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PRINCIPAL LHCC DELIBERATIONS

22ND MEETING OF THE ATLAS RESOURCES REVIEW BOARD

25 APRIL 2006

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

Commissioning of the Barrel Toroid and Solenoid magnets is being prepared. The Barrel Toroid will be ready for field tests at the end of May 2006 and the Solenoid magnet field mapping will take place in June 2006. The End-Cap Toroid Side C will be ready for installation in August 2006, while Side A will be ready for installation in November 2006.

CONCERNS FROM THE PREVIOUS ATLAS RESOURCES REVIEW BOARD

SUB-SYSTEM	CONCERN	STATUS
Inner Detector	Tight schedule for completion of the Semiconductor Tracker (SCT) Barrel and End-Cap A and the Transition Radiation Tracker (TRT) End-Cap A.	Construction of the SCT is advancing well. The Barrel and End-Cap SCT module production is complete. Production of the TRT End-Cap is on schedule with the End-Cap C completed and the End-Cap A stacking advancing well.
LAr Calorimeters	The major outstanding problem area is related to the timely delivery of the low voltage and high voltage power supplies.	Delivery of the power supplies remains critical.
Muon System	The timely construction of the Muon Spectrometer Big Wheels remains the last item of potential concern.	Assembly of the wheel sectors is according to schedule. A plan to recover delays in the production of the wheels has been agreed and is being implemented.

LHCC COMPREHENSIVE REVIEW

The sixth of the LHCC Comprehensive Reviews of ATLAS took place on 10-11 October 2005. The LHCC referees addressed the following areas: Inner Detector, Calorimetry, Muon Spectrometer, Trigger and DAQ, Physics, Software and Computing, Installation and Technical Coordination, Commissioning and Combined Test Beam Results and the issues of Management, Magnet Systems and Electronics.

Since the previous ATLAS Comprehensive Review in July 2004, the ATLAS Collaboration has made very significant progress towards the realisation of an experimental set-up ready to record proton-proton collisions at the LHC in 2007. In particular, construction of the majority of the final components is either well-underway or completed, installation of the technical infrastructure in the underground caverns is well-advanced, installation of the first sub-detector elements of the ATLAS experiment in the underground cavern has been successful, and commissioning of the ATLAS experiment has started successfully. The procurement of the front-end electronics has in general been successfully completed.

It is realistic to expect ATLAS to have an initial working detector for the start of LHC operation in 2007, although detector installation can be foreseen beyond this date. However, the LHCC considers that the ATLAS plan to have installed and commissioned an initial working detector by the end of June 2007 is challenging, as a number of systems no longer have any contingency in the schedule, originally included as a safety margin for their installation. The LHCC observes that additional resources, both in terms of money and manpower, would aid in completing the initial detector.

Detector elements not installed by the LHC start-up in 2007 will be staged. The staging plan consists of deferring installation of some components of the Inner Detector, the Calorimetry, the Muon Instrumentation, the Higher-level Trigger, DAQ and the radiation shielding. Their installation in a long shutdown, while requiring additional resources, would complete the ATLAS detector as described in the approved Technical Design Reports.

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 ATLAS Comprehensive Review.

- Construction of the Inner Detector is advancing well and several outstanding problems have been solved since the previous Comprehensive Review. The one major concern is with the corrosion in the stave cooling pipes of the Pixel detector. Solutions to this problem have been identified, but the Pixel project has some considerable risk in not being completed on time.
- Significant progress since the last ATLAS Comprehensive Review was reported on the ATLAS Calorimeters. The major outstanding problem area is related to the timely delivery of the high and low voltage power supplies.
- Good progress was reported on the Monitored Drift Tube (MDT), Cathode Strip Chamber (CSC), Resistive Plate Chamber (RPC) and Thin Gap Chamber (TGC) detectors and a significant number of chambers, together with their front-end electronics, have been produced. The major outstanding concern remains the timely completion of the MDT chambers and the adherence to a strict quality control procedure for the RPC chambers.

- No major concerns were expressed for the Calorimeter Trigger, Muon Trigger, the Higher-Level Trigger and the DAQ, but the schedule to complete the Calorimeter and Muon Triggers remains tight.
- Significant progress was reported on the Physics, Software and Computing, with no major concerns having been identified.
- Impressive progress was reported on the installation of ATLAS sub-systems at Point 1 and commissioning of the ATLAS detector has started. The revised ATLAS Installation Schedule is realistic but tight as contingency in the time to install the detectors prior to the end of June 2007 has been significantly reduced.
- Excellent progress was reported on the ATLAS commissioning and on the Combined Test Beam.
- The LHCC congratulates the ATLAS Collaboration for the significant progress since the previous Comprehensive Review. Should the total Cost-to-Completion not be covered, detector elements not installed by the start-up of the LHC in 2007 will be staged.

COMPUTING TECHNICAL DESIGN REPORT

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