

A Permian-?Pennsylvanian Chondrichthyan Microfauna from Lowermost Wichita-Albany Group in North-Central Texas

The age of the vertebrates from the Rattlesnake Canyon locality in western Archer County is currently considered to be latest Wolfcampian-earliest Leonardian or latest Gearyan (latest Pennsylvanian). Comparison of the shark teeth obtained by bulk-sediment sampling with those obtained in a similar manner from younger Leonardian localities in the same region and from Pennsylvanian (Virgilian) localities in Nebraska and the Dunkard basin favors a Permian age, but with reservations due partly to the coexistence of taxa with freshwater and marine affinities.

Three species of xenacanthoideids occur here (two are rare) and in younger deposits; they are unknown from the older deposits. A new species occurs in Nebraska. Six new species of hyodontoids occur in the Texas deposits, but only two occur at Rattlesnake Canyon (one exclusively); at least five of them occur in Nebraska, but all remain unknown from the Dunkard basin. One species (new) of helodontid occurs in the Texas localities; it is rare at Rattlesnake Canyon, known only from the Wolfcampian in the Dunkard basin, but many occur in the Nebraskan Virgilian. Iniopterygians have previously been reported only from the Pennsylvanian, including the Nebraska locality, but not from the Dunkard basin; a new genus occurs at Rattlesnake Canyon, but the group is absent from younger deposits. Ctenacanthoids and petalodontiids are too rare and poorly understood taxonomically to permit a significant analysis.

JOHNSON, SAMUEL Y., Univ. Washington, Seattle, WA

Stratigraphy, Sedimentology, and Paleogeographic Significance of Spieden Group, San Juan Islands, Washington

Spieden and Sentinel Islands, San Juan Islands, Washington, are underlain by the only known occurrence of the Spieden Group, composed of the Upper Jurassic (Oxfordian or Kimmeridgian) Spieden Bluff Formation and the disconformably overlying Lower Cretaceous (Valanginian to Hauterivian and possibly younger) Sentinel Island Formation.

The 100-m thick Spieden Bluff Formation is subdivided into two members: (1) a lower member consisting of 5 m of massive sandstone and tuff overlain by 75 m of volcanic breccia-conglomerate largely of debris flow (laharic?) origin; and (2) an upper 20-m thick fossiliferous sandstone and siltstone member deposited on a shallow-marine slope. Sediments of the Spieden Bluff Formation were derived from an active volcanic source to the north consisting of andesite, dacite, and basaltic andesite.

The 740-m thick Sentinel Island Formation is also subdivided into two members: (1) a 140-m thick lower member consisting of fossiliferous sandstone and siltstone of shallow-marine origin; and (2) an unconformably overlying 600-m thick upper member consisting of volcanic conglomerate deposited by debris-flow and stream-flow processes on an alluvial fan. The source terrane for the Sentinel Island Formation lay to the northeast and was also primarily composed of Upper Jurassic volcanic rocks.

Spieden Group strata are broadly folded and unmetamorphosed. They contrast sharply with highly deformed, metamorphosed, flysch-like rocks of the same age to the south in the San Juan Islands and in neighboring geologic provinces. The Spieden Group and these latter age equivalent units might have been juxtaposed by fragmentation of a once coherent regional convergent margin, by large-scale tectonic transport

of allochthonous blocks, or by some combination of the two mechanisms.

JOHNSTON, J. E., III, and S. A. MULCAHY, Louisiana Geol. Survey, Baton Rouge, LA

Resource Assessment of Near-Surface Lignite in Louisiana

Analysis of approximately 2,200 shallow density logs in 22 parishes in Louisiana has indicated a significant occurrence of near-surface lignite (that which occurs at a depth of less than 200 ft or 61 m below the surface). The preparation of lignite isopleth, isopach, and reserve estimates for the 22 parishes indicated that 17 contain near-surface lignite and 14 contain commercially significant near-surface lignite which occurs in seams 3 ft (9 m) or greater in thickness.

Significant lignite occurs not only in the Wilcox Group (Eocene), but in the Jackson and Claiborne Groups (Eocene) as well.

Plans for four lignite surface mines in northwest Louisiana have been announced, with more announcements imminent. Commercial mining should begin in late 1981.

JONES, R. W., Chevron Oil Field Research Co., La Habra, CA, and G. J. DEMAISON, Chevron Overseas Petroleum Inc., San Francisco, CA

Organic Matter Characteristics Near Shelf-Slope Boundary

The organic characteristics of the sediments deposited near the shelf-slope break depend on the organic facies, which then depend upon the types of organic matter available at the deposition site and its early diagenetic history. The amount of land-derived organic matter generally decreases away from the shoreline, although high percentages of land-derived organic matter can be deposited on slopes, particularly when close to large rivers.

A primary control on the organic facies present at the shelf-slope boundary is the depth at which the oxygen minimum zone impinges on the water-sediment interface. Currently, the oxygen minimum zone in the world's oceans intersects the continental margins mostly on the upper slope, and it is there that the best potential source rocks now being deposited preferentially exist. The oxygen minimum zone locally reaches onto the shelf, most noticeably in areas of upwelling as in offshore southwest Africa.

In the past, owing to such factors as climate change and different current patterns, the oxygen minimum layer has transgressed well onto the shelves on a regional basis. Such events have resulted in the deposition of the source rocks of much of the world's oil as transgressive shelf deposits.

JORDAN, D. W., and K. HAUGAN, Cities Service Co., Tulsa, OK

Geologic Analysis for Enhanced Oil Recovery, Madison Block, Greenwood County, Kansas

Five oriented cores from the Cities Service Co. enhanced oil-recovery project, Madison Block (Unit B) of the Seeley-Wickfield, were analyzed. Primary production, air, and water drives in the Middle Pennsylvanian Bartlesville Sandstone (Cherokee Group) have produced 12.5 million bbl of oil with 18.6 million bbl remaining.

Six depositional facies are recognized in the cores. The