

SOURCE OF PALM SPRING SEDIMENTS, IMPERIAL VALLEY, CALIFORNIA

Sands of the Palm Spring Formation are similar to those of the Colorado delta and those deposited in Lake Mead. All are very well sorted, and have similar median diameters and mineral composition. Cretaceous Foraminifera (reworked) which are widespread in the Palm Spring occur in the delta sands. Various primary structures characteristic of the Palm Spring are present in delta sediments. Both groups of sediments contain important amounts of volcanic and carbonate rock fragments and potash feldspar whereas plagioclase, hornblende, and augite are minor. The source indicated by this assemblage is the Great Basin-Colorado Plateau area rather than the Peninsular Range. The latter area probably supplied some coarse arkosic sands and gravels intertongering in the west with the fine sands, silts, and clays but it is probable that most of the Palm Spring Formation is Pleistocene delta sediment.

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ELECTRO-SONIC PROFILER

The Rayflex *Electro-Sonic Profiler* was developed for petroleum exploration in 1961. The general objectives of its development were to provide marine seismic information in greater clarity and detail than previous methods at modest costs. Initially a tool for shallow depths, the *Electro-Sonic Profiler* has through use and further engineering become capable of revealing detail at production levels. In addition, its application to deep-water oceanography has advanced the study of the oceanic province by many years. Present use of the *Electro-Sonic Profiler* has shown numerous types of geological events in near text book quality.

Compositing and playback techniques have expanded capabilities towards the deep "look-see." Interpretation problems are minimized through use of special recording techniques. Numerous marine profiles demonstrate the flexibility and usefulness of the method.

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GEOLOGIC SETTING OF BEVERLY HILLS AND LAS CIENEGAS FIELDS

Exploration and development during the last decade, primarily by slant drilling from only a few drill sites, have revealed several previously unknown or only partly suspected complexities of structure and stratigraphy beneath the Pleistocene or Recent cover along the northern flank of the Los Angeles basin between Western Avenue and the city limits of Santa Monica. Very little well information has been released for publication or even into restricted industry channels. Permission however has been granted to the author by the various operators in the area to present this general paper.

Tight folds, which are in places overturned toward the south, and high angle thrust faults are characteristic. These features are aligned east-west and transect the Beverly-Newport lineament, suggesting that the latter feature is either over-riden, swings sharply westward north of Inglewood field, or dies out before reaching Cheviot Hills.

Pronounced unconformities are present at the base of Wissler's Zone 4 of the upper Repetto (Pliocene), within the upper Miocene at the top of the "E" (Nodular shale)

and probably elsewhere, and between the "E" and "F" zones. There is also onlap of the beds of Delmontian age onto various older beds. Difficulties of paleontological correlation have been further confounded by "salting" of older forms into younger beds. The southeastern portion of the area has a thinned section of Pliocene and Miocene overlapping a granodiorite high.

Defining pool as a continuous, pressure-connected body of oil and gas, there are at least five new pools in the Beverly Hills-Cheviot Hills field, one in the Salt Lake field, and four or more in the Las Cienegas field.

Production figures for the separate pools are not given, but the new pools of Beverly Hills-Cheviot Hills have produced about 18 million barrels of oil and 76 million mcf of gas, and Las Cienegas about 4 million barrels and 3½ million mcf of gas. The production from the new pool in the Salt Lake field is about ¼ million barrels. At the time of preparation of this paper, development was continuing with three rigs active in the Beverly Hills-Cheviot Hills area and one active at the third drill site in Las Cienegas. Exploratory core holes were being drilled from time to time in and near the area.

The complexity of the area and the difficulty of exploration by slant drilling suggest that there may be several undiscovered oil accumulations of considerable magnitude in the area. The presence of saturated but tight oil sandstone in a wildcat at the extreme northwestern corner of this area is not to be discounted.

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SAN ANDREAS FAULT CROSS-SECTIONS—INTERIM REPORT ON A.A.P.G. COMMITTEE FOR CROSS-SECTIONS (SUB-COMMITTEE FOR A.A.P.G. COMMITTEE FOR STUDY OF LATERAL FAULTING IN CALIFORNIA)

The Committee for the Study of Lateral Faulting in California was established in June, 1961, by the executive committee of the Pacific Section of the A.A.P.G. with Richard F. Walters, chairman. Purposes of the Committee were: (1) to compile available data relative to lateral faulting in California, (2) to publicize results of such compilations, (3) to stimulate additional basic research of critical problems and areas, and (4) to sponsor field trips providing first-hand views of important areas.

At the first meeting in Los Angeles on October 2, 1961, specific responsibilities were accepted by individuals for the immediate objectives of the Committee: (1) to prepare an annotated bibliography covering lateral faulting in California, (2) to commence a survey of available material and interested contributors, (3) to concentrate on accumulating data relative to the San Andreas fault, and (4) to commence construction of a pair of matched cross-sections along the San Andreas fault.

The Committee will not publish or support direct interpretive positions on direction and amount of displacement, take sides on theories, or limit studies to faults which are only lateral in displacement—the Committee will remain strictly objective.

Four San Andreas fault cross-sections of a probable 14 are completed. Each cross-section shows the eastern and western sides of the fault in geographically opposite intervals.

Volunteers are urged to help. There are many important faults for further study.