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John E. Kinnaman
Globe, Ariz
1955

UNITED STATES ATOMIC ENERGY COMMISSION

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PRELIMINARY REGIONAL MAPPING IN THE RUBY QUADRANGLE, ARIZONA

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PRELIMINARY REGIONAL MAPPING IN THE RUBY QUADRANGLE, ARIZONA

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PRELIMINARY REGIONAL MAPPING IN THE RUBY QUADRANGLE, ARIZONA

ABSTRACT

Reconnaissance mapping in the Ruby Quadrangle, Arizona, indicates the existence of a complex assemblage of volcanic rocks and associated sediments, divisible into a younger and older series. The young series consists of flat-lying tuffs, lavas, and tuffaceous conglomerates of late Cenozoic (?) age. The extent and structural pattern of these rocks can largely be determined from air photo study. The older series consists of (acidic and intermediate) lavas, tuffs, conglomerates, and associated sediments of Mesozoic (?) age, locally folded and extensively intruded by a dioritic magma. Uranium mineralization is thought to be confined to the acidic lava member of the older series. Further field work will be necessary to determine the extent and structure of the favorable formations.

apparent in the younger beds. Considerable field work will be necessary to establish the extent and relationships of the older series rocks, which were only studied briefly in the current investigation.

The younger series considered to be of late Cenozoic age may be subdivided into two formations, which, in order of increasing age, have been named the Atascosa formation and the Montana Peak formation.

The Atascosa formation, so named because of its prominent outcrops in the Atascosa Range, is the most widespread of the units exposed in the quadrangle and contains the youngest rocks found in the area.

The upper section of the formation consists of coarse conglomerates with some thin interbedded basic lavas. The formation becomes increasingly tuffaceous toward the base and contains interbedded acidic lavas. The tuffaceous beds are thickest in the vicinity of the Atascosa Range and thin toward the east and west. The tuffs for the most part are well-bedded and were probably water-laid. A white tuffaceous unit, up to 500-feet thick at Atascosa Lookout Station, is a cliff-former, readily recognized on the photos and in the field, and was used as a marker horizon. The whole formation is about 800 feet thick near the Atascosa Lookout Station.

The Atascosa formation rests generally conformably, with local disconformity, upon the Montana Peak formation, typically developed at Montana Peak. It consists of rhyolitic lavas, breccias, and tuffs, characterized by a general red or purple color in the field. At Montana Peak the formation is about 800 feet thick.

Below the Montana Peak formation along the Ruby Road on the southwest flank of the Atascosa Range are exposures of gray intermediate (?) lavas and tuffaceous rocks, which are here referred to as the Ruby Road formation. Time did not permit completing the necessary field work to resolve the true nature of this formation (which in places has the appearance of an intrusive rock) and its relationship to rocks above and below. Similar rock types outcrop below the Montana Peak formation on the west side of Montana Peak and north of Ruby. This formation is not differentiated on the accompanying map.

Structure

The Atascosa formation and underlying Montana Peak formation are predominantly flat-lying over wide areas. They are folded into a broad synclinal structure in the western section of the quadrangle, probably due to differential movement along fault zones bounding the structure. The axis of the fold strikes northwest-southeast and plunges gently toward the southeast. The structure dies out toward the southeast as it approaches a north-south fault zone. In the vicinity of Atascosa Peak these beds dip flatly to the north and east, and over the eastern half of the quadrangle dip at low angles (up to 10°) in a general easterly direction.

In contrast to the younger formations discussed above, whose general outcrop pattern and structure can be readily determined from examination of the air photos, the structure of the older formations cannot be unravelled by this technique. In the field the older rocks were seen to have been affected by folding and intrusion not apparent in the younger formations and presumably occurring before these latter were formed. No attempt was made in the present investigation to map these structures except certain shear zones in the mineralized areas.

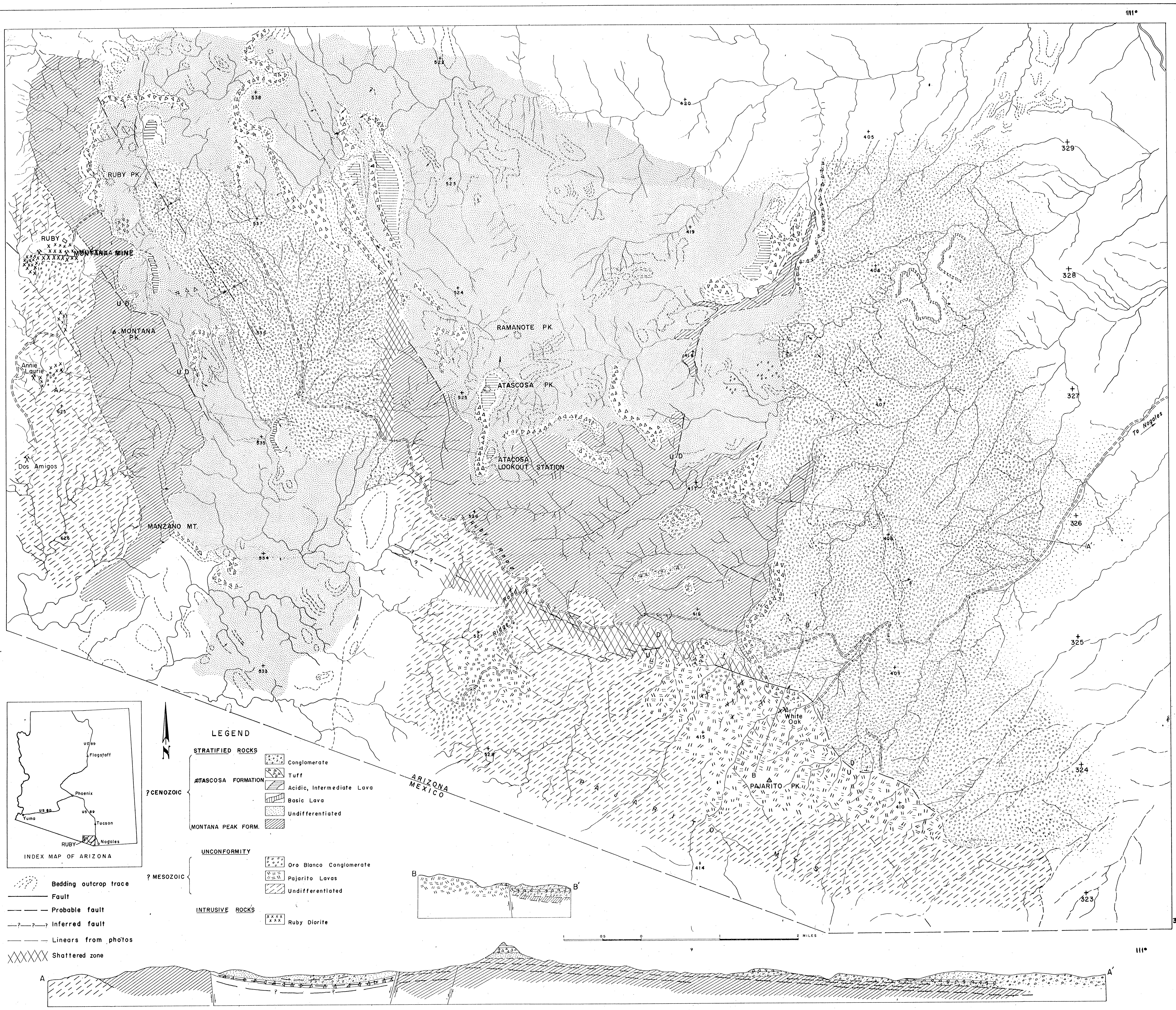
A strong north-west fault zone bounds the north flank of the Pajarito Mountains along which the formations on the south side have been relatively upthrown. The fault appears to die out to the northwest.

Mineralization

Known mineralization is confined to areas of exposure of the older series of formations.

Considerable mining activity was formerly carried on in the Ruby district, which produced appreciable amounts of copper, gold, and cadmium. The Montana mine produced base metals and silver from an east-west shear zone in Oro Blanco conglomerate and Ruby diorite(1). Gold was produced from the Dos Amigos group of workings five miles south of Ruby(2).

on the ground for anomalous radioactivity. The areas of suitable terrain could be tested by airborne equipment. A detailed study of the distribution of metals in the mineralized zones (Ruby Area) might determine whether the uranium is related to a particular metal assemblage and thus serve as a further guide to new occurrences.



RECONNAISSANCE GEOLOGIC MAP
RUBY QUADRANGLE, ARIZONA

PLATE I

Prepared by the U.S.A.E.C.
Division of Raw Materials
1953, By B.P.W. and K.C.C.

U.S.A.E.C. DRM. To Accompany R.M.E. 2009

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