



**Minutes of the 17th Resources Review Board Meeting
Held at CERN on 25th October 2006**

Present:

Europe

F. Le Diberder (IN2P3, Paris, France), E. Aslanides
J. Richter (BMBF, Bonn, Germany)
F. Ferroni (INFN, Rome, Italy), P. Campana
A. van Rijn (NIKHEF, Amsterdam, Netherlands)
J. Królikowski (University of Warsaw, Warsaw, Poland), G. Polok
L. Puscaragiu (Geneva Permanent Mission of Romania, Delegate)
V. Savrin (Ministry of Science and Technology, Moscow, Russia), A. Golutvin
A. Petrov (Geneva Permanent Mission of Russian Federation)
D. Espriu (University of Barcelona, Barcelona, Spain), L. Garrido Beltran
G. Parisod (EPFL, Lausanne, Switzerland), A. Bay
A. Rubbia (ETH Zurich, Switzerland)
R. Wade (PPARC, Swindon, United Kingdom), J. Seed, N. Harnew (University of Oxford)

Asia

P. Ji, (National Funding Agency of China)

North America

J. Whitmore (NSF, Washington, USA, observer)

CERN

R. Aymar, J.J. Blaising, J. Engelen (chairman), P. Geeraert, D. Jacobs, C. Jones (secretary),
S. Lettow, A. Naudi, J. Salicio Diez, S. Schmeling, E. Tsesmelis, E. Van Hove, P. Geeraert

LHCb

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

M. Morandin (INFN Padova, Scrutiny Group Chairman)

17th Meeting of the LHCb Resources Review Board RRB, 25th October 2006**1. Introduction****J. Engelen, Chief Scientific Officer**

J. Engelen welcomed RRB delegates to this 17th session of the LHCb Resources Review Board.

2. Approval of the Minutes of the 16th Meeting (CERN-RRB-2006-067)

The minutes of the 16th 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-2006-092

Presentation CERN-RRB-2006-093

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 observation on the B_s oscillation from the Tevatron can be found in his slides 24/25. His conclusion was that they needed to be ready to exploit fully the 2008 data taking in order to collect at least an order of magnitude more events than their competition.

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 missing MoU pledges had amounted to 5.084 MCHF.

Additional contributions to the subdetectors had come from CERN (799 kCHF), Germany BMBF (381 kCHF), UK (44 kCHF), Italy (847 kCHF), the Netherlands (381 kCHF). New contributions to the CPU farm for the event filtering and monitoring in the pit from France (500 kCHF) and the US (400 kCHF) meant that the total income was 73.609 MCHF and the missing funds amounted to 1.732 MCHF.

Since the previous RRB new contributions to the CPU farm had been approved by Germany BMBF (300 kCHF) and US-NSF (130 kCHF for 2007). This left the current missing funds (all attributed to the CPU farm) at 1.302 MCHF (38% of the CPU farm cost).

There were requests pending for new contributions to the CPU farm from Spain (20 kCHF), UK (400 kCHF), Italy (200 kCHF), and US-NSF (450 kCHF for 2008-2009) and these added up to 1.070 MCHF. For the UK and for Italy the outcome of these requests depended on the overall requirements from all LHC experiments and would hopefully be known in the Spring of 2007. For the US-NSF the outcome depended on the result of the peer review which would be known by Summer 2007.

They were seeking further funding for the CPU farm and discussions had started with other countries, which included Brazil, Switzerland, and the Netherlands, and which needed to be pursued. They were re-optimising the deployment plan for the DAQ system and CPU farm in view of the new LHC start-up plan, and delaying the expensive purchasing as late as possible with Moore's law in mind.

However a large fraction of the missing funds needed to be committed by the end of 2007 in order to have sufficient CPU power for the event filtering and monitoring essential for the 2008 physics run.

3.4 Conclusions

T. Nakada concluded as follows. LHCb was fully committed to be ready for the 2007 pilot-run with the complete detector.

Currently, the Magnet was ready, the VELO tank, RICH-2 mechanics, and Calorimeter installed, the RICH-1 mechanics, OT and Muon system were being installed.

The Schedule was very tight, in particular, for the production of the Si modules (VELO and IT), RICH-1 mirrors and Muon chamber installation. More manpower was needed.

Additional contributions had been approved for the CPU farm, as detailed above, but there were still missing funds amounting to 1302 kCHF. There were pending request for 1070 kCHF (ES, GB, IT, US). There was no problem for 2007, but they needed most of the commitment by the end of 2007 for the physics run in 2008.

Discussion

J. Engelen thanked T. Nakada for his clear and comprehensive presentation of the experiment and the finances. He asked if there were any questions on this presentation or on the associated paper (CERN-RRB-2006-098) from the LHCC secretary E. Tsesmelis.

J. Królikowski asked whether the problem of ageing of the outer detector was serious. T. Nakada replied but that it was serious but they thought they had found a solution such that they would not see the effect.

R. Wade found particularly useful the table of actions in the LHCC deliberations. This time however he had found that the status reports seemed not to convey how tight some of the timelines remained. T. Nakada and E. Tsesmelis replied that there remained areas where the schedule remained tight but that major progress had been made, such that 60% or even 90% of an item had been produced on schedule. This explained perhaps the different ways of looking at the same situation. Things were on schedule but the schedule itself was tight.

R. Wade also asked whether there were issues for LHCb in moving to full luminosity. J. Engelen noted that optimal luminosity for LHCb was $10^{32} \text{ cm}^{-2}\text{s}^{-1}$, and that, whilst there were thoughts being developed for an upgrade beyond the MoU specifications, this was a completely different issue. T. Nakada added that they were aiming at having a complete detector by end of 2007 for the pilot run. This was the detector that was in the TDR and should run with an average luminosity of $2 \cdot 10^{32} \text{ cm}^{-2}\text{s}^{-1}$. This would be comparable with $10^{34} \text{ cm}^{-2}\text{s}^{-1}$ at the other intersections, coming from a reduced focussing of the beam.

F. Ferroni noted that Italy had made known their concerns about the USA participation in this experiment. They had expected to see a greater contribution in clear terms. LHCb was relying upon a contribution which was 40% American for solving their 1 MCHF deficit, namely 400 kCHF. He would like a clear statement as to the probability of obtaining this money since the Italian contribution was dependent upon this American NSF contribution. J. Whitmore clarified

that he was present as an observer. He noted that the procedure was that NSF received a proposal which it then sent out to reviewers. Based on the priority decided by the reviewers relative to the other projects, it would be funded or not funded. J. Engelen and F. Ferroni said that they considered that this was useful information, but they would like to know what LHCb was going to do with this information. T. Nakada noted that, without these two contributions and possibly that of another Funding Agency which might follow the same line, only half of the missing money might materialise. J. Engelen added that 1 MCHF was a lot of money, but LHCb had maintained a certain financial rigour over its lifetime, which warranted a certain confidence that they would overcome this problem as well. The CPU was at the heart of the detector and essential, and he thought that CERN should consider whether it could turn this deficit into a cash flow problem by brokering a loan against suitable pledges. Nonetheless the messages were clear and on record.

A, Naudi added that this was a very clear message to the NSF.

4. LHCC Deliberations (paper only)
Paper CERN-RRB-2006-098

E. Tssemelis, LHCC Scientific Secretary

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

5. Financial matters
Paper CERN-RRB-2006-079

P. Geeraert, Head, CERN Finance Dept.
Presentation CERN-RRB-2006-084

5.1 Status of Common Fund accounts

P. Geeraert presented an update to his financial report giving transactions as from the end of August 2006. In the Common Fund the current balance was 3.640 MCHF with outstanding commitments of 1.263 MCHF.

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 and Brazil (UFRJ) – 40 KCHF, making a grand total of 82 kCHF outstanding.

P. Geeraert showed the table of Common Fund contributions received and outstanding, membership fees and cash payments. The total due according to the MoU was 9.358 MCHF and they had so far received 6.909 MCHF leaving 2.449 MCHF due before the end of the project.

5.2 Status of M&O accounts

For the M&O-A the current balance stood at 587 kCHF, with open commitments of 20 kCHF. There were outstanding contributions to the M&O-A from Poland, Spain, Romania, Russia and Ukraine amounting to 480 kCHF.

Discussion

J. Engelen thanked P. Geeraert for his presentation and asked for any questions. J. Królikowski announced that there had been a visit at the time of the April RRB of the Under Secretary of State for the Ministry of Science and Higher Education. He had initiated a review of the Polish participation in the complete LHC programme. This review was now complete and the money had been agreed. There remained only a technical problem of sending this money to the various Institutes. He believed that all the remaining money due to LHCb, membership fees, common fund contributions and M&O-A would be paid by the end of the year.

A. Naudi returned to the 2.449 MCHF outstanding. P. Geeraert noted that not all of this had yet been invoiced. A. Smith added that he would cover this point.

There being no further comments on these numbers, the RRB **took note** of this financial report.

6. Construction Budgets

Paper CERN-RRB-2006-090

A. Smith, Resources Coordinator

Presentation CERN-RRB-2006-114

6.1 Construction Budgets for 2006 and 2007

A. Smith reported that the Common Fund spending this year had been mainly in infrastructure. In the course of next year essentially all the remaining funds would be spent on finishing the sub-detectors and the infrastructure. Only a small amount still to be spent on the on-line farm could remain to be spent. He showed the table of common fund spending in 2006 by sub-detector.

6.2 Common Fund

The Chinese contribution had been fully paid. Italy was making a contribution of 300 kCHF this year and their requested invoice was "in the post". Germany BMBF had now fully paid, and Germany MPI was in talks about the remaining 240 kCHF, of which some was expected to be contributed later this year. There had been a recent meeting in Poland at which funds for LHCb were promised such that the present debts were expected to be paid this year. The LHCb Spanish collaborators were in the process of obtaining payment of almost all of the outstanding contribution.

The 500 kCHF indicated as being due from NIKHEF would eventually appear as a contribution in kind. The agreed contribution to the OTR from the Common Fund was 900 kCHF, of which less than 200 kCHF has been spent so far. The NIKHEF contribution would be spent directly on completing the OTR. Romania was paying half of their remaining contribution this year and would pay the rest (17 kCHF) next year. Zurich had requested SNF for their outstanding funds that could be available in the middle of 2007 if the request were successful.

LHCb needed all outstanding Common Fund contributions in order to keep advancing with the installation of the detectors and their infrastructure.

The table of CORE spending for 2007 had been presented at the two previous RRBs and they still expected that spending would be finished by the end of this year with some commitments being carried over into 2007.

Discussion

J. Engelen thanked him for this presentation and asked for any questions,

D. Espriu wished to reassure the Collaboration that the Spanish contribution for the Common Fund, the M&O-A for 2006 and the additional money for the computing, would be at CERN before the end of the year. J. Engelen thanked him for this contribution.

7. M&O Budget

Paper CERN-RRB-2006-091

A. Smith, Resources Manager

Presentation CERN-RRB-2006-114

7.1 Cat. A M&O 2007

A. Smith pointed out that the 2007 M&O-A estimate had been modified following two meetings with the Scrutiny Group and their referees. Most changes were small. The SG would like most of the Electronics Pool charges to be moved to Cat B but this had not been possible as yet because the detector groups seem to prefer it to remain in Cat A. Putting this in Cat B would involve more complications for them with the establishment of team codes for the payments.

Regarding on-line items, costs for the FARM for 2007-10 had been re-estimated based on having hot spares and the replacement of PC's dying out of warranty. This latter was taken as about 6% of investment. This covered the period when most of the equipment would still be under guarantee.

Replacement plans for later years were still under discussion within the CB with no scenario yet agreed upon.

The sharing numbers had been updated since last year. A. Smith presented the estimated M&O-A costs for 2007 by category and by Funding Agency.

7.2 Cat. B M&O 2007

A. Smith noted that some of the estimates for Cat B still required updating, and the table presented could only be taken as indicative for those detectors that had not yet presented their sharing method. In particular, about half the sub-detectors had still to provide their agreed sharing method.

He presented the numbers that the detector groups would be asking of their Funding Agencies.

He also presented the 2007 LHCb CORE Computing requirements in FTEs. He showed the current FTE breakdown, noting that they were currently 4 FTEs short.

7.3 M&O Scrutiny Group Report

M. Morandin

Paper CERN-RRB-2006-104

M. Morandin pointed out that the level of M&O-A spending had reached a level which was close to the projected plateau. In fact the increase from 2006 to 2007 was the largest in the time profile of the M&O-A budget. The Scrutiny Group considered that this increase was well justified by the level of activities and the status of the experiment. They had examined with the Resource Coordinator in detail the proposed budget for 2007 and received satisfactory explanations on all the questions raised.

On Cat B the experiment was implementing a scheme in line with the other experiments and they considered this a good development so that the contributions of the Funding Agencies for M&O of the sub-detectors were exposed.

In conclusion he recommended the proposed 2007 M&O budget for approval by the RRB.

J. Engelen thanked him for this report. There were no questions and the 2007 Cat. A budget of 2222 kCHF plus power costs of 600 kCHF was **approved**.

10. Scrutiny Group Composition in 2007

J. Engelen used this opportunity to thank M. Morandin for his hard and serious work as retiring Chairman of the Scrutiny Group. INFN had proposed G. Batignani as a new member of the Scrutiny Group and this was agreed.

The normal maximum term in office in the Scrutiny Group was three years. However exceptions could be made if approved by the RRB. V. Luth was proposed by DoE and NSF to continue as their representative for a fourth year and this was agreed. Similarly E. Tsesmelis was proposed to continue as CERN member acting as linkman to the Technical Services for a fifth year in view of his very special position, and this was also agreed. CERN was seeking for another name to replace R. Landau who had served three years.

B. Stugu had represented the smaller Member States for three years and a replacement was needed. J. Engelen invited the RRB to send him suggestions for candidates.

He concluded that the procedure was such that the Scrutiny Group would elect the new Chairman from the members.

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

J. Engelen concluded by noting that LHCb had presented extremely good progress, giving confidence that they would be on the floor when needed towards the end of next year. They had discussed a few technical issues related to worries about the time schedule, and they had discussed a relatively small, but nevertheless existing, financial problem that would have to be brought to a solution in the year to come.

<p>The next RRB meetings in 2007 will take place at CERN on Monday 23rd, Tuesday 24th and Wednesday 25th April 2007</p>

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

C. Jones
March 2007