

Proposal for BLM threshold changes on LSS magnets to avoid UFO-induced dumps

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UFO-induced dumps on LSS magnets

Started with rather conservative MFs on IPQs/IPDs (risk of symmetric quenches)

Fill	Date (Time)	Beam	BLM dump at	Beam mode	Remark
4978	01/06 (13h09)	B1	Q5.R5/XRP.E6R5	ADJUST	
4979	02/06 (04h24)	B1	ALICE BCM	STABLE (11h)	ALICE trip
4983	03/06 (12h29)	B2	TCL.6L1	ADJUST	Multiple UFOs, dump in long RS
5018	14/06 (13h57)	B2	Q5/Q6.L1	ADJUST	Multiple UFOs (one big)
5021	16/06 (04h24)	B1	TCTPH.4L1	STABLE (8.5h)	

+a few more events reaching a few 10% of IPQ BLM thresholds

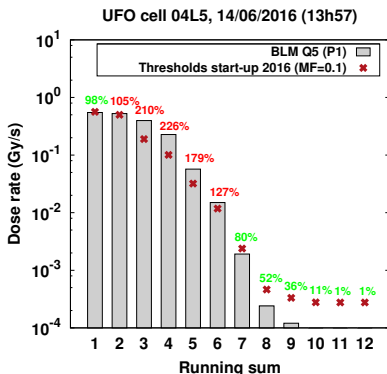
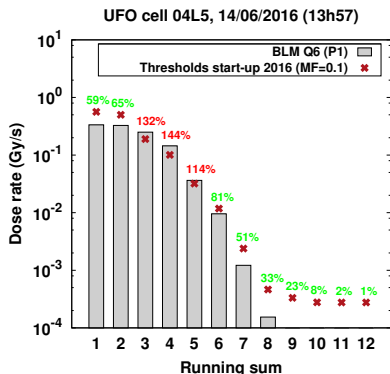
IPQ/IPD families and present MFs

Family	# BLMs	MF	Remark
THRI.LS.P1_MQM	23	0.1 (all)	Oct 2015: 0.333
THRI.LS.P2_MQM	25	0.1 (all)	Oct 2015: 0.333
THRI.LS.P3_MQM	25	0.1 (22x) + 0.16 (1xIR2) + 0.3 (2xIR2/8)	MT@max
THRI.LS.P1_MQY	22	0.1 (all)	Oct 2015: 0.333
THRI.LS.P1_MQY_FT	8	0.4 (all)	
THRI.LS.P2_MQY	32	0.1 (20x) + 0.5 (8xIR6) + 1.0 (4xIR4 [†])	Oct 2015: 0.333
THRI.LS.P3_MQY	36	0.3 (34x) + 0.1 (2xIR5)	MT@max
THRI.IP3.P1_MQTL	4	0.4 (all)	
THRI.IP7.P1_MQTL_FT	4	0.4 (all)	
THRI.IP3.P2_MQTL	4	0.1 (all)	Oct 2015: 0.333
THRI.IP7.P2_MQTL_FT	4	0.1 (all)	Oct 2015: 0.333 ??
THRI.IP37.P3_MQTL	8	1.0 (all)	MT@max
THRI.LS.P1_MBX	2	0.1 (all)	
THRI.LS.P2_MBX	2	0.1 (all)	
THRI.LS.P12_MBRC	6	0.1 (all)	Oct 2015: 0.333

+special families for injection regions, wire scanners etc.

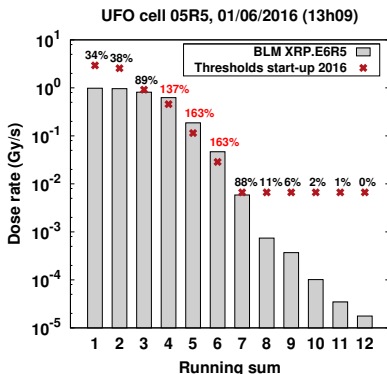
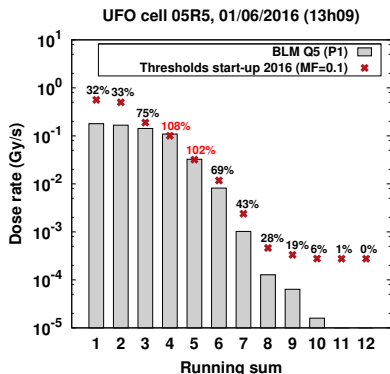
† why not in THRI.LS.P2_MQY_WS family?

Dump 2016 #4: confirmed that IPQ thr are conservative



→ UFO not really shortened, reached 226% without issues for magnet

Dump 2016 #1: present IPQ thr at similar level as RP thr



→ increasing IPQ thresholds still leaves other bottlenecks (see also Alessio's talk)

Proposal of MF change (for discussion)

Family	# BLMs	Present MF	Proposed MF
THRI.LS.P1_MQM	23	0.1 (all)	0.333 (all)
THRI.LS.P2_MQM	25	0.1 (all)	0.333 (all)
THRI.LS.P3_MQM	25	0.1 (22x) + 0.16 (1xIR2) + 0.3 (2xIR2/8)	1.000 (all)
THRI.LS.P1_MQY	22	0.1 (all)	0.333 (all)
THRI.LS.P1_MQY_FT	8	0.4 (all)	no change
THRI.LS.P2_MQY	32	0.1 (20x) + 0.5 (8xIR6) + 1.0 (4xIR4)	0.333 (20x) + 0.5 (8xIR6) + 1.0 (4xIR4)
THRI.LS.P3_MQY	36	0.3 (34x) + 0.1 (2xIR5)	1.000 (all)
THRI.IP3.P1_MQTL	4	0.4 (all)	no change
THRI.IP7.P1_MQTL_FT	4	0.4 (all)	no change
THRI.IP3.P2_MQTL	4	0.1 (all)	0.333
THRI.IP7.P2_MQTL_FT	4	0.1 (all)	0.333 ??
THRI.IP37.P3_MQTL	8	1.0 (all)	no change
THRI.LS.P1_MBX	2	0.1 (all)	no change?
THRI.LS.P2_MBX	2	0.1 (all)	no change?
THRI.LS.P12_MBRC	6	0.1 (all)	0.333

→no change to special families for injection regions, wire scanners etc.

→create special families (_CRIT) for magnets where QH problem remains (Q4.L5/R5) and keep MF=0.1