Modification and re-commissioning of BIS in 2011

- Installation & modification during the Xmas technical stop
- Re-Commissioning
- Automated CIBU test

HiRadMat project:

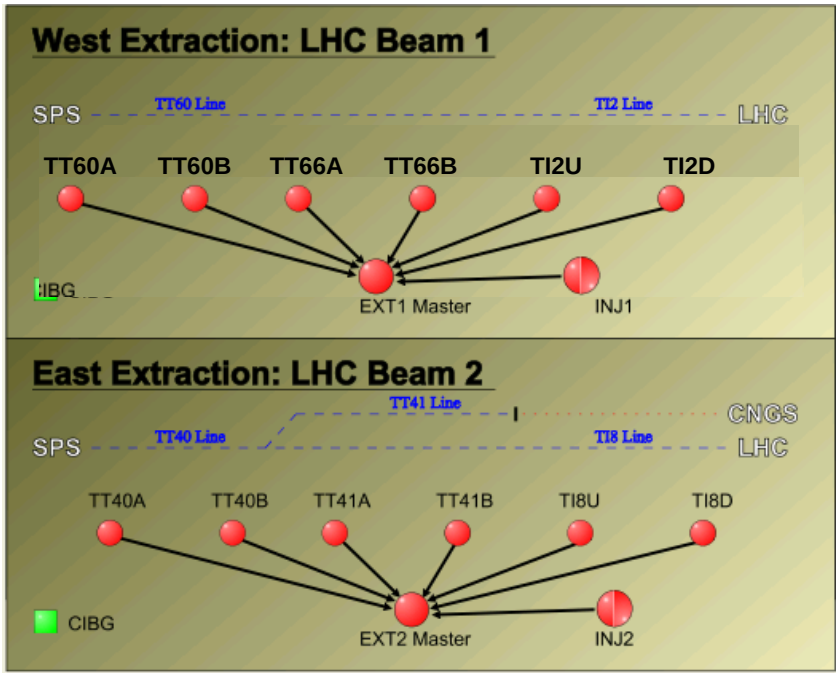
- New BIC for TT66 line:
  - Permits from Vacuum, Magnet Interlocks, Power Converters, BTV, FMCM and Operator switch in CCC

- Modification of the Master BIC in LSS6 (LHC beam-1)
  - Additional inputs with:
    - Local Permit from TT66-BIC
    - LHC cycle Flag
    - (new) HiRadMat cycle Flag

    } from SMP system

  ⇨ layout mirroring of Master BIC installed in LSS4 (LHC beam-2)

Extraction BICs layout mirroring



EXT1 Master BIC
(LSS6)

1	E-440 Flag
2	E-450 Flag
3	TT60-A
4	TT60-B
5	TED-in TT60
6	TT66-A
7	TT66-B
8	TI2 Upstream
9	TI2 Downstream
10	TED-in TI2
11	INJ Beam-1
12	Probe Beam Flag
13	BPF-1
14	SBF-1

EXT2 Master BIC
(LSS4)

1	E-400 Flag
2	E-450 Flag
3	TT40-A
4	TT40-B
5	TED-in TT40
6	TT41-A
7	TT41-B
8	TI8 Upstream
9	TI8 Downstream
10	TED-in TI8
11	INJ Beam-2
12	Probe Beam Flag
13	BPF-2
14	SBF-2

Activities planned during shutdown

- "adjustment" on each controller of LHC-ring BIS:

  with connection of the redundant Power Supply on a different UPS line

  … and nothing else!

- Re-commissioning of CIBU connection with:
  - WIC in point 8 (system moved from UA83 to US85)
  - CMS Injection inhibit (VME based syst. replaced by PLC based syst.)
  - ATLAS (x3) (if new HW to interface CIBU/CIBF)
  - ALPHA roman-pots? (TBC by S.Wenig)

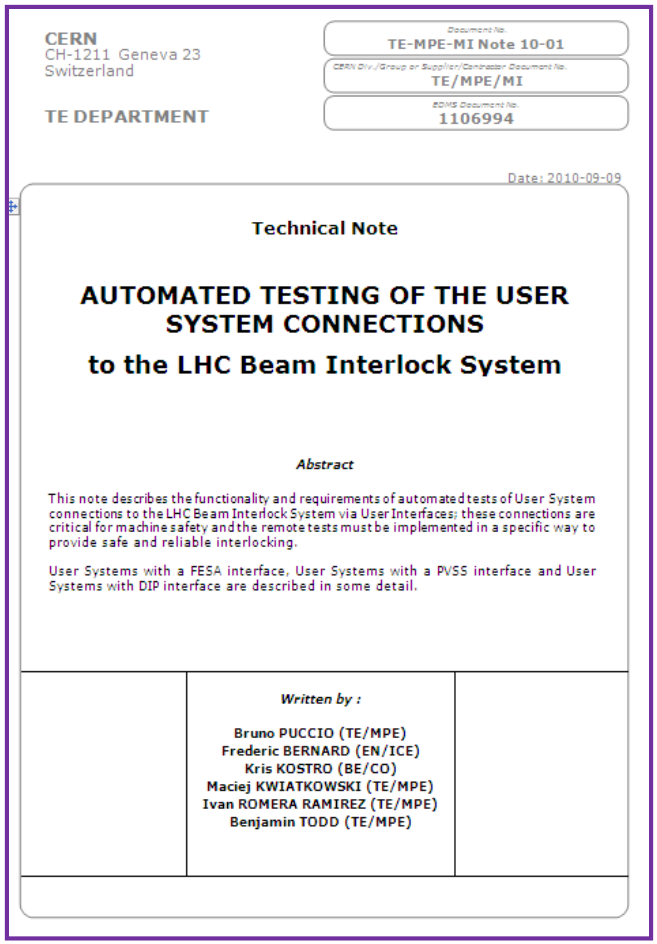
  As a reminder: if Hw modified/changed during the TC

  => the CIBU connection should be re-commissioned !

- In addition, links re-validation with:
  - Vacuum (managed by Alick McP.)
  - Collimation in Injection regions (managed by Stefano R.)
  - CMS "Detector/BCM2" (managed by Nicola Bacchetta)

Automated CIBU connections test

EDMS Document proposes a homogeneous solution for systems using FESA, for systems using PVSS & for DIP interface:



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Technical Note

AUTOMATED TESTING OF THE USER SYSTEM CONNECTIONS

to the LHC Beam Interlock System

Abstract

This note describes the functionality and requirements of automated tests of User System connections to the LHC Beam Interlock System via User Interfaces; these connections are critical for machine safety and the remote tests must be implemented in a specific way to provide safe and reliable interlocking.

User Systems with a FESA interface, User Systems with a PVSS interface and User Systems with DIP interface are described in some detail.

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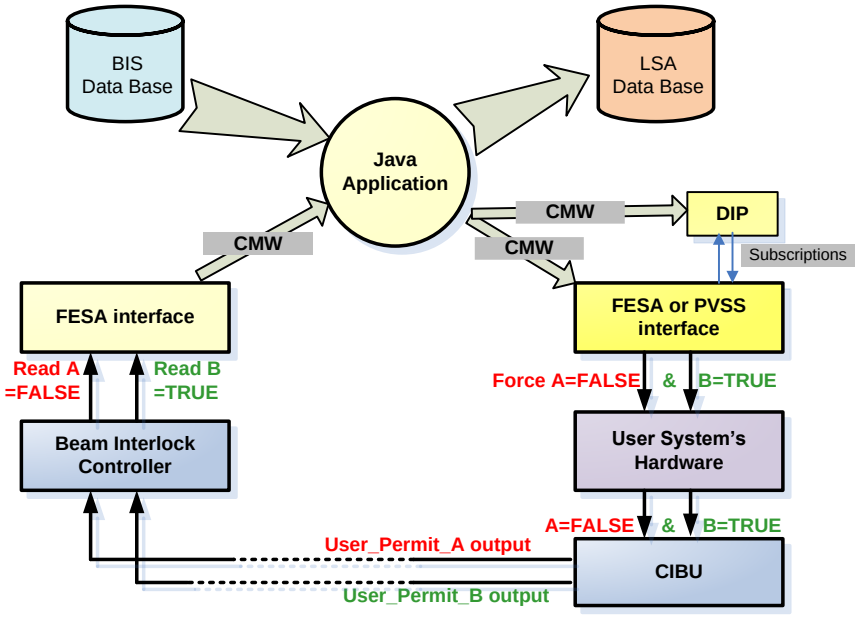

Very simple test:

Step#1: Enter into Test mode

Step#2: test of USER_PERMIT_A
(*USER_PERMIT_A* = **FALSE**) & (*USER_PERMIT_B* = TRUE)

Step#3: test of USER_PERMIT_B
(*USER_PERMIT_A* = TRUE) & (*USER_PERMIT_B* = **FALSE**)

Step#4: Quit the Test mode

This document is going to be distributed soon….

=> Implementation will be done (case by case) all along 2011

That's it!

Thank you !

LHC-ring & Injection BIS coonections

			R1	L2	R2	U3	S3	L4	R4	L5	R5	L6	R6	U7	S7	L8	R8	L1	CCC	Inj1	Inj2	∑
UNmaskable	1	**Vacuum** (Sector valves)		♦♦	♦♦	♦♦		♦♦	♦♦	♦♦		♦♦	♦♦	♦♦		♦♦	♦♦	♦♦		♦	♦	32
		("X valves")	♦	♦	♦						♦					♦	♦					
	2	**PIC** (for essential circuits)	♦	♦	♦	♦♦		♦	♦	♦	♦	♦	♦	♦♦		♦	♦	♦				16
	3	**BLM** (at aperture limitations)		♦			♦	♦		♦		♦			♦	♦		♦				8
	4	**Warm magnets (WIC)**		♦		♦			♦	♦		♦		♦		♦		♦				8
	5	**Beam Dumping system**										♦	♦							♦	♦	4
	6	**Injection Kicker**			♦												♦			♦	♦	4
	7	**Access** (LASS + E.I.S.)				♦		♦	♦										♦			4
	8	**Operator Buttons** (CCC)																	♦	♦	♦	3
	9	**Programmed Beam Dump**																	♦♦			2
	10	**Safe Machine Parameters sys**																	♦♦			2
	11	***ATLAS*** (Detector part)	♦																	♦	♦	3
	12	" " (Movable device)	♦♦																			2
	13	***ALICE*** (Detector part)			♦															◇	♦	2
	14	***CMS*** (Detector part)									♦♦									♦	♦	4
	15	***LHCb*** (Detector part)															♦			♦	◇	2
	16	" " (Movable device)															♦					1
	17	***LHCF***	♦																			1
	18	***TOTEM***									♦♦									♦	♦	4
Maskable	19	**Collimation** (Env. Param.)	♦♦	♦♦	♦♦	♦♦				♦♦	♦♦	♦♦		♦♦		♦♦	♦♦			♦♦	♦♦	24
	20	**Collimation** (Motor pos.)	♦♦	♦♦	♦♦	♦♦				♦♦	♦♦	♦♦		♦♦		♦♦	♦♦	♦♦		♦♦	♦♦	26
	21	**PIC** (for auxiliary circuits)	♦	♦	♦	♦♦		♦	♦	♦	♦	♦	♦	♦♦		♦	♦	♦				16
	22	**BLM** (in the arcs)		♦			♦	♦		♦		♦			♦	♦		♦				8
	23	**Screens**		♦		♦♦			♦♦				♦♦	♦			♦					9
	24	**Fast Magnet Current ch.**			♦		♦♦♦				♦		♦♦		♦♦♦			♦		♦♦	♦♦	16
	25	**RF & Transverse Damper**						♦♦	♦♦													4
	26	**Beam Aperture Kicker**						♦♦														2
	27	**TCDQ**										♦♦										2
	28	**Fast BCT** (di/dt)							♦♦													2
	29	**Beam excursion (BPM)**											♦♦		♦♦							4
	30	**MSI Power Conv.** (sum fault)																		♦	♦	2
	31	***Experimental Magnets***	♦		♦						♦						♦					4
	32	***ALICE-ZDC***																		♦		1

Not connected ♦♦ : **Individual Beam connections** ♦ : **Both Beams connections** **Total: 222**