700

FILE COPY
Surname:
Ching
Kilsgaard
Sullivan
Hopson

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

APR 19 1956

Calamity Creek Uranium Company
913 First Security Bank Building
Salt Lake City, Utah

Re: Docket No. DMEA-3934 (Uranium)
Calamity Creek Property
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 the presence of a small uranium ore deposit on your property, indicates to us that the probability of disclosing further 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 4-17-56
cc to: Docket
Code 700
Mr. Ching
Admr.'s Reading File
Operating Committee
MEA Field Team, Region III (2)
essrs. JECrawford, Rm. 3641
THKiilsgaard, Rm. 5224
JOHosted, Rm. 3210, GSA

RCh.

Docket Copy
700

Ching
Ellis

SUMMARY OF PROPOSED PROJECT

Object: Denial of application for an exploration project.

Docket No.: DMEA-3934

Commodity: Uranium

Applicant: Calamity Creek Uranium Company, a Utah Corporation
913 First Security Bank Building
Salt Lake City, Utah

Property: 15 unpatented mining claims, Little Girl, Little Girl Nos. 2-3, Pretty Boy Nos. 1-6, and Cottonwood Nos. 1-6, situated in sec. 15, T. 50 N., R. 18 W., Mesa County, Colorado. Applicant is the owner.

Date of Application: July 13, 1955

Amount of Application: $97,135.00

Work Proposed: Explore the Salt Wash member of the Morrison formation by core and non-core drilling in 3 stages as follows:

Stage I - 18 wide spaced holes, aggregating 9,000 feet.
Stage II - 40 holes on 200-foot centers, aggregating 16,000 feet.
Stage III - 40 holes on 75-foot centers, aggregating 16,000 feet.

Estimated Cost

4,900 ft. core drilling	$15,600.00
35,500 ft. non-core drilling	51,485.00
150 hrs. bulldozer work	1,800.00
150 hrs. standby time for drill	2,250.00
Radiometric logging of 98 holes	5,880.00
Labor, supervision & consultants	16,500.00
Other costs	1,620.00
Contingencies	2,000.00

Total	$97,135.00
Government Participation @ 75%	$72,851.25

Field Team Reports: Original, December 22, 1955
Supplement, March 15, 1956
F. M. Byers, Jr., USGS and M.H. Salsbury, USBM

The subject claims lie on the bench east of Calamity Mesa and overlooking Calamity Creek on the east. The potential ore-bearing unit is the uppermost Salt Wash sandstone. About a half mile to the north this unit is favorable lithologically and in thickness, and some 33,300 tons of 0.34% U_3O_8 and 1.53% U_2O_5 ore

were found in 26 ore bodies. Southward toward the Calamity Creek group the ore-bearing sandstone changes from favorable to semi-favorable and ore bodies found in this area are apt to be small. Still farther south, on the subject claims, the ore-bearing sandstone becomes semi-favorable to unfavorable. This was demonstrated by 42 holes previously drilled by the Government and the Applicant, and by examination of two exposures on the rim.

Six holes previously drilled on the property by the Government were barren. Drilling by the Applicant outlined a small ore body of 1,000 tons or less, but paradoxically, the host rock was found to be only semi-favorable to unfavorable. Results of Government drilling of an area immediately north of the property were negative. Drilling of an area on the west side of Calamity Mesa opposite the subject property also gave negative results.

Just south of the subject property the Cliff Dweller mine produced 847 tons of ore containing 0.35% U_3O_8 and 1.67% V_2O_5, from a thin sandstone lens with a maximum thickness of 10 feet. The lens is located about 100 feet below the top of the Salt Wash and, therefore, below the recognized ore-bearing unit.

In addition to generally unfavorable geological criteria there are four areas of conflict in connection with the property rights. This will greatly restrict the area with a clear title which remains unexplored.

It is concluded that the subject property lies well south of the ore-bearing trend of the Uravan Mineral Belt and that only small or pod-like ore bodies can be expected in the semi-favorable to unfavorable sandstone found on the property. Furthermore, it is concluded that any such ore bodies found could not be mined profitably.

Commodity Group Comments:

USBM - John E. Crawford, Jan. 27, 1956 & James Paone, April 13, 1956:

Discussed the original Report of Examination and the Supplemental Report with the AEC representative. Crawford thought the property merited a modified exploration program prior to receipt of the Supplemental Report. Paone concurs with the Field Team recommendation of denial after receipt of the Supplemental Report.

USGS - W.P. Williams, Jan. 19, 1956 & April 16, 1956:

After receipt of the original Report of Examination, concluded that since eight ore holes were drilled on the property and latter is located nearly adjacent to significant production, a first stage of drilling was warranted. After receipt of the Supplemental Report, concurs with the Field Team recommendation of denial.

Rare and Miscellaneous Metals Division - Michael Ching - April 17, 1956:

Just south of the Cliff Dweller mine the Cal-M-Co Uranium Corporation application under Docket No. DMEA-4046 was recommended for denial because of the small extent and erratic distribution of favorable sandstone, the unfavorable trend indicated by the Government drilling to the north, the negative results of preliminary drilling on the property, and the small size and sparse distribution of the exposed ore occurrences. This situation appears to support the field examiners' conclusions regarding the Calamity Creek property.

We must conclude that the finding of two ore bodies of approximately 1,000 tons each on the Cottonwood No. 3 claim and at the Cliff Dweller mine, both in more or less unfavorable sandstone, is paradoxical, but not indicative of a favorable potential on the subject property.

Conclusions and Recommendations:

The property appears to be in the borderline category but the preponderant geological evidence is against the finding of worthwhile ore bodies on it by the proposed exploration. It is recommended that the application be denied.

Ernest Wm. Ellis

Ernest Wm. Ellis, Chief
Rare and Miscellaneous
Metals Division

4-17-56

IN REPLY REFER TO:

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

RECEIVED
APR 16 1956

April 16, 1956

Memorandum

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

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

Subject: Review of Supplemental Memorandum Report, DMEA 3934, Calamity Creek Uranium Company, Calamity Creek property, Mesa County, Colorado.

In a supplement to a report of field examination the examining team strengthens their recommendation for denial of the subject application.

The recommendation for denial is based on the following major considerations: 1) the property is outside the south limit of the Uravan Mineral Belt which contains the large deposits, 2) logs of 42 holes drilled on the property are mostly unfavorable, 3) Government drilling in the vicinity shows the area to be unfavorable for large deposits, and 4) the geologically unfavorable nature of the Salt Wash member indicates that ore bodies that might be found are likely to be small.

Under the conditions it seems advisable to deny the application, and I agree with the examining team's recommendation for such action.

W. P. Williams

W. P. Williams

IN REPLY REFER TO:

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

RECEIVED
APR 16 1956

April 16, 1956

m

E. W. Ellis, Defense Minerals Exploration Administration

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

ject: Review of Supplemental Memorandum Report, DMEA 1934, Calamity Creek Uranium Company, Calamity Creek property, Mesa County, Colorado.

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Under the conditions it seems advisable to deny the application, and I agree with the examining team's recommendation for such action.

W. P. Williams

WPWilliams:iml
G-4/16/56
cc: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
J. E. Crawford, 3641
J. O. Hosted, 3210

IN REPLY REFER TO:

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

RECEIVED
APR 16 1956

April 16, 1956

Memorandum

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

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

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

RECEIVED
APR 16 1956

April 16, 1956

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WPWilliams:iml
G-4/16/56
cc: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
J. E. Crawford, 3641
J. O. Hosted, 3210

4-16-56

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

RECEIVED
APR 13 1956

April 13, 1956

Memorandum

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee

From: James Paone, Bureau of Mines Alternate Member
Uranium Commodity Committee

Subject: Supplemental Memorandum Report, DMEA Docket 3934, Calamity Creek Uranium Company, Mesa County, Colorado

I have reviewed the report, Calamity Creek Uranium Company, DMEA Docket 3934, dated March 30 and received in this office April 5. I have also discussed it with Joseph O. Hosted, Washington representative of the Atomic Energy Commission.

The Field Team, upon review of all available information on the subject docket, again recommends that the application be denied because of the general geologic unfavorability of the property, the small and widely scattered ore bodies, and the large areas of conflict with adjoining claims.

Inasmuch as the field examiners are firm in their recommendation that the application be denied, it appears advisable that we concur in the recommendation, but we do so with reluctance.

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

James Paone

James Paone

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

RECEIVED
APR 13 1956

April 13, 1956

m

Me Ernest William Ellis, DMEA Member
Uranium Commodity Committee

a: James Paone, Bureau of Mines Alternate Member
Uranium Commodity Committee

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James Paone

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

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Inasmuch as the field examiners are firm in their recommendation that the application be denied, it appears advisable that we concur in the recommendation, but we do so with reluctance.

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

James Paone

4-6-56

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

APR 2 - 1956

March 30, 1956

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Chairman, Operating Committee, DMEA

From: Field Team, Region III

Subject: Supplemental Memorandum Report, Docket DMEA 3934 (Uranium)
Calamity Creek Uranium Company, (Calamity Creek Property)
Mesa County, Colorado

Enclosed are the original and three copies of a memorandum from the field examiners containing a review of all available information on the subject docket which was requested in your letter of February 6, 1956.

The field examiners again recommend that the application be denied.

Because of the general geologic unfavorability of the property, small and widely scattered ore bodies, and the large areas of conflict with adjoining claims, we concur in the examiners' recommendation that the application be denied.

Will you please place this memorandum report in the folder with the original Joint Report of Examination transmitted to you January 3, 1956.

DMEA Field Team, Region III

W. M. Traver

By W. M. Traver
Executive Officer

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
4-6-56
(date)

DMEA
Date Rec'd.
MAR 28 1956
BUREAU OF MINES
Denver, Colorado

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

MINERAL DEPOSITS
DMEA
RECEIVED
MAR 22 1956
U. S.
GEOLOGICAL SURVEY
DENVER, COLORADO

March 15, 1956

Memorandum

To: Executive Officer, DMEA Field Team, Region III

From: M. H. Salsbury
F. M. Byers

Through: E. N. Harshman
J. F. Shaw
J. William Hasler

Subject: DMEA docket 3934 (Uranium), Calamity Creek Uranium Company, Calamity Creek property, Mesa County, Colorado

The comments of W. P. Williams, U. S. Geological Survey, John E. Crawford, U. S. Bureau of Mines, and W. S. Martin, acting chairman, DMEA Operating Committee, are considered below. The suggestions contained in the Executive Officer's memorandum of February 10 are also considered.

The DMEA application on the Calamity Creek Uranium property was denied by the examining team chiefly on two counts: 1) the general geologic unfavorability, despite the fact that the considerable drilling already done had discovered an ore body of possibly as much as 1,000 tons and, also, 2) the ore body already discovered and any other bodies similar in thickness, size, and grade would be too deep to mine profitably now or in the foreseeable future.

The examining team is prepared to document this denial recommendation more fully, for since last September when the property was examined, three additional properties have been examined for DMEA assistance in the Calamity Mesa quadrangle and additional information that bears on the subject property has been compiled.

The relation of the Calamity Creek Uranium property, DMEA 3934, to the three other properties that have pending DMEA loan applications is shown on figure 1, which accompanies this memorandum. The geographic relations of these properties to favorable trends within the Uravan Mineral Belt (Fischer and Hilpert, 1952) and drill holes outside the belt are also shown. (The many thousands of closely-spaced drill holes within the Uravan Mineral Belt are not shown on figure 1, except on American Leduc properties, DMEA 4041).

The first comment of W. P. Williams (memorandum dated January 19) points out (1) that although nearly a mile of rim exposures of the ore-bearing sandstones are unfavorable, some of the remaining part of the property up to 3,000 feet west of the ore-bearing sandstone rim might contain some favorable zones. Actually, if one considers only the ore-bearing sandstone and eliminates the ground in conflict with Newmont Mining Corporation, the Calamity Creek property has only a distance of about 1800 feet west of rim that is free of conflict.

Reviewed by
DMEA OPERATING COMMITTEE
4-6-56
(date)

Furthermore, logs of the 42 holes drilled on the property were studied by the DMEA examining geologist and found to be mostly unfavorable; several holes, mainly those that penetrated the ore body might be regarded as semifavorable. This rather close association of semifavorable, almost unfavorable, ore-bearing sandstone with an ore body was considered at the time by the DMEA geologist as "paradoxical"; however, several other small ore deposits in areally unfavorable Salt Wash have since been found to lack green mudstone immediately under the ore-bearing sandstone below the ore body, especially in those associations in which the ore zone is more than about 5 feet above the base of the ore-bearing sandstone.

Mr. Williams further states in his second comment that it might be reasonable to expect ore bodies, or reserves. on the Calamity Creek property to be intermediate in size between those (38,000 tons) to the north and the one (850 tons) to the south of the property. This statement might be considered a reasonable assumption in areas where no geologic control can be demonstrated or possibly might hold true in a longitudinal direction with respect to mineralized trends. However, in a southerly direction from the large ore bodies of the Calamity Mines (Fig. 1) one crosses the trend of the Uravan Mineral Belt and passes from favorable to unfavorable sandstone in the upper part of the Salt Wash. The association of large ore bodies within trends of favorable ground within the Uravan Mineral Belt, and the reverse relation of small or pod-like ore bodies in semifavorable to unfavorable ground has been amply demonstrated by U. S. Geological Survey studies on the Colorado Plateau (See USGS Bull. 988A, 988B, and 1009). Furthermore, no subordinate trend of favorable ground within the belt extends outside the belt, even as semifavorable ground, in the vicinity of the Calamity Creek Uranium property, although at the southern part of area II, American Leduc properties (DMEA 4041), a favorable trend does indeed extend southwesterly, but outside of the belt this trend within the ore-bearing sandstone changes from favorable to semifavorable.

The geologic knowledge and experience gained by testing the Uravan Mineral Belt with thousands of Government drill holes costing millions of dollars would be completely disregarded, if in this area one should interpolate size of ore bodies arithmetically with respect to distance, especially across trends.

The third comment of Mr. Williams is similar to those of Messrs. John E. Crawford (memo dated January 27, 1956), W. S. Martin (letter dated February 6, 1956) and W. M. Traver (memo dated February 10, 1956); namely, a small ore body has already been found on the property and there yet remain unexplored areas. First, it should be pointed out that the general geologic unfavorability of the property suggests that the original reserve estimate of 760 tons of indicated ore is probably the correct order of magnitude of the ore body rather than a total of the combined indicated and inferred

reserves (page 14, report of examination). Hence, it is believed that only the estimate of indicated ore should be used as a basis for discussion; inferred ore is little more than a geologic guess based on the experience of the geologist with similar deposits. From study of many more "fringe" deposits subsequent to the examination of the Calamity Creek property, the DMEA examining geologist believes that the inferred ore reserve may have been extrapolated too far for unfavorable ground. (The assumption used in computing both the indicated and inferred ore reserves on the Calamity Creek Uranium property were similar to assumptions used by H. K. Stager (1951, TEI 146) in computing reserves in favorable ground to the north).

Another characteristic of Salt Wash ore bodies in areas bordering productive areas of favorable ground, is their tendency to occur on different stratigraphic horizons, thereby possibly increasing exploration costs. Therefore, it should be re-emphasized that the 847 tons of ore produced at the Cliff Dweller Mine just south of the subject property came from a thin, lenticular ore-bearing sandstone that is 60 to 70 feet below the main ore-bearing sandstone, in which the 760-ton Calamity Creek ore body occurs. Hence, at least 125 feet of the upper part of the Salt Wash would have to be cored to test the main ore-bearing sandstone and any possible ore-bearing lenticular sandstones that might occur down to the horizon of the Cliff Dweller body. If only the main, uppermost ore-bearing sandstone is to be tested, any ore bodies at the general stratigraphic position of the Cliff Dweller Mine must be excluded as possible drilling targets.

From the general geologic unfavorability of the main ore-bearing sandstone beneath the Calamity Creek Uranium property, as indicated by 42 holes drilled to date and by rim exposures, it is the DMEA examining team's opinion that the frequency or density of occurrences of ore bodies will be low and the ore bodies small. It is quite possible from the general geologic unfavorability that the 42 holes drilled to date may have, by good fortune, found the only ore body on the property.

A POSSIBLE PROGRAM OF EXPLORATION

For the purpose of discussion, however, it is probably reasonable to assume that perhaps two other ore bodies of about the same size as the one already found, possibly each 750 tons, may remain undiscovered beneath the property. Each ore body would present a drilling target having an average lateral dimension of about 100 feet and a thickness of about one foot. The orientation or elongation, if any, of the ore target cannot be predicted, because the known ore body is only partly drilled out. These undiscovered ore bodies are assumed to be of the same grade as the known ore body and to contain possibly 0.25 percent of U_3O_8 and 1.2 percent V_2O_5. The gross value

of this ore, assuming complete recovery under present price schedule, would be, with initial production bonus, about $68,000.00.

Because there are no trends of mineralization, known or indicated, that could be used to localize drilling, the first stage of drilling program on the portions of the claims to which title is uncontested, would have to blanket the unexplored area. A minimum hole spacing of 200 feet in the first stage is believed to be the closest which could be justified economically, and it falls short of a drilling pattern which will insure location of every ore occurrence with a maximum dimension of 100 feet. It would be easily possible in a drilling program on the wider spacing to miss an ore body of the size expected, because the halo of weakly mineralized or altered greenish-gray sandstone commonly extends but several feet, or at most a few tens of feet, laterally beyond the outer margin of an ore body in semifavorable and unfavorable ground. In this area of semifavorable to unfavorable ground, it appears likely that the frequency of occurrence is low, and that not more than two 750-ton deposits are present. Assume that two such deposits are, by good fortune, found by a drilling project with holes on 200-foot centers. An estimate of the cost of exploration on this basis is as follows:

Stage I

75 holes on 200-foot centers, 220 feet in depth with 180 feet of non-core and 40 feet of core drilling per hole:

13,500 feet non-core drilling at $1.75 per foot - -	$23,625.00
3,000 feet core drilling at $3.50 per foot - - - -	10,500.00
Total stage I -	$34,125.00

Stage II

8 holes on 50-foot centers offsetting 2 ore holes, with 180 feet of non-core and 40 feet of core drilling per hole:

1,760 feet non-core drilling at $1.75 per foot - -	$ 3,080.00
320 feet core drilling at $3.50 per foot - - - -	1,120.00
Total stage II -	$ 4,200.00
Total for project- - - - - - - - - - - - - - - - - - - -	$38,325.00

This amount of drilling would probably not block out ore bodies well enough to justify underground development to reach them, and the operator should probably spend up to $15,000.00 more to develop them by further drilling.

Depending on the location of the assumed ore occurrences with respect to the rim, and whether or not one development opening would serve to mine more than one ore body, the cost of preparing an ore body for mining, including surface installations, might be anywhere from $25,000.00 to $50,000.00. On the one ore body discovered to date, the development cost would probably be near the higher figure because the operator has been unsuccessful in subsequent drilling, in extending the ore toward the rim. An estimated mining charge of $20.00 per ton, based on Atomic Energy Commission figures, is assumed for a small ore body with an indicated thickness of one foot.

Following is a summary of estimated costs and returns from 1500 tons of ore.

Estimated cost of exploring, developing and mining two hypothetical ore bodies containing 750 tons each:

Debit:

Drilling exploration - - - - - - - - - - -	$38,325.00
Drilling development - - - - - - - - - - -	15,000.00
Underground development and equipment costs (lowest estimate)- - - - - - - - -	25,000.00
Mining 1500 tons at $20.00 per ton- - - -	30,000.00
Total estimated cost to recover 1500 tons of ore - - - - - - - - - - - - -	108,325.00

Credit:

Government participation in exploration - - - - - - - - - -	$28,743.75	
Gross income from 1500 tons of ore at $45.69 per ton, less $2.28 per ton DMEA royalty-	65,115.00	
Total credits to operator - - - - - - - -		93,858.75
Estimated deficit to operator - - - - - -		14,466.25

The examining team believes an assumption that 1,500 tons of ore with an average uranium content of 0.25 percent might be found by the proposed exploration is very optimistic.

On the basis of the preceding estimates the operator would still be about $3,000.00 short of breaking even when the initial production bonus was exhausted, assuming that 2,000 tons of ore containing 10,000 pounds of U_3O_8 could be mined without any additional expenditures for development. To realize $3,000.00 from ore returns without bonus payments, at least 500 tons

more would have to be produced, because the operating gain, without the bonus, on this grade and thickness of ore is probably not over $6.00 per ton. A production of over 19,000 tons of ore would be required to return the Government's expenditure in royalties. In the opinon of the examining team the possibility of a profitable operation is remote.

The exploration program described in this memorandum is used solely as an example of the amount of drilling which is considered to be economically justifiable. It should not be construed as a feasible plan which the examining team might recommend. The cost of an adequate drilling program that would insure complete exploration of the ground would be about $153,000.00 for 68,000 feet of drilling in 300 holes, which is entirely disproportionate to the value of probable ore bodies.

The examining team does not find any evidence on which to change the recommendation made for denial of the application for Government assitance under DMEA 3934.

M. H. Salsbury
M. H. Salsbury,
U. S. Bureau of Mines

F. M. Byers, Jr.
F. M. Byers, Jr.,
U. S. Geological Survey

FMB/mlr

Enclosures (Fig. 1)

4/3/56 gla

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

March 30, 1956

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Chairman, Operating Committee, DMEA

From: Field Team, Region III

Subject: Supplemental Memorandum Report, Docket DMEA 3934 (Uranium)
Calamity Creek Uranium Company, (Calamity Creek Property)
Mesa County, Colorado

Enclosed are the original and three copies of a memorandum from the field examiners containing a review of all available information on the subject docket which was requested in your letter of February 6, 1956.

The field examiners again recommend that the application be denied.

Because of the general geologic unfavorability of the property, small and widely scattered ore bodies, and the large areas of conflict with adjoining claims, we concur in the examiners' recommendation that the application be denied.

Will you please place this memorandum report in the folder with the original Joint Report of Examination transmitted to you January 3, 1956.

DMEA Field Team, Region III

By W. M. Traver
W. M. Traver
Executive Officer

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
4-6-56
(date)

DMEA
Date Rec'd.
MAR 28 1956
BUREAU OF MINES
Denver, Colorado

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

MINERAL DEPOSITS
DMEA
RECEIVED
MAR 22 1956
U. S.
GEOLOGICAL SURVEY
DENVER, COLORADO

March 15, 1956

Memorandum

To: Executive Officer, DMEA Field Team, Region III

From: M. H. Salsbury
F. M. Byers

Through: E. N. Harshman EMH
J. F. Shaw JWH for
J. William Hasler

Subject: DMEA docket 3934 (Uranium), Calamity Creek Uranium Company, Calamity Creek property, Mesa County, Colorado

The comments of W. P. Williams, U. S. Geological Survey, John E. Crawford, U. S. Bureau of Mines, and W. S. Martin, acting chairman, DMEA Operating Committee, are considered below. The suggestions contained in the Executive Officer's memorandum of February 10 are also considered.

The DMEA application on the Calamity Creek Uranium property was denied by the examining team chiefly on two counts: 1) the general geologic unfavorability, despite the fact that the considerable drilling already done had discovered an ore body of possibly as much as 1,000 tons and, also, 2) the ore body already discovered and any other bodies similar in thickness, size, and grade would be too deep to mine profitably now or in the foreseeable future.

The examining team is prepared to document this denial recommendation more fully, for since last September when the property was examined, three additional properties have been examined for DMEA assistance in the Calamity Mesa quadrangle and additional information that bears on the subject property has been compiled.

The relation of the Calamity Creek Uranium property, DMEA 3934, to the three other properties that have pending DMEA loan applications is shown on figure 1, which accompanies this memorandum. The geographic relations of these properties to favorable trends within the Uravan Mineral Belt (Fischer and Hilpert, 1952) and drill holes outside the belt are also shown. (The many thousands of closely-spaced drill holes within the Uravan Mineral Belt are not shown on figure 1, except on American Leduc properties, DMEA 4041).

The first comment of W. P. Williams (memorandum dated January 19) points out (1) that although nearly a mile of rim exposures of the ore-bearing sandstones are unfavorable, some of the remaining part of the property up to 3,000 feet west of the ore-bearing sandstone rim might contain some favorable zones. Actually, if one considers only the ore-bearing sandstone and eliminates the ground in conflict with Newmont Mining Corporation, the Calamity Creek property has only a distance of about 1800 feet west of rim that is free of conflict.

Reviewed by
DMEA OPERATING COMMITTEE
4-6-56
(date)

Furthermore, logs of the 42 holes drilled on the property were studied by the DMEA examining geologist and found to be mostly unfavorable; several holes, mainly those that penetrated the ore body might be regarded as semifavorable. This rather close association of semifavorable, almost unfavorable, ore-bearing sandstone with an ore body was considered at the time by the DMEA geologist as "paradoxical"; however, several other small ore deposits in areally unfavorable Salt Wash have since been found to lack green mudstone immediately under the ore-bearing sandstone below the ore body, especially in those associations in which the ore zone is more than about 5 feet above the base of the ore-bearing sandstone.

Mr. Williams further states in his second comment that it might be reasonable to expect ore bodies, or reserves. on the Calamity Creek property to be intermediate in size between those (38,000 tons) to the north and the one (850 tons) to the south of the property. This statement might be considered a reasonable assumption in areas where no geologic control can be demonstrated or possibly might hold true in a longitudinal direction with respect to mineralized trends. However, in a southerly direction from the large ore bodies of the Calamity Mines (Fig. 1) one crosses the trend of the Uravan Mineral Belt and passes from favorable to unfavorable sandstone in the upper part of the Salt Wash. The association of large ore bodies within trends of favorable ground within the Uravan Mineral Belt, and the reverse relation of small or pod-like ore bodies in semifavorable to unfavorable ground has been amply demonstrated by U. S. Geological Survey studies on the Colorado Plateau (See USGS Bull. 988A, 988B, and 1009). Furthermore, no subordinate trend of favorable ground within the belt extends outside the belt, even as semifavorable ground, in the vicinity of the Calamity Creek Uranium property, although at the southern part of area II, American Leduc properties (DMEA 4041), a favorable trend does indeed extend southwesterly, but outside of the belt this trend within the ore-bearing sandstone changes from favorable to semifavorable.

The geologic knowledge and experience gained by testing the Uravan Mineral Belt with thousands of Government drill holes costing millions of dollars would be completely disregarded, if in this area one should interpolate size of ore bodies arithmetically with respect to distance, especially across trends.

The third comment of Mr. Williams is similar to those of Messrs. John E. Crawford (memo dated January 27, 1956), W. S. Martin (letter dated February 6, 1956) and W. M. Traver (memo dated February 10, 1956); namely, a small ore body has already been found on the property and there yet remain unexplored areas. First, it should be pointed out that the general geologic unfavorability of the property suggests that the original reserve estimate of 760 tons of indicated ore is probably the correct order of magnitude of the ore body rather than a total of the combined indicated and inferred

reserves (page 14, report of examination). Hence, it is believed that only the estimate of indicated ore should be used as a basis for discussion; inferred ore is little more than a geologic guess based on the experience of the geologist with similar deposits. From study of many more "fringe" deposits subsequent to the examination of the Calamity Creek property, the DMEA examining geologist believes that the inferred ore reserve may have been extrapolated too far for unfavorable ground. (The assumption used in computing both the indicated and inferred ore reserves on the Calamity Creek Uranium property were similar to assumptions used by H. K. Stager (1951, TEI 146) in computing reserves in favorable ground to the north).

Another characteristic of Salt Wash ore bodies in areas bordering productive areas of favorable ground, is their tendency to occur on different stratigraphic horizons, thereby possibly increasing exploration costs. Therefore, it should be re-emphasized that the 847 tons of ore produced at the Cliff Dweller Mine just south of the subject property came from a thin, lenticular ore-bearing sandstone that is 60 to 70 feet below the main ore-bearing sandstone, in which the 760-ton Calamity Creek ore body occurs. Hence, at least 125 feet of the upper part of the Salt Wash would have to be cored to test the main ore-bearing sandstone and any possible ore-bearing lenticular sandstones that might occur down to the horizon of the Cliff Dweller body. If only the main, uppermost ore-bearing sandstone is to be tested, any ore bodies at the general stratigraphic position of the Cliff Dweller Mine must be excluded as possible drilling targets.

From the general geologic unfavorability of the main ore-bearing sandstone beneath the Calamity Creek Uranium property, as indicated by 42 holes drilled to date and by rim exposures, it is the DMEA examining team's opinion that the frequency or density of occurrences of ore bodies will be low and the ore bodies small. It is quite possible from the general geologic unfavorability that the 42 holes drilled to date may have, by good fortune, found the only ore body on the property.

A POSSIBLE PROGRAM OF EXPLORATION

For the purpose of discussion, however, it is probably reasonable to assume that perhaps two other ore bodies of about the same size as the one already found, possibly each 750 tons, may remain undiscovered beneath the property. Each ore body would present a drilling target having an average lateral dimension of about 100 feet and a thickness of about one foot. The orientation or elongation, if any, of the ore target cannot be predicted, because the known ore body is only partly drilled out. These undiscovered ore bodies are assumed to be of the same grade as the known ore body and to contain possibly 0.25 percent of U_3O_8 and 1.2 percent V_2O_5. The gross value

of this ore, assuming complete recovery under present price schedule, would be, with initial production bonus, about $68,000.00.

Because there are no trends of mineralization, known or indicated, that could be used to localize drilling, the first stage of drilling program on the portions of the claims to which title is uncontested, would have to blanket the unexplored area. A minimum hole spacing of 200 feet in the first stage is believed to be the closest which could be justified economically, and it falls short of a drilling pattern which will insure location of every ore occurrence with a maximum dimension of 100 feet. It would be easily possible in a drilling program on the wider spacing to miss an ore body of the size expected, because the halo of weakly mineralized or altered greenish-gray sandstone commonly extends but several feet, or at most a few tens of feet, laterally beyond the outer margin of an ore body in semifavorable and unfavorable ground. In this area of semifavorable to unfavorable ground, it appears likely that the frequency of occurrence is low, and that not more than two 750-ton deposits are present. Assume that two such deposits are, by good fortune, found by a drilling project with holes on 200-foot centers. An estimate of the cost of exploration on this basis is as follows:

Stage I

75 holes on 200-foot centers, 220 feet in depth with 180 feet of non-core and 40 feet of core drilling per hole:

13,500 feet non-core drilling at $1.75 per foot - -	$23,625.00
3,000 feet core drilling at $3.50 per foot - - - -	10,500.00
Total stage I -	$34,125.00

Stage II

8 holes on 50-foot centers offsetting 2 ore holes, with 180 feet of non-core and 40 feet of core drilling per hole:

1,760 feet non-core drilling at $1.75 per foot - -	$ 3,080.00
320 feet core drilling at $3.50 per foot - - - -	1,120.00
Total stage II -	$ 4,200.00
Total for project- - - - - - - - - - - - - - - - - - - -	$38,325.00

This amount of drilling would probably not block out ore bodies well enough to justify underground development to reach them, and the operator should probably spend up to $15,000.00 more to develop them by further drilling.

Depending on the location of the assumed ore occurrences with respect to the rim, and whether or not one development opening would serve to mine more than one ore body, the cost of preparing an ore body for mining, including surface installations, might be anywhere from $25,000.00 to $50,000.00. On the one ore body discovered to date, the development cost would probably be near the higher figure because the operator has been unsuccessful in subsequent drilling, in extending the ore toward the rim. An estimated mining charge of $20.00 per ton, based on Atomic Energy Commission figures, is assumed for a small ore body with an indicated thickness of one foot.

Following is a summary of estimated costs and returns from 1500 tons of ore.

Estimated cost of exploring, developing and mining two hypothetical ore bodies containing 750 tons each:

Debit:

Drilling exploration - - - - - - - - - - -	$38,325.00
Drilling development - - - - - - - - - - -	15,000.00
Underground development and equipment costs (lowest estimate)- - - - - - - - -	25,000.00
Mining 1500 tons at $20.00 per ton- - - -	30,000.00
Total estimated cost to recover 1500 tons of ore - - - - - - - - - - - -	108,325.00

Credit:

Government participation in exploration - - - - - - - - - -	$28,743.75	
Gross income from 1500 tons of ore at $45.69 per ton, less $2.28 per ton DMEA royalty-	65,115.00	
Total credits to operator - - - - - - - -		93,858.75
Estimated deficit to operator - - - - -		14,466.25

The examining team believes an assumption that 1,500 tons of ore with an average uranium content of 0.25 percent might be found by the proposed exploration is very optimistic.

On the basis of the preceding estimates the operator would still be about $3,000.00 short of breaking even when the initial production bonus was exhausted, assuming that 2,000 tons of ore containing 10,000 pounds of U_3O_8 could be mined without any additional expenditures for development. To realize $3,000.00 from ore returns without bonus payments, at least 500 tons

more would have to be produced, because the operating gain, without the bonus, on this grade and thickness of ore is probably not over $6.00 per ton. A production of over 19,000 tons of ore would be required to return the Government's expenditure in royalties. In the opinon of the examining team the possibility of a profitable operation is remote.

The exploration program described in this memorandum is used solely as an example of the amount of drilling which is considered to be economically justifiable. It should not be construed as a feasible plan which the examining team might recommend. The cost of an adequate drilling program that would insure complete exploration of the ground would be about $153,000.00 for 68,000 feet of drilling in 300 holes, which is entirely disproportionate to the value of probable ore bodies.

The examining team does not find any evidence on which to change the recommendation made for denial of the application for Government assitance under DMEA 3934.

M. H. Salsbury
M. H. Salsbury,
U. S. Bureau of Mines

F. M. Byers, Jr.
F. M. Byers, Jr.,
U. S. Geological Survey

FMB/mlr

Enclosures (Fig. 1)

2-15-56 dgm

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

RECEIVED
FEB 1 5 1956

February 10, 1956

224 New Customhouse
Denver 2, Colorado

Memorandum

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

From: Executive Officer, DMEA Field Team, Region III

Subject: Docket DMEA 3934 (Uranium) Calamity Creek Uranium Company, Calamity Creek Property, Mesa County, Colorado

Enclosed is a copy of a letter from the Chairman of the Operating Committee on the subject docket. Also enclosed are memoranda of review of your recommendations in your Report of Examination on the subject property.

It appears that many conflicts of ownership may exist on the north, west, and south parts of this group of claims. There remains a sizable area in the east central part of this group on which there are no conflicts. What are your thoughts on this area which is clear of conflicts?

Will you please give further consideration to your Report of Examination and the enclosed letter and memoranda and submit any comments and recommendations that may result from such reappraisal, so that we may reply to the letter of the Chairman of the Operating Committee.

W. M. TRAVER,

W. M. Traver

Enclosure

HMC:ab

cc: Chair. Op. Comm. (2)
Harshman
Docket 3934
Chron.

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

RECEIVED FEB 15 1956

February 10, 1956

224 New Customhouse
Denver 2, Colorado

Memorandum

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

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W. M. TRAVER,

W. M. Traver

Enclosure

HMC:ab

cc: Chair. Op. Comm. (2)
Harshman
Docket 3934
Chron.

700

FILE COPY
Surname:
Ching
Ellis
Martin
Bylander
Mottindorf

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

FEB - 6 1956

Mr. W. M. Traver
Executive Officer
DMEA Field Team, Region III
22h New Customhouse Building
Denver 2, Colorado

Re: Docket No. DMEA-3934 (Uranium)
Calamity Creek Uranium Company
Calamity Creek Property
Mesa County, Colorado

Dear Mr. Traver:

The Report of Examination recommending denial of the subject application was concurred in by the Field Team.

Enclosed are two copies each of memoranda, dated January 19 and 27, 1956, from W. P. Williams, USGS, and J. E. Crawford, USBM, respectively. You will note that both Commodity Group members do not concur with the recommendation of the Field Team.

A review of all the available information appears to place the proposed project in the borderline category. Where exposed on the rim or in drill holes, the ore-bearing sandstone appears to be semi-favorable to unfavorable, lithologically, for the occurrence of ore bodies. On the other hand, an actual ore body of possibly 1000-ton size has been found on the claim and another deposit of equal size has been mined a short distance south of the property. Of eighteen wide spaced holes drilled by the USGS, AEC, and the Applicant, only one showed ore-grade material, but this one hole led to the discovery of the first-mentioned 1000-ton ore body. Two factors which may be considered as on the negative side are the comparatively deep drilling required on the western half of the claims and the large areas of conflict with adjoining claims.

It is requested that the Field Team review the proposed project further and submit any comments and recommendations that may result from such reappraisal.

Sincerely yours,

W. S. Martin
ACTING Chairman, Operating Committee

Enclosures

APPROVED:

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

/s/ Thor H. Kiilsgaard
Member, Geological Survey

Messrs. JECrawford, Rm. 3641
THKiilsgaard, Rm. 5224
JOHosted, Rm. 3210, GSA

Mr. Ching
Admr.'s Reading File
Operating Committee

ig/izm 2-1-56
py to: Docket
Code 700

1/30/56 gla

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

RECEIVED
JAN 27 1956

January 27, 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 3934, Calamity Creek Uranium Company, Calamity Creek property, Mesa County, Colorado

I have reviewed the report of examination of DMEA Docket 3934, dated January 3, 1956, and received in this office on January 24. I have also discussed it with Joseph O. Hosted, Washington representative of the Atomic Energy Commission.

Calamity Creek Uranium Corporation applied for DMEA assistance in exploring the Little Girl, Pretty Boy, and Cottonwood claims, Mesa County, Colo. The exploration project consists of 36,100 feet of plug-bit and 4,300 feet of core drilling at an estimated cost of $97,135.

The field team upon examination of the property recommend denial of the application for exploration assistance because the subject claims lie "well south of the main belt of mineralization in the Calamity Creek district" and "there is little possibility of finding more than small scattered deposits characteristic of 'fringe' areas."

It is difficult to concur with the field team in view of the potentialities of the claims, specifically Cottonwood No. 3 claim which is found to contain 760 tons of indicated ore averaging 0.23 percent U_3O_8 and 1.13 percent V_2O_5, and 700 tons of inferred ore of similar grade.

Although an exploration project of the magnitude proposed by the applicant would probably be questionable, the property at least merits a modified exploration program on the claims which are not subject to conflicts. We suggest that some exploration be con-

sidered to test by drilling the eastern parts of the Pretty Boy No. 4, Cottonwood No. 6, and Cottonwood No. 5 claims.

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

1-20-56 [illegible]

IN REPLY REFER TO:

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

RECEIVED
JAN 20 1956

January 19, 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 3934, Calamity Creek Uranium Corporation, Cottonwood, et al. claims, Calamity Mesa, Mesa County, Colorado.

After examination of the subject property the examining team recommends that the application be denied. The report of examination is far from being unequivocal in many respects and is actually occasionally self-contradictory.

Denial of the proposed project seems to be based on the following items:

1) Rim exposures, at the easternmost edge of the claims, indicate that the ore zone in the Salt Wash member is unfavorable. The western edge of the property is about 3,000 feet west of the rim exposures--so unfavorableness at the outcrop should not be applied to the whole claim area.

+ holes show 2/3 semi-favorable to unfavorable

Furthermore, on page 14 of the report is is noted, "The most paradoxical fact is the presence of red mudstone [an unfavorable criteria] underlying ore-bearing sandstone . . . "

2) " . . . more likely [the ore bodies] will consist of widely separated small bodies of less than 1,000 tons each." The Calamity group just north of the property has produced 38,000 tons of ore averaging 0.36 percent U_3O_8. The Cliff Dweller mine just south of the property produced about 850 tons of ore averaging 0.35 percent U_3O_8. It seems reasonable to expect reserves on the property to be intermediate between the two sets of figures.

But these are in favorable SS

Holes drilled do not indicate this

3) Considerable drilling has already been completed on the property. While it is true that 42 holes have been drilled on the property, the completed drilling does not by any means exhaust the possibilities for finding new ore bodies on the property, and five claims have no drilling on them at all. Of the holes drilled eight are in ore and at least one other is mineralized.

Since eight ore holes have already been drilled on the property and the property is located nearly adjacent to significant production it appears that the property warrants at least a first stage of drilling to see if mineralization or ore can be found in areas heretofore not explored.

W P Williams

W. P. Williams

1-12-56-Lgm

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

RECEIVED
JAN 6 1956

224 New Customhouse
Denver 2, Colorado

January 3, 1956

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Field Team, Region III

Subject: Joint Report of Examination, DMEA Docket 3934 (Uranium), Calamity Creek Uranium Company, Calamity Creek property, Mesa County, Colorado

Enclosed are the original and three copies of the report pertaining to the above application.

The field examiners found many claim conflicts but because of their belief that the property did not warrant Government participation in exploration, the question of conflicts was not examined further. They recommend that the application be denied and we concur in that recommendation.

DMEA Field Team, Region III

W. M. Traver

By W. M. Traver
Executive Officer

Enclosures

4046 2 Pelsor South 1 mile In Field
3528 56 Green NW. 1½ " Withdrawn
2425 30 Pelsor SS 2 " Denied

Reviewed by
DMEA OPERATING COMMITTEE
1-11-56
(date)

DMEA
Date Rec'd.

DEC 23 1955

BUREAU OF MINES
Denver, Colorado

Building 20
Denver Federal Center
Denver 2, Colorado
December 22, 1955

REGION III

Memorandum

TRANSMITTED
JAN 3 1955

To: Executive Officer, DMEA Field Team, Region III

From: E. N. Harshman
John F. Shaw

Subject: Docket No. DMEA 3934, Calamity Creek Uranium Corporation, Mesa County, Colorado

Enclosed are the original and 9 copies of a Joint engineering and geologic report by F. M. Byers, Jr., Geologist, and M. H. Salsbury, Mining Engineer, covering DMEA Docket No. 3934, Calamity Creek Uranium Corporation.

Calamity Creek Uranium Corporation applied for exploration assistance to explore the Little Girl, Pretty Boy, and Cottonwood claims by 36,100 feet of plug-bit and 4300 feet of core drilling at an estimated cost of $97,135.00.

The property was examined by F. M. Byers, Jr., Geologist, and M. H. Salsbury, Mining Engineer. The examining team concluded that the applicant's property lies well south of the main belt of mineralization in the Calamity Creek District, and that there are no known trends crossing it, and that there is little possibility of finding more than small scattered deposits characteristic of "fringe" areas.

It is recommended that the application be denied.

E. N. Harshman
Member Field Team

John F. Shaw
Supervising Mining Engineer

JFS/mw

cc: 9
ENHarshman
DMEA 3934
Chron.

Reviewed by
DMEA OPERATING COMMITTEE
1-11-56
(date)

MINERAL DEPOSITS
DMEA
RECEIVED
DEC 12 1955
U. S.
GEOLOGICAL SURVEY
DENVER, COLORADO

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

December 7, 1955

Memorandum

To: Executive Officer, DMEA Field Team, Region III

Through: E. N. Harshman

TRANSMITTED
JAN 3 1955

From: J. William Hasler

Subject: DMEA 3934 (Uranium), Calamity Creek Uranium Corporation, Little Girl, Pretty Boy, and Cottonwood claims, Mesa County, Colorado

Enclosed is a joint engineering and geologic report by F. M. Byers, Jr., and M. H. Salsbury on the Calamity Creek Uranium Corporation property on Calamity Mesa, Mesa County, Colorado.

The applicant applied for Government assistance to explore for uranium on 15 claims. The total cost of the proposed program was for $97,135.00, of which the Government participation would be $72,851.35 on the 75 percent participation basis.

The property was examined September 29, 1955, in company with Mr. Roy A. Anderson and Mr. Cecil W. McCoy, representatives of the applicant. The property has had some production, although drilling by the U. S. Geological Survey and subsequent geologic work indicate that the ground underlain by the applicant's claims is generally unfavorable for the occurrence of ore deposits. There are also four areas of conflict in the adjoining ground which are in the state of being resolved; however, the applicant did not mention the conflict in the application.

Reviewed by
DMEA OPERATING COMMITTEE
1-11-56
(date)

(DMEA 3934)

The Calamity Mesa area has been extensively drilled by the Geological Survey and substantial tonnages of ore have been discovered in the northern part of Calamity Mesa; however, the drilling to the south, as mentioned before, showed the ground to become semi-favorable to unfavorable for ore deposition.

It is concluded, therefore, that the Little Girl, Pretty Boy, and Cottonwood claims are located in the semi-favorable to unfavorable area, as substantiated by Government and private drilling. The ore bodies, if found, would be of too small size and grade to be commercial, and it is concluded that the chances of finding ore bodies of significant size and grade are not good. It is recommended, therefore, that the application be denied.

Enclosed are the necessary number of illustrations as well as the applicant's brochure.

The Atomic Energy Commission was consulted relative to the appraisal and the program. I concur with the recommendations and conclusions of the examining team that the application for Government assistance be denied.

J. William Hasler

J. William Hasler,
Geologist.

JWH/mlr

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

JOINT REPORT OS EXAMINATION BY EXAMINING TEAM
REGION III

TRANSMITTED

JAN 3 1955

DMEA 3934

CALAMITY CREEK URANIUM CORPORATION

LITTLE GIRL, PRETTY BOY, AND COTTONWOOD CLAIMS

MESA COUNTY, COLORADO

Uranium

Joint Engineering and Geologic Report

By

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

M. H. Salsbury, Mining Engineer
Bureau of Mines

December 22, 1955

Reviewed by
DMEA OPERATING COMMITTEE
1-11-56
(date)

DMEA 3934

CALAMITY CREEK URANIUM CORPORATION
LITTLE GIRL, PRETTY BOY, AND COTTONWOOD CLAIMS
MESA COUNTY, COLORADO

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ILLUSTRATIONS

Figure — Follows Page

1. Location map, Little Girl, Pretty Boy and Cottonwood claims, Calamity Creek Uranium Corporation, Mesa County, Colo. DMEA 3934 4

2. Geologic map of part of Calamity Mesa Area, showing ore bodies, existing drill holes (on Calamity Creek group only) and drill holes proposed by applicant on Little Girl, Pretty Boy, and Cottonwood groups of claims, Calamity Creek Uranium Corporation, Mesa County, Colorado 6

3. Ore body on Cottonwood No. 3 claim, showing limits of indicated and inferred ore (tables 2 and 3) 7

DMEA 3934

CALAMITY CREEK URANIUM CORPORATION
LITTLE GIRL, PRETTY BOY, AND COTTONWOOD CLAIMS
MESA COUNTY, COLORADO

INTRODUCTION AND SUMMARY

On July 26, 1955, Calamity Creek Uranium Corporation, 913 First Security Bank Building, Salt Lake City, Utah, applied for Defense Minerals Exploration assistance to explore for uranium on 15 claims on Calamity Mesa, Mesa County, Colorado. The proposal calls for 36,100 feet of plug bit, and 4,300 feet of core drilling in 98 holes at an estimated cost of $97,135.00. Government participation at 75 percent would be $72,851.35.

The property was examined on September 29, 1955 in company with Roy H. Anderson and Cecil W. McCoy, consulting geologist and Director respectively, of the applicant corporation.

The 15 claims included in the DMEA project are owned by the applicant, subject to a royalty due McCoy and two associates. There are four areas of conflict with adjoining ground (fig. 2). Two of these conflicts, one on the north, and a larger area on the west, are with claims belonging to the New Verde Mining Company, a subsidiary of the Newmont Mining Company. Mr. McCoy stated that the conflict on the north was being resolved in the applicant's favor by agreement, but did not mention the west conflict, which is indicated by New Verde maps furnished the Geological Survey. The adverse locations at the northeast corner and along the south boundary are definitely prior to the applicant's locations. Because the possibility of an approval of the project appeared to be remote, the question of claim conflicts was not examined further.

Most of the claim area in the proposed DMEA project is on a 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, north of the applicant's property, and the small ore body found in the vicinity of the applicant's hole no. 3 are in this unit. Several other pods of mineralized material in rim outcrops, and a small deposit at the Cliff Dweller mine, adjoining on the south, are in thin sandstone units below the main ledge. The sandstones on the property, and for some distance north of it, have been classed by the Geological Survey as semi-favorable, becoming unfavorable in the southern portion of the property. This evaluation has been confirmed by the present examination and by the data which were obtained from records of the considerable amount of drilling already accomplished.

All available evidence suggests that ore bodies underlying the claims the applicant proposes to explore do not exceed a few thousand tons; it is more likely that they will consist of small, widely separated bodies of less than 1,000 tons each.

The proposed exploration has been planned to complete work which was partly accomplished by Geological Survey, Atomic Energy Commission, and private drilling. The first stage consists of wide spaced drill holes to blanket the claims in order to determine the favorability of potential ore sands. Three holes are planned to core the entire Salt Wash member. An attempt to extend the small ore body around the applicant's hole no. 3 to the east by further drilling in the vicinity of mineralized hole no. 4 was unsuccessful. Two additional stages of exploration proposed correspond to the normal first and second stages of a DMEA project.

The contract drilling prices quoted from three independent contractors are normal, but the applicant's estimates on overhead costs, particularly supervision

and technical services, are out of line.

It is concluded that the applicant's property lies well south of the main belt of mineralization in the Calamity Creek district, that there are no known trends crossing it, and that there is little possibility of finding more than small scattered deposits characteristic of "fringe" areas. This is substantiated by the rim exposures, by the results of the considerable amount of drilling already done on the property, and by the character of the deposit which has been mined at the Cliff Dweller mine.

It is believed that DMEA projects should be confined to areas of favorability. In the present case, it appears that previous drilling has established adequately that the area is generally unfavorable or, at the best, semi-favorable. Three small local areas of favorability were reported in the application. In one of these, the original ore hole was offset on close centers, blocking out a small ore body, but an effort to show by further drilling that it was in an easterly trend was unsuccessful. The presence of ore in the other two reported favorable areas was not substantiated by gamma-ray logging of the holes, and no chemical analyses were obtained. Additional drilling does not appear to be justified, because the probable reserve of ore which might be disclosed is likely to be insignificant.

Denial of the application under DMEA 3934 is recommended.

ACKNOWLEDGMENTS

Data on the property furnished by the applicant included geologic and radiometric logs, drillers logs and results of chemical analyses of ore samples. The Atomic Energy Commission was consulted through Louis Garbrecht. The complete results of Geological Survey and Atomic Energy Commission drilling on and around the property were made available to the examining team.

LOCATION, TOPOGRAPHY AND CLIMATE

The Little Girl, Pretty Boy, Cottonwood claim group is in secs. 14 and 15, T. 50 N., R. 18 W., New Mexico principal meridian, Mesa County, Colorado (figure 1). The claims are 44 miles north of Uravan, Colorado most of distance over a poor dirt access road connecting with Colorado State Highway 141 at Mesa Creek. A somewhat better route over the Uncompahgre connects with the same highway in Unaweep Canyon. By this route, Grand Junction, Colorado, the nearest major supply center, is 58 miles away.

Half of the claim area, at an altitude of 6,200 to 6,300 feet, is on the moderately sloping bench on the east side of Calamity Mesa overlooking Calamity Creek (figure 2). The eastern end is on the extremely precipitous slope of Calamity Creek Canyon, and the western claims cover a steep slope below the Burro Canyon rim and a narrow strip on top of the mesa.

Operations are feasible throughout the year under normal conditions. Total precipitation is moderate but occurs in heavy storms both summer and winter, after which access may be difficult.

Water for mining purposes is available from springs or surface flow. Mining supplies must come from Grand Junction. All power needs must be met by the individual operator. The most accessible uranium treatment plant is that of Climax Uranium Company in Grand Junction, Colorado.

A frame building on the claims is available for use by exploration personnel. Presumably a drilling contractor would furnish labor and other housing facilities.

The history of the Calamity Mesa district as a vanadium ore producer dates back before World War I. The current activities date from 1949 when the Geological Survey initiated a core drilling project on ground which Union Mines Development Corporation had deeded to the Government. A large amount of drilling

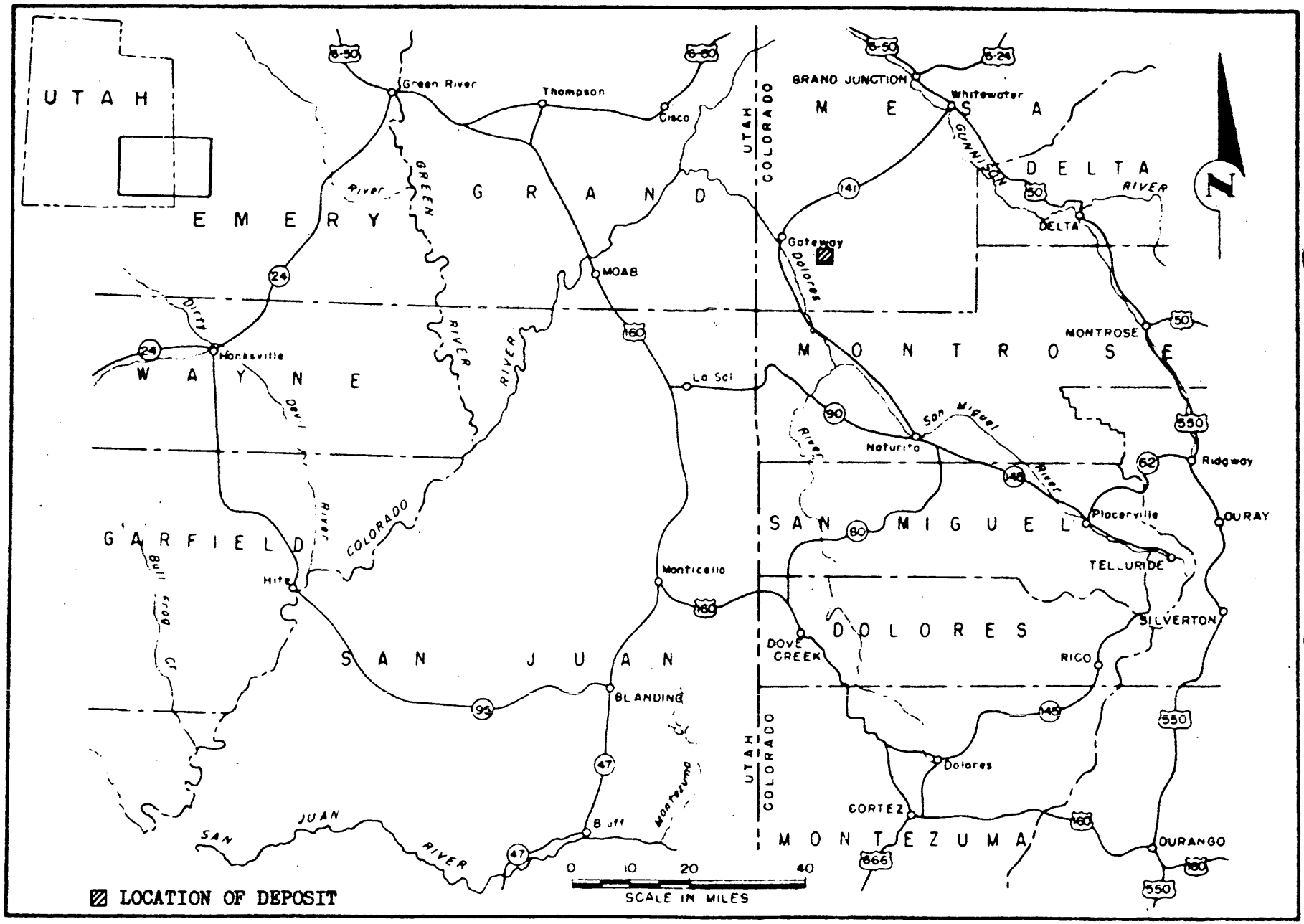


FIGURE 1 - LOCATION MAP, LITTLE GIRL, PRETTY BOY AND COTTONWOOD CLAIMS, CALAMITY CREEK URANIUM CORPORATION, MESA COUNTY, COLO. DMEA 3934

exploration has been done by the Geological Survey, and by the Atomic Energy Commission on adjoining privately owned ground.

A very significant production has been made from ore bodies in favorable ground on Government owned claims, as well as other property in sections 10 and 11. This ground, however, is north of the applicant's ground. As an indication of the size of ore bodies in favorable ground, the total production through September 1955 from 7 of the Calamity claims, with that prior to 1944 estimated, is 38,000 tons. The average content of ore mined since 1949 has been 0.36 percent U_3O_8 and 1.60 percent V_2O_5.

This is in contrast to the production from the Cliff Dweller mine in ground classed as unfavorable, which adjoins the applicant's ground on the south, given in Atomic Energy Commission records as follows:

PERIOD	TONS	U_3O_8 (percent)	V_2O_5 (percent)
Prior to 1954	304.76	0.34	1.60
Jan.-June 1954	108.36	0.32	1.66
July-Dec. 1954	168	0.31	1.61
Jan.-Mar. 1955	115	0.37	1.63
Mar.-June 1955	151	0.44	1.95
TOTALS	847.12	0.35	1.67

The Cliff Dweller mine was not in operation at the time of the examination, but an inspection of the workings indicated that all of the minable ore in sight had been removed.

There has been no production from the Little Girl, Pretty Boy, Cottonwood group.

OWNERSHIP AND EXTENT

The 15 claims in the group included in the DMEA proposal were sold to the Calamity Creek Uranium Corporation by Peter Kaasch, Cecil McCoy and Warren Wright for a consideration of $20,000.00, secured by a promissory note due and

payable only out of ore returns. The locations were recorded at the Mesa County Courthouse in Book 554, pages 497 to 509, and Book 605, pages 84 and 85. A check at the Courthouse shows Pretty Boy No. 6 located on September 26, 1951 and recorded on October 4, 1951 in Book 554, page 503. An amended location was filed on December 7, 1953. The original location certificate is signed by William E. Wright and Warren E. Wright. A map of the claims was filed on September 9, 1955 and recorded in Book 660, page 155. A copy of the quit-claim deed to Calamity Creek Uranium Corporation from Kaasch, Wright and McCoy was furnished with application. The acquisition of a part interest in the claims by Kaasch and McCoy was not documented.

There are four areas of conflict with adjoining claims (figure 2):

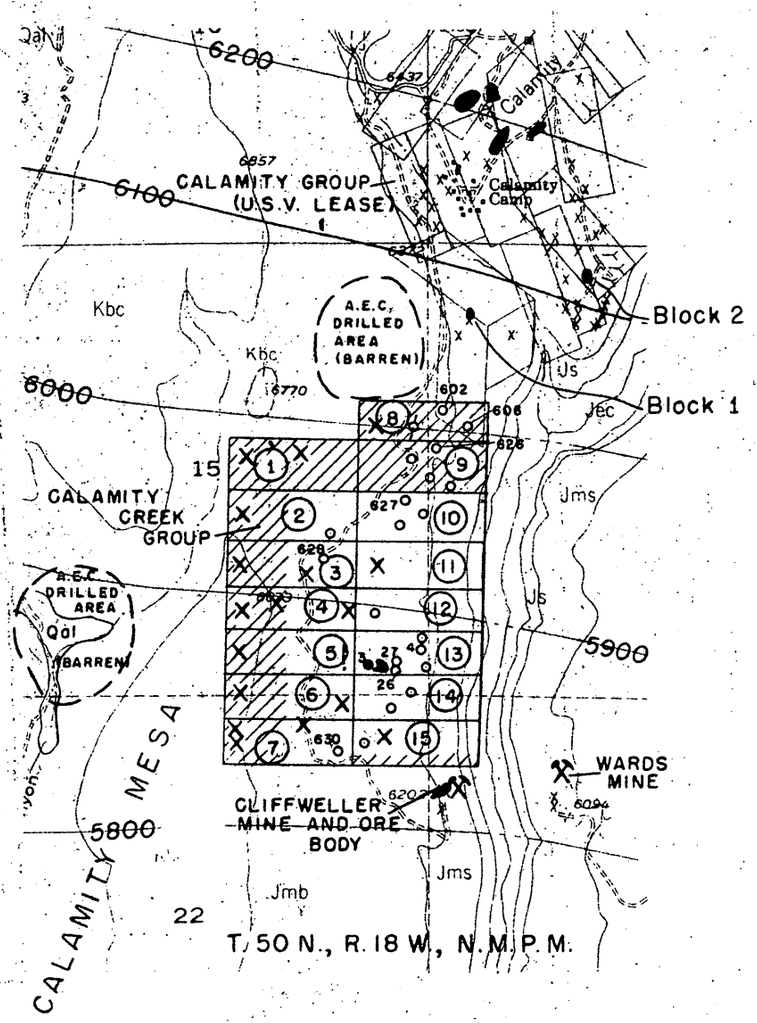
(1) That part of Little Girl and Little Girl No. 3 in the northwest quarter of section 14 is in conflict with ground withdrawn by the Atomic Energy Commission and is invalid.

(2) Along the south boundary, Cottonwood No. 1 overlaps Cliff Dweller No. 1, a prior location.

(3) On the north, the balance of Little Girl and Little Girl No. 3, as well as Little Girl No. 2 are overlapped by the New Verde Mining Company's Tinhorn Nos. 2, 4, 6 and 7. The applicant states that this conflict is about to be resolved in their favor.

(4) On the west, about half of the applicant's west row of 7 claims is in conflict with New Verde claims, and there is a double conflict of part of the same area with the Red Cliff and Cliff No. 1 and No. 2 claims. The latter are recent locations and are not believed to be valid but the New Verde locations may have some validity.

Because of the probable recommendations for denial on the DMEA application, the applicant was not requested to clear up these conflicts.



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.

CLAIM INDEX

1	LITTLE GIRL NO. 2	
2	PRETTY BOY NO. 6	½ out
3	PRETTY BOY NO. 5	½ out
4	PRETTY BOY NO. 4	½ out
5	COTTONWOOD NO. 6	½ out
6	COTTONWOOD NO. 5	½ out
7	COTTONWOOD NO. 4	½ out
8	LITTLE GIRL NO. 3	Out
9	LITTLE GIRL	out
10	PRETTY BOY NO. 3	
11	PRETTY BOY NO. 2	
12	PRETTY BOY NO. 1	
13	COTTONWOOD NO. 3	
14	COTTONWOOD NO. 2	
15	COTTONWOOD NO. 1	Partly out

N

2000 0 4000 FEET

EXPLANATION

Qal	QUATERNARY ALLUVIUM
Kbc	CRETACEOUS BURRO CANYON FORMATION
Jmb / Jms	JURASSIC MORRISON FORMATION: BRUSHY BASIN MEMBER, SALT WASH MEMBER,
Js	JURASSIC SUMMERVILLE FORMATION
Jec	JURASSIC ENTRADA SANDSTONE AND CARMEL FORMATIONS, UNDIVIDED
~	GEOLOGIC CONTACT
6100	STRUCTURE CONTOUR DRAWN ON TOP OF ENTRADA SANDSTONE. INTERVAL 100 FEET
●	ORE BODY
▨	CLAIM AREA IN CONFLICT
x	PROSPECT
	DRILL HOLES ON CALAMITY CREEK GROUP (NOT SHOWN ELSEWHERE); HOLE NUMBERS 602 AND 606 DRILLED BY U.S.G.S.; 626, 627, 628, AND 630 DRILLED BY A.E.C.; OTHER HOLES DRILLED BY CALAMITY CREEK URANIUM CORPORATION; (CLOSELY SPACED HOLES OFFSETTING HOLES NO. 3 AND 4 NOT SHOWN)
○	BARREN
ϕ	WEAKLY MINERALIZED
●	ORE-BEARING
×	DRILL HOLE SITE PROPOSED BY CALAMITY CREEK URANIUM CORPORATION

FIGURE 2. GEOLOGIC MAP OF PART OF CALAMITY MESA AREA, SHOWING ORE BODIES, EXISTING DRILL HOLES (ON CALAMITY CREEK GROUP ONLY) AND DRILL HOLES PROPOSED BY APPLICANT ON LITTLE GIRL, PRETTY BOY, AND COTTONWOOD GROUPS OF CLAIMS, CALAMITY CREEK URANIUM CORPORATION, MESA COUNTY, COLORADO.

PRESENT STATUS

Exploration and Development

Exploration done to date on the property has consisted of an access road to reach the Salt Wash outcropping above Calamity Creek, a small amount of hand excavation on two minor "shows" in outcrops, and 42 drill holes. Of these drill holes 2 were drilled by the Geological Survey, 6 by the Atomic Energy Commission, and 34 by the applicant. Of the latter 12 holes were wide spaced holes and 22 were offset holes (figures 2 and 3). Government agencies also drilled adjoining ground immediately north of the property, and an area in Maverick Canyon on the west side of Calamity Mesa. The results of all Government drilling, on the property or near it, were negative.

The applicant reported ore in holes Nos. 1, 2 and 3 and mineralization in hole No. 4. Chemical analyses of material from hole No. 3 indicated it was of ore grade. This is the hole which was offset with good results. A gamma-ray log of hole No. 3 made by the Century Geophysical Corporation checked the chemical analyses, but logs of holes no. 1 and 2, as well as hole no. 4, barely indicate mineralization, and certainly not ore, judging by a comparison with log of ore hole no. 3. No chemical analyses were made on holes nos. 1, 2 and 4.

Mining and Milling Equipment and Other Facilities

The applicants have a frame building suitable for living quarters for two or three men. They own a pick-up truck but no other equipment. The proposed exploration would be done by a drilling contractor.

GEOLOGY

The claims of the Calamity Creek Uranium Corporation are in the western part of the Calamity Mesa 7½ minute quadrangle on the southwest flank of the Uncompahgre uplift. Rocks exposed on the Calamity Creek group claims are, in ascending order, the Jurassic Entrada and Carmel formations (undivided on figure 2),

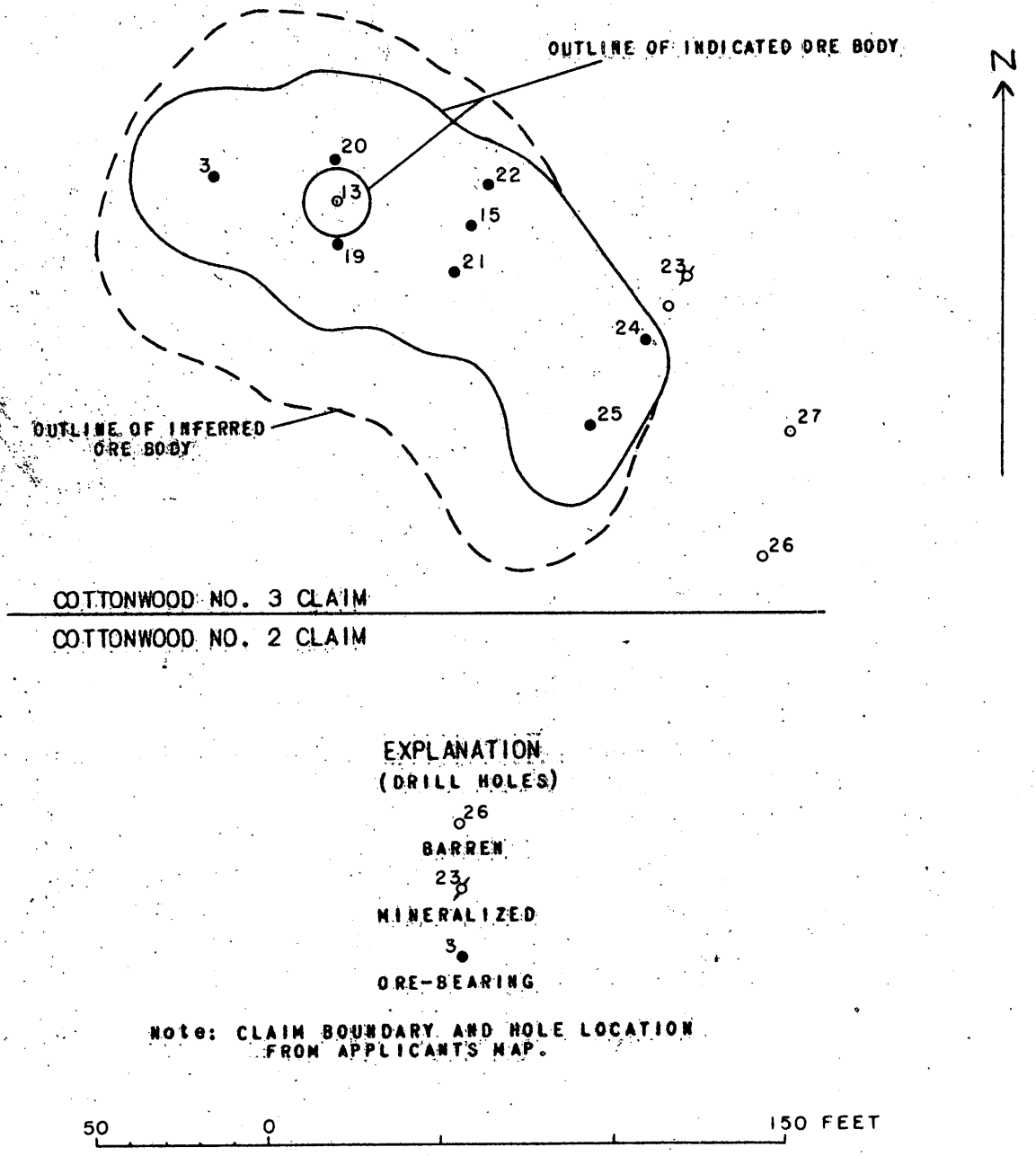


FIGURE 3. ORE BODY ON COTTONWOOD NO. 3 CLAIM, SHOWING LIMITS OF INDICATED AND INFERRED ORE (TABLES 2 AND 3)

which are exposed in the lower part of Calamity Creek, the Jurassic Summerville formation, the Salt Wash and Brushy Basin member of the Jurassic Morrison formation, and the Burro Canyon formation of Cretaceous age, which caps Calamity Mesa in the westernmost part of the claims. The bedded sequence dips about 2 degrees southward (Cater 1955). The base of the Entrada-Carmel formations is not exposed. The thickness and descriptions of the higher units given in the table below are slightly modified from Cater (1955). (Table 1).

Age	Formational Unit	Lithology	Thickness
Cretaceous	Burro Canyon formation	Sandstone and conglomerate	80'+
Jurassic	Morrison formation Brushy Basin member	Variegated shales and mudstones with minor intercolated sandstone beds	400'
	Salt Wash member	Sandstone beds with interbedded mudstone	290'
	Summerville formation	Thin-bedded variegated sandy shale and mudstone	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	Thickness
Sandstone, reddish, locally ore-bearing	30
Mudstone, red	20
Sandstone, thin to cross-bedded, red mudstone splits	40
Mudstone, red; contains lenticular sandstones, locally ore-bearing	60
Sandstone, reddish brown, lenticular	10
Mudstone, red and green with a few thin (1-to 2-foot) sandstone beds; locally mineralized	35
Sandstone (2nd ledge)	40
Mudstone and siltstone, greenish gray; locally mineralized at one place	20
Sandstone (1st ledge)	35
Total thickness of the Salt Wash member	290

The above section is more or less typical of the Salt Wash cliff in the easternmost part of the applicant's claims. The 10-foot lenticular reddish brown sandstone in the above section is exposed for only a few hundred feet along the canyon walls. Another sandstone lens of similar size, but slightly higher in stratigraphic position, contains the small high grade ore body at the Cliff Dweller Mine just south of the subject applicant's claims (figure 2).

ORE DEPOSITS

The Calamity group of Government claims leased to U. S. Vanadium Company lies just north of the Calamity Creek group (figure 2). Drilling by the U. S. Geological Survey in 1948 and early 1949 consisted of 622 diamond drill holes (Stager, 1951, page 13), of which only the more southerly holes are shown on figure 2. 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 V_2O_5. This tonnage was in 26 different ore bodies, ranging from 100 to 7,800 tons (Stager, 1951, table 5). Several of the ore bodies are within the area covered by figure 2 and are shown thereon. 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 3½ feet beneath the sandstone. Where the ore-bearing sandstone is barren but is favorable (Weir, 1952) this alteration zone is about 1½ feet thick.

Most of the tonnage indicated by U. S. Geological Survey drilling is more than 2,000 feet north of the northernmost boundary of the applicant's Calamity Creek group of claims. Southward toward the Calamity Creek group, the ore-bearing sandstone changes from favorable to semi-favorable (Stager, 1951, figure 3). Blocks 1 and 2 (figure 2) indicated by U. S. Geological Survey

drilling on the Government Calamity group (Stager, 1951, table 5) are in the area classed as semi-favorable. Block 1 consisted of only 50 tons of inferred ore containing 0.10 percent U_3O_8, block 2 consisted of 300 tons of combined indicated and inferred ore containing 0.17 percent of U_3O_8. These small reserves illustrate the general tendency of the ore bodies to be small in areas of semi-favorable ground.

Still farther southward on the applicant's Calamity Creek group of claims the top ore-bearing sandstone of the Salt Wash is semi-favorable to unfavorable, as evidenced by many core holes drilled by both the Government and by the applicant (figure 2). Rim exposures of the ore-bearing sandstone were examined at two places by the DMEA geologist and also found to be unfavorable. No associated greenish gray zone is at the top of the underlying mudstone, whereas the mudstone underlying the ore-bearing sandstone at the Government Calamity group, half a mile to the north, is altered through a thickness of $1\frac{1}{2}$ to $3\frac{1}{2}$ feet.

Holes 602 and 606 drilled under U. S. G. S. contract in the northeastern part of the Calamity Creek group were barren (figure 2), and in ground classed as semi-favorable by the U. S. G. S. project geologist (Stager, 1951, figure 3). Four AEC holes 626, 627, 628, and 630 drilled on the Calamity Creek group were all barren and penetrated 30 to 50 feet of reddish or reddish brown, therefore unfavorable sandstone at the top of the Salt Wash. (A.E.C. drill hole 629 was bottomed in Brushy Basin shales and is not shown on figure 2).

Holes drilled by the applicant on the Calamity Creek group penetrated semi-favorable to unfavorable sandstone, though one hole, No. 12, was weakly mineralized (figure 2) and several holes, including no. 3 and its offsets (figure 3) penetrated ore. Drill holes No. 4 and its 10 offsets, of which only Nos. 4 D, 4 DS, and 4 FS are shown on figure 2, explored a narrow area west of the outcropping

rim for a northerly distance of 850 feet on the Cottonwood 2 and 3 claims, but all these holes, including No. 4, are barren and unfavorable. In the opinion of the examining team, the rim exposures and the holes drilled by the applicant and the AEC have demonstrated that the ore-bearing sandstone under the eastern two-thirds of the applicant's claims is semi-favorable to unfavorable, despite some mineralized and ore-bearing holes. Three holes drilled by the A.E.C. in Maverick Canyon on the west side of Calamity Mesa (figure 2) and opposite the Calamity Creek group penetrated barren and unfavorable sandstone (Waulters, 1951, figure 3).

Salt Wash ledges cropping out below the main ore-bearing horizon along the west wall of Calamity Creek are mineralized at a few places. The Cliff Dweller Mine produced from 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 of U_3O_8 and 1.7 percent of V_2O_5. The Wards mine, just across Calamity Creek (figure 2) is in the top ledge of the Salt Wash. Judging from the size of the dump, this mine probably had a small production from an ore body comparable in size to the Cliff Dweller ore body.

Elsewhere along the rim, thin sandstones in the lower part of the Salt Wash (see stratigraphic section) were shown to the DMEA examining team and found to be sufficiently mineralized so that ore samples had been taken, but the total amount present at each of two outcrops is less than one ton.

The small ore pods and small ore bodies in thin sandstones above or below the thick Salt Wash sandstone unit that is ore-bearing to the north and the unfavorability criteria (Weir, 1952) observed in the thick sandstone unit suggest that any ore bodies underlying the Calamity Creek group are not likely to

exceed a few thousand tons; more likely they will consist of widely separated small bodies of less than 1,000 tons each.

ORE RESERVES

A small ore body (figure 3) has been indicated in unfavorable host rock by the applicant's drilling. Chemical analyses of ore-bearing drill holes, and the character of the ore-bearing sandstone are presented in table 2.

Table 2 - Analyses of cores of ore holes drilled on Cottonwood No. 3 claim, Calamity Creek Uranium Corporation
(Analysis by Minerals Assay Laboratory, Grand Junction, Colo.)

Hole No.	Collar Elev. (feet)	Elev. of Inferred top or Salt Wash (feet)	Elev. top of ore zone sampled (feet)	Thickness ore zone sampled (feet)	Chemical Assay $\%U_3O_8$	Chemical Assay $\%V_2O_5$	Thickness of ore-bearing sandstone (feet)	Thickness of green mudstone alteration beneath sandstone (feet)
3	6301	-	6151	1.0	0.20	1.14	No information	No information
15	6297	6167	6149	1.0	0.23	0.97	29	-
19	6299	6164	6152	1.0	0.36	2.00	26	None
20	6301	6156	6153	1.0	0.13	0.79	17+	-
21	6297	6167	6149	2.0	0.11	0.64	30	None
22	6298	6168	6150	1.0	0.13	1.40	29	None
24	6293	6165	6149	1.0	0.61	1.69	29	None
24 a/	6293		6146	1.0	0.12 a/	0.27 a/		
25	6291	6162	6146	1.0	0.24	0.86	29	None

a/ Not used in computation of ore reserves based on chemical analyses

The most paradoxical fact is the presence of red mudstone underlying ore-bearing sandstone, although the sandstone immediately above and below the ore horizon is light gray. The continuity of the top of the ore zone, as shown in the third column, table 2, indicates that the eight drill holes have penetrated one more or less continuous ore body.

The ore reserves indicated and inferred by the applicant's drilling are tabulated in table 3 as follows:

Table 3 - Computation of ore reserves based on drill-hole data (table 2), Cottonwood No. 3 claim, Calamity Creek Uranium Corporation. (Cut-off grade, 0.10% U_3O_8)

Ore Reserve category	Area (feet)	Average thickness (feet)	Tons	Average grade U_3O_8	Average grade V_2O_5
Indicated ore	9750	1.1	760	0.23	1.13
Inferred ore	9000	1.1	700	0.23	1.13

Reserves were computed essentially following U.S.G.S. methods, specifically those used by Stager (1951, pages 23-28) in computing ore blocks indicated and inferred by U.S.G.S. drilling on the Government Calamity group. The lateral limits of both the indicated and inferred ore shown in figure 3 may appear slightly on the liberal side, but it should be noted that the applicant did not drill out the ore body on the north, west, or south sides and, further, did not obtain chemical analyses of the full width of the ore zone. Hence, whatever error may be involved in over-extending the lateral limits of indicated and inferred ore is probably compensated by the limitations of the applicant's drilling and analytical data.

The applicant's calculated reserve for the same ore body is 1018 tons of indicated ore containing from 0.20 to 0.40 percent U_3O_8 and about 1.0 percent V_2O_5.

No sampling was done by the examining team. Several of the ore holes on which the ore reserves were based, were probed in their presence, with results roughly confirming the values reported. The mineralization reported showing in an outcrop of the Salt Wash was checked, radiometrically, substantiating the reported chemical assay of 0.46 percent U_3O_8. The occurrence was some distance below the main ore horizon, however, and did not have any appreciable length, so far as could be seen.

Ore reserves on property which the Atomic Energy Commission through Louis Garbrecht reported as belonging to the applicant corporation were found to be about a mile north of the proposed DMEA exploration area, and to have no bearing on the program.

PROPOSED EXPLORATION

The proposed exploration is in three phases.

Phase 1 consists of 18 holes on wide spread centers. The first three holes were to be cored completely through the Salt Wash member and the other 15 holes were to be entirely non-core. Total drilling was estimated at 8,100 feet of plug bit and 900 feet of core drilling. Phase 1 is actually in the nature of prospecting as it is designed to establish favorability and is not based on known mineralized trends.

Phase 2 consists of 40 holes on 200 foot centers to be drilled in the vicinity of mineralized holes found in Phase 1. An estimated 2,000 feet of core and 14,000 feet of non-core drilling would be required. This phase corresponds more nearly to the normal first stage of a DMEA project. Four holes which would be in Phase 2 have since been drilled in the northeast corner of the property with negative results.

Phase 3 would consist of 40 holes on 75-foot centers to explore mineralized showings found in Phase 2 and would require another 2000 feet of core and

14,000 feet of non-core drilling.

The cost estimate submitted was supported by three bids from independent drilling contractors which were reasonable. The estimates for supervision and the technical services however were high.

CONCLUSIONS AND RECOMMENDATIONS

It is concluded that the Little Girl, Pretty Boy, Cottonwood claims are located in a semi-favorable and unfavorable Salt Wash area, as substantiated by the results of a very substantial amount of drilling which has already been done on and around the property, by the apparent small size of the ore body found, by the size and character of the Cliff Dweller ore body south of the property, and by the unfavorable appearance of the Salt Wash outcrops on the property.

The one significant ore occurrence found by drilling has already been offset, and no further drilling appears to be justified. It is recommended that the application under DMEA 3934 be denied.

1/9/56 glu

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

224 New Customhouse
Denver 2, Colorado

January 3, 1956

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Field Team, Region III

Subject: Joint Report of Examination, DMEA Docket 3934 (Uranium), Calamity Creek Uranium Company, Calamity Creek property, Mesa County, Colorado

Enclosed are the original and three copies of the report pertaining to the above application.

The field examiners found many claim conflicts but because of their belief that the property did not warrant Government participation in exploration, the question of conflicts was not examined further. They recommend that the application be denied and we concur in that recommendation.

DMEA Field Team, Region III

W. M. Traver

By W. M. Traver
Executive Officer

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
1-11-56
(date)

DMEA
Date Rec'd.

DEC 23 1955

BUREAU OF MINES
Denver, Colorado

Building 20
Denver Federal Center
Denver 2, Colorado
December 22, 1955

REGION III

Memorandum

TRANSMITTED
JAN 3 1955

To: Executive Officer, DMEA Field Team, Region III

From: E. N. Harshman
John F. Shaw

Subject: Docket No. DMEA 3934, Calamity Creek Uranium Corporation, Mesa County, Colorado

Enclosed are the original and 9 copies of a Joint engineering and geologic report by F. M. Byers, Jr., Geologist, and M. H. Salsbury, Mining Engineer, covering DMEA Docket No. 3934, Calamity Creek Uranium Corporation.

Calamity Creek Uranium Corporation applied for exploration assistance to explore the Little Girl, Pretty Boy, and Cottonwood claims by 36,100 feet of plug-bit and 4300 feet of core drilling at an estimated cost of $97,135.00.

The property was examined by F. M. Byers, Jr., Geologist, and M. H. Salsbury, Mining Engineer. The examining team concluded that the applicant's property lies well south of the main belt of mineralization in the Calamity Creek District, and that there are no known trends crossing it, and that there is little possibility of finding more than small scattered deposits characteristic of "fringe" areas.

It is recommended that the application be denied.

E. N. Harshman

E. N. Harshman
Member Field Team

John F. Shaw

John F. Shaw
Supervising Mining Engineer

JFS/mw

cc: 9
ENHarshman
DMEA 3934
Chron.

Reviewed by
DMEA OPERATING COMMITTEE
1-11-56
(date)

MINERAL DEPOSITS
DMEA
RECEIVED
DEC 12 1955
U. S.
GEOLOGICAL SURVEY
DENVER, COLORADO

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

December 7, 1955

Memorandum

To: Executive Officer, DMEA Field Team, Region III

Through: E. N. Harshman

TRANSMITTED
JAN 3 1955

From: J. William Hasler

Subject: DMEA 3934 (Uranium), Calamity Creek Uranium Corporation, Little Girl, Pretty Boy, and Cottonwood claims, Mesa County, Colorado

Enclosed is a joint engineering and geologic report by F. M. Byers, Jr., and M. H. Salsbury on the Calamity Creek Uranium Corporation property on Calamity Mesa, Mesa County, Colorado.

The applicant applied for Government assistance to explore for uranium on 15 claims. The total cost of the proposed program was for $97,135.00, of which the Government participation would be $72,851.35 on the 75 percent participation basis.

The property was examined September 29, 1955, in company with Mr. Roy A. Anderson and Mr. Cecil W. McCoy, representatives of the applicant. The property has had some production, although drilling by the U. S. Geological Survey and subsequent geologic work indicate that the ground underlain by the applicant's claims is generally unfavorable for the occurrence of ore deposits. There are also four areas of conflict in the adjoining ground which are in the state of being resolved; however, the applicant did not mention the conflict in the application.

Reviewed by
DMEA OPERATING COMMITTEE
1-11-56
(date)

(DMEA 3934)

The Calamity Mesa area has been extensively drilled by the Geological Survey and substantial tonnages of ore have been discovered in the northern part of Calamity Mesa; however, the drilling to the south, as mentioned before, showed the ground to become semi-favorable to unfavorable for ore deposition.

It is concluded, therefore, that the Little Girl, Pretty Boy, and Cottonwood claims are located in the semi-favorable to unfavorable area, as substantiated by Government and private drilling. The ore bodies, if found, would be of too small size and grade to be commercial, and it is concluded that the chances of finding ore bodies of significant size and grade are not good. It is recommended, therefore, that the application be denied.

Enclosed are the necessary number of illustrations as well as the applicant's brochure.

The Atomic Energy Commission was consulted relative to the appraisal and the program. I concur with the recommendations and conclusions of the examining team that the application for Government assistance be denied.

J. William Hasler

J. William Hasler,
Geologist.

JWH/mlr

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

JOINT REPORT ON EXAMINATION BY EXAMINING TEAM
REGION III

TRANSMITTED
JAN 3 1955

DMEA 3934

CALAMITY CREEK URANIUM CORPORATION

LITTLE GIRL, PRETTY BOY, AND COTTONWOOD CLAIMS

MESA COUNTY, COLORADO

Uranium

Joint Engineering and Geologic Report

By

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

M. E. Salsbury, Mining Engineer
Bureau of Mines

December 22, 1955

Reviewed by
DMEA OPERATING COMMITTEE
1-11-56
(Date)

DMRA 3934

CALAMITY CREEK URANIUM CORPORATION
LITTLE GIRL, PRETTY BOY, AND COTTONWOOD CLAIMS
MESA COUNTY, COLORADO

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DMEA 3934

CALAMITY CREEK URANIUM CORPORATION
LITTLE GIRL, PRETTY BOY, AND COTTONWOOD CLAIMS
MESA COUNTY, COLORADO

INTRODUCTION AND SUMMARY

On July 26, 1955, Calamity Creek Uranium Corporation, 913 First Security Bank Building, Salt Lake City, Utah, applied for Defense Minerals Exploration assistance to explore for uranium on 15 claims on Calamity Mesa, Mesa County, Colorado. The proposal calls for 36,100 feet of plug bit, and 4,300 feet of core drilling in 98 holes at an estimated cost of $97,135.00. Government participation at 75 percent would be $72,851.35.

The property was examined on September 29, 1955 in company with Roy H. Anderson and Cecil W. McCoy, consulting geologist and Director respectively, of the applicant corporation.

The 15 claims included in the DMEA project are owned by the applicant, subject to a royalty due McCoy and two associates. There are four areas of conflict with adjoining ground (fig. 2). Two of these conflicts, one on the north, and a larger area on the west, are with claims belonging to the New Verde Mining Company, a subsidiary of the Newmont Mining Company. Mr. McCoy stated that the conflict on the north was being resolved in the applicant's favor by agreement, but did not mention the west conflict, which is indicated by New Verde maps furnished the Geological Survey. The adverse locations at the northeast corner and along the south boundary are definitely prior to the applicant's locations. Because the possibility of an approval of the project appeared to be remote, the question of claim conflicts was not examined further.

Most of the claim area in the proposed DMEA project is on a 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, north of the applicant's property, and the small ore body found in the vicinity of the applicant's hole no. 3 are in this unit. Several other pods of mineralized material in rim outcrops, and a small deposit at the Cliff Dweller mine, adjoining on the south, are in thin sandstone units below the main ledge. The sandstones on the property, and for some distance north of it, have been classed by the Geological Survey as semi-favorable, becoming unfavorable in the southern portion of the property. This evaluation has been confirmed by the present examination and by the data which were obtained from records of the considerable amount of drilling already accomplished.

All available evidence suggests that ore bodies underlying the claims the applicant proposes to explore do not exceed a few thousand tons; it is more likely that they will consist of small, widely separated bodies of less than 1,000 tons each.

The proposed exploration has been planned to complete work which was partly accomplished by Geological Survey, Atomic Energy Commission, and private drilling. The first stage consists of wide spaced drill holes to blanket the claims in order to determine the favorability of potential ore sands. Three holes are planned to core the entire Salt Wash member. An attempt to extend the small ore body around the applicant's hole no. 3 to the east by further drilling in the vicinity of mineralized hole no. 4 was unsuccessful. Two additional stages of exploration proposed correspond to the normal first and second stages of a DMEA project.

The contract drilling prices quoted from three independent contractors are normal, but the applicant's estimates on overhead costs, particularly supervision

and technical services, are out of line.

It is concluded that the applicant's property lies well south of the main belt of mineralization in the Calamity Creek district, that there are no known trends crossing it, and that there is little possibility of finding more than small scattered deposits characteristic of "fringe" areas. This is substantiated by the rim exposures, by the results of the considerable amount of drilling already done on the property, and by the character of the deposit which has been mined at the Cliff Dweller mine.

It is believed that DMRA projects should be confined to areas of favorability. In the present case, it appears that previous drilling has established adequately that the area is generally unfavorable or, at the best, semi-favorable. Three small local areas of favorability were reported in the application. In one of these, the original ore hole was offset on close centers, blocking out a small ore body, but an effort to show by further drilling that it was in an easterly trend was unsuccessful. The presence of ore in the other two reported favorable areas was not substantiated by gamma-ray logging of the holes, and no chemical analyses were obtained. Additional drilling does not appear to be justified, because the probable reserve of ore which might be disclosed is likely to be insignificant.

Denial of the application under DMRA 3934 is recommended.

ACKNOWLEDGMENTS

Data on the property furnished by the applicant included geologic and radiometric logs, drillers logs and results of chemical analyses of ore samples. The Atomic Energy Commission was consulted through Louis Gerbracht. The complete results of Geological Survey and Atomic Energy Commission drilling on and around the property were made available to the examining team.

LOCATION, TOPOGRAPHY AND CLIMATE

The Little Girl, Pretty Boy, Cottonwood claim group is in secs. 14 and 15, T. 50 N., R. 18 W., New Mexico principal meridian, Mesa County, Colorado (figure 1). The claims are 44 miles north of Uravan, Colorado most of distance over a poor dirt access road connecting with Colorado State Highway 141 at Mesa Creek. A somewhat better route over the Uncompahgre connects with the same highway in Unaweep Canyon. By this route, Grand Junction, Colorado, the nearest major supply center, is 58 miles away.

Half of the claim area, at an altitude of 6,200 to 6,300 feet, is on the moderately sloping bench on the east side of Calamity Mesa overlooking Calamity Creek (figure 2). The eastern end is on the extremely precipitous slope of Calamity Creek Canyon, and the western claims cover a steep slope below the Burro Canyon rim and a narrow strip on top of the mesa.

Operations are feasible throughout the year under normal conditions. Total precipitation is moderate but occurs in heavy storms both summer and winter, after which access may be difficult.

Water for mining purposes is available from springs or surface flow. Mining supplies must come from Grand Junction. All power needs must be met by the individual operator. The most accessible uranium treatment plant is that of Climax Uranium Company in Grand Junction, Colorado.

A frame building on the claims is available for use by exploration personnel. Presumably a drilling contractor would furnish labor and other housing facilities.

The history of the Calamity Mesa district as a vanadium ore producer dates back before World War I. The current activities date from 1949 when the Geological Survey initiated a core drilling project on ground which Union Mines Development Corporation had deeded to the Government. A large amount of drilling

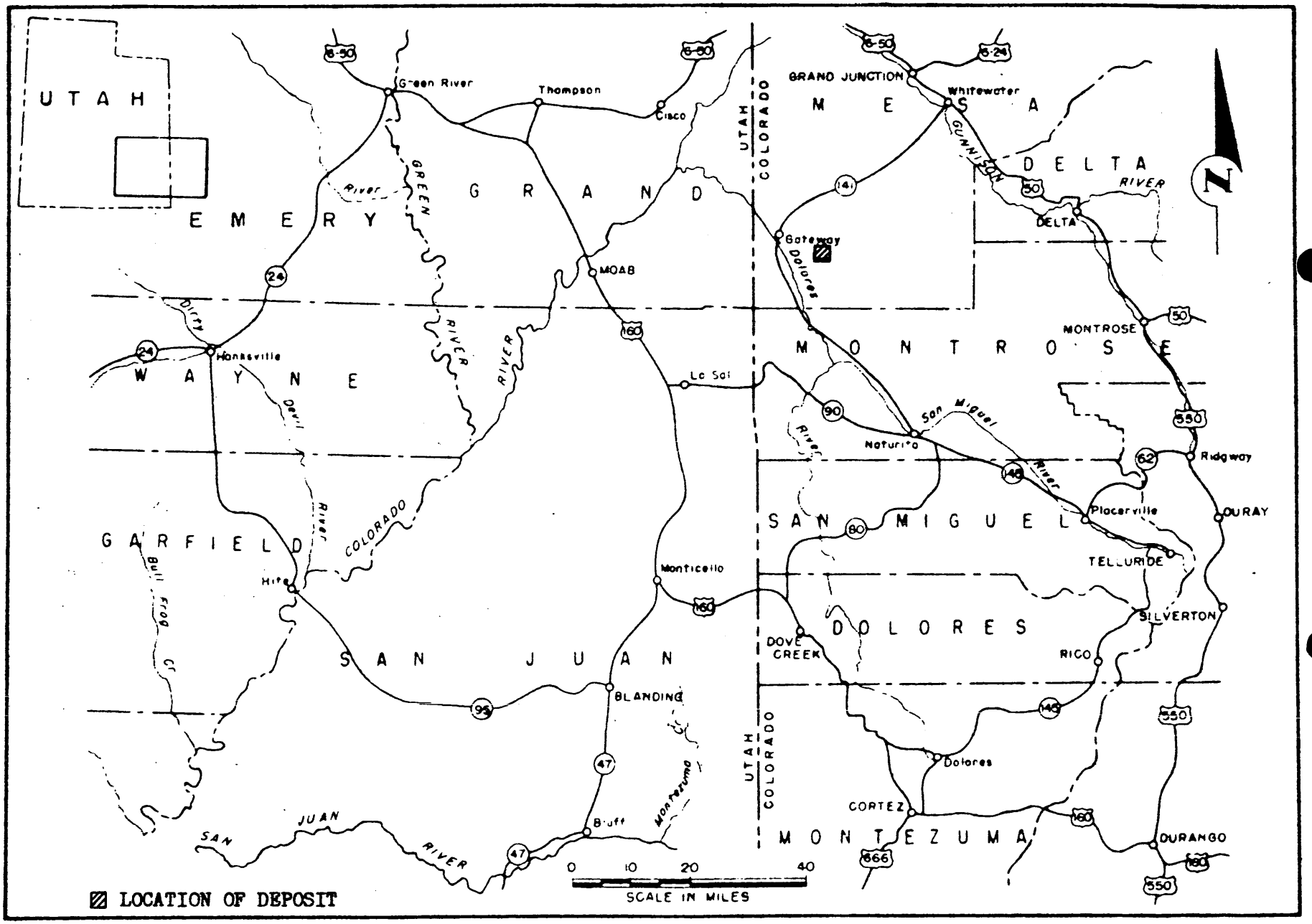


FIGURE 1 - LOCATION MAP, LITTLE GIRL, PRETTY BOY AND COTTONWOOD CLAIMS, CALAMITY CREEK URANIUM CORPORATION, MESA COUNTY, COLO. DMEA 3934

exploration has been done by the Geological Survey, and by the Atomic Energy Commission on adjoining privately owned ground.

A very significant production has been made from ore bodies in favorable ground on Government owned claims, as well as other property in sections 10 and 11. This ground, however, is north of the applicant's ground. As an indication of the size of ore bodies in favorable ground, the total production through September 1955 from 7 of the Calamity claims, with that prior to 1944 estimated, is 38,000 tons. The average content of ore mined since 1949 has been 0.36 percent U_3O_8 and 1.60 percent V_2O_5.

This is in contrast to the production from the Cliff Dweller mine in ground classed as unfavorable, which adjoins the applicant's ground on the south, given in Atomic Energy Commission records as follows:

PERIOD	TONS	U_3O_8 (percent)	V_2O_5 (percent)
Prior to 1954	394.76	0.34	1.60
Jan.-June 1954	108.36	0.32	1.66
July-Dec. 1954	168	0.31	1.61
Jan.-Mar. 1955	115	0.37	1.63
Mar.-June 1955	151	0.44	1.95
TOTALS	847.12	0.35	1.67

The Cliff Dweller mine was not in operation at the time of the examination, but an inspection of the workings indicated that all of the minable ore in sight had been removed.

There has been no production from the Little Girl, Pretty Boy, Cottonwood group.

OWNERSHIP AND EXTENT

The 15 claims in the group included in the DMEA proposal were sold to the Calamity Creek Uranium Corporation by Peter Kassch, Cecil McCoy and Warren Wright for a consideration of $20,000.00, secured by a promissory note due and

payable only out of ore returns. The locations were recorded at the Mesa County Courthouse in Book 554, pages 497 to 509, and Book 605, pages 84 and 85. A check at the Courthouse shows Pretty Boy No. 6 located on September 26, 1951 and recorded on October 4, 1951 in Book 554, page 503. An amended location was filed on December 7, 1953. The original location certificate is signed by William E. Wright and Warren E. Wright. A map of the claims was filed on September 9, 1955 and recorded in Book 660, page 155. A copy of the quit-claim deed to Calamity Creek Uranium Corporation from Kanach, Wright and McCoy was furnished with application. The acquisition of a part interest in the claims by Kanach and McCoy was not documented.

There are four areas of conflict with adjoining claims (figure 2):

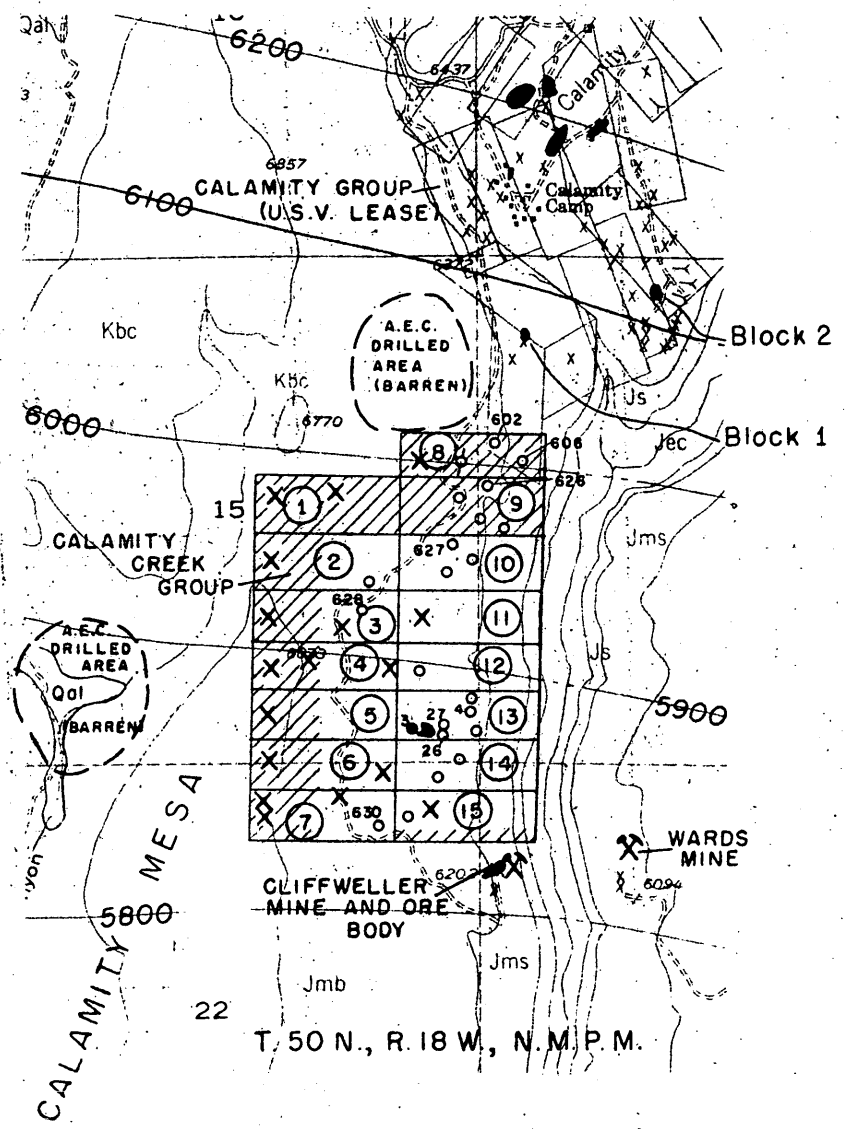
(1) That part of Little Girl and Little Girl No. 3 in the northwest quarter of section 14 is in conflict with ground withdrawn by the Atomic Energy Commission and is invalid.

(2) Along the south boundary, Cottonwood No. 1 overlaps Cliff Dweller No. 1, a prior location.

(3) On the north, the balance of Little Girl and Little Girl No. 3, as well as Little Girl No. 2 are overlapped by the New Verde Mining Company's Tinhorn Nos. 2, 4, 6 and 7. The applicant states that this conflict is about to be resolved in their favor.

(4) On the west, about half of the applicant's west row of 7 claims is in conflict with New Verde claims, and there is a double conflict of part of the same area with the Red Cliff and Cliff No. 1 and No. 2 claims. The latter are recent locations and are not believed to be valid but the New Verde locations may have some validity.

Because of the probable recommendations for denial on the DMEA application, the applicant was not requested to clear up these conflicts.



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.

CLAIM INDEX

1 LITTLE GIRL NO. 2
2 PRETTY BOY NO. 6
3 PRETTY BOY NO. 5
4 PRETTY BOY NO. 4
5 COTTONWOOD NO. 6
6 COTTONWOOD NO. 5
7 COTTONWOOD NO. 4
8 LITTLE GIRL NO. 3
9 LITTLE GIRL
10 PRETTY BOY NO. 3
11 PRETTY BOY NO. 2
12 PRETTY BOY NO. 1
13 COTTONWOOD NO. 3
14 COTTONWOOD NO. 2
15 COTTONWOOD NO. 1

N

2000 0 4000 FEET

EXPLANATION

Qal	QUATERNARY ALLUVIUM
Kbc	CRETACEOUS BURRO CANYON FORMATION
Jmb / Jms	JURASSIC MORRISON FORMATION: BRUSHY BASIN MEMBER, SALT WASH MEMBER
Js	JURASSIC SUMMERVILLE FORMATION
Jec	JURASSIC ENTRADA SANDSTONE AND CARMEL FORMATIONS, UNDIVIDED
~	GEOLOGIC CONTACT
6100	STRUCTURE CONTOUR DRAWN ON TOP OF ENTRADA SANDSTONE. INTERVAL 100 FEET
●	ORE BODY
▨	CLAIM AREA IN CONFLICT
x	PROSPECT
	DRILL HOLES ON CALAMITY CREEK GROUP (NOT SHOWN ELSEWHERE); HOLE NUMBERS 602 AND 606 DRILLED BY U.S.G.S.; 626, 627, 628, AND 630 DRILLED BY A.E.C.; OTHER HOLES DRILLED BY CALAMITY CREEK URANIUM CORPORATION; (CLOSELY SPACED HOLES OFFSETTING HOLES NO. 3 AND 4 NOT SHOWN)
○	BARREN
ϕ	WEAKLY MINERALIZED
●	ORE-BEARING
X	DRILL HOLE SITE PROPOSED BY CALAMITY CREEK URANIUM CORPORATION

FIGURE 2. GEOLOGIC MAP OF PART OF CALAMITY MESA AREA, SHOWING ORE BODIES, EXISTING DRILL HOLES (ON CALAMITY CREEK GROUP ONLY) AND DRILL HOLES PROPOSED BY APPLICANT ON LITTLE GIRL, PRETTY BOY, AND COTTONWOOD GROUPS OF CLAIMS, CALAMITY CREEK URANIUM CORPORATION, MESA COUNTY, COLORADO.

PRESENT STATUS

Exploration and Development

Exploration done to date on the property has consisted of an access road to reach the Salt Wash outcropping above Calamity Creek, a small amount of hand excavation on two minor "shows" in outcrops, and 42 drill holes. Of these drill holes 2 were drilled by the Geological Survey, 6 by the Atomic Energy Commission, and 34 by the applicant. Of the latter 12 holes were wide spaced holes and 22 were offset holes (figures 2 and 3). Government agencies also drilled adjoining ground immediately north of the property, and an area in Maverick Canyon on the west side of Calamity Mesa. The results of all Government drilling, on the property or near it, were negative.

The applicant reported ore in holes Nos. 1, 2 and 3 and mineralization in hole No. 4. Chemical analyses of material from hole No. 3 indicated it was of ore grade. This is the hole which was offset with good results. A gamma-ray log of hole No. 3 made by the Century Geophysical Corporation checked the chemical analyses, but logs of holes no. 1 and 2, as well as hole no. 4, barely indicate mineralization, and certainly not ore, judging by a comparison with log of ore hole no. 3. No chemical analyses were made on holes nos. 1, 2 and 4.

Mining and Milling Equipment and Other Facilities

The applicants have a frame building suitable for living quarters for two or three men. They own a pick-up truck but no other equipment. The proposed exploration would be done by a drilling contractor.

GEOLOGY

The claims of the Calamity Creek Uranium Corporation are in the western part of the Calamity Mesa 7½ minute quadrangle on the southwest flank of the Uncompahgre uplift. Rocks exposed on the Calamity Creek group claims are, in ascending order, the Jurassic Entrada and Carmel formations (undivided on figure 2),

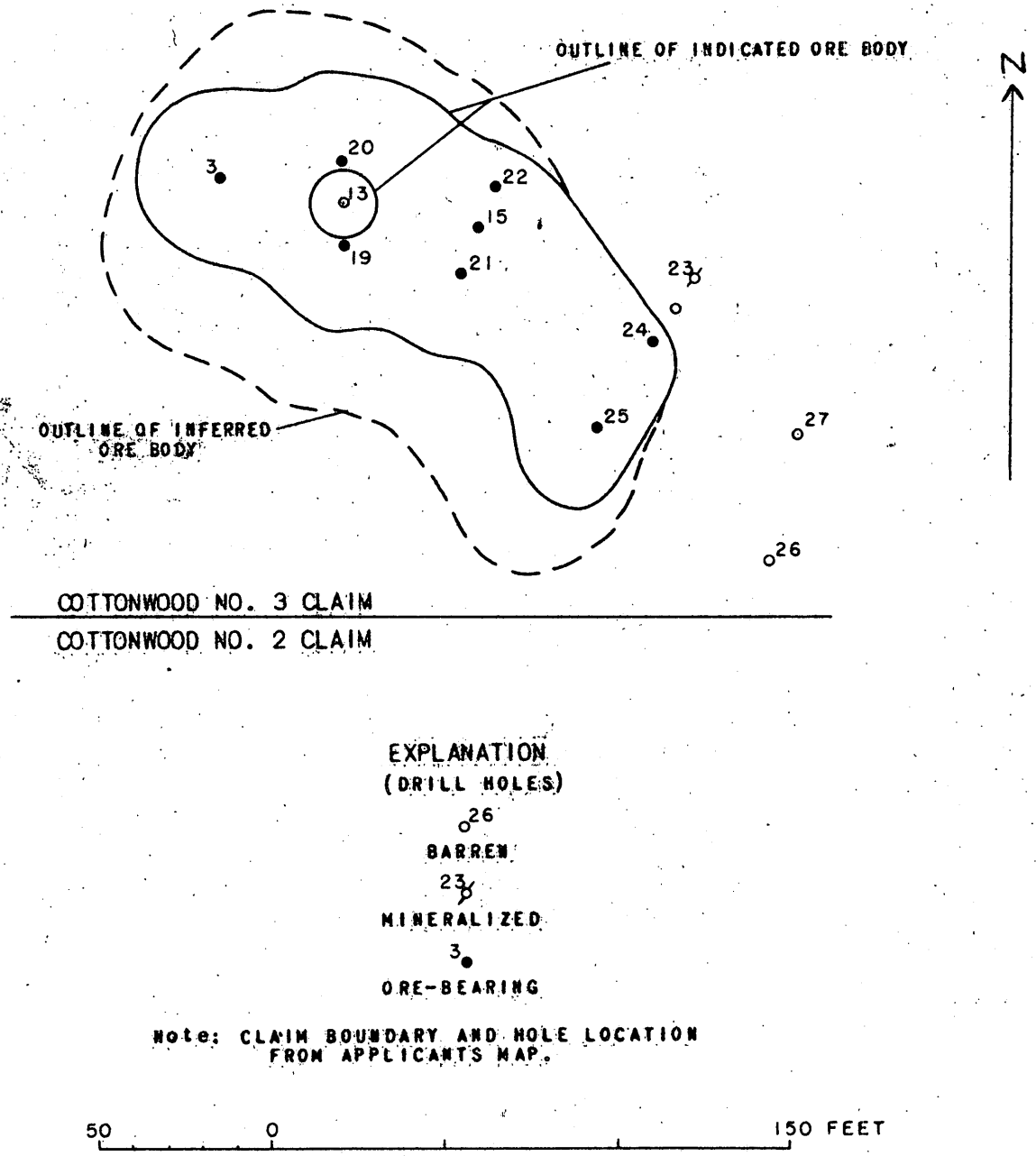


FIGURE 3. ORE BODY ON COTTONWOOD NO. 3 CLAIM, SHOWING LIMITS OF INDICATED AND INFERRED ORE (TABLES 2 AND 3)

which are exposed in the lower part of Calamity Creek, the Jurassic Summerville formation, the Salt Wash and Brushy Basin member of the Jurassic Morrison formation, and the Burro Canyon formation of Cretaceous age, which caps Calamity Mesa in the westernmost part of the claims. The bedded sequence dips about 2 degrees southward (Cater 1955). The base of the Entrada-Carmel formations is not exposed. The thickness and descriptions of the higher units given in the table below are slightly modified from Cater (1955). (Table 1).

Age	Formational Unit	Lithology	Thickness
Cretaceous	Burro Canyon formation	Sandstone and conglomerate	80'+
Jurassic	Morrison formation Brushy Basin member	Variegated shales and mudstones with minor interbedded sandstone beds	400'
	Salt Wash member	Sandstone beds with interbedded mudstone	290'
	Summerville formation	Thin-bedded variegated sandy shale and mudstone	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	Thickness
Sandstone, reddish, locally ore-bearing	30
Mudstone, red	20
Sandstone, thin to cross-bedded, red mudstone splits	40
Mudstone, red; contains lenticular sandstones, locally ore-bearing	60
Sandstone, reddish brown, lenticular	10
Mudstone, red and green with a few thin (1-to 2-foot) sandstone beds; locally mineralized	35
Sandstone (2nd ledge)	40
Mudstone and siltstone, greenish gray; locally mineralized at one place	20
Sandstone (1st ledge)	35
Total thickness of the Salt Wash member	290

The above section is more or less typical of the Salt Wash cliff in the easternmost part of the applicant's claims. The 10-foot lenticular reddish brown sandstone in the above section is exposed for only a few hundred feet along the canyon walls. Another sandstone lens of similar size, but slightly higher in stratigraphic position, contains the small high grade ore body at the Cliff Dweller Mine just south of the subject applicant's claims (figure 2).

ORE DEPOSITS

The Calamity group of Government claims leased to U. S. Vanadium Company lies just north of the Calamity Creek group (figure 2). Drilling by the U. S. Geological Survey in 1948 and early 1949 consisted of 622 diamond drill holes (Stager, 1951, page 13), of which only the more southerly holes are shown on figure 2. 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 V_2O_5. This tonnage was in 26 different ore bodies, ranging from 100 to 7,800 tons (Stager, 1951, table 5). Several of the ore bodies are within the area covered by figure 2 and are shown thereon. 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 3½ feet beneath the sandstone. Where the ore-bearing sandstone is barren but is favorable (Weir, 1952) this alteration zone is about 1½ feet thick.

Most of the tonnage indicated by U. S. Geological Survey drilling is more than 2,800 feet north of the northernmost boundary of the applicant's Calamity Creek group of claims. Southward toward the Calamity Creek group, the ore-bearing sandstone changes from favorable to semi-favorable (Stager, 1951, figure 3). Blocks 1 and 2 (figure 2) indicated by U. S. Geological Survey

drilling on the Government Calamity group (Stager, 1951, table 5) are in the area classed as semi-favorable. Block 1 consisted of only 50 tons of inferred ore containing 0.10 percent U_3O_8, block 2 consisted of 300 tons of combined indicated and inferred ore containing 0.17 percent of U_3O_8. These small reserves illustrate the general tendency of the ore bodies to be small in areas of semi-favorable ground.

Still farther southward on the applicant's Calamity Creek group of claims the top ore-bearing sandstone of the Salt Wash is semi-favorable to unfavorable, as evidenced by many core holes drilled by both the Government and by the applicant (figure 2). Nine exposures of the ore-bearing sandstone were examined at two places by the RMSA geologist and also found to be unfavorable. No associated greenish gray zone is at the top of the underlying mudstone, whereas the mudstone underlying the ore-bearing sandstone at the Government Calamity group, half a mile to the north, is altered through a thickness of 1½ to 3½ feet.

Holes 602 and 606 drilled under U. S. G. S. contract in the northeastern part of the Calamity Creek group were barren (figure 2), and in ground classed as semi-favorable by the U. S. G. S. project geologist (Stager, 1951, figure 3). Four AEC holes 626, 627, 628, and 630 drilled on the Calamity Creek group were all barren and penetrated 30 to 50 feet of reddish or reddish brown, therefore unfavorable sandstone at the top of the Salt Wash. (A.E.C. drill hole 629 was bottomed in Brushy Basin shales and is not shown on figure 2).

Holes drilled by the applicant on the Calamity Creek group penetrated semi-favorable to unfavorable sandstone, though one hole, No. 12, was weakly mineralized (figure 2) and several holes, including no. 3 and its offsets (figure 3) penetrated ore. Drill holes No. 4 and its 10 offsets, of which only Nos. 4 D, 4 DS, and 4 FS are shown on figure 2, explored a narrow area west of the outcropping

rim for a northerly distance of 850 feet on the Cottonwood 2 and 3 claims, but all these holes, including No. 4, are barren and unfavorable. In the opinion of the examining team, the rim exposures and the holes drilled by the applicant and the AEC have demonstrated that the ore-bearing sandstone under the eastern two-thirds of the applicant's claims is semi-favorable to unfavorable, despite some mineralized and ore-bearing holes. Three holes drilled by the A.E.C. in Maverick Canyon on the west side of Calamity Mesa (figure 2) and opposite the Calamity Creek group penetrated barren and unfavorable sandstone (Faulters, 1951, figure 3).

Salt Wash ledges cropping out below the main ore-bearing horizon along the west wall of Calamity Creek are mineralized at a few places. The Cliff Dweller Mine produced from 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 190 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 of U_3O_8 and 1.7 percent of V_2O_5. The Wards mine, just across Calamity Creek (figure 2) is in the top ledge of the Salt Wash. Judging from the size of the dump, this mine probably had a small production from an ore body comparable in size to the Cliff Dweller ore body.

Elsewhere along the rim, thin sandstones in the lower part of the Salt Wash (see stratigraphic section) were shown to the DMEA examining team and found to be sufficiently mineralized so that ore samples had been taken, but the total amount present at each of two outcrops is less than one ton.

The small ore pods and small ore bodies in thin sandstones above or below the thick Salt Wash sandstone unit that is ore-bearing to the north and the unfavorability criteria (Weir, 1958) observed in the thick sandstone unit suggest that any ore bodies underlying the Calamity Creek group are not likely to

exceed a few thousand tons; more likely they will consist of widely separated small bodies of less than 1,000 tons each.

ORE RESERVES

A small ore body (figure 3) has been indicated in unfavorable host rock by the applicant's drilling. Chemical analyses of ore-bearing drill holes, and the character of the ore-bearing sandstone are presented in table 2.

Table 2 - Analyses of cores of ore holes drilled on Cottonwood No. 3 claim, Calamity Creek Uranium Corporation
(Analysis by Minerals Assay Laboratory, Grand Junction, Colo.)

Hole No.	Collar Elev. (feet)	Elev. of Inferred top of Salt Wash (feet)	Elev. top of ore zone sampled (feet)	Thickness ore zone sampled (feet)	Chemical Assay U_3O_8	Chemical Assay V_2O_5	Thickness of ore-bearing sandstone (feet)	Thickness of green mudstone alteration beneath sandstone (feet)
3	6301	-	6151	1.0	0.20	1.14	No information	No information
15	6297	6167	6149	1.0	0.23	0.97	29	-
19	6299	6164	6152	1.0	0.36	2.00	26	None
20	6301	6156	6153	1.0	0.13	0.79	17+	-
21	6297	6167	6149	2.0	0.11	0.64	30	None
22	6298	6168	6150	1.0	0.13	1.40	29	None
24	6293	6165	6149	1.0	0.61	1.69	29	None
a/ 24	6293		6146	1.0	a/ 0.12	a/ 0.27		
25	6291	6162	6146	1.0	0.24	0.86	29	None

a/ Not used in computation of ore reserves based on chemical analyses

The most paradoxical fact is the presence of red mudstone underlying ore-bearing sandstone, although the sandstone immediately above and below the ore horizon is light gray. The continuity of the top of the ore zone, as shown in the third column, table 2, indicates that the eight drill holes have penetrated one more or less continuous ore body.

The ore reserves indicated and inferred by the applicant's drilling are tabulated in table 3 as follows:

Table 3 - Computation of ore reserves based on drill-hole data (table 2), Cottonwood No. 3 claim, Calamity Creek Uranium Corporation. (Cut-off grade, 0.10% U_3O_8)

Ore Reserve category	Area (feet)	Average thickness (feet)	Tons	Average grade U_3O_8	Average grade V_2O_5
Indicated ore	9750	1.1	760	0.23	1.13
Inferred ore	9000	1.1	700	0.23	1.13

Reserves were computed essentially following U.S.G.S. methods, specifically those used by Stager (1951, pages 23-28) in computing ore blocks indicated and inferred by U.S.G.S. drilling on the Government Calamity group. The lateral limits of both the indicated and inferred ore shown in figure 3 may appear slightly on the liberal side, but it should be noted that the applicant did not drill out the ore body on the north, west, or south sides and, further, did not obtain chemical analyses of the full width of the ore zone. Hence, whatever error may be involved in over-extending the lateral limits of indicated and inferred ore is probably compensated by the limitations of the applicant's drilling and analytical data.

The applicant's calculated reserve for the same ore body is 1018 tons of indicated ore containing from 0.20 to 0.40 percent U_3O_8 and about 1.0 percent V_2O_5.

No sampling was done by the examining team. Several of the ore holes on which the ore reserves were based, were probed in their presence, with results roughly confirming the values reported. The mineralization reported showing in an outcrop of the Salt Wash was checked, radiometrically, substantiating the reported chemical assay of 0.46 percent U_3O_8. The occurrence was some distance below the main ore horizon, however, and did not have any appreciable length, so far as could be seen.

Ore reserves on property which the Atomic Energy Commission through Louis Garbrecht reported as belonging to the applicant corporation were found to be about a mile north of the proposed DMEA exploration area, and to have no bearing on the program.

PROPOSED EXPLORATION

The proposed exploration is in three phases.

Phase 1 consists of 18 holes on wide spread centers. The first three holes were to be cored completely through the Salt Wash member and the other 15 holes were to be entirely non-core. Total drilling was estimated at 8,100 feet of plug bit and 900 feet of core drilling. Phase 1 is actually in the nature of prospecting as it is designed to establish favorability and is not based on known mineralized trends.

Phase 2 consists of 40 holes on 200 foot centers to be drilled in the vicinity of mineralized holes found in Phase 1. An estimated 2,000 feet of core and 14,000 feet of non-core drilling would be required. This PHASE corresponds more nearly to the normal first stage of a DMEA project. Four holes which would be in Phase 2 have since been drilled in the northeast corner of the property with negative results.

Phase 3 would consist of 40 holes on 75-foot centers to explore mineralized showings found in Phase 2 and would require another 2000 feet of core and

14,000 feet of non-core drilling.

The cost estimate submitted was supported by three bids from independent drilling contractors which were reasonable. The estimates for supervision and the technical services however were high.

CONCLUSIONS AND RECOMMENDATIONS

It is concluded that the Little Girl, Pretty Boy, Cottonwood claims are located in a semi-favorable and unfavorable Salt Wash area, as substantiated by the results of a very substantial amount of drilling which has already been done on and around the property, by the apparent small size of the ore body found, by the size and character of the Cliff Dweller ore body south of the property, and by the unfavorable appearance of the Salt Wash outcrops on the property.

The one significant ore occurrence found by drilling has already been offset, and no further drilling appears to be justified. It is recommended that the application under RMMA 3934 be denied.

8/30/55 gla

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

RECEIVED
AUG 29 1955

August 25, 1955

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Chairman of the Operating Committee, DMEA

From: Executive Officer, DMEA Field Team, Region III

Subject: Appraisal relative to necessity for a field examination. Docket DMEA 3934 (Uranium), Calamity Creek Uranium Corporation, Mesa County, Colorado

Enclosed are four copies of a memorandum dated August 22, 1955 and four copies of a memorandum dated July 22, 1955 from the Grand Junction office on the subject docket.

A field investigation is in order and the examination date will be set as soon as possible.

The copy of the Bureau of Mines brochure has been forwarded to the engineer.

W. M. Traver

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

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

RECEIVED
AUG 29 1955

August 22, 1955

Memorandum

To: Executive Officer, Region III

Through: E. N. Hansmann

From: J. William Hasler, DGS
M. H. Salsbury, UGM

Subject: Appraisal relative to necessity for a field examination.
DMA 3934 (Domestic) CALAMITY CREEK URANIUM CORPORATION
Mesa County, Colorado.

The application was reviewed by the Grand Junction office July 22, 1955, and a memo to E. N. Hansmann from J. W. Hasler on that date recommended a field examination; a copy of Mr. Hasler's memo is attached. The examination date will be set as soon as possible.

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

July 22, 1955

Memorandum

RECEIVED
AUG 29 1955

To: N. N. Harshman

From: J. William Hasler

Subject: Calamity Creek Uranium Corporation,
913 First Security Bank Bldg., Salt Lake City, Utah

Enclosed are four copies of application form 4F-103, which have been completed by the Calamity Creek Uranium Company. The consulting geologist, Mr. Ray Anderson, brought them to this office Monday, July 18, and we reviewed them with him at that time.

In view of your recent memo regarding processing of applications, I thought it just as well to review them in light of a possible field examination.

The subject property lies south of the area covering the Calamity group of claims on Calamity Mesa, Mesa County, Colo. The Survey drilling in the most southern part of the Calamity group of claims was not too encouraging; however, the Calamity group of claims have produced a substantial tonnage of ore and the drilling established an estimated reserve of carnotite-bearing material totaling 47,100 tons of ore averaging 0.33 percent U_3O_8 and 1.2 percent V_2O_5. It is, therefore, deemed advisable, under these circumstances, that the subject property should require a field examination.

/s/ J. William Hasler
J. William Hasler,
Geologist

JWH/alr
Enclosures

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

RECEIVED
AUG 28 1955

August 25, 1955

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Chairman of the Operating Committee, DMEA

From: Executive Officer, DMEA Field Team, Region III

Subject: Appraisal relative to necessity for a field examination. Docket DMEA 3934 (Uranium), Calamity Creek Uranium Corporation, Mesa County, Colorado

Enclosed are four copies of a memorandum dated August 22, 1955 and four copies of a memorandum dated July 22, 1955 from the Grand Junction office on the subject docket.

A field investigation is in order and the examination date will be set as soon as possible.

The copy of the Bureau of Mines brochure has been forwarded to the engineer.

W. M. Traver

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

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

August 22, 1955

Memorandum

To: Executive Officer, Region III

Through: E. N. Harshman

From: J. William Hasler, USGS
M. H. Salsbury, USBM

Subject: Appraisal relative to necessity for a field examination. DMEA 3934 (Uranium) GALAMITY CREEK URANIUM CORPORATION Mesa County, Colorado.

The application was reviewed by the Grand Junction office July 22, 1955, and a memo to E. N. Harshman from J. W. Hasler on that date recommended a field examination; a copy of Mr. Hasler's memo is attached. The examination date will be set as soon as possible.

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

July 22, 1955

Memorandum

To: E. N. Harshman

RECEIVED
AUG 29 1955

From: J. William Hasler

Subject: Calamity Creek Uranium Corporation,
913 First Security Bank Bldg., Salt Lake City, Utah

Enclosed are four copies of application form MF-103, which have been completed by the Calamity Creek Uranium Company. The consulting geologist, Mr. Roy Anderson, brought them to this office Monday, July 18, and we reviewed them with him at that time.

In view of your recent memo regarding processing of applications, I thought it just as well to review them in light of a possible field examination.

The subject property lies south of the area covering the Calamity group of claims on Calamity Mesa, Mesa County, Colo. The Survey drilling in the most southern part of the Calamity group of claims was not too encouraging; however, the Calamity group of claims have produced a substantial tonnage of ore and the drilling established an estimated reserve of carnotite-bearing material totaling 47,100 tons of ore averaging 0.33 percent U_3O_8 and 1.2 percent V_2O_5. It is, therefore, deemed advisable, under these circumstances, that the subject property should require a field examination.

/s/ J. William Hasler
J. William Hasler,
Geologist

JWH/mlr
Enclosures

Surname 700

Ching
Geehan
Kilsgaard
Selfridge
Ellis

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

AUG 25 1955

Calamity Creek Uranium Co.
913 First Security Bank Building
Salt Lake City, Utah

Re: Docket No. DMEA-3934 (Uranium)
Calamity Creek Property
Mesa County, Colorado

Gentlemen:

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 make a field examination of your property 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,

C. O. Mittendorf (for)

Administrator

GSelfridge:EWEllis:MChing:gla:am
8-22-55 - 8-24-55
cc to: Admr. Reading File
Docket
Code 700
Mr. Ching
DMEA Field Team, Region III(2)

RCB

Surname 700

Ching
Selfridge
Ellis

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

AUG 2 5 1955

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

Re: Docket No. DMEA-3934 (Uranium)
Calamity Creek Property
Calamity Creek Uranium Co.
Mesa County, Colorado

Dear Mr. Traver:

Enclosed are copies of memoranda from John E. Crawford, dated August 5, and W. P. Williams, dated August 12, 1955, members of the Uranium Commodity Committee.

We concur with the suggestion that a field examination of the property be made.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (SHS)

Enclosures

/s/ Robert W. Geehan (SHS)
Member, Bureau of Mines

Thor H. Kiilsgaard (SHS)
Member, Geological Survey

EWEllis:gla:am
8-22-55: 8-24-55
cc to: Admr. Reading File
Operating Committee
Docket
Messrs. J.E.Crawford,Rm.3641
T.H.Kiilsgaard, ~~XXXXXXXXXXX~~ Rm.5222
J.O.Hosted,Rm.3210,GSA
Code 700
Mr. Ching

8/12/55 gla

IN REPLY REFER TO:

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

August 12, 1955

Memorandum

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

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

Subject: Review of DMEA application, Docket No. 3934 (uranium), Calamity Creek Uranium Company, Gateway Mining District, Mesa County, Colorado.

The applicant proposes to explore for uranium ore on 15 unpatented mining claims on Calamity Mesa by means of a three-stage core and non-core drilling program. The project, as estimated by the applicant, would cost $97,135.

The application is accompanied by three bids from reputable drilling concerns, so drilling costs are in line. Costs for labor and supervision, however, are exorbitant. On Calamity Mesa there is no reason to believe that excellent core recovery will not be obtained. Under those conditions it should be possible to probe the holes much cheaper with a portable hand counter with much less stand-by time. Total probing and stand-by costs are estimated by the applicant at $8,130.

The property is located near existing, producing mines, and the applicant has found ore-grade material and mineralization in three core-drill holes on the property. As a result further exploration seems warranted.

The Executive Officer, Region III, has requested (memo to J. W. Hasler and J. F. Shaw, July 28, 1955) a field examination and report; and I concur with that action.

W P Williams

W. P. Williams

RECEIVED
AUG 12 1955

8/8/55 glu

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

RECEIVED
AUG - 5 1955

August 5, 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 3934, Calamity Creek Uranium Corporation, Mesa County, Colorado

I have reviewed the attached application for assistance, Calamity Creek Uranium Corporation, DMEA Docket 3934; and I have discussed it with Joseph O. Hosted, Washington representative of the Atomic Energy Commission.

The Calamity Creek Uranium Corporation drilled 8 holes on the claims, 3 of which were mineralized. Samples from only 1 of the 3 holes were chemically analyzed. Analyses indicated a U_3O_8 content of 0.20 percent. The degree of mineralization of the other 2 holes was not determined by the applicant. Holes were located on claims adjacent to the rim, with one exception and this hole was not mineralized.

The applicant's drilling costs appear in order and are justified with enclosed bids by contractors. Phase 1 and Phase 2 plans as proposed by the applicant may be sound, but I hesitate to recommend drilling holes on 75 foot centers for purely exploration purposes as the applicant suggests, under Phase 3.

Inasmuch as the applicant has shown some initiative and attempted some basic exploration work, because results of this work was reasonably favorable, and owing to the geologic favorability of the area, I suggest that a field examination be made of the property, and that the Field Team consult with Mr. Ernest R. Gordon, Atomic Energy Commission, Grand Junction, Colorado.

I note that under the new procedure for processing DMEA applications, described in the DMEA Field Team's memorandum of July 11, 1955, to Messrs. Wilson, Osterstock, Hasler, and Shaw, an examination of this property has already been ordered. Mr. Hosted will delay his decision on this docket until the Field Team report is forwarded to Washington for review by the Commodity Committee members.

John E Crawford

John E. Crawford

Attachment

August 3, 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-3934 Calamity Creek Uranium Co.

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

Calamity Creek Uranium Co.
913 First Security Bank Bldg.
Salt Lake City, Utah

August 3, 1955
Subject: DMEA-3934
Re: Exploration Assistance
Calamity Creek

Gentlemen:

The receipt of your application dated July 15, 1955 for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA-3934 and referred to the Rare and Miscellaneous 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

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

RECEIVED AUG 1 1955

224 New Customhouse
Denver 2, Colorado

July 28, 1955

Memorandum

To: Chairman, Operating Committee, DMEA

From: Executive Officer, DMEA Field Team, Region III

Subject: Application for DMEA Aid, Uranium, Calamity Creek Uranium Corporation, Mesa County, Colorado

Enclosed are two copies of the following:

1. The subject application

2. Letter from J. W. Hasler dated July 22, 1955

3. Letter from E. N. Harshman dated July 25, 1955

4. Memorandum from the DMEA Field Team, Region III to J. W. Hasler and J. F. Shaw.

W. M. Traver

W. M. Traver

Enclosures

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

RECEIVED
AUG - 1955

224 New Customhouse
Denver 2, Colorado

July 26, 1955

Memorandum

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

From: Executive Officer, DMEA Field Team, Region III

Subject: Application for DMEA Aid, Uranium, Calamity Creek Uranium Corporation, Mesa County, Colorado

Enclosed is a copy of the subject application in the amount of $97,135.00.

A field examination and suitable report are required.

You will be advised of the docket number at a later date.

W. M. Traver
W. M. Traver

Enclosure

HMC:sr

cc Subject
Harshman
Chairman Op. Comm. (2)
Chron

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Defense Minerals Exploration Administration
Denver Federal Center
Denver, Colorado

REFER TO: DMEA Rec'd

July 25, 1

Memorandum

To: Executive Officer, DMEA Field Team, Region III

From: E. N. Harshman

Subject: DMEA Docket _____ (uranium), Calamity Creek Uranium Corporation, Mesa County, Colorado

Enclosed are four copies of an application for exploration assistance on the Little Girl, Pretty Boy, and Cottonwood claims of the subject company, and one copy of a review of the application by geologist J. W. Hasler, U. S. Geological Survey.

In view of the new system of processing Plateau uranium applications, a field examination is in order.

E. N. Harshman

E. N. Harshman
Member, Field Team

Enclosures (5)

ENHarshman:arh

IN REPLY REFER TO:

MINERAL DEPOSITS
DMEA
RECEIVED
JUL 25 1955
GEOLOGICAL SURVEY
DENVER, COLORADO

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

[redacted]

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

July 22, 1955

DMEA
Denver

JUL 6 1955

Memorandum

To: E. N. Harshman

From: J. William Hasler

Subject: Calamity Creek Uranium Corporation,
913 First Security Bank Bldg., Salt Lake City, Utah

Enclosed are four copies of application form MF-103, which have been completed by the Calamity Creek Uranium Company. The consulting geologist, Mr. Roy Anderson, brought them to this office Monday, July 18, and we reviewed them with him at that time.

In view of your recent memo regarding processing of applications, I thought it just as well to review them in light of a possible field examination.

The subject property lies south of the area covering the Calamity group of claims on Calamity Mesa, Mesa County, Colo. The Survey drilling in the most southern part of the Calamity group of claims was not too encouraging; however, the Calamity group of claims have produced a substantial tonnage of ore and the drilling established an estimated reserve of carnotite-bearing material totaling 47,100 tons of ore averaging 0.33 percent U_3O_8 and 1.2 percent V_2O_5. It is, therefore, deemed advisable, under these circumstances, that the subject property should require a field examination.

J. William Hasler

J. William Hasler,
Geologist

JWH/mlr

Enclosures

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

DMEA
Date Rec'd.
JUL 26 1955
BUREAU OF MINES
Denver, Colorado

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

RECEIVED
AUG - 1 1955

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

Not to be filled in by applicant

Docket No. 3934
Metal or Mineral Uranium
Date Received 8-1-55
Estimated Cost 97,135
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: CALAMITY CREEK URANIUM COMPANY
913 First Security Bank Building
Salt Lake City, Utah

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

(*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 15 unpatented mining claims situate in Section 15, Township 50 North, Range 18 West, Mesa County, State of Colorado.

(*b*) State any mine name by which the property is known. Calamity Creek

(*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 10% of net mill receipts and bonuses plus development and haulage allowances payable to prior grantors until the sum of $20,000 is paid.

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

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

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

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

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

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

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 9 months from the date of an exploration project contract. Weather permitting.

(*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)?

(*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 July 15, 1955

Calamity Creek Uranium
(Applicant)

By Stanford Hale

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

4. Physical description:

(a) There are no mine workings on the property at present. The applicant has, at his expense, drilled 8 exploratory holes on the property. Such holes are marked (A) on attached map. The holes average 280 feet in depth... Hole No. 1 showed 10 feet of mineralization by probing at a depth of 48 to 58 feet. Hole No. 2 showed 6 feet of slight mineralization at a depth of 176 to 182 feet. Hole No. 3 showed 4 feet of mineralization from 150 to 154 feet by probing with a high count of .80% e U_3O_8. Core recovery thru this zone was poor; however, a chemical analysis showed 0.20% U_3O_8 and 1.14% V_2O_5. The claims are easily accessible by automobile.

(b) None

(c) The area of the claims is underlain by the Salt Wash member of the Morrison formation which has produced considerable quantities of bedded ores of vanadium and uranium from nearby properties, viz. Outlaw and Calamity Mesas. Ore outcroppings are known both immediately to the North and South of the Claim group. 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 outlined in this application. There is a producing mine within 400 feet of the south boundary of the claim group. Within 2000 feet of the north boundary of the claim group, mineralized outcroppings occur.

(d) Accessibility from Grand Junction, Colorado, herein considered as the nearest shipping, supply, and residence points; 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 forest road crossing Uncompaghre Plateau.

(e) All manpower, materials, supplies, equipment, and water are available and must be transported onto the property as is customary on most of the Uranium operations now being conducted on the Colorado Plateau. Electric power is not available.

5. The exploration project:

(b) The proposed work consists of exploration of the property by core and non-core drilling. The drilling will be done in three phases:
Phase 1 will consist of drilling 3 holes (marked 1C on attached map) completely through the Morrison formation. The Salt Wash section will be cored completely and the top Brushy Basin member will be drilled by non-core methods. This will amount to 900 feet of core drilling and 600 feet of non-core drilling. In addition to the above three holes, 15 holes (marked 1b on attached map) will be drilled by non-core methods to the base of the Salt Wash section of the Morrison. This will amount to 7500 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.
All holes will be probed with a scintillator probe with a recording attachment. It is felt that more complete information can be gained by this method than by coring each hole and that the cost will be greatly reduced.

5. (b) cont.

Phase 2 will consist of drilling approximately 40 holes on 200 foot centers in the vicinity of the mineralized holes encountered in Phase 1. This drilling will approximate 16,000 feet of drilling which includes 2000 feet of core thru the mineralized portion of the horizon. These holes will also be surveyed and probed as in phase 1. Twelve of these holes will be used to explore mineralization that has been encountered to date by drilling on the property.

Phase 3 will consist of drilling approximately 40 holes on 75 foot centers to explore mineralized showings found in Phase 2 drilling. This drilling will approximate 16,000 feet of drilling which includes 2000 feet of core thru the mineralization portion of the horizon. These holes will also be surveyed and probed as in Phase 1 and 2.

5. (d) The applicant has been connected with the Uranium business for approximately one year; however, the Engineering firm of Watrous and Anderson have been retained to supervise the drilling and exploration program. Watrous and Anderson have been active engineers in the Colorado Plateau for about three years.

6. Estimate of Costs:

(a) The proposed work consists for the most part of core and non-core drilling. Bids were obtained from three contract drillers and attached hereto. Ray Drilling Company was low bidder; therefore, these costs are used in making the contract estimates.
Independent contract costs are as follows:

Phase No. 1:

1c holes:			
Drilling	0-200 ft. - $1.10 per ft.		
	3 holes totalling 600 feet.	$ 660.00	
Coring	200-500 ft. - $4.00 per ft.		
	3 holes totalling 900 feet	$ 3,600.00	
1b holes:			
Drilling	0-500 ft. - $1.55 per ft.		
	15 holes totalling 7500 ft.	$11,625.00	
Estimted standby time on Drill:			
	50 hours @ $15.00	$ 750.00	
Bulldozer work on roads:			
	50 hours @ $12.00	$ 600.00	
Radiometric logging of holes:			
	18 holes @ $60.00	$ 1,080.00	
Total Phase 1 contract			$18,315.00

6. (a) cont.

Phase No. 2

Drilling	0-400 ft. - $1.40 per ft. 40 holes totalling 14000 ft.	$19,600.00		
Coring	2000 ft. @ $3.00	6,000.00		
Standby time on Drill (estimated) 50 hours @ $15.00		750.00		
Bulldozer work on Roads & Drillsites: 50 hours @ $12.00		600.00		
Radiometric logging of Holes: 40 holes at $60.00		$ 2,400.00		
Total Phase 2 contracts			$29,350.00	

Phase No. 3

Drilling	0-400 ft. - $1.40 per ft. 40 holes totalling 14000 ft.	$19,600.00		
Coring	2000 ft. @ $3.00	6,000.00		
Standby time on Drill (estimated) 50 hours @ $15.00		750.00		
Bulldozer work on Roads & Drillsites: 50 hours @ $12.00		600.00		
Radiometric logging of holes: 40 holes @ $60.00		$ 2,400.00		
Total Phase 3 contracts			$29,350.00	
TOTAL COSTS of INDEPENDENT CONTRACTS				$77,015.00

6. (b) Labor, Supervision, Consultants:

Phase 1 program

1 workman - 2 months @ $500.00	$ 1,000.00		
1 superintendent - 2 months @ $1000.00	2,000.00		
Engineering consultants - 15 days @ $100.	1,500.00		
		$ 5,500.00	
Phase 2 program - same as above		5,500.00	
Phase 3 program - same as above		5,500.00	
Total cost 6 (b)			$16,500.00

6. (c) Operating materials and supplies:

Phase 1

200 gal. gasoline for company truck @ $.30	$ 60.00		
Core boxes - 900 ft. core @ $.10	90.00		
Total - Phase 1		$150.00	

Phase 2

200 gal. gasoline @ $.30	$ 60.00		
Core boxes - 2000 ft. @ $.10	200.00		
Total - Phase 2		$260.00	
Phase 3 - same as Phase 2 above		$260.00	
Total cost 6 (c)			$ 670.00

(d) Operating equipment:

Rental of pick-up truck for all 3 phases	$ 500.00

(e) The applicant has a 20' x 15' boarding house on the property which may be used at no cost. No repairs are necessary.

(f) None

(g) Chemical assays for U3O8 and V2O5:

Phase 1 - 10 assays @ $5.00	$ 50.00	
Phase 2 - 40 assays @ $5.00	200.00	
Phase 3 - 40 assays @ $5.00	200.00	
Total cost 6 (g)		$ 450.00
(h) Contingencies		$ 2,000.00
TOTAL COST ESTIMATE		$97,135.00

RECEIVED
AUG - 1 1955

V & A Drilling Contractors

Louis Ausmus Don Van Pelt
Cedaredge, Colorado

July 7, 1955

Mr. Cecil W. McCoy
Calamity Creek Uranium Corp.
485 29 Road
Grand Junction, Colo.

Subject: Calamity Mesa Drilling Bids

Dear Sir:

In regard to 20,000 feet of vertical drilling in the Calamity Creek area of Colorado, we wish to submit the following bids:

Plug Bit		Core	
0 to 200 @	$1.65	0 to 200 @	$2.25
200 to 400 @	2.00	200 to 400 @	2.60
400 to 600 @	2.25	400 to 600 @	3.30

All drill roads and sites will be constructed by customer.

Should drilling be terminated by customer before a minimum of 20,000 feet is drilled, there will be a $1,000 moving charge.

Standby time at the rate of ten dollars ($10.00) per hour, for four (4) hours or more. No standby time will be charged under four (4) hours.

An amount to cover an estimated one month drilling will be placed in escrow by Calamity Creek Uranium Corporation, and this amount will be applied to the final invoice on completion of drilling.

Payments to be made monthly, based on completed holes, within ten days after invoice.

V. &. A. Drilling Contractors will provide a minimum of 2 rigs, and by mutual agreement, will double shift these rigs.

Yours truly,
V. & A. Drilling Contractors
Don Van Pelt
Don Van Pelt
Operator

RAY DRILLING COMPANY INC.

RECEIVED
AUG - 1 1955

209 State Exchange Building
Phone 5-9345
Salt Lake City 1, Utah

July 8, 1955

Mr. Cecil W. McCoy,
485 - 29 Road,
Grand Junction, Colorado

Re: Drilling Program
Calamity Mesa, Colorado

Dear Mr. McCoy:

We are pleased to submit a proposal covering the drilling and/or coring of a minimum of 20,000 feet of 4-1/4" diameter drill hole at the above subject property.

The following footage prices will apply:

Depth Increment	Drill/Foot	Core/Foot
0 to 100 feet	$1.00	$2.00
100 to 200 feet	$1.20	$2.50
200 to 300 feet	$1.50	$3.25
300 to 400 feet	$1.85	$4.00

Standby time will be at the rate of $15.00 per hour after three hours and we reserve the right to drill with air or water whichever method proves most efficient. We understand that you will furnish us with right of ingress and egress and that all access roads will be for your account. We shall carry sufficient insurance to cover our equipment and crews under the laws of the State of Colorado.

We understand that you anticipate more than the 20,000 feet proposed above, and we shall be pleased to renew the contract in increments of 10,000 feet after the original contract is completed.

Very truly yours,

RAY DRILLING COMPANY, INC.

A. Wiegand

Andrew Wiegand

In Duplicate
cc: Roy A. Anderson

RECEIVED
JUL - 1 1955

AFFIDAVIT

STATE OF UTAH)
: ss
COUNTY OF SALT LAKE)

ALVIN I. SMITH, being first duly sworn deposes and says:

1. That he is attorney for Calamity Creek Uranium Corporation and is personally acquainted with title and all obligations in connection with the unpatented mining claims owned by the company located in Gateway Mining District, Mesa County, State of Colorado, more particularly described as follows:

Little Girl
Little Girl #2 and 3
Cottonwood #1-6
Pretty Boy #1-6

2. That Calamity Creek Uranium Corporation is the owner of said unpatented mining claims and that the only obligation due in connection with the acquisition and ownership of the said property is the following promissory note which was duly executed and delivered to the payees thereof:

"Promissory Note

$20,000.00 Salt Lake City, Utah
March 17,1955

CALAMITY CREEK URANIUM CORPORATION, a Utah corporation, promises to pay to the order of PETER KAASCH, CECIL McCOY and WARREN WRIGHT the sum of Twenty Thousand Dollars ($20,000.00), said payment to be due, payable and made only from ten per cent of the net mill receipts excluding haulage and development allowances, but including all bonuses realized from all ore shipped from certain mining claims located on the west side of Calamity Creek in the Gateway Mining District of Mesa County, State of Colorado, more particularly described as follows:

Little Girl
Little Girl #1 and 2
Cottonwood #1-6
Pretty Boy #1-6

The principal of this note and any balance hereafter due thereon shall not bear interest.

CALAMITY CREEK URANIUM CORPORATION
By /S/ Stanford L. Hale
President"

FURTHER affiant sayeth not.

Alvin I. Smith
ALVIN I. SMITH

Subscribed and sworn to before me this 8th day of July, 1955.

Sheldon R. White
Notary Public

THIS INDENTURE, Made this 18th day of May, in the year of our Lord one thousand nine hundred 54, between WILLIAM E. WRIGHT, PETER G. MARCH, CECIL W. McCOY, residents of the State of Colorado, party of the first part, and CALAMITY CREEK URANIUM CORPORATION, a corporation of the State of Utah, party of the second part;

WITNESSETH: That the said party of the first part, for and in consideration of the sum of Ten Dollars ($10.00) to it in hand paid by the said party of the second part, the receipt whereof is hereby acknowledged, has granted, bargained, sold, remised, released and forever quit-claimed and by these presents does grant, bargain, sell, remise, release and forever quit-claim, unto the said party of the second part, its assigns, the following described property, situate, lying and being in the Gateway Mining District, in the County of Mesa, State of Colorado, to-wit:

The deeds to these claims being recorded in the County Clerk and Recorder's Office, County of Mesa, State of Colorado:

Name of Claim	Book	Page
Little Girl	604	497
Little Girl No. 2	603	[illegible]
Little Girl No. 3	603	[illegible]
Pretty Boy No. 1	604	[illegible]
Pretty Boy No. 2	604	499
Pretty Boy No. 3	604	500
Pretty Boy No. 4	604	501
Pretty Boy No. 7	604	502
Pretty Boy No. 9	604	503
Cottonwood No. 1	604	504
Cottonwood No. 2	604	505
Cottonwood No. 3	604	506
Cottonwood No. 4	604	507
Cottonwood No. 5	604	508
Cottonwood No. 6	604	509

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 the 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 party 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 assigns forever.

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

Signed, sealed and delivered in the presence of

Warren E. Wright (seal)

Peter G. Kaasch (seal)

Cecil W. McCoy (seal)

STATE OF OHIO)
: ss
COUNTY OF [illegible])

The foregoing instrument was acknowledged before me this 18th day of [illegible], 1956 by [illegible], PETER G. KAASCH and CECIL W. MCCOY, party of the first part, executed the above instrument.

WITNESS, my hand and official seal.

Lester W. Hachman
Notary Public

My commission expires:
April 21st - 1956.

RAY DRILLING COMPANY INC.

RECEIVED
AUG - 1 1955

209 State Exchange Building
Phone 5-9345
Salt Lake City 1, Utah

July 8, 1955

Mr. Cecil W. McCoy,
485 - 29 Road,
Grand Junction, Colorado

Re: Drilling Program
Calamity Mesa, Colorado

Dear Mr. McCoy:

We are pleased to submit a proposal covering the drilling and/or coring of a minimum of 20,000 feet of 4-1/4" diameter drill hole at the above subject property.

The following footage prices will apply:

Depth Increment	Drill/Foot	Core/Foot
0 to 100 feet	$1.00	$2.00
100 to 200 feet	$1.20	$2.50
200 to 300 feet	$1.50	$3.25
300 to 400 feet	$1.85	$4.00

Standby time will be at the rate of $15.00 per hour after three hours and we reserve the right to drill with air or water whichever method proves most efficient. We understand that you will furnish us with right of ingress and egress and that all access roads will be for your account. We shall carry sufficient insurance to cover our equipment and crews under the laws of the State of Colorado.

We understand that you anticipate more than the 20,000 feet proposed above, and we shall be pleased to renew the contract in increments of 10,000 feet after the original contract is completed.

Very truly yours,

RAY DRILLING COMPANY, INC.

A. Wiegand

Andrew Wiegand

In Duplicate
cc: Roy A. Anderson

RECEIVED
AUG - 1 1955

It is presumed that you will furnish all access roads and drill sites for the movement of our equipment. Stand-by time will be charged at the rate of $12 per hour.

It will be a pleasure to hear from you concerning this bid.

Very truly yours,

MINERALS ENGINEERING COMPANY

John B. Rigg
Drilling Division

JBR/k

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

June 13, 1955

RECEIVED
AUG - 1 1955

Calamity Creek Uranium Co.
485 - 29 Road
Grand Junction, Colorado

Attention Cecil H. McCoy

Gentlemen:

In regard to 100,000 lineal feet of vertical dry rotary drilling in the Calamity Creek Area of Colorado, we wish to bid the following:

Depth	Price per Foot
0-100 feet	$ 1.50
100-200 feet	1.85
200-300 feet	2.20
300-400 feet	2.55
400-500 feet	2.90

Should ground conditions be unfavorable to dry rotary drill and conversion to water as a circulating medium become necessary, we would drill at the following rates:

Depth	Price per Foot
0-200 feet	$ 2.25
200-400 feet	2.80
400-600 feet	3.50

The above prices would become effective at the point of conversion from air to water and conversion would be done at our discretion.

Core prices on the above would be:

Depth	Price per Foot
0-200 feet	$ 2.50
200-400 feet	3.25
400-500 feet	4.50

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

DMEA
Date Rec'd.
JUL 26 1955

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

RECEIVED
AUG - 1 1955
BUREAU OF MINES
Denver, Colorado

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

Not to be filled in by applicant

Docket No. 3934
Metal or Mineral Uranium
Date Received 8-1-55
Estimated Cost $97,135
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: CALAMITY CREEK URANIUM COMPANY
913 First Security Bank Building
Salt Lake City, Utah

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

(*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 15 unpatented mining claims situate in Section 15, Township 50 North, Range 18 West, Mesa County, State of Colorado.

(*b*) State any mine name by which the property is known. Calamity Creek

(*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 10% of net mill receipts and bonuses plus development and haulage allowances payable to prior grantors until the sum of $20,000 is paid.

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

See attached:

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

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

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

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

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

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 9 months from the date of an exploration project contract. Weather permitting.

(*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)?

(*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 July 15, 1955

Calamity Creek Uranium
(Applicant)

By Stanford Hale

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

4. Physical description:

(a) There are no mine workings on the property at present. The applicant has, at his expense, drilled 8 exploratory holes on the property. Such holes are marked (A) on attached map. The holes average 280 feet in depth... Hole No. 1 showed 10 feet of mineralization by probing at a depth of 48 to 58 feet. Hole No. 2 showed 6 feet of slight mineralization at a depth of 176 to 182 feet. Hole No. 3 showed 4 feet of mineralization from 150 to 154 feet by probing with a high count of .80% e U308. Core recovery thru this zone was poor; however, a chemical analysis showed 0.20% U308 and 1.14% V205. The claims are easily accessible by automobile.

(b) None

(c) The area of the claims is underlain by the Salt Wash member of the Morrison formation which has produced considerable quantities of bedded ores of vanadium and uranium from nearby properties, viz. Outlaw and Calamity Mesas. Ore outcroppings are known both immediately to the North and South of the Claim group. 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 outlined in this application. There is a producing mine within 400 feet of the south boundary of the claim group. Within 2000 feet of the north boundary of the claim group, mineralized outcroppings occur.

(d) Accessibility from Grand Junction, Colorado, herein considered as the nearest shipping, supply, and residence points; 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 forest road crossing Uncompaghre Plateau.

(e) All manpower, materials, supplies, equipment, and water are available and must be transported onto the property as is customary on most of the Uranium operations now being conducted on the Colorado Plateau. Electric power is not available.

5. The exploration project:

(b) The proposed work consists of exploration of the property by core and non-core drilling. The drilling will be done in three phases:
Phase 1 will consist of drilling 3 holes (marked 1C on attached map) completely through the Morrison formation. The Salt Wash section will be cored completely and the top Brushy Basin member will be drilled by non-core methods. This will amount to 900 feet of core drilling and 600 feet of non-core drilling. In addition to the above three holes, 15 holes (marked 1b on attached map) will be drilled by non-core methods to the base of the Salt Wash section of the Morrison. This will amount to 7500 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.
All holes will be probed with a scintillator probe with a recording attachment. It is felt that more complete information can be gained by this method than by coring each hole and that the cost will be greatly reduced.

5. (b) cont.

Phase 2 will consist of drilling approximately 40 holes on 200 foot centers in the vicinity of the mineralized holes encountered in Phase 1. This drilling will approximate 16,000 feet of drilling which includes 2000 feet of core thru the mineralized portion of the horizon. These holes will also be surveyed and probed as in phase 1. Twelve of these holes will be used to explore mineralization that has been encountered to date by drilling on the property.

Phase 3 will consist of drilling approximately 40 holes on 75 foot centers to explore mineralized showings found in Phase 2 drilling. This drilling will approximate 16,000 feet of drilling which includes 2000 feet of core thru the mineralization portion of the horizon. These holes will also be surveyed and probed as in Phase 1 and 2.

5. (d) The applicant has been connected with the Uranium business for approximately one year; however, the Engineering firm of Watrous and Anderson have been retained to supervise the drilling and exploration program. Watrous and Anderson have been active engineers in the Colorado Plateau for about three years.

6. Estimate of Costs:

(a) The proposed work consists for the most part of core and non-core drilling. Bids were obtained from three contract drillers and attached hereto. Ray Drilling Company was low bidder; therefore, these costs are used in making the contract estimates.
Independent contract costs are as follows:

Phase No. 1:

1c holes:			
Drilling	0-200 ft. - $1.10 per ft.		
	3 holes totalling 600 feet.	$ 660.00	
Coring	200-500 ft. - $4.00 per ft.		
	3 holes totalling 900 feet	$ 3,600.00	
1b holes:			
Drilling	0-500 ft. - $1.55 per ft.		
	15 holes totalling 7500 ft.	$11,625.00	
Estimted standby time on Drill:			
	50 hours @ $15.00	$ 750.00	
Bulldozer work on roads:			
	50 hours @ $12.00	$ 600.00	
Radiometric logging of holes:			
	18 holes @ $60.00	$ 1,080.00	
Total Phase 1 contract			$18,315.00

280'

6. (a) cont.

Phase No. 2

Drilling	0-400 ft. - $1.40 per ft. 40 holes totalling 14000 ft.	$19,600.00	
Coring	2000 ft. @ $3.00	6,000.00	
Standby time on Drill (estimated) 50 hours @ $15.00		750.00	
Bulldozer work on Roads & Drillsites: 50 hours @ $12.00		600.00	
Radiometric loggins of Holes: 40 holes at $60.00		$ 2,400.00	
Total Phase 2 contracts			$29,350.00

±15¢/foot

$ 1,050
2,400
2,400
$ 5,850 probing

Phase No. 3

Drilling	0-400 ft. - $1.40 per ft. 40 holes totalling 14000 ft.	$19,600.00	
Coring	2000 ft. @ $3.00	6,000.00	
Standby time on Drill (estimated) 50 hours @ $15.00		750.00	
Bulldozer work on Roads & Drillsites: 50 hours @ $12.00		600.00	
Radiometric logging of holes: 40 holes @ $60.00		$ 2,400.00	
Total Phase 3 contracts			$29,350.00

750
750
750
2,250 standby
5,850
$ 8,100 standby & probing

TOTAL COSTS of INDEPENDENT CONTRACTS $77,015.00

6. (b) Labor, Supervision, Consultants:

Phase 1 program

1 workman - 2 months @ $5.00.00	$ 1,000.00	
1 superintendent - 2 months @ $1000.00	2,000.00	
Engineering consultants - 15 days@ $100.	1,500.00	
		$ 5,500.00

Phase 2 program - same as above	5,500.00
Phase 3 program - same as above	5,500.00
Total cost 6 (b)	$16,500.00

6. (c) Operating materials and supplies:

Phase 1

200 gal. gasoline for company truck @ $.30	$ 60.00		
Core boxes - 900 ft. core @ $.10	90.00		
Total - Phase 1		$150.00	

Phase 2

200 gal. gasoline @ $.30	$ 60.00		
Core boxes - 2000 ft. @ $.10	200.00		
Total - Phase 2		$260.00	
Phase 3 - same as Phase 2 above		$260.00	
Total cost 6 (c)			$ 670.00

(d) Operating equipment:

Rental of pick-up truck for all 3 phases	$ 500.00

(e) The applicant has a 20' x 15' boarding house on the property which may be used at no cost. No repairs are necessary.

(f) None

(g) Chemical assays for U308 and V205:

Phase 1 - 10 assays @ $5.00	$ 50.00	
Phase 2 - 40 assays @ $5.00	200.00	
Phase 3 - 40 assays @ $5.00	200.00	
Total cost 6 (g)		$ 450.00
(h) Contingencies		$ 2,000.00
TOTAL COST ESTIMATE		$97,135.00

V & A Drilling Contractors

Louis Ausmus Don Van Pelt

Cedaredge, Colorado

RECEIVED
AUG - 1 1955

July 7, 1955

Mr. Cecil W. McCoy
Calamity Creek Uranium Corp.
485 29 Road
Grand Junction, Colo.

Subject: Calamity Mesa Drilling Bids

Dear Sir:

In regard to 20,000 feet of vertical drilling in the Calamity Creek area of Colorado, we wish to submit the following bids:

Plug Bit		Core	
0 to 200	@ $1.65	0 to 200	@ $2.25
200 to 400	@ 2.00	200 to 400	@ 2.60
400 to 600	@ 2.25	400 to 600	@ 3.30

All drill roads and sites will be constructed by customer.

Should drilling be terminated by customer before a minimum of 20,000 feet is drilled, there will be a $1,000 moving charge.

Standby time at the rate of ten dollars ($10.00) per hour, for four (4) hours or more. No standby time will be charged under four (4) hours.

An amount to cover an estimated one month drilling will be placed in escrow by Calamity Creek Uranium Corporation, and this amount will be applied to the final invoice on completion of drilling.

Payments to be made monthly, based on completed holes, within ten days after invoice.

V. &. A. Drilling Contractors will provide a minimum of 2 rigs, and by mutual agreement, will double shift these rigs.

Yours truly,
V. & A. Drilling Contractors

Don Van Pelt

Don Van Pelt
Operator

RAY DRILLING COMPANY INC.

RECEIVED
AUG - 1 1955

209 State Exchange Building
Phone 5-9345
Salt Lake City 1, Utah

July 8, 1955

Mr. Cecil W. McCoy,
485 - 29 Road,
Grand Junction, Colorado

Re: Drilling Program
Calamity Mesa, Colorado

Dear Mr. McCoy:

We are pleased to submit a proposal covering the drilling and/or coring of a minimum of 20,000 feet of 4-1/4" diameter drill hole at the above subject property.

The following footage prices will apply:

Depth Increment	Drill/Foot	Core/Foot
0 to 100 feet	$1.00	$2.00
100 to 200 feet	$1.20	$2.50
200 to 300 feet	$1.50	$3.25
300 to 400 feet	$1.85	$4.00

Standby time will be at the rate of $15.00 per hour after three hours and we reserve the right to drill with air or water whichever method proves most efficient. We understand that you will furnish us with right of ingress and egress and that all access roads will be for your account. We shall carry sufficient insurance to cover our equipment and crews under the laws of the State of Colorado.

We understand that you anticipate more than the 20,000 feet proposed above, and we shall be pleased to renew the contract in increments of 10,000 feet after the original contract is completed.

Very truly yours,

RAY DRILLING COMPANY, INC.

A. Wiegand

Andrew Wiegand

In Duplicate
cc: Roy A. Anderson

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

RECEIVED
AUG - 1 1955

June 13, 1955

Calamity Creek Uranium Co.
485 - 29 Road
Grand Junction, Colorado

Attention Cecil H. McCoy

Gentlemen:

In regard to 100,000 lineal feet of vertical dry rotary drilling in the Calamity Creek Area of Colorado, we wish to bid the following:

Depth	Price per Foot
0-100 feet	$ 1.50
100-200 feet	1.85
200-300 feet	2.20
300-400 feet	2.55
400-500 feet	2.90

Should ground conditions be unfavorable to dry rotary drill and conversion to water as a circulating medium become necessary, we would drill at the following rates:

Depth	Price per Foot
0-200 feet	$ 2.25
200-400 feet	2.80
400-600 feet	3.50

The above prices would become effective at the point of conversion from air to water and conversion would be done at our discretion.

Core prices on the above would be:

Depth	Price per Foot
0-200 feet	$ 2.50
200-400 feet	3.25
400-500 feet	4.50

It is presumed that you will furnish all access roads and drill sites for the movement of our equipment. Stand-by time will be charged at the rate of $12 per hour.

It will be a pleasure to hear from you concerning this bid.

Very truly yours,

MINERALS ENGINEERING COMPANY

John B. Rigg
Drilling Division

JBR/k

RECEIVED
AUG - 1 1955

A F F I D A V I T

STATE OF UTAH)
: ss
COUNTY OF SALT LAKE)

ALVIN I. SMITH, being first duly sworn deposes and says:

1. That he is attorney for Calamity Creek Uranium Corporation and is personally acquainted with title and all obligations in connection with the unpatented mining claims owned by the company located in Gateway Mining District, Mesa County, State of Colorado, more particularly described as follows:

Little Girl
Little Girl #2 and 3
Cottonwood #1-6
Pretty Boy #1-6

2. That Calamity Creek Uranium Corporation is the owner of said unpatented mining claims and that the only obligation due in connection with the acquisition and ownership of the said property is the following promissory note which was duly executed and delivered to the payees thereof:

"Promissory Note

$20,000.00 Salt Lake City, Utah
March 17,1955

CALAMITY CREEK URANIUM CORPORATION, a Utah corporation, promises to pay to the order of PETER KAASCH, CECIL McCOY and WARREN WRIGHT the sum of Twenty Thousand Dollars ($20,000.00), said payment to be due, payable and made only from ten per cent of the net mill receipts excluding haulage and development allowances, but including all bonuses realized from all ore shipped from certain mining claims located on the west side of Calamity Creek in the Gateway Mining District of Mesa County, State of Colorado, more particularly described as follows:

Little Girl
Little Girl #1 and 2
Cottonwood #1-6
Pretty Boy #1-6

The principal of this note and any balance hereafter due thereon shall not bear interest.

CALAMITY CREEK URANIUM CORPORATION
By /S/ Stanford L. Hale
President"

FURTHER affiant sayeth not.

Alvin I. Smith
ALVIN I. SMITH

Subscribed and sworn to before me this 8th day of July, 1955.

Shelden R. White
Notary Public

THIS INDENTURE, Made this 18th day of May, in the year of our Lord one thousand nine hundred 54, between WARREN E. WRIGHT, PETER G. KASCH, CECIL W. McCOY, residents of the State of Colorado, party of the first part, and CALAMITY CREEK URANIUM CORPORATION, a corporation of the State of Utah, party of the second part;

WITNESSETH: That the said party of the first part, for and in consideration of the sum of Ten Dollars ($10.00) to it in hand paid by the said party of the second part, the receipt whereof is hereby acknowledged, has granted, bargained, sold, remised, released and forever quit-claimed and by these presents does grant, bargain, sell, remise, release and forever quit-claim, unto the said party of the second part, its assigns, the following described property, situate, lying and being in the Gateway Mining District, in the County of Mesa, State of Colorado, to-wit:

The deeds to these claims being recorded in the County Clerk and Recorder's Office, County of Mesa, State of Colorado:

Name of Claim	Book	Page
Little Girl	554	497
Little Girl No. 2	605	84
Little Girl No. 3	605	85
Pretty Boy No. 1	554	498
Pretty Boy No. 2	554	499
Pretty Boy No. 3	554	500
Pretty Boy No. 4	554	501
Pretty Boy No. 5	554	502
Pretty Boy No. 6	554	503
Cottonwood No. 1	554	504
Cottonwood No. 2	554	505
Cottonwood No. 3	554	506
Cottonwood No. 4	554	507
Cottonwood No. 5	554	508
Cottonwood No. 6	554	509

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 the 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 party 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 assigns forever.

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

Signed, sealed and delivered in the presence of

Warren E. Wright (Seal)

Peter G. Kaasch (Seal)

Cecil W. McCoy (Seal)

STATE OF COLORADO)
: ss
COUNTY OF [illegible])

The foregoing instrument was acknowledged before me this 18th day of [illegible], 1956 by WARREN E. WRIGHT, PETER G. KAASCH and CECIL W. MCCOY, party of the first part, executing the above instrument.

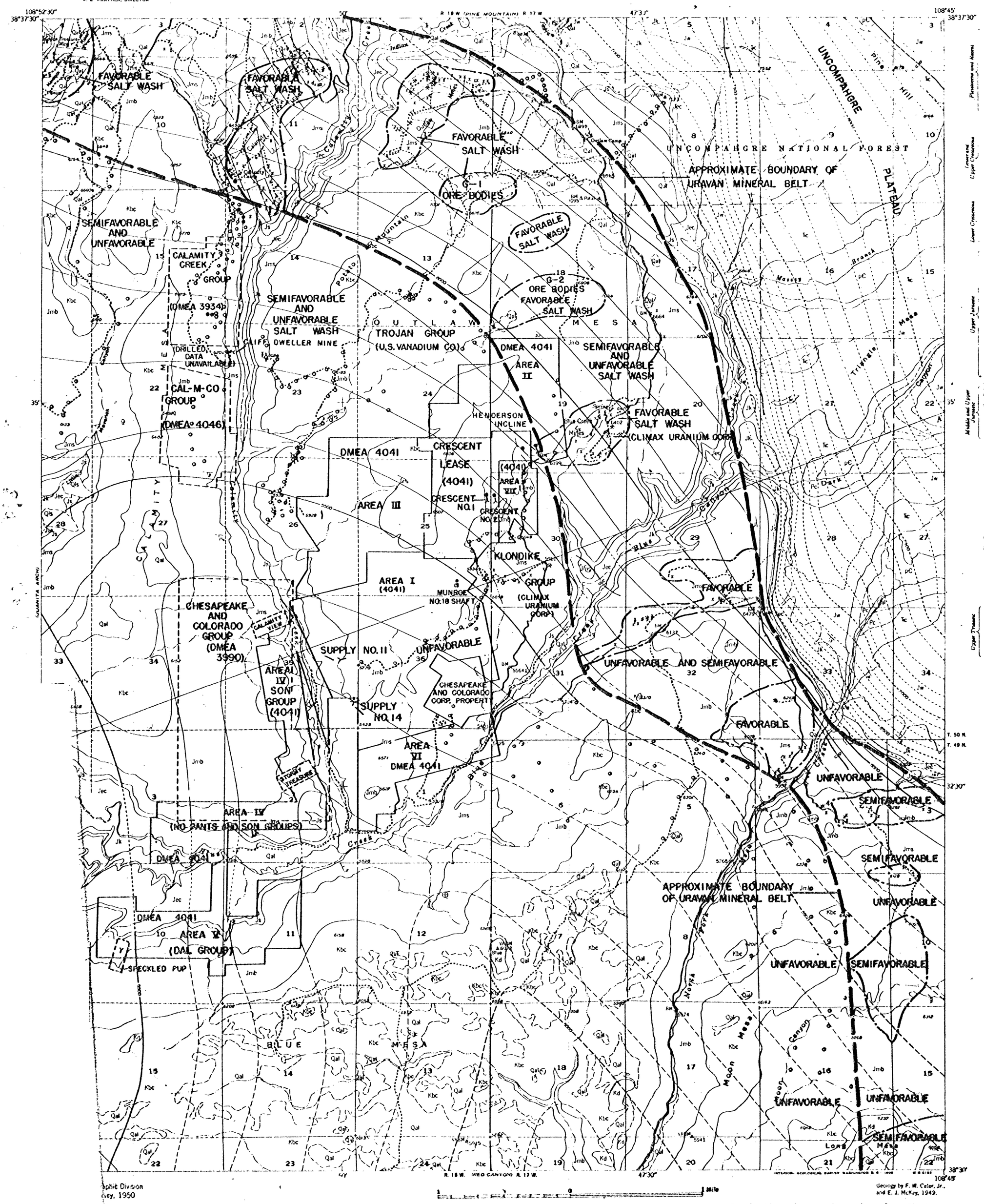
Witness my hand and official seal.

Lester W. Lechman
Notary Public

My commission expires:
April 21st - 1956.

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY
W. E. WRATHER, DIRECTOR

DEFENSE MINERALS EXPLORATION ADMINISTRATION
DOCKET 3934 MARCH 1956



Geology by F. W. Cater, Jr., and E. J. McKay, 1949.

Compilation of economic geology from Fischer and Hilpert (1952), Stager (1951), Brasher (1952), Finch (1952), Stweart (1953), and Waulters (1951).

EXPLANATION

QUATERNARY

Qal — **Alluvium**
Light-red wind-deposited sand and silt on benches and mesa tops, reworked in part by water; Recent valley fill and alluvium deposits.

Qls — **Landslide deposits**

UNCONFORMITY

CRETACEOUS

Kd — **Dakota sandstone**
Yellowish, lenticular sandstone and conglomerate with interbedded carbonaceous shale and impure coal.

UNCONFORMITY

Kbc — **Burro Canyon formation**
White, gray, and red sandstone and conglomerate with interbedded green and purplish shale.

JURASSIC

Jmb / Jms — **Morrison formation**
Variegated shale and mudstone; white, gray, reddish-red, and buff sandstone; reddish-red conglomerate; local thin limestone beds. At the top the Brushy Basin shale member, Jmb, consisting largely of bentonitic shale but including some sandstone and conglomerate lenses, and at the base the Salt Wash sandstone member, Jms, with more numerous and thicker sandstone beds.

Js — **Summerville formation**
Thin bedded red, gray, green, and brown sandy shale and mudstone.

Jec — **Entrada sandstone and Carmel formation undivided**
Orange, buff, and white, fine-grained, massive and cross-bedded Entrada sandstone at the top. Red sandstone and mudstone of the Carmel formation at the base.

UNCONFORMITY

JURASSIC(?)

Jn — **Navajo sandstone**
Buff and gray crossbedded, fine-grained sandstone.

Jk — **Kayenta formation**
Irregularly bedded, red, buff, gray, and lavender shale, siltstone, and fine- to coarse grained sandstone.

Jw — **Wingate sandstone**
Fine-grained reddish-brown, cliff-forming sandstone, thick bedded, massive and crossbedded.

TRIASSIC

Tc — **Chinle formation**
Red to orange-red siltstone, with interbedded lenses of red sandstone, shale, and limestone pebble and clay-pelled conglomerate. Lenses of quartz-pebble conglomerate and grit at base.

UNCONFORMITY

PERMIAN(?)

Pc — **Cutler formation**
Maroon, red, mottled light-red, and purple conglomerate, arkose, and arkosic sandstone. Thin beds of sandy mudstone.

UNCONFORMITY

PRE-CAMBRIAN

pC — **Gneiss, schist, granite, and pegmatite.**

Contact
Dashed where approximately located.

Indefinite contact
Includes inferred contacts and indefinite boundaries of surficial deposits.

Fault
Dashed where approximately located; dotted where concealed. U, upthrown side; D, downthrown side.

Strike and dip of beds

Horizontal beds

Structure contour
Drawn on top of Entrada sandstone; dashed where approximately located; short dashes indicate projection above surface. Contour interval 100 feet. Datum is mean sea level.

Shaft

Adit

Prospect

Mine

Outline of patented claim
Located only approximately.

Drill holes
(individual closely spaced holes not shown; holes within Uravan Mineral Belt not shown except on American Leduc property; coverage of private drilling incomplete)

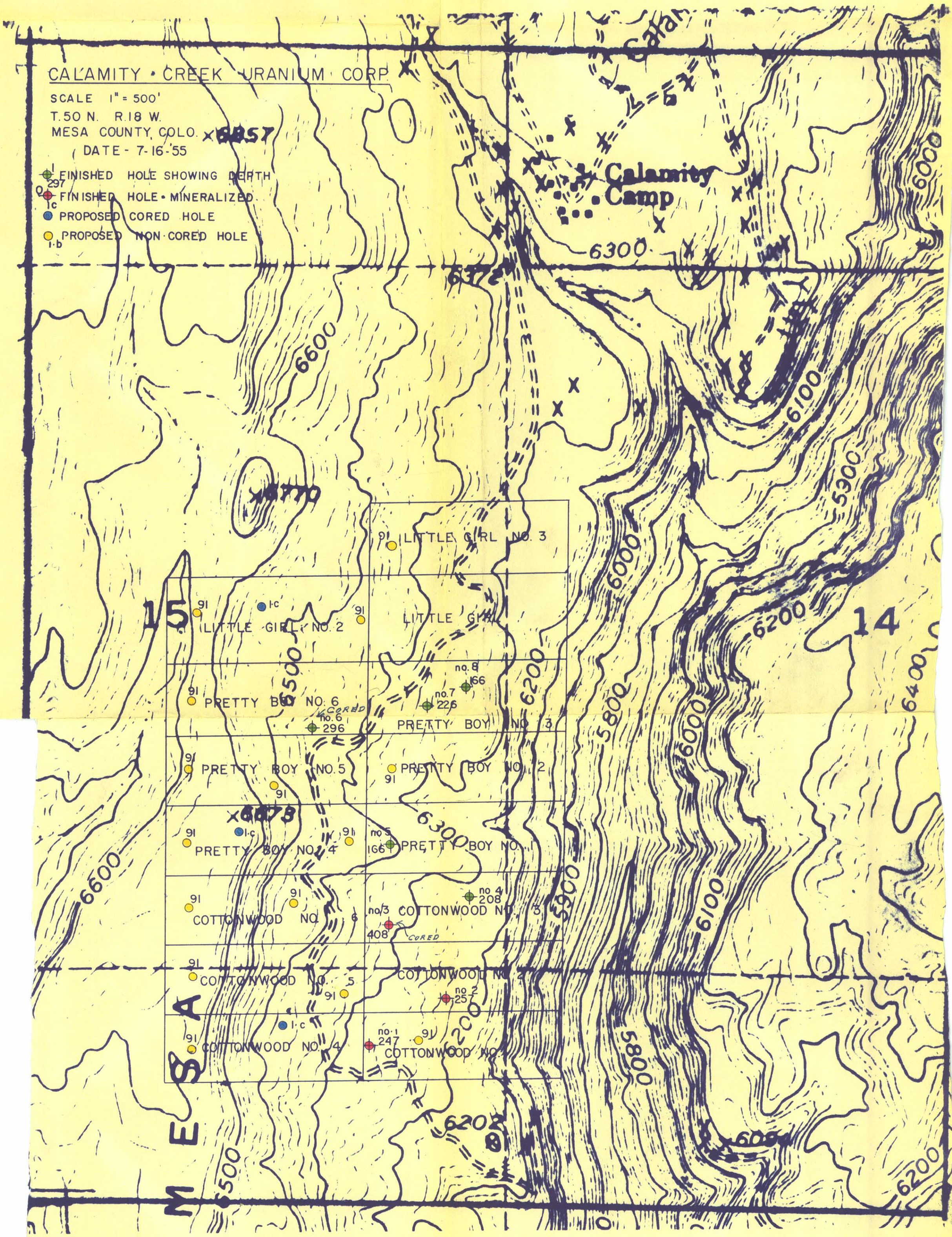
Barren

Weakly mineralized

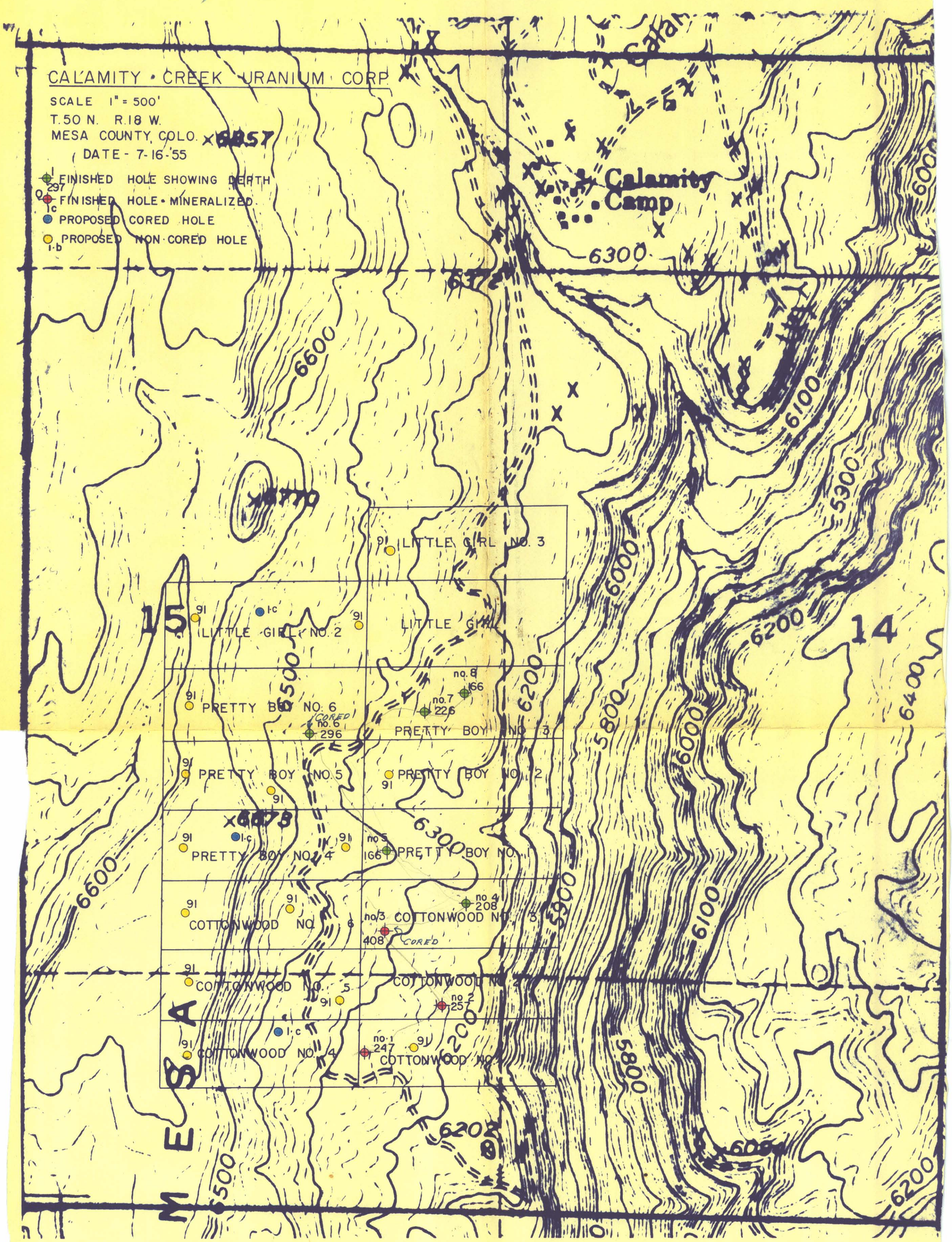
Ore-bearing

(Areas I to VII and Crescent Lease are American Leduc Uranium properties, DMEA 4041)

FIGURE 1. GEOLOGIC MAP OF CALAMITY MESA QUADRANGLE, COLORADO, SHOWING CALAMITY CREEK GROUP OF CLAIMS AND OTHER PROPERTIES IN RELATION TO URAVAN MINERAL BELT.


CALAMITY • CREEK URANIUM CORP
SCALE 1" = 500'
T. 50 N. R. 18 W.
MESA COUNTY, COLO.
DATE - 7-16-'55
FINISHED HOLE SHOWING DEPTH
FINISHED HOLE • MINERALIZED
PROPOSED CORED HOLE
PROPOSED NON-CORED HOLE
Calamity Camp
LITTLE GIRL NO. 3
LITTLE GIRL NO. 2
LITTLE GIRL
PRETTY BOY NO. 6
PRETTY BOY NO. 3
PRETTY BOY NO. 5
PRETTY BOY NO. 2
PRETTY BOY NO. 4
PRETTY BOY NO. 1
COTTONWOOD NO. 6
COTTONWOOD NO. 3
COTTONWOOD NO. 5
COTTONWOOD NO. 2
COTTONWOOD NO. 4
COTTONWOOD NO. 1
CORED
15
14
MESA

DMEA-3934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COTTONWOOD NO. 1
CORED
15
14
MESA