700

FILE COPY
Surname: Murphy

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

March 6, 1956

Memorandum

To: Robert E. Adams, Chief
Operations Control and Statistics Division

From: F. M. Murphy, Mining Engineer
Rare and Miscellaneous Metals Division

Subject: Docket Nos. DMEA-3461 and 3991

Both applications cover the same mining claims. DMEA-3461 was denied because the Applicant did not submit evidence of its right of possession.

The following material has been transferred by F. M. Murphy from Docket No. DMEA-3461 to Docket No. DMEA-3991:

1. One copy of Purchase Agreement, dated May 18, 1954

Buyers	Sellers
John G. Obrecht	F. M. Bottom
John J. McIntyre	Dee Finch
	William A. Pischel
	Ed Robinett

2. One copy of recording of above Agreement.

3. One copy of Assignment from above Buyers to Crown Uranium Co.

4. One copy of recording of above Assignment.

5. Original copy of Report of Examination by Field Team, dated October 8, 1954, by W. P. Williams, USGS. (DMEA-3461).

6. Original copy of Engineering Report, (no date) received March 4, 1955, by M. H. Salsbury, USBM, re DMEA-3461

A copy of this memorandum has been placed in Docket No. DMEA-3991, which is currently assigned to this Division.

F M M

F. M. Murphy

Copy for Docket No. DMEA-3461

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

March 6, 1956

Memorandum

To: Robert E. Adams, Chief
Operations Control and Statistics Division

From: F. M. Murphy, Mining Engineer
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6. Original copy of Engineering Report, (no date) received March 4, 1955, by M. H. Salsbury, USBM, re DMEA-3461

A copy of this memorandum has been placed in Docket No. DMEA-3991, which is currently assigned to this Division.

F M Murphy

F. M. Murphy

3/7/55 gla

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

224 New Customhouse
Denver 2, Colorado

February 25, 1955

Mr. John G. Obrecht, President
Crown Uranium Company
205 Star Building
Casper, Wyoming

Re: Docket DMEA 2461 (Uranium)

Dear Mr. Obrecht:

We have had no reply to our letter to you dated January 18, 1955 and have closed this docket.

If at some future date you can prove valid title, a new application would receive proper consideration.

Very truly yours,

W. M. Traver

W. M. Traver

E. N. Harshman

E. N. Harshman

DMEA Field Team, Region III

HMC:jp
cc Docket
Chron
Harshman
Shaw
Williams
Chairman, Op. Comm. (4) w/copy report of examination

Reviewed by
DMEA OPERATING COMMITTEE
3-4-55
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

December 1, 1954

224 New Customhouse
Denver 2, Colorado

Memorandum

To: DMEA Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Final Report, DMEA Docket 3461 (Uranium), Crown Uranium Company, Lost Brothers claims, San Miguel County, Colorado.

Enclosed are 11 copies of the engineering report of examination on the subject docket.

The applicant requested 11,500 feet of diamond core drilling and 350 hours of stripping by bulldozer at an estimated total cost of $33,300.00.

The engineer examiner recommends an exploration project to be set up in three stages of diamond core drilling, provided the applicant can resolve the conflicting ownership between the Lost Brothers and the Chusa claims. The total cost of the recommended drilling program is estimated to be $11,732.50.

We concur in the examining engineer's recommendations.

W. H. King

W. H. King

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
3-4-55
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Region IV

Building 20, Room 137
Denver Federal Center
Denver 2, Colorado
November 4, 1954

Memorandum

To: Executive Officer, DMEA Field Team, Region IV

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

Subject: DMEA 3461 (Uranium) Crown Uranium Company (Lost Brothers group) San Miguel County, Colo.

Enclosed are the original and 10 copies of a "Summary, Conclusions, and Recommendations", by M. H. Salsbury, Bureau of Mines and W. P. Williams, Geological Survey and of Salsbury's engineering report on the above docket.

Salsbury concludes there is a reasonable possibility of finding, by a judicious core drilling program, a moderate reserve of uranium ore in small bodies that could be mined profitably. He recommends a 3 stage project designed to explore the area included in 4 of the Lost Brothers claims, by 31 staggered holes on a 250-foot grid in Stage I, 24 offset holes on 100-foot centers in Stage II, and 10 offset holes on 50-foot centers in Stage III. Footages for the 3 stages are 1,550, 1,200 and 500 respectively, a total 3,250. Stages II and III require prior written authorization by the Region IV Field Team on recommendations by the Geological Survey personnel, working in the area. The total overall cost of all drilling, if completed, will be $11,732.50--Government participation 75 percent or $8,799.38.

I concur with the conclusions and recommendations. The conflicting ownership between the Lost Brothers and Chusa No. 5 claim of Four Corners Uranium Corporation should be resolved before a contract is entered into, or the conflicting area should be eliminated.

The application was discussed with Atomic Energy Commission personnel by the Geological Survey member of the examining team.

The brochure provided with your memorandum of August 17, 1954 instructing that we examine the property and submit a report of our findings and a copy of the Geologic report are also enclosed.

W. M. Traver

W. M. Traver

Reviewed by
DMEA OPERATING COMMITTEE
3-4-55
(date)

enclosures
WMT/dj
cc: 20
DMEA 3461 Chron.

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Defense Minerals Exploration Administration
Denver Federal Center
Denver 2, Colorado

October 19, 1954

Memorandum

To: DMEA Field Team, Region IV

From: A. H. Koschmann

Subject: DMEA Docket 3461, Crown Uranium Company, Lost Brothers Group, San Miguel County, Colorado

Enclosed are 10 copies of a geologic report by W. P. Williams of the U. S. Geological Survey covering the above docket.

Mr. Williams concludes that exploration on the property may lead to the discovery of significant uranium ore deposits and recommends that a program of exploration, modified somewhat from that proposed by the applicant, be approved.

One copy of the report has been given to Mr. W. H. Traver. He will forward it directly to you.

Nine extra copies of the map accompanying the report are transmitted also.

E. M. Hackman
for A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Enclosures (19)

Reviewed by
DMEA OPERATING COMMITTEE
3-4-55
(date)

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

October 8, 1954

Memorandum

To: A. H. Koschmann, DMEA Field Team, Region IV

From: Arnold L. Brokaw, District Supervisor

Subject: DMEA 3461, Crown Uranium Company, Lost Brothers group, San Miguel County, Colorado

Transmitted herewith are eleven copies of a geologic report by W. P. Williams, covering the above-referenced DMEA application.

Field examination, the regional setting of the property, the presence of mineralized material on the property, and favorable geologic conditions have caused me to recommend favorable action on the application with regard to a DMEA contract.

This application has been brought to the attention of the Atomic Energy Commission's Grand Junction Operations Office and the Commission has been asked for their help and advice in evaluating the subject property.

We are enclosing nine extra copies of the maps accompanying the report.

WPWilliams
For Arnold L. Brokaw

WPW/mlr

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
3-4-55
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMEA 3461, Lost Brothers Group

Crown Uranium Company

San Miguel County, Colorado

Uranium

W. P. Williams, Geologist
Geological Survey

M. H. Salsbury, Mining Engineer
Bureau of Mines

October 25, 1954

Reviewed by
DMEA OPERATING COMMITTEE
3-4-55
(date)

DMEA 3461

LOST BROTHERS GROUP
CROWN URANIUM COMPANY
SAN MIGUEL COUNTY, COLORADO

Summary, Conclusions, and Recommendations

By W. P. Williams
Geologist
Geological Survey

M. H. Salsbury
Mining Engineer
Bureau of Mines

Reviewed by
DMEA OPERATING COMMITTEE
3-4-55
(date)

DMEA 3461

LOST BROTHERS GROUP
CROWN URANIUM COMPANY
SAN MIGUEL COUNTY, COLORADO

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

By W. P. Williams and M. H. Salsbury

The Lost Brothers group of claims, located in Bull Canyon mining district, San Miguel County, Colorado, was examined by a Defense Minerals Exploration Administration examining team on September 14, 1954. Application has been made by the Crown Uranium Company, 205 Star Building, Casper, Wyoming, for Government assistance in exploration for uranium at at estimated cost of $33,300.00—Government participation 75 percent, or $24,975.00. Diamond drilling totaling about 11,500 feet and 350 hours of stripping with a bulldozer was proposed to explore known shallow deposits at surface and to explore the Salt Wash and Summerville formations by drilling holes up to 200 feet in depth.

The rocks on the Lost Brothers claims are composed of the Summerville and Morrison formations. The Summerville formation here is composed of about 90 feet of even and thinly bedded, flat lying, sandy and silty shale. It crops as a steep debris covered slope, generally reddish or greenish brown. Grain sizes range from shale to a fine-grained sandstone. The sandstone is generally found as small, discontinuous lenses intercalated in the shale. On the Lost Brothers claims the Summerville is directly overlain by the

Reviewed by
DMEA OPERATING COMMITTEE
3-4-55
(date)

Salt Wash member of the Jurassic Morrison formation. The Salt Wash member is composed of fine- to medium-grained, white to dark gray sandstone, which contains in places intercalated lenses of gray-green mudstone about 6 inches thick. On the Lost Brothers Nos. 1 and 2 claims, the Salt Wash horizon is composed of two principal sandstone ledges about 30 feet thick, separated by 15 feet of reddish-gray and green shale. On claims 3, 4, and 5, the two sandstone ledges merge into one sandstone layer about 40 feet thick.

Only the first or lowest horizon of the Salt Wash formation remains at the claims. It is exposed on the mesa rim where there are several minor "shows" and the top of the formation is found on the mesa only 5 to 25 feet below the surface. This horizon has been explored at shallow depth by trenching and stripping with the recorded production through June 30, 1954, of about 50 tons of ore averaging 0.55 percent U_3O_8 and 2.34 percent V_2O_5. This was taken out by lessees who probably mined and sorted the ore very carefully in a surface operation. North of the claims, adjoining mines, the Broadway and Mary Jane, have produced more than 1,800 tons of ore averaging from 0.15 to 0.20 percent U_3O_8 and 2.00 percent V_2O_5, also from shallow workings.

The applicant company has proposed exploration of the surface for more shallow deposits by stripping. This would actually be more of a mining operation, and does not qualify as a DMEA project. They also propose drilling a narrow north and south strip through the property along a supposed trend projected from the Broadway and Mary Jane ore bodies. No definite evidence of such an ore trend

was found by the examining team. Some mineralization, not of ore grade, is present in outcrops near the base of the Salt Wash in Mary Jane Draw, north of the Lost Brothers claims. It indicates a possibility of mineralization below the known shallow deposits at an average depth of not over 50 feet and appears to be a reasonable target for diamond drilling. Exploration of the Summerville formation by deeper drilling is not considered advisable, based on unfavorable results of regional studies of the Summerville by the Geological Survey.

At a field conference with John G. Obrecht, president, and Donuil M. Hillis, geologist, for the applicants, the stripping and deep drilling were eliminated and a program in three stages totaling 3,250 feet of diamond core drilling in a maximum of 65 holes averaging 50 feet in depth to explore the area as a whole, instead of a narrow strip, was agreed upon.

There is a reasonable possibility of finding a moderate tonnage of significant ore by drilling that can be mined at a small profit. An exploration project estimated to cost $11,732.50--Government participation 75 percent, or $8,799.38--is recommended for approval.

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

224 New Customhouse
Denver 2, Colorado

January 18, 1955

Mr. John G. Obrecht, President
Crown Uranium Company
205 Star Building
Casper, Wyoming

Re: Docket No. DMEA 3461

Dear Mr. Obrecht:

This will acknowledge receipt of your letter dated January 14, 1955, in which you requested additional time to review your records and prepare a map for the subject application.

This information is required before we can continue to process your application and if we do not receive it before February 20, 1955, we will assume that you are no longer interested in the proposed exploration and will close the docket.

Yours very truly,

W. M. TRAVER,

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

WMC:ld

Copy to: Chairman, Operating Committee
J. F. Shaw
E. W. Harshman
W. P. Williams
R. M. Connors
Sub
Chron

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

224 New Customhouse
Denver 2, Colorado

January 6, 1955

Mr. John G. Obrecht, President
Crown Uranium Company
205 Star Building
Casper, Wyoming

Re: Docket No. DMEA 3461

Dear Mr. Obrecht:

We have had no reply to our letter dated November 17, 1954, in which we requested a map showing the area in conflict with the Chusa claims which were located in January 1944. We also requested evidence of final transfer of the Lost Brothers claims in accordance with your purchase agreement.

If we do not receive the requested information within 30 days we will assume that you are no longer interested in the proposed exploration and will close the docket.

Yours very truly,

W. H. King

W. H. King

E. N. Harshman

E. N. Harshman

DMEA Field Team, Region IV

HMC:ld

Copy to: Chairman, Opr. Comm.
Traver
Harshman
Williams
Connors
Sub
Chron

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

December 1, 19[illegible]

[illegible] Federal Center
Denver 25, Colorado

Memorandum

To: DMEA Field Trea., Region IV

From: Chief, Mining Division, Region IV

Subject: Final Report, DMEA Docket 3401 (Uranium), Crown Uranium Company, Lost Brothers claims, San Miguel County, Colorado.

Enclosed are [illegible] copies of the engineering report of examination on the subject docket.

The applicant requested [illegible] feet of diamond core drilling and [illegible] feet of stripping by bulldozer at an estimated total cost of $[illegible].

The engineer recommended [illegible] be set up in three stages of diamond core drilling, provided the applicant can resolve the conflicting ownership between the Lost Brothers and the Crown claims. The total cost of the recommended [illegible] estimated to be $[illegible].

[illegible] concur in the examiner's recommendations.

W. H. King

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Region IV

Building 20, Room 137
Denver Federal Center
Denver 2, Colorado
November 4, 1954

Memorandum

To: Executive Officer, DMEA Field Team, Region IV

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

Subject: DMEA 3461 (Uranium) Crown Uranium Company (Lost Brothers group) San Miguel County, Colo.

Enclosed are the original and 10 copies of a "Summary, Conclusions, and Recommendations", by M. N. Salsbury, Bureau of Mines and W. P. Williams, Geological Survey and of Salsbury's engineering report on the above docket.

Salsbury concludes there is a reasonable possibility of finding, by a judicious core drilling program, a moderate reserve of uranium ore in small bodies that could be mined profitably. He recommends a 3 stage project designed to explore the area included in 4 of the Lost Brothers claims, by 31 staggered holes on a 250-foot grid in stage I, 24 offset holes on 100-foot centers in stage II, and 10 offset holes on 50-foot centers in stage III. Footages for the 3 stages are 1,550, 1,200 and 500 respectively, a total 3,250. Stages II and III require prior written authorization by the Region IV Field Team on recommendations by the Geological Survey personnel, working in the area. The total overall cost of all drilling, if completed, will be $11,732.50--Government participation 75 percent or $8,799.38.

I concur with the conclusions and recommendations. The conflicting ownership between the Lost Brothers and claim No. 5 claim of Four Corners Uranium Corporation should be resolved before a contract is entered into, or the conflicting area should be eliminated.

The application was discussed with Atomic Energy Commission personnel by the Geological Survey member of the examining team.

The brochure provided with your memorandum of August 17, 1954 instructing that we examine the property and submit a report of our findings and a copy of the Geologic report are also enclosed.

W. M. Traver

W. M. Traver

enclosures
one/10
DMEA 3461 Chron.

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Defense Minerals Exploration Administration
Denver Federal Center
Denver 2, Colorado

October 19, 1954

Memorandum

To: DMEA Field Team, Region IV

From: A. H. Koschmann

Subject: DMEA Docket 3461, Crown Uranium Company, Lost Brothers Group, San Miguel County, Colorado

Enclosed are 10 copies of a geologic report by W. P. Williams of the U. S. Geological Survey covering the above docket.

Mr. Williams concludes that exploration on the property may lead to the discovery of significant uranium ore deposits and recommends that a program of exploration, modified somewhat from that proposed by the applicant, be approved.

One copy of the report has been given to Mr. W. H. Traver. He will forward it directly to you.

Nine extra copies of the map accompanying the report are transmitted also.

E. M. Hutchinson
for A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Enclosures (19)

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

October 8, 1954

Memorandum

To: A. H. Koschmann, DMEA Field Team, Region IV

From: Arnold L. Brokaw, District Supervisor

Subject: DMEA 3461, Crown Uranium Company, Lost Brothers group, San Miguel County, Colorado

Transmitted herewith are eleven copies of a geologic report by W. P. Williams, covering the above-referenced DMEA application.

Field examination, the regional setting of the property, the presence of mineralized material on the property, and favorable geologic conditions have caused me to recommend favorable action on the application with regard to a DMEA contract.

This application has been brought to the attention of the Atomic Energy Commission's Grand Junction Operations Office and the Commission has been asked for their help and advice in evaluating the subject property.

We are enclosing nine extra copies of the maps accompanying the report.

WPWilliams
For Arnold L. Brokaw

WPW/mlr

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMEA 3481, Last Northern Group

Crown Jewelers Company

San Miguel County, Colorado

Uranium

W. F. Williams, Geologist
Geological Survey

M. H. Salsbury, Mining Engineer
Bureau of Mines

October 25, 1954

DMRA 3161

LOST BROTHERS GROUP
OPPOSIT MINERAL COMPANY
SAN MIGUEL COUNTY, COLORADO

Summary, Conclusions, and Recommendations

By H. P. Williams
Geologist
Geological Survey

H. H. Shideler
Mining Engineer
Bureau of Mines

DMEA 3441

LOST BROTHERS GROUP
GROUM URANIUM COMPANY
SAN MIGUEL COUNTY, COLORADO

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

By W. P. Williams and M. R. Salisbury

The Lost Brothers group of claims, located in Bull Canyon mining district, San Miguel County, Colorado, was examined by a Defense Minerals Exploration Administration examining team on September 14, 1954. Application has been made by the Groum Uranium Company, 205 Star Building, Casper, Wyoming, for Government assistance in exploration for uranium at an estimated cost of $33,300.00--Government participation 75 percent, or $24,975.00. Diamond drilling totaling about 11,500 feet and 350 hours of stripping with a bulldozer was proposed to explore known shallow deposits at surface and to explore the Salt Wash and Summerville formations by drilling holes up to 200 feet in depth.

The rocks on the Lost Brothers claims are composed of the Summerville and Morrison formations. The Summerville formation here is composed of about 90 feet of even and thinly bedded, flat lying, sandy and silty shale. It crops as a steep debris covered slope, generally reddish or greenish brown. Grain sizes range from shale to a fine-grained sandstone. The sandstone is generally found as small, discontinuous lenses interpolated in the shale. On the Lost Brothers claims the Summerville is directly overlain by the

Salt Wash member of the Jurassic Morrison formation. The Salt Wash member is composed of fine- to medium-grained, white to dark gray sandstone, which contains in places intercalated lenses of gray-green mudstone about 6 inches thick. On the Lost Brothers Nos. 1 and 2 claims, the Salt Wash horizon is composed of two principal sandstone ledges about 30 feet thick, separated by 15 feet of reddish-gray and green shale. On claims 3, 4, and 5, the two sandstone ledges merge into one sandstone layer about 40 feet thick.

Only the first or lowest horizon of the Salt Wash formation remains at the claims. It is exposed on the mesa rim where there are several minor "shows" and the top of the formation is found on the mesa only 5 to 25 feet below the surface. This horizon has been explored at shallow depth by trenching and stripping with the recorded production through June 30, 1954, of about 50 tons of ore averaging 0.55 percent U_3O_8 and 2.34 percent V_2O_5. This was taken out by lessees who probably mined and sorted the ore very carefully in a surface operation. North of the claims, adjoining mines, the Broadway and Mary Jane, have produced more than 1,800 tons of ore averaging from 0.15 to 0.20 percent U_3O_8 and 2.00 percent V_2O_5, also from shallow workings.

The applicant company has proposed exploration of the surface for more shallow deposits by stripping. This would actually be more of a mining operation, and does not qualify as a DMEA project. They also propose drilling a narrow north and south strip through the property along a supposed trend projected from the Broadway and Mary Jane ore bodies. No definite evidence of such an ore trend

was found by the examining team. Some mineralization, not of ore grade, is present in outcrops near the base of the Salt Wash in Mary Jane Draw, north of the Lost Brothers claims. It indicates a possibility of mineralization below the known shallow deposits at an average depth of not over 50 feet and appears to be a reasonable target for diamond drilling. Exploration of the Summerville formation by deeper drilling is not considered advisable, based on unfavorable results of regional studies of the Summerville by the Geological Survey.

At a field conference with John E. Obrecht, president, and Donald M. Billis, geologist, for the applicants, the stripping and deep drilling were eliminated and a program in three stages totaling 3,250 feet of diamond core drilling in a maximum of 65 holes averaging 50 feet in depth to explore the area as a whole, instead of a narrow strip, was agreed upon.

There is a reasonable possibility of finding a moderate tonnage of significant ore by drilling that can be mined at a small profit. An exploration project estimated to cost $11,732.50—Government participation 75 percent, or $8,799.38—is recommended for approval.

UNITED STATES DEPARTMENT OF THE INTERIOR

DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION
REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMEA 3461, Crown Uranium Company, Lost Brothers group, San Miguel County, Colorado

Uranium

Geologic Report

by

W. P. Williams
U. S. Geological Survey

October 8, 1954

DMEA 3461

INTRODUCTION AND SUMMARY

The Crown Uranium Company, 205 Star Building, Casper, Wyoming, has applied to the Defense Minerals Exploration Administration (DMEA docket 3461) for aid to explore for uranium. The property involved consists of the Lost Brothers claims 1-5, located in the Bull Canyon district, Sec. 27, T. 45 N., R. 18 W., N.M.P.M., San Miguel County, Colorado. The property may be reached by traveling northwest approximately 12 miles on Colorado Highway 90; thence 13 miles southwest on unimproved dirt roads.

A joint field examination of the property was made on September 14, 1954. The examining team consisted of M. H. Salsbury, U. S. Bureau of Mines, and W. P. Williams, U. S. Geological Survey. The examining team was accompanied by John G. Obrecht, President, Crown Uranium Company and Donuil Hillis, consulting geologist for Crown Uranium Company.

The applicant is a purchaser of the claims under contract.

GEOLOGY AND ORE RESERVES

The rocks on the Lost Brothers claims are composed of the Summerville and Morrison formations. The Summerville formation on the claims is about 90-feet thick and is composed of even and thinly bedded, flat lying, sandy and silty shale. The Summerville crops out as a steep, debris-covered slope and is generally reddish or greenish brown. Grain sizes in the Summerville range from shale to fine-grained sandstone. The sandstone is generally found as small, discontinuous lenses intercalated in the shale.

The Summerville formation is directly overlain on the Lost Brothers claims by the Saltwash member of the Jurassic Morrison formation. The Saltwash member is composed of fine- to medium-grained, white- to dark-gray sandstone. On Lost Brothers claims 1 and 2, the Saltwash member is composed of two principal sandstone ledges about 30-feet thick, separated by about 15 feet of reddish gray and green shale. On claims 3, 4, and 5, the two sandstone ledges merge into one sandstone layer about 40-feet thick. The Saltwash sandstone is pale gray, or nearly white, and in places contains intercalated lenses of gray-green mudstone about 6-inches thick.

The applicant has done a small amount of exploration work on the claims in the form of small bulldozer cuts on surface. This work has uncovered three or four pods of carnotite ore in the Saltwash sandstone. The pods are about 3-5 feet in width, about 10 feet long, and are about 6 inches thick. The ore is heavily stained with limonite, so that the ore has a rusty-brown color. Scintillator readings of the limonite-stained ore showed a count about 30 times background count. At the present stage of development, it is not possible to compute ore reserves on the property.

At the uranium prospects, about 500 feet north of the Lost Brothers claims, scintillator readings were about 10 times background count. These prospects consist of logs and trashy pockets of small size in the basal Saltwash sandstone. Anomalous scintillator readings were noted in the topmost parts of the Summerville formation close to the prospects.

On the Lost Brothers claims, the rocks dip northeast about 3-5° and strike northwest. The surface on the claims is almost a dip slope, covered locally by soil-and-rock debris.

PROPOSED EXPLORATION

The applicant proposes to explore the Lost Brothers claims by means of approximately 64 core-drill holes placed on a more or less regular grid pattern. The proposed holes are on about 200-foot centers and the applicant estimates hole depths at a maximum of about 200-feet for an average of 50 feet. The applicant also proposes, in addition to drilling, to strip areas surrounding the present small pits in the effort to uncover additional ore bodies. The total estimated cost of the proposed exploration program as estimated by the applicant would be $33,300.00.

It is recommended that a revised exploration project be approved to explore the Lost Brothers claims. The examining field team are of the opinion that stripping of overburden should be deleted.

During the field examination, it was agreed by all concerned that the following core drilling program would adequately test the property involved.

Stage I - Core drill 31 holes at locations shown on figure 2. The holes should be in lines 250 feet apart with the holes on 250-foot centers along the lines; and the holes should be in staggered array. The average depth of the holes will be about 50 feet. Total drilling footage will, therefore, be about 1550 feet in stage I.

Stage II - Government drilling in the Bull Canyon district shows that an average of about one drill hole in five in geologically favorable areas is apt to show favorable indications for the presence of ore. Thus, of the 31 holes drilled in stage I, it may be expected that 6 holes will be favorable and require four offset holes each, giving a total of 24 drill holes in stage II. Total drilling footage in stage II would then be about 1200 feet. Stage II holes should be at least 100 feet from other existing holes.

Stage III - Should consist of ten additional drill holes placed as offset holes near favorable holes drilled in stage II. Stage III holes should be no closer than 50 feet to other existing holes.

Summary of Drilling

Stage I	31 holes	250 ft. centers	50 ft. deep	1,550 ft.
Stage II	24 holes	100 ft. centers	50 ft. deep	1,200 ft.
Stage III	10 holes	50 ft. centers	50 ft. deep	500 ft.
Total---	65 holes	Total footage ----------		3,250

Although the upper parts of the Summerville formation in the vicinity of the Lost Brothers claims show anomalous radioactivity, regional study of the Summerville indicates that it is not advisable to drill far into the formation. It is, therefore, recommended that all drill holes be bottomed in the Summerville immediately below the Saltwash-Summerville contact in the topmost red mudstone in the Summerville formation.

All drill holes should be no smaller than AX size to permit logging of holes with in-hole equipment. All holes should be cored their entire length. The core should be split and one half saved and stored in a safe manner for the use of the Government. Government drilling in the Bull Canyon district indicates that provision should be made for about 40 assays in the whole project. An exploration project could begin within 30 days and be completed within 6 months from the date of a DMEA contract.

The U. S. Atomic Energy Commission, Grand Junction Operations Office, has been apprised of this application and examination; and the AEC has been asked for its comments and advice.

CONCLUSIONS AND RECOMMENDATIONS

Field examination, study of the ore deposits in the Bull Canyon district, and the presence of uranium mineralization on and near the Lost Brothers claims indicates that an exploration drilling project on the claims would have a good chance of discovering new uranium ore reserves. I recommend that a DMEA contract be prepared to provide for an exploration project as outlined above.

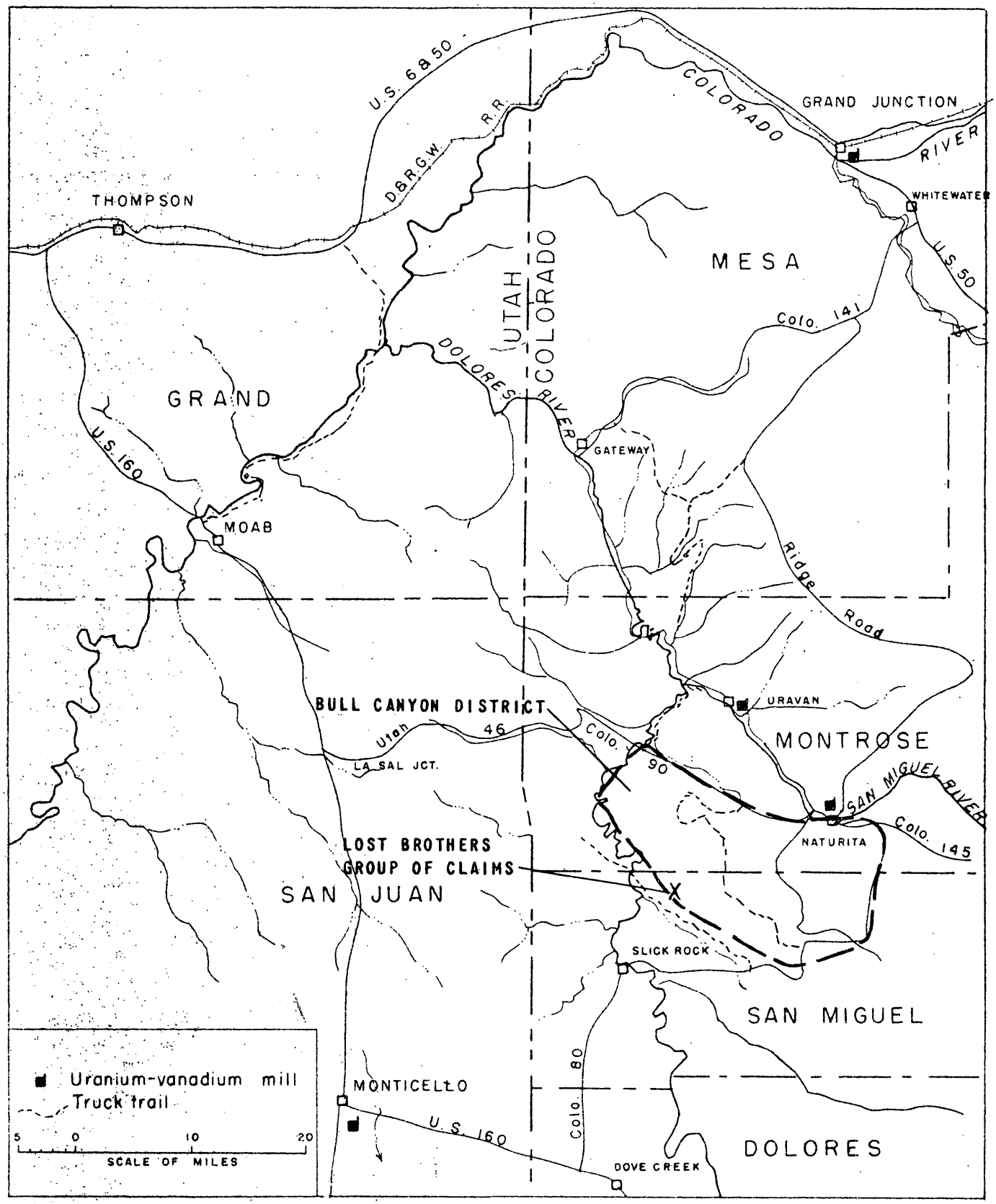

Figure 1. INDEX MAP OF PART OF THE COLORADO PLATEAU SHOWING THE LOCATION OF THE LOST BROTHERS GROUP OF CLAIMS, BULL CANYON DISTRICT, SAN MIGUEL COUNTY, COLORADO

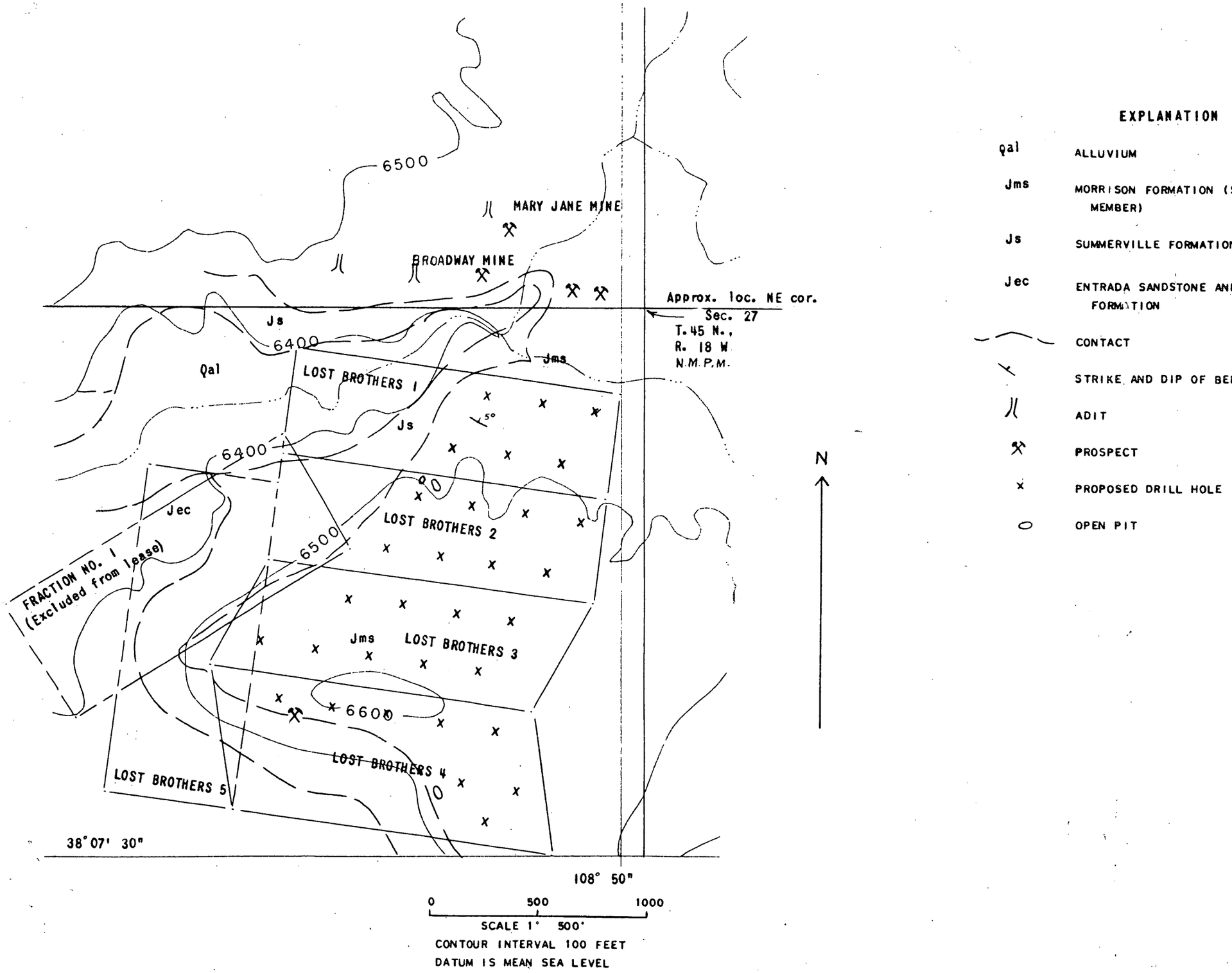

Figure 2. MAP SHOWING PROPOSED DRILL HOLES ON LOST BROTHERS GROUP OF CLAIMS, CROWN URANIUM CO., SAN MIGUEL COUNTY, COLORADO

DMEA 3461

LOST BROTHERS GROUP
CROSS URANIUM COMPANY
SAN MIGUEL COUNTY, COLORADO

Engineering Report

By M. H. Salsbury
Mining Engineer
Bureau of Mines

DMEA 3461

LOST BROTHERS GROUP
CROWN URANIUM COMPANY
SAN MIGUEL COUNTY, COLORADO

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ILLUSTRATIONS

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1. Location map, Lost Brothers Group, Crown Uranium Co., San Miguel County, Colo. 2

DMRA 3441

LOST BROTHERS GROUP
GROWN URANIUM COMPANY
SAN MIGUEL COUNTY, COLORADO

ENGINEERING REPORT

By

M. R. Salisbury

INTRODUCTION

The Lost Brothers group of claims, located in Bull Canyon mining district, San Miguel County, Colorado, was examined by a Defense Minerals Exploration Administration Region IV examining team on September 14, 1954. They were accompanied by John S. Obrecht, 205 Star Building, Casper, Wyoming, president, and Russell M. Willis, 4831 East Harvard Lane, Denver, Colorado, geologist, representing the applicant company, a Colorado corporation. Government-assisted exploration for uranium consisting of approximately 11,500 feet of diamond core drilling and 350 hours of stripping by bulldozer is requested at an estimated cost of $33,300.00--Government participation 75 percent, or $24,975.00.

ACKNOWLEDGEMENTS

Data were obtained from the applicants, and by consultation with Carl Roach and A. R. Flint of the Geological Survey who are assigned to this area. Lou Gerbrecht of the Atomic Energy Commission was consulted by the Geological Survey member of the examining team but no specific information on the area was obtained other than production figures for the Lost Brothers and adjoining property. Statistics compiled by the Commission were used in certain estimates.

LOCATION, TOPOGRAPHY, AND PHYSICAL FEATURES

The Lost Brothers claims are located in secs. 22, 26, and 27, T. 43 N., R. 18 W., Bull Canyon mining district, San Miguel County, Colorado (fig. 1). They are on the west and north rim of a mesa overlooking a branch of Mary Jane Draw, and about 2 miles northwest of the Dolores river. Access is over 18 miles of dirt road from Colorado State Highway 90, a graveled road.

The area is typical Colorado Plateau mesa land at an altitude of 6,500 feet, 1,200 feet higher than the floor of the Dolores river canyon. However, the relief at the claims is not great and the mesa rim forms a cliff from 10 to 30 feet high. The mesa top at this point is almost a dip slope with the depth to the ore horizon increasing slightly northward.

The normally arid climate permits year-around operation, although surface exploration may be inadvisable during infrequent storms in late winter and early spring. Domestic water supplies must be hauled from Naturita, Colorado. Water for mining purposes must be hauled 20 miles from the Lone Cone spring.

An abundant growth of pinion pine provides an ample supply of firewood. Some mining supplies are obtainable at Naturita, Nucla, or Uravan, but most items must come from Grand Junction, Colorado, the nearest major supply center, a distance of 103 miles from Naturita over U. S. Highway 50 and Colorado State Highway 141.

Power for all development purposes must be furnished by the operator. The nearest ore purchasing depots are at the plants of the Vanadium Corporation of America at Naturita, and the United States Vanadium Company at Uravan.

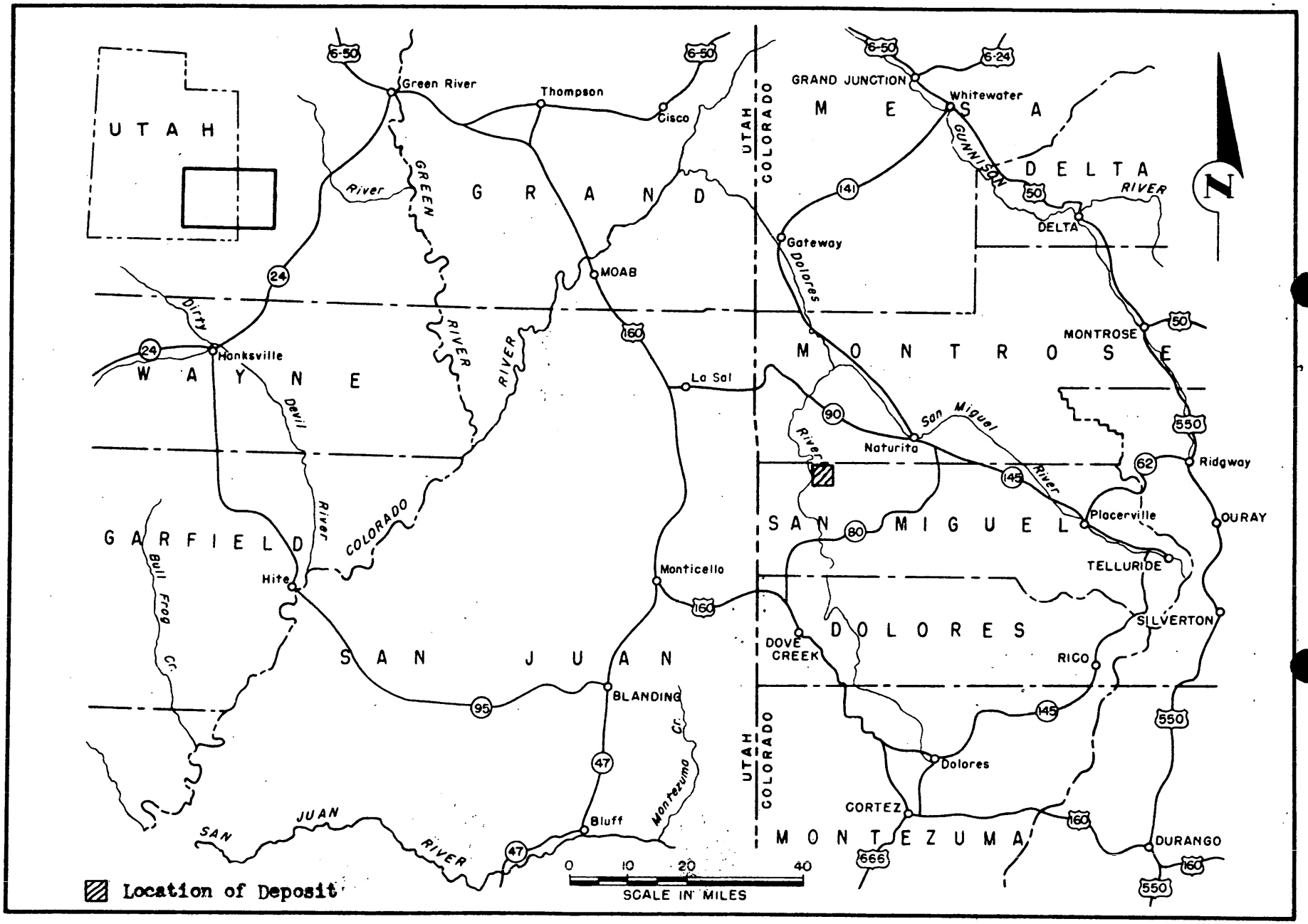


FIGURE 1 - LOCATION MAP, LOST BROTHERS GROUP, CROWN URANIUM CO., SAN MIGUEL COUNTY, COLO. (DMEA 3461)

LABOR AND LIVING CONDITIONS

The standard wage scale for semi-skilled labor is $1.50 to $2.00 per hour. The normal work week is 6 days, with time and one-half being paid over 40 hours. The labor supply is reasonably adequate. The proposed work would be contracted and would require, in addition, only supervision and technical services, and two workmen. These men were presently living on the project. Housing in the nearest towns is critical and mine personnel is usually housed at the project in housetrailers or rough cabins. Contractors normally furnish their own facilities.

HISTORY, PRODUCTION, AND OWNERSHIP

The mining history of the immediate area dates from before World War II. Exploration and production were negligible before 1948.

L. G. Murren and Delbert Zufelt, lessees of the property, shipped 14.7 tons of ore averaging 0.81 percent U_3O_8 and 3.19 percent V_2O_5 between September 1951 and November 1952.

The Atomic Energy Commission furnished the following figures on production from the Lost Brothers claims and two adjoining mines from 1948 through June 30, 1954:

Mine	Dry Tons	Average Content percent U_3O_8	Average Content percent V_2O_5
Lost Brothers	51.49	0.55	2.34
Broadway	454.94	0.15	2.00
Mary Jane	1407.94	0.20	2.02

The property consists of five unpatented lode claims, the Lost Brothers Nos. 1 to 5, which were located by William A. Fischel, Bee Finch, Bi Robinett, and F. M. Rotten, on May 22, 1951, according to a location notice on a discovery post on the Lost Brothers No. 5 lode, (Figure 2 with the geologic report). Records in the San Miguel

county courthouse at Telluride, Colorado, give the recording date as July 9, 1951, in Book 175, pages 101 to 103. An amended location certificate for the claims was filed on December 3, 1953, by William Fischel, in compliance with Public Law 350, because of a conflicting oil and gas lease which was afterward found to be invalid. Zufelt and Karren, the lessees in 1951-52, mistakenly filed under Atomic Energy Commission Circular No. 7, an application for an Atomic Energy Commission lease (AX(05-1)-00-2), recorded in Book 216, page 348, San Miguel county. This lease was terminated by a letter from the commission dated January 20, 1954, a copy of which was furnished the examining engineer.

The recording date of the claims, July 9, 1951, is prior to a withdrawal of the ground by the Atomic Energy Commission on January 4, 1952, and they are not affected. The claims have been surveyed by the applicants, using plane table methods, tying them to the northeast corner of section 27.

The present owners, Crown Uranium Company, a Colorado corporation, have obtained the five claims under a purchase agreement with the original locators at a total price of $20,000.00 of which $4,000.00 was paid down. Final payment was due on or before September 18, 1954, and Chrecht stated to the examining team that the papers were being drawn up and the final payment would be made on time. A copy of the purchase agreement was attached to the loan application.

Another unpatented claim, Fraction No. 1 lode, located April 5, 1950, and recorded May 3, 1950, in Book 174, page 563 by C. L. Zufelt, conflicts with about half of Lost Brothers No. 5 lode

and smaller areas of Lost Brothers Nos. 2 and 3 lodes. This claim was a prior location and the applicants do not claim the area in conflict, nor include it in the lease application.

Another group of claims, Chuse No. 1 to 5, is in section 26 east of the Lost Brothers. One of these, Chuse No. 5, apparently extends into section 27 and overlaps part of one or more Lost Brothers claims. The applicants state that this claim was located subsequent to the Lost Brothers claims and consequently the Lost Brothers have title to the area in conflict. A location notice for Chuse No. 5 was noted on Lost Brothers ground by the examining team. It was an amended location dated December 5, 1953, recorded in Book 226, pages 505-510. This is subsequent to the Lost Brothers locations. The Chuse No. 5 claim corners were not found. However, a search was not made by the examining team.

The location certificate found, referred to an earlier location of the Chuse claims recorded on January 28, 1944, in Book 174, page 313, San Miguel County. This was verified at the courthouse by the examining engineer. The date of location by Tom L. Reddick and A. C. Mc Donald was given as December 13, 1943. The claims apparently have not been surveyed and are described only as being in T. 43 N., R. 18 W., 8,200 feet, S. 32°07' E. from Wedding Bell mountain. The examining engineer did not find a record of Affidavits of Labor, or Notices in Lieu of Assessment on the claims. Thus, there may be doubt as to the validity of the earlier location. The consultant for the Four Corners Uranium Corporation, present owners of the Chuse claims, C. W. Wilfley, was contacted at their

Denver office, but he was not familiar with the details of the claims and did not express any opinion regarding the conflict, except to state that the earlier Chuma locations appeared to have the prior rights. Unless the conflict can be resolved in favor of the applicants, the area which may be in dispute would have to be eliminated from consideration for a Defense Minerals Exploration Administration project, if this area can be defined from the Chuma claim descriptions, which is doubtful.

If the sale of the property to the applicants has been completed, a Consent to Lien from the former owners is, of course, not required. However, evidence of the final transfer should be furnished by the applicant company.

DESCRIPTION OF THE DEPOSITS

The uranium-vanadium deposits of the Bull Canyon district occur in four horizons or rims in the Jurassic Salt Wash formation. At many points some of these horizons have been removed by erosion. The uranium occurs as carnotite and associated uranium and vanadium minerals in sandstone ledges as replacements of buried trees or other carbonaceous material in rolls and thickened lenses of sandstone. Only the first or lowest potential ore-bearing rim is present on the Lost Brothers claims, dipping 3 to 5° northeast. The top of this horizon is at a depth of from 5 to 25 feet below surface. It outcrops on the property along the rim to the west and north, and there are several "shows" along the west rim where several partly mineralized trees were found. It is exposed on top of the mesa at three points, at least, where small lenses as much as 5 feet long,

10 feet wide and 0.5 to 1 foot thick have been mined by trenching and stripping. North of the property, the first rim can be followed along both walls of a trench of Mary Jane draw. There is some evidence of mineralization in the main ledge here and scintillometer readings were about 10 times background. Slight mineralization was noted in the top of the Summerville formation outcropping below. Locally, there is a split sandstone ledge under the main first horizon which can be followed westward along the south side of the draw. North of the draw, a continuation of the first rim has been mined in the Broadway and Mary Jane properties. Here again the ore horizon is very near surface.

The applicants' geologist postulates a north-south trend of mineralization based on known ore occurrences in the Broadway and Mary Jane mines and open pits on the Lost Brothers No. 2 claim. Specific evidence to support this is lacking. However, there appears to be enough evidence of mineralization on the Lost Brothers property to warrant exploration without proving this trend.

MINEABLE ORE RESERVES

There are no measurable or other types of ore reserves on the property. The ore exposures have not been explored sufficiently to permit calculation of reserves. No samples were taken during the examination. Exposures of ore and mineralization were checked by using a scintillometer.

PRESENT STATUS

Exploration and Development

Exploration to date has been confined to shallow openings

in the rim outcrops where mineralization was found, and three or more open cuts on top of the mass on the Lost Brothers Nos. 2 and 4 claims. The cuts on the Lost Brothers No. 2 claim have been exploited further by stripping.

The applicants report that some of the recorded ore production came from the rim openings where several mineralized logs were found, but it must have been very small, judging from the present appearance of the workings. Ore-grade mineralization at the rim which might be worth attempting to follow in is not evident.

One open cut on the Lost Brothers No. 4 claim shows narrow seams of ore. The applicants suggest a possible continuation of this ore westward, possibly connecting to one of the rim shows.

Most of the reported production came from the Lost Brothers No. 2 claim where the top of the first rim is practically at surface. The present exposures of ore do not average over 0.5 feet in thickness. Radioactivity up to 30 times background count was measured by scintillometer. The horizontal dimensions of the small lenses mined were perhaps 5 feet by 10 feet. The ore shipped in the past must have been mined and sorted carefully to make the grade shown by the settlements. The applicants have confined their efforts to date to stripping the area surrounding the original workings, using a D8 Caterpillar tractor. Perhaps five tons of ore had been saved for shipment at the time of the examination. The grade of ore being saved in this stripping operation does not appear to be as good as that mined by hand methods.

The operations at the Broadway and Mary Jane mines to the north of the Lost Brothers property have been carried on through adit

tunnels on the rim. In these operations, difficulty has been encountered with heavy ground, particularly in the Broadway mine, because the ore is so close to surface that there is very little solid cover. At several points in the Broadway mine, the workings have broken through into the overburden. The applicants report that these adjoining mines are shut down at the present time partly because of the problem of ground support under dangerous conditions. It is to be noted that the average grade of ore in the Broadway mine, 0.15 percent U_3O_8, and 2.00 percent V_2O_5, is probably barely profitable. ($25.50 per ton with initial production bonus).

Mining and Milling Equipment and Other Facilities

A private contractor has on the property a D8 tractor, a Jaeger air compressor and drilling equipment. A cabin, test house, and tool shed have been constructed.

PROJECT PROPOSALS, WITH COSTS

The applicants have proposed exploration by drilling and stripping. The estimated cost of drilling, $1.60 per foot, is too low for diamond core drilling as proposed by the applicant. The amount of drilling and stripping was not specified. From the estimated costs, the following tabulation can be inferred:

11,560 feet of core drilling at $1.60 per foot (number of holes unspecified-64 shown on map)	$ 18,500.00
Approximately 364 hours stripping-D8 tractor and operator at $18.00 per hour	6,575.00
Approximately 364 hours operation air compressor and drilling outfit at $5.30 per hour, including rental, repairs and fuel	1,925.00
1,850 hours labor at $2.00 per hour (2 men to be employed)	3,500.00

Supervision for 3-1/3 months at $600.00 per month	$ 2,000.00
Geological and engineering consultation	1,000.00
Supplies (explosives, steel, drilling water)	500.00
Contingencies	300.00
Total estimated cost	$ 13,300.00
Government participation at 75 percent	$ 24,975.00

The time for completion estimated by the applicants is 3-1/3 months and it is proposed to contract all work except supervision, technical services and the labor required to follow up stripping operations.

The proposed stripping does not meet the requirements of a DMEA exploration project, but is more of a mining operation. The drilling is described by the applicants as being laid out in three parallel north and south rows, although it is not shown this way in their map. The proposed hole spacing is 100 feet north and south, and 50 feet east and west, all located in relation to the supposed north and south axis of a trend of mineralization. This would require about 72 holes averaging 160 feet in depth, on the basis of 11,560 feet of drilling. The cost of the applicants' proposal is out of proportion to the amount of ore that is likely to be found.

From the evidence observed by the examining team, this program does not fit conditions, and confining the drilling to one narrow strip is unadvisable because there are not sufficient data to show the trend of mineralization suggested by the applicants.

At a field conference, the applicants agreed to a revised project in three stages designed first, to locate favorable areas and then to test the favorable geological conditions for mineralization. A considerably reduced program of diamond drilling is proposed at a total cost commensurate with the claim area and the amount of uranium likely to be found.

The exploration target is the lowest or first rim of the Salt Wash formation, and the holes should bottom in the first red sandstone encountered in the Summerville formation immediately below. This will insure penetration of the total thickness of favorable sandstone, including the split ledge which can be seen below the main ledge in Mary Jane draw. Exploration of the Summerville, as suggested by the applicants, is not considered advisable by the Geological Survey after consideration of regional studies. The average drilling depth in the revised program is 50 feet. Although the maximum drilling depth is not over 75 feet, core drilling is preferred to wagon or rotary-dry drilling because some geological information is sought in addition to testing the formations penetrated for ore bodies.

Following is the proposed exploration in three stages, to be completed in an estimated 3 months, if there are no delays between stages:

Stage I - Core drill 31 holes to an average depth of 50 feet at locations shown on figure 2 with the geologic report. The holes should be staggered on lines 250 feet apart with holes on 250 feet centers along the lines

Total Stage I - 31 holes 1,550 feet

Stage II - Core drill, 24 holes offsetting a maximum of six holes in Stage I which are geologically favorable, in four directions on 100-foot centers. No hole is to be closer than 100 feet to any existing hole.
Total Stage II - 24 holes 1,200 feet

Stage III - Core drill 10 holes to offset significant mineralization found in Stages I and II on fifty foot centers. No hole is to be closer than 30 feet to any existing hole.
Total Stage III - 10 holes 500 feet

Drilling Summary

	Holes	Centers feet	Depth feet	Footage
Stage I	31	250	50	1,550
Stage II	24	100	50	1,200
Stage III	10	50	50	500
Total	65			3,250

Following is an itemized cost estimate:

(1) Contracts
Core drilling in 65 holes
3,250 feet at $2.75 per foot $ 8,937.50
Drill site preparation
16 hours bulldozing
D8 tractor at $18.00 per hour 288.00
Total Contracts $ 9,225.50

(2) Labor and supervision
Labor None
Supervision, one-half of salary of superintendent for 3 months at $600.00 per month, or 1/2 of $1,800.00 900.00
Total supervision 900.00

Technical services
Consulting and engineering
4 days per month, or 12 days at $50.00 per day 600.00
Total technical services $ 600.00

Total labor, supervision and technical services 1,500.00

(3) Operating materials and supplies

80 core boxes for 3,250 feet of core at $3.50 each	$ 280.00	
Gas, oil and repairs for service truck, 3 months at $75.00 per month	225.00	
Total materials and supplies		505.00

(4) Operating equipment

Rental	None	
Purchase	None	
Depreciations		
1 truck valued at $1,000.00 depreciated at $16.67 per month, 3 months	50.00	
Total operating equipment		50.00

(5)(6) No initial rehabilitation or repairs, or new buildings and improvements

(7) Miscellaneous

Accounting 3 months at $50.00 per month	150.00	
Sampling and analysis 40 samples assayed for U_3O_8 and V_2O_5 at $5.00 each	200.00	
Compensation insurance, payroll taxes, etc., on supervisors salary - 5 percent of $1,800.00	90.00	
Total miscellaneous		440.00

Maximum cost of project if carried through to completion		$ 11,720.50
Overall cost per foot	$ 3.61	
Overall cost per foot, less sampling costs	$ 3.54	

SUMMARY COST OF PROJECT

Stage	Drilling Footage	Estimated Cost per foot	Total Cash
I	1,550	$ 3.61	$ 5,595.50
II	1,200	3.61	4,332.00
III	500	3.61	1,805.00
	3,250		
		Total estimated cost of project	$11,732.50
		Government participation at 75 percent	8,799.38

The superintendent will be employed at another project one-half of the time. It is believed that provision for a sampler,

other than services of the superintendent and consultant, is not necessary because all of the ore is to be saved. The contract price of $9.75 per foot for drilling is used because of the small amount of drilling involved, and also the fact that the applicant cannot guarantee more than the 1,550 feet called for in Stage I. Drill holes should be drilled AX size or larger, and cored throughout their length. The usual provisions for saving and splitting the core should be observed with chemical analysis of portions which radiometric scaling indicates has significant U_3O_8 content.

Authorization in writing by the DMEA Field Team, Region IV, should be required for Stages II and III, based on the results of previous stages.

CONCLUSIONS

The proposed project would explore the potential ore-bearing lowest, or first, horizon of the Salt Wash formation from the top where there is known mineralization of ore grade very close to surface, to the Salt Wash-Summerville contact. Exploration of the lower part of the horizon is believed to be justified, even though the mineralization found in Mary Jane drew at this depth is not of ore-grade, on the supposition that the ore-grade mineralization found near surface may be repeated below. The recorded production from the ground adjoining on the north is low in grade, but the small tonnage produced from the Lost Brothers claims is of very good grade, and there is a reasonable possibility that significant amounts of ore can be found which would be minable at a profit in an efficient operation, although the grade probably will not compare with the carefully sorted ore shipped previously. If only the

shallow upper horizon was to be investigated, most of the claim area could be explored by trenching or stripping which would probably accomplish mining at the same time. The possible occurrence of ore at greater depth justifies exploratory drilling.

The individual lenses are likely to have horizontal dimensions of about 5 by 10 feet, with an average thickness of 0.5 feet. Each lens might therefore contain 2.0 tons of mineralized material which, as mined, would be diluted to perhaps 6 tons. Basing the frequency of occurrence of these lenses on the operation on the Lost Brothers No. 2 claim, which has produced an estimated 40 tons of ore from an area of about 40,000 square feet, each claim might produce 450 tons of ore from shallow deposits, assuming that half of the total area is productive. This would be about 2,000 tons from the effective area of the five claims. If the size and frequency of possible ore lenses at a greater depth is comparable to this, the total production from the claims might be as much as 4,000 tons. There is, however, no evidence on which to base the possible tonnage of ore at a lower level.

The following estimate is based on mining and development costs on the Colorado Plateau, compiled by the Atomic Energy Commission. They have been adapted to the special conditions on the Lost Brothers property such as shallow mining depth and very thin deposits. They are included to show the minimum grade of ore which would return the total cost of production on a possible 4,000 tons of ore, and are not to be considered in any way as an estimate of ore reserves.

Estimated cost of producing 4,000 tons of ore

Camp facilities	$ 4,000.00	
Equipment	8,000.00	
Ore bins or alternate loading facilities	3,000.00	
Four, fifty-foot shafts or 200 feet of drifting and/or inclines	10,000.00	
(Other drifting costs are included in mining cost)		
Total development cost		$ 25,000.00
Applicants' share of estimated cost of DMEA exploration		3,000.00
Mining cost for small leases and thin ore widths 4,000 tons at $30.00 per ton		120,000.00
Total estimated cost for 4,000 tons		$148,000.00
Total estimated cost per ton produced		$ 37.00

Minimum grade of ore for a break-even operation producing 4,000 tons of ore:

U_3O_8 content - 0.21 percent; U_3O_8 payment before bonus	$ 16.95
V_2O_5 content eligible for payment, 2.10 percent-payment	13.02
(V_2O_5 content of ore based on past production in this area)	
Total payment per ton, before bonus	$ 29.97

Gross payment before bonus on 4,000 tons at $29.97 per ton	119,880.00
Bonus on first 10,000 pounds U_3O_8 at $3.50 per pound	35,000.00
Total Gross payment	$ 154,880.00
DMEA Royalties	- 7,744.00
Estimated net payment to shipper	$ 147,136.00

Production of about 4,800 tons of ore of this grade would be required to repay the Government in royalties, the estimated cost of the proposed DMEA project.

The property rights of the applicants appear to be valid, excluding the area in conflict with the Fraction No. 1, which is not claimed. However, if Four Corners Uranium Corporation should see fit to dispute the applicants' rights in the area which appears to be in conflict with Chuse No. 5, litigation might result.

RECOMMENDATIONS

It is recommended that a Government-assisted exploration loan in the amount of $11,732.50--Government participation 75 percent or $8,799.38--be approved, and a short-form contract prepared for a project in three stages as revised and outlined under Project Proposals.

The usual requirements for supervision, engineering, disposition of drill-core, and sampling should be incorporated. If possible, authorization of Stages II and III by the Region IV Field Team should depend on recommendation of the Geological Survey representative stationed in the field. Requiring a recommendation by a Bureau engineer, who will see the project only during monthly inspections, would probably cause considerable delay on this small project, where an exploration stage should be completed in a few weeks.

The area in conflict with the Chuse No. 5 claim should be eliminated from the project unless the Four Corners Uranium Corporation will release it.

Based on experience with failure of operators under other contracts to determine if holes have been drilled to the proper depth, there should be a specific requirement in the contract that competent personnel, for which provision is made in the cost estimate, should be available to determine when a hole has been drilled to the proper depth. This does not necessarily mean that such personnel must be present to bottom every hole, but certainly the first holes should be closely supervised until accurate information on drilling depths and marker beds is obtained.

/dj

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

224 New Customhouse
Denver 2, Colorado

December 1, 1954

Memorandum

To: Administrator, Defense Minerals Exploration Administration

From: Field Team, Region IV

Subject: Report of Examination, DMEA Docket 3461 (Uranium), Crown Uranium Co., Lost Brothers claims, San Miguel County, Colo.

The application for Government assistance in exploration work estimated to cost $11,732.50, has been approved by us and a contract will be prepared when proof of valid title is obtained.

Government participation will be 75 percent, or $8,799.38.

Four copies of the Report of Examination and two copies of Form 3b will be forwarded with your copy of the contract.

W. H. King

W. H. King

E. N. Hausman

for A. H. Koschmann

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

214 Post Customhouse
Denver 2, Colorado

December [illegible], [illegible]

Memorandum

To: Administrator, Defense Minerals Exploration Administration

From: Field Team, Region IV

Subject: Report of Examination, DMEA Docket 3401 (Uranium), Crown Uranium Co., Lost Brothers Claims, San Miguel County, Colo.

The application for Government assistance in exploration work estimated to cost $[illegible], has been approved by us and a contract will be prepared when proof of valid claims is obtained.

Government participation will be [illegible] percent, or $[illegible].

Four copies of the Report of Examination and two copies of Form [illegible] will be forwarded with your copy of the contract.

W. H. King
W. H. King

for E. N. Hawkinson
E. N. Hawkinson

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

224 New Customhouse
Denver 2, Colorado

August 20, 1954.

Memorandum

To: C. O. Mittendorf, Administrator, DMEA
Attention: Code 200

From: Executive Officer, DMEA Field Team, Region IV

Subject: Docketing for Exploration Assistance

Enclosed herewith in duplicate is DMEA Form 3a and MF-103 with supporting data pertaining to the following applications for Government assistance in exploration work.

Crown Uranium Company (Uranium)
Lost Brothers Mine
San Miguel County, Colorado

Wyoming Uranium Corporation (Uranium)
Fremont County
Wyoming

W. H. King

W. H. King

Enclosures

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

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

Not to be filled in by applicant

Docket No. 3461
Metal or Mineral Uranium
Date Received
Estimated Cost $33,300
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: CROWN URANIUM COMPANY, a Colorado corporation
205 Star Building
Casper, Wyoming

(*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. Corporation, Incorporated in the State of Colorado.

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

(*d*) If a partnership, add to the above statement the names and addresses of all partners. Not a partnership.

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
See accompanying paper.

(*b*) State any mine name by which the property is known. Lost Brothers

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

(*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. See Exhibit 1 attached hereto.

(*e*) If you own the land, describe any liens or encumbrances on it There are no liens, except the unpaid purchase price, which now amounts to $14,000.00.

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice.
See description on accompanying paper, instruction 3.

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. See accompanying paper.

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

(*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. See accompanying paper and Exhibits 2 and 3.

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

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

16—66551-1

See accompanying paper.

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. See accompanying paper and Exhibit 3.

(*c*) The work will start within 10 days and be completed within six months from the date of an exploration project contract.

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

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.). See accompanying paper.

(*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. See accompanying paper.

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

(*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. None

(*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. None

(*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. None

(*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. None

(*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. See accompanying paper.

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

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

[X] Money [ ] Use of equipment owned by you [ ] Other

Explain in detail on acompanying paper. See accompanying 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 August 11, 1954

CROWN URANIUM COMPANY
(Applicant)

By John G. Obrecht
John G. Obrecht
President

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—68551-1

ACCOMPANYING PAPER

ACCOMPANYING APPLICATION OF CROWN URANIUM COMPANY
205 STAR BUILDING, CASPER, WYOMING

1(c). The titles, names and addresses of officers are:

John G. Obrecht, President and Director, 239 South Lowell Street, Casper, Wyoming.
Nathan Novick, Vice President and Director, 731 South Park Street, Casper, Wyoming.
Jerel J. Gillilan, Secretary and Director, Sinclair, Wyoming.
Earl R. Johnson, Treasurer and Director, 1615 South Spruce Street, Casper, Wyoming.
Donuil M. Billis, Director, 4831 East Harvard Lane, Denver, Colorado.

3. The following described unpatented mining claims situate in San Miguel County, State of Colorado, and recorded on the records of said County as indicated below, to-wit:

Claim	Book	Page	Date of Record
Lost Brothers No. 1	175	101	July 2, 1951
Lost Brothers No. 2	175	101	"
Lost Brothers No. 3	175	102	"
Lost Brothers No. 4	175	102	"
Lost Brothers No. 5	175	103	"

Excluding, however, that portion of said claims which overlaps Fraction No. 1 Claim, recorded in Book 174, page 583, Records of San Miguel County, Colorado; said claims being within SW¼ of Section 22, NW¼ of Section 26 and NE¼ of Section 27, Township 45 North, Range 18 West of the New Mexico Principal Meridian.

4(a). There is an existing open pit on Claim No. 1 and another on Claim No. 5. Some ore has been mined and shipped from each of these pits, and in each case additional ore is left exposed. Applicant is now enlarging these pits to see if it can be determined whether the ore bed is extensive.

On the edge of the escarpment on Claim No. 3, about 20 feet below the surface, three petrified trees, impregnated with uranium, are exposed. A small amount of ore has been removed from the face of the cliff, but no drifting has been done. There is also an exposure of ore on the cliff, on Claim No. 5, about 40 feet from the open pit. Applicant will extend the pit to the point of this showing to determine whether there is commercial ore in between.

There is on the property at this time a D8 Caterpillar Diesel Tractor with dozer; a Jeager, 185CFM, Air Compressor; and a Thor #55 Hammer, with hose and bits. Strip mining can be done with this equipment, but there are no other production facilities at this time.

Applicant is contracting this work. It has a purchase agreement for the claims, and will be the sole interested party in such operations.

There is a good dirt automobile road to the vicinity of these claims. There is also a road, easily accessible by automobile or jeep, to the claims and to the mine workings.

4(b). Applicant has not been able to obtain production data for past shipments, except for three small shipments, which show the following:

Pounds of Ore Shipped	Percent of U_3O_8 (uranium)	Percent of V_2O_5 (vanadium)	Total Value
2,850	1.07	3.43	$183.21
7,830	0.89	4.08	413.37
4,250	1.90	5.70	478.83

Applicant has removed a small amount of ore, but none of it has as yet been shipped. No estimate has been made, and none could be made at this time, with respect to ore reserves, no with respect to the quantities and grades.

4(c). The Morrison formation outcrops on this property. It is not covered with very much over-burden at any place on the property. The uranium and vanadium deposits seem to be bedded deposits. Showings which are present would indicate that there are extensive ore bodies, but the extent and quality thereof has not yet been determined. This requires exploration, which applicant feels can be accomplished best by drilling and stripping. Uranium and vanadium ore has been and is being mined profitably on three sides of the property, in the same Morrison formation which is present at a shallow depth on these claims. Applicant wishes to explore for the purpose of determining where and to what extent such ore bodies are actually present on its claims, and whether they seem to have commercial value.

There is attached hereto a report made by Donald Tillis, geologist, on July 30, 1954, together with a map prepared by him showing these claims. The report is marked Exhibit 2, and the map is marked Exhibit 3.

4(d). There is a good access road into the property. It can be traveled by automobiles, jeeps and ore trucks. It is 38 miles from the Vanadium Corporation of America Mill, near Naturita, Colorado. Supplies are available at Naturita, about 30 miles from the property, and residence facilities are available either at Naturita or at Norwood, which is an additional 16 miles.

4(e). The proposed exploration is to be contracted, and all necessary man power, materials, supplies and equipment are immediately available. There is also sufficient manpower, supplies and equipment available in the vicinity for any possible development and mining operations which may follow such exploration work.

Water may not be necessary for drilling or stripping, except for drinking and radiators. If larger amounts become necessary, however, either in the exploration program, or subsequent mining operations, there is a good [illegible] spring, called the Lone Cone Spring, 20 miles from the property. Water can be hauled from it.

Power is not present. Such as will be needed, will be generated on the property.

5(b). On the attached map, Exhibit 3, we have indicated an axis, passing through the two pits on applicant's claims and the Broadway Mine at the north. It is proposed to drill exploratory holes, at intervals of approximately 100 feet, across this axis. Alternate rows will probably be staggered as recommended by the geologist, in the report attached as Exhibit 2. Cores will be taken so that ore showings can be properly assayed. These holes will probably range from 10 feet to a maximum of 200 feet in depth. They will probably average 50 feet in depth.

In addition to such drilling, it is proposed to strip areas surrounding the present pits in order to determine whether or not extensive ore bodies are present. Similar stripping will be done between the two pits, if and when indications are found which justify this kind of exploration.

5(d). Applicant is a new company with no previous record of mining experience. It will, however, employ and maintain at all times experienced and qualified personnel for the supervision and management of this operation. The actual drilling and stripping will be done by contractors who are qualified and reliable. The program will be supervised in general by Mr. Donald Willis, who is a graduate and experienced mining geologist of good standing and repute. The superintendent in direct charge

of work on the ground will be Ed Robinett of Dove Creek, Colorado. He has had 25 years of mining experience and a lot of experience with uranium and vanadium ores. He was formerly a superintendent for the Consolidated Uranium Company.

6(a). It is estimated that all exploratory drilling will be obtained, on an independent contract basis, at the rate of $1.60 per foot. The total of this is estimated at $18,500.00.

Stripping will also be done by an independent contractor, except that applicant will furnish supervision and all labor necessary to run the air compressor and jack hammer and to do the blasting and hand work. For a D8 Caterpillar Tractor, with dozer, including the cost of an operator, it will cost $3,000.00 per work month of 160 hours. All additional time will cost $18.00 per hour. The air compressor and one jack hammer will be furnished by the same contractor at a charge of $850.00 per month, with fractional months prorated. The total cost for this contractor, for the tractor with operator, and for the air compressor and jack hammer, is $6,500.00. (Estimated)

(b) It is estimated that two laborers will be required at $2.00 each per hour. This is estimated at $3,500.00.

It is estimated that one superintendent, at $600.00 per month and expenses, will be needed. The total for this is estimated at $2,000.00.

It is estimated that the fees for geologists and consultants will amount to $1,000.00.

Thus, the total for labor and supervision would be $15,500.00.

(c) For dynamite, caps, fuses, bits and water it is estimated that $500.00 will be spent.

(h) For contingencies it is estimated that $300.00 will be spent.

SUMMARY OF TOTALS FOR ESTIMATED COST:

(a)	Drilling - - - - - - - - - - - - - - - - - -	$18,500.00
	Stripping- - - - - - - - - - - - - - - - - -	8,500.00
(b)	Labor and supervision- - - - - - - - - - -	5,500.00
(c)	Materials and supplies - - - - - - - - - -	500.00
(h)	Contingencies- - - - - - - - - - - - - - -	300.00
	GRAND TOTAL - - - - - - - - - -	$33,300.00

7(h). Applicant will furnish its share in money. It is prepared to do this in cash.

CROWN URANIUM COMPANY
205 Star Building
Casper, Wyoming
(Not to be returned)

EXHIBIT 2

LOST BROTHERS GROUP
CROWN URANIUM CO. LEASE
SAN MIGUEL COUNTY, COLO.

This supplemental report furnishes some additional information concerning the Lost Brothers Claims, which was obtained during a plane table survey. The position of the claim lines was taken from an Atomic Energy Commission map which tied them to the Broadway Mine. The plane table survey started with the Broadway Mine. It outlined the boundary of the Salt Wash sandstone in which the uranium ore occurs. All of the occurrences of ore on the Lost Brothers Claims and immediately to the north are shown, insofar as they are exposed on the surface.

The lowest member of the Salt Wash sandstone of the Morrison (Juressic), covers most of the surface of these claims. It dips to the north at an angle of approximately five degrees. The uranium ore within it where exposed in three pits and several outcrops is not more than 10' below the surface. This situation favors a very inexpensive drilling program to outline the most favorable ore bearing areas.

From an examination of all the exposures of uranium shown on the map, it has been noted that the ore-bearing channels within the sandstone tend to have a northerly trend. It is therefore recommended that exploratory drill holes be aligned in an east west direction in order to intersect the channels. The holes could be spaced 100' apart. An adjoining east west line could be advantageously offset so that the holes would be 50' to the east or west of the first row. Under these

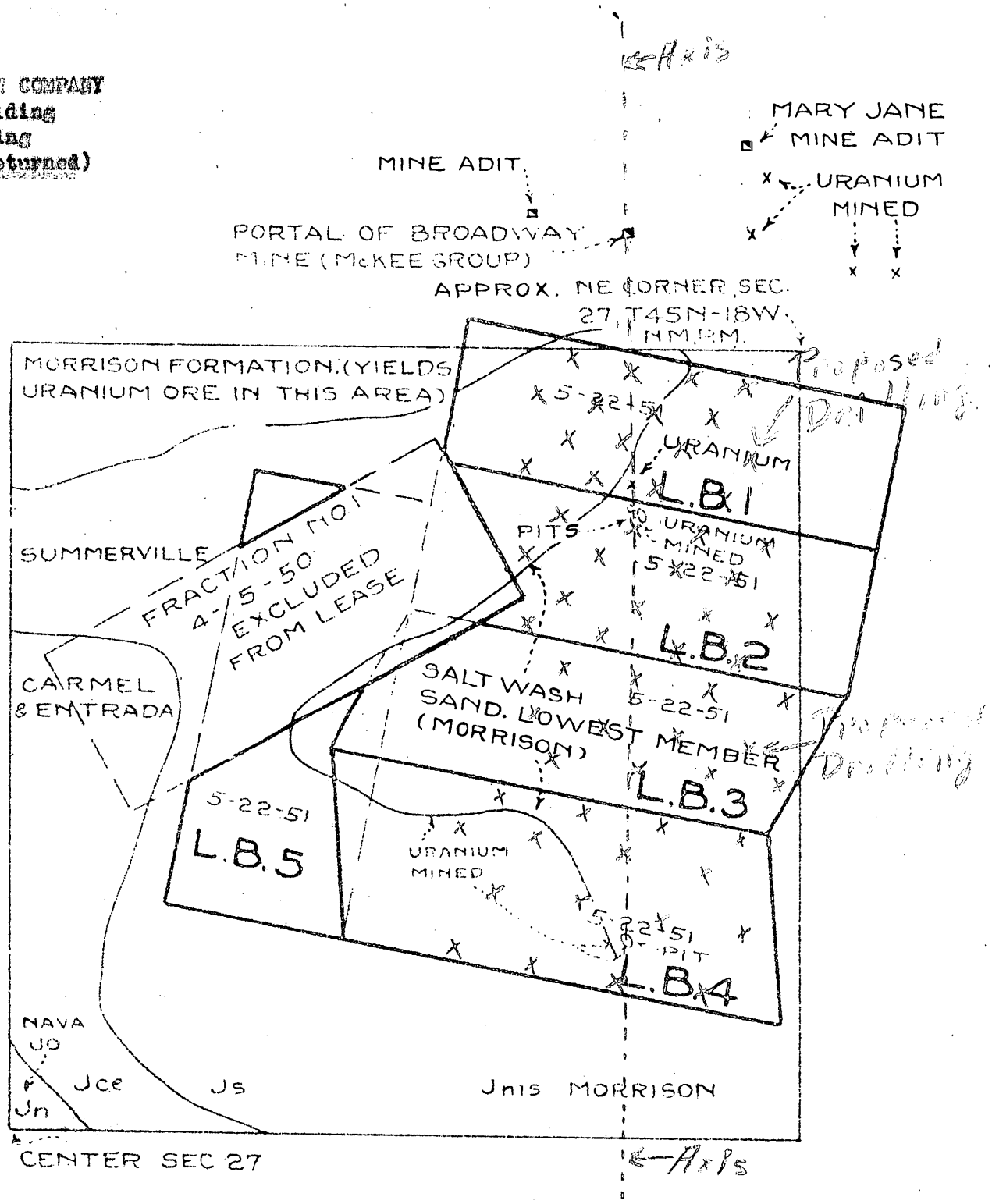
circumstances there would be a greater likelihood of intersecting a channel or channels. All of the areas where mining has taken place, still have ore in sight.

(s) DONUIL HILLIS
Geologist

Continental Oil Bldg.
Denver, Colorado.
July 30, 1954.

EXHIBIT 3

CROWN URANIUM COMPANY
205 Star Building
Casper, Wyoming
(Not to be returned)



LOST BROTHERS GROUP. CROWN URANIUM CO. LEASE. 75± ACRES

BULL CANYON MINING DISTRICT
SAN MIGUEL COUNTY, COLO.

0 500' 1000'
SCALE.

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

OFFICIAL BUSINESS

KNOXVILLE
AUG 23
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1954
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George C. Selfridge, Chairman
Operating Committee, D.M.E.A.
Dept. of the Interior
Washington 25, D.C.