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APACHE TRAIL URANIUM PROSPECT, WHITE SIGNAL DISTRICT, GRANT COUNTY, NEW MEXICO

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Trace Elements Memorandum Report 121

UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

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UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

APACHE TRAIL URANIUM PROSPECT, WHITE SIGNAL DISTRICT, GRANT COUNTY, NEW MEXICO

by

Herman L. Bauer, Jr.

June 1951

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Trace Elements Memorandum Report 121

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USGS - TEM Report 121

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APACHE TRAIL URANIUM PROSPECT,

WHITE SIGNAL DISTRICT,

GRANT COUNTY

NEW MEXICO

By

Herman L. Bauer, Jr.

ABSTRACT

The Apache Trail uranium prospect in the White Signal district, Grant County, N. Mex., was mapped by the Geological Survey in May 1950.

Pre-Cambrian granite is cut by a diabase dike and a parallel quartz-hematite vein, both of which strike easterly and dip 60 to 65 degrees north.

Small quantities of copper carbonates and bismuth-gold ore have been mined. The quartz-hematite vein is moderately radioactive and, although no uranium minerals were seen, two samples contained about 0.01 percent uranium. The diabase dike locally contains torbernite. Two samples of diabase contained about 0.04 percent uranium.

INTRODUCTION

The Apache Trail uranium prospect, in sec. 2, T. 20 S., R. 15 W., White Signal district, Grant County, N. Mex. (fig. 1), is an unpatented claim in a school section. It is leased from the state by Mr. Charles

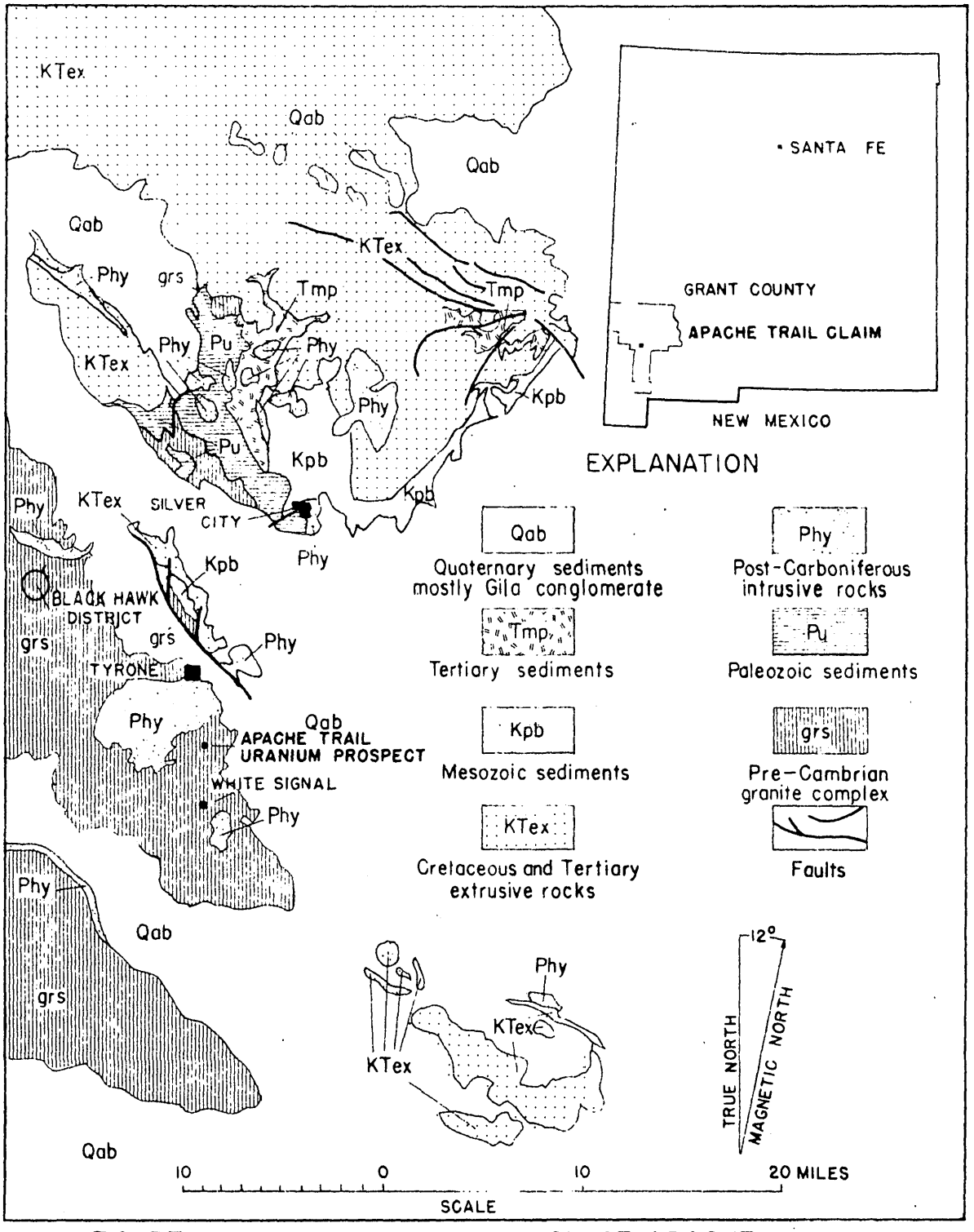

FIGURE 1.— MAP SHOWING LOCATION OF APACHE TRAIL URANIUM PROSPECT, GRANT COUNTY, NEW MEXICO

M. Russell, Box A, Tyrone, N. Mex., and Mrs. Elsie R. Wiley, 1451 South Oakhurst Drive, Los Angeles 35, Calif. The claim is accessible by vehicle according to the following directions: go 2.4 miles north from White Signal, N. Mex.; turn left (west) through gate onto an ungraded road; follow road for two miles to the Apache Trail prospect. White Signal is approximately sixteen miles south-southwest from Silver City, N. Mex., the nearest railroad loading point. There is no water or large timber near the Apache Trail claim.

The claim was originally located for copper about 1890, but the early production, if any, is unknown. Five cars of copper carbonate ore, averaging 5 percent copper and 5 oz. silver per ton, were shipped between 1915 and 1920.

The original claim was abandoned, and the present claim was located for gold in 1927. Bismuth, a common associate of gold in the district, was recognized at pit No. 5 (fig. 2) in the quartz-hematite vein, and fifty tons of ore, averaging 1½ oz. gold per ton and 4 percent bismuth, were shipped. The bismuth in the ore is said to hinder both concentration and smelting of other metals.

A 200-foot vertical shaft and 265 feet of drifts and crosscuts on the 100-foot level were driven in 1932, but the bismuth-gold ore shoot in the vein was never found in these workings. The shaft is inaccessible below the 100-foot level. Prospect pits have been dug at several places along the hematite vein (fig. 2).

H. L. Bauer, Jr., of the U. S. Geological Survey, mapped, sampled, and radiometrically examined the ground surface (fig. 2) and the 100-foot level (fig. 3) during part of three days in May 1950.

GENERAL GEOLOGY

The country rock in the vicinity of the Apache Trail claim is a medium-grained biotite granite of pre-Cambrian age. At the claim, the granite is cut by a fine-grained diabase dike one to two feet thick and a quartz-hematite vein up to 8 feet thick. The diabase dike and the vein are parallel throughout much of their length; they trend easterly and dip 60° to 65° N. (fig. 2). Where exposed, the diabase dike is less than five feet from the hematite vein and they intersect at two places on the surface, but the exposures are too obscure to allow the determination of relative ages. The diabase dike, however, is believed to be older than the vein, because hematite appears to replace parts of the dike in pit No. 5.

A greenish porphyritic dike, perhaps andesite porphyry, is exposed at the eastern end of the claim. The relations of this dike to the hematite vein and to the diabase dike are not known.

A well-defined fault zone is exposed in the east drift and in the easternmost 40 feet of the west drift on the 100-foot level. Fragments of hematite in the fault zone indicate that this faulting is later than

the vein. Fault gouge and slickensides occur along the hanging wall of the diabase dike on the 100-foot level, and other faults are also present in the old copper stope (pit No. 10) and near pits No. 5 and 6.

The granite is fresh except at the old copper stope (pit No. 10) and near the quartz-hematite vein, where it is altered to a soft, fine-grained material for as much as 5 feet from the vein. Farther from the vein the rock is less intensely altered and the original texture of the granite can be recognized. The diabase dike is altered and soft on the 100-foot level and in the various pits on the surface.

RADIOACTIVE DEPOSITS

Two types of radioactive deposits occur on the Apache Trail claim. The larger deposit is the quartz-hematite vein that does not contain visible uranium minerals, and the other deposit is the diabase dike that locally contains visible torbernite.

The quartz-hematite vein is composed of specularite, magnetite, quartz, and a massive dull variety of hematite. Locally gold, copper carbonates, limonite pseudomorphs after pyrite, and lead and bismuth minerals are found in or adjacent to the quartz-hematite vein. The vein is up to 8 feet thick, but locally pinches out; the average thickness is about 3.5 feet. It forms a bold outcrop and can be traced for several thousand feet east and west of the Apache Trail claim. Although no uranium minerals were seen in the quartz-hematite vein, it is moderately radioactive at all places where sulfide minerals were originally present, and locally elsewhere.

Radiometric readings taken along the quartz-hematite vein on the surface and underground ranged from 2 divisions on the 0.2 scale to 5 divisions on the 2.0 scale of a Beckman MX 5 Geiger-Mueller counter with the six-inch probe held one inch from the outcrop. Background readings on granite ranged from 1 to 5 divisions on the 0.2 scale. Radiometric readings in pit No. 1 ranged from 15 on the 0.2 scale to 5 on the 2.0 scale, and a 3.5 foot channel sample cut across the quartz-hematite vein contained 0.012 percent uranium.

Radiometric readings along the hematite vein on the 100-foot level ranged from 15 to 20 on the 0.2 scale, and a three foot sample cut across the vein contained 0.011 percent uranium. (table 1).

The diabase dike is highly radioactive only at the western end of the 100-foot level, where individual, or clusters of flat, green, square crystals of torbernite occur in the fractures and vugs (fig. 3). Two samples, taken across the diabase dike, contained 0.041 and 0.038 percent uranium respectively. Two other samples taken across the drift in diabase and altered granite contained 0.008 and 0.012 percent uranium respectively. (table 1).

The small fault along the footwall of the diabase dike has been mineralized locally, and a greater concentration of torbernite crystals was noted next to this fault.

The slightly radioactive (2-8 on 0.2 scale) dump around the old copper stope (pit No. 10) is composed of extremely altered granite, limonite pseudomorphs after pyrite, specularite, and copper carbonates.

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Table 1.--Sample data, Apache Trail claim

Number	Location	Material	Equivalent uranium (percent)	Uranium (percent)	Insoluble residue (percent)	Iron (percent)	Copper (percent)
BJ-4-4	100-ft. level western face.	Diabase, 3 feet thick.	0.033	0.041			
4-5	do.	do.	.017	.038			
4-6	100-ft level western part.	Diabase and altered granite.	.011	.012			
4-7	do	do.	.010	.008			
4-8	100-foot level western part	Hematite-quartz vein, 3 ft. thick.	.013	.011	12.44	58.67	1.36
5-9	Pit No. 1, east end of claim.	do.	.021	.012	21.73	42.93	0.82

SUGGESTIONS FOR PROSPECTING

Prospecting for other uranium deposits in the area should consist of: 1) further prospecting on the Apache Trail claim, and 2) prospecting along the entire length of the quartz-hematite vein.

Samples indicate that the diabase in the western end of the 100-foot level of the Apache Trail mine workings contains a maximum of 0.04 percent uranium. Torbernite is visible in the rock of this grade. As torbernite has not been seen elsewhere in the diabase dike, it is probable that rock of this grade is only locally present; however, a westward extension of the drift would reveal the length of the torbernite zone and may disclose higher-grade rock.

The quartz-hematite vein, although containing only 0.01 percent uranium in two samples may be of higher grade elsewhere along its eastern or western extension. The vein should be examined particularly at places where there are minerals produced by alteration of sulfides.