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PRELIMINARY REPORT ON
DIAMOND-DRILL EXPLORATION
ON OUTLAW MESA, MESA COUNTY,
COLORADO

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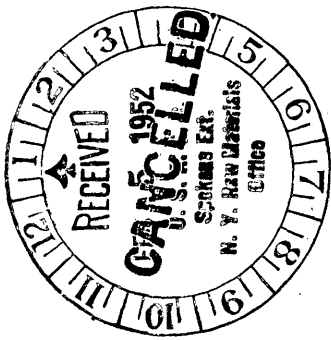
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Trace Elements Memorandum Report 295

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

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AEC - 562/2

Dr. Phillip L. Merritt, Assistant Director
Division of Raw Materials
U. S. Atomic Energy Commission
P. O. Box 30, Ansonia Station
New York 23, New York

Dear Phil:

Transmitted herewith for your information are copies 5-6 of Trace Elements Memorandum Report 295, "Preliminary report on diamond-drill exploration on Outlaw Mesa, Mesa County, Colorado", by G. K. Brasher, January 1952.

Drilling on the Outlaw Mesa area was completed on November 4, 1951. No additional drilling is planned.

This report presents a preliminary reserve estimate of about 210,000 short tons of carnotite ore, with an average grade of about 0.35 percent U_3O_8 and 1.3 percent V_2O_5 for the entire Outlaw Mesa area. A final and more comprehensive report on the Outlaw Mesa area will be transmitted later.

The increase of 10,000 tons in this report over the reserve estimate given in TEMR 202, "Results of diamond-drill exploration and plans for additional drilling on Outlaw Mesa, Mesa County, Colorado", by G. K. Brasher and D. A. Jobin, April 1951, is due mainly to ore discovered in privately owned ground in the SW $\frac{1}{4}$ sec. 7, T. 50 N., R. 17 W., New Mexico principal meridian.

One block of ground on public land containing a sizable ore reserve lies west of the southernmost leased ground. Information concerning this ore reserve is given in "Preliminary reserve

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statement 20, reserve blocks H, I, J, K, L, M, and N, Outlaw Mesa, Mesa County, Colorado", by G. K. Brasher, November 1951. The Commission may be interested in leasing this ground.

Sincerely yours,



for

W. H. Bradley
Chief Geologist

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Geology - Mineralogy

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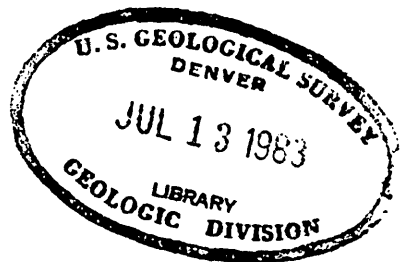
PRELIMINARY REPORT ON DIAMOND-DRILL EXPLORATION
ON OUTLAW MESA, MESA COUNTY, COLORADO /

By

George K. Brasher

January 1952

Trace Elements Memorandum Report 295



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/This report concerns work done on behalf of the Division of Raw Materials of the U. S. Atomic Energy Commission.

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USGS - TEM Report 295

GEOLOGY - MINERALOGY

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ILLUSTRATION

Figure 1. Map of Outlaw Mesa, Mesa County, Colorado	In Envelope
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PRELIMINARY REPORT ON DIAMOND-DRILL EXPLORATION
ON OUTLAW MESA, MESA COUNTY, COLORADO

By

George K. Brasher

INTRODUCTION

Outlaw Mesa is northeast of the Dolores River, about 10 miles southeast of Gateway, Mesa County, Colo. It is an oval-shaped area of about 17 square miles lying mostly within T. 50 N., R. 17 W., and T. 50 N., R. 18 W., New Mexico principal meridian. The area is accessible by three unimproved roads from Colorado Highway 141. The altitude of the mesa ranges from about 5,500 feet to over 7,000 feet.

Total production from Outlaw Mesa from 1914 to 1949 was about 4,000 tons of carnotite ore, having an estimated grade of about 0.50 percent U_3O_8 and 2.5 percent V_2O_5 . The production from 1949 to October 1951 was about 18,000 tons, having an estimated grade of about 0.35 percent U_3O_8 and 1.6 percent V_2O_5 . About 80 percent of the production from 1949 to October 1951 was from deposits discovered by U. S. Geological Survey diamond-drilling in public land, now leased to the Climax Uranium Co. A more complete history of mining and production on Outlaw Mesa has been given in earlier reports. /

/ Stager, H. K., Results of diamond-drill exploration and plans for additional drilling on Outlaw Mesa and vicinity, Mesa County, Colorado: U. S. Geol. Survey Trace Elements Memorandum Rept. 103, February 1950.

Brasher, G. K. and Jobin, D. A., Results of diamond-drill exploration and plans for additional drilling on Outlaw Mesa, Mesa County, Colorado: U. S. Geol. Survey Trace Elements Memorandum Rept. 202, April 1951.

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The results of Geological Survey exploration on Outlaw Mesa are summarized in this preliminary report. A final and more comprehensive report will be transmitted later. No additional drilling is planned.

GEOLOGY

Rocks found in drilling on Outlaw Mesa are in the Upper Jurassic Morrison formation and the Lower Cretaceous Burro Canyon formation. These formations strike about N. 45° W., and dip about 3° SW.

Most of the known carnotite deposits on the mesa are in the upper part of the Salt Wash sandstone member of the Morrison formation. This member consists of sandstone lenses interbedded with mudstone. It is overlain by the Brushy Basin shale member.

GEOLOGICAL SURVEY EXPLORATION

The Geological Survey completed 1,302 holes for a total of 222,150 feet of drilling on Outlaw Mesa from January 20, 1949 to November 4, 1951. This work was done during three periods under six separate drilling contracts. The drilling was done to find economic carnotite deposits and to obtain a better appraisal of the reserves of the area.

About 45 percent of the holes and about 65 percent of the total footage were drilled in public land. The remaining 55 percent of the holes and 35 percent of the footage were drilled in private claims. Only the Government-owned claims are shown on figure 1.

Mineralized rock was cut in 365 of the 1,302 holes drilled. Of these 365 holes, 110 are in ore (material 1 foot or more thick containing

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0.10 percent or more U_3O_8 or 1.0 percent or more V_2O_5 as based on visual estimates and available chemical and radiometric assay data).

RESERVES

As the result of exploration by the Geological Survey between January 20, 1949 and November 4, 1951, an estimated 210,000 tons of indicated and inferred ore (material 1 foot or more thick containing 0.10 percent or more U_3O_8 or 1.0 percent or more V_2O_5 as based on visual estimates and available chemical and radiometric assay data) was discovered on Outlaw Mesa. Of the total, the indicated reserves amount to about 148,000 tons. These reserves are estimated to average about 0.35 percent U_3O_8 and 1.3 percent V_2O_5 . The difference between these reserve figures and those estimated in April 1951 / is

/ Brasher, G. K. and Jobin, D. A., op. cit.

due, mainly, to ore discovered in the SW $\frac{1}{4}$ sec. 7, T. 50 N., R. 17 W., New Mexico principal meridian (fig. 1).

The reserves are in about 45 separate bodies, ranging in size from about 150 to 95,000 tons each. About 60 percent of the total indicated and inferred reserves are in public land and leased public land, and the remainder is in private claims.

A more complete appraisal of the reserves will be made in the final report, after receipt of assay data.

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PLANS

No further exploration by the Geological Survey is planned on Outlaw Mesa. Recommendations for further drilling and prospecting by the claim owners or lessees, particularly in areas of leased public land, will be made in the final report.

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