Report of Geology and Mineralization of Hunts Mesa, Monument Valley, Arizona, Navajo County, with Recommendations for Exploration Drilling

by

John W. Chester

1951

ARIZONA GEOLOGICAL SURVEY
UNITED STATES ATOMIC ENERGY COMMISSION
DIVISION OF RAW MATERIALS
EXPLORATION BRANCH

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REPORT OF GEOLOGY AND MINERALIZATION
OF
HUNT'S MESA, MONUMENT VALLEY, ARIZONA, Navajo County
WITH RECOMMENDATIONS FOR EXPLORATION DRILLING

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John W. Chester

June 20, 1951
(Grand Junction, Colorado)
Property Owners: REPORT OF GEOLOGY AND MINERALIZATION OF HUNT'S MESA, MONUMENT VALLEY, ARIZONA WITH RECOMMENDATIONS FOR EXPLORATION DRILLING

Mr. Sam Charlie
Chilchinbeto
Arizona

Sam Charlie is in partnership with, or financed by:

Mr. Ray Hunt
Indian Trading Post
Chilchinbeto, Arizona

Mr. Jim Hunt
San Juan Trading Post
Mexican Hat, Utah

Mr. Harris Shumway
Blanding
Utah

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REPORT OF GEOLOGY AND MINERALIZATION
OF
HUNT'S MESA, MONUMENT VALLEY, ARIZONA
WITH RECOMMENDATIONS FOR EXPLORATION DRILLING

ABSTRACT

Hunt's Mesa was examined on June 2 and 3, 1951, by the writer assisted by R. C. Cutter. Two channels were located and studied. Outcrops of the channels are mineralized, the mineralization being of the copper-uranium variety. There are indications that an appreciable quantity of ore can be found by exploration drilling. A program of 25,000 feet of wagon drilling is recommended.

INTRODUCTION

Two days, June 2 and 3, were spent in examining the subject area which, for the purpose of this report, is referred to as Hunt's Mesa. The rims were studied at close range and from a distance, and all points appearing to have mineralization were checked with a scintillometer for radioactivity. Mineralization and structural features were plotted on areal photos and maps made from the photos.

Location

Hunt's Mesa is located adjacent to the southern part of Monument Valley approximately six miles south of the Arizona-Utah state line. The area has not been surveyed, but the location as determined from uncontrolled areal mosaics is between latitudes 36° 53.5' N and 36° 54' N and longitudes 110° 3.5' W and 110° 4.25' W.

Owners

Two claims are located on the mesa. One, comprising approximately 40 acres and known as the Sam Charlie No. 1, was staked in August 1948, by an Indian, Sam Charlie, of Chilchinbeto, Arizona. He is in partnership with, or financed by, three white men, namely: Ray Hunt, who operates the Indian Trading Post at Chilchinbeto, Arizona; Jim Hunt, his brother, who operates the San Juan Trading Post at Mexican Hat, Utah; and, Harris Shumway, of Blanding, Utah. Dan Hayes, of Blanding, Utah, has been negotiating for a lease on this claim, but according to Ray Hunt, these negotiations apparently have not been successful.
The other claim is the Koley No. 2, staked by an Indian, Koley Black, of Piute Farms, Utah, on April 29, 1949. It is a standard mining claim measuring 600 feet by 1,500 feet. Since no other claims or markers could be found on the mesa, it is assumed that the remainder of the area is open for location.

No ore has been shipped from either of these claims. The Hunts and Shumway have built a very poor road to the top of the mesa and have blasted two outcrops in an attempt to obtain fresh exposures. This procedure only made it more difficult to obtain useful information.

Accessibility

The top of the mesa can be reached by Jeep over the road built by the Hunts and Shumway. At the present time, it is in poor condition, but passable. One long sand-covered grade and two washouts render travel difficult.

The distance from the north rim of Hunt's Mesa to the junction with the Cane Valley road is 11.5 miles. Six and one-half miles along the Cane Valley road brings one to the junction of State Route No. 47, about 46 miles south of Mexican Hat, Utah. (See Figure 1). By these roads, Hunt's Mesa is approximately 140 miles from Monticello, Utah. Of the 11.5 miles from the Mesa to the Cane Valley road, seven miles of the road traverses the bottom of a sand wash which can be passed with little difficulty.

Exploitation

Although copper-uranium ores are now being accepted by the Atomic Energy Commission at Monticello, Utah, mineral production from this area is retarded by road conditions and haulage distances.

An aerial tram or an inclined railway might be built from the north rim of the mesa to the floor of Monument Valley proper. There are fair roads in Monument Valley below Hunt's Mesa. A 2,000-foot aerial tram built to one of these roads would eliminate almost 40 miles of road haul. This would reduce the distance from the mines to Monticello to 100 miles.

GEOLOGY AND ORE DEPOSITS

Structure

Hunt's Mesa lies near the crest of the Monument Valley anticline. The rocks making up the mesa are flat dipping to horizontal. The mesa is capped by the cliff-forming Shinarump conglomerate, which has been partially eroded leaving the greatest thickness at the center section of the mesa and making a featheredge at the east and west ends of the mesa. Below the Shinarump lies the Moenkopi sandstone and the Hoskinmini tongue, comprising a series of red to maroon shales and sandstones.
The DeChelly sandstone lies below the Hoskinnini tongue. This is a red, massive, cross-bedded sandstone forming sheer cliffs 500 to 600 feet high. The upper part of the Organ Rock member of the Cutler is exposed at the base of the mesa.

Two channels are partially exposed on the mesa. One of these, which will be referred to as the main channel, cuts 50 feet into the Moenkopi shale. Only one outcrop of this channel can be found. Mineralization occurs near the bottom of the channel.

The second channel is partially exposed at two places along the North rim of the mesa. It appears to be about 100 feet wide and a maximum of 30 feet in depth, and to trend in a general east-west direction more or less parallel to, but within, the rim. The two ore exposures on this channel are on the north flank of the channel and also on the northward-facing side of the mesa which curves outward to the north so that most of the channel appears to remain uneroded.

Mineralogy

The mineralogy is of the copper-uranium type. Minerals observed include chalcopyrite, various copper carbonates or sulphates, copper silicates, and yellow uranium minerals.

Ore Exposure

Mineral of ore grade is exposed at three points along the north rim of the mesa. (Figure 2). Two of these places are covered by the Sam Charlie claim and the third partially covered by the Koley No. 2 claim. None of these outcrops is well exposed.

Of the two outcrops on the Sam Charlie No. 1 claim, the west outcrop shows the best exposure and best mineralization, but gives the lowest assay. However, both of these outcrops appear to be on the flank of the channel, the greater part of which is hidden. On the west outcrop, the full depth of the ore is not exposed and the channel can be seen cutting into the shale at the lowest visible point.

The east outcrop is even more difficult to trace. An attempt was made by the holders of the claim to blast off and expose a fresh face. The overhanging rock was blasted which resulted in covering most of the outcrop. It appears from what may be observed that this outcrop is also on the flank of the channel.

The outcrop of the main channel, which is partially covered by the Koley No. 2 claim, is also partially obscured. Much of the lower part of the channel is covered with talus, making it difficult to observe the mineralization. Numerous small flecks of copper mineralization were
Observed and one high grade streak was located by removal of about 1 foot of talus. This streak was about 1 foot in thickness, but because of the overburden, it was impossible to determine its extent.

**Sampling**

One sample was taken from each outcrop. Grab sample No. 13754 taken from Area B assayed 4.78% U₃O₈, 6.12% V₂O₅, and 0.51% Cu. This is a high-grade sample and actually cannot be considered representative of the whole outcrop; it is, however, indicative of good mineralization. A 3-foot channel Sample No. 13755 taken from the east outcrop of the smaller channel assayed 0.14% U₃O₈, 0.96% V₂O₅, and 0.10% Cu, and a 5-foot channel Sample No. 13756 contained 0.06% U₃O₈, 1.26% V₂O₅, and 2.69% Cu. We have been informed that selected samples from these outcrops contained as much as 3% U₃O₈ and 12% Cu.

**RECOMMENDATIONS**

Hunt's Mesa is recommended for 25,000 feet of exploration drilling. This will be distributed 6,000 feet to Drilling Area A (Figure 2), which covers the Sam Charlie claim and 19,000 feet of Drilling Area B, which is over the main channel.

The thickness of the Shinarump in Drilling Area A averages about 60 feet. The strongest mineralization appears near the base of the Shinarump. Near the rim there is no overburden, but toward the center of the mesa dune sand will be encountered. The maximum depth of these dunes is estimated to be 50 feet. Drilling depths in Drilling Area B approximate 100 feet. The Shinarump formation here is about 50 feet thick and the channel cuts into the Moenkopi shale an additional 50 feet. There is very little dune sand in this portion of the mesa.

In Area A, the drilling is recommended to be in lines 250 feet apart with holes on 50-foot centers, ten holes to the row or a total of 80 holes. The lines of holes are to be oriented in a north-south direction. The average depth of hole will be 60 feet, giving a total of 4,800 feet of hole. An additional 1,200 feet is allowed for offset drilling.

In Drilling Area B, the first line of holes should be placed 50 feet from the rim and the holes spaced 50 feet apart for a total of 70 holes. A second row of 70 holes should be placed 250 feet back of the first row of holes and a third row of 30 holes, 250 feet from this and placed to cover the trend of the channel as determined by the first two rows of holes. At an average hole depth of 100 feet per hole, this gives a total of 17,000 feet of hole. An additional 2,000 feet allowed for offset drilling brings the total to 19,000 feet.

Depending on the results of this preliminary drilling, an additional drilling program could be recommended to further explore indicated ore trends. Close geologic guidance will be required in delimiting channels.
The nearest reliable source of water is at Kayenta, a distance of 18 miles. Because of this long haul for water and the condition of the road to the mesa, wagon drilling is recommended.

The exploration drilling recommended herewith covers a small district within Monument Valley. Therefore, this report should be considered together with others concerning the area to form a comprehensive recommendation of greater scope which would be commensurate with an exploration drilling project.
Sample No. 13754
Small Deep Channel Cu U Mineralization
Steep north side
Gentle slope on south side
Sample No. 13756
Steep north side
Gentle slope on south side
Sample No. 13755
Claim Koley No. 2 Cu U Mineralization
Apparently on south flank of channel

EXPLANATION
== Proposed Road
== Shinarump-Moenkopi Contact
== Alteration Zone at Contact
50 Scintillometer Readings
O Ore Showing
Base traced from uncontrolled mosaic from aerial photographs

FIG. 2
GRAND JUNCTION EXPLORATION BRANCH
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SKETCH OF HUNTS MESA
MONUMENT VALLEY, ARIZONA

SCALE: 1" = 1000'
CONTOUR INTERVAL: GEOL.

BY: R.C. ACCEPLAINCES DRILLING RECOMMENDATIONS
CHECKED: E.E.R. DATE: JUNE 20, 1951
DRAWN BY: R.C. CORRECT
TRACED BY: N.B.P. FILE INDEX