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Petroleum geology of southwestern New Mexico

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This is one of many related papers that were included in the 1970 NMGS Fall Field Conference Guidebook.

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PETROLEUM GEOLOGY OF SOUTHWESTERN NEW MEXICO

By

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Hachita, New Mexico

Oil and gas exploration in southwestern New Mexico is favored by an excellent stratigraphic section. 15,000 feet of Paleozoic and Cretaceous marine beds lie between Precambrian granite and Cretaceous terrestrial rocks. The Pennsylvanian-lower Permian Horquilla Limestone, over 3000 feet thick, has shelf, reef, and basin facies. Higher Permian dolomites include evaporites and several types of porosity. Cretaceous limestone, rich in marine shells, contains many bioherms.

Geologic structures present exploration problems as well as providing possible oil traps. "Laramide" structures include folds, great overthrust faults, high-angle faults, and belts of igneous intrusions. Basin and Range structures are mainly normal faults flanking the mountain ranges. As there was no significant lateral movement on these faults,

geologic features exposed in mountains can be expected to continue under the downfaulted adjacent valleys.

Despite the difficult structural problems, the favorable stratigraphy of the region is encouraging to oil and gas exploration.

Editor's Note: This *article is an* abstract that was *sent to* Mr. John M. Cys of *Midland, Texas* for informal publication in the *West Texas Geological Society* newsletter. *Unfortunately, Zeller* was killed in a *plane crash* two weeks before he was to have *given a* talk on this subject to the *WTGS*. *Mr. Cys kindly* sent this abstract to the *NMGS* for publication in the *Guidebook*.



View northnorthwest from Alamo Hueco Mountains showing Big Hatchet Mountains in right middle ground and U-Bar Ridge of Lower Cretaceous reef limestone in left middle ground. Tertiary volcanic rocks of Alamo Hueco Mountains in foreground have gentle dips. Animas Mountains and Playas Valley in left distance.

(Photograph by Zeller)



View south from Big Hatchet Peak showing large southeast-plunging syncline (U-Bar Ridge) rimmed by Lower Cretaceous reef limestones in middle ground. Limb of adjoining anticline to southwest (right). Alamo Hueco Mountains in background. Tertiary volcanic rocks exposed in the Alamo Hueco Mountains are typical of volcanics over parts of the Lower Diamond A Ranch area in that they lie with slight to great angular unconformity on older rocks and there appears to be little correlation with intense folding in pre-Tertiary rocks and the more gentle folding of the Tertiary volcanic rocks.

(Photograph by Zeller)



View northwest toward the south end of the Animas Mountains from N.M. Highway 79 in eastern San Luis Pass. White Water Mountains to the south; Culberson Peak just out of view to left. Playas Valley to right (east). All the rocks in this view are Tertiary volcanics. *(Photograph by Wengerd)*