viodeltaic channels. Conglomeratic strata occur both as piedmont-fan deposits and within proximal turbidite channel complexes. Sparse nonclastic facies include local algal carbonate platforms built on isolated submarine banks formed by tectonic uplift, and minor lagoonal beds of algal carbonate rocks and gypsiferous evaporites associated with delta platforms.

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Paleoecology in Basin Analysis—Humboldt Basin of California as Example

Paleoecologic techniques make important contributions to basin analysis. The Neogene Humboldt basin of northern California is an excellent example of a basin whose history of development is being increasingly understood owing to paleoecologic study. Before the geologic history of a basin can be well understood, correlation of stratigraphic units must be established. This has been a problem in the Humboldt basin, but improved zonation based on planktonic foraminfera, diatoms, paleomagnetics, and dated ash beds offers promise of improved correlation. Several paleoecological techniques have been used to determine depositional environments: (1) taxonomic uniformitarianism; (2) biogeochemistry (especially oxygen isotopic analysis); (3) skeletal structure; (4) functional morphology; (5) trace fossils; (6) population dynamics; (7) community analysis; and (8) biogeography. These techniques are especially valuable as supplements to sedimentologic and stratigraphic study.

The Humboldt basin formed in late Miocene time and deepened rapidly. Most of the basin fill is a thick regressive sequence of deep basin, slope, shelf, and finally continental deposits. At least the landward part of the basin was strongly deformed in mid-Pleistocene time. The basin was probably considerably more extensive both in the landward and seaward directions than suggested by the present outcrop pattern. The offshore part of the basin may still be an active site of deposition with nonmarine sedimentation still occurring in the lower Eel River valley, lagoonal sedimentation in Humboldt Bay, and shelf and deeper sedimentation continuing offshore into the Pacific Ocean basin.

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Evaluation of Volume of Entrained Methane in Deep, Tertiary Sandstone Reservoirs Along Onshore Texas Gulf Coast

Volume of methane dissolved in formation waters in Tertiary sandstone reservoirs is directly related to sandstone volume and porosity, formation temperature and pressure, and salinity of formation fluids. Volume of potential reservoirs, located on regional cross sections below 8,000 ft (2,438 m; approximate base of oil production), was determined from isopach and net-sandstone maps of each formation. Plots show variation of formation pressure, temperature, and salinity with depth in all wells on cross sections. Porosity was determined by whole-core analyses, supplemented by sonic and resistivity logs.

The Texas Gulf Coast was divided into 24 subdivisions for detailed reservoir mapping and calculation of methane resource. Subdivision boundaries were defined by structural provinces and by major fault zones. Subdivision 2, an area of 5,300 sq mi (13,727 sq km) along the lower Texas coast, illustrates methods for evaluating the amount of methane dissolved in formation waters. In the lower Frio Formation, an in-place resource estimate of 61 quads (1 quad = 1 Tcf) was calculated by averaging parameters in 1,000-ft (305 m) intervals, a method similar to that used by the U.S. Geological Survey. A comparable estimate, 56 quads, was calculated by using parameters averaged for the entire lower Frio Formation. Total in-place methane of 144 quads for all formations in Subdivision 2 was determined using the latter method. Similar evaluation of all subdivisions will define the entrained methane resource of the onshore Texas Gulf Coast.

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SEG Delegation Visit to People's Republic of China

A delegation of 11 members of the Society of Exploration Geophysicists visited the People's Republic of China (PRC), September 5-27, 1979. Facilities visited were the Geophysical Research Institute and an instrument factory in Peking, computer center in Zhou Xien (60 km south of Peking), Shengli oil field on the Yellow River delta, marine branch of the Geological Exploration Corp. in Shanghai, southwest branch of the China Petroleum Corp. in Chengtu, and south seas branch of the China National Oil and Gas Exploration and Development Corp. in Canton.

Delegation members presented previously prepared papers at each facility visited except at the instrument factory in Peking. A seismic-field party operating near Chungking also was visited.

Group discussions followed presentations of papers by delegation members. Generally, these consisted of a description by PRC geophysicists of current seismic exploration efforts and associated problems peculiar to the areas being explored. Delegation members then endeavored to answer specific questions and offer potential solutions to problems encountered. A wide range of topics were involved, covering seismic data acquisition, processing, and interpretation. Of special interest were (1) determination of lithology, (2) reef exploration, (3) operations in areas of rugged topography, (4) deconvolution, (5) modeling and migration, and (6) static time corrections. PRC geophysicists appeared extremely anxious to acquire necessary modern skills in petroleum exploration. A present lack of sufficient modern field equipment and data processing systems is being corrected by purchases from the United States and France as rapidly as possible. This activity, coupled with the training of personnel by U.S. petroleum and geophysical service companies, should bring petroleum exploration in the PRC to a more advanced stage in a few years.