

STRUCTURAL GEOLOGY OF BLACK GAP AREA,  
BREWSTER COUNTY, TEXAS

by

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ABSTRACT

The outcropping strata of the Black Gap area are principally Cretaceous, but include Tertiary volcanic rock and Quaternary alluvium. No rocks older than the Cretaceous Glen Rose Limestone crop out within the map area, although Paleozoic strata of the Ouachita System are exposed near the northwest corner.

The area is on the plunging northwest end of the Serrania del Burro and astride the frontal and interior zones of the Ouachita System. To the north, northwest-trending monoclines and an east-trending igneous belt border the Marathon Basin; to the south lies the block-faulted and reverse-faulted eastern margin of the Big Bend structural belt.

The mosaic of structural features is the result of several events. Uplift of the Sierra del Carmen followed by decollement to the northeast across the Black Gap area formed the asymmetric Stillwell anticline and other folds. Rejuvenation of northeast-trending Paleozoic faults is probably the cause of the northeast-striking Dove Mountain Ranch anticline and associated faults. The re-occurrence of northwestward thrusting of the underlying Paleozoic strata, possibly resulting from sub-crustal activity, compressed the strata, forming conjugate shear sets striking approximately N. 20° W. and N. 75° W. in the massive Cretaceous limestones. Release of compression resulted in block faulting along the zones of weakness set up by the compression. A left-lateral rift movement accompanied the normal faulting.