

# *Alvin* Debrief Issues

## ***Wheat et al, Costa Rica -- NDSF-provided equipment***

- Navigation was conducted using LBL for the first dive to the wellhead but a 100m offset from reality was introduced because the system had an inaccurate sound velocity profile that needed updating. Added to that, two of the transponders supplied were set up to operate at an identical frequency – this was not helpful!

### NDSF Response:

The Expedition Leader stated that the offset was caused by the initial survey more than a bad SVP. The transponder frequency issue involved the elevator transponders where only one frequency was available -- the wire releases and the sub emergency transponder were using the other available frequencies so 7.0/9.0 was the only set available.



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- Navigation was also hindered by the loss of the forward-looking sonar which failed on Dives 2 & 3 and remained inoperative throughout the remainder of the dive series.

## NDSF Response:

We have requested quotations for a second spare. An alternative from Sea King is also being considered.

- The homer probes used routinely with *Alvin* at other sites are not rated for use at 4500m so they could not be used. This was particularly noticed when trying to locate the packages that were free-fall deployed from the surface ship.

## NDSF Response:

We have priced a deep probe but the cost is significant, almost 3x the cost of a regular beacon. Economics and our normal dive locations dictated that we purchase four general-use shallow beacons instead of a single deep beacon. Perhaps ODP or the PI could purchase a few deep beacons for use at well heads?



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## ***Levin et al, Costa Rica -- Vehicle Operations***

- One dive was lost due to weather which the PI considered a conservative call. Winds picked up from flat calm to 20-25 knots and the forecast the Captain had was for the wrong area, leading to a decision not to dive.

### NDSF Response:

We are sorry that the PI considered this a conservative call, but neither WHOI nor NDSF management will second-guess the Master/Expedition Leader where safety of personnel or equipment is concerned.

- Both *Jason* and *ABE/Sentry* subscribe to a private email service providing predictions for 3-hour periods that seems accurate even in remote areas. Called Commander's Weather -- worth considering as a good investment for *Alvin* operations too?

### NDSF Response:

Navy mandates 24 hr forecast not 3 hr but we will look into this agency.



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## **NDSF-provided equipment**

- The sonar on *Alvin* was broken for the whole cruise and this proved a big setback because this sonar is relied on heavily for identifying the hard-grounds that form around the cold seeps and, hence, are extremely valuable for target location.

### NDSF Response:

Same response to the issue as during the Wheat leg.

- On at least one and maybe as many as three dives there was no still camera working. No explanation was provided to the PI why this was so.

### NDSF Response:

Again, because of an equipment failure. This camera was eventually sent to the manufacturer for a total camera replacement. A spare camera quotation has been requested and the cost is in the \$25K range.



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- On one dive the right-hand video was not working properly and on subsequent dives the only way to record video was by having to take the overlays off which has the potential to cause confusion when working up results from dive-tapes later.

## NDSF Response:

That problem was eventually fixed over several nights during the leg. Only other alternative would have been to stop diving operations to repair.

- The hand-held HD camera was used in the sub on two dives but when the tapes were handed over at the end of the cruise, the tape from one dive was found to be blank. By that time it was too late to collect more material – if these tapes had been duped and handed over earlier – e.g. right after the dive like normal dive-tapes – the PI would have had the opportunity to try and rectify this.

## NDSF Response:

Tapes from this camera are normally checked post-dive and this will be done on all future legs.



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- The Reson was on board and collecting data but the PI did not know it was available. Had they been aware they could potentially have made use of it. Further, the SSSG did not seem to be aware that they were responsible for copying this data.

## NDSF Response:

The Reson sonar is brand new and is still a work in progress. If post-dive maps are required the Imagenex sonar would be installed to meet that requirement. We hope to be considerably further along this year in having the ability to do post-dive maps.

- There were also problems generating usable data from the CTD on board *Alvin* that require more than just processing what *Alvin* collects using standard SeaBird software. Sean and Mike worked with Vicky Orphan from the science party to resolve this – eventually – but this is something that ought to be streamlined to become more user friendly.

## NDSF Response:

Unit was sent to Seabird for refurb and it should now be more user friendly



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- The PI would also like to see an oxygen sensor added to *Alvin* with the same dynamic range as used on a CTD (0.04 to 2 ml/l).

NDSF Response:

Plans for the overhaul upgrade are to include this.

Estimated spares cost:

Sonar	\$74K
DSC Camera	\$20K
Deep Homer Beacons (2)	<u>\$22K</u>
<b>Total</b>	<b>\$116K</b>

