LHCb

10th May 2006

DRAFT **Minutes of the 16th Resources Review Board Meeting**

Held at CERN on 26th April 2006

Present:

Europe
E. Aslanides (IN2P3, Paris, France)
J. Richter (BMBF, Bonn, Germany), K. Ehret (BMBF/DESY)
F. Ferroni (INFN, Rome, Italy), R. Campana
A. van Rijn (NIKHEF, Amsterdam, Netherlands)
J. Królikowski (University of Warsaw, Warsaw, Poland), G. Polok
F-D. Buzatu (National Institute for Physics and Nuclear Engineering, Bucharest, Romania), L. Puscaragiu (Geneva Mission, Delegate)
V. Savrin (Ministry of Science and Technology, Moscow, Russia), A. Golutvin
D. Espriu (Unversity of Barcelona, Barcelona, Spain), L. Garrido Beltran
G. Parisod (EPFL, Lausanne, Switzerland), O. Schneider, A. Rubbia
U. Straumann (University of Zurich)
R. Wade (PPARC, Swindon, United Kingdom), V. Gibson

Asia
P. Ji, (National Funding Agency of China), Y. Zhang

North America
M. Pripstein (NSF, Washington, USA, observer)

CERN
J.J. Blaising, J. Engelen (chairman), P. Geeraert, D. Jacobs, C. Jones (secretary), A. Naudi, J. Salicio Diez, E. Tsesmelis

LHCb
R. Forty, T. Nakada, A. Smith, W. Witzeling

16th Meeting of the LHCb Resources Review Board RRB, 26th April 2006

1. Introduction J. Engelen, Chief Scientific Officer

J. Engelen welcomed RRB delegates to this 16th session of the LHCb Resources Review Board.

2. Approval of the Minutes of the 15th Meeting (CERN-RRB-2005-070)

The minutes of the 15th meeting were **approved** without comment. J. Engelen thanked C. Jones for having taken these minutes. There were no matters arising.

3. Status of the Experiment T. Nakada, Spokesperson

Paper CERN-RRB-2006-039 Presentation CERN-RRB-2006-059

T. Nakada presented a status report on the LHCb experiment. He divided his talk into four areas, namely, construction status, physics update, costs and funding, and conclusions.

3.1 Construction Status

T. Nakada presented the LHCb construction status in detail and this information can be found both in his paper and his presentation referenced above. This information is not summarized further in these minutes with the exception of the major points in the conclusions below.

3.2 Physics Update

Similarly his update on the physics and the latest results from the TeVatron can be found in his slides 25/26.

3.3 Cost and Funding

T. Nakada reminded the RRB that the construction MoU foresaw the total cost of the experiment at 75.045 MCHF and a requested funding of 73.300 MCHF, thus leaving some parts of the detector under funded. As of October 2005 the total cost of the experiment was 75.341 MCHF and the funding signed up in the MoU amounted to 70.257 MCHF. The MoU had been signed by all countries except Brazil. There had been no cost increase but the funding shortfall was currently 5.084 MCHF and they needed to seek additional resources.

The strategy adopted by the LHCb collaboration for a proposed solution was as follows. Firstly they would try to secure funds to complete the detector construction both by asking Funding Agencies for extra contributions for items in which they were involved, and by moving money for CPUs into detectors. They needed to do this in a way that did not jeopardize the data taking in 2007. Secondly they would seek extra contributions for the CPUs they needed.

For the first part they had found solutions for three subsystems. The Muon System had been funded by shifting money from the Common Fund, shifting the Italian contribution foreseen for the data handling and the L0 electronics, and new contributions from Italy (847 kCHF) and CERN (185 kCHF). For the Outer Tracker there were new contributions from Germany-BMBF (381 kCHF) and from the Netherlands (381 kCHF). For the RICH System there were new contributions from CERN (614 kCHF) and from the UK (44 kCHF). There were a total of 2.452 MCHF in new contributions. The contribution from BMBF had not yet been finally approved but was considered firm. They considered that the funding of the detector was now assured.

As a result, 2.632 MCHF were missing for the DAQ/CPU farm. The total cost of the DAQ/CPU farm was 5.1 MCHF, divided into pure CPU which cost 3.420 MCHF, and other infrastructure such as network switches which cost 1.680 MCHF. Current contributions amounted to 2.468 MCHF, coming from Switzerland (500 kCHF), CERN (1.486 MCHF) and the Common

Fund (482 kCHF). The foreseen contributions from the UK and from IT had been re-allocated. Syracuse had now agreed to contribute 400 kCHF for CPU, leaving a remaining shortfall of 2.232 MCHF for the CPUs. Therefore, in 2007, they would start with only 1/3 of required CPU's, but they considered that this would have no serious effect for the commissioning run. However, in 2008 they would need the full number of CPUs in order to exploit the physics.

T. Nakada presented the current understanding of the cost-funding matrix. For the remaining 2.232 MCHF needed in 2007 for full physics exploitation in 2008, France had agreed to pay 500 kCHF. Requests had been made as follows: Germany-BMBF for 450 kCHF, UK for 400 kCHF, Italy for 200 kCHF and the US-NSF for 600 kCHF. This made a total of 2.15 MCHF, leaving 82 kCHF still to be found. They were discussing with Spain and the Netherlands. They planned to conclude these discussions by the next RRB in Oct 2006 so that the final cost-funding matrix could be approved.

3.4 Conclusions

T. Nakada summarized as follows:

1. LHCb is generally making good progress, with:
   - the Magnet installed and commissioned
   - the RICH-2 mechanics, Ecal and Hcal installed
   - the OT module and PS supermodule production completed
   - the HPD and Muon chamber in production as planned
2. The schedule was very tight, e.g. the production of Si modules, RICH-1 mirrors, Muon chamber installation. However they were fully committed to be ready for the first beam.
3. A solution for financing the detector construction had been found.
4. New contributions were being asked for the missing CPUs. They needed 2.232 MCHF (2/3 of required CPUs), for data taking in 2008. Of this:
   - 500 kCHF was approved (FR)
   - 1.650 MCHF was requested (DE, GB, IT, US)

They planned to conclude these discussions by the next RRB.

Discussion

J. Engelen thanked T. Nakada for his clear presentation and asked if there were any questions on this presentation or on the associated paper from the LHCC secretary E. Tsesmelis.

J. Richter confirmed that Germany would contribute 381 kCHF for the Outer Tracker.

D. Espriu noted that Spain had received the above request from the Collaboration and they were prepared to contribute 20 KCHF of the missing 80 kCHF.

R. Wade noted that the UK was holding a single fund for contingency for all 3 detectors. The first call on this would be the UK deliverables. In around one year from now they would be able to review this. They looked favourably on the request but they would probably not be able to say more by the time of the October RRB.

4. LHCC Deliberations (paper only) E. Tsesmelis, LHCC Scientific Secretary

Paper CERN-RRB-2006-047

Delegates had no further comments to make and the RRB **took note** of the report of E. Tsemelis.

5. Financial matters — P. Geeraert, Head, CERN Finance Dept.

Paper CERN-RRB-2006-025 Presentation CERN-RRB-2006-051

5.1 Status of Common Fund accounts

P, Geeraert presented an update to his financial report giving transactions as from the end of February 2006. In the Common Fund account new income of 38 kCHF and new payments of 265 kCHF left a balance of 4.349 MCHF with outstanding commitments of 1.558 MCHF. The additional income came from Romania and Switzerland.

In terms of Membership Fees, amongst member states Poland owed 18 KCHF and in the non member states there were outstanding contributions from Brazil (CBPF) – 24 KCHF, Brazil (UFRJ) – 40 kCHF and China – 28 kCHF, making a total of 110 kCHF.

For the M&O A additional income of 294 kCHF and additional payments of 349 kCHF left a balance of 430 kCHF, with open commitments of 4 kCHF. They had received contributions from France-IN2P3, Germany-BMBF, Romania, Russia and Switzerland.

There were outstanding contributions to the M&O A, up to end 2005, from Poland, China, Russia and Ukraine amounting to 239 kCHF. There were several outstanding contributions for 2006 which led to a total of outstanding contributions of 1.104 MCHF.

J. Engelen thanked P. Geeraert for his presentation and asked for any questions. There being no comments on these numbers, the RRB **took note** of this financial report.

6. Construction Budgets — A. Smith, Resources Manager

Paper CERN-RRB-2006-030 Presentation CERN-RRB-2006-019

6.1 2005 Construction Budgets

A. Smith reported that the Common Fund had made payments of 2.872 MCHF last year, and the only difference from the document presented in October 2005 was in the trigger, where the spending profile was delayed.

6.2 Construction Budgets for 2006 and 2007

The planned spending of the Common Fund in 2006 and 2007 was 6.838 MCHF, which meant that in theory, everything except infrastructure should be totally spent. As the RRB had already seen in the presentation by P. Geeraert there were about 4.5 MCHF in the Common Fund and about 2 MCHF was still due. They needed all of these outstanding contributions to the Common Fund to be paid this year or, at the very latest, early next year.

A. Smith presented the expected spending for 2006, with again the only change from the previously presented information being the delay in the trigger spending.

Discussion

J. Engelen noted that this picture was completely consistent with the profile and overall picture presented earlier. The message was clear that there would be a problem if the CORE contributions as agreed in the MoU were not here by early next year at the latest. There were no questions.

7. M&O Budget — A. Smith, Resources Manager

Paper CERN-RRB-2006-021 Presentation CERN-RRB-2006-019

7.1 Cat. A M&O 2005

A. Smith presented the outcome of the 2005 M&O Category A spending. The budget was essentially completely used up last year, with one late bill for services being paid this year.

7.2 Cat. A M&O 2006

The spending on the 2006 Category A M&O account on 7th April was 420 kCHF. This was higher than expected for this time of the year because some services that have traditionally been invoiced later in the year had already been invoiced The balance of the account was 200 kCHF as not many of this year's contributions had been received.

7.3 Cat. A M&O 2007, 2008-2010

The estimate for 2007 was 2.3 MCHF, an increase over 2006. This was largely due to detector related costs, such as much increased spending in gas for the detectors, plus they would have to pay for vacuum pipe interventions. There would also be an increase in on-line computing support. The paper and the slides both contained an error where the cost of power was shown in the tables as 100 kCHF whereas in fact it should be 600 kCHF. The text in the paper was correct, as were the calculations of sharing amongst Funding Agencies. The Scrutiny Group would now examine these numbers and the result of these discussions would be a budget that would be presented to the October RRB.

The budget forecast for the years 2008 to 2010 was almost constant at the level of 2007. There was no obvious new item that would come into play in those years. However there was no provision in these costs for the replacement of the PCs used in the on-line farm. After discussion within the Collaboration they would come back to the RRB on this issue.

7.4 Signatures of the MoU for M&O

A. Smith showed the table of Funding Agencies which had signed the signatures of the MoU for M&O. The two new names this year were Russia and the USA (Syracuse University).

7.5 Category B

Most detectors did not plan on having Category B costs until 2007 or 2008. Exceptions were the STR and Muon. The sharing method was decided by the detector groups and was typically proportional to the original CORE sharing or to the number of names on papers.

A. Smith presented a table of the manpower required for 2007 as the Cat B contribution to the CORE software production and maintenance. For 2007 the total number of FTE's for this activity was 36.9. He also presented the estimated Cat B budgets for 2007.

Discussion

R. Wade thought that they used to hear more frequently than once a year from the Scrutiny Group, and he wished to see the evolution of these budgets into the future, as well as the confirmation of the M&O budgets for next year. J. Engelen noted that the Scrutiny Group, under the current Chairman M. Morandin, continued its regular meetings as before. To his understanding the reporting to the RRB had not changed and it had always been once a year. They would report at the October RRB.

8. Summary, Future Activities & A. O. B. J. Engelen

J. Engelen concluded by noting that LHCb had presented progress that was consistent with the aim of being ready for physics on day one. They had heard a detailed presentation of the actual financial situation and the forecast. They had seen presented the way in which LHCb was dealing with a relatively modest shortfall, and they had some reactions today confirming the correctness of anticipated contributions, all of which was very positive. On this positive note he would like to conclude and ask for any further questions.

The next RRB meetings in 2006 will take place at CERN on
Monday 23rd, Tuesday 24th and Wednesday 25th October 2006

There being no questions and no further business, the Chairman thanked the participants and closed the meeting.

C. Jones
June 2006