal thanks to his efforts” during the duration of his contract



Conclusions

- Challenging YETS due to the ventilation work. Major effort from EN-CV to deliver and test the system on time for the 20/02. Benefit now from an improved system (DSO tests successfully passed...)
- All technical teams were available for maintenance activities despite the short time window allocated. Stable beam commissioning ongoing.
- Many technical visits related to future consolidation and improvement (fire safety improvements, 2 GeV, beam dumps exchange....)
- Good news on the REXEBIS solenoid side. Repair was successful (no need to exchange with the TwinEBIS). Improvement in preparation.
- HIE ISOLDE

Another important highlight: first post-covid end of year karaoke

Santa Claus was very generous end of 2022 !



Dear all,
 It is with great pleasure to announce that finally after a few years of confinement Santa will be back to celebrate with you another successful ISOLDE year, including Winter Physics, coming to an end.
 Nibbles and beverages will be provided in a typical ISOLDE Christmas atmosphere..
 Feel free to wear your best, or worst, Christmas Party outfit and don't forget to practice you favorite songs !
 Small Christmas gifts will be handed out to those having the courage to grab the microphone first 😊

Don't miss it!
 Santa and his Merry Christmas Karaoke Show live from ISOLDE!
 Friday 9 Dec 16h





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