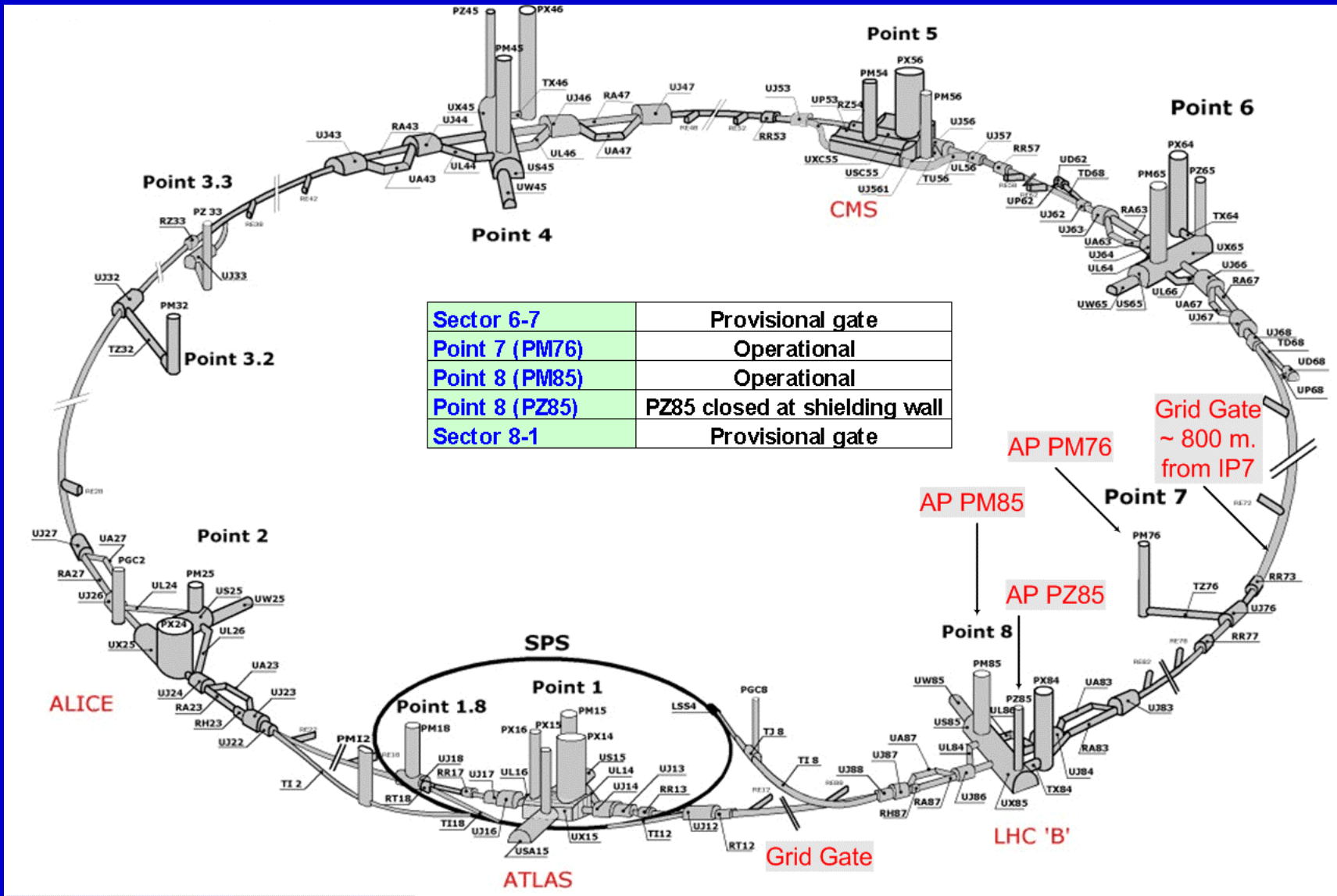


Abréviations	Nom complet
ECA	Equipement de contrôle d'accès
EIS	Elém ent Important de Sûreté
EIS-a	Elém ent Important de Sûreté de l'accès
EIS-f	Elém ent Important de Sûreté de la machine inhibant les faisceaux
EIS-m	Elém ent Important de Sûreté de la machine
INB	Installations Nucléaires de Base
RCA	Réseau de contrôle d'accès
SGCI	Système de Gestion et de Configuration de l'Interverrouillage
SCEa	Système de Contrôle des Eléments Importants de Sûreté de l'accès
SCEf	Système de Contrôle des Eléments Importants de Sûreté de la machine inhibant les faisceaux
SCEm	Système de Contrôle des Eléments Importants de Sûreté de la machine
SSAL	Système de Sûreté d'Accès du LHC
SSIA	Système de Supervision et d'Informations d'Accès
SSIS	Système de Supervision et d'Informations de Sûreté

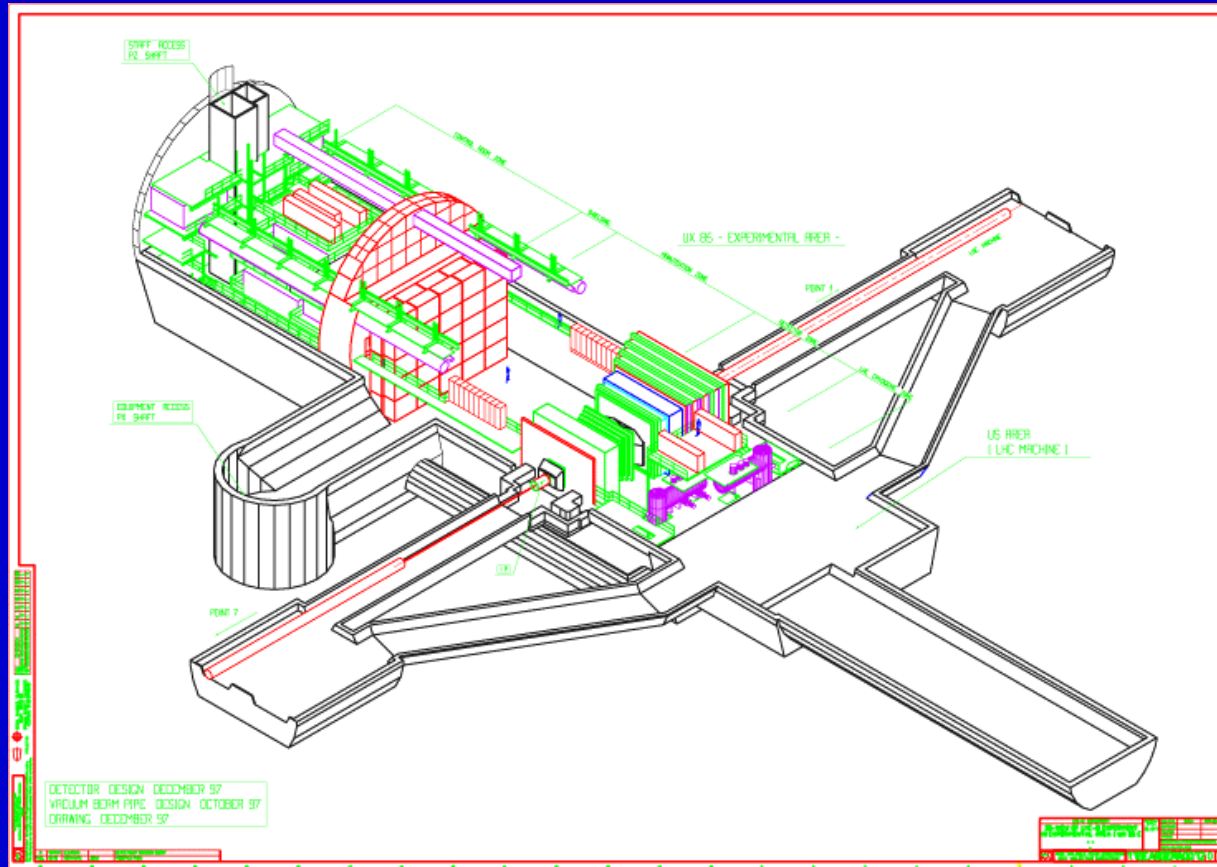
Sector test: access

- **Sector 8-1**
 - **PM76**
 - **PM85**
 - **PZ85**
 - **Sector 6-7**
-
- **Requirements:**
 - **Ensure that test zone is inaccessible while possibility of beam**
 - **Interlock beam off if above conditions are broken**
 - **(access system will interlock T18 main bends, TED in, will not directly inhibit extraction from SPS)**
 - **Ensure the test zone is inaccessible until a radiation survey is performed**
 - **Allow limited controlled access during and after the test.**

Sector test - access



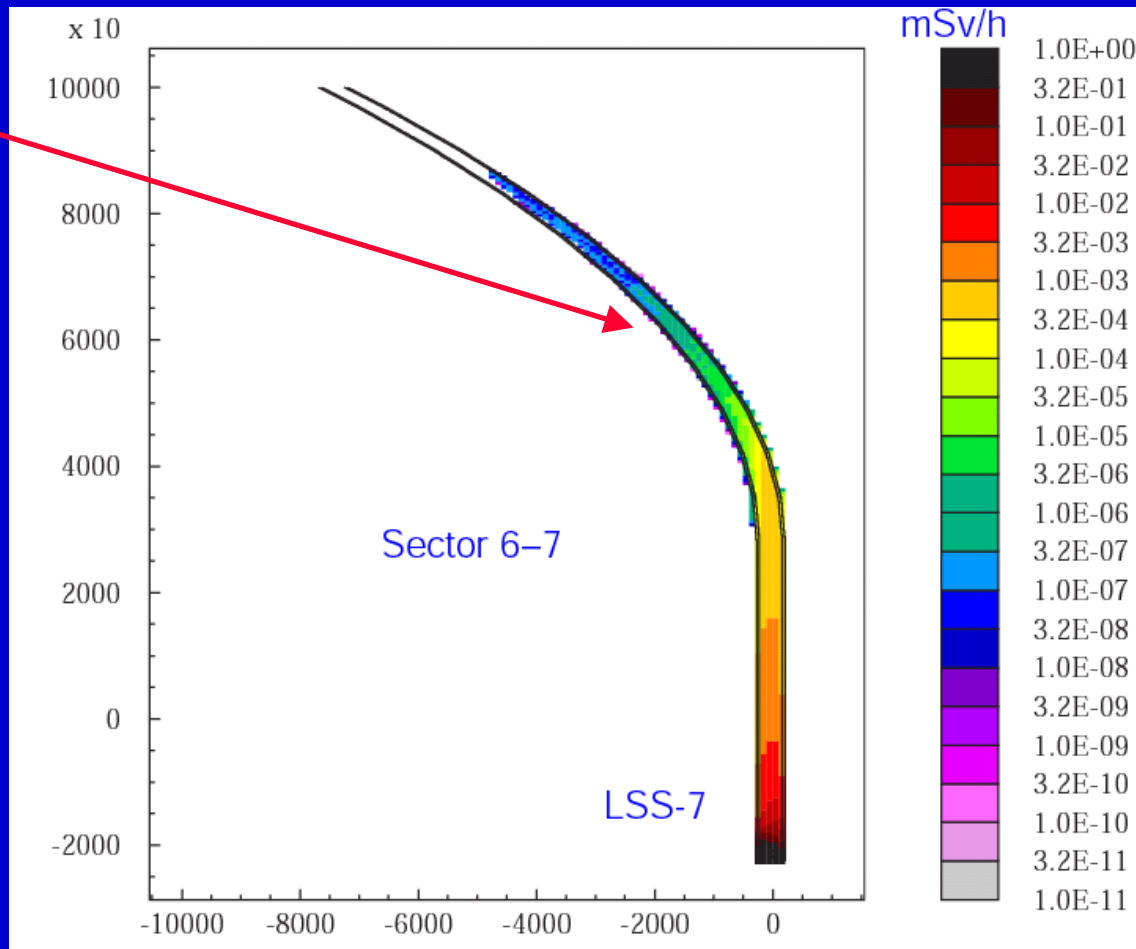
LHCb: PZ85



Clear request for access to counting rooms during sector test :. access point through shielding wall. Access control might not be fully implemented. Would padlock door – some question about emergency exit. No padlocks in the tunnel, same emergency exit solution (safety lock) as used in the SPS.

Sector 6-7

- Contours of muon dose rates in sector 6-7. Distances in cm.
- Contours calculated for pilot pulses only
- 0.1 $\mu\text{Sv/h}$ is at 500 m. from the IP
- Several nominal bunches would be 100 times higher



Need to make absolutely sure that nobody working in 6-7 sees anything

Agreed that the sector gate be placed at 800 m from IP7. Special purpose temporary installation.

Appropriate monitoring will be required.

Sector test: access

- **Sector 8-1**
 - Position of gate – as for T18 test, final configuration, door comes out again after the test
- **PM76**
 - lock-out at surface
- **PM85**
 - Controlled access. This would be the sole fully equipped access point and would be used for access during the test.
- **PZ85**
 - lock-out

Access Doors interlocked in Access Safety CHAIN 2 for the Extraction Test TI8

24.-25. September 2004

30.-31. October 2004

Elements interlocked in Machine Safety CHAIN 2

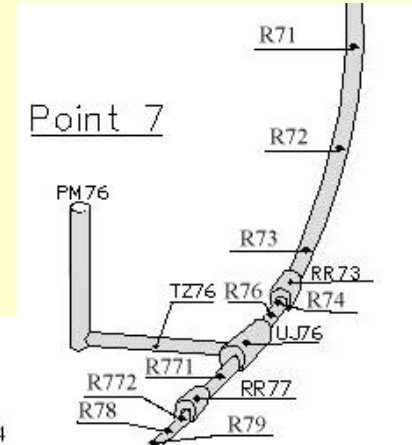
Kickers MKE	} OK
Septa MSE	
Bends BHC	
TED TT40	

Elements interlocked in Machine Safety CHAIN 3

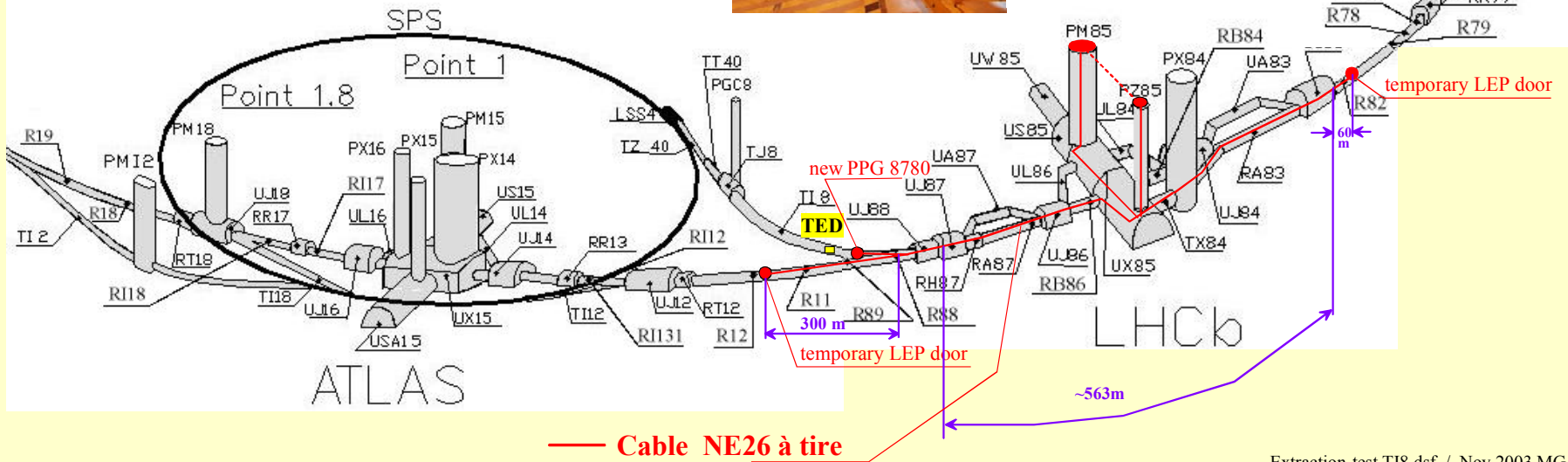
TBSEL	} OK
MBI	
MBIA V815	
TED TI8	



PM 85, PZ 85
Interlock on sliding doors



Point 8



Access Interlocks

- **Personnel protection via access system**
 - EIS:
 - T18 Bends, TT40 TED +
 - Patrol requirements: procedure to be defined.
- **Interlock chain**
 - More-or-less as for access safety chain 2, but will special interlock loop for LHC sector and have another name for LHC implementation
- **Access during the test will be required**
 - At least one per day should be foreseen.
 - Requirement on users? Tokens – final solution
 - Control from CCC foreseen, also possible from workshop

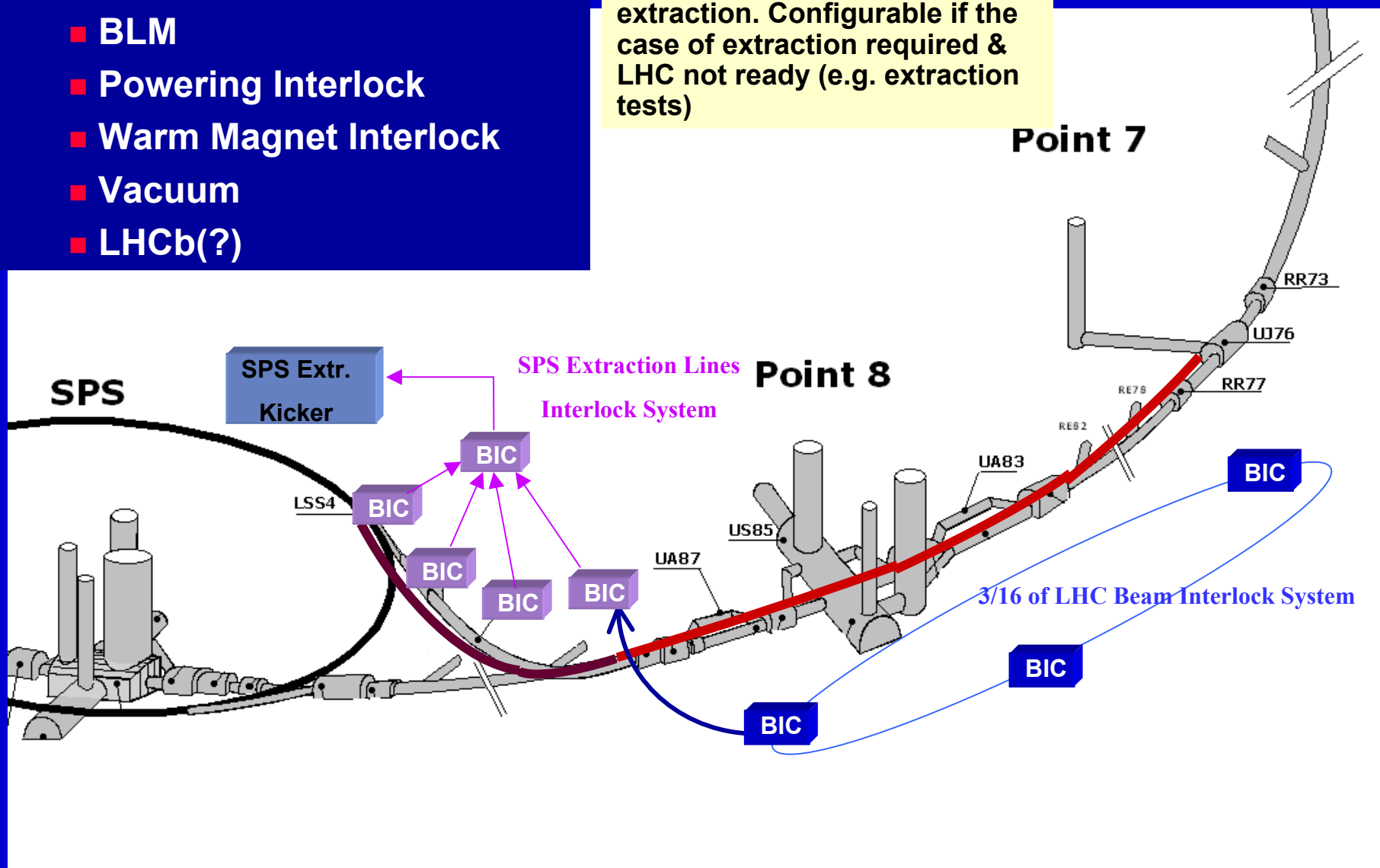
Monitoring

- **Radiation monitoring**
 - RAMSES have the injection test as milestone
 - LHCb: 4-5 monitors planned under RAMSES
 - **Extra monitors required to ensure $< 0.5 \mu\text{Sv/h}$** , PMI monitors planned, modern data monitoring + interlocks.
 - Ventilation
 - Access gates radiation \rightarrow BIC
 - Permitted radiation level outside zone **$< 0.5 \mu\text{Sv/h}$**
- **Beam Loss Monitors**
 - Sensitive to losses at 1% level with pilot bunch intensity
 - Additional BLMs in LHCb
- **Beam Intensities**
 - Beam extracted, injected and to dump to be logged
- **RPG survey after the event and perhaps during the test to ensure that activation remains low.**
 - Careful survey afterwards planned after the test near the injection dump and dump itself.

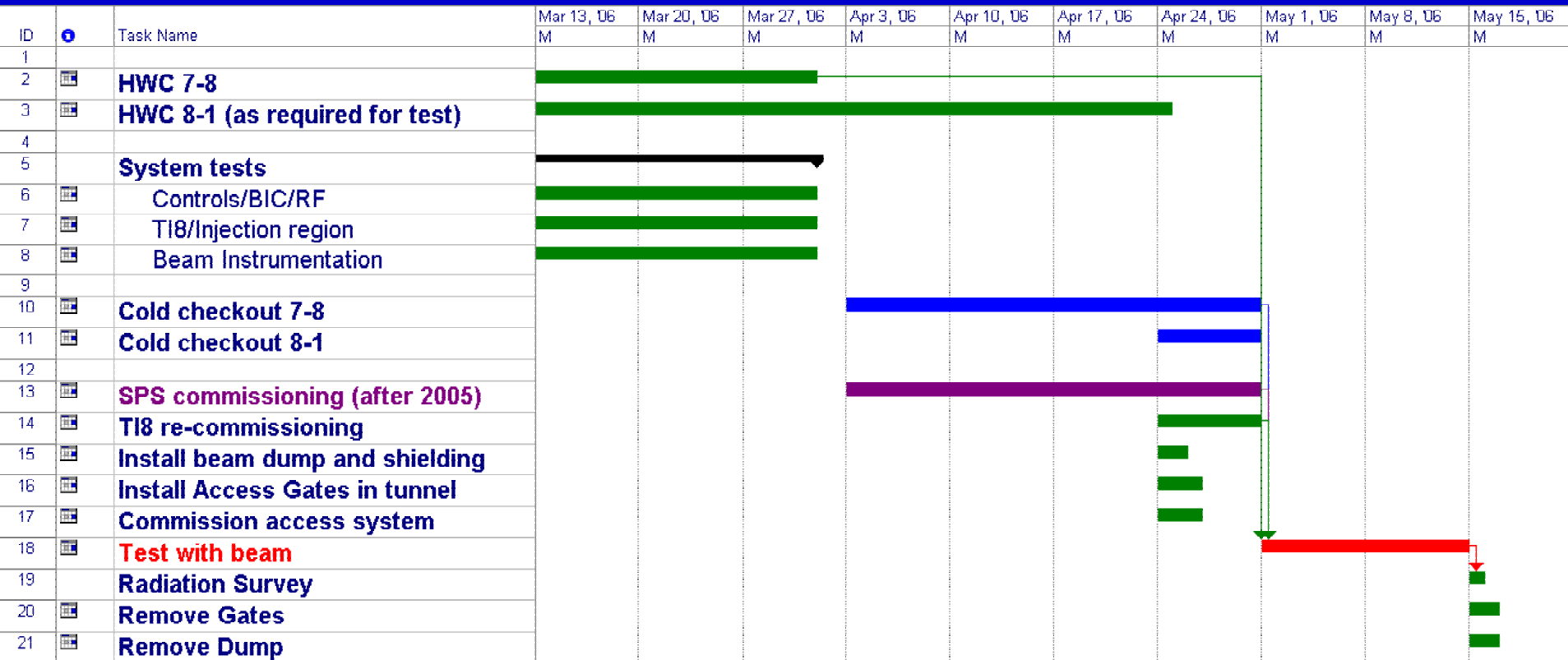
BIC

- Radiation levels
- BLM
- Powering Interlock
- Warm Magnet Interlock
- Vacuum
- LHCb(?)

Access system will provide input to BIC (to be confirmed) which will inhibit SPS extraction. Configurable if the case of extraction required & LHC not ready (e.g. extraction tests)



2006



Schedule

- **Installation**
 - Gates – allow 2 days, who is responsible for pulling the cables? Work n parallel of course.
 - Pilot application tests – 5 days, need to see all signals . (HWC provides some opportunity but only looks for electrical hazards etc., sector test needs to check machine EIS)
 - DSO test – 1 day, need standard configuration, force all 5 doors in turn and verify.
 - 4 days with machine shut to fully commission.
- **Re-commissioning TI8**
 - Will have to be done as an integral part of the sector test, can not envisage establishing sub-zone.
 - TT40, on the other hand, should be possible with zones already defined.
- **Decommissioning procedure:**
 - Radiation survey will be performed before removal of gates
 - Get the gates out – 2days
 - Get the dump out. Need prior authority for transport of dump.

Other stuff

- **Formalities? INB?**
 - Have to establish prior authority, and what measures will be in place. Should be an addendum to the big report going to INB in summer 2005 (?) where final go ahead for LHC and sector test will be given.
 - A safety handbook for the project would be desirable.
 - Report to be prepared (Ghislain, Mike...). Remind Ghislain frequently.
- **Emergency stop? Should be hooked up if final system is in place. Check this. Are they hooked to the access system?**
- **CSAM? Nothing specific to sector test**