

# **SPS Big Bang 2001: Post Mortem**

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- **Thanks**
- **List of Major Activities**
- **... What was particularly good, and**
- **... What could have been better ...**
- **Conclusions**

# Thanks (& congratulations) to Everyone!

**A huge amount of work has been done on the SPS during the shutdown.**

**In spite of falling staff numbers and lack of money we somehow got the whole lot finished in time.**

**Within 2 hours of starting, circulating beam was established, last Wednesday (27/6/2001) ... 24 hours ahead of schedule.**

**This showed that all major systems worked !**

**Setting up with beam is proceeding well ... there is still a lot to do before physics starts (planned for 12/7/2001).**

**Studies will be started in the coming weeks to look at the effect of all the modifications to the SPS on the beam itself.**

**In answer to Alberto, there were no catastrophes!**

# Major Activities : Tunnel

- <sup>\*</sup> Removal of Lepton Equipment - RF, kickers, transfer lines etc.
- <sup>\*</sup> Major modifications to the RF, damper, injection channel, LSS6.
- <sup>\*</sup> Civil engineering around LSS4 (TT40) and for TI2.
- <sup>\*</sup> Major infrastructure works in ECA4/ECX4
- <sup>\*</sup> Installation of ~1000 impedance reduction shields by displacing 400 main ring dipoles and ~150 short straight section girders.
- <sup>\*</sup> First installation of LSS4 extraction equipment.
- <sup>\*</sup> ~150 'minor' changes to the machine layout
- <sup>\*</sup> Cabling and piping works all over the place.
- <sup>\*</sup> ECA5 bridge and shielding wall.

# Major Activities : Surface

- † **Water project**
- † **BE renovation**
- † **Power converter renovation project**
- † **BA1 re-organization of the kicker zone**
- † **BA2 Damper modifications**
- † **BA3 RF Faraday cage renovation**
- † **BA4 Clearing works in preparation for the LHC equipment**
- † **BA7 clearing works and civil engineering for cryo installation**

## **...What was good ...**

**Planning started early (10<sup>th</sup> April 2000) for the Big-Bang with meetings throughout the summer to discuss each surface and underground zone. From these a work package list was generated and the layouts defined.**

**With everyone's help a complete, detailed planning could be produced to cover all works. With the potential interference of different worksites, this was very important.**

**The level of communication between the different groups was extremely good.**

**... The vast majority of the work proceeded smoothly**

**This year the INB was thrust upon us ...**

**A simplified system for tracing equipment removed from the machine was put into operation. Thanks to everyone's efforts, this worked very well ... this will remain in place for the next shutdown as well.**

**Collaboration:**

**Many activities required close collaboration between different groups/divisions (eg PPS shield installation: SL/MS, ST/HM & LHC/VAC).**

... What could have been better ...

## **Site Supervision:**

**We felt that there was not always sufficient supervision of worksites. This led to weakness in the areas of safety, cleanliness, scheduling and co-habitation.**

## **Co-habitation :**

**... is always difficult, but necessary to finish the work in time. Protection of existing installations during 'dirty' works was not always well done.**

## **Collection of Rubbish**

**At the start of the shutdown a huge amount of waste was removed from the buildings and tunnel. There was a serious problem with the emptying of the bins and rubbish was piling up on all the car parks.**

## **Storage**

**Not an ST problem, but the question of radioactive storage was a major headache.**

## **Value for Money**

**Will be treated separately, but with such a large number of OSVC's & TID's flying around, it was not always easy to know if we were getting value for money.**

... What could have been better 2 ...

## **Quality Control:**

**Difficult subject. SL think (perhaps incorrectly) that we also pay for supervision of a contractor and quality control for the final ‘product’. In some cases it was up to the client to find design flaws (damper cooling) or poor workmanship (Faraday cage cables) and point them out.**

## **Poor Communications:**

**Still persist in some areas. In one case this lead to the north extraction equipment being let up to air ... could have been a disaster. This case is particularly bad as it also happened the year before.**

**SL is sometimes used for communications within the ST division!**

## **(Non-)Respect for the Planning**

**Only one case - and was, at least an additional activity. Where an urgent repair for the false floor was requested and planned for mid-March it was finally done at the end of May. This had a major knock on effect on other groups (SL/PO and cable works). *{arguments about load-bearing capability of floor?}***

**However we still had the occasional; ‘by the way we are planning to .... next week’**

# Other Comments

## **Building Maintenance:**

**Perhaps a more systematic maintenance should be considered for buildings again. We had an awful lot of leaks this year... perhaps linked to the new rooftop installations for CV?**

## **Acceptance**

**The end of the major works was a little chaotic with partially accepted installations pushed into service and some confusion over safety tests etc.**

## **SPS Safety Upgrade**

**Despite the global approach to the SPS safety upgrade project, the result is (so far) not very convincing. The different systems often don't hang together during safety tests. Have been forced to ask for a derogation from TIS to operate the SPS this year with the present state of the extraction system.**



# Conclusions

**An incredible amount has been completed during the shutdown. The schedule has been maintained - in spite of the LEP mess at the beginning. Everyone involved should be congratulated.**

**However, I think that we (& you) were stretched to, and beyond, the limit with resources. That it worked is due to the good will of everyone involved.**

**A global, but detailed planning is vital to allow efficient use of resources and to get the job(s) done during the time constrained shutdown of the machine. It is in everyone's interest to make their needs known to the planners early ...**

***(next years planning is now in preparation, 140 days and counting!)***

**I feel that the cross division contact & communication between ST and SL has improved tremendously and hope this continues. However, I think that we should not go too far with the 'client', 'service provider' approach to inter-divisional contacts.**

**Next time someone suggests having a big bang in the SPS ...  
shoot him!**