

Installation of a particle accelerator: From theory to practice

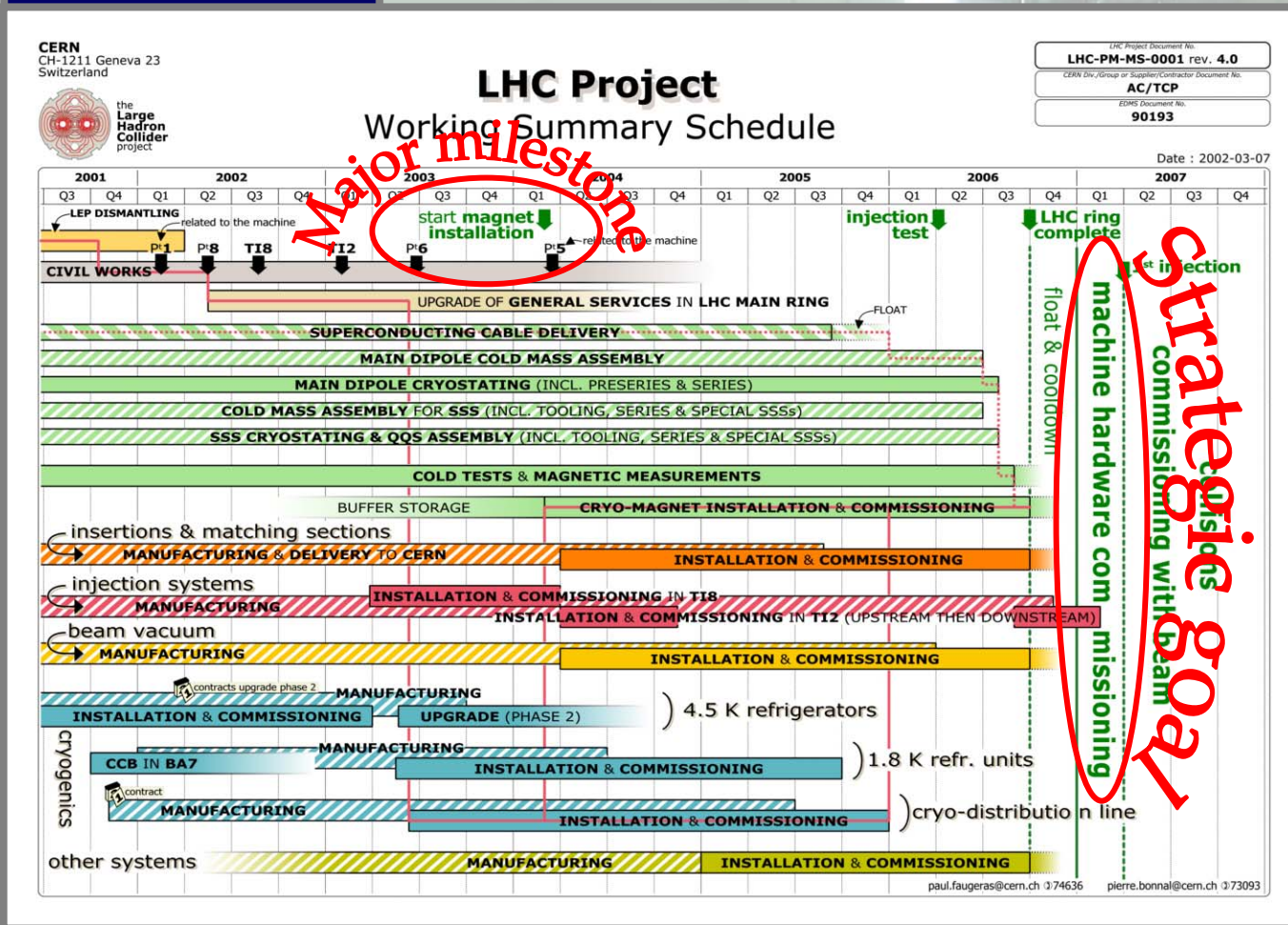
K. Foraz, S. Grillot, S. Weisz

Summary

- **Planning of the LHC installation**
 - Different levels
 - Coordination schedule
 - Detailed schedule
- **Coordination of installation**
 - Mandate
 - Where to find information
 - Real life examples

Different level of planning

Master schedule



Different level of planning

Master schedule

Coordination schedule



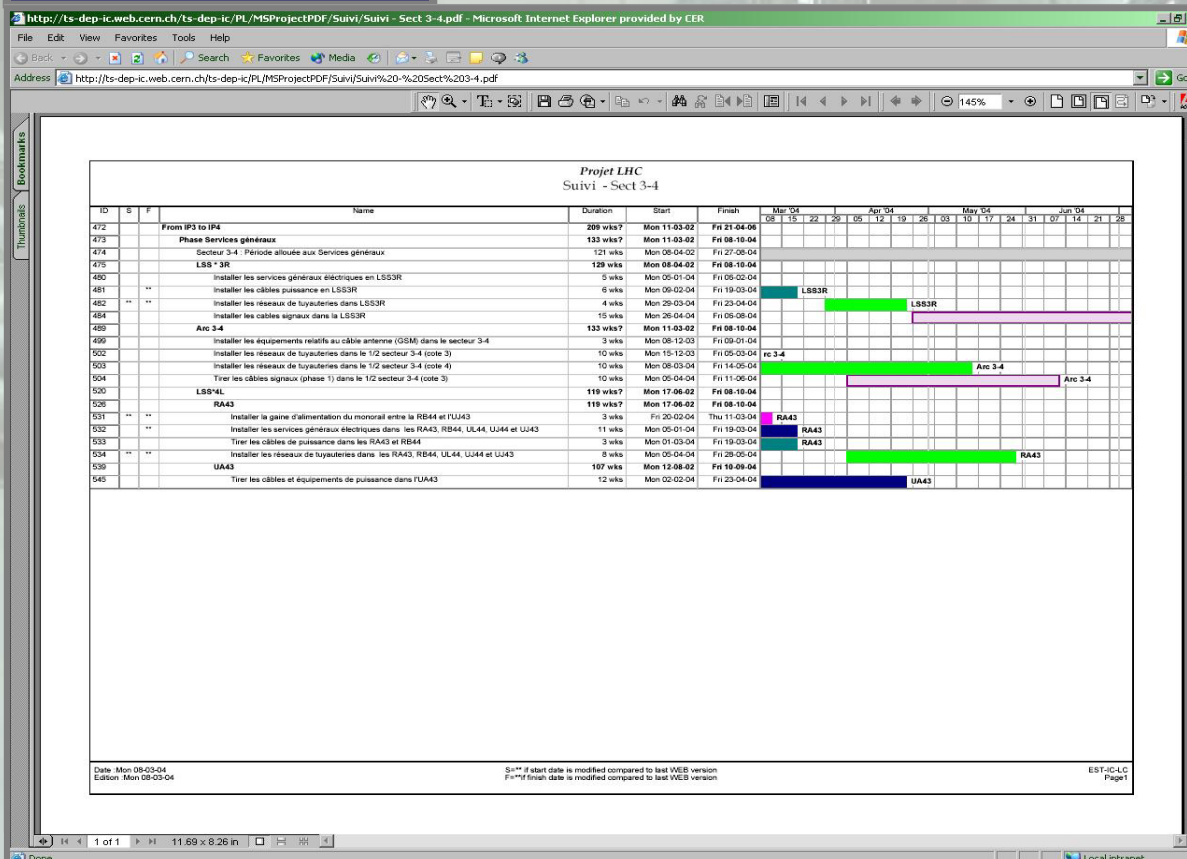
- Issued by TS-IC-PL
- Approved by group leader and head of department
- Endorsed by LHC project Leader
- EDMS N°: 102509

Different level of planning

Master schedule

Coordination schedule

Detailed schedule



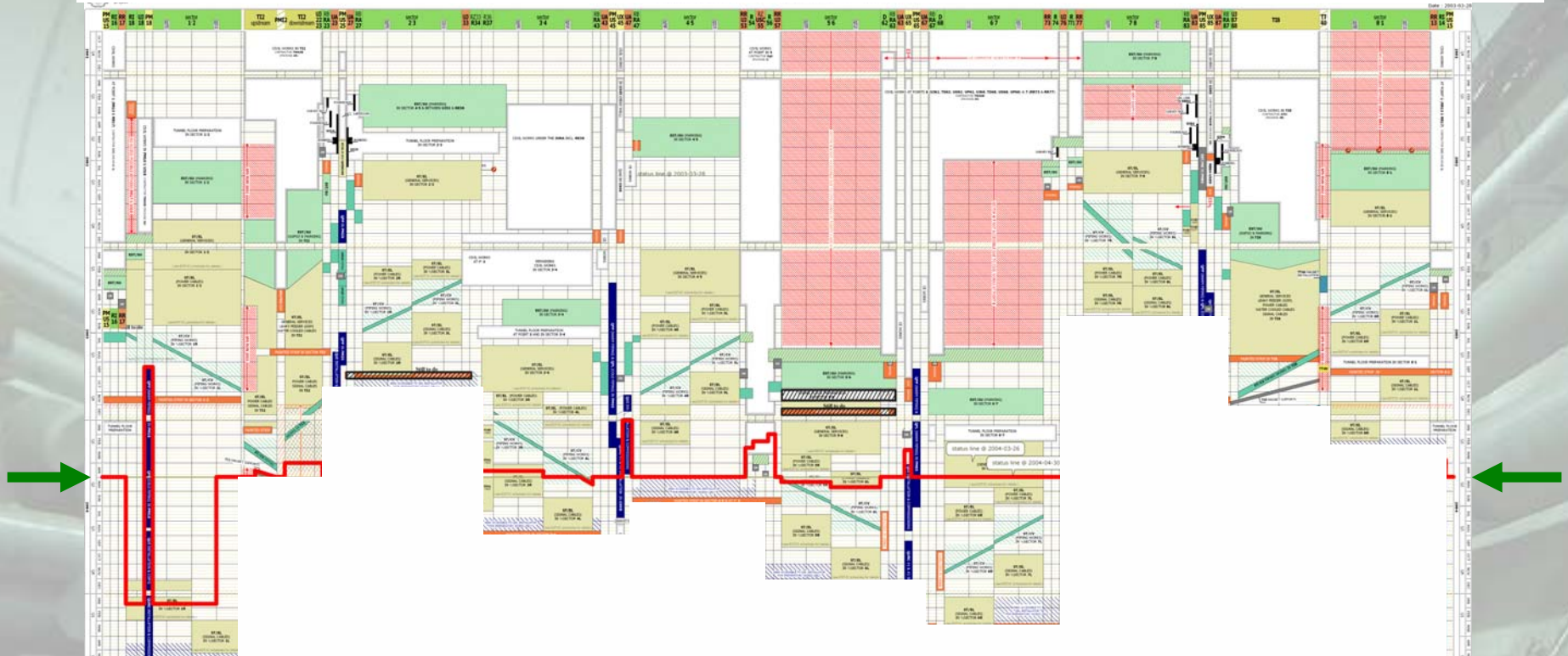
-
1. Survey marking
 2. EL. G.S. & power cabling
 3. Piping
 4. Signal cabling

5. QRL installation
6. Local cabling
7. QRL commissioning installation

9. Cryomagnets installation
10. Interconnections works
11. Electronics equipment inst.
12. Commissioning

Coordination schedule

Schedule status



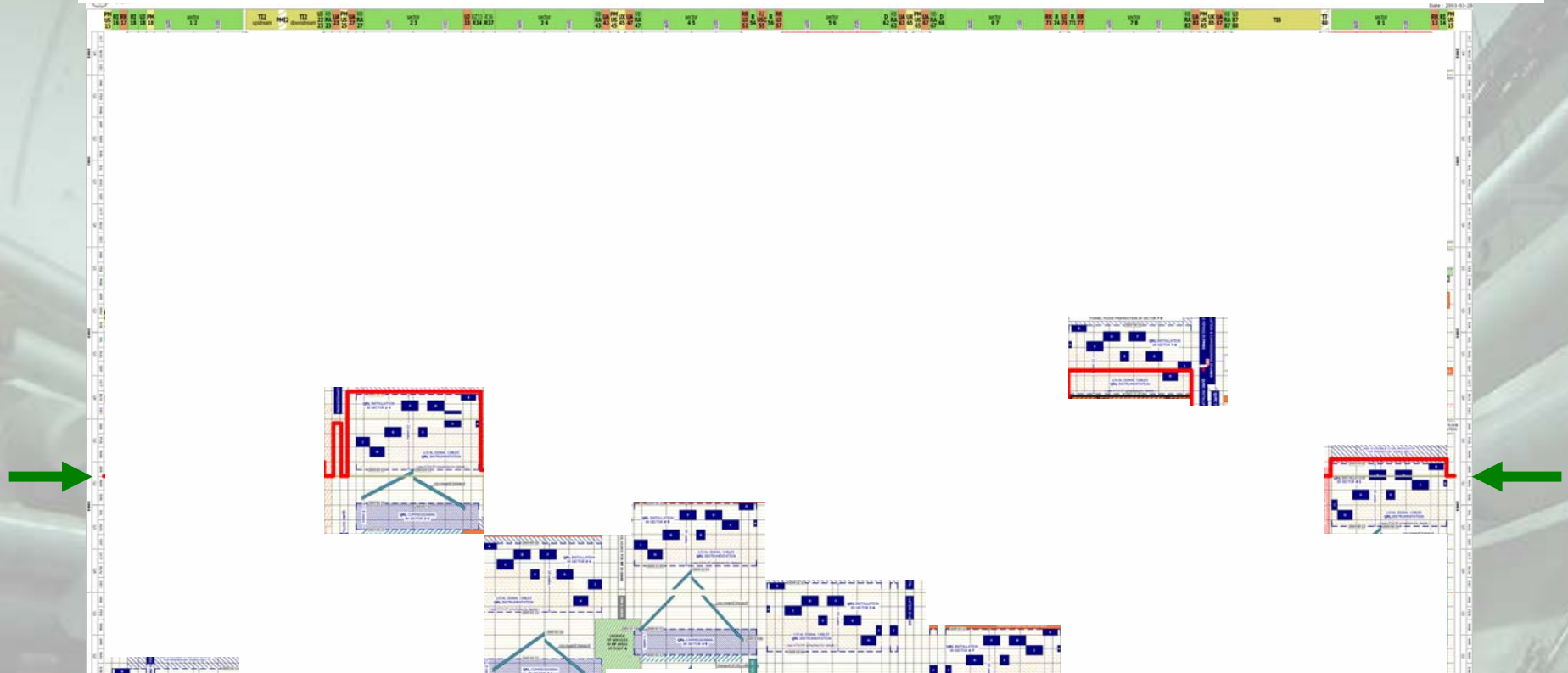
Period 1: General services

➔ Consolidated schedule

➔ Works on schedule except around point 5

Coordination schedule

Schedule status



Period 2: Cryogenics

→ Consolidated schedule

→ Installation delay

↻ SCR (incl. Period 3 consolidated schedule)

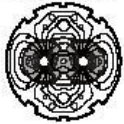
↻ Sector's order

Coordination schedule

Schedule status

SCR Sector 7-8

CERN
CH-1211 Geneva 23
Switzerland



the
Large
Hadron
Collider
project

LHC Project Document No.
LHC-PM-MS-0013

EDMS Document No.
424751

Engineering Change requested by (Name & Div./Grp.) :
Katy Foraz, Sylvain Weisz

Date: 2004-03-17

Schedule Change Request - Class I INSTALLATION SCHEDULE OF MACHINE ELEMENTS IN THE CONTINUOUS CRYOSTAT OF SECTOR 7-8

We propose to modify the sequence of installation of the machine elements of the sector 7-8 with respect to the scenario indicated in the general co-ordination schedule version 1.7 (EDMS document #102509 issued March 27th 2003). The main changes concern the transport and placing of the magnets in the tunnel, which will occur while the assembly of the QRL is still in progress, and the interconnection work that will start before the end of the commissioning tests of the QRL. This will allow gaining experience with the introduction of new activities as soon as possible, with a view to limit the impact of accumulated delays in the installation of the QRL in sector 7-8. This schedule expects the continuous cryostat of sector 7-8 to be assembled and ready for hardware commissioning by **end of September 2004**.

Equipment concerned :
QRL
Local & Network cables
Jacks
Cryo-magnet transport
Cryo-dipole & SSS
DFBA

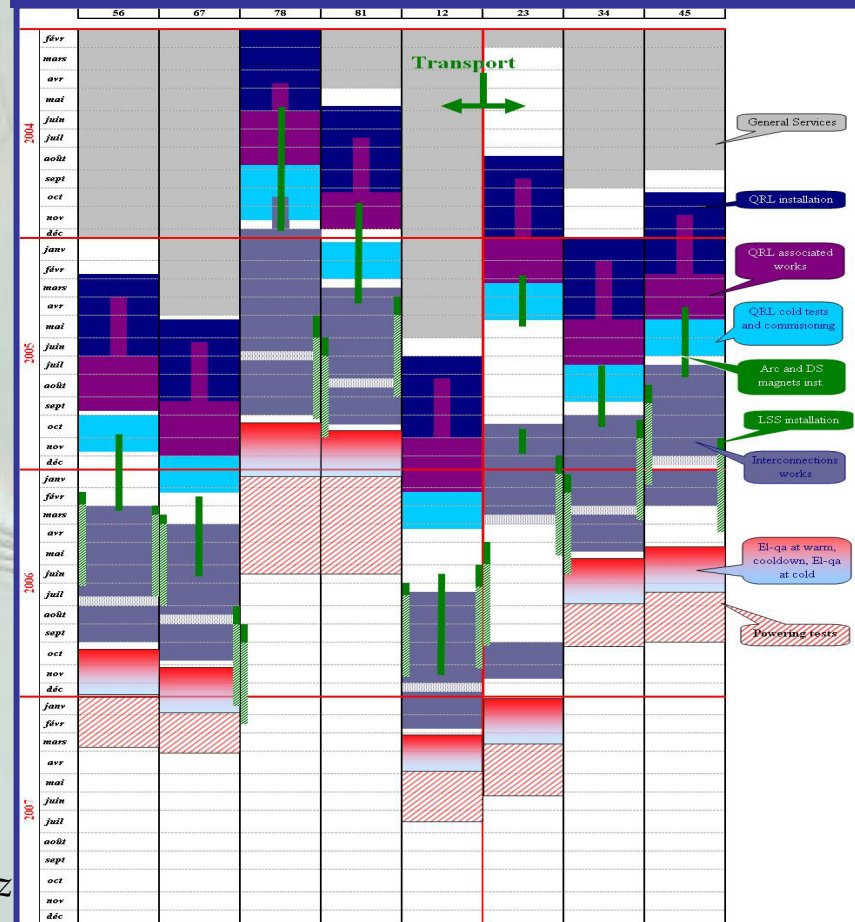
Drawings concerned :

Documents concerned :
LHC-PM-MS-0005

PE in charge of the item :
Katy Foraz, Sylvain Weisz

PE in charge of parent item in PBS :
Paul Proudlock

Updated coordination schedule

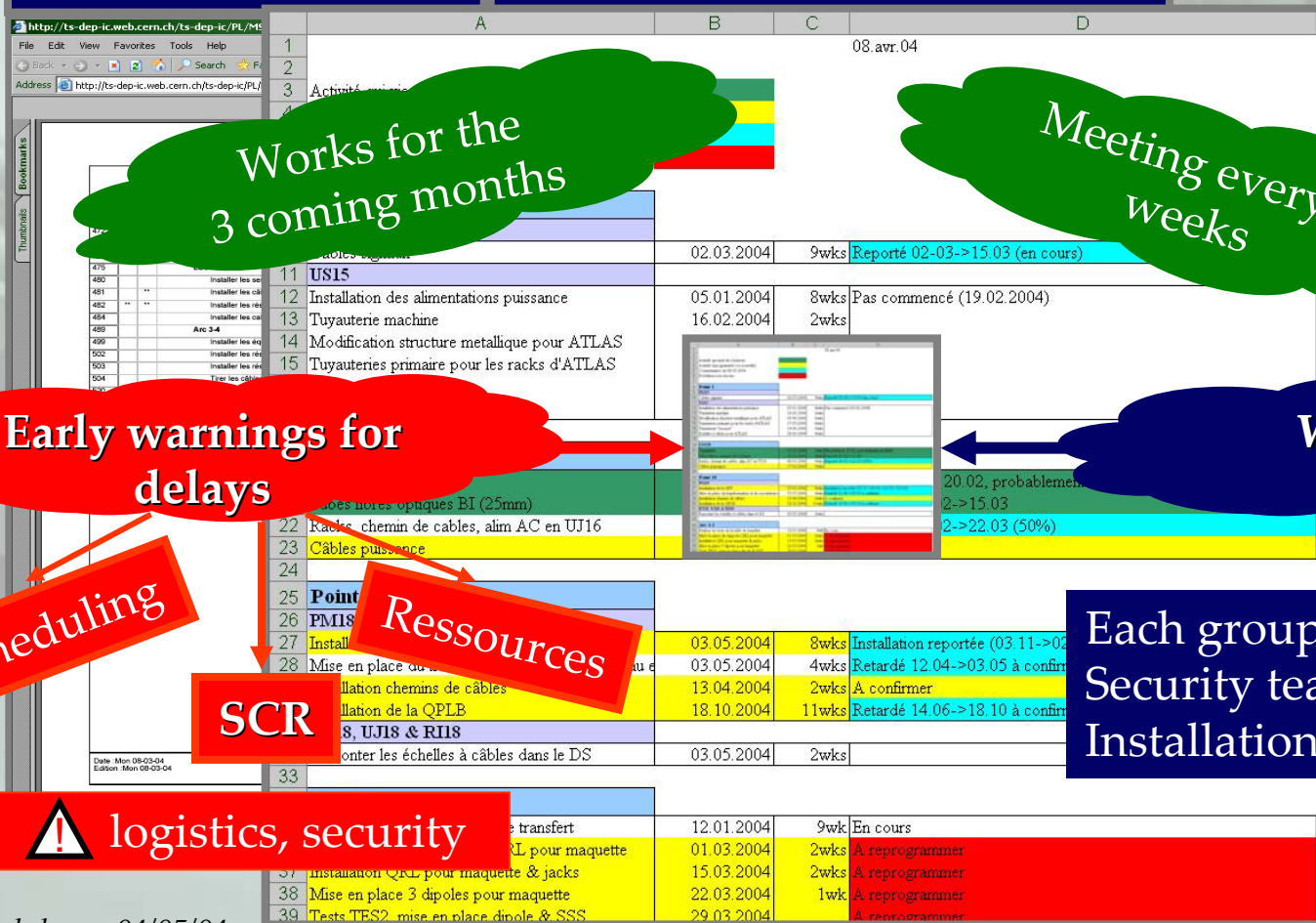


Detailed installation planning

Short Term planning Meetings

Microsoft Project file

Short Term planning meetings



Works for the 3 coming months

Meeting every 4 weeks

Early warnings for delays

WHO?

Rescheduling

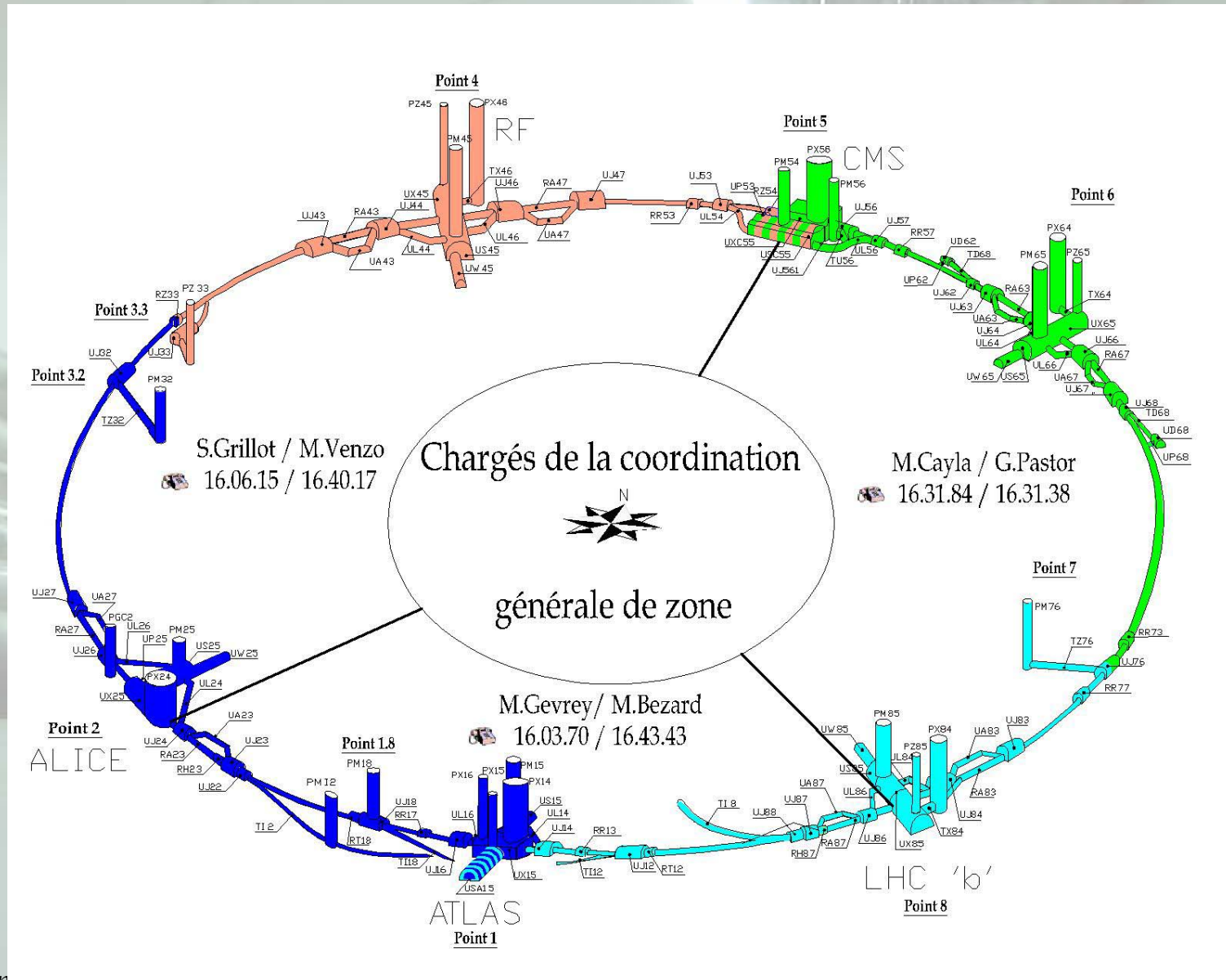
Ressources

SCR

Each group concerned
Security team
Installation coordination team

⚠️ logistics, security

Coordination of Installation (TS-IC-CI)



Coordination of Installation (TS-IC-CI)

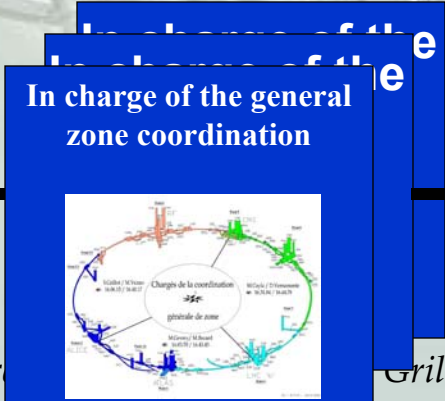
General Follow-up

TCC

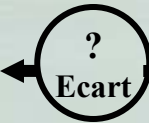
Installation Follow-up & Planning and logistics

Territorial Follow-up

REACTIVITY via
 Execution Supervisor
 Logistics & Planning Section
 Assistance to Installation Section
 Site Managers/TSO
 Safety Coordinators
 Integration



INFORMATION
 General follow-up of Installation



Coordination of Installation (TS-IC-CI)

END



Coordination of Installation (TS-IC-CI)

[Mandat](#)
[Membres](#)
[Presentations](#)
[LHC Project](#)
[CERN](#)
[EDMS](#)
[TS-IC](#)

CI - Coordination de l'Installation

Liens Spécifiques

- Organisation de l'installation
- Suivi des lots travaux/réserves
 - Services Généraux
 - QRL
 - Machine LHC
- Visite de Zones
 - Mandat
 - Participants
 - Point 2 - Comptes Rendus Avancement
 - Point 4 - Comptes Rendus Avancement
 - Point 6 - Comptes Rendus Avancement
 - Point 8 - Comptes Rendus Avancement
- Suivi de l'installation
 - Mandat
 - Participants
 - Comptes Rendus
- Divers
 - Procédures d'installation
 - Gestion des espaces
 - Coordination Générale de Zone
 - Mandat

Tracé géométrique	●●●●●	●●●●●
Services généraux électriques	●●●●●	●●●●●
Câbles de puissance	●●●●●	●●●●●
Tuyauterie	●●●●●	●●●●●
Câbles de contrôle	●●●●●	●●●●●
Nouveau câble à poste en service	●●●●●	●●●●●

■ Accès autorisé téléphone rouge en service
● Accès INTERNET sans évacuation d'urgence

Etat d'Avancement
 Lots de Travaux: de janvier 2003 a aout 2004
[Suivi](#)
[Plan de Situation Point 4](#)
[Allocation d'Espace Point 4](#)

Mise à jour: SG-TS/IC-000401

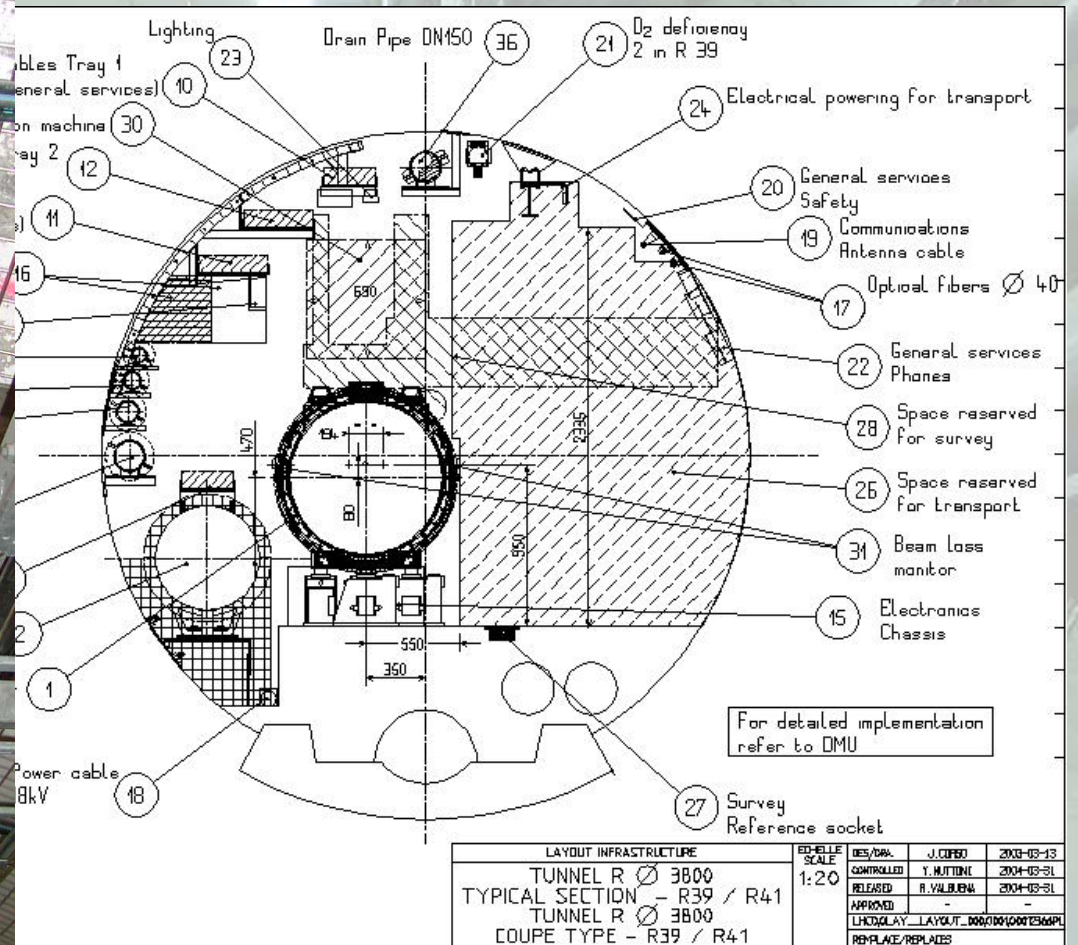
Coordination of Installation (TS-IC-CI)

Possible types of deviations:

- planning
 - safety
 - logistics
 - working conditions
-(no technical role)

Coordination of Installation (TS-IC-CI)

Secteur 3-4



Coordination of Installation (TS-IC-CI)

PM18



Coordination of Installation (TS-IC-CI)

UJ22



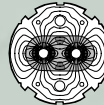
Coordination of Installation (TS-IC-CI)

UX45



Coordination of Installation (TS-IC-CI)

CERN
CH-1211 Geneva 23
Switzerland



the
**Large
Hadron
Collider**
project

LHC Project Document No.
LHC-PM-IP-0001 rev. 1.0

CERN Div./Group or Supplier/Contractor Document No.
AC/TCP & SL/MR

EDMS Document No.
323972

Date: 2001-10-30

**ORGANISATION
DES TRAVAUX D'INSTALLATION
DU LHC ET DE SES EXPÉRIENCES**

**ORGANISATION
OF THE INSTALLATION WORK OF
LHC AND ITS EXPERIMENTS**

Abstract

Ce document s'adresse à toutes les personnes amenées à intervenir sur les installations du CERN dans le cadre des projets LHC et CNGS, qu'ils s'agisse de personnels CERN (titulaires et utilisateurs) ou de personnels d'entreprises contractantes. Ce document et le PGCSPS se complètent mutuellement. Les dispositions particulières sont décrites dans les fiches descriptives des lots de travaux, qui seront disponibles sur l'EDMS au fur et à mesure de l'avancement des projets

This document addresses all persons likely to intervene on CERN installations within the framework of the LHC and CNGS projects, either CERN members (staff and users) or staff of contracting companies. This document and the PGCSPS complement each other mutually. Specific measures are described in the so-called work package data sheets, which are made available through the EDMS according to the progress of the projects.

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Coordination of Installation (TS-IC-CI)

CERN CH-1211 Geneva 23 Switzerland	<small>LHC Project Document No.</small> LHC-J34-IW-0001 rev 1.0	
 the Large Hadron Collider project	<small>CERN Div./Group or Supplier/Contractor Document No.</small> AC/TCP, SL/MR, EST/IC	
	<small>CERN Document No.</small> 362465	
<small>Date: 2003-02-14</small>		
Work Package / Lots de travaux		
INSTALLER LES SERVICES GÉNÉRAUX DANS LE SECTEUR 3-4 (DE RB44 À R36)		
<small>Prepared by :</small> Pierre BONNAL Michel CAYLA Katy FORAZ Hubert GAILLARD Serge GRILLOT	<small>Checked by :</small> Robert CHARAVAY Luit DE JONGE Alain FERON Louis GUERRERO Jean-Claude GUILLAUME Claude JACOT Keith KERSHAW Rui NUNES Daniel PARCHET Serge PELLETIER Bernard PIROLLET Carine PIVIDORI Sylvie PRODON Jean-Pierre QUESNEL Albino VAIRO Michel VITASSE Tim WATSON Sylvain WEISZ	<small>Approved by :</small> Pai ANDERSSSEN Jean-Luc BALDY Paolo CIRIANI André FAUGIER Claude HAUVILLER Tadeusz KURTYKA Michel MAYOUD Steve MYERS Pierre NININ John PEDERSEN John POOLE Paul PROUDLOCK Ingo RUEHL Roberto SABAN Alberto SCARAMELLI Wolfgang WEINGARTEN Mats WILHELMSSON

Coordination of Installation (TS-IC-CI)

Suivi des lots de travaux Installation									
PHASE SERVICES GENERAUX				PHASE LIGNES CRYOGENIQUES (Tests de réception inclus)			PHASE INSTALLATION MACHINE		
Période couverte		Statut	Période couverte		Statut	Période couverte		Statut	
Début	Fin		Début	Fin		Début	Fin		
TI2	sept.-02	avr.-04	Released						
TI8	sept.-02	nov.-03	Released				oct.-03	mai-04	Released
PM15	mars-03	févr.-04	Released						
PM18	mars-03	févr.-04	Released	mars-04	juil.-05				
PM25	mai-02	mai-03	Released	févr.-04	juin-05	Released			
PM45	mars-02	déc.-02	Released	mars-03	févr.-05	Released			
PM65				sept.-03	juil.-05	Released			
PM85	mai-02	mai-03	Released	févr.-03	juin-04	Released			
Secteur 1-2	mai-02	mai-05	Released	mai-05	avril-05				
Secteur 2-3	mai-02	sept.-03	Released	* juin-04	mai-05	Released			
Secteur 3-4	janv.-03	août-04	Released	oct.-04	sept.-05				
Secteur 4-5	janv.-03	juin-04	Released	août-04	juil.-05				
Secteur 5-6	août-03	déc.-04	Released	jan.-05	nov.-05				
Secteur 6-7	août-03	mars-05	Released	mars-05	févr.-06				
Secteur 7-8	oct.-01	juin-03	Released	* juil.-03	nov.-04	Released			
Secteur 8-1	oct.-01	févr.-04	Released	mars-04	mars-05	Released			
UA23	Voir secteur 1-2								
UA27	Voir secteur 2-3								
UA43	Voir secteur 3-4								
UA47	Voir secteur 4-5								
UA63	Voir secteur 5-6								
UA67	Voir secteur 6-7								
UA83	Voir secteur 7-8								
UA87	Voir secteur 8-1								

Aucun work package n'est prévu
Work package: en préparation
Work package: Activités en cours
Work package: Activités terminées
* Tableau des réserves

14-avril-2004

Bonne fête SYLVAIN !!!

