

205th Machine Protection Panel Meeting (LHC)

Friday 26 Mar 2021 (Zoom)

Indico: [205th MPP](#)

Participants

C. Wiesner (TE-MPE), A. Calia (BE-OP), M. Campanelli (EP-UAT), C. Hernalsteens (TE-MPE), G. Pigny (TE-VSC), D. Wollmann (TE-MPE), Y. Dutheil (SY-ABT), B. Petersen (EP-ADT), J. Uythoven (TE-MPE), H. Hillemanns (EP-AID), I. Lopez Paz (EP-UAT), B. Salvachua Ferrando (SY-BI), D. Lazic (EP-UCM), C. Zamantzas (SY-BI), D. Jacquet (BE-OP), F. Moortgat (EP-CMG), D. Mirarchi (BE-OP), M. Solfaroli Camillocci (BE-OP), J. Wenninger (BE-OP), G. Kruk (BE-CSS)

Minutes of the meeting [204th MPP](#) approved.

MPS re-commissioning in the MPP: Overview (D.Wollmann)

D.Wollmann recalled the goals of discussing the MPS re-commissioning needs in the MPP and presented the updated list of presentation dates and documents in EDMS with the machine protection procedures for LHC re-commissioning.

Re-commissioning of the vacuum system (G.Pigny)

G.Pigny presented the overview of the activities carried out during LS2 for the vacuum system, the new sectorizations introduced and the commissioning and testing of the vacuum system.

160 racks were moved to service caverns and consolidated and 200 new ion pump controllers were installed. The re-cabling affected the interlock cables that were disconnected and reconnected to the racks in the new locations. The conformity of the connections to the BIS will be tested.

Radiation tolerant electronics (gauges) were installed to provide instrumentation to cryo (no BIS interlock).

Fixed pumping group controllers were installed (including 240 new PLC crates) and consolidation of the pumping groups and preventive maintenance on the primary pumps took place. Additional fixed pumping groups on TD62 and TD68 along with corresponding PLC controllers were installed.

New vacuum sectorizations were introduced in LS2.

- TI2 and TI8: new sectorization around TEDs with 3 interlocking valves. The valve close to the SPS can be interlocked either by LHC or SPS. Its status is an input of the SPS BIC to enable SPS extraction to LHC.
- TDIS: new sectorization around new TDIS in LSS2 and LSS8 with interlocking valves.
- TCLD: new arc sectorization around TCLDs in arc 12 (UA23) and arc 23 (UA27) with interlocking valves.
- Beam Wire Scanner (BWS): new sectorization around the BWS in C5L4 and C4R4 (with interlocking valves) to allow efficient BWS intervention without venting the full vacuum sector.
- Beam Gas Curtain (BGC): new sectorization for installation of BGC (stage 1) on LSS4L with interlocking valves.
- VELO: additional vacuum sector upstream of VELO to allow efficient installation of future equipment without venting IP8 sectors. The new valve is not interlocked, is manually operated, but its status is included in the BIS. This follows a completely new control system for the VELO Vacuum System with delicate vacuum requirements.

The new vacuum system testing and commissioning will be carried out by 7 teams and is almost finished. Testing procedure and instrument type is described in EDMS 1405440.

- User alarms: tested for MKIs and cryo. Still missing: ADT, ACS and MKB.
- A full validation of the BIS user permits is foreseen but not yet scheduled.

All sectors are presently under vacuum except:

- ATLAS: temporary vacuum pipe installation for beam test (without bake out). Valves test ~1 week before beam test. Final bake out for nominal conditions foreseen January 2022.
- ALICE: bake out foreseen June 2021.
- CMS: bake out foreseen May 2021.
- LHCb: temporary vacuum pipe installation for beam test (without bake out). Valves test ~1 week before beam test. Final bake out for nominal conditions not yet planned.
- CTD62: vacuum conditions ongoing after installation of new window.
- S67: already tested before warm up. Actuator tests will follow cooldown foreseen April-May 2021.

MPS commissioning procedure is described in EDMS 896391. In order to automatically perform the tests, a script has to be updated to reflect the changes in the vacuum control system.

Discussion:

- J.Wenninger mentioned that the checkout tests should be started as soon as possible in order to avoid stress during checkout for beam tests.
- J.Uythoven mentions that the vacuum system checkout tests should be closely coordinated with the BIS team.
- G.Pigny mentions that the checkout tests are automatic and the script is maintained by the vacuum group (following a question from J.Uythoven):

- The script depends on the BIS system as it has to acquire the interlock timestamp for validation. G.Pigny asked who to contact in case of problems with the BIS CMW interface and Daniel answered Marc-Antoine Galilee. (ACTION)
- J.Wenninger suggested having a validation version of the script in order to verify before the checkout tests the connection (via CMW) to the BIS system.
- J.Uythoven asked about interlock connections modifications to the CIBU unit.
 - G.Pigny answered that there were no modifications but since the equipment was moved, the cables had to be disconnected and reconnected.
 - J.Uythoven and G.Pigny then agreed that it is necessary to check the CIBU connections everywhere before checkout tests. (ACTION)
 - J.Wenninger pointed out that the connection verification should be coordinated with OP since the machine is not always accessible due to powering tests and training.

Actions

- Validation of automatic script for the vacuum checkout tests. Verify with Marc-Antoine Galilee (TE-MPE-CB) the possible changes in the BIS CWM interface after LS2. (G.Pigny)
- Coordinate with C.Martin (TE-MPE-MI) to verify CIBU connections of the vacuum system. (G.Pigny)