



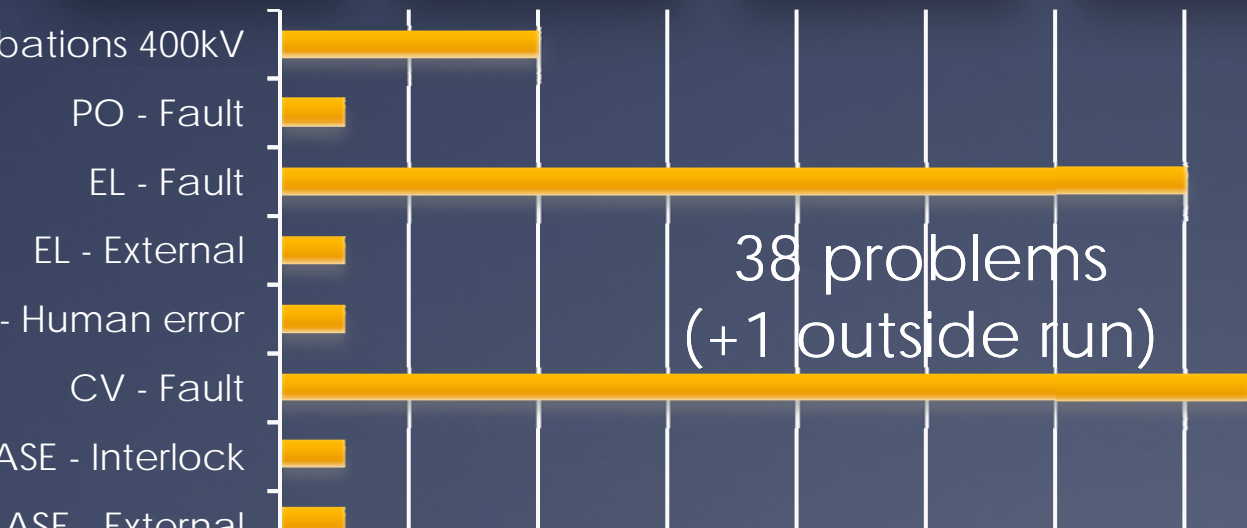
Session 4: **Technical**
Infrastructure

ATOP Days 4-6 March 20

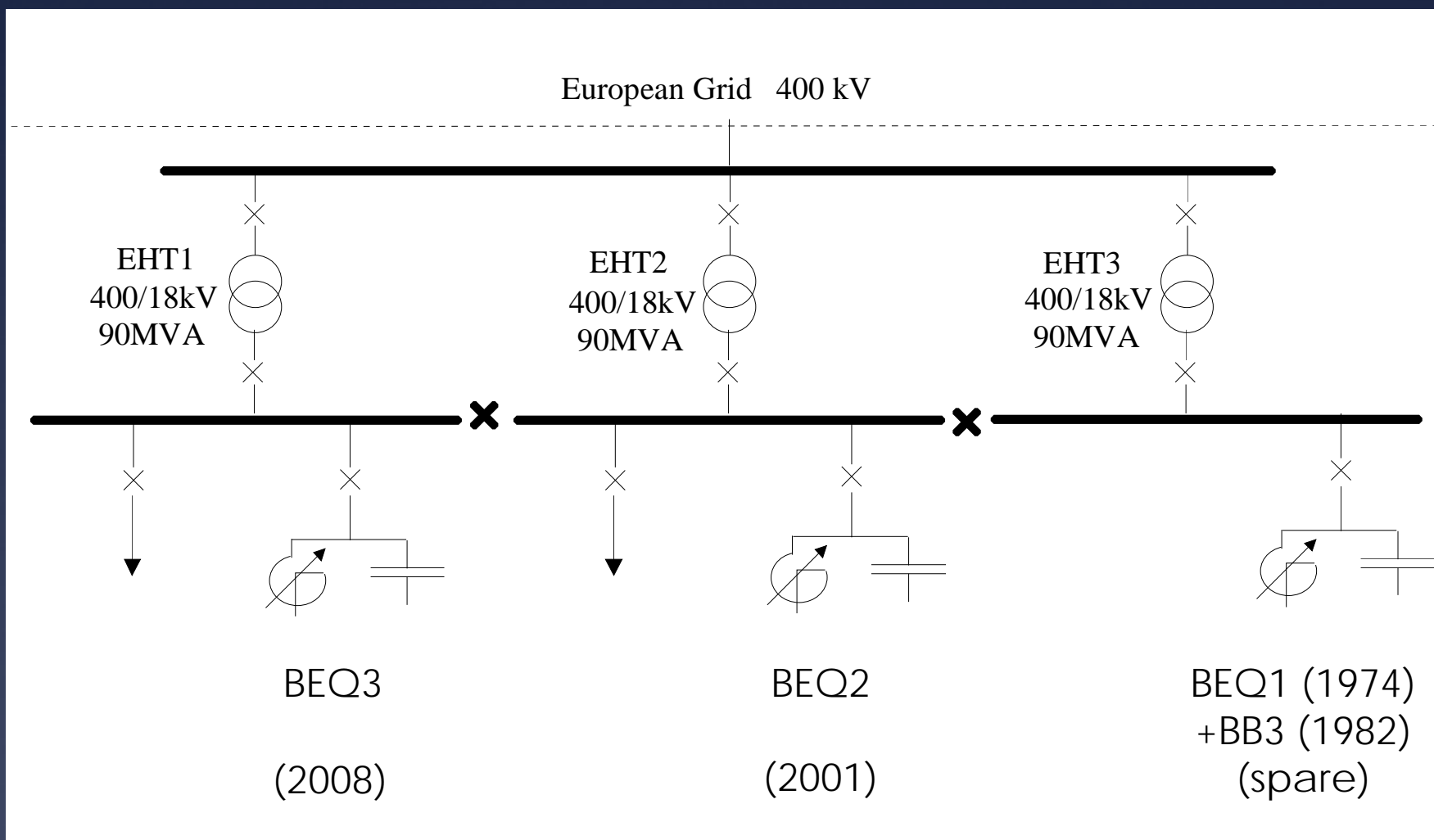
Roberto Saban – Peter Solla

infrastructures during 20

A Major Event is a technical infrastructure problem that had or could have had consequences on the accelerators, the experiments, the cryogenics or the computer centre.



TSOC becomes TIC
2009:
wider participation,
detailed recording of
events



Events

1: EDMS 945725, 945728, 945729

protection trips of bypass capacitors of saturated reactor

3: EDMS 945704, 963394, 964141

capacitor failures and star point balancing in harmonic filter F7

The Compensation

Spare coils There are about 250 coils installed at CERN (40 different types). We have had only one coil failure in 25 years (TCR PA4). The delivery time for a replacement coil about 3...6 months. A call for tender for spare coils and preparation. Spare coils will be available at CERN end of 2009.

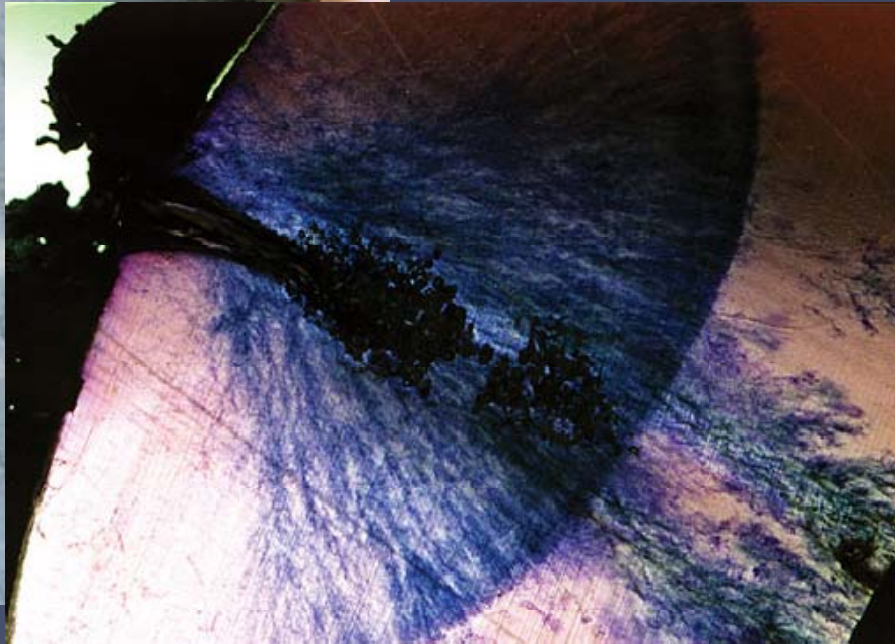
Maintenance All SVCs have gone through a preventive maintenance campaign.

Consolidation or more spares The SVC for the BEQ1 (minor insulation problem: cracks on the coil) and for the SPS (BEQ2+BEQ3) are in good shape. The spare SVC (BEQ1+BB3) for the SPS is operational, but approaching end of life time. We must decide if we want to buy spare parts for BEQ2 and BEQ3 or go into a consolidation program (BEQ1+BB3).

High Voltage cells & cables **The 18 kV Network**

Why ?

- Ageing switch gear
- Ageing cables but also ageing accessories
- Manufacturing defects of joints & terminations



The consolidation plan

The 18 kV Network

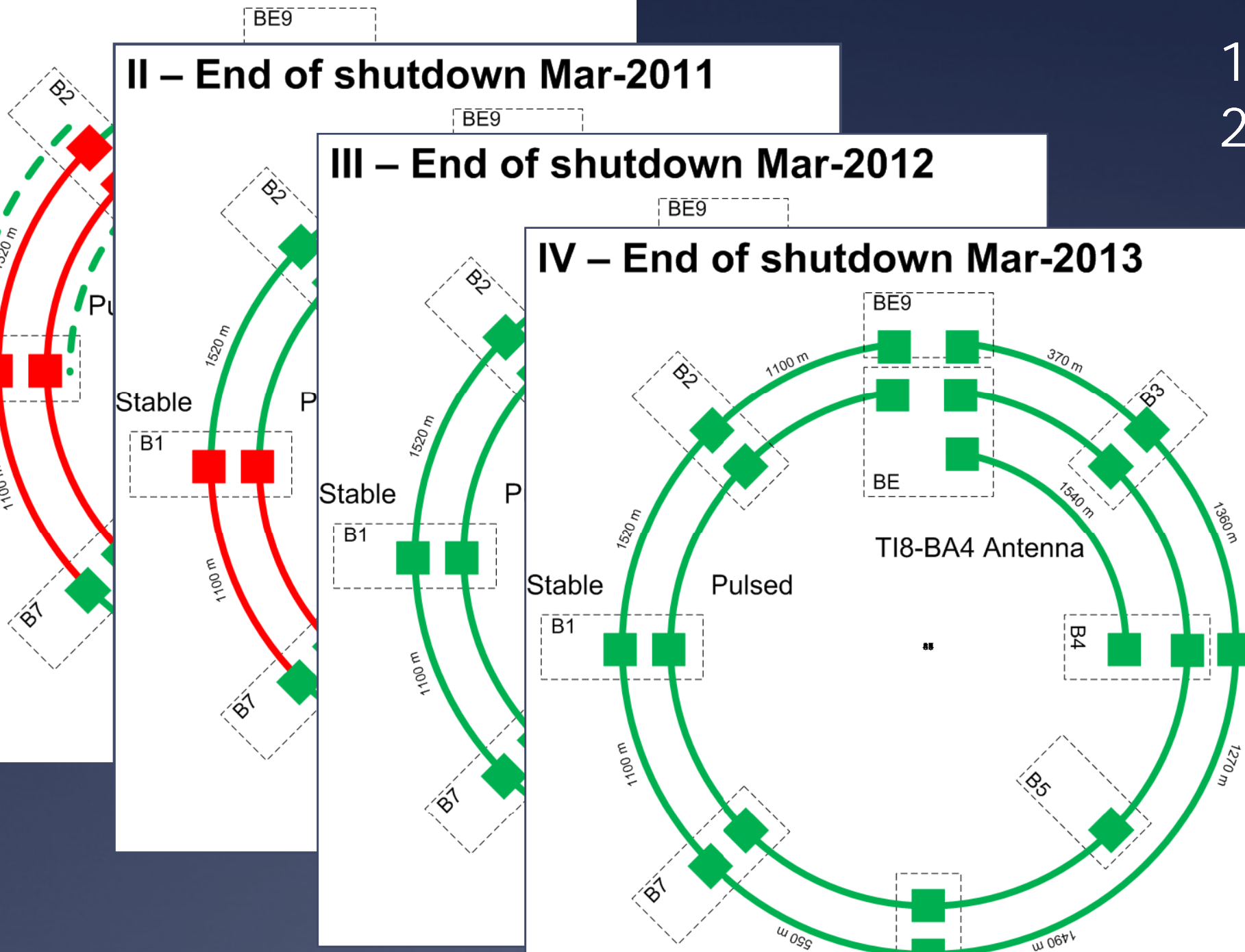
beginning of shutdown Dec-2010

II – End of shutdown Mar-2011

III – End of shutdown Mar-2012

IV – End of shutdown Mar-2013

1. Loop
2. Antenna feeding



1000 cables AC, DC, infrastructure
1000 cables control
total length: 5400 km

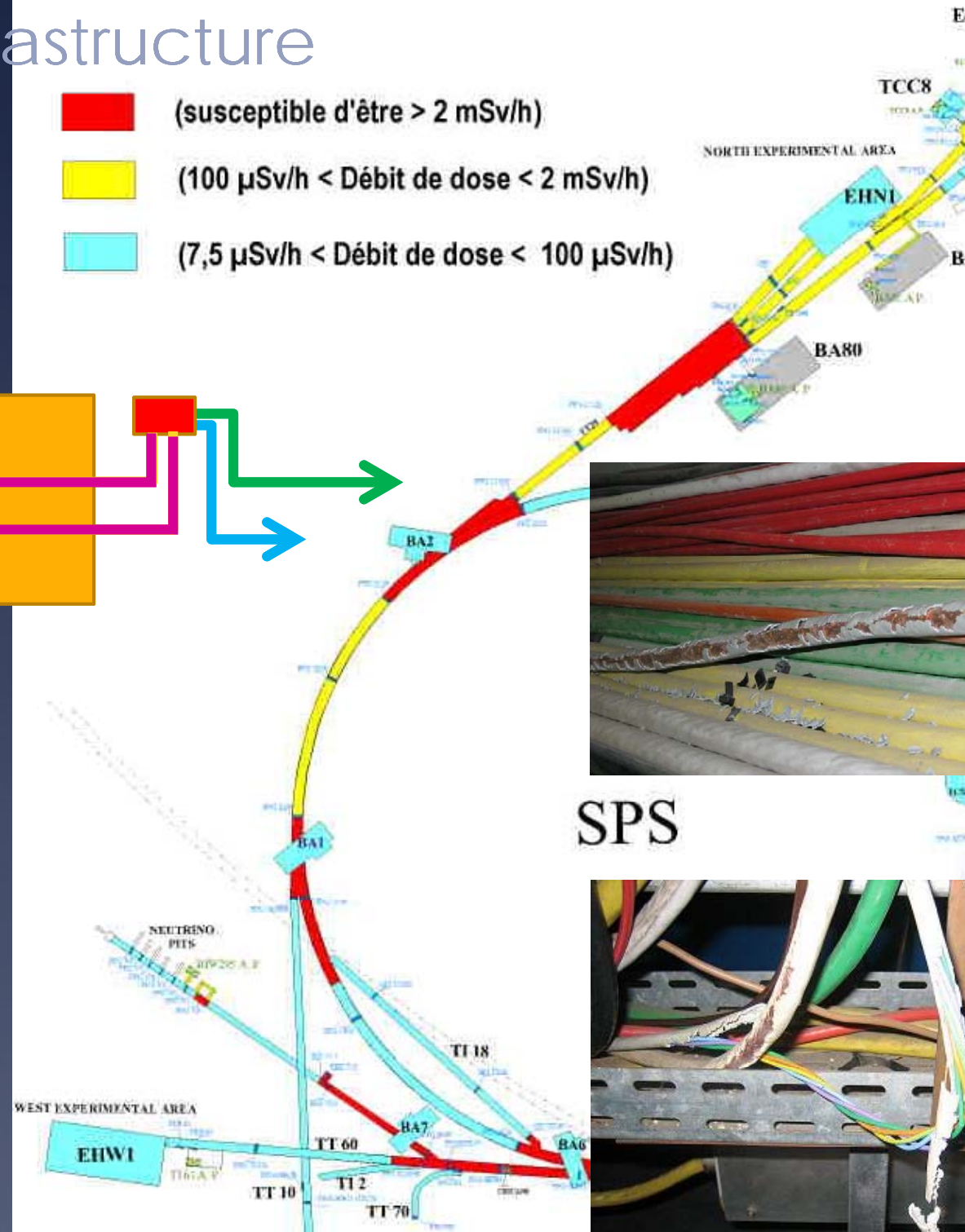
Irradiated segments

Presently, the cables are
changed on average
every 10 years without
any mechanical or
chemical tests.

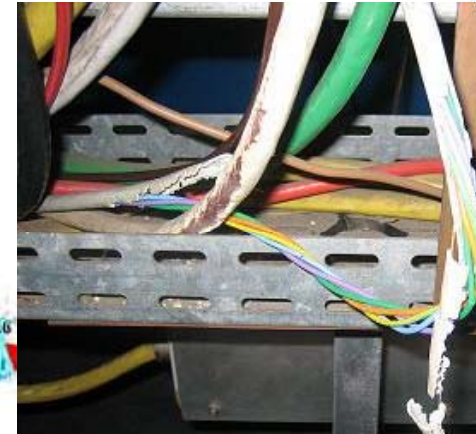
Since 1997, no sample

Zonage Radiologique du SPS

-  (susceptible d'être > 2 mSv/h)
-  ($100 \mu\text{Sv/h} < \text{Débit de dose} < 2 \text{ mSv/h}$)
-  ($7,5 \mu\text{Sv/h} < \text{Débit de dose} < 100 \mu\text{Sv/h}$)



SPS



We do not have a method to determine the status of the cables

estimation of functioning cables is based on visual inspection of those which have reached the age limit according to 1990 replacement plan

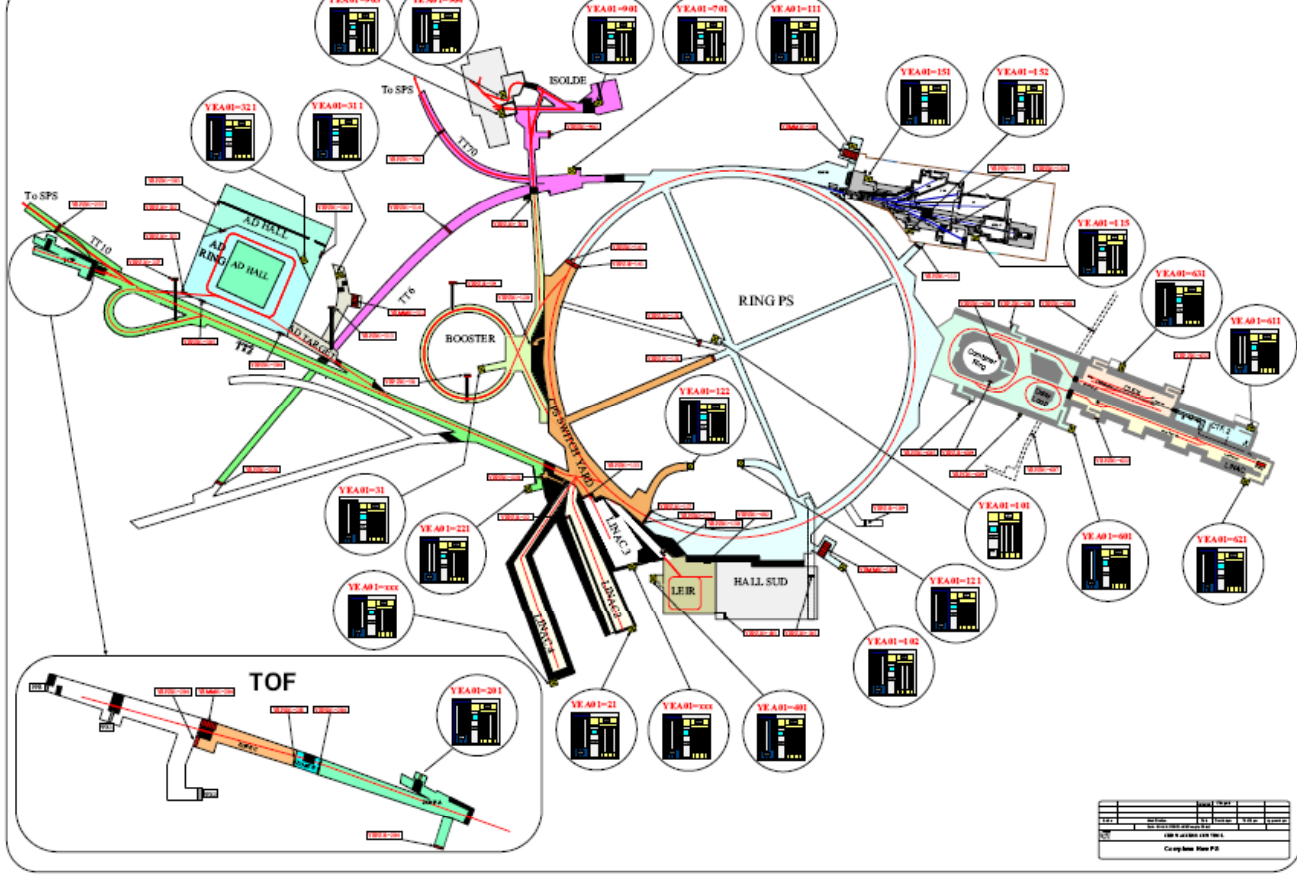
A replacement strategy should be based on

1. A program for the identification and the removal of unused cables
2. A program for the analysis of the installed cables
3. The definition of radiation resistant cables
4. A (new) program for the replacement of irradiated cables

The cable owners should help to identify the cables which are not needed anymore and the obsolete systems which can be shut down

A pluridisciplinary group to define this will be mandated

Injector complex



Budget

10 MCHF PS Co

(doubled)

2 MCHF SPS for

limited upgrade

it needs renovation

- No spare parts
- Impossible to add new access points
- Evolution of safety norms

Objective & Constraints

- Like LHC including lessons learnt
- Compliant with new safety concepts
- Flexibility required by the operators
- Installation without impact on operation & schedule

tunnels related to the injected comp

olidation is needed because of operational and
omical reasons but also safety, legal obligations

009 consolidation program is based on the most
t interventions but depends on:

he budget: MCHFs needed 2.5/y, available 0.8
ccelerator operation, weather conditions, etc.

umber of FTE assigned



2008

Renovations

ISOLDE, comp. air, B359, CNGS
ventilation, control system, etc.

New projects

CLEX ventilation, SPL3 test bench



2009

B378 ED production, North Area
towers, PS and SPS controls,
Linac2,3 regulation, and more



small proportion of CV resources are dedicated to new projects
lot of effort put on the improvement of the spare parts
management (information and storage)
controls renovation is on-going: but the new tools do not yet
meet the standards which allow efficient monitoring from CCC

budget & human resources

building and tunnel consolidation

18 kV network ensure adequate resources are available for the supervision of repair or upgrade work in the EL Grid

access control system complete the study in view of the renovation in the PS and the evaluation of the need for the upgrade of the SPS

radiated cables set up the task force for the definition of the strategy for their replacement

SVCs in the SPS we must decide if we invest in spare for BEQ2 and BEQ3 or go into a consolidation program BEQ1+BB3

CV controls renovation must ensure adequate means