



NOC Scientific Engineering Update

NMF – Scientific Engineering

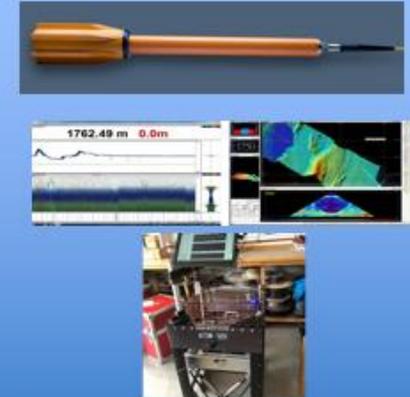
OEG



S&M



SSS



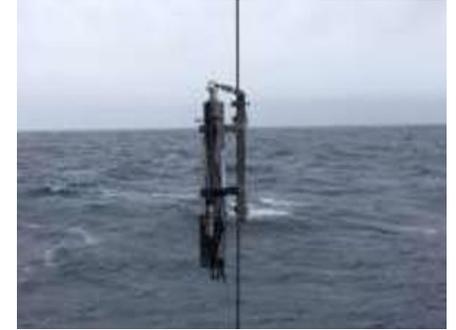
Process Systems

MFP Marine Facilities Planning

Calibration Laboratory

NMEP Trials

- Annual equipment trials conducted
- Alternate between ships each year
- Equipment assurance and personnel training



Stand Alone Pump System

- Taken out of service in 2018 due to issues with reliability around impeller binding and thrust bushing failures.
- The magnetic window, impeller, spindle and bushing arrangement has been redesigned.
- Successful sea trials completed Aug 2019

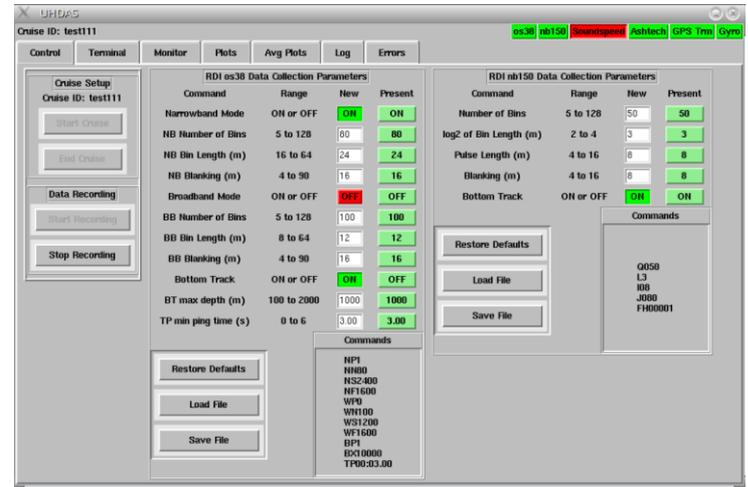


UHDAS

UHDAS installed on both RRS James Cook and Discovery during summer refits with successful sea acceptance trials.

The primary benefits available are:

- More reliable recording of ADCP data
- Real time data monitoring
- Remote monitoring



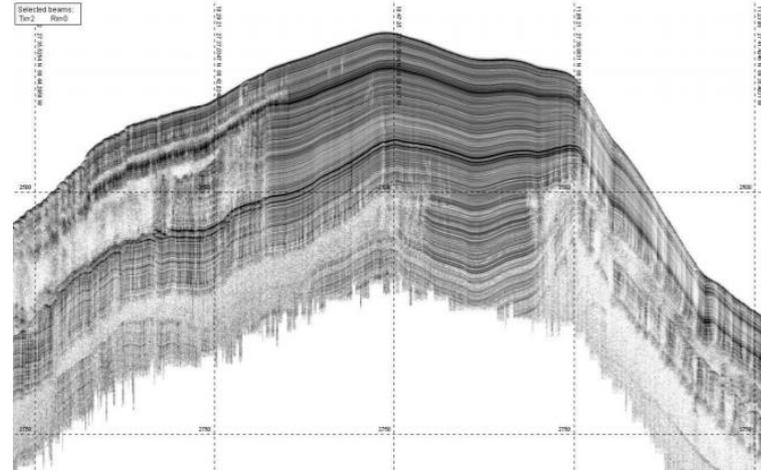
Calibration Laboratory

An in-house calibration laboratory was set up in 2017.
ISO 9001 accreditation expected on 2020/21.



Sub-Bottom Profiler Upgrade

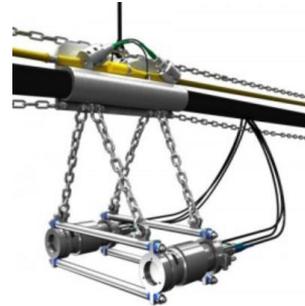
Upgrade from SBP 120 to SBP 27 scheduled for both RRS James Cook and Discovery scheduled summer 2020



GI Source Deployment System

Redesign of GI source deployment system and operating procedures ongoing

Trials scheduled June 2020



RVDAS

Short term:

- Free form event logger and basic metadata system for BODC sensor library integration

Medium term:

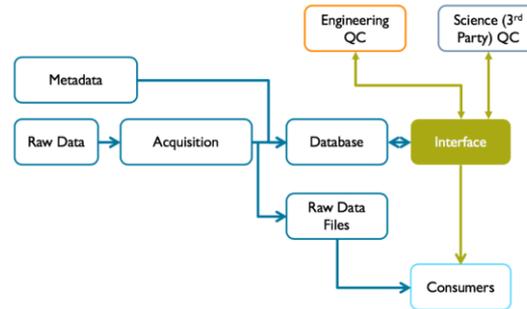
- Interface for machine readable access to the database

Long term:

- Series of post-processing modules

The screenshot shows the NERC RVDAS Raw Recorder interface. At the top, it displays 'NERC NHF RVDAS Raw Recorder' and navigation tabs for 'Acquisition', 'Log', and 'Configuration'. The status bar shows 'Status: 10:17 sensors recording', 'Show View', '19:56:58', 'History Usage: 43.86%', 'CPU Load: 0%', and 'Disk Usage: 81%'. Below this is a table with columns for 'Sensor', 'Listening', 'Recording', and 'Last Frame'. The table lists various sensors such as POSMV_POS, POSMV_ATT, POSMV_GYRO, SEAPATH_POS, SEAPATH_ATT, SHPS_GYRO, RANGD3_USBL, AIRSEA2_GRAVITY, DM40_DEPTH, DR130_DEPTH, NHF_WINCH, NHF_SURFNET, SBK45_TEC, SHPS_CHEMNEED, SHPS_PORPEBLOG, DMNV_GPS, and DIS116_GPS. The 'Listening' and 'Recording' columns indicate the operational status of each sensor, with some showing 'No data' or 'Waiting...'.

Sensor	Listening	Recording	Last Frame
POSMV_POS	Listening	Recording	\$GPRMC,1954.08,29.4,253.3,35
POSMV_ATT	Listening	Recording	\$GPRMC,1954.08,29.4,253.3,35
POSMV_GYRO	Listening	Recording	\$GPRMC,1954.08,29.4,253.3,35
SEAPATH_POS	Listening	Recording	\$INSDPT,1,47,00.7M,F
SEAPATH_ATT	Listening	Recording	\$PXCX43,1,174,1.09,147.07,4
SHPS_GYRO	Listening	Recording	\$HCHDH,139,302M17
RANGD3_USBL	Listening	No data	(Waiting...)
AIRSEA2_GRAVITY	Listening	No data	(Waiting...)
DM40_DEPTH	Listening	Recording	\$SDDBT,4.57,6.5777A
DR130_DEPTH	Listening	No data	\$SDDBT,3661.91,2.97,2000.0P
NHF_WINCH	Listening	Recording	\$WINDCH,18,022
NHF_SURFNET	Listening	Recording	\$GPRSD23,903833.71,16.3,58
SBK45_TEC	Listening	Recording	tl=21.9222, cl= 5.5972B, m=
SHPS_CHEMNEED	Listening	Recording	\$VDRBW,0.00,0.00,0.00,0.00,0.00
SHPS_PORPEBLOG	Listening	Recording	\$VDRBW,0.00,0.00,0.00,0.00,0.00
DMNV_GPS	Listening	Recording	\$XDRGGA,3.0,0.0,0.0,0.0,0.0
DIS116_GPS	Listening	Recording	\$GPRGGA,1954.08,00.2535.401H



Towed Body Capabilities – Lite?

Investigating potential options for towed body “lite” capabilities to the scientific community

- Quicker deployment/recovery?
- Reduced manpower requirement?
- Reduced cost?



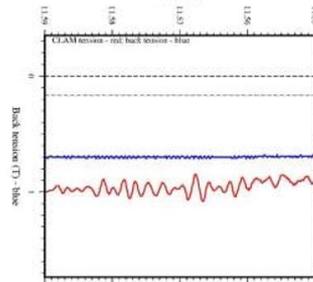
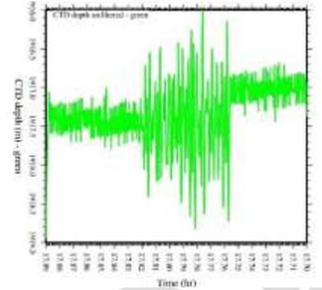
Winch Issues

Plasma (Deep Water Coring) Rope

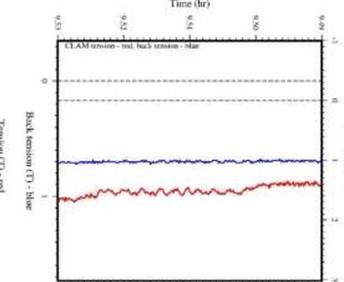
- Varying diameter
- Scrolling issues
- Buoyancy when piston coring

Active Heave Compensation

- Varying success across ships and systems



Trace showing OB tension in red without AHC



Trace showing OB tension in red with AHC engaged

The two figures above show the same package at the same depth.
The left hand figure is with AHC engaged, the right hand figure without.