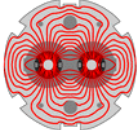


Summary Session 2: Availability

Mirko Pojer, Jan Uythoven

- QPS – Analysis of main problems, areas to target, possible improvements
 - Reiner Denz
- Cryogenics, Availability achieved in 2011 and perspectives for 2012
 - Serge Claudet
- Technical Stops: what were the issues in 2011, minimizing impact and improving recovery
 - Matteo Solfaroli Camillocci
- R2E – Experience and outlook for 2012
 - Giovanni Spiezia

Thanks to the speakers for their excellent talks!



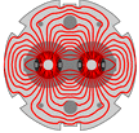
Quench Protection System

■ QPS - 2011

- 54 faults requiring intervention
- 190 faults radiation induced
- **The observed faults never caused a total loss of protection !**
- Number of faults close to maximum admissible (R.Denz)

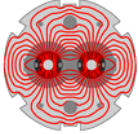
■ QPS 2012

- Consolidation measures over Xmas TS will not lead to zero radiation induced trips, but allow to **limit the number of faults despite increasing luminosity**
- Tune Feedback -> MQT, QPS limits can be increased for 2012, running at 4 TeV, ECR in preparation



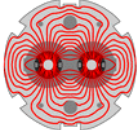
Cryogenics

- Serge explained to us how to **standardize** statistics
 - “ Every single drop of Cryo Maintain is logged, with other categories like duration, situation when lost (beams, Powering, ...), origin of failure, ...”
- Provided a good availability of **89.7 %** over 2011 despite serious “discoveries”
- 210 hrs of cryo stop related to R2E. 19 SEUs ‘saved’.
- Tuned away beam induced effect on cryo regulation
 - Helped by avoiding dip in bunch length during ramp
- Improved strategy on spare components with test bench
- Consider **95 % availability** reachable for running in 2012



Technical Stops

- No systematic source of trouble over the 5 TSs
- About 50 % of time spent for recovery from TS related to works done during the TS
 - 2/3 related to hardware, 1/3 to software
- Clearly improving recovery during the year
 - From 43 h to 13 h
- Can do even better by
 - **Control for Software changes: CO and Equipment Groups**
 - **List of work/changes to be taken into account by operating crew**
- 4 TS foreseen for 2012. Can we push to 3 TS of 5 days?
 - **NO**



Radiation to Electronics

- 2011 saw about **70** radiation linked dump events
 - Predicted 100 in Chamonix 2011
- Operation scaling for 2012
 - Expect more SEUs due to increased total lumi
 - **Beam gas** can give up to 100 x more SEU
 - Important for 25 ns operation, **to be better understood!**
- For 2012 more mitigation actions
 - UJ14/16 shielding and relocation
 - US85 relocations
 - Collimation power supply redundancy etc.
 - Power converters Digital Filter improvement
- 2012 Expect **30 – 50** dump events
 - Including **60 % mitigation**
- Suggest additional RadMon coverage for ion operation