

Expedition 397T (Cape Town, SA → Lisbon, Portugal) Engineering Report

10 September–11 October 2022

VIT

1. VIT Depth/Speed Indicator

During the initial iRIS debugging period, we began looking at ongoing non-communication of the MTNW (now called Rugged Controls www.ruggedcontrols.com) LCI-90i display unit. We suspected that there is a fault at the display unit, and after testing different setup settings, and looking at the internals, we called the company and discussed the problem with a Technical Engineer. We discovered that the communications board was not working correctly. The defective board was removed, and swapped with the second unit's board, and communications were restored. The original unit is being sent back to manufacturer for repair (RMA # 176-973) once received at JRSO. This unit must be sent back to the ship asap.

2. VIT Lights

- a) The VIT reentry light (at the center back) is behaving erratic by not powering up on the deck but will power up while being deployed, usually around 100m depth. VIT usage isn't expected on Exps 397/398, but will leave request for Siem/IODP Electricians to note all conditions if this occurs
- b) The cameras are erratically powering down when being recovered, but cycle back on right afterwards. We are suspecting a loose/defective connection or some anomaly with the fiber in the main lift umbilical.
- c) The new SeaStar lights were configured using the ROSYS EoSCode program. They were set to ID's 1, 2, and 3 and have been set to turn on to 60% intensity upon power up. They were installed on the frame temporarily to test command communications via IRIS VIT Control (IVC) software. While on the frame, they did not want to respond and it was spotty if IVC or EoSCode would see them. Further investigation is needed and Remote Ocean Systems has been contacted for assistance in establishing communication. A quick start guide for using EoSCode to program the lights is on the ship server at: <U:\Operations\2-Engineering\1 VIT\4 END DEVICES\LIGHTING\ROSYS SeaStar Light Control Software>

3. VIT Cameras

- a) The VIT reentry camera #2 (right side from the front) and the wide-angle camera are likewise power cycling, but during the recovery phase of a VIT deployment. Have left inquiry with Siem Elect Supervisor to note all conditions (depth, date, connector status, etc.) to see if there is a connector issue or maybe something with the main lift umbilical fibers. One possibility would be to stop the recovery and shoot the (BLU, ORG, GRN) fibers to clear the umbilical of issues, as the BRN fiber is typically tested at the start/end of an expedition.
- b) With the change-over to iRIS, several serial COM ports have been changed/updated. This “broke” the Imenco GUI connection from the VIT PC and the OPS PC. Had to remove the old virtual COMs and create new ones. Wrote up a quick start guide for how to create a virtual COM (we were reinventing the wheel because we didn’t have any documentation of how it was done). The Imenco GUI is once again successfully controlling the PTZ camera. Quick Start Guide is on the ship server at: U:\Operations\2-Engineering\1 VIT\4 END DEVICES\CAMERAS\4 Imenco OE14_522D PTZ

4. VIT Test Cable in Subsea

- a) During testing of the new VIT SeaStar lights, we went to set up the spare pod to conduct a bench test to determine how to control the lights. We quickly realized that we needed to replace the old test cable with the Ametek CCP test cable purchased from TTL Subsea on requisition 2008090DCH. We asked Siem to assist in getting the new test connection cable installed in Subsea. After getting it installed, we attempted several times to get the pod to communicate to the surface multiplexer box but without success. We tested the fibers/splices and everything seems in working order. At this time, we do not know why it is not communicating and further testing is in order.

5. VIT Documents and Schematics

- a) All VIT manuals and Schematics have been updated to reflect changes made to networks and COMs during the setup and initiation of iRIS along with the software upgrade to the DVR PCs from v5.7.4RC to v6.3.1. Siem crew (Calle, Ike, and Eugene) were made aware of the changes and given a brief introduction to all the changes. The manuals and Schematics have been uploaded to Confluence as PDFs (for document control purposes) and are available at: <http://confluence.ship.iodp.tamu.edu:8090/display/LMUG/Engineering+and+Tools>
- b) The original Word version/schematics are on the ship server at <U:\Operations\2-Engineering\1 VIT> in their appropriate subfolders

iRIS

6. Hardware

a) Drawworks

Siem ET's added a physical switch to the drawworks distance measurement system in the Driller's shack. The Driller can now switch between the laser and radar systems on their display, with the intention to verify the radar unit and eventually use that 100% of the time.

b) Driller's J-box Refurbishment

The newly refurbished J-box by the drawworks winch is in service, but the cable that connects it to the subsea iRIS/RigWatch service boxes will need replacing. IODP ETs to get specs and length for ordering. This may improve the SNR of the radar and other signals going to iRIS/RigWatch.

c) iRIS cRIO UPS/battery backup

We have started looking for a battery backup/UPS for the cRIO and modules. Although the cRIO is very robust, and can handle sudden power loss, uncommanded shutdowns, and other potential failures, it appears to simply go back to work and restart with no problems. However, to fully protect the unit, a UPS/battery backup will be installed. Ideally, the unit we use will be able to communicate with the iRIS software through serial comms, and the user can track system power health.

7. Software

a) Ongoing alpha testing of General Users Interface (GUI)

Bill Mills has been working on debugging and updating the iRIS GUI. The latest version (Ver 13, Fix 0, Build 0) is deployed and we will encourage staff & scientists to use this on Exps 397/398 and provide feedback. Initial versions were tested during coring and drilling activities on holes U1584 and U1585.



Figure 1. iRIS General User's Interface

b) Ongoing alpha testing of Drillers Interface

Likewise, the Drillers Interface (Ver 13, Fix 0, Build 0) deployed continued debugging and development. Most likely one more revision to fix a known bug will be fixed and re-deployed. We are going to encourage the Drillers on Exp397 as time allows, as they will be fully engaged with drilling/coring activities. We are hoping to get some feedback from them on 397 and 398 to complete debugging and revisions during the upcoming tie-up after 398.

- c) Have the iRIS General UI running on the Engineering computer while its collecting data
- d) Software Installers are stored on the JR network at: <U:\Operations\2-Engineering\iRIS>
- e) Software Development Team is still working on the Data Collector system but is near completion prior to the end of Exp397T.



Figure 2. iRIS Driller's Interface

8. Documentation

a) General User's Manual

The GUI User's Manual Rev 0 was completed and will be placed onto Confluence on the JR, but still needs to be edited and revised.

b) General User's Quick Start Guide (QSG)

The GUI QSG Rev 0 was completed and will be put into Confluence

c) iRIS Software Documentation

- iRIS software documentation uploaded to Confluence at: <http://confluence.ship.iodp.tamu.edu:8090/display/LMUG/Downhole+Logging#DownholeLogging-iRIS>
- Original (*.DOCX) files are also stored on the JR at: <U:\Operations\2-Engineering\iRIS>

SubC DVRO computers

1. Software Update

SubC updated the software on the recently repaired (Unit 15483) DVR pc to v6.3.1. This computer is currently installed and working. The software does have one known bug that SubC is working to fix. When initiating Video out over the HD-SDI DeckLink Quad 2, the program pops up an error box that implies that the video out channel is already in use and can't be used. Despite this popup box, the video **does** get initiated and set out to the CCTV system.

- a) Issues updating second unit to 6.3.2 (slightly newer than v6.3.1). The initial DVR PC (unit 15455) initially had version 5.7.4RC installed. I downloaded the newest DVRO installer and when installed, the PC could not initiate video out with the same pop up error box as above. However, the bug seems worse in this version in that I had the DP tv turned to the correct channel and nothing ever came on unlike with v6.3.1. During the last part of the Expedition, I re-installed 5.7.4RC to have a working spare, however when I tested the PC on the system, the PC had two issues come up.
 - a. A small chassis fan made horrid screeching noises and then seized.
 - b. The Osprey 460e video capture card no longer registers in the system. Trouble shooting involved making sure it was properly seated in its slot and checking that the drivers were installed/working. Neither resulted in regaining the card's function. As of EOX we are attempting to arrange for it to be shipped back to SubC for repairs and cleaning.
- b) We have one dongle for SubC's DVRO program (that we are aware of) and are inquiring if we initially purchased 2 and what it would take to obtain a second dongle. Looking at the original POs in AMS does not indicate how many dongles were provided/purchased.