



Detector Support Group

Weekly Report, 2017-11-15

Status

Magnets

- Eighteen interlock checkouts for Pre-Power-up of Torus completed.
- Start-up mode changed for Sol-LV-cRIO to allow an automatic program-run after the cRIO controller is power-cycled.
- Battery replaced and tested on the UPS of Torus power supply.
 - * Battery discharged < 20 seconds instead of lasting ~27 minutes for present load.

RICH

- Detector rotated twice for assembly tasks.
 - * Vertical to horizontal rotation performed to allow removal of exit window, installation of stiffening tool, and installation of spherical mirror.
 - * Horizontal to vertical rotation performed to allow for mirror alignment and survey of detector shell.
- Reflectivity measured of mirrors 4, 4C, 5, 2C, and 3C.
 - * All mirrors and spots had reflectivity ~90%.
- D0 and Shack-Hartmann measurements performed for mirrors 1 and 5.
 - * Mirror 1: fit-d0 = 1.85 mm at R = 2718 mm.
 - * Mirror 5: fit-d0 = 2.20 mm at R = 2722 mm.
 - Issue with analysis program for d0 images caused incorrect fit for mirror 5, giving fit results larger than expected or observed.
 - * Shack-Hartmann analysis performed at INFN due to software licensing.
- Two humidity sensors in nitrogen volume debugged.
 - * On Board B, H1 sensor was not reading correctly because PCB was bad.
 - Spare cable installed as replacement for cable with bad board.
 - * On Board F, H1 sensor was not reading correctly because sensor was bad.
 - Bad humidity sensor on HTSB replaced and now reads correctly.
- New E-panel cooling manifold machined.
 - * New manifold, 59.1 inches long and 12 holes, have two holes threaded for 5 mm Φ nozzles, remaining 10 are 2mm Φ holes. Spacing between holes is 4.53 inches.

MVT

- Fabricated:
 - * Five Ethernet cables for the MFCs.
 - * Seven DB9 connectors for Black Box (control box) terminals.
 - * Seven DB15 connectors: five for MFCs and two for pressure transducer terminals.
- All cables connected and tested.

Gas Systems

- Orifice installed on MVT pre-mix supply pressure regulator inlet.
- ASME relief valve installed on MVT pre-mix supply for Hall B.
- MVT Hall B pre-mix on target gas pad leak-checked with Snoop.



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Antonioli, Mary Ann

- Assisted in assembly of RICH stiffening tool.
- Fabricated two RICH sensor cables (portion between detector and electronics panel), with Mindy.

Bonneau, Peter

RICH

- RICH Hardware Interlock System hardware.
 - ★ Researched and obtained quote for hardware needed to instrument both sensors on the temperature and humidity boards.
 - cRio controller, RTD modules, ADC module, relay module, power supply, mounting chassis & hardware is needed.
 - A NI 9035 chassis will support (2) RICH sectors of e-panel sensors.
 - ★ DSG cRio test station was reconfigured for the development of the e-panel sensor LabVIEW RT-program.
 - ★ Troubleshooting procedures for humidity sensors was reviewed with sensor assembly installers.
 - ★ Calibration constants for the N2 humidity sensors was documented.

SVT

- SVT Hardware Interlock System
 - ★ Continued development of the CS-Studio EPICS slow controls user interface.
 - ★ The completed softIOC is being tested for the SVT EPICS client interface.

Forward Tagger

- Worked with Amanda and Pablo on FT Hardware Interlock System debugging.
 - ★ Testing and troubleshooting procedures for calorimeter chiller enable and status read-back signal.
- Worked with Pablo and Mary Ann on development of the National Instruments Compact-Rio test station.
 - ★ Troubleshooting procedures for cRio communication issues were reviewed.
 - ★ Next steps in the development of tests for ADC modules was discussed.

Campero, Pablo

Magnets

- Completed Torus Pre-Power up interlock checkouts.
 - ★ Verified 18 interlock tasks.
- Changed Start up mode for Sol-LV-cRIO
 - ★ Startup executable allows to the Sole-lv-cRIO run the program automatically after the cRIO controller is power cycled.
 - ★ Tested cRIO run properly by power cycling cRIO manually.
- With Brian debugged solenoid radial load cell incorrect read back (zero value) in control system



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- * Verified address assigned to the radial cell connector (J27) in the Low Voltage chassis #1, were the correct.
- * Compare that calibration values assigned for the load cell were the same as the values on the lookup table in the LV LabVIEW program.
- * Confirmed that radial load cell read back values are negative.
- Replaced and tested faulty battery on Torus UPS power supply.
 - * Tested proper functions of the UPS.
 - Two output analog signals tested. One signal sent when there is a power outage and another signal when the battery is low.
 - UPS bypass the power source to the generator circuit when the battery is low, and keep the all Torus control system alive.

MVT

- Collaborated with Brian with the connection of five MFC and two pressure transducers used on the MVT gas system.
 - * Prepared and connected five Ethernet cables for the MFC.
 - * Soldered signals and power cables to the proper connectors for the MFC and Pressure transducers.
 - Seven DB9 connectors made for Black Box (control box) terminals.
 - Seven DB15 connectors made for MFC (X5) and Pressure transducers (x2) terminals.
 - * Labeled network and signal cables.

ET

- Debugged Chiller status read back given by its Contact module.
 - * Verified that relay output on the card work properly, contact open and closes when chiller is tripped.
 - * Measure proper 5 V input voltage going to the Contact card.
 - * Problem not solved, ADC cRIO module cannot read 5 V coming out of the Contact card when the chiller is tripped.
- Worked on cRIO Test Station.
 - * Debugged USB communication issues between cRIO controller and dsgcomp2-PC.
 - * Connected cRIO to Hall B network switch via Ethernet cable.
 - * Requested IP address for the cRIO to be added to Hall B subnet.

Eng, Brian

RICH

- Installed stiffening tool on shell in horizontal position after exit window was removed.
- Rotated shell back to vertical to allow for mirror alignment and survey to be done.

MVT

- Terminated, labeled, and connected cables that go between SFL3 and gas pad with Pablo.
- Deployed first version of mixing code on SF cRIO, in process of updating main GUI with new controls/indicators for mixing system.



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Hoebel, Amanda

DC

- Calculated mean of TCU1 and TCU2 with 95% probability.
 - * Mean for TCU1 found to be between 2.7434 V and 7.4360 V.
 - * Mean for TCU2 found to be between 2.5822 V and 2.5824 V.

ET

- Tested chiller cable for interlocks with Pablo. Checked:
 - * Cable continuity with ohmmeter.
 - Cable works properly.
 - * Voltage coming from cRIO.
 - Verified +5 V being sent to chiller.
 - * Voltage at chiller-end of cable.
 - Verified +5 V at connector.
 - * Voltage coming from chiller after cable was connected.
 - Chiller works but cannot see +5 V.
 - Voltage is floating at ~3 V, as seen through LabVIEW program.
- Created and edited weekly report.

Jacobs, George

GAS Systems

- Ordered BSPP adapter fittings for MVT gas control chassis
- Installed 0.009" orifice on MVT pre-mix supply pressure regulator inlet
- Installed 100 psi ASME relief valve on MVT pre-mix supply for Hall B
- Leak checked MVT Hall B pre-mix on target gas pad using Snoop.
- Ordered 1/4" bulkhead connectors for MVT gas chassis

HALLB

- Ordered CO2 for DC
- Discussions with Sandro about sealing the RICH N2 volume after completed assembly
- Crane ops for RICH
- Prepared slides for TCB meeting
- Participated in TCB meeting – LTCC single sector test status, LTCC gas system status, and MVT pre-mix supply for Hall B status
- Discussions with Sandro on RICH assembly fixture upper mounting brackets modifications

Leffel, Mindy

ET

- Modified interlock test cable, added additional leads.

RICH

- HTSB cables.



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- ★ Worked with Mary Ann to fabricate nitrogen cables.
- ★ Continued working on test cables.
- Assisted with attachment of stiffening tool.
- Contributed to rotation from horizontal to vertical.
- Worked with Tyler troubleshooting humidity sensors.
 - ★ Replaced one sensor and one HTSB cable.

Lemon, Tyler

RICH

- Rotated RICH for assembly tasks.
 - ★ RICH rotated two times after preliminary gas seal test: once from vertical to horizontal and once from horizontal to vertical.
 - ★ Vertical to horizontal rotation performed to allow removal of exit window, installation of stiffening tool, and mirror installation.
 - ★ Horizontal to vertical rotation performed to allow for mirror alignment and survey of detector shell.
- Measured reflectivity of Mirrors 4, 4C, 5, 2C, and 3C
 - ★ All mirrors and spots measured reflectivity ~90%
 - ★ Results from spots that looked smudged slightly lower.
- Performed D0 and Shack-Hartmann measurements of Mirrors 1 and 5.
 - ★ Mirror 1: fit-d0 = 1.85 mm at R = 2718 mm
 - ★ Mirror 5: fit-d0 = 2.20 mm at R = 2722 mm
 - ★ Issue with analysis program for d0 images caused incorrect fit for mirror 5, giving fit results larger than expected or observed.
 - ★ Shack-Hartmann analysis performed at INFN due to analysis software licensing.
- Debugged two humidity sensors that were not working in nitrogen volume with Mindy.
 - ★ Bad sensor #1: H1 on sensor board located on right side, middle of detector near front panel
 - Sensor incorrectly reading very low humidity.
 - Checked sensor with meter, verified that sensor did not appear to be working.
 - Mindy replaced bad humidity sensor with new sensor but we still could not read humidity from sensor.
 - Determined that PCB for sensor may be bad.
 - Installed spare cable with nitrogen volume connectors to replace cable with bad board.
 - ★ Bad sensor #2: H1 on sensor board located on left side, middle of detector near front panel
 - Sensor showing humidity of ~60% when all others showed ~30%.
 - Verified cables to and wiring in cRIO chassis was correct.
 - Mindy replaced bad humidity sensor on HTSB and verified it now reads correctly.



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McMullen, Marc

DC

- Completed TCU flow of standard at 200cc/m.

RICH

- Machined RICH assembly support frame modification. Modified 2 x M10 holes to 9/16".
 - ★ Added 4 more 9/16 holes to add stability to support RICH in the 65 degree position.
- Completed two rotations from 65 degrees to 0 and back.
- Removed the exit panel.
- Installed the Stiffening tool.
- Machined new E-panel cooling manifold. The new manifold is 59.1" long and has two extra holes which will be threaded for 5mm nozzles, in addition to the 10 2mm holes. Hole spacing is 4.53"