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PIC configuration: Potential modification of skew quadrupoles (RQS)

A. Antoine
I. Romera

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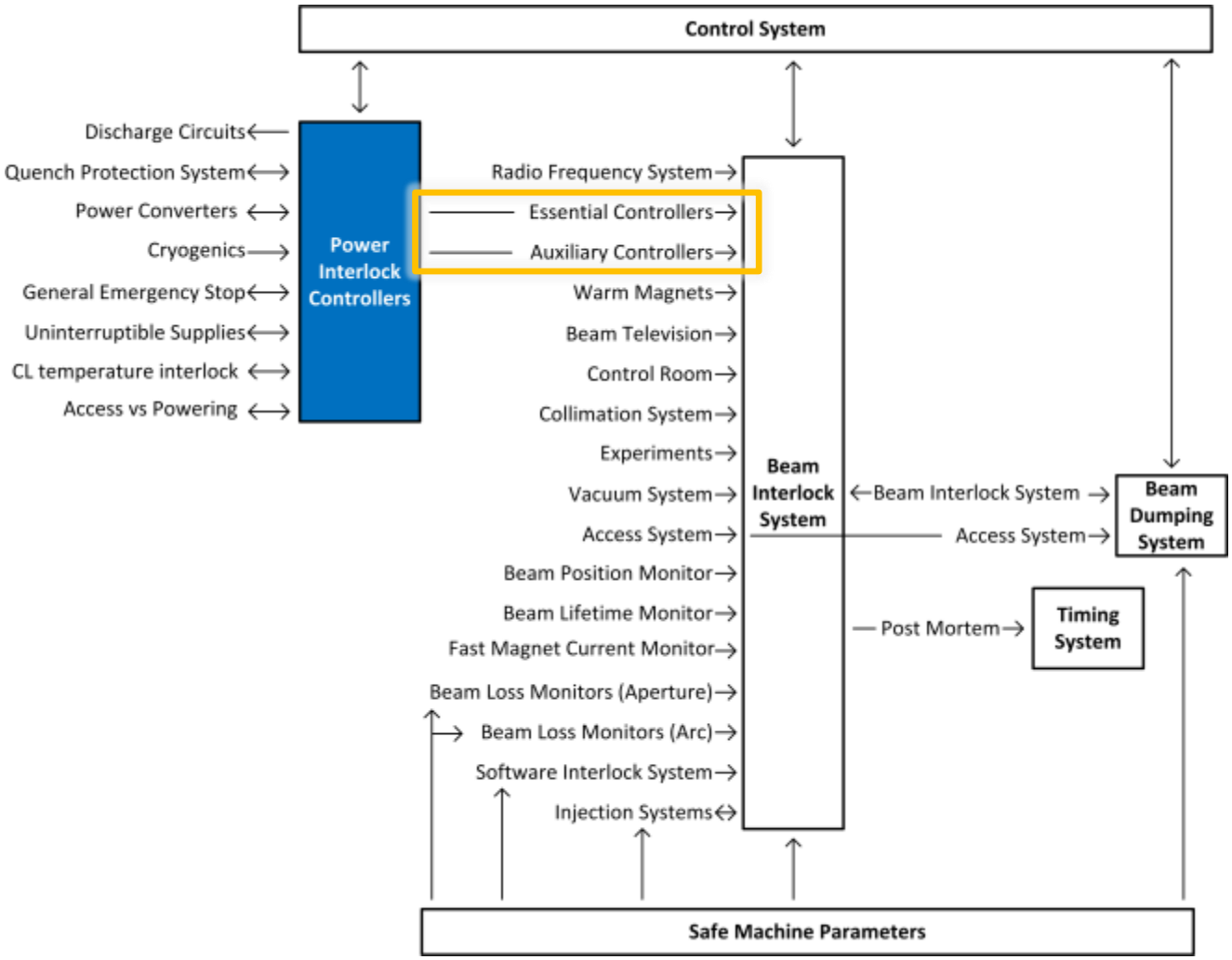
Powering and Beam Interlocks



Definition of essential and auxiliary

- **Essential circuits** are connected to unmaskable input of BIS
  => **BEAM DUMP** under any condition (including safe beams)

- **Auxiliary circuits** are connected to maskable input of BIS
  => BEAM DUMP if unsafe beams (can be masked on the BIS when running with safe beams)

  NOTE: No difference between Essential and Auxiliary definition with unsafe beams!

- **None of the above** => **no impact** on beam

Present PIC configuration

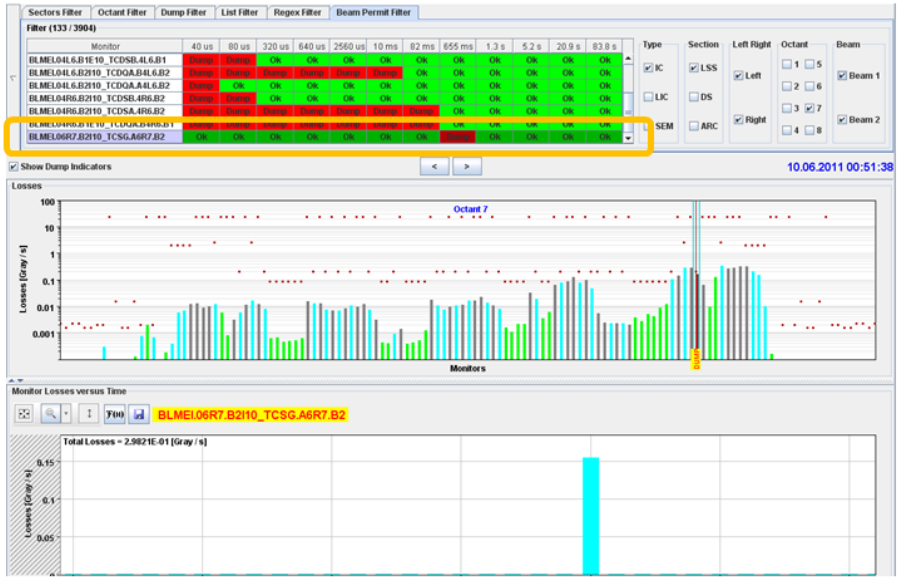
- **UNMASKABLE** (essential for operation):
  - RB, RQD, RQF, RQX, RD1-4, RQ4-RQ10

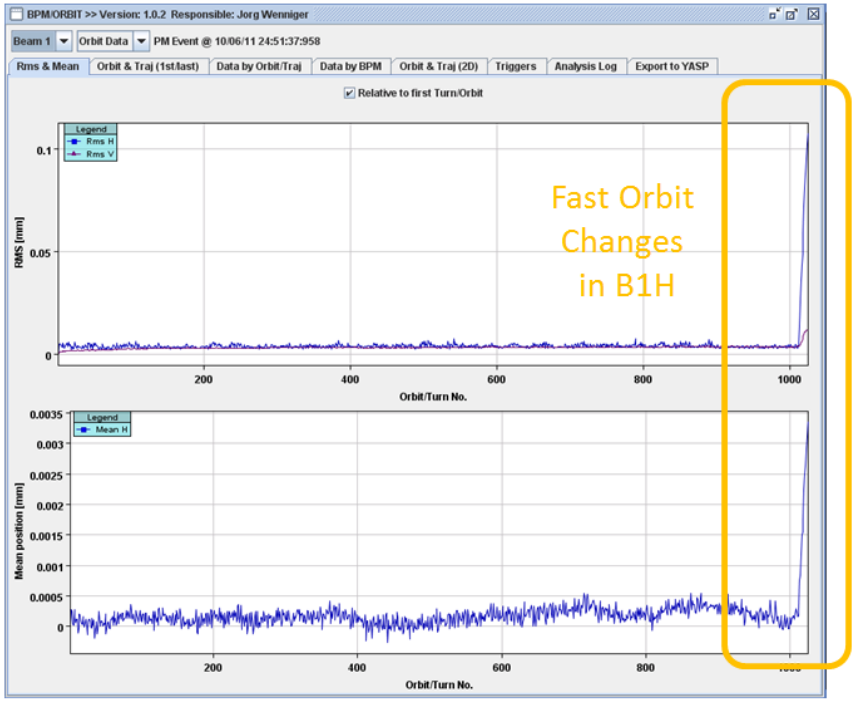
- **MASKABLE** (not essential for operation):
  - RCS, RQT%, RSD%, RSF%, **RQSX3**, ROD, ROF, RCBXH/V and RCB%

- **NO IMPACT** (do not trigger the BIS)
  - RCD, RCO, **RQS.%**, RSS

Modifications during Run1

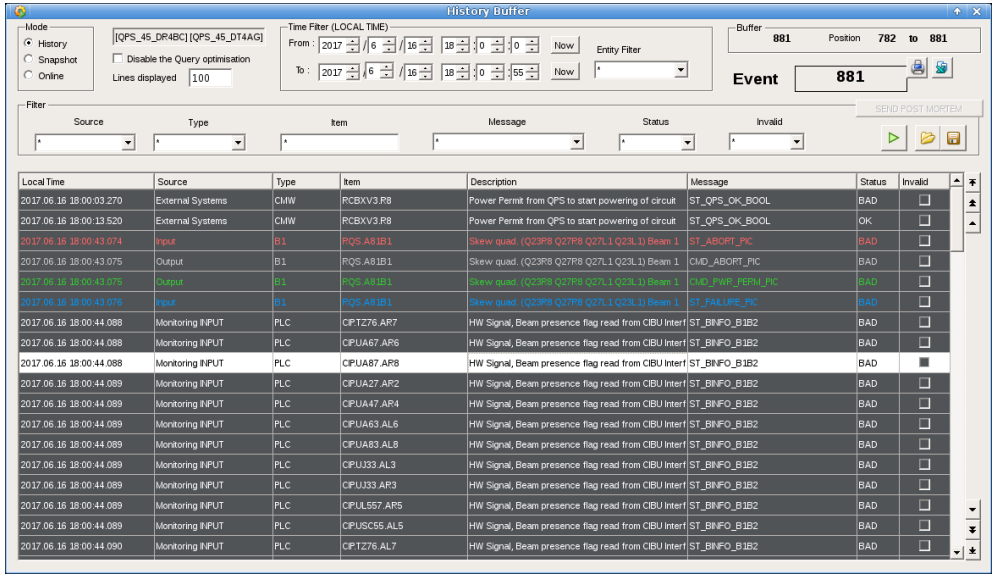
- **RQSX3.%:** Included in **Maskable** PIC configuration after trip provoking fast orbit changes and beam losses in SR7 (event on June 2011 – ECR 1203408)

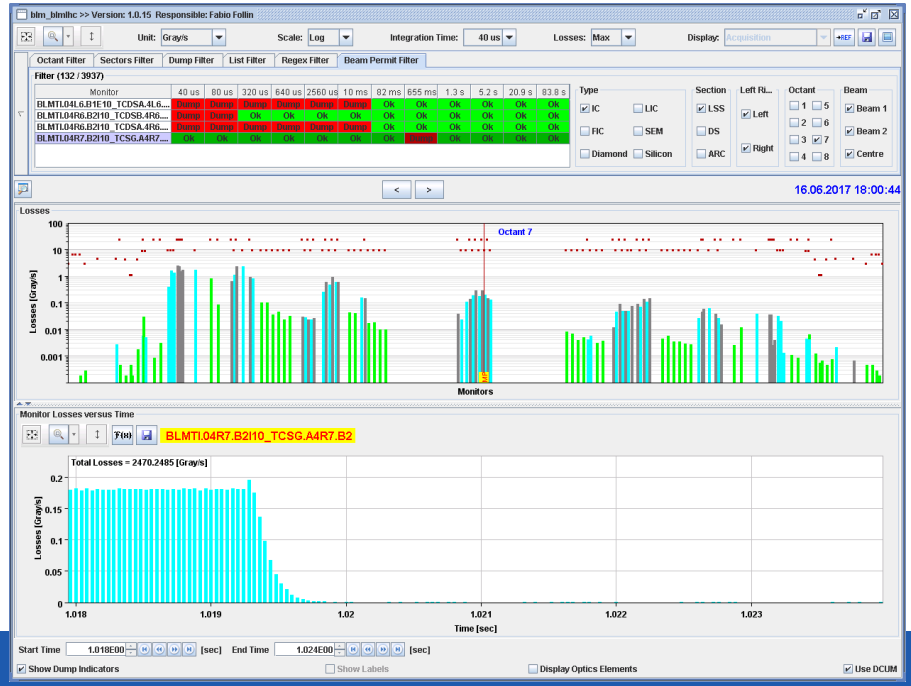




Potential modification for 2017-TS1

- **RQS.%:** Propose to include in **MASKABLE** configuration to avoid dump on beam losses
  - Event on 16.06.2017: Trip of RQS.A81B1 provoked beam losses in R7.
  - Several families: RQS.A% (8 circuits), RQS.L/R% (8+8 circuits)
  - Currently studying the expected kicks from RQS circuits



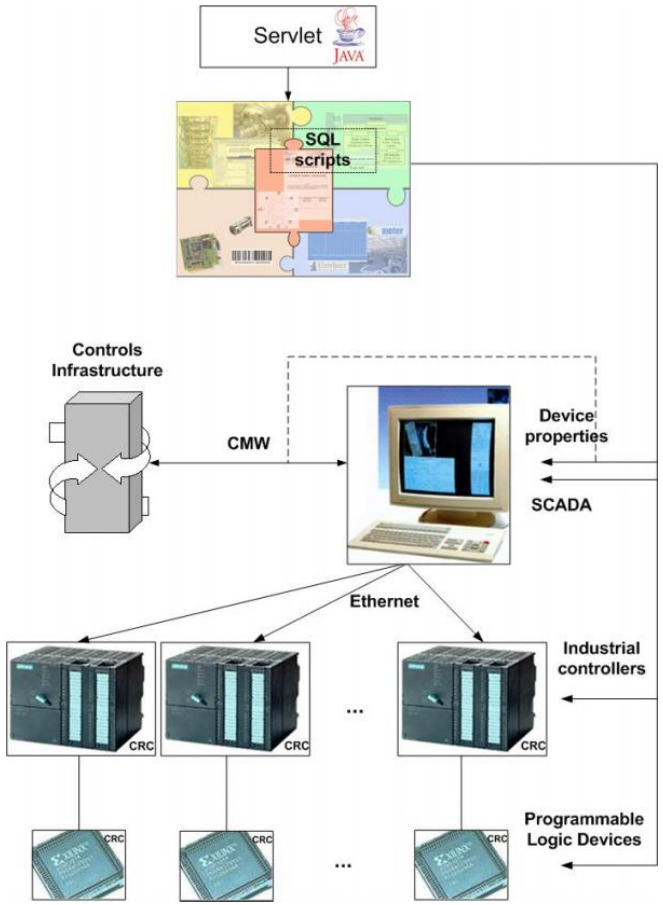


How to deploy new configuration…

- Apply changes to **reference DB**
- Generate **configuration data** (script)
- **Download new configuration** to PLC

- Time estimated for changes: 4 hours

- Time estimated for validation: 2 hours
  - Run a few powering tests
  - Run PIC-BIC interface sequences



Thanks for your attention