

159th Meeting of the Machine Protection Panel

The meeting took place on March the 9th in 774/1-079.

Participants: A. Apollonio, B. Holzer, S. Jakobsen, D. Lazic, B. Lindstrom, C. Martin, Y. Nie, B. Petersen, G. Pigny, I. Romera, C. Schwick, R. Secondo, J. Uythoven, M. Valette, S. Wenig, J. Wenninger, D. Wollmann, M. Zerlauth.

The slides of all presentations can be found on the website of the Machine Protection Panel:

<http://lhc-mpwg.web.cern.ch/lhc-mpwg/>

1.1 Approval of MPP#158's minutes

- Actions from the 158th MPP.
 - Action (ABT): check on redundant powering of the LBDS (UPS test). Chiara gave an update after the meeting and Ivan confirmed the tests will be planned in the coming days. Jorg added that BE-CO performed several upgrades during the YETS (concerning diamond etc) and it needs to be tested, that these information are properly propagated to the control system in the CCC, otherwise the tests would have to be redone.
- The software implementation for the β^* -leveling has been discussed in the recent CollWG. However, the full procedure of β^* -leveling, crossing angle change and TCT movement needs to be finalized and agreed between OP, the CollWG and the MPP. It needs to be ensured, that the triplet aperture is not exposed at any time during this exercise. Joerg added, that this topic will also be addressed in the next LBOC.

1.2 MPS re-commissioning after YETS 2017/18: BIS/SMP (I. Romera, R. Secondo)

- Ivan presented the changes and recommissioning plans for the BIS and SMP.
- There were no hard- or firmware changes to the BIS in this YETS and no new user connection. The local BIS loop was installed in IR6 from the 12th of January and will be removed on the 22nd of March, the procedure is available in EDMS.
- The Crab Cavities were added to the SPS BIS as input 5 (non-maskable). This user was also added to the SPS extraction BIS (non-maskable) and vetoes extraction in LSS6 when the table of the CC are in beam.
- The plan for YETS is to re-establish operational configuration on the 22nd of March, to be ready for beam on the 30th. The BIS commissioning with the BIS loops closed will require about 4 hours in common with ABT. For the hardware commissioning and the checkout all links from user to BIS and SIS to BIS as well as links from flags to BIS and from BIS to LBDS have to be tested.
 - Siegfried asked if any action was necessary on the experiment's side. Ivan answered that if anything was changed on the beam permit

production it has to be retested. Jorg added the injection handshakes are straightforward to check but the dump is less so. There will be a dry run test the week before Easter.

- There were no hardware changes to the SMP system either. An issue was brought up by GMT responsible because of recurring PLL errors. The cable was replaced with a spare because of a faulty connector. It is now working properly but PLL errors are still generated in the timing system. There was no record of such errors in the past as they are not logged.
 - Daniel asked what the consequence of such an error would be. They would cause a dump if a frame is lost.
- There was a firmware change in the SPS SMP: a new format for the BCT headers, which was discussed in MPP#141 and validated with BI. The first three bits of the header now include the location of the BCT (BA 3, 4 or 5) which allows to detect wrong cable connections. These bits were previously always set to 0. The system will go to failsafe if a wrong header is received. The connection to the new BCT 5 system was tested successfully without beam.
 - The MPS documents were published, the LHC commissioning will include validation of energy and intensity reception and the same in the SPS. The commissioning with beam will include the verification of the generation of flags and equations, for movable devices and the stable beams flag. In the SPS, flag generation and transmission to BIS and GMT will be verified.

1.3 MPS re-commissioning after YETS 2017/18: Vacuum systems (G. Pigny)

- Gregory gave an overview of the YETS activities and commissioning plans:
 - In LSS1, because of the installation of the wire collimators the layout was changed and ion pumps added.
 - Barbara asked about the BLM shown in the layout and if it was updated according to the collimator. Barbara will verify within the BLM team, that the new BLM has been properly installed and added to the database.
 - Daniel asked about the issue of a short in one of the wires which was solved in the end. Vacuum was not affected.
 - In LSS3, the maintenance of 22 sector valves was performed, O-rings and switches were replaced. User permit generation has to be checked.
 - In LSS4, the layout of the BSRT and fluorescence monitors was modified.
 - In LSS6, a leak detection was performed for CTD62.
 - In LSS7, the new crystal collimator was installed, with similar modifications as for LSS1
 - In LSS8, the exchange of an MKI magnet required a bake-out of the neighbouring sectors.
- In summary, a lot of de-cabling and re-cabling occurred, one new sector was added for the BBWC in LSS1. Gregory summarized the status of the valves and interlock tests as of the 18th of March:

- For experiments IPs, B1 and B2 were done, the BIC tests are left. The x-beams valves are closed so no tests are possible. The injection valves tests in 2 and 8 on one side are yet to be done (planned for 9th of March).
- For the other IPs:
 - LSS3 the ASB switches were replaced.
 - LSS4 the alarm to BE-RF is to be checked.
 - LSS6 is done, the alarms to MKBs are to be tested.
 - LSS7 is done.
- All the procedures are detailed in the following EDMs [document](#). No intervention was done on ALICE so the manual valve was closed. For ATLAS, the pump down will occur between the 5th and 12th of March, for LHCb between the 12th and the 21st and for CMS between the 21st and the 26th.
 - Jorg observed that there was an inconsistency for the date of the valve opening in CMS which is supposed to happen on the 29th and on the 23rd for other experiments. The dates mentioned above are for the pump down, the opening of valves can be done later as it is up the experiments. Dragoslav-Laza added heavy objects are being moved right now so it is better to do it without vacuum.

AOB - all

- Next week there will be another MPP meeting with collimation and the beam-beam wire compensators as well as the roman pots (TOTEM & ALFA/AFP) presenting their recommissioning plans.
- The MPP members representing the experiments would like to be notified when their presence is necessary, as they cannot attend all meetings.
- Jorg brought up an issue with the MAD-X files generated from the layout database. The layout database will eventually be bypassed and the 2017 MAD-X file will be used after adding the beam-beam wire collimators and the crystal collimators manually.