



APEX MINE

LANDER COUNTY
GENERAL

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,

Arthur P. Butler, Jr.

Enclosure

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

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The geology of the deposits is described by Davis and Hetland (1956). In a cut 8 to 10 feet deep examined during this visit gray to white fine-grained oolitic layers from 0.1 foot to 1.0 foot thick are interbedded with lesser amounts of white, non-gritty beds of clay and are nearly flat-lying. Some beds are mottled with spherical limonite stains and some layers less than 0.5 foot thick are limonite-stained. A 5.5-foot thickness of beds on the SE wall of the cut in the vicinity of a fracture that dips 45° SE have a radioactivity of 1.0 to 1.5 MR. Similar beds in other cuts for a 0.5 mi. to the SW dip 5 to 15° SW and are non-radioactive to moderately radioactive (0.8 MR). According to Davis and Hetland (1956), results of exploration suggest that distribution of uranium is related to a northerly trending zone of fracturing, but whether there is also some stratigraphic control too remains unclear.

Apex mine, Lander County.--Several thousand tons of ore have been produced from a complex of underground workings in the Apex Mine (at one time also known as the Early Day) in NW $\frac{1}{4}$ sec. 1, T. 18 N., R. 43 E., about 3 miles south of Austin, Nev. The deposit has been developed by two adits and their connecting drifts and an inclined shaft for a vertical distance of perhaps 150 feet. Fine-grained phyllitic and quartzitic rocks are in intricate intrusive and fault contact with a moderately coarse-grained granitic rock. Both the igneous and metamorphic rocks are cut by aplite dikes which are also involved in some of the faults. The dikes trend a little north of east. According to Thurlow and Reyner (1956) fractured metamorphic rock close to the contact with the igneous rock is the principal locus of uranium. Judging from maps made by the AEC a considerable amount of ore is in such rock along the walls of the larger dike, but fractures at large angles with the dikes are also mineralized. Introduced minerals are fine-grained and inconspicuous so that mineralized rock is not readily distinguishable.

Lowboy Mine:--The Lowboy mine in secs. 13 and 24, T. 18 N., R. 44 E., is developed by an open cut about 300 feet long trending about NW an inclined shaft (inaccessible at time of visit), an adit about 60 feet long near the SE end of the cut, and a stub adit near the NW end. The general geologic features are similar to those at the Apex Mine. Fine-grained gray metamorphic rock adjoins granitic rock to the northeast along a contact that is locally faulted. Some fractures and faults striking at 45° and 90° to the trend of the major contact are locally mineralized. In the southwest adit about one foot of rock in the footwall of a fault striking N. 40° W. and dipping 15° to 20° SE is moderately radioactive, 1.5 MR. Ore and gangue minerals are inconspicuous. The over-all pattern of uranium distribution, other than proximity to a contact with granite, is obscure despite fairly good exposures.