# ENGINEERING EXP 362 6 AUG - 6 OCT 2016.

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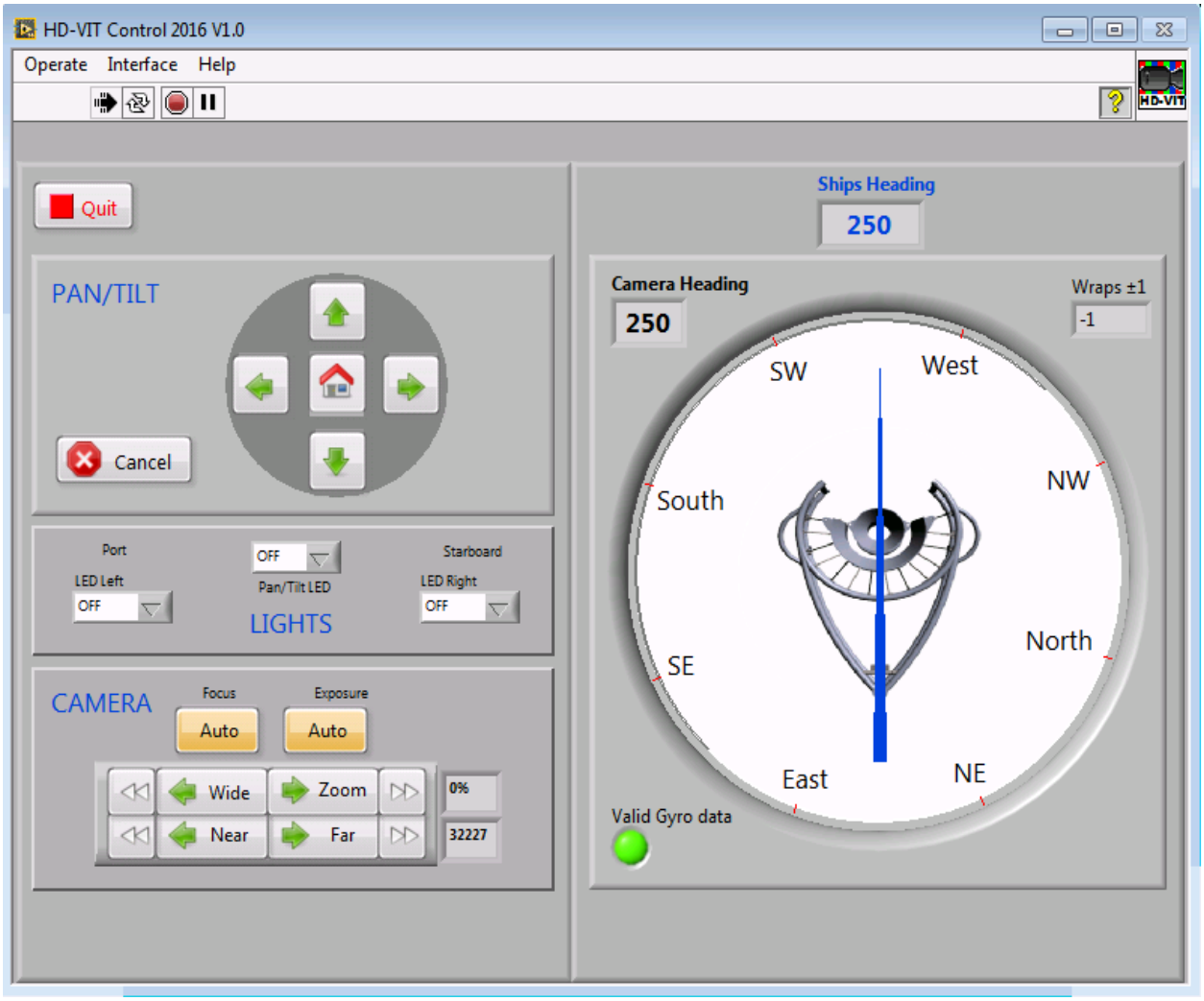


# ENGINEERING

## OVERVIEW:

Multiple deployments were planned with the SLB-Wireline /ERS/MDHDS/T2P combination. The T2P was extensively damaged on the first deployment and further deployments were put on hold.
The VIT was deployed in water depths <4000m for the first time, without any issues. Two of which exceeding 36 hours. VIT was dropped ~6m onto the FFF due to an operator's error. No apparent damage.
A new single window control application was written in LabView.
No evidence of changes in optical attenuation, implying the optical fibers are well isolated from any destructive forces within the cable.
VIT tensiometers did not hold up in the harsh environment in the moonpool area. Parts are on order to address the issue. Mounting position also to be revisited to avoid removal/mounting on cable for each deployment.

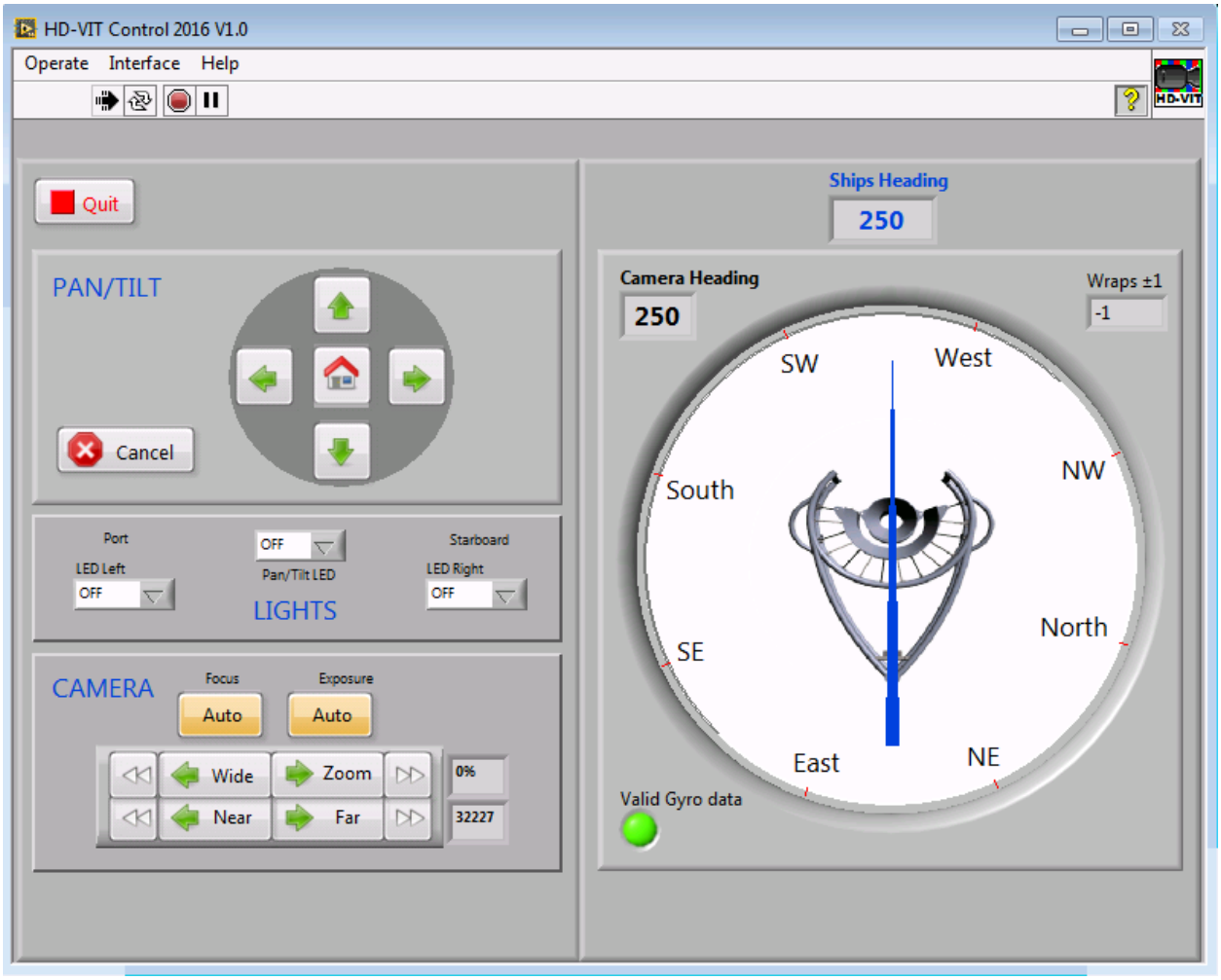
## VIT SYSTEM:

### GENERAL

- Multiple deployments were made to <4000m with no issues. Two deployments for <36HRS.
- The new SeaView Systems multiplexer cards functioned without any issues.
- No evidence of changing attenuation in test fiber.
- Adjustment were made to "Near Focus" of both HD cameras to prevent them from focusing on objects on the pressure vessel window.
- Opened Re-entry cam S/N2 to remove foreign particle from port window. Replaced O-ring 2-018.
- Pan/Tilt faulty. Spare unit on order. Expected Exp 366.
- Populated AMS with VIT critical spares list and adjusted stock levels.

## SOFTWARE

New Software – HD-VIT Control 2016 V1.0
The VIT control software has been updated to incorporate all of the VIT control functions into a single user Graphical User Interface (GUI), with the exception of the proprietary Sonar software. LED control, Pan/Tilt control, Camera Zoom and focus as well as Gyrocompass display are all controllable within the single "HD-VIT Control 2016V1.exe" executable. The GUI defaults to a "Simple" interface with fewer tabs and visible controls. An Advanced GUI can be selected via




the "Interface" menu. The advanced interface allows the use of additional commands and diagnostic and debug data.

*New in this Version 1.0 :*

- Single window Operation
- Automatic Ships Heading and Latitude
- Ships Heading displayed on Gyro (Blue Needle) for ease of determining relative camera direction
- Simple and Advanced Graphical User Interfaces

- Additional Controls
- Improved Gyro drift correction for earth's rotation

## TRAINING

USER training topics for OPERATORS:

- Launching Sonar and Labview control applications on the VIT PC
- Initial set-up of Gyro
- Controlling, Lights, Zoom, Pan and Tilt devices.
- Setting-up of the DVR recorder and applying file naming convention.
- Transferring files to IODP server, post deployment.

Follow-up training to be done with new software application.

TECHNICAL training topics for MAINTENANCE PERSONNEL:

- Topics above for Operators.
- System technical overview
- Schematic diagrams
- Course Wavelength Division Multiplexing.(CWDM) techniques.
- Optical Measurement techniques.
- Fusion splicing techniques.

Attendees:

- John Pretorius
- Stephen Cowen
- Richo
- Nico Hurn

## TENSIOMETER

Overview:

- Payout calibrated to the Siem Veeder Depth meter. Calibration factor = 22.999p/min.
- Both tensiometers failed during deployments. 354A as a result of water ingression into j-box and 355B TBD. New j-boxes to be fitted and extra measures to be taken to prepare the units for working in the harsh environment in the moon-pool area.
- Repositioning of the tensiometer on the cable to be considered to avoid mounting and dismantling the unit for every deployment. This task is cumbersome and the potential of dropping parts while assembling/dismantling tensiometer over moonpool is high.
- j- boxes and m A Converters on order.
- Created spares list in AMS

# DOWNHOLE TOOLS

## T2P/ERS/MDHDS DEPLOYMENT

- Only one deployment was made resulting in the T2P being damaged beyond repair.
- From the RIS and T2P data it was determined that the pins sheared and MDHDS de-latched prematurely when landed in the BHA. The T2P suffered buckle damage when it could not penetrate the sand formation and the push force from Standpipe pressure at 1200psi was more than the T2P could support.
  Lessons learned:
  - Do not deploy in sand.
  - Shearpin design to be revisited.
  - Standpipe pressure to be limited to 600psi when deploying the T2P.

## ERS

- A new motor was installed and motorcan filled with water.
- ERS release of MDHDS in BHA were normal.
- "Tool present" indication did not function.
- ERS failed to attach to MDHDS. Probably due to sand in the cavity for "Tool Presence" switch.
- Water drained from motor-can at end of expedition.

## MDHDS

- Tool was not maintained following Exp 359. However, it was layed out and latching mechanism appeared to be operating normal.
- Pins sheared prematurely when landed in BHA.
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- Following the deployment, the latch was rebuilt, assembled and tool placed in the shuck.
- Reccommendations from TomP and PeterP following failure:
  - Never deploy in sand
  - Limit standpipe pressure to 600psi
  - Add step to verify tool is latched to deployment procedure.

## T2P

- T2P tool DAQ1 was assembled and when pressure tested it was found that Tip pressure did not release. Disassembling the tool we found obvious damage to the shaft o-ring.
- After consultation, it was decided to omit one of two o-rings on the TXD-block which cured the issue above.
- Dimensions of the big porous ring is critical at 0.2". Any smaller, the porous ring seal between shaft and TXD-Block is compromised. Any bigger, the small o-ring seal for thermistor-shaft through TXD-block is compromised.
- During the actual deployment the thermistor constant current source was interrupted, causing a shift in the A-D Vref.

- The CDAQ stopped recording data shortly after the T2P fell through the bit into the formation. At the time of failure, Mud pumps were running with Standpipe press around 1100psi.
- Two MDM/GREENTWEED/FISCHER connector harnesses were re-wired.
- Reasons for failed deployment as stated by TomP and PeterP
- OT 7043, coupling from T2P to MDHDS, no fit. A spacer ring had to be machined as a work-around to couple T2P to MDHDS. BobA working on an Eng change.
- T2P to stay onboard for Exp 366
- PeterP to arrange for spare parts below to have a 2nd T2P ready for Exp 366:
    - 1) Drive Tube.
    - 2) Drive Tube Nut
    - 3) Spin Collar
    - 4) CDAQ Housing
    - 5) Fischer 19 to Fischer 5 split cable.
- Damaged parts to be returned to UT end Exp-362.

## APCT3

- S/N's 023 and 002 in incoming shipment.
- Return S/N's 005 and 007 for calibration.

## SET2

- BobA to design cross-over sub to allow the SET2 carrier (OM1610) to be deployed with CDS.
- Awaiting 2nd SET2 tool from shore.

## SETP

- Received SETP S/N 01 from shore. Awaiting firmware with latest calibration factors.
- Installed battery, filled pressure system with RTF and tested both pressure and temperature measurements ok.
- SETP S/N 2 to be returned for calibration post Exp 362, Singapore.

## MICROSMART PRESS TXD

- Returned 2 x 10k devices for calibration.
  S/N 4986 and S/N 40060 OM0950 Batteries to remain on board.

## MSS

- Received 2 X MSS plugs with holes drilled in wrong position. Drilled holes in correct position and requested shore to do an engineering change. Requested 0-rings for the plugs.

## DH TOOL INVENTORY:

- SETP: S/N 01
- SET2: S/N 540
- SET: S/N 05
- APCT3
  - S/N 1858004C
  - S/N 1858009C
  - S/N 1858002C (oncoming shipment)
  - S/N 1858023C (oncoming shipment)
- ERS: S/N's 1 and 2.
- Microsmart Pressure TXD's 15k, S/N's 4997 / 4981

## TOOLS RETURNED:

- Microsmart Pressure TXD's 10k, S/N's 40060 / 4986
- SETP, S/N 2
- APCT3, S/N's 1858005 and 1858007

## RIGWATCH

### PIPECOUNTER

- Replaced broken gland on pipe-counter j-box.
- Alu j-box and metal compression glands on order to replace the plastic box.

### SOFTWARE

- DOWComm.exe has been modified to allow selection of VIT depth from the SIEM Veeder-Root Counter or the Tensiometer for both RIS data and Overlay depth
- Currently using SIEM veeder-root Depth data for RIS and Overlay

## ITEMS RETURNED:

REDUNDANT VIT DEVICES:

- OV0829 QTY X 2 24V P-Supplies
- OV0823 QTY X 1 Ethernet switch
- OV0828 QTY X 3 Serial Servers
- OV0851 QTY X 1 Low Lite Camera
- OV0826 QTY X 4 O F Media converter
- OV0825 QTY X 3 O F Media converter

OTHER:

- OM0950 QTY X 2 u Smart press txd's
- MDHDS RS-OVERSHOT (DAMAGED)
- DAMAGED T2P PARTS
- SETP S/N 1

## ACTION ITEMS:

- SETP S/N 01, requires firmware with latest calibration factors.
- Fwd cal files for APCT3's, S/N's S/N 1858002 and S/N 1858023
- Calibrate 2x u Smart press txd's.
- Calibrate and return 2nd SET2
- Design and fabricate cross-over between SET2 carrier (OM1610) and MDHDS.
- T2P coupling to MDHDS (OT 7043) to be redesigned and fabricated.
- Damaged MDHDS RS-Overshot to be replaced.
- Design / fabricate protector sub for MDHDS.
- Engineering change request to prevent MDHDS from acting as a bucket in the shuck.
- Update MDHDS User manual with new recommendations in 362 failure analysis.
- Purchase and ship o-rings for MSS-plug.
- On VIT Tensiometers and Pipecounter, replace j-boxes and install metal watertight cord grips. (ship)
- Retrofit Pod S/N 2 with Seaview parts.
- Please ship Antares pencil-type temp data logger.