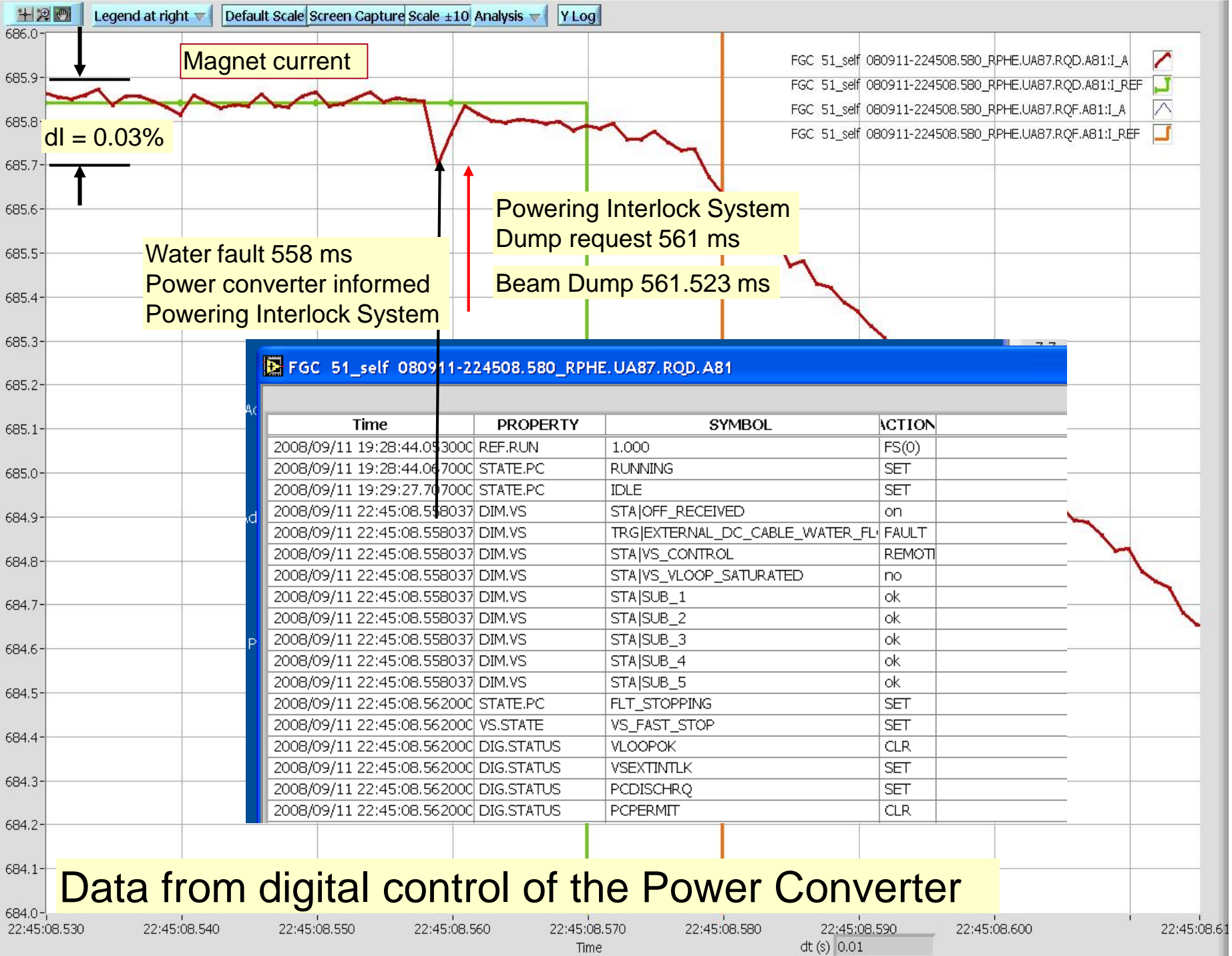


- On 11 September 2008 already operation with circulating beam
- At 22:45:08, the beam 2 was dumped by the beam dumping system
- The dump was caused by a water fault in the DC cables in the QD/QF circuit in arc 81
- This event allowed to address the performance of the interlock / machine protection systems at a very early state, as well as to understand the functionality of the post mortem (transient data) recording

Thanks for the help from B.Goddard, J.Uythoven, A.Rijllart, D.Nisbet and others



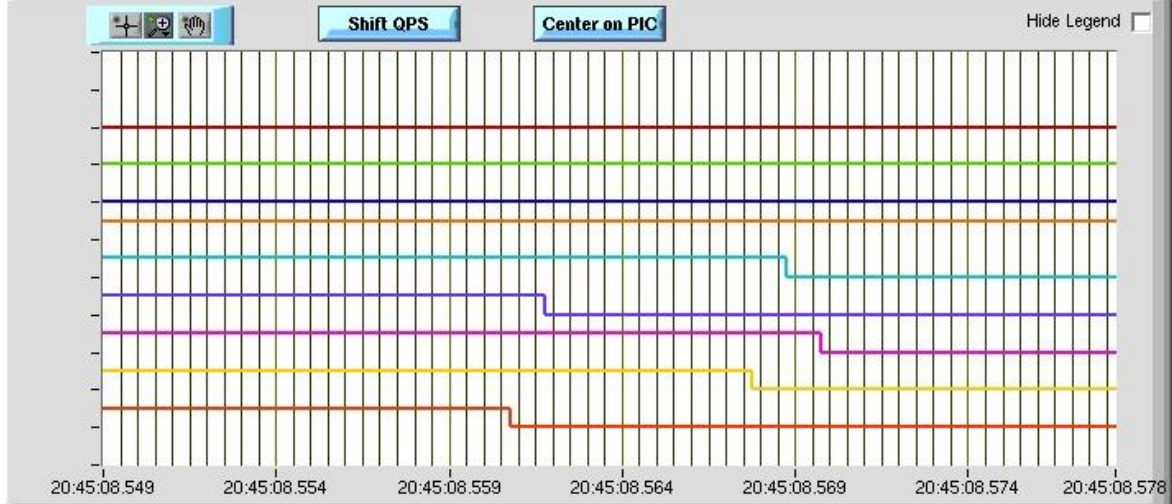
Circuit: PIC event: 1

Test Type: PC event: Screen Capture Close

QPS event: Pass Fail Fail & Flag



- I_MEAS
- V_MEAS
- I_A
- I_B
- U_LEAD_NEG
- U_LEAD_POS
- I_EARTH
- I_DIFF_MA



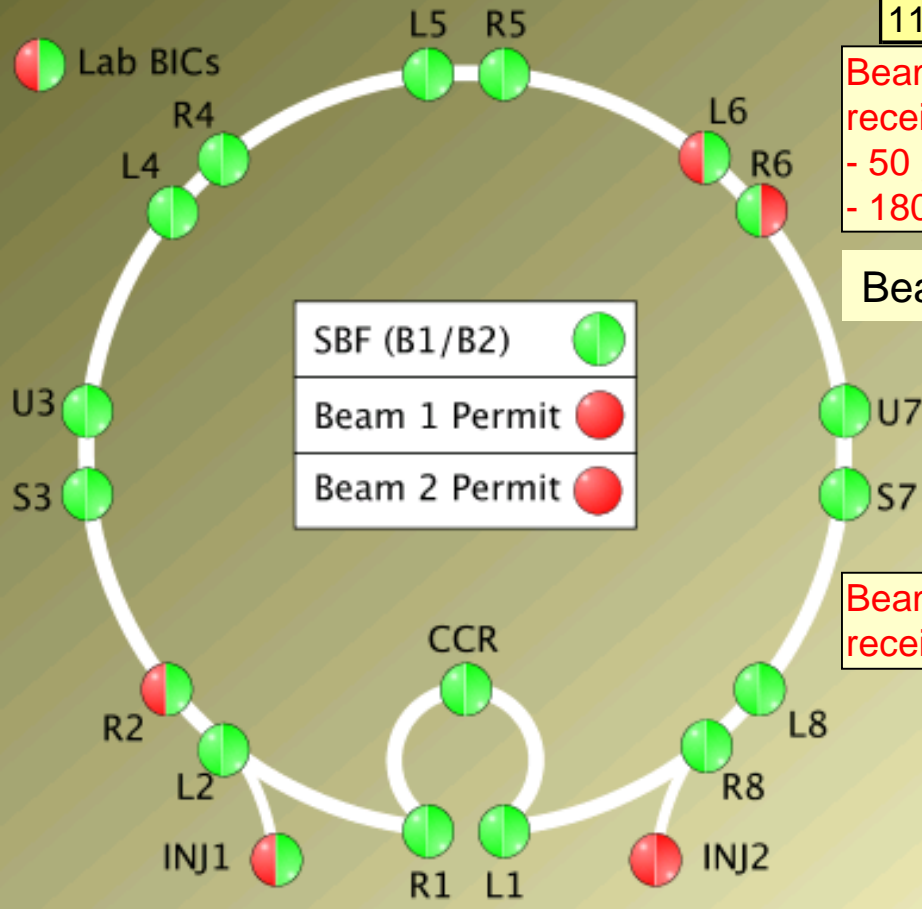
- ST_FAULTS:FAST_ABORT
- ST_UNLATCHED:PWR_FAILURE
- ST_UNLATCHED:PC_DISCH_RQ
- ST_UNLATCHED:PC_PERMIT
- :CMD_ABORT_PIC
- :CMD_PWR_PERM_PIC
- :ST_ABORT_PIC
- :ST_DISCHARGE_PIC
- :ST_FAILURE_PIC

Comments

Signal Name	Timestamp	Delay (s)
RQD.A81:CMD_ABORT_PIC	080911-204508.569	-3599.993
RQD.A81:CMD_PWR_PERM_PIC	080911-204508.562	-3600.000
RQD.A81:ST_ABORT_PIC	080911-204508.570	-3599.992

Data from Powering Interlock System

LHC Beam Interlock System



11 Sep 2008 22:45:08 (561617)

11 Sep 2008 22:45:08 (561484)

Beam Interlock Controller at IP6 received dump request
 - 50 μ s later (anti clockwise signal)
 - 180 μ s later (clockwise signal)

Beam Dump 561.523 ms

LHC Beam Presence: R2

LHC Stable Beam Flag

Operator Overview

Interlock Hit List

Beam Interlock Controller at IP8 received dump request at 561.437 ms

11 Sep 2008 22:45:08 (561437)

11 Sep 2008 22:45:08 (561437)

BIS Loop Frequencies

Generator Controls

Data from Beam Interlock System

- The interlock / MP systems worked as expected
- The beam dump was performed before the magnet current changed
- The systems are well synchronised
 - beam dumping system for the time being with a resolution of better than one μs
 - powering interlock system (PLC based) with an error of 1-2 ms
 - beam interlock system at one μs (issues with logging / history buffer)
 - **accuracy and stability of synchronisation still to be adressed**
- The tools are available to understand what happened
- The objective is to understand the cause of each beam dump as well as the subsequent events
 - work is ongoing to improve the tools, with of automatic analysis for beam dumps