



# Re-validation of CMS solenoid input following temporary masking

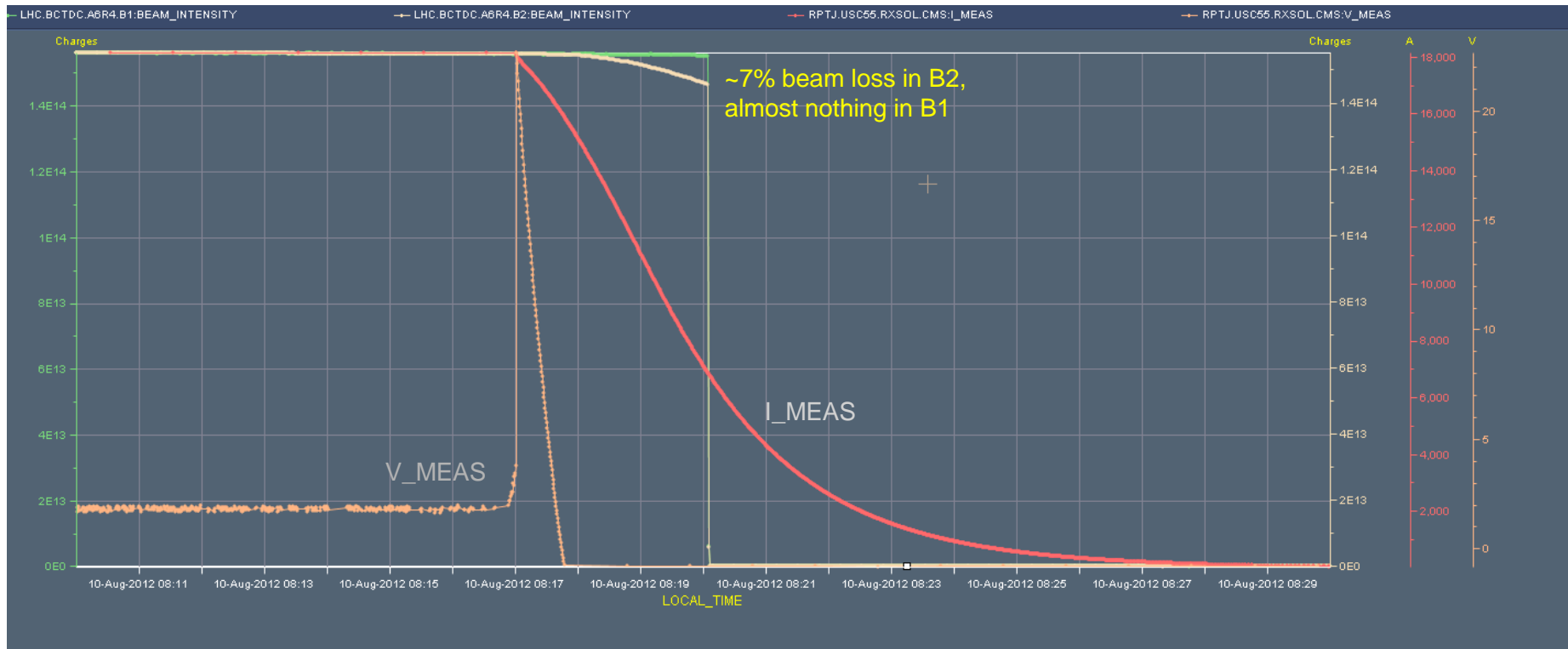
C.Martin, N.Bourgeois, M.Zerlauth

# Introduction

- As part of the re-commissioning of the CMS Solenoid Magnet, a series of powering test were performed 3<sup>rd</sup> week of April (during LHC intensity ramp-up)
- This includes Fast Abort Tests, which since 2013 trigger the BEAM\_PERMIT provided by CMS to the BIS (see event August 2012)
- Following rMPP approval, the BIS input was masked on the BIS side during the test program
- The following powering tests allowed for the functional verification of the interface
- The connection is considered fully operational again

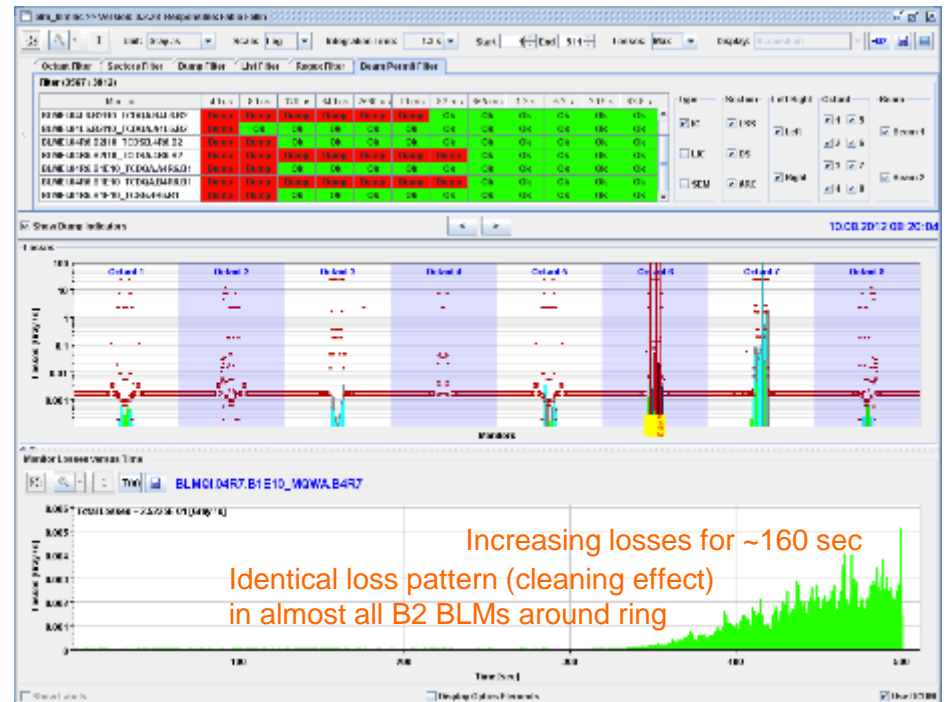
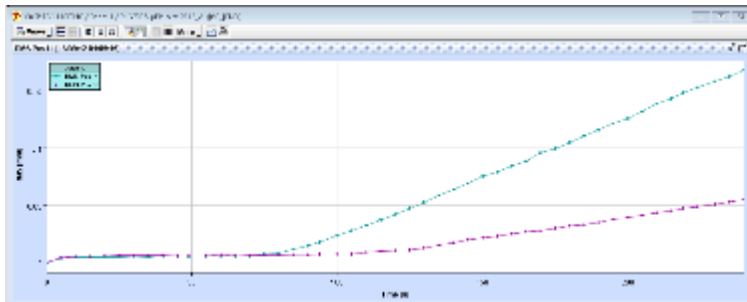
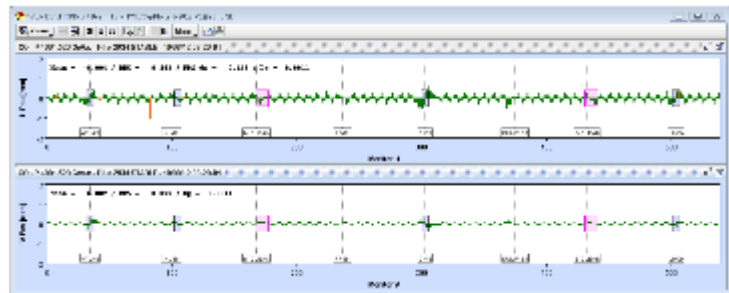
# Event sequence 10.08.2012

- Solenoid magnet of CMS tripped due to cooling problem, causing beam dump 3 minutes later (@ 08:17)
- current at time of dump already < 40% of I Nom



# Slow orbit changes and losses

- rms change was  $\sim 150\mu\text{m}$  in H, a factor of 2 below 2012 SIS limit
- Agreed with CMS to include Fast Aborts in Beam Permit signal



# Magnet Test Program vs BIS

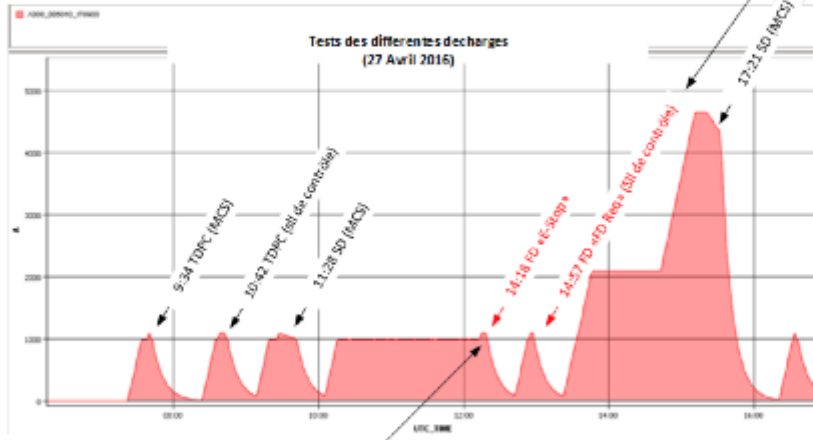
**Remarques :**

**TDPC :** Total Discharge Power Converter

**SD :** Slow Dump

**FD :** Fast Discharge

407	24	MSSA_EXP_FD_REG	Wed Apr 27 2016 14:58:00:648	1
416	111	MSSA_TRIG	Wed Apr 27 2016 14:58:00:648	1
421	303	MSSB_TRIG	Wed Apr 27 2016 14:58:00:648	1



293	13	MSSA_MAGNET_E_STOP	Wed Apr 27 2016 14:19:08:430	1
304	111	MSSA_TRIG	Wed Apr 27 2016 14:19:08:430	1
309	303	MSSB_TRIG	Wed Apr 27 2016 14:22:52:777	1

Point	Timestamp	Visibility	Event Type	Description	Details
0000	27-04-16 15:10:09.893089	EXPERT	DISABLED_PERMIT	13 B-F	0x0F5F3CF See logs for more details
0000	27-04-16 15:10:09.887825	EXPERT	DISABLED_PERMIT	13 B-F	0x0F5F3CF See logs for more details
0000	27-04-16 15:10:09.887782	EXPERT	DISABLED_PERMIT	13 B-F	0x0F5F3CF See logs for more details
0000	27-04-16 15:10:09.174721	EXPERT	DISABLED_PERMIT	13 A-F	0x0F5F3CF See logs for more details
0000	27-04-16 15:10:09.172361	EXPERT	DISABLED_PERMIT	13 A-F	0x0F5F3CF See logs for more details
0000	27-04-16 15:10:09.172358	EXPERT	DISABLED_PERMIT	13 A-F	0x0F5F3CF See logs for more details
0000	27-04-16 14:58:00.649388	EXPERT	DISABLED_PERMIT	13 B-F	0x0F5F3CF See logs for more details
0000	27-04-16 14:58:00.649412	EXPERT	DISABLED_PERMIT	13 A-F	0x0F5F3CF See logs for more details
0000	27-04-16 14:58:00.649411	EXPERT	DISABLED_PERMIT	13 A-F	0x0F5F3CF See logs for more details
0000	27-04-16 14:58:00.649410	EXPERT	DISABLED_PERMIT	13 A-F	0x0F5F3CF See logs for more details
0000	27-04-16 14:31:18.793911	EXPERT	DISABLED_PERMIT	13 B-F	0x0F5F3CF See logs for more details
0000	27-04-16 14:31:18.793500	EXPERT	DISABLED_PERMIT	13 B-F	0x0F5F3CF See logs for more details
0000	27-04-16 14:31:18.793466	EXPERT	DISABLED_PERMIT	13 B-F	0x0F5F3CF See logs for more details
0000	27-04-16 14:31:18.001395	EXPERT	DISABLED_PERMIT	13 A-F	0x0F5F3CF See logs for more details
0000	27-04-16 14:31:18.000787	EXPERT	DISABLED_PERMIT	13 A-F	0x0F5F3CF See logs for more details
0000	27-04-16 14:31:18.000786	EXPERT	DISABLED_PERMIT	13 A-F	0x0F5F3CF See logs for more details
0000	27-04-16 14:22:52.777898	EXPERT	DISABLED_PERMIT	13 B-F	0x0F5F3CF See logs for more details
0000	27-04-16 14:19:08.433894	EXPERT	DISABLED_PERMIT	13 A-F	0x0F5F3CF See logs for more details

# Thank you for your attention

- Questions?