



### ISOLDE scientific coordinator's report

INTC 21 February 2005

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#### **Schedule conditions for 2005**



### Accelerator schedule 2005

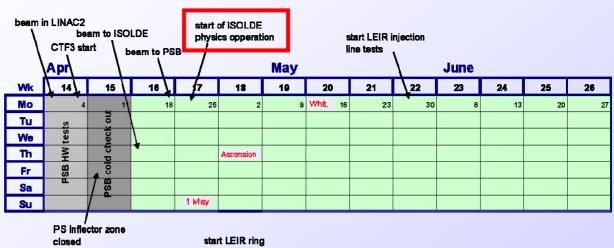


25 April → 31 October [27 weeks]

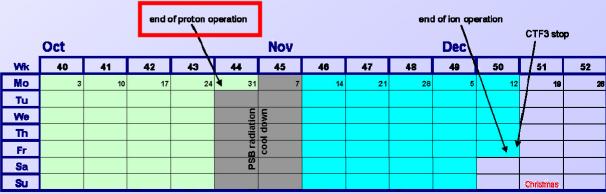
#### SINGLE USER

- •12 *4-hour* periods access to PS
- •6 8-hour MDs for PSB
- •2/12 cycles for parasitic MD for PSB every Wed.

And...









# Reduction of basic cycling



- ✓ It is not possible to deliver all of the protons requested for CNGS and the SPS Fixed Target programme
  - → Increasing the SPS intensity per pulse is the only possibility identified by the HIP working group.
  - → ISOLDE will loose 5 10% protons when CNGS is running
  - $\rightarrow$  Even more (15 35%) if the SPS intensity is increased
- ✓ Potential solution is an increase of PSB repetition rate
  - → The changes should not affect the beam dynamics in PS or SPS
  - → The increased number of PSB cycles per year will reduce the lifetime of some equipment (<75% of their current values).

#### ⇒ SWITCH to 900 ms basic cycle



### 900 ms choice



- ✓ Compatible with hardware and controls
- ✓ Short-term, low-cost
- ✓ Sufficient positive impact
- ✓ Cycles on all machines must be multiples of 900 ms
- ✓ 33% increase in PSB cycles
- ✓ Basis for ISOLDE upgrade



## 900 ms impact



- ✓ Larger number of available cycles for ISOLDE allows to reduce the peak intensity
- ✓ Equipment lifetime
- ✓ Target production limit
- ✓ Radiation aspects: losses, etc
- ✓ Impact [M. Benedikt, PS-SPS Days 2005]:

<b>Operation</b>	Machine issues	<u>Impact</u>
LHC nominal 25/75ns	Shorter PS, SPS cycles	15% shorter LHC filling time
CNGS	Shorter PS cycle, acceleration on h=8 in PS	-5% flux (single batch PSB-PS)
		Neutral (double batch PSB-PS)
SPS Fixed Target	Shorter PS cycle	Neutral (unchanged duty cycle)
PS East hall	Longer PS cycle, longer spill	20% increase in duty cycle
nTOF	Shorter PS cycle	5% flux increase (15.3 GeV/c)
	Longer PS cycle	-30% flux (w/o energy change)
AD	Shorter PS cycle	Neutral
PSB ISOLDE	-	33% flux increase

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## 900 ms implementation



- ✓ 2005 [approved by AB MB on 06/12/04]
  - $\rightarrow$  LINAC2 and PSB
    - START at 1200 ms
    - Prepare 900 ms in parallel (timing, tests)
    - Switch to 900 ms and verify all beams [2+2 weeks]
    - Switch back to 1200 ms
- ✓ 2006 (after evaluation of 2005 tests)
  - $\rightarrow$  PS and SPS
    - START at 1200 ms
    - Prepare 900 ms in parallel
    - Use a 2-weeks dedicated MD to verify conditions
    - Switch back to 1200 ms



## 900 ms schedule for 2005



- ✓ Test take ~4 weeks
  - $\rightarrow$  1 week switch to 900 ms
  - $\rightarrow$  2 weeks of running  $\rightarrow$  PHYSICS
  - $\rightarrow$  1 week switch back to 1200 ms

#### ✓ Dates **still to be defined**

- → Avoid summer period (July/August)
- → Avoid LEIR commissioning (from 1 August)
- → Weeks 25 & 26 are booked for changes at REX power supply controls (CO group)
- ✓ Most likely option is

23 May to 17 June (weeks 21 to 24) [M. Benedikt]



## **Constraints for schedule 2005**



#### ✓ Operation

- → Reduced to 25 weeks of operation (26 in 2003, 27 in 2004)
- $\rightarrow$  2 more weeks with risk of interruptions
- → Expected HRS and GPS running in pull/push mode

#### ✓ RILIS:

- → Limited manpower: limit on ~150 shifts for Physics
- $\rightarrow$  ~2000 hours last year (on- & offline + tests)
- ✓ UC targets
- **✓** REX
  - $\rightarrow$  Change of power supplies (~2 weeks)
  - → MD time for beam development
  - → MINIBALL schedule



# MINIBALL @ REX-ISOLDE



✓ Transfer of MINIBALL from GSI to CERN (MINIBALL steering committee on 11 Feb 2005)

→ End of beamtime at GSI: 20 April

 $\rightarrow$  Dismounting 21 – 22 April

 $\rightarrow$  Repairs 23 – 28 April

→ Transfer to CERN 29 April – 2 May

 $\rightarrow$  Setting up at ISOLDE 3-17 May

→ Ready for experiments at ISOLDE 20 May



## Schedule for 2005



- ✓ Reduced time to 25 weeks
  - → GPS/HRS in pull/push mode
  - → Aim to schedule ~300 shifts
- ✓ 579 outstanding shifts
  - → From those 212 REX-ISOLDE physics (37%)
    - 136 with MINIBALL
  - → 193 more to be discussed in the present INTC
- ✓ REX available ~May
- ✓ RILIS: similar to 2004
- ✓ MINIBALL available from 20 May
- ✓ Not yet possible to fix schedule



### **Other issues**



- ✓ Shutdown courses
  - $\rightarrow$  held end of 2004
  - → overbooked
- ✓ Hall extension
  - → On schedule
  - → Protection wall kept until mid April
- ✓ Next INTC dates in 2005:
  - 23 24 May
  - 31 October 1 November