

ISOLDE 2011 HIGHLIGHTS

- Operations and experiments
- Vacuum
- Targets
- REX
- Hie-Isolde

INTC shifts in 2011:

930 Remaining

657.5 Requested

440 Scheduled

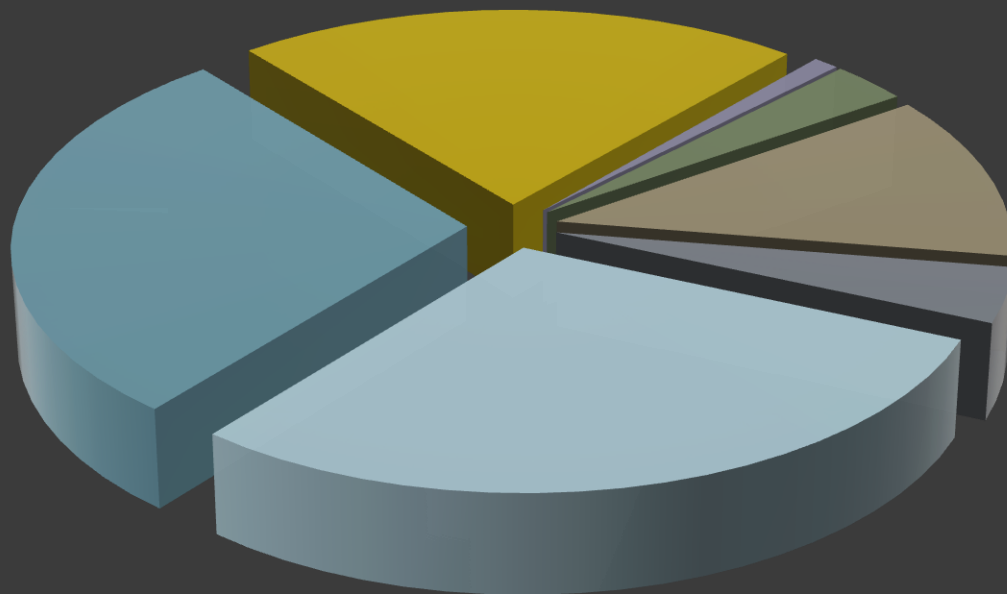
320-360 Delivered successfully (very rough estimate); vs 265 in 2010

Present INTC:

243 Shifts requested (proposals)

INTC shifts remaining for 2012: (rough estimate)

810-850 Shifts



- Nuclear structure using reactions
- Nuclear structure from ground-state properties & beta-decay
- Nuclear astrophysics
- Fundamental interactions
- Solid-state physics
- Biophysics and medicine
- Target and ion source development and Coordinator's reserve

- New PVSS system for ISOLDE and REX
- User friendly system .Very visual.
- Almost fully automatic system .Some improvements can be done anyway.
- Easy recover after powercuts (very frequent this year)

unicosHMI_1: unicosHMI

W: Isolde

System Status: Isoop 03:17:22 PM 10/24/2011

VACUUM ISOLDE

Bad: 2011/10/24 14:36:31.193 VISL_GPS10_VWH2 Sector High pumping Valve Stop Interlock Status FALSE !!! S 934/ 934 487 Unack.

Remaining time: Device: Select

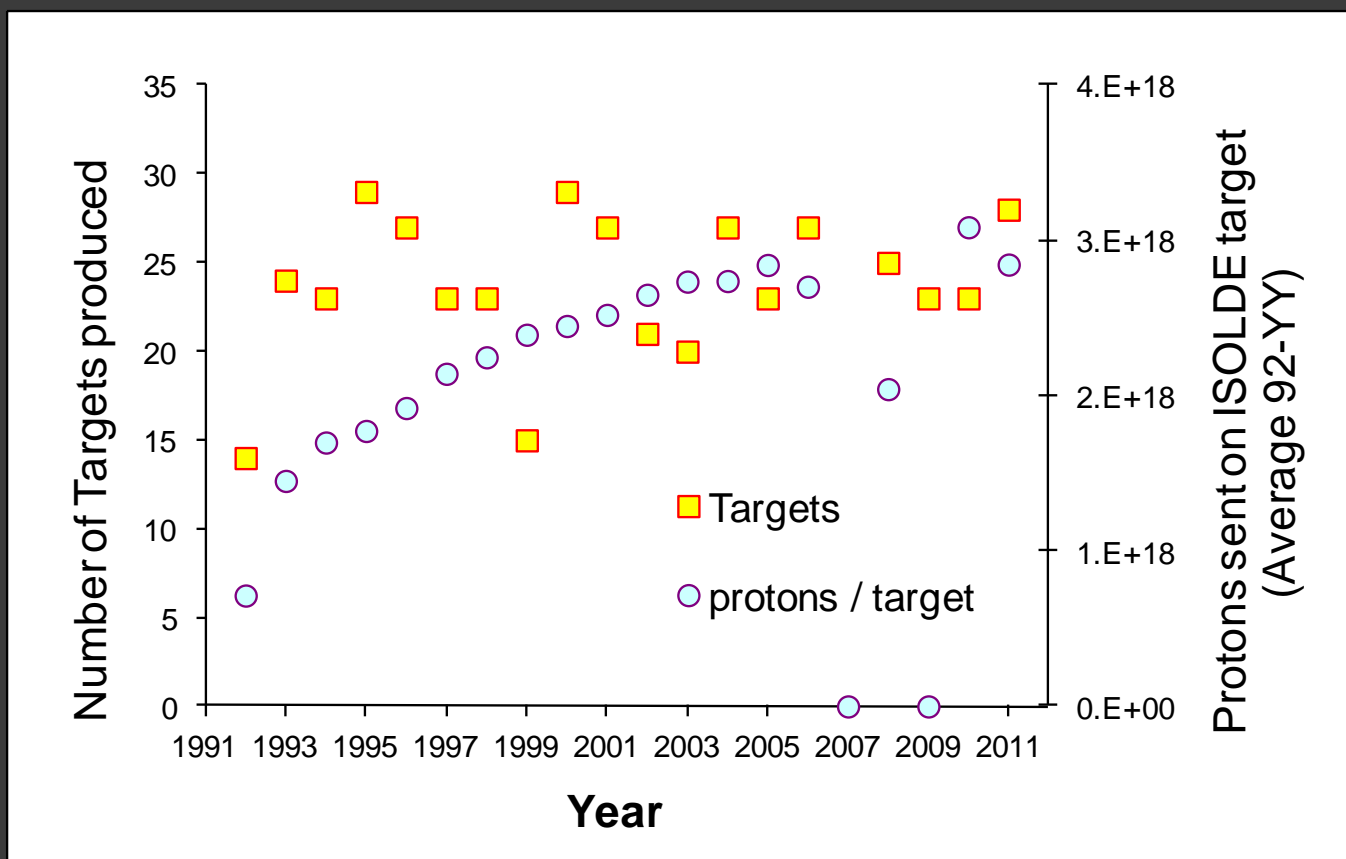
Exhaust

L 2011.10.24 15:03:38 INFO VISL_VAR20_VAR acknowledgement successful.

T 2011.10.24 15:04:57.88 INFO automatic deselect VISL_VAR20_VAR

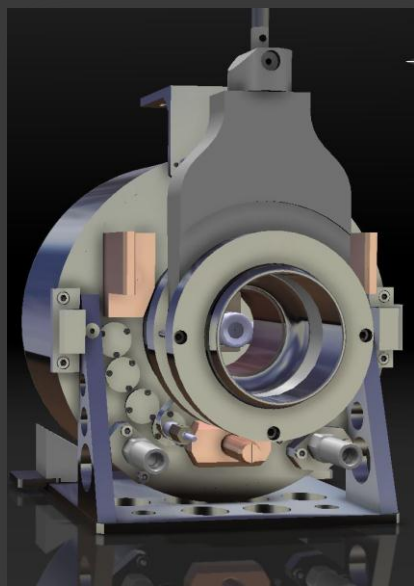
USER MANUAL :
<https://edms.cern.ch/document/10832750> Isolde.pnl Vers2.0

28 target units produced in 2011
Average $2.8 \cdot 10^{18}$ protons/target

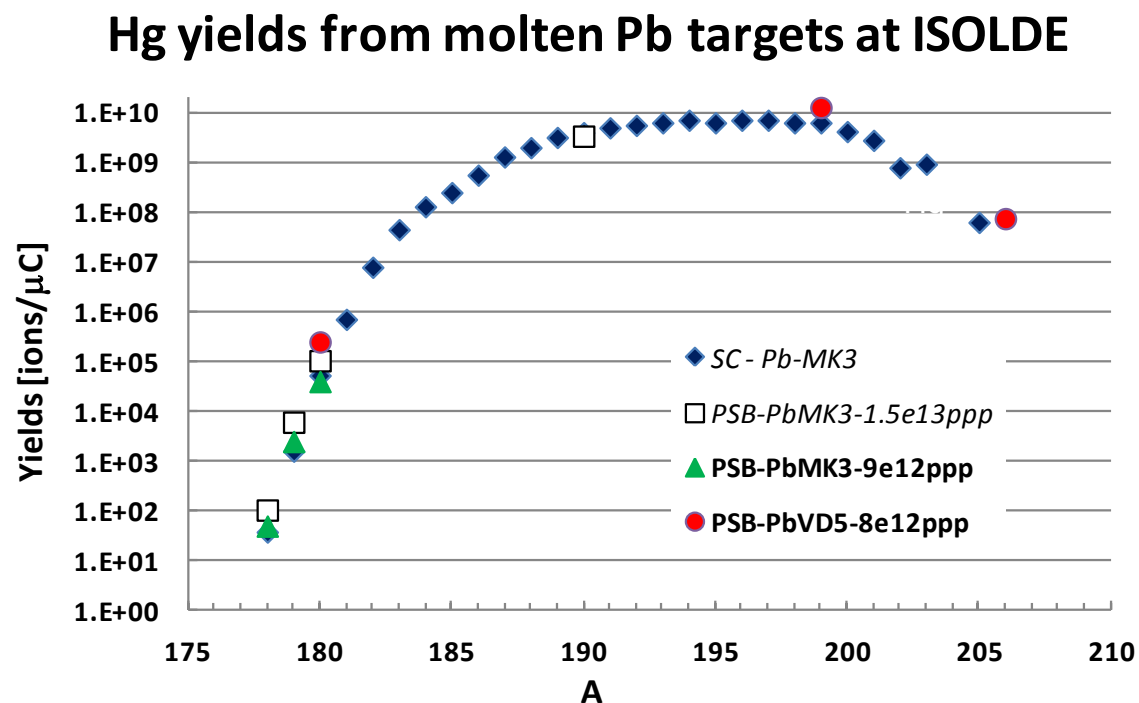


Target Ion Source Develop. /TISD

- Improved intensities of Hg beams with VADIS ion source :
- x5 improvement vs historical Molten Lead Target Units equipped with MK3 ion sources



A. Gottberg, B. Crepieux,
M. Owen, TISD team



Target Ion Source Develop. /TISD



1st online operation of a Helicon source for molecular Radioactive Ion Beams

Production of ^{17}C as $^{17}\text{CO}^+$ to IS445

Successful use of double-stage extraction electrode

Stable operation and fast release of CO^+ up to $7 \cdot 10^{17}$ p.

*P. Suominen, C. Seiffert, A. Gottberg, T. Mendonca, M. Czapski,
IS445 H. Fynbo et al.*

- 7-gap tuners consolidation. Now working smoothly.
- New Pico-Amperemeters for Faradaycups. Real time and low noise. Easier set up for REX.
- Still some problems with the cathode lifetime and poisoning problem.
- Lower REX set up time and more reliability.
- β -NMR setup mechanically operational

(1) IS494 186-200Pb

7 isotopes delivered!

(2) IS496 140Nd

(3) IS485 96Kr

(4) IS506/IS475 208, 220Rn

} heavy
beams

(5) IS475 224Ra

(6) IS477 126,128Cd

(7) IS478 72Kr (RF amplifier problems)

(8) IS482 26Na (30Na too low yield ISOLDE)

(9) IS451 98Sr

(10) IS504 66Ni

(11) IS510 72Zn

2-neutron transfer reactions + Coulomb excitation

(12) IS483 72 or 74 Zn

(scheduled for end of November)

In addition

+ 2 beta-NMR runs with 27Na (8Li failed TRAP/EBIS)

+ 2 WITCH runs: IS433 35Ar

+ 1 WITCH run scheduled for next year

12 REX-ISOLDE runs scheduled for 14 experiments with 190.5 RIB shifts (43 %) (160 in 2010)

- 11 runs done
- 1 to be done
- 1 postponed by user (IS512)

* Ambitious program

* Record number of delivered REX shifts

* Some hick-ups (RF problems, cathode failure) but mostly successful year

Isolde & REX Multidevices optimizer

Application by E.Piseli & T.Gilles

Simplex algorithm (Nelder–Mead)

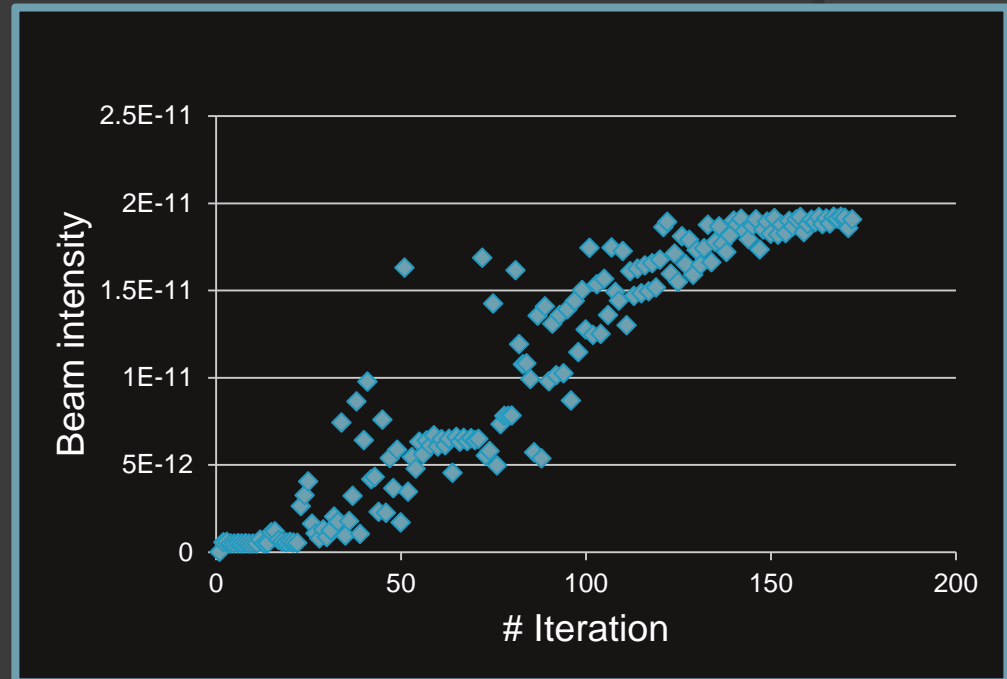
N devices

Dev #1

Dev #2

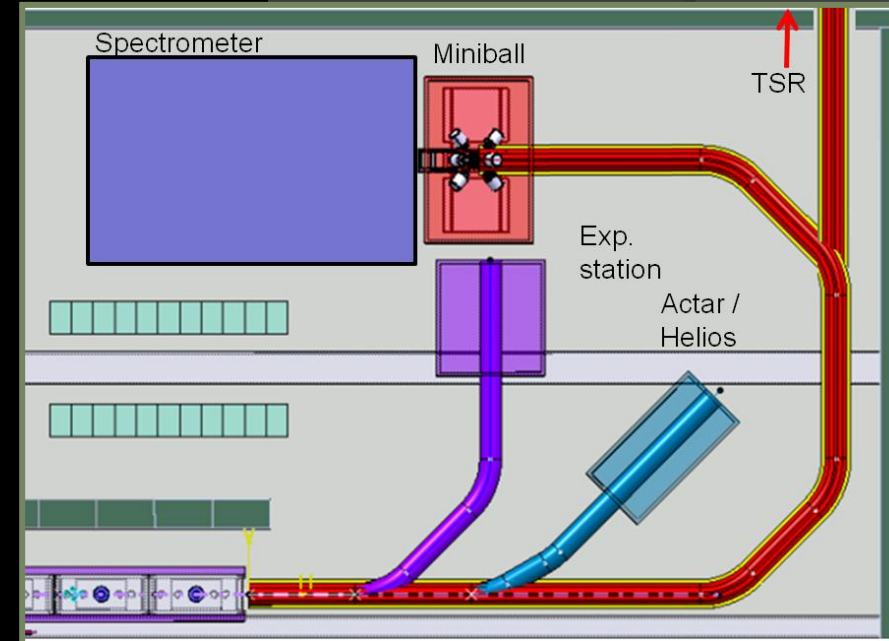
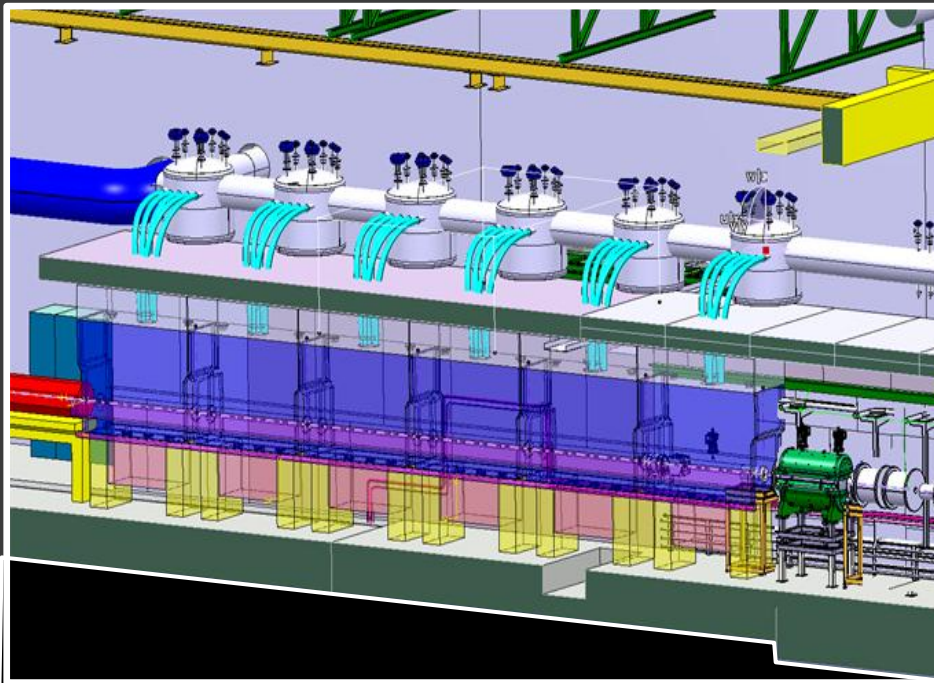
Dev #N

Beam
measurement



Some results...after about 6 weeks of test

- ✓ We need to start the optimization already with some beam
- ✓ Fast (~10 min to optimize 6-8 devices)
- ✓ It works very good for the Linac (only beam intensity optimization required)
- ✓ We to better understand how to handle noise
- ✓ We still need to improve the GUI



Hie-Isolde SC Linac:

5.5MeV/u by autumn 2014

10MeV/u by spring 2016

New high energy beamlines
and experiments