UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

INDIAN CREEK URANIUM PROSPECTS, BEAVER COUNTY, UTAH

by

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and

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This report and accompanying illustrations are preliminary and have not been edited or reviewed for conformity with U. S. Geological Survey standards and nomenclature.

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ABSTRACT

The secondary uranium minerals metatorbernite (?) and autunite (?) were discovered at Indian Creek in the spring of 1950. The deposits, in sec. 28, T. 27 S., R. 6 W., Beaver County, Utah, are 20 miles west of Marysvale, and about three-eighths of a mile east of a quartz monzonite stock.

The uranium minerals are sparsely disseminated in argillized and silicified earlier Tertiary Bullion Canyon latite and related volcanic rock beneath, but close to, the contact of the overlying later Tertiary Mount Belknap gray rhyolite. The prospects are in a landslide area where exposures are scarce. Therefore, trend and possible continuity of the altered and the uraniferous zones cannot be established definitely.

The occurrence of secondary uranium minerals in beidellite-montmorillonite rock, formed by alteration of earlier Tertiary rocks near a quartz monzonite stock, is similar to that in some of the deposits in the Marysvale uranium district.

INTRODUCTION

Secondary uranium minerals were found in the vicinity of Indian Creek in May 1950. The deposits are at altitudes of 7,600 to 7,900 feet on the west side of the Tushar Mountains about 20 miles west of Marysvale, in the center of sec. 28, T. 27 S., R. 6 W., Salt Lake base and meridian, Beaver County, Utah (fig. 1). They are in the old Newton mining district from which some gold was produced in the early days. They may be reached from Beaver, Utah, the nearest town, by travelling 8 miles north on U. S. Highway 91, and then east for about 6½ miles on a good graded Forest Service road up Indian Creek Canyon. The deposits are about half a mile north of the road, between Grassy and Twitchell Creeks - tributaries of Indian Creek.

The deposits are on the Sniffer and Mystery groups of claims located in May and June 1950 by Thomas Harris, Le Roy Harris, and Louis Lessing of Beaver, Utah. They adjoin the Deer Trail group of claims of Littlefield, Hodges, Peterson, and Hodges, and other claims staked by David Arnold, Allen Taylor, and William Baldwin. All of these claims are under lease to Arnold and Baldwin who, in October 1950, were attempting to interest mining companies in exploring the deposits on a lease basis. The prospects are developed by two shafts, 6 to 12 feet deep, and by two prospect pits. Exposures are poor and the bedrock is largely covered with talus and thick undergrowth.

The geology of the surrounding area has been mapped by Callaghan _/.

_/ Callaghan, Eugene, Beaver quadrangle, Utah: U. S. Geol. Survey Prelim. Map Series, in preparation, 1951.

The deposits were examined in September 1950 as part of the Geological Survey's program for the evaluation of the uranium resources of the Marysvale region _/.

_/ Wyant, D. G., Stugard, F., Jr., and Kaiser, E. P., The uranium resources of the Marysvale region, Utah - an interim report -: U. S. Geol. Survey Trace Elements Memorandum Rept. 169, September 1950.

GEOLOGY

The uranium deposits on Indian Creek are in altered Bullion Canyon latite and related extrusive rocks of the earlier Tertiary group of Callaghan _/. They are about one-quarter to three-eights of a mile

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_/ Callaghan, Eugene, Volcanic sequence in the Marysvale region in southwest-central Utah: Am. Geophys. Union Trans., pt. 3, pp. 438-452, 1939.

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east of the eastern end of a large stock of older Tertiary quartz monzonite. The deposits are beneath, but close to, the contact of Bullion Canyon latite with the overlying later Tertiary Mount Belknap

rhyolite, as mapped by Callaghan _/. These two rock types are overlain

_/ Callaghan, Eugene, op. cit., 1951.

and partially obscured by Pleistocene and Recent talus in the vicinity of the deposits (fig. 2). The Bullion Canyon latite, in the area mapped, is a more or less argillized silicified granular rock stained by limonite. It is composed of hornblende and feldspar phenocrysts in a glassy gray-green to buff-brown matrix. According to field tests, the beidellite-montmorillonite group comprises at least part of the clay minerals. Small flakes of secondary uranium minerals are sparsely disseminated in the intensely argillized Bullion Canyon rock. Many veinlets and irregular blebs of purple fluorite cut the altered Bullion Canyon latite.

The later Tertiary Mount Belknap rhyolite is a gray, thinly laminated rock. The laminae are commonly separated by vugs, as much as a quarter of an inch wide, containing drusy quartz. The attitude of the lamination is parallel or subparallel to the base of the Mount Belknap rhyolite and strikes within 10 degrees of east and, where measured, dips from 18° to 31° N.

STRUCTURE

The deposits are in an area underlain by at least one, and probably two, landslide blocks. The upper landslide block, above the two prospect shafts (fig. 2), drops the Bullion Canyon-Mount Belknap contact down to the south. The prospect shafts themselves are probably in the

second, or lower, landslide block. It is possible, however, because of the poor exposures, that the shafts are in the down-faulted segment of a normal fault rather than a landslide block. They must be near the Mount Belknap-Bullion Canyon contact, because of the distribution of Mount Belknap float, and because of the small outcrop of Mount Belknap rhyolite 220 feet northeast of the eastern shaft.

ORE DEPOSITS

Apple-green metatorbernite (?) and yellow autunite (?) crystals are sparsely disseminated in the argillized and silicified Bullion Canyon latite. Most of the rock in the lower landslide block is probably argillized and silicified latite _/. Fluorite-bearing float is co-

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_/ Callaghan classes this as the "pyritic type of alteration."

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extensive with float of this altered rock. The maximum width and length of the altered zone on the surface are unknown, but float indicates that the zone is at least 1,000 feet long and 300 feet wide. Fresh Bullion Canyon latite crops out 400 feet southeast of the eastern shaft. The altered zone appears to trend approximately east. By analogy with similar zones near Marysvale, it is probable that the altered zone is vertical. There was insufficient development work at the time of the examination to establish definitely the trend or possible continuity of the uraniferous zones between prospect pits and shafts, but the exposures suggest an east trend and a vertical dip. As in most secondary mineral

deposits the distribution of autunite (?) and metatorbernite (?) is irregular, but continuity between exposures may be established by further exploration.

Samples

Four vertical channel samples (table 1) were taken in the shafts and pits exposing the uranium minerals. The location and assays of these samples are shown on figure 2. The highest assay (locality A, fig. 2) obtained was 0.016 percent equivalent uranium, 0.017 percent uranium. This sample was taken in the western pit across 2 feet of silicified argillized red Bullion Canyon latite. A sample, 6 feet long, taken across the vertical face in the westernmost shaft (locality B, fig. 2), contained 0.015 percent equivalent uranium, 0.010 percent uranium.

Table 1.--Analyses of samples, Indian Creek uranium prospects.

Reference letter (fig. 2)	Locality and Sample No.	Description	Equivalent uranium (percent)	Uranium (percent)
A	FS-32-56	2.0 feet, silicified argillized red Bullion Canyon latite; visible autunite (?); includes some soil.	0.016	0.017
B	FS-31-55	6.0 feet, argillized Bullion Canyon latite, with autunite (?), fluorite.	0.015	0.010
C	FS-31-54	3.0 feet, silicified altered rock, probably Bullion Canyon latite.	0.008	0.005
D	FS-31-53	3.2 feet, altered Bullion Canyon latite; texture obliterated.	0.003	0.003

OUTLOOK AND GUIDES TO PROSPECTING

Insufficient development work makes it impossible to evaluate adequately the potentialities of the deposits at the present time. The occurrence of secondary uranium deposits in argillized Bullion Canyon latite near intrusive quartz monzonite in a new district 20 miles from Marysvale indicates that uranium deposits of the Marysvale type are widespread and that other zones of alteration, especially if they are in Bullion Canyon volcanic rock, near quartz monzonite, should be carefully prospected. Clues to uranium mineralization in this area are: 1) deep-purple fluorite in the altered Bullion Canyon latite, and 2) beidellite-montmorillonite clay. As in the Marysvale uranium district, pitchblende may be found at depth.

Further prospecting of the Indian Creek deposits should be undertaken to test the possibilities of finding commercial ore between known exposures of uranium minerals. This could be accomplished most readily by bulldozer trenches, oriented at right angles to and across the southern fault.