

The presence of facies in the South Plains syncline and the Midland basin similar to those of Oklahoma led to the adoption of Oklahoma nomenclature in West Texas. It is used in part in this paper. The El Reno group with its basal sandstone, the San Angelo, is the red clastic time equivalent of the San Andres and its basal sandstone, the Glorieta. By subsurface correlations the Whitehorse group is traced to its surface outcrop, west of Carlsbad, and is tied into Lang's Chalk Bluff formation. To the south it is traced to the Glass Mountains, where it appears to be equivalent to the Gilliam formation. Sediments of volcanic origin are present in the Leonard, San Andres and their time equivalents, gradually disappearing to the north. They are also present in the Whitehorse in its southern development.

Unconformities are recognized as the best time markers because of the changing facies. By this means the base of the Permian is found near the middle of the Cisco, as described by Plummer and Moore, and at the base of the Wolfcamp and Abo. The unconformity at the base of the Leonard of the Glass Mountains is represented on the east rim of the basin by a change in sedimentation. A conglomerate, 300 feet below the base of the Word, appears to be equivalent to the base of the El Reno group, the San Andres and the Delaware Mountain formation. An unconformity exists at the base of the Whitehorse along the entire length of the east rim of the basin. In the Glass Mountains it appears to be represented by a hiatus at the base of the Gilliam. Eleven hundred feet below the top of the Delaware Mountain formation a break in deposition has been reported which may represent this unconformity. While the lower Castile was being deposited in the southwestern portion of the basin, a hiatus occurred in the remaining areas. An unconformity at the base of the upper Castile and the Quartermaster is indicated in several areas on the east rim of the basin by a conglomerate at the base of the latter.

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The Monument field is in east-central Lea County, southeastern New Mexico, and at the present time represents the northernmost producing area of the Hendrick-Jal-Cooper-Eunice trend of Winkler County, Texas, and Lea County, New Mexico. Regionally, the structure is closely related to this same trend, but is locally developed as a broad anticlinal fold in contrast to the rather narrow anticlinal ridges to the south. Production is from porous dolomitic limestone of Middle Permian age and is found at an average depth of 3,950 feet. A horizontal oil zone common to the field and approximately 150 feet in thickness is found between the subsea depths of minus 200 and a common water table of minus 350. Since the oil zone is horizontal and there is considerable structural relief, production is found through a stratigraphic range of several hundred feet. A definite relationship exists between structural position and productivity. Productive limits are defined off structure by the absence of porosity above the water table. Folding occurred at intervals during Middle and Upper Permian time, but the major movement was post-Rustler in age. Prior to July 1, 1938, a total of 473 wells, each on a 40-acre unit, had been drilled, and since the field was discovered early in 1935 it had produced under proration approximately 19,750,000 barrels of oil.