

Alvin de-brief summaries - 2009

Five cruises for 59 dives

Southern California borderlands
Juan de Fuca
Costa Rica

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Overview:

All the PIs were very satisfied with their Alvin experience and felt that their scientific goals were all met or exceeded. These were repeat users of the facility and many noted significant improvements from previous years.

All personnel from Captain to deck crew, Expedition Leader, pilots, and engineers were at various times singled out for praise. The Alvin team was universally praised for its professionalism.

The following is an overview of some of the issues that came up during the cruises. Some of these are problems that have or will require some sort of corrective action while others are issues beyond the NDSF's control but presented here for their educational value to future users.

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Overview (continued):

The main point of these interviews is to track recurrent issues and make sure there is followup and ultimately that there are no recurrent issues. We are finding that we are achieving that goal. Problems are being dealt with in a timely manner and equipment is being repaired/ replaced/ updated as fast as is practical or budgets allow. The only truly long-term recurrent issues seem to deal with navigation (which has been steadily improving), mobilization/demobilization/agent issues, and, of course, dives lost to weather.

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Pre-Cruise Planning:

All PIs satisfied with planning in general with only a few issues. These were experienced PIs who put a lot of effort into planning.

Despite the advance planning, operating in and out of Costa Rica (Puntarenas) proved difficult due to customs issues and anchorage vs. docking

Juan de Fuca work required complex planning due to multiple programs occurring in the area such as Neptune-Canada. Most was anticipated but the arrival of MBARI's vessel and ROV was not. Neither UNOLS nor MBARI had identified adequately in advance that this conflict was going to occur – something that needs improvement in the scheduling process in future

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Mobilization/Demobilization:

Most gear was transferred at US ports making this easy.

It was new for these PIs to be able to get on-board ship 2 days in advance of the cruise and much appreciated. Not only did this allow the science party to prepare thoroughly but it also allowed the Alvin group to process all the scientists through their pre-dive briefings before leaving port – a distinct advantage when the first dive site was only a few hours away for some of these projects. This was a huge advantage over previous operations and a significant change for the better.

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Operations - Vehicle:

Overall, the PIs thought Alvin was operating close to its very best and that Alvin and Ship operations were very well integrated.

The batteries on the sub worked well throughout all but one of the programs but a 6 week layup before that one resulted in the sub's batteries being in poor condition and consistently underperforming throughout the cruise. This resulted in 0.5-1 hour reduced bottom times and needs paying attention to if Alvin is going to be "laid up" at sea again in future.

There were no other significant issues with the vehicle and all lost time was due to situations outside NDSF's control such as weather, a mechanical failure on the ship, and interference with other vehicle operations in the Juan de Fuca area.

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Operations - NDSF Equipment:

LBL transponder navigation was used for much of this work and generally worked very well. The new USBL system was also used and found to be very effective.

In the early dive series, navigation was hindered by the loss of the forward-looking sonar which failed early on and remained inoperative throughout the remainder of the dive-series and the following cruise. This proved a big setback because this sonar is relied on heavily for target location. NDSF is looking into purchasing a spare.

There was a problem with generating usable data from the CTD on-board Alvin that required more than just the standard SeaBird software. The Alvin team was able to resolve this on board and the unit was ultimately sent to SeaBird for refurb.

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Operations - NDSF Equipment (continued):

There were a few camera issues during the early dive series but all were ultimately rectified and the later dive series reported no camera problems. The still camera was replaced. For high-resolution documentation of some of the manipulations, one PI noted that one cannot always film what is going on from the manipulator arm camera when that is the arm that is being used to conduct the key manipulations! If payload etc were no object, adding a scientist-driven camera on a pan-and-tilt to the brow of Alvin (and the new RHOV) would be an asset.

A PI recommended adding an oxygen sensor to Alvin with the same dynamic range as used on a CTD (0.04 to 2 mL/L) and this is planned for the next overhaul.

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Data hand-over:

This is always put off until the end of the cruise and became a problem when there were only a few hours between the last dive and disembarkation. Often there is a significant amount of data copying required after handoff but before disembarkation. On one cruise the DVD copier became unreliable. Can we come up with a better system, possibly copying all data to PI-provided external hard-drive(s) which allow data transfers at much higher rates?

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User Recommendations:

There should be a planned back-up for the Sonar on Alvin. It is too important of a tool to have to cope without it.

The ship should also maintain the 2 days prior to departure for set-up and ALVIN-related meetings (e.g., briefing, exterior, in-hull) because that greatly enhances the ability to make full use of precious science time on-station once the ship sails.

Effort should be made to improve communications between the SSSGs and the Alvin Group with regard to data transfer.

More attention should be paid to the still cameras on Alvin. This is where the best publication output from having an HOV comes from yet one PI noted that it never seems to be operating at an optimal level.

One PI noted that the ship's IT system was showing its age – more notably than on his previous cruise 12 months earlier.

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User Recommendations (continued):

One PI praised the merits of using Alvin and Sentry together. During this cruise Sentry found new, important and significant sites that could otherwise have continued to remain overlooked, which Alvin was then able to dive on.