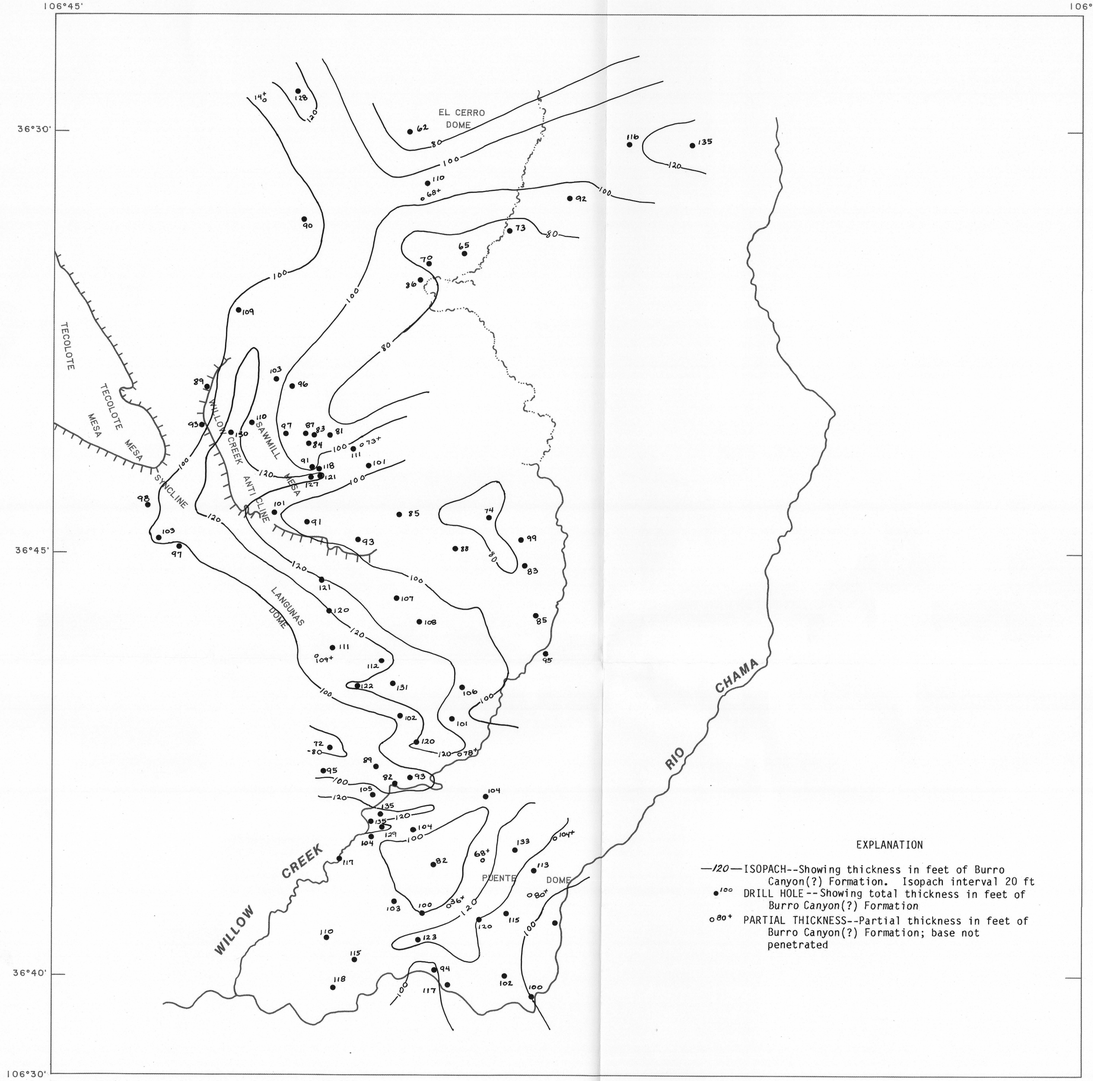
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF-1496-C




EXPLANATION

—120— ISOPACH--Showing thickness in feet of Burro Canyon(?) Formation. Isopach interval 20 ft

● DRILL HOLE--Showing total thickness in feet of Burro Canyon(?) Formation

○ PARTIAL THICKNESS--Partial thickness in feet of Burro Canyon(?) Formation; base not penetrated

Base modified from U.S. Geological Survey 1:62,500
Chama, Tierra Amarilla, 1955

SCALE 1:62 500

1 ½ 0 1 2 3 4 MILES

1 .5 0 1 2 3 4 KILOMETERS

ISOPACH MAP

NEW MEXICO

## DISCUSSION

In the Chama Basin a sequence of conglomerate, sandstone, and red, gray-green, and pale-purple mudstone occurs stratigraphically between the Upper Jurassic Morrison Formation and Upper Cretaceous Dakota Sandstone. This stratigraphic interval has been called the Burro Canyon Formation by several workers (Craig and others, 1959; Smith and others, 1961; Saucier, 1974). Although similarities in lithology and stratigraphic position exist between this unit and the Burro Canyon Formation in Colorado, no direct correlation has been made between the two. For this reason the unit in the Chama Basin is called the Burro Canyon(?) Formation.

The Burro Canyon(?) Formation of Early Cretaceous age in the Chama Basin is composed primarily of conglomerate and sandstone containing thin red and green shale and mudstone lenses. Conglomerate is usually confined to the lower half of the formation. Mudstone and shale are sparse in the lower two-thirds of the formation but become more abundant, locally, in the upper one-third. The Burro Canyon(?) is unconformably overlain by the Upper Cretaceous Dakota Sandstone and unconformably overlies the Upper Jurassic Brushy Basin Member of the Morrison Formation.

Isopach and structure contour maps of the Burro Canyon(?) Formation were prepared using data primarily from geophysical and lithologic logs made available by the Anaconda Company. The geophysical logs include gamma, spontaneous potential, and resistivity logs. Subsurface drill-hole data were integrated with surface geologic data from Landis and Dane (1967) and Muehlberger (1967) in preparing the structure contour map. Strike and dip data and faults shown on their maps were used as aids in interpreting the subsurface orientation of the top of the Burro Canyon(?) Formation as determined from geophysical logs.

The isopach map of the Burro Canyon(?) Formation indicates a range in thickness from about 65 to about 137 ft for the formation. In addition, it shows that over short distances the variation in thickness of the formation can be pronounced. Most of the variation is attributed to relief at the bottom of the formation. A rolling type of topography at the base of the Burro Canyon(?) is interpreted by the author to represent an erosion surface cut into the top of the Brushy Basin Member of the Morrison Formation at some time prior to deposition of the Burro Canyon(?). Intertonguing of the Burro Canyon(?) and Brushy Basin has not been observed in outcrop or subsurface studies. The remaining variation in total thickness of the Burro Canyon(?) is attributed to erosion of the top of the formation preceding deposition of the Dakota Sandstone. Relief on the pre-Dakota erosion surface is relatively much less than that at the base of the Burro Canyon(?).

The structure map contoured on the top of the Burro Canyon(?) Formation is in general agreement with structure maps prepared by Landis and Dane (1967) and Muehlberger (1967). Structurally this area is extremely complex; structural features include domes, anticlines, synclines, as well as numerous faults.

## REFERENCES

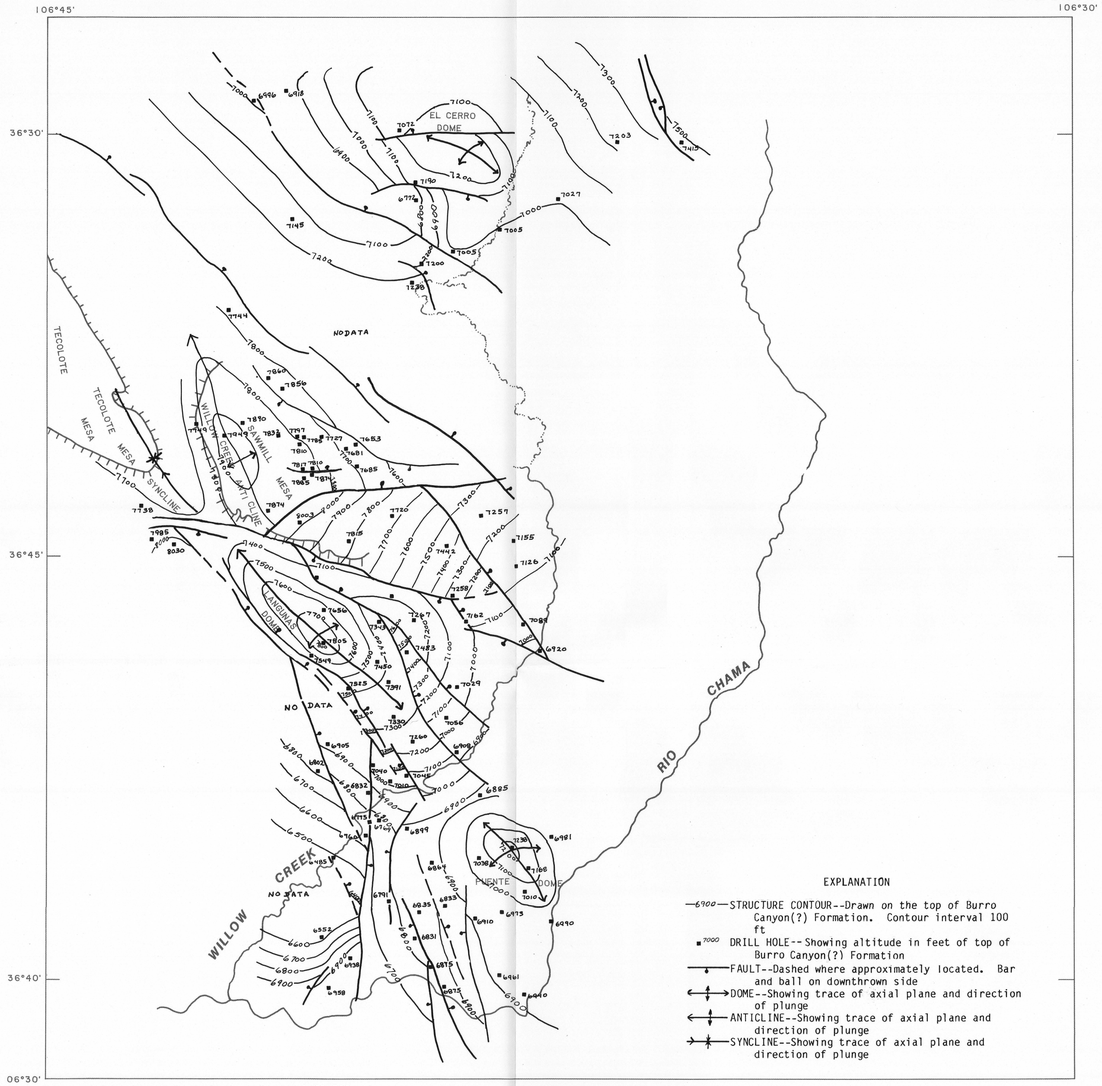
Craig, L. C., and others, 1959, Measured sections of the Morrison and adjacent formations: U.S. Geological Survey Open-File Report, 700 p.

Landis, E. R., and Dane, C. H., 1967, Geologic map of the Tierra Amarilla quadrangle, Rio Arriba County, New Mexico: New Mexico Bureau of Mines and Mineral Resources Geologic Map 19, scale 1:62,500.

Muehlberger, W. R., 1967, Geology of Chama quadrangle: New Mexico Bureau of Mines and Mineral Resources Bulletin 89, 114 p.

Saucier, A. E., 1974, Stratigraphy and uranium potential of the Burro Canyon Formation in the southern Chama Basin, New Mexico, in Siemers, C. T., ed., New Mexico Geological Society 25th Field Conference, Guidebook of Ghost Ranch central-northern New Mexico, p. 211-219.

Smith, C. T., Budding, A. J., and Pitrat, C. W., 1961, Geology of the southeastern part of the Chama Basin: New Mexico State Bureau of Mines and Mineral Resources Bulletin 75, 57 p.




EXPLANATION

—6900— STRUCTURE CONTOUR--Drawn on the top of Burro Canyon(?) Formation. Contour interval 100 ft

■ 7000 DRILL HOLE--Showing altitude in feet of top of Burro Canyon(?) Formation

—— FAULT--Dashed where approximately located. Bar and ball on downthrown side

DOME--Showing trace of axial plane and direction of plunge

ANTICLINE--Showing trace of axial plane and direction of plunge

SYNCLINE--Showing trace of axial plane and direction of plunge

Base modified from U.S. Geological Survey 1:62,500
Chama, Tierra Amarilla, 1955

SCALE 1:62 500

1 ½ 0 1 2 3 4 MILES

1 .5 0 1 2 3 4 KILOMETERS

STRUCTURE CONTOUR MAP

NEW MEXICO

# ISOPACH AND STRUCTURE CONTOUR MAPS OF THE BURRO CANYON (?) FORMATION IN THE CHAMA-EL VADO AREA, CHAMA BASIN, NEW MEXICO

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