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Coulman High ANDRILL sites (C-19 calving site on Coulman High), Ross Sea, Antarctica

B. P. Luyendyk (1), D.S. Wilson (1), R. Decesari (1), C.C. Sorlien (1), L.R. Bartek (2), F.R. Rack (3), and ANDRILL Science Committee

(1) Univ. California-Santa Barbara, California, USA, (2) Univ. of North Carolina, North Carolina, USA, (3) Univ. of Nebraska-Lincoln, Nebraska, USA (luyendyk@ltsc.ucsb.edu / Fax: +1 805-893-2314)

We propose drilling sites on the Coulman High ($\sim$77.46^o S; 171.23^o to 171.68^o E) to target the earliest Miocene and older stratigraphic section in the western Ross Sea, in order to address themes on evolution and stability of the cryosphere, warm climate periods in the Early Tertiary, orbital variability and controls on climate, and tectonics within the West Antarctic Rift System and the Transantarctic Mountains. The sediments collected from the Antarctic margin in our proposed project can be of exceptional value towards understanding Paleogene climate history. It has long been recognized that the climate transition from a "Greenhouse" to an "Icehouse" world occurred at some point during the middle to late Eocene. The sites are located in the C-19 iceberg calving site east of Ross Island, 125 km overland in a straight line NE from McMurdo Station, on the Coulman High between the Victoria Land Basin and the Central Trough. The water depth here is 834-871 m and the Ross Ice Shelf is 229-251 meters-thick. We conducted a site survey at the front of the ice shelf in 2003 under the premise that the advancing ice sheet will in time cover the survey lines, thereby allowing drilling into the sea bed from the ice shelf. We completed single and multichannel seismic reflection profiles along with gravity, magnetics and swath bathymetry on a grid with E-W lines spaced at 2-5 km, and three N-S tie-lines spaced at 10 km. The C-19 area is characterized by basement that is faulted into N-S half grabens containing syn-rift sediments with an internal unconformity, all overlain by undeformed upper Oligocene and younger sediments above a widespread angular un-

conformity. Proposed sites are on a profile closest to the ice shelf front (1A0); this line has since been covered by the advancing ice shelf that is moving north at a rate of $\sim$740 m/year.