

Technical news

MENU

Technical Issues:

HRS coupling table piston - BTY Line water leak
HRS valve shutter - GPS Extraction Electrode (and coupling piston)

Shutdown (not yet finalized):

Final modification of the target area/ventilation
Completion of target storage in class A building
New Control room in Building 508

RILIS:

Operation
New achievement

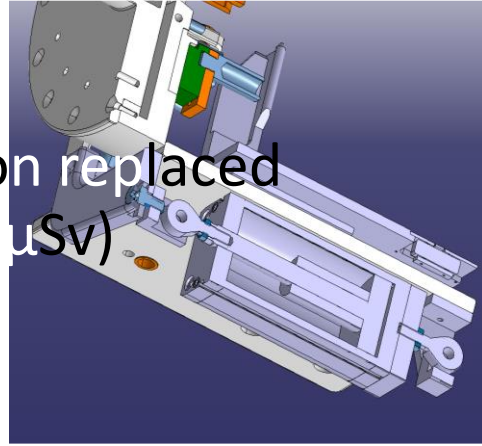
TISD:

Negative ion source tests/LIEBE high power target
New uranium oxide batch

NEWS Isolde and EN dept

HRS Coupling Issue : 14 July + 30 October

- Unable to pump target #541, then target #519
- Human intervention for observation:
 - Target clearly not connected to Front end + A lack of coupling force
Piston replaced with spare identical : ~ 1 min (Collective dose observ 66 μ Sv & repair 51 μ Sv)
- With piston lifetime ~ 6 months, exchange GPS piston in Sept 2015
- New problem with HRS piston on 30 October : **New all metal piston**



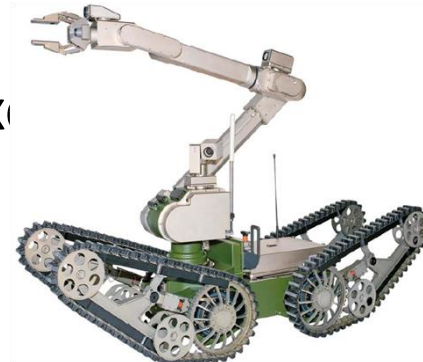
Water Leak near BTY Line 28 July

- Alarm on water detectors in both GPS and HRS trenches
- A disconnected tube and faulty valve used for the purge of the magnet cooling system.
- **A permanent repair will be done during the YETS**



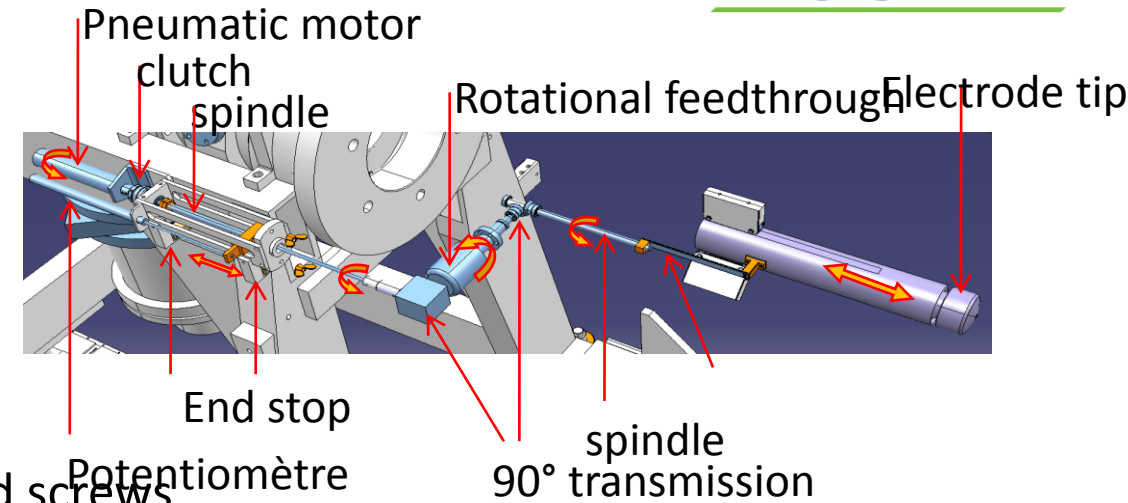
HRS Target Valve/Shutter Issue 5 Aug

- All possible causes were checked and everything was working fine with the ex valve closed but did not seal:
- **Improve on cameras/Improve on redundancy of feedback from Frontend movements/Precede any human intervention with a Telex intervention**



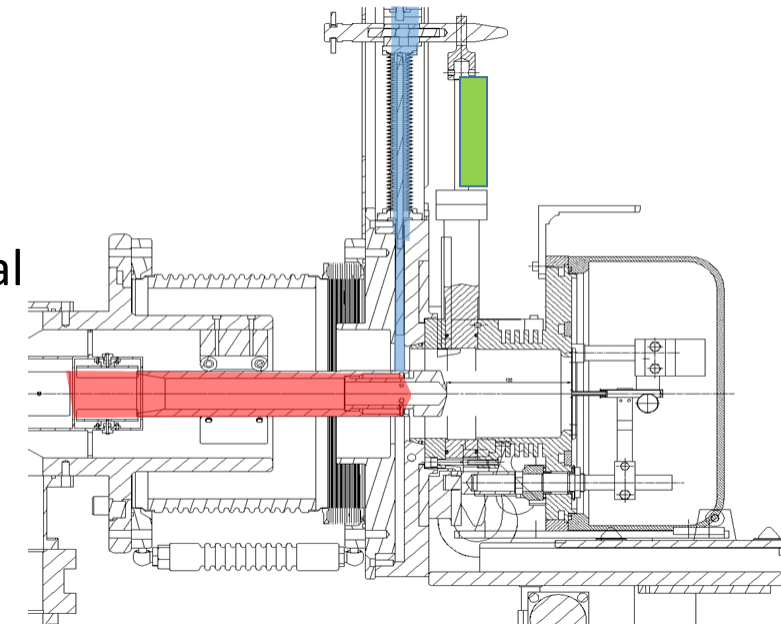
GPS Extraction Electrode 11 Aug

- The extraction electrode on the GPS Stopped at position 153 instead of 178
- Removal of highly radioactive target with Kuka robot
- Used Telemax to place a support
- **But plug target didn't couple correctly**
- the problem was located at the connection between the clutch and the spindle.
- Replace clutch screws with bigger and easily accessible pointed screws
- But... 2 screws on the 90 deg. transmission were also loose!



Conclusions

- Vibration seems to be the cause of the screw loosening and we will have to revise the EE mechanism during the next shutdown :Very difficult for internal pieces
- Hidden consequences of trying to improve on reliability
New robots > new coupling table > new piston design/configuration
Stepping motors with encoders > compressed air motors > new EE mechanism



Some news on the shutdown

- Temporary Magnetite shielding removed next week
- Ventilation SAS creation
- Used target storage with shielded doors for Isolde and Medicis
- Final shielding in primary target area
- Rail Conveyor System Installation for Isolde and Medicis
- Start up Kuka Robot for storage/Medicis

New ISOLDE Control room

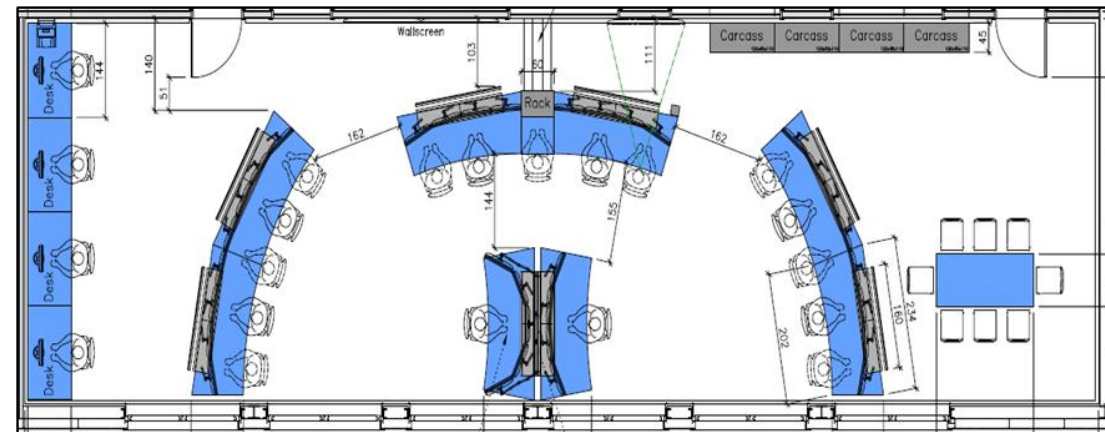
- New users and operations building 508:
- ✓ ISOLDE Control room outside the Class C experimental hall
 - ✓ Kitchen
 - ✓ Visitors/meeting room
 - ✓ All furniture arriving as of 16th Nov.



New ISOLDE Control room in B508



Visitors/meeting room in B508

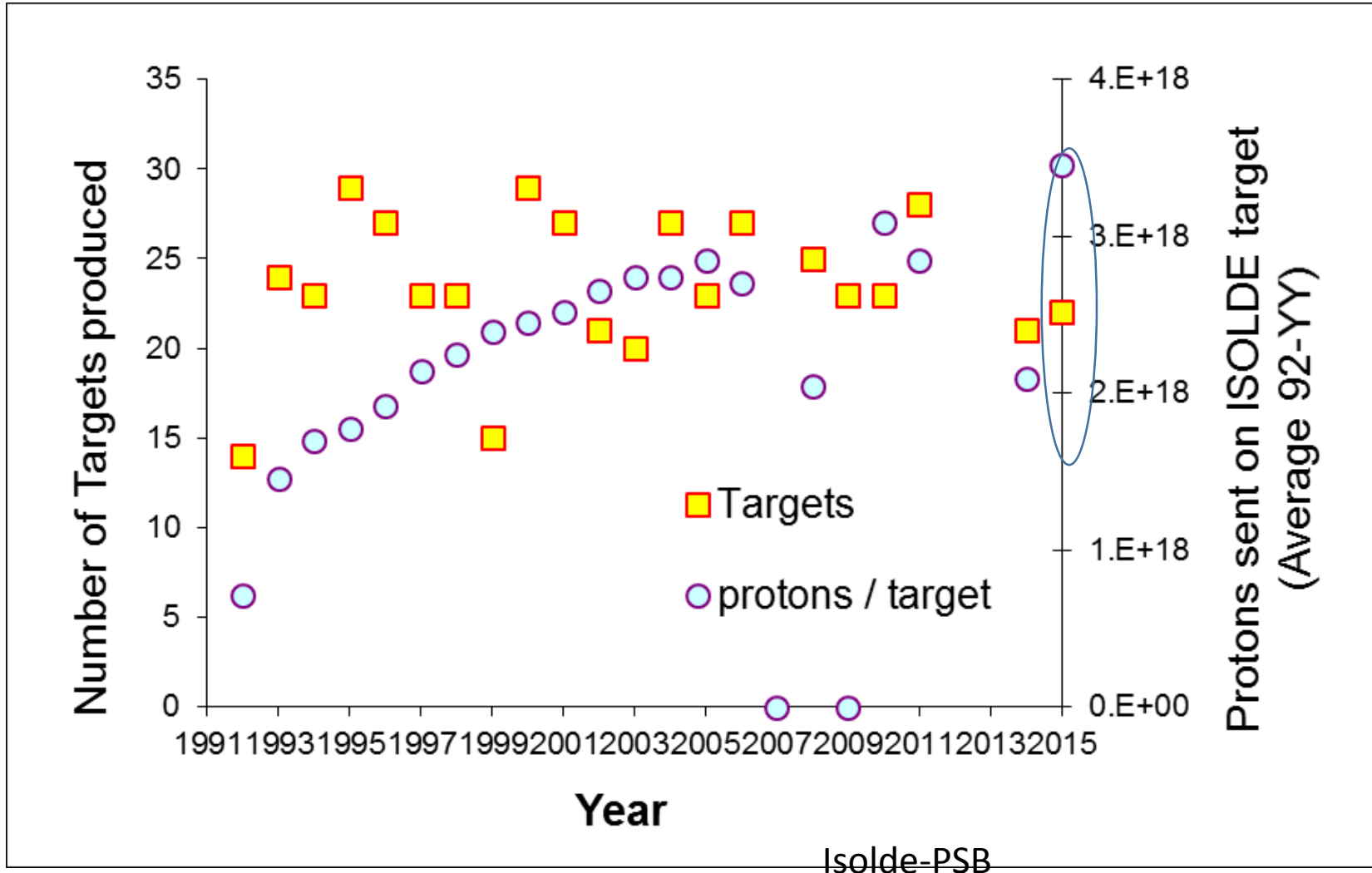


New 508 ISOLDE Control room layout

Courtesy E. Siesling

T. Stora on behalf of R. Catherall EN/STI

Target and Ion sources units in 2015



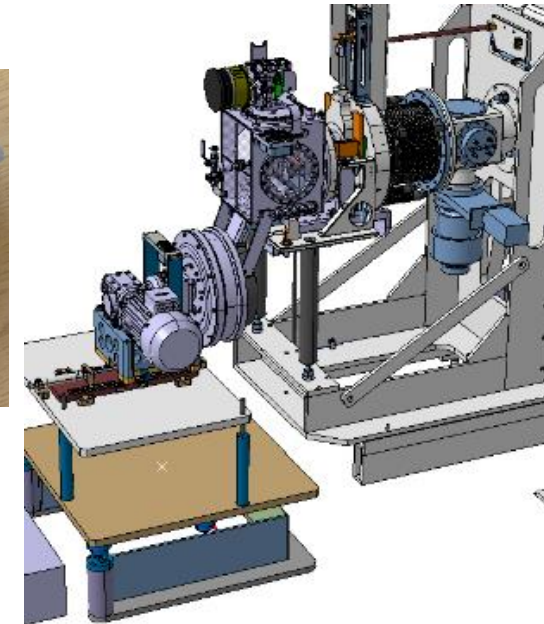
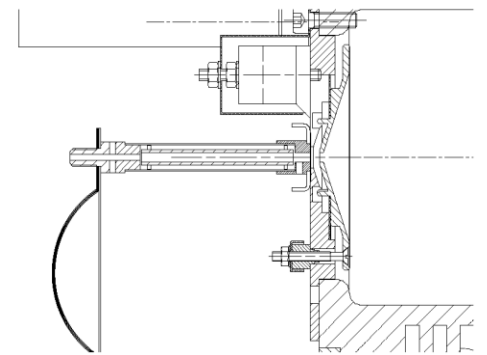
This year, UC-Ta n 539 unit
Received the ISOLDE PSB record
PoT (proton on target): **13.3 10¹⁸**;

It's good for operation optimization

But it's much detrimental for waste
Management (**max PoT of 10 10¹⁸**)

Target and Ion Source Development

- Negative ion source tests: **A lot of efforts to obtain online data, some more « offline work required »**
- LIEBE high power target: **Design finalized, manufacturing started**
- New uranium oxide batch: (total 6.1×10^{19} 81% of Isolde protons on UCx targets in 2015)



Item	Qty	Unit	Deliveries/Services	Unit Price	Price
000010	1,000	LO	CERN - UO2 Powder 2015 (20 kg) Closing Invoice	SEK	65,000.00

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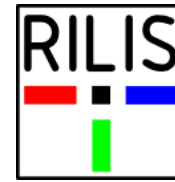
Mn yields from IDS (all yields
63Mn - 6000 ions/uC
64Mn - 1000 ions/uC
65Mn - 500 ions/uC
66Mn - 13 ions/uC
68Mn - 7 ions/uC

Target #550 - 580A, line 269A
    
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ISSC/INTC 10-11Nov 2015

Courtesy M. Delonca, T. Mendonca, Y. Martinez, J. Ballof, B. Gonsalves, JP Ramos on behalf of « negative beams group(s) » T. Stora on behalf of R. Catherall EN/STI

RILIS statistics for 2015 on-line operation



17 elements

*Ag, Al, Au, Ba, Be, Ca, Cd, Cu, Dy,
Ga, Hg, In, Mg, Mn, Po, Tl, Zn*

23 RILIS runs

116 operating days

2550 hours *(not including setup time of >1000 person-hours)*

> 75 % of ISOLDE Physics

Courtesy B. Marsh

New achievements for RILIS



- 1st Optically pumped radioisotopes using ISCOOL + RILIS
Manganese isotopes for COLLAPS
- 1st Radiogenic RILIS Ba beams
- RILIS ionized indium beams since the RILIS upgrade:
> 500 x enhancement with respect to surface ionization
- Negative ion photo-detachment
Successful commissioning of the photo-detachment setup
- 1st on-line physics from RILIS applied to the VADIS ion source
In-source spectroscopy of Hg isotopes

Courtesy B. Marsh

News related to ISOLDE

- 2GeV...From the minutes of the ATSMB meeting
- Freddy concludes that this project will cost around 7 to 10 MCHF. Based on the positive reactions from Council in June, no changes will be done on the MTP that will be presented for approval in September, i.e. if this upgrade has to be done, it can only be during LS3.
- A request has been made for consolidation money (~4MCHF) for the beam dumps
- ...but after discussions and a clear lack of finance, this has not been further pursued.
- Consequently, ISOLDE will not benefit from more intensity due to Linac 4 commissioning
 - But this also depends on air activation to be further analysed next year once the ventilation systems are stable.
- 660kCHF has been granted from the consolidation budget for the replacement of both Frontends during LS2
- A work request **to re-align the hall beam lines in LS2** (yes already!) has been submitted to the PLAN office.
- But the green light should be given by the ISCC

News from EN dept

- Roberto Losito will become the EN department head
- He will be replaced by Simone Gilardoni
 - Who knows ISOLDE quite well due to work done on convertor target simulations and liquid mercury targets.
- Ana-Paula Bernardes will diversify her role by taking on PS complex shutdown safety coordination, especially LS2 but starting this year. She will be “replaced” by a Fellow paid for by TE department.

Thank you !

Reserve

Ta544-W unit for medical Tb collections

- Mixed 6/25 mu Ta foils
- learning from EURISOL DS TARPIPE project: E, Noah et al.
<http://cds.cern.ch/record/1355076/files/document.pdf>
- S. Fernandes, et al *Journal of Nuclear Materials* 416.1 (2011): 99-110.



ISCC/INTC 10-11Nov 2015

“Hi Thierry,

It was the first year that we came close to the shipping limits, between 150MBq and 170MBq or so of ¹⁴⁹Tb...(max is 200MBq).

Not every day but was like this for the first few days anyway. “

Courtesy Karl Johnston

Next step : reduce oxyde « sidebands »

L4P-E14: 6 μm Ta foil in Mo frame
PIE in PSI hot cell

T. Stora on behalf of R. Catherall EN/STI