

PRINCIPAL LHCC DELIBERATIONS

16TH MEETING OF THE LHCb RESOURCES REVIEW BOARD

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GENERAL

This document summarises the principal LHCC deliberations concerning LHCb at the Committee's sessions in October and November 2005 and in February and March 2006.

STATUS OF THE LHCb TECHNICAL DESIGN REPORTS

	<i>Submission to LHCC</i>	<i>Research Board Approval</i>
Magnet TDR	December 1999	April 2000
Vertex Locator TDR	May 2001	November 2001
Inner Tracker TDR	November 2002	February 2003
Outer Tracker TDR	September 2001	February 2002
RICH Detector TDR	September 2000	February 2001
Muon Detector TDR	May 2001	November 2001
First Addendum Muon Detector TDR	January 2003	February 2003
Second Addendum Muon Detector TDR	April 2005	September 2005
Calorimeter TDR	September 2000	February 2001
Trigger (L0/L1) TDR	September 2003	February 2004
Online System TDR	December 2001	April 2002
Addendum to Online System TDR	November 2005	December 2005
Computing TDR	June 2005	March 2006
Re-optimized Detector TDR	September 2003	February 2004

CONCERNS FROM THE PREVIOUS LHCb RESOURCES REVIEW BOARD

SUB-SYSTEM	CONCERN	STATUS
Vertex Locator (VELO)	Module production is on a tight schedule.	<p>The Production Readiness Review for module production was delayed by 8 months, resulting in a very tight schedule for the completion of module fabrication. Module production is set to start in April 2006.</p> <p>The on-time delivery of kapton cables and RF boxes also remains critical.</p>

Inner Tracker & Trigger Tracker	Module production is on a tight schedule.	Production of the Inner Tracker and Trigger Tracker is advancing, albeit with a slower-than-expected start. The production and installation schedule is feasible but tight.
Muon System	Delays in MWPC production.	Production of MWPCs is advancing at the nominal rate at all sites but the schedule to complete the production of modules and the associated electronics remains tight for meeting the ready-for-installation milestone.

LHCC COMPREHENSIVE REVIEW

The fourth of the LHCC Comprehensive Reviews of LHCb took place on 13-14 February 2006. The LHCC referees addressed the following areas: Inner Tracker, Trigger Tracker, Outer Tracker, Vertex Locator, RICH Detectors, Calorimeter System, Muon System, Trigger & DAQ, Computing, Physics and the issues of Management, Technical Coordination and Schedules.

Since the previous Comprehensive Review in February 2005, the LHCb Collaboration has made very significant progress towards the realisation of an experimental set-up ready to record proton-proton collisions at the LHC. The LHCC expects LHCb to have a working detector installed in time for the beginning of LHC operation in 2007 provided the timely delivery of the sub-detectors and the smooth advancement of the production schedules is ensured.

Construction of final components is well underway. The spectrometer dipole magnet has been successfully commissioned and its magnetic field mapped. The Electromagnetic Calorimeter (ECAL), Hadronic Calorimeter (HCAL) and RICH-2 Ring Image Cherenkov Detector have been installed in the UX85 cavern. Installation of the infrastructure and technical services in the experimental area are well advanced. Issues concerning interference due to the installation of LHC Machine components around the LHCb experimental hall have been successfully handled. The LHCC noted as a concern the delays and resulting tight schedules in the production of the Vertex Locator (VELO), Inner Tracker, Trigger Tracker, RICH-1 Detector, Muon System, and in the Outer Tracker and Calorimeter front-end electronics.

The principal conclusions and concerns of the LHCC are summarised below. They will allow the Committee to follow up the outstanding issues and to monitor future progress of this project in forthcoming sessions of the LHCC prior to the next LHCb Comprehensive Review one year hence.

- Good progress was reported on the Inner Tracker, Trigger Tracker and Outer Tracker. The tight schedules for Inner Tracker and Trigger Tracker and for the Outer Tracker front-end electronics remain as the major outstanding issues.

- Good progress was reported on the VELO, RICH Detectors and Calorimeters. Production of all detectors is either underway or complete and installation in the UX85 cavern has started. The major outstanding issues regard the tight schedules for the completion of the VELO module production, the RICH-1 spherical mirrors and the Calorimeter front-end electronics.
- Good progress was reported on the Level-0, High-Level Triggers, Data Acquisition and Experiment Control System.
- Impressive progress was made in the Muon System and the Computing project since the previous LHCb Comprehensive Review. However, the schedule for the production of modules and electronics for the Muon System remains tight for meeting the ready-for-installation milestone.
- The LHCC took note of the new organization structure for the physics activities and plans until the start of LHC data-taking and requests further details on the physics commissioning strategy for the initial LHC operation phase.
- Much progress was reported on the work in the UX85 experimental cavern. The LHCC considers that although the schedule is tight, it is realistic to expect LHCb to have a working detector installed in time for the beginning of LHC operation in 2007.

ADDENDUM TO THE ONLINE SYSTEM TECHNICAL DESIGN REPORT

The LHCC recommended general approval of the LHCb Addendum to the Online System Technical Design Report and the Research Board approved the Addendum.

COMPUTING TECHNICAL DESIGN REPORT

The LHCC recommended general approval of the LHCb Technical Design Report on the Computing and the Research Board approved the Technical Design Report.