GOLDSTEIN, ROBERT H., Univ. Wisconsin, Madison, WI

Stratigraphy and Sedimentology of Pleistocene-Holocene Turbidites and Glacial Ice-Rafted Sequence, Canada Basin, Arctic Ocean

A collection of short cores were taken from the Canada Basin northwest of the Canadian continental shelf at depths of 3,600 to 3,700 m, where the bottom slope is less than 0.1°. The cores consist of turbidites and glacial-marine sediment as determined by diagnostic sedimentary character. The turbidite layers observed are graded and commonly contain a Bouma C to D transition. The glacial-marine layers generally exhibit a peloidal texture, and in some cores, contain striated pebbles. The peloidal texture consists of clots or pellets which have been aggregated in interstices between crystals of ice and have maintained their integrity despite falling through almost 4,000 m of water. Till and till peloids are released by ice rafted across the basin.

A previously unrecognized lithostratigraphy, consisting of 20 laterally continuous units, is correlated over a wide area of the Canada Basin. Magnetic stratigraphy shows this sequence to be Pleistocene-Holocene in age. The stratigraphic sequence is dominantly turbidites with a minor number of ice-rafted layers, which represent a history of intermittent turbidity current deposition masking a slow, relatively constant influx of ice-rafted sediment. The glacial-marine sediment layers represent long periods between turbidite events. The Canada Basin lithostratigraphy has little similarity to the lithostratigraphy developed for turbidite-free sediment of a similar age from the adjacent Alpha Cordillera.

GOODELL, PHILIP C., Univ. Texas at El Paso, El Paso, TX

A Model for Formation of Uranium Deposits in Volcanic Rocks

Uranium is found in widespread occurrences and several commercial concentrations in volcanic rocks of western North America. Mineral exploration and estimates of potential resources in this frontier geologic environment have been hampered by the lack of a viable genetic model. Geologic, geophysical, and geochemical aspects of numerous deposits are compared and synthesized, and a genetic model is presented that integrates these features. The model includes uranium migration during caldera evolution, and subsequent ground water and diagenetic effects. The comparison and model are enhanced by the availability of large chemical data sets for several example areas, and statistical properties are discussed.

Exploration for these deposits should involve close attention to detailed volcanic geology, rock permeability, and trace element chemistry. Significant deposits exist in the intrusive, intra-caldera, outflow, and volcaniclastic environments. The variety of potential host environments is large, and this has presented a bewildering array to the explorationist and to the commodity specialist. Lithogeochemical exploration proves to be more successful than stream sediment studies.

GORDON, PATRICK T., Gulf Oil Corp., Midland, TX

Devillier Field, Chambers County, Texas—Effects of Growth Faults and Deltaic Sedimentation on Hydrocarbon Accumulation in a Stratigraphic Trap

Devillier field is an overpressured gas reservoir producing from upper Vicksburg (lower Oligocene) *Loxostoma "B" delicata*-age sands which pinch-out near the crest of an anticline located on the downthrown side of the Vicksburg flexure. The field is located 50 mi (80 km) east of Houston in northeastern Chambers County, Texas. The first year's production per well has averaged 1.0 Bcf gas and 13,000 bbl condensate, for the seven wells completed since the field discovery in 1975. Calculated open flows have ranged as high as 600,000 Mcf gas per day from an average net-sand interval of 25 ft (7.6 m) at depths between 10,550 and 10,750 ft (3,216 and 3,277 m).

A structure map on the upper Frio (upper Oligocene) shows south-southeast regional dip over the field. Structure and isopach maps on the upper Vicksburg show north-northwest dip, and thickening of sands and shales into the Vicksburg flexure northwest of the field. Correlation of stratigraphic units indicate maximum growth across the flexure during upper Vicksburg time. Based on the regional stratigraphic framework, paleontologic data, and microscopic analysis of conventional core and sidewall core data, the upper Vicksburg sediments are considered to have been deposited in a shallow-marine environment. Based on analysis of composition, sorting, and grain size of detrital minerals and quartz from cores and cuttings, the field pay, the Loxostoma sand, is interpreted to have been deposited in a delta distributary mouth bar. Pinch-out of this sand facies against a prodelta shale facies has resulted in creation of a true stratigraphic trap.

GOVEAN, FRANCES M., Amoco Production Co., Tulsa, OK

Oxygenated Versus Dysaerobic Depositional Environments, Upper Monterey Formation, California

Massive and laminated diatomites are the two principal rock types that compose the upper Monterey Formation and reflect deposition under varying oxygen levels. Laminated units are characterized by greenish to yellowish hues, high organic content, lack of burrowing, specific foraminiferal faunas, and good preservation. Massive diatomites are predominantly white to orange in color, are bioturbated, and have high moldic porosity. The foraminifers differ from those found in the laminated units.

A third lithologic type, indistinctly laminated diatomite, occurs predominantly as yellow-gray homogeneous horizons alternating with olive-gray, partly burrowed, laminated bands. The foraminifera are a mixture of the faunas found in the laminated and massive units.

Dysaerobic or aerated conditions at the sediment-water interface during deposition can be interpreted by (1) foraminiferal taxa, (2) sediment color and texture, and (3) trace fossil assemblages.

GRABOWSKI, GEORGE J., JR., Rice Univ., Houston, TX

Alteration of Organic Matter and Generation of Hydrocarbons in Austin Chalk, Southeast Texas

Kerogen in the Upper Cretaceous Austin Chalk from the subsurface of southeastern Texas is predominantly amorphous and sapropelic, with minor amounts of spores, pollen, and woody fragments. Over a range of 7,000 ft (2,134 m), the amorphous kerogen increases in maturity from a T.A.I. of between 1+ and 2− (medium yellow) at 2,300 ft (701 m; present depth below surface), to a maximum of between 2+ and 3− (orange-brown to light brown) at 9,100 ft (2,744 m). This