

PRINCIPAL LHCC DELIBERATIONS

20TH MEETING OF THE ALICE RESOURCES REVIEW BOARD
26 APRIL 2006

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GENERAL

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

STATUS OF THE ALICE TECHNICAL DESIGN REPORTS

	Submission to LHCC	Research Board Approval
RICH HMPID	August 1998	November 1998
Photon Spectrometer	March 1999	June 1999
Zero Degree Calorimeter	March 1999	June 1999
Inner Tracking System	June 1999	September 1999
Muon Arm	August 1999	November 1999
Addendum to Muon Arm TDR	December 2000	June 2001
Photon Multiplicity Detector	September 1999	February 2000
Addendum to PMD TDR	September 2003	February 2004
Time Projection Chamber	January 2000	April 2000
Time-of-Flight	February 2000	June 2000
Addendum to TOF TDR	May 2002	November 2002
Transition Radiation Detector	October 2001	February 2002
Computing TDR	June 2005	March 2006
Physics Performance Report Vol. I	November 2003	
Physics Performance Report Vol. II	December 2005	
Trigger / DAQ / HLT TDR	January 2004	May 2004
Forward Detectors TDR	September 2004	March 2005

CONCERNS FROM THE PREVIOUS ALICE RESOURCES REVIEW BOARD

SUB-SYSTEM	CONCERN	STATUS
Inner Tracking System (ITS)	Very tight schedule for completion of the ITS.	Progress was reported on all components of the ITS, but significant delays with respect to the schedule of last year have been noted. The overall schedule remains extremely tight and has no contingency. The unproven assembly rate of the Silicon Drift Detector (SDD) is a major concern.
Dimuon Forward Spectrometer	Timely delivery of the read-out electronics for the tracking chambers.	The outstanding concern remains the timely delivery of the MANU read-out boards and CROCUS cards for the tracking chambers, and a delay in their availability would delay completion of the detector.
Photon Spectrometer (PHOS)	Short-fall in the level of funding.	Discussions with Funding Agencies are ongoing.

LHCC COMPREHENSIVE REVIEW

The sixth of the LHCC Comprehensive Reviews of ALICE took place on 20-21 March 2006. The LHCC referees addressed the following systems and areas: Inner Tracking System, Particle Identification, Time Projection Chamber, Calorimeters, Forward Detectors, Dimuon Forward Spectrometer, Trigger, Data Acquisition, High-Level Trigger and Controls, Software, Computing and Physics, and the topics of Management, Technical Coordination, Integration, Schedules and Costs.

Since the fifth of the Comprehensive Reviews in March 2005, the ALICE Collaboration has made very significant progress towards the realisation of an experimental set-up ready to record proton-proton and heavy-ion collisions at the LHC. The LHCC considers it reasonable to expect ALICE to be ready with an initial working detector for the start of LHC operation in summer 2007, assuming that the timely delivery of sub-detectors and the smooth advancement of the production schedules remain ensured, and detector installation can be foreseen beyond this date.

Construction of final components is well underway. The spectrometer solenoid and dipole magnets have been successfully commissioned and their magnetic field mapped. Installation of the large infrastructure is on schedule and pre-commissioning tests for the installation of detectors have

been successful. A commissioning task force has been created and plans are being made to prepare for the analysis of the first proton-proton data. The LHCC noted as a concern the delays and resulting tight schedules in the completion of the detector services and in the production of the Silicon Drift Detector (SDD), the Silicon Strip Detector (SSD), and the front-end electronics for the tracking chambers of the Dimuon Forward Spectrometer.

The conclusions and concerns of the LHCC are given below. They will allow the Committee to follow up outstanding issues and to monitor future progress of this project in upcoming sessions of the LHCC prior to the next ALICE Comprehensive Review.

- Progress was reported on all components of the Inner Tracking system – Silicon Pixel Detector (SPD), Silicon Strip Detector (SSD) and Silicon Drift Detector (SDD), but significant delays with respect to the schedule of last year have been reported. The overall schedule remains extremely tight, and with no contingency. The unproven assembly rate of the SDD is a major concern.
- Good progress was reported on the Time-of-Flight Detector (TOF) and Transition Radiation Detector (TRD), with the outstanding concern being the 4-month delay in the ready-for-installation milestone for the former.
- Very good progress was reported on the Time Projection Chamber (TPC) and the Committee has no major concerns. Production of the detector is advancing well and on schedule.
- Good progress was reported on the High Momentum Particle Identification Detector (HMPID), Photon Spectrometer (PHOS). The Technical Proposal for the EMCAL is currently under preparation and will be reviewed by the LHCC. The major outstanding issues are the timely completion of the HMPID gas system and the funding for the PHOS and EMCAL detectors.
- Significant progress was reported on the Forward Detectors, consisting of the Zero Degree Calorimeters (ZDCs), Photon Multiplicity Detector (PMD), Forward Multiplicity Detector (FMD), T0, and V0, since the previous Comprehensive Review. The construction and installation schedules are reasonable and include some contingency. No major concerns were identified. All components of the ACORDE cosmic muon trigger have been delivered. The LHCC requests the submission of a scientific and technical description of the ACORDE project.
- Good progress was reported on the Dimuon Forward Spectrometer since the previous Comprehensive Review. The outstanding issue of concern is the timely delivery of the MANU read-out boards and CROCUS cards for the tracking chambers, as a delay in their availability would delay completion of the detector.
- Much progress was reported on the Trigger, DAQ, High-Level Trigger and Controls and no major problems were identified.
- The ALICE software and computing projects are advancing well. The major outstanding concern is with the expected reduction in manpower for the computing effort. The plans for first physics studies with the ALICE detector with proton-proton collisions are reasonable.
- The LHCC considers that the ALICE experiment is progressing well since the previous Comprehensive Review in the production, integration, installation and commissioning of the experiment. It is realistic to expect ALICE to have an initial working detector for the start of LHC operation in summer 2007, although detector installation can be foreseen beyond this date. The Committee noted the risk in schedule delays concerning the timely completion of the SDD, SSD and Dimuon Forward Spectrometer tracking chambers. Installation of detector services will be a major activity in the coming year as the schedule to complete this work is very tight. The Collaboration has adopted measures to control increases in the cost-to-completion, but the Common Fund balance needs to be carefully monitored. The Committee will continue monitoring developments in these issues.

COMPUTING TECHNICAL DESIGN REPORT

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