

**LHC EXPERIMENT-ACCELERATOR DATA EXCHANGE WORKING GROUP
(LEADE)**

Minutes of the 30th Meeting held on May 15, 2006

Present: S. Baron, Ph. Baudrenghien, N. Ellis, D. Evans, Ph. Farthouat, R. Hall-Wilton, Ch. Ilgner, R. Jacobsson, R. Jones, D. Macina, P. Palazzi, Th. Pauly, A.-L. Perrot, B. Puccio, A. Smith, W. Snoeys, D. Swoboda, E. Tsesmelis

1. MATTERS ARISING

Approval of the Minutes

The minutes of the 29th LEADE meeting were approved without modification.

2. LHC CONTROLS RACKS (CH. ILGNER)

Christoph Ilgner presented the results of his enquiry on the position of the LHC controls racks, housing the interface of the Beam-Interlock Control System to the experiments.

3. FUNCTIONAL SPECIFICATION: DATA AND SIGNALS TO BE EXCHANGED BETWEEN THE LHC MACHINE AND EXPERIMENTS (E. TSESMELIS)

The approval period for the functional specification Emmanuel Tsesmelis has released will end on May 26th. The document already comprises the comments that were received so far, including the ones submitted by EDMS.

The controls group proposes to measure the average bunch length every minute, at 10% accuracy. This has been added with an update from the RF group.

Final approval will be given by the technical coordination, i.e. department heads of PH and AB.

4. STATUS OF THE TTC (S. BARON)

Sophie Baron gave an update on the design of the TTC modules. The signals are distributed to the experiments via the CCC.

AB/RF has chosen analog Tx and Tx modules, digital modules (6U) and the Miteq 3GHz optical link. The phase noise has been measured to be 0.4ps at 400MHz. The design is done

and validated following a review. Ten modules are already at CERN, and 10 more are going to be ordered soon.

Also, efforts are being undertaken to decrease the price by looking for cheaper modules. This is an option for 70% of the signals, since for these the precision requirements are less. The schematics will be exactly the same, actually a quality assessment is being done in order to be ready for the September test beam.

Information about the crates, the power supplies (48V is not available for ALICE), and the crate controllers (which are specific to the experiments) is available from the TTC upgrade web site, which is continuously updated.

A prototype of the fan-outs has been developed, which is now under test. One pototype will be given to each experiment. Modifications are still possible afterwards.

A detailed overview of the VME64x-6U-4TE receiver modules followed, which offer various adjustable parameters, such as the choice of clock phase and clock type. Multiplexing between each input and the internal clock is possible (manual or automatic mode). One module has three bunch-clock inputs plus its internal clock.

A student has started to work on the analog receivers and transmitters, and the firmware is written. Production of the boards will start this week, the same for the digital receivers and transmitters. The goal is to have everything ready by August, so that the test can be done in the test beam.

Documentation is available in EDMS, and the TTC upgrade web site is regularly updated. The first specifications are approved.

5. INTEGRATION OF HARDWARE FOR MACHINE-EXPERIMENT EXCHANGE (D. SWOBODA)

Detlef Swoboda, as the integration coordinator, needs all the equipment and the respective suppliers to be identified. He proposed, to prioritize the parameter list, in order to have at least the compulsory systems ready for LHC startup.

Contact persons are assigned for the LHC machine and the five experiments, an ATLAS person still needs to be nominated (probably Th. Pauly). LHCf should be handled by the ATLAS contact person, or by a generic LHCf person.

Only the request for beam dump and injection inhibit will be hard-wired. Software interlocks are also foreseen, but they will not dump the beam. The BPM will have to be linked in as well as luminometers, beam-loss monitors and general machine timing.

The data-exchange concept, as defined in 1999, is based on a publish/subscriber paradigm. Questions still remain: Who are the contacts from the experiments and from LHC? Also the data set needs to be defined. However, for the data required from the experiments by the LHC, as described in the functional specification (see 3), the production volume and interval is low, so it will not overload the data highway.

The production volume of the signals from the experiments to the machine is not high either, but this still needs to be implemented.

The timing signals from the LHC were already discussed in Sophie Baron's presentation (see 4).

For the beam-interlock system, the information was retrieved from AB-CO: The machine supplies the units, the experiments have to define the rack (which is done) and pay for the cable, the cabling is done by the LHC machine by means of the general cabling campaigns in the experimental caverns. The user interface for each experiment has one channel per beam.

Detlef Swoboda has already identified most of the system providers, but the information needs to be updated by LEADE members. He closed by presenting a list of tasks in view of the completion of the project.

6. A.o.B.:

The cabling for the BPTX pick-ups was not done. The information once collected will be re-distributed by Christoph Ilgner, Detlef Swoboda will then take care of a new order.

The next meeting will be held on July 3rd (changed!).

Provisional dates for the remaining meetings in 2006 (16:00 hrs, 40 R-A10):

July 3,
July 24,
September 4,
October 16,
November 27.

Ch. Ilgner