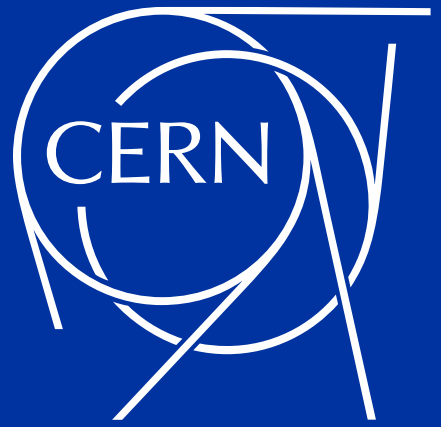


MTN.211128 incident and mitigation TE-MSC

Philip Schwarz

26.11.2024

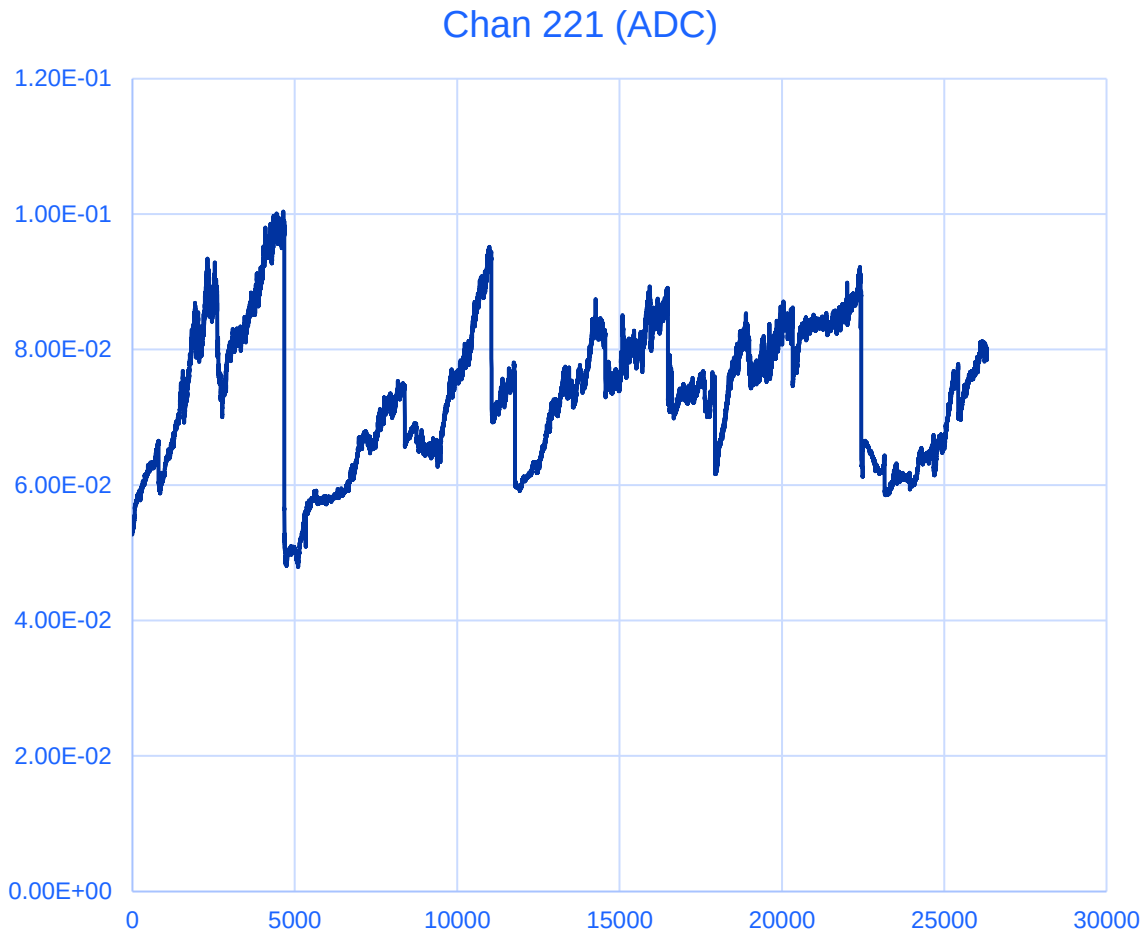
Incident and mitigation timeline

- **20.08.2024:**
  - CCC informed that circuit corresponding to 3 MTNs in 241 tripped due to excessive current-to-ground
  - Fuse on converter was exchanged and operation restarted
  - Magnet tripped again multiple times during the night, with accelerating frequency
  - No increased water consumption of abnormal conductivity for the water was observed
- **28.08.2024:**
  - Access was possible and the circuit split between cables and magnet chain, confirming that the problem lies with the magnets
  - Increase of tripping threshold from 100 mA to 160 mA

Incident and mitigation timeline (continued)

09.09.2024:

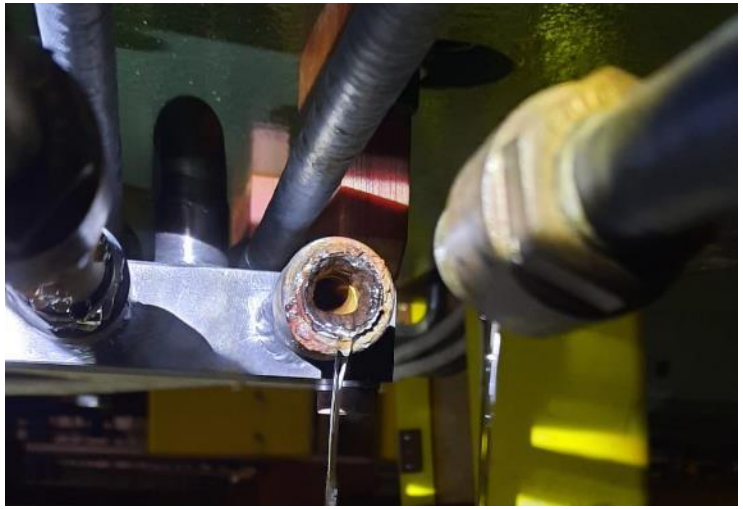
- The circuit did not trip since the incident and occasional measurements of the current-to-ground reveal current-to-ground well below the threshold of even 100 mA
- Installation of datalogger to monitor and record the development of current-to-ground
- Data logs shows hiking current (only sometimes above 100 mA), followed by a drop to lower levels
- Suggests a worsening problem
- Due to radiation environment, a closer investigation during the YETS was planned



Incident and mitigation timeline (continued)

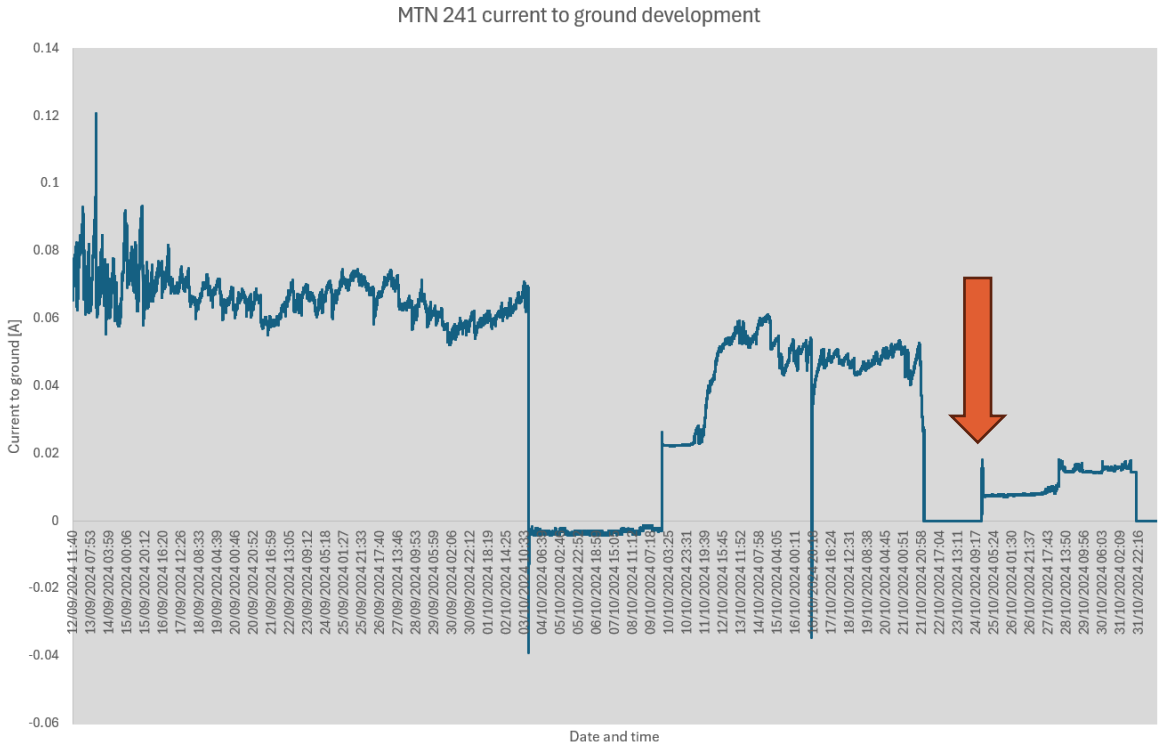
- **21.10.2024:**
  - CCC informed that a leak in the water circuit had caused a trip of the pumps
  - Leak was significant enough as to not allow the continuation of the operation

- **22.10.2024:**
  - Access was granted and MTN.241128 found with a leak on a broken insulator
  - Replacement of the insulator was not possible within exposure time limits, as part of the broken insulator remains gripped within the fixation nut
  - In agreement with the beamline physicists, it was decided to remove the faulty magnet (MTN.241128) from the circuit, as the remaining two magnets were sufficient to enable ion operation



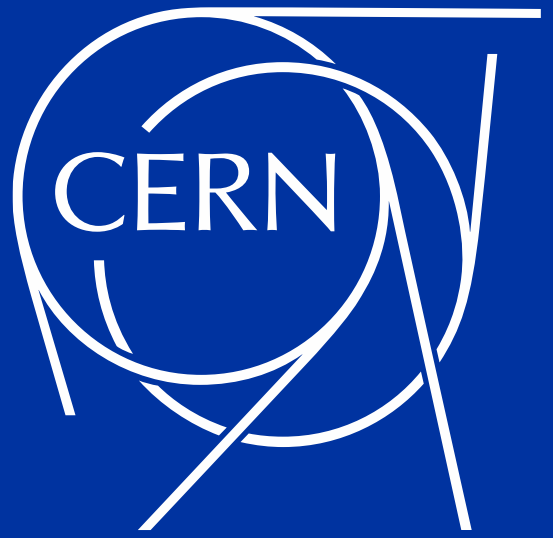
Situation now and future actions

- **Operation was continued with the magnet removed**
  - A significant improvement can be observed in the current-to-ground development after the intervention
  - The current-to-ground levels seem much more in line with typically observed levels
- **MTN.241128 will be exchanged during the YETS**
- **Broken insulator and neighbouring insulators will be analysed for cause of (apparent) corrosion**



Questions?

Thanks to all involved groups for their support, enabling a quick mitigation of the problem!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