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IN REPLY REFER TO:

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY  
Branch of Radioactive Materials  
Building 25, Federal Center  
Denver 25, Colorado

August 25, 1961

Mr. R. R. Coats  
U. S. Geological Survey  
345 Middlefield Road  
Menlo Park, California

Dear Bob:

The memorandum accompanying this note is somewhat later in getting finished and dispatched than it should have been. It was written mainly to preserve a record of what was seen in a rather rapid tour and the tentative and somewhat nebulous ideas stemming from the observations.

Uranium deposits of the kind near Mountain City are sufficiently widespread to suggest that resources of uranium in deposits of this kind might be significant. At the present time, however, too little is known about the critical aspects of the relation of such deposits to their geologic setting and of events that have shaped or taken place in that setting to permit any reasonable definition of that potential.

Although the exploited or discovered deposits near Mountain City are relatively small, study of them would contribute to knowledge of the habits, distribution and relation of such deposits to their setting that would be very useful in helping to understand better the significance of this environment for uranium.

I think that gaining the kind of information that is needed to resolve some of the problems is beyond the scope of what investigations by the AEC are likely to accomplish, even though Bob Cohenour is aware of the problems. I hope that the charter for your project is liberal enough so that you can find an opportunity to help fit the uranium deposits and their possible provenance into the more comprehensive geologic picture that your work will develop.

I am sorry that our visit to the area could not have come at a time when you were there, but timing had to be accommodated in part to the schedule for Mr. Udas of the Indian Atomic Energy Commission.

Best wishes,

*Art*  
Arthur P. Butler, Jr.

Enclosure

Copy to: Director's Reading File  
Office of Economic Geology



Deposits belonging to type A that were examined are in northern Elko County, near Mountain City, in Washoe County, Nev., and Lassen County, Calif., about 25 miles north and north-northwest of Reno, respectively. The Carol R mine deposit, about 10 miles east of Hawthorne, Mineral County, may be of the same type.

Mountain City area, Elko County, Nev.

Deposits examined in the vicinity of Mountain City include:

Hot Spot No. 1, N $\frac{1}{2}$ NE $\frac{1}{4}$  sec. 2, T. 45 N., R. 53 E., 0.45 mi. SW of Mountain City.

Race Track, Tag, Denis, and South Fork and Pixley. These are strung out along the valley of California Creek from the center W side sec. 31, to the SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec. 35, T. 44 N., R. 54 E. (unsurveyed).

Rimrock near common corner sec. 26, 27, 34, and 35, T. 46 N., R. 54 E.

Autunite NE $\frac{1}{4}$ , SE $\frac{1}{4}$  sec. 30, T. 46 N., R. 54 E. (unsurveyed)

All deposits except the Autunite are generally similar. They are in a sequence of rocks of Tertiary and probably early Tertiary age which includes tuffaceous mudstone, vitric, crystal, and pumiceous tuff, lesser amounts of tuffaceous sandstone, and subordinate lenses of conglomerate and arkose. This sequence is overlain at least locally, and probably generally, by welded felsic tuff. Pebbles and cobbles in the conglomerate consist of differing proportions of older igneous and metamorphic rock and of volcanic rocks.

Thin seams and small pods of carbonaceous trash are irregularly present in the finer grained clastic rocks and are locally abundant.

The sedimentary rocks rest on an irregular surface developed on underlying medium- to coarse-grained granitoid rock. Local relief on this surface ranges from 5 to 30 feet in distances of 100 to 200 feet. The total relief on the surface beneath the sedimentary-volcanic sequence is doubtless much greater but requires district wide or quadrangle mapping to distinguish the effects of post-volcanic deformation from pre-volcanic erosion and determine the total original relief.

In part, as a result of the irregularity of the underlying surface, the thickness of the sedimentary part of the sequence is irregular. It is 3 to 10 feet thick in cuts at the Hot Spot claims west of Mountain City and at least 70 feet thick at the Denis pit 4 miles east of Mountain City.