

and thins to a feather edge in the San Andres and Sacramento mountains. It is probably marine in origin.

The San Andres is gray to pale-buff medium- to heavy-bedded limestone about 350 feet thick at the type locality in Rhodes Canyon. It thins to 20 feet on Glorieta Mesa and disappears north; its relations to the overlying Permian southeast are not well understood. A sand zone in the lower part is traceable from the Zuni Mountains to Hondo Canyon 225 miles southeast. At the north the San Andres is overlain by pink silts and sands of unknown age.

38. CHARLES P. MILLER, Consulting Geologist, Hobbs, New Mexico
Geological Factors Which Led to Discovery of Salt Lake Pool, Western Lea County, New Mexico

The Salt Lake pool is in southeastern New Mexico, approximately midway between Carlsbad and Hobbs. The discovery well was completed in June, 1941, at a total depth of 3,103 feet. As of February 1, 1942, the field contained six wells, producing oil that ranges in gravity from 26 to 30 degrees.

Microscopic study of the pay section reveals that much of the oil has accumulated in solution cavities within the dolomitic limestone and that the dolomitic limestone itself is not saturated. Two distinct "pays" are separated by approximately 75 feet of limestone yielding only minor showings of oil. The early appearance of water suggests that the solution cavities contain appreciable amounts of water as well as oil. Free gas is practically lacking and the oil is produced by pumping. The Cowden anhydrite member in the lower part of the Salado salt is believed to be the youngest reliable structural marker. It is believed that much of the structural adjustment that produced closure in the Salt Lake pool occurred during middle Salado time. Therefore, in searching for new pools within this area, the thickening and thinning of the Salado should be carefully studied. Isopach maps of the interval from the top of the Rustler anhydrite to the top of the Cowden anhydrite are very helpful in localizing structure. Isopach maps in the interval from the top of the Cowden to the top of the pay may be very useful in predicting pay characteristics.

The methods which were checked one against the other in locating the Salt Lake pool are given herewith in the order used.

1. Regional contouring on a bed below the base of the salt.
2. Preparation of isopach maps on the salt section.
3. Survey of local area by torsion balance.
4. Survey of local area by soil analysis.

39. MALCOLM C. OAKES, Oklahoma Geological Survey, Norman, Oklahoma
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Upper Des Moines and Lower Missouri Rocks of Northeastern Oklahoma and Southeastern Kansas

Four major subdivisions of the Pennsylvania, separated by unconformities, are generally recognized in Oklahoma. From the base upward they are: Morrow, Des Moines, Missouri, and Virgil. The Morrow is not present in Kansas. Rocks herein discussed lie in the upper part of the Des Moines and lower part of the Missouri, and thus, roughly, in the middle part of the Pennsylvanian.

The unconformity between the Des Moines and the Missouri is indicated by absence of some Des Moines beds in northeastern Oklahoma and southeastern Kansas and by erosion and channeling of others. It is further indicated by a northward progressive overlap in the overlying basal Missouri beds, well shown in the Seminole formation of Oklahoma, whose lower part does not extend into Kansas but whose uppermost part is continuous with the Hepler sandstone of Kansas. The Checkerboard limestone of Oklahoma has been mapped into Kansas, and is the same as the limestone overlying the Hepler sandstone. Rocks in Kansas lying between the Checkerboard limestone, below, and the Dennis formation, above, exhibit marked facies changes as they extend southward into Oklahoma. Limestones disappear and shales are less dark and more sandy. The limestones have been mapped with care to their southernmost extent.

40. PHIL F. MARTYN, Houston Oil Company of Texas, Houston, Texas
The Greta Sands of South Texas
41. JOHN C. POOLE, Consulting Geologist, Corpus Christi, Texas
The Coletto Creek Field, Victoria County, Texas
42. W. K. ESGEN, Consulting Geologist, Houston, Texas