

**Minutes of the 34th Plenary Meeting of the LHC Resource Review Boards (RRB)
(CERN, Geneva, 23rd April 2012)**

1. Welcome. S. Bertolucci, Director for Research and Scientific Computing

S. Bertolucci welcomed delegates to the Plenary meeting of the RRB.

The minutes of the last Plenary Session CERN-RRB-2012-003 were approved.

2. CERN Status and News. S. Bertolucci, Director for Research and Scientific Computing

S. Bertolucci summarised progress since October. He reported that all experiments were staying abreast of the fantastic LHC performance, continuously adapting to the increased performances of the machine, refining analyses and optimizing software whilst drafting numerous papers. The experiments were closing in on the Higgs with its existence restricted to a few GeV and both CMS and ATLAS have had tantalizing hints, but could not yet claim discoveries. Looking at Neutrinos, the Opera results had been updated and measurements would be repeated by Opera and other experiments.

At the January meeting in Chamonix, it was decided to run at 8 TeV instead of 7 TeV. This was largely due to experience and to technical improvements to the machine protection system. Risks have been reduced and the higher energy will give the experiments increased reach for high mass states. The machine is running beyond design performance; this is good for morale but it produces problems with pile-up for the experiments. They are responding to this challenge by optimising software and introducing novel techniques, for example "data parking". The machine started on schedule and, in less than one month, it has exceeded the previous performance

S. Bertolucci presented the composition of the Scrutiny Group (for details please refer to the RRB agenda page). The membership was approved by the RRB.

S. Bertolucci reminded delegates that, during the April 2011 RRB Plenary, a proposal to extend the current construction MoU for five years and to add Upgrade projects to the MoU through dedicated Addenda had been favorably received by the Funding Agencies. To formalise this decision, he would send a letter to the Funding Agencies.

S. Bertolucci concluded by reminding delegates that, due to the European Particle Physics Strategy Symposium, the proposed dates for the next RRB are 29th to 31st October.

There were no questions arising from this presentation.

3. LHC Status Report. S. Myers, Director for Accelerators and Technology, for the LHC team.
Slides of this presentation are on the RRB agenda page.

S. Myers gave an in depth presentation of the current status of the LHC, focussing on four main topics:

- Performance in 2011
- Chamonix 2012
 - Summary of Proposals/Decisions
 - Safe Beam Energy for 2012... 4TeV
 - Priorities for the 2012 run
 - Proton-proton (integrated luminosity) HIGGS
 - Proton-ion
 - Machine Studies...UFOs and Quenches
 - Prepare 25ns
 - Date of Start of LS1..determined at lumi breakpoints
 - «Ready for beam» date after LS1 (1st September 2014.. CMS)
 - After LS1: Around 6.5TeV/beam to reduce the number of re-training quenches
- Start-Up in 2012
 - Hardware commissioning
 - Optics and machine validation
 - Physics with intensity build up
 - Some issues encountered
- Conclusions
 - The 8% difference in 2011 delivered luminosity seems to be confirmed by further studies
 - The CMS online luminosity is going to be revised downwards after performing VdM calibrations
 - ATLAS initial analysis indicate an underestimated online luminosity
 - The exact extent will be known after complete analysis of VdM data and presented at next LMC
 - Final decision on possible mitigation measures of a residual difference should be postponed to the next LMC

S. Myers ended his presentation with a summary of week 16 and MD report.

Replying to a question concerning the quantity of luminosity required to 5 sigma significance for one channel of the Higgs, G. Tonelli replied that the value was around 15 fb⁻¹. F. Gianotti was of the opinion that the value would be slightly more, perhaps 20-25 fb⁻¹.

4. Summary. S. Bertolucci. Director for Research and Scientific Computing

S. Bertolucci concluded that he was looking forward to seeing some interesting discoveries in the very near future.

T. Medland, for the UK, welcomed the suggestion of formalising the agreement on extending the Construction MoUs for the crucial Upgrade phase. CERN, the collaborations and the Funding Agencies should agree on the nature, scope and obligations of the previously proposed Framework. He was looking forward to discussing details of the implementation, for example the operation of the Common Fund. S. Bertolucci agreed that a Common Fund was necessary but, since the experiments have different approaches, the matter would be better addressed in individual RRBs. Concerning the letter to the Funding Agencies, he confirmed that it would be sent out as soon as possible.