

Background

Recently there have been a small number of incidences where a single power supply on one of the spectrometer solenoids has started to ramp to a current without a command from an operator. Such “autonomous” ramps put the integrity of the data-taking and the safety of the equipment in the MICE Hall at risk.

A number of measures have been taken to reduce or remove the risk of another autonomous ramp. The magnet controls have been modified to limit the instructions that can be sent to the magnet power supplies and to provide two levels of confirmation for an instruction to ramp. In addition, the shift crew make regular checks of the status of the magnet power supplies which are logged on paper.

The present review is being carried out at a time when the principal author of the “user layer” of the MICE controls and monitoring code may be preparing to move to a new job. Therefore the review must be conducted with a view to ensuring the continued maintenance and development of the system for the duration of the experiment.

Process

Initial investigation of possible causes of the autonomous ramps have not identified the cause. It is therefore necessary to take an approach that scrutinises all levels of the system. The process for the rolling review will be an initial meeting in which the architecture, structure and philosophy of the system is presented. This will be followed by a targeted investigation of the individual components of the controls-and-monitoring system related to the powering of the superconducting magnets. The review will encompass the low-level code, networking and serial communications and the high-level code.

Constraint

Since MICE is now in production data taking for Step IV, the work of the rolling review must be carried out in such a way that the experiment is at all times ready to take data.

Charge

Execute a detailed investigation of the controls and monitoring code and the associated communication systems that control the power system for the superconducting magnets.

Personnel

The rolling review team will include:

- K. Long (Chair)
- D. Rajaram (Secretary, S/w 'n' C coordinator)
- C. Whyte (Project Manager)
- B. Martlew (DL Controls Group Leader)
- P. Hodgson (Duty Coordinator, experimenter with experience in real-time systems)

Other persons may be coopted as necessary.

Key MICE personnel that will be required to provide material for the rolling review:

- P. Hanlet (Controls and monitors coordinator)
- P. Owens (DL Controls Engineer)
- A. Oates (DL Controls Engineer)

- P. Franchini (Online computing infrastructure coordinator)
- A. Kurup (Controls and monitoring group member)
- M. Courthold (Magnet and controls expert)
- S. Griffiths (DL Electrical Engineering Group Leader)
- T. Hartnett (DL Electrical Engineering Group)
- S. Feher (FNAL, Magnet expert)
- A. Bross (Deputy Spokesman and magnet expert)

Where appropriate, advice and input from other key people, e.g. R. Fillipenko (FNAL) will be sought.

Timetable

An initial meeting to receive presentations on the architecture, structure and philosophy of the system will take place before Christmas 2016. The work of the review will be carried out with a view to completing the rolling review by the start of ISIS User Cycle 2016/05 in February 2017.