

# NDSF Facility Update

## AUV Sentry

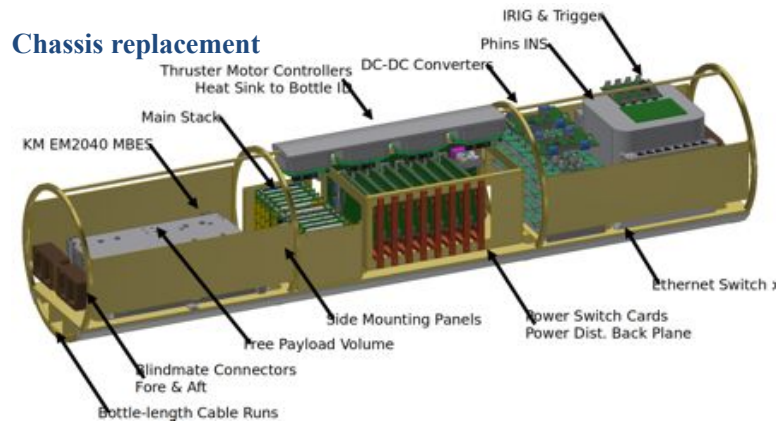
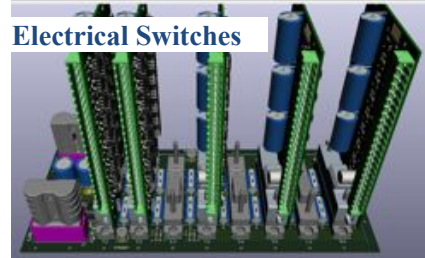
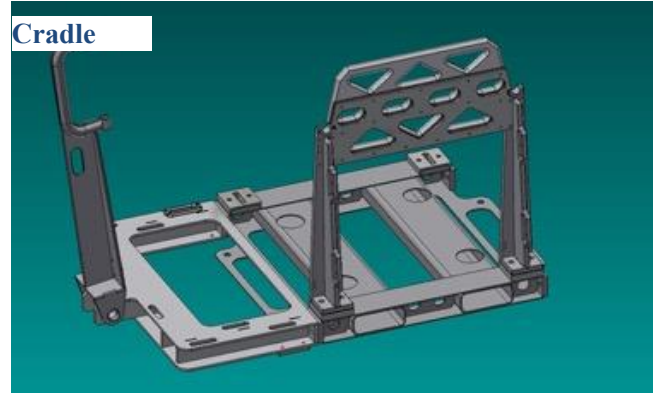
**NDSF** NATIONAL  
DEEP SUBMERGENCE  
FACILITY



# Hardware Upgrades



|   |
|---|
| Cradle replacement (Done)                         |
| Sidescan Sonar replaced with Edgetech 2205 system |
| Chassis complete redesign (in progress)           |
| Datapod Camera hardware upgrade (Done)            |
| DC/DC Converter upgrades (Built)                  |
| SyPRID Electronics upgrades (Done)                |
| Main housing connector (purchased)                |
| New Battery hardware and batteries (in Progress)  |
| Junction Boxes (In progress)                      |





# Software Upgrades



Mission Controller Development (In Progress)

ROS - Based software drivers -Trigger board

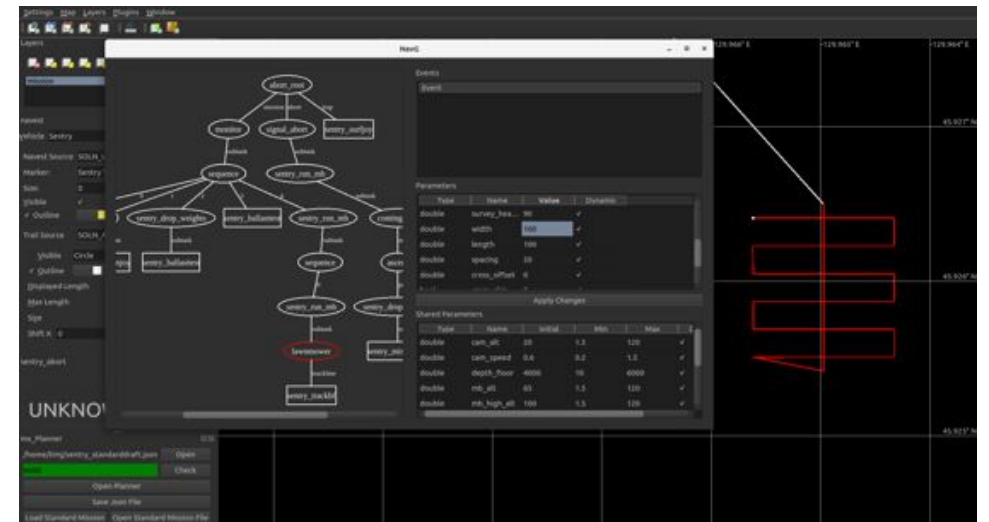
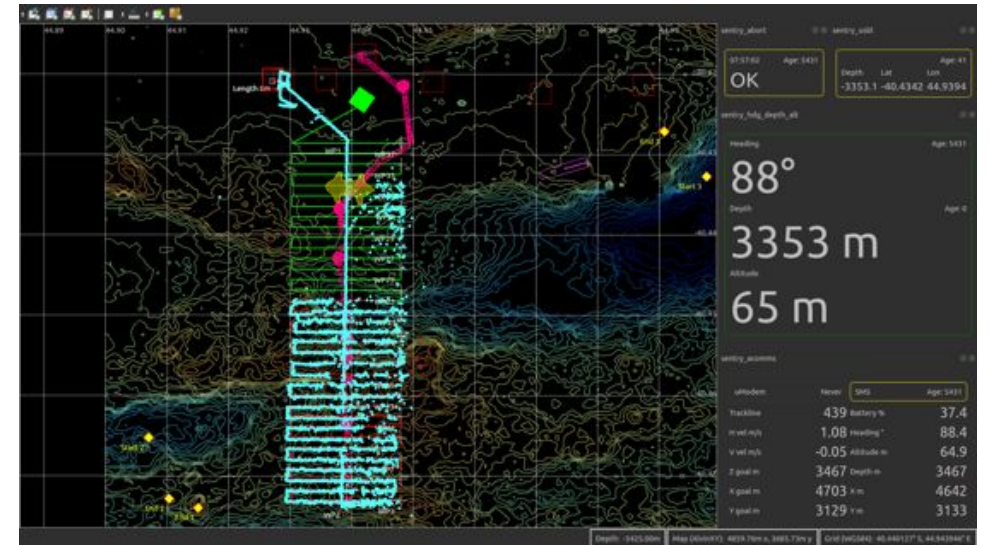
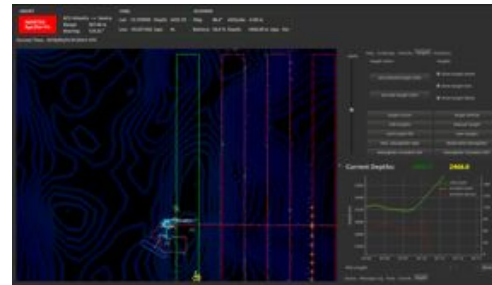
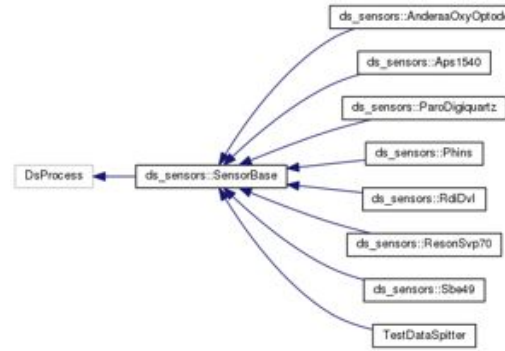
NavG bug fixes and upgrades

ROS Based SyPRID driver (Done)

ROS Based XR driver for new hardware

ROS2 distribution upgrade (In Process summer 2021)

COEX NOAA funded project integration (In Progress)



# ROS

# Sentry Staffing Update



## Team Members

**Sean Kelley** - program manager

**Justin Fujii** – Completed first cruise as EL

**Zac Berkowitz** – At sea electrical support/EL

**Stefano Suman** – At sea software support

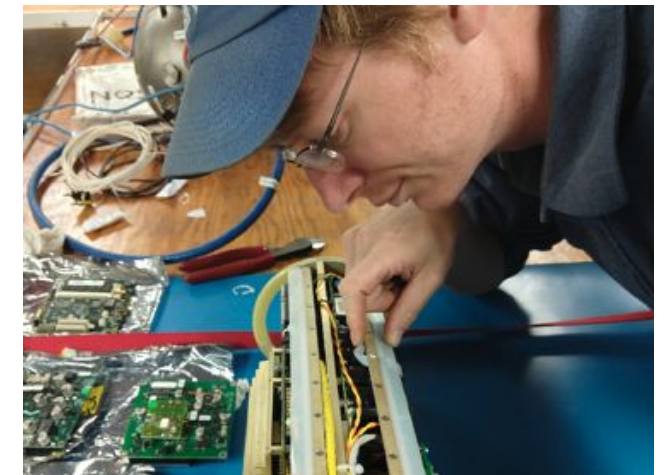
**Mike Skowronski** – At sea and on shore EE support

**Isaac Vandor** – continued software support Software engineer

**Matt Silvia** - Mechanical Engineer

**Amanda Sutherland** - Mechanical Engineer

**Lee Garcia** - Software Engineer

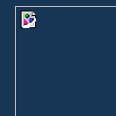




# NDSF Facility Update

## ROV Jason

**NDSF** NATIONAL  
DEEP SUBMERGENCE  
FACILITY



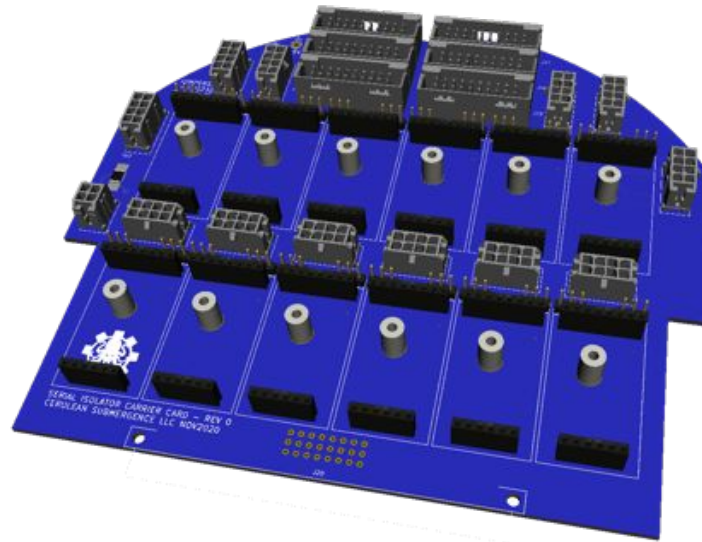
# Jason update: Staffing



- Lost Summer Ferrel, OET ROV operator, mechanical/Navigation  
COVID-19 loss of Jason ops, took another position
- Lost Jim Convery, oil field ROV operator, mechanical  
COVID-19 loss of Jason ops, took another position
- Lost Jim Varnum retired early 2021
- Added Jeremy Paulus, contractor prior WHOI engineer, mechanical
- Added Ben Pietro, logistics coordinator
- Added Peter Hall, ProteQ contracting firm, mechanical
- Added Gabby Inglis, OET, electrical/Nav
- Added Tom Lanagan, WHOI engineer, mechanical
- Added Ronnie Whimms, move from WHOI Marine dept., mechanical
- Alvin participants not available in 2021 (reassembling Alvin)

# Jason Telemetry Replacement

- Complex integration requiring 2 months for planning/install/operational testing with vehicle at WHOI
- Original Prizm telemetry system discontinued in 2017  
No longer able to get repairs/spares/support





# Jason Telemetry Replacement

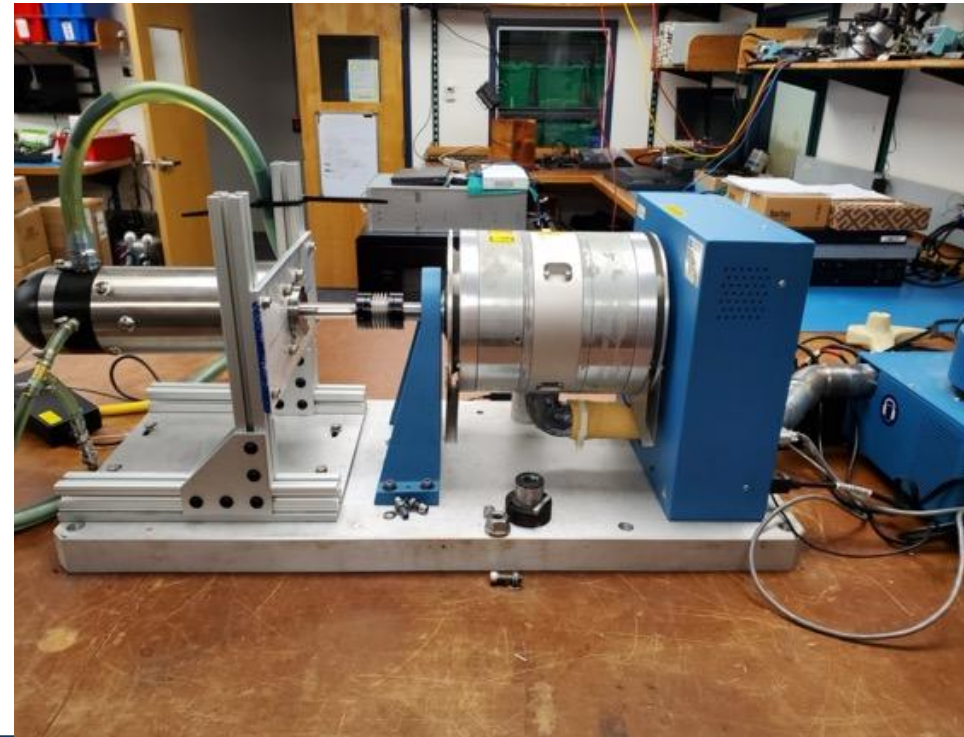
- Upgraded to Moog Focal 907 series muxes
- Expanded individual Ethernet connections to vehicle (from 2 to 6)
- Several Ethernet ports now available at Gigabit bandwidth
- Reduced topside rack footprint
- Fiber optics utilize industry standard CWDM SFP modules





# Jason Propulsion System Upgrade

- The old Jason thruster is no longer supported by the manufacturer, driving the need for a new design
- Increase in science payload, each motor is 13 lb lighter than the old motors with similar efficiency and output power



# Jason Propulsion System Upgrade



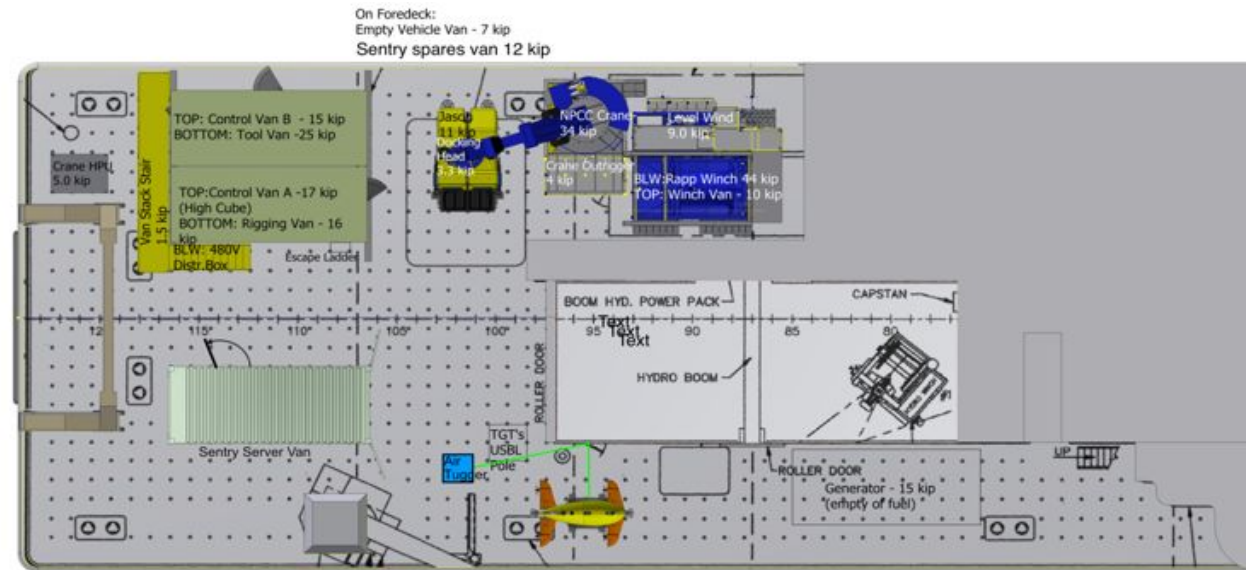
- Dock testing of new thruster at WHOI November 2020
- Power input/output verification
- Bollard pull verification
- Lifetime endurance testing





# Additional Jason System Upgrades

- Testing a prototype video recorders which would eliminate splitters and correct timing issues. pcar 2020
- New tool van, currently being fabricated, integrated into system Oct. 2021
- Ongoing integration of Phins IMU for improved nav and closed loop control
- Ongoing and continuous efforts to increase MOB and DEMOB efficiency, including additional logistics staff as well as improved load plans pcar 2020



## Winter 2020/21 Jason maintenance period

- LARS general maintenance
- Manipulator repair and preventative maintenance
- Tune ICLs for integrated water sampler concurrent temperature measurement
- New telemetry system into Jason sub-sea and topside systems

Installation and testing was a success, the system has been working well in the field

- Remove, weigh, and repair flotation block

Normal maintenance to facilitate frame inspection and repairs, and to increase life cycle of flotation

- Data entry into Inventory management system

For better equipment tracking, sparing, failure tracking, increase reliability

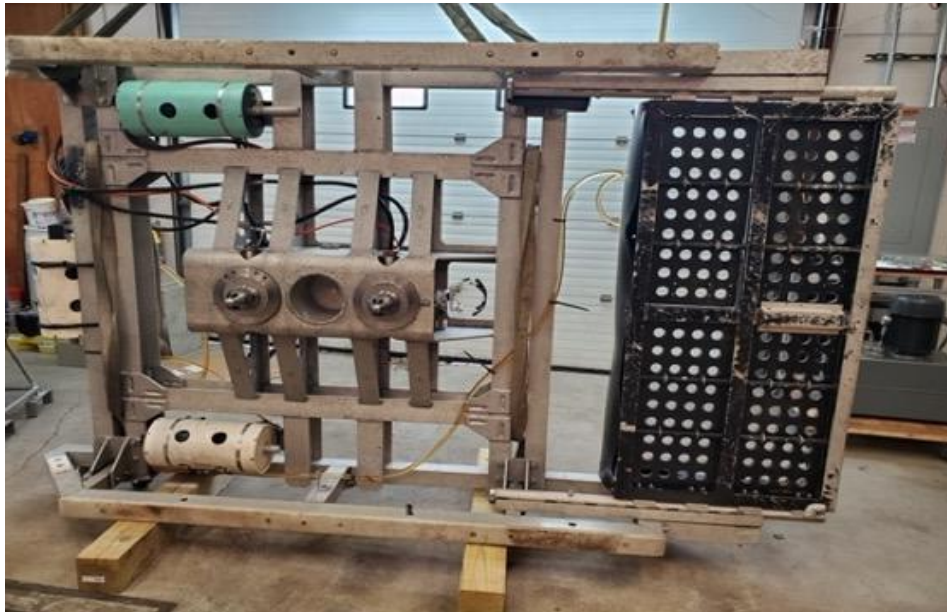
- Sea log system remote operation via tele-presence

Potentially reduce ops team via remote data processing



# Winter 2020/21 Jason Maintenance Period

- Replaced all rubber molded cables on Jason
- Replaced all compensation and PBOF lines on Jason
- Dye-Pen inspection of frame, no anomalies
- Thruster and hydraulic system annual service
- Heavy lift sled hydraulic system service



# Sulis Stills Camera

- In consultation with the science teams we are seeking solutions for the best way to QC still images from the Sulis camera between dives
- Efforts underway to streamline downloads
- Ensure flexibility for control by Science Party





# Jason OHS maintenance at Joint Base Cape Cod

- NPC crane docking head rebuild and testing
- Rapp winch repairs and testing, including new brake HPU motors,
- Numerous hardware and software upgrades in the Rapp power van
- Facility use will be phased out as new LARS building comes online



# New LARS Maintenance Facility

- New facility currently being built at WHOI Warehouse facility
- Will allow for expanded on-site maintenance of Jason's launch and recovery equipment
- UNOLS 1" x 2ft ctr bolt-down pattern set into concrete covers 24' x 16' for full LARS testing inside.
- 25T bridge crane with 25' hook height

