

KILO MOANA  
Debrief Responses

2002 - 2003

# Debriefs Conducted

1. Doug Capone: 22 Sep – 17 Oct 2002
2. Bob Bidigare: 23 Nov – 27 Nov 2002
3. Tom Gregory: 16 Dec – 21 Dec 2002
4. Karin Bjorkman 8 Mar – 10 Mar 2003
5. Tom Gregory 20 Mar – 24 Mar 2003
6. Christopher Kelley 1 Apr – 3 Apr 2003
7. Scott Stalin 20 May – 11 Jun 2003
8. Brian Popp 18 June – 5 August 2003

# 1. The sea-state in which the operation was conducted,

- *Up to 6ft seas*
- *Winds 5-10knts, long swell ~ 20 sec period*
- *Calm, most of way, last day 12-15 ft seas and 30 knot winds.*
- *Calm 10-20 knots, SS3, rain*
- *6-8' seas. One day they have 16'-20' rollers.*
- *Weather was generally very good so little opportunity to observe ship in bad weather*

# The method used...

- **CTD deployments,**
- **Zooplankton tows**
- **Optical casts**
- **Underway sampling through ship's clean water system**
- **Free floating: productivity array, sediment trap array.**
- **Multibeam mapping**
- **XBT, XCTD**
- **Short mapping cruises**
- **Recovery of moorings with large surface buoys and subsurface moorings.**
- **GoFlo deployments**
- **Multi-core operations.**

**Whether this method was done in a safer and more efficient way than would have been done on a monohull vessel,**

- **Current CTD deployment system considered unsafe**
- **No accumulator on winch**
- **Wire twisting caused kinks requiring re-termination.**
- **Difficulty because of high freeboard, users have devised handling procedures to mitigate problems.**
- **Biggest problem is crane for CTD; pivot point is too high causing whiplash problems, also poor visibility over stern.**
- **Deep props prevent true sampling of upper 5m**
- **All were safe, freeboard cause recovery problems**

## **Ways to improve the method used...**

- **Moon pool for CTD is expected to be an improvement but concern expressed about air pressure surges through moon pool hatch and wave slap problems during recover and launch procedures.**
- **Adapting procedures to constraints of the ship**

**Did the sea-keeping characteristics of the ship made it easier or more difficult to conduct the scientific operation?**

- **Liked stability of the platform**
- **Easier.**
- **Never really had bad weather**
- **Not applicable**

## **Whether the layout of the deck and lab space made it easier or more difficult to conduct the scientific operation.**

- **Deck space is good/getting better**
- **Lab space unprecedented**
- **Would like to have vans on upper deck but deck strength and ships carrying capacity may limit this option.**
- **Freezer space on ship is inadequate, barely adequate for 4 day cruises, need more chest and upright freezers/fridge space for longer cruises.**
- **Layout is fine**



# **What were the most positive aspects of your research cruise with a SWATH compared to your previous experience on a monohull?**

- **High off water**
- **Crew great/worked around problems**
- **Space**
- **Backing down while sampling from stern allowed our getting good clean water.**
- **Liked access to storage area, on working deck.**
- **Liked large labs.**
- **Accommodations**
- **Ship stability. For example, did work at several sites around the Hawaiian Islands where seas are often rough but could still map successfully (in comparison, monohull in similar situation won't be able to do this).**
- **Ship is small and compact, but rides like a much larger monohull.**

## **What were the most negative aspects of your research cruise with a SWATH compared to your previous experience on a monohull?**

- None really.
- Did not like getting around on the ship, - ship needs an elevator.
- Positive pressure problems in accommodation makes opening doors difficult, seems to lead to breaking of door catches as people “force” doors.
- Drainage of water from sinks in labs is a problem and appears to be related to ship’s trim. Needs fixing.
- High freeboard makes deployment and recovery of packages harder. - but are learning to deal with it.
- The inability to recover surface mooring with large discus buoys other than using a small boat. This limits the sea state that this operation can occur in.
- Visibility of some rear deck areas from bridge needs to be improved, use of cameras would help. Alternatively a rear control station that can be used to drive the ship would solve the problem.

**Did you have difficulty  
loading/unloading the scientific gear  
from the ship?**

- **High freeboard, and consequently steep gangplank made loading by hand too difficult, needed to use crane.**
- **Cargo conveyor belt is needed.**
- **Crane does not reach far enough on to the dock.**

# Were the labs adequate (location, size, accessibility) for you?

- **Yes**
- **Liked labs and the fact that they were compartmentalized.**
- **They need to have freezers installed, -20 and -80 C,**
- **Drainage from sinks is badly affected by ship trim.**
- **Plenty of space and easy access.**
- **The laboratories lacked convenient storage space.**
- **It was not easy to move the CTD package into the wet lab for sampling because the door to the wet lab was not large enough to easily accommodate the package.**

## **Were the underway systems (thermosalinograph, running seawater) working adequately?**

- Some minor plumbing problems fixed.
- Yes
- Were O.K. but not enough flow for on underway system for multiple users, may need larger pump.
- Quirk with the logging system for the fluorometer that caused it to stop logging data. Fortunately, data generated by the underway system can be monitored from virtually any room on the ship, the failure of the system could be corrected easily.

# Were communications with the bridge, winch and crane operators easy to conduct?

- VHF works. But used phones. Could be better.
- Moving the CTD up one deck will be a very noisy place.
- Yes, but bridge wing operating system is inadequate when recovering over the side equipment. Need to improve readout etc. on repeater units used on bridge wings.
- Used preplanned tracklines. Communicated with bridge after every line finished using phone in lab--this worked out easily.
- Communications with the bridge, etc. was fine; no problems.

# Were communications with the bridge, winch and crane operators easy to conduct?

- No. The CTD winch operator on shallow casts simply stayed next to the winch on the 01 deck. The area was exposed to weather and loud.
- Winch operations were conducted from the doghouse on the 02 deck during deep casts where external noise was not an issue.
- Launch and recovery was still performed from the 01 station because visibility of the back deck from the doghouse was limited.
- A crewmember was stationed on the aft deck for all over-the-side operations (CTD, GoFlo, Multicore) to monitor wire angle because it was not visible to the bridge.
- An aft control station is necessary; certainly dynamic positioning would have been useful.

## **Were the accommodations adequate (e.g., size, location, accessibility)?**

- Great. Some noise. 01 deck noisy. Main ok.
- Liked cabins but aft cabins by winch are too noisy
- No sound insulation between cabins
- The ship is maze-like and similar looking halls, arrows pointing to areas of interest or "you are here" like maps would be good.
- All accommodations were easily accessible and adequate.



# Was the computer network system adequate?

- Liked system, would like wire readouts on screen.
- The computer network is the best in terms of number of terminals.
- The flat screens throughout the ship are incredibly valuable.
- Shipboard computers were used to collect and process mapping data, these were excellent. There was an issue related to image quality of monitors in staterooms.
- Hook up was easy and quick.
- The system was better than any other UNOLS ship on which I have sailed. Having a central large hard drive with access from any room on the ship kept vital information within reach at all times.
- Only improvement - add a wireless network.

## **What is the habitability of the lounge, staterooms, mess deck, and fitness room?**

- **Lounge couch is very uncomfortable**
- **The lounge was extremely comfortable and of adequate size.**
- **The usefulness of the lounge was enhanced by the closed circuit television system since the programs in the lounge were available in virtually any room on the ship.**
- **Sound in the lounge could be heard in the stateroom immediately next to the lounge. Extra soundproofing should be considered.**

## **What is the habitability of the lounge, staterooms, mess deck, and fitness room?**

- **The staterooms were excellent – spacious and comfortable.**
- **Liked TV screens in rooms and ability to tune into cameras reporting meter wheel parameters etc.**
- **Mess room layout is rows of booths in long room - limited conversations to individual booths and was not conducive for interactions among personnel at mealtime.**
- **The mess deck is well located and comfortable.**
- **The fitness room is small but well equipped. The fitness room would be more useful if it had free weights and better ventilation.**

# Are there any noise and vibration feedback concerns?

- None
- Yes noise, no vibration problems
- No, except for the cabin noise level
- Minimal noise and vibrations compared to monohulls.
- The staterooms numbered 01-12 and 01-14 have excessive noise and vibration when the trawl winch was operating. The noise level most likely exceeds safety standards and these staterooms should be designated as requiring hearing protection.

## **Were there ship vibrations or other motions that made it difficult to work and live on the ship?**

- **Ship was “super stable”, no vibration concerns.**
- **None.**
- **Hardly any vibrations or other motions—there was a slight sliding motion but people get used to it. Swath hull did not move as much as monohulls. Very pleasant to be on.**
- **When it was rough, the waves slapping on the deck make significant vibrations. If this continued for 20 days, it would get old.**

**At any time, did you feel the ship was not sea-worthy at certain sea states? Were there times when you felt that you rather be on a monohull ship? A SWATH ship?**

- **No.**
- **Sustained winds of 25-30 knot for at most 2-3 days on our cruise. Under these conditions, the ship was more stable than most monohull ships on which I have sailed. Arguably, it was even more stable than Revelle/Atlantis under these conditions... I would prefer a SWATH ship because it allows more detailed sampling of the upper ocean.**

## **Were deck crane and winch operations safe and efficient? Did it take more personnel to perform the operation that you expected?**

- Yes.
- CTD launching operations are not safe, needs a new approach
- More people are needed to do the CTD.
- The deep sea winch with fly block was a useless piece of c###. The fairlead along the A-frame is foolish and not working properly for mooring work.

# CTD Operations

- The system for launch and recovery of the CTD package was inadequate in rough seas.
- The knuckle crane required about a ~30 foot whip which resulted in excessive swing of the CTD package particularly when seas exceeded about 10 feet.
- A moon-pool was installed to alleviate this problem. However, it was clear that this system was inadequate.
- Concern that turbulence created around the stern compromised water sampling near the sea surface.
- It took a winch operator, a crane operator, two persons on tag lines, a CTD lab operator and a marine technician to orchestrate launch and recovery.



## Were there any weight distributions problems with heavy science payload such as vans?

- No Problems.
- No, but drainage of sinks in labs may be related to ship trim problems
- Floor drains that back up ...a potential slip risk.
- This was not an issue. Six surface moorings and some subsurface moorings were done. There was a concern of adequate space for the buoys.
- The upper deck had no 2'x2' tie downs and there was a question of whether the deck was made for holding things. Some items were lashed to the rail.

# Was dynamic positioning used? And was it useful?

- Not used.
- Wanted to use it but it was not working.

# Were the multibeam or acoustic Doppler systems working properly under all conditions?

- Multibeam yes, ADCP no.
- Not Used.
- Multibeam worked well.
- Sidescan data had streaks (people are actively working to solve the sidescan problem).

Were any heavy gear  
deployments undertaken such as  
moorings or sediment sampling?

- NO

Were there any pre-cruise planning measures and shore facility communications that were necessary and unique to the SWATH operations?

- No.
- Boarding scientists need to be apprised of problems and solution to deployment procedures of gear from deck
- Not really. Cleared locations of nearshore work with Captain (water depth vs ship draft), but would have done this with a Monohull, too.

# What advice would you give a colleague that was going to sail on a SWATH vessel such as the R/V KILO MOANA?

- Small boat use was difficult.
- None really, it was a great ship.
- Think about freeboard and deployment issues.
- Array spacing, need to submerge equipment while loading, since freeboard is higher need larger gaps.
- CTD ops take longer because of handling problems.
- Expect a quieter and smoother ride than a monohull.
- Don't try to do mooring work from it.

# Any additional comments?

- None really, a great ship, overall “A” rating
- Current CTD package has to be modified to safely recover it through the Moon pool.
- Height of working deck above waterline would need to be taken into account if intended to tow seismic or other gear.
- The crew all worked together and were very help.
- Get rid of moon pool; it is dangerous.
- The back deck is very short; hardly enough space to try and grab something in the water. Also, the screws for the engines are right there.
- The deck is so high up that it was necessary to put a small boat in the water and use it to hook onto the surface buoy.