

# LHC Technical Co-ordination

6<sup>th</sup> ST Workshop  
1<sup>st</sup> to 3<sup>rd</sup> April 2003  
Thoiry (F)

P. Proudlock





- Paul Faugeras retired at the end September 2002
- Founder of much of the Project Management at the LHC project
- Fought many a long battle to get established a new way of working at LHC/CERN
- Established the Technical Baseline and planning for the machine
- Last seen in China, New York , Paris and the odd visit to CERN

### **Creation of an Installation Co-ordination group**

- Recommendation of Taskforce 5 in February 2002
- Rubber stamped in a meeting of May 7
- Appointment of P. Ciriani at June Council
- Claude Hauviller named as Group Leader
- Presentation at the TCC of 27 September
- Management endorsement 15 October
- Group took over full responsibility for Installation Co-ordination 1 January 2003

## Mandate based on the “13 points” of the meeting of 7 May

- ✓ The definition and maintenance of data bases needed for the assembly, installation and eventual operation of the machine. (Tools by EST/ISS)
- ✓ Establishing and maintaining, via engineering change control, the machine baseline. (Project tracking in collaboration with cost control). *Creating and maintaining the project Web pages.*
- ✓ Providing and keeping up-to-date the integration and layout drawings for installation
- ✓ Design of the infrastructure and definition of transport needs and requirements
- ✗ *The quality assurance plan and its enforcement*
- ✓ Establishing the installation work packages and the corresponding logistics
- ✓ Allocation and management of space
- ✓ Site preparation (small works)
- ✓ Overall on-site supervision and corrective measures
- ✓ Training and access management
- ✓ Site safety co-ordination
- ✓ Co-ordination of individual and system tests
- ✓ Sites management

A Group in charge of  
configuration management,  
the integration studies,  
the coordination of the installation and  
the hardware commissioning of the LHC

## mandate

Coordination of the installation of the LHC machine, its injection lines and the infrastructures in the experimental halls. Hardware commissioning of the LHC sectors *and injection lines*.

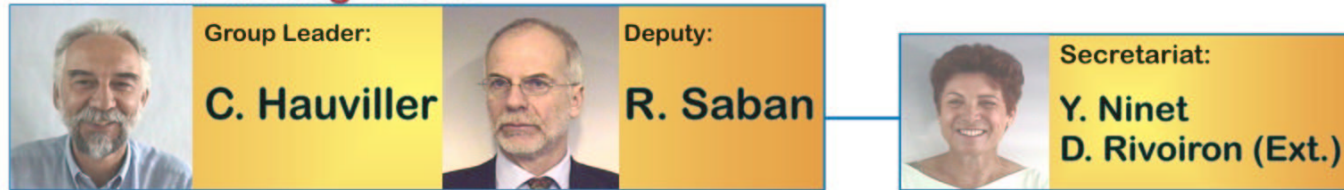
## Composition

Made up of people from several divisions and groups.

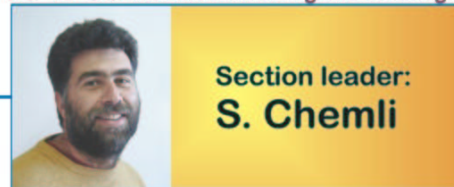
# EST-IC

# LHC Installation Coordination

## IC-DI: Management



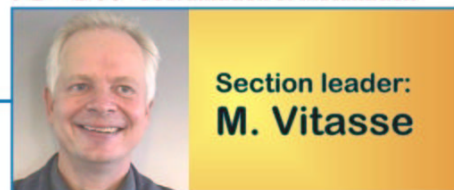
## IC-DC: Databases and Configuration Management



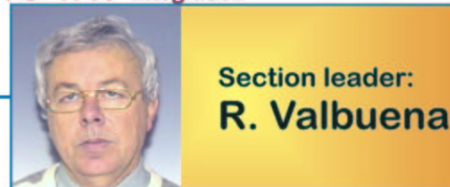
## IC-MS: Metallic Structures



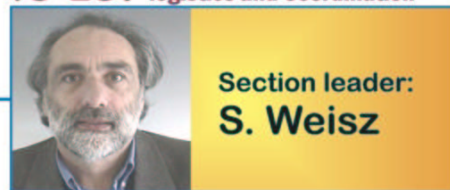
## IC-CI: Coordination of Installation



## IC-IN: Integration



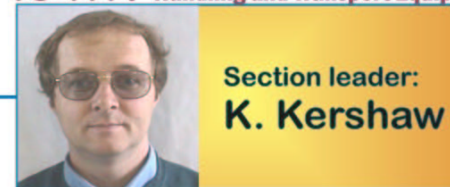
## IC-LC: logistics and Coordination



## IC-AI: Assistance to Installation



## IC-HT: Handling and Transport Equipment



## IC-SM: Sites Management



## IC-HC: Hardware Commissioning



January 2003

P. Proudlock 25/03/03

# LHC Project Organization



**Project Management**

<b>L. Evans</b>	Project Leader
<b>P. Bryant</b>	Contracts and Non-Member States collaborations
<b>P. Ciriani</b>	EST Division Leader
<b>A. Faugier</b>	Project Safety Coordinator, INB
<b>P. Lebrun</b>	AT Division Leader, Collaboration with France and India
<b>S. Myers</b>	AB Division Leader
<b>K. Potter</b>	Experiment linkperson
<b>P. Proudlock</b>	Technical Coordination and Planning
<b>A. Scaramelli</b>	ST Division Leader
<b>H. Wenninger</b>	Special studies

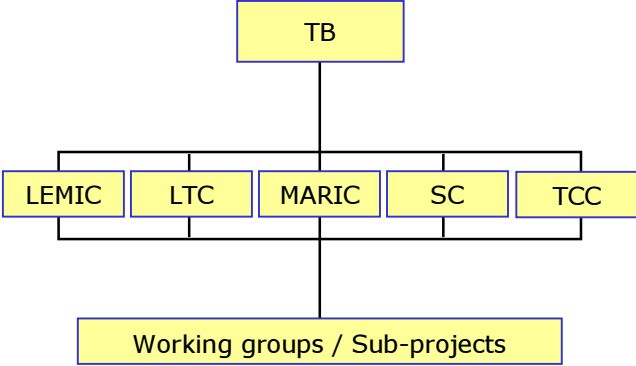
**Project Leader's Office**

<b>L. Evans</b>	Project Leader
<b>P. Bonnal</b>	Cost and schedule
<b>A. Brissonaud</b>	Finance
<b>P. Bryant</b>	Contracts and Non-Member States collaborations
<b>J. Karlson Forestier</b>	Secretariat
<b>P. Proudlock</b>	Technical Coordination and Planning

**Supporting Divisions**

- AB Accelerator Beams
- AC Accelerator Directorate Unit
- AS Administrative Support
- AT Accelerator Technology
- DSU Directorate Services Unit
- EST Engineering Support and Technologies
- FI Finance
- IT Information Technology
- SPL Supplies, Procurement and Logistics
- ST Technical Support
- TIS Technical Inspection and Safety

**Committees**



TB	LHC Technical Board
LEMIC	LHC Experiments Machine Interface Committee
LTC	AB Division - LHC Technical and Commissioning Cttee
MARIC	AT Division - Main Ring Committee
SC	LHC Specification Committee
TCC	LHC Technical Coordination Committee

**Collaborations**

- Canada
- Host States
- India
- Japan
- Russia
- USA

**Mandate of the LHC Project Technical Coordination Committee (TCC)**

**The LHC Technical Co-ordination Committee will oversee the technical co-ordination of the LHC machine by consultation across the various divisions.**

In particular it will:

- Maintain the General Co-ordination Schedule
  - Review the technical baseline of the machine and where appropriate approve changes or additions.
  - Follow the progress of the installation and hardware commissioning of the LHC machine.
  - Allocate the overall space requirements for the project.
  - Assure the provision of adequate infrastructure and general services.
  - Consider matters of safety related to the project.
- 
- Its members should consist of representatives from each of the major systems involved in the LHC project.**

**The committee reports to the LHC Technical Board.**

**40 Members**  
**26 Alternates**  
**Many informed**

Ex officio	
A. Scaramelli	ST Division Leader

<i>Member (Division-group)</i>	<i>Alternate</i>
<b>ST Division</b>	
J.L. Baldy    ST-CE P. Ninin     ST-MA J. Pedersen   ST-EL B. Pirollet   ST-CV I. Ruehl      ST-HM	J. Osborne R. Nunes J.C. Guillaume M. Wilhelmsson S. Prodon

Plus invited speakers and informed

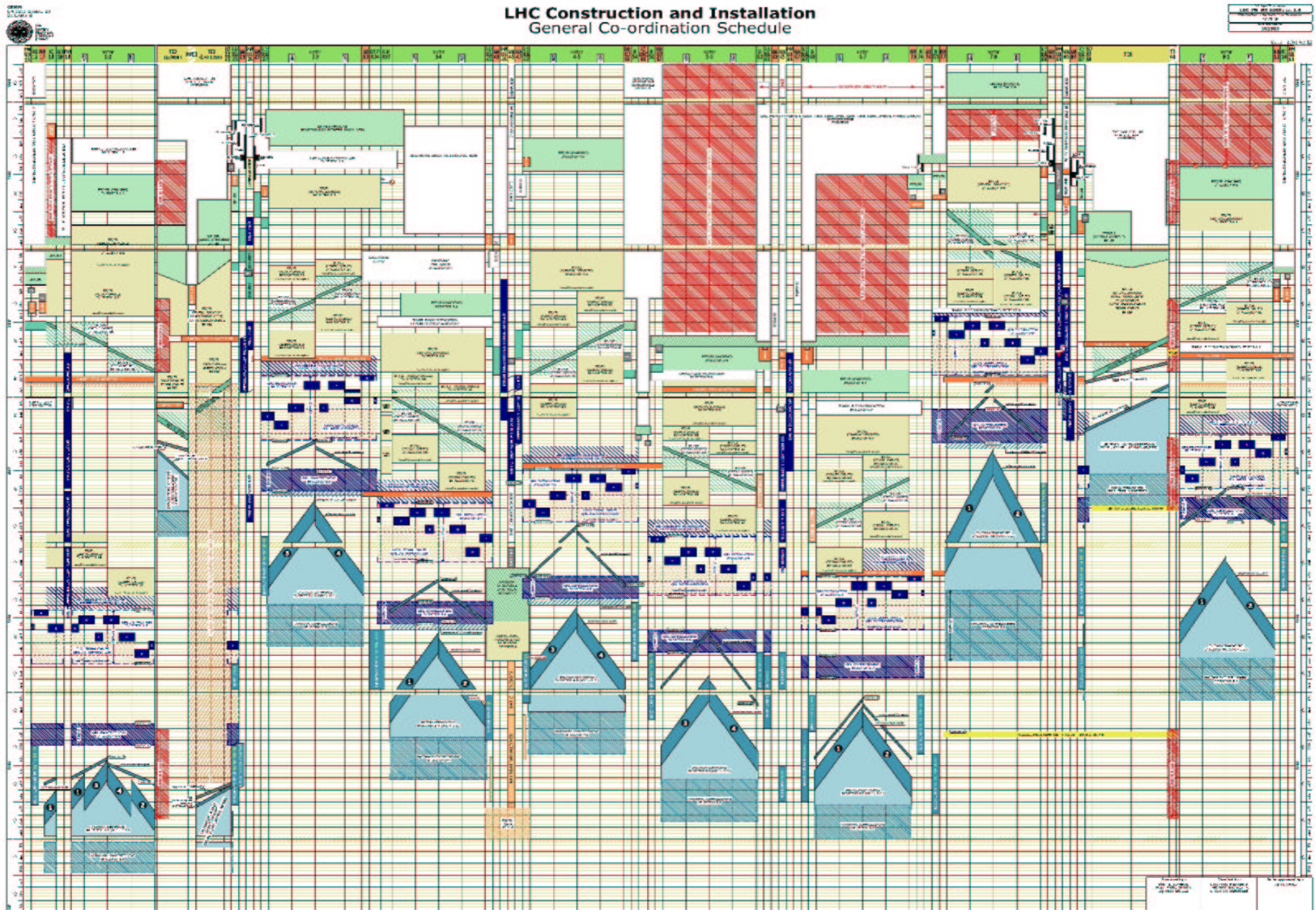


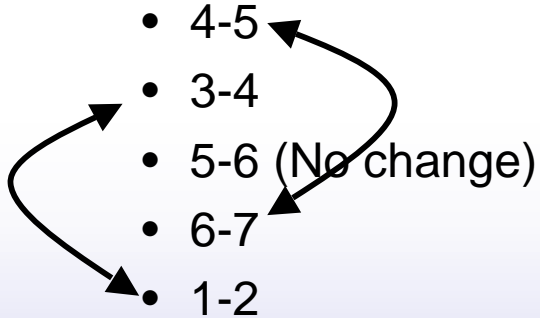
## **Normally the last Friday of each Month**

### Typical Agenda

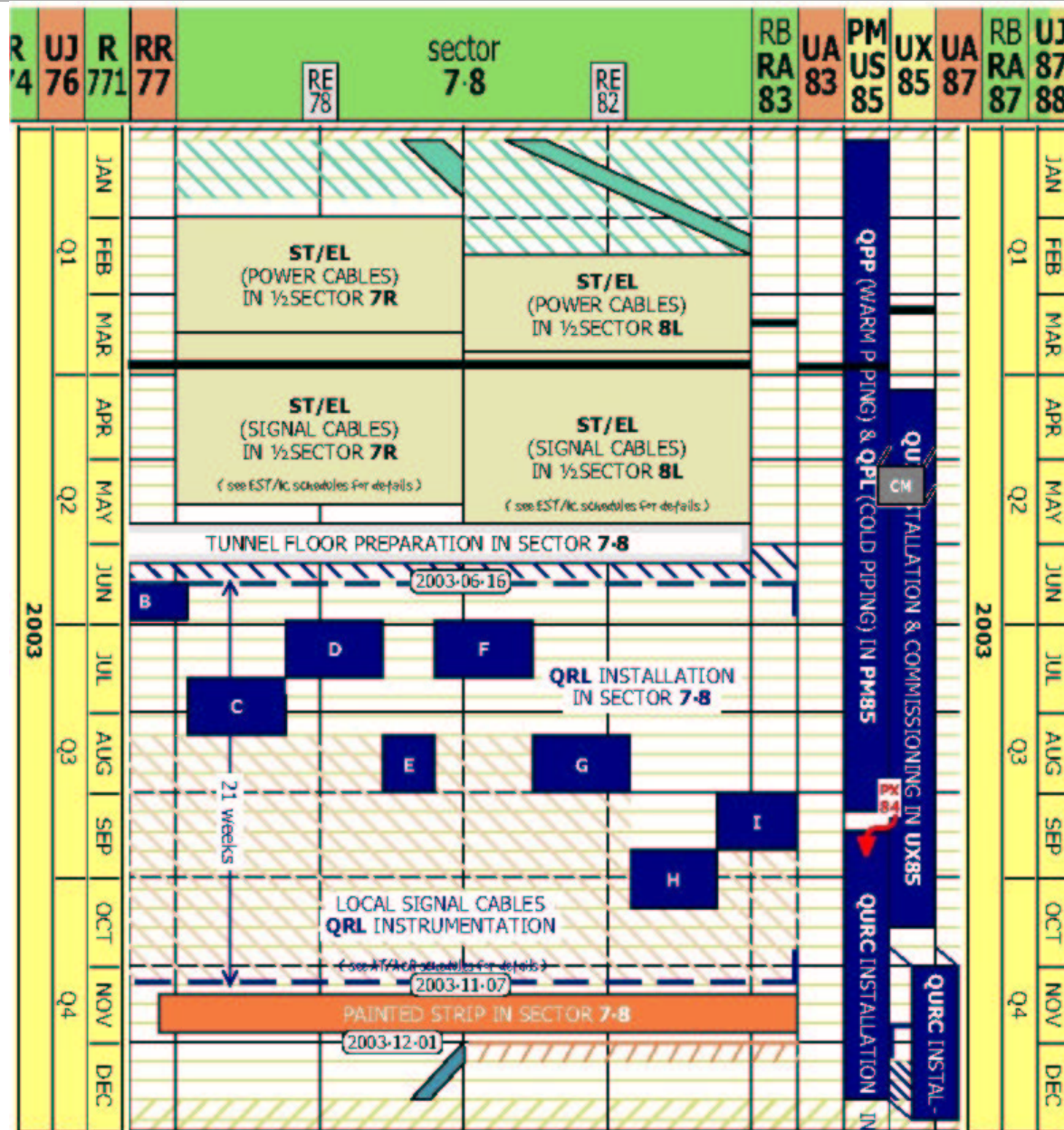
- General Information
  - Hardware baseline and ECRs
  - Installation and follow-up of planning
- Main Topics

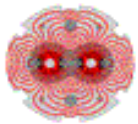
**•All information available on the Web from the LHC home page**



- New version is 1.7 (2<sup>nd</sup> round approved at TCC 28 March)
  - What's changed?
    - Sequence of sector installation has been changed
      - 7-8, 2-3, 1-8 (No change)
      - 4-5
      - 3-4
      - 5-6 (No change)
      - 6-7
      - 1-2
    - Late CE deliveries and re-scheduled general services baselined
    - No QRL commissioning over Xmas period 2003/2004
    - Installation of cryomagnets during QRL commissioning
    - TI8 rescheduled
- 

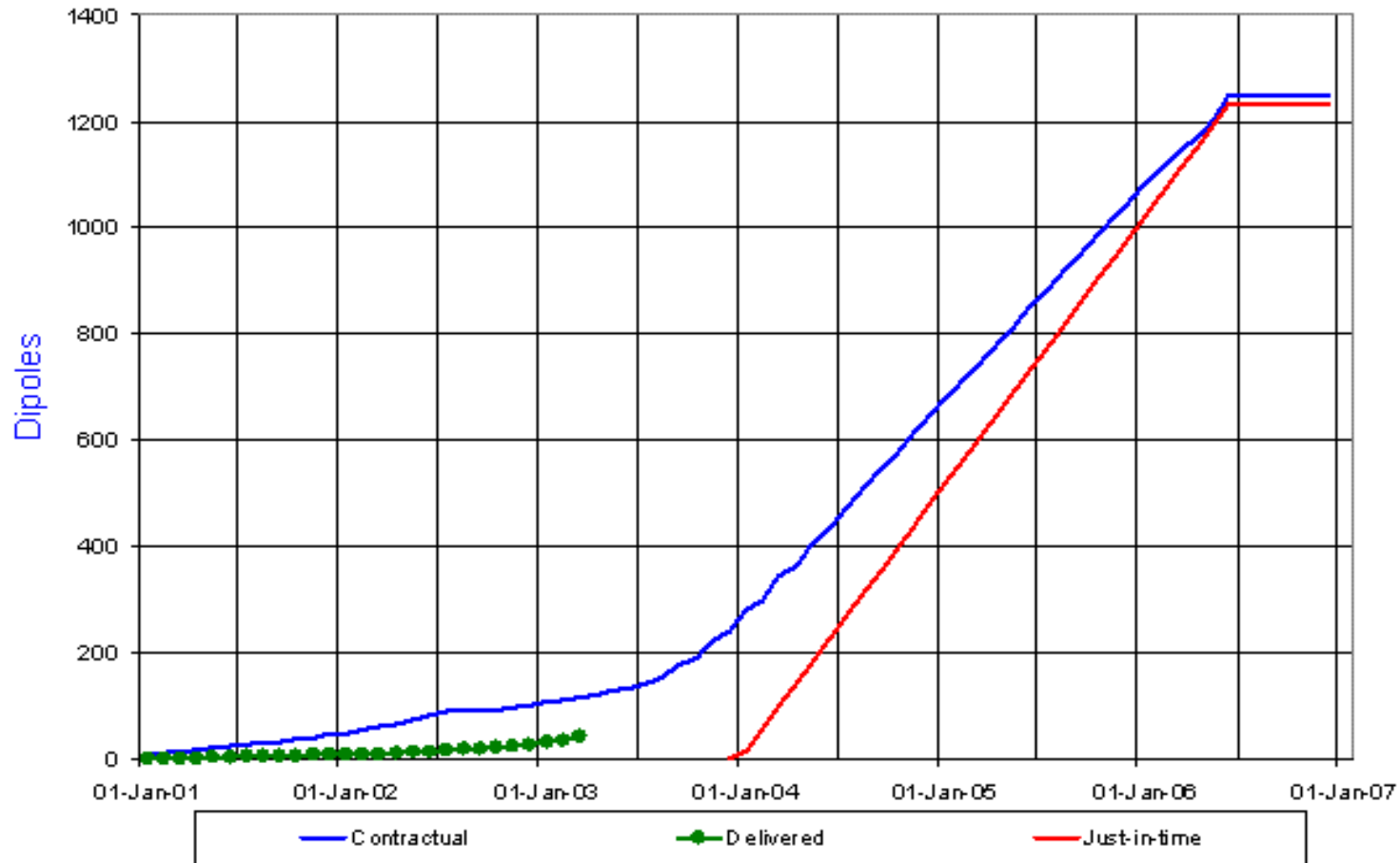
- Consequences
  - Slack in old schedule distributed between the sectors
  - First magnet could descend during December 2003  
(Now scheduled for 12 January)
  - First interconnects in May 2004
  - TI8 test with beam delayed to September 2004
  - Injection test limited to sector 8-7 but still in April 2006
  - Last magnet installed in August 2006
  
- Start-up still scheduled for April 2007





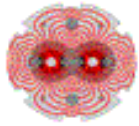
LHC Progress  
Dashboard

Dipole cold masses



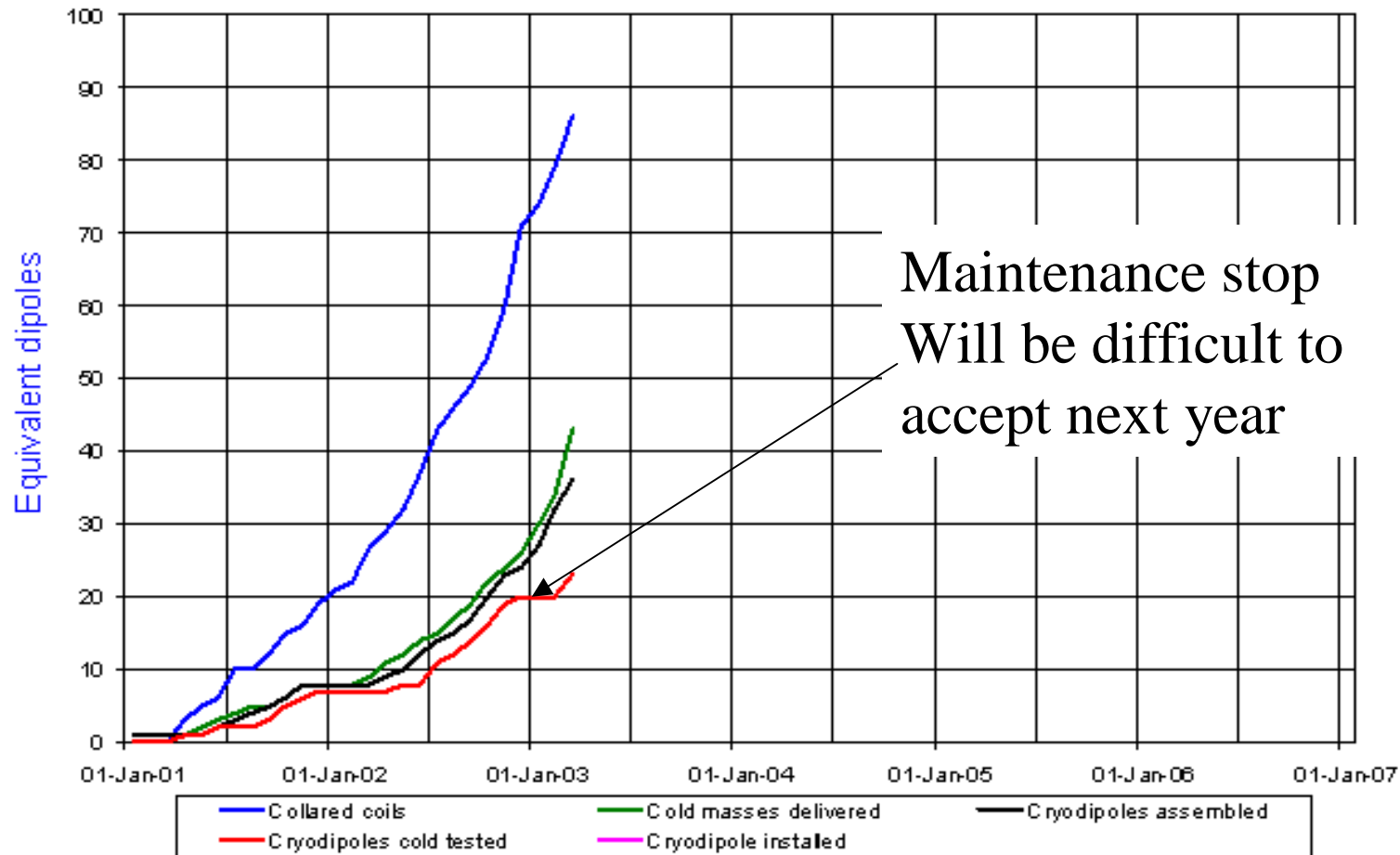
Updated 31 Mar 2003

Data provided by P. Lienard AT-MAS



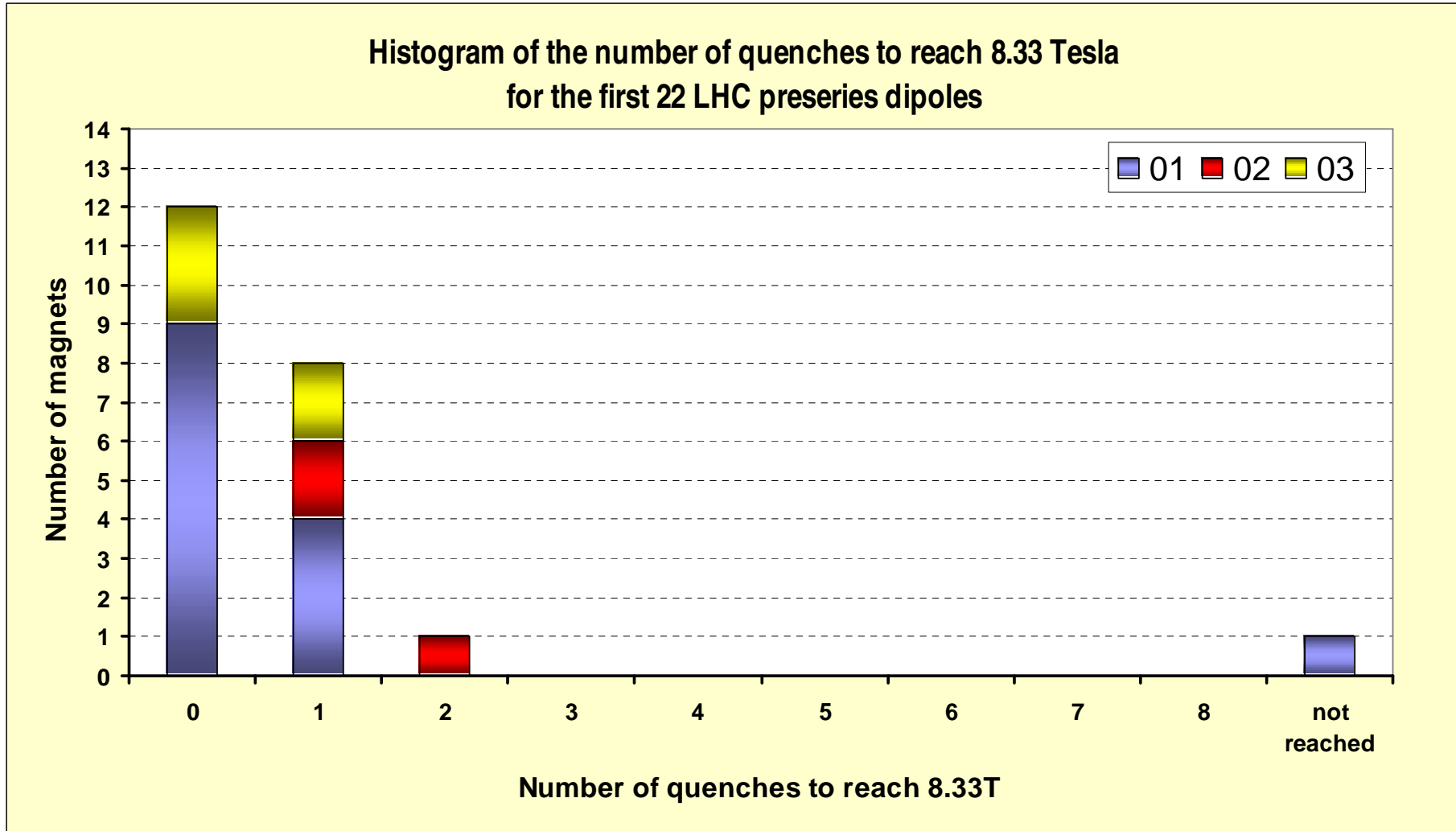
## LHC Progress Dashboard

### Cryodipole summary



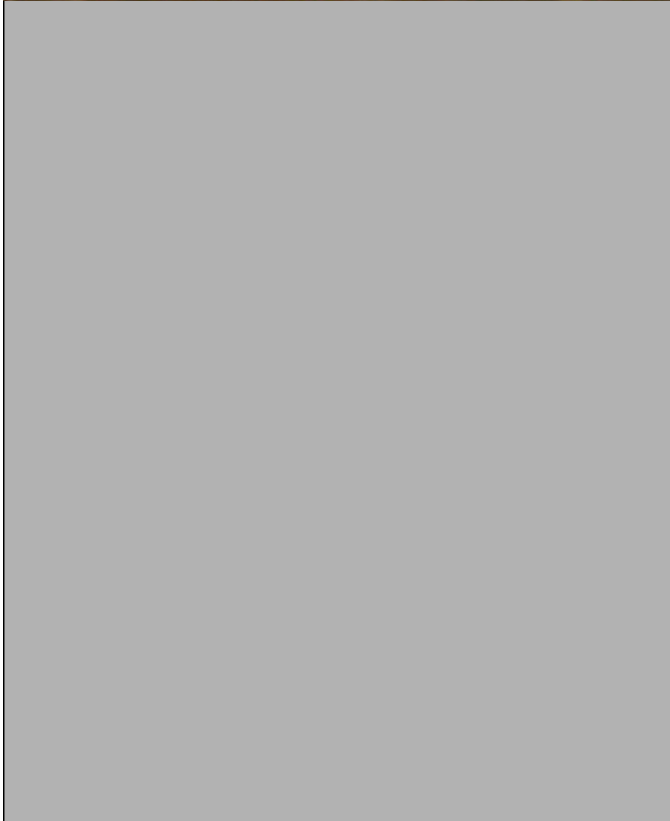
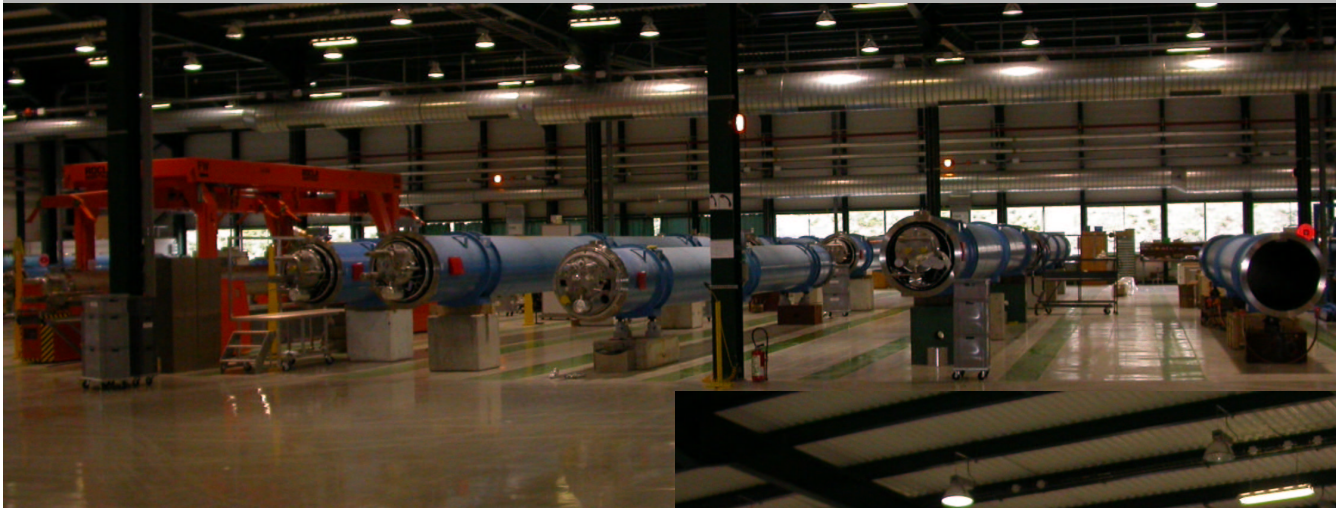
Updated 31 Mar 2003

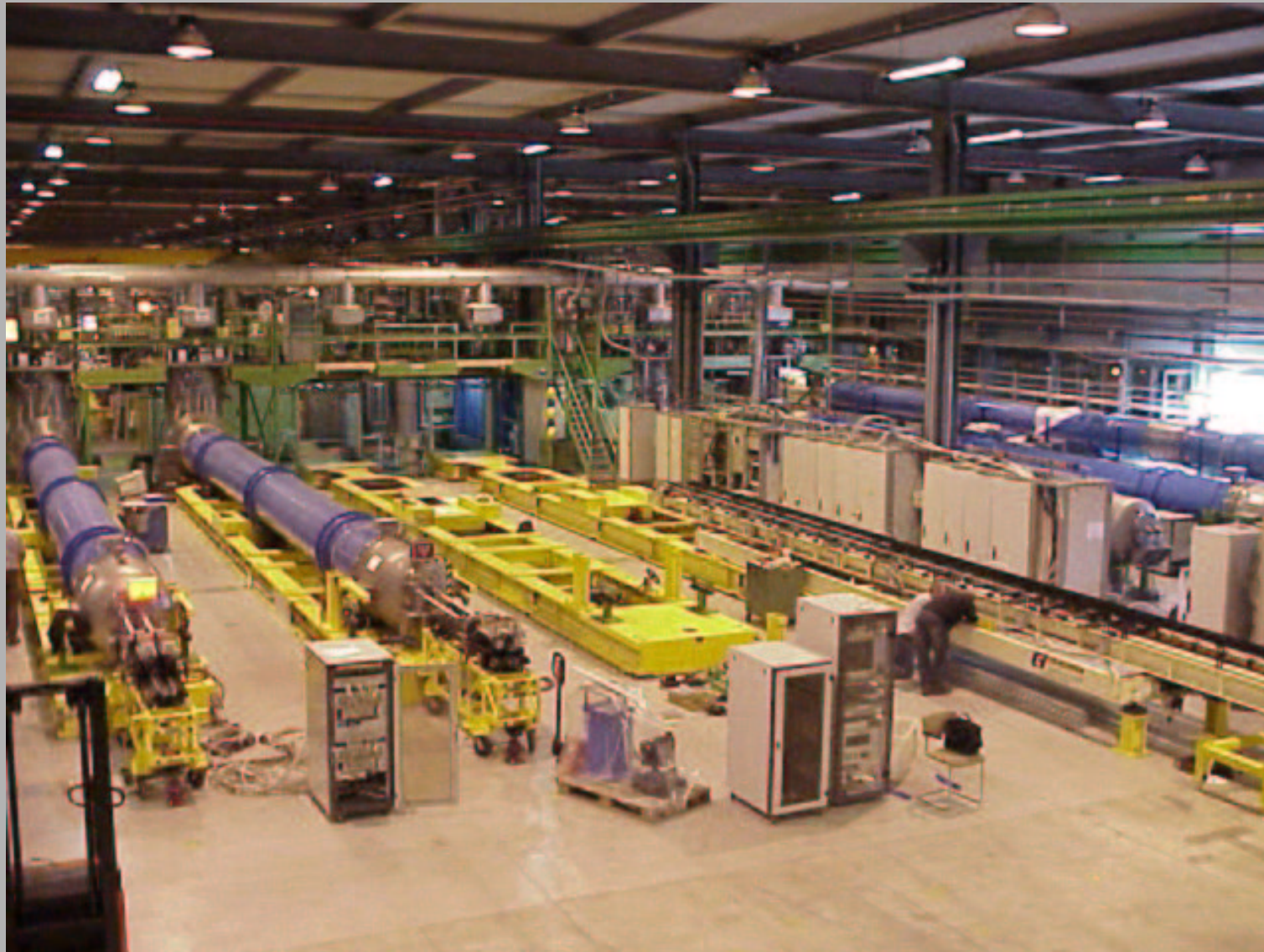
Data provided by P. Lienard, D. Tommasini AT-MAS









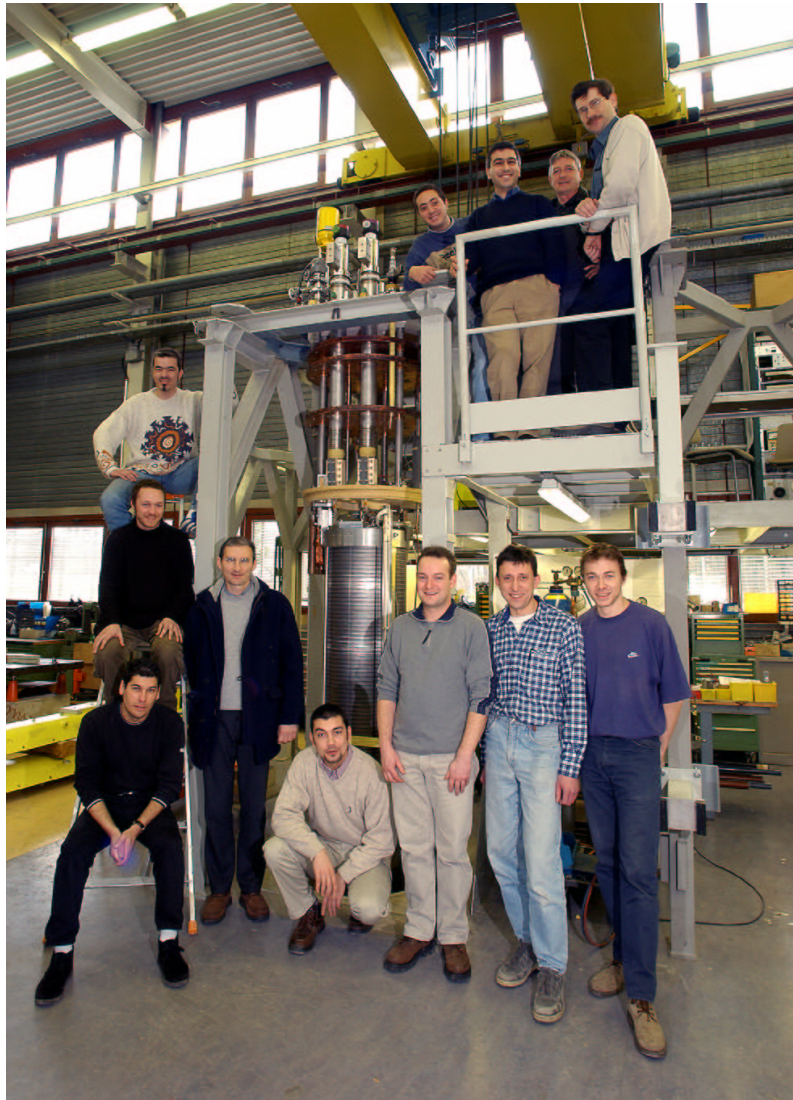


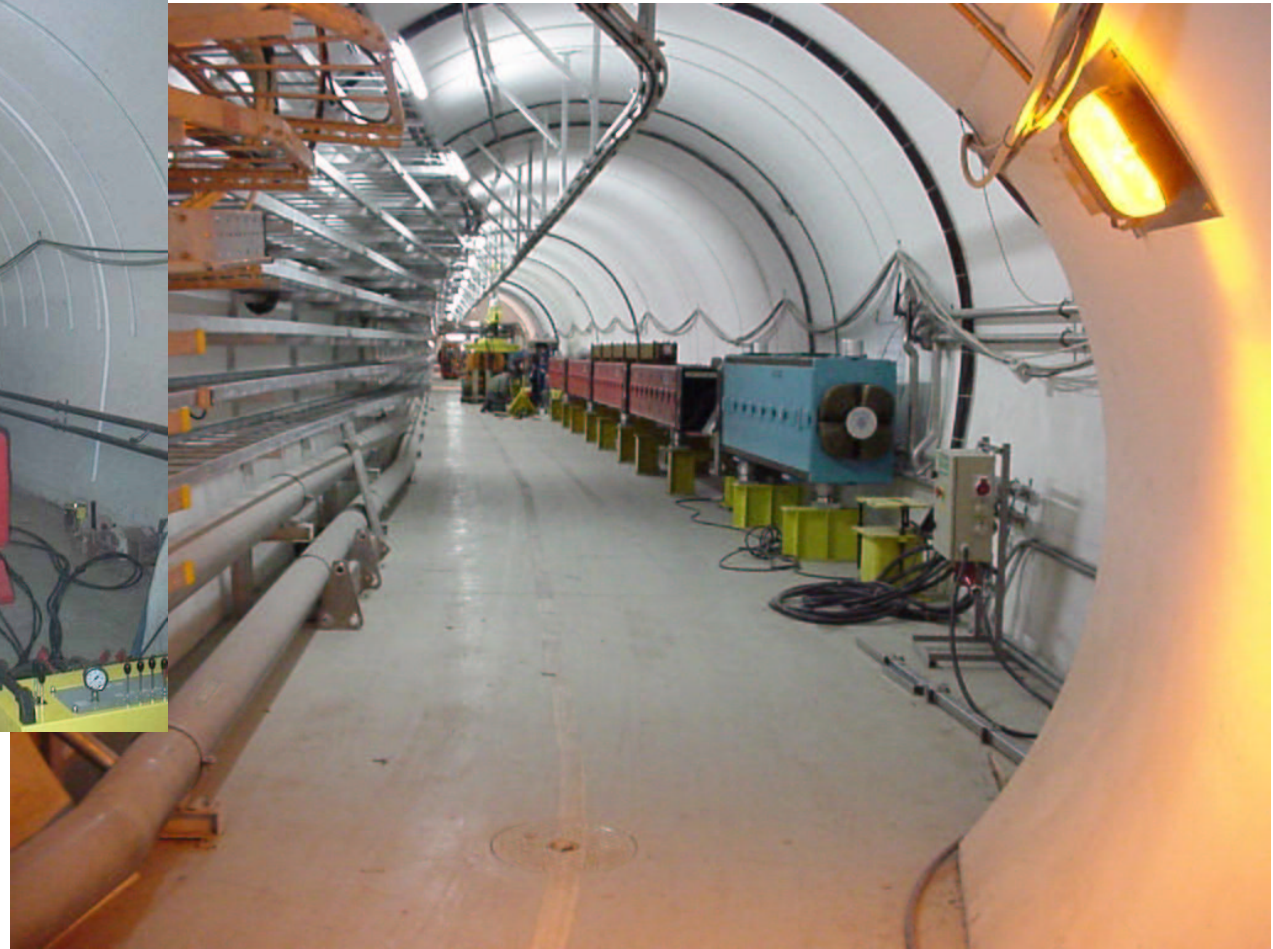
Insulation vacuum OK  
Cool down starts on April 7th  
Run lasts until end June 2003

- Heat Load Measurements
- Quench Propagation
- Gas Desorption on Beam Screen
- UNICOS control system
- Line N cool down time
- 600 A & 6 kA Prototype Power Converters













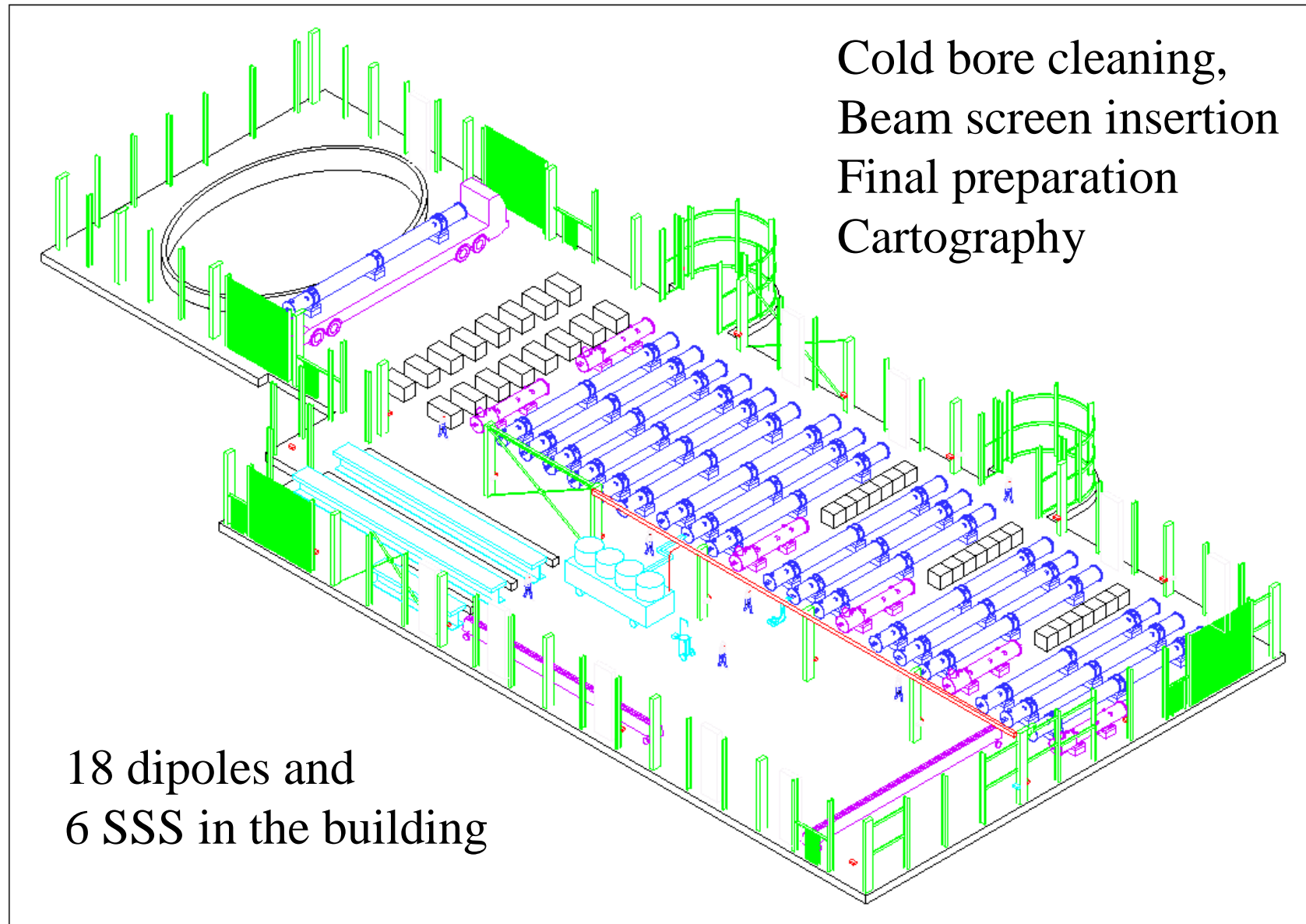








LHC T1 2 - SMI 2/SDI 2 Buildings - Inside - 26-03-2003 - CERN ST-CE



- ST installing general services until end July 2003
- AT prepares hall during August
- First Cryodipole arrives September
- By December,
  - ~15 Cryomagnets fully prepared and ready to install
    - First magnet will probably descend 12 January 2004
  - ~ 110 Cryodipoles tested and most stored on Preveessin site
- By February 2004,
  - Total of 50 cryomagnets will have passed through SMI2
- Then production of ~60 cryomagnets per month

- A new and critical stage of the project has started
  - We are very much in the spot light
  - We have a key date to start QRL installation on 16 June
- A new general schedule has just been issued
  - It is vital that everyone respects this
  - Specific planning must be in accordance with this
  - All planning must be co-ordinated with EST/IC/Logistics and Co-ordination
- More than ever we need to work as one team
  - You depend on others and others depend on you
  - Communication is essential for success
  - Project engineers need to follow integration studies
- We have tight budgetary constraints
  - Everyone needs to be aware of costs
  - EVM is a reality, use it to help you
- The field work has started
  - You need to closely supervise what is going on and respond positively
- I'm afraid there's a lot of hard work ahead
  - I very much hope it will be enjoyable and rewarding!!

Thanks for your attention