

Mike Meiring



#### OVERVIEW:

- Changed out old VIT frame with new.
- Modified Antares loggers for high Temp range.
- Deployed Kuster WST.
- Deployed the ETBS Temperature tool.
- Deployed VIT system.
- Researched potential gyros for COT project.

VIT:

#### OLD/NEW FRAME CHANGE-OUT:

- Removed all devices from old frame. Cleaned and checked them for any physical deficiencies.
- Cleaned cables/connectors and replaced o-rings.
- Telem pod S/N 2 on frame S/N 1 now serviceable spare.
- Made and installed plastic brackets for all devices attached to the frame.
- Replaced Frame J-Box Compensator with new.
- Old frame to be stored on board as a spare.

#### PLASTIC BRACKETS:

- All steel brackets on frame were replaced with plastic.



Plastic brackets

- Dimensions for most brackets are 8" X 12". A standard 12" X 24" sheet will make 3 x brackets. 0.5" for normal and 0.75" for heavier devices. Mounting the devices to brackets and the brackets to the frame are done with Vibration isolating U-bolts. Mounting to the frame are on either a 2" or 3" pipe support.
- McM # for UHMW polyethylene sheeting:

<b>Dimension</b>	<b>McM #</b>	
12" X 24" 0.5"	85705K43	Standard
12" X 24" 0.75"	85705K83	Heavy loads

These plastic sheets have excellent impact and tensile strength and meet ASTM D4020 UL 94HB specification.

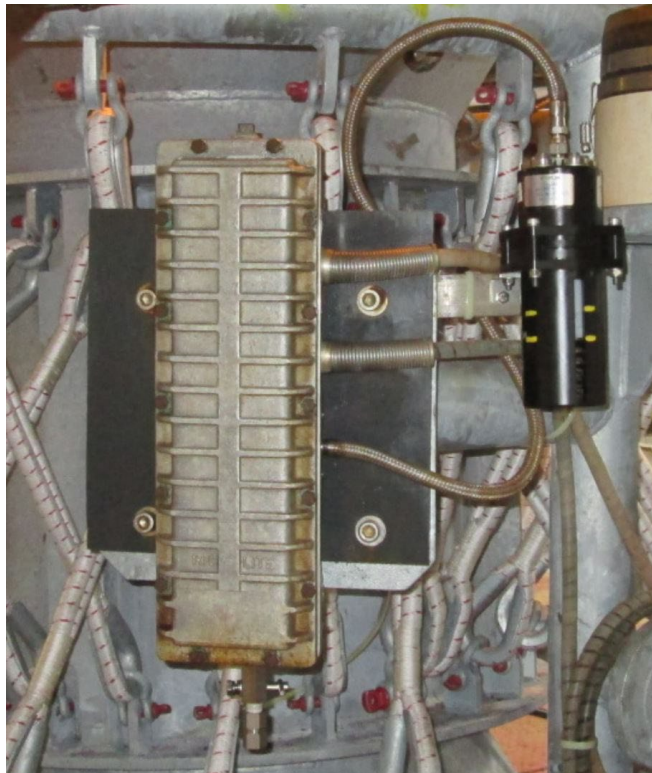
- **McM # for Vibration Isolation U-BOLTS:**

<b>Device</b>	<b>Device OD</b>	<b>McM #</b>
Frame 2" Pipe	2"	3176T16
Frame 3" Pipe	3"	3176T18
Altimeter	1.7"	3176T14
Sonar/LED	4.1"	3176T19
WFOV -Cameras	4.7"	3176T21
HD-Cameras	4.7"	3176T21
OE PTZ Cam	5.5"	3176T22

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**FRAME J-BOX COMPENSATOR:**

- Installed new Forum 270cc compensator #SA-HC-0406-MAS on the Frame J-Box.
- New silicon oil fill procedure updated in VIT AUG.



Frame J-Box with new Compensator

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**PITTING ON ROSS LED LIGHTS:**

- Significant pitting is taking place due to compromised anodizing on the aluminum housings of the ROS LED lights. Plan to replace these lights in near future. We currently have three on the frame and one spare. They each deliver 10000 lumens at 90deg flood. Replace with similar flood lights.



Pitting on ROS LED Light

## FORJ:

### BRUSH DUST SHORT CIRCUIT:

On Exp 385T, the 480VAC power supply to the umbilical blew its fuses. The fault was traced to a short circuit in the slipping portion of FORJ S/N 1519 and it was replaced with the spare.

Feedback from vendor indicated that the short circuit was caused by brush dust build-up. It will be refurbished and returned to ship.

The unit has been in service for 3 years since new. I suggest the electrical portion of the FORJ get refurbished after 2 years' service as a planned maintenance task, to prevent a similar breakdown with production time lost.

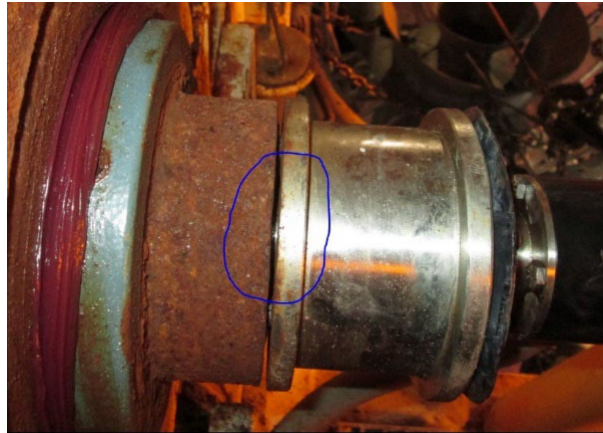
### WATER INGRESS:

Another potential cause for failure could be water ingress into slipping. Water can be trapped in the drum shaft where FORJ is housed when drainage becomes compromised. The drainage gap between the FORJ flange and Drum shaft face was increased to  $\sim 1/16''$  See images below.

Checking free space around FORJ in shaft and drainage should become a maintenance item.



Before



After

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## MAIN HYBRID POD CONNECTOR:

On disconnecting the main hybrid connector from telemetry pod S/N 1, there again was evidence of silicon oil being pushed up from the Frame J-Box via pigtail.

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## SUBCDVR :

CPU usage pegged at 100% and failing when recording more than one channel:

What has been determined:

- Fault is intermittent.
- It is caused by overlay data. No overlay data, no problem.
- Fault remained when SUBCDVR PC was replaced with spare.
- All external related programs/devices have been reset/started.
- Four serial overlays, from Com5&6, on each of the 3 videos simultaneously indicated CPU usage <30% when system running normally
- Adding one serial overlay, from either Com5 or Com6, to each of the three videos. CPU usage >100% in fault condition.

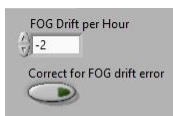
SUBCDVR PC Win7 to Win10 CHANGE:

- There is a requirement from TAMU for all PCs on the network to have Win10 OS. e-mail 10/28/2019

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## HD VIT SOFTWARE UPGRADE SUMMARY:

- The Earth-rate drift correction did not give consistent results at various locations. Please remove all Earth rate auto correction code. Total drift determined on site and entered in the *FOG Drift per hour* box below, was the most effective.



- HD VIT not seeing Nav data from both Winfrog PC's. Data comes from either one of two Winfrog E-mail DF 03112019
- Request from operators to remove both analog(blue pointer) and digital indication of "Ship heading" from display. E-mail DF 03112019
- Code to be added to monitor VIT Pod Power Supply failure. E-mail JvH DF 07052019
- Pan/Tilt device no longer operational. Please remove all related code.
- Please send *Infinity focus* cmd to Sony HD-Cameras at start-up.

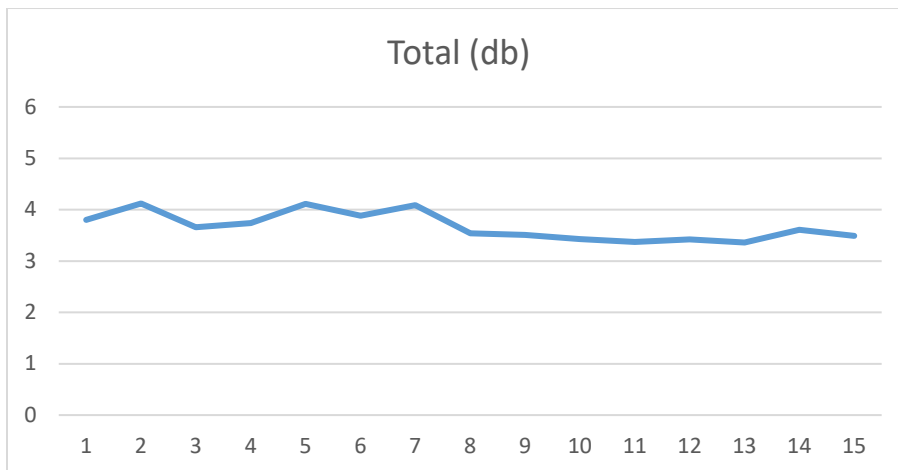
## VIT HPU CAMERA:

- Siem installed a new camera to monitor the VIT HPU system.

## GENERAL MAINTENANCE:

- Flushed devices/connectors with fresh water and sprayed with silicon lubricant.
- Ordered Fusion splices and FO patch cords.
- Optical link integrity:  
OTDR measurements are periodically made on the spare Brown Fiber from DP to the VIT Frame J-Box. Compared against measurements from previous Expeditions, this could be an early indication of potential issues especially on the FORJ and Umbilical. OTDR measurements on the BRN reference fiber shows no evidence of optical link degradation.

EXPEDITION	SUBSEA J-BOX (db)	FORJ (db)	Total (db)	Length (m)
Exp 362T	1.26	1.3	3.8	7513
Exp 362T 700m	1.6	1.54	4.12	7513
Exp 366 Start	1.12	1.02	3.66	7512
Exp 366 3670m	1.16	1.1	3.74	7511
Exp 366 End	1.59	1.48	4.11	7511
Exp 368 Start	1.35	1.17	3.88	7512
Exp 368 2780m	1.52	1.42	4.09	7511
Exp 371 Start	0.35	0.95	3.54	7512
Exp 372 End	0.94	0.85	3.51	7511
Exp 375 Start	0.34	0.94	3.43	7510
Subic Dry dock	0.9	0.79	3.37	7467
Exp 368X	0.31	0.9	3.42	7467
Exp 379	0.31	0.94	3.36	7466
Exp 383	1.05	1.05	3.61	7466
Exp 385 End	1.03	0.81	3.49	7466



## PROJECTS:

### CORE ORIENTATION TOOL (GYRO):

- Received STIM 210Y and evaluated. The +/-4deg fixed window was found not to be practical for our application. . Returned gyro.
- Inertial lab IMU with a 0/360deg window appears to be acceptable. Two gyros were purchased for evaluation.
- The Request For Tender (RFT) document was populated with technical content to support the new Inertial Lab IMU-T gyro.

## RIS:

### GENERAL MAINTENANCE:

- Made new brackets for and secured RIS J-Box1 at rear of drill shack.

### WINDOWS 10/64 OS:

- Rigwatch application runs on Windows10/64 OS.

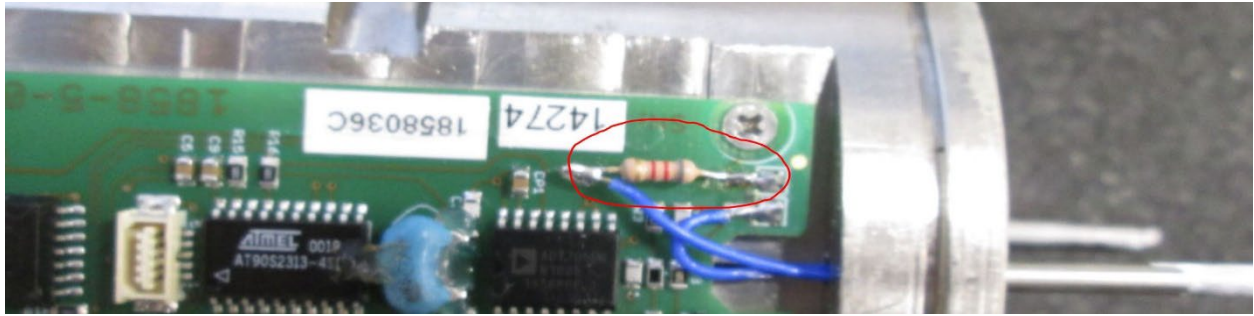
### DONGLES/KEYS:

- Dongles are no more required to run the Rigwatch software. Vendor offered a work-around which requires a specific procedure to be implemented by MCS. They are familiar with this.
- Determine if touch screen PC for DrillShack is upgradeable to Windows10/64 OS. It is currently running Windows XP. If not upgradeable, consider replacement units.
- The Subsea NI cRIO-9014 CompactRIO Real-Time-Controller is still a single point of failure for the Rigwatch system. We do not have a functional spare.

## DHML:

### HIGHER TEMPERATURE RANGE MODIFICATIONS:

- Science party expected tools onboard to measure temperatures between 60C and 80C
- APCT3 S/N 36 and SET2 S/N 39 were modified to extend their measuring range. A 8200 ohm resistor was added in series with the thermistor.



APCT3 S/N 36



SET2 S/N 39

Both tools were calibrated in a crude temp bath against a glass thermometer reference. Curve fitting was attempted and The APCT3 Temperature cal file was changed to:

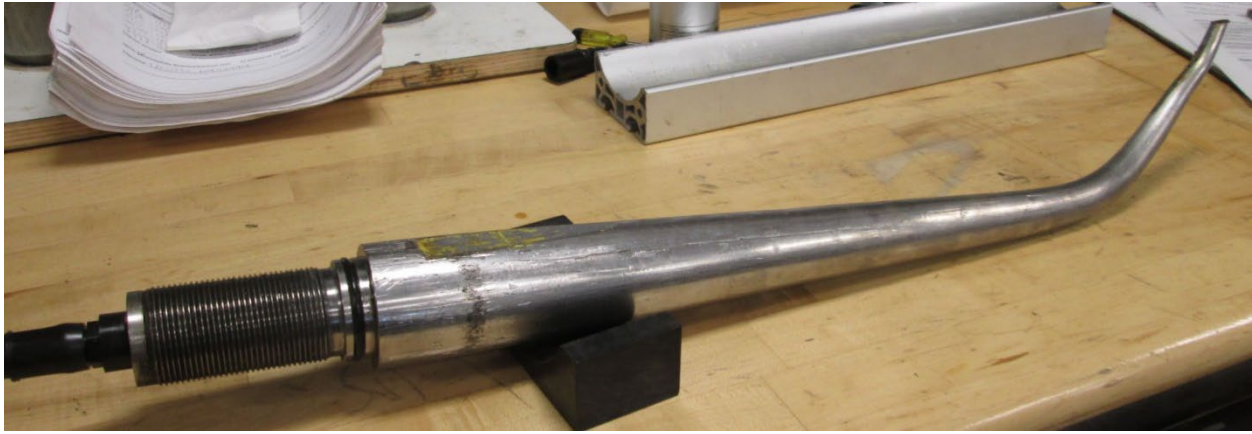
R	degC
45175	20
15290	60
11300	85

- Cal data from SET2 S/N 39 was plotted in Excel and a log trend line provided a reasonable fit. This equation was applied in Excel to calculate Temperature values from Tool R. Although the uncertainties of the measurements were ~3-4 degrees at best, scientists accepted the results.
- APCT3 S/N 36 and SET2 S/N 39 electronics only, were returned to College Station for calibration. SET2 S/N 39 now also needs a housing. The only hardware modifications that were made to them were adding a 8k2 resistor in series with the thermistor.

#### SET2 TOOL DAMAGE:

- SET2 S/N 39 was damaged in hole U1548C. The colet protection in the CDS did not operate. Electronics was not damaged. The High temp modified S/N 39 Electronics were then transferred into SET2 S/N 49 housing for remainder of the expedition, Damaged tip was discarded of.





#### ETBS TOOL:

- Deployed this once with no tool issues.
- Review hardware for interfacing tool to the drilling system and deployment procedure. CT devised a plan to make this work.



Improvised deployment hardware

#### KUSTER TOOL:

- Tool operated as designed, returning water samples under pressure.
- O-Ring issue:  
When the Transfer Head Assembly Handle was screwed into the Valve Body Assembly to release the water sample, the pressure would blow the valve o-ring out of its groove (Fig 1), with adequate pressure it was destroyed. (Fig 2).



Fig 1

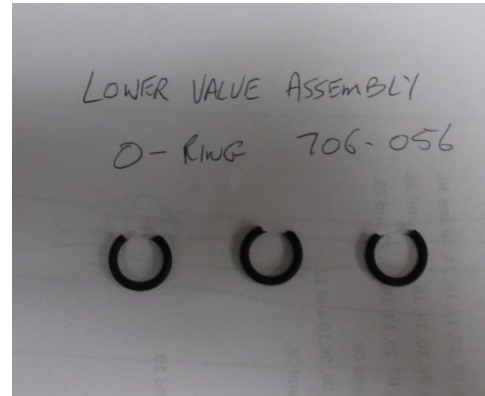


Fig 2

The chamber pressure is released by compromising the o-ring seal. Damage to o-ring depended on sample chamber pressure. O-ring was destroyed 3 out of four deployments. Pressure >2000psi. This did not affect the sample taking negatively, as the o-ring blew out when sample chamber was in process of being de-pressurized and o-ring had to be replaced anyway following a deployment.

- Pressure gauges:  
The need for pressure indications will vary from application. The water sample arrives at the hydrostatic pressure where it was collected, could be many thousands of psi. Due to the incompressibility of water, it equilibrates to ambient pressure very quickly on opening the valve. Other than a flick, we never saw any evidence of sustained or building pressure. We have a range of pressure gauges in UT store should future applications require a pressure gauge.
- Cleaning of tool:  
This depends on what the scientists are interested in finding. Compared to Exp 376, requirements for this Exp was more relaxed. We rinsed with DI water and applied anti-seize/lubricant to threads as needed.
- Review hardware for interfacing tool to the drilling system and deployment procedure. The tool was deployed with the same hardware devised by CT to deploy the ETBS. However, in this configuration the holes in OM7024, were inside the drill pipe, making it unlikely for any flow through the tool while stationary in the pipe in a flowing hole.
- Both tools were rinsed with DI-Water and stored with valves closed.



Improvised deployment hardware

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MSS:

2 X TOOLS ONBOARD. One tool failed.

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## INVENTORY:

APCT3	S/N 002
APCT3	S/N 041
APCT3	S/N 035
APCT3	S/N 032 Batt?
APCT3	S/N 031 Batt?
SET2	S/N 449
MicroSmart 10k	S/N 40129
MicroSmart 10k	S/N 40121
MicroSmart 10k	S/N 40060
MicroSmart 10k	S/N 4986
MicroSmart 15k	S/N 4997
MicroSmart 15k	S/N 4981 could not be located?
ERS	S/N 1
ERS	S/N 2

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## ACTION ITEMS:

- No spare VIT Main hybrid connector/ pigtail.
- Order new Survey PTZ camera on.
- Start planning to replace the ROS LED lights.
- SUBCDVR Windows10 change.
- SUBCDVR CPU 100% issue.
- HD-VIT code changes.
- ETBS/KUSTER deployment procedures and hardware.
- VIT Hand-over to Siem
- RIS system replacement

## SHIPPING RECEIVED:

- VIT-HPU monitor Camera for Siem installation.
- STIM210 Gyro
- 2 X U/W LED Y cable for LED lighting. OV0820.
- 2 X U/W Cables for cameras. OV0841.
- VIT Surface 480VAC Fuses. (handed to Electricians)
- 2 x APCT3's S/N 36 and S/N 41

## SHIPPING RETURNED:

- Crate: 36" x 36" x 16" on Main Deck:

5	Heavy duty clamps, VIT	OV0970
2	Tensiometers, VIT	OV1000
2	Top Sub, PCS	OP6318
3	Piston, MDHDS	OT7042
1	Latch Rod MDHDS	OT7075
3	Landing Shoulder, MDHDS	OT7035
3	Female Quick release, MDHDS	OT7043
1	Crossover sub, MDHDS	OT7047
1	Piston, MDHDS	OT7027
1	Spring Compression tool, MDHDS	OT7063
1	Shear pin housing, MDHDS	OT7022
• 1	APCT3 S/N 36 (H-Temp mod)	OP4375
• 1	APCT3 S/N 07	
• 1	SET2 S/N 39 (H-Temp mod) Electronics only	OM1600
• 1	Gyro, STIM210Y	

## ORDERS/REQUESTS OUTSTANDING:

- RIS Pipe counter reflectors McM# 1927N21: e-mail 03152019