LHC EXPERIMENT-ACCELERATOR DATA EXCHANGE WORKING GROUP (LEADE)

Minutes of the 40th Meeting held on 15 October, 2007

Present: S. Baron, M. Deile, A. Di Mauro, D. Evans, P. Farthouat, M. Ferro-Luzzi, R. Hall-Wilton (Scientific Secretary), D. Macina, N. Massol, T. Pauly, A-L. Perrot, F. Rodriguez, H. Schindler, R. Schmidt, J. Serrano, D. Swoboda, B. Todd, E. Tsesmelis (Chairperson), S. Wenig.

1. PROPOSAL FOR HARDWARE INJECTION INHIBIT (BENJAMIN TODD)

A proposal for a hardware implementation of the interlock for the injection inhibit was presented. This is intended to be a replacement for the foreseen software interlock.

The proposal consists of using a newly available standard interlock module, the CIBFU. From an end-user point of view this is identical to a CIBU - i.e. the form factor (2U) and connections required to issue the permit (current loop) are the same as for the CIBU unit.

Physically, the INJECTION_PERMIT signal is passed over an optical fibre rather than a copper connection which is where the CIBFU differs from a CIBU. Using a fibre connection allows the signal to be passed a much larger distance with the required integrity. Physically the set of extra fibres needed is mostly already extant in the form of spares laid around the ring.

Details of patch panels and cables will be discussed in the event of this proposal being accepted. One CIBF is required per beam (i.e. 2 per experiment except ALICE and LHC-B who have 1 existing CIBU for the injection inhibit for the injected beam at their respective IRs).
This requirement is in addition to the existing CIBUs for the BEAM_PERMIT.

It was noted that the software alternative will be there anywhere, but OP would prefer to stick with a hardware solution if it is chosen.

The cost per connection for the experiments is ca. 7k CHF. The experiments need to say before the end of November whether this is needed or not. The hardware interlock will be ready for next spring, if the proposal is accepted.

Action:
The experiments should indicate and coordinate their decisions through Detlef Swoboda. The decisions will be formalised at the next LEADE meeting.

2. SUMMARY OF WORKSHOP ON POST MORTEM (RUDIGER SCHMIDT)

A summary was given of the relevant aspects arising from the Post Mortem workshop held in January this year. The main aims of the workshop were to verify the readiness of the system in the context of the start of the powering of the cold circuits and to develop a roadmap for immanent and future beam operations. The main purpose of the post mortem is to gather an

appropriate set of coherent information identify the causes of failure in the event of a dump, and to identify any failure of redundancy in the system, so that a prompt decision can be made whether to re-inject immediately or not.

It is noted that a precise naming convention already exists - and can be looked up. There is a wide variety of machine equipment that will send Post-Mortem reports. In the context of the experiments, they are certainly expected to send post-mortem data if they trigger the dump, and it was felt to be of interest to have the data anyway in the event of beam loss. However it was noted that AB/OP cannot take responsibility to analyse this experimental data - and that anyway the experiments are in a better position to understand and interpret their own post-mortem data. The injection inhibit exists to protect the experiments in the event of problems caused by a beam failure.

Information exchange is in any event anticipated between the experiments and the machine in the event of a beam dump. It was noted that maybe for low intensities no post mortem need be sent.

It was asked whether the experiments can access data from the machine post-mortem; the data is in a database which is however inside the firewall of the Technical Network. Therefore cannot a priori it cannot be easily accessed. The experiments expressed interest in accessing the post-mortem data.

It was noted that the BIC contains the initial data to see where the first trigger for the beam abort came from. BIC information should give the principal input to the understanding of what happened.

It was requested that if experimental data was provided it should be provided in SDDS format. It was also noted that the timing system distributes the triggers which signal the beam dump has happened and therefore trigger the post mortem.

In terms of possible post-mortems provided from the experiments, it was important to note:
1) They be triggered by the machine timing system.
2) What transients are available from the experiments? What time scales are involved?
3) Can they be implemented into the post mortem system soon?
4) The format is SDDS.

Another follow-up post-mortem workshop is not planned at the present time.

Action items:
1) Should formalise what data is sent from the experiments.
2) What kind of signals / sub-detectors would experiments look at to analyse data?
3) Good idea to put these ideas together to be complementary to OP.
Formal paper summarising this considered desirable.

Minutes by RJ Hall-Wilton