

# State Department of Geology and Mineral Industries

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## MEMO ON HARPER URANIUM DEPOSITS

### Introduction

On March 17, 1954, Louis Hall and Lormand Wise filed a series of claims for uranium prospecting a few miles south of the town of Harper in eastern Oregon. When news of the discovery was announced, the area in the vicinity of Hall's claim was quickly staked out by numerous other prospectors. No development work, however, was done on any of these claims with two exceptions - Hall's (the Blue Moon uranium and Bonanza claims) and those belonging to a group headed by Jack Flock and Seymour Knott (the Blue Star claims). N. S. Wagner of the Baker field office made a one-day inspection of the Blue Moon claims belonging to Hall and Wise on March 26 during the height of the "rush" when the first claims were being staked. Samples of the most radioactive material from the Hall discovery pit were sent to the Portland office for inspection and testing. A subsequent report concerning the samples from the Blue Moon claims made by Wagner is on file in the Malheur County binder. Since the time of Wagner's report, additional work was done on the Hall claim as well as some trenching on the Flock claim. For this reason it was decided that further investigation of the area was warranted. The writer, accompanied by Max Schafer of the Grants Pass office, spent approximately 4 days in the field from June 23 to June 27. Most of the time was spent in making radiometric tests on the lake beds between Hall's claims to the

north and Flock's claims to the south. All of the sedimentary rock outcrops in this general area were checked as well as the ground around discovery claim stakes that could be located. Except for Hall's and Flock's claims, no measurable radioactivity could be detected.

#### Location

The deposits occur in a fairly narrow belt having a general northerly trend. The district in which radioactive samples were noted is south of the Harper Basin from approximately the center of sec. 22, T. 20 S., R. 42 E. to the center of sec. 11, T. 21 S., R. 42 E. The Hall claims are located along the east side of an unnamed tributary to Cottonwood Creek approximately 4.5 miles south of Harper Junction, and the Flock claims are located on the west slope of Hoodoo Mountain approximately 9 miles south of Harper Junction.

#### General geology

The Harper area is underlain by generally eastward dipping lake bed sediments of the Idaho formation of Pliocene age. Moore (1937) notes that vertebrate remains were collected from beds "some 2 miles southeast of Harper". These remains were given a Pliocene age by Stock and Furlong because of their similarity to bones taken from the Pliocene Thousand Creek formation in Nevada. The lake beds in the Harper Basin can be traced eastward into the Mitchell Butte quadrangle where bones of Pliocene age have also been found (Pritchett, 1953). The Idaho formation contains numerous intercalated basalt flows much in evidence in the Harper area. The typical geomorphic feature developed on this lava-lake bed sequence is a series of long cuesta-like ridges of basalt separated

by valleys of eroded, less resistant sediments. Moore, mapping in the Harper Basin, has subdivided the sediments roughly into five members on the basis of the dominant lithology of each. However, unconformities between these members have obscured their exact stratigraphic relationships, especially in the southern part of his mapped area. For this reason no attempt was made to correlate the sediments present in the uranium area with those mapped by Moore in the Harper Basin to the north. A further complicating factor in making correlations over wide areas is the slumping of large blocks of sediments into the drainage basins. The lake beds are strong enough to stand by themselves when dry, but become very weak and well lubricated during rainy periods. Bentonitic sediments, in particular, because of their swelling properties when wet, are especially susceptible to sliding. Slump topography was particularly noticeable along the west flank of Hoodoo Mountain, especially in the vicinity of the Blue Star claims.

Since Wagner's report on the Blue Moon uranium claims, little further development work has been done. After the two initial bulldozer cuts were made, a drilling program was begun on top of the bluff above the outcrop. Only one hole was drilled to a depth of approximately 50 feet before operations were abandoned. According to Wise, the drill ran into a basalt flow underlying the lake beds that effectively stopped further drilling. Hall and Wise are planning, however, to bring in a rotary core drilling outfit capable of drilling horizontally into the face of the outcrop. They hope to drill at least six holes in this manner and test the cores for any possible radioactivity before doing any further development work.

Some samples of the limonitic material supposedly having the greatest amount of radioactivity were tested with our portable Geiger counter. The background count in the area showed an average of .01 - .02 mr/hr. The limonitic sample showing the greatest radioactivity had an average of .03 mr/hr. This sample came from the upper bulldozer cut described by Wagner in his report. The lower bulldozer cut was also carefully checked for radioactivity, but results were nil.

The Blue Star claims belonging to Fleck and Knott are located on the west slope of Hoodoo Mountain, a west-facing cuesta composed of lake beds capped by basalt, approximately 4.5 miles southeast of the Blue Moon claims. The outcrop is composed of greenish to buff bentonitic tuffs and siltstones with a 5-foot bed of impure diatomite approximately half way up the face. Within the diatomite layer are sparsely disseminated opaline concretions elongated parallel to the bedding. One 3-foot concretion was found, but the average size was less than 1 foot. These concretions fluoresced a yellowish-green color and showed the greatest amount of radioactivity recorded anywhere in the area. An average reading of .06 mr/hr. was obtained with occasional deflections as high as 0.1 mr/hr. on the largest concretion noted above. Knott reported that the opaline material assayed .011 U<sub>3</sub>O<sub>8</sub>.

Since the area around the Blue Star claims is badly slumped, the outcrop of diatomite could not be traced for more than a few hundred feet in either direction from the discovery trench. Although the sediments cropping out in the Blue Moon claims to the north could not be traced south for any great distance, on the basis of structural position and areal distribution they would appear to underlie the diatomite and tuffs at the Blue Star claims.

Conclusions

Samples from both the Blue Moon and Blue Star claims have been tested on the Radioassayer and analyzed on the spectrograph. The highest recorded reading of any of the samples (.02 percent  $U_3O_8$  equivalent) came from the opaline concretions found in Flock's discovery pit. Spectrographic analyses of these samples failed to show any radioactive minerals to be present. However, uranium in such low concentrations as indicated by the Radioassayer would not be visible on the spectrograph and it can only be assumed that some secondary uranium mineral or salt does exist to cause the radioactivity to be noticeable. The fluorescence noted in the samples from both claim areas was thought to be due to the presence of uranium salts disseminated through the material. However, the writer has since tested fluorescent opaline samples from other areas on the Radioassayer that gave no evidence of any radioactivity whatsoever. In any event, the very low uranium concentration in all of the samples tested thus far indicates that at present no commercial amounts of uranium have even been approached. Since the highest radioactivity was noted in sparsely disseminated opaline concretions in a fairly thin bed of diatomite, it would not appear, from present indications at least, that there is much chance for finding uranium concentrations in commercial quantities in this region. It is suggested, however, that any further prospecting in the area should be directed toward finding more continuous opaline layers or beds such as are known to exist in both the Idaho formation and the underlying Payette formation. Prospecting done by the U.S. Geological Survey in the Virgin Valley, Nevada, approximately 41 miles south of Denio, Oregon, showed that opalized layers in volcanic pyroclastics contained as much

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as 0.12 percent uranium, although here again the average was in the range of .02 percent to .03 percent (Staatz and Bauer, 1951).

References

Moore, B.N., Nonmetallic mineral resources of eastern Oregon: U.S.G.S. Bull. 875, 1937.

Pritchett, Frank, The geology of the western portion of the Mitchell Butte quadrangle, Oregon: Oregon Univ. Master's Thesis, 1953.

Staatz, M.H., and Bauer, H.L., Jr., Virgin Valley opal district, Humboldt County, Nev.: U.S.G.S. Circular 142, 1951

Report by

R. E. Corcoran  
July 1, 1954

The following information was obtained from the records of the Humboldt County Assessor's Office, Eureka, California, regarding the Mitchell Butte quadrangle, Oregon, and the Virgin Valley opal district, Humboldt County, Nevada, as of July 1, 1954.

The Mitchell Butte quadrangle, Oregon, is located in the western portion of the Humboldt County, Oregon, and is bounded by the Humboldt River to the north, the Mitchell Butte to the east, and the Humboldt River to the south. The Virgin Valley opal district, Humboldt County, Nevada, is located in the Humboldt County, Nevada, and is bounded by the Humboldt River to the north, the Humboldt River to the east, and the Humboldt River to the south.

The Humboldt County Assessor's Office, Eureka, California, has records of the Mitchell Butte quadrangle, Oregon, and the Virgin Valley opal district, Humboldt County, Nevada, as of July 1, 1954. The records show that the Mitchell Butte quadrangle, Oregon, is owned by the Humboldt County Assessor's Office, Eureka, California, and the Virgin Valley opal district, Humboldt County, Nevada, is owned by the Humboldt County Assessor's Office, Eureka, California.