



**Minutes of the 15th Resources Review Board Meeting
Held at CERN on 19th October 2005**

Present:

Europe

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

North America

T. Ferbel, (DOE, Washington, USA, observer)
M. Pripstein (NSF, Washington, USA, observer)

CERN

J.J. Blaising, S. Bergerot, J. Engelen (chairman), P. Geeraert, D. Jacobs, C. Jones (secretary),
E. Tsesmelis

LHCb

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

Scrutiny Group

M. Morandin

Apologies

F. Le Diberder (IN2P3, Paris), M. Schmelling (MPI Munich), W. Shen (NSFC, Beijing)

15th Meeting of the LHCb Resources Review Board RRB, 19th October 2005

Documents can be found at the URL <http://committees.web.cern.ch/Committees/LHCRRB/> and are also listed in Appendix 1 of these minutes

1. Introduction

J. Engelen, Chief Scientific Officer

J. Engelen welcomed RRB delegates to this 15th session.

2. Approval of the Minutes of the 14th Meeting (CERN-RRB-2005-047)

The minutes of the 13th meeting were **approved** without comment. J. Engelen thanked C. Jones for having taken both these minutes. There were no matters arising.

3. Status of the Experiment

T. Nakada, Spokesperson

Paper CERN-RRB-2005-090

Presentation CERN-RRB-2005-094

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

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 Collaboration Issues

LHCb had a new collaboration member, Syracuse University (USA), funded by NSF and the University. It had been the leading member of the BTeV experiment. They brought the equivalent of 6 PhDs. Due to the Congressional restriction, they were not able to fund the current detector construction. However possible funding to be further discussed with them included funding for CPUs for the event reconstruction farm in Pit-8, for M&O, for remaining and future R&D as well as for upgrades. They were already contributing to areas where more manpower was needed, namely global alignment, trigger monitoring, analysis framework, VELO R&D and test beams and HPDs in the B field.

Organisational issues included the installation of a Commissioning Task Force. This was chaired by a Commissioning Coordinator; O. Callot (LAL, Orsay) with representatives from all the subsystems. Its mandate was:

- Defining the mode of operation for data taking, and identifying, producing, implementing and testing all the tools necessary for this operation
- Commissioning the sub-systems
- Preparing the detector for steady data taking, through global commissioning, including the pilot run.

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. He pointed out that the numbers in the paper and the presentation differed slightly although the main conclusions did not.

The strategy adopted by the LHCb collaboration for a proposed solution was as follows. Firstly they would try to complete the detector and the electronics, and start the experiment with reduced CPU power, since full CPU power would not be needed in 2007. Then they would examine the sub-detectors that had a funding shortfall. In the case that the shortfall was due to reasons “outside” of the sub-system then they would cover this with the Common Fund (or CERN as appropriate). In the case that the shortfall was due to internal reasons then the solution was to be found within the groups responsible for the subsystem. They would ask for extra funding for the CPUs which would be needed in 2008. He then illustrated this plan by showing the proposed options in detail for the muon system, the OT system and the RICH system (slide 33).

In the case of adoption of this plan, some countries would require modifications to the MoU. Germany would be requested to increase the total contribution from 3.757 to 4.138 MCHF. Italy would be requested similarly to increase from 10.0 to 10.847 MCHF, and the Netherlands would be requested to increase from 6.3 to 6.681 MCHF. The UK would be requested to increase from 10.3 to 10.344 MCHF and CERN from 12.7 to 13.499 MCHF. If these new requests for increased funding were to be approved then all the sub-systems would be fully funded except the CPUs.

The total funding required to cover the missing CPUs was then 2.632 MCHF of which it was proposed that Syracuse should contribute 0.4 MCHF, leaving 2.232 MCHF still outstanding. In this plan they could equip 35% of the CPUs which would be enough for 2007. However they asked for an extra contribution for the CPUs from the LHCb Funding Agencies so that in 2008 they would have full CPU power. They had started discussions with the Funding Agencies in order to find a fair sharing of this remaining shortfall.

3.4 Conclusions

In conclusion, T. Nakada summarized as follows:

1. Production, installation and commissioning of all the subsystems was progressing well
2. No problems any more with the TT and ST sensor delivery
3. Still tight schedule for VELO sensors, RICH1 mechanics, HPD's and Muon chambers
4. A solution for the funding shortfall (~5 MCHF) proposed including:
 - a. Revised cost-funding matrix to complete the subsystem, affecting the funding of DE(BMBF), GB, IT, NL, CERN
 - b. New contribution to be asked for the missing CPU part (2.232 MCHF), ~2/3 of the final scale.
5. The LHCb collaboration requested the RRB to approve the new cost-funding matrix, and to give positive reactions for the extra contribution to install the remaining CPUs in 2008

Discussion

J. Engelen thanked T. Nakada for his presentation and proposed to separate the discussions of the technical and financial parts. For the technical part he asked the secretary of the LHCC committee whether there was something to be added on behalf of the committee. E. Tsesmelis reported that the LHCC had met the previous week and he confirmed everything that T. Nakada had presented. There just one issue that the referees had noted which concerned the tight schedule for the muon chambers. It was possible that this would have some effects on the completion of the M1 station. It might be necessary to arrange their installation order to maximise the physics output. T. Nakada replied that they were aware of this and were taking appropriate actions.

U. Dosselli note with pleasure the progress made in the detectors and congratulated LHCb on being always in a first place in using GRID computing and support worldwide. He questioned the progress of the muon chambers and the kink in the slope as shown. W. Witzeling replied that this was simply the consequence of the August holiday period in Russia where in addition to taking holiday they changed to making a new type of chamber. He foresaw that this would come back on to the desired slope.

U. Dosselli wished to hear from the US colleagues. He was more than happy to see this new group join the collaboration but this had to be within a given framework and supported by the Funding Agency. He wished to see then contribute normally to the M&O as everyone else. It was unfortunate that there was no representative from the US officially present at the meeting.

J. Engelen noted that the admission of new groups had to go through the dynamics of the collaboration itself and he understood that this had been done. The terms for joining had been agreed within the collaboration. He did not know whether the RRB had sufficient information to endorse this change, but he proposed that the RRB accept them provisionally and to examine this case retrospectively in somewhat more detail. U. Dosselli agreed that the RRB could endorse this case but it would be provisionally, and he felt that correct financial contribution was necessary. T Nakada noted that in the collaboration discussion Syracuse could offer 400 kCHF for CPUs plus manpower in areas where this was currently needed. They were told that they had to make additional efforts for more funding. J. Engelen noted that the RRB wished to hear an update on this funding at the next meeting or at the latest in one year from now. U. Dosselli pointed out that he did not want to see that they just contributed to M&O, because a collaborator by definition had to contribute to M&O. He wanted to see a contribution to the building of the actual detector.

J. Engelen referred back to the last slide giving the summary. He wanted to understand the exact status of the proposal that had been made. J. Richter confirmed that the money from Germany had been discussed and agreed with the aim of making it available in the next two years, which should be decided by Spring 2006. F. Linde confirmed that the requested increase to 6.681 MCHF had been approved in the Netherlands. J. Engelen thanked them for these efforts.

J. Engelen summarized that the RRB appreciated the detailed breakdown of this funding situation. The problem was not very big but it would not go away. A number of the Funding Agencies around the table were informed, and had made positive or constructive responses. He insisted that for next time they complete the discussions with the Funding Agencies such that at the RRB it was clear exactly what had to be decided.

U. Dosselli admitted that he had come to CERN with a different understanding of the arrangements. However he agreed with the spirit of the proposal completely. They had to concentrate on building the detector and elaborate on what could be purchased later on. He would hesitate however to approve a new cost matrix as shown today. He proposed to do this at the next meeting when people had had time for further discussions and understanding. J. Engelen agreed with this suggestion, namely to approve the spirit of the proposal and to leave formal approval until next time.

R. Wade supported fully the proposal of U. Dosselli and he felt that the very recent discussions had been able to clarify how to move forward. He felt they now understood the magnitude of the shortfall and they were looking at a fair way to distribute that across the whole collaboration. He would like to see the new cost matrix well ahead of the next RRB.

J. Engelen noted that the RRB was very pleased with the progress. They were very supportive in a concrete manner in some cases and in other cases in a manner supportive of the spirit. It was up to the collaboration to take this forward such that they could do definitive business at the next meeting.

E. Aslanides communicated immediately after the meeting, on behalf of F. Le Diberder, that France would make a contribution of 500 kCHF to the cost of completion to the outstanding deficit of the CPU farm.

4. LHCC Deliberations (paper only)

Paper CERN-RRB-2005-082

E. Tsesmelis, 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-2005-074

P. Geeraert, Head, CERN Finance Dept.

Presentation CERN-RRB-2005-078

5.1 Status of Common Fund accounts

P, Geeraert presented an update to his financial report giving transactions as from the 15th August 2005. In the common fund account new income of 8 kCHF and new payments of 185 kCHF left a balance of 4.559 MCHF and outstanding commitments of 1.001 MCHF. The new income came from Romania. Amongst member states Poland owed 18 KCHF to the common fund membership fees. In the non member states there were outstanding contributions from Brazil (CBPF) – 24 KCHF, Brazil (UFRJ) – 40 kCHF, China - 28 kCHF, Romania – 8 kCHF and Ukraine – 32 kCHF, giving a total of 132 kCHF.

For the M&O A additional income of 72 kCHF and additional payments of 58 kCHF left a balance of 701 kCHF, with open commitments of 51 kCHF. They had received contributions from Switzerland, Romania and Brazil. There were outstanding contributions from the member states Poland and Spain totalling 118 kCHF, and from non member states China, Romania, Russia and Ukraine for a total of 207 kCHF.

Discussion

J. Królikowski confirmed that the M&O A contributions would be most likely paid by the beginning of next year, now that the legal barriers had been removed and the experiments had been invited to submit their requests. J. Engelen thanked him for this and suggested that the RRB consider this tentatively as solved. He noted that it was slightly disturbing that some Funding Agencies in question did not bother to come to this RRB. A. Smith noted that, whilst Brazil did not contribute to the common fund, it had now paid all of its M&O A money. Romania has started to pay M&O for the first time, and they were hoping and expecting that Russia would have soon solved their M&O problem, indeed they had contributed to M&O in the past. The remaining problem was for China and Ukraine.

G. Zinovjev noted that the Ukraine was under the stage of permanent revolution and he hoped that for next year this might be solved.

A. Petrov announced the situation was the same as for the other experiments. They were expecting the decision of the government on the whole question of the contributions to the M&O and they expected this very soon.

J. Engelen thanked these delegates for contributions and P. Geereart for his presentation. There being no further comments on these numbers, the RRB **took note** of this financial report.

6. Construction Budgets

Paper CERN-RRB-2005-095

A. Smith, Resources Manager

Presentation CERN-RRB-2005-078

6.1 2006 Construction Budgets

A. Smith reported that the expected spending of the Common Fund this year was a little different from that presented at the April RRB. However the main expenditure would still concern infrastructure. The Common Fund spending expected in 2006 originally included an appreciable amount for data acquisition, but as had been explained in the Status Report, it was now planned that most of the DAH spending would be delayed until 2007, with even some in 2008. The

following two slides showed spending in line with the original plan, and spending as LHCb would now prefer the funds to be distributed if approved by the RRB.

The calorimeter spending included a contribution in-kind from Russia who had been doing much work that they were not foreseen to do in this area. They expected that the total Russian contribution to the Common Fund would be made by around Easter 2006.

There was currently around 4 MCHF uncommitted in the Common Fund, with a further 4 MCHF still due from the funding agencies. The main amounts due at the end of September were 1.679 kCHF from Italy, 700 kCHF from Switzerland, 500 kCHF from the Netherlands, 490 kCHF from Spain, 242 k CHF from Germany MPI, 222 kCHF from Germany BMBF and 110 kCHF from Poland. They had some understanding from the Funding Agencies as to when these contributions would arrive. They expected about 340 kCHF to arrive very shortly from Spain. Italy has indicated they could expect 800 kCHF at the beginning of 2006 with the remaining 880 kCHF to come early in 2007. Germany MPI would make its final contribution directly to the PC Farm. Since CERN was offering to help bridge any cash flow problem, it was essential to know when the remaining outstanding funds would become available.

Discussion

U. Dosselli confirmed that Italy would give its share as indicated above.

The Construction Budget numbers were **agreed** by the RRB.

7. M&O Budget

Paper CERN-RRB-2005-096

A. Smith

Presentation CERN-RRB-2005-078

7.1 Cat. A M&O 2005-6

A. Smith presented the 2005 M&O category A spending so far. He noted that some of the spending was not reflected in the numbers of P. Geereart because it had been charged to the CERN operational codes. This was because technicians understandably signed orders on the codes they knew best and not always the correct ones. This needed to be sorted out retroactively. The spending was proceeding to plan and they were coming close to spending the whole budget. For 2006 the total sum would increase substantially, mainly due to the purchase of gas. The details had been reviewed and approved by the Scrutiny Group.

The carry-over from 2004 had been 302 kCHF. The Scrutiny Group had proposed a method to reduce this surplus and he proposed to reduce this figure by a factor two, leaving still an operating buffer. He presented the resultant table for contributions by Funding Agency for 2006.

7.2 Cat. B M&O 2005-6

Under category B, the CORE computing team was referred to as a Category B item. Category B for detector maintenance was the responsibility of each sub-detector group who had to arrive at an agreed sharing of the work and costs involved. The Muon group was the first to have indicated such a sharing, prompted mainly by the Italian part of the collaboration who planned to make a request for funds for next year. They expected all sub-detectors eventually to define a plan for sharing/contributing the resources needed for maintenance.

7.3 M&O Scrutiny Group Report

Paper CERN-RRB-2006-083

Scrutiny Group Chair, M. Morandin

M. Morandin confirmed that the SG had discussed with the experiment in detail and that this had led to the reformulation of some of the estimates. Concerning the M&O surplus they thought it was reasonable for LHCb to start gradually to return to the Funding Agencies any such surplus and

they approved this initiative in which LHCb was in some sense anticipating the actions of the other experiments.

J. Engelen thanked him for this report and noted that in a related issue, it was appropriate for LHCb to consider the proposals of ATLAS and CMS for dealing with late payments. A. Smith confirmed that they were aware of these developments and were considering them.

A. Smith added that eventually the Ukraine would be credited with a contribution in-kind to the Common Fund although this was not yet visible in the accounts.

Discussion

U. Dosselli invited the collaboration to present a global picture of M&O B by the next RRB such that his Funding Agency could consider the request for Category B funds that LHCb had made. A. Smith replied that his experience from LEP would suggest that it was very difficult to control what exactly was a category B cost and he gave examples. J. Engelen considered nonetheless that this was a reasonable request from a Funding Agency. A. Smith agreed that they could ask for this information but he expressed his doubts as to the value of the information they would receive. U. Dosselli explained that he was not trying to enforce a common scheme for everyone, he just wanted to have a picture how the other detectors foresaw the maintenance of the detector itself. J. Engelen invited the collaboration to consider how they could present such information at the one of the next RRBs.

The RRB **endorsed** the M&O budget for LHCb for 2006.

8. M&O Scrutiny Group in 2006

J. Engelen

The composition of the Scrutiny Group in 2006 foresaw three changes, one external member from Germany to replace H. Gutbrod and for whom a proposal had been made, and two internal CERN members to replace A. Ceccucci and E. Tsesmelis. The final composition would be agreed well before the next meeting.

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

J. Engelen

J. Engelen noted that LHCb had given the RRB a technical overview of the experiment which showed very positive progress, and a detailed picture of the financial shortfall which was not very big but which would not go away on its own. They had heard very positive and concrete signals as to how those problems should be solved along the lines proposed by the collaboration. They had heard that some Funding Agencies needed a little bit more time but they were not negative about the approach. Therefore he believed one could conclude this meeting in a positive spirit, both congratulating LHCb for their progress and encouraging to make further efforts to be ready on time.

F. Linde asked for a visit to the LHCb cavern. This would be planned for the next meeting.

The next RRB meetings in 2006 will take place at CERN on
Monday 24th, Tuesday 25th and Wednesday 26th April 2006
 and on the
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
December 2005