MPP, 17.09.2012

issue with timing synchronization SPS/LHC

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what happened on 4 July

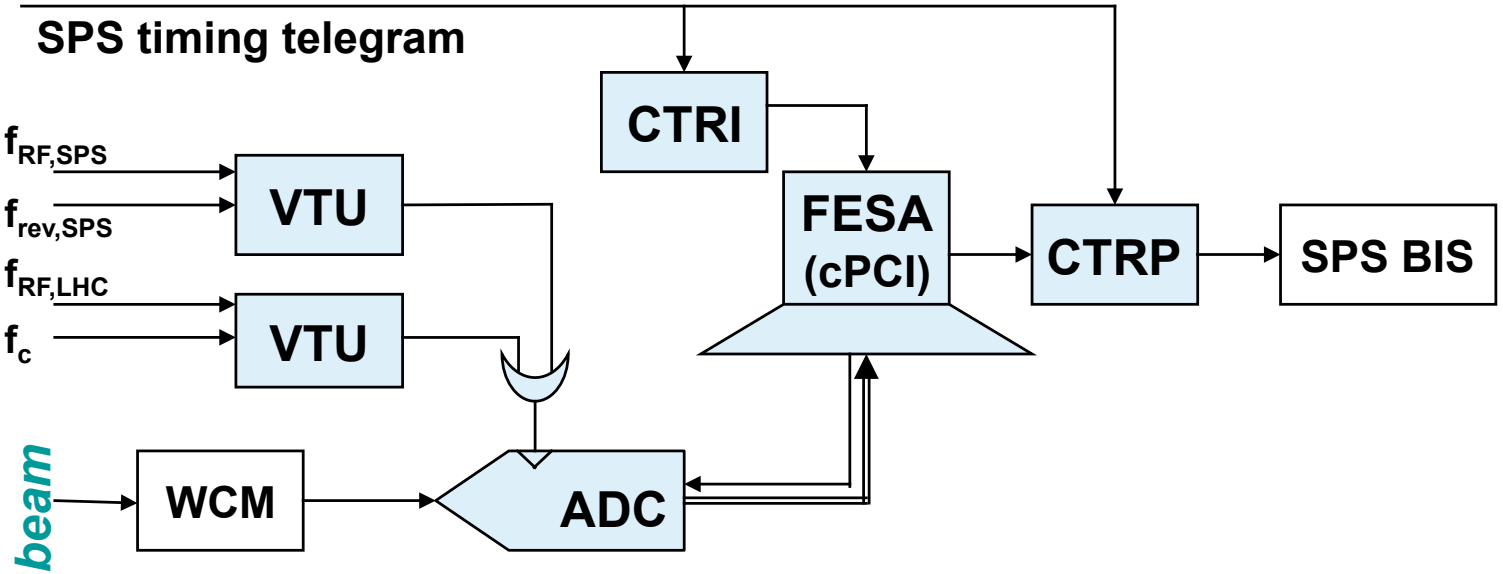
from PM acknowledgement:
"Lost six bunches at injection for B1;
large BLM signals in injection region
and ALICE confirms that their TPC cage was hit." (21:17)

from the logbook:
"Called Etienne who will check if he can see
the beam wrt the kicker waverform 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)

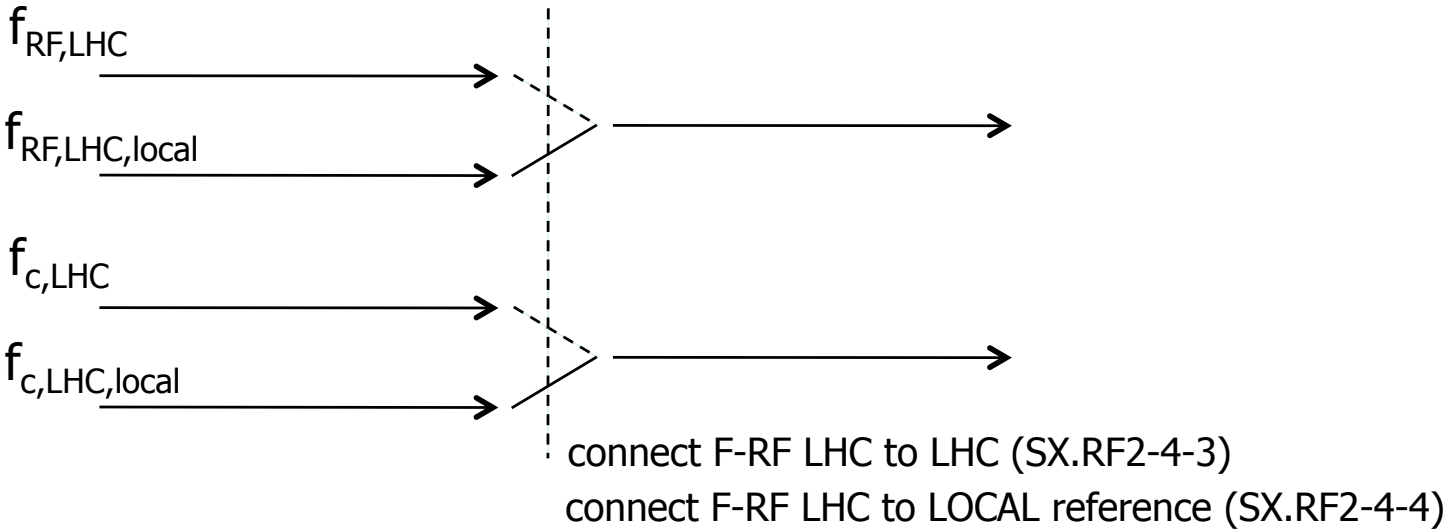
SPS Beam Quality Monitor

- automated analysis of wall current monitor beam profiles
  - checks bunch lengths, beam pattern, position wrt $f_{RF,LHC}$
- emergency dump if criteria are not met



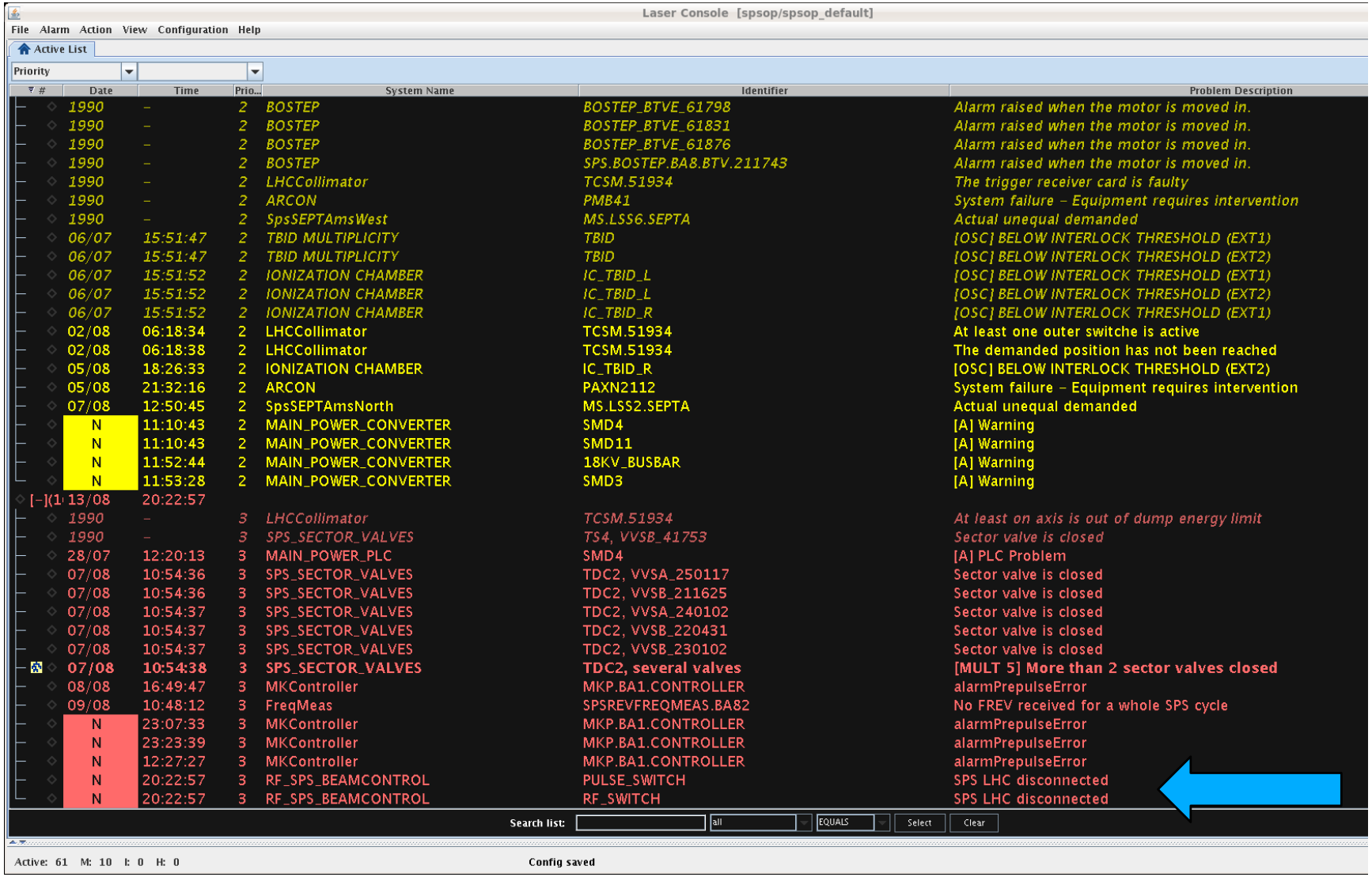
timings on 4 July

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

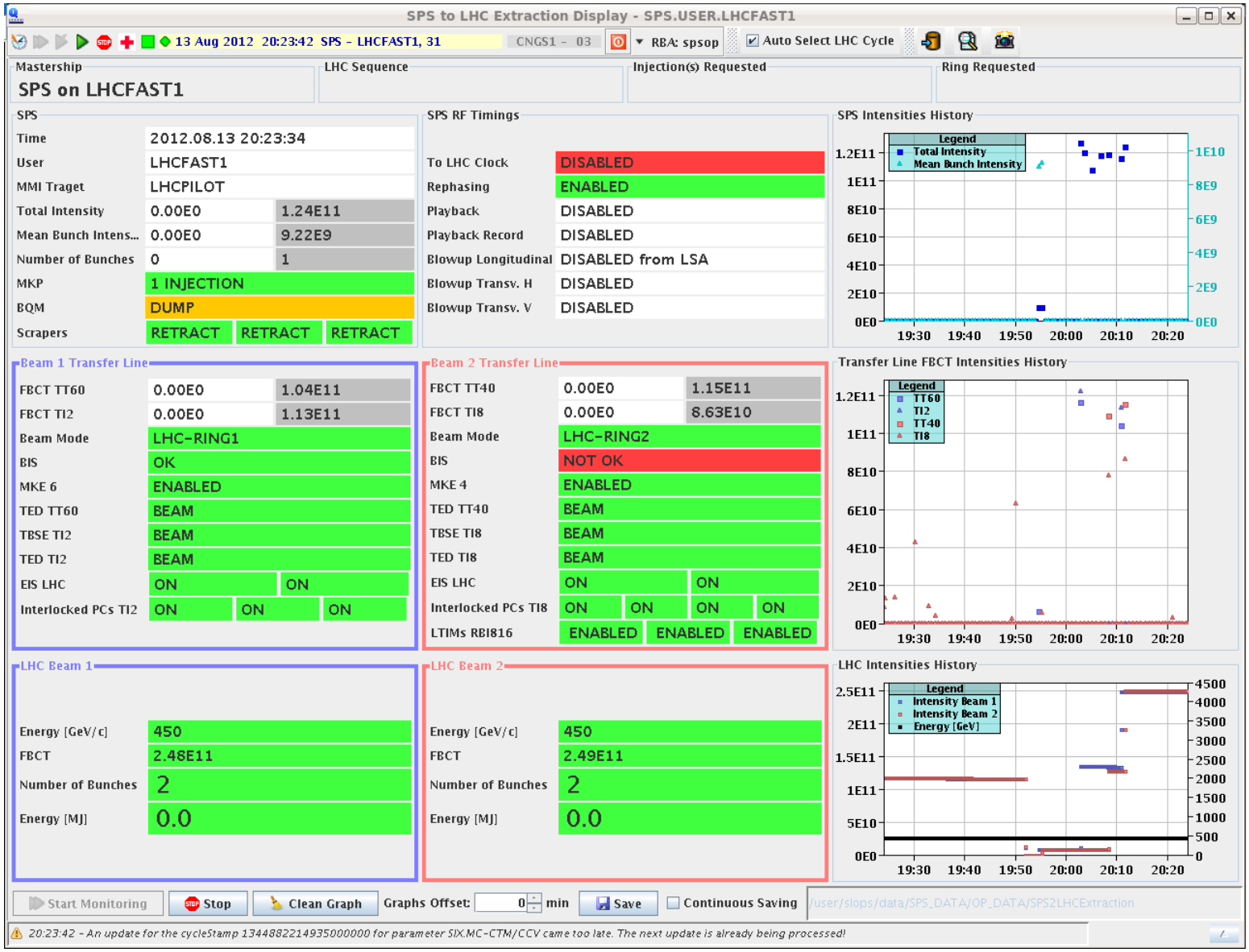


- how it should have been spotted
  - in SPS alarms
  - in SPS to LHC extraction display

in SPS alarms



in SPS to LHC extraction display



improvements since

- 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)