LHC EXPERIMENT-ACCELERATOR DATA EXCHANGE WORKING GROUP (LEADE)

Minutes of the 23rd Meeting held on April 25, 2005

Present: R. Assmann, S. Baron, Th. Bohl, D. Evans, K. Gill, P. Grafström, Ch. Ilgner, R. Jacobsson, D. Macina, J.-J. Savioz, A. Smith, D. Swoboda, E. Tsesmelis, J. Wenninger

1. MATTERS ARISING

Approval of the Minutes
The minutes of the 22nd LEADE meeting were approved without modification.

2. RF SIGNAL INPUTS TO THE TTC (S. BARON)

In her presentation on the transmission of the RF to the TTC network, Sophie Baron discussed the signal quality. In order to cope with the jitter that might occur, there are two options: one ring can be used as a reference, or there will be an external, fixed reference, i.e. a third loop, that provides a 40 MHz clock during beam ramping. The latter solution of course would bring in some new electronics. Sophie will discuss this with the TTC coordinator.

Richard Jacobsson stated that, as already mentioned earlier, the TTC clock should be constantly available. Virtually never the internal clocks of the experiments should be used; this applies also to non-physics data taking, like during cosmics runs. GPS time should also be transmitted.

Earlier on, there was a suggestion to implement a switch at the TTC input to select the input (RF or local reference). This would lead to a clean, stable and non-interrupted 40 MHz signal. However, this switch cannot be provided and maintained by LHC RF.

The clock signal will be reliable right after the first injection from the SPS into the LHC. No signal will be available during access, after a beam dump and during shut down.

Jörg Wenninger added, that, if the RF disappears, the beam will automatically be dumped after one turn.

Specifications on the physical form of the modules the experiments want will be collected by Sophie.

3. STATUS OF STUDIES ON FAST INTERLOCK SIGNALS (D. MACINA)

Daniela Macina gave details on signals to be transmitted from the experiments to the machine:

The **beam-abort signal** is generated by hardwired logics that after the beam abort can be used for diagnostics by both the experiment and the machine. The signals are generated based on background-signal levels in the detectors and their gradients and will be continuously provided to the machine on a normalized scale. Emmanuel suggested to colour-code these levels.

The same logics will provide one single signal, the **beam-abort warning**, at a defined fraction of the abort level, which might allow the machine group to take action in order to avoid a beam abort.

The **ready-for-injection signal** is required to be true for injection to take place. It needs to be distinguished from the beam-abort signal and is provided by the Detector-Safety System. For the movable detectors there will be a hardwired inhibit signal.

In order to permit beam-optimization procedures that are optional, the experiments will give a **ready-for-high-risk-procedure signal**. Its absence will not avoid the machine group from operations necessary to maintain the beam. Details still need to be discussed with the machine group. A list of high-risk procedures needs to be defined.

A **ready-for-beam-abort signal** is required to be true for the machine group to abort the beam after alerting the experiments that a beam-dump is necessary.

Consequently, the signals that are sent from the machine to the experiments are **"injection"**, **"luminosity"**, **"high-risk procedure"** or **"adjust"** and **"beam dump".** The machine modes, will be described in a dedicated paper, also dealing with the "high-risk procedures", and in particular referring to LEP signals.

4. A. o. B.

Ralph Assmann initiated a discussion on how the background from the detectors of the experiments will be transmitted to the machine. The machine group now has started to look into this. Beam-loss rates will be measured at a frequency of about 1 kHz (at the Tevatron the readout rate is 700 Hz). An appropriate signal transmission or at least a 5s history buffer with fast readout would be necessary. Emmanuel concluded, that for this a list of detectors, that can provide these background signals, is needed.

Ch. Ilgner

Provisional dates and rooms for the meetings in 2005 (16:00 hrs):

June 20, room 4-S-013
July 18, room 40-R-A10
September 5, room 40-R-A10
October 24, room 4-S-013
December 5, room 4-S-013