

# DISTRIBUTION AND STRATIGRAPHY OF UPPER PENNSYLVANIAN ROCKS IN THE TIJERAS CANYON AREA, CENTRAL NEW MEXICO

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Investigations of the Pennsylvanian System in central New Mexico during the past two decades have led to a stratigraphic nomenclature that appears to be applicable over a large area of the state, from the Sierra Oscura of Socorro County northward to the Sandia Mountains of Bernalillo County, a transect of about 150 km. Thus, Middle and Upper Pennsylvanian (Atokan-Virgilian) marine and marginal-marine strata are assigned to the Sandia Formation (containing a relative abundance of siliciclastic deposits), the overlying Gray Mesa Formation (dominantly carbonate facies), and the Atrasado Formation (alternating siliciclastic- and carbonate-dominated intervals). A number of intraformational units (members) have been identified, with eight members in the Middle-Upper Pennsylvanian Atrasado Formation presently recognized. An uninterrupted section of the Pennsylvanian System is exposed in Tijeras Canyon east of Albuquerque, NM, along a prominent, NE-SW trending ridge ("Tijeras hogback"), which runs along the eastern side of the Tijeras fault zone for approximately 5 km to the east of I-40 and south of Seven Springs. Because these rocks have provided the raw material for the production of Portland cement since the 1950s, geologists at the cement plant in Tijeras, NM, have long had a practical incentive to characterize and delineate the distribution of Pennsylvanian stratigraphic units in a 10 km<sup>2</sup> area extending south of the village. The cement quarries are developed in the Atrasado Formation, and the informal lithostratigraphic scheme developed by geologists at the cement plant is similar to the formal, eight-member division of the Atrasado Formation in current use (the industrial classification consists of nine lithostratigraphic members, rather than eight). Geologic mapping by geologists at the cement plant beginning in the late 1950s produced a detailed interpretation of the distribution of Upper Pennsylvanian strata in the vicinity of the quarries, thus providing basic structural information for an area to the east of the Tijeras fault zone that has received little detailed attention in published map compilations. A measured section of the Pennsylvanian succession across the Tijeras hogback yields a thickness estimate of 356 meters (Sandia- 56 m, Gray Mesa- 68 m, Atrasado- 232 m). Mississippian? redbeds and dolomitic mudstone (~20 m thick) are present between the Sandia Formation and Proterozoic basement on the steep western side of the hogback, and the Atrasado Formation is overlain by siliciclastic and carbonate facies of the transitional Pennsylvanian-Permian Bursum Formation in exposures along Highway 337 near the Tijeras ranger station and in a quarry a few hundred meters southwest of the cement plant ovens. The fact that industry geologists independently developed an internal lithostratigraphic classification of the Atrasado Formation essentially identical to the subdivisions recognized by university and museum geologists is confirmation of the ready recognition and utility of these subdivisions in regional stratigraphy, mapping and economic geology.