

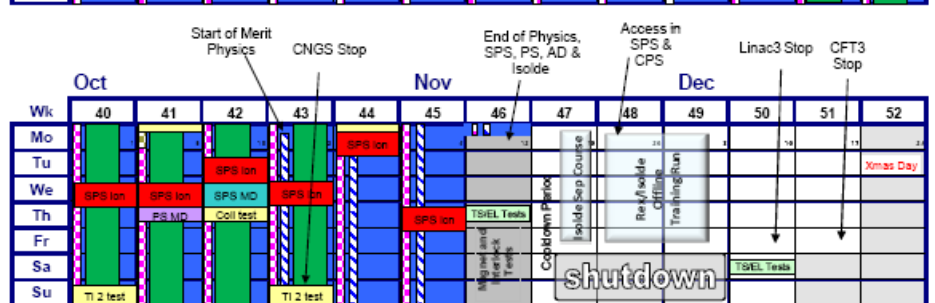
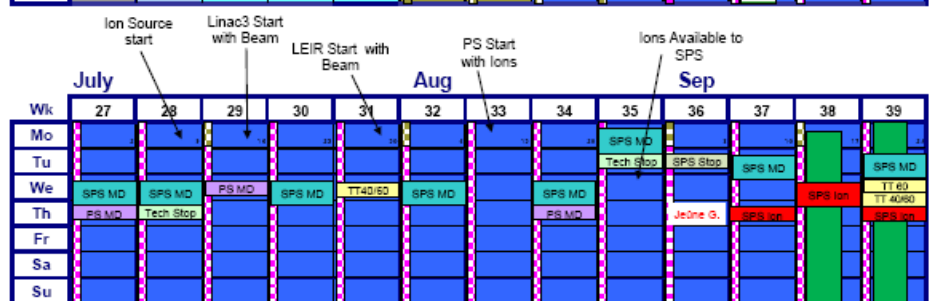
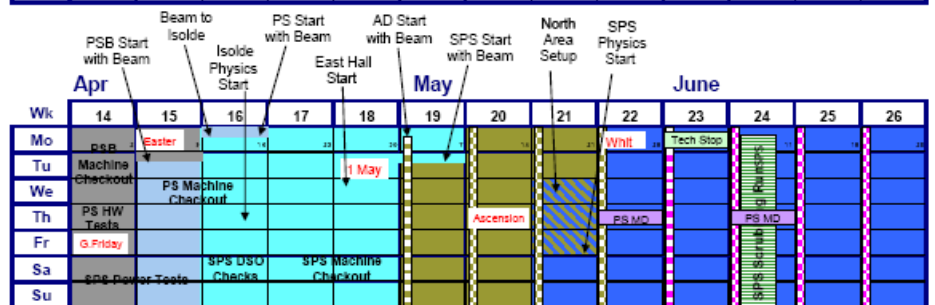
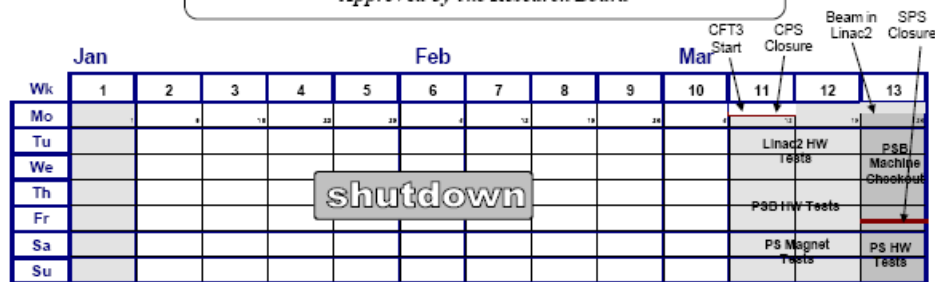
# PRELIMINARY MD PLANNING FOR 2008

E. Métral

- ◆ **2008 injector accelerator schedule vs. 2007  $\Rightarrow$  New structure**
- ◆ **Missing items (or where to put them?)**
- ◆ **Pros & Cons**
- ◆ **New concept of Dedicated MD needed**
- ◆ **Requests known as of today**
- ◆ **Conclusion**

# 2007 Accelerator Schedule

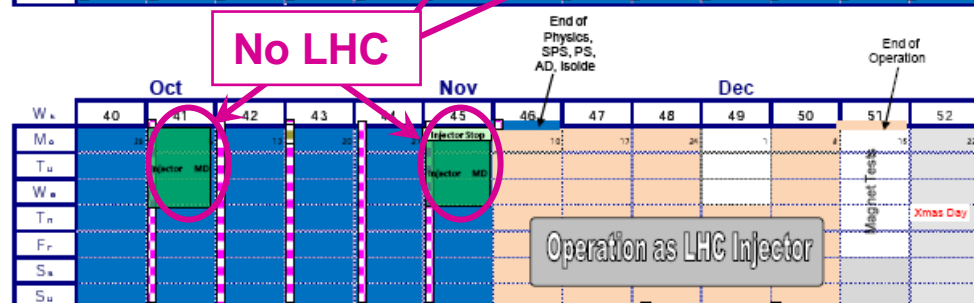
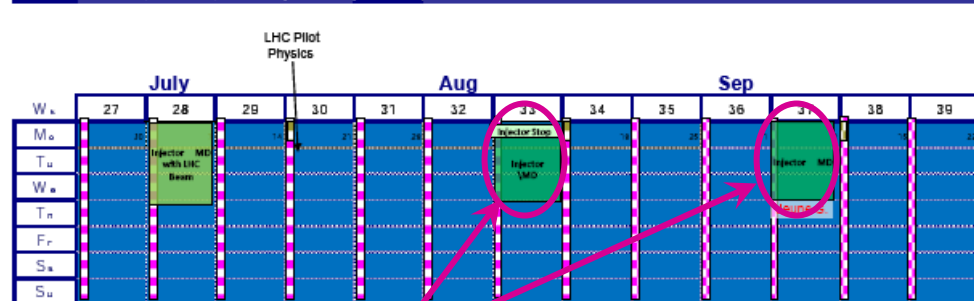
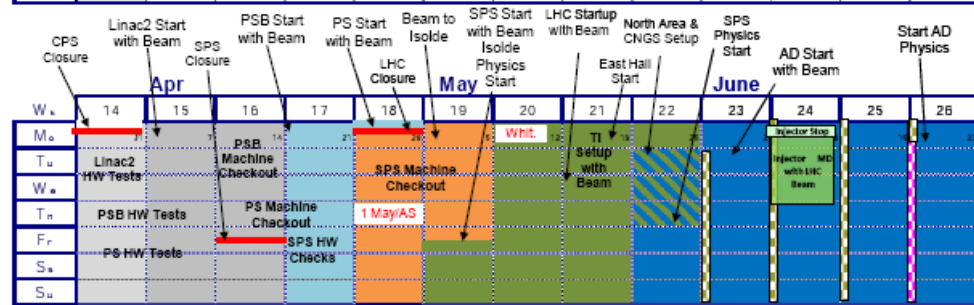
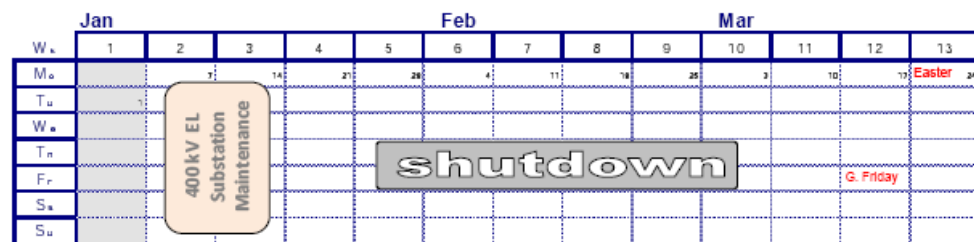
Approved by the Research Board



- PS MD Dedicated PS MD
- SPS MD Dedicated SPS Proton MD
- SPS Ion Dedicated SPS Ion MD
- TI 2 Test Special Dedicated Test
- SPS Scrubbing Run
- CNCS Commissioning Run
- Weeks with AD Physics
- AD Setting up
- Weeks with Merit (nToF11) Physics

# 2008 Injector Accelerator Schedule

Draft



- Injector complex MD (parasitic Physics beams may be available)
- Injector Complex MD with Beam to LHC
- Special Test
- TI 2 Test
- Dedicated Ion MD
- Technical Stop for the Injector Chain
- AD Physics
- AD Setting up & Studies
- nToF Physics

# MISSING ITEMS (OR WHERE TO PUT THEM?)

- ◆ Scrubbing run  $\Rightarrow$  Also important for FT (not only LHC)

$\Rightarrow$  Could perhaps be done during the first MD block (week 24, the same as this year) using a supercycle with a pilot beam sent to the LHC)

- ◆ Ions  $\Rightarrow$  S. Maury

- ◆ “MTE commissioning”

# NEW STRUCTURE FOR THE MDs

## ◆ For the moment, foreseen in 2008

- 6 blocks of 3 days = 18 days ( - 3 due to the 3 injector stops foreseen)  $\Rightarrow$  15 days in reality
- Injector MD with LHC  $\Rightarrow$  1 block of 2 days + 1 block of 3 days
- Injector MD without LHC  $\Rightarrow$  2 blocks of 2 days + 2 blocks of 3 days

## ◆ In 2007 we have

- 6 blocks of 8 hours for PS dedicated MDs = 2 days in total
- 9 days for SPS dedicated MDs
- 3 blocks of 8 hours + 7 days for the SPS ion dedicated MDs = 8 days in total
- **Summary**
  - 19 days of dedicated MDs foreseen in 2007
  - + 1 week for the SPS scrubbing run

# PROS & CONS

## ◆ PROS

- Save time (if everything goes perfectly well!) for the setting-up time  $\Rightarrow$  Clearly seen this year
- Less perturbation for the physics (MD time + switching to the physics supercycle which always take some time)
- Easier for the schedule as in case of delay we can shift the whole blocks
- ...

## ◆ CONS

- In case of problem, the whole block could be lost
- 3 days is quite long + there are MDs in the LHC during few days just before (with some people needed both in the SPS and LHC)  $\Rightarrow$  Many conflicts/problems might appear (it might be better for the machines but not for the people)
- ...

# NEW CONCEPT OF DEDICATED MD NEEDED (1/2)

## ◆ Should introduce new concept of

- Dedicated MD vs. FT (i.e. beam available for LHC)
- Dedicated MD vs. LHC (i.e. beam available for FT)
- Dedicated MD vs. both FT/LHC (no beam for both FT and LHC)

⇒ One should try to make parallel MDs in the SPS, as it is done in the PS for many years

## ◆ Can we have a supercycle in the SPS composed by e.g. 2 identical nominal cycles for LHC filling ( $2 \times 21.6 = 43.2$ s), with one cycle at $\sim$ half intensity sent to the LHC and the other at $\geq$ nominal intensity for beam studies in the SPS?

- First answer for the SPS by T. Bohl ⇒ As long as there are 2 different Timing Users (LHC25NS and MD1, e.g.) attached to these cycles, there should be no problem
- What about the PS?

## NEW CONCEPT OF DEDICATED MD NEEDED (2/2)

- ◆ **Faster switch between the supercycles**  $\Rightarrow$  Sometimes ~ 1 hour lost to install the MD supercycle (Maybe my fault... with better communication we could really improve the situation by preparing the “new” supercycle in the previous shift, as all the information should be available)

# REQUESTS KNOWN AS OF TODAY (1/4)

- ◆ **MTE commissioning in the PS (Massimo)**
  - **Dedicated MD time does not seem to be needed**
  - **Most of the activities should be labelled as “MTE commissioning”  $\Rightarrow$  Some dedicated short periods should be allowed to perturb the physics programme:**
    - **Some HW tests of the kickers**
    - **Initial commissioning of the fast bump where some interference between the new extraction system and BFAs might occur**
    - **Outline of commissioning**
      - **1<sup>st</sup> period (May-June. Kickers not ready for beam yet)**
      - **2<sup>nd</sup> period (June-July. Kickers available for extraction)**
  - **Rough estimate for additional studies  $\approx$  1/3 of the time allocated in 2007 (if 2007 programme completed...)**

# REQUESTS KNOWN AS OF TODAY (2/4)

## ◆ PSB

- **Intensity limits  $\Rightarrow$  Longitudinal and transverse stability issues at 160 MeV for LINAC4 (most of it should be parallel MDs). Other optics and other working points (Montague?) might require dedicated MD (time for re-cabling of the power circuits is required)**
- **Study of the limitations of the RF system (dedicated)**
- **Fast wire scanners, investigate systematic effects, make the system operational (parallel)**
- **Test of BLMs in the measurement line (parallel)**
- **Delivery of beams for PS MTE commissioning (parallel)**
- **Re-alignment  $\Rightarrow$  Setting-up time? (see M. Chanel's talk)**

# REQUESTS KNOWN AS OF TODAY (3/4)

## ◆ PS

- Transition in the PS: next year new doublet power supplies will be available (dedicated?)
- Scrubbing run in the PS, methods to keep the bunches long: Will we manage this year? (dedicated)
- LHC beam with no rotating machine in the PS: we need to do some test this year!!) but we might have to continue next year (dedicated)

## ◆ SPS

- Impedance issues: a series of measurements might be required for keeping track of the machine impedance (parallel)
- Matching monitor in the SPS: Certainly more time will be required next year (dedicated)
- LHC nominal beam in the SPS: time is certainly required to set-up the beam once more and train people (dedicated)
- BBLR (dedicated)
- Ultimate beams and upgrade studies (some dedicated time)

# REQUESTS KNOWN AS OF TODAY (4/4)

- ◆ RF (T. Bohl) will discuss the requests for MD time in 2008 first among themselves (RF-BR, RF-FB sections). Furthermore there might be some conflicts with LHC (W. Hofle)
- ◆ BI (R. Steinhagen)
  - would essentially need about the same amount of time we needed this year. Half of it (total 6x4-8 hours in the SPS/LHC) would be used for system-integration and function tests and the other half for new BI-QP developments. The other tests could and will be done in parallel with normal operation or are part of the commissioning
  - We would need to accept the fact that SPS MDs and LHC access will overlap next year and that they will have to decide on a case-by-case basis whether they can give support to non-BI MDs in the SPS while being in the LHC tunnel the same day...

# CONCLUSION

- ◆ **After several discussions (please do not hesitate for any other comments), 3 consecutive days of dedicated MDs look very difficult  $\Rightarrow$  We would like to reduce the blocks to  $\sim 2$  days maximum. During the other day the FT physics could profit from the beam (with an increased duty factor)**
- ◆ **Conflicts with LHC (few days of MDs just before, same people...)**
- ◆ **A new concept of dedicated MDs should be introduced**
  - **Dedicated MD vs. FT (i.e. beam available for LHC)**
  - **Dedicated MD vs. LHC (i.e. beam available for FT)**
  - **Dedicated MD vs. both FT/LHC (no beam for both FT and LHC)**
- ◆ **It seems that we need to be able to perform MDs in the SPS in parallel to LHC (as done in the PS)  $\Rightarrow$  I am following this up**
- ◆ **We should also continue to improve the switching between the different supercycles  $\Rightarrow$  I am following this up**