700

FILE COPY
Surname:
Ching
Wilson
Geyman
Jeffrey
Mittendorf

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

APR 6 1956

Cal-M-Co Uranium Corporation
2028 N. 10th
Grand Junction, Colorado

Re: Docket No. DMEA-4046 (Uranium)
Cedar Cliff Claims, et al.
Mesa County, Colorado

Gentlemen:

Your application for aid in an exploration project and other information available to us in Washington concerning the above-named property have been reviewed.

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

Careful study of all our information, although noting some uranium mineralization on your property, indicates to us that the probability of disclosing significant ore reserves is not sufficiently promising to justify Government participation. We regret to advise you that, under these circumstances, your application for exploration assistance is denied.

We wish to thank you for your interest in the Defense Minerals Program and for bringing your property to our attention.

Sincerely yours,

C. O. Mittendorf

Administrator

MChing/izm 4-4-56
cc to: Docket
Code 700
Mr. Ching
Admr.'s Reading File
Operating Committee
DMEA Field Team, Region III (2)
Messrs. JECrawford, Rm. 3641
THKiilsgaard, Rm. 5224
JOHosted, Rm. 3210, GSA

Docket Copy

700

Ching
Ellis

April 4, 1956

SUMMARY OF PROPOSED PROJECT

Object: Denial of application for an exploration project.

Docket No.: DMEA-4046

Commodity: Uranium

Applicant: Cal-M-Co Uranium Corporation
2028 N. 10th
Grand Junction, Colorado

Property: 16 unpatented mining claims, Cedar Cliff 1-6, Muscrat 1-6, Beaver 1-3 and Calco, located in secs. 22, 23, 26, and 27, T. 50 N., R. 18 W., N.M.P.M., Mesa County, Colorado. Applicant is the owner but there appears to be some boundary conflicts for which proof of settlement was not submitted.

Date of Application: October 21, 1955

Amount of Application: $131,960.00 (Applicant's total of $123,380.00 in error)

Work Proposed: Explore the Salt Wash member of the Morrison formation in 3 stages as follows:

Stage I

100 hrs. bulldozing on roads and drill sites
5,600 ft. of core drilling and 5,400 ft. of non-core drilling in 28 holes
150 ft. drifting from outcrop at E-3 ..... $42,340.00

Stage II

30 hrs. bulldozing
1,500 ft. core drilling & 12,000 ft. of non-core drilling in 30 holes $32,310.00

Stage III

Same as Stage II $32,310.00

Supervision $18,000.00

Other Costs ..... $ 7,000.00

Total Estimated Cost $131,960.00

Government Participation @ 75% ..... $ 98,970.00

Field Team Report:

The claims lie on the bench east of Calamity Mesa overlooking Calamity Creek on the east. Rocks exposed consist, in ascending order, of the Jurassic Summerville formation, the Salt Wash and Brushy Basin members of the Jurassic Morrison formation, and the Cretaceous Burro Canyon formation which caps the mesa on the west.

The potential ore-bearing unit is the uppermost Salt Wash sandstone member, which is approximately 40 feet in thickness on the property and predominantly reddish in color. Rim exposures of this horizon were found to be unfavorable for ore occurrence. Four holes drilled through this horizon by the Applicant failed to encounter mineralization, and the cuttings indicated that the sandstone was unfavorable.

Two ore-grade exposures on the rim were examined. One, at the top of the 4th or lowermost rim was about 1 foot thick and of very limited extent. The second, consisted of high-grade pods of carnotite ore in a large slump block of sandstone which probably came from the base of the second rim. Possibly as much as 500 pounds of ore containing 1% U_3O_8 is exposed in this outcrop, but no persistence of mineralization was noted.

Just north of the subject property the Cliff Dweller mine produced 847 tons of ore containing 0.35% U_3O_8 and 1.67% U_2O_5 from a thin sandstone lens with a maximum thickness of about 10 feet. The lens is located about 100 feet below the top of the Salt Wash.

Extensive Government drilling north of the subject claims exposed reserves estimated at 33,300 tons of 0.34% U_3O_8 ore in 26 ore bodies, and favorable sandstone extending to within 1 mile of the northern boundary of the subject property. Further south the sandstone changes from favorable to semi-favorable and unfavorable; nevertheless, two ore bodies approaching 1,000 tons each were found in this area north of the Cal-M-Co property.

It is concluded that the potential ore bodies on this property would be limited in size and that an exploration project is not warranted. This conclusion is based on the small extent and erratic distribution of favorable sandstone, the negative results of preliminary drilling on the property, the unfavorable trend indicated by the Government drilling to the north and the small size and sparse distribution of the exposed ore occurrences. It is recommended that the application be denied.

Commodity Group Comments:

USGS - W. P. Williams - March 1, 1956:

The several unfavorable characteristics of the property pointed out by the field examiners leads me to concur with the recommendation that the application be denied.

USBM - John E. Crawford - March 7, 1956:

Discussed the Report of Examination with the AEC representative. Concurs in the recommendation that the application be denied.

Rare & Miscellaneous Metals Division - Michael Ching - April 4, 1956:

The Cliff Dweller mine produced nearly 1,000 tons of ore and is located just north of the subject property and just south of the Calamity Creek Uranium Company property (Docket-3934). It represents about the only encouraging criterion connected with the subject application, although located below the principal ore-bearing unit of the area. The ore-bearing sandstone on the Calamity Creek property appears to be semi-favorable to unfavorable. Here, another ore body of possibly 1,000 ton size was found less than a mile north of the Cal-M-Co property. The Field Team recommended denial on Docket-3934 but the property appeared to be in the borderline category and a reappraisal was requested. Results of such reappraisal again were negative.

Since the subject property appears to be unencouraging in most respects and is less favorable lithologically than the Calamity Creek property, which is doubtful, an exploration project is not warranted.

Conclusions and Recommendations:

The potential of this property is quite limited. It is recommended that the application be denied.

Ernest Wm. Ellis

Ernest Wm. Ellis, Chief
Rare and Miscellaneous
Metals Division

Chairman Operating Committee, D.M.E.A.
4/3/56 gla

DN 235 BUR MINES 4-3-56 -0-06

CHAIRMAN, OPERATING COMMITTEE, DMEA

REURTEL APRIL 2, CAL-M-CO URANIUM CORP., DMEA-4046. APP
XXX APPLICANT STILL UNABLE TO OBTAIN RESULTS OF PREVIOUS DRILLING.
WE RECOMMEND DENIAL WITHOUT FURTHER DELAY.

W M TRAVER

ver, Colorado

APR 3 1 32 PM '56
BUREAU OF MINES
MAIL ROOM
WASHINGTON, D.C.

FILE COPY

Surname:

700 Ching
Ellis
Gilman
Leeper
Selfridge
Johnson
Rittenhouse

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

DEPARTMENT OF THE INTERIOR

APR 2 1956

DMEA
14X1401(01) Revolving Fund,
Defense Production Act,
Interior (Allocated Working Fund to the
Office of the Secy.)

T E L E T Y P E

W. M. TRAVER
EXECUTIVE OFFICER
DMEA FIELD TEAM, REGION III
224 NEW CUSTOMHOUSE BUILDING
DENVER 2, COLORADO

REURMEM FEBRUARY 16 CAL-M-CO URANIUM CORP., DMEA-4046. IS ADDITIONAL INFORMATION FORTHCOMING AND DO YOU RECOMMEND FURTHER DELAY BEFORE DENIAL?

George C. Selfridge

GEORGE C. SELFRIDGE (24B)
CHAIRMAN, OPERATING COMMITTEE

MChing/izm 4-2-56
cc to: Docket
Code 700
Mr. Ching
Admr.'s Reading File
Operating Committee
Confirmation to Region III
Messrs. JECrawford, Rm. 3641
THKiilsgaard, Rm. 5224

R.R.

3/7/56 [illegible]

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

RECEIVED
MAR - 7 1956

March 7, 1956

Memorandum

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee, Room 4445

From: John E. Crawford, Bureau of Mines Member
Uranium Commodity Committee

Subject: Report of Examination, DMEA Docket 4046, Cal-M-Co Uranium Corporation, Cedar Cliff, Muscrat, Beaver, and Calco claims, Mesa County, Colorado

I have reviewed the report of examination, Cal-M-Co Uranium Corporation, DMEA Docket 4046, dated February 16 and received in this office February 28. I have also discussed it with Joseph O. Hosted, Washington representative of the Atomic Energy Commission.

The applicant proposes a three-stage exploration project on the subject claims. In Stage I, 23 holes, each averaging about 400 feet in depth, were suggested, as well as 150 feet of drifting on a mineralized outcrop. In Stage II, 30 holes would be drilled, averaging 450 feet in depth. The holes would be located to further explore mineralization found in previous drilling. The estimated cost of the program would be $123,380, with Government participation at 75 percent.

Inasmuch as (1) the favorable ore horizon is erratically distributed in the area, (2) results of drilling on the property have been negative, (3) Government drilling to the north of the property has been unfavorable, and (4) ore bodies have been found to be small and sparsely distributed in the area, we concur in the recommendation that the application be denied. However, should the results of previous drilling on the property conducted by Vernon Pick be made available to the field examiners and they find that such information would make advisable reconsideration of the proposal, we should then be willing to re-evaluate the application.

The report is being forwarded to the Chief, Division of Minerals, in accordance with the routing slip attached thereto.

John E. Crawford
John E. Crawford

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

RECEIVED
MAR - 7 1956

March 7, 1956

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Uranium Commodity Committee, Room 4445

From: John E. Crawford, Bureau of Mines Member
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The report is being forwarded to the Chief, Division of Minerals, in accordance with the routing slip attached thereto.

John E. Crawford

3/2/56 dym

IN REPLY REFER TO:

RECEIVED
MAR - 1 1956

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

March 1, 1956

Memorandum

To: E. W. Ellis, Defense Minerals Exploration Administration

From: W. P. Williams, U. S. Geological Survey

Subject: Review of field examination report, DMEA 4046, Cal-M-CO Uranium Corporation, Cedar Cliff, Muscrat, Beaver, and Calco claims, Mesa County, Colorado.

The examining team, in their report of field examination, points out the several unfavorable characteristics of the property. Chief among these are 1) examination of outcrops along the east side of the property shows the Salt Wash sands to be unfavorable for ore deposition, 2) fair-sized ore bodies are known about 1½ miles north of the property, but Government drilling to the north shows that conditions become unfavorable to the south toward the property, 3) examination of drill-bit cuttings from holes previously drilled on the property shows the ground to be unfavorable for ore deposition, 4) known ore deposits in the vicinity are small--less than 1,000 tons.

Because the property has so many unfavorable characteristics, it seems unlikely that geologic logs of the four, out of eight, holes that penetrated the potential ore horizon on the property would much alter the over-all picture of the claims.

I concur with the examining team's recommendation that the application be denied.

W.P. Williams

W. P. Williams

IN REPLY REFER TO:

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

RECEIVED
MAR - 1 1956

March 1, 1956

Memorandum

To: E. W. Ellis, Defense Minerals Exploration Administration

From: W. P. Williams, U. S. Geological Survey

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Because the property has so many unfavorable characteristics, it seems unlikely that geologic logs of the four, out of eight, holes that penetrated the potential ore horizon on the property would much alter the over-all picture of the claims.

I concur with the examining team's recommendation that the application be denied.

W. P. Williams

WPWilliams:jeh
3/1/56
cc:Director's reading 4212
Branch reading 4212
DMEA (3)
Docket file
J.E.Crawford 3641
J. O. Hosted 3210

FEB 27 1956

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

RECEIVED
FEB 23 1956

February 16, 1956

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Field Team, Region III

Subject: Joint Report of Examination, Docket DMEA 4046 (Uranium), Cal-M-Co Uranium Corporation, Cedar Cliff, Muscrat, Beaver, and Calco claims, Mesa County, Colorado

Enclosed are the original and three copies of a Joint Report of Examination on the subject property.

The examiners concur that the requested exploration will not result in the discovery of significant amounts of uranium ore, and they recommend that the application be denied. We concur in this recommendation.

In the event that you concur in the denial of this application, we suggest that you postpone writing your letter of denial pending receipt of the results of previous drilling by Vernon Pick on this property. The applicant called J. William Hasler and stated he would try to obtain this information and forward it to him. We doubt if the additional information will change the recommendation of denial, but we believe it advisable to wait a reasonable time.

DMEA Field Team, Region III

W. M. Traver

W. M. Traver

E. N. Harshman

E. N. Harshman

Reviewed by
DMEA OPERATING COMMITTEE
2-27-56
(date)

Enclosures

RECEIVED FEB 23 1956

IN REPLY REFER TO:

DMEA
Date Rec'd
FEB 14 1956
BUREAU OF MINES
Denver, Colorado

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Defense Minerals Exploration Administration
Denver Federal Center
Denver, Colorado

February 13, 1956

TRANSMITTED
FEB 16 1956

Memorandum

To: Executive Officer, DMEA Field Team, Region III

From: E. N. Harshman
John F. Shaw

Subject: DMEA Docket 4046 (Uranium), Cal-M-Co Uranium Corporation, Cedar Cliff, Muscrat, Beaver, and Calco claims, Mesa County, Colorado

Enclosed are the original and nine copies of a joint examination report by F. M. Byers, Jr., Geological Survey, and M. H. Salsbury, Bureau of Mines, covering their examination of the subject property.

For reasons given in the report the examiners believe that the requested exploration will not result in the discovery of significant reserves of uranium ore. The property lies just south of the Calamity Creek Uranium property (DMEA Docket 3934). Denial of the Calamity Creek Uranium application for exploration assistance was recommended by the field examiners in a previous report.

Denial of this application for exploration assistance, DMEA Docket 4046, is recommended.

E. N. Harshman
E. N. Harshman
Member, Field Team

John F. Shaw
John F. Shaw
Superintendent of the Denver
Experiment Station

Reviewed by
DMEA OPERATING COMMITTEE
2-27-56
(date)

Enclosures (10)
ENHarshman:mp

UNITED STATES
DEPARTMENT OF THE INTERIOR
Geological Survey
Colorado Plateau District
P. O. Box 360
Grand Junction, Colorado

MINERAL DEPOSITS
RECEIVED
FEB 6 1956
RECEIVED FEB 23 1956
GEOLOGICAL SURVEY

Reviewed by
DMEA OPERATING COMMITTEE January 26, 1956

Memorandum 2-27-56 (date)

TRANSMITTED
FEB 16 1956

To: E. N. Harshman, DMEA Field Team, Region III

From: J. William Hasler

Subject: DMEA docket 4046, (Uranium) Cal-M-Co Uranium Corporation, Cedar Cliff, Muscrat, Beaver, and Calco claims, Mesa County, Colo.

Transmitted herewith is a joint geologic and engineering report, prepared as a result of a field examination, by F. M. Byers, Jr., geologist, U. S. Geological Survey, and M. H. Salsbury, mining engineer, U. S. Bureau of Mines.

The Cal-M-Co Uranium Corporation applied for Government aid in exploration of uranium on 16 unpatented claims on Calamity Mesa. The applicant's claims are on the southern part of Calamity Mesa which lies on the southwest flank of the Uncompahgre uplift.

The rocks exposed on the Cal-M-Co group are those of Jurassic and Cretaceous age. The ore deposits on Calamity Mesa are in the uppermost Salt Wash sandstone member of the Morrison formation of Jurassic age. The U. S. Geological Survey has completed an extensive exploration program about one and one-half miles north of the northernmost boundary of the applicant's claims. The ore reserves, indicated by company and other Government drilling, consisisted of 33,300 tons containing 0.34 percent U_3O_8 and 1.53 percent V_2O_5. This tonnage was in 26 different ore bodies ranging from 100 to 7,800 tons in size. The portion of Calamity Mesa, containing the applicant's group of claims, consists of semi-favorable to unfavorable Salt Wash sandstone. This is evidenced by several barren drill holes completed by the applicant. Rim exposures of the ore-bearing

sandstone were examined and were also found to be unfavorable. The prevalence of reddish sandstone on the Cal-M-Co claims and adjoining property, and the tendency of small ore bodies and pods to occur in the thinner sandstone below the top rim of the Salt Wash, indicates that any ore bodies found on the properties are likely to be small and would not add particularly to the over-all reserve picture.

It is concluded that the chances of finding any significant ore bodies on this portion of Calamity Mesa, and especially within the claims mentioned, are not encouraging. It is, therefore, recommended that the application be denied. I concur with the conclusions and recommendations of the examining team.

The Atomic Energy Commission was consulted relative to the appraisal of the property.

Enclosed are the required number of maps, as well as the applicant's brochure.

J. William Hasler
J. William Hasler
Geologist

JWH/vlh

Enclosures

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FEB 23 1956

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION III

TRANSMITTED

FEB 16 1956

DMEA 4046

Cal-M-Co Uranium Corporation

Cedar Cliff, Muscrat, Beaver, and Calco Claims

Mesa County, Colorado

Uranium

Joint Engineering and Geological Report

by

F. M. Byers, Jr., Geologist
Geological Survey

M. H. Salsbury, Mining Engineer
Bureau of Mines

February 10, 1956

Reviewed by
DMEA OPERATING COMMITTEE
2-27-56
(date)

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ILLUSTRATIONS

Figure — Follows page

1. Location map of Cedar Cliff, Muscrat, Beaver, and Calco claims, Cal-M-Co Uranium Corporation, Mesa County, Colorado. DMEA 4046..... 4

2. Geologic map of part of Calamity Mesa area, showing ore bodies, existing drill holes and proposed drill holes by applicant, Cedar Cliff, Muscrat, Beaver, and Calco groups of claims, Cal-M-Co Uranium Corporation, Mesa County, Colorado. DMEA 4046..... 4

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FEB 23 1956

DMEA 4046

CAL-M-CO URANIUM CORPORATION
CEDAR CLIFF, MUSCRAT, BEAVER, AND CALCO CLAIMS
MESA COUNTY, COLORADO

INTRODUCTION AND SUMMARY

The Cal-M-Co Uranium Corporation, 2028 N. 10th St., Grand Junction Colorado, on October 28, 1955, applied for Defense Minerals Exploration assistance to explore for uranium on 16 unpatented claims on Calamity Mesa, Colorado. The proposal calls for 150 feet of drifting from a portal and 3,800 feet of core and non-core drilling, if the three-stage proposal is carried through to completion. The estimated cost is $123,380.00 in which Government participation at 75 percent would be $92,535.00. On this basis, the exploration cost would be $7,700.00 per claim.

The property was examined on December 2, 1955, in company with Melvin M. Bell representing the applicant corporation.

The claims have been acquired by the applicant under a purchase agreement with the original locators. It appears that they are still subject to a royalty on all production. There are claim conflicts along three sides of the property. The applicant's representative stated that all conflicts had been settled, but no written evidence of this was presented. The applicant's locations appear to be valid so far as could be determined by a field check. In view of the probable recommendations on the proposed work, the matter of claim conflicts was not examined further.

The claims lie on the bench east of Calamity Mesa overlooking Calamity Creek on the southwest flank of the Uncompahgre uplift. Rocks

exposed on the claims are, in ascending order, the Jurassic Summerville formation, the Salt Wash and Brushy Basin members of the Jurassic Morrison formation, and the Cretaceous Burro Canyon formation which caps the mesa in the western part of the property.

The potential ore-bearing unit in the area is the uppermost Salt Wash sandstone member which ranges from 25 to 80 feet in thickness. The deposits in the Calamity group of Government claims 2 miles north of the applicant's property, and the small ore body found in the property of the Calamity Creek Uranium Company (DMEA 3934) about one-half mile north, are in this unit. A small deposit in the Cliff Dweller mine which adjoins the subject claims on the north is in a thin sandstone unit below the main ledge. The two mineralized outcrops on the applicant's property are also in units below the main ledge.

The southern boundary of favorable ground in the Calamity Creek area, as determined by extensive Government drilling, is fully 1 mile north of the northern boundary of the Cal-M-Co group of claims.

The significant ore production in the Calamity Creek area has all come from operations near the Government claims. The two known ore deposits on the Cliff Dweller claims and the Calamity Creek Uranium Corporation property probably contain less than 1,000 tons each. The one in the Cliff Dweller mine has been mined out producing 847 tons of ore averaging 0.35 percent U_3O_8 and 1.67 percent V_2O_5. The ore deposit on the Calamity Creek Uranium Corporation property has been partially outlined by drilling and may contain 1,000 tons of ore averaging 0.23 percent U_3O_8 and 1.13 percent V_2O_5.

The proposed exploration program has been planned to follow preliminary drilling recently completed by the applicant and to explore two mineralized outcrop exposures. The results of the drilling already done, which appears to have been poorly supervised, were negative. All evidence noted by the examining team, including examination of the small mineralized outcrops on the rim, the unfavorable sandstone thickness and color, as well as data previously obtained during the field examination of the Calamity Creek Uranium Corporation under DMEA 3934, leads to the conclusion that the claims are unfavorable for significant uranium deposits, and that only small scattered occurrences are likely to be found.

This was also the conclusion reached in the examination of DMEA Docket 3934 and substantiated by the results of Government drilling north of the Cal-M-Co property.

On the premise that DMEA projects should be confined to areas of favorability, it is recommended that the application under DMEA 4046 be denied.

ACKNOWLEDGMENTS

The applicant furnished maps, a drilling proposal with cost estimate, and results of chemical analyses of outcrop samples. The Atomic Energy Commission had already been consulted in connection with examination of a nearby property under DMEA 3934. The complete results of Geological Survey and Atomic Energy Commission drilling north of the property were available to the examining team.

LOCATION, TOPOGRAPHY, AND CLIMATE

The Cedar Cliff, Muscrat, Beaver, and Calco claims are in secs. 22, 23, 26, and 27, T. 50 N., R. 18 W., New Mexico principal meridian, Mesa County, Colorado (fig. 1). The claims are 44 miles north of Uravan, Colorado, most of the distance over a poor dirt access road. A somewhat better route in dry weather crosses the Uncompahgre uplift and connects with Colorado State Highway 141 in Unaweep Canyon. By this route, Grand Junction, Colorado, the nearest major supply center, is 58 miles away.

The claims cover the steep west slope of Calamity Creek Canyon, the moderately sloping bench above it, and the steep Burro Canyon slope above and west of this. The altitude ranges between 5,800 and 6,200 feet (fig. 2).

Operations are feasible throughout the year with proper preparation. In wet weather roads are nearly unpassable except to 4-wheel drive vehicles.

Water, supplies, power, and labor present no unusual problems. The proposed work would be done by a drilling contractor who presumably would furnish labor and housing. The operator plans to establish a camp on the property.

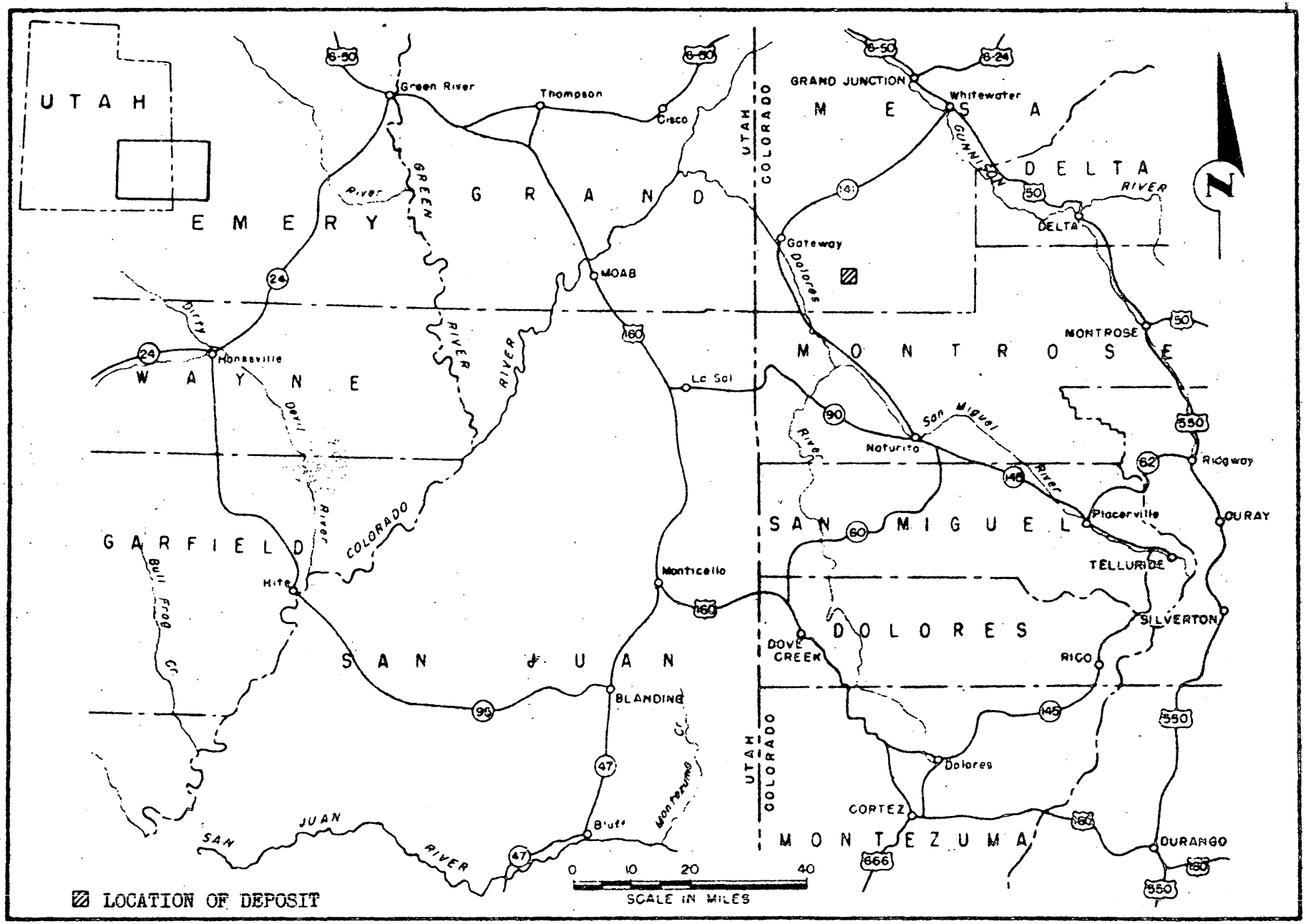

FIGURE 1 - LOCATION MAP OF CEDAR CLIFF, MUSCRAT, BEAVER AND CALCO CLAIMS, CAL-M-CO URANIUM CORPORATION, MESA COUNTY, COLO. DMEA 4046

RECEIVED
FEB 23 1956

HISTORY AND PRODUCTION

The Calamity Mesa district has been active since before World War I. Successively, radium, vanadium, and uranium have been sought. Current activities date from 1949 when the Geological Survey initiated a core-drilling project on patented claims which the Government had obtained through the Union Mines Development Corporation. A large amount of drilling exploration has been done both by the Geological Survey and the Atomic Energy Commission in the area north of the Cal-M-Co property, some of it on privately-owned ground.

The Cal-M-Co group was located in September 1951. No exploration had been done prior to 1955 when 9 holes were drilled.

A substantial production has been made from the area of favorable ground around the Government claims in the Calamity Creek district. As an example, the total production through September 1955 from seven Calamity claims was 38,000 tons with an average content of 0.36 percent U_3O_8 and 1.60 percent V_2O_5. This is in contrast to the only production in the immediate vicinity of the Cal-M-Co group, from the Cliff Dweller mine, which produced, through June 1955, 847 tons of ore with an average content of 0.35 percent U_3O_8 and 1.67 percent V_2O_5. This came from the one and only ore body found to date. The Cliff Dweller mine is not in operation at the present time. Inspection of the workings during a previous field visit indicated that all of the minable ore in sight had been removed. There has been no production from the Cal-M-Co group.

OWNERSHIP AND EXTENT

Fifteen of the sixteen claims owned by the applicant corporation were located by Cecil W. McCoy, Peter G. Kaasch, and Warren E. Wright in September 1951. The other claim was located by Melvin M. Bell on August 20, 1955, to cover a Salt Wash outcrop on some open ground adjoining the southeast corner of the property.

The 15 claims located by McCoy and associates are listed with recording data in the following table:

Claims	Recorded in Mesa County Courthouse Book	Page
Cedar Cliff 1 through 6	554	491-495
Muscrat Nos. 1, 2, and 3	554	488-490
Muscrat Nos. 4, 5, and 6	605	86-88
Beaver Nos. 1 and 2	554	486-487
Beaver No. 3	605	89

The Calco claim located by Melvin M. Bell is recorded in Book 658, page 434.

The Cedar Cliff, Muscrat, and Beaver claims were sold to Melvin M. and L. F. Bell who in turn deeded them to the Cal-M-Co Uranium Corporation.

The copies of the conveying instruments furnished with the application give the consideration involved as "Ten Dollars and other valuable considerations." A royalty agreement is not mentioned.

It is stated in the application that all boundary conflicts have been settled, but no evidence to support this fact was submitted. There are conflicting claims shown on certain maps in the Geological Survey records which the applicant does not show on the map furnished with the application. These claims, the Horned Owl Nos. 3, 4, and 6, the Moosehorn Nos. 3 and 4, and the Hornswoggle No. 2 conflict with the applicant's Cedar Cliff Nos. 4, 5, and 6, Muscrat Nos. 4, 5, and 6, and Beaver No. 3. Claims of other ownership, Cliff claims Nos. 3, 4, 5, and 6, shown on the applicant's map as adjoining on the west, would also conflict with the Horned Owl, Moosehorn, and Hornswoggle claims, part of a larger group which are or were controlled by the New Verde Mining Company, a subsidiary of the Newmont Mining Company. Mr. Bell did not have any knowledge of this latter conflict, and consequently has not checked the matter.

The conflict on the north shown on the applicant's map between the Cedar Cliff Nos. 1, 2, and 6, and the Norva Louise Nos. 1 and 2, and the Cliff House No. 2 has been resolved, according to the applicant's statement, by agreement with the owner, Vernon Pick. Again no agreement was presented in evidence. The Calco claim in the southeast corner of the property conflicts with a corner of the Juniper Berry No. 1 claim which, according to the applicant, has been abandoned. Still another conflict is shown along the south boundary of the Cal-M-Co group with the Dogberry No. 1, Dogberry No. 2, Dewberry No. 1, Dewberry No.2, and Berry No. 3 claims.

During the field investigation claim corners or discovery notices for the conflicting claims were not found. However, no effort was made to examine the ground in detail. It would be necessary for the applicant to furnish considerable more information to establish rights to all ground which appears to be in conflict.

PRESENT STATUS

Exploration and Development

Exploration to date on the property has consisted of eight dry non-core holes drilled on a wide-spaced pattern (fig. 2). The first four holes, designated E-1 on the applicant's map, were not deep enough to reach the ore horizon, according to the applicant. Four other holes designated E-2 were drilled after the DMEA application had been submitted. No mineralization was encountered, and examination of the cuttings left on the ground at the drilling sites indicated that the sandstone was unfavorable, judging from the red color. Logs of the drill holes were not made.

Mining and milling equipment and other facilities

No improvements other than drill roads have been made on the property.

GEOLOGY

The claims of the Cal-M-Co Uranium Corporation are in the western part of the Calamity Mesa 7-1/2-minute quadrangle on the southwest flank of the Uncompahgre uplift. The geology of the Calamity Mesa quadrangle has been mapped by Cater (1955). Rocks exposed on the Cal-M-Co group are, in ascending order, the Jurassic Summerville formation, the Salt Wash and Brushy Basin members of the Jurassic Morrison formation, and the Cretaceous Burro Canyon formation, which caps Calamity Mesa in the westernmost part of the claims. The bedded sequence dips about 2 degrees southward. The thicknesses and descriptions of the units given in the table below are slightly modified from Cater (1955):

Age	Formational unit	Lithology	Thickness
Cretaceous	Burro Canyon	SS and Congl.	80'+
Jurassic	Morrison		
	Brushy Basin member	Variegated sh. and MS with minor intercalated SS beds	400'+
	Salt Wash member	SS beds with interbedded MS	275'
	Summerville	Thin-bedded variegated sandy shale and MS	70'

The Salt Wash member of the Jurassic Morrison formation is composed of the following units, as observed on the west side of Calamity Creek on the easternmost side of the applicant's claims:

Unit	Approximate thickness in feet	"Rim" no.
Sandstone, reddish, locally ore-bearing	40	1st
Mudstone, red	30	
Sandstone, thin to cross-bedded, mottled green and red; E4 prospect (fig. 2) near base	25	2nd
Mudstone, red; contains lenticular sandstones, locally ore-bearing	60	
Sandstone, red	20	3rd
Mudstone, red and green with a few thin beds; 1 to 2 feet sandstone, locally mineralized	35	
Sandstone, greenish gray above E3 prospect; red elsewhere	10	4th
Siltstone and mudstone greenish gray; E3 prospect (fig. 2) in 1-foot siltstone bed at top	5	
Sandstone, gray below E3	5	
Mudstone, upper 1-foot gray below E3	5	
Sandstone, red	45	
Total thickness of the Salt Wash member	280	

The above section is more or less typical of the Salt Wash member in the easternmost part of the applicant's claims. A sandstone lens, 10 feet in thickness and of limited extent, occurs within the 60-foot mudstone interval in the middle of the Salt Wash and contains the small high grade ore body at the Cliff Dweller mine just north of the applicant's claims (fig. 2).

ORE DEPOSITS

The Calamity group of Government claims leased to U. S. Vanadium Company lies about 1-1/2 miles north of the Cal-M-Co group (fig. 2). Drilling by the U. S. Geological Survey in 1948 and early 1949 consisted of 622 diamond drill holes (Stager, 1951, p. 13). The ore reserves indicated by this and other Government drilling consisted of 33,300 tons containing 0.34 percent of U_3O_8 and 1.53 percent of V_2O_5. This tonnage was in 26 different ore bodies ranging from 100 to 7,800 tons (Stager, 1951, table 5). All the deposits are in the uppermost Salt Wash sandstone which ranges from 25 to 80 feet in thickness and averages about 55 feet. Where the ore deposits occur, the ore-bearing sandstone is thicker, and the mudstone underlying the ore-bearing sandstone is altered to greenish gray for about 3-1/2 feet beneath the sandstone. Where the ore-bearing sandstone is barren, but is favorable (Weir, 1952) this alteration zone is about 1-1/2 feet thick.

Most of the tonnage indicated by U. S. Geological Survey drilling of favorable ground is more then 1-1/2 miles north of northernmost boundary of the applicant's Cal-M-Co group of claims. Southward toward the Calamity Creek group (DMEA 3934) the ore-bearing sandstone changes from favorable to semifavorable and unfavorable (Stager, 1951, fig. 3), fully 1 mile north of the northern boundary of the Cal-M-Co group of claims, and the ore bodies become smaller than 1,000 tons. On the claims of the

Calamity Creek Uranium Corporation to the north a small ore body containing several hundred tons was indicated by company drilling (see table 2 and figure 3, joint report of examination, DMEA 3934, and figure 2 of this report). This ore body is in the top rim of the Salt Wash. Two mineralized outcrops on the Calamity Creek group also contain very small pods of ore in thin sandstone below the top rim.

The Cliff Dweller mine (fig. 2) operated a 1,000-ton ore body in a thin sandstone lens with a maximum thickness of about 10 feet and thinning to a knife edge within 150 feet on either side of its maximum thickness as seen in the canyon wall exposure. The top of the lens is about 100 feet below the top of the Salt Wash. The average grade of ore shipped from the Cliff Dweller ore body was about 0.35 percent U_3O_8 and 1.7 percent V_2O_5. The Wards mine just across Calamity Creek (fig. 2) is in the top ledge of the Salt Wash, but there is no record of any production.

On the Cal-M-Co property, the Salt Wash member is unfavorable as evidenced by several barren drill holes drilled by the applicant (fig. 2). Rim exposures of the ore-bearing sandstone were examined at two places by the DMEA examining team and also found to be unfavorable. Only two small mineralized prospects, called E-3 and E-4 by the applicant are exposed at the Salt Wash outcrop on the west side of Calamity Creek.

Prospect E-3 (fig. 2) exposes one foot of mineralized green laminated siltstone or fine sandstone which immediately underlies

a 10-foot gray sandstone bed at the top of the 4th and lowermost rim. The underlying mudstone and sandstone is also altered greenish gray through a stratigraphic interval of about 11 feet. The applicant reports the following assays from two "average" samples from E-3 prospect:

	$\%U_3O_8$	$\%V_2O_5$
Sample 1	0.11	0.26
" 2	0.22	0.60

A check with a Geiger counter indicates that these samples are probably representative of the 1-foot mineralized siltstone exposed in the prospect pit. Thirty feet south of the prospect pit, however, tests with Geiger counter indicate only weakly mineralized siltstone containing less than 0.05 percent eU_3O_8. The sandstone overlying the weakly mineralized siltstone is mottled red and green and grades into reddish sandstone still farther south along the outcrop. Northward the overlying sandstone becomes reddish within 50 feet of the E-3 prospect pit, although the underlying ore-bearing siltstone, if present, is not exposed. The limited grade and thickness of the ore, the pinch-out toward the south associated with a reddening of the overlying sandstone, and the reddening of the overlying sandstone toward the north along the outcrop indicate that the chances of finding even a small ore body are not good.

Prospect E-4 (fig. 2) consists of several closely spaced high-grade pods of dark carnotite-stained ore in a large slump block of sandstone, which probably came from near the base of the second rim. The pods appear to be controlled by fissures rather than

bedding and no persistence of ore along any trend could be demonstrated. The pods individually are estimated to contain not more than one hundred pounds of ore. The sandstone is locally altered to greenish gray around E4 prospect. The applicant reports the following assays from two "average" samples:

	U_3O_8	V_2O_5
Sample 1	4.66	2.86
" 2	10.49	11.43

A check with a Geiger counter indicated that such high grade samples are easily obtainable, but the total quantity of ore of such grade is not more than 25 pounds. Possibly as much as 500 pounds of ore containing about one percent of U_3O_8 is exposed in this outcrop.

ORE RESERVES

The prevalence of reddish sandstone on the Cal-M-Co and adjoining properties and the tendency of small ore bodies and pods to occur in the thinner sandstones below the top rim of the Salt Wash indicates that any ore bodies under the Cal-M-Co property are likely to be less than 1,000 tons and widely spaced.

PROPOSED EXPLORATION

The proposed exploration is in three stages. In Stage I, 23 holes averaging about 400 feet in depth and requiring an estimated 5,400 feet of non-core drilling and 5,600 feet of core drilling are proposed. In addition, exploration of the outcrop at location E-3 (fig. 2) by 150 feet of drifting is proposed.

Stage II calls for 30 holes averaging 450 feet in depth requiring 12,000 feet of non-core drilling and 1,500 feet of core drilling. Holes would be located to further explore mineralization found in Stage I.

Stage III calls for 30 more holes averaging 450 feet deep requiring 12,000 feet of non-core drilling and 1,500 feet of core drilling. Presumably the purpose of this stage is to offset on closer centers mineralization found in Stages I and II.

The estimated cost of the entire program is given as $123,380. Government participation at 75 percent would be $92,535. It is based on three bids by drilling contractors. The average over-all cost per foot of drilling on this basis would be $3.25. This figure is about 50 cents per foot higher than the contract price in similar DMEA projects. Most of the extra cost is in high supervision and technical costs.

The program is planned to explore the entire Salt Wash member of the Morrison formation, not withstanding the fact that the significant known deposits are believed to be confined to the topmost horizon. A revised program and cost estimate was not prepared by the examining team.

CONCLUSIONS AND RECOMMENDATIONS

It is concluded that neither the proposed exploration program nor a modification of it is justified by the limited size of the ore

discoveries to date. The unfavorable factors on which this conclusion is based are the small extent and erratic distribution of favorable sandstone, the negative results of drilling on the property, the unfavorable data on the area from extensive Government drilling just to the north, and the probable small size and sparse distribution of ore bodies, such as E-3 and E-4. Ore occurrences of the size found in adjoining properties would not be significant.

It is recommended that the application under DMEA 4046 be denied.

References cited

Cater, Fred W., 1955, Geology of the Calamity Mesa quadrangle, Colorado: U. S. Geol. Survey GQ 61.

Stager, Harold K., June 1951, Carnotite resources of the Calamity group area, Mesa County, Colorado: U. S. Geol. Survey TEIR-146, 30 p.

Weir, Doris Blackman, 1952, Geologic guides to prospecting for carnotite deposits on Colorado Plateau: U. S. Geol. Survey Bull. 988-B, 27 p.

2-24-56 [illegible]

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

RECEIVED
FEB 23 1956

February 16, 1956

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Field Team, Region III

Subject: Joint Report of Examination, Docket DMEA 4046 (Uranium), Cal-M-Co Uranium Corporation, Cedar Cliff, Muscrat, Beaver, and Calco claims, Mesa County, Colorado

Enclosed are the original and three copies of a Joint Report of Examination on the subject property.

The examiners concur that the requested exploration will not result in the discovery of significant amounts of uranium ore, and they recommend that the application be denied. We concur in this recommendation.

In the event that you concur in the denial of this application, we suggest that you postpone writing your letter of denial pending receipt of the results of previous drilling by Vernon Pick on this property. The applicant called J. William Hasler and stated he would try to obtain this information and forward it to him. We doubt if the additional information will change the recommendation of denial, but we believe it advisable to wait a reasonable time.

Reviewed by
DMEA OPERATING COMMITTEE
2-27-56
(date)

DMEA Field Team, Region III

W. M. Traver
W. M. Traver

E. N. Harshman
E. N. Harshman

Enclosures

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

RECEIVED
FEB 23 1956

DMEA
Date Rec'd.
FEB 14 1956

Defense Minerals Exploration Administration
Denver Federal Center
Denver, Colorado

BUREAU OF MINES
Denver, Colorado

February 13, 1956

Memorandum

TRANSMITTED
FEB 16 1956

To: Executive Officer, DMEA Field Team, Region III

From: E. N. Harshman
John F. Shaw

Subject: DMEA Docket 4046 (Uranium), Cal-M-Co Uranium Corporation, Cedar Cliff, Muscrat, Beaver, and Calco claims, Mesa County, Colorado

Enclosed are the original and nine copies of a joint examination report by F. M. Byers, Jr., Geological Survey, and M. H. Salsbury, Bureau of Mines, covering their examination of the subject property.

For reasons given in the report the examiners believe that the requested exploration will not result in the discovery of significant reserves of uranium ore. The property lies just south of the Calamity Creek Uranium property (DMEA Docket 3934). Denial of the Calamity Creek Uranium application for exploration assistance was recommended by the field examiners in a previous report.

Denial of this application for exploration assistance, DMEA Docket 4046, is recommended.

Reviewed by
DMEA OPERATING COMMITTEE
2-27-56
(date)

E. N. Harshman
E. N. Harshman
Member, Field Team

for John F. Shaw
John F. Shaw
Superintendent of the Denver
Experiment Station

Enclosures (10)
ENHarshman:mp

UNITED STATES
DEPARTMENT OF THE INTERIOR
Geological Survey
Colorado Plateau District
P. O. Box 360
Grand Junction, Colorado

RECEIVED
FEB 23 1956

Reviewed by
DMEA OPERATING COMMITTEE
2-27-56
(date)

MINERAL DEPOSITS
DMEA
RECEIVED
FEB 6 1956
U. S.
GEOLOGICAL SURVEY
DENVER, COLORADO

January 26, 1956

TRANSMITTED
FEB 16 1956

Memorandum

To: E. N. Harshman, DMEA Field Team, Region III

From: J. William Hasler

Subject: DMEA docket 4046, (Uranium) Cal-M-Co Uranium Corporation, Cedar Cliff, Muscrat, Beaver, and Calco claims, Mesa County, Colo.

Transmitted herewith is a joint geologic and engineering report, prepared as a result of a field examination, by F. M. Byers, Jr., geologist, U. S. Geological Survey, and M. H. Salsbury, mining engineer, U. S. Bureau of Mines.

The Cal-M-Co Uranium Corporation applied for Government aid in exploration of uranium on 16 unpatented claims on Calamity Mesa. The applicant's claims are on the southern part of Calamity Mesa which lies on the southwest flank of the Uncompahgre uplift.

The rocks exposed on the Cal-M-Co group are those of Jurassic and Cretaceous age. The ore deposits on Calamity Mesa are in the uppermost Salt Wash sandstone member of the Morrison formation of Jurassic age. The U. S. Geological Survey has completed an extensive exploration program about one and one-half miles north of the northernmost boundary of the applicant's claims. The ore reserves, indicated by company and other Government drilling, consisisted of 33,300 tons containing 0.34 percent U_3O_8 and 1.53 percent V_2O_5. This tonnage was in 26 different ore bodies ranging from 100 to 7,800 tons in size. The portion of Calamity Mesa, containing the applicant's group of claims, consists of semi-favorable to unfavorable Salt Wash sandstone. This is evidenced by several barren drill holes completed by the applicant. Rim exposures of the ore-bearing

sandstone were examined and were also found to be unfavorable. The prevalence of reddish sandstone on the Cal-M-Co claims and adjoining property, and the tendency of small ore bodies and pods to occur in the thinner sandstone below the top rim of the Salt Wash, indicates that any ore bodies found on the properties are likely to be small and would not add particularly to the over-all reserve picture.

It is concluded that the chances of finding any significant ore bodies on this portion of Calamity Mesa, and especially within the claims mentioned, are not encouraging. It is, therefore, recommended that the application be denied. I concur with the conclusions and recommendations of the examining team.

The Atomic Energy Commission was consulted relative to the appraisal of the property.

Enclosed are the required number of maps, as well as the applicant's brochure.

J. William Hasler
J. William Hasler
Geologist

JWH/vlh

Enclosures

RECEIVED
FEB 23 1956

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION III

TRANSMITTED

FEB 16 1956

DMEA 4046

Cal-M-Co Uranium Corporation

Cedar Cliff, Muscrat, Beaver, and Calco Claims

Mesa County, Colorado

Uranium

Joint Engineering and Geological Report

by

F. M. Byers, Jr., Geologist
Geological Survey

M. K. Salsbury, Mining Engineer
Bureau of Mines

February 20, 1956

Reviewed by
DMEA OPERATING COMMITTEE
2-27-56
(date)

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1. Location map of Cedar Cliff, Muscrat, Beaver, and Calco claims, Cal-M-Co Uranium Corporation, Mesa County, Colorado. DMEA 4046	4
2. Geologic map of part of Calamity Mesa area, showing ore bodies, existing drill holes and proposed drill holes by applicant, Cedar Cliff, Muscrat, Beaver, and Calco groups of claims, Cal-M-Co Uranium Corporation, Mesa County, Colorado. DMEA 4046	4

DMEA 4046

CAL-M-CO URANIUM CORPORATION
CEDAR CLIFF, MUSCRAT, BEAVER, AND CALCO CLAIMS
MESA COUNTY, COLORADO

INTRODUCTION AND SUMMARY

The Cal-M-Co Uranium Corporation, 2028 N. 10th St., Grand Junction Colorado, on October 28, 1955, applied for Defense Minerals Exploration assistance to explore for uranium on 16 unpatented claims on Calamity Mesa, Colorado. The proposal calls for 150 feet of drifting from a portal and 3,800 feet of core and non-core drilling, if the three-stage proposal is carried through to completion. The estimated cost is $123,380.00 in which Government participation at 75 percent would be $92,535.00. On this basis, the exploration cost would be $7,700.00 per claim.

The property was examined on December 2, 1955, in company with Melvin M. Bell representing the applicant corporation.

The claims have been acquired by the applicant under a purchase agreement with the original locators. It appears that they are still subject to a royalty on all production. There are claim conflicts along three sides of the property. The applicant's representative stated that all conflicts had been settled, but no written evidence of this was presented. The applicant's locations appear to be valid so far as could be determined by a field check. In view of the probable recommendations on the proposed work, the matter of claim conflicts was not examined further.

The claims lie on the bench east of Calamity Mesa overlooking Calamity Creek on the southwest flank of the Uncompahgre uplift. Rocks

exposed on the claims are, in ascending order, the Jurassic Summerville formation, the Salt Wash and Brushy Basin members of the Jurassic Morrison formation, and the Cretaceous Burro Canyon formation which caps the mesa in the western part of the property.

The potential ore-bearing unit in the area is the uppermost Salt Wash sandstone member which ranges from 25 to 80 feet in thickness. The deposits in the Calamity group of Government claims 2 miles north of the applicant's property, and the small ore body found in the property of the Calamity Creek Uranium Company (DMEA 3934) about one-half mile north, are in this unit. A small deposit in the Cliff Dweller mine which adjoins the subject claims on the north is in a thin sandstone unit below the main ledge. The two mineralized outcrops on the applicant's property are also in units below the main ledge.

The southern boundary of favorable ground in the Calamity Creek area, as determined by extensive Government drilling, is fully 1 mile north of the northern boundary of the Cal-M-Co group of claims.

The significant ore production in the Calamity Creek area has all come from operations near the Government claims. The two known ore deposits on the Cliff Dweller claims and the Calamity Creek Uranium Corporation property probably contain less than 1,000 tons each. The one in the Cliff Dweller mine has been mined out producing 847 tons of ore averaging 0.35 percent U_3O_8 and 1.67 percent V_2O_5. The ore deposit on the Calamity Creek Uranium Corporation property has been partially outlined by drilling and may contain 1,000 tons of ore averaging 0.23 percent U_3O_8 and 1.13 percent V_2O_5.

The proposed exploration program has been planned to follow preliminary drilling recently completed by the applicant and to explore two mineralized outcrop exposures. The results of the drilling already done, which appears to have been poorly supervised, were negative. All evidence noted by the examining team, including examination of the small mineralized outcrops on the rim, the unfavorable sandstone thickness and color, as well as data previously obtained during the field examination of the Calamity Creek Uranium Corporation under DMEA 3934, leads to the conclusion that the claims are unfavorable for significant uranium deposits, and that only small scattered occurrences are likely to be found.

This was also the conclusion reached in the examination of DMEA Docket 3934 and substantiated by the results of Government drilling north of the Cal-M-Co property.

On the premise that DMEA projects should be confined to areas of favorability, it is recommended that the application under DMEA 4046 be denied.

ACKNOWLEDGMENTS

The applicant furnished maps, a drilling proposal with cost estimate, and results of chemical analyses of outcrop samples. The Atomic Energy Commission had already been consulted in connection with examination of a nearby property under DMEA 3934. The complete results of Geological Survey and Atomic Energy Commission drilling north of the property were available to the examining team.

LOCATION, TOPOGRAPHY, AND CLIMATE

The Cedar Cliff, Muscrat, Beaver, and Calco claims are in secs. 22, 23, 26, and 27, T. 50 N., R. 18 W., New Mexico principal meridian, Mesa County, Colorado (fig. 1). The claims are 44 miles north of Uravan, Colorado, most of the distance over a poor dirt access road. A somewhat better route in dry weather crosses the Uncompahgre uplift and connects with Colorado State Highway 141 in Unaweep Canyon. By this route, Grand Junction, Colorado, the nearest major supply center, is 58 miles away.

The claims cover the steep west slope of Calamity Creek Canyon, the moderately sloping bench above it, and the steep Burro Canyon slope above and west of this. The altitude ranges between 5,800 and 6,200 feet (fig. 2).

Operations are feasible throughout the year with proper preparation. In wet weather roads are nearly unpassable except to 4-wheel drive vehicles.

Water, supplies, power, and labor present no unusual problems. The proposed work would be done by a drilling contractor who presumably would furnish labor and housing. The operator plans to establish a camp on the property.

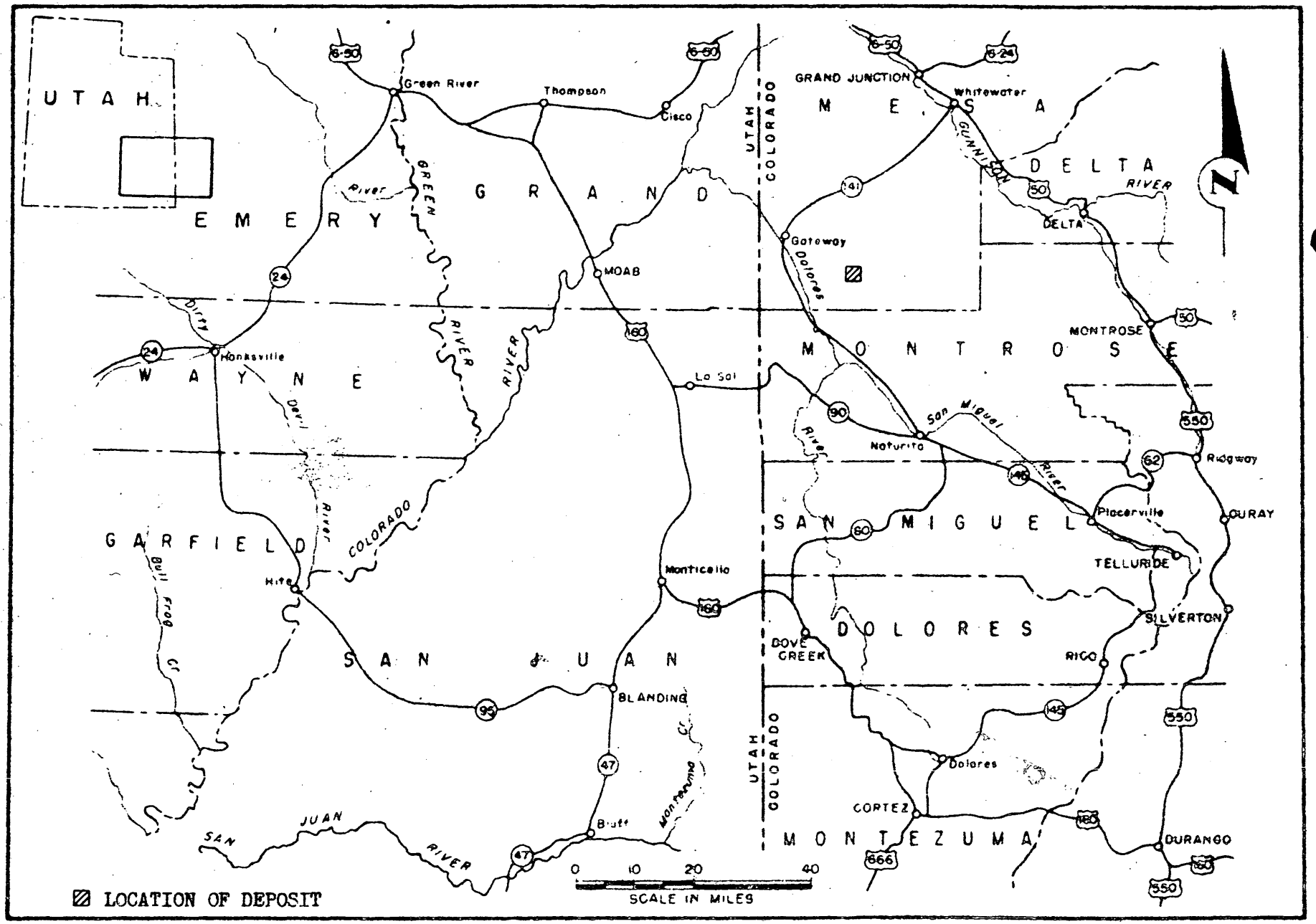

FIGURE 1 - LOCATION MAP OF CEDAR CLIFF, MUSCRAT, BEAVER AND CALCO CLAIMS, CAL-M-CO URANIUM CORPORATION, MESA COUNTY, COLO. DMEA 4046

HISTORY AND PRODUCTION

The Calamity Mesa district has been active since before World War I. Successively, radium, vanadium, and uranium have been sought. Current activities date from 1949 when the Geological Survey initiated a core-drilling project on patented claims which the Government had obtained through the Union Mines Development Corporation. A large amount of drilling exploration has been done both by the Geological Survey and the Atomic Energy Commission in the area north of the Cal-M-Co property, some of it on privately-owned ground.

The Cal-M-Co group was located in September 1951. No exploration had been done prior to 1955 when 9 holes were drilled.

A substantial production has been made from the area of favorable ground around the Government claims in the Calamity Creek district. As an example, the total production through September 1955 from seven Calamity claims was 38,000 tons with an average content of 0.36 percent U_3O_8 and 1.60 percent V_2O_5. This is in contrast to the only production in the immediate vicinity of the Cal-M-Co group, from the Cliff Dweller mine, which produced, through June 1955, 847 tons of ore with an average content of 0.35 percent U_3O_8 and 1.67 percent V_2O_5. This came from the one and only ore body found to date. The Cliff Dweller mine is not in operation at the present time. Inspection of the workings during a previous field visit indicated that all of the minable ore in sight had been removed. There has been no production from the Cal-M-Co group.

OWNERSHIP AND EXTENT

Fifteen of the sixteen claims owned by the applicant corporation were located by Cecil W. McCoy, Peter G. Kaasch, and Warren E. Wright in September 1951. The other claim was located by Melvin M. Bell on August 20, 1955, to cover a Salt Wash outcrop on some open ground adjoining the southeast corner of the property.

The 15 claims located by McCoy and associates are listed with recording data in the following table:

Claims	Recorded in Mesa County Courthouse Book	Page
Cedar Cliff 1 through 6	554	491-495
Muscrat Nos. 1, 2, and 3	554	488-490
Muscrat Nos. 4, 5, and 6	605	86-88
Beaver Nos. 1 and 2	554	486-487
Beaver No. 3	605	89

The Calco claim located by Melvin M. Bell is recorded in Book 658, page 434.

The Cedar Cliff, Muscrat, and Beaver claims were sold to Melvin M. and L. F. Bell who in turn deeded them to the Cal-M-Co Uranium Corporation.

The copies of the conveying instruments furnished with the application give the consideration involved as "Ten Dollars and other valuable considerations." A royalty agreement is not mentioned.

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During the field investigation claim corners or discovery notices for the conflicting claims were not found. However, no effort was made to examine the ground in detail. It would be necessary for the applicant to furnish considerable more information to establish rights to all ground which appears to be in conflict.

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Mining and milling equipment and other facilities

No improvements other than drill roads have been made on the property.

GEOLOGY

The claims of the Cal-M-Co Uranium Corporation are in the western part of the Calamity Mesa 7-1/2-minute quadrangle on the southwest flank of the Uncompahgre uplift. The geology of the Calamity Mesa quadrangle has been mapped by Cater (1955). Rocks exposed on the Cal-M-Co group are, in ascending order, the Jurassic Summerville formation, the Salt Wash and Brushy Basin members of the Jurassic Morrison formation, and the Cretaceous Burro Canyon formation, which caps Calamity Mesa in the westernmost part of the claims. The bedded sequence dips about 2 degrees southward. The thicknesses and descriptions of the units given in the table below are slightly modified from Cater (1955):

Age	Formational unit	Lithology	Thickness
Cretaceous	Burro Canyon	SS and Congl.	80'+
Jurassic	Morrison		
	Brushy Basin member	Variegated sh. and MS with minor intercalated SS beds	400'+
	Salt Wash member	SS beds with interbedded MS	275'
	Summerville	Thin-bedded variegated sandy shale and MS	70'

The Salt Wash member of the Jurassic Morrison formation is composed of the following units, as observed on the west side of Calamity Creek on the easternmost side of the applicant's claims:

Unit	Approximate thickness in feet	"Rim" no.
Sandstone, reddish, locally ore-bearing	40	1st
Mudstone, red	30	
Sandstone, thin to cross-bedded, mottled green and red; E4 prospect (fig. 2) near base	25	2nd
Mudstone, red; contains lenticular sandstones, locally ore-bearing	60	
Sandstone, red	20	3rd
Mudstone, red and green with a few thin beds; 1 to 2 feet sandstone, locally mineralized	35	
Sandstone, greenish gray above E3 prospect; red elsewhere	10	
Siltstone and mudstone greenish gray; E3 prospect (fig. 2) in 1-foot siltstone bed at top	5	4th
Sandstone, gray below E3	5	
Mudstone, upper 1-foot gray below E3	5	
Sandstone, red	45	
Total thickness of the Salt Wash member	280	

The above section is more or less typical of the Salt Wash member in the easternmost part of the applicant's claims. A sandstone lens, 10 feet in thickness and of limited extent, occurs within the 60-foot mudstone interval in the middle of the Salt Wash and contains the small high grade ore body at the Cliff Dweller mine just north of the applicant's claims (fig. 2).

ORE DEPOSITS

The Calamity group of Government claims leased to U. S. Vanadium Company lies about 1-1/2 miles north of the Cal-M-Co group (fig. 2). Drilling by the U. S. Geological Survey in 1948 and early 1949 consisted of 622 diamond drill holes (Stager, 1951, p. 13). The ore reserves indicated by this and other Government drilling consisted of 33,300 tons containing 0.34 percent of U_3O_8 and 1.53 percent of V_2O_5. This tonnage was in 26 different ore bodies ranging from 100 to 7,800 tons (Stager, 1951, table 5). All the deposits are in the uppermost Salt Wash sandstone which ranges from 25 to 80 feet in thickness and averages about 55 feet. Where the ore deposits occur, the ore-bearing sandstone is thicker, and the mudstone underlying the ore-bearing sandstone is altered to greenish gray for about 3-1/2 feet beneath the sandstone. Where the ore-bearing sandstone is barren, but is favorable (Weir, 1952) this alteration zone is about 1-1/2 feet thick.

Most of the tonnage indicated by U. S. Geological Survey drilling of favorable ground is more than 1-1/2 miles north of northernmost boundary of the applicant's Cal-M-Co group of claims. Southward toward the Calamity Creek group (DMEA 3934) the ore-bearing sandstone changes from favorable to semifavorable and unfavorable (Stager, 1951, fig. 3), fully 1 mile north of the northern boundary of the Cal-M-Co group of claims, and the ore bodies become smaller than 1,000 tons. On the claims of the

Calamity Creek Uranium Corporation to the north a small ore body containing several hundred tons was indicated by company drilling (see table 2 and figure 3, joint report of examination, DMEA 3934, and figure 2 of this report). This ore body is in the top rim of the Salt Wash. Two mineralized outcrops on the Calamity Creek group also contain very small pods of ore in thin sandstone below the top rim.

The Cliff Dweller mine (fig. 2) operated a 1,000-ton ore body in a thin sandstone lens with a maximum thickness of about 10 feet and thinning to a knife edge within 150 feet on either side of its maximum thickness as seen in the canyon wall exposure. The top of the lens is about 100 feet below the top of the Salt Wash. The average grade of ore shipped from the Cliff Dweller ore body was about 0.35 percent U_3O_8 and 1.7 percent V_2O_5. The Wards mine just across Calamity Creek (fig. 2) is in the top ledge of the Salt Wash, but there is no record of any production.

On the Cal-M-Co property, the Salt Wash member is unfavorable as evidenced by several barren drill holes drilled by the applicant (fig. 2). Rim exposures of the ore-bearing sandstone were examined at two places by the DMEA examining team and also found to be unfavorable. Only two small mineralized prospects, called E-3 and E-4 by the applicant are exposed at the Salt Wash outcrop on the west side of Calamity Creek.

Prospect E-3 (fig. 2) exposes one foot of mineralized green laminated siltstone or fine sandstone which immediately underlies

a 10-foot gray sandstone bed at the top of the 4th and lowermost rim. The underlying mudstone and sandstone is also altered greenish gray through a stratigraphic interval of about 11 feet. The applicant reports the following assays from two "average" samples from E-3 prospect:

	$\%U_3O_8$	$\%V_2O_5$
Sample 1	0.11	0.26
" 2	0.22	0.60

A check with a Geiger counter indicates that these samples are probably representative of the 1-foot mineralized siltstone exposed in the prospect pit. Thirty feet south of the prospect pit, however, tests with Geiger counter indicate only weakly mineralized siltstone containing less than 0.05 percent eU_3O_8. The sandstone overlying the weakly mineralized siltstone is mottled red and green and grades into reddish sandstone still farther south along the outcrop. Northward the overlying sandstone becomes reddish within 50 feet of the E-3 prospect pit, although the underlying ore-bearing siltstone, if present, is not exposed. The limited grade and thickness of the ore, the pinch-out toward the south associated with a reddening of the overlying sandstone, and the reddening of the overlying sandstone toward the north along the outcrop indicate that the chances of finding even a small ore body are not good.

Prospect E-4 (fig. 2) consists of several closely spaced high-grade pods of dark carnotite-stained ore in a large slump block of sandstone, which probably came from near the base of the second rim. The pods appear to be controlled by fissures rather than

bedding and no persistence of ore along any trend could be demonstrated. The pods individually are estimated to contain not more than one hundred pounds of ore. The sandstone is locally altered to greenish gray around E4 prospect. The applicant reports the following assays from two "average" samples:

	U_3O_8	V_2O_5
Sample 1	4.66	2.86
" 2	10.49	11.43

A check with a Geiger counter indicated that such high grade samples are easily obtainable, but the total quantity of ore of such grade is not more than 25 pounds. Possibly as much as 500 pounds of ore containing about one percent of U_3O_8 is exposed in this outcrop.

ORE RESERVES

The prevalence of reddish sandstone on the Cal-M-Co and adjoining properties and the tendency of small ore bodies and pods to occur in the thinner sandstones below the top rim of the Salt Wash indicates that any ore bodies under the Cal-M-Co property are likely to be less than 1,000 tons and widely spaced.

PROPOSED EXPLORATION

The proposed exploration is in three stages. In Stage I, 23 holes averaging about 400 feet in depth and requiring an estimated 5,400 feet of non-core drilling and 5,600 feet of core drilling are proposed. In addition, exploration of the outcrop at location E-3 (fig. 2) by 150 feet of drifting is proposed.

Stage II calls for 30 holes averaging 450 feet in depth requiring 12,000 feet of non-core drilling and 1,500 feet of core drilling. Holes would be located to further explore mineralization found in Stage I.

Stage III calls for 30 more holes averaging 450 feet deep requiring 12,000 feet of non-core drilling and 1,500 feet of core drilling. Presumably the purpose of this stage is to offset on closer centers mineralization found in Stages I and II.

The estimated cost of the entire program is given as $123,380. Government participation at 75 percent would be $92,535. It is based on three bids by drilling contractors. The average over-all cost per foot of drilling on this basis would be $3.25. This figure is about 50 cents per foot higher than the contract price in similar DMEA projects. Most of the extra cost is in high supervision and technical costs.

The program is planned to explore the entire Salt Wash member of the Morrison formation, not withstanding the fact that the significant known deposits are believed to be confined to the topmost horizon. A revised program and cost estimate was not prepared by the examining team.

CONCLUSIONS AND RECOMMENDATIONS

It is concluded that neither the proposed exploration program nor a modification of it is justified by the limited size of the ore

discoveries to date. The unfavorable factors on which this conclusion is based are the small extent and erratic distribution of favorable sandstone, the negative results of drilling on the property, the unfavorable data on the area from extensive Government drilling just to the north, and the probable small size and sparse distribution of ore bodies, such as E-3 and E-4. Ore occurrences of the size found in adjoining properties would not be significant.

It is recommended that the application under DMRA 4046 be denied.

References cited

Cater, Fred W., 1955, Geology of the Calamity Mesa quadrangle, Colorado: U. S. Geol. Survey GQ 61.

Stager, Harold K., June 1951, Carnotite resources of the Calamity group area, Mesa County, Colorado: U. S. Geol. Survey TEIR-146, 30 p.

Weir, Doris Blackman, 1952, Geologic guides to prospecting for carnotite deposits on Colorado Plateau: U. S. Geol. Survey Bull. 988-B, 27 p.

12-2-55 gm

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

RECEIVED
DEC - 1 1955

November 29, 1955

204 New Customhouse
Denver 2, Colorado

Memorandum

To: J. F. Shaw
J. W. Hasler

From: Acting Executive Officer, DMEA Field Team, Region III

Subject: Docket DMEA 4046 (Uranium), Cal-M-Co Uranium Corporation, Cedar Cliff claims, et al., Mesa County, Colorado

For your information enclosed are the following:

1. Copy of a letter from the Chairman of the Operating Committee dated November 21, 1955

2. Review of the application by N. E. Nelson, United States Geological Survey

3. Review of the application by John E. Crawford, United States Bureau of Mines

Both copies of the application for the use of the field examiners have recently been forwarded you.

E. M. Hershman

E. M. Hershman

Enclosures

cc: Sec. Op. Comm. (2)

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

RECEIVED
DEC - 1 1955

November 29, 1955

224 New Customhouse
Denver 2, Colorado

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E. M. Harshman

E. M. Harshman

Enclosures

cc: Sec. Op. Comm. (2)

Surname copy

700

Ching
Ellis
Leehan
Nelson
Selfridge

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

NOV 21 1955

Mr. Melvin M. Ball
Cal-M-Co Uranium Corporation
2028 N. 10th
Grand Junction, Colorado

Re: Docket No. DMEA-4046 (Uranium)
Cedar Cliff Claims, et al.
Mesa County, Colorado

Dear Mr. Ball:

The application for assistance in exploring the subject property under the captioned docket number has been reviewed by the Rare and Miscellaneous Metals Division.

The DMEA Field Team, Region III, Mr. W. M. Traver, Executive Officer, 224 New Customhouse Building, Denver, Colorado, will schedule a field examination of your property in the near future if it has not already done so.

Any assistance you may give the members of the Field Team during the examination will be appreciated.

Sincerely yours,

Jens E. Johnson

ACTING Administrator

MChing/gla
11-18-55
cc to: Admr.'s Reading File
Docket
Code 700
Mr. Ching
DMEA Field Team, Region III (2)

R.C.H.

Surname copy

700

Ching
Elk
Nelson
Selfridge
JEJohnson

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

NOV 2 1 1955

Mr. W. M. Traver
Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

Re: Docket No. DMEA-406 (Uranium)
Cal-M-Co Uranium Corporation
Cedar Cliff Claims, et al.
Mesa County, Colorado

Dear Mr. Traver:

This is with reference to your memorandum of October 28 and enclosures, relating to the subject application.

Enclosed are two copies each of memoranda, dated November 8 and November 10, 1955, from N. E. Nelson, USGS, and John E. Crawford, USBM, respectively.

Applicant states that all property conflicts have been settled. In the event a contract is recommended, it is suggested that such settlement be confirmed by the Field Team.

Sincerely yours,

George C. Selfridge
by EST
Chairman, Operating Committee

Enclosures

APPROVED:

/s/ Robert W. Geehan by EST
Member, Bureau of Mines

N. E. Nelson by EST
Member, Geological Survey

MChing/gla
11-18-55
cc to: Admr.'s Reading File
Operating Committee
Docket
Messrs. JECrawford, Rm. 3641
THKiilsgaard, Rm. 5224
JOHosted, Rm. 3210, GSA
Code 700
Mr. Ching

R.C.

11/10/55-gh

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

November 10, 1955

Memorandum

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee, Room 4445

From: John E. Crawford, Bureau of Mines Member
Uranium Commodity Committee

Subject: Application for assistance, DMEA Docket 4046, Cal-M-Co Uranium Corporation, Calamity Mesa area, Gateway mining district, Mesa County, Colorado

I have reveiwed the attached application, Cal-M-Co Uranium Corporation, DMEA Docket 4046, dated October 21, 1955, and received in this office November 4, 1955. I have also discussed it with Joseph O. Hosted, Washington representative of the Atomic Energy Commission.

The Cal-M-Co Uranium Corporation has requested DMEA assistance in a three-stage uranium exploration program on 16 claims located in the Uravan Mineral Belt on Calamity Mesa in Mesa County, Colo. Stage I would include 4,400 feet of core and 4,500 feet of non-core drilling, and 150 feet of drift. Stages II and III would each consist of 12,000 feet of non-core and 1,500 feet of core drilling. The total estimated cost is $123,380.00.

Inasmuch as a field examination had been scheduled for the subject property before we could review the application, there is no alternative but to await the report of examination from Region III.

John E Crawford
John E. Crawford

Attachment

11-9-55 ign

IN REPLY REFER TO:

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

November 8, 1955

Re: DMEA 4046
Cal - M - Co Uranium Corp.
Cal - M - Co property
Mesa County, Colorado
$123,380.00 - Uranium

Memorandum

To: E. W. Ellis, Defense Minerals Exploration Administration

From: N. E. Nelson, U. S. Geological Survey

Subject: Review of application.

The field office has expressed the belief that an examination is warranted.

The applicant requests assistance in exploring 16 claims with 3 stages of dry and core drilling, and 150 feet of drifting.

Two outcrops of uranium-vanadium-bearing material occur on the southeastern claim of the group. Samples taken of the two outcrops, E-3 and E-4, assayed:--

E-3,	sample 1	0.11% U_3O_8	0.26% V_2O_5
	sample 2	0.22% "	0.60% "
E-4,	sample 1	4.66% "	2.86% "
	sample 2	10.49% "	11.43% "

The samples are called "average" but no sampling widths are given.

Five exploratory holes were drilled by the applicant at widely separated points. The application says the holes failed to reach and penetrate favorable horizons in the Salt Wash formation due to the inadequate equipment used. Four holes are now being drilled using other equipment. One of the holes being drilled is 'back of' the E-4 outcrop and should furnish valuable information.

The first four widely-spaced holes of Stage I drilling will be horizon finders. The other 24 holes of Stage I will get their cues from the four pilot holes.

Stage II and III holes will be fill ins should the Stage I holes indicate such are justified.

RECEIVED NOV 9 1955

A producing mine is located less than a thousand feet to the north of the group and others are a short distance to the northeast. Three miles to the north and northeast are the very productive Calamity and Outlaw areas.

As a general drilling program the hole layout may be well done, but in case early production is an object concentration of work nearer the rim would appear desirable.

Perhaps by the time the contemplated visit is made by the examiners, the holes 'in progress' will have been completed.

I concur with the conclusion of the field office that an examination is warranted and recommend that such be made.

N. E. Nelson

N. E. Nelson

IN REPLY REFER TO:

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

November 8, 1955

Re: DMEA 4046
Cal - M - Co Uranium Corp.
Cal - M - Co property
Mesa County, Colorado
$123,380.00 - Uranium

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RECEIVED
NOV - 8 1955

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I concur with the conclusion of the field office that an examination is warranted and recommend that such be made.

N. E. Nelson

N. E. Nelson

NENelson:iml
G-11/8/55

cc: Director's reading, 4212
Branch reading, 4212
DMEA (3)✓
Docket file
J. E. Crawford, 3641
J. O. Hosted, 3210

November 4, 1955

Memorandum

To: Executive Officer, DMEA Field Team, Region III

From: Chief, Operation's Control and Statistics Division

Subject: Assignment of Docket Number

There is listed below the assigned docket number to an application recently received from Region III.

DMEA- 4046 Cal-M-Co Uranium Corporation

Robert E. Adams
Chief, Operation's Control
and Statistics Division

November 4, 1955
Subject: DMEA-4046
Re: Exploration Assistance
Cal-M-Co

Cal-M-Co Uranium Corporation
2028 N 10th
Grand Junction, Colorado

Gentlemen:

The receipt of your application dated October 21, 1955, for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA-4046 and referred to the Rare & Misc. Metals Division.

Kindly identify all future correspondence relating to your application by this docket number.

Sincerely yours,

Robert E. Adams, Chief
Operations Control and
Statistics Division

60932

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

RECEIVED
NOV - 2 1955

October 28, 1955

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Executive Officer, DMEA Field Team, Region III

Subject: Application for DMEA aid (Uranium), Cal --M - Co Uranium Corporation, Calamity Mesa Area, Mesa County, Colorado

Enclosed are two copies of the subject application in the amount of $123,380.00.

This application was submitted to the Grand Junction office by the applicant.

Four copies of a review of the application are enclosed and since this review recommends a field examination, one copy of the application has been forwarded for use of the engineer examiner.

W. M. Traver

By J W Townsend
J. W. Townsend

Enclosures

November 1, 1955

Memorandum

To: W. M. Traver, Executive Officer, DMEA Field Team, Reg. III

From: Acting Superintendent, Denver Experiment Station, Reg. III

Subject: Docket DMEA _____ Cal - M - Co Uranium Corporation (Uranium), Calamity Mesa Area, Mesa County, Colorado

The above brochure was received in this office on October 31, 1955.

A field examination will be made and suitable report prepared by an engineer from the Denver or Grand Junction office.

John F. Shaw

cc: 2 w/orig.
E. N. Harshman
J. W. Hasler
Sec. Op. Com

November 1, 1955

Memorandum

To: W. M. Trever, Executive Officer, DMEA Field Team, Reg. III

From: Acting Superintendent, Denver Experiment Station, Reg. III

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cc: 2 w/orig.
E. N. Harshman
J. W. Healer

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

RECEIVED
NOV - 2 1955

October 28, 1955

224 New Customhouse
Denver 2, Colorado

DMEA # 4046

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Executive Officer, DMEA Field Team, Region III

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W. M. Traver

By J. W. Townsend
J. W. Townsend

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

RECEIVED NOV - 2 1955

IN REPLY REFER TO:
DMEA
Date R...

OCT 28 1955

BUREAU OF MINES
Denver, Colorado

October 27, 1955

Memorandum

To: W. M. Traver, Executive Officer, DMEA Field Team, Region III

From: J. William Hasler and M. H. Salsbury

DMEA 4046

Subject: Cal-M-Co Uranium Corporation (Uranium)

I am in receipt of four copies of answers to MF-105 forms, submitted by the Cal-M-Co Uranium Corporation. The company proposes to explore 16 unpatented mining claims, located in sections 22, 23, 26, and 27, T. 50 N., R. 18 W., in the Calamity Mesa area, Gateway mining district, Mesa County, Colorado.

The application has been reviewed with reference to the necessity of a field examination. The northern portion of the Calamity Mesa has been an important producer of uranium-vanadium ore on the Colorado Plateau. Although USGS drilling on the southern portion of the Mesa was not encouraging, it is believed that a field examination of this property relative to the proposed exploration work, as outlined in the application, should be made.

We are retaining one copy of the application material and forwarding three copies to the Field Team, Region III.

J. William Hasler
J. William Hasler,
Geologist, USGS

G Walker
for M. H. Salsbury
Engineer, USBM

JWH/mlr
cc: E. N. Harshman

Enclosures

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

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

RECEIVED
NOV - 2 1955

Not to be filled in by applicant

Docket No. DMEA-4046
Metal or Mineral Uranium
Date Received 11-2-55
Estimated Cost $123,380.00
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:

CAL - M - CO URANIUM CORP.
2028 N 10th
Grand Junction, Colorado

(*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.

(*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.

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 16 unpatented mining claims located in Sections 22, 23, 26 and 27, Township 50 N and Range 18 W. Claims Cedar Cliff 1 to 6 incl., Muscrat 1-6 incl., Beaver 1 to 3 incl., and Calco.

(*b*) State any mine name by which the property is known. CAL - M - CO

(*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.

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. None

(*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.

5. *The exploration project.*—State the mineral or minerals for which you wish to explore Uranium and Vanadium

(*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.

(*c*) The work will start within 90 days and be completed within 13 months from the date of an exploration project contract. depending upon weather conditions

(*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.

(*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?

[x] 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 October 21, 1955

CAL - M - CO URANIUM CORP.
(Applicant)

By Melvin M. Bell

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

CAL - M - CO URANIUM CORPORATION
2028 N 10th
Grand Junction, Colorado

1. (b) A corporation of the State of Colorado and qualified to do business in the State of Colorado.

(c)

President - Peter G. Kassch	Grand Junction, Colo.
Executive Vice President - Melvin M. Bell	2028 N. 10th Grand Junction, Colo.
Vice-President - L. F. Bell	Rt #1, Gooding, Idaho
Secretary-Treasurer, A. F. Little	1401 Sycamore Wasco, Calif.
Director - H. S. Giddings	1230 Griffith Ave., Wasco, Calif.
Director - Warren E. Wright	2930 U.S. Highway 50 Grand Junction, Colo.

3. (f) Claims recorded in Mesa County Recorder's Records:

	Book	Page
Cedar Cliff #1	554	491
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Cedar Cliff #3	554	493
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Muscrat #6	605	88
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Beaver #2	554	487
Beaver #3	605	89
Calco	658	434

All boundary line conflicts have been settled and the proposed drill site locations have been located accordingly as shown on map.

4. (a) There has not been nor is there at present on the property any known mining operations. The applicant has, at his expense, drilled 5 exploratory holes as shown and marked E - 1 on attached map. The information obtained was inconclusive due to the fact that the type of equipment used could not penetrate the formation to the required depth. The applicant plans to drill, at his expense, using the required type of equipment, 4 holes to approximate depth of 500 ft. The information obtained will be readily available for DMEA inspection team. These hole locations are marked E-2, as shown on attached map. The applicant has located two mineralized

CAL - M - CO URANIUM CORPORATION
2028 N 10th
Grand Junction, Colorado

4. (a) Continued

outcroppings as marked E-3 and E-4 and located on Calco claim, as shown on map. Two average samples were taken for each outcropping and a chemical analysis for U_3O_8 and V_2O_5 was made by Minerals Assay Laboratory, Grand Junction, Colo. The following results were obtained:

Outcropping E-3 sample #1	.11% U_3O_8,	.26% V_2O_5
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Outcropping E-4 sample #1	4.66% U_3O_8,	2.86% V_2O_5
sample #2	10.49% U_3O_8,	11.43% V_2O_5

The drill holes are accessible by automobile road and the outcroppings are accessible by foot trail from nearby roads.

(c) The claim group is located in the heart of the Uravan mineral belt, on Calamity Mesa and is covered by exposed portions of Dakota sandstones and Brushy Basin and Salt Wash members of the Morrison formation. The Calamity Mesa proper is capped by a protective ledge of Dakota sandstone some 40 to 60 ft thick. The Brushy Basin member of the Morrison formation about 300 ft thick, consisting of variegated clays and marls, forms a ragged slope directly underlying the Dakota sandstone. Underlying the Brushy Basin is the Salt Wash member of the Morrison formation which is about 300 ft thick and is exposed along Calamity Creek where the creek has cut into the underlying Entrada some 30 to 50 ft. The outcropping E-3 lies on rim about 150 ft above the Entrada and outcropping E-4 lies on rim about 150 ft above outcropping E-3. Outcropping E-4 is about 3000 ft south and on about the same level as an existing producing mine known as the Cliff Dweller. The Cliff Dweller mine, owned and operated by Vernon Pick, is located approximately 800 ft north of applicant's north boundary; recently mineralized ore bodies have been located by drilling approximately 1400 ft and 5000 ft; these new discoveries being the Calamity Creek mine (1400 ft) and Newmont's New Vardie Mine (5000 ft) respectively. The producing mines in G1, G2 and Blue Creek all on Out Law Mesa are about 8000 ft to the Northeast and East of applicant's East boundary.

It is believed that this area is a potential producer and that it lies within a very favorable province of uranium production which should be tested by a drilling program as outlined in this application.

CAL - M - CO URANIUM CORPORATION
2028 N 10th
Grand Junction, Colorado

4. (d) Grand Junction, Colorado is the nearest shipping, supply and residence point and is accessible by automobile road, as follows:

9 miles to Whitewater via Highway 50, thence 14 miles to Taylor's Ranch via Highway 141, thence 35 miles to the claims via a mountain road crossing the Uncompahgre forest plateau.

(e) All manpower, materials, equipment, supplies and domestic water are available and, as is customary, transported to property from Grand Junction, Colorado. Electric power is not available on property.

5. (b) The applicant's proposed program is to construct a base camp on and thoroughly explore the entire 16 claims by core and non-core drilling. The program will be done in three stages, as follows:

<u>Stage 1</u>. Consisting of 28 holes drilled to or near the base of the Salt Wash member of the Morrison formation. Four of these holes, as marked G-1 and shown on map, will be non-core drilled through the Brushy Basin member and then core drilled to the base of the Salt Wash. This amount will total approximately 1200 ft of core drilling and 950 ft of non-core drilling. The depth of core and non-core drilling for the remaining 28 holes, as marked D-1 and shown on map, will depend on the information gained from the first four holes. The Topography map shows the proposed location and approximate depth of each hole. The total depth will be approximately 4400 ft of core drilling and 4,500 ft of non-core drilling. A survey will be run while the drilling is in progress to determine the position and elevation of the hole collars. Each hole will be checked with modern subsurfaced logging equipment, such as scintillator probe, and an accurate log kept. The results obtained will be evaluated by a qualified geologist and the second stage program will be planned around the information obtained. Due to the fact that the vicinity around outcropping E-3 is not suitable for drilling this area will be explored by the use of a 150 ft drift into the side of the cliff. Outcropping E-4 will be checked by a hole drilled at 100 ft distance.

CAL - M - CO URANIUM CORPORATION
2028 N 10th
Grand Junction, Colorado

5. (b) Continued

Stage 2. Will consist of drilling approximately 30 holes for a total depth of 12,000 ft of non-core drilling and 1500 ft of core drilling. The location of these holes will be based on information gained from stage 1.

Stage 3. Will consist of drilling approximately 30 holes for a total depth of 12,000 ft of non-core drilling and 1500 ft of core drilling. The location of these holes will be based on information gained from stage 2. These holes will be surveyed and probed as in stages 1 and 2.

(d) The applicant has been connected with the Uranium business and especially this type of a program for approximately one year. The applicant is a corporation that has as members of its board of directors men who have had several years of experience as construction contractors. A brief resume' as follows:

Executive Vice-President and Projects Supervisor, Melvin M. Ball. Graduate mechanical engineer, 7 years experience as project manager in the construction field.

Vice-President, L. F. Ball. 10 years experience as owner and operator of a company for construction and maintenance of heavy construction equipment.

Director, H. S. Giddings. 25 years experience as owner and operator of a company for land leveling and road construction work.

Director, Warren E. Wright. 5 years experience as a uranium mining contractor with most of this time spent in the area in which the applicant proposes to explore.

Also, the applicant will have the services of the Engineering firm of Watrous and Anderson to supervise and advise the program. The firm of Watrous and Andersen of Idaho Springs, Colorado have been active engineers in the Colorado plateau area for several years.

CAL - M - CO URANIUM CORPORATION
2028 N 10th
Grand Junction, Colorado

6. Estimates of drilling costs were obtained from three drilling contractors, copies of which are attached.

(a) Estimates of costs for the proposed program are, as follows:

Stage 1. C-1 Holes		
Non-core drilling 0 ft to 300 ft		
4 holes - 900 ft @ $2.05	$1,845.00	
Coring 300 ft to 600 ft		
4 holes - 1200 ft @ $4.50	5,400.00	
D-1 Holes		
Non-core drilling 0 ft to 300 ft		
24 holes - 4,500 ft @ $2.05	9,225.00	
Coring 300 ft to 600 ft		
24 holes - 4,400 ft @ $4.50	19,800.00	
Work on roads and drillsites		
Bulldozer 100 hrs @ $12.00	1,200.00	
Air compressor, jack hammer and blasting powder	250.00	
Estimated standby time on drill rigs 60 hours @ $12.00	720.00	
Subsurface logging equipment for checking holes after drilling	400.00	
Exploring outcropping E Drifting and road work	3,500.00	
Stage 1, sub-total		$42,340.00
Stage 2. Non-core drilling 12,000 ft @ $2.05	$24,600.00	
Coring 1500 ft @ $4.50	6,750.00	
Estimated standby time on drill rigs 50 hrs @ $12.00	600.00	
Bulldozer work on roads and drillsites 30 hrs @ $12.00	360.00	
Stage 2, sub-total		$32,310.00

CAL - M - CO URANIUM CORPORATION
2028 N 10th
Grand Junction, Colorado

6. (a) Continued

Stage 3. Non-core drilling		
12,000 ft @ $2.05	$24,600.00	
Coring 1500 ft @ $4.50	6,750.00	
Bulldozer work on roads and drill-sites 30 hrs @ $12.00	360.00	
Estimated standby time on drill rig 50 hrs @ $12.00	600.00	
Stage 3, sub-total		$32,310.00

(b) Supervision and consultants.

Stage 1.		
1 superintendent @ $1,000 per month, 5 months	5,000.00	
Engineering consultants 30 days @ $100.00	3,000.00	
Stage 1, sub-total		8,000.00
Stage 2.		
1 superintendent @ $1,000 per month, 3 months	3,000.00	
Engineering consultants 20 days @ $100.00	2,000.00	
Stage 2, sub-total		5,000.00
Stage 3.		
Same as Stage 2		5,000.00

CAL - M - CO URANIUM CORPORATION
2028 N 10th
Grand Junction, Colorado

6. Continued

(c) Operating materials and supplies

Stage 1.

Truck operating expense		
5 months @ $50.00	$ 250.00	
Campsite maintenance including water and fuel - 5 mos @ $30.00	150.00	
Core boxes 1400 ft @$.10	140.00	
Stage 1, sub-total		$ 540.00

Stage 2

Truck operating expense		
3 months @ $50.00	150.00	
Campsite maintenance including water and fuel		
3 months @ $30.00	90.00	
Core boxes 500 ft $.10	50.00	
Stage 2, sub-total		290.00

Stage 3

Same as Stage 2	290.00	290.00

(d) Operating Equipment

Stage 1

Pickup Truck rent		
5 months @ $50.00	250.00	250.00

Stage 2

Pickup truck rent		
3 mnths @ $50.00	150.00	150.00

Stage 3

Same as Stage 2	150.00	150.00

CAL- W - GO URANIUM CORPORATION
2028 N 10th
Grand Junction, Colorado

6. Continued

(f) Campsite including building, water and fuel tank $2500.00

(g) Chemical assays for V_3O_8 and V_2O_5

Stage 1	20 assays @ $5.00	100.00
Stage 2	20 assays @ $5.00	100.00
Stage 3	20 assays @ $5.00	100.00
Accounting		
Stage 1	5 months @ $30.00	150.00
Stage 2	3 months @ $30.00	90.00
Stage 3	3 months @ $30.00	90.00

(h) Contingencies

Stage 1	1000.00
Stage 2	600.00
Stage 3	600.00

GRAND TOTAL $123,380.00

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

RECEIVED
NOV - 2 1955

IN REPLY REFER TO:
DMEA
Date Rec'd.
OCT 28 1955

BUREAU OF MINES
Denver, Colorado

October 27, 1955

Memorandum

To: W. M. Traver, Executive Officer, DMEA Field Team, Region III

From: J. William Hasler and M. H. Salsbury

Subject: Cal-M-Co Uranium Corporation (Uranium)

I am in receipt of four copies of answers to MF-103 forms, submitted by the Cal-M-Co Uranium Corporation. The company proposes to explore 16 unpatented mining claims, located in sections 22, 23, 26, and 27, T. 50 N., R. 18 W., in the Calamity Mesa area, Gateway mining district, Mesa County, Colorado.

The application has been reviewed with reference to the necessity of a field examination. The northern portion of the Calamity Mesa has been an important producer of uranium-vanadium ore on the Colorado Plateau. Although USGS drilling on the southern portion of the Mesa was not encouraging, it is believed that a field examination of this property relative to the proposed exploration work, as outlined in the application, should be made.

We are retaining one copy of the application material and forwarding three copies to the Field Team, Region III.

J. William Hasler
J. William Hasler,
Geologist, USGS

for G. Walker
M. H. Salsbury
Engineer, USBM

JWH/mlr
cc: E. N. Harshman

Enclosures

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

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

RECEIVED
NOV - 2 1955

Not to be filled in by applicant

Docket No. DMEA-4046
Metal or Mineral Uranium
Date Received 11-2-55
Estimated Cost $ 123,380.00
Participation (Government %) $ 131,960.00

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:

CAL - M - CO URANIUM CORP.
2028 N 10th
Grand Junction, Colorado

(*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.

(*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.

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 16 unpatented mining claims located in Sections 22, 23, 26 and 27, Township 50 N and Range 18 W. Claims Cedar Cliff 1 to 6 incl., Muscrat 1-6 incl., Beaver 1 to 3 incl., and Calco.

(*b*) State any mine name by which the property is known. CAL - M - CO

(*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.

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. None

(*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.

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

(*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.

(*c*) The work will start within 90 days and be completed within 13 months from the date of an exploration project contract. depending upon weather conditions

(*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:

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Dated October 21, 1955

CAL - M - CO URANIUM CORP.
(Applicant)

By Melvin M. Bell

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2028 N 10th
Grand Junction, Colorado

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CAL - M - CO URANIUM CORPORATION
2023 N 10th
Grand Junction, Colorado

4. (a) Continued

outcroppings as marked E-3 and E-4 and located on Calco claim, as shown on map. Two average samples were taken for each outcropping and a chemical analysis for U_3O_8 and V_2O_5 was made by Minerals Assay Laboratory, Grand Junction, Colo. The following results were obtained:

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CAL - M - CO URANIUM CORPORATION
2028 N 10th
Grand Junction, Colorado

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(e) All manpower, materials, equipment, supplies and domestic water are available and, as is customary, transported to property from Grand Junction, Colorado. Electric power is not available on property.

5. (b) The applicant's proposed program is to construct a base camp on and thoroughly explore the entire 16 claims by core and non-core drilling. The program will be done in three stages, as follows:

<u>Stage 1</u>. Consisting of 28 holes drilled to or near the base of the salt wash member of the Morrison formation. Four of these holes, as marked C-1 and shown on map, will be non-core drilled through the Brushy Basin member and then core drilled to the base of the salt wash. This amount will total approximately 1200 ft of core drilling and 950 ft of non-core drilling. The depth of core and non-core drilling for the remaining 28 holes, as marked D-1 and shown on map, will depend on the information gained from the first four holes. The Topography map shows the proposed location and approximate depth of each hole. The total depth will be approximately 4400 ft of core drilling and 4,500 ft of non-core drilling. A survey will be run while the drilling is in progress to determine the position and elevation of the hole collars. Each hole will be checked with modern subsurfaced logging equipment, such as scintillator probe, and an accurate log kept. The results obtained will be evaluated by a qualified geologist and the second stage program will be planned around the information obtained. Due to the fact that the vicinity around outcropping E-3 is not suitable for drilling this area will be explored by the use of a 150 ft drift into the side of the cliff. Outcropping E-4 will be checked by a hole drilled at 100 ft distance.

CAL - M - CO URANIUM CORPORATION
2028 N 10th
Grand Junction, Colorado

5. (b) Continued

Stage 2. Will consist of drilling approximately 30 holes for a total depth of 12,000 ft of non-core drilling and 1500 ft of core drilling. The location of these holes will be based on information gained from stage 1.

Stage 3. Will consist of drilling approximately 30 holes for a total depth of 12,000 ft of non-core drilling and 1500 ft of core drilling. The location of these holes will be based on information gained from stage 2. These holes will be surveyed and probed as in stages 1 and 2.

(d) The applicant has been connected with the Uranium business and especially this type of a program for approximately one year. The applicant is a corporation that has as members of its board of directors men who have had several years of experience as construction contractors. A brief resume as follows:

Executive Vice-President and Projects Supervisor, Melvin M. Bell. Graduate mechanical engineer, 7 years experience as project manager in the construction field.

Vice-President, L. F. Bell. 10 years experience as owner and operator of a company for construction and maintenance of heavy construction equipment.

Director, H. S. Giddings. 25 years experience as owner and operator of a company for land leveling and road construction work.

Director, Warren E. Wright. 5 years experience as a uranium mining contractor with most of this time spent in the area in which the applicant proposed to explore.

Also, the applicant will have the services of the Engineering firm of Watrous and Anderson to supervise and advise the program. The firm of Watrous and Anderson of Idaho Springs, Colorado have been active engineers in the Colorado plateau area for several years.

CAL - M - CO URANIUM CORPORATION
2028 N 10th
Grand Junction, Colorado

6. Estimates of drilling costs were obtained from three drilling contractors, copies of which are attached.

(a) Estimates of costs for the proposed program are, as follows:

Stage 1. C-1 Holes		
Non-core drilling 0 ft to 300 ft		
4 holes - 900 ft @ $2.05	$1,845.00	
Coring 300 ft to 600 ft		
4 holes - 1200 ft @ $4.50	5,400.00	
D-1 Holes		
Non-core drilling 0 ft to 300 ft		
24 holes - 4,500 ft @ $2.05	9,225.00	
Coring 300 ft to 600 ft		
24 holes - 4,400 ft @ $4.50	19,800.00	
Work on roads and drillsites		
Bulldozer 100 hrs @ $12.00	1,200.00	
Air compressor, jack hammer and blasting powder	250.00	
Estimated standby time on drill rigs 60 hours @ $12.00	720.00	
Subsurface logging equipment for checking holes after drilling	600.00	
Exploring outcropping E Drifting and road work	3,500.00	
Stage 1, sub-total		$42,340.00
Stage 2. Non-core drilling 12,000 ft @ $2.05	$24,600.00	
Coring 1500 ft @ $4.50	6,750.00	
Estimated standby time on drill rigs 50 hrs @ $12.00	600.00	
Bulldozer work on roads and drillsites 30 hrs @ $12.00	360.00	
Stage 2, sub-total		$32,310.00

CAL - M - CO URANIUM CORPORATION
2028 N 10th
Grand Junction, Colorado

6. (a) Continued

Stage 3. Non-core drilling		
12,000 ft @ $2.05	$24,600.00	
Coring 1500 ft @ $4.50	6,750.00	
Bulldozer work on roads and drill-sites 30 hrs @ $12.00	360.00	
Estimated standby time on drill rig 50 hrs @ $12.00	600.00	
Stage 3, sub-total		$32,310.00

(b) Supervision and consultants.

Stage 1.		
1 superintendent @ $1,000 per month, 5 months	5,000.00	
Engineering consultants 30 days @ $100.00	3,000.00	
Stage 1, sub-total		8,000.00
Stage 2.		
1 superintendent @ $1,000 per month, 3 months	3,000.00	
Engineering consultants 20 days @ $100.00	2,000.00	
Stage 2, sub-total		5,000.00
Stage 3.		
Same as Stage 2		5,000.00

CAL - M - CO URANIUM CORPORATION
2028 N 10th
Grand Junction, Colorado

6. Continued

(c) Operating materials and supplies

Stage 1.

Truck operating expense		
5 months @ $50.00	$ 250.00	
Campsite maintenance including water and fuel - 5 mos @ $30.00	150.00	
Core boxes 1400 ft @$.10	140.00	
Stage 1, sub-total		$ 540.00

Stage 2

Truck operating expense		
3 months @ $50.00	150.00	
Campsite maintenance including water and fuel		
3 months @ $30.00	90.00	
Core boxes 500 ft $.10	50.00	
Stage 2, sub-total		290.00

Stage 3

Same as Stage 2	290.00	290.00

(d) Operating Equipment

Stage 1

Pickup Truck rent		
5 months @ $50.00	250.00	250.00

Stage 2

Pickup truck rent		
3 mnths @ $50.00	150.00	150.00

Stage 3

Same as Stage 2	150.00	150.00

CAL- M - CO URANIUM CORPORATION
2028 N 10th
Grand Junction, Colorado

6. Continued

(f) Campsite including building, water and fuel tank $2500.00

(g) Chemical assays for V_3O_8 and V_2O_5

Stage 1	20 assays @ $5.00	100.00
Stage 2	20 assays @ $5.00	100.00
Stage 3	20 assays @ $5.00	100.00
Accounting		
Stage 1	5 months @ $30.00	150.00
Stage 2	3 months @ $30.00	90.00
Stage 3	3 months @ $30.00	90.00

(h) Contingencies

Stage 1	1000.00
Stage 2	600.00
Stage 3	600.00

GRAND TOTAL $123,380.00

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

RECEIVED
NOV - 2 1955

October 28, 1955

224 New Customhouse
Denver 2, Colorado

Memorandum

To: W. H. King (With brochure)
J. W. Hasler

From: Executive Officer, DMEA Field Team, Region III

Subject: Application for DMEA aid (Uranium), Cal - M - Co Uranium Corporation, Calamity Mesa Area, Mesa County, Colorado

Enclosed is the subject application in the amount of $123,380.00.

A field examination and suitable report are required.

W. M. Traver

By J. W. Townsend
J. W. Townsend

Enclosure

HMC:ab
cc: Sec. Op. Comm. (2)

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

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October 28, 1955

224 New Customhouse
Denver 2, Colorado

Memorandum

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J. W. Hasler

From: Executive Officer, DMEA Field Team, Region III

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Enclosed is the subject application in the amount of $123,350.00.

A field examination and suitable report are required.

W. M. Traver

By J. W. Townsend
J. W. Townsend

Enclosure

HMC:ab
cc: Sec. Op. Comm. (2)

IN REPLY REFER TO:

RECEIVED

DMEA
Date Rec'd.

OCT 28

BUREAU OF MINES
Denver, Colorado

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

[redacted]

Colorado Plateau District
P. O. Box 360
Grand Junction, Colorado

October 27, 1955

Memorandum

To: W. M. Traver, Executive Officer, DMEA Field Team, Region III

From: J. William Hasler and M. H. Salsbury

Subject: Cal-M-Co Uranium Corporation (Uranium)

I am in receipt of four copies of answers to MF-103 forms, submitted by the Cal-M-Co Uranium Corporation. The company proposes to explore 16 unpatented mining claims, located in sections 22, 23, 26, and 27, T. 50 N., R. 18 W., in the Calamity Mesa area, Gateway mining district, Mesa County, Colorado.

The application has been reviewed with reference to the necessity of a field examination. The northern portion of the Calamity Mesa has been an important producer of uranium-vanadium ore on the Colorado Plateau. Although USGS drilling on the southern portion of the Mesa was not encouraging, it is believed that a field examination of this property relative to the proposed exploration work, as outlined in the application, should be made.

We are retaining one copy of the application material and forwarding three copies to the Field Team, Region III.

J. William Hasler
J. William Hasler,
Geologist, USGS

for M. H. Salsbury
Engineer, USBM

JWH/mlr
cc: E. N. Harshman

Enclosures

RECEIVED
NOV -

IN REPLY REFER TO:
DMEA
Date Rec'd.
OCT 28 1955
BUREAU OF MINES
Denver, Colorado

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

October 27, 1955

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J. William Hasler
J. William Hasler,
Geologist, USGS

for M. H. Salsbury
Engineer, USBM

JWH/mlr
cc: E. N. Harshman

Enclosures

MINERALS ENGINEERING COMPANY
P. O. BOX 1951
GRAND JUNCTION, COLORADO

October 18, 1955

Cal-M-Co Uranium Corporation
2028 North Tenth
Grand Junction, Colorado

RECEIVED
NOV - 7 1955

Attention Mr. Melvin M. Bell

Gentlemen:

Pursuant to our telephone conversation October 14, 1955, please accept the following quotations as our bid for drilling a minimum of 10,000 feet on your Calamity Mesa properties, Sections 22, 23, 26 and 27, Township 50 North, Range 18 West:

	Price per Foot	
Depth	Non Core	BX Core
0-200 feet	$ 2.15	$ 2.50
200-400 feet	2.60	3.25
400-600 feet	2.85	4.50
600-800 feet	3.50	6.50

Stand-by time we bid at the rate of $12.00 per hour.

It is understood that you will prepare access roads and drill sites for the movement of our equipment.

We would anticipate beginning this operation with two fully equipped truck-mounted Joy 22 core drills. These machines are capable of delivering BX cores to depths of 1,500 feet and proven to be excellent core drills throughout the Colorado Plateau.

We would anticipate being able to begin operations within 15 days of notice of acceptance of our bid.

Thank you for asking us to submit this proposal.

Very truly yours,

MINERALS ENGINEERING COMPANY

Howard S. Perry

Howard S. Perry
Drill Superintendent

HSP/k

MANUFACTURERS OF
DIAMOND DRILLS
DRILLING EQUIPMENT
DIAMOND BITS

BRANCH OFFICES
NEW YORK · PITTSBURGH
PHILADELPHIA
GRAND JUNCTION, COLO.

EXECUTIVE OFFICES & PLANT
221 W. OLIVE STREET
SCRANTON, PA.

SINCE 1883

SPRAGUE & HENWOOD, INC.
CONTRACTORS FOR
DIAMOND DRILLING
SHOT DRILLING · SOIL SAMPLING · PRESSURE GROUTING
WATER WELLS & CHURN DRILLING

PLEASE REPLY TO
P. O. BOX 645
GRAND JUNCTION, COLO.
TELEPHONE 934

October 17, 1955

CAL-M-CO Uranium Corp.
c/o Mr. Melvin M. Bell
Motor Inn Lodge
2028 N. 10th St.
Grand Junction, Colorado

NOV - 8 1955

Gentlemen:

In accordance with our recent conversation, we are pleased to submit our proposal for drilling on your property in Sections, 22-23-26-27 in the Calamity Creek area.

It is our understanding that approximately 30 holes will be drilled totaling approximately 15,000 feet.

PROPOSAL:

Non-Core (Drilling with Air or Water)

Item No. 1. From surface to 400.0 ft. . . . $2.40 per ft.
Item No. 2. From 400.0 ft. to 600.0 ft. . . 2.75 per ft.
Item No. 3. From 600.0 ft. to 800.0 ft. . . 3.50 per ft.

Core Drilling (Recovering minimum size AX core)

Item No. 4. From surface to 400.0 ft. . . . 3.75 per ft.
Item No. 5. From 400.0 ft. to 600.0 ft. . . 4.75 per ft.
Item No. 6. From 600.0 ft. to 800.0 ft. . . 6.00 per ft.

Delays

Item No. 7. For all delays for radiometric logging or for any other reason required by the customer. . . . $12.00 per hr. per rig

Transportation

Item No. 8. Should drilling be terminated before a minimum of 10,000 feet is drilled, a $1,000.00 transportation charge will apply. If 10,000 ft. or more is drilled, this charge is not applicable.

Grand Junction, Colorado
October 17, 1955

This quotation is based on the following conditions:

1. All drill hole locations and access roads to drill sites will be constructed and maintained to accommodate Sprague & Henwood, Inc. truck mounted drills and water trucks. Any bulldozer work required for preparation of sites and roads will be furnished by the customer at no cost to Sprague & Henwood, Inc.

2. Cores will be delivered at drill hole locations, and storage and preservation of cores will be the responsibility of the customer.

3. Upon completion of a hole to the specified bottom depth and prior to moving the drill rig, if the drill and crew are required to stand by while the customer logs said hole with subsurface logging equipment, or if the drill and crew are required to perform additional work in the hole for use of subsurface logging equipment, Sprague & Henwood, Inc. will be paid at the rate per hour specified under Item 7. of proposed schedule above.

4. In the event the customer does not have logging equipment available at the time the hole is completed to specified depth, the customer may require that the casing be left in the hole and the drill moved to another site. Sprague & Henwood, Inc. shall be paid at the rate per hour under Item 7. for the time required to return, set up on hole, and pull the casing. If such casing should be impossible to recover after diligent effort on the part of Sprague & Henwood, Inc., using such equipment normally capable of performing the operation efficiently, then the casing left in the hole will be paid for by the CAL-M-CO Uranium Corp. at the fair market value.

5. All work shall be performed in such a manner as to secure maximum core recovery from each hole drilled and to deliver as complete and accurate core samples as are consistent with good drilling practice. The customer may require core runs of five feet when necessary to attain satisfactory core recovery.

6. Payments are to be made monthly based on completed holes, within 15 days after date of invoice. Should payments not be made within the specified period then Sprague & Henwood, Inc. reserves the right to terminate operations. Credit arrangements satisfactory to Sprague & Henwood, Inc. must be made prior to commencement of work.

7. All holes will be located in the field by the customer.

8. All rights of entry to and exit from the property will be obtained by the customer.

9. Prior to commencement of drilling of each hole, the non-core depth will be established by the Owner. This depth may be changed by the Owner at any time prior to commencement of coring. Once coring has begun, any drilling beyond the depth where coring commenced, will be paid for at coring prices.

FORM 5—3-55—25M

SPRAGUE & HENWOOD, INC.

Grand Junction, Colorado
October 17, 1955

10. Sprague & Henwood, Inc. will furnish one or two #142 truck mounted drill rigs and all necessary water truck or trucks, operating crews and accessory equipment commensurate with good drilling operations.

We thank you for the opportunity of submitting this proposal and we hope to be favored with your order.

Very truly yours,

SPRAGUE & HENWOOD, INC.

by Vincent R. D'Amico

R. R. Carver

RRC:bc

This proposal and conditions as shown above, is submitted in triplicate, and if acceptable, please sign in space provided below, one copy, and return to this office, and this instrument will be used as a contract between CAL-M-CO Uranium Corp. and Sprague & Henwood, Inc.

BY: _____
CAL-M-CO Uranium Corp.

_____
Date

Howard Binkley
Drilling Contractor
Rotary Wet & Dry Core
Wagon

1445 Grand
Grand Junction, Colo.

Cal M Co. Uranium Co.
c/o Mr. Melvin Bell
Motor Inn Lodge
2028 No.10th Street
Grand Junction, Colo.

RECEIVED
NOV - 2 1955

Sir:

In regard to our conversation of Oct. 17th 1955. These are my drilling prices on Sec. 22-23-26-27 Calamity Creek area.

Air Blast Drilling
0 to 300 ft. $1.80
300 to 600 ft $2.25

Coring
0 to 300 ft. $2.75
300 to 600 ft. $4.25

In the event water is used whenever necessary therewill be an additional charge of twenty five (25) cents a foot, from the depth where the use of water is started.

Equipment to be used:
Porta Drill 1000 Full Combination 17/8 core

Standby time $12.00 per drill.

Thanking you for your consideration.

[illegible]

Reception No..... .....Recorder.

THIS INDENTURE, Made this 15th day of October, in the year of our Lord one thousand nine hundred Fifty-five, between

MELVIN M. BELL and L. F. BELL

of the County of Mesa and State of Colorado, parties of the first part, and

CAL-M-CO URANIUM CORPORATION, a Colorado corporation

of the County of Mesa and State of Colorado, party of the second part;

WITNESSETH, That the said parties of the first part, for and in consideration of the sum of Ten Dollars and other valuable consideration - - - - - - - ~~Dollars~~ 100 to them in hand paid by the said party of the second part, the receipt whereof is hereby acknowledged, have granted, bargained, sold, remised, released and forever quit-claimed, and by these presents do grant, bargain, sell, remise, release and forever quit-claim, unto the said party of the second part, its ~~heirs~~ successors and assigns, the following described property, situate, lying and being in Gateway Mining District, in the County of Mesa, and State of Colorado, to-wit:

Name of Claim	Recorded in Book	at Page
Cedar Cliff No. 1	544	491
Cedar Cliff No. 2	544	492
Cedar Cliff No. 3	544	493
Cedar Cliff No. 4	544	494
Cedar Cliff No. 5	544	495
Cedar Cliff No. 6	544	496
Muscrat No. 1	544	488
Muscrat No. 2	544	489
Muscrat No. 3	544	490
Muscrat No. 4	605	86
Muscrat No. 5	605	87
Muscrat No. 6	605	88
Beaver No. 1	544	486
Beaver No. 2	544	487
Beaver No. 3	605	89
Calco	658	434

TOGETHER with all the dips, spurs, and angles, and all the metals, ores, gold and silver-bearing quartz, rock and earth therein, and all the rights, privileges and franchises thereto incident, appendant and appurtenant, or therewith usually had and enjoyed; and all and singular the tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining, and the rents, issues and profits thereof; and all the estate, right, title, interest, claim and demand whatsoever, as well in law as in equity, of the said parties of the first part, of, in or to the said premises, and every part and parcel thereof, with the appurtenances.

TO HAVE AND TO HOLD, all and singular, the said premises, together with the appurtenances and privileges thereto incident, unto the said party of the second part its successors ~~heirs~~ and assigns forever.

IN WITNESS WHEREOF, The said parties of the first part have hereunto set their hands and seals the day and year first above written.

Signed, sealed and delivered in the presence of

Melvin M. Bell [SEAL]

L. F. Bell [SEAL]

[SEAL]

STATE OF COLORADO,
County of Mesa } ss.

The foregoing instrument was acknowledged before me this 15th day of October A. D. 1955, by Melvin M. Bell and L. F. Bell.

My commission expires April 21, 1956, 19. Witness my hand and official seal.

Scott W. Hackman
Notary Public.

No. 37. MINING DEED. —Bradford-Robinson Ptg. Co., Mfrs. Robinson's Legal Blanks, 1824-46 Stout St., Denver, Colorado

THIS INDENTURE, Made[illegible]s 23rd day of [illegible]ne, in the year of our Lord one thousand nine hundred 55, between

Cecil W. McCoy, Peter G. Kaasch and Warren E. Wright

of the County of Mesa and State of Colorado, part ies of the first part, and

MELVIN M. BELL and L. F. BELL

of the County of Mesa and State of Colorado, part ies of the second part;

WITNESSETH, That the said part ies of the first part, for and in consideration of the sum of TenDollars and other valuable consideration. ~~Dollars~~ 100

to them in hand paid by the said part ies of the second part, the receipt whereof is hereby acknowledged, ha ve granted, bargained, sold, remised, released and forever quit-claimed, and by these presents do grant, bargain, sell, remise, release and forever quit-claim, unto the said part ies of the second part, their heirs and assigns, the following described property, situate, lying and being in Gateway Mining District, in the County of Mesa, and State of Colorado, to-wit:

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Cedar Cliff No. 3	554	493
Cedar Cliff No. 4	554	494
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Cedar Cliff No. 6	554	496
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Muscrat No. 2	554	489
Muscrat No. 3	554	490
Muscrat No. 4	605	86
Muscrat No. 5	605	87
Muscrat No. 6	605	88
Beaver No. 1	554	486
Beaver No. 2	554	487
Beaver No. 3	605	89

TOGETHER with all the dips, spurs, and angles, and all the metals, ores, gold and silver-bearing quartz, rock and earth therein, and all the rights, privileges and franchises thereto incident, appendant and appurtenant, or therewith usually had and enjoyed; and all and singular the tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining, and the rents, issues and profits thereof; and all the estate, right, title, interest, claim and demand whatsoever, as well in law as in equity, of the said part ies of the first part, of, in or to the said premises, and every part and parcel thereof, with the appurtenances.

TO HAVE AND TO HOLD, all and singular, the said premises, together with the appurtenances and privileges thereto incident, unto the said part ies of the second part their heirs and assigns forever.

IN WITNESS WHEREOF, The said part ies of the first part ha ve hereunto set hand s and seal s the day and year first above written.

Signed, sealed and delivered in the presence of

Peter G. Kaasch [SEAL]

Warren E. Wright [SEAL]

Cecil W. McCoy [SEAL]

STATE OF COLORADO, }
County of Mesa } ss.

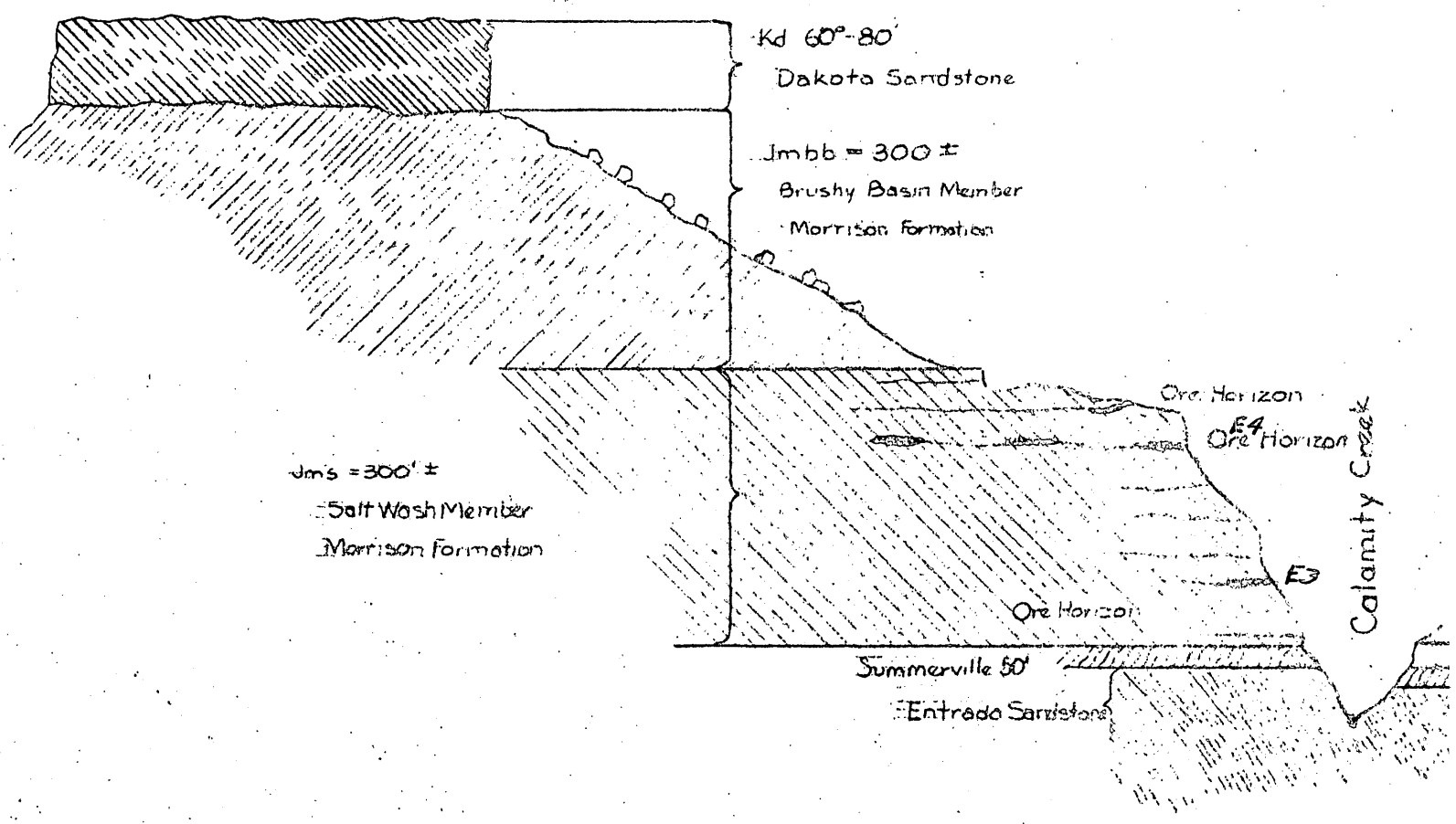
The foregoing instrument was acknowledged before me this 23rd day of June A. D. 19 55, by Cecil W. McCoy, Peter G. Kaasch and Warren E. Wright

My commission expires April 21st., 19 56. Witness my hand and official seal.

Scott W. Hackman
Notary Public.

No. 37. MINING DEED. —Bradford-Robinson Ptg. Co., Mfrs. Robinson's Legal Blanks, 1824-46 Stout St., Denver, Colorado

CALAMITY MESA



Howard Binkley
Drilling Contractor
Rotary Wet & Dry Core
Wagon

1445 Grand
Grand Junction, Colo.

Cal M Co. Uranium Co.
c/o Mr. Melvin Bell
Motor Inn Lodge
2028 No.10th Street
Grand Junction, Colo.

RECEIVED
NOV - 2 1955

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Air Blast Drilling
0 to 300 ft. $1.80
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0 to 300 ft. $2.75
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In the event water is used whenever necessary therewill be an additional charge of twenty five (25) cents a foot, from the depth where the use of water is started.

Equipment to be used:
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Standby time $12.00 per drill.

Thanking you for your consideration.

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MINERALS ENGINEERING COMPANY
P. O. BOX 1951
GRAND JUNCTION, COLORADO

October 18, 1955

Cal-M-Co Uranium Corporation
2028 North Tenth
Grand Junction, Colorado

RECEIVED
NOV 1955

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We would anticipate being able to begin operations within 15 days of notice of acceptance of our bid.

Thank you for asking us to submit this proposal.

Very truly yours,

MINERALS ENGINEERING COMPANY

Howard S. Perry

Howard S. Perry
Drill Superintendent

HSP/k

MANUFACTURERS OF
DIAMOND DRILLS
DRILLING EQUIPMENT
DIAMOND BITS

BRANCH OFFICES
NEW YORK · PITTSBURGH
PHILADELPHIA
GRAND JUNCTION, COLO.

EXECUTIVE OFFICES & PLANT
221 W. OLIVE STREET
SCRANTON, PA.

SINCE 1883

SPRAGUE & HENWOOD, INC.

CONTRACTORS FOR
DIAMOND DRILLING
SHOT DRILLING · SOIL SAMPLING · PRESSURE GROUTING
WATER WELLS & CHURN DRILLING

PLEASE REPLY TO
P. O. BOX 645
GRAND JUNCTION, COLO.
TELEPHONE 834

October 17, 1955

CAL-M-CO Uranium Corp.
c/o Mr. Melvin M. Bell
Motor Inn Lodge
2028 N. 10th St.
Grand Junction, Colorado

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Gentlemen:

In accordance with our recent conversation, we are pleased to submit our proposal for drilling on your property in Sections, 22-23-26-27 in the Calamity Creek area.

It is our understanding that approximately 30 holes will be drilled totaling approximately 15,000 feet.

PROPOSAL:

Non-Core (Drilling with Air or Water)

Item No. 1. From surface to 400.0 ft. . . . $2.40 per ft.
Item No. 2. From 400.0 ft. to 600.0 ft. . . 2.75 per ft.
Item No. 3. From 600.0 ft. to 800.0 ft. . . 3.50 per ft.

Core Drilling (Recovering minimum size AX core)

Item No. 4. From surface to 400.0 ft. . . . 3.75 per ft.
Item No. 5. From 400.0 ft. to 600.0 ft. . . 4.75 per ft.
Item No. 6. From 600.0 ft. to 800.0 ft. . . 6.00 per ft.

Delays

Item No. 7. For all delays for radiometric logging or for any other reason required by the customer. . . . $12.00 per hr. per rig

Transportation

Item No. 8. Should drilling be terminated before a minimum of 10,000 feet is drilled, a $1,000.00 transportation charge will apply. If 10,000 ft. or more is drilled, this charge is not applicable.

Grand Junction, Colorado
October 17, 1955

This quotation is based on the following conditions:

1. All drill hole locations and access roads to drill sites will be constructed and maintained to accommodate Sprague & Henwood, Inc. truck mounted drills and water trucks. Any bulldozer work required for preparation of sites and roads will be furnished by the customer at no cost to Sprague & Henwood, Inc.

2. Cores will be delivered at drill hole locations, and storage and preservation of cores will be the responsibility of the customer.

3. Upon completion of a hole to the specified bottom depth and prior to moving the drill rig, if the drill and crew are required to stand by while the customer logs said hole with subsurface logging equipment, or if the drill and crew are required to perform additional work in the hole for use of subsurface logging equipment, Sprague & Henwood, Inc. will be paid at the rate per hour specified under Item 7. of proposed schedule above.

4. In the event the customer does not have logging equipment available at the time the hole is completed to specified depth, the customer may require that the casing be left in the hole and the drill moved to another site. Sprague & Henwood, Inc. shall be paid at the rate per hour under Item 7. for the time required to return, set up on hole, and pull the casing. If such casing should be impossible to recover after diligent effort on the part of Sprague & Henwood, Inc., using such equipment normally capable of performing the operation efficiently, then the casing left in the hole will be paid for by the CAL-M-CO Uranium Corp. at the fair market value.

5. All work shall be performed in such a manner as to secure maximum core recovery from each hole drilled and to deliver as complete and accurate core samples as are consistent with good drilling practice. The customer may require core runs of five feet when necessary to attain satisfactory core recovery.

6. Payments are to be made monthly based on completed holes, within 15 days after date of invoice. Should payments not be made within the specified period then Sprague & Henwood, Inc. reserves the right to terminate operations. Credit arrangements satisfactory to Sprague & Henwood, Inc. must be made prior to commencement of work.

7. All holes will be located in the field by the customer.

8. All rights of entry to and exit from the property will be obtained by the customer.

9. Prior to commencement of drilling of each hole, the non-core depth will be established by the Owner. This depth may be changed by the Owner at any time prior to commencement of coring. Once coring has begun, any drilling beyond the depth where coring commenced, will be paid for at coring prices.

FORM 5—3-55—25M

SPRAGUE & HENWOOD, INC.

Grand Junction, Colorado
October 17, 1955

10. Sprague & Henwood, Inc. will furnish one or two #142 truck mounted drill rigs and all necessary water truck or trucks, operating crews and accessory equipment commensurate with good drilling operations.

We thank you for the opportunity of submitting this proposal and we hope to be favored with your order.

Very truly yours,

SPRAGUE & HENWOOD, INC.

by Vincent D. Fuerte
R. R. Carver

RRC:bc

This proposal and conditions as shown above, is submitted in triplicate, and if acceptable, please sign in space provided below, one copy, and return to this office, and this instrument will be used as a contract between CAL-M-CO Uranium Corp. and Sprague & Henwood, Inc.

BY: _____
CAL-M-CO Uranium Corp.

_____
Date

THIS INDENTURE, Made this 23rd day of June, in the year of our Lord one thousand nine hundred 55, between

Cecil W. McCoy, Peter G. Kaasch and Warren E. Wright

of the County of Mesa and State of Colorado, parties of the first part, and

MELVIN M. BELL and L. F. BELL

of the County of Mesa and State of Colorado, parties of the second part;

WITNESSETH, That the said parties of the first part, for and in consideration of the sum of TenDollars and other valuable consideration. ~~DOLLARS~~ 100

to them in hand paid by the said parties of the second part, the receipt whereof is hereby acknowledged, have granted, bargained, sold, remised, released and forever quit-claimed, and by these presents do grant, bargain, sell, remise, release and forever quit-claim, unto the said parties of the second part, their heirs and assigns, the following described property, situate, lying and being in Gateway Mining District, in the County of Mesa, and State of Colorado, to-wit:

Name of Claim	recorded in Book	Page
Cedar Cliff No. 1	554	491
Cedar Cliff No. 2	554	492
Cedar Cliff No. 3	554	493
Cedar Cliff No. 4	554	494
Cedar Cliff No. 5	554	495
Cedar Cliff No. 6	554	496
Muscrat No. 1	554	488
Muscrat No. 2	554	489
Muscrat No. 3	554	490
Muscrat No. 4	605	86
Muscrat No. 5	605	87
Muscrat No. 6	605	88
Beaver No. 1	554	486
Beaver No. 2	554	487
Beaver No. 3	605	89

TOGETHER with all the dips, spurs, and angles, and all the metals, ores, gold and silver-bearing quartz, rock and earth therein, and all the rights, privileges and franchises thereto incident, appendant and appurtenant, or therewith usually had and enjoyed; and all and singular the tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining, and the rents, issues and profits thereof; and all the estate, right, title, interest, claim and demand whatsoever, as well in law as in equity, of the said parties of the first part, of, in or to the said premises, and every part and parcel thereof, with the appurtenances.

TO HAVE AND TO HOLD, all and singular, the said premises, together with the appurtenances and privileges thereto incident, unto the said parties of the second part their heirs and assigns forever.

IN WITNESS WHEREOF, The said parties of the first part have hereunto set hands and seals the day and year first above written.

Signed, sealed and delivered in the presence of

Peter G. Kaasch [SEAL]

Warren E. Wright [SEAL]

Cecil W. McCoy [SEAL]

STATE OF COLORADO,
County of Mesa } ss.

The foregoing instrument was acknowledged before me this 23rd day of June A. D. 19 55, by Cecil W. McCoy, Peter G. Kaasch and Warren E. Wright

My commission expires April 21st., 19 56. Witness my hand and official seal.

Scott W. Hoelman
Notary Public.

Reception ..... Recorder.

THIS INDENTURE, Made this 15th day of October, in the year of our Lord one thousand nine hundred Fifty-five, between

MELVIN M. BELL and L. F. BELL

of the County of Mesa and State of Colorado, parties of the first part, and

CAL-M-CO URANIUM CORPORATION, a Colorado corporation

of the County of Mesa and State of Colorado, party of the second part;

WITNESSETH, That the said parties of the first part, for and in consideration of the sum of Ten Dollars and other valuable consideration - - - - - - - ~~Dollars~~ 100 to them in hand paid by the said party of the second part, the receipt whereof is hereby acknowledged, have granted, bargained, sold, remised, released and forever quit-claimed, and by these presents do grant, bargain, sell, remise, release and forever quit-claim, unto the said party of the second part, its ~~heirs~~ successors and assigns, the following described property, situate, lying and being in Gateway Mining District, in the County of Mesa, and State of Colorado, to-wit:

Name of Claim	Recorded in Book	at Page
Cedar Cliff No. 1	544	491
Cedar Cliff No. 2	544	492
Cedar Cliff No. 3	544	493
Cedar Cliff No. 4	544	494
Cedar Cliff No. 5	544	495
Cedar Cliff No. 6	544	496
Muscrat No. 1	544	488
Muscrat No. 2	544	489
Muscrat No. 3	544	490
Muscrat No. 4	605	86
Muscrat No. 5	605	87
Muscrat No. 6	605	88
Beaver No. 1	544	486
Beaver No. 2	544	487
Beaver No. 3	605	89
Calco	658	434

TOGETHER with all the dips, spurs, and angles, and all the metals, ores, gold and silver-bearing quartz, rock and earth therein, and all the rights, privileges and franchises thereto incident, appendant and appurtenant, or therewith usually had and enjoyed; and all and singular the tenements, hereditaments and appurtenances thereto belonging or in anywise appertaining, and the rents, issues and profits thereof; and all the estate, right, title, interest, claim and demand whatsoever, as well in law as in equity, of the said parties of the first part, of, in or to the said premises, and every part and parcel thereof, with the appurtenances.

TO HAVE AND TO HOLD, all and singular, the said premises, together with the appurtenances and privileges thereto incident, unto the said party of the second part its successors ~~heirs~~ and assigns forever.

IN WITNESS WHEREOF, The said parties of the first part have hereunto set their hands and seals the day and year first above written.

Signed, sealed and delivered in the presence of

Melvin M. Bell [SEAL]

L. F. Bell [SEAL]

..... [SEAL]

STATE OF COLORADO,
County of Mesa } ss.

The foregoing instrument was acknowledged before me this 15th day of October A. D. 19 55, by Melvin M. Bell and L. F. Bell.

My commission expires April 21, 1956, 19 . Witness my hand and official seal.

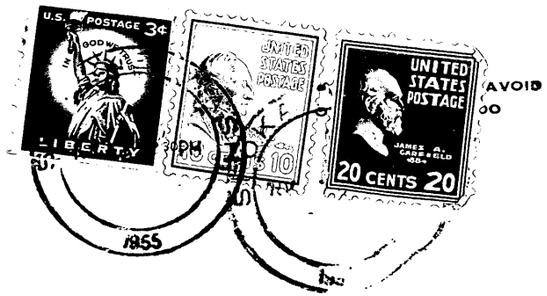
Scott W. Hackman
Notary Public.

No. 37. MINING DEED. —Bradford-Robinson Ptg. Co., Mfrs. Robinson's Legal Blanks, 1824-46 Stout St., Denver, Colorado

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS
EXPLORATION ADMINISTRATION

OFFICIAL BUSINESS

U. S. GEOLOGICAL SURVEY
SOUTH 157 HOWARD ST.
SPOKANE 4, WASHINGTON



AVOID
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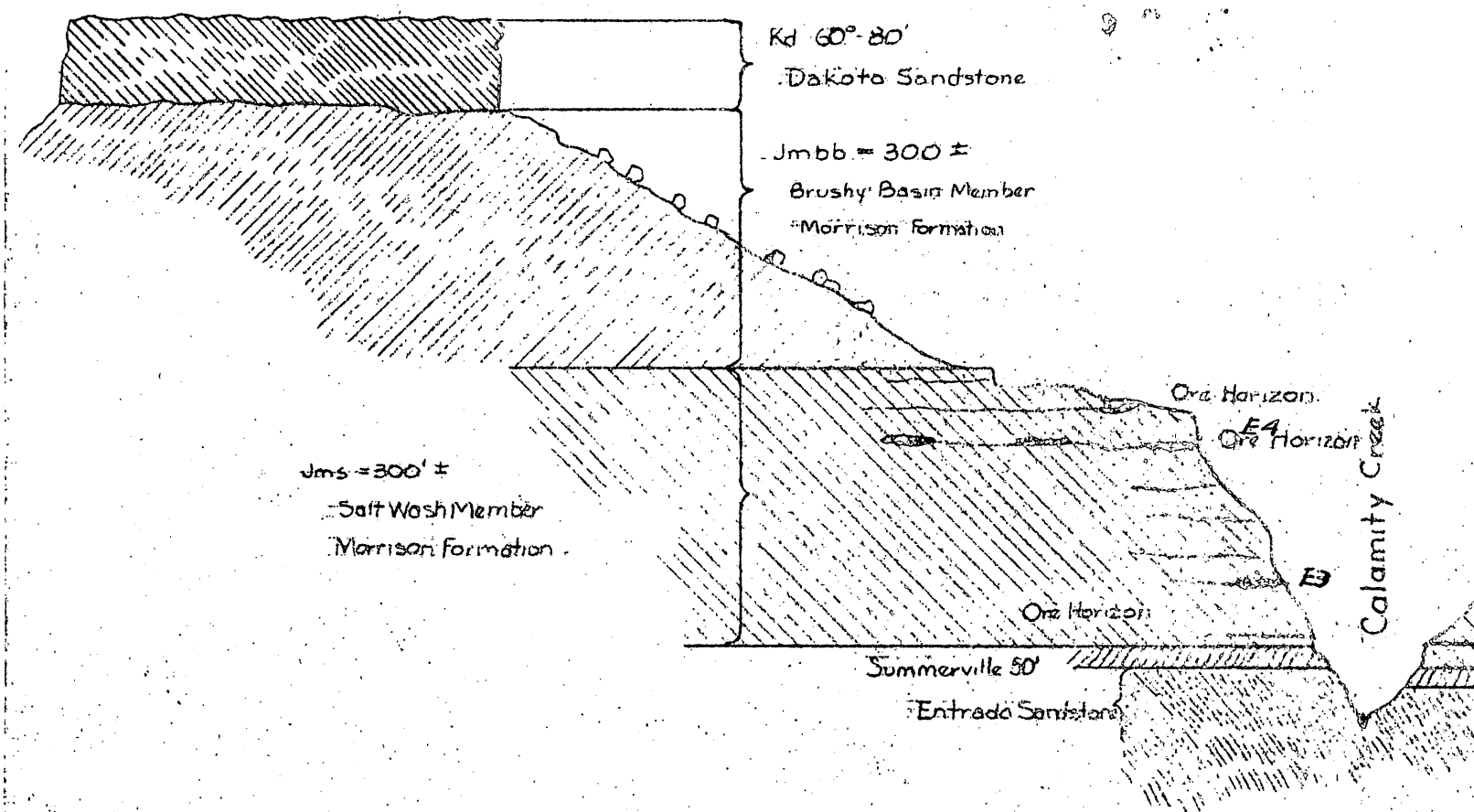
Mr. George C. Selfridge
Chairman, Operating Committee
Defense Minerals Explor. Admin.
Department of the Interior
Washington 25, D. C.

CALAMITY MESA



MESA
C1 HOLES
D1 HOLES
E1 DRILLED HOLES
E2 IN PROGRESS
6202
6492
6482
22
CC6
CC5
CC4
CC1
CC2
CC3
M6
M5
M4
M1
M2
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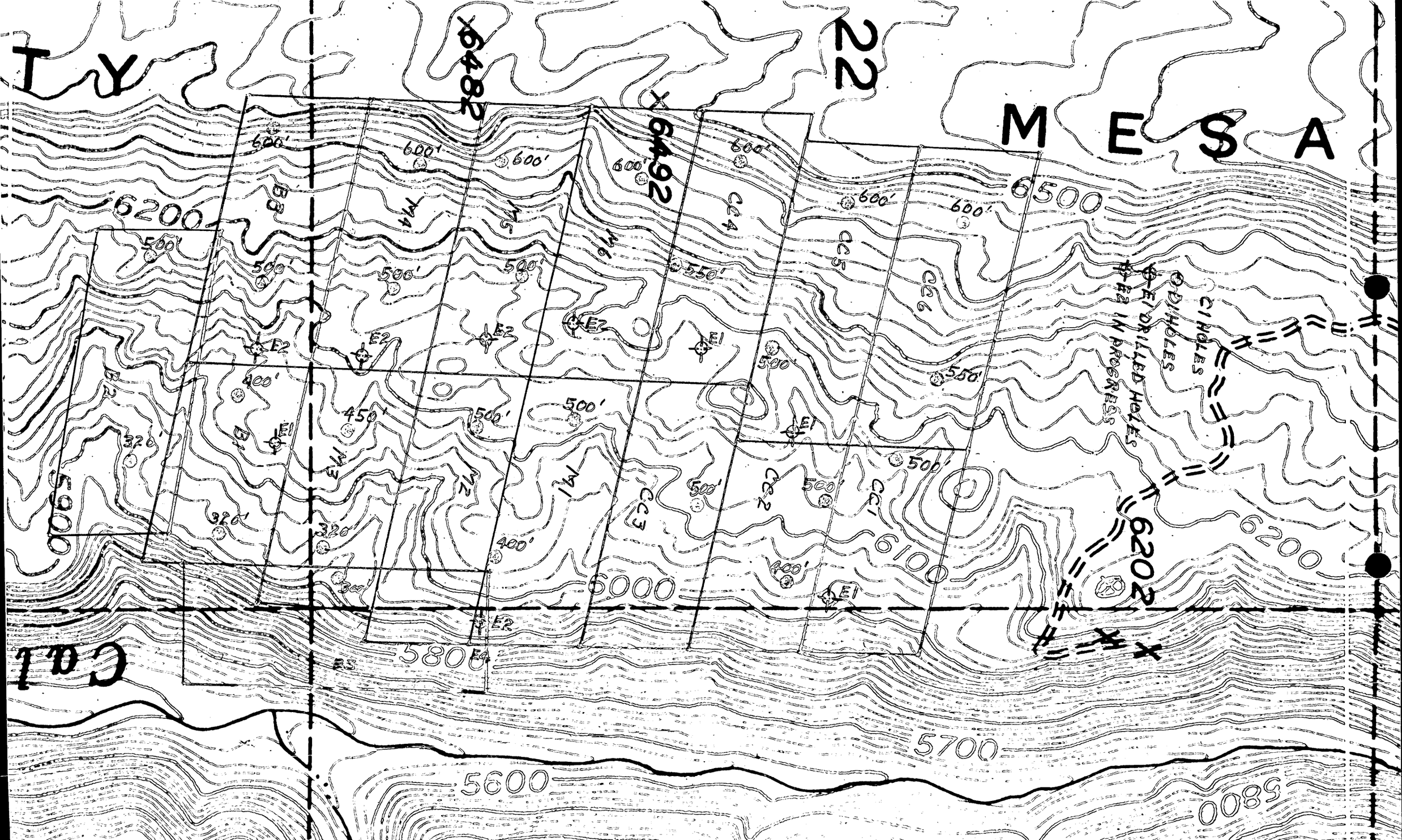
MESA
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5700
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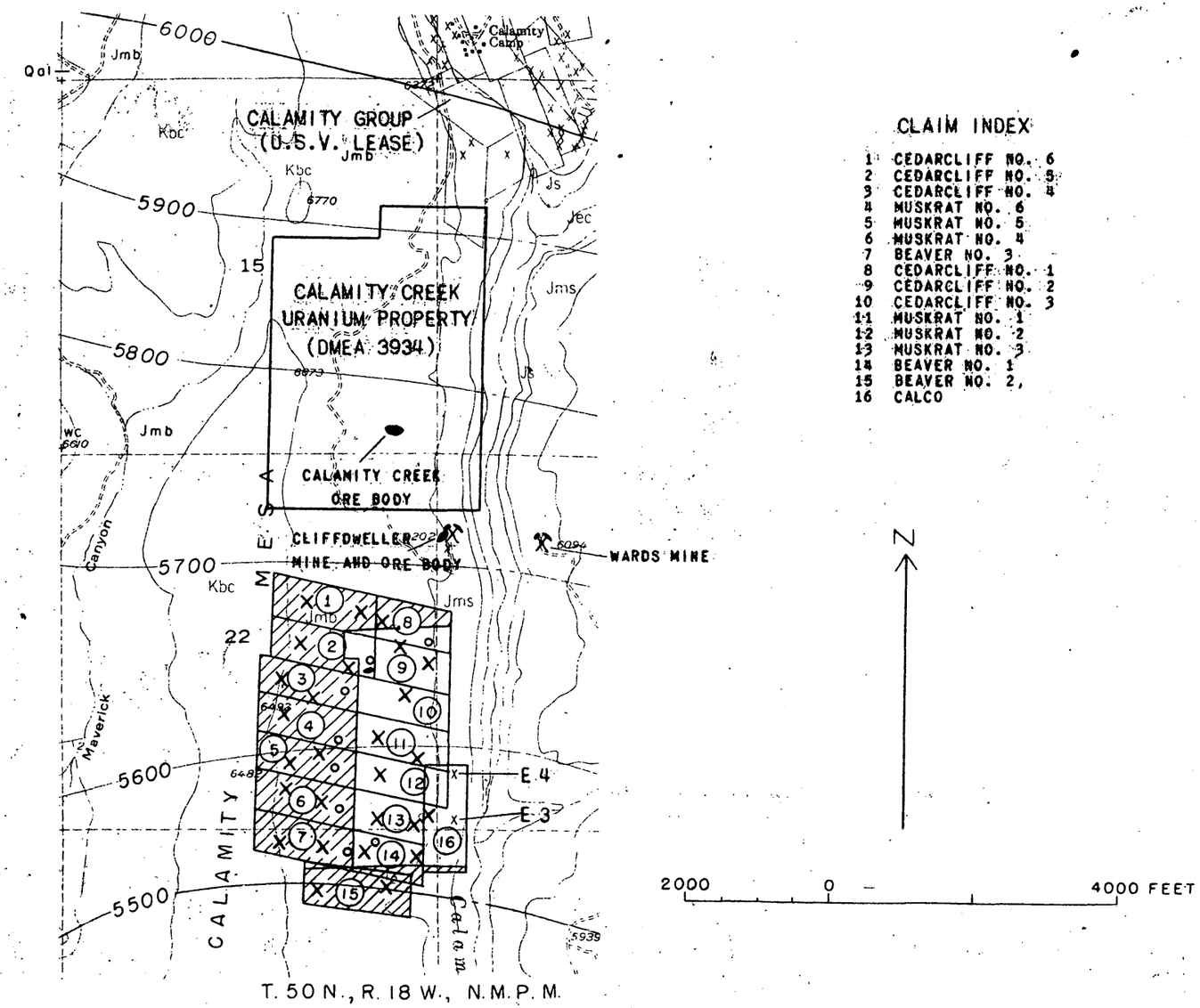
500'
450'
400'
320'
550'
E1
E2
E3
E4
B2
B3
B4
M1
M2
M3
M4
M5
M6
CC1
CC2
CC3
CC4
CC5
CC6
O DH HOLES
C1 HOLES
E1 DRILLED HOLES
E2 IN PROGRESS



CLAIM INDEX

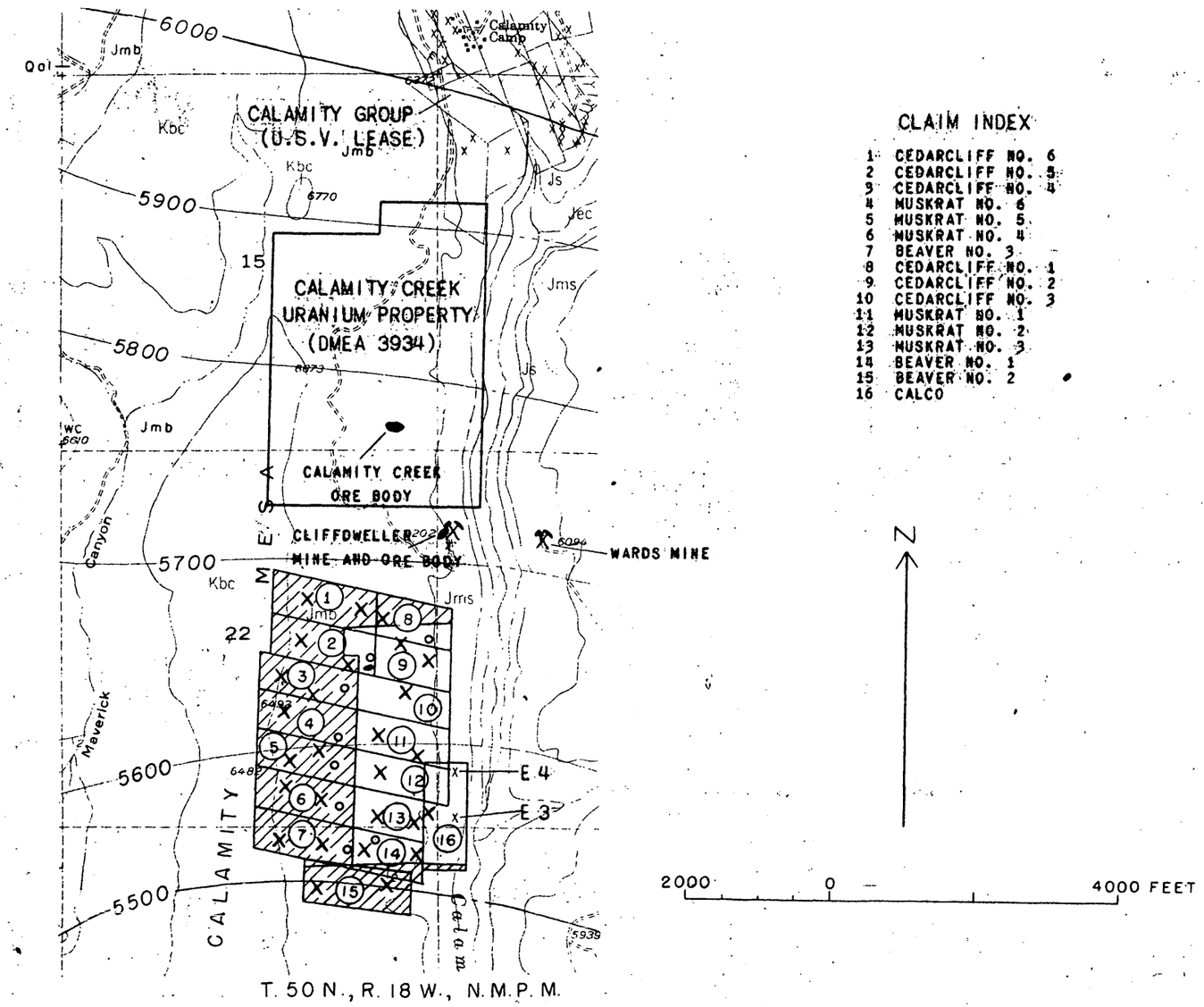
1 CEDARCLIFF NO. 6
2 CEDARCLIFF NO. 5
3 CEDARCLIFF NO. 4
4 MUSKRAT NO. 6
5 MUSKRAT NO. 5
6 MUSKRAT NO. 4
7 BEAVER NO. 3
8 CEDARCLIFF NO. 1
9 CEDARCLIFF NO. 2
10 CEDARCLIFF NO. 3
11 MUSKRAT NO. 1
12 MUSKRAT NO. 2
13 MUSKRAT NO. 3
14 BEAVER NO. 1
15 BEAVER NO. 2,
16 CALCO

EXPLANATION

Qal	QUATERNARY ALLUVIUM
Kbc	CRETACEOUS BURRO CANYON FORMATION
Jmb Jms	JURASSIC MORRISON FORMATION: BRUSHY BASIN MEMBER, Jmb ; SALT WASH MEMBER, Jms
Js	JURASSIC SUMMERVILLE FORMATION
Jec	JURASSIC ENTRADA SANDSTONE AND CARMEL FORMATIONS, UNDIVIDED
	GEOLOGIC CONTACT
5700	STRUCTURE CONTOUR DRAWN ON TOP OF ENTRADA SANDSTONE, INTERVAL 100 FEET
	ORE BODY
	CLAIM AREA IN CONFLICT
X	PROSPECT PIT E3 AND E4 LOCALITIES DISCUSSED IN TEXT
o	DRILL HOLE ON CAL-M-CO GROUP (NOT SHOWN ELSEWHERE)
X	DRILL HOLE SITE PROPOSED BY CAL-M-CO URANIUM CORPORATION

Note: GEOLOGY FROM U.S. GEOLOGICAL SURVEY MF SERIES QUADRANGLE MAP 32. CLAIM BOUNDARIES, EXISTING HOLES AND LOCATION OF PROPOSED DRILL HOLE SITES FROM APPLICANTS MAP.

FIGURE 2. GEOLOGIC MAP OF PART OF CALAMITY MESA AREA, SHOWING ORE BODIES, EXISTING DRILL HOLES AND PROPOSED DRILL HOLES BY APPLICANT, CEDARCLIFF, MUSKRAT, BEAVER, AND CALCO GROUPS OF CLAIMS, CAL-M-CO URANIUM CORPORATION, MESA COUNTY, COLORADO.



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EXPLANATION

Qal	QUATERNARY ALLUVIUM
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