

ISOLDE scientific coordinator's report

ISCC meeting, February 11, 2008

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Update running period 2007

Planning and resources for 2008

ISOLDE schedule 2007

ISOLDE dates 2007:

protons started April 16
 physics started April 20
 protons stopped Nov. 12

→ 29.5 weeks
 for physics

- 30 experiments (7 REX runs)
- 24 target units (4 old units)
- 12 UC_x targets (2 old units)

Apr		May					Jun						
Wk	14	15	16	17	18	19	20	21	22	23	24	25	26
Mo	2	Easter 9	16	Tech stop 23	IS442 ³⁰ I68 I64	IS442 ⁷	Stop PS 14	IS427 ²¹	Whitsun 28	Tech stop 4	11	IS397 ¹⁸	25
Tu				TISD	IS455	IS413	Stop PS		IS437	REX MD	IS453 IS443	IS441	IS390
We													(IS442) I64
Th							Ascen				PS MD	IS434	IS413
Fr	G Friday				IS425	IS442			IS413		IS442 IS443	IS434	IS413
Sa			TISD	IS455	IS442	IS450	IS427	IS437	IS448		IS397		
Su													

Jul			Aug				Sep						
Wk	27	28	29	30	31	32	33	34	35	36	37	38	39
Mo	2	9	IS439 ¹⁶	23	30	6	IS414 ¹³	20	TISD 27	IS400 ³	10	IS397 ¹⁷	24
Tu		IS451							Tech stop		IS424		IS410
We	PS MD		PS MD				PS MD	IS452	IS413				
Th			IS442	IS411	IS456	IS414				Jeûne Gen			
Fr	IS451											IS409	
Sa		IS439	IS431 (coll)				IS452	IS442 (IS448)	IS445 (TISD)	IS424	IS397		IS417
Su													

Oct			Nov			Dec							
Wk	40	41	42	43	44	45	46	47	48	49	50	51	52
Mo	1	8	15	22	29	5	12	19	26	3	10	17	24
Tu	IS410				Tech stop								Christmas
We													
Th		PS MD			IS454								
Fr													
Sa	IS425 (IS390)	IS433				ISCOOL							
Su													

Stop protons 2007

- ISOLDE delivered **377.5** RIB shifts

- 292 (77.4%) for INTC experiments
- 85.5 (22.6%) other
 - Standard target check + TISD + REX-MD
 - Coordinators reserve: debugging, recovery, Lols

- 30 research projects (“experiments”)

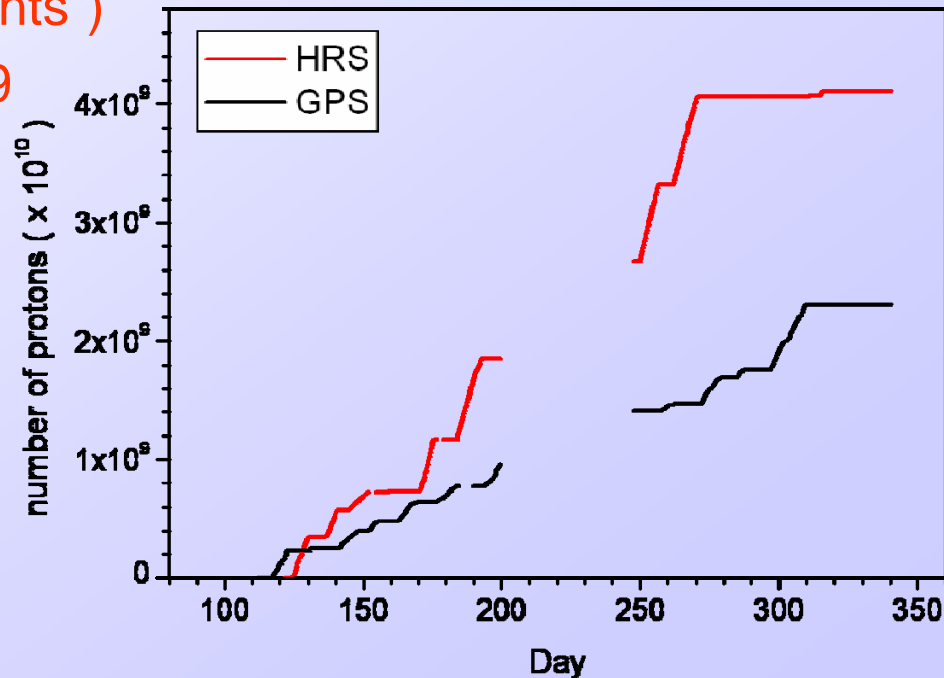
- Integrated # protons = $6.41\text{E}+19$

- Below $2\text{E}+20$ radioprotection average limit
- limitation of GPS proton beam intensity (activated air release)

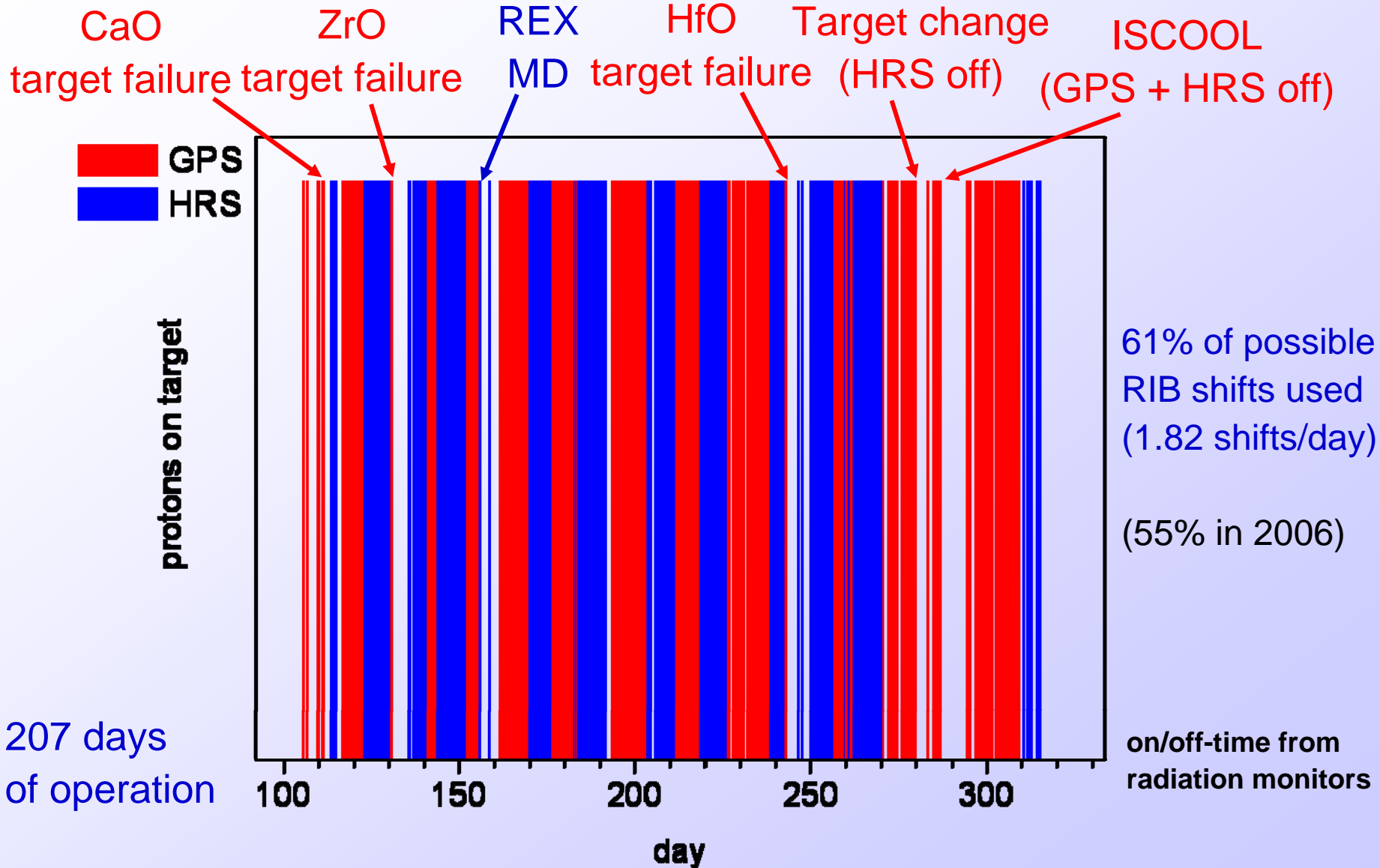
- Installation of ISCOOL RFQ

- Running for 207 days

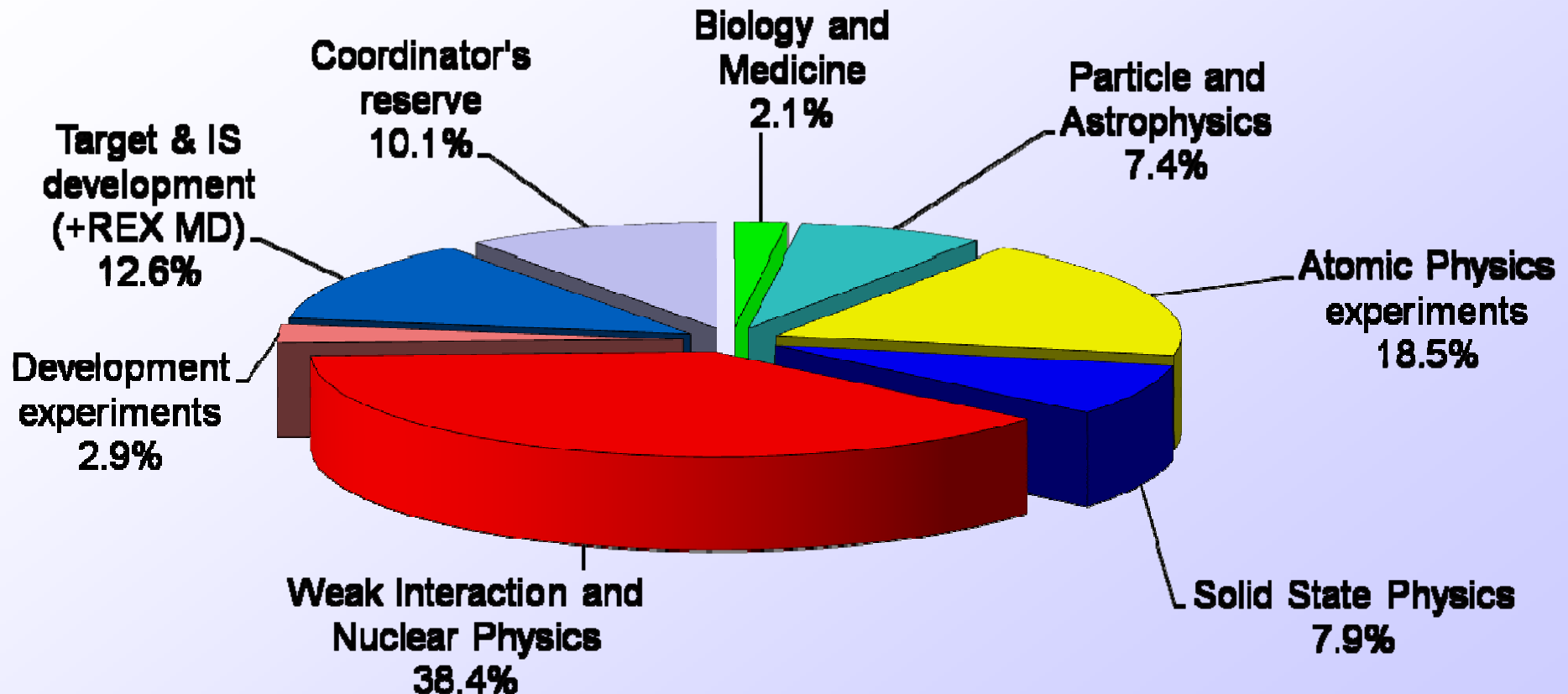
- One week no beam for ISCOOL installation



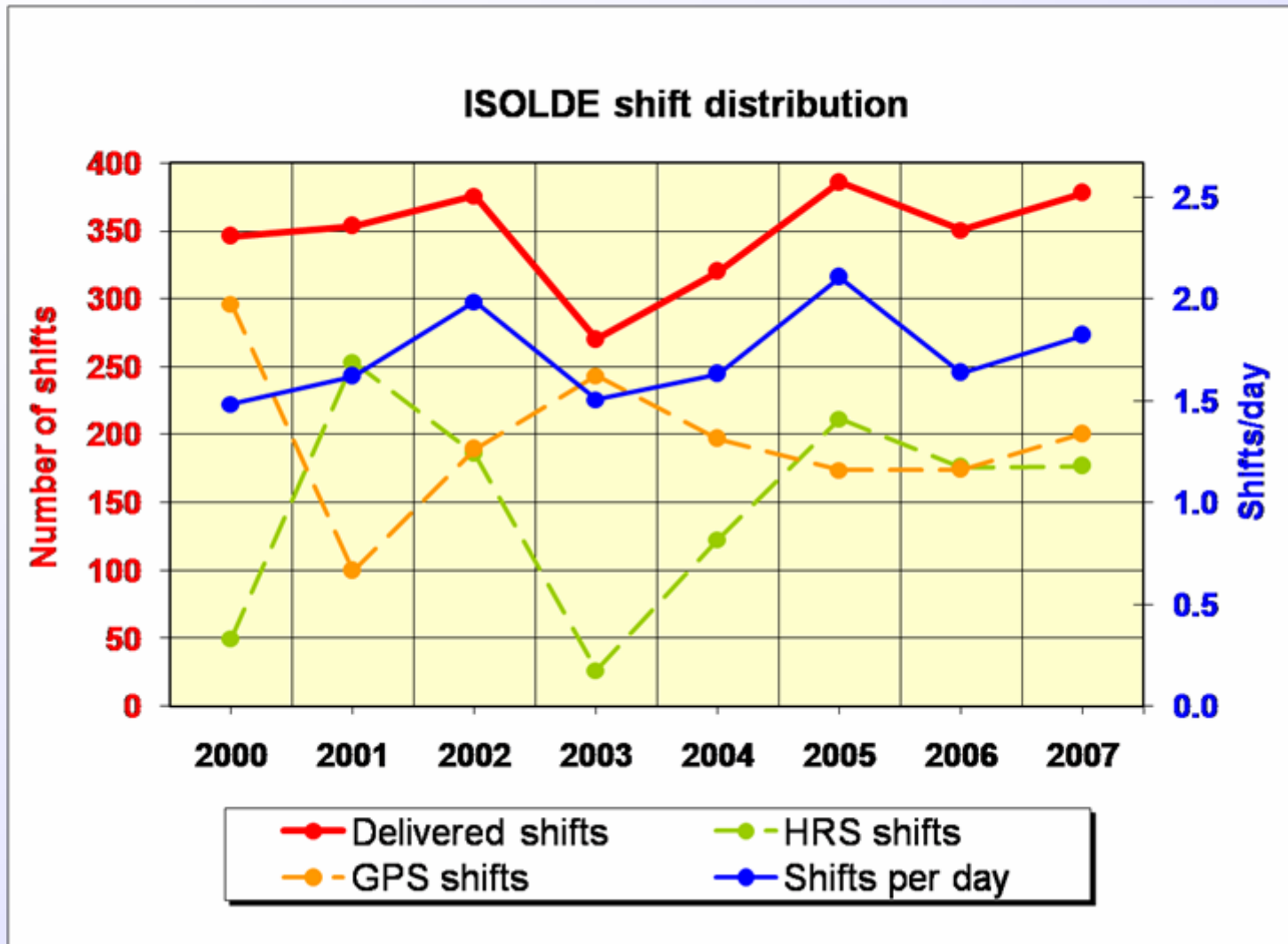
RIB overview GPS/HRS 2007



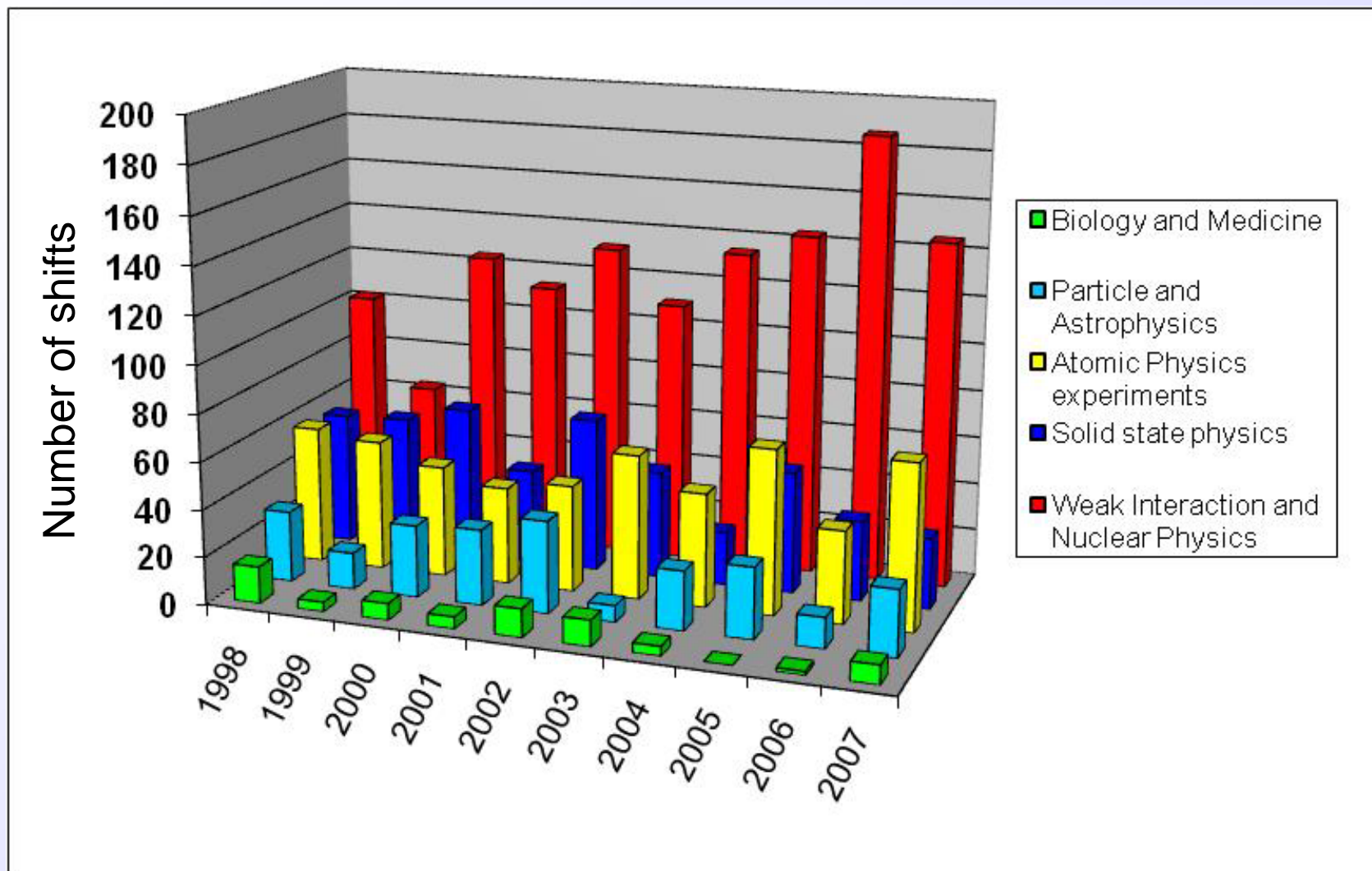
ISOLDE shift distribution 2007



ISOLDE shift distribution 2000-2007

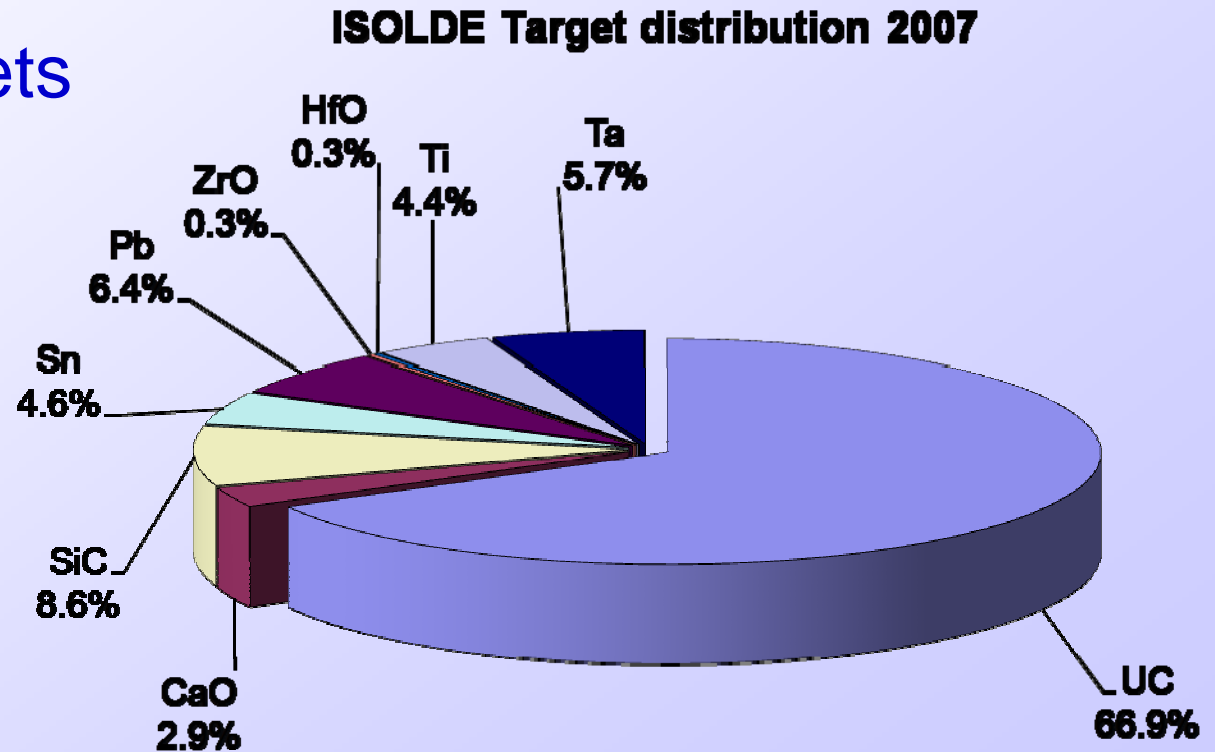


Shift distribution 1998-2007



Key resources: targets

- Actinide targets
 - 252.5 shifts (out of 377.5) [67%]
 - 10 new units (+ 2 old)
- In total 24 targets
 - 20 new units



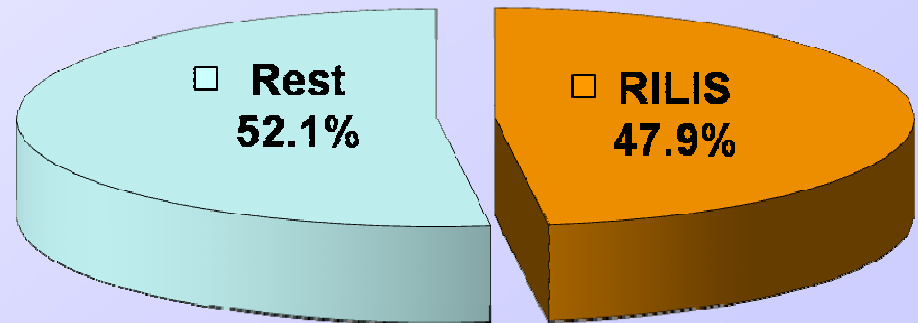
Key resources: RILIS

- 154.5 total RIB shifts
 - 146.5 shifts for INTC shifts
- 1763 hours for online work
 - includes setup, yield checks, etc.
- 14 IS experiments

- Beams: Ag, Mg, Pb, Mn,
Cu, Po, Cd

- “efficiency” 70%

RILIS % from *INTC shifts* 2007



- 88.5 RIB shifts delivered to experiments

- + 6 RIB shifts for development
- 7 experiments
- REX-ISOLDE training for machine supervisors

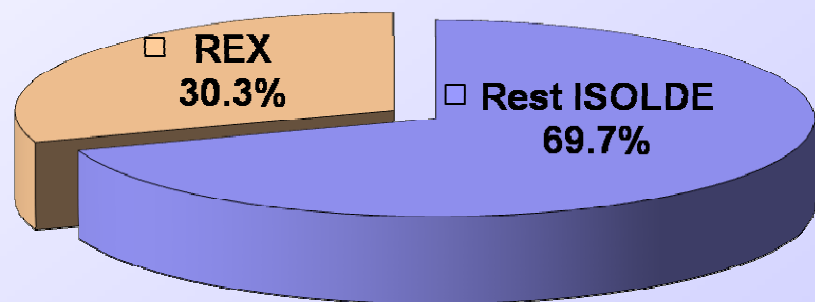
- $E \leq 3$ MeV/u

- $E=2.99$ MeV/u (^{31}Mg)

- Efficiency

- Range 1.5% - 10%

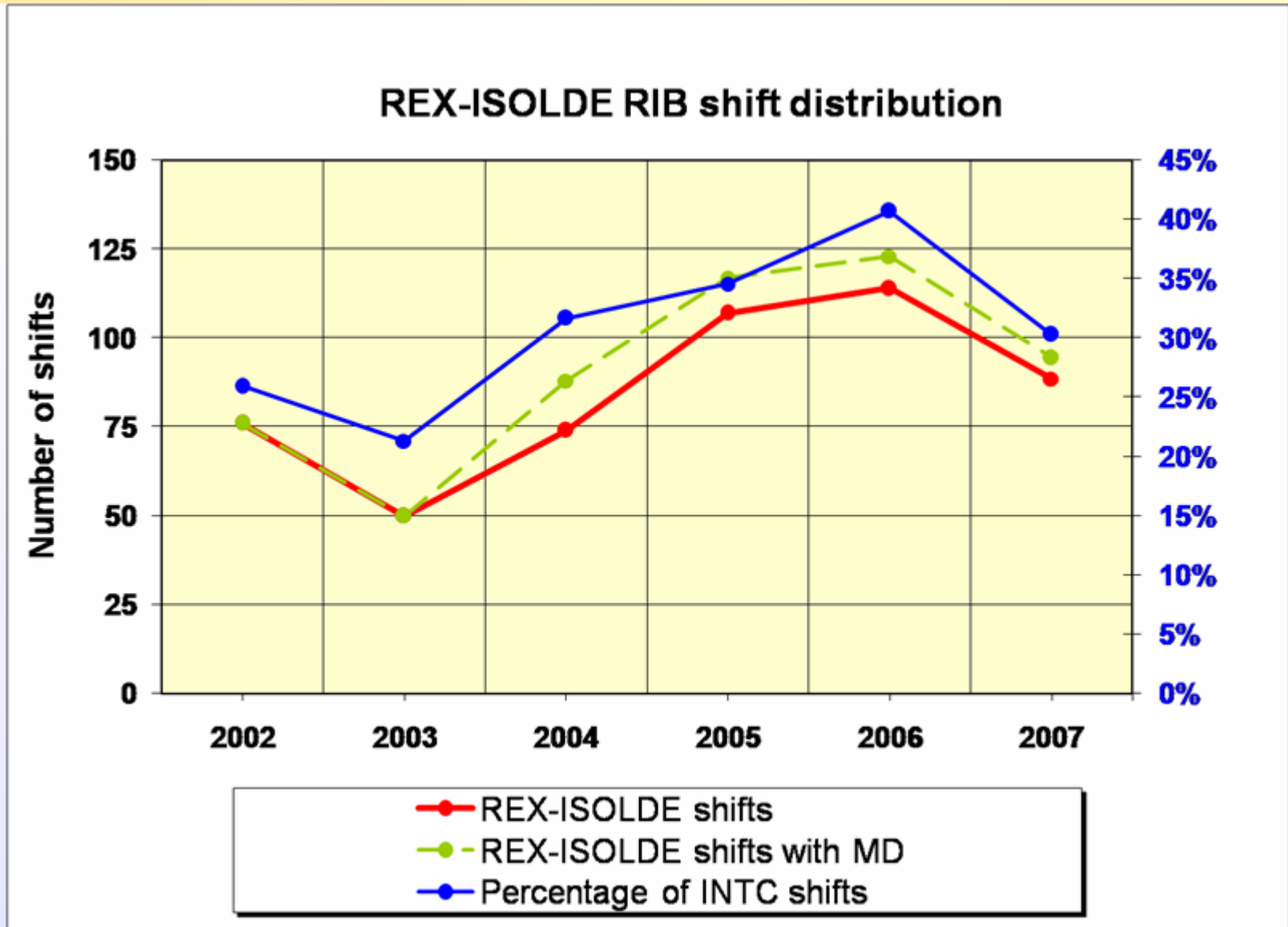
REX % from *INTC* shifts 2007



F. Wenander

	Z	N	A	q	half life	C stripper ug/cm2	stripped q	E MeV/u	breeding ms	eff. %
F	9	8	17	5	64.8s	50	9	2.60	18	7.5
Sr	38	58	96	23	1s			2.87	120	2.0
Ba	56	84	140	33	12.75d			2.84	171	4.5
Ba	56	86	142	33	10.7m			2.84	168	5.0
Ba	56	92	148	35	610 ms			2.84	230	1.5
Hg	80	104	184	43	30.6s			2.85	170	1.7
Hg	80	106	186	43	1.4m			2.85	170	1.7
Hg	80	108	188	44	3.25m			2.85	170	1.7
Mg	12	19	31	9	230ms			2.99	28.5	10.0
Mg	12	18	30	7	335ms			2.27	15	10.0
Mg	12	18	30	7	335ms			1.91	15	10.0
Mg	12	18	30	7	335ms			1.56	15	10.0
Mg	12	18	30	7	335ms			2.85	15	7.2

REX-ISOLDE 2002-2007



REX ISOLDE 2007 – new beams

- New REX radioactive beams for Physics in 2007
 - $^{96}\text{Sr}^{27+}$
 - $^{140,142,148}\text{Ba}^{33+,33+,35+}$
 - $^{184,186,188}\text{Hg}^{43+,43+,44+}$
- 3 new elements and
7 new radioactive isotopes
- New record for heavy masses
 - $^{238}\text{U}^{56+}$ accelerated ($A/q = 4.25$, $T_{\text{breed}} = 500$ ms)
 - $^{184,186,188}\text{Hg}$ accelerated to 2.8 MeV/u
- So far 53 radioactive isotopes of 20 elements

Accelerator schedule 2008

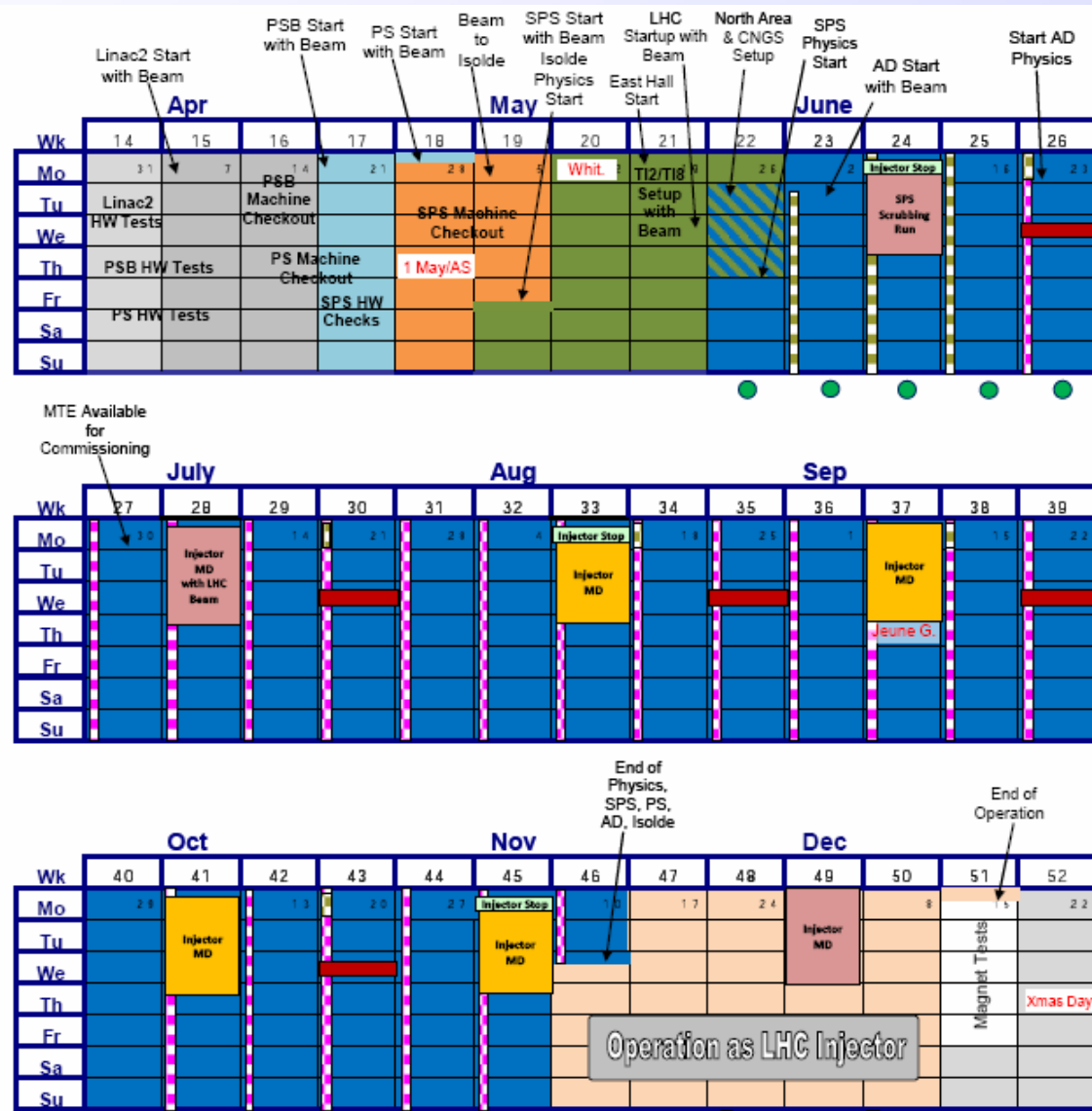
Approved by CERN Research Board November 28, 2007

ISOLDE dates:

protons from PSB May 5
 physics start ISOLDE May 7
 protons stop November 12
 (i.e. 27 weeks for physics)

Expected frequent changes of supercycles (as 2007)

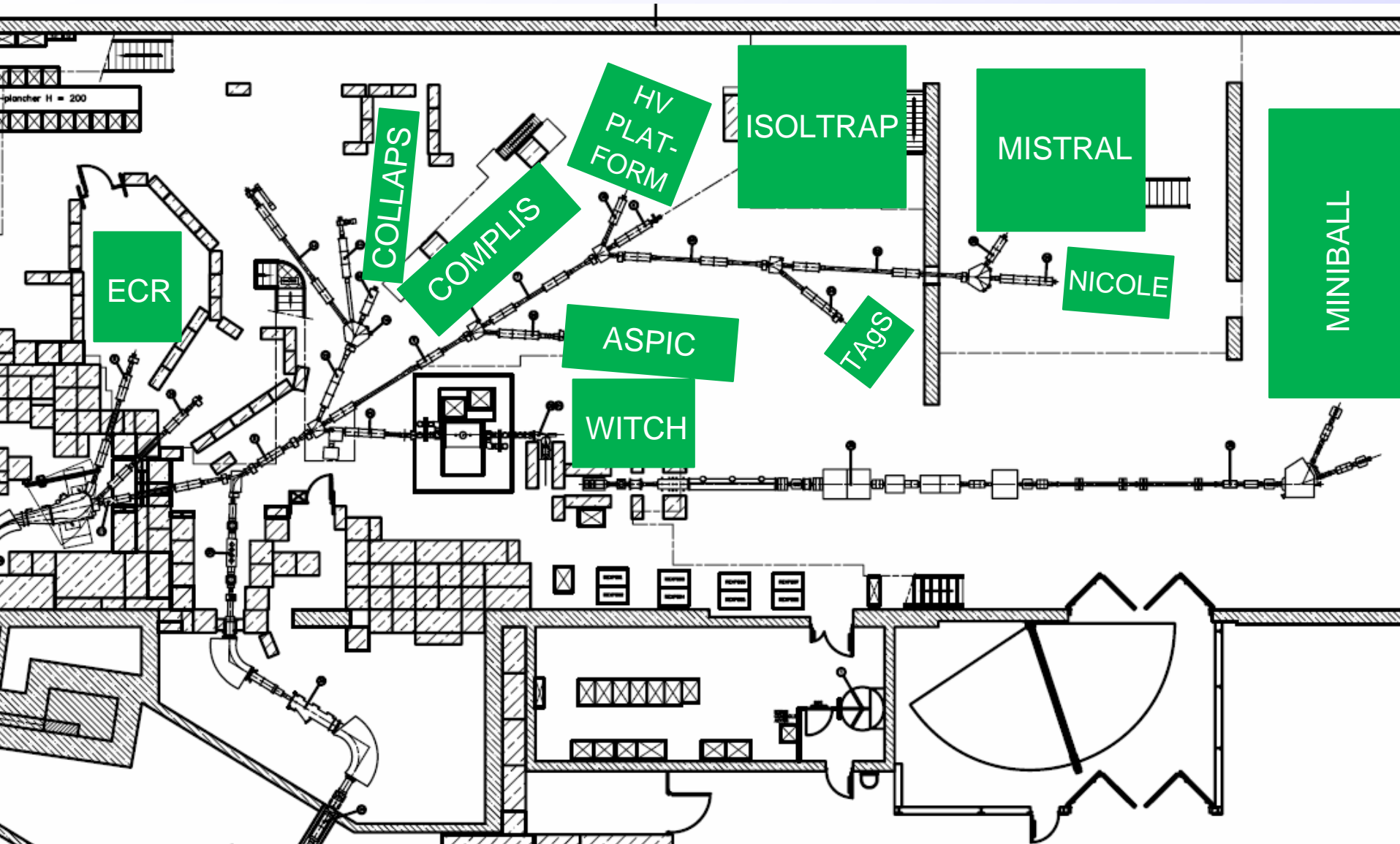
Several long periods of MD without protons to ISOLDE



ISOLDE schedule/operation 2008

- Limits in key resources
 - RILIS (installation of new solid state lasers)
 - UC_x targets
- REX operation
 - MINIBALL ready for Physics June 1
- Schedule:
 - 470 RIB shifts left for approved experiments
 - New proposals and addenda at February INTC meeting 2008
 - ISCOOL operation (further tests, optimization for users, ...)
 - Long supercycles
 - Several proton beam cuts due to MD periods at PS and SPS (each up to a duration of 3 days)
- New Solid State Physics Lab
 - In building 115, ready for operation in 2008

Reallocation of space for experiments



Reallocation of space for experiments

