



Fig. 7: Tidal record from January 18 to January 30, 2007.

Ocean Bottom Seismometers (OBS)

Of the eleven units deployed in April 2006, we were able to communicate with nine of them early in this cruise. Sites 303 and 305 had been mute a day after they were deployed, and were still mute this time. Sites 206, 210, and 212, which are stuck in lava after the eruption in January, are still talking at this time. The acoustics should be able to aid in any recovery by Jason. Of the nine 300 series sites that were talking, we were able to recover eight. All of them were counting time when recovered, indicating proper program function. The clock drifts ranging from less than 10 msec, to 2113 msec., within clock specifications. All were full of data, with closing block numbers over 50 million, about 28 gigabytes. Data was not copied, due to equipment limitations, so there is no indication of data quality.

There were a few problems. One radio failed to turn on (radio sn 18). It was switched on when examined, but the pressure switch failed off. One unit (frame sn 66) has a grounded sense control line, and required seven release one commands before it lifted off the bottom. There is a dummy plug installed, so it may be a leak in the wire harness. The biggest problem appears to be a lost instrument, site 309 (logger 79, acoustic 79, frame 79, float 43, strobe 35, radio 36). I got confirmation that the unit released, and saw closing ranges after the end of the burn window. When the estimated rise time had elapsed, the bridge was still not seeing anything. We never heard the radio, or saw the light (it was night). Sweeping the ocean with the searchlight failed to light up reflector tape. When I did ranges, the result was intermittent, and seemed to be bottom depth values. I decided this was because we couldn't hear one of the direct paths, so were hearing a bottom reflection in the travel path. The fact that sometimes we heard no return further indicated that the unit was on the surface. As the ship moved right over the site location, the ranges were exactly twice bottom depth. The downward cone of the hull transducer probably limited the reception to a pair of bottom bounces. The fact that the range was so out of sync with

the water depth indicated that the unit was not on the bottom.

We searched for several hours, with no luck. Later that night, the ship moved down current to do a garbage dump, searching for the instrument on the way, with no luck. The sub operations require the ship to be in a certain location by dawn, and during the day, so we could not chase the instrument during daylight hours. The next night, we returned to the site 309 to verify it was not still stuck on the bottom. Several commands went unacknowledged, and there were no range replies, all indicating the unit had released, and floated away unobserved.

We visited sites 303 and 305, about 1 km apart, to attempt recoveries. Release commands had never been sent to these unit. The operation was to sit over the site, then move 500 meters to the east, and steam a slow circle at that radius. Release commands were sent every two minutes, 8 to 10 on release one and a similar number on release two. After occupying both sites in this manner, the ship sat at midpoint and waited 90 minutes from the last release command. Nothing surfaced, and nothing was heard on the acoustics. Whatever failed on these units, they are lost.

OBS (site #)	Latitude (N)	Longitude (W)
301	9° 48.9448	104° 17.2038
302	9° 49.5194	104° 16.9900
303	9° 49.4073	104° 17.5663
304	9° 49.8573	104° 18.3060
305	9° 49.9521	104° 17.6665
307	9° 50.2106	104° 16.5380
308	9° 50.6581	104° 17.1860
309	9° 51.0860	104° 17.6352
310	9° 49.7013	104° 17.3072
311	9° 50.2666	104° 17.3297
312	9° 50.4782	104° 17.7695
206	9° 50.1108	104° 17.1582
210	9° 49.7374	104° 17.3791
212	9° 50.5166	104° 17.8408

Table 6: Locations of ocean bottom seismometers (OBS).