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Erik D. Scott<sup>1</sup>, William R. Bryant<sup>2</sup>, Frank J. Peel<sup>1</sup>, Carl Taylor<sup>1</sup>, Daniel Bean<sup>2</sup> (1) BHP Billiton, Houston, TX (2) Texas A&M University, College Station, TX

## **Processes of Large Scale Sedimentary Furrows: Implications for Deep Water Sediment Reworking**

Mapping of the seafloor on a regional 3D seismic data set in the Green Knoll/Walker Ridge area has revealed a set of regionally extensive sedimentary furrows. From seismic and deep-tow sidescan sonar data, the furrows run from northeast of Green Knoll along the Sigsbee Escarpment through the Walker Ridge protraction area and most likely continue into the western Gulf of Mexico. Preliminary investigation of the furrows shows a predictable pattern as current flow velocity increases.

The furrows range from a 3 meters up to 10 meters deep by 5 to over 30 meters wide with high angle sides, some greater than 70°. Utilizing the DSV Alvin, dives were made in the Farnella Canyon area (Walker Ridge 805) and off the southeast corner of Green Knoll (Walker Ridge 35). The sea floor was flat to slightly undulating but was interrupted by the erosional furrows scouring into the sea floor. At Green Knoll, there were some instances when a smaller furrow formed inside of a larger furrow causing a bench. The Farnella Canyon location exhibited large scour marks, up to three meters deep, from higher currents (probably greater than 1 knot).

The sedimentary furrows, along with current meter recordings, indicate strong ocean bottom currents with sufficient power to carry significant amounts of fine-grained sediment long distances. Most likely, modern currents are keeping the existing furrows open with their high angles of repose while an episode of higher currents in the past eroded the furrow field.