

CRUISE REPORT

Cruise Number BV-03-01

VESSEL: F/V Big Valley

AREA OF OPERATION: Gulf of Alaska, Kodiak Island to Seward, AK.

ITINERARY: Depart Kodiak, AK, Friday May 30th.
Arrive Kodiak, AK, Tuesday June 3rd.

PARTICIPATING ORGANIZATIONS: NOAA/PMEL/FOCI

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CRUISE OBJECTIVES: Deployment of an ROV system to recover 4 damaged moorings on the GLOBEC Line south of Seward, AK.

SUMMARY OF OPERATIONS:

ROV Deployments:	10
Number of Moorings recovered	3

NARRATIVE:

The F/V Big Valley left Kodiak Alaska at 1700 hours May 30th, 2003. We were prepared for an earlier departure but the forecast for 30 knot winds on the working grounds delayed our sailing. Successful operations with this vessel/ROV combination are essentially limited to 6 foot seas, 15-20 knot winds and 1.5 knots of current. Anything beyond these parameters greatly limits the success and safety of each ROV dive.

We steamed directly to mooring location GB-4, arriving at 11am on May 31st. After completing an extensive search pattern ranging with the acoustic release deck unit we were able to deploy the ROV and located the mooring anchor on our first dive. Unfortunately, the 25 knot winds and 8-9 foot seas made it difficult for the Big Valley to hold station. The ROV was being towed away from the mooring by the umbilicus; the pilot could not maneuver the ROV to attach a recovery line to the mooring. We recovered the ROV and set up for a second dive. Conditions improved as the winds came down but even with several passes over the mooring site we were not able to locate the mooring a second time. A portion of the spectra recovery line came loose and tangled in the vertical lift propeller. We recovered the ROV and suspended operations around 10pm that night.

The Big valley drifted during the night, we resumed operations at 0530 June 1st. On our second dive of the day we were able to connect the recovery line to the mooring and bring back what was left of the damaged mooring. Since we saw no evidence of any floatation on this mooring I can only assume that the original mooring wire parted below the bottom float. We recovered a release, a Microcat and an RCM9 from mooring GB-4. The broken end of the mooring wire was returned to PMEL engineering for examination.

We steamed to site GB-3 where we located the acoustic release and set up for the next series of ROV deployments. Two dives later and after a lot of driving around we located the release and anchor for

mooring GB-3. This was the Tapps/Iron meter mooring and there is every indication that the mooring wire failed on the 150 meter piece just above the release. No floatation or instrumentation other than the release was observed or recovered from this site.

When the moorings fail, the remaining instruments/wire tends to fall down around the anchor. When the recovery line is attached to a portion of the mooring the wire often fouls on the anchor. In addition the Benthos 865A releases will not release if they are tilted in excess of 25 degrees off vertical. This requires that you pull the release vertical and put a strain on the anchor before you are able to fire the release. If you lift the anchor off the bottom to release it, there is a chance that when the anchor falls it will land on a portion of the mooring laying on the bottom. The 150 meters of loose wire fouled in the 2000 pound anchor, our only option was to recover anchor, wire and release with a combination of the crab block, pot lift and small hydraulic winch. With the anchor at the surface I could see that part of the tangle was on a shackle head. I was able to retrieve the bitter end and examine the break but it was not considered prudent to recover the anchor to untangle the wire for return to Seattle. The break was a stretch break, rusted, not new. Because there was only one place to attach the recovery hook/line there was some damage to the acoustic release head when the hook turned sideways with the load of the 2000 pound anchor. We finished this recovery at 2130 and steamed to mooring site GB-2. At site GB-2 we completed an acoustic release search then drifted near station for the remainder of the night.

At 6am on Monday June 2nd we started the ROV search for mooring GB-2. We located the mooring on dive one but once again the spectra recovery line came loose from the umbilicus and there was concern that the ROV would become entangled in the line. We recovered the ROV, reattached the line and re-deployed the ROV. On the second dive we were able to attach the pickup line to a Microcat cage, recover the ROV and begin to recover the mooring. The pull on the mooring was beyond what could be expected from a 1600 pound anchor, we had hung on something else on the ocean bottom. The spectra line parted leaving the mooring on the ocean bottom.

The mooring at site GB-1 was placed too close to an underwater fiber optic cable to safely conduct dragging operations for a recovery. Since we were running short on cruise time the decision was made to move inshore to site GB-1 for an ROV recovery. If time allowed we would return to site GB-2 for another attempt with the ROV or possibly drag for this mooring on a subsequent cruise. The operation at GB-1 went well. Following a pre-deployment search with the acoustic deck unit we deployed the ROV and recovered what remained of mooring GB-1. A Microcat and a release were brought aboard, the broken wire was also returned to PMEL engineering group for examination.

We steamed offshore to site GB-2 for another attempt at recovering this mooring. The ROV was deployed, the mooring was located and the spectra recovery line was attached to the mooring. When we tried to recover the ROV it became obvious that once again we had snagged something larger than a 1600 lb anchor. The ROV umbilicus was wrapped on the recovery line and we were hung hard on the bottom. At one point the ROV umbilicus was severed and had the two lines not been entangled we would have lost the ROV. We recovered as much slack line as possible, pulling in a little at a time as the ship repositioned and slack became available. The aft "A" frame buckled from the strain on the recovery line. The buckled stanchions were cut away with a torch and the remaining "A" frame was tilted forward and propped against the house for support. As slack became available we continued to pull on the recovery line until the line finally parted around midnight Tuesday night. At this point we were out of cruise time, had a buckled "A" frame and a severed ROV umbilicus. At 1am we began our steam to Kodiak arriving at the dock at 1030pm June 4th.

During our ROV search for mooring GB-2 the only obstruction we saw in the area was a pile of old large link anchor chain. An additional ROV reconnaissance may locate the obstruction that we hung up on during

both attempts to recover mooring GB-2. During our search we were able to identify a release, a Microcat and a current meter. These instruments are still on the ocean bottom at site GB-2.

The ocean bottom sediments at all of these stations made ROV operations considerably more difficult and more time consuming than originally anticipated. As the ROV moved forward the visibility was acceptable, when you stopped the system near the bottom, the thrusters kicked up the sediments and you could not see anything for 5 to 10 minutes. It was exasperating to locate the mooring but not be able to attach the line because there was no visibility. If the vessel was unable to hold position while you waited for the sediments to clear the ROV would be dragged away from the target and the search would begin again. Underwater camera footage is available for this cruise on CD and VHS video format.

ACKNOWLEDGEMENTS:

Gary Edwards and the crew of the F/V Big Valley put forth a commendable effort during this cruise. Their abilities and dedication were put to the test when we were hung on the bottom, the "A" frame buckled and field repairs needed to be completed quickly. Mark Blakesley did a superb job in navigating the ROV through thick sediment clouds and attaching the recovery line to the moorings.

ATTACHMENTS:

Table 1: Mooring Locations.

02-GB-4B	59 07.7163 N	148 47.1787 W
02-GB-3B	59 17.5615 N	148 57.4170 W
02-GB-2B	59 34.1011 N	149 12.6934 W
02-GB-1B	59 41.6616 N	149 21.4902 W

Figure 1: Cruise Station Locations.

