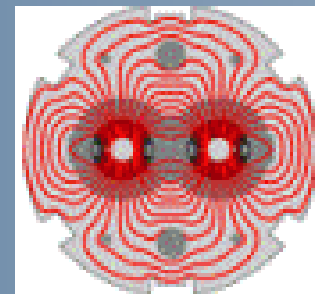
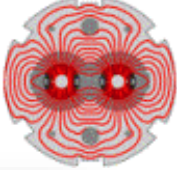




Emergency dump update 2





This document describes the procedure that should be followed by the operations crew in case the programmed beam dump does not work.

CERN
CH-1211 Geneva 23
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the
Large
Hadron
Collider
project

LHC Project Document No
LHC-OP-MPS-000x v1.0

CERN Div./Group or Supplier/Contractor Document No
BE/OP/LHC/MPP

EDMS Document No
1166480

Date: 2012-03-26

MPS Procedure

THE LHC MACHINE PROTECTION SYSTEM

PROCEDURE IN CASE OF NON-WORKING DUMP TRIGGER

Abstract

This document describes the procedure that should be followed by the operations crew in case the programmed beam dump does not work.

GENERAL STRATEGY

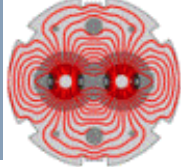
- Force open the BIS loop
- Generate an internal fault in the LBDS
- Scrape the beam away

Information flow

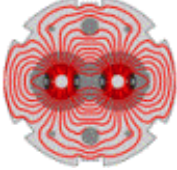
- LHC Machine coordinator
- OP LHC section leader
- OP group leader
- LHC MPP chairman

Nota Bene: Details for all “non-physical”, SW based actions are not contained in the EDMS procedure, but only in the version stored on TN:

- Accessible also from the OP sequence
- A paper copy must be available in CCC



	N.	ACTION	OPTION
CLIENTS	#1	Timing event	
	#2	OP switches	
	#3	Different BIC user input	AC-dipole activation
			ADJUST mode set (in case present mode = SB)
			SIS trigger by stopping BLM subscription
#4	BIS controller power cycle		
LBDS	#5	Switch off MKB generator	
	#6	Disable RF freq on LBDS	
	#7	LBDS VME crate power cycle sync async BD!!	
Action on beam	#8	Scrape the beams away	ADT blow-up
			Third resonance tune move



Actions on LBDS

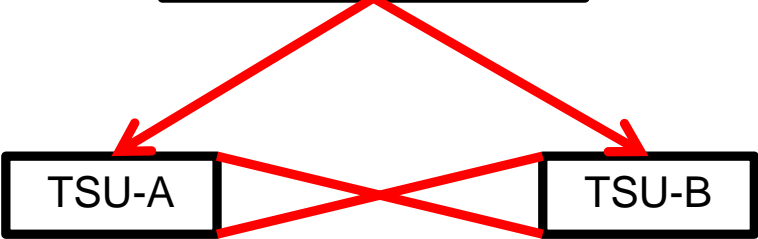
Before LS1

- VME crate containing:
- BLMDD
 - TSU
 - RF freq receiver

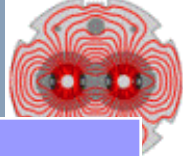
N.	ACTION
#5	Switch off MKB generator
#6	Disable RF freq on LBDS
#7	LBDS VME crate power cycle <i>Async dump</i>

After LS1

- Crate containing:
- BLMDD
 - RF freq receiver

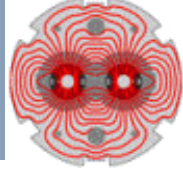


N.	ACTION
#5	Switch off MKB generator
#6	Disable RF freq on LBDS
#7	LBDS crate power cycle
#8	TSU reboot



Tests

Test name	Date	Result
OP switches	#1 Sep 22 nd @13:17:58 #2 Sep 22 nd @13:29:16 #3 Sep 22 nd @13:32:53 #4 Sep 22 nd @13:36:27	OK
AC dipole	B1 - Sep 22 nd @13:07:24 B2 - Sep 22 nd @13:10:17	OK
SIS – BLM	Sep 22 nd @13:42:56	OK
SIS – BPMS		Removed. Conditions changed (same effect as previous one)
BIC crate power cycle (via SW)	Sep 22 nd @14:06:38	OK
BIC crate power cycle (via HW)	Sep 22 nd @14:15:56	OK
Access system	Shall we add it (large impact test)?	
MKB generator in not ready state		
Stop F_rev received by LBDS		
Power cycle the LBDS crate		
Power cycle of the TSU		
Beam scraping with ADT	Not tested, parameter to be defined if decided to keep the method in	
Beam scraping V tune resonance		
COLL closing		



Section 5 – future improvements

For additional diagnostics in case of major failures in the LHC control system (e.g. power cuts in the CCC...) a **fully passive 'beam presence' display in the CCC** could be envisaged...