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Lacustrine Diatomaceous Deposits of Piute Valley, California and Nevada

A small, potentially economic deposit of diatomite occurs in Piute valley, near the California-Nevada border. Outcrops are found primarily in Secs. 21 and 28, T13N, R19E, San Bernardino Base and Meridian.

The deposit crops out over an area of approximately 1 mi^2 (2.6 km^2). The materials consist of diatomite interbedded with minor amounts of sand, silt, and volcanic ash. The sediments are capped by a layer of caliche. The deposit has been gently uplifted and has been dissected by erosion to expose at least 15 ft (4.6 m) of diatomite and associated sediments.

The deposit is lacustrine in origin. The entire deposit it thinly laminated with sand and silt lenses occurring mostly near the top. Predominantly diatomite occurs below this sequence. A cursory examination under the microscope showed approximately 80% diatomite. The beds dip either subhorizontal or 2 to 5° to the east in all occurrences.

Microscopically, the majority of the diatoms are rodlike or cylindrical in shape, which is typical of lacustrine diatoms found in the southwest. The individual diatoms are intact and show little or no alteration.

The material from the deposit has been used in the past as filler for wallboard and as insulation material.

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Nonmarine Lithofacies Included In Scappoose Formation, Northwest Oregon

Discovery of commercial quantities of gas near Mist, in northwest Oregon, has stimulated exploration activity and renewed interest in Tertiary stratigraphy of the region. The youngest rocks include the Scappoose Formation and the overlying Grande Ronde Basalt (middle Miocene, Columbia River Basalt Group). As originally described, the Scappoose Formation was said to be of late Oligocene to early Miocene age, based on fossils of "Blakeley age." However, recent work shows that basaltic conglomerate lenses in fluvial arkosic sandstone with interbedded marine siltstone and sandstone in the Scappoose Formation are coeval with the Grande Ronde Basalt. Chemical analyses of basalt clasts in the conglomerates and of flows of overlying Grande Ronde Basalt have the same diagnostic ratios of $(Na_2O + K_2O)/P_2O_5$, $(CaO + MgO)/P_2O_5$, and TiO_2/P_2O_5 and very similar trace-element compositions. Older basalts in the region, middle Eocene Tillamook Volcanics and late Eocene Goble Volcanics, which are other possible sources of the conglomerate clasts, have very different major oxide and trace-element compositions.

Identical conglomerates containing Grande Ronde basalt clasts are found overlying older, pre-Scappoose formations as well as between flows in Grande Ronde Basalt sections. The conglomerates and associated cross-bedded arkosic sandstones with mudstone rip-ups were deposited in channels and valleys eroded into and through the Scappoose Formation.

The Scappoose Formation was apparently deposited as a wave- and tide-dominated delta. Marine regression or progradation of shoreline was followed by development of a fluvial valley system which was filled and partially buried by Grande Ronde Basalt.

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Preliminary Results, DSDP Leg 84, Middle America Trench Off Guatemala

The Middle America Trench off Guatemala, which was drilled on DSDP Legs 67 and 84, is part of a nonaccreting convergent margin. The igneous continental framework of Central America extends to the base of the landward trench slope. Ophiolitic rocks, which correspond to the acoustic basement seen in seismic records beneath a cover of Neogene slope deposits, were recovered at five sites (seven holes). This basement represents an ocean crust first tectonized in the pre-Campanian and emplaced in pre-early Eocene time; the basement is not a tectonic product of the present convergent margin. Subduction of sediment on the Cocos plate may result in the development of overpressures which was observed directly at four sites.

On Leg 84, gas hydrate was recovered at three sites and detected at five of the six sites drilled. It occurs dispersed in muddy sediment or in porous lithologies and in fractures. A distinctive gas composition and low salinity pore water were found associated with the gas hydrate. The source of the gas was mainly biogenic, but thermogenic gas apparently was present in fractures of the basement rock.

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Foraminiferal Distributions and Environmental History of Quaternary San Francisco Bay

The Holocene San Francisco Bay and adjacent ocean-shelf foraminiferal fauna have been divided into five principal biofacies: brackish-water nearshore mudflat, marsh, normal bay, open bay, and open ocean. The open-ocean biofacies probably is restricted to the area outside the Golden Gate; at some localities individual specimens were found to occur within the open bay, but they were thought to have been current transported. By analogy, these biofacies provided the basis necessary for recognizing Pleistocene paleoenvironments in two bay cores.

Cold-water, open-ocean influence existed at the onset of Pleistocene deposition within the bay, reaching inland as far as the east side of Yerba Buena Island (core 88), and at times as far southeast as the Oakland Estuary (core 484). The degree of periodic open-ocean influence, both in its geographic extent and its duration, was far greater than anticipated. Fluctuations ranging from open-ocean to marsh conditions persisted throughout the Pleistocene and correlate with Pleistocene and Holocene periods of glacial and interglacial eustatic sea-level changes. No faunal evidence was found to indicate the existence of Pleistocene nearshore mudflat biofacies. This may have been indicative of either lack of preservation or rapidly changing environments. The core samples contained five species not found within the Holocene bay: *Bulimina marginata, Elphidium albiumbilicatum, Lagena filicosta, Oolina melo,* and *Globigerina quinqueloba.*

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Turbidite Reservoir Facies and Trap Types