

# Current BLM Threshold Families

1st BLM Thresholds WG Meeting

Matti Kalliokoski

# Monitors

- Total number of monitors in the LSA database: 3902
  - 1 Flat ionization chamber
  - 3601 Ionization chambers
  - 17 LICs
  - 283 Secondary Emission Monitors
- The detectors are placed in 181 families based on the type and location
- None of the SEMs and the FIC are connected to BIS
- From LICs, 2 are connected to BIS

# Ionization Chambers

- The 3601 ICs are placed in 144 families
  - 3486 are connected to BIS
- 221 detectors have their thresholds set to maximum
  - 116 of these are connected to BIS
- 66 detectors have filters
  - 57 are connected to BIS
    - 8 have thresholds set to maximum

# Families

- Naming conventions: THRa.b.c.d.e.f\_E
  - a = I for ionization chambers, S for SEM, L for LIC, F for FIC
  - b-cell No = AR(12-34) or DS or SS or number
  - c = L for left, R for right
  - d-IP=CO(3,7), NC(1,2,4,5,6,8) or number
  - e = B1 / B2
  - f = position on magnet (10, 11, 20, 21, 30, ...)
  - E = MQ, MQM, MB ...

# Cryomagnets

- 77 Families
  - 8 with thresholds set to maximum [LHC-BLM-ECR-0016]
    - THRI\_B1.3B\_MQXA & THRI\_B2.3\_MQXA (6+6 monitors)
    - THRI\_B1.3\_MQTLH & THRI\_B2.3\_MQTLH (4+4)
    - THRI.SS.B1.3\_MQM & THRI.SS.B2.3\_MQM (12+12)
    - THRI.SS.B1.3\_MQY & THRI.SS.B2.3\_MQY (18+18)
  - 3+3 large families for the arcs with 360 monitors in each
    - THRI.AR.B1(2).2 and THRI.AR.B1(2).3 hold the same threshold values
  - The arcs values were used for THRI.DS.B1(2).1(2-3)\_MQ respectively with same MF [LHC-BLM-ECR-0016]
  - Thresholds of THRI\_B1(2).2\_MB and THRI\_B1(2).3\_MB [101 (102) & 17 (18) monitors] were set to THRI\_B1.1\_MB [1 monitor]
    - Threshold values of THRI.AR.B1.1 were used to set THRI\_B1.1\_MB

# Cryomagnets

- Several families were split in 2011 to cover the injection losses left of IP2 and right of IP8
  - From THRI.DS.B1(2).1(2-3)\_MQM [44/43 monitors], families THRI.DS.B1(2).1(2-3)\_MQM\_IL [2 monitors] were created
    - THRI.DS.B2.1\_MQM\_IL has currently only 1 monitor
  - This was also done for MXQA and MXQB monitors, but the removed monitors were later returned back
    - Exception THRI\_B2.3\_MQXA\_IL [3 monitors]
  - Also from THRI\_MBRC 2 monitors were split to create THRI\_MBRC\_IL
    - $12 - 2 = 11$

# Cryomagnets

- Filters were installed to the readout chain of 30 ICs on the external side in IP2 and IP8 injection region (MQML, MQM, MSI cell 6, 7 and 8 L2 and R8) [LHC-BLM-ECR-0003]
  - Reduce the peak signal by a factor of 8.3
  - Stretching the length of the signal by the same factor
  - RC filters were installed 26.4.2010
- Families THRI.DS.B1(2).1(2-3)\_MQM\_RC, THRI.SS.B1(2).1(2-3)\_MQM\_RC and THRI\_MSI\_RC
  - To be checked

# Collimators

- 17 families
  - 2 families, THRI\_DRIFT & THRI\_TCDD have their thresholds set to maximum [1+1 monitors]
  - In THRI\_TCLI there is one extra monitor with filters that is not connected to BIS – meas. purpose
  - Family THRI.07\_7\_AB\_TCLA has 4 monitors from which only 2 are connected to BIS
    - 2 disconnected since the respective TCLAs (IP7) was not installed in the LHC [LHC-BLM-ECR-0002]
  - Family THRI\_TCL has 8 monitors from which 4 are connected to BIS
    - From the connected ones BLMEI.05L5.B2E10 and BLMEI.05R5.B1E10\_TCL5R5.B1 are dismantled – too be checked



# Collimators

- Filters were added to the readout chain of 6 ICs (which are installed 1.2, 2 and 3.2 m downstream of primary collimators) [LHC-BLM-ECR-0004]
  - reducing the peak signal by a factor of 175
  - stretching the length of the signal by the same factor
  - The 6 ICs which were changed were not protecting nor monitoring (??) any installed equipment
  - Families THRI\_TCHS\_RC and THRI\_TCP\_RC were created [4+2 monitors]
  - Not connected to BIS
- The filters were also added to the readout chain of two ICs on the TDIs [LHC-BLM-ECR-0005]
  - Family THRI\_TDI\_RC180, connected to BIS
    - BLMEI.04L2.B1E20\_TDI.4L2.B1, temporarily dismantled