

Installation and SX5 Activities Update and Plans

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YB+2 Status

- Passage of cables across the feet in S09 and S11 was completed last week. The two feet chambers were installed on Thursday December 1st.
 - The surface installation of YB+2 is completed.
 - MB2C23 S09 was extracted ~80cm from the HV side to replace a faulty board in the outer RPC. This operation required the use of the cradle and the chamber was fully disconnected (gas, cooling, HV, LV, trigger readout....).
 - The feet chambers were transported flat on a truck to SX5 Wednesday afternoon, the chambers were installed by 16:00 on Thursday and the operation on MB2C23 was completed by 19:30
- Installation of feet chambers is not a problem.

YB+2 Status

- The RPC group has just started checking the chambers in YB+2 (after the cabling of the bottom sectors!). It is worrisome that a faulty board was found in the first sector tested.
- Cabling has been more time consuming than expected.
- The layout was changed to avoid blocking the protection covers (carters) that must be removed to make connections.
- Several carters have been modified to simplify the passage of fibers and protective corrugated tube.
- The fibers distribution has been changed since the planned scheme was too cumbersome.
- Only S10 and S11 are equipped with fibers.
- The RPC cables have been installed only in S10 and S11 but are not connected to the chambers pending the measurement of the skew time.

YB+2 Status

- The DT cabling (copper) is completed for the bottom sectors (S07 to S12). The cables for S07 are retracted to avoid interferences with the lowering gear.
- Test of the MC after cabling is completed for S10 and in progress for S11 (Franco Gonella and Marco Nervo). Some problems were found:

MB1 S10 Traco switch open on trb0 (**missed during commissioning**)

MB2 S10 Veto cable not connected

MB4/10R Trigger out problem. Timing to be readjusted (5ns window)

MB4/10L BTI problem

MB1 S11 transmission problem (link board???)

➤ Not quite as smooth as expected

YB+2 Status

- The feet chambers are under gas
- We will attempt to connect the cables from the chamber and to the MC with the existing cables in place. If this fails, S11 (and S09) have to be uncabled and recabled
- Commissioning of these chambers will be done using the final cables once YB+1 commissioning is complete
- Photogrammetry of the feet chambers and MB2C23 should be done before the MT but may be difficult to find the time and space.

		YB + 1									
Sectors		+8		+9		+10		+11		+12	
Chambers		MB1P36		MB1P22		MB1P23		MB1P25		MB1P35	
HV	Com	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Chambers		MB2P25		MB2P20		MB2P40		MB2P18		MB2P21	
HV	Com	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Chambers		MB3P40		MB3P26		MB3P10		MB3P20		MB3P46	
HV	Com	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Chambers		MB4L4		MB4C32		MB4L33		MB4R31		MB4C33	
HV	Com	▶		—		▶		ON		—	
		YB + 1									
Sectors		+2		+3		+4C		+5		+6	
Chambers		MB1P11		MB1P37		MB1P51		MB1P19		MB1P38	
HV	Com	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Chambers		MB2P39		MB2P35		MB2P54		MB2P36		MB2P38	
HV	Com	OK	OK	OK	OK	OK	OK	ON	?	OK	OK
Chambers		MB3P22		MB3P42		MB3P02c		MB3P06		MB3P28	
HV	Com	OK	OK	OK	OK	OK	OK	ON		OK	OK
Chambers		MB4R05		MB4R07		MB44C1		MB44C2		MB4L10	
HV	Com	ON		OK	OK	OK	OK	OK	OK	ON	OK

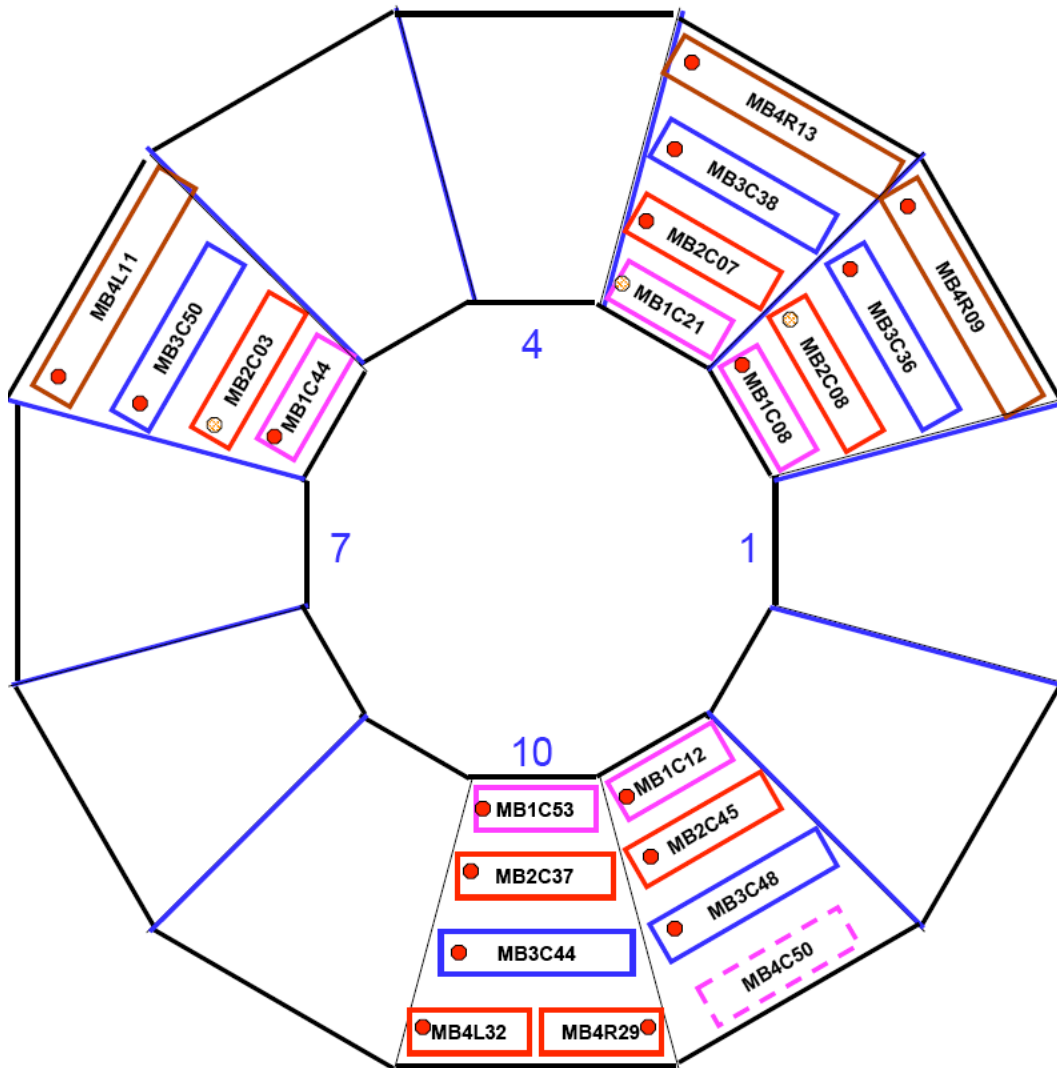
YB+1 Status

- 2 Chambers not yet under HV
- 7 Chambers still to be commissioned
- MB4R31 problem solved by Jesus+Marcos: strip shorted to ground by broken decoupling board ground pin. Pin was extracted at HV side
- MC power interlock on water flow inserted by Franco G. Unattended data taking is allowed.

YB+1 Status

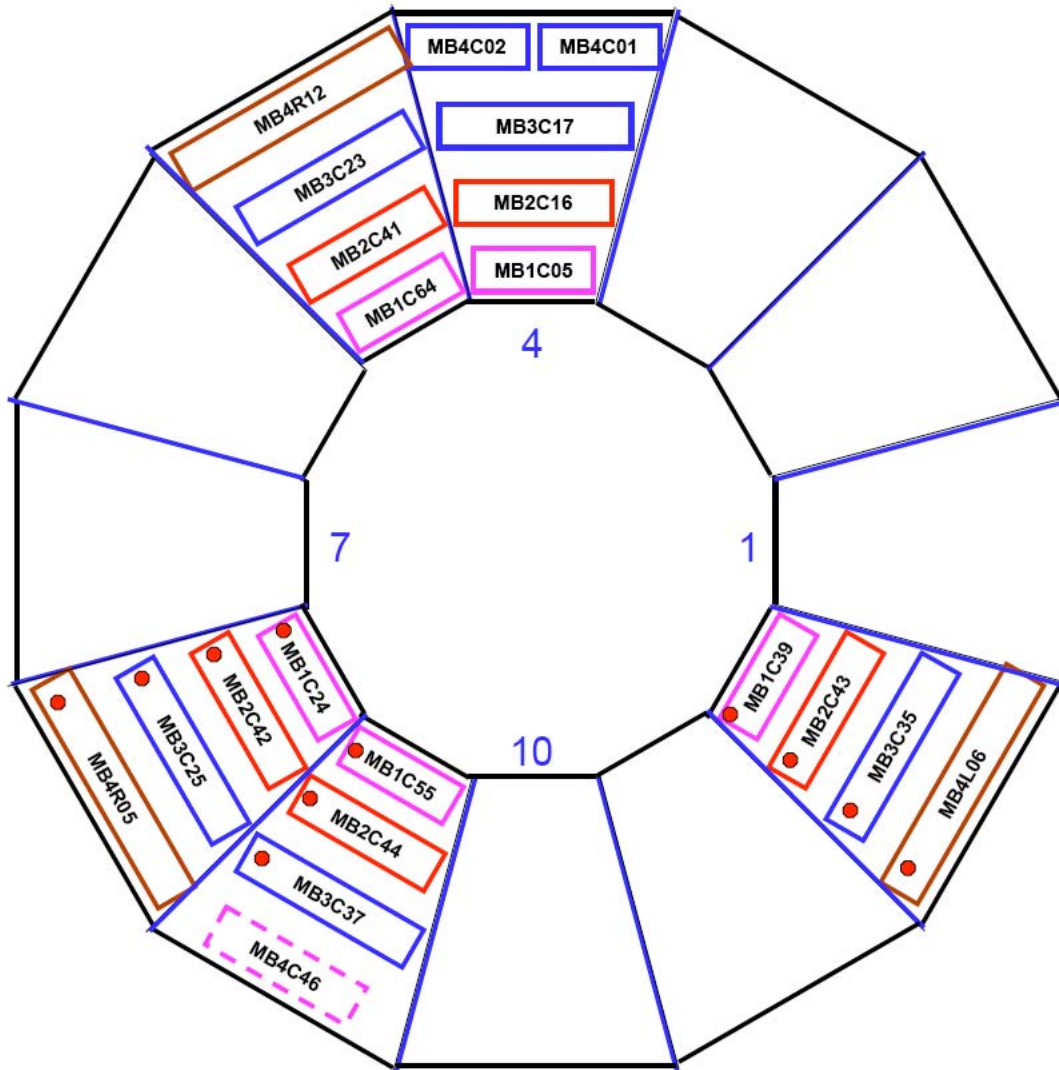
- Two RPCs (MB1 S05 and MB1 S09) required interventions: one disconnected cable and a damaged board due to accidental power short. The chambers were extracted ~30cm one from the HV side (S09) and the other from the front-end side. This operation can be done manually and requires the chamber to be disconnected from gas and cooling.
- The photogrammetry measurement of these chambers should be repeated after the installation of the feet chambers.
- The cabling operation should start on January 9th with a new team (Russian). Commissioning must be completed before the end of the year and also the tidying up at least of the bottom sectors.
- **Another incident with gas system:** ~1 day lost in commissioning to understand cause of unusually large fraction of afterpulses in 2 chambers. Problem disappeared after a while. Mass flow meters monitoring did not present any anomalies. The overall gas distribution must be checked. Better monitoring (test chamber) needed.

Installation Schedule (Final)



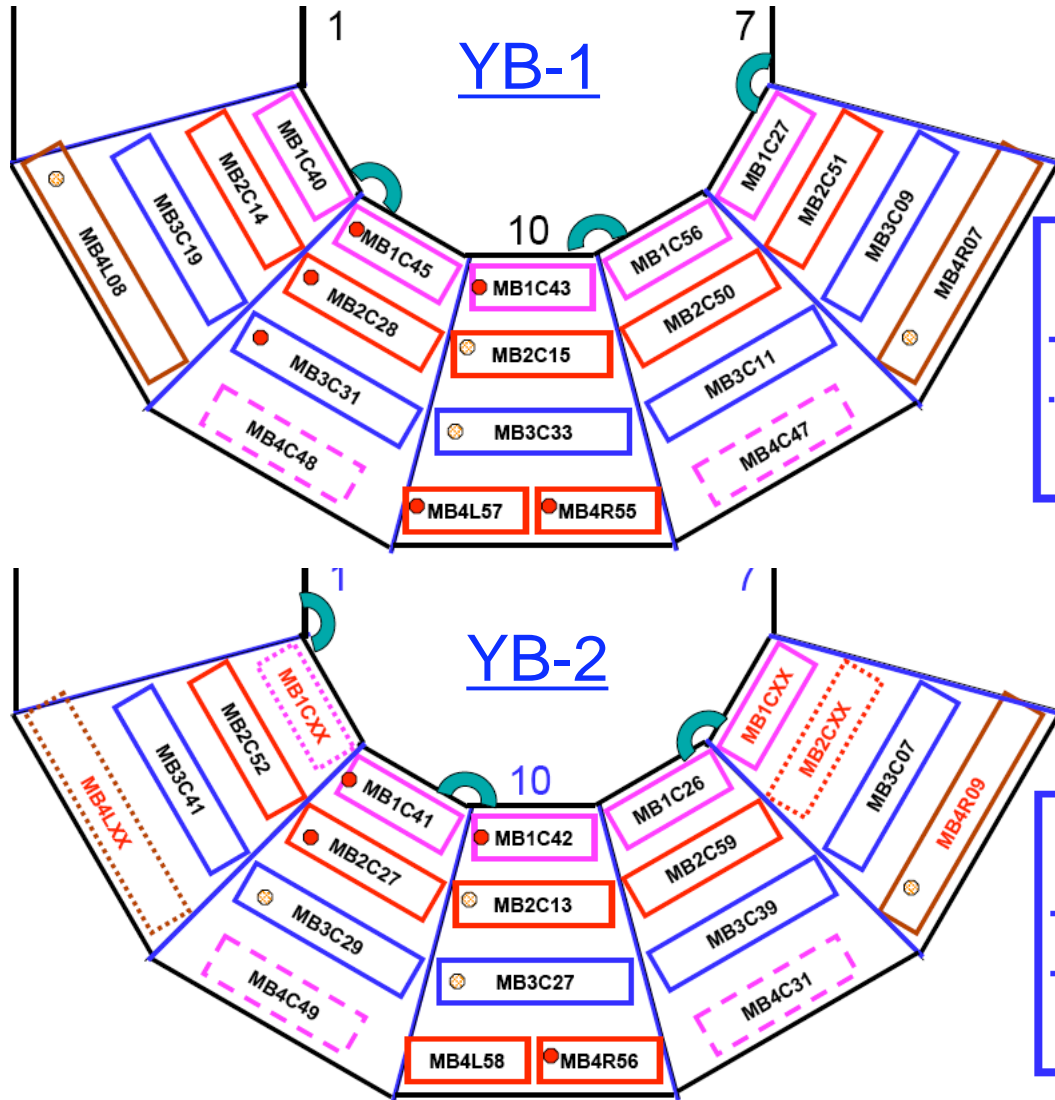
- Installation window = 2 weeks starting January 31st Critical Path
- S10,S11 on transport frames
- DT- RPC coupling in progress
- 3 Chambers still with HV problems (see Jesus talk)
 - S10, S11 Installed first
- Staging area on YB0- side
 - Move scissor lift to YB-0 during YB+0 installation on top
- **Position of HO RBXs still not finalized. Holes for supports must be drilled before MB1 installation**

Installation Schedule (Final)



- Install Sectors 8,9, 12
- All chambers ready for coupling with RPC
- Installation time required 1 week (11 chambers) with adequate manpower and priority access to the crane
- Installation window follows YB+0

Installation Schedule (Final)



➤ Installation window= 2 weeks:
starts 1 week after YB-0

➤ YB-1 moved over cryostat

➤ Install YB-1 from front-end side, YB-2 from HV side

- Install S10, S11 in YB-1 and YB-2 (16 chambers)

- Install additional MB4 (5 ch):

YB-1: S08, S12, S02

YB-2: S03, S08

- 5 Chambers still with HV problems

- MB1 supports to be installed before end of the year

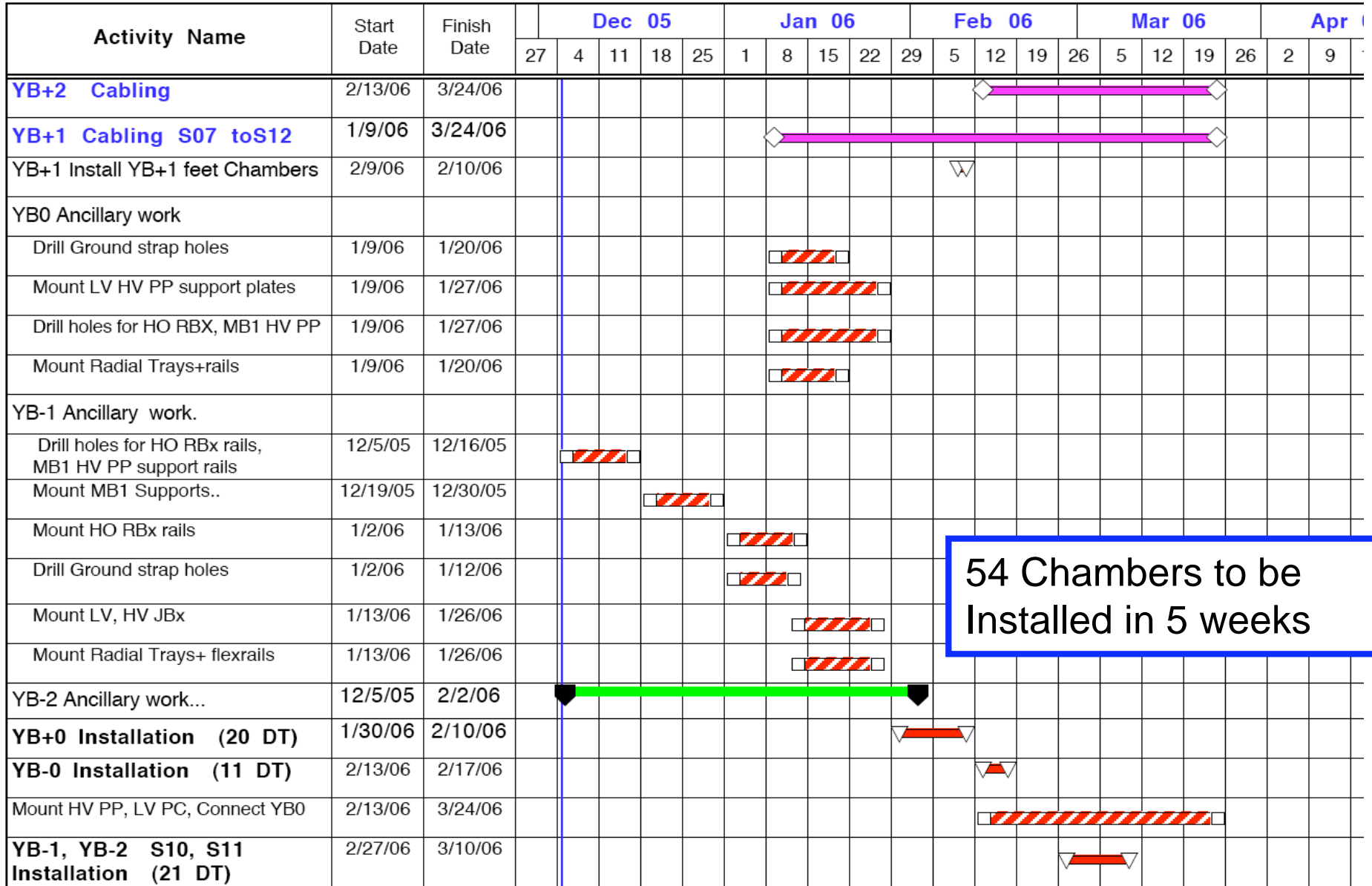
MT Schedule (Oral Version)

Activity Name	Start Date	Finish Date	Jan 06				Feb 06				Mar 06				Apr 06				May 06				Jun 06				Jul 06				Aug		
			1	8	15	22	29	5	12	19	26	5	12	19	26	2	9	16	23	30	7	14	21	28	4	11	18	25	2	9	16	23	30
Cryo Welding	12/5/05	1/23/06	[Blue bar from Jan 1 to Jan 22]																														
Install BMU, HB+,HB-, 2EB+SM, Tracker, Cabling	1/24/06	3/24/06	[Green bar from Jan 22 to Mar 19]																														
Close - Side	3/27/06	3/30/06	[Blue diamond icon at Mar 26]																														
Close + Side	4/3/06	4/7/06	[Blue diamond icon at Apr 9]																														
Coil Commissioning (6 weeks)	4/10/06	5/19/06	[Red bar with arrowheads from Apr 16 to May 13]																														
Open, Remove Tracker , ECAL , cables, insert field mapper, Close	5/22/06	6/23/06	[Green bar from May 28 to Jun 18]																														
Field Mapping (4 + 2 weeks)	6/26/06	8/4/06	[Red bar with arrowheads from Jun 25 to Aug 1]																														

- HB+ moves from alcove 25/01/07
- YB+1 over solenoid after YB0+ installation
- Scaffolding erected between YB+1 and YB0+ (may hinder YB0 work)

- YB-1 over solenoid after YB0- installation
- YB0 access for ancillary work possible during opening before field mapping

SX5 Main Activities up to MT



54 Chambers to be Installed in 5 weeks

Installation After the Magnet Test

Preferred Installation Sequence:

- 1) YB-0 S04, S05: 9 +2 chambers
- 2) YB-1 ~8 Sectors: 29 +2 chambers
- 3) YB+2, YB+1 S01, S07: 16 chambers (UX installation)
- 4) YB-2 ~8 Sectors: 30 +2 chambers
- 5) YB0, YB-1, YB-2 S01, S07: 24 chambers (UX installation)

The chambers for the first 3 points (58) must be ready by the end of the Magnet Test.

Access time to YB0 can be minimized by commissioning (and cabling) YB+0 and YB-0 in parallel with two dedicated teams.

Required Installation Windows (Minimum)

Activity Name	Start Date	Finish Date	Aug 06					Sept 06					Oct 06					Nov 06					Dec 06					Jan 07				Feb 07								
			30	6	13	20	27	3	10	17	24	1	8	15	22	29	5	12	19	26	3	10	17	24	31	7	14	21	28	4										
YB0 Installation Sectors - 4,5 (9 Chambers) + 2 MB4/9-11	8/21/06 10/9/06	8/25/06 10/13/06				▲									▲																									
UX YB+2, YB+1 Sectors 1,7 (16 Chambers)	9/25/06	10/6/06													▲																									
YB-1 Installation , 8 sectors (29 +2 chambers)	8/28/06 10/30/06	9/15/06 11/3/06					▲																																	
UX5 YB0 Installation and Cabling																																								
UX YB0 Sectors 1,7 (8 Chambers)	11/20/06	11/24/06																																						
YB-2 Installation , 8 sectors (30 +2)	10/23/06 1/8/07	11/10/06 1/12/07																																						
UX5 YB-1,YB-2 Installation and Cabling																																								
UX YB-1, YB-2 Sectors 1,7 (16 Chambers)	1/8/07	2/2/07																																						

First Installation Period:
58 Chambers in 6 weeks

Second Installation Period:
56 chambers in 6 weeks

- with priority use of crane and access to wheels (8am to 12pm) and adequate manpower (no experience with UX installation)
- Installation windows are educated guesses not cleared with TC

Some Issues

- Cabling is progressing but still not a routine operation. Preparation and layout of fibers still done by “experts” not by cabling team.
- IHEP cabling team leaves December 17th. **New team**, with only one experienced person, returns February 10th.
- Second cabling team (Russian) arrives January 6th will start cabling YB+1.
- Redefine rock bottom goal before MT as:
 - YB+2 and YB+1 bottom sectors completed
 - YB+2 some top sectors to learn rate and problems
- Many items are still missing at the rack side, notably the boxes for extra lengths storage and connections.

Some Issues

- Racks are still lacking service power and tri-phase for AC/DC converters.
- Cabling at the racks must be completed before the MT at least for YB+2 S10, S11 and YB+1 S10. It will take time to set up a team and progress on the learning curve.
- At least 2 experienced teams are needed after MT to complete YB+2, YB+1 in parallel.
- YB0 integration is still a major bottleneck for cabling readiness after MT (cutting lengths....)

Some Issues

- Some items needed for installation BEFORE MT are still pending:
 - holes for HO read out boxes and HV PP on YB0
 - holes for HO rdbx and HV PP on YB-1 and YB-2
 - holes for ground connections on YB0, YB-1, YB-2
 - MB1 supports on YB-1 and YB-2
 - Support plates for HV PP and LV patch connectors for YB0 still to be (or just) ordered.
- Ancillary work on YB+0, YB-1, YB-2 should be done before the MT
- Check that all needed items have been ordered (supports, cable trays, boxes for fibers.....)

Summary

- Surface installation in YB+2 is completed.
- YB+2 cabling for S10 and S11 completed. Copper cables are in place for the bottom sectors.
- MC testing with final cables is progressing, some problems have been found that required intervention on the MCs.
- YB+1 commissioning will be finished before the end of the year. Preparation for cabling is now an urgent task.
- Cabling (and testing) is still a major hurdle. Still climbing the learning curve as new (inexperienced) teams will continue in 2006.
- Cabling at the racks side is a major worry, items missing, diffused responsibilities...
- Installation of 54 chambers by middle of March 06 is challenging but feasible. Chambers will be ready on time thanks to Jesus, Marcos, Maria, Sandro, Jose Miguel, Vincenzo, Vittorio, Franco and Marco N.
- Adequate manpower for 2006 activities is a real challenge