GEOLOGY OF THE POINT OF PINES AREA, SAN CARLOS INDIAN RESERVATION, GRAHAM COUNTY, ARIZONA

By

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The geology of about 125 square miles in the vicinity of Point of Pines, Graham County, Arizona, was mapped to provide a part of the general background for archeological studies being made in that area by the Anthropology Department of the University of Arizona. The area mapped includes parts of the steep southwest and gentle northeast slopes of the Natanes Rim, a tilted fault block in the Central Highlands region of Arizona.

The rocks in the area include Precambrian granite; Cambrian sandstone, mudstone and limestone (730 feet); limestone and associated clastic sedimentary rocks of Devonian (210 feet), Mississippian (1,160 feet, in part repeated by faulting), and Pennyslvanian (180 feet, partial section) ages. Also included is a nearly 4,000-foot-thick complex sequence of volcanic, intrusive, and sedimentary rocks of probable Tertiary and Quaternary age. No rocks of the Precambrian Apache group, the Ordovician Longfellow limestone or the Cretaceous system, all reported in nearby areas, are present.

Rocks of probable Tertiary, Tertiary and Quaternary age have been subdivided into eight units, tabulated in order of increasing age:

	Approximate thickness (feet)
PLEISTOCENE-RECENT:	
Alluvium: unconsolidated to poorly consolidated mudstone, sandstone, and conglomerate deposited along present drainage system.	0 - 20
Unconformity	
QUATERNARY:	
Conglomerate: moderately well-consolidated, composed predominantly of rhyolitic tuff and agglomerate fragments; best developed on back slope and at foot of Natanes Rim; in part faulted against older rocks	0 - 200±
QUATERNARY(?):	
Basalt flows: thin bedded	0 - 100±
Unconformity	
LATE TERTIARY (?):	
Andesite porphyry flows: characterized by large feldspar phenocrysts; forms much of the crest of the Natanes Rim.	200±
Unconformity, erosional	
Welded tuffaceous agglomerate: rhyolitic to felsitic upper members persistent throughout area; forms conspicuous light-colored part of eroded front of Natanes Rim scarp.	150 - 1,200

Sandstone: tuffaceous; cross bedded, eolian, only locally developed. . . . . 0 - 100

Unconformity: angular; relief up to 1,000 feet.

TERTIARY (?):

Basalt and andesite: flows with thin intercalated sandstone and conglomerate lenses; well oxidized; deposited on erosion surface cut on underlying agglomerate and Paleozoic rocks. . . . . 1,000±

Unconformity (?):

Agglomerate: predominantly andesitic in composition; may include mud flows; cut by andesitic dikes and plugs. . . . . 1,000±

Base covered.

On the back slope of the Natanes Rime three erosional surfaces are recognized, in the form of steps successively 10± feet, 35± feet, and 250± feet above the present channel ways.