

MPP, 17.09.2012

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# issue with timing synchronization SPS/LHC

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# what happened on 4 July

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from PM acknowledgement:

“Lost six bunches at injection for B1;

large BLM signals in injection region

and ALICE confirms that their TPC cage was hit.” (21:17)

from the logbook:

“Called Etienne who will check if he can see  
the beam wrt the kicker waveform on the last event.

IQC does not report anything wrong for the kicker

so it seems [the timing between prepulse and kicker is correct](#).

It looks like the kicker pulses correctly wrt the prepulse

but [the beam is some 50 us too early](#)... we have to look to the RF side now.” (21:39)

“The "to LHC clock" MUST be enabled,

but it is strange that [the BQM did not catch this](#).

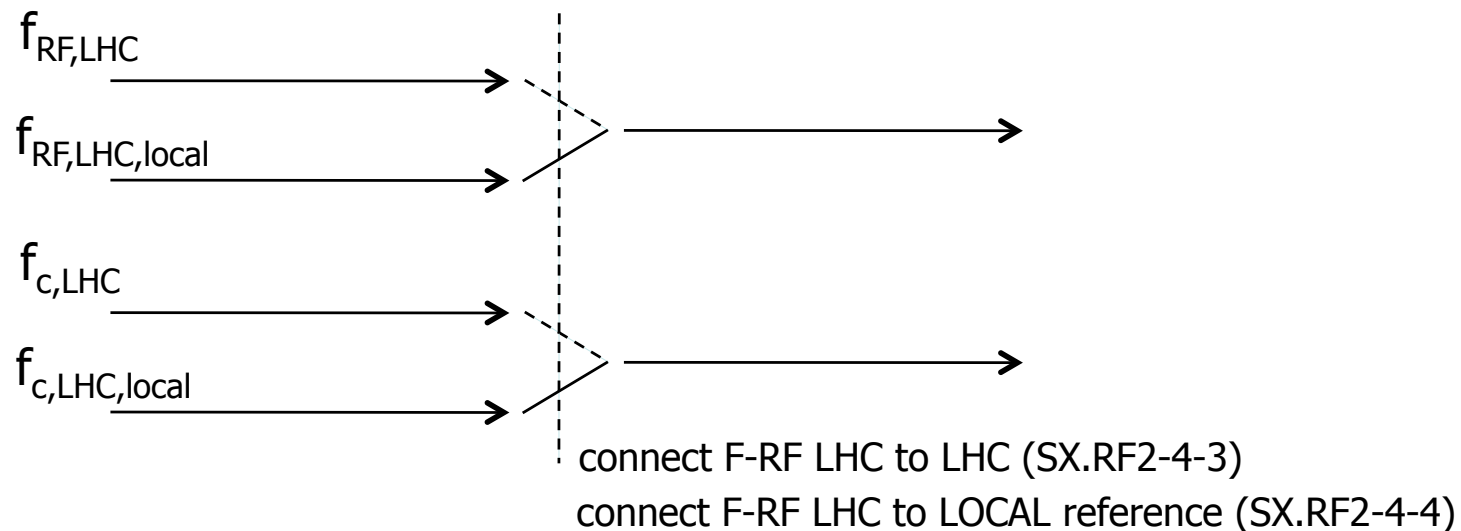
It was enabled for the probe cycle and not for the nominal cycle...” (22:47)



# timings on 4 July

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- two switches to connect to LHC or local reference
  - controlled by timings
  - required for setting up beams at the SPS



- how it should have been spotted
  - in SPS alarms
  - in SPS to LHC extraction display

# in SPS alarms

Laser Console [spsop/spsop\_default]

File Alarm Action View Configuration Help

Active List

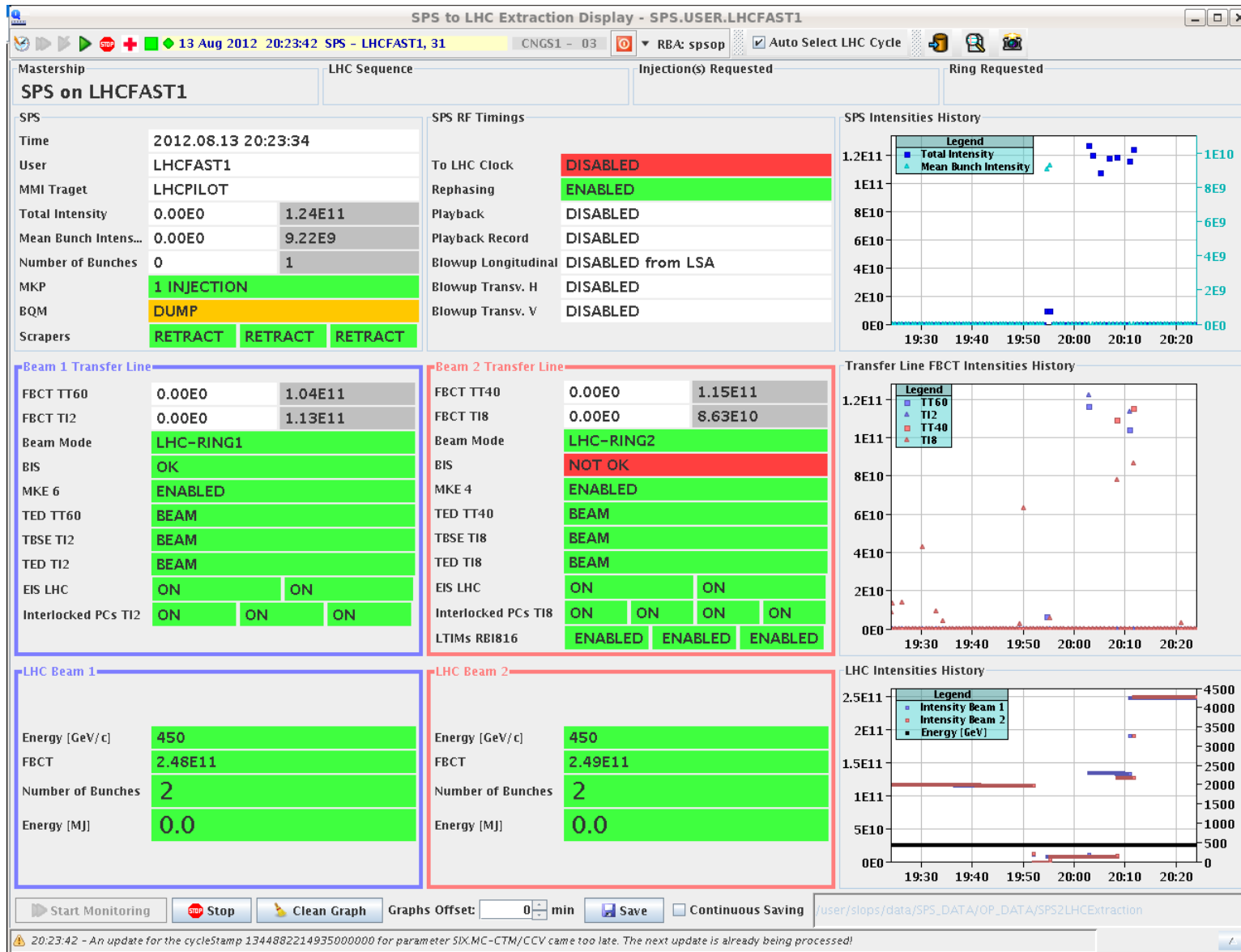
Priority

#	Date	Time	Prio...	System Name	Identifier	Problem Description
◇	1990	-	2	BOSTEP	BOSTEP_BTVE_61798	Alarm raised when the motor is moved in.
◇	1990	-	2	BOSTEP	BOSTEP_BTVE_61831	Alarm raised when the motor is moved in.
◇	1990	-	2	BOSTEP	BOSTEP_BTVE_61876	Alarm raised when the motor is moved in.
◇	1990	-	2	BOSTEP	SPS.BOSTEP.BA8.BTV.211743	Alarm raised when the motor is moved in.
◇	1990	-	2	LHCCollimator	TCSM.51934	The trigger receiver card is faulty
◇	1990	-	2	ARCON	PMB41	System failure - Equipment requires intervention
◇	1990	-	2	SpsSEPTAmsWest	MS.LSS6.SEPTA	Actual unequal demanded
◇	06/07	15:51:47	2	TBID MULTIPLICITY	TBID	[OSC] BELOW INTERLOCK THRESHOLD (EXT1)
◇	06/07	15:51:47	2	TBID MULTIPLICITY	TBID	[OSC] BELOW INTERLOCK THRESHOLD (EXT2)
◇	06/07	15:51:52	2	IONIZATION CHAMBER	IC_TBID_L	[OSC] BELOW INTERLOCK THRESHOLD (EXT1)
◇	06/07	15:51:52	2	IONIZATION CHAMBER	IC_TBID_L	[OSC] BELOW INTERLOCK THRESHOLD (EXT2)
◇	06/07	15:51:52	2	IONIZATION CHAMBER	IC_TBID_R	[OSC] BELOW INTERLOCK THRESHOLD (EXT1)
◇	02/08	06:18:34	2	LHCCollimator	TCSM.51934	At least one outer switche is active
◇	02/08	06:18:38	2	LHCCollimator	TCSM.51934	The demanded position has not been reached
◇	05/08	18:26:33	2	IONIZATION CHAMBER	IC_TBID_R	[OSC] BELOW INTERLOCK THRESHOLD (EXT2)
◇	05/08	21:32:16	2	ARCON	PAXN2112	System failure - Equipment requires intervention
◇	07/08	12:50:45	2	SpsSEPTAmsNorth	MS.LSS2.SEPTA	Actual unequal demanded
◇	N	11:10:43	2	MAIN_POWER_CONVERTER	SMD4	[A] Warning
◇	N	11:10:43	2	MAIN_POWER_CONVERTER	SMD11	[A] Warning
◇	N	11:52:44	2	MAIN_POWER_CONVERTER	18KV_BUSBAR	[A] Warning
◇	N	11:53:28	2	MAIN_POWER_CONVERTER	SMD3	[A] Warning
◇ [-]	13/08	20:22:57				
◇	1990	-	3	LHCCollimator	TCSM.51934	At least on axis is out of dump energy limit
◇	1990	-	3	SPS_SECTOR_VALVES	TS4, VVSB_41753	Sector valve is closed
◇	28/07	12:20:13	3	MAIN_POWER_PLC	SMD4	[A] PLC Problem
◇	07/08	10:54:36	3	SPS_SECTOR_VALVES	TDC2, VVSA_250117	Sector valve is closed
◇	07/08	10:54:36	3	SPS_SECTOR_VALVES	TDC2, VVSB_211625	Sector valve is closed
◇	07/08	10:54:37	3	SPS_SECTOR_VALVES	TDC2, VVSA_240102	Sector valve is closed
◇	07/08	10:54:37	3	SPS_SECTOR_VALVES	TDC2, VVSB_220431	Sector valve is closed
◇	07/08	10:54:37	3	SPS_SECTOR_VALVES	TDC2, VVSB_230102	Sector valve is closed
◇	07/08	10:54:38	3	SPS_SECTOR_VALVES	TDC2, several valves	[MULT 5] More than 2 sector valves closed
◇	08/08	16:49:47	3	MKController	MKP.BA1.CONTROLLER	alarmPrepulseError
◇	09/08	10:48:12	3	FreqMeas	SPSREVFREQMEAS.BA82	No FREV received for a whole SPS cycle
◇	N	23:07:33	3	MKController	MKP.BA1.CONTROLLER	alarmPrepulseError
◇	N	23:23:39	3	MKController	MKP.BA1.CONTROLLER	alarmPrepulseError
◇	N	12:27:27	3	MKController	MKP.BA1.CONTROLLER	alarmPrepulseError
◇	N	20:22:57	3	RF_SPS_BEAMCONTROL	PULSE_SWITCH	SPS LHC disconnected
◇	N	20:22:57	3	RF_SPS_BEAMCONTROL	RF_SWITCH	SPS LHC disconnected

Search list:  all

Active: 61 M: 10 I: 0 H: 0 Config saved

# in SPS to LHC extraction display



# improvements since

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- by Delphine Jacquet
  - In addition, in the LHC RF RESYNCH sequence, I've added tasks that will force the SPS frequency on LHC frequency for the users LHC1, LHC2, LHC3, LHC4, LHCFAST1, LHCFAST2."
  - "I've added a check of the corresponding XTIM in the LHC Injection Sequencer before each injection.
    - By default, the check is done for the users LHC1, LHC2, LHC4, LHCFAST1, LHCFAST2. It is possible to add or remove users from the check with the button "LHCusr chck freq linked".
- by Louis Pereira
  - SPS SIS interlock (to be done)