

REPORTS FROM THE MCWG TO THE R2E PROJECT MEETING

2 December 2010

M. Calviani, EN/STI

Measurement and Calculation Working Group

2

Mandate of the Measurement and Calculation WG established within the R2E Mitigation Project:

1. Monitoring around the LHC critical areas of concern for R2E
2. Comparison and benchmarking with expected radiation level
3. Coordination of the required Monte-Carlo calculations
4. Improvement of the LHC Combined Monitoring Tool & related issues
5. Possible improvement of RadMon monitor locations and eventual increase in number
6. Extrapolation towards nominal LHC operation
7. Development of a standardized reporting method of radiation levels

Organization and First findings (1 / 2)

3

- The WG meets every 2-3 weeks to sum up the open points and the improvements → [INDICO link](#)
- Always a close contact between members to discuss current topics and propose plans of actions

Principal findings/actions (October-November):

1. The WG follows closely **LHC operation** to understand the readings in RadMon detectors and help in case of equipment failure → i.e. QPS “lost-ok” events in 9R7/9L7/9R3
2. New release of the **LHC Monitoring Tool** with a platform for reporting bugs and issue request → new version has been released, more usability and flexibility ([link](#))
3. New MC calculation on **P1** and **P8** → first **benchmark** for RAMSES/RadMon detector for a UX, good agreement found
4. EDMS document prepared for P8 calculations (draft version, <https://edms.cern.ch/document/1099674>):

Organization and First findings (2/2)

4

4. **Improvements of monitor locations** according to new unforeseen needs ([link](#)) prepared for xMas break
5. **BLM/RadMon ratios** → of great use for regions (namely the ARC) where RadMons are not present and for other critical locations
6. Close discussion for the interpretation of **BLM readings**: offsets, proper running sums, cumulative values over the year ... linked also to DB issues
7. **Update of the Layout Drawings** with RadMon/RAMSES detectors and critical equipment which generate known losses (TDI, TCTH, TCTVB, ZDC ... etc.) ([DFS link](#))
8. First version of a “**Weekly Radiation Report**” → presently is a pdf map + Excel file for detailed information of losses ([DFS link](#))
 - to be refined and from next year distributed by R2E to equipment owners with a first interpretation of results (hadron fluence, dose, 1 MeV silicon equivalent)

Members of the MCWG

5

- **RadMons**: D. Kramer, G. Spiezia, K. Roed (EN-STI)
- **RAMSES**: S. Roesler (DGS/RP)
- **BLM**: A. Nordt (BE/BI)
- **TDLs**: M. Brugger, A. Thornton (EN/STI)
- **Monitoring Tool**: M. Pinheiro (BE/OP)
- **Monte-Carlo calculations**: M. Calviani, K. Roed, M. Brugger (EN/STI)
- **Radiation Damage**: K. Roed (EN/STI)
- **LHC Operation**: M. Pojer (BE/OP)
- **R2E**: M. Brugger (EN/STI)
- **Chair**: M. Calviani (EN/STI)

Weekly Radiation Report for the LHC Critical Areas

Date: 25/10/2010—01/11/2010

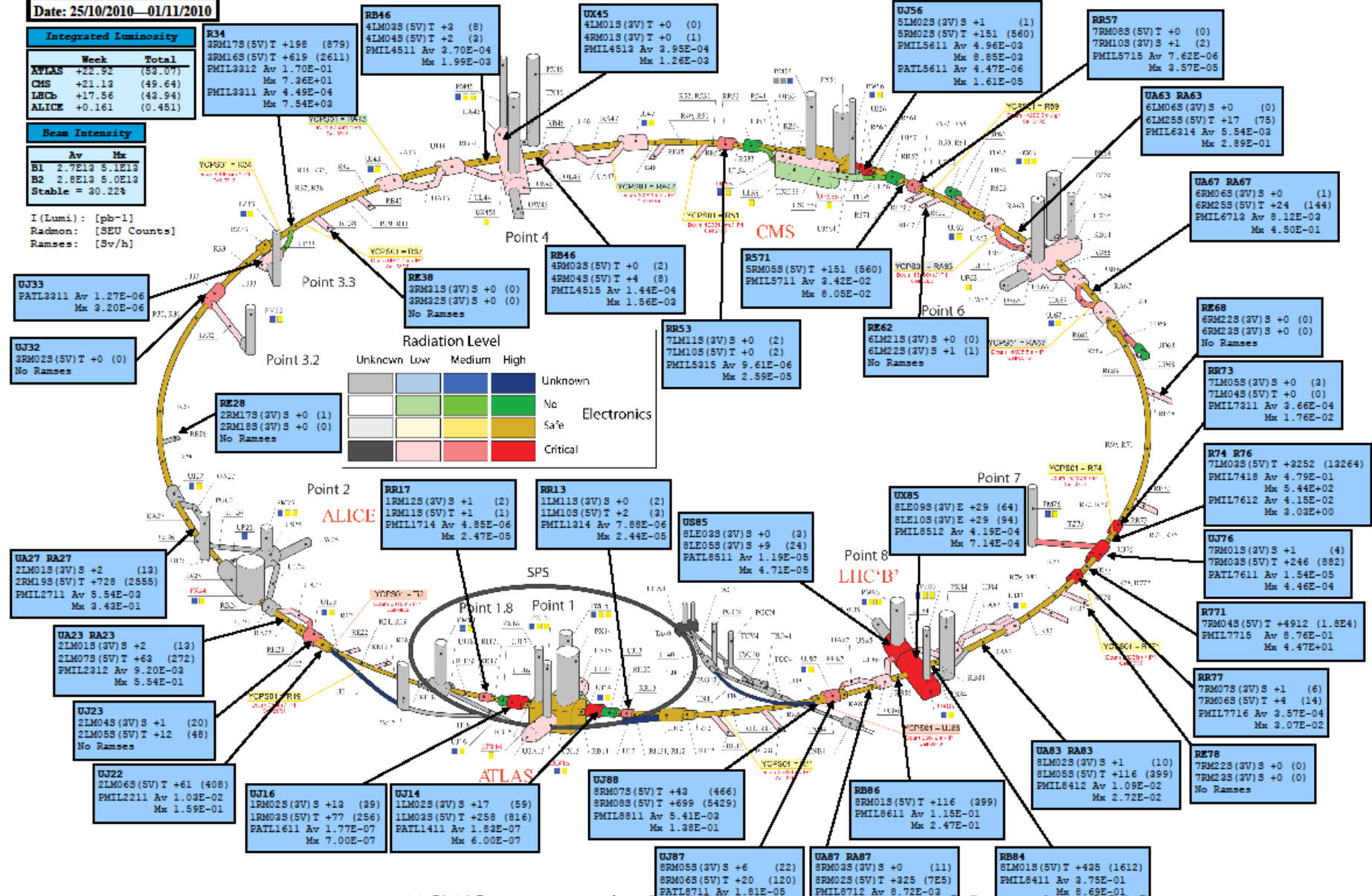
Integrated Luminosity

Week	Total
ATLAS	+22.92 (53.07)
CMS	+21.13 (49.64)
LHCb	+17.56 (43.94)
ALICE	+0.161 (0.451)

Beam Intensity

Av	Mx
B1	2.7E13 5.1E13
B2	2.8E13 5.0E13
Stable	= 30.22%

I (Lumi): [pb-1]
Radmon: [SEU Counts]
Ramses: [Sv/h]



Radiation Level

Unknown	Low	Medium	High	Unknown
Grey	Light Blue	Green	Yellow	Unknown
Grey	Light Blue	Green	Yellow	No
Grey	Light Blue	Green	Yellow	Safe
Grey	Light Blue	Green	Yellow	Critical

Electronics