MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

Form Approved.
Budget Bureau No. 42-R1035.2.

Defense Minerals Administration
RECEIVED
JUL 20 1953

APPLICATION FOR AID IN AN EXPLORATION PROJECT, PURSUANT TO DMEA ORDER 1, UNDER THE DEFENSE PRODUCTION ACT OF 1950, AS AMENDED

Not to be filled in by applicant

Docket No. DMEA-3123
Metal or Mineral
Date Received 7/20/53
Estimated Cost
Participation (Government %)

INSTRUCTIONS

1. *Name of applicant.*—(*a*) State here your full legal name, in the form in which you will wish to contract, and your mailing address:

E. R. RANDOLPH BLUFF, UTAH
HARMON RANDOLPH BLUFF, UTAH

(*b*) If other than an individual, add to your name above whether a corporation, partnership, etc., and the name of the State in which incorporated or otherwise organized. PARDNERSHIP

(*c*) If a corporation, add to above statement, titles, names and addresses of officers.

(*d*) If a partnership, add to the above statement the names and addresses of all partners.

SAME AS 1 A

2. *General.*—Read DMEA Order 1, "Government Aid in Defense Exploration Projects," before completing this application. Submit this application and all accompanying papers in quadruplicate (four copies), with your name and address on each sheet of the application and on all accompanying papers. Where sufficient space is not provided on the form for all required information, state it on an accompanying paper, with a reference in each case to the instruction to which it refers by number. Comply with all applicable instructions; or, if not applicable, so state. File the application with Defense Minerals Exploration Administration, Department of the Interior, Washington 25, D. C., or with the nearest field executive officer thereof.

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract Six mining claims namely: Hole In The Rock 1 to 4 inclusive, located in the N.E. ¼ of T40S, R22E, SLPM and Cottonwood 1 &2 located in the West ½ T 35 S, R26 E. Both groups in San Juan County, Utah

(*b*) State any mine name by which the property is known. Hole In The Rock

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise Owner

(*d*) If you are not the owner, submit with this application a copy of the lease, contract, or other document under which you control the property.

(*e*) If you own the land, describe any liens or encumbrances on it None

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. See Addendum I

4. *Physical description.*—(*a*) Describe in detail any mining or exploration operations which have been or now are being conducted upon the land, including existing mine workings and production facilities. State your interest, if any, in such operations. Also describe accessibility of mine workings for examination purposes.

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades.

(*c*) Describe the geologic features of the property, including mineralization, type of deposit (vein, bedded, etc.), and your reasons for wishing to explore. Illustrate with maps or sketches. Send with your application (but not necessarily as a part of it) any geologic or engineering report, assay maps, or other technologic information you may have, indicating on each whether you require its return to you.

(*d*) State the facts with respect to the accessibility of the project: Access roads, distances to shipping, supply and residence points.

(*e*) State the availability of manpower, materials, supplies, equipment, water, and power.

16—66551-1

See Letter Attached

5. *The exploration project.*—(a) State the mineral or minerals for which you wish to explore .....

(b) Describe fully the proposed work, including a map or sketch of the property showing a plan (and cross sections if needed) of any present mine workings, and the location of the proposed exploration work as related to such features as contacts, veins, ore-bearing beds, etc. [illegible]

(c) The work will start within 30 days after contract let and be completed within 6 months from the date of an exploration project contract.

(d) State the operating experience and background of the applicant with relation to the ability to carry out such exploration project, and also that of the person or persons who will supervise the operations.

6. *Estimate of costs.*—Furnish a detailed estimate of the costs of the proposed work (you will have to use a separate sheet), under the following headings. Add the totals under all headings to give the estimated total cost of the project:

(a) *Independent contracts.*—(Note.—If the applicant does not intend to let any of the work to contractors, write "none" after this item. To the extent that the work is to be contracted, do not repeat the cost of the contract-work in subsequent items.) State the cost of any proposed independent contracts for the performance of all or any part of the work, expressed in terms of units of work (such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, per cubic yard of material moved, etc.).

(b) *Labor, supervision, consultants.*—Include an itemized schedule of numbers, classes and rates of wages, salaries or fees for necessary labor, supervision and engineering and geological consultants.

(c) *Operating materials and supplies.*—Furnish an itemized list, including items of equipment costing less than $50 each, and power, water and fuel.

(d) *Operating equipment.*—Furnish an itemized list of any operating equipment to be rented, purchased, or which is owned and will be furnished by the Operator, with the estimated rental, purchase price, or suggested use-allowance based on present value, as the case may be.

(e) *Rehabilitation and repairs.*—Furnish a detailed list showing the cost of any necessary initial rehabilitation or repairs of existing buildings, installations, fixtures, and movable operating equipment, now owned by the Operator and which will be devoted to the exploration project. /ii.

(f) *New buildings, improvements, installations.*—Furnish a detailed list showing the cost of any necessary buildings, fixed improvements, or installations to be purchased, installed or constructed for the benefit of the exploration project.

(g) *Miscellaneous.*—Furnish a detailed list showing the cost of repairs to and maintenance of operating equipment (not including initial rehabilitation or repairs of the Operator's equipment), analytical work, accounting, workmen's compensation and employers' liability insurance, and payroll taxes.

(h) *Contingencies.*—Give an estimate of any necessary allowances for contingencies not included in the costs stated above.

NOTE.—No items of general overhead, corporate management, interest, taxes (other than payroll and sales taxes), or any other indirect costs, or work performed or costs incurred before the date of the contract, should be included in the estimate of costs.

7. (a) Are you prepared to furnish your share of the cost of the proposed project in accordance with the regulations on Government participation (Sec. 7, DMEA No. 1)? Yes.

(b) How do you propose to furnish your share of the costs?

☒ Money ☐ Use of equipment owned by you ☐ Other

Explain in detail on acompanying paper.

CERTIFICATION

The undersigned, whether as an individual, corporate officer, partner, or otherwise, both in his own behalf and acting for the applicant, certifies that the information set forth in this form and accompanying papers is correct and complete, to the best of his knowledge and belief.

Dated 6-3-53, 195...

E. R. Randolph
Harmon R. Randolph (Applicant)
By E. R. Randolph

Title 18, U. S. Code (Crimes), Section 1001, makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

U. S. GOVERNMENT PRINTING OFFICE 16—66551-1

DEPARTMENT OF THE INTERIOR
Bureau of Mines
RECEIVED
JUL 30 1953

B --
Hole In The Rock Mine has been operating two and one half years. No. 2-3-4 Claims have ore showing. There has been no development on them except road work.

No. 1.

Three or Four Hundred feet of tunneling fisher veins and small deposits hoping to discover the main channel or body. Surface mining of approximately 400 tons.
Mine owners have had several years of mining experience and have operated wagon drills and core drills. Expect to ~~hire~~ hire a geological Consultant~~e~~ Engineer Contract if possible or practical, or purchase own drill,.
The mine is located four miles off the State Highway which is graveled. The four miles is a sandy road, which is a good truck road.
We ~~have~~ haul water 5 miles from Bluff, Utah) We have two cabins on the claim.

NO. 6.

Geological consultant and Assay Repobts ----------$1,000.00
Dozer work , consisting of excess roads for drill locations, @ $10.00 per hour----------1,000.00
Wagon Drilling, approximately 30 ft. per hole @ approximately $1.00 per foot , 1333 per claim----------8,000.00
Core Drilling , approximately $3.00 per foot, 444 feet, per claim, including water hauling.
Will need advice of Engineer or Geologist as to what drill is practical.

There has been approximately 875 Tons of Ore mined from these Calims and has all been mined with no maps or drilling. Now I feel the time has come to do some drilling and less exploration work without first knowing what is in sight and in which will be the most logical way to proceed. This ore has been held to an average of not less than .22 .

I would appreciate any help or information which you might be able to render. If this is not all the information you require please advise and I will immediately gather more of the same. Mr. Rasor, with the ASC tells me he thinks there is a ~~$$$$$$$~~ map of my mine in his office and if so he will send it to me. Upon receipt of same I will send it directly to you.

orig in 3123 Docket

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON 25, D. C.

September 30, 1953

Memorandum

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee, Room 4640

From: H. D. Keiser, Bureau of Mines Member
Uranium Commodity Committee

Subject: Final Report, DMEA Docket 3123, Randolph and Randolph, Hole in the Rock claims, San Juan County, Utah

I have reviewed the subject report and have discussed it with Arthur P. Butler, Geological Survey, and Joseph O. Hosted, representative of the Atomic Energy Commission.

I concur with the Field Team in denial of the application involved under the subject docket.

The report has been forwarded to the Chief, Minerals Division, Bureau of Mines, in accord with the routing slip attached thereto.

Signed

H. D. Keiser

STANDARD FORM NO. 64

613

Office Memorandum • UNITED STATES GOVERNMENT

TO : E. Wm. Ellis, DMEA Member, Uranium Commodity Committee

DATE: September 25, 1953

FROM : Arthur P. Butler, Jr., USGS Member, Uranium Commodity Committee

SUBJECT: Final Field Team Report, DMEA Docket 3123 (uranium), E. R. Randolph and Harmon Randolp, applicants, Bluff, Utah; Hole in the Rock group of claims Sec. 10, T. 40 S., R. 22 E., and Cottonwood claims Sec. 10,(?), T. 36 S., R. 26 E., San Juan Co., Utah.

The Field Team examiners recommended denial of Government assistance for exploration at the first property identified in the subject above, and that part of the application pertaining to the second property was withdrawn by the applicants. The application for assistance to explore the Hole in the Rock group was denied by the Field Team, Region IV.

The report has been reviewed and discussed with H. D. Keiser, Bureau of Mines member, Uranium Commodity Committee, and J. O. Hosted, U. S. Atomic Energy Commission.

The field team examiners found that the Hole in the Rock group has produced about 1,400 tons of uranium ore containing 0.27 U_3O_8 which has qualified for the initial production bonus. Potential reserves are estimated to be about 2,000 tons, but only the next 400 to 500 tons will qualify for the balance of the amount of ore on which the initial bonus will be paid. The examiners and the owners estimate that ore cannot be mined and shipped profitably after the limit of the production bonus has been reached, because the ore has a high lime content for which a heavy penalty is incurred. Thus, although there is a fairly good chance that exploration by drilling would find additional ore, it is doubtful that the ore would be mined. The examiners, therefore, recommended that the application be denied.

The examination was made in company with a representative of the Grand Junction staff AEC.

Conclusion

Although exploration would be likely to find additional ore at this property, I concur with the recommendation of the Field Team that the application be denied, because of the improbability that any ore discovered could be mined.

Arthur P. Butler Jr.

Copies to: E. Wm. Ellis (2)

Defense Minerals Administration
RECEIVED
SEP 25 1953

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

September 25, 1953

E. Wm. Ellis, DMEA Member, Uranium
Commodity Committee

Arthur P. Butler, Jr., USGS Member, Uranium
Commodity Committee

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Copies to: E. Wm. Ellis (2)

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

E. Wm. Ellis, DMEA Member, Uranium Commodity Committee

September 25, 1953

Arthur P. Butler, Jr., USGS Member, Uranium Commodity Committee

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Copies to: E. Wm. Ellis (2)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON 25, D. C.

September 30, 1953

Memorandum

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Uranium Commodity Committee, Room 4640

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Subject: Final Report, DMEA Docket 3123, Randolph and Randolph, Hole in the Rock claims, San Juan County, Utah

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I concur with the Field Team in denial of the application involved under the subject docket.

The report has been forwarded to the Chief, Minerals Division, Bureau of Mines, in accord with the routing slip attached thereto.

H. D. Keiser

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

224 New Customhouse
Denver 2, Colorado

September 11, 1953.

Memorandum

To: Administrator, Defense Minerals Exploration Administration
Attention: 200

From: Field Team, Region IV

Subject: Final Report, DMEA Docket 3123 (Uranium), Randolph and Randolph, Hole in the Rock claims, San Juan County, Utah.

Enclosed are four copies of the final report on the subject docket, a copy of the letter of denial to the applicant and two copies of Form 3b.

W. H. King
W. H. King

A. H. Koschmann
A. H. Koschmann

Enclosures

DENIED

AB

Reviewed by
DMEA OPERATING COMMITTEE
9-25-53
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

224 New Customhouse
Denver 2, Colorado

September 11, 1953.

Mr. E. R. and Harmon Randolph
Bluff
Utah

Re: Docket DMEA-3123

Gentlemen:

Reference is made to your application for Government aid on the Hole in the Rock claims.

Projects approved by the Defense Minerals Exploration Administration must, in its judgment, show definite promise of yielding material of acceptable grade, and in quantities that will significantly improve the mineral supply position for the National Defense Program.

A careful study of your property and data available to this agency reveals that the probability of disclosing mineable reserves of uranium by your proposed exploration program is not considered sufficiently promising to justify Government participation. Under these circumstances, we regret to advise that your application for exploration aid is denied.

Very truly yours,

W. H. King
W. H. King
Field Team, Region IV

HMC:cwm

cc: Subject
Administrator, DMEA
SRWilson
ERGordon
RPFischer
AHKoschmann (2)
Chron.

A. H. Koschmann
A. H. Koschmann
Field Team, Region IV

Reviewed by
DMEA OPERATING COMMITTEE

9-25-53
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

September 11, 1953.

Memorandum

To: Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Final Report, DMEA Docket 3123 (Uranium), Randolph and Randolph, Hale in the Rock Claims, San Juan County, Utah.

Enclosed are eleven copies of the final engineering report on the subject docket.

The applicants originally requested $10,000.00 for wagon drilling and diamond drilling on the Hale in the Rock and Cottonwood claims.

The engineer examiner concludes that since the Cottonwood group was withdrawn by the applicants the likely area for exploration is small and he recommends that the application be denied.

We concur in this recommendation.

W. H. King
W. H. King

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
9-25-53
(Date)

Region IV

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Building 20, Room 137
Denver Federal Center
Denver 14, Colorado
September 8, 1953

Memorandum

To: Executive Officer, Field Team, Region IV

From: Chief, Mineral Resources Branch, Mining Division
Region IV

Subject: DMEA 3123, Hole in the Rock and Cottonwood groups, (Uranium)
E. R. and Harmon Randolph, San Juan County, Utah

Enclosed are the original and ten copies of Carl Belser's engineering report on the subject docket. G. W. Weir, the participating geologist, is not available for conference and consequently a joint "Summary, Conclusions, and Recommendations" is not being prepared.

Belser concludes that after the Cottonwood group was withdrawn by the applicant from consideration, the likely area for exploration is small, and although some small ore lenses might be discovered, as many, if not more, would be missed unless drilling was done on an extremely close-spaced grid pattern. He recommends denial of the application and I approve. Incidentally, the Cottonwood group was not examined.

The application forwarded with your memorandum of July 27, 1953, instructing us to make the investigation, is also returned herewith.

W. M. Traver

W. M. Traver

enclosures

WMT/kp

cc ✓10
DMEA 3123
DMEA Chron

Reviewed by
DMEA OPERATING COMMITTEE
9-25-53
(Date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.
200 New Customhouse
Denver 2, Colorado

September 8, 1953

Memorandum

To: DMEA Field Team, Region IV

From: A. H. Koschmann

Subject: DMEA Docket 3123 (Uranium), Randolph and Randolph, Hole in the Rock and Cottonwood claims, San Juan County, Utah

Enclosed are 11 copies of a geologic report by G. W. Weir, Geological Survey, and Carl Belser, Bureau of Mines, covering the above docket.

It has been recommended that the loan be denied.

The brochure is enclosed.

A. H. Koschmann
A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Enclosures (11)

Reviewed by
DMEA OPERATING COMMITTEE
9-25-53
(date)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
P. O. BOX 360
GRAND JUNCTION, COLORADO

MEMORANDUM SEPTEMBER 2, 1953

TO: A. H. Koschmann, Field Team, Region IV

FROM: R. P. Fischer, Colorado Plateau District

SUBJECT: DMEA 3123 (Uranium), Randolph and Randolph, Hole in the Rock and Cottonwood claims, San Juan County, Utah

Transmitted herewith are eleven copies of a geologic report on the subject claims. The proposed exploratory drilling applied for is estimated to cost $10,000.

The attached report, by G. W. Weir, is based on a field examination made jointly with Carl Belser, U. S. Bureau of Mines, on August 20, 1953, and accompanied by the applicants and two AEC representatives, E. V. Reinhardt and J. W. Smith. Reinhardt and Smith concur with the recommendations in this report.

Because the ore from the Hole in the Rock mine is penalized for its high lime content and is low in vanadium, the applicant stated that mining operations would not be profitable under present economic conditions without the initial production bonus payment. As the property will not qualify for the initial production bonus after the next 400 to 500 tons of ore is produced, and as indicated and inferred reserves total nearly this amount, it would appear that any additional ore found with exploration probably could not be mined at a profit. For this reason, the field examiners concluded that the application should be denied, as stated in the accompanying report.

On the other hand, as the report points out, potential reserves probably total about 2,000 tons of uranium-bearing material. At least some of this material probably could be found by exploration.

Thus, it would appear that there is a chance of finding uranium-bearing material with exploration, but it is likely that this material probably could not be mined at a profit under present economic conditions. From the standpoint of guiding policy, it will be interesting and helpful for us in the field to see if DMEA concurs with the recommendation for denial, which is based on the conclusion that any ore found could not be mined profitably under present economic conditions, or if the recommendation is reversed on the chance of finding uranium-bearing material, whether or not it is economically minable.

R. P. Fischer

R. P. Fischer
Acting District Supervisor

Enclosures 11

Reviewed by
DMEA OPERATING COMMITTEE
9-25-53
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMEA 3123, E. R. and Harmon Randolph

Hole in the Rock and Cottonwood Groups

San Juan County, Utah

Uranium

Carl Belser, Mining Engineer
Bureau of Mines

September 8, 1953

Reviewed by
DMEA OPERATING COMMITTEE
9-25-53
(Date)

DMEA DOCKET 3123

E. R. RANDOLPH AND HARMON RANDOLPH, HOLE IN THE ROCK GROUP OF CLAIMS AND COTTONWOOD GROUP OF CLAIMS, MONTICELLO DISTRICT, SAN JUAN COUNTY, UTAH

INTRODUCTION AND SUMMARY

Messrs. E. R. Randolph and Harmon Randolph, owners of the Hole in the Rock group of claims and the Cottonwood group of claims, have applied (DMEA 3123) to the Defense Minerals Exploration Administration for a loan to explore for uranium on these properties. The Hole in the Rock group of claims are in sec. 10, T. 40 S., R. 22 E., S. L. M., on a prominent ridge about 4 miles northeast of Bluff, Utah (see fig. 1). The Cottonwood group of claims are in Coalbed Canyon about 12 miles southeast of Monticello, Utah, (see fig. 1) and are believed to be in sec. 10, T. 36 S., R. 25 E., S. L. M., although the application gives the location as W½ of T. 35 S., R. 26 E., S. L. M.

The Hole in the Rock group of claims was examined on August 20, 1953, by G. W. Weir, Geological Survey, and Carl Belser, Bureau of Mines, accompanied by E. R. Randolph and Harmon Randolph, the applicants, and E. V. Reinhardt and J. W. Smith, Atomic Energy Commission. Because the applicants stated that they wished to withdraw the part of the application pertaining to the Cottonwood group of claims, these claims were not visited by the examining team. Therefore, this report and recommendations herein apply to the Hole in the Rock group of claims.

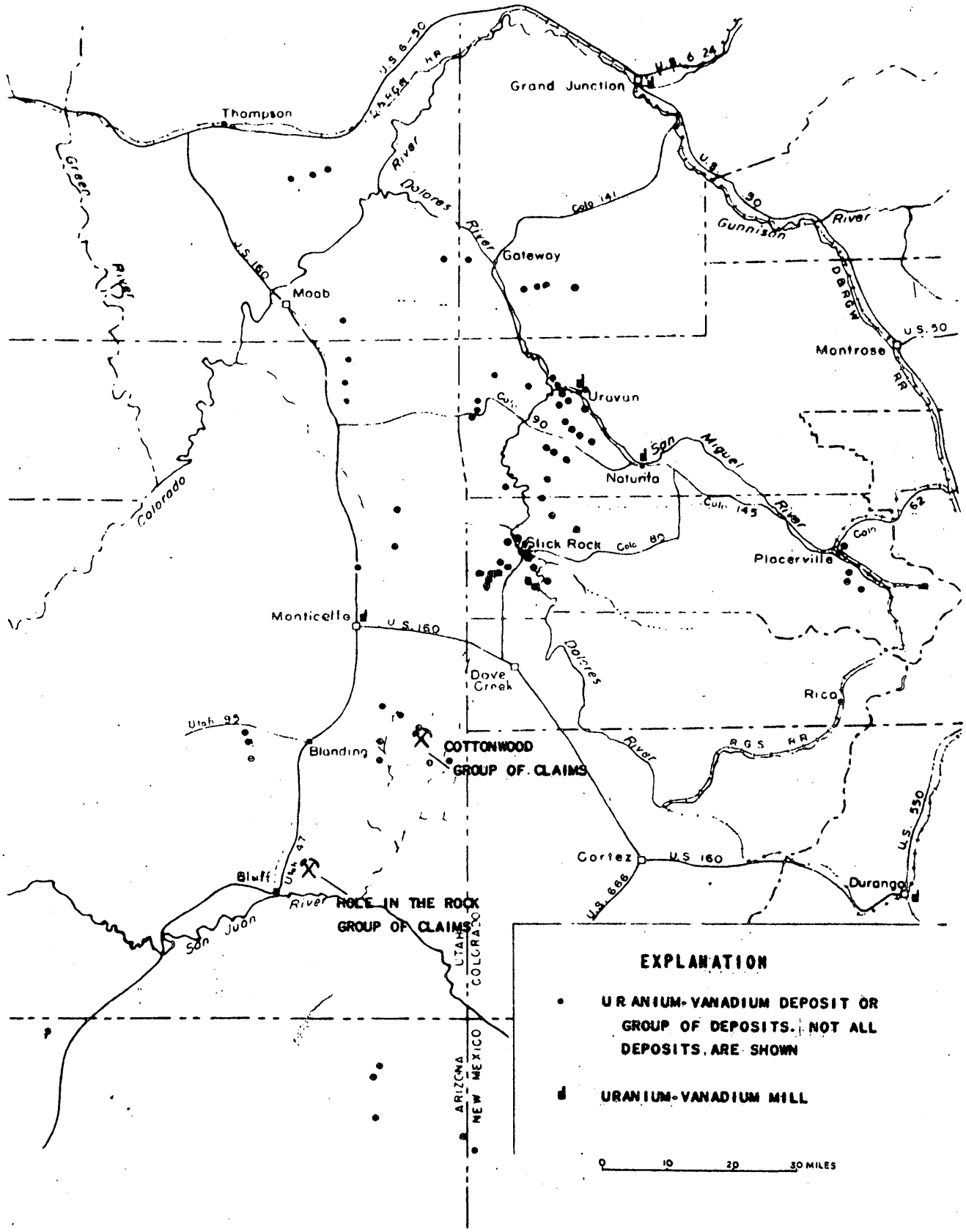

Figure 1. INDEX MAP SHOWING APPROXIMATE LOCATION OF THE HOLE IN THE ROCK GROUP OF CLAIMS AND THE COTTONWOOD GROUP OF CLAIMS, SAN JUAN COUNTY, UTAH

The applicants proposed a program of wagon drilling and core drilling at an estimated cost of $10,000. As a result of the field examination, it is recommended that the applicants' proposal be denied, because the lime content of the ore is so high that no production is likely from these claims after bonus payment for the initial 10,000 pounds of U_3O_8, of which 7,477 pounds have been produced at the end of June 1953. It is estimated that expected life of the mine under the current price schedule is less than one year. It must be recognized, however, that there is a chance of finding a small tonnage of uranium-bearing material with exploration.

The examining geologist wishes to acknowledge the helpful cooperation in obtaining information on the Hole in the Rock group of claims given by Messrs. E. V. Reinhardt, J. W. Smith, C. A. Rasor, and L. E. Perrin, all of the Atomic Energy Commission, Grand Junction Operations Office.

GEOLOGY

The exposed rocks on the Hole in the Rock group of claims consist of the Recapture, the Westwater Canyon, and the Brushy Basin members of the Upper Jurassic Morrison formation. The contacts between these members are gradational and are determined by gross changes in lithology and color.

The Recapture member is about 185 feet thick and consists of pale red fine-grained structureless and cross-bedded sandstone in beds from a few feet up to about 30 feet thick, intercalated with dusky red mudstone in beds from a few feet up to about 15 feet thick.

The Recapture forms a broad bench near the Hole in the Rock group of claims.

The Westwater Canyon member conformably overlies the Recapture member. The Westwater is about 200 feet thick and consists of units of fine- to medium-grained cross-bedded, channeling, light grayish yellow, weathering near white, sandstone in beds from less than 1.0 foot up to about 40 feet thick, and light greenish gray claystone in beds from less than 1.0 foot up to about 25 feet thick. The ore is believed to occur mainly in the middle part of the basal sandstone of the Westwater Canyon member. The ore-bearing sandstone is well exposed in the area and generally forms a prominent light-colored ledge above the red sandstones and claystones of the Recapture member. The Westwater generally weathers to steep ledges and narrow benches and forms the lower part of a prominent ridge on which the Hole in the Rock claims are located.

The Brushy Basin member, which conformably overlies the Westwater Canyon member, consists dominantly of light greenish gray claystone with thin beds of greenish gray fine-grained sandstone. An estimated 150 feet of the Brushy Basin member is exposed near the Hole in the Rock claims. The Brushy Basin forms a steep slope, the upper part of the ridge on which the claims are located.

The beds in this area dip easterly less than 1°; however, local channeling and compaction or slump structures in places give an impression of as much as a 5° easterly dip.

ORE DEPOSITS

History and production.--The Hole in the Rock claims are in an area of only a few mines and prospects and only a relatively small amount of ore has been produced from this area. The Hole in the Rock claims contains the largest and the only currently producing mine in the area. Minor amounts of carnotite in small pockets were noted apparently on the Hole in the Rock claims by Union Mines Development Corp. geologists in 1944 (Chamberlain, 1944, pl. sjb-1). According to records made available by C. A. Rasor, Atomic Energy Commission, the Hole in the Rock No. 1 claim was originally located by Walter J. Stevens on February 12, 1949. Mr. E. R. Randolph, present owner, acquired the claim from A. V. Feguson, et al., on January 1, 1951, E. R. and Harmon Randolph located the Hole in the Rock claims Nos. 2, 3, and 4. The locations of the Hole in the Rock claims were amended and re-recorded on September 10, 1951, by E. R. and Harmon Randolph.

The relocation certificates for these claims are on public record in San Juan County, Utah, as follows:

Claim	Book	Page	Date location	Date record
Hole in the Rock No. 1	R-4	118	9-5-51	9-10-51
Hole in the Rock No. 2	R-4	118	9-5-51	9-10-51
Hole in the Rock No. 3	R-4	118	9-5-51	9-10-51
Hole in the Rock No. 4	R-4	118	9-5-51	9-10-51

These four claims were certified for the production bonus on the first 10,000 pounds of U_3O_8 on December 12, 1951.

Table 1 shows the production record of the Hole in the Rock mine through June 1953, according to Atomic Energy Commission Finance Division records in Grand Junction, Colo. All the ore is believed to have been mined from the basal sandstone ledge in the Westwater Canyon member of the Morrison formation on the Hole in the Rock No. 1 claim.

Table 1.--Production from the Hole in the Rock mine, Monticello district, San Juan Co., Utah

Period	Ore (Dry tons)	U_3O_8 %	U_3O_8 (Dry pounds)	V_2O_5 %	V_2O_5 (Dry pounds)	$CaCO_3$ Range in %	Mill	Producers
1 (?) month 1950	9.42	.30	56.50	.74	139.36	--	--	Ferguson & Goforth
12 months 1951	574.19	.24	2,735.87	.36	4,188.49	3.9 to 21.3	Monticello	Ferguson & Goforth; E.R. & Harmon Randolph
12 months 1952	400.40	.31	2,487.53	.15	1,195.73	11.5 to 23.4	Monticello Rifle	E.R. & Harmon Randolph
First 6 months 1953	407.44	.27	2,197.07	.25	2,004.69	15.2 to 19.9	Monticello	E.R. & Harmon Randolph
Grand Totals	1,391.45	.27	7,476.97	.27	7,528.27			

The records show that the Hole in the Rock mine has been a consistent producer since 1951, that the grade of U_3O_8 has been kept at a profitable figure and that production has apparently increased in 1953. On the other hand, the grade of V_2O_5 has generally been too low for payment. The lime ($CaCO_3$) content has been exceptionally high for ore deposits in the Morrison formation. This high lime content has caused a penalty to be assessed against shipment from this mine. The penalty for lime at the Monticello mill is $1.00 for ore containing 6 percent or more lime plus $0.30 per ton for each 1 percent above 6 percent. Mr. Harmon Randolph stated that for the past several months the penalty for lime of the Hole in the Rock ore has averaged about $5.00 per ton.

Mr. Harmon Randolph further stated that he doubted that production could be profitably continued after initial production bonus on the first 10,000 pounds is paid. As of June 1953, about 2,523 pounds of U_3O_8 or about 470 tons of ore with an average grade of .27 percent U_3O_8 remained to be produced for payment of the initial production bonus. The present price (before haulage allowance of $0.06 per mile) of .27 percent U_3O_8 ore is $41.55 per ton including the bonus and only $22.65 without the production bonus. Considering the average lime penalty on the Hole in the Rock ore, the average payment per ton of ore would be about $17.65 per ton (excluding the haulage allowance). The examining geologist agrees with Mr. Harmon Randolph that the Hole in the Rock mine probably cannot profitably be mined without the bonus payment. If this is true, at the present rate of production the expected life of the Hole in the Rock mine is less than one year.

Ore bodies.--Most known uranium deposits in the Monticello mining district are in the Salt Wash member of the Jurassic Morrison formation. Most of the minable deposits are in the upper sandstone of the Salt Wash member. The ore occurrences near Bluff are exceptions to these generalizations. Mineralized rock is known only in the Recapture and Westwater Canyon member of the Morrison formation in this area. The occurrences are generally small, scattered, and uneconomic. The Hole in the Rock deposit is apparently the largest and at present the only producing mine near Bluff.

The Hole in the Rock deposit is in the basal sandstone in the Westwater Canyon member of the Morrison formation. This sandstone is about 40 feet thick at the mine and forms a prominent well-exposed light colored ledge near the mine. Most of the mineralized rock and the principal mine workings are in the middle of this ledge but some mineralized rock has been mined from the base of this ledge. The mineralized rock generally forms rudely tabular masses but thickens irregularly in places to form roll-like ore bodies. The edges of the bodies of mineralized rock generally "horsetail" into barren rock.

The mineralized rock is colored dark gray with scattered bright yellow and greenish yellow minerals. Barren rock is generally a uniform light grayish yellow. The dark gray color of the mineralized rock is believed to be caused by the presence of very fine-grained vanadium hydromicas. The bright yellow and greenish yellow minerals are believed to be uranium minerals of the carnotite group.

The ore minerals are generally associated with macerated carbonaceous material. Although in places accumulations of carbonaceous material are not mineralized, the presence of carbonaceous material appears to be a guide to ore. No general trend of the deposit was determined by the examining geologist although the trend of the largest mined ore body was approximately south. Mr. E. V. Reinhardt, Atomic Energy staff geologist, reports that the Hole in the Rock deposit appears to be on the west flank of a broad channel about 600 feet wide and with a maximum depth of about 40 feet and with a general trend of about S. 10° E. near the mine. Mr. Reinhardt suggests that the channel controls the ore deposit and that the ore trend will be about the same as the channel trend, S. 10° E.

Mineralized rock occurs erratically throughout the mine workings. According to Mr. Harmon Randolph the thickest ore layer mined reached a maximum thickness of about 8 feet but this ore layer thinned in about 10 feet to a thickness of less than 4 feet. The thickest layer of mineralized rock observed in the mine was about 2 feet thick. Most layers of ore were less than 1.5 feet thick. According to Mr. Harmon Randolph the largest ore body was from about 8 to less than 4 feet thick, from about 10 feet to 20 feet wide and about 60 feet long. An ore layer now being mined in the lower southeast workings appears to have probably similar horizontal dimensions but is only 1.5 to less than 1 foot thick. Much production has apparently come from scattered small pockets not more than 10 feet in diameter.

These pockets contain abundant carbonaceous material and are believed to contain much higher grade ore than the average grade of ore shipped from the mine.

During the examination a plan of the mine showing ore occurrences was loaned by Mr. J. W. Smith, Atomic Energy Commission geologist. Although it is difficult to make visual estimates of grade of uranium ore, the examining geologist believes that most exposures of mineralized rock over 1.0 foot thick constitute ore. Based on the amount of mineralized rock and ore showing in the mine workings and the dominantly tabular habit of the ore bodies, the indicated and inferred ore based on reasonable extensions of known ore occurrences of the Hole in the Rock mine is estimated to be on the order of 300 tons with an average grade of .27 percent. All of this inferred and indicated ore lies in the Hole in the Rock No. 1 claim. No mineable ore has been shown to exist on the Hole in the Rock claims Nos. 2, 3, and 4, although mineralized rock is reported on some outcrops in these claims. Considering the record of past production, the erratic distribution of ore bodies, and the limited amount of exposures on outcrops and in mine workings, the total potential ore predicted on the basis of geologic interpretation of all four claims is estimated to be on the order of 2,000 tons with an average grade of .27 percent U_3O_8. However, as pointed out in the discussion of past production, the high lime content (mostly between 15% and 20% $CaCO_3$) of the Hole in the Rock ore will probably make this deposit uneconomic after bonus payment ceases.

PROPOSED EXPLORATION

Messrs. E. R. and Harmon Randolph, the applicants, have proposed exploration by drilling an unspecified number of wagon drill and core drill holes on Hole in the Rock claims Nos. 1, 2, 3, and 4 at an estimated cost of $10,000, of which the Government's share would be $9,000. Most of the drilling would be on a narrow bench about 300 feet wide and about 2,000 feet long about 80 feet above the principal mine workings. With a moderate amount of bulldozer work this drilling area could be doubled and could cover parts of all claims.

CONCLUSIONS AND RECOMMENDATIONS

Uranium-bearing rock occurs in the basal sandstone of the Westwater Canyon of the Morrison formation at the Hole in the Rock group of claims. The property has produced 1,391 tons of ore with an average grade of 0.27 percent U_3O_8 through June 1953. Indicated and inferred reserves are estimated to be on the order of 300 tons but total potential ore of the property is estimated to be on the order of 2,000 tons. The lime content of the ore is high and penalties for lime content will probably make the deposits uneconomic to mine when the bonus payment ceases. The life of this mine is estimated by the examining geologist at less than one year.

It is recommended that the applicants' proposal be denied because the ore bodies are for the most part small and erratically distributed and would be difficult to find except by expensive close-spaced core drilling and because the lime content of the ore is so high that this deposit will not be minable after bonus payment for the initial production bonus payment ceases.

If the base price of uranium ore were to be increased, or if it is a purpose of DMEA program to find uranium-bearing material, even though the material found might not be proditably mined under the existing price schedule, a program of close-spaced core drilling may be feasible for this property. If DMEA reverses the recommendation of this report and approves exploration on this property, it will be necessary to prepare a plane-table map of the topography of the Hole in the Rock area in order to prepare drilling plans.

REFERENCE CITED

Chamberlain, V. R., 1946, Report on Comb Ridge Fold district, unpublished report, Union Mines Development Corp. (in AEC files).

DMEA 3123

E. R. AND HARMON RANDOLPH
HOLE IN THE ROCK AND COTTONWOOD GROUPS
SAN JUAN COUNTY, UTAH

Engineering Report

By Carl Belser
Mining Engineer
Bureau of Mines

Reviewed by
DMEA OPERATING COMMITTEE
9-25-53
(date)

DMEA 3123

E. R. AND HARMON RANDOLPH
HOLE IN THE ROCK AND COTTONWOOD GROUPS
SAN JUAN COUNTY, UTAH

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ILLUSTRATIONS

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DMEA 3123

E. R. AND HARMON RANDOLPH
HOLE IN THE ROCK AND COTTONWOOD GROUPS
SAN JUAN COUNTY, UTAH

ENGINEERING REPORT

By

Carl Belser

INTRODUCTION

E. R. and Harmon Randolph, a partnership, whose business address is Bluff, San Juan County, Utah, on June 3, 1953, submitted an application to the Defense Minerals Exploration Administration for aid in an exploration project on the Hole in the Rock and Cottonwood groups of claims, both located in San Juan County, Utah. The application, DMEA 3123, requested aid in drilling 8,000 feet of wagon drill holes and 2,666 feet of core drill holes at a revised estimated cost of $17,992.00, of which the Government's participation (90 percent for uranium) would be $16,192.80. This proposed exploration was to test the ore horizons in the Morrison formation. It was proposed to test each of the four claims in the Hole in the Rock group and the two claims in the Cottonwood group with approximately 1,333 feet of wagon drilling and 444 feet of core drilling. The original, over-all estimated cost of this work by the applicant, including geological consultant, assaying, and bulldozer preparation of access roads and drill sites, was $10,000.00.

A joint field investigation was made of the Hole in the Rock group by a Geological Survey and Bureau of Mines examining team on August 20, 1953. At the time of the examination, E. R. Randolph notified the examining team that the applicants wished to defer the examination of the Cottonwood group, pending the possible drilling of that area by the Atomic Energy Commission. The Cottonwood group is in T. 35 S., R. 26 E., Salt Lake principal meridian, and about 100 miles distant, by road, from the Hole in the Rock group. The Cottonwood group was given no further consideration in the field or in this report.

ACKNOWLEDGMENTS

Both E. R. and Harmon Randolph were present during the examination.

E. V. Reinhardt, staff geologist, Atomic Energy Commission, Grand Junction, Colo., was assigned by Ernest Gordon, supervisor, Atomic Energy Commission, Grand Junction, Colo., to act in an advisory capacity to the examining team.

R. P. Fischer, acting district supervisor, Geological Survey, Grand Junction, Colo., assigned G. W. Weir, geologist, to make the examination as the Geological Survey member of the examining team.

LOCATION, TOPOGRAPHY, AND CLIMATE

The Hole in the Rock group of mining claims is in the south part of sec. 10, T. 40 S., R. 22 E., Salt Lake principal meridian, and the Cottonwood group is in T. 35 S., R. 26 E., Salt Lake principal meridian, San Juan County, Utah (fig. 1).

The claims cover a small, steep-sided hill that rises above the plateau on the south and west and drops abruptly into the deeply eroded Recapture Creek basin on the north and east. The altitude of the mine

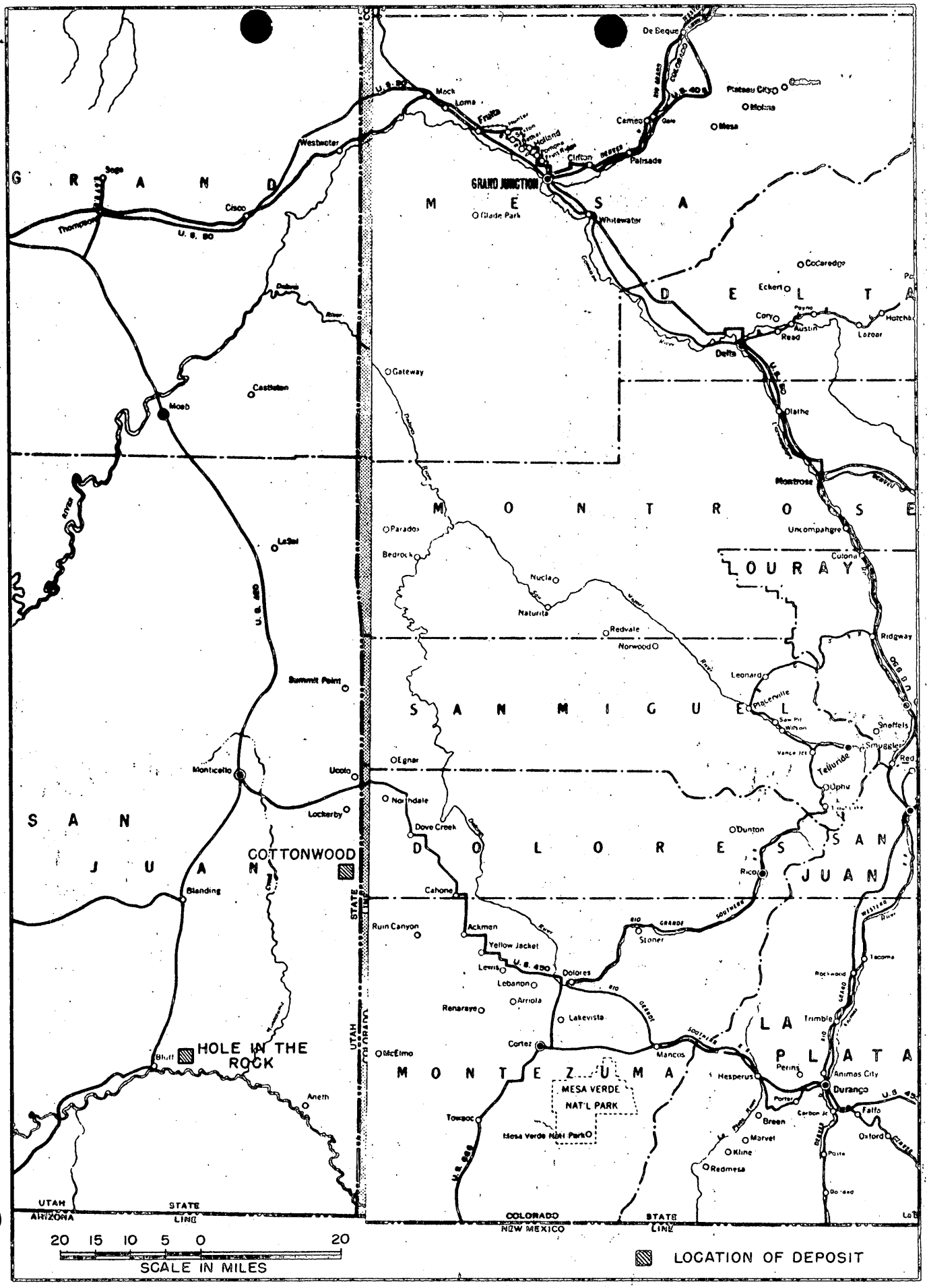

FIGURE 1. - LOCATION MAP, E. R. AND HARLON RANDOLPH, HOLE IN THE ROCK AND COTTONWOOD GROUPS, SAN JUAN COUNTY, UTAH. (DMEA 3123)

workings is about 5,300 feet. Annual rainfall is less than 12 inches, the winters are mild, and operations can be carried on the year around. Water, suitable for domestic and mining purposes, can be hauled from Bluff.

There is no native timber growing in the immediate vicinity of the property, but native timber, suitable for mine use, can be obtained at reasonable prices. A fair secondary road, 4 miles in length, connects with State Highway 47 about 1 mile north of Bluff, the nearest post office and telephone station. Mine supplies can be obtained from Blanding, 30 miles to the north, or from Monticello, 52 miles to the north, on State Highway 47. The ore is milled at Monticello. Crescent Junction, 142 miles to the north, is the nearest railhead.

Two small cabins are located near the mine, and accommodations for miners are available in Bluff.

HISTORY AND PRODUCTION

The Hole in the Rock claims were first worked in January 1950. Since that time, 1,391.45 tons containing 0.27 percent U_3O_8 and 0.27 percent V_2O_5 have been shipped. About 400 tons of this production came from a small surface pit and the balance from underground mine workings. The ore contains from 15 to 22 percent $CaCO_3$ and carried a penalty of $1.00 base plus $0.30 a unit for each percentage of $CaCO_3$ over 6 percent.

OWNERSHIP AND EXTENT

The property consists of four unpatented claims, the Hole in the Rock Nos. 1 to 4 inclusive. The applicants state that the property is free of any liens or encumbrances.

DESCRIPTION OF DEPOSITS

The exposed rocks on the Hole in the Rock claims are flat-dipping shales, mudstones, and sandstones of the Morrison (Upper Jurassic) formation. In the vicinity of the mine the Salt Wash member is much thinner than it is in the Uravan area. The ore occurs as lenses in the Salt Wash sandstones.

The control for the principal uranium mineralization at the Hole in the Rock mine appears to be a channel in the Salt Wash formation. This channel is about 600 feet wide, 40 feet deep, and has a S. 10° E. strike. The limited amount of underground workings indicates two ore zones about 12 feet apart vertically. The largest ore lens so far mined appears to have had maximum dimensions of about 30 feet long, 15 feet wide, and 6 feet thick.

The mine has been worked by a small, shallow open pit and five underground workings. At the time of the examination, the underground workings totaled 567 feet of which 319 feet were on the lower ore zone, 188 feet on the upper ore zone, and about 60 feet in a tunnel driven below the open pit. The country rock is moderately firm and, so far, has stood without timbering.

MINABLE ORE RESERVES

There are no measurable ore reserves. Indicated and inferred reserves will extend in scattered lenses throughout an area of at least 600 by 600 feet. There is nothing to indicate that this ore will vary greatly in grade from the ore already mined.

PRESENT STATUS

Exploration and Development

The property has been explored only by mining and all ore encountered, except that left as pillars, has been removed.

Mining and Milling Equipment and Other Facilities

Mining equipment now on the property consists of the following:

1 Wagner tractor loader
1 LeRoi Air Master 105-cubic foot compressor
1 Ingersoll-Rand 45-pound jackhammer with jack leg

The applicants have a 160-cubic foot LeRoi compressor at the Cottonwood group. Present working crew at the Hole in the Rock mine consists of three men. Four-foot, fourteen-hole rounds are drilled with 7/8-inch steel, using press-on, hard-surfaced bits.

There is no milling equipment on the property. The ore is shipped to the Monticello, Utah mill of the Atomic Energy Commission. This truck haul costs 8 cents a ton-mile, of which the Atomic Energy Commission pays 6 cents.

PROPOSED EXPLORATION

The applicants originally proposed to further explore the two groups of claims by the following:

Item	Group: Hole in the Rock		Group: Cottonwood	
Geological consultant and assays		$ 667.00		$ 333.00
Bulldozer work at $10.00 per hour	66.7 hours	667.00	33.3 hours	333.00
Wagon drilling at $1.00 per foot	5,333 feet	5,333.00	2,667 feet	2,667.00
Core drilling at $3.00 per foot	1,776 feet	5,328.00	888 feet	2,664.00
		$11,995.00		$5,997.00
Total			$17,992.00	

The applicants estimated that 1,333 feet of wagon drilling and 444 feet of core drilling were needed to explore each claim.

ESTIMATED COST OF PROJECT

On the Hole in the Rock group the feasible area to drill appears to be about 600 feet by 600 feet, which is the approximate width of the channel in the Salt Wash member of the Morrison formation from its outcrop on the north side of the hill to its approximate outcrop on the south side of the hill. On a 100-foot grid, this would require 36 holes with an average depth of about 80 feet or 2,880 feet of wagon drilling.

The examining engineer estimates that a project of wagon drilling to adequately explore this area would cost about $3,758.00 and require 1 month to complete.

CONCLUSIONS

The Hole in the Rock deposit is in a new district where probably the only occurrence in the immediate vicinity of the Salt Wash member of the Morrison formation is confined to a comparatively small area where the Salt Wash formation cuts through a hill on the Hole in the Rock claims. The possible productive area seems to be limited to an area of about 600 by 600 feet. While the examining team is in agreement that the drilling of this area will locate new ore, the ore lenses are small and many of them will be missed unless drilling is done at short intervals between holes. The examining team believes that under the present conditions (The applicants have only 2,486 pounds of U_3O_8 to ship or 460 tons of ore before they exhaust their bonus after which 0.27 percent U_3O_8 ore will be worth about $10.50 per ton at the mill after $CaCO_3$ penalty and

trucking deductions.) the property will not be materially helped by drilling and that the applicants should continue with their present form of mining, paying special attention to old stream channels.

RECOMMENDATIONS

It is recommended that the application be denied.

kp

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

224 New Customhouse
Denver 2, Colorado

September 11, 1953.

Memorandum

To: Administrator, Defense Minerals Exploration Administration
Attention: 200

From: Field Team, Region IV

Subject: Final Report, DMEA Docket 3123 (Uranium), Randolph and Randolph, Hole in the Rock claims, San Juan County, Utah.

Enclosed are four copies of the final report on the subject docket, a copy of the letter of denial to the applicant and two copies of Form 3b.

W. H. King

W. H. King

A. H. Koschmann

A. H. Koschmann

Enclosures

DENIED

OFFICE OF THE ADMINISTRATOR

C
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P
Y

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION
WASHINGTON 25, D. C.

RECEIVED 9/17/53

224 New Customhouse
Denver 2, Colorado

September 11, 1953

Mr. E. R. and Harmon Randolph
Bluff
Utah

Re: Docket DMEA-3123

Gentlemen:

Reference is made to your application for Government aid on the Hole in the Rock claims.

Projects approved by the Defense Minerals Exploration Administration must, in its judgment, show definite promise of yielding material of acceptable grade, and in quantities that will significantly improve the mineral supply position for the National Defense Program.

A careful study of your property and data available to this agency reveals that the probability of disclosing mineable reserves of uranium by your proposed exploration program is not considered sufficiently promising to justify Government participation. Under these circumstances, we regret to advise that your application for exploration aid is denied.

Very truly yours,

/s/ W. H. King
Field Team, Region IV

/s/ A. H. Koschmann
Field Team, Region IV

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

September 11, 1953.

Memorandum

To: Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Final Report, DMEA Docket 3123 (Uranium), Randolph and Randolph, Hole in the Rock Claims, San Juan County, Utah.

Enclosed are eleven copies of the final engineering report on the subject docket.

The applicants originally requested $10,000.00 for wagon drilling and diamond drilling on the Hole in the Rock and Cottonwood claims.

The engineer examiner concludes that since the Cottonwood group was withdrawn by the applicants the likely area for exploration is small and he recommends that the application be denied.

We concur in this recommendation.

W. H. King

W. H. King

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Region IV

Building 20, Room 137
Denver Federal Center
Denver 14, Colorado
September 8, 1953

Memorandum

To: Executive Officer, Field Team, Region IV

From: Chief, Mineral Resources Branch, Mining Division
Region IV

Subject: DMEA 3123, Hole in the Rock and Cottonwood groups, (Uranium)
E. R. and Harmon Randolph, San Juan County, Utah

Enclosed are the original and ten copies of Carl Belser's engineering report on the subject docket. G. W. Weir, the participating geologist, is not available for conference and consequently a joint "Summary, Conclusions, and Recommendations" is not being prepared.

Belser concludes that after the Cottonwood group was withdrawn by the applicant from consideration, the likely area for exploration is small, and although some small ore lenses might be discovered, as many, if not more, would be missed unless drilling was done on an extremely close-spaced grid pattern. He recommends denial of the application and I approve. Incidentally, the Cottonwood group was not examined.

The application forwarded with your memorandum of July 27, 1953, instructing us to make the investigation, is also returned herewith.

Wm. Traver

W. M. Traver

enclosures

WMT/kp

cc 10
DMEA 3123
DMEA Chron

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.
200 New Customhouse
Denver 2, Colorado

September 8, 1953

Memorandum

To: DMEA Field Team, Region IV

From: A. H. Koschmann

Subject: DMEA Docket 3123 (Uranium), Randolph and Randolph, Hole in the Rock and Cottonwood claims, San Juan County, Utah

Enclosed are 11 copies of a geologic report by G. W. Weir, Geological Survey, and Carl Beiser, Bureau of Mines, covering the above docket.

It has been recommended that the loan be denied.

The brochure is enclosed.

A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Enclosures (11)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
P. O. BOX 360
GRAND JUNCTION, COLORADO

MEMORANDUM

SEPTEMBER 2, 1953

TO: A. H. Koschmann, Field Team, Region IV

FROM: R. P. Fischer, Colorado Plateau District

SUBJECT: DMEA 3123 (Uranium), Randolph and Randolph, Hole in the Rock and Cottonwood claims, San Juan County, Utah

Transmitted herewith are eleven copies of a geologic report on the subject claims. The proposed exploratory drilling applied for is estimated to cost $10,000.

The attached report, by G. W. Weir, is based on a field examination made jointly with Carl Belser, U. S. Bureau of Mines, on August 20, 1953, and accompanied by the applicants and two AEC representatives, E. V. Reinhardt and J. W. Smith. Reinhardt and Smith concur with the recommendations in this report.

Because the ore from the Hole in the Rock mine is penalized for its high lime content and is low in vanadium, the applicant stated that mining operations would not be profitable under present economic conditions without the initial production bonus payment. As the property will not qualify for the initial production bonus after the next 400 to 500 tons of ore is produced, and as indicated and inferred reserves total nearly this amount, it would appear that any additional ore found with exploration probably could not be mined at a profit. For this reason, the field examiners concluded that the application should be denied, as stated in the accompanying report.

On the other hand, as the report points out, potential reserves probably total about 2,000 tons of uranium-bearing material. At least some of this material probably could be found by exploration.

Thus, it would appear that there is a chance of finding uranium-bearing material with exploration, but it is likely that this material probably could not be mined at a profit under present economic conditions. From the standpoint of guiding policy, it will be interesting and helpful for us in the field to see if DMEA concurs with the recommendation for denial, which is based on the conclusion that any ore found could not be mined profitably under present economic conditions, or if the recommendation is reversed on the chance of finding uranium-bearing material, whether or not it is economically minable.

R. P. Fischer

R. P. Fischer
Acting District Supervisor

Enclosures 11

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMEA 3123, E. R. and Harmon Randolph

Hole in the Rock and Cottonwood Groups

San Juan County, Utah

Uranium

Carl Belser, Mining Engineer
Bureau of Mines

September 8, 1953

DMEA DOCKET 3123

E. R. RANDOLPH AND HARMON RANDOLPH, HOLE IN THE ROCK GROUP OF CLAIMS AND COTTONWOOD GROUP OF CLAIMS, MONTICELLO DISTRICT, SAN JUAN COUNTY, UTAH

INTRODUCTION AND SUMMARY

Messrs. E. R. Randolph and Harmon Randolph, owners of the Hole in the Rock group of claims and the Cottonwood group of claims, have applied (DMEA 3123) to the Defense Minerals Exploration Administration for a loan to explore for uranium on these properties. The Hole in the Rock group of claims are in sec. 10, T. 40 S., R. 22 E., S. L. M., on a prominent ridge about 4 miles northeast of Bluff, Utah (see fig. 1). The Cottonwood group of claims are in Coalbed Canyon about 12 miles southeast of Monticello, Utah, (see fig. 1) and are believed to be in sec. 10, T. 36 S., R. 25 E., S. L. M., although the application gives the location as W½ of T. 35 S., R. 26 E., S. L. M.

The Hole in the Rock group of claims was examined on August 20, 1953, by G. W. Weir, Geological Survey, and Carl Belser, Bureau of Mines, accompanied by E. R. Randolph and Harmon Randolph, the applicants, and E. V. Reinhardt and J. W. Smith, Atomic Energy Commission. Because the applicants stated that they wished to withdraw the part of the application pertaining to the Cottonwood group of claims, these claims were not visited by the examining team. Therefore, this report and recommendations herein apply to the Hole in the Rock group of claims.

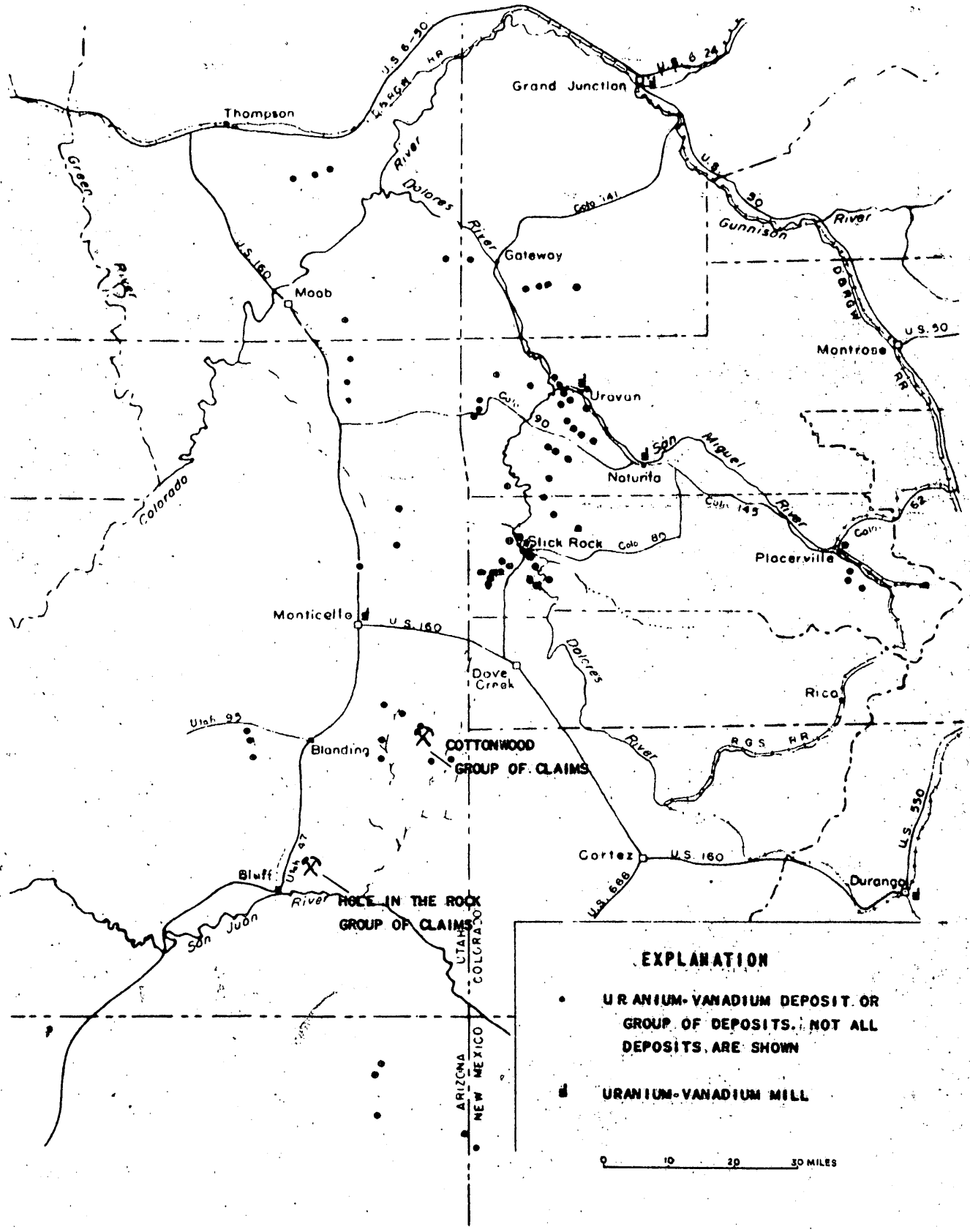

Figure 1. INDEX MAP SHOWING APPROXIMATE LOCATION OF THE HOLE IN THE ROCK GROUP OF CLAIMS AND THE COTTONWOOD GROUP OF CLAIMS, SAN JUAN COUNTY, UTAH

The applicants proposed a program of wagon drilling and core drilling at an estimated cost of $10,000. As a result of the field examination, it is recommended that the applicants' proposal be denied, because the lime content of the ore is so high that no production is likely from these claims after bonus payment for the initial 10,000 pounds of U_3O_8, of which 7,477 pounds have been produced at the end of June 1953. It is estimated that expected life of the mine under the current price schedule is less than one year. It must be recognized, however, that there is a chance of finding a small tonnage of uranium-bearing material with exploration.

The examining geologist wishes to acknowledge the helpful cooperation in obtaining information on the Hole in the Rock group of claims given by Messrs. E. V. Reinhardt, J. W. Smith, C. A. Rasor, and L. E. Perrin, all of the Atomic Energy Commission, Grand Junction Operations Office.

GEOLOGY

The exposed rocks on the Hole in the Rock group of claims consist of the Recapture, the Westwater Canyon, and the Brushy Basin members of the Upper Jurassic Morrison formation. The contacts between these members are gradational and are determined by gross changes in lithology and color.

The Recapture member is about 185 feet thick and consists of pale red fine-grained structureless and cross-bedded sandstone in beds from a few feet up to about 30 feet thick, intercalated with dusky red mudstone in beds from a few feet up to about 15 feet thick.

The Recapture forms a broad bench near the Hole in the Rock group of claims.

The Westwater Canyon member conformably overlies the Recapture member. The Westwater is about 200 feet thick and consists of units of fine- to medium-grained cross-bedded, channeling, light grayish yellow, weathering near white, sandstone in beds from less than 1.0 foot up to about 40 feet thick, and light greenish gray claystone in beds from less than 1.0 foot up to about 25 feet thick. The ore is believed to occur mainly in the middle part of the basal sandstone of the Westwater Canyon member. The ore-bearing sandstone is well exposed in the area and generally forms a prominent light-colored ledge above the red sandstones and claystones of the Recapture member. The Westwater generally weathers to steep ledges and narrow benches and forms the lower part of a prominent ridge on which the Hole in the Rock claims are located.

The Brushy Basin member, which conformably overlies the Westwater Canyon member, consists dominantly of light greenish gray claystone with thin beds of greenish gray fine-grained sandstone. An estimated 150 feet of the Brushy Basin member is exposed near the Hole in the Rock claims. The Brushy Basin forms a steep slope, the upper part of the ridge on which the claims are located.

The beds in this area dip easterly less than 1°; however, local channeling and compaction or slump structures in places give an impression of as much as a 5° easterly dip.

ORE DEPOSITS

History and production.--The Hole in the Rock claims are in an area of only a few mines and prospects and only a relatively small amount of ore has been produced from this area. The Hole in the Rock claims contains the largest and the only currently producing mine in the area. Minor amounts of carnotite in small pockets were noted apparently on the Hole in the Rock claims by Union Mines Development Corp. geologists in 1944 (Chamberlain, 1944, pl. sjb-1). According to records made available by C. A. Rasor, Atomic Energy Commission, the Hole in the Rock No. 1 claim was originally located by Walter J. Stevens on February 12, 1949. Mr. E. R. Randolph, present owner, acquired the claim from A. V. Feguson, et al., on January 1, 1951, E. R. and Harmon Randolph located the Hole in the Rock claims Nos. 2, 3, and 4. The locations of the Hole in the Rock claims were amended and re-recorded on September 10, 1951, by E. R. and Harmon Randolph.

The relocation certificates for these claims are on public record in San Juan County, Utah, as follows:

Claim	Book	Page	Date location	Date record
Hole in the Rock No. 1	R-4	118	9-5-51	9-10-51
Hole in the Rock No. 2	R-4	118	9-5-51	9-10-51
Hole in the Rock No. 3	R-4	118	9-5-51	9-10-51
Hole in the Rock No. 4	R-4	118	9-5-51	9-10-51

These four claims were certified for the production bonus on the first 10,000 pounds of U_3O_8 on December 12, 1951.

Table 1 shows the production record of the Hole in the Rock mine through June 1953, according to Atomic Energy Commission Finance Division records in Grand Junction, Colo. All the ore is believed to have been mined from the basal sandstone ledge in the Westwater Canyon member of the Morrison formation on the Hole in the Rock No. 1 claim.

Table 1.--Production from the Hole in the Rock mine, Monticello district, San Juan Co., Utah

Period	Ore (Dry tons)	U_3O_8 %	U_3O_8 (Dry pounds)	V_2O_5 %	V_2O_5 (Dry pounds)	$CaCO_3$ Range in %	Mill	Producers
1 (?) month 1950	9.42	.30	56.50	.74	139.36	--	--	Ferguson & Goforth
12 months 1951	574.19	.24	2,735.87	.36	4,188.49	3.9 to 21.3	Monticello	Ferguson & Goforth; E.R. & Harmon Randolph
12 months 1952	400.40	.31	2,487.53	.15	1,195.73	11.5 to 23.4	Monticello Rifle	E.R. & Harmon Randolph
First 6 months 1953	407.44	.27	2,197.07	.25	2,004.69	15.2 to 19.9	Monticello	E.R. & Harmon Randolph
Grand Totals	1,391.45	.27	7,476.97	.27	7,528.27			

The records show that the Hole in the Rock mine has been a consistent producer since 1951, that the grade of U_3O_8 has been kept at a profitable figure and that production has apparently increased in 1953. On the other hand, the grade of V_2O_5 has generally been too low for payment. The lime ($CaCO_3$) content has been exceptionally high for ore deposits in the Morrison formation. This high lime content has caused a penalty to be assessed against shipment from this mine. The penalty for lime at the Monticello mill is $1.00 for ore containing 6 percent or more lime plus $0.30 per ton for each 1 percent above 6 percent. Mr. Harmon Randolph stated that for the past several months the penalty for lime of the Hole in the Rock ore has averaged about $5.00 per ton.

Mr. Harmon Randolph further stated that he doubted that production could be profitably continued after initial production bonus on the first 10,000 pounds is paid. As of June 1953, about 2,523 pounds of U_3O_8 or about 470 tons of ore with an average grade of .27 percent U_3O_8 remained to be produced for payment of the initial production bonus. The present price (before haulage allowance of $0.06 per mile) of .27 percent U_3O_8 ore is $41.55 per ton including the bonus and only $22.65 without the production bonus. Considering the average lime penalty on the Hole in the Rock ore, the average payment per ton of ore would be about $17.65 per ton (excluding the haulage allowance). The examining geologist agrees with Mr. Harmon Randolph that the Hole in the Rock mine probably cannot profitably be mined without the bonus payment. If this is true, at the present rate of production the expected life of the Hole in the Rock mine is less than one year.

Ore bodies.--Most known uranium deposits in the Monticello mining district are in the Salt Wash member of the Jurassic Morrison formation. Most of the minable deposits are in the upper sandstone of the Salt Wash member. The ore occurrences near Bluff are exceptions to these generalizations. Mineralized rock is known only in the Recapture and Westwater Canyon member of the Morrison formation in this area. The occurrences are generally small, scattered, and uneconomic. The Hole in the Rock deposit is apparently the largest and at present the only producing mine near Bluff.

The Hole in the Rock deposit is in the basal sandstone in the Westwater Canyon member of the Morrison formation. This sandstone is about 40 feet thick at the mine and forms a prominent well-exposed light colored ledge near the mine. Most of the mineralized rock and the principal mine workings are in the middle of this ledge but some mineralized rock has been mined from the base of this ledge. The mineralized rock generally forms rudely tabular masses but thickens irregularly in places to form roll-like ore bodies. The edges of the bodies of mineralized rock generally "horsetail" into barren rock.

The mineralized rock is colored dark gray with scattered bright yellow and greenish yellow minerals. Barren rock is generally a uniform light grayish yellow. The dark gray color of the mineralized rock is believed to be caused by the presence of very fine-grained vanadium hydromicas. The bright yellow and greenish yellow minerals are believed to be uranium minerals of the carnotite group.

The ore minerals are generally associated with macerated carbonaceous material. Although in places accumulations of carbonaceous material are not mineralized, the presence of carbonaceous material appears to be a guide to ore. No general trend of the deposit was determined by the examining geologist although the trend of the largest mined ore body was approximately south. Mr. E. V. Reinhardt, Atomic Energy staff geologist, reports that the Hole in the Rock deposit appears to be on the west flank of a broad channel about 600 feet wide and with a maximum depth of about 40 feet and with a general trend of about S. 10° E. near the mine. Mr. Reinhardt suggests that the channel controls the ore deposit and that the ore trend will be about the same as the channel trend, S. 10° E.

Mineralized rock occurs erratically throughout the mine workings. According to Mr. Harmon Randolph the thickest ore layer mined reached a maximum thickness of about 8 feet but this ore layer thinned in about 10 feet to a thickness of less than 4 feet. The thickest layer of mineralized rock observed in the mine was about 2 feet thick. Most layers of ore were less than 1.5 feet thick. According to Mr. Harmon Randolph the largest ore body was from about 8 to less than 4 feet thick, from about 10 feet to 20 feet wide and about 60 feet long. An ore layer now being mined in the lower southeast workings appears to have probably similar horizontal dimensions but is only 1.5 to less than 1 foot thick. Much production has apparently come from scattered small pockets not more than 10 feet in diameter.

These pockets contain abundant carbonaceous material and are believed to contain much higher grade ore than the average grade of ore shipped from the mine.

During the examination a plan of the mine showing ore occurrences was loaned by Mr. J. W. Smith, Atomic Energy Commission geologist. Although it is difficult to make visual estimates of grade of uranium ore, the examining geologist believes that most exposures of mineralized rock over 1.0 foot thick constitute ore. Based on the amount of mineralized rock and ore showing in the mine workings and the dominantly tabular habit of the ore bodies, the indicated and inferred ore based on reasonable extensions of known ore occurrences of the Hole in the Rock mine is estimated to be on the order of 300 tons with an average grade of .27 percent. All of this inferred and indicated ore lies in the Hole in the Rock No. 1 claim. No mineable ore has been shown to exist on the Hole in the Rock claims Nos. 2, 3, and 4, although mineralized rock is reported on some outcrops in these claims. Considering the record of past production, the erratic distribution of ore bodies, and the limited amount of exposures on outcrops and in mine workings, the total potential ore predicted on the basis of geologic interpretation of all four claims is estimated to be on the order of 2,000 tons with an average grade of .27 percent U_3O_8. However, as pointed out in the discussion of past production, the high lime content (mostly between 15% and 20% $CaCO_3$) of the Hole in the Rock ore will probably make this deposit uneconomic after bonus payment ceases.

PROPOSED EXPLORATION

Messrs. E. R. and Harmon Randolph, the applicants, have proposed exploration by drilling an unspecified number of wagon drill and core drill holes on Hole in the Rock claims Nos. 1, 2, 3, and 4 at an estimated cost of $10,000, of which the Government's share would be $9,000. Most of the drilling would be on a narrow bench about 300 feet wide and about 2,000 feet long about 80 feet above the principal mine workings. With a moderate amount of bulldozer work this drilling area could be doubled and could cover parts of all claims.

CONCLUSIONS AND RECOMMENDATIONS

Uranium-bearing rock occurs in the basal sandstone of the Westwater Canyon of the Morrison formation at the Hole in the Rock group of claims. The property has produced 1,391 tons of ore with an average grade of 0.27 percent U_3O_8 through June 1953. Indicated and inferred reserves are estimated to be on the order of 300 tons but total potential ore of the property is estimated to be on the order of 2,000 tons. The lime content of the ore is high and penalties for lime content will probably make the deposits uneconomic to mine when the bonus payment ceases. The life of this mine is estimated by the examining geologist at less than one year.

It is recommended that the applicants' proposal be denied because the ore bodies are for the most part small and erratically distributed and would be difficult to find except by expensive close-spaced core drilling and because the lime content of the ore is so high that this deposit will not be minable after bonus payment for the initial production bonus payment ceases.

If the base price of uranium ore were to be increased, or if it is a purpose of DMEA program to find uranium-bearing material, even though the material found might not be proditably mined under the existing price schedule, a program of close-spaced core drilling may be feasible for this property. If DMEA reverses the recommendation of this report and approves exploration on this property, it will be necessary to prepare a plane-table map of the topography of the Hole in the Rock area in order to prepare drilling plans.

REFERENCE CITED

Chamberlain, V. R., 1946, Report on Comb Ridge Fold district, unpublished report, Union Mines Development Corp. (in AEC files).

DMEA 3123

E. R. AND HARMON RANDOLPH
HOLE IN THE ROCK AND COTTONWOOD GROUPS
SAN JUAN COUNTY, UTAH

Engineering Report

By Carl Belser
Mining Engineer
Bureau of Mines

DMEA 3123

E. R. AND HARMON RANDOLPH
HOLE IN THE ROCK AND COTTONWOOD GROUPS
SAN JUAN COUNTY, UTAH

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DMEA 3123

E. R. AND HARMON RANDOLPH
HOLE IN THE ROCK AND COTTONWOOD GROUPS
SAN JUAN COUNTY, UTAH

ENGINEERING REPORT

By

Carl Belser

INTRODUCTION

E. R. and Harmon Randolph, a partnership, whose business address is Bluff, San Juan County, Utah, on June 3, 1953, submitted an application to the Defense Minerals Exploration Administration for aid in an exploration project on the Hole in the Rock and Cottonwood groups of claims, both located in San Juan County, Utah. The application, DMEA 3123, requested aid in drilling 8,000 feet of wagon drill holes and 2,666 feet of core drill holes at a revised estimated cost of $17,992.00, of which the Government's participation (90 percent for uranium) would be $16,192.80. This proposed exploration was to test the ore horizons in the Morrison formation. It was proposed to test each of the four claims in the Hole in the Rock group and the two claims in the Cottonwood group with approximately 1,333 feet of wagon drilling and 444 feet of core drilling. The original, over-all estimated cost of this work by the applicant, including geological consultant, assaying, and bulldozer preparation of access roads and drill sites, was $10,000.00.

A joint field investigation was made of the Hole in the Rock group by a Geological Survey and Bureau of Mines examining team on August 20, 1953. At the time of the examination, E. R. Randolph notified the examining team that the applicants wished to defer the examination of the Cottonwood group, pending the possible drilling of that area by the Atomic Energy Commission. The Cottonwood group is in T. 35 S., R. 26 E., Salt Lake principal meridian, and about 100 miles distant, by road, from the Hole in the Rock group. The Cottonwood group was given no further consideration in the field or in this report.

ACKNOWLEDGMENTS

Both E. R. and Harmon Randolph were present during the examination.

E. V. Reinhardt, staff geologist, Atomic Energy Commission, Grand Junction, Colo., was assigned by Ernest Gordon, supervisor, Atomic Energy Commission, Grand Junction, Colo., to act in an advisory capacity to the examining team.

R. P. Fischer, acting district supervisor, Geological Survey, Grand Junction, Colo., assigned G. W. Weir, geologist, to make the examination as the Geological Survey member of the examining team.

LOCATION, TOPOGRAPHY, AND CLIMATE

The Hole in the Rock group of mining claims is in the south part of sec. 10, T. 40 S., R. 22 E., Salt Lake principal meridian, and the Cottonwood group is in T. 35 S., R. 26 E., Salt Lake principal meridian, San Juan County, Utah (fig. 1).

The claims cover a small, steep-sided hill that rises above the plateau on the south and west and drops abruptly into the deeply eroded Recapture Creek basin on the north and east. The altitude of the mine

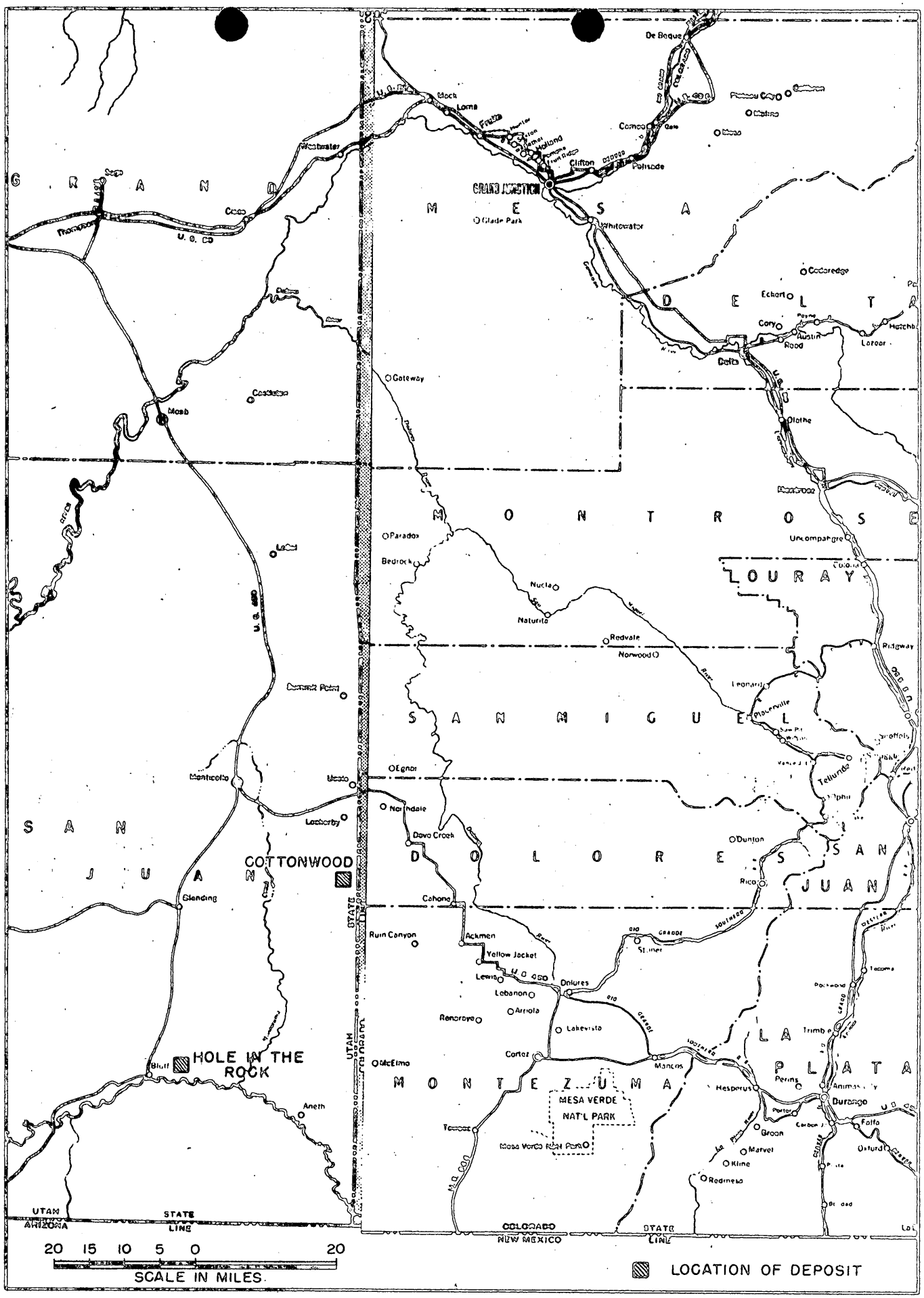

FIGURE 1. - LOCATION MAP, E. R. AND HARMON RANDOLPH, HOLE IN THE ROCK AND COTTONWOOD GROUPS, SAN JUAN COUNTY, UTAH. (DMEA 3123)

workings is about 5,300 feet. Annual rainfall is less than 12 inches, the winters are mild, and operations can be carried on the year around. Water, suitable for domestic and mining purposes, can be hauled from Bluff.

There is no native timber growing in the immediate vicinity of the property, but native timber, suitable for mine use, can be obtained at reasonable prices. A fair secondary road, 4 miles in length, connects with State Highway 47 about 1 mile north of Bluff, the nearest post office and telephone station. Mine supplies can be obtained from Blanding, 30 miles to the north, or from Monticello, 52 miles to the north, on State Highway 47. The ore is milled at Monticello. Crescent Junction, 142 miles to the north, is the nearest railhead.

Two small cabins are located near the mine, and accommodations for miners are available in Bluff.

HISTORY AND PRODUCTION

The Hole in the Rock claims were first worked in January 1950. Since that time, 1,391.45 tons containing 0.27 percent U_3O_8 and 0.27 percent V_2O_5 have been shipped. About 400 tons of this production came from a small surface pit and the balance from underground mine workings. The ore contains from 15 to 22 percent $CaCO_3$ and carried a penalty of $1.00 base plus $0.30 a unit for each percentage of $CaCO_3$ over 6 percent.

OWNERSHIP AND EXTENT

The property consists of four unpatented claims, the Hole in the Rock Nos. 1 to 4 inclusive. The applicants state that the property is free of any liens or encumbrances.

DESCRIPTION OF DEPOSITS

The exposed rocks on the Hole in the Rock claims are flat-dipping shales, mudstones, and sandstones of the Morrison (Upper Jurassic) formation. In the vicinity of the mine the Salt Wash member is much thinner than it is in the Uravan area. The ore occurs as lenses in the Salt Wash sandstones.

The control for the principal uranium mineralization at the Hole in the Rock mine appears to be a channel in the Salt Wash formation. This channel is about 600 feet wide, 40 feet deep, and has a S. 10° E. strike. The limited amount of underground workings indicates two ore zones about 12 feet apart vertically. The largest ore lens so far mined appears to have had maximum dimensions of about 30 feet long, 15 feet wide, and 6 feet thick.

The mine has been worked by a small, shallow open pit and five underground workings. At the time of the examination, the underground workings totaled 567 feet of which 319 feet were on the lower ore zone, 188 feet on the upper ore zone, and about 60 feet in a tunnel driven below the open pit. The country rock is moderately firm and, so far, has stood without timbering.

MINABLE ORE RESERVES

There are no measurable ore reserves. Indicated and inferred reserves will extend in scattered lenses throughout an area of at least 600 by 600 feet. There is nothing to indicate that this ore will vary greatly in grade from the ore already mined.

PRESENT STATUS

Exploration and Development

The property has been explored only by mining and all ore encountered, except that left as pillars, has been removed.

Mining and Milling Equipment and Other Facilities

Mining equipment now on the property consists of the following:

1 Wagner tractor loader
1 LeRoi Air Master 105-cubic foot compressor
1 Ingersoll-Rand 45-pound jackhammer with jack leg

The applicants have a 160-cubic foot LeRoi compressor at the Cottonwood group. Present working crew at the Hole in the Rock mine consists of three men. Four-foot, fourteen-hole rounds are drilled with 7/8-inch steel, using press-on, hard-surfaced bits.

There is no milling equipment on the property. The ore is shipped to the Monticello, Utah mill of the Atomic Energy Commission. This truck haul costs 8 cents a ton-mile, of which the Atomic Energy Commission pays 6 cents.

PROPOSED EXPLORATION

The applicants originally proposed to further explore the two groups of claims by the following:

Item	Group			
	Hole in the Rock		Cottonwood	
Geological consultant and assays		$ 667.00		$ 333.00
Bulldozer work at $10.00 per hour	66.7 hours	667.00	33.3 hours	333.00
Wagon drilling at $1.00 per foot	5,333 feet	5,333.00	2,667 feet	2,667.00
Core drilling at $3.00 per foot	1,776 feet	5,328.00	888 feet	2,664.00
		$11,995.00		$5,997.00
	Total		$17,992.00	

The applicants estimated that 1,333 feet of wagon drilling and 444 feet of core drilling were needed to explore each claim.

ESTIMATED COST OF PROJECT

On the Hole in the Rock group the feasible area to drill appears to be about 600 feet by 600 feet, which is the approximate width of the channel in the Salt Wash member of the Morrison formation from its outcrop on the north side of the hill to its approximate outcrop on the south side of the hill. On a 100-foot grid, this would require 36 holes with an average depth of about 80 feet or 2,880 feet of wagon drilling.

The examining engineer estimates that a project of wagon drilling to adequately explore this area would cost about $3,758.00 and require 1 month to complete.

CONCLUSIONS

The Hole in the Rock deposit is in a new district where probably the only occurrence in the immediate vicinity of the Salt Wash member of the Morrison formation is confined to a comparatively small area where the Salt Wash formation cuts through a hill on the Hole in the Rock claims. The possible productive area seems to be limited to an area of about 600 by 600 feet. While the examining team is in agreement that the drilling of this area will locate new ore, the ore lenses are small and many of them will be missed unless drilling is done at short intervals between holes. The examining team believes that under the present conditions (The applicants have only 2,486 pounds of U_3O_8 to ship or 460 tons of ore before they exhaust their bonus after which 0.27 percent U_3O_8 ore will be worth about $10.50 per ton at the mill after $CaCO_3$ penalty and

trucking deductions.) the property will not be materially helped by drilling and that the applicants should continue with their present form of mining, paying special attention to old stream channels.

RECOMMENDATIONS

It is recommended that the application be denied.

kp

MDL

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

224 New Customhouse
Denver 2, Colorado

July 17, 1953.

Memorandum

To: Administrator, Defense Minerals Exploration Administration
Attention: Code 200

From: Executive Officer, DMEA Field Team, Region IV

Subject: Docketing for Exploration Assistance -DMEA-3123

Enclosed herewith in duplicate is DMA Form 3a and MF-103 and supporting data pertaining to the following application for Government assistance in exploration work:

E. R. Randolph
Harmon Randolph
Bluff,
Utah.

W. H. King
W. H. King

Enclosures

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