# Meeting of LIU SPS-BD WG on 26.05.2016

Present

H. Bartosik, T. Kaltenbacher, G. Rumolo, E. Shaposhnikova, C. Vollinger, J. Repond, D. Quartullo, J. Esteban Müller, A. Lasheen, J. Perez Espinos, V. Kain, B. Goddard, P. Kramer, B. Salvant, J. A. Ferreira Somoza

Agenda

1. Follow up of soft clamps production and testing - T. Kaltenbacher
2. Impact of remanent fields on SPS chromaticity - H. Bartosik

Foreword

* Summary of the vacuum flanges short-circuit MD.
  + Technical stop shorten -> may not be possible to do it in 8 hours.
  + Issues of the short-circuit discussed (effects of grounding loop …).

**1 – Follow up of soft clamps production and testing – T. Kaltenbacher**

* Open questions about installation of short-circuit after visit in the tunnel.
  + Issues to add conducting clamps on insulating layers on the beam pipe.
    - Solution proposed (José) -> cut one strip of the insulation next to the VF.
  + Left over metal bands from LEP -> remove it?
    - J. A. Ferreira Somoza: Protection for synchrotron radiation when the SPS was accelerating electrons.
    - No risk to remove them from a vacuum point of view.
    - V. Kain: crosscheck with Karel by safety.
  + Isolating supports next to the VF, problem to short circuit.
    - Longer loop would be a solution (easier installation).
  + Wide copper braid (short-circuit) touch the weld.
    - Use thinner braid and thinner clamp.
* Check the fingers in vacuum flanges. If they do not work/are broken, should be modified (high impedance).
* B. Goddard: Technical stop may be too short (8h), use this time to have a better understanding of the problem, take systematic HD pictures of all the locations. First have an overview of the issues and do the MD in September.
* Test of short-circuits (remove QF SSS earth connection?).
  + Deployment long and difficult, cable tie system has to be modified.
  + Need measurement of the current flowing through the clamps to take a decision about short-circuits.
  + Cannot do the measurement by hand in the tunnel but eventually could be done remotely (see with magnet team).
  + If we can prove that the clamps are really conducting we can then temporarily remove the ground in some area.
* 6th of June MD.
  + Measure the current in the earth-loops.
  + See if fingers installed and functional (shielded pumping ports).
  + Go and remove metal band and insulation (VSC).

**2 – Impact of remanent fields on SPS chromaticity – H. Bartosik**

* Follow the last presentation (Effects of remanent fields).
* Errors in the magnets were estimated from a parametric model in MAD and time measurement as a function of radial position.
* Problems to build a model for both optics at the same time, we think that octupolar and sextupolar component missing are coming from the remanent fields.
* Measurement setup: 2 cycles.
  + One ramp to 400 GeV, no beam.
  + One FB cycle with beam.
* Changing the sextupoles in the 400 GeV cycle -> direct impact on the next cycle (unstable).
* Huge effects of the remanent field in the sextupoles (especially in the vertical plane).
* Also remanent field in the octupoles.
  + Simple de-Gauss on the magnet -> important effect on the second order chromaticity.
  + Optimization of this de-gauss step in operation foreseen (Full de-gauss cycle impossible on a normal basis in operation, 50 A seems already a good compromise).
* Remanent field effects experimentally confirmed.
* Better knowledge will lead to better control of the chromaticity (better control of losses).

Actions

* Impossible to use the beam dump in the SPS for the moment, maybe till the end of the year. MDs on instability threshold, 800 MHz etc… cannot be done.
  + Stay at injection energy (FB).
    - Synchrotron frequency shift (25GeV).
    - Head-tail instability.
    - Measurements of chromaticity/tune.
    - Measurements of the tune shift (probe impedance) (B. Salvant).
    - TMCI.
    - Longitudinal instabilities Q26 FB.
* Alex: 1 Ohm, single bunch, instability threshold simulations.

Minutes written by A. Lasheen and J. Repond