

LHCb Technical Board 29/11/1999 - Summary

Agenda

- 1) RICH Photo Detector
- 2) Experiments Control System (SCADA)
- 3) Software Migration
- 4) Detector Layout
- 5) Test Beams
- 6) AOB
 - Magnet TDR
 - Injection Test
 - Status of revised Costs for Subsystems

Participants: J. Christiansen, H. Dijkstra, W. Flegel, R. Forty, C. Gaspar (part-time for point b), J. Harvey, H. J. Hilke, B. Jean-Marie (as Referee for RICH photodetector choice), B.Koene, D. Lacarrere, J. Lefrançois, R. Lindner, T. Ruf, B. Schmidt, A.Schopper, U. Straumann, I. Videau, D. Websdale

Excused: T. Nakada, R.Heuer (as Referee for RICH photodetector choice)

1) Choice of Photo Detector for RICH

D. Websdale reported on the process, which led to the recommendation of the RICH group for the choice of the Photo Detector. A panel had been nominated to prepare this recommendation; it met 15 times. For each of the three candidate technologies- Pixel HPD, Pad HPD and MaPMT- a proposal has been written, including definition of baseline specifications, results from R&D and test beams and future R&D requirements. These proposals were presented in a plenary RICH group meeting. After additional clarifications, a second plenary was called and Panel reports were presented on performance studies, readout electronics, mounting and integration. None of these gave a clear indicator as to the best technology choice. Finally, risk assessments and cost evaluation of the three options were undertaken.

The Panel concluded that all options could be made to work, given time. The risk assessments of the three options were graded in reverse order of the costs; the MaPMT being considered the most costly, the Pad HPD the cheapest. The recommendation to the Technical Board, endorsed by >2/3 of those present at the RICH group meeting, read:

- To adopt as baseline photodetector the device with the lowest acceptable risk that is within the LHCb RICH budget.
- In the event that this implies one or other of the HPDs being selected, the MaPMT should be maintained as a backup. This implies setting of rigorous milestones, within the timescale of one year, for the baseline and a well-focussed activity to ensure the MaPMT remains a viable backup, consistent with LHCb schedule.

As one of the referees, B. Jean-Marie presented his written assessment and commented on the discussions with the other referee, R.Heuer, whose recommendation was tabled. Both recommendations were not in contradiction to the Panel recommendation. Then the Management commented, in particular on the necessity of industrial production and their assessment of risks and costs.

After an extensive discussion, the **TB recommended** to choose as baseline the Pixel HPD.

The MaPMT should be taken as fallback option for the case that the milestones for the Pixel HPD would not be fulfilled by the end of 2000.

2) Experiments Control System (SCADA)

Clara Gaspar informed the TB about the JCOP Proposal for the use of SCADA (Supervisory Control And Data Acquisition) for control Supervision. JCOP asks for a commitment from the LHC collaborations, in order to go on with the tendering procedure of SCADA products. The LHCb DAH Group supports the JCOP recommendation to use SCADA systems. The **TB recommended** to wait for reactions from the different sub-systems until end of January.

3) Software Migration

John Harvey reported on the present plans to convert LHCb software from FORTRAN to C++ code. The proposed strategy involves three steps. First SICB will be split in a

simulation part (SICBMA) and the reconstruction part (SICBREC). In the next step, SICB digitisation and reconstruction FORTRAN modules will be wrapped so that they can be called from C++, and integrated with the GAUDI framework. After checking the DST output, SICBREC will be dropped. Finally each FORTRAN module will be replaced piece by piece with C++ equivalent.

The **TB requests** that the DAH Group prepare a detailed schedule for these steps.

4) **Detector Layout**

- Coordinate System/ Detector Orientation

The **TB agreed** on the following orientations.

The origin (0,0,0) will be placed at the Interaction Point, the x-axis will be kept horizontal and will not follow the accelerator plane; z will follow the beam line with $z > 0$ pointing towards the muon system and will be inclined by +3.6 mrad; y points upwards with a 3.6mrad tilt.

The Dipole will be tilted in z and with its principal field component parallel to y.

The detectors will be mounted vertically with horizontal symmetry axis and their centres following the beam-axis(= z-axis).

- Additional Requests

Jacques Lefrançois informed the Technical Board, that the Calorimeter group is proposing a Scintillator Pad Detector SPD in front of the Preshower. For this, an additional 3cm are requested along z for the calorimeter system.

The **TB agreed** that a special meeting be called as soon as possible, in order to evaluate in detail the needs for T11/M1/SPD and the various demands for more space, including the 12cm requested for RICH2.

5) **Test Beams 1999/2000**

Rolf Lindner summarized the LHCb test beam situation for 1999/2000. The first draft of the SPS test beam program approved 13 out of the 14 requested weeks for LHCb. Three periods have been allocated to the LHCb muon system in the GIF. The draft of the PS program complies with the LHCb request.

6) **AOB**

- The Magnet TDR should be submitted to LHCC in January 2000. The internal referees should get the TDR the week after this collaboration week and LHCC referees before 17/12/99.

- H.J.Hilke informed the TB about the planned shift of the LHC injection tests in 2003/2004 by 3 months. This was announced without consulting LHCb. The shift will have an impact on our installation. The Technical Coordinator will prepare a reaction.

- H.J.Hilke informed the TB briefly about the status of detector costs.

- **Urgent need** for help was mentioned in two areas; background calculations and DAQ in test beams. Proposals are highly welcome.

