

# ISOLDE scientific coordinator's report

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L.M. Fraile, CERN PH/IS

## Schedule conditions for 2005

# Accelerator schedule 2005

25 April →  
 31 October  
 [27 weeks]

	Apr			May							June			
Wk	14	15	16	17	18	19	20	21	22	23	24	25	26	
Mo	4	11	18	25	2	9	Whit.	16	23	30	6	13	20	27
Tu														
We														
Th						Ascension								
Fr														
Sa														
Su				1 May										

	July				Aug				Sep				
Wk	27	28	29	30	31	32	33	34	35	36	37	38	39
Mo	4	11	18	25	1	8	15	22	29	5	12	19	26
Tu													
We													
Th										Jeune G.			
Fr													
Sa													
Su													

	Oct				Nov				Dec				
Wk	40	41	42	43	44	45	46	47	48	49	50	51	52
Mo	3	10	17	24	31	7	14	21	28	5	12	19	26
Tu													
We													
Th													
Fr													
Sa													
Su												Christmas	

## 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 lose 5 - 10% protons when CNGS is running
    - 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]:

<u>Operation</u>	<u>Machine issues</u>	<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

# 900 ms implementation

✓ 2005 [approved by AB MB on 06/12/04]

→ **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)

→ **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
  - 1 week switch to 900 ms
  - 2 weeks of running → PHYSICS
  - 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)
- 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
- ~2000 hours last year (on- & offline + tests)

## ✓ UC targets

## ✓ REX

- 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
- Dismounting 21 – 22 April
- Repairs 23 – 28 April
- Transfer to CERN 29 April – 2 May
- 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
  - 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