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
sils 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 25 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 lime­
stone 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 care­
fully 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 pre­
dicting 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

J. M. JEWETT, State Geological Survey of Kansas, Lawrence, Kansas

Upper Des Moines and Lower Missouri Rocks of Northeastern Oklahoma and South­
eastern 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 dis­
cussed 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 ab­
ence 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, be­
low, and the Dennis formation, above, exhibit marked facies changes as they extend
southward into Oklahoma. Limestones disappear and shale 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