

ICM activities: LHC, SPS, CPS

G. Pigny

22nd of June 2020



LS2



LHC

Performed activities (BV, IV)

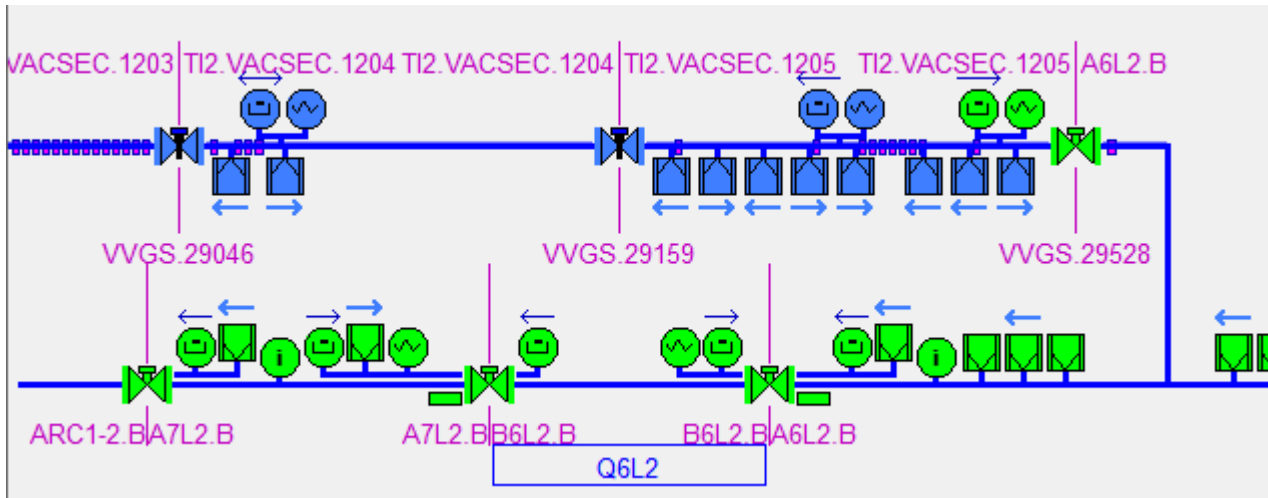
Next LHC PLC/SCADA update preparation (23/06/20) (Sebastien, Pablo, Gregory, BVO, BE-CO)

- VacDB synchronization
- New sectorization (C4L2.X, D4L2.X, E4L2.C, F4L2.B, F4L2.R, A12.R, B12.R, C12.R, A23.B, B23.B, C23.B, C5L4.B, F5L4.R, G5L4.B, G5L4.R, E5R4.B, F5R4.B, E5R4.R, G5R4.B, F5R4.R, A67.R, B67.R, C67.R, A78.B, B78.B, C78.B, C4R8.X, D4R8.X, E4R8.C, F4R8.B, F4R8.R)
- Migration pumping group and I/O gauge control Octant 1 + Octant 2 Left + 2 Inner Triplet VPGF right side
- Migration of ion pump controller to Agilent controller (including new relay alarms)
- Migration hardware interface for sector valves
- Extension lines TI2 and TI8
- Gauges and Pumping Group animations review

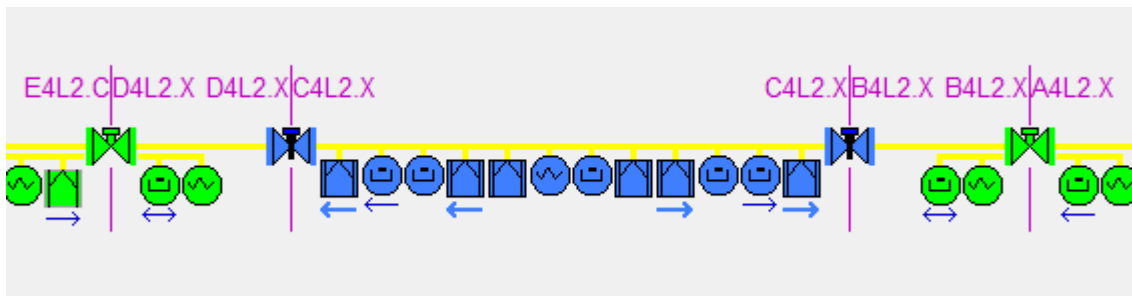
Performed activities

LHC PLC/SCADA update preparation (Sebastien, Pablo, Gregory)

TI2 1203, 1204, 1205



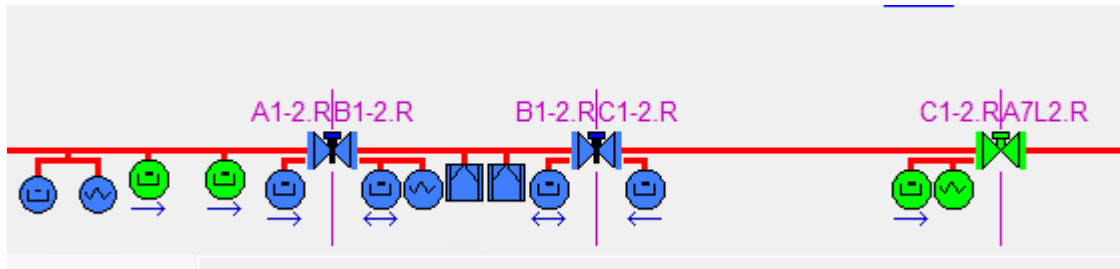
TDIS D4L2.X, C4L2.X, B4L2.X



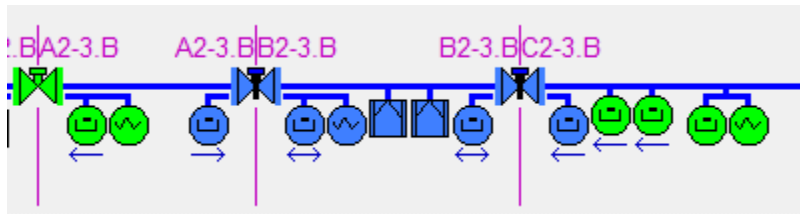
Performed activities

LHC PLC/SCADA update preparation (Sebastien, Pablo, Gregory)

TCLD B1-2.R



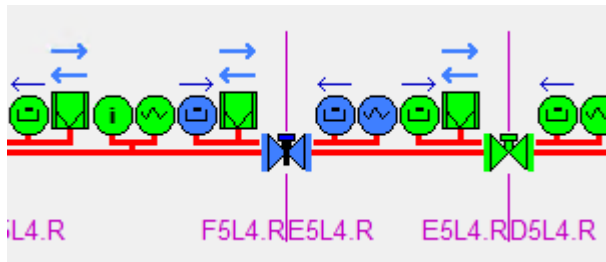
TCLD B2-3.B



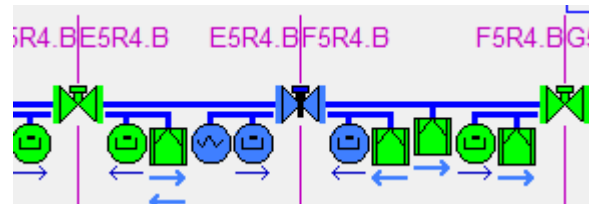
Performed activities

LHC PLC/SCADA update preparation (Sebastien, Pablo, Gregory)

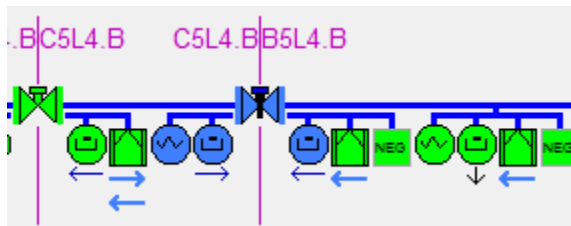
BWS E5L4.R, F5L4.R



BWS E5R4.B, F5R4.B



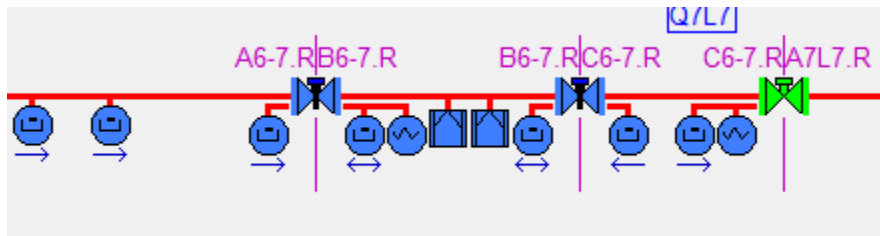
BGC LSS4L



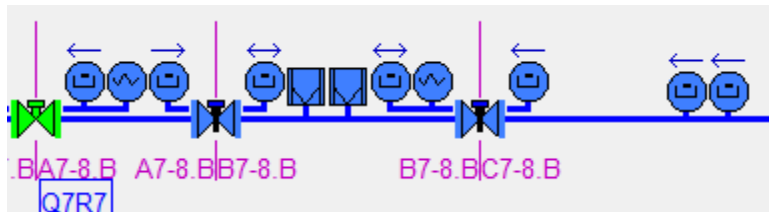
Performed activities

LHC PLC/SCADA update preparation (Sebastien, Pablo, Gregory)

TCLD B6-7.R



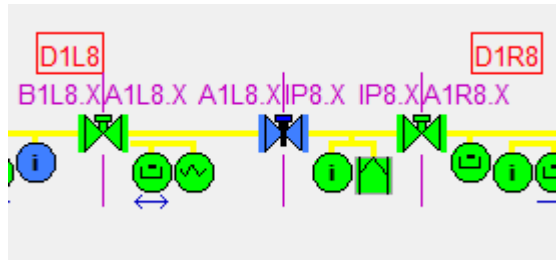
TCLD B7-8.B



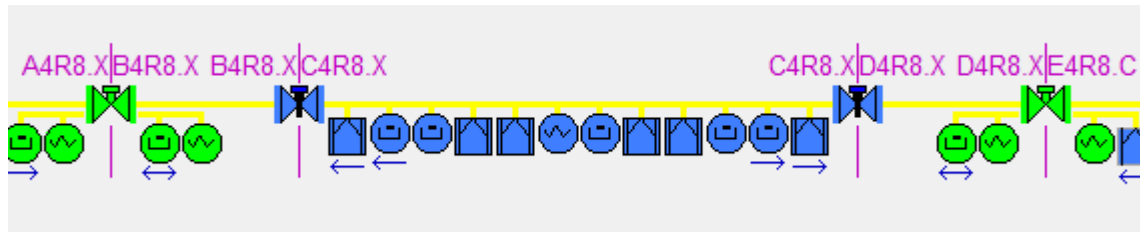
Performed activities

LHC PLC/SCADA update preparation (Sebastien, Pablo, Gregory)

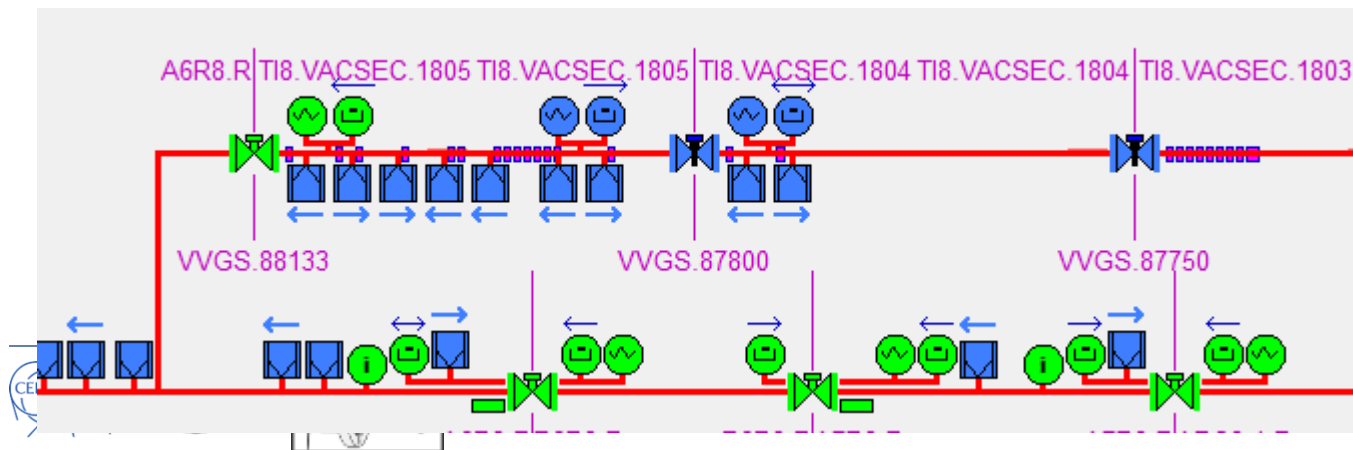
New valve upstream VELO, A1L8.X, IP8.X



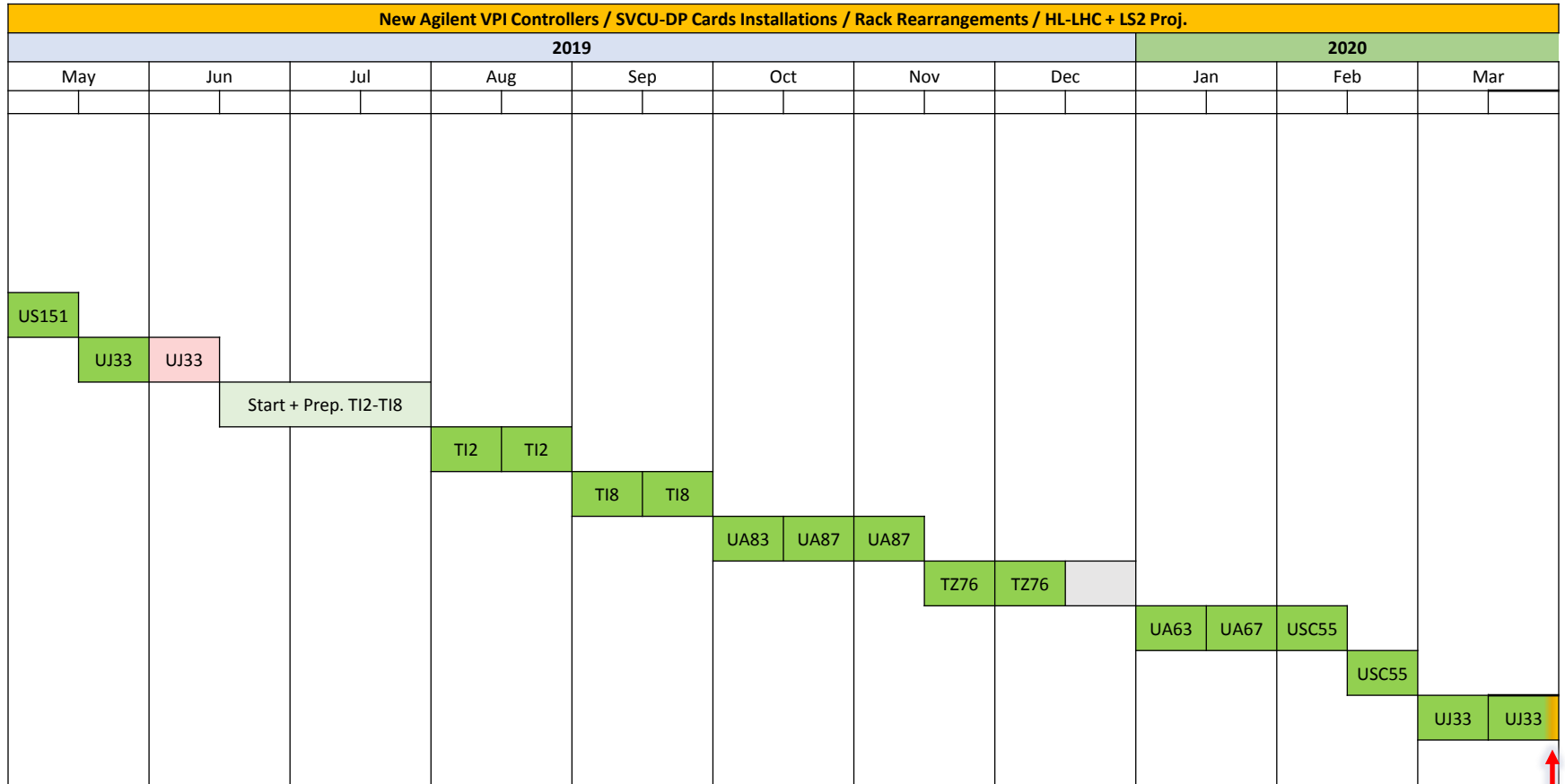
TDIS B4R8.X, C4R8.X, D4R8.X



TI8 1805, 1804, 1803



LHC Racks Consolidation (BV)



Pt1, Pt2, Pt4 done before May

UJ33 95% completed:

Detailing: Intlck cables, Plates, ...
PLC+SCADA Update pending

Performed activities (BV)

W23/24/25 (Pablo, Abel N., FSU)

- Mobile equipment connection in B4L5 and A4L5
- Test and reconnection of BGC adjacent sectors instrumentation
- Connection of new VPI controllers to the second master PLC in TZ76
- Profibus network troubleshooting in UA63 (not fully solved yet)

Performed activities (BV)

W23/24/25 (Rodrigo, Jose, Abel N., FSU, Gregory)

MKB

- Fixed issue with MKB equipment data acquisition on TD62+TD68
 - All functions are now called every cycle (Gauges/VPI ~40ms, VPGF ~150ms)
 - SCADA delay ~1s
- Performed local venting tests on all MKB TD62 pumping groups
 - Four groups working fine (first two and last two tanks)
 - One group (VPGFL.623298.R) didn't vent properly in case of error or power cut. Also didn't auto-restart until errors were manually cleared.
 - Auto-restart and auto-venting parameters in PLC were missing (solved)
- Checked VPI and VGP calibration and level settings
 - 3 VPI controllers changed due to bad calibration or alarm relay issues
 - VGP all tested OK
 - Level setting 1E-7mbar / 5E-7mbar OK

Planned activities (BV)

W26/27 (Pablo, Abel N.)

- PLC/SCADA update and tests
- Reconnection of TI2 instrumentation
- Mobile equipment connection for A6L2 and A5L8
- TCLD instrumentation checking and connection
- Check the VGP.39.5R8.C gauge on MKI
- Check the VGP.77.6L7.R and VPI chains

Performed activities (IV)

W23/24/25 (Lampros, Nikos, Alexander, Petter, Christopher & FSU)

- Sector 12 installation
 - **US151**: PLC installation and cabling
 - **LSS1**: Local crates R2E type installation, B50 connector modifications, VPGF connection & starting (minor issues)
 - **RE18**: Rack rearrangements, PLC installation & cabling.
 - **RE22**: Rack rearrangements.
 - **ARC 12**: Local crates modification, left side waiting for cooling fans installation, right side waiting for mechanical consolidations (DLM). VRJGE modifications left side and R2E electronics installation.
- Received all the new VPGF and gauge controllers from Greece. Tested all the controllers OK
- RE22 cabling requests for additional VPGs (13L2.Q & 14L2.Q):
 - Ethernet cables: signed for installation, Power cables: on progress, visit scheduled next week, Signal cables: on progress, OSVC signed



Performed activities (IV)

W23/24/25 (Lampros, Rodrigo, Nikos, Alexander, Petter & FSU)

- IT Redundant Pumping Groups power cables installation: Finished
- Commissioning sector 45:
 - Updated all sector 45 pumping groups with the latest VPG_STD software and the proper configuration for all VPG <-> Gauge Reading Crates communication
 - Tested start/stop and VVR reopening of all available groups, as well as actuation of group gauges and reading of sector gauges: All OK
 - RF cavities: stand-by due to high pressure in some cavities - unable to perform Pirani calibration
 - LSS4R: Calibrated Piezo and Pirani. Tested Penning control chain of TPG300. Some issues with measuring cards. Tested VPGF (1 issue sector A)
 - BV Q7: Consolidation of 3 TPG300 controllers (UA43 and UA47). Calibration of pirani gauges Q7 and test of Penning control chain

Performed activities (IV)

W23/24/25 (Lampros, Rodrigo, Nikos, Alexander, Petter & FSU)

Piezo Calibration



R2E Installation ARC12



Planned activities (IV)

W26/27 (Lampros, Nikos, Alexander, Petter & FSU)

- PLC/SCADA update and tests
- RE22 & UA23 gauge controllers installation. US151 Ethernet connection.
- UA23 Rack rearrangements, PLC installation & cabling.
- LSS2 Left Burndy 50 modifications, Local crates installation, cabling.
- RE22 PLC installation & cabling.
- ARC 12 VPGs cables connection & starting.
- VRJGE modifications and R2E installation P2 left side.
- Complete commissioning sector 45 and start sector 81.

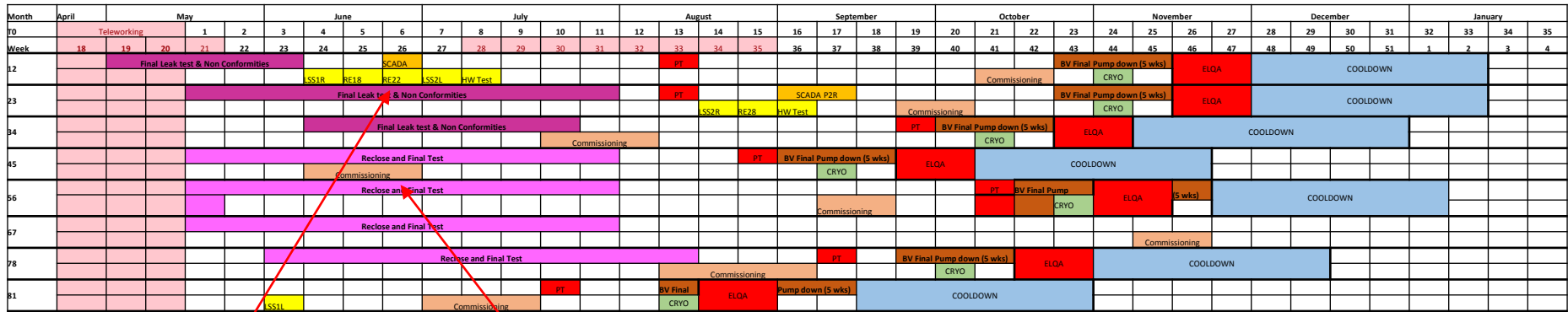
PLC migration and R2E electronics

| Fixed Pumping Group Controllers / R2E Electronics Replacement Schedule | | | | | | | | | | | | | | |
|--|------|----------------|-----------|------------|------------|----------|----------|----------|---------|---------|---------|------------------|----------------------------------|--|
| 2019 | | | | | | | 2020 | | | | | | | |
| June | July | August | September | October | November | December | January | February | March | April | May | June | July | August |
| Octant 3 | | | | | | | | | | | | | | |
| | | Start Octant 4 | | | | | | | | | | | | |
| | | | Octant 4 | | | | | | | | | | | |
| | | | | Octant 6/7 | | | | | | | | | | |
| | | | | | Octant 6/7 | | | | | | | | | |
| | | | | | | TESTS | | | | | | | | |
| | | | | | | | Octant 5 | | | | | | | |
| | | | | | | | | Octant 8 | | | | | | |
| | | | | | | | | | COVID19 | | | | | |
| | | | | | | | | | | COVID19 | | | | |
| | | | | | | | | | | | COVID19 | | | |
| | | | | | | | | | | | | P1 LSS ARC 12 | | |
| | | | | | | | | | | | | | P2 LSS L SCADA up HW tests | |
| | | | | | | | | | | | | | | P2 LSS R RE28 SCADA up HW tests |



P1 left/right
RE18
Start RE22

IV Commissioning planning (baseline v2.5)



VPGF, GRC
 P1 LSS L/R
 RE18
 Start RE22

Finish Commissioning Sector 45
 Start sector 81

SPS and more

Performed activities

W23/24/25 (Abel G.)

SPS:

- PLC/SCADA project preparation and update (19/06/20) (w/ Joao and Andre)
 - PLC master consolidation of BA80 (TDC2). From S7-400 to S7-1500 series
 - Consolidation of the missing negative ion pumps controllers to AGILENT in BA2 and BA5
 - Renaming of critical vacuum sectors, following BVO naming proposal
 - Displaying of first LHC sector valves downstream TED in TI2 & TI8. Adding static arrows for LHC interlocks and full range gauges
 - Removal of window valves from TT20 and TDC2
 - Adding SMS notifications for compress air status of sector valves in TI2 & TI8
- Test of sector valves in BA4 and BA6: just one valve (VVSA_40701) in ARC 4- did not open, reported to BVO
- Local boxes closure in ARC 1+ and ARC2- as part of the electrical safety consolidation: SPS ring finished!

Performed activities

W23/24/25 (Abel G.)

SPS:

- Putting orange scotch in all the racks with UPS power outlets (BA1..BA80)
- Checking of noisy and wrong measurement ion pumps in SPS. Preparing replacement campaign for non-calibrated power supplies providing interlocks
- DIC and DEC for 6x penning gauges to be replaced in MSE & MST sectors of point 2
- Diagnostic for VPIB_11878 (LSS1): Pressure rise in the whole sector while switching it on. Control chain OK. Pump has been replaced by BVO -> Fixed
- Diagnostic for VPIA_61040 (ARC 6-): Sparking. Power supply and local cable damaged -> Fixed
- Diagnostic for VPIB_61857 (LSS6): Open cable. Wrong convention at patch panel level -> Fixed
- Diagnostic for VPI remote IO patch panel down (BA1): Power supply damaged -> Fixed

Performed activities

W23/24/25 (Abel G.)

North Area & NA62

- North Area: Diagnostic for M_HNA403 master PLC in North Area: No communication. Replacement of communication processor -> Fixed
- NA62: SCADA/PLC update (w. Andre)

ISOLDE & REX & HIE-ISOLDE:

- Membrane gauge replacement of exhaust tank 1. SCADA and PLC updated accordingly (w. Jose Ferreira)
- Cables manufacturing and connections of 10x triphasic pumps for the consolidation of ISOLDE and REX
- Commissioning of separator sector in REX-ISOLDE. Sector valves interlock tests for Low Energy part
- Support during pump-down to BVO and during tests to OP
- Replacement of damaged TPG252 controller in EBS -> Fixed
- Closure of primary pump control crates in HIE-ISOLDE (electrical safety consolidation)

Planned activities

W26/27 (Abel G.)

- Sector valves test in LSS3 (RF cavities)
- Support during pump down of LSS1+
- Connection of D-Boxes in REX
- Connection of new primary pumps in ISOLDE and REX

CPS

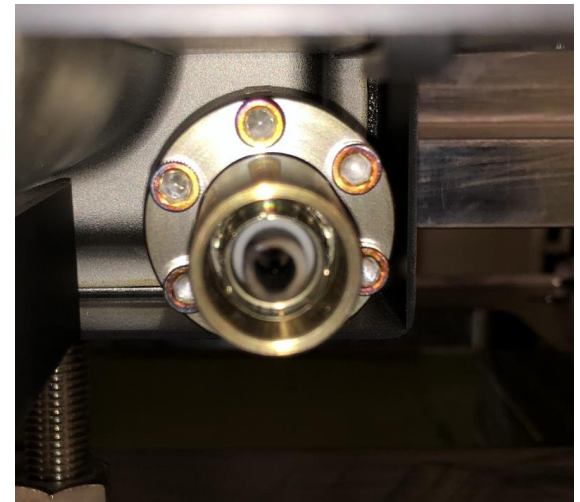
Performed activities

W23/24/25 (Jose)

- CPS PLC/SCADA update
 - New position BR.VPI10L5
 - New position PR70.VPI68A
 - New rack distribution in TT2, PSB and PS
 - Fixing small problems
 - New calibration for VPIs
- L4
 - Diagnostic for L4L.VPGR.2106.6 pumping group in Linac 4, thermal breaker triggered because primary pump damaged
- PSB
 - User interlocks test
 - BR.VPI10L5 to BR.VPI10L1
 - Performed the BIS test with C. Martin
 - Connection and commissioning for the SCRAPPERS 8L4
 - VPIs power supply troubleshooting



BR.VPI10L5 to BR.VPI10L1



Feedthrough VPI side

Performed activities

W23/24/25 (Jose, Abel G., FSU)

- PSR
 - VIC BGIs
 - Consolidation of 3x TPG300, troubleshooting of VPG PR90.84
 - 3 Phase temporary power for VPG sector 90
 - PR50.VPG45 connection and commissioning
 - VPIs power supply troubleshooting (rack/tunnel)
 - Connection and commissioning of PR90 & PR100
 - External alarms and signals tests with RF
- TT2
 - Rearrangement of TPG300 controllers
 - Reconnection of cables disconnected during the decabling campaign

Planned activities

W26/27 (Jose, Abel G.)

- PSB
 - Check user alarms
 - Diagnostic of pumping groups in failure in PSB
- PSR
 - Check user alarms
 - Support to BVO during pump-down
- TT2
 - Connection and commissioning tunnel side

AD & ELENA

Performed activities

W23+24+25 (Petter, Jose, Abel G.)

- Updated VacDB & synoptics
- Removed all old cables
- Installed Agilent controllers
- Installed new Fast valve system
- Installed the new MUX DP cards for ELENA and AD
- Moved old VGIs and Helmer setup to fit with the fast valve system.
- Installed covers to valve crates (IP2X)
- Modified the VPI local boxes and backplates (EN/EL)
- Lockout of AD racks (VYA03,04 and 17) for EN/EL Cabling



Planned activities

W26+27 (Petter, Jose, Abel G.)

- SCADA/PLC Update
- Fast Valve system test
- TPG installation and tests
- Interlocks and Profibus cabling
- Modify LNS Pumping Groups with new interlock
- Get the ring equipment ready

- Deadlines
 - Mid July – Ring HW commissioning
 - Early August – Circulate H-
 - Mid September – Transfer line HW commissioning

Thank you !



LS2

