resistant, thick beds of siliceous calcareous shale and porcelanite are interbedded with soft poorly exposed calcareous shale containing sparse silica. Above this basal unit is a sequence dominated by very poorly exposed, organic-rich calcareous shale, mostly containing sparse silica, and in some layers, abundant phosphate. Overlying is a transition unit within which the poorly exposed organic-rich calcareous shale is interbedded with resistant calcareous chert and porcelanite. The upper two units both consist of interbedded porcelanite, siliceous mudstone, and chert; however, the uppermost unit is noncalcareous and has interbedded tuff layers ranging in thickness from 1 cm to more than 30 cm.

The regional pattern of diagenesis was evaluated by determining the diagenetic maturity of a single stratigraphic unit (the transition unit) at each of the seven localities. At Goleta the section is completely diatomaceous (opal-A), whereas preliminary results indicate that diagenetic quartz as well as opal-CT are present in the North Sulphur Mountain area. Although this pattern is complicated by local structural deformation, diagenesis generally increases eastward from Goleta producing a trend opposite to that in the Santa Barbara coastal area, where diagenetic maturity increases westward from Goleta. This regional pattern of diagenesis, influenced mainly by Pliocene depositional trends, is consistent with paleogeographic reconstruction of the post-Miocene breakup of the ancestral Santa Barbara basin.

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Airborne Geophysical Surveying; Don't Forget to Look at the Data

The writer's experiences in airborne geophysical surveying date from the late 1940s to the present. Misconceptions about airborne geophysical surveying, errors in its use, and the digital computer have all affected the attitudes and conclusions made by interpreters.

KELLOGG, WILLIAM C., Kellogg Exploration Co.

Current Technology in Airborne Radioactivity Surveying

Airborne gamma-ray surveying was used during government projects in the ERDA and NURE programs. These programs are now drawing to a close.

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Sedimentologic, Stratigraphic, and Tectonic Significance of Neogene Sedimentary Megabreccias, Western Salton Trough, California

Two massive, very thick (165 ft or 50 m), essentially tabular sedimentary megabreccia beds, exposed in the Vallecito Mountains, Split Mountain, and Fish Creek Mountains, are comprised of very poorly sorted, large boulders up to 33 ft (10 m) in diameter, suspended in a comminuted silty sand matrix. Many boulders can be visually reconstructed, like pieces of a giant jigsaw puzzle. Upper bed boundaries are hummocky, and lower bed contacts are undulatory. Where present, subjacent sedimentary strata are typically disrupted, locally deformed into mega-flaps (-flames) and also locally occur as large rip-up blocks. Each megabreccia bed is thought to represent a catastrophically emplaced, air-cushioned landslide, perhaps triggered by a strong seismic event.

The stratigraphic position, paleotransport data, and provenance suggest that these catastrophic landslides were deposited during mid-Neogene tectonic readjustments in the Salton Trough. The lower megabreccia bed culminates early Miocene nonmarine sedimentation in a Basin-Range(?) rift basin and was derived from the Vallecito Mountains and transported eastward. The upper megabreccia bed occurs within the lower Pliocene basal marine and nonmarine deposits of the Gulf of California, and is thought to have been transported southward from a "phantom-porpoise" structure of the San Jacinto fault zone, indicating a minimum early Pliocene age for the San Jacinto fault.

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Sedimentology of Late Paleocene through Middle Eocene Poway Clast-Bearing Marine Depositional System, Southern California Borderland

Remnants of a late Paleocene through middle Eocene depositional system are preserved in the stratigraphic record on San Miguel and Santa Cruz Islands and in coastal San Diego.

On San Miguel Island, upper Paleocene starved-basin mudstones were deposited on Maestrichtian middle submarine fan sandstones. Lying conformably on the Paleocene deposits is a lower Eocene sequence of starved-basin to fan-fringe mudstones and Poway rhyolite-bearing, middle submarine-fan depositional lobes of conglomerate. These facies are in turn overlain by an upper lower Eocene through lower middle Eocene retrogradational sequence of shale-filled channels, levees, fan-fringe, and starved-basin deposits. The remainder of the middle Eocene strata are braided, middle submarine-fan sandstones and mudstones.

Paleogene sedimentation on Santa Cruz Island began in the late Paleocene and continued uninterrupted through the entire Eocene Epoch. Upper Paleocene strata are composed of detritus washed from paralic environments to the east-northeast. These inner shelf deposits form a sequence of sublittoral sheet sandstones which coarsen upward into an interval of Poway rhyolite-bearing channelized conglomerate. Lower Eocene outer shelf mudstones overlie the conglomerate and the remainder of the depositional facies record sedimentation under progressively deepening marine conditions. These environments include passive slope, fan-fringe, and inner submarine-fan channels containing Poway rhyolite-bearing conglomerate.

In San Diego, the Mount Soledad Formation is composed of six sedimentary facies: (1) paralic (upper estuarine), (2) deltaic, (3) alluvial fan and fluvial channels, (4) submarine canyon head, (5) inner fan channel, and (6) slope. Poway rhyolite clasts are found in facies 2 through 5.

Based primarily on lithostratigraphic correlations, deltaic facies of the Mount Soledad Formation are proximal equivalents to the sublittoral sand sheet facies on Santa Cruz Island. Alluvial fan, fluvial channel, submarine canyon head, and inner submarine-fan conglomerate portions of the Mount Soledad sequence are equivalent to lower Eocene middle submarine-fan conglomerates on San Miguel Island.

The Paleogene sequence of facies on San Miguel and Santa Cruz Islands are equated lithostratigraphically to equivalent facies of the Mount Soledad Formation. Comparison of the changes in depths of deposition of the vertical sequence of facies with Tertiary eustatic changes suggests that the succes-