

**IODP Expedition 318: Wilkes Land Glacial History
Week 7 Report (14–20 February 2010)**

OPERATIONS

Operations this week consisted of waiting on weather and multiple attempts to return to Site U1360 (WLSHE-09B) and other shelf sites – these were thwarted by ice conditions.

Site U1360 (WLSHE-09B): At the end of last week, we had just departed Site U1360 after being driven away by ice and then by a severe weather system. We departed Site U1360 at 0615 hrs on February 14th. We planed on returning to this site, but moved to deeper water to avoid riding out next intense low pressure system among the ice and in shallow water. This system was predicted to arrive on the evening of February 14th with for 50-knot winds (gusts up to 60 knots) and poor visibility in snow flurries on Monday.

We arrived at a position in deeper water that was 50 nmi north of the ice pack. The 104 nmi transit to this location took 10.2 hours at 10.2 knots. We then went into dynamic positioning mode to safely ride out the storm. This system arrived as predicted late Sunday evening and by Monday it was upon us with sustained winds of 50 knots and gusts as high as 62 knots as well as heavy seas and poor visibility during periods of heavy snow. The sea and swell continued to build during most of February 15th with the vessel motion reflecting the intensity of a storm that increased to just short of hurricane force. The barometer bottomed out at 972 Mb and remained there for the rest of the afternoon. At 1800 hrs on February 15th, we had to offset the ship due to an approaching iceberg. The storm began to abate during the late evening and we began the transit back to Site U1360 early the next morning (1000 hrs on February 16th).

During the transit, we adjusted speed and course so that we would not overtake the remnants of the storm that was still south of us and so that we would arrive at first light the next morning. During the daylight hours of February 17th, we made four attempts to penetrate the northern edge of the extensive pack ice and iceberg barrier that existed between the vessel and Site U1360. However, each time we were blocked by the ice and had to reverse course. So that we could avoid having to maneuver the vessel amidst the ice during the darkness, we moved to a position about 100 nmi NW of Site U1360 and “parked” in dynamic positioning mode throughout the evening of February 17th.

The next morning we decided to attempt to reach Site U1360 from the south. We began the transit at 0545 hr on February 18th. We sailed around the western edge of the growing ice tongue, then ESE past the Antarctic Circle at 1340 hrs, and attempted to approach Site U1360 from the southwest. This time we were able to get within 8 nmi of Site U1360 before encountering a heavy concentration of pack ice and icebergs blocking access to the site. We reluctantly reversed course and began retracing our course westward in order to move back around to the northern edge of the ice tongue during the evening of February 18th. We decided to try to get to Site U1358 or other alternate sites on the outer shelf on the northern edge of the ice tongue.

By the morning of February 19th, we continued around the western edge of the growing ice field and then turned east and returned to check the ice conditions at Site U1358. When we found access to Site U1358 still blocked by ice, we attempted to reach an alternate shelf site (WLSHE-12A) situated north of Site U1358. We were able to come within 3 nmi of the alternate site when, once again, we were blocked by heavy ice.

Since we could not reach any of our shelf sites at this time, we turned north at 1630 hr on February 19th and proceeded to Site U1359 to complete the RCB portion of the coring program at that location.

We arrived at Hole U1359D at 2200 hrs on February 19th. The total time spent since being forced off Hole U1360A by icebergs at 0615 hrs on February 14th was 5.7 days. The total distance covered was 760 nmi at an average speed of 8.7 knots.

Site U1359

After returning to Site U1359 at 2200 hrs on February 19th, we assembled the RCB bottom-hole assembly and lowered it to the seafloor. We tagged the seafloor with the bit at 3023.0 mbrf and started drilling Hole U1359D at 0530 hrs on February 20th. We drilled without coring to 152.2 mbsf and then started RCB coring at that depth to overlap with previous APC/XCB coring that extended to 252 mbsf. So far, RCB Cores U1359D-2R to 16R penetrated from 152.2 to 295.0 mbsf and recovered 124.9 m (87%).

SCIENCE RESULTS

We did not process any new core this week. We have been finalizing sample/data processing and reports from earlier sites.

TECHNICAL SUPPORT AND HSE ACTIVITIES

A fire and boat drill was held on February 18th for the entire ship's complement.