

## Notes of the SPS Injection Interlocking meeting #2 of 16/03/2017

Present: Ivan Romera, Jan Uythoven, Bruno Puccio, Etienne Carlier, Stephane Cettour-Cave

Excused: Klaus Hanke, Rende Steerenberg, Verena Kain

Notes of the meeting:

- Impact of increasing time delay between SBDS and injection inhibit after SBDS relocation (Etienne).

Etienne analysed a possible solution to the problem of injection a beam just after a beam has been dumped and for this reason not being able to dump this freshly injected beam. The conclusion is that one needs to wait at least 16.0  $\mu$ s between receiving the beam dump request by the new SBDS in LSS5 and the moment of dumping the beam. As one wants to avoid any complicated logic, this would mean adding a delay in the BIS connection of the TSU. The TSU of the new SBDS will be synchronised to the abort gap, adding possible one second of delay, resulting in an overall delay of maximum 1.7 turns between receiving the BIS dump request and dumping the beam. This most critical situation for which this needs to be applied is the 4<sup>th</sup> LHC batch injected.

One will need to balance the likelihood of a dump request just before injection against the additional delay for an emergency dump, taking into account where the beam would go if we cannot dump it anymore.

After the meeting Stephane checked this option with Karel, who has no objection against this additional delay. A wider approval will need to be obtained by edms.

- Within the discussions it was questioned why in the LHC there is a direct line between the LBDS and the injection BIS. **Bruno will check.**
- Definition of user clients and destinations of the INJ-BIS (Stephane).

Stephane presented the possible inputs and outputs to the future SPS injection BIS.

Inputs:

- o 35 magnets TT10 on FGC3 → this will need a concentrator.
- o BH2377, PS TL switching magnet
- o SPS injection kickers MKP, check STATE.
- o BTV in TL up to injection dump in the SPS
- o SEM grid
- o Ring BIS
- o BLMs TT10 – latch
- o BQM of PS (new)

Outputs:

- o Injection deflector MDSH1197 (faster than D3 switching magnet, but is it fast enough, seems to be obligatory for getting the beam on the dump with Q20 optics).
- o MKP → which action if interlocked remains to be determined, possibly delayed discharge.
- o BH2377, to put the beam on the D3 dump, most important output. Will be faster after LS2.
- o Ring BIS → this was questioned at and vetoed after the meeting.

This was seen as a good starting point, but will need to be reiterated in the next meeting in the presence of Verena.