

**Summary of Principal LHCC Deliberations  
(May, July and October 2001 Sessions)**

**7<sup>th</sup> Meeting of the LHCb Resource Review Board  
22 October 2001**

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## 1. General

This document summarises the principal LHCC deliberations concerning LHCb at the Committee's sessions in May, July and October 2001.

The LHCC considers that the LHCb project is progressing well and that the following schedule for the Technical Design Reports (TDRs) is reasonable.

### Status of LHCb TDRs

	<i>Submission to LHCC</i>	<i>Research Board Deliberation</i>
Magnet TDR	December 1999	Approved April 2000
Vertex Detector TDR	May 2001	November 2001
Inner Tracker TDR	End 2002	
Outer Tracker TDR	September 2001	Expected February 2002
RICH Detector TDR	September 2000	Approved February 2001
Muon Detector TDR	May 2001	November 2001
Calorimeter TDR	September 2000	Approved February 2001
Trigger (L0/L1) TDR	End 2002	
DAQ TDR	End 2001	
Computing TDR	December 2002	

Construction of the LHCb detector commenced in 2001 following approval of the respective TDRs by the Research Board, in line with being ready for first collisions at the LHC in April 2006.

The LHCb Collaboration is in the process of re-optimising the detector by re-examining its material budget. The current number of nine tracking stations has resulted from dropping the station in the middle of the magnet and one just behind the RICH-2, as it was shown to not affect the tracking performance. While maintaining the technology and design of the individual tracking detectors, re-optimisation of the remaining nine tracking stations is being studied in order to reduce further the amount of material in front of RICH-2. The re-optimisation also includes reducing the material in the RICH-1 mirrors and the Vertex Locator RF shielding. The Collaboration will submit to the LHCC in the autumn 2002 a detailed document reporting on the design and performance of the re-optimised detector. As a result, submission of the Inner Detector and Trigger TDRs are now delayed by one year. The LHCC considers that the delay is not critical.

## 2. Dipole Magnet

The Magnet Advisory Group to the LHCC (MAG) reported orally its conclusions on the review of the LHCb dipole magnet to the October 2001 session of the Committee. The review is not yet finalised and agreed by the LHCC. However, the MAG noted that the magnet is on track and the costs are within the budget estimates.

### **3. Tracking**

The LHCC recommended general approval of the LHCb Vertex Locator TDR. The LHCC considers the schedule given in the TDR and the list of milestones in an ancillary document to be reasonable. Deliberation at the Research Board is scheduled for its November 2001 session.

The LHCC is currently deliberating on the Outer Tracker TDR, submitted in September 2001. The Committee will review the TDR through the autumn of 2001, leading to a recommendation later in the year.

Any design changes as part of the re-optimisation of the LHCb tracking will need to be presented to the LHCC before construction of the Vertex Locator, Inner Tracker or Outer Tracker commences.

### **4. Particle Identification**

The LHCC noted that LHCb decided to remove tracking station T11 after the RICH-2 detector. The Committee considers that this appears to be reasonable. However, the Committee is evaluating a detailed report on the decision by the Collaboration, at which point it will consider whether an addendum to the approved RICH TDR is needed.

### **5. Muon Spectrometer**

The LHCC recommended general approval of the LHCb Muon System Technical Design Report. The LHCC considers the schedule given in the TDR and the list of milestones in an ancillary document to be reasonable. Deliberation at the Research Board is scheduled for its November 2001 session.

Any impact on the muon identification, trigger and measurement, resulting from design changes as part of the re-optimisation of the LHCb tracking, must be presented to the Committee.

Moreover, the LHCC recommended that all LHC experiments produce a detailed document illustrating the individual tasks to be undertaken in the manufacturing phase of the Resistive Plate Chambers (RPCs). The report should also address Quality Assurance and Control. This document should be reviewed within each of the experiments and should also be communicated to the LHCC. The LHCC will use this information to review and monitor the production of the RPCs. The task list should also serve as a basis to prepare the contract with the manufacturing firm. The LHCC also recommended that the experiments should not move hastily into production of the chambers before ensuring both their functionality and the manufacturing process. The LHCC will continue monitoring the progress in the RPCs.

## **6. Computing**

The LHCC considers that the LHC Computing Review, which was held under the chairmanship of S. Bethke, has set out a sound model for the future LHC Computing. The LHCC also endorses the identification of a potential lack of resources – hardware, infrastructure and related manpower – while noting the limited maturity of the current planning and resource estimates for the production of the software, the development and support of simulation packages and the support and future evolution of analysis tools.

The LHC Computing Review has recommended the instigation of the LHC Software and Computing Steering Committee (SC2) to help facilitate the deployment of the entire LHC hierarchical computing structure, and the LHCC concurs with this conclusion.

The LHCC considers that the plan for the LHC Computing Grid Project, which includes the required additional resources both at CERN and in the Member States and Non Member States, is reasonable and endorses it as the next step forward in proceeding with the LHC Computing.