



ATLAS

01 March 2012

**Minutes of the 33rd LHC Resource Review Board Meeting
(CERN, Geneva, 17 October 2011)**

Present:

G. Taylor (University of Melbourne, Australia)
W. Davidson (National Research Council (NSERC) of Canada, Ottawa, Canada)
R. Teuscher (University of Toronto, Canada)
Q. Meng (National Natural Science Foundation, China)
Y. Zhang (National Natural Science Foundation, China)
O. Novak (Ministry of Education, Youth and Sports, Prague, Czech Republic)
P. Hansen (Niels Bohr Institute, Copenhagen, Denmark)
P. Rebourgeard (CEA Saclay, IRFU/DIR, France)
E. Augé (CNRS/IN2P3, France)
D. Fournier (LAL Orsay, France)
B. Mansoulié (CEA Saclay, IRFU/DIR, France)
K. Ehret (BMBF, Germany)
H. Mahlke (BMBF, Germany)
P. Mattig (BMBF/University of Wuppertal, Germany)
M. Fleischer (DESY, Germany)
S. Bethke (Max Planck Institut fuer Physik, Muenchen, Germany)
E. Rabinovici (Hebrew University, Jerusalem, Israel)
G. Mikenberg (Wiezmann Institute, Rehovot, Israel)
F. Cervelli (INFN - Sezione di Pisa, Italy)
L. Rossi (Universita & INFN - Sezione di Genova, Italy)
H. Iwasaki (KEK, Tsukuba, Japan)
H. Kamiyama (Permanent Mission of Japan, Geneva)
A. Van Rijn (NIKHEF, Amsterdam, Netherlands)
B. Jacobsen (The Research Council of Norway, Oslo, Norway)
F. Ould-Saada (University of Oslo, Norway)
M. Turala (Institute of Nuclear Physics, PAN, Krakow, Poland)
J. Królikowski (Ministry of Science and Higher Education/ University of Warsaw, Poland)
G. Barreira (LIP - Laboratório de Instrumentação e Física Experimental de Partículas, Lisbon, Portugal)
F.D. Buzatu (Institute of Atomic Physics, Bucharest, Romania)
V. Matveev (Institute for Nuclear Research of the Russian Academy of Sciences, Moscow, Russia)
V. Savrin (Institute of Nuclear Physics, Moscow State University, Moscow, Russia)
M. Itkis (Inst. for Nuclear Research - JINR, Dubna, Russia)
Y.V.Kozlov (Ministry of Education and Science, Moscow, Russia)
Z. Hlavacikova (Ministry of Education, Science, Research and Sports, Bratislava, Slovak Republic)
M. Mikuz (University of Ljubljana & Jozef Stefan Institute, Ljubljana, Slovenia)
D. Adams (Department of Science and Technology, Pretoria, South Africa)
V. Spanenberg (Funding Agency alt., Ithemba LABS, South Africa)
F. del Aguila (Universidad de Granada, Spain)
P. Karlsson (Swedish Research Council, Stockholm, Sweden)
T. Ekelof (Uppsala University, Sweden)
T. Nakada (CHIPP, Lausanne, Switzerland)
S.-C. Lee (Academia Sinica, Taipei, Taiwan)
A. Medland (STFC, United Kingdom)
H. Gordon (Brookhaven National Laboratory, Upton, NY, United States of America)
S. Rajagopalan (Brookhaven National Laboratory, Upton, NY, United States of America)
M. Tuts (Columbia University, New York, United States of America)
S. Gonzalez (DOE, United States of America)
T. Hallman (DOE, United States of America)

S. Rolli (DOE, United States of America)
R. Ruchti (NSF, United States of America)

ATLAS

D. Charlton, F. Gianotti, G. Herten, G. Mornacchi, M. Nessi, M. Nordberg

CERN

S. Bertolucci, J. de Groot, S. Lettow, R. McLaren, C. Saitta, J. Salicio-Diez, E. Tsesmelis, E. Van Hove

Resources Scrutiny Group

S. Schmeling, B. Loehr

Excused

O. Abdinov (Institute of Physics, Baku, Azerbaijan)

R. C. Shellard (RENAFAE/CBPF, Rio de Janeiro, Brazil)

I. Blain (Natural Science and Engineering Research Council of Canada (NSERC), Ottawa, Canada)

R. McPherson (University of Victoria, Canada)

M. Banach (Ministry of Science, Warsaw, Poland)

A. Clark (Université de Genève, Switzerland)

R. Heuer (CERN)

T. Lagrange (CERN)

P. Bloch (CERN)

Documents can be found in the RRB indicio pages; accessible via the LHC-RRB home page
<http://cern.ch/committees/all/welcomeLHCRRB.html>

1. Introduction. S. Bertolucci, Director of Research and Scientific Computing.

S. Bertolucci welcomed delegates to the meeting of the ATLAS LHC Resource Review Board.

2. Approval of the minutes of the last meeting. S. Bertolucci, Director of Research and Scientific Computing.

CERN-RRB-2011-062

The minutes of the last ATLAS CERN-RRB were approved without comment.

3. ATLAS Progress Report (part I). F. Gianotti, Spokesperson.

CERN-RRB-2011-067 (report), CERN-RRB-2011-109 (slides).

F. Gianotti reported that the ATLAS Collaboration now encompasses:

- 38 Countries
- 173 Institutions
- 2980 active scientists (~ 1800 with a PhD, ~1100 students)

A letter has been sent by NSERC to the ATLAS Spokesperson and CB Chair announcing the withdrawal of the University of Regina, Canada.

Turning to the status of the experiment and recent accomplishments she stated that since the last RRB meeting there has been:

- Superb LHC performance: ~ 5 fb⁻¹ delivered to ATLAS as of this morning
- ATLAS has been taking data with high efficiency, and very smooth and effective operation from detector to distributed computing

- Huge amount of physics results presented at summer conferences and documented in dozens of papers (not only Higgs ...)

And went into detail in each area.

F. Gianotti concluded that:

The whole experiment works very well, from smooth and efficient operation of the detector, trigger and computing to the (fast) delivery of physics results

- M&O funds and Computing Resources (thanks to the Funding Agencies for their crucial contributions !!) have been essential for these achievements and have been well used.
- It is crucial to maintain this performance in 2012; huge efforts by the Collaboration (~ 1100 FTE needed to operate ATLAS including shifts and personnel at Tiers)

Excellent physics achievements:

- About 80 papers using collision data published or submitted for publication
- “Rediscovery” of the Standard Model is complete; precise measurements of various processes start to challenge the theory and previous machines
- Searches for new physics extend well into the few-TeV region for many scenarios; pair-produced SUSY particles excluded for gluino masses below 0.5-1 TeV in simplest models
- Heavy Ion data produced exciting results, from jet quenching to J/ψ suppression, absence of such effects for W and Z bosons, etc; and ATLAS will soon be able to do more quantitative measurements

ATLAS has looked for a SM Higgs boson over the mass region 100-600 GeV, in 11 distinct channels, using up to 2.3 fb⁻¹ of data:

- Most of the mass region 146-466 GeV has been excluded
- If the SM Higgs exists, it is most likely in the region ~ 114-145 GeV

2012 will most likely be “the year of the Higgs”

F. Gianotti concluded that ATLAS is very grateful to the Funding Agencies for their huge contributions to the success of the experiment and their continuous support during almost 20 years.

ATLAS Progress report (part II). M. Nesi, Technical Coordinator.
CERN-RRB-2011-067 (Report) CERN-RRB-2011-110 (Slides)

M. Nesi reported on the data-taking efficiency and status of the detectors and TDAQ, noting that all subdetectors have operational fractions in the upper 90's. He presented the plans for the Xmas shutdown and reported that the TDAQ system had been upgraded to improve HLT bandwidth.

Looking ahead, he outlined the plans for the Long Shutdowns, LS1, LS2 and LS3, emphasising the three major steps and the strategy. He then presented the timetable for the three phases of consolidation/upgrade: ATLAS Phase 0, 1 and 2.

- Phase 0 : plans presented to the April 2011 RRB

Financial plan was presented to the April 2011 RRB
Installation in LS1 (2013-2014)

- Phase 1 : plans as in the ATLAS Phase-1 Upgrade LoI
First cost estimations presented to the April 2011 RRB (35M)
Phase-1 LoI will be presented to the LHCC end 2011
More detailed plans to this October 2011 RRB
Installation in LS1 and LS2 (2013-2014 and 2018)
- Phase 2 : plans as in the ATLAS Phase -2 Upgrade LoI
First cost estimations presented to the October 2011 RRB
Phase-2 LoI expected to be submitted to the LHCC by the end of 2012
More detailed plans will be presented in 2012-2013
Installation in LS3 (2022-2023)

M. Nessi then went into the organisational and technical details of each of the Phases.

Turning to finance, he presented a preliminary cost estimation for Phase I including a breakdown of items and the spending profile over 2012-2018; the total cost is estimated to be around 32 MCHF. He also presented a first cost estimation for Phase II which he broke down into a request for 208 MCHF with a possible need for an additional 82 MCHF.

In reply to F. Cervelli's question on Phase I, M. Nessi said that installing a forward detector at 220m will imply inserting a beam pipe during the shutdown; the cost is included in the spending profile. F. Cervelli remarked that it was difficult to predict the background which would be present in the machine when maximum luminosity is reached and asked if upgrades could already be planned. M. Nessi agreed that it was difficult but the construction of an inner detector was extremely challenging and would take 10 years. He felt that not premature to start work if the detector was to be ready to 2023. F. Gianotti added that today the machine is very clean; background is largely due to collisions and this is being carefully studied.

4. LHCC Deliberations (paper only). E. Tsesmelis, LHCC Scientific Secretary.
CERN-RRB-2011-092

E. Tsesmelis reported that the LHCC considers that ATLAS has made excellent progress in all aspects of the experiment and the Committee congratulates the ATLAS Collaboration on its achievements.

5. Financial matters. C. Saitta, CERN Finance and Procurement Department
CERN-RRB-2011-070 (report), CERN-RRB-2011-097 (slides)

C. Saitta presented the changes with respect to the above mentioned report.

Construction Common Fund, Commissioning & Integration:
Outstanding Contributions from Non-Member States total 2.8 MCHF

Maintenance & Operations – Category A:
Additional Contributions received as from 1 September 2011 amounted to 5.6 MCHF

Outstanding contributions from the member states amount to 805 kCHF and 917 kCHF for non-member states.

Concerning outstanding contributions, M. Nordberg added that for Canada there is a clear plan which is linked to the timing of the purchase of processors. For Australia there is an understanding with the Funding Agencies. He also thanked the Russian Funding Agencies for their efforts.

6. Budgets. M. Nordberg, Resources Coordinator.

CERN-RRB-2011-068 (report), CERN-RRB-2011-069 (report), CERN-RRB-2011-0111 (slides)

M. Nordberg began with the 2012 budget request: M&O-A 17.9 MCHF and M&O-B 5.2 MCHF, and presented a graph of the evolution of M&O from 2002 to 2018. The graph illustrated that, as requested in the last RRB, the budget requests had been smoothed; this had been achieved by modulating the TDAQ budget line. He thanked B. Loehr and the Scrutiny Group for their substantial effort.

Due contributions totalled: M&O-A 1.7 MCHF and M&O-B 480 kCHF.

T. Medland pointed out that the Scrutiny Group had highlighted several items which were not included in future budget requests and asked how this would be handed. M. Nordberg replied that the SG had asked if ATLAS could work with a five year replacement cycle (rather than four); this was part of an on-going discussion. The additional items were part of the negotiation process and it was too early to give a definitive answer.

M. Nordberg concluded his presentation with a report on the Full Design Luminosity (FDL) Activities:

- Updated 2011 payments
 - TDAQ: 500 kCHF
 - (n)SQP and IBL: unchanged (2.7+2.5 MCHF)
- Planned 2012 payments
 - TDAQ: 365 kCHF (completing initial TDAQ CORE funding)
 - (n)SQP and IBL: 0.4 MCHF + 3.5 MCHF
 - Note: IBL subject to final MoU agreement
- IBL MoU (final version) being prepared for signatures

The RRB endorsed the M&O and FDL (TDAQ) budgets as well as M&O-A in-kind contributions for 2012. It took note of the FDL 2011 budget status and approved the 2012 budgets.

7. Summary. S. Bertolucci, Director of Research and Scientific Computing.

S. Bertolucci reminded delegates that there was a need to replace several members of the Scrutiny Group and asked agencies for proposals for new members. B. Loehr was asked to remain Chairman for another year. There being no further business, the chairman closed the meeting.

The proposed dates for the next RRB are 23rd – 25th April 2012