

ECFA

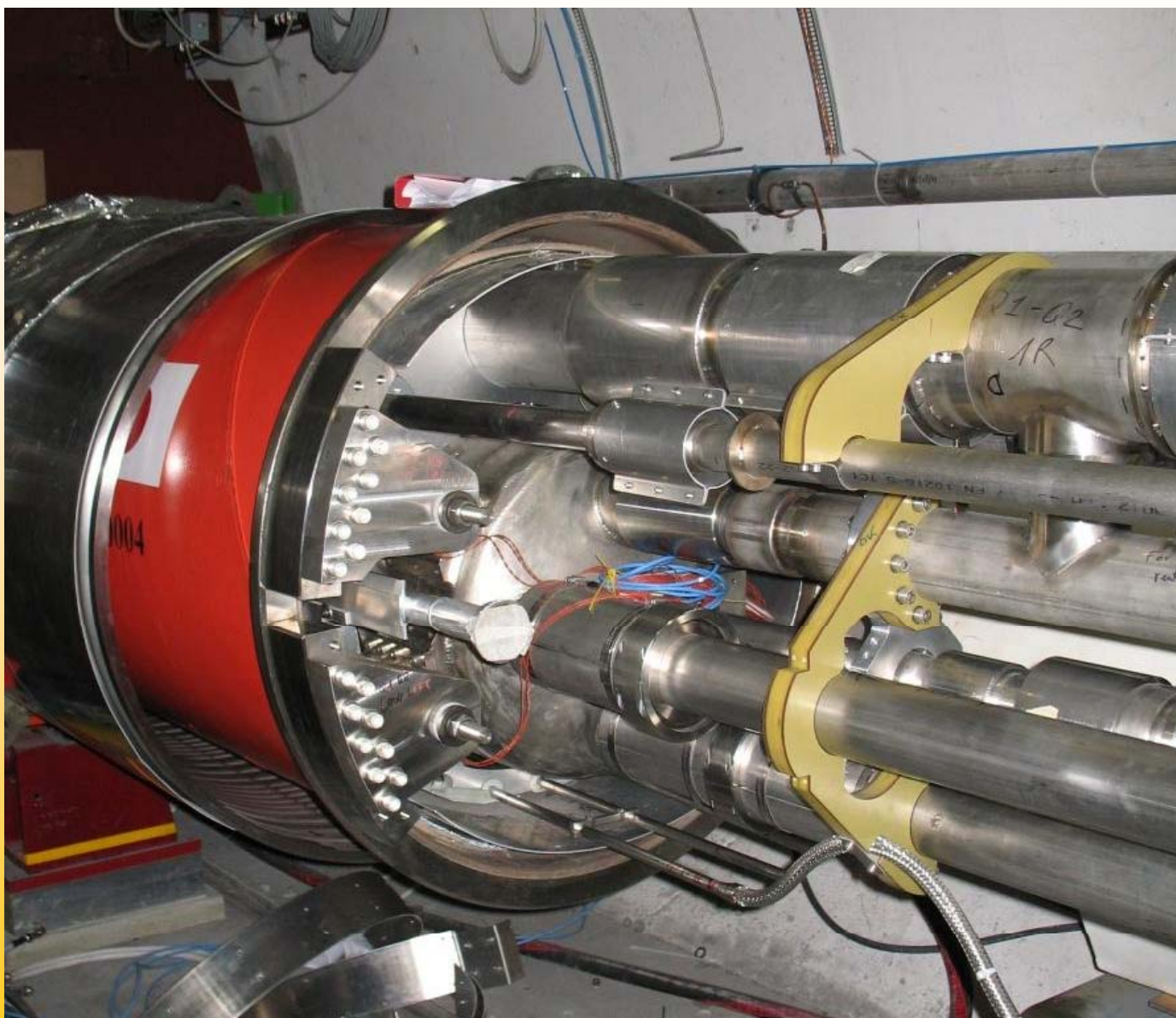
30 November 2007

Robert Aymar

LHC Status Report



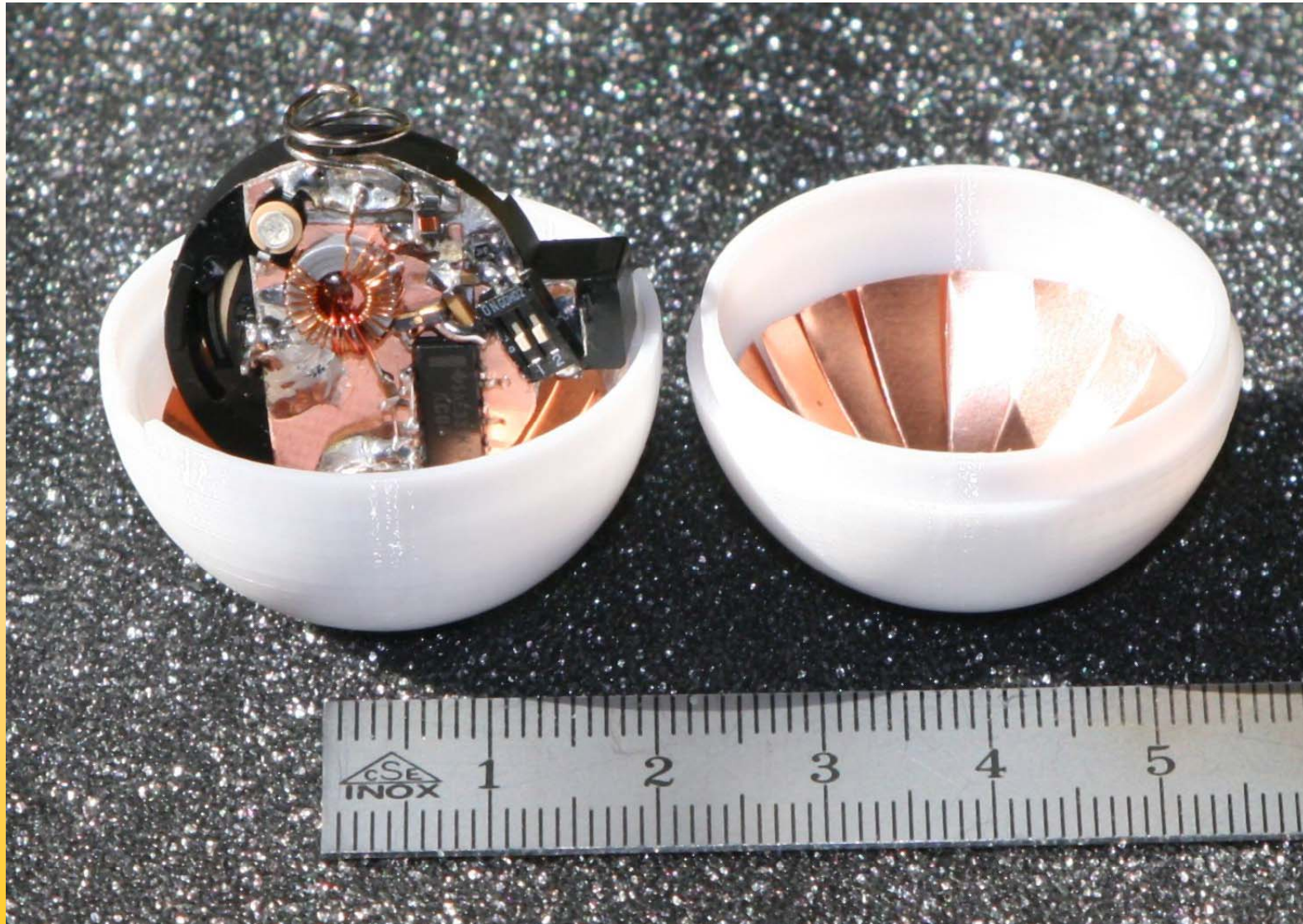
Q1.R8



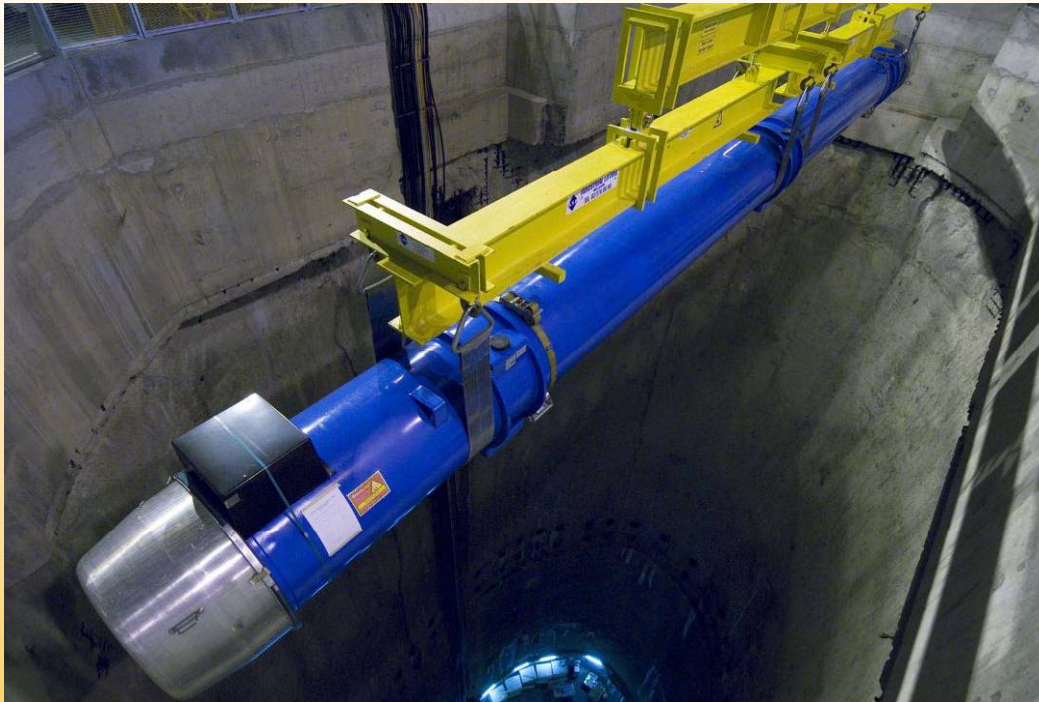
Arc plug-in module at working temperature



Transmitter prototype



Descent of the last magnet, 26 April 2007



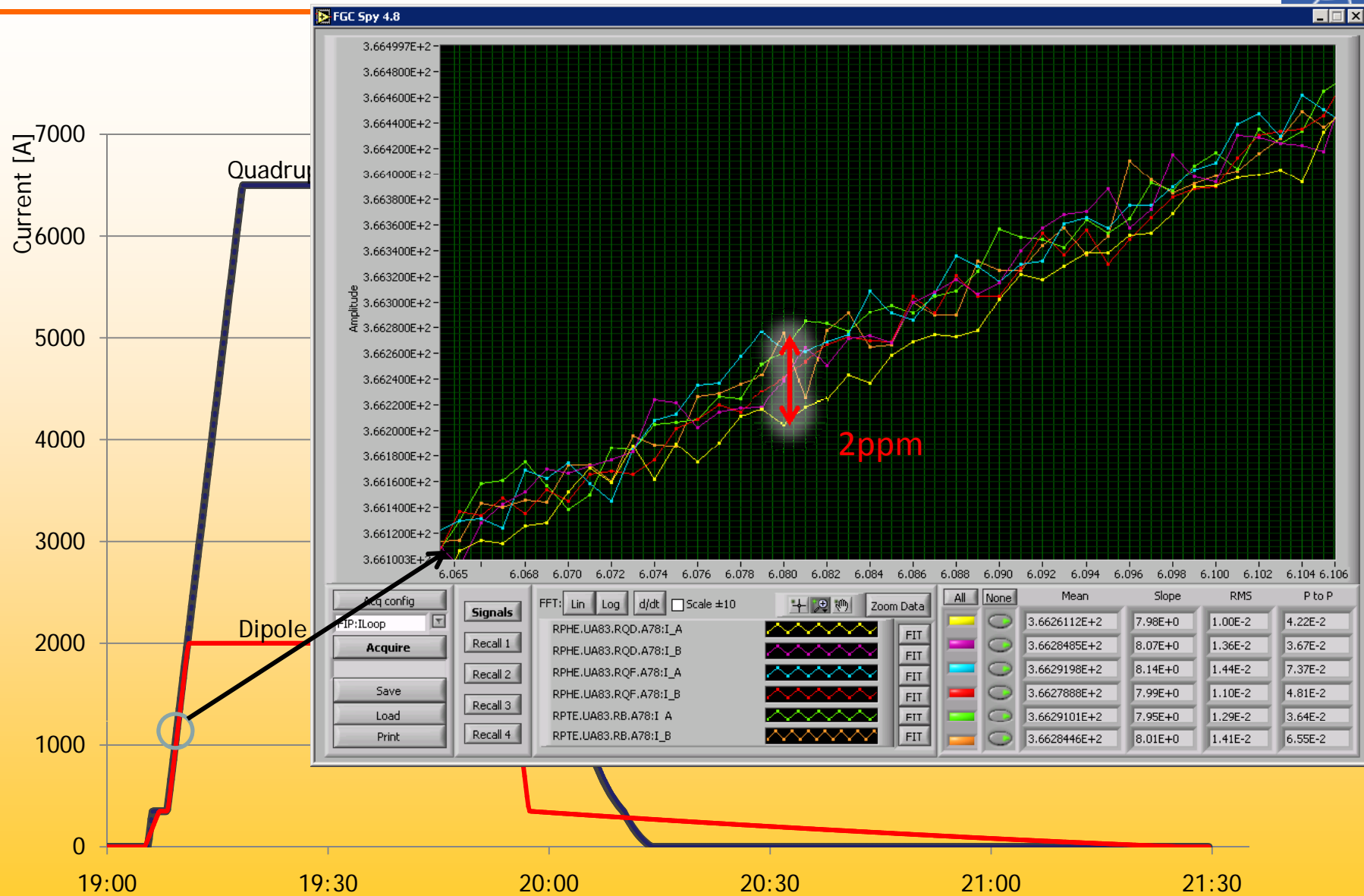
30'000 km underground at 2 km/h!



The last interconnect in the LHC is sealed, 7 November 2007

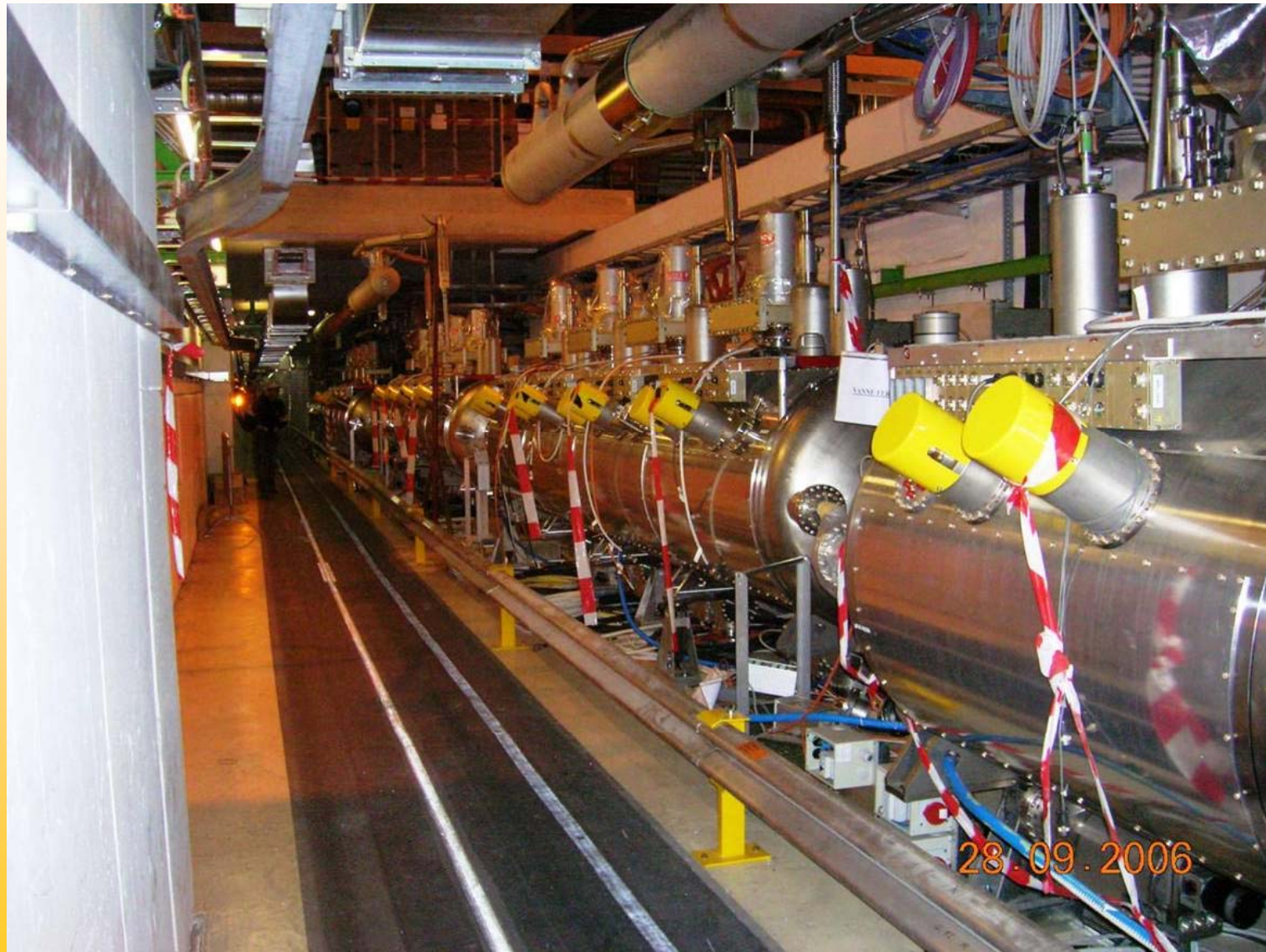


Tracking between the three main circuits of sector 78



Courtesy F.Bordry

RF cavities



Two 300 kW klystrons with circulators and loads



Cooldown of Sector 7-8



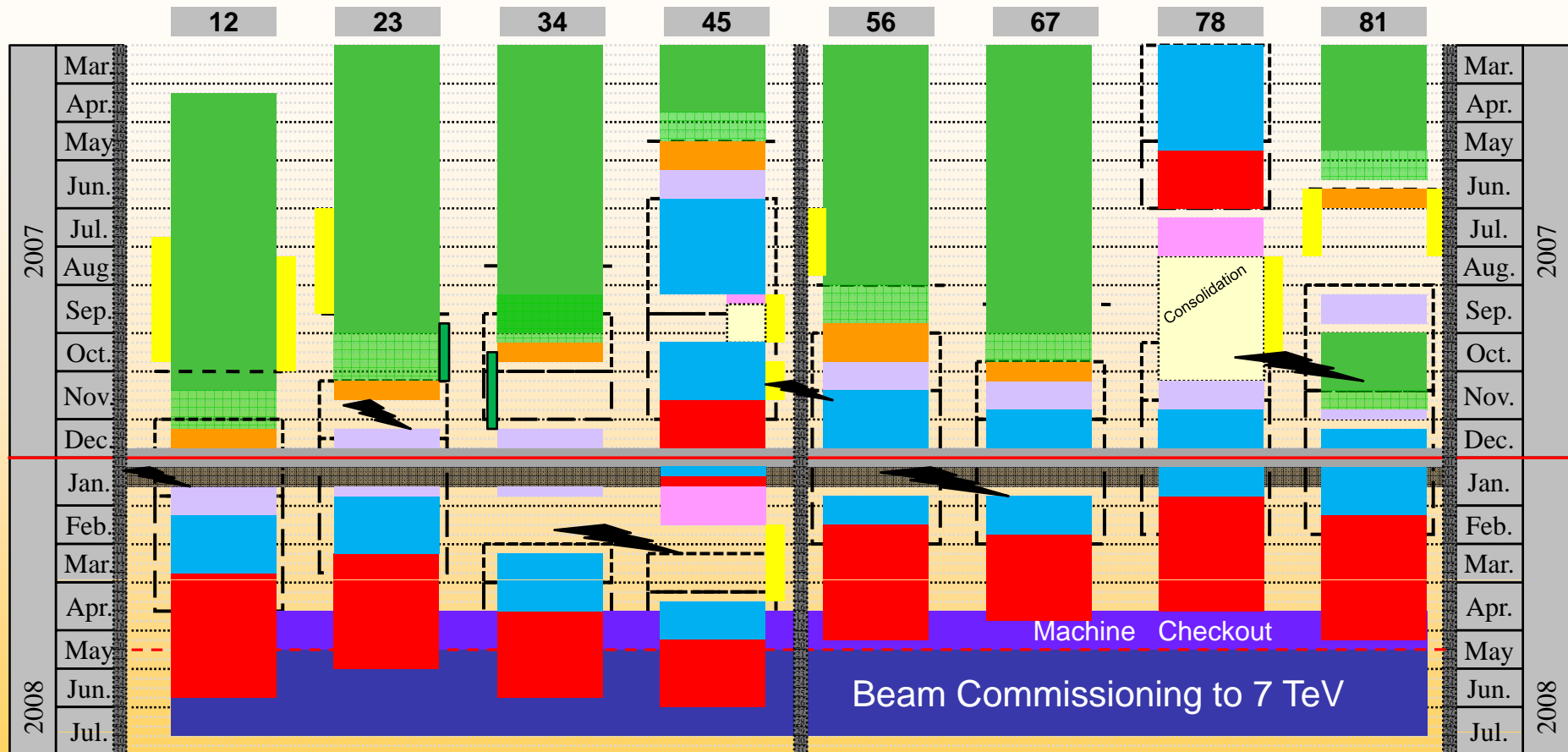
- From RT to 80K precooling with LN2. 1200 tons of LN2 (64 trucks of 20 tons). Three weeks for the first sector.
- From 80K to 4.5K. Cooldown with refrigerator. Three weeks for the first sector. 4700 tons of material to be cooled.
- From 4.5K to 1.9K. Cold compressors at 15 mbar. Four days for the first sector.

Updated General Schedule – 08.10.07



	Pressure test	Cool-down		Powering tests	
Sector 12	wk. 49 (2007)	wk. 07 (2008)	wk. 12 (2008)	wk. 13 (2008)	wk. 25 (2008)
Sector 23	wk. 44 (2007)	wk. 05 (2007)	wk. 10 (2008)	wk. 11 (2008)	wk. 22 (2008)
Sector 34	Done	wk. 11(2008)	wk. 16 (2008)	wk. 17 (2008)	wk. 25 (2008)
Sector 45	Done	<i>Started</i>	wk. 46 (2007)	wk. 47 (2007)	wk. 03 (2008)
		wk. 16 (2008)	wk. 19 (2008)	wk. 20 (2008)	wk. 26 (2008)
Sector 56	<i>Done</i>	wk. 46 (2007)	wk. 07 (2008)	wk. 08 (2008)	wk. 19 (2008)
Sector 67	Done	wk. 48 (2007)	wk. 08 (2008)	wk. 09 (2008)	wk. 17 (2008)
	<i>Done</i>	<i>Done</i>	<i>Done</i>	<i>Done</i>	<i>Done</i>
Sector 78	<i>Done</i>	wk. 48 (2007)	wk. 04 (2007)	wk. 05 (2007)	wk. 16 (2008)
	<i>Done</i>	wk. 48 (2007)	wk. 04 (2007)	wk. 05 (2007)	wk. 16 (2008)
Sector 81	<i>Done</i>	wk. 50 (2007)	wk. 06 (2008)	wk. 07 (2008)	wk. 19 (2008)

Updated General Schedule – 08.10.07



General schedule Baseline rev. 4.0

- Global pressure test & Consolidation
- Cool-down
- [-] Powering Tests

- Interconnection of the continuous cryostat
- Leak tests of the last sub-sectors
- Inner Triplets repairs & interconnections
- Global pressure test & Consolidation

- Flushing
- Cool-down
- Warm up
- Powering Tests

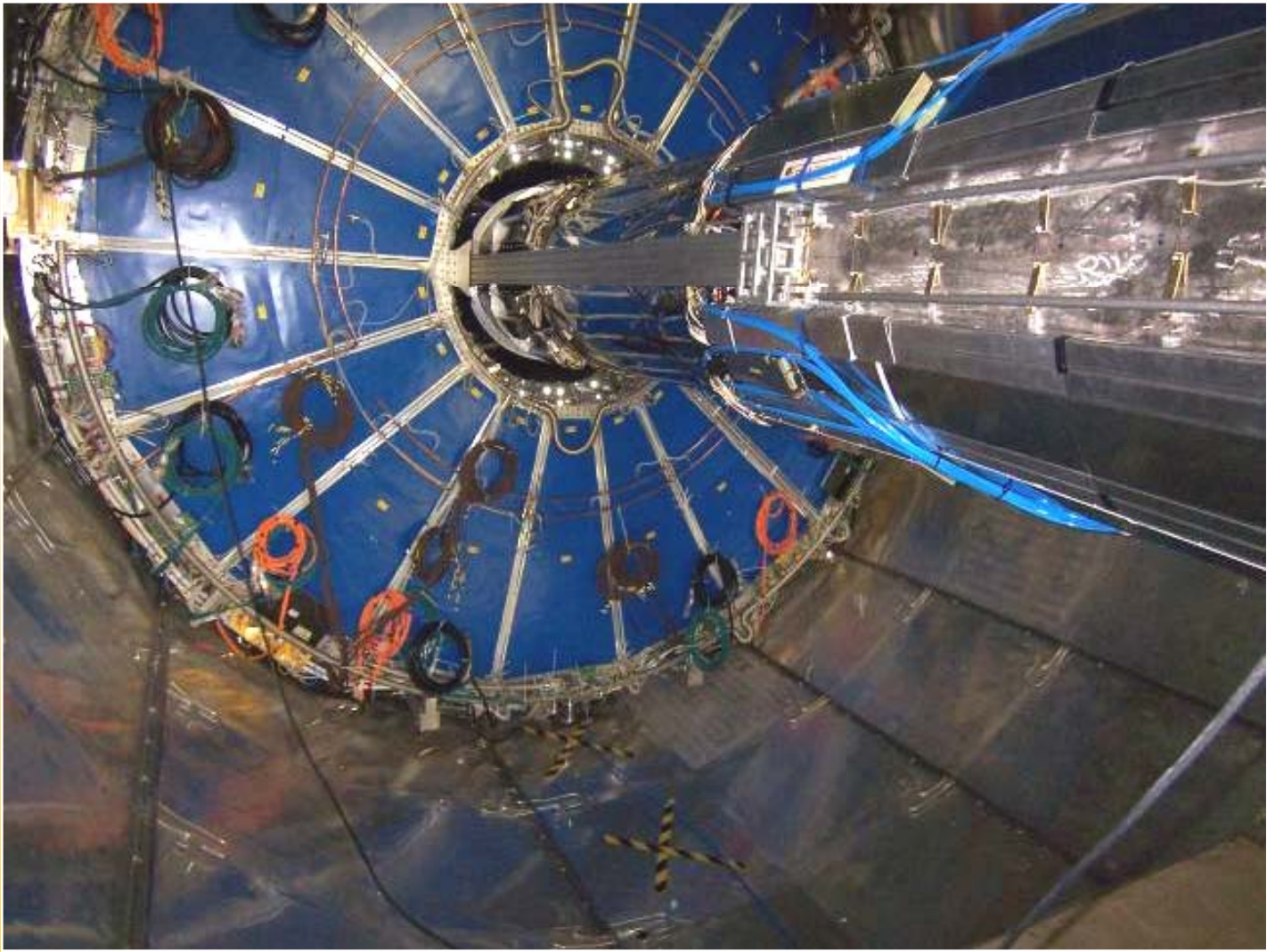
TPC

- full commissioning in Feb08; LV bus bars: connectors inadequate, all to be replaced, soon completed

Installation of ALICE proceeding well

- e.g. installation of Inner Tracking System

ALICE – TPC moved to IP



Inner Detector

- Silicon Tracker
 - cooling system ('heater') modifications complete
 - new: heat exchanger solder joints being reworked in CERN workshops – delay being absorbed
- Transition Radiation Tracker
 - commissioning ongoing

Forward Muon Spectrometer

- big wheels essentially complete; small wheels to be installed Dec-Jan

Liquid Argon; Tile Calorimeters

- operational; some 'retrofitting' and refurbishment ongoing or completed

Magnet tests

- stand-alone; joint magnet test: spring 2008

Cosmic runs

- taking place 'routinely'

ATLAS



Installation

- only 3 'heavy lowerings' remain (yoke/endcap disks)

Services on YB0

- cooling and cables for tracker, calorimeter: complex and labour intensive: completed

Inner tracker

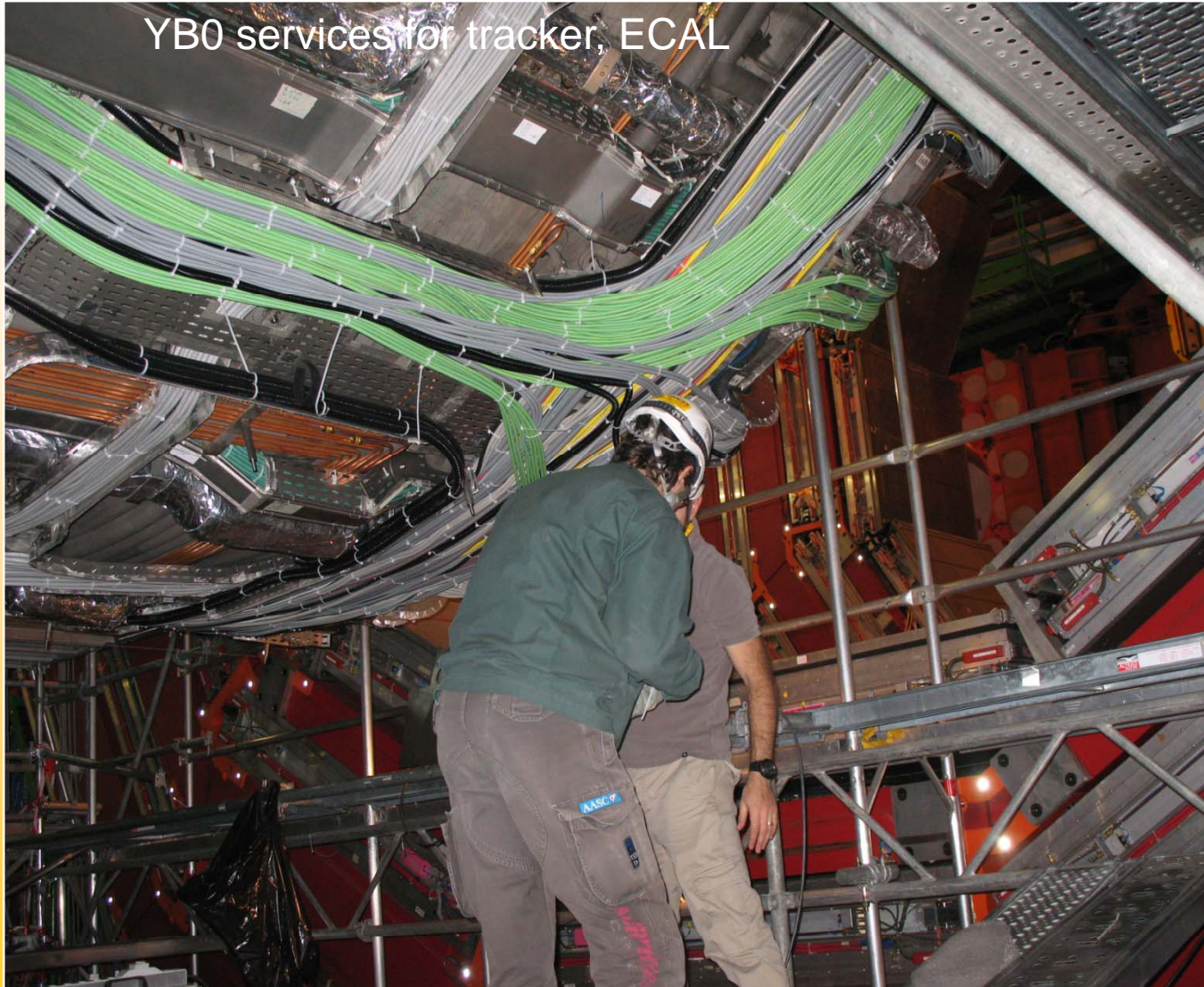
- commissioning on surface complete (very good results); transport to point 5 imminent

Endcap ECAL

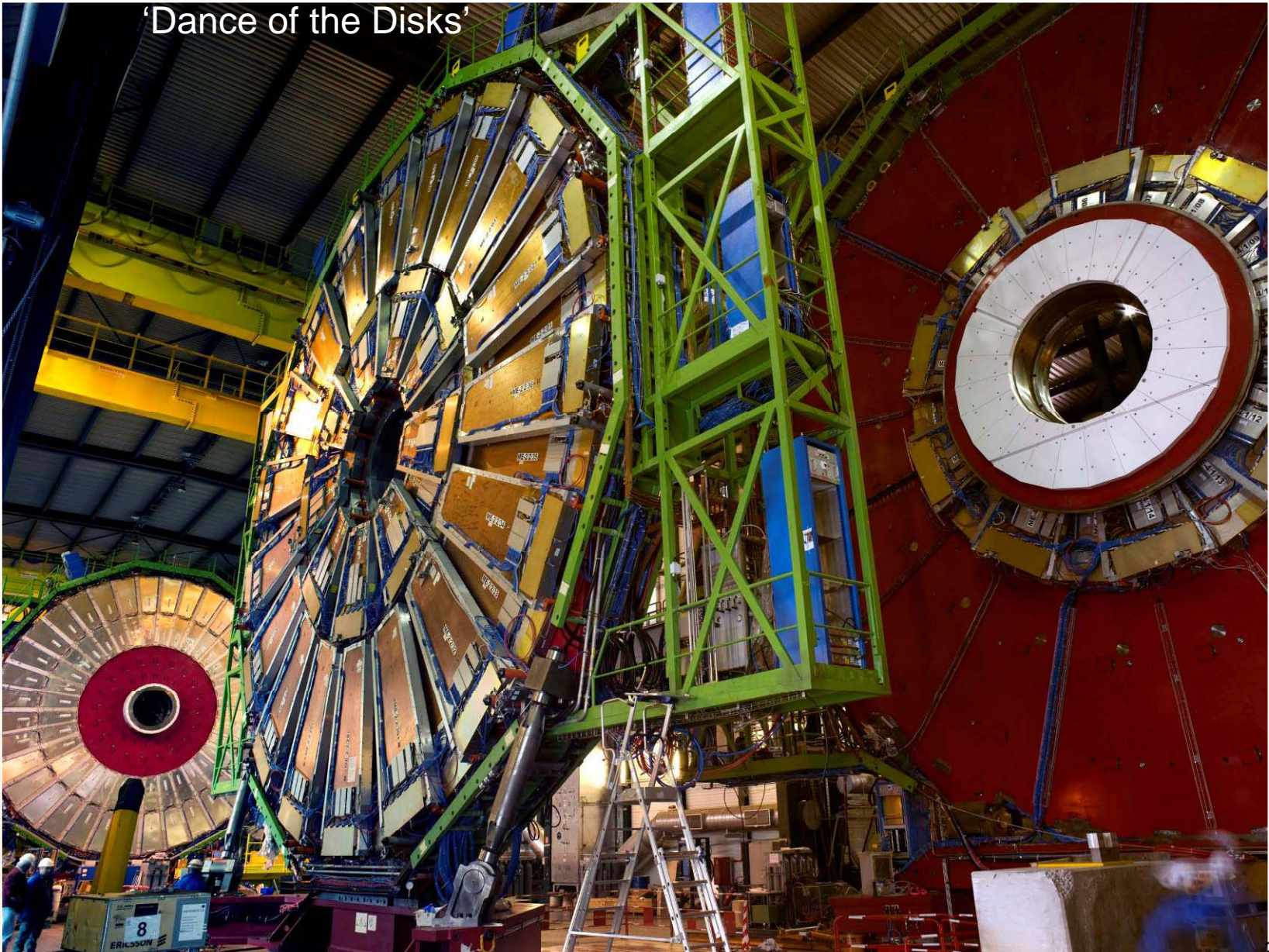
- 'supercrystal' mounting on Dee1 completed; Dee2 in progress (first endcap installation March08, next ready May08, i.e. (too?) late for initial run)

Commissioning runs ongoing

YB0 services for tracker, ECAL



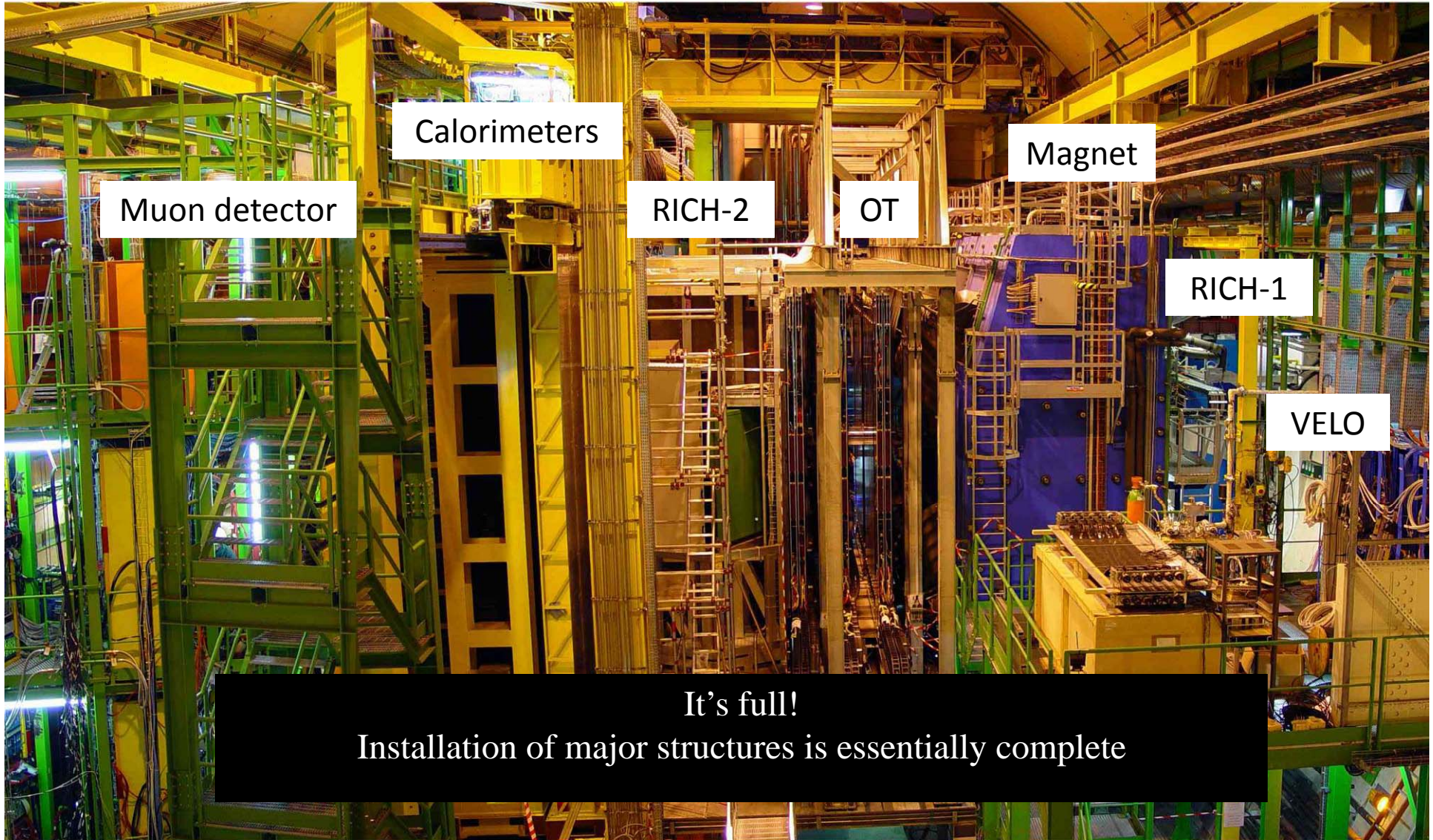
'Dance of the Disks'





- **Installation of LHCb is almost complete**
 - Important recent milestone: Vertex Locator installation
 - All major structures are in place (except for M1, in progress)
 - Sensitive elements are now produced and mostly in place: RICH-1, the Silicon Trackers, and M1 remain to be instrumented,
 - Progress made to understand and minimise the OT gain-loss; not considered a problem for correct operation
- **Commissioning is now underway**
 - Using cosmics where possible, otherwise test pulses, light spots, etc.

View of the cavern



It's full!
Installation of major structures is essentially complete

Other Experiments at LHC



Also TOTEM, LHCf making good progress and planning to be ready at the time of first beam



- **LHC grid computing is a reality**
 - All experiments use it routinely for production
 - Grid Physics Analysis model still evolving
- **Stability must be improved**
 - We have eyes to look at it, but it doesn't always look good
 - Combined Computing Readiness Challenge brings everything together (Feb, May 08)
- **Don't forget to buy hardware**
 - Even on the grid, you still have to provide resources.....
 - and manpower

The LHC experiments



are completing installation

are in the process of commissioning the systems, including data-acquisition and processing, all the way from detector to Tier-0,1,2

are preparing for physics analysis

are on a schedule to close the beam pipe in March/April 2008