

Summary of Post-Cruise Debriefs

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Alvin (Scott White for Amanda Demopoulos – USGS)

NDSF NATIONAL
DEEP SUBMERGENCE
FACILITY



Summary of 2019-2020 *Alvin* Debriefs

Hansel, SOLARIS (Alvin) Oct 2019

Sylvan/Fornari/Mullineaux, EPR (Alvin/Sentry) Dec 2019 – Jan 2020

*McClain, Woodfall (Alvin) Feb 2020

*Young, Larvae (Alvin) Feb-Mar 2020

*Not debriefed yet

Alvin Debrief Highlights

Despite highly complex ops that included multiple-PIs and complicated dives, the expedition was successful due to careful preparation and execution by the ops teams.

Looking forward to future concurrent ops with the waveglider/Sentry and Alvin

Pre-cruise and Mobilization

No issues.



Operations –vehicle performance

Ground fault detected during descent and dive was aborted once the vehicle reached the seafloor. The ground was isolated and Alvin dove the following day.

Great bottom times

Alvin EX lead recommended bounce dives to improve chances of finding good sites

Operations- NDSF-provided equipment

ICL on the majors had issues. The wired heat flow probe was used if the ICLs didn't work after 10 min.

One camera had issues, 4K camera did not work consistently

SeaLog dive annotation was a success, and was often combined with hand written logs. This was most successful/efficient when each science observer was assigned one logging type task.

Ability to customize the SeaLog for specific ops and observations was useful.

Concurrent wave glider/Sentry ops with Alvin were planned, however due to technical issues, the wave glider was recovered. Concurrent Alvin/Sentry ops was conducted on one dive, with a standoff distance that allowed for both vehicles to be monitored. If the wave glider had been available earlier in the expedition, more concurrent ops would have been attempted.

Operations- User-provided equipment

No issues.

General Recommendations

While a complete data set was provided to the Chief Scientist prior to disembarking the cruise, data duplication took longer than expected, preventing other members of the science party from receiving a complete set. Given multi-investigator/PI cruises are going to continue to occur, improving data duplication efficiencies would be appreciated.

Create a read-me file that explains where the most useful data products are located would help PIs.

More concurrent ops

Improve internet capabilities on board

Acquire Navy clearance for backup sites (e.g., 2 sites for the same day) to allow for more flexible dive planning, particularly in areas that are less known/more exploratory.

Summary of 2019-2020 *Sentry* Debriefs

Sylvan/Fornari/Mullineaux, EPR (Alvin/Sentry) Dec 2019 – Jan 2020

Chadwick, Axial (Jason/Sentry), Sep 2020

*Young (Sentry), Oct-Nov 2020

*Not debriefed yet

Sentry Debrief Highlights – Sensors and Tech

Conducted Alvin and Sentry concurrent operations on one dive at a standoff distance that enabled both systems to be monitored.

If the wave glider were available, the concurrent ops would have been conducted sooner and likely more often.

Ship-to-Shore communications were critical for the success of TRN integration with Sentry because some co-PI were unable to sail in 2020.

Error messages from new multibeam sonar caused one dive delay of 12-24 hrs. Sonar head replaced resolving the problem

Sentry required launch and recovery during daylight after an impact with the vessel during the first recovery on one cruise. This shortened dive durations for a time.

Wave glider intended as comms relay did not work as planned due to flooded Iridium antenna connector. Decision was made to leave wave glider deployed given the difficulty of the 2-body recovery

Sentry Debrief Highlights – Team

Preparation and execution by team allowed cruises to go well with multi-disciplinary goals and combined objectives.

Laura Lindsay noted as extra helpful with data processing to identify off-axis sulfide chimney structures.

Sentry Pre-cruise Recommendations

Consider the experience and training of the ship's crew in planning launch/recovery ops (e.g. daylight hours)

Sentry Ops Recommendations

Wave glider would be helpful to conduct concurrent ops

Sentry Data Recommendations

No issues reported

Summary of 2019-2020 *Jason* Debriefs

Seewald/Lang/Rogers, Cayman (Jason) Jan-Feb 2020

Schmidt, Cascadia (Jason) July 2020

*Kelly/OOI (Jason) Aug 2020

Chadwick, Axial (Jason/Sentry), Sep 2020

*Not debriefed yet

Jason Debrief – Overview

Overall successful cruises with science objectives met
PreCruise, MOB, Data Handoff, and DeMOB all went well.
Expedition Leaders and Team were all great at communication
Post-Covid PreCruise Discussions dominated by COVID
Minor issues occurred with the vehicle.

On one cruise these were diverse issues that appeared unrelated.

The other 2 cruises had minor problems that were fixed after minor delays and not mission critical.

Virtual participation was possible and scientists were sometimes remotely for a variety of reasons (Fire/COVID/2020).

1 Cruise lost 5 days to weather but the call was the obvious one; the timing of the cruise should have been a good weather window.

Jason Debrief – Operational Issues and Equipment

Overall technical problems were minor, communicated with Science, and rapidly fixed

2 Cruises were delayed from port 1) An AC unit went out on the Control Van and 2) COVID results were delayed.

A bad splitter led to poor color rendering in archived footage and non-ideal camera setting (potentially default of camera) led to overly dark images on a couple dives

Sea Log and Virtual Van remain non-completely integrated/ redundant

USBL Navigation was not superb at deeper water depths

ICLs were not 100% successful and a backup was needed and used on one dive.

Jason – Recommendations and Comments from users

Recommendations & Comments

It should be a high priority to replace the functionality of Virtual Van in SeaLog or abandon SeaLog and renew development of Virtual Van

Camera issues were caught by science party diligence

- Suggest at the end of the first dive of a cruise to have a meeting where data location is walked through with the Chief Sci/science party to facilitate data check and reminded the party where they have access to double check data.
- Double check that settings of Sulis camera are retained between dive/ improve documentation to allow settings to be double checked
- 4k video was ‘Heartbreakingly gorgeous’ but some additional training would inform what is an acceptable amount of 4k to shoot

Pilots were very careful around delicate seafloor targets, which was appreciated.

Elevator deployed with USBL really simplified some of the science aims.

Science Aims were treated as a priority on the first cruise of the season.

Overall, Communication between the Jason Team and the Science party was repeatedly referenced as very good and a strength.