



Base from U.S. Geological Survey
Aztec, 1954; Ratón, 1954

MAP OF QUATERNARY AND PIOCENE FAULTS IN THE EASTERN PART OF THE AZTEC 1° X 2° QUADRANGLE AND
THE WESTERN PART OF THE RATÓN 1° X 2° QUADRANGLE, NORTHERN NEW MEXICO

By

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DESCRIPTION OF MAP UNITS

PLEISTOCENE AND PIOCENE BASIN-FILL AND HOLOCENE AND PLEISTOCENE SURFICIAL DEPOSITS—Young basin-fill deposits (early Pleistocene to Pliocene) consisting of weakly to moderately consolidated, sandy stream alluvium; silt to sandy, gravelly piedmont-slope alluvium; and locally derived sand to boulder gravel that forms alluvial fans. These sediments include the Pliocene Ancha and Puye Formations as mapped in the Española basin. The younger part of the basin fill is interbedded locally with flows of Pliocene Servilleta Basalt. The surficial deposits are Holocene to middle(?) Pleistocene and consist mainly of strath and cut-and-fill terrace, piedmont-slope, and local alluvial-fan and eolian sediment. These deposits are commonly less than 10 m thick and either overlie the basin-fill deposits or fill channels cut into them. However, near mountain fronts, coarse-grained alluvium forms thick alluvial fans that thin outward into broad piedmont slopes

PLEISTOCENE AND PIOCENE VOLCANIC ROCKS—Mainly basaltic flows of the Pliocene Servilleta Basalt and local Pliocene and Pleistocene rhyolitic to rhyodacitic domes and flows less than 5 Ma (age determinations shown in table 1 of map)

Vents, including cinder cones, explosion craters (saars), and plugs, are shown by asterisks

CENOZOIC BASIN-FILL DEPOSITS AND TERTIARY TO PRE-CAMBRIAN BEDROCK—Miocene basin-fill deposits of the lower part of the Santa Fe Group (Chamita and Tesuque Formations of Galusha and Black, 1971) and Miocene and older sedimentary, volcanic, plutonic, and metamorphic rocks (bedrock). These rocks are exposed mainly in intracrift horsts of the southern San Luis basin (Taos Plateau), throughout the Española basin, and along and outside the margins of the modern Rio Grande rift

CONTACT

ANTICLINE—Dashed where inferred

SYNCLINE—Dashed where inferred

FAULT—Solid line where age of most recent movement is known; dashed line where age is inferred; dotted line where fault is suspected or a known fault is concealed. Circled numbers correspond to faults described in table 2 and to discussion of prominent faults in pamphlet. Although there are many faults in the map area, only faults having proven Pliocene or Quaternary displacement are shown. Most faults in areas of Miocene and older bedrock are not shown because these faults commonly are not overlain by deposits young enough to prove Quaternary or Pliocene fault movement or other deformation

Age of most recent fault movement (shown by symbol on the down-dropped side of the fault)

Holocene (past 10 ka)

Late Pleistocene (10–150 ka)

Middle Pleistocene (150–750 ka)

Early Pleistocene (0.75–2.0 Ma) or Pliocene (2.0–5.0 Ma)

Age unknown

Amount of surface offset—The amount of vertical surface offset (throw, in meters) along a fault is shown in combination with a symbol for the age of deposit along the fault. These parameters are shown in the form of 5/mp or A/mp where the number (5) or capitalized letter (A) is the amount of offset, and the lower-case letters (mp, for example) designate the age category of the faulted deposits. Age categories are the same as for recency of fault movement.

Specific amounts of offset (numerical values) are generally derived from topographic profiles of fault scarps, whereas ranges in values are commonly derived from topographic map data, from published estimates of offset, or by photogrammetric methods. Range in age of deposits is shown in places, for example, as 1–mp, late to middle Pleistocene

Ranges in offset

Age of deposits

A 0–5 m h Holocene

B 5–20 m lp Late Pleistocene

C 20–50 m mp Middle Pleistocene

D 50–150 m ep Early Pleistocene to Pliocene

E More than 150 m x Quaternary or Pliocene, undivided

X Unknown amount (h) Unfaulted deposit (Holocene)

▲ 48 [1] SAMPLE LOCALITY—Showing potassium-argon age determination (in a.y.) and reference number (in brackets, see table 1) for dated Pleistocene and Pliocene volcanic rocks in the map area. Does not include age determination for rocks of the Jemez volcanic field, for which an age determination was previously shown by Luedke and Smith (1978)

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Table 1.—Potassium-argon age determinations of Pliocene and Pleistocene volcanic rocks in the map area

[Does not include ages in the Jemez volcanic field that are shown by Luedke and Smith (1978)]

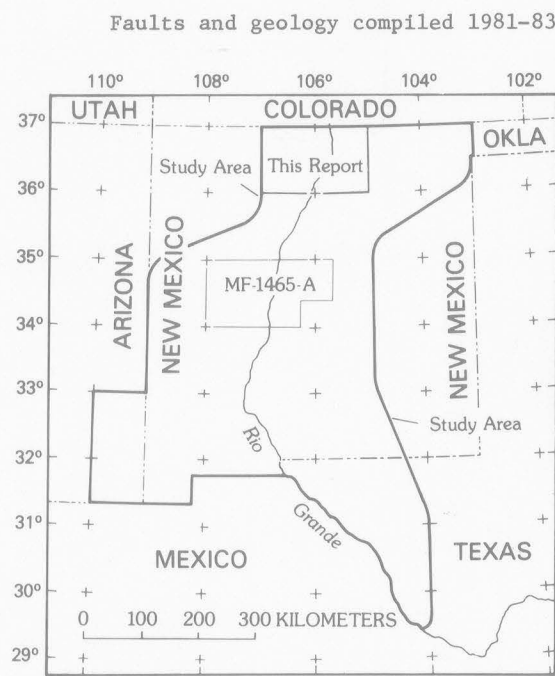
No. on map	K-Ar age (Ma)	Name of sampled site or rock unit	Rock type	References	Sample No.
1	.24 ± 0.06	Tierra Amarilla—	Basalt—	Lipman and Mehrt (1975).	68L-92
2	.24 ± 0.14	Upper canyon of Rio Brazos.	—do.—	—do.—	68L-101
3	.81 ± 0.15	—do.—	—do.—	C. R. Scott and R. F. Marvin, written commun., 1984.	D2891R
4	1.10 ± 0.04	Cerro Gato(?)—	—do.—	—do.—	D2813R
5	.96 ± 0.03	Red Hill—	—do.—	—do.—	D2814R
6	3.12 ± 0.17	San Antonio Mountain.	Rhyodacite.	Lipman and Mehrt (1979).	67L-30A
7	2.24 ± 0.15	NE of San Antonio Mountain.	Basaltic andesite.	—do.—	68L-123
8	3.35 ± 1.48	Servilleta—	Basalt—	—do.—	68L-114
9	1.84 ± 0.72	Pinabetsos Peaks—	Basaltic andesite.	—do.—	68L-116
10	3.91 ± 0.27	No Agua Peaks—	Rhyolite—	—do.—	66L-234A
11	4.8	—do.—	—do.—	Lipman and others (1970).	Piselon-track age.
12	3.52 ± 0.20	Cerro del Aire—	Olivine andesite.	Lipman and Mehrt (1979).	67L-66
13	2.31 ± 0.14	Cerro de la Olla—	—do.—	—do.—	67L-68
14	4.84 ± 0.24	Guadalupe Mountain.	Rhyodacite	—do.—	67L-3
15	3.75 ± 0.77	Servilleta—	Basalt—	—do.—	68L-121
16	3.6 to 4.5	—do.—	—do.—	Ozima and others (1967; suite of samples).	None.
* 16A	4.6 ± 0.6	—do.—	—do.—	Baldrige and others (1980).	UAKA-72-65
17	4.5	—do.—	—do.—	—do.—	Two samples.
18	2.8 ± 0.7	Cañones Mesa—	—do.—	Manley and Mehrt (1981).	77-9-1
19	2.8 ± 0.5	—do.—	—do.—	—do.—	78-6-3-1
20	3.1 ± 1.0	Unnamed mesa—	—do.—	—do.—	77-8-28-4
21	3.2 ± 0.1	Mesa de Abiqua—	—do.—	Baldrige and others (1980).	UAKA-77-85
22	4.8 ± 0.1	Sierra Negra—	—do.—	—do.—	UAKA-77-93
23	2.78 ± 0.44	Servilleta—	—do.—	Manley (1976).	72-8-6

* Age of 4.6 Ma from uppermost Servilleta Basalt (number 16A) is in conflict with ages of 3.6–4.5 Ma determined from stratigraphically lower rocks by Ozima and others (1967; number 16).

Table 2.—Location, recency of movement, and size of some major faults in the map area

[Age symbols: eh, early Holocene; lp, late Pleistocene; mp, middle Pleistocene; ep, early Pleistocene to Pliocene. Symbol e indicates scarp height estimated from 7 1/2-minute topographic map. Types of fault movement determined from scarp morphology, age determination of faulted deposits, and/or map pattern. <, less than; >, greater than]

No. on map	Fault name(s)	Location	Age of most recent movement	Measured scarp heights (m)	Age of displaced deposits	Fault length (km)	Type of fault movement	References
1	Mesa—	E. of Ute Mountain—	lp—	2–5e	mp-lp(?)	22	Recurrent—	Colton (1976); Burroughs (1978); Kirkham and Rodgers (1981).
2	Sunshine Valley (new name).	E. of Sunshine, 14 km SW. of Costilla.	lp—	<5e	mp(?)–lp—	2–13	Unknown—	Colton (1976).
3	Cedro Canyon (new name).	5–12 km S. of Costilla, E. of N. Mex. Hwy 85.	lp—	2–14	mp-lp—	7	Recurrent—	Upson (1939).
4	Urraca Ranch (new name).	12 km S. of Costilla at Urraca Ranch.	lp—	17	mp-lp(?)	2	Recurrent—	Do.
5	Taos Pueblo (new name).	North part— 2 km NE. of Taos Pueblo	lp—	2–18	ep-lp(?)	5	Recurrent and segmented.	None.
	South part—	2 km E. of Taos, N. to Rio Pueblo de Taos.	lp—	2–7	mp(?)–lp	5		Do.
6	Cañon (new name).	E. of Taos, from Cañon S. to Talpa.	lp to eh(?)	2–5	ep(?)–lp	6	Recurrent—	Lambert (1966).
7	Los Cordovas (new name).	N. of Los Cordovas, 10 km W. of Taos.	mp(?)—	<15–30e	ep—	<8–12	Unknown, many faults.	Do.
8	Bahudo (Picuris frontal fault).	Hondo Canyon, SW. along Rio Grande, coincides with Jemez lineament.	lp(?)—	7–15	ep-mp—	>32 to 75	Recurrent, reverse to normal.	Lambert (1966); Muehlberger (1979).



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