

**Minutes of the 29th Plenary Meeting of the LHC Resource Review Boards (RRB)  
(CERN, Geneva, 12 October 2009)**

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

S. Bertolucci welcomed delegates to the 29<sup>th</sup> Plenary meeting of the RRB. The minutes of the April 2009 (28<sup>th</sup>) Plenary Session CERN-RRB-2009-006 were approved without comment.

**2. CERN Status and News.** R. Heuer, Director-General (DG)

R. Heuer commented briefly on the arrest of a CERN user working in LHCb.

He then reported on two meetings which had taken place during the last year. In May there was workshop on "New Opportunities in the Physics Landscape at CERN" that assessed new ideas for unique experiments outside the LHC programme. In October there was a neutrino workshop that focussed the discussion on the European Strategy for physics.

The results of these workshops will be summarised and discussed in the relevant committees to define the future direction.

Some consolidation work has already been started to maintain the infrastructure of the laboratory, this includes the extension of restaurant 1.

Progress of the fixed target programme is smooth and experience is proving the importance of spares and the consolidation of the injector complex.

*There were no questions or discussion arising from the presentation.*

**3. LHC Status Report.** R. Heuer, Director-General (DG)

The DG started by looking at the LHC repairs in detail, illustrating where the repairs were taking place. These included photographs of the QRL service module in S3-4 and of the Beam vacuum recovery in sector 3-4. He explained the role of the Enhanced QPS system and the upgrade which allows measurement of joint resistances at ambient and low temperatures.

After giving a detailed explanation of the splice resistance measurements, the DG gave a summary of the 35000 manual non-invasive splice resistance measurements. As a result of this work and after consultation with the experiments, a decision was taken to operate at initial collision energy of 7 TeV.

Since this decision was made in August, the stock of spares has been re-established to the level prior to the incident. Helium leaks in flexible DFB connections in S45, S23, and S81 have been repaired. A super-insulation fire in S67 was contained and there was only minor damage. A magnet/bus-bar short to earth in S67 was detected and repaired.

The injector chain has been tested with protons and lead ions as demonstrated by ALICE which detected ions on the beam stopper at the LHC injector.

Seven out of eight sectors have reached an operating temperature of 1.9 K. The last sector should reach operating temperature at the end of the week.

The DG summarised that:

- 7 Sectors were at operating temperature
- 2 Sectors splice resistances had been measured
- Injection lines had been tested up to LHC for protons and ions
- First injection is expected mid November
- Followed by collisions at injection energy
- Collisions at 7 TeV
- Towards 10 TeV in the course of 2010
- Heavy Ion collisions at the end of the run in 2010

He concluded that a considerable amount of work had been done in a short time. This was accomplished not only thanks to the efforts of accelerator sector and contractors, but also to users and many laboratories and institutes around the world.

*In response to a question of the two plots of resistance of the splices, the DG clarified that the current in the splices was 2 KA. In the case of 3.5 TeV, the resistance would stay the same but the accuracy would improve.*

*S. Bethke asked if the splice resistances of the other 6 sectors will also be precisely measured before LHC is switched on. The DG replied that henceforth these measurements would always be made automatically.*

#### **4. M&O Scrutiny Group (SG) Report. B. Loehr, Chairman** CERN-RRB-2009-078

B. Loehr reminded delegates of the composition of the Scrutiny Group for 2009 and thanked the members and the resource coordinators for their hard work. He gave some introductory remarks before moving on to the scrutiny of each experiment. For each experiment he reported on the closing report, the request for 2010 M&O A and projections to 2013, highlighting the main cost items and major points of discussion.

In summary, the Scrutiny Group made the following recommendations:

ALICE: The SG recommends the approval of the ALICE closing report for 2008 and the M&O A budget request for 2010.

ATLAS: The SG recommends the approval of the ATLAS closing reports for M&O A and M&O B of 2008. The SG recommends the approval of the M&O A budget request for 2010 under the following conditions: -the IBL is not yet a formal project; it should be reviewed by the LHCC and a written report should be presented to the RRB prior to approval. A technical solution for the new compressor system for the Inner Detector cooling has not yet been worked out; when a new concept exists, it should be reviewed by the LHCC and a written report should be presented to the RRB. The SG recommends the approval of the M&O B budget request for 2010.

CMS: The SG recommends the approval of the CMS closing report for M&O A of 2008. The SG recommends the approval of the M&O A budget request for 2010 but it points out that the SG was not able to scrutinize the request of 780 kCHF for the OSC, ENIC and ELIC projects. The SG recommends that the OSC, ENIC and ELIC projects be reviewed by the LHCC.

LHCb: The SG recommends the approval of the LHCb closing report for 2008 and the M&O A budget request for 2010.

TOTEM: The SG recommends the approval of the TOTEM closing report for 2008 and the M&O A budget request for 2010.

Turning to collaborative tools, B. Loehr summarised the discussions about collaborative tools concentrated around the EVO service and gave details of the requested contributions for 2009. The LHC experiments, except TOTEM, included contributions for EVO, or an alternative, in the 2010 budget request. The SG endorsed these requests, although it is not clear from the MoUs that this is a pure M&O A item. The SG recommends that in the future necessary payments should be made on the basis of a clear funding model which has to be agreed upon between CERN and the funding agencies.

Concerning service level agreements, new contracts have been signed for electrical distribution and cooling & ventilation. The service Level Agreements date back to 2007 and have to be updated.

The SG has been asked to look into M&O Cat C. The SG has no clear mandate for this. The SG will discuss needs and expectations with the LHC experiments. Items within Cat. C (as defined in the MoU) include safety & radiation protection, INB compliance, radioactive waste removal, access system, elevators, site management, flood control, insurance (CERN standard), cleaning, and office space.

B. Loehr enumerated several points from discussion with LHC experiments and stated that they had expressed the opinion that an accord based on Service Level Agreements or MoUs between CERN and the LHC experiments should be developed. It was agreed that ATLAS should serve as a test-case for an M&O C Memorandum of Understanding or Service Level Agreement.

He also brought up some other issues including the validity of the present model for on-line computing hardware replacements that currently foresees an exchange of processors every three years. The DRC, Sergio Bertolucci, and the SG have questioned the validity of this model. The DRC will convene a meeting with the experiments around summer 2010 to review the model after some experience has been gained with beam operation. The SG pointed out that getting "in-kind contributions" from institutions for well defined collaboration tasks could be the right solution to get skilled people and save money.

The composition of the Scrutiny Group in 2010 remains unchanged.

*In response to a question concerning support for on-line database, B. Loehr explained that, although the experiments had offered to provide an in-kind contribution, the IT department had insisted on an FTE to allow them to provide a reliable service.*

*It was clarified that the SG, at the request of ATLAS, reviews and gives an opinion concerning the ATLAS M&O B budget.*

## **5. Computing Resources Scrutiny Group (CRSG) Report.** D. Espriu, chairman CERN-RRB-2009-079

D. Espriu reminded delegates of the purpose of the CRSG and of its mandate.

In the process of scrutinizing the 2009 and 2010 requests of the four LHC experiments the CRSG critically examined:

- The resource accounting figures for the preceding year
- The use the experiments made of these resources
- The overall request for resources for every experiment for 2009 and 2010 and forecasts for the subsequent two years

The CRSG also:

- Examined the match between the refereed requests and the pledges from the Institutions.
- Made recommendations concerning apparent under-funding all possible aspects of the different computing models and their implementation.

While the CRSG found some potentially troublesome issues, with long term implications for the sustainability of the models, the interactions with the experiments had led to a noticeable improvement and a reasonable degree of convergence had been reached.

The CRSG acknowledged the special characteristics of the combined 2009 and 2010 run.

Updates and revisions of the computing models, perhaps of some substance in some cases, will be needed. The scrutiny after the first round of real data will be of great relevance.

The CRSG believes that the different computing models have largely proven their validity and had no doubt that they will survive their first contact with real data in 2009.

*M. Turala asked if the report requested from the experiments March 2010 should include the Tier 2 resources; D. Espriu replied affirmatively.*

## **6. Summary. S. Bertolucci.** Director for Research and Scientific Computing

S. Bertolucci summarised that this was a transition period. He praised the work of the Scrutiny Groups and their efforts to work closely with the experiments and the scientific committees.

The results of this first phase of data taking will guide the management in decisions for the future model; however, this will take time. Comments from the delegates are very important in this process.

The experiments are also going through an important transition, going towards operation and putting in place the tools which support system sustainability.