STATE BUREAU OF MINES AND MINERAL RESOURCES

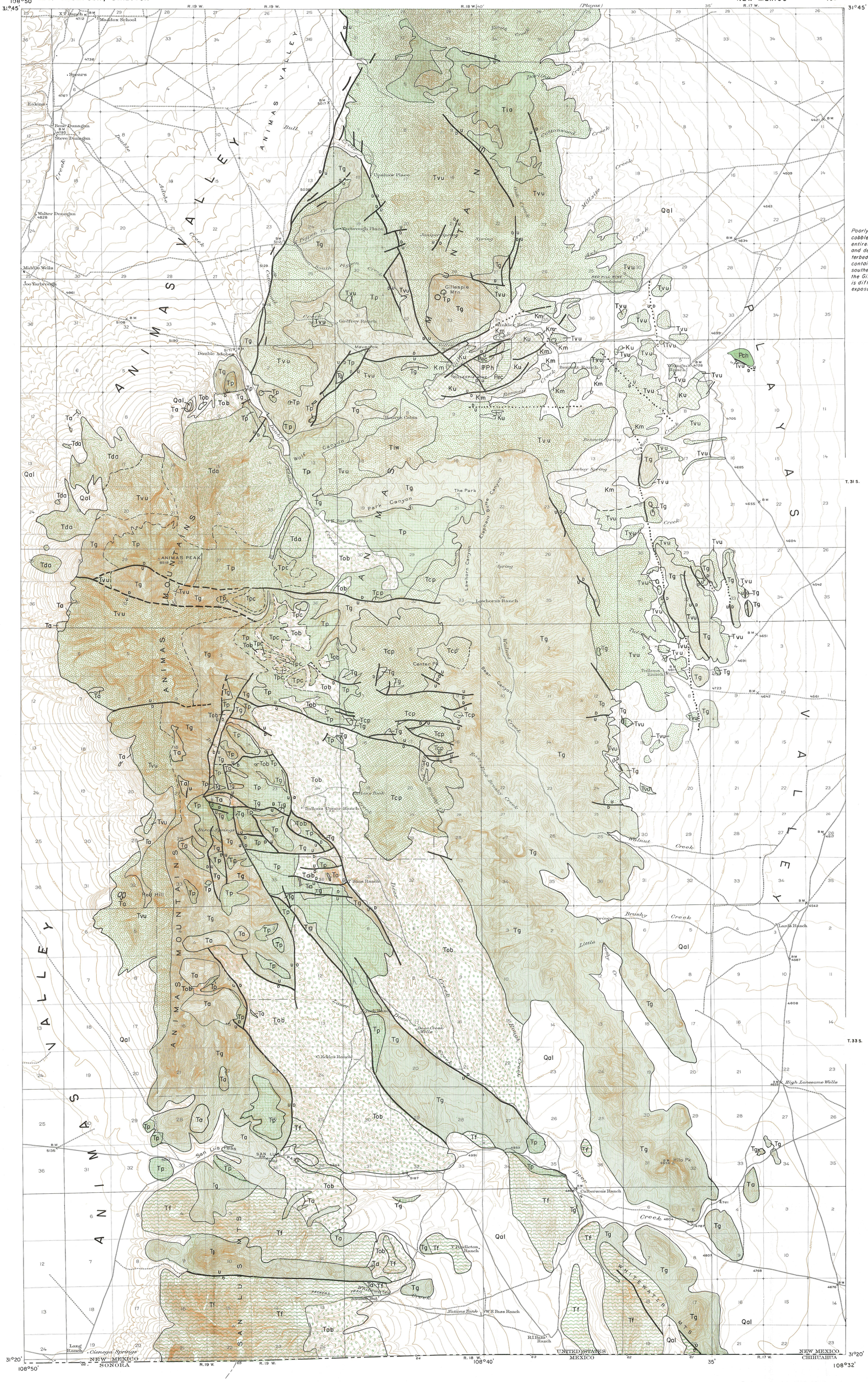
A.J. THOMPSON, DIRECTOR

NEW MEXICO INSTITUTE OF MINING AND TECHNOLOGY

E.J. WORKMAN, PRESIDENT

GEOLOGIC MAP 17

GEOLOGY SOUTHERN ANIMAS MOUNTAINS NEW MEXICO

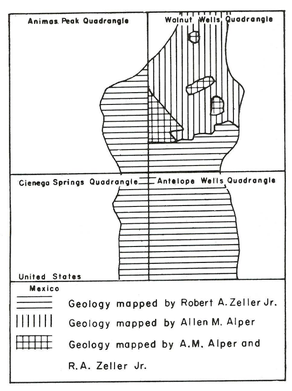


Base from parts of Walnut Wells, Antelope Wells, Animas Peak and Cienega Springs quadrangles; surveyed by the U.S. Geological Survey in cooperation with the War Department, 1917-1918.

Geology mapped in 1954-60. Geologic cartography by R. Molina.

RECONNAISSANCE GEOLOGIC MAP OF SOUTHERN ANIMAS MOUNTAINS

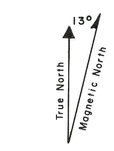
By Robert A. Zeller, Jr.



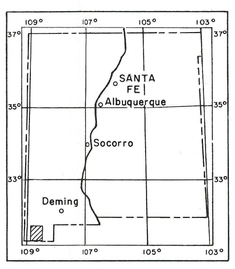
Scale 1/62500

1 0 1 2 3 Miles

1962



Approximate mean declination 1959



EXPLANATION

QUATERNARY

Qal — Alluvium

ANGULAR UNCONFORMITY

Ta — Andesite and basalt

Black aphanitic, locally vesicular andesite and basalt; occurs chiefly in flows but also in dikes. Bed of basalt lapilli and bombs found locally at base of flows. Flows may be genetically related to basalt flows in OK Bar Conglomerate. Same formation is shown on map of Dog Mountains quadrangle. (Geologic Map B)

ANGULAR UNCONFORMITY

TERTIARY

Tob — * OK-Bar Conglomerate

Poorly sorted, weakly consolidated boulder and cobble conglomerate and sandstone composed entirely of locally derived volcanic detritus and deposited upon deeply eroded surface. Interbedded thin basalt flows and beds of pumice containing nodular obsidian inclusions occur in southern part of area. This formation resembles the Gila Conglomerate to the north. Formation is difficult to distinguish from alluvium in some exposures.

Tpc — * Pine Canyon Formation

Latitic flows and agglomerate; in part, equivalent to OK Bar Conglomerate and Double Adobe Latite.

Tda — * Double Adobe Latite

Latite flows; rock is dark gray to dark purple, weathers rust brown, contains large, clear euhedral plagioclase phenocrysts and small green phenocrysts of ferromagnesian minerals; has aphanitic groundmass which is locally spherulitic

EROSIONAL UNCONFORMITY

Tp — * Park Tuff

White, welded rhyolite tuff with phenocrysts of clear quartz and iridescent sanidine and with pumaceous lithic lenses; sandstone bed commonly found at base; formation thin but persistent.

Tf — Felsite

Light-gray siliceous flow-banded felsite in southern part of area; believed to be generally equivalent to Park Tuff, although in one place, where both formations are in contact, felsite overlies Park Tuff.

EROSIONAL UNCONFORMITY

Tcp — * Center Peak Latite

Flow of light-gray latite with conspicuous acicular hornblende phenocrysts.

EROSIONAL UNCONFORMITY

Tg — *Gillespie Tuff

Pink, welded, quartz latite tuff composed largely of quartz and feldspar phenocrysts and rich in lithic fragments. The formation is generally thick, is uniform in composition and texture throughout, is well indurated, and is commonly exposed in bold columnar-jointed cliffs. This formation is recognized by Zeller in the southern Peloncillo Mountains and in the Alamo Hueco Mountains. In the latter area (Geologic Map B) it is shown as Tlc - coarse-grained quartz latite.

UNCONFORMITY (?)

Tiw — *Walnut Wells Monzonite

Reddish monzonite porphyry which is interpreted by Alper as the filling of an igneous vent.

Tia — *Animas Monzonite

Pink-gray quartz monzonite porphyry with various proportions of phenocrysts and aphanitic to finely-phaneritic groundmass; occurs as stock.

Tvu — Undifferentiated rock units, chiefly of volcanic origin

All non-intrusive Tertiary rock units which underlie Gillespie Tuff; includes rhyolite breccia, quartz latite breccia, quartz latite tuff, andesite, sandstone, and conglomerate composed mostly of volcanic detritus.

ANGULAR UNCONFORMITY

LOWER CRETACEOUS

Km — Mojado Formation

Lenticular beds of tan-weathered quartz sandstone interbedded with gray shale. Mostly terrestrial, but upper part includes thin beds of marine limestone. Southeast of Cowboy Spring this formation is conformably overlain by Cretaceous limestone conglomerate, which is included with the Mojado Formation. On map of Dog Mountains quadrangle (Geologic Map B) the Mojado Formation is shown as Ks - Cretaceous sandstone.

Ku — U-Bar Formation

Thin- and medium-bedded gray fossiliferous limestone with interbedded shale. On map of Dog Mountains quadrangle (Geologic Map B) U-Bar Formation is shown as Kl - Cretaceous limestone.

EROSIONAL UNCONFORMITY

PERMIAN

Pch — Concha Limestone

Medium-bedded gray bioclastic limestone rich in chert nodules and silicified brachiopods.

EPITAPH DOLOMITE AND SCHERRER FORMATION ARE NOT EXPOSED

Pec — Earp Formation and Colina Limestone

The Earp Formation consists of brown-weathered siltstone interbedded with gray shale. The Earp Formation is overlain conformably by the Colina Limestone, which is medium-bedded, black, dense, light-gray-weathered limestone and includes a few thin beds of buff-weathered dolomite.

EROSIONAL UNCONFORMITY

PENNSYLVANIAN

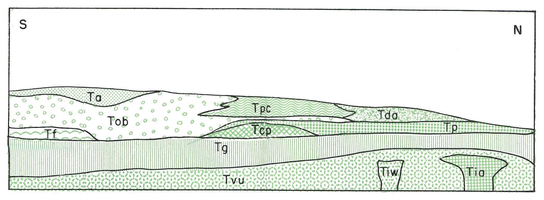
PPh — Horquilla Limestone

Medium- to thick-bedded bioclastic limestone; only upper part exposed.

* Manuscript names of formations to be described by Alper and Zeller

Contact — Approximately located; dashed where existence or position of contact is interpretive.

Fault — Approximately located; dashed where existence or position of fault is interpretive; dotted where concealed. U, upthrown side; D, downthrown side.



Relationship of Tertiary formations in southern Animas Mountains shown schematically