24 January 2003

AD-HOC WORKING GROUP ON LHC EXPERIMENT-MACHINE PARAMETER AND SIGNAL EXCHANGE

Minutes of the 7th Meeting held on 16 December 2002

Present: N. Ellis, D. Evans, L. Fernandez-Hernando, R. Jones, D. Macina, A. Macpherson, W. Salter, A. Smith, W. Smith, E. Tsesmelis

1. INTRODUCTION

The minutes of the 6th Meeting were approved without modification.

The 1st LHC Machine-Experiment Joint Workshop on Luminosity Measurements at the LHC was held at CERN on Monday, 9 December. Further information may be found at:

http://est-div-lea.web.cern.ch/est-div-lea/luminosity/1st_lumi_workshop.htm

2. REPORT FROM THE BPTX TECHNICAL LIAISON GROUP

(Emmanuel Tsesmelis)

Emmanuel Tsesmelis reported on the discussions held as part of the BPTX technical liaison group, which has been mandated to develop the read-out and exploitation of the BPTX signals, and which consists of representatives from the machine (SL/BI) and experiments.

As has been discussed in earlier meetings, the BPTX will serve the purpose of a) monitoring the phase of the clock of the two beams locally at the IRs, thus determining whether the TTC is synchronised with the actual arrival of the bunch, and b) identifying the location of the gaps in the bunch train.

Details of the button electrode and stripline coupler candidate technologies were presented. Given the relative simpler construction and adequate output signal of the former, the button electrodes were proposed to be used as the BPTX technology.

It was noted that the read-out electronics developed for the LHC machine cannot provide timing information requested by the experiments and that the latter should develop their own scheme. This could be as simple as a digital oscilloscope or other electronics being developed within the experiments that can be used as is or after minor modifications.

For the case of the button electrodes, one read-out cable (plus one spare) on either side of each IP is required. The experiments are requested to draw up the cable routing scheme from their BPTX to their underground counting rooms keeping in

mind the attentuation and radiation issues. The requests from all the experiments will be collected and forwarded for a common purchase. A cable specification for the machine BPMs, based on coaxial cable CMC50, is appended to these minutes as an example.

3. PRELIMINARY TESTS FOR THE DEVELOPMENT OF A BEAM CONDITION MONITOR

(Alick Macpherson)

Alick Macpherson reported on the status of the tests regarding the development of a Beam Condition Monitor (BCM).

He reported on the so-called `1-shot tests' on ATLAS and CMS silicon modules performed at the PS East Hall. The aim of the tests was to study the effect of an unsynchronised beam abort on the silicon modules. Two fast extracted spills, separated by 527 ns and each with an intensity of 3.6×10^{11} protons, were used to simulate an accident resulting from an unsynchronised beam abort. Preliminary analysis of the sensors, hybrids and modules indicate no permanent damage. Tests will continue in 2003 with final ATLAS and CMS modules. ALICE and LHCb are encouraged to participate in these tests with their own silicon modules.

Development of the detectors to measure online the machine background in the experiments and provide a beam abort signal to the LHC Machine Beam Interlock Controller is in progress. Two options are being considered presently: CVD diamond and quartz fibre. It is proposed to install these monitors within the volume of the experiments around the experimental beampipes.

4. STATUS REPORT FROM THE LHC DATA INTERCHANGE WORKING GROUP (LDIWG)

(Wayne Salter)

Wayne Salter gave a report from the LHC Data Interchange Working Group (LDIWG).

The LDIWG was set up in 1999 by the Controls Board with the mandate to define a single data exchange mechanism between all systems in the LHC operations in an effort to discourage individual point-to-point links between systems, a philosophy which still remains valid. Phase 1 of the work gathered the requirements and its report was delivered in mid-2000. Phase 2 started in autumn 2002 with the aim of reviewing the validity of the user requirements, creating the system requirements, reviewing products in use at CERN for applicability, defining the protocol and selecting a suitable product.

The ensuing discussion highlighted the need to review the user requirements of Phase 1, as requests have evolved since the first report was prepared. The various users of this system are therefore asked to consult the report appended to these minutes and a further discussion is planned for the upcoming meetings of the Ad-hoc WG.

5. A.O.B.

Meetings of the WG will be held on the following Mondays starting at **16:00** in the **Conference Room Bat. 14-4-030**.

Provisional Dates for 2003 Meetings:

27 January
3 March
31 March
12 May
7 July
18 August
13 October
10 November
15 December