

NDSF Operator's Report

NDSF Vehicle Operations Summary

NDSF NATIONAL
DEEP SUBMERGENCE
FACILITY



Alvin Operations Summary



3 Cruises in 2020

- East Pacific Rise (Dec/Jan 2019/2020)
- Gulf of Mexico (Feb 2020)
- Gulf of Mexico/Eastern Seaboard (Feb/Mar 2020)

85 Operating Days

26 Sylvan/Mullineaux/Fornari

- Microbiology - Superb cruise with concurrent Sentry/Alvin Ops

13 McClain

- Biology - Excellent cruise although two days lost to fog in-port resulting in no engineering dive time – all remaining dives to science

22 Young

- Biology - Excellent cruise overcoming many weather and clearance challenges

27 Dives

12 Sylvan (2,500m)

6 McClain (2000m)

9 Young (380m – 3300m)

- ✓ 204 Hours Submerged
- ✓ 154 Hours on Bottom
- ✓ 5.43 Hours Average Bottom Time per Dive

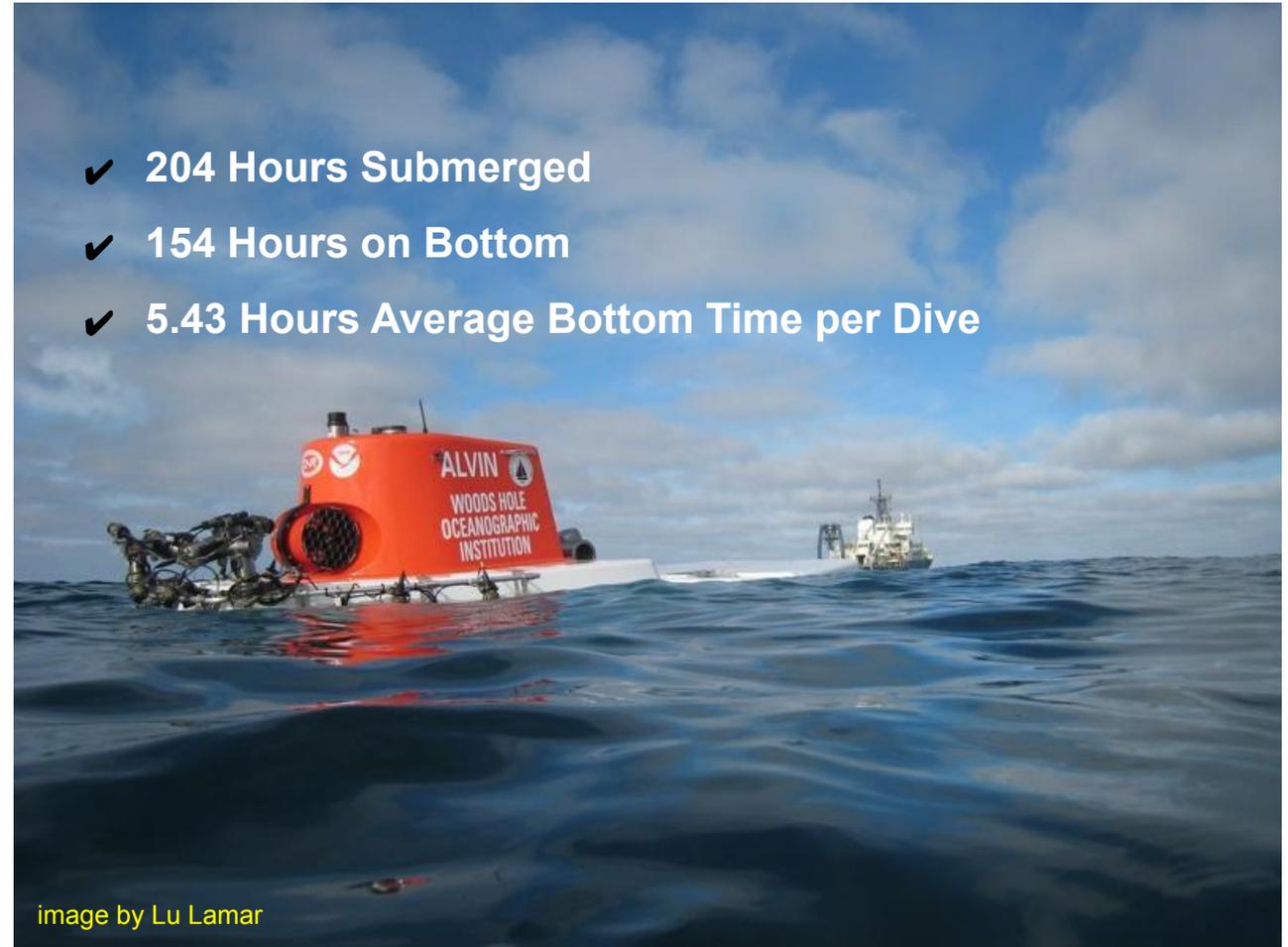


image by Lu Lamar

Alvin Highlights



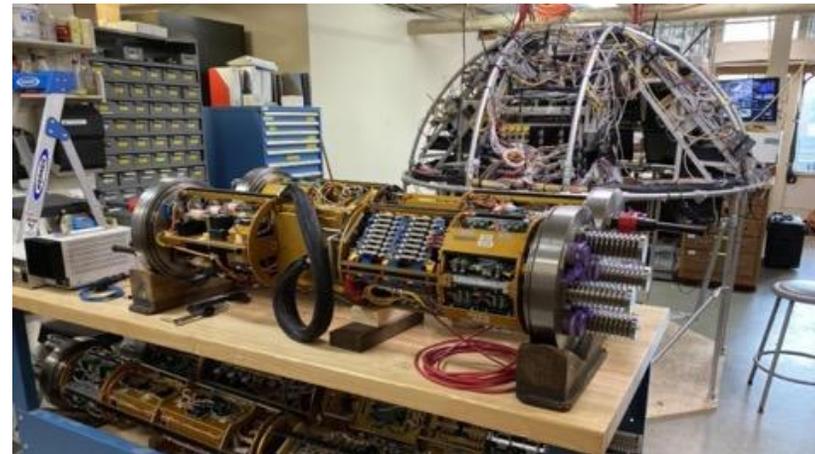
Suspend Alvin operations in March 2020

Overhaul Commenced in March 2020

- March 2020 - return to WHOI
- April - May 2020 - offload and disassembly
- June 2020 - April 2021 - system maintenance
- May - July 2021 - vehicle reassembly
- August 2021 - dockside testing
- September 2021 - Seatrials/6500m Certification
- October 2021 - SVE & return to operations

Superb & successful team effort during the COVID 19 Pandemic

Lots of demand for the 6500m Alvin in 2022!



JASON Operations Summary

1. Kelley RCA

- Thompson, Single body, 24 hour ops, 2 legs
- 44 dives 10-1/2 days in water 2904 m

2. Miksis-Olds ADEON

- Neil Armstrong, single body
- 3 dives, 9 hours in water, 887m
- 3 engineering dives, 24 hours in water
- Recovered lost CTD
- Recovered 2x lost mooring
- 3 engineering dives

3. Fornari/Arellano/Mullineaux

- EPR-950 Hydrothermal/Larnae-Biofilms/Functional diversity
- 19 dives, 13+ days in water
- Max depth 2570m



JASON Highlights

- Telemetry replacement complete and fully successful
- Propulsion upgrade proceeding
- Sulis 4 k camera interface improved
- Sentry Kongsberg EM 2040 tested successfully on Jason
- Integration of Phins INU for improved navigation and closed loop control
- Sea-log being used extensively, mostly positive feedback
- Recognize concerns and developing transition from VV to Sealog **pcar 2020**



Sentry Operations Summary

- **36 operating days**
- **1 Cruise Completed 2021**
 - 2021 Fornari
 - 2021 Young (Underway)
- **9 dives**
- **Total survey time:** 200 hrs
- **Total Survey coverage:** 72 km²
- **Vessels:** R/V Roger Revelle
- **COVID-19 Impacts:**
 - 2 Week isolation in San Diego
 - Reduced pre-cruise maintenance due to personnel limits at work.



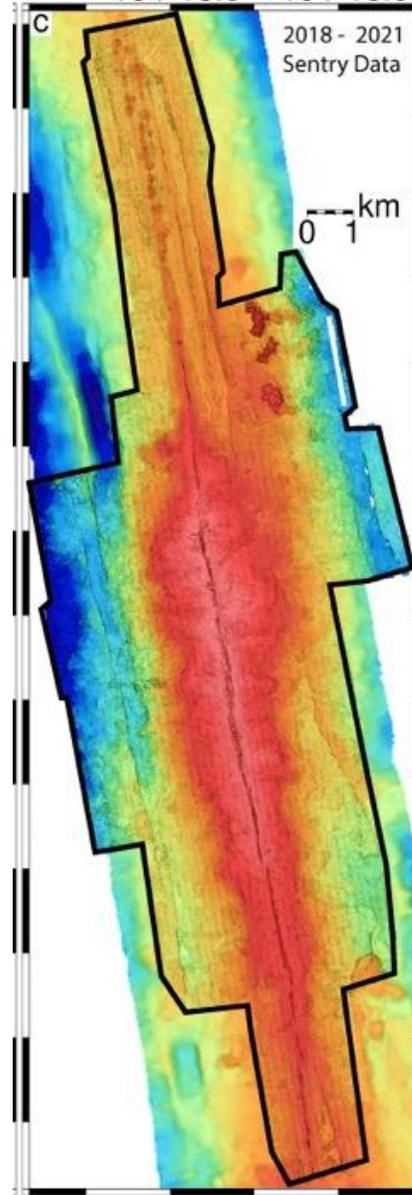
2021 Fornari cruise - March 2021



Pre-cruise in water testing at WHOI dock March 2021

Sentry Operation Highlights

- **9 Dives** on EPR extending high resolution survey.
- Use of **Kongsberg multibeam**, continues to be robust and we are happy with this investment
- Integration of Fornari owned 20mpx **OIS camera** including strobe upgrade for improved light output.
- Engineering dive completed during Fornari, testing **new mission controller** opening up new mission survey types.



EPR Completed survey 2021.



Image from integrated Fornari Camera at EPR



Fornari 20mpx camera installed aft end of Sentry