HOT-29: Chief Scientist Report

Chief Scientist: D. HEBEL

Personnel List

Dale Hebel, Chief Scientist
Ricardo Letelier
Terrence Houlihan
Jef Snyder
Jim Christian
Katharina Thywissen
Chris Carrillo
Dan Sadler
Fernando Santiago-Mandujano
Sean Kennan
Soma
John Constantinou

Summary

HOT 29 was conducted aboard the RV Alpha Helix 8-12 August 1991. All samples and hydrographic work was completed with no major mechanical/instrumental failures with the exception of the weak to nonexistent RDF transmissions from the in situ array (channel 72). The only persistent problem which plagued HOT 29 was leaky water bottles. Apparently, the springs had been replaced prior to departure. The spring tension was sufficient to seal the bottle until the vent value was opened. Obviously, adequate spring tension is necessary to offset the contained water sample weight. The specifications for spring tension should be available from the bottle manufacturer and we should adjust our bottle spring tension to this value and test the bottles before HOT 30 departure.

HOT 29 departed Snug Harbor on 8 August 1991 at approximately 0900 hrs. While steaming to Kahe Pt. a fire and boat drill was conducted by the First Mate (Bill Rook), followed by a cruise objective and safety science meeting led by D. Hebel. It was pointed out by Bill that in addition to life vests, hard hats were required (for insurance coverage to be effective), when deploying overhead equipment. This point has been raised on previous Helix cruises, however, it is not ship's policy to require hard hats in the same regard as they require life vests and no Chief Scientist has made this policy for scientific personnel. I asked if CTD deployment fell into this category and Bill responded that it did. I therefore suggested to the science party that we wear hard hats during CTD deployments as well as Trap and in situ array deployments/retrievals. This action was only partially successful. Many of the ship's hard hats were in poor repair and did not fit properly, therefore causing more problems and dangers than solving. It was also obvious that some people would not wear them unless it was official policy as it is on the RV Wecoma. Our official policy should be clarified and if it is determined that hard hats will be worn I suggest we purchase our own and assign them to specific personnel so

that they are available and fit properly.

At Kahe Point we conducted a 1000 m weight cast to pressure test one of Mimi's transponders as well as other equipment. This was followed by a PNF cast and the GOFS 1000 m cast. We departed Kahe approximately 1600 hrs and steamed to station ALOHA. We arrived at the trap deployment site (approximately 3 miles east of center), approximately 2400 hrs and completed deployment by 0230 hrs. Deployment went smoothly except for the loss of one trap at both 300 and 500 m due to collar failure. RDF and strobe lite functioning was verified and we proceeded to station center. The WOCE deep cast was conducted followed by 39 hrs of 1000 m "burst" sampling. During this period we collected all core WOCE and GOFS samples. We conducted an additional cast at the end since we fell somewhat behind during the GOFS 0-200 m cast. This cast took 2 hrs to sample (not counting salt sampling), with 4 experienced personnel conducting the sampling ! The only additional samples we took were 12 depths for Quay and duplicate samples for alkalinity. This is becoming a very labor intensive cast and therefore it may be to our benefit to overlap the shifts in such a manner that we have additional personnel available for this cast and the following primary productivity cast in order to maintain the 3 hr CTD schedule.

The failure of the in situ RDF necessitated visual tracking of the in situ array.The reason for the failure appears to be a bad connection. We assembled the transmitter, verified output via red lite LED and placed it in the spar buoy. Further signal verification from the bridge indicated no transmission. The transmitter was removed from the buoy and no red lite indicator was visible. The cap was manipulated to produce a red lite output and the signal verified from the bridge. The transmitter and strobe assembly was once again placed in the spar buoy. The bridge continued to receive the signal until the buoy went over the side.

During this cruise we tried to access Argos data directly from the ship. We had made arrangements with Service Argos to dump the data into the Alpha Helix mailbox in Miami and we anticipated accessing the data via ATSVAX satellite. If this did not work then we would access the data directly via Inmarsat and if we still had problems we had a backup system at the University. We were successful in completing the ATSVAX link to Miami but alas, there was no data from Service Argos. We tried at several different time-points with the same result -- no data! The direct approach via Inmarsat to Argos was successful and we obtained satellite positions. From the information obtained it appeared that the Traps were tracking almost due north at ~ 0.3 kts.

Following completion of the core sampling Ricardo made a cast for an HPLC fractionating and concentration experiment followed by a series of net tows. John Constantinou completed a cast for his mixotrophic experiment and continued to process samples for Mike Landry's grazing inhibition determination experiment.

While samples from the previous casts were being processed we slowly steamed to the supposed position of the traps. Our last Argos fix was 1930 hrs on 9 Aug. '91. We decided not to interrogate Argos unless we were unsuccessful in locating the traps via deadreckoning from the established drift tract. As we steamed towards the predetermined

location we picked up the RDF signal and located the traps without difficulty. The final CTD cast was a Tricodesmium collection by Ricardo while standing off the traps. The final cast was a 2000 m weight cast to pressure test Mimi's transponder #2. Trap recovery was initiated ~0200 on 12 Aug. '91 and completed ~0330 hrs without incident. Departed station ALOHA and arrived at Snug Harbor1600 hrs 12 Aug. '91.

| SAMPLES | COLLECTED BY |
| --- | --- |
| GOFS Core | GOFS/WOCE |
| WOCE Core | GOFS/WOCE |
| WOCE, GOFS salts | WOCE |
| L. Campbell | GOFS |
| P. Quay | GOFS |
| M. LANDRY | John Constantinou |
| J. Constantinou's | John Constantinou |
| HPLC fractionating exp. | R. Letelier |
| Trico net tows | R. Letelier |
| Trico water bottle | R. Letelier |
| L. Sautter | GOFS |
| J. Christian | J. Christian |