

July 7, 2005

IODP EXPEDITION 308: GULF OF MEXICO HYDROGEOLOGY SITE U1323 SUMMARY

Hole U1323A Latitude: 28°, 5.4725' N, Longitude: 89°, 4.3509' W
Water depth: 1260.5 m

Site U1323 is located in the Ursa basin, in between Sites U1322 and U1324. Site U1323 has a sediment cover above the permeable Blue Unit intermediate in thickness between those of Site U1322 and U1324. The original objectives of drilling Site U1322 were to document rock physical properties at this location, measure in-situ formation temperature and pressure, document geochemical composition of the pore water, and establish a preliminary age model leading to an estimate of sediment accumulation rates at this location. Because of the revised target depth due to the discovery of overpressured sand at this location (see below) and because of the need for additional pressure and temperature measurements at Site U1322, Site U1323 was logged using MWD/LWD and not cored.

Logging operations at Site U1323 proceeded at an average rate of penetration of 30 m/hr but with borehole dimensions typically greater than 24 cm to a depth of 204 mbsf, where an overpressured sand was encountered. The silty sand layer, approximately 3-m thick, was detected at 204 mbsf and simultaneously, a jump in pressure of 150 psi over the background drilling pressure in the APWD log was observed. A residual backpressure of 150 psi was also observed by the driller when he shut down the mud pumps. At 242 mbsf, a rapid drop in gamma ray, suggestive of a second sand interval, was observed in the data. At this point, it was decided that to maximize the amount of science, conserve mud, we should move to the location of Site U1324 (BP Block MC 897) and plug and abandon Hole U1323A. Site U1323 was the *JOIDES Resolution's* first experience with riserless drilling using weighted mud. We confirmed that we can carefully monitor shallow flows, take appropriate action to control the flow, drill ahead under appropriate conditions and provided with accurate real-time downhole information.

Lithostratigraphic interpretation of LWD and seismic data are still preliminary as a malfunctioning battery required onshore processing of the resistivity image data before a comprehensive interpretation could be performed. However, preliminary data correlate well to Site U1324 and Site U1322 for the upper 197 meters below seafloor. Logging and seismic data confirm that this interval is predominantly mud and clay rich, including two mass transport deposits. Preliminary interpretation of the resistivity image data that was sent back to the ship at the end of the expedition shows several highly deformed intervals confirming the original log-seismic interpretation of the presence of several mass transport deposits. These mass transport deposits also displayed trademark characteristics of lower bulk density and resistivity compared with surrounding undeformed sediment and will provide great data for post-cruise analysis of such deposits. However, the lower 45 meters of Site U1323 do not correlate to either Site U1324 or U1322 and contain at least one overpressured sand that was not expected prior to drilling.

Despite not coring Site U1323, the good quality logging data prove to be valuable for analysis of the stratigraphic history of the Ursa Basin. Drilling objectives for Site U1323 were thus achieved in three different ways: 1) overpressure was evidenced during LWD/MWD operations, 2) the novel IODP approach to "riserless controlled drilling" proved efficient in controlling the flow and 3) data obtained at Site U1323 provides information on the lateral continuity and the stratal architecture of the Ursa Basin.