STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

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

DATE: September 16, 1953

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

SUBJECT: Final Field Team Report, DMEA Docket 2788 (uranium), L. W. Staats and F. M. Blair, applicants, Nucla, Colo., Quarrel claim group, Bull Canyon District, Montrose Co., Colo.

The applicants proposed to explore for uranium deposits in the lower part of the Salt Wash member of the Morrison formation by 16,625 of wagon drilling at total cost of $16,625.

Examination of the property by the Field Team revealed that the occurrences on these claims are in the lower part of the Salt Wash member and are too small to warrant mining. Elsewhere in the district uranium ore occurrences at this stratigraphic position also tend to be small and widely scattered. Some drilling by the applicants near known showings failed to reveal minable extensions of the known occurrences or new significant showings, and confirmed the small size of bodies of uranium bearing rock.

The Field Team concluded that the small size, scattered distribution of occurrences, the generally unfavorable stratigraphic position, and the unfavorable results of the applicants' prior drilling make it doubtful that the proposed exploration would find new minable ore bodies. On their recommendation the application was denied in Region IV.

Conclusion

I concur with the recommendations and action of the Field Team in denying this application.

Arthur P. Butler, Jr.

Copies to: E. Wm. Ellis (2)

DENIED

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

SEP 16 1953

September 16, 1953

Memorandum

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

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

Subject: DMEA Docket No. 2788, Blair and Staats, Quarrel Group, Montrose County, Colorado

I have reviewed the subject report and discussed it with Arthur P. Butler, Geological Survey Member.

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

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

H. D. Keiser

9/15/53-db.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
SEP 4 1953

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

224 New Customhouse
Denver 2, Colorado

August 31, 1953.

Memorandum

To: Administrator, Defense Minerals Exploration Administration
Attention: 200

From: Field Team, Region IV

Subject: Final Report, DMEA Docket 2788 (Uranium), Blair and Staats, Quarrel Group, Montrose County, Colorado.

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

W. H. King
W. H. King

A. H. Koschmann
A. H. Koschmann

Enclosures

DENIED

Reviewed by
DMEA OPERATING COMMITTEE
9-11-53
(date)

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
4 1953

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

224 New Customhouse
Denver 2, Colorado

August 31, 1953.

Mr. Floyd Blair and Mr. Lowell Staats
Box 307
Nucla, Colorado

Re: Docket DMEA-2788

Dear Mr. Blair and Mr. Staats:

Reference is made to your application for Government aid on the Quarrel Group.

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

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

Very truly yours,

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

HMC:cwm

cc: Docket
Administrator, DMEA
WMTraver
ERGordon
RPFischer
AHKoschmann (2)
Chron.

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

Reviewed by
DMEA OPERATING COMMITTEE
9-11-53
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

August 31, 1953.

Memorandum

To: Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Final Report, DMEA Docket 2788 (Uranium), Blair and Staats, Quarrel Group, Montrose County, Colorado.

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

The applicants requested $16,697.50 to build an access road and wagon drill 16,625 feet of holes on their three claims.

The examining engineer believes this work is not justified and recommends denial of the application.

We concur in this recommendation.

W. H. King
W. H. King

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
9-11-53
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Region IV

Building 20, Room 137
Denver Federal Center
Denver 14, Colo.
August 24, 1953

Memorandum

To: Executive Officer, Field Team, Region IV

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

Subject: DMMA 2788, Quarrel group (Uranium), Bull Canyon district, Montrose County, Colo.

Submitted herewith are the original and ten copies of the "Summary, Conclusions, and Recommendations", by Carl Balser, Bureau of Mines, and R. L. Bowman, Geological Survey, and of Balser's engineering report on the subject docket.

The applicants proposed 16,683 feet of wagon drilling, with some complementary road work and drill-site preparation, to explore their three claims for uranium at an estimated cost of $16,697.50.

Balser concludes that the possibility of the discovery of worthwhile reserves on the Quarrel claims is unlikely, and if any were found, they would be small and probably could not be mined economically. He recommends denial of the application.

I approve his conclusions and recommendation.

The application provided with your memorandum of June 30, 1953, instructing that a field examination be made, and the geologic report furnished us for use in preparing the engineering report are also returned herewith. Your attention is called to the fact that the application is not complete in that figure 4 is not in the envelope on the back page and the engineer's report was received short that figure.

W. M. Traver

W. M. Traver

enclosures

WMT/hp

cc: 10
DMMA 2788
DMMA Green.

Reviewed by
DMMA OPERATING COMMITTEE
9-11-53
(date)

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

August 3, 1953

Memorandum

To: DMEA Field Team, Region IV

From: A. H. Koschmann

Subject: DMEA Docket 2788, Quarrel group of claims, Bull Canyon district, Montrose County, Colorado

Enclosed are 10 copies of the geologic report by R. L. Boardman of the U. S. Geological Survey covering the above docket.

It has been recommended that the loan be denied.

A. H. Koschmann

A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Enclosures (10)

Reviewed by
DMEA OPERATING COMMITTEE
9-11-53
(date)

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

July 30, 1953

Memorandum

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

From: R. P. Fischer
Colorado Plateau District office

Subject: DMEA 2788, Quarrel group of claims, Bull Canyon district, Montrose County, Colorado

Transmitted herewith are ten copies of a geologic report on the Quarrel group of claims, leased by L. W. Staats and F. M. Blair, Bull Canyon district, Montrose County, Colorado. The applicants have applied for assistance in exploring for uranium deposits. They propose 16,625 feet of wagon drilling plus some road work to prepare drill-hole sites, the total cost of which is estimated to be $16,697.50.

The attached report is prepared by R. L. Boardman and is based on a field examination made jointly with R. R. McLellan and Carl Belser of the Bureau of Mines.

Three small deposits are known on this group of claims. Only one of these deposits has been mined and it yielded a small production of high-grade ore. The second deposit is known by a low-grade showing at the outcrop. A third deposit is known from two wagon-drill holes. A small amount of drilling already done by the applicant in ground near these deposits failed to show mineable extensions.

Because of the result of work already done by the applicant, and because most of the known deposits in the lower part of the Salt Wash in this area are small, it is concluded that the chances for finding mineable deposits by the proposed exploration are poor. For these reasons, the report recommends that the application be denied.

I concur with this recommendation.

R. P. Fischer

R. P. Fischer
Acting District Supervisor

Reviewed by
DMEA OPERATING COMMITTEE
9-11-53
(date)

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION XV

DMEA 2768, Floyd M. Blair and Lowell W. Steele, Lessees

Squirrel Group

Montrose County, Colo.

Uranium

Earl Belser, Mining Engineer
Bureau of Mines

R. L. Boardman, Geologist
Geological Survey

August 24, 1953

Reviewed by
DMEA OPERATING COMMITTEE

(date)

DMEA 2768

FLOYD M. BLAIR AND LOWELL W. STAATS, LESSEES
QUAREEL GROUP
MONTROSE COUNTY, COLO.

Summary, Conclusions, and Recommendations

By Carl Belser
Mining Engineer
Bureau of Mines

and

R. L. Boardman
Geologist
Geological Survey

Reviewed by
DMEA OPERATING COMMITTEE

9-11-55
(date)

DMEA 2768

FLOYD M. BLAIR AND LOWELL W. STAATS, LESSEES
QUARREL GROUP
MONTROSE COUNTY, COLO.

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

By Carl Balser and R. L. Boardman

Floyd M. Blair and Lowell W. Staats, of Nucla, Colo., have applied to the Defense Minerals Exploration Administration for assistance to explore for uranium on the Quarrel group of three mining claims, Bull Canyon district, Montrose County, Colo. The applicants proposed spending $16,697.50--Government participation $13,087.75--for drilling 16,685 feet of wagon drill holes.

An examination of the property disclosed that there is no mineable ore; that further ore shoots, if encountered, will be small, and the results from holes drilled in 1952 were unsatisfactory and indicate that mineable ore deposits will not be penetrated by additional drilling.

The exposed surface rock is of the lower alternating sandstone and mudstone strata of the Salt Wash member of the Upper Jurassic Morrison formation, and all local uranium deposits so far mined from the rim have been small.

It is recommended that the application be denied.

UNITED STATES DEPARTMENT OF THE INTERIOR

DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM

REGION IV

DMEA 2788 (Uranium)

L. W. Staats and F. M. Blair, Quarrel group of claims, Bull Canyon district, Montrose County, Colorado

By

R. L. Boardman, Geologist
U. S. Geological Survey

July 1953

DMEA 2788 (Uranium)

L. W. STAATS AND F. M. BLAIR, QUARREL GROUP OF CLAIMS
BULL CANYON DISTRICT, MONTROSE COUNTY, COLORADO

INTRODUCTION AND SUMMARY

L. W. Staats and F. M. Blair of Nucla, Colo., have applied to the Defense Minerals Exploration Administration for a loan to explore for uranium on the Quarrel, Quarrel No. 1, and Quarrel No. 2 claims, leased by the applicants, in the Bull Canyon district, Montrose County, Colo. (fig. 1).

The claims were examined on July 16, 1953, by R. L. Boardman, geologist, U. S. Geological Survey, and R. R. McLellan and Carl Belser, engineers, U. S. Bureau of Mines, in company with L. W. Staats, representing the applicants. The claims lie in parts of secs. 1 and 12 (unsurveyed), T. 45 N., R. 18 W., New Mexico principal meridian. They are accessible by 15 miles of secondary road, almost all of which is graveled, that joins Colorado Highway 90 in Paradox Valley, about 13 miles west of Naturita, Colo.

The applicants propose 16,625 feet of wagon drilling in holes spaced from 25 to 200 feet apart to explore for uranium in at least two mineralized sandstone zones near the base of the Salt Wash member of the Jurassic Morrison formation. The drilling was proposed throughout the area of the three Quarrel claims. The total cost of the proposed exploratory work, including preparation of drill-hole sites, technical supervision, and smaller incidentals was estimated by the applicants to be $16,697.50.

As a result of the field examination, it is believed that there is little likelihood of finding new commercial ore bodies through exploratory drilling in the three Quarrel claims. The known deposits in the lower Salt Wash sandstones in this part of the Bull Canyon district are small and erratically distributed. Results of previous drilling in the Quarrel group by the applicants confirm this observation. It is doubtful if any deposits would be found by the proposed exploration. If deposits were discovered, however, it is expected that they would be too small to be mined economically. Because of these conclusions, it is recommended that the application be denied.

A copy of figure 4 of the applicants' brochure showing the location of the claims examined, the ore occurrences, and some of the proposed wagon drill-hole sites is included as figure 2 in this report.

GEOLOGY

The rocks exposed in the Quarrel claims are essentially flat-lying and consist almost entirely of alternating sandstone and mudstone strata of the lower part (bottom one-third to one-half) of the Salt Wash member of the Upper Jurassic Morrison formation. Along parts of the western edge of the Quarrel and Quarrel No. 1 claims, shale and sandstone beds of the underlying Summerville and Entrada formations, also Upper Jurassic, crop out.

The part of the Salt Wash member present in the Quarrel group attains a maximum thickness of approximately 150 feet. The Salt Wash sandstone lenses range from 10 to 50 feet in thickness. They are separated by relatively thin red to red-brown mudstone beds. A sandstone lens, 15 to 30 feet thick, forms a bench surface over nearly all the area of the Quarrel group. The sandstones are light brown to red brown.

In the vicinity of mineralized rock the sandstones are lightly stained with limonite and are in contact with varying thickness of gray-green mudstone. Carbonaceous material is relatively abundant in the sandstone outcrops and is not believed to be reliable as a guide to ore deposits in the Quarrel group.

ORE DEPOSITS

Three deposits of mineralized material are known in the Quarrel group, two in the Quarrel claim, and one in the Quarrel No. 1 claim (fig. 2).

The two deposits in the Quarrel claim are in different sandstone lenses; one deposit is about 50 feet stratigraphically below the other. The lower deposit, indicated by the Quarrel Adit on figure 2, is in about the middle of the 50-foot thick basal Salt Wash sandstone lens and is the only deposit in the Quarrel group that has been mined. The adit is about 60 feet long and is believed to have yielded a maximum of 10 to 15 tons of ore. According to the applicants, the only recorded production is 1 ton of ore that assayed 7.7 percent U_3O_8 and was mined in 1949. This ore was from a richly mineralized log, trending about N 75° E, that was exposed at the outcrop. Only a few thin remnants of mineralized material, mostly low grade, are left in the workings, indicating that the mineralized material was likely almost entirely confined to the high-grade log. The upper deposit in the Quarrel claim was discovered by assessment wagon drilling in 1952. One hole (fig. 2) is reported to be in 18 inches of mineralized material at a depth of about 50 feet. One 25-foot offset hole to the southeast is reported to have penetrated thinner and lower grade mineralized material at about the same stratigraphic horizon. Other closely spaced offset holes are in barren sandstone. The applicants and the examining field team do not consider this deposit to be of sufficient size to warrant mining.

The deposit in the Quarrel No. 1 claim consists of a small outcrop, a few inches by a few feet, of vanadiferous sandstone which may correlate stratigraphically with the upper deposit in the Quarrel claim. Little carnotite staining was noted in this outcrop. Four assessment wagon-drill holes near this deposit were completed in 1952, but failed to penetrate mineralized material (fig. 2).

The uranium and vanadium minerals in the Quarrel deposits are the same as those common in most of the uranium-vanadium deposits of the Colorado Plateau. A small amount of hewettite was observed in remnants of "blue-black" ore in the Quarrel adit. The Quarrel deposits apparently are very small and widely scattered--typical of nearly all of the deposits in the lower part of the Salt Wash member in the Bull Canyon district as well as elsewhere in the Colorado Plateau.

PROPOSED EXPLORATION

The applicants propose to explore the lower part of the Salt Wash member for uranium in the Quarrel group. The proposed exploration program would consist of 16,625 feet of wagon drilling planned in three phases, as follows:

First phase.--Holes drilled on 200-foot centers throughout the three Quarrel claims (fig. 2). This phase consists of 33 holes averaging 125 feet deep, for a total of 4,125 feet of drilling.

Second phase.--Offset holes drilled on 100-foot centers in ground determined to be geologically favorable, based on the results of the First-phase drilling. The Second phase consists of an estimated 60 holes averaging 125 feet deep, for a total of 7,500 feet of drilling.

Third phase.--Offset holes drilled on 25-foot centers to outline ore bodies discovered by First- and Second-phase drilling. The Third phase consists of an estimated 40 holes averaging 125 feet deep, for a total of 5,000 feet of drilling.

In 1951 and 1952, the applicants completed 10 wagon-drill holes in the Quarrel group as their assessment work on those claims. None of the holes extended either of the two previously known deposits, although two holes penetrated a new deposit. This new deposit is not considered to be economic. At least five of the holes were carried to a depth sufficient to test the lower ore-bearing zone.

It is believed that holes on 200-foot centers, or even 100-foot centers, would have very little likelihood of hitting mineralized targets as small as the known deposits in the Quarrel group, and as small as most of the deposits known in the lower part of the Salt Wash elsewhere in the Bull Canyon district. It is doubtful if enough geologic information could be gained from wagon drilling to guide intelligently the proposed exploration and to appraise the favorableness of the ground. It is improbable that deposits of commercial size could be found, by any reasonable plan of exploration in the Quarrel group. For the foregoing reasons it is believed inadvisable for the DMEA to enter into contract with the applicants to do the proposed exploration.

CONCLUSIONS AND RECOMMENDATIONS

A DMEA (uranium) field examination was made of the Quarrel group of claims in the Bull Canyon district, Montrose County, Colo. The claims are leased to the applicants, L. W. Staats and F. M. Blair of Nucla, Colo.

There are three small deposits known in the Quarrel group. They occur in three (possibly two) sandstone zones in the lower part of the Salt Wash member of the Jurassic Morrison formation. Only one of the deposits has been mined, yielding an estimated maximum of 10 to 15 tons of relatively high grade ore. Recorded production has been 1 ton of ore assaying 7.7 percent U_3O_8. The grade of U_3O_8 for the total production is undoubtedly appreciably less. No measurable reserves are present in the deposits.

The applicants propose 16,625 feet of wagon drilling, planned to be done in three phases, to test the lower part of the Salt Wash in the Quarrel group. Based on the size of the known deposits in the area examined as well as on the size of nearly all deposits in the lower part of the Salt Wash elsewhere on the Plateau, the undiscovered deposits that may exist in the lower part of Salt Wash in the Quarrel group are believed to be very small and erratically distributed. Because deposits in the Quarrel group are likely to be small and spotty, and because it is improbable that new commercial ore bodies will be found by exploration in this group, it is recommended that the subject DMEA application be denied.

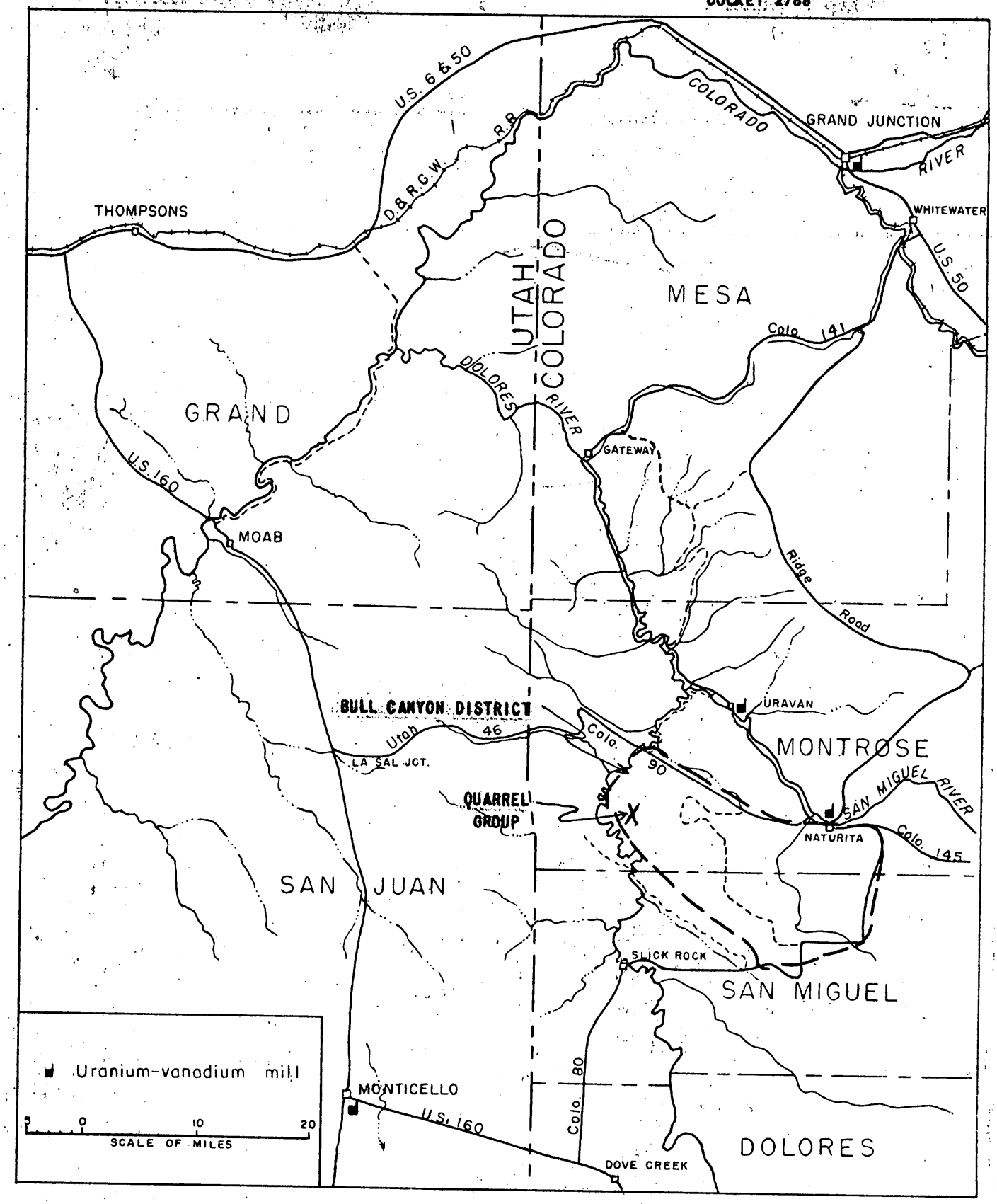

Figure 1. INDEX MAP OF PART OF THE COLORADO PLATEAU SHOWING THE APPROXIMATE LOCATION OF THE QUARREL GROUP OF CLAIMS, BULL CANYON DISTRICT, MONTROSE COUNTY, COLORADO

MESA 2768

FLOYD M. BLAIR AND LOWELL W. SHARP, LESSEES
QUARTER GROUP
MONTROSE COUNTY, COLO.

Engineering Report

By Carl Belser
Mining Engineer
Bureau of Mines

RMRA 2708

FLOYD M. BLAIR AND LOWELL W. SHAARS, LESSEES
QUARREL GROUP
MONTROSE COUNTY, COLO.

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ILLUSTRATIONS

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MMA 2700

FLOYD M. BLAIR AND LOWELL W. SHAATS, LESSEES
QUARREL GROUP
MONTROSE COUNTY, COLO.

ENGINEERING REPORT

By

Carl Belser

INTRODUCTION

Floyd M. Blair and Lowell W. Shaats, who have a mining lease on the Quarrel group of claims located near the east end of Bull Canyon, Montrose County, Colo., have applied for a Defense Minerals Exploration Administration loan to explore the property for uranium. The applicants submitted a proposal estimated to cost $16,697.50--Government participation, 90 percent or $15,027.75--to explore the Quarrel, Quarrel No. 1, and Quarrel No. 2 lode mining claims, known to have produced some uranium in the past, at points which are impossible to examine from surface or from existing workings. The proposal called for 16,685 feet of wagon drilling, together with a small amount of preparation of drill sites, engineering, and sampling.

ACKNOWLEDGMENTS

Project proposals were discussed with engineers of the Bureau of Mines familiar with similar drilling operations on the Colorado Plateau. The examining team consisted of R. L. Boardman, geologist, Geological Survey, and R. N. McLellan and Carl Belser, mining engineers, Bureau of

Mines. The team was accompanied by one of the applicants, Lowell W. Steele.

LOCATION, TOPOGRAPHY, AND PHYSICAL FEATURES

The Quarrel group is located in secs. 1 and 2, T. 45 N., R. 18 W., New Mexico principal meridian, in Montrose County, Colo. (fig. 1). The claims are on low tableland capped by rocks of the Lower Salt Wash (Morrison) formation and abut on the west Wild Horse Draw, near the east end of Bull Canyon. The altitude on top of the rim is about 6,100 feet, and the old Quarrel mine adit is about 120 feet below the rim. A good secondary road, 15 miles long, connects the property with Colorado State Highway 90 about 13 miles west of Naturita. Ridgway, 87 miles to the east, is the nearest railhead.

Annual rainfall is about 12 inches and vegetation is of the semi-arid type, consisting mainly of sage brush, pinon, and juniper. Some of the local timber is suitable for mines use. Although winters are somewhat severe, the main roads are kept open and interruptions to year-around operations are few.

Miners can be obtained in Naturita and Norwood. Living quarters are obtainable at Naturita or a camp can be established near the mine. The nearest permanent stream is the Dolores River, about 3-1/2 miles by airline to the west. However, the nearest available permanent stream is probably the San Miguel River.

HISTORY AND PRODUCTION

The owners of the Quarrel claims have records of 1-ton of ore being produced, which assayed 7.7 percent U_3O_8. This production was made in 1949 from a "tree" in the 60-foot-long adit which was driven into the

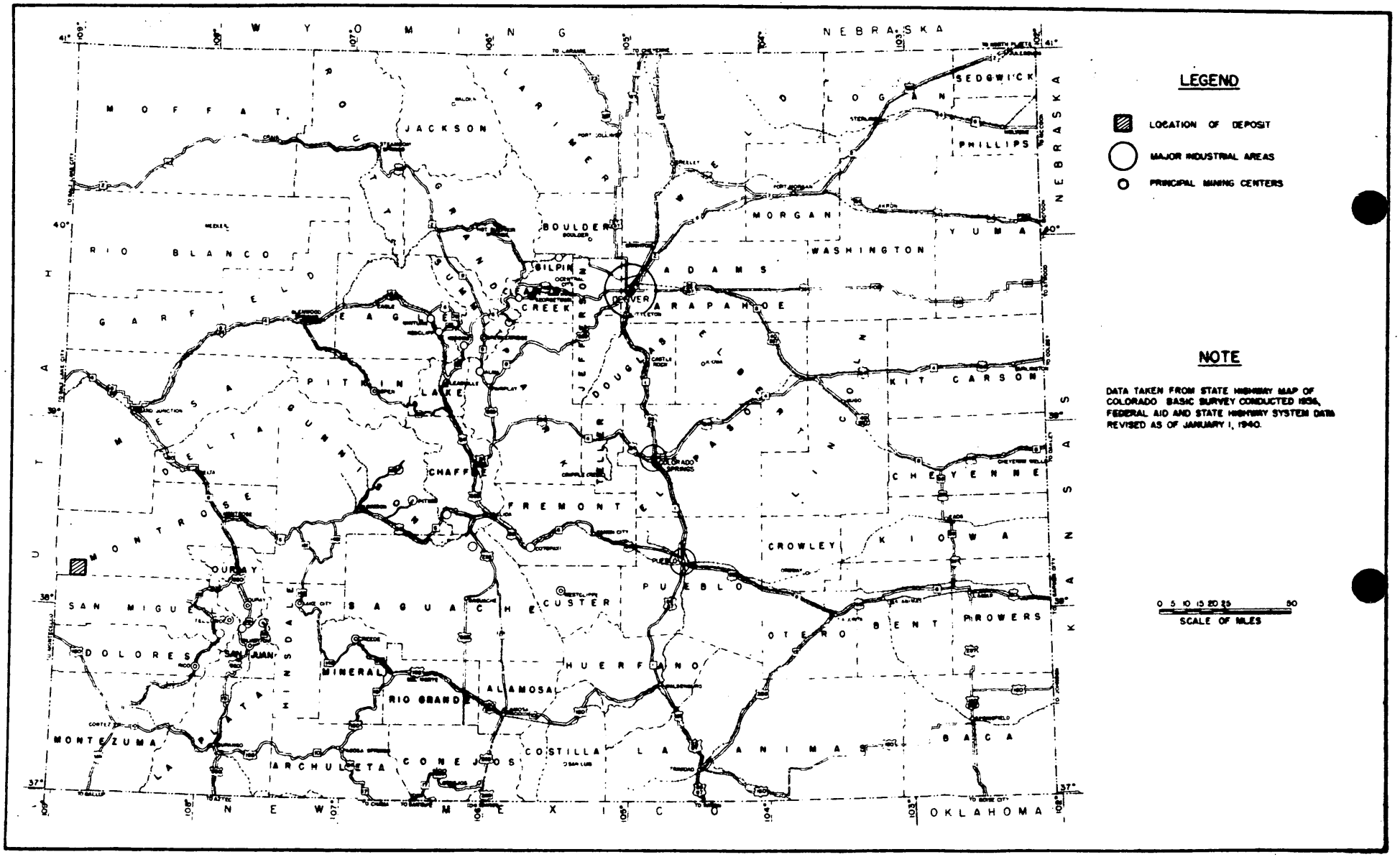

FIGURE 1. - LOCATION MAP, QUARREL GROUP, BULL CANYON MINING DISTRICT, MONTROSE COUNTY, COLORADO (DMEA 2788)

face of the rim rock on the Quarrel claims. However, the date "1952" is carved on the face of the cliff near the adit and total production is believed to have been about 15 tons.

OWNERSHIP AND EXTENT

The Quarrel, Quarrel No. 1, and Quarrel No. 2 lode mining claims are held under possessory rights by J. F. Anderson and E. C. Anderson, of Montrose, Colo., and J. F. McWilliams, of Olathe, Colo. The claims were leased to Lowell W. Staats and Floyd M. Blair, of Nucla, Colo., on April 24, 1952, for a period of 5 years and are said to be free and clear of all liens, encumbrances, and adverse claims.

DESCRIPTION OF THE DEPOSITS

The exposed rocks on the Quarrel claims are mostly flat-dipping sandstones and mudstones of the lower portion of the Salt Wash member of the Morrison (Upper Jurassic) formation, and they apparently rest conformably upon the Entrada formation which outcrops on the steep slope that drops abruptly into Bull Canyon. The uranium mineralization is known to occur in three small flat deposits. The lowest deposit has been developed by a 60-foot adit, which has been driven into the cliff about 120 feet below the top of the rim rock. A small "tree" was mined in this adit in 1949. Wagon drill holes, drilled as assessment work in 1952, failed to encounter an extension of the lower deposit, but one hole penetrated 18 inches of uranium-bearing material at a depth of 50 feet. A 85-foot offset hole penetrated a thinner section of this same material. A small, thin area of vanadium-bearing sandstone is exposed on top of the rim rock on the Quarrel No. 1 claim. As a whole,

the sandstone is dry and moderately soft, and would stand without support in small openings.

MINERALS OF PROMISE

Only small remnants of uranium mineralization remain in the 60-foot tunnel, and the examining team does not consider any of the three deposits of sufficient size to warrant mining.

PRESENT STATUS

Exploration and Development

Outside of the 60-foot adit on the Quarrel claims, all development consists of a few wagon drill holes, drilled vertically from surface.

Mining and Milling Equipment and Other Facilities

There are no mining or milling equipment or other facilities on the property. The nearest available mills are at Naturita and Uravan. A fair mine road furnishes access to the claims.

PROJECT PROPOSALS, WITH COSTS

The applicants proposed to explore the claims with a wagon drilling program set up in three phases.

Phase I - A 200-foot drill pattern, covering the whole area with 33 holes averaging 125 feet in depth, or a total of 4,125 feet.

Phase II - Elimination of about one-third of the area as unfavorable and a 100-foot drill pattern on the balance, or 60 holes averaging 125 feet in depth--a total of 7,500 feet.

Phase III - About 40 additional holes to block out ore bodies, or 5,000 feet of drilling.

The costs of drilling these 133 holes, 125-feet-deep, has been estimated by the applicants as follows:

6,650 feet of wagon drilling under 50 feet, at $0.65 per foot	$ 4,322.50
9,975 feet of wagon drilling over 50 feet, at $1.00 per foot	9,975.00
Bulldozing drill sites, 50 hours at $10.00 per hour	500.00
Consultant-engineer, 15 days at $50.00 per day	750.00
Sampler, 3 months at $350.00 per month	1,050.00
Pickup, depreciation and operation, 1,000 miles at 10¢ per mile	100.00
	$16,697.50

The above drilling costs are based on an estimate by Robert Williams, drilling contractor.

Under the circumstances, the engineers made no analysis of the proposal or costs and suggest no alternate program.

CONCLUSIONS

Known uranium deposits in the Lower Scott Wash sandstones in this area are small. The holes drilled in 1952 indicate that the uranium deposits on the Quarrel claims are not of minerable size and it is the examining team's opinion that worthwhile minerable deposits will not be developed by further exploratory drilling.

RECOMMENDATIONS

It is recommended that the applicants' request for Government assistance in exploratory work on the Quarrel group of claims be denied.

kp

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
SEP 4 1953

224 New Customhouse
Denver 2, Colorado

August 31, 1953.

Memorandum

To: Administrator, Defense Minerals Exploration Administration
Attention: 200

From: Field Team, Region IV

Subject: Final Report, DMEA Docket 2788 (Uranium), Blair and Staats, Quarrel Group, Montrose County, Colorado.

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

W. H. King
W. H. King

A. H. Koschmann
A. H. Koschmann

Enclosures

DENIED

OFFICE OF THE ADMINISTRATOR

C
O
P
Y

UNITED STATES
DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS ADMINISTRATION

WASHINGTON 25, D. C.

RECEIVED 9/4/53

224 New Customhouse
Denver 2, Colorado

August 31, 1953

Mr. Floyd Blair and Mr. Lowell Staats
Box 307
Nucla, Colorado

Re: Docket DMEA-2788

Dear Mr. Blair and Mr. Staats:

Reference is made to your application for Government aid on the Quarrel Group.

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

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

Very truly yours,

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

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

August 31, 1953.

Memorandum

To: Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Final Report, DMEA Docket 2788 (Uranium), Blair and Staats, Quarrel Group, Montrose County, Colorado.

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

The applicants requested $16,697.50 to build an access road and wagon drill 16,625 feet of holes on their three claims.

The examining engineer believes this work is not justified and recommends denial of the application.

We concur in this recommendation.

W. H. King
W. H. King

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Region IV

Building 20, Room 137
Denver Federal Center
Denver 14, Colo.
August 24, 1953

Memorandum

To: Executive Officer, Field Team, Region IV

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

Subject: MMA 2788, Quarrel group (Uranium), Bull Canyon district, Montrose County, Colo.

Submitted herewith are the original and ten copies of the "Summary, Conclusions, and Recommendations", by Carl Belser, Bureau of Mines, and R. L. Beardman, Geological Survey, and of Belser's engineering report on the subject docket.

The applicants proposed 16,625 feet of wagon drilling, with some complementary road work and drill-site preparation, to explore their three claims for uranium at an estimated cost of $16,697.50.

Belser concludes that the possibility of the discovery of worthwhile reserves on the Quarrel claims is unlikely, and if any were found, they would be small and probably could not be mined economically. He recommends denial of the application.

I approve his conclusions and recommendation.

The application provided with your memorandum of June 30, 1953, instructing that a field examination be made, and the geologic report forwarded us for use in preparing the engineering report are also returned herewith. Your attention is called to the fact that the application is not complete in that figure 4 is not in the envelope on the back page and the engineer's report was received short that figure.

W. M. Trever

W. M. Trever

enclosures

WMT/kp

cc: 10
MMA 2788
MMA Chron.

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

August 3, 1953

Memorandum

To: DMEA Field Team, Region IV

From: A. H. Koschmann

Subject: DMEA Docket 2788, Quarrel group of claims, Bull Canyon district, Montrose County, Colorado

Enclosed are 10 copies of the geologic report by R. L. Boardman of the U. S. Geological Survey covering the above docket.

It has been recommended that the loan be denied.

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

Enclosures (10)

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

July 30, 1953

Memorandum

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

From: R. P. Fischer
Colorado Plateau District office

Subject: DMEA 2788, Quarrel group of claims, Bull Canyon district, Montrose County, Colorado

Transmitted herewith are ten copies of a geologic report on the Quarrel group of claims, leased by L. W. Staats and F. M. Blair, Bull Canyon district, Montrose County, Colorado. The applicants have applied for assistance in exploring for uranium deposits. They propose 16,625 feet of wagon drilling plus some road work to prepare drill-hole sites, the total cost of which is estimated to be $16,697.50.

The attached report is prepared by R. L. Boardman and is based on a field examination made jointly with R. R. McLellan and Carl Belser of the Bureau of Mines.

Three small deposits are known on this group of claims. Only one of these deposits has been mined and it yielded a small production of high-grade ore. The second deposit is known by a low-grade showing at the outcrop. A third deposit is known from two wagon-drill holes. A small amount of drilling already done by the applicant in ground near these deposits failed to show mineable extensions.

Because of the result of work already done by the applicant, and because most of the known deposits in the lower part of the Salt Wash in this area are small, it is concluded that the chances for finding mineable deposits by the proposed exploration are poor. For these reasons, the report recommends that the application be denied.

I concur with this recommendation.

R. P. Fischer

R. P. Fischer
Acting District Supervisor

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMEA 2788, Floyd M. Blair and Lowell W. Staats, Lessees

Quarrel Group

Montrose County, Colo.

Uranium

Carl Belser, Mining Engineer
Bureau of Mines

R. L. Boardman, Geologist
Geological Survey

August 24, 1953

DMEA 2788

FLOYD M. BLAIR AND LOWELL W. STAATS, LESSEES
QUARREL GROUP
MONTROSE COUNTY, COLO.

Summary, Conclusions, and Recommendations

By Carl Belser
Mining Engineer
Bureau of Mines

and

R. L. Boardman
Geologist
Geological Survey

DMEA 2788

FLOYD M. BLAIR AND LOWELL W. STAATS, LESSEES
QUARREL GROUP
MONTROSE COUNTY, COLO.

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

By Carl Belser and R. L. Boardman

Floyd M. Blair and Lowell W. Staats, of Nucla, Colo., have applied to the Defense Minerals Exploration Administration for assistance to explore for uranium on the Quarrel group of three mining claims, Bull Canyon district, Montrose County, Colo. The applicants proposed spending $16,697.50--Government participation $15,027.75--for drilling 16,625 feet of wagon drill holes.

An examination of the property disclosed that there is no mineable ore; that further ore shoots, if encountered, will be small, and the results from holes drilled in 1952 were unsatisfactory and indicate that mineable ore deposits will not be penetrated by additional drilling.

The exposed surface rock is of the lower alternating sandstone and mudstone strata of the Salt Wash member of the Upper Jurassic Morrison formation, and all local uranium deposits so far mined from the rim have been small.

It is recommended that the application be denied.

UNITED STATES DEPARTMENT OF THE INTERIOR

DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM

REGION IV

DMEA 2788 (Uranium)

L. W. Staats and F. M. Blair, Quarrel group of claims, Bull Canyon district, Montrose County, Colorado

By

R. L. Boardman, Geologist
U. S. Geological Survey

July 1953

DMEA 2788 (Uranium)

L. W. STAATS AND F. M. BLAIR, QUARREL GROUP OF CLAIMS
BULL CANYON DISTRICT, MONTROSE COUNTY, COLORADO

INTRODUCTION AND SUMMARY

L. W. Staats and F. M. Blair of Nucla, Colo., have applied to the Defense Minerals Exploration Administration for a loan to explore for uranium on the Quarrel, Quarrel No. 1, and Quarrel No. 2 claims, leased by the applicants, in the Bull Canyon district, Montrose County, Colo. (fig. 1).

The claims were examined on July 16, 1953, by R. L. Boardman, geologist, U. S. Geological Survey, and R. R. McLellan and Carl Belser, engineers, U. S. Bureau of Mines, in company with L. W. Staats, representing the applicants. The claims lie in parts of secs. 1 and 12 (unsurveyed), T. 45 N., R. 18 W., New Mexico principal meridian. They are accessible by 15 miles of secondary road, almost all of which is graveled, that joins Colorado Highway 90 in Paradox Valley, about 13 miles west of Naturita, Colo.

The applicants propose 16,625 feet of wagon drilling in holes spaced from 25 to 200 feet apart to explore for uranium in at least two mineralized sandstone zones near the base of the Salt Wash member of the Jurassic Morrison formation. The drilling was proposed throughout the area of the three Quarrel claims. The total cost of the proposed exploratory work, including preparation of drill-hole sites, technical supervision, and smaller incidentals was estimated by the applicants to be $16,697.50.

As a result of the field examination, it is believed that there is little likelihood of finding new commercial ore bodies through exploratory drilling in the three Quarrel claims. The known deposits in the lower Salt Wash sandstones in this part of the Bull Canyon district are small and erratically distributed. Results of previous drilling in the Quarrel group by the applicants confirm this observation. It is doubtful if any deposits would be found by the proposed exploration. If deposits were discovered, however, it is expected that they would be too small to be mined economically. Because of these conclusions, it is recommended that the application be denied.

A copy of figure 4 of the applicants' brochure showing the location of the claims examined, the ore occurrences, and some of the proposed wagon drill-hole sites is included as figure 2 in this report.

GEOLOGY

The rocks exposed in the Quarrel claims are essentially flat-lying and consist almost entirely of alternating sandstone and mudstone strata of the lower part (bottom one-third to one-half) of the Salt Wash member of the Upper Jurassic Morrison formation. Along parts of the western edge of the Quarrel and Quarrel No. 1 claims, shale and sandstone beds of the underlying Summerville and Entrada formations, also Upper Jurassic, crop out.

The part of the Salt Wash member present in the Quarrel group attains a maximum thickness of approximately 150 feet. The Salt Wash sandstone lenses range from 10 to 50 feet in thickness. They are separated by relatively thin red to red-brown mudstone beds. A sandstone lens, 15 to 30 feet thick, forms a bench surface over nearly all the area of the Quarrel group. The sandstones are light brown to red brown.

In the vicinity of mineralized rock the sandstones are lightly stained with limonite and are in contact with varying thickness of gray-green mudstone. Carbonaceous material is relatively abundant in the sandstone outcrops and is not believed to be reliable as a guide to ore deposits in the Quarrel group.

ORE DEPOSITS

Three deposits of mineralized material are known in the Quarrel group, two in the Quarrel claim, and one in the Quarrel No. 1 claim (fig. 2).

The two deposits in the Quarrel claim are in different sandstone lenses; one deposit is about 50 feet stratigraphically below the other. The lower deposit, indicated by the Quarrel Adit on figure 2, is in about the middle of the 50-foot thick basal Salt Wash sandstone lens and is the only deposit in the Quarrel group that has been mined. The adit is about 60 feet long and is believed to have yielded a maximum of 10 to 15 tons of ore. According to the applicants, the only recorded production is 1 ton of ore that assayed 7.7 percent U_3O_8 and was mined in 1949. This ore was from a richly mineralized log, trending about N 75° E, that was exposed at the outcrop. Only a few thin remnants of mineralized material, mostly low grade, are left in the workings, indicating that the mineralized material was likely almost entirely confined to the high-grade log. The upper deposit in the Quarrel claim was discovered by assessment wagon drilling in 1952. One hole (fig. 2) is reported to be in 18 inches of mineralized material at a depth of about 50 feet. One 25-foot offset hole to the southeast is reported to have penetrated thinner and lower grade mineralized material at about the same stratigraphic horizon. Other closely spaced offset holes are in barren sandstone. The applicants and the examining field team do not consider this deposit to be of sufficient size to warrant mining.

The deposit in the Quarrel No. 1 claim consists of a small outcrop, a few inches by a few feet, of vanadiferous sandstone which may correlate stratigraphically with the upper deposit in the Quarrel claim. Little carnotite staining was noted in this outcrop. Four assessment wagon-drill holes near this deposit were completed in 1952, but failed to penetrate mineralized material (fig. 2).

The uranium and vanadium minerals in the Quarrel deposits are the same as those common in most of the uranium-vanadium deposits of the Colorado Plateau. A small amount of hewettite was observed in remnants of "blue-black" ore in the Quarrel adit. The Quarrel deposits apparently are very small and widely scattered--typical of nearly all of the deposits in the lower part of the Salt Wash member in the Bull Canyon district as well as elsewhere in the Colorado Plateau.

PROPOSED EXPLORATION

The applicants propose to explore the lower part of the Salt Wash member for uranium in the Quarrel group. The proposed exploration program would consist of 16,625 feet of wagon drilling planned in three phases, as follows:

First phase.--Holes drilled on 200-foot centers throughout the three Quarrel claims (fig. 2). This phase consists of 33 holes averaging 125 feet deep, for a total of 4,125 feet of drilling.

Second phase.--Offset holes drilled on 100-foot centers in ground determined to be geologically favorable, based on the results of the First-phase drilling. The Second phase consists of an estimated 60 holes averaging 125 feet deep, for a total of 7,500 feet of drilling.

Third phase.--Offset holes drilled on 25-foot centers to outline ore bodies discovered by First- and Second-phase drilling. The Third phase consists of an estimated 40 holes averaging 125 feet deep, for a total of 5,000 feet of drilling.

In 1951 and 1952, the applicants completed 10 wagon-drill holes in the Quarrel group as their assessment work on those claims. None of the holes extended either of the two previously known deposits, although two holes penetrated a new deposit. This new deposit is not considered to be economic. At least five of the holes were carried to a depth sufficient to test the lower ore-bearing zone.

It is believed that holes on 200-foot centers, or even 100-foot centers, would have very little likelihood of hitting mineralized targets as small as the known deposits in the Quarrel group, and as small as most of the deposits known in the lower part of the Salt Wash elsewhere in the Bull Canyon district. It is doubtful if enough geologic information could be gained from wagon drilling to guide intelligently the proposed exploration and to appraise the favorableness of the ground. It is improbable that deposits of commercial size could be found, by any reasonable plan of exploration in the Quarrel group. For the foregoing reasons it is believed inadvisable for the DMEA to enter into contract with the applicants to do the proposed exploration.

CONCLUSIONS AND RECOMMENDATIONS

A DMEA (uranium) field examination was made of the Quarrel group of claims in the Bull Canyon district, Montrose County, Colo. The claims are leased to the applicants, L. W. Staats and F. M. Blair of Nucla, Colo.

There are three small deposits known in the Quarrel group. They occur in three (possibly two) sandstone zones in the lower part of the Salt Wash member of the Jurassic Morrison formation. Only one of the deposits has been mined, yielding an estimated maximum of 10 to 15 tons of relatively high grade ore. Recorded production has been 1 ton of ore assaying 7.7 percent U_3O_8. The grade of U_3O_8 for the total production is undoubtedly appreciably less. No measurable reserves are present in the deposits.

The applicants propose 16,625 feet of wagon drilling, planned to be done in three phases, to test the lower part of the Salt Wash in the Quarrel group. Based on the size of the known deposits in the area examined as well as on the size of nearly all deposits in the lower part of the Salt Wash elsewhere on the Plateau, the undiscovered deposits that may exist in the lower part of Salt Wash in the Quarrel group are believed to be very small and erratically distributed. Because deposits in the Quarrel group are likely to be small and spotty, and because it is improbable that new commercial ore bodies will be found by exploration in this group, it is recommended that the subject DMEA application be denied.

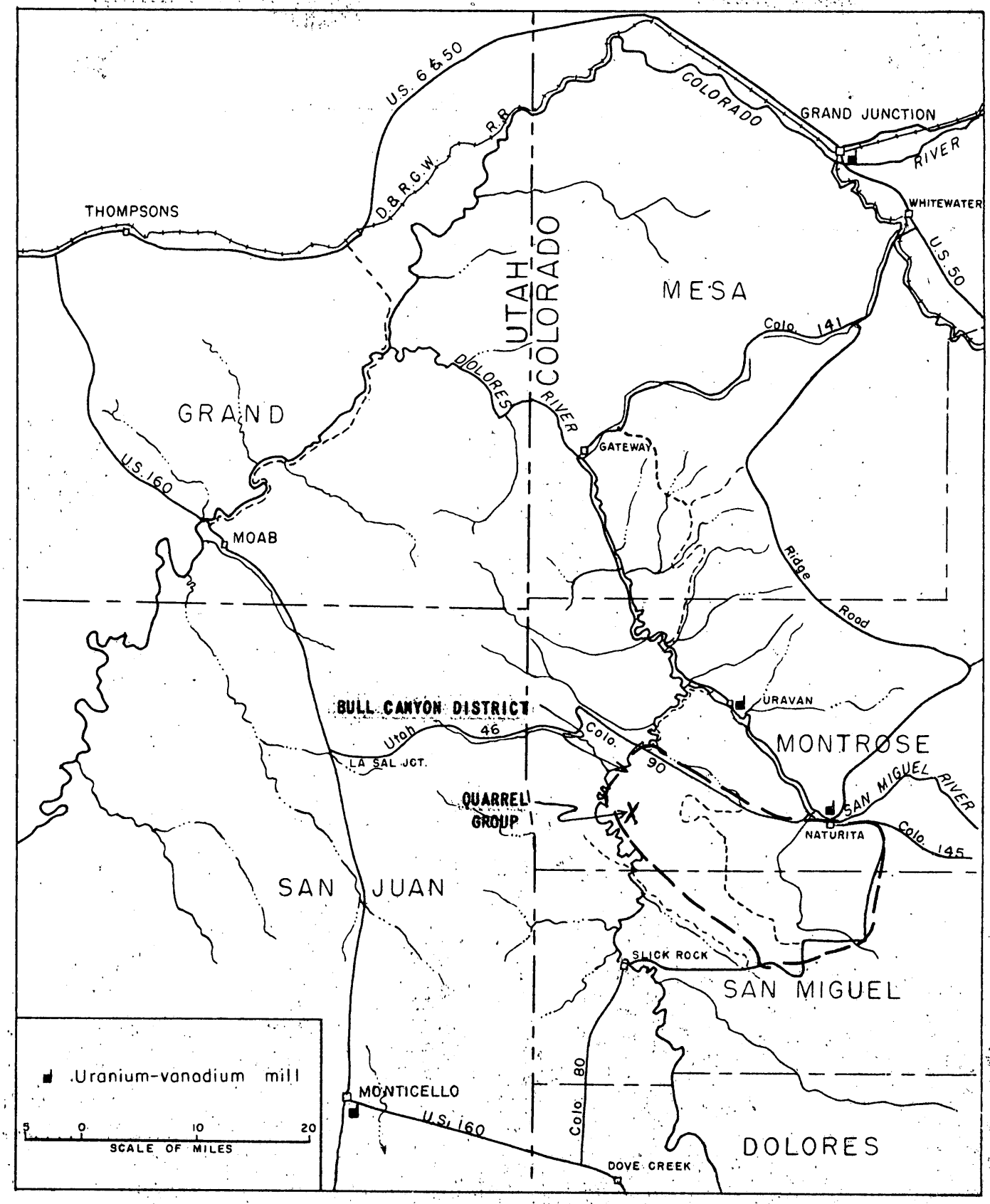

Figure 1. INDEX MAP OF PART OF THE COLORADO PLATEAU SHOWING THE APPROXIMATE LOCATION OF THE QUARREL GROUP OF CLAIMS, BULL CANYON DISTRICT, MONTROSE COUNTY, COLORADO

DMEA 2788

FLOYD M. BLAIR AND LOWELL W. STAATS, LESSEES
QUARREL GROUP
MONTROSE COUNTY, COLO.

Engineering Report

By Carl Belser
Mining Engineer
Bureau of Mines

DMEA 2788

FLOYD M. BLAIR AND LOWELL W. STAATS, LESSEES
QUARREL GROUP
MONTROSE COUNTY, COLO.

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DMEA 2788

FLOYD M. BLAIR AND LOWELL W. STAATS, LESSEES
QUARREL GROUP
MONTROSE COUNTY, COLO.

ENGINEERING REPORT

By

Carl Belser

INTRODUCTION

Floyd M. Blair and Lowell W. Staats, who have a mining lease on the Quarrel group of claims located near the east end of Bull Canyon, Montrose County, Colo., have applied for a Defense Minerals Exploration Administration loan to explore the property for uranium. The applicants submitted a proposal estimated to cost $16,697.50--Government participation, 90 percent or $15,027.75--to explore the Quarrel, Quarrel No. 1, and Quarrel No. 2 lode mining claims, known to have produced some uranium in the past, at points which are impossible to examine from surface or from existing workings. The proposal called for 16,625 feet of wagon drilling, together with a small amount of preparation of drill sites, engineering, and sampling.

ACKNOWLEDGMENTS

Project proposals were discussed with engineers of the Bureau of Mines familiar with similar drilling operations on the Colorado Plateau. The examining team consisted of R. L. Boardman, geologist, Geological Survey, and R. R. McLellan and Carl Belser, mining engineers, Bureau of

Mines. The team was accompanied by one of the applicants, Lowell W. Staats.

LOCATION, TOPOGRAPHY, AND PHYSICAL FEATURES

The Quarrel group is located in secs. 1 and 2, T. 45 N., R. 18 W., New Mexico principal meridian, in Montrose County, Colo. (fig. 1). The claims are on low tableland capped by rocks of the Lower Salt Wash (Morrison) formation and abut on the west Wild Horse Draw, near the east end of Bull Canyon. The altitude on top of the rim is about 6,100 feet, and the old Quarrel mine adit is about 120 feet below the rim. A good secondary road, 15 miles long, connects the property with Colorado State Highway 90 about 13 miles west of Naturita. Ridgeway, 87 miles to the east, is the nearest railhead.

Annual rainfall is about 12 inches and vegetation is of the semi-arid type, consisting mainly of sage brush, pinon, and juniper. Some of the local timber is suitable for mines use. Although winters are somewhat severe, the main roads are kept open and interruptions to year-around operations are few.

Miners can be obtained in Naturita and Norwood. Living quarters are obtainable at Naturita or a camp can be established near the mine. The nearest permanent stream is the Dolores River, about 3-1/2 miles by airline to the west. However, the nearest available permanent stream is probably the San Miguel River.

HISTORY AND PRODUCTION

The owners of the Quarrel claims have records of 1-ton of ore being produced, which assayed 7.7 percent U_3O_8. This production was made in 1949 from a "tree" in the 60-foot-long adit which was driven into the

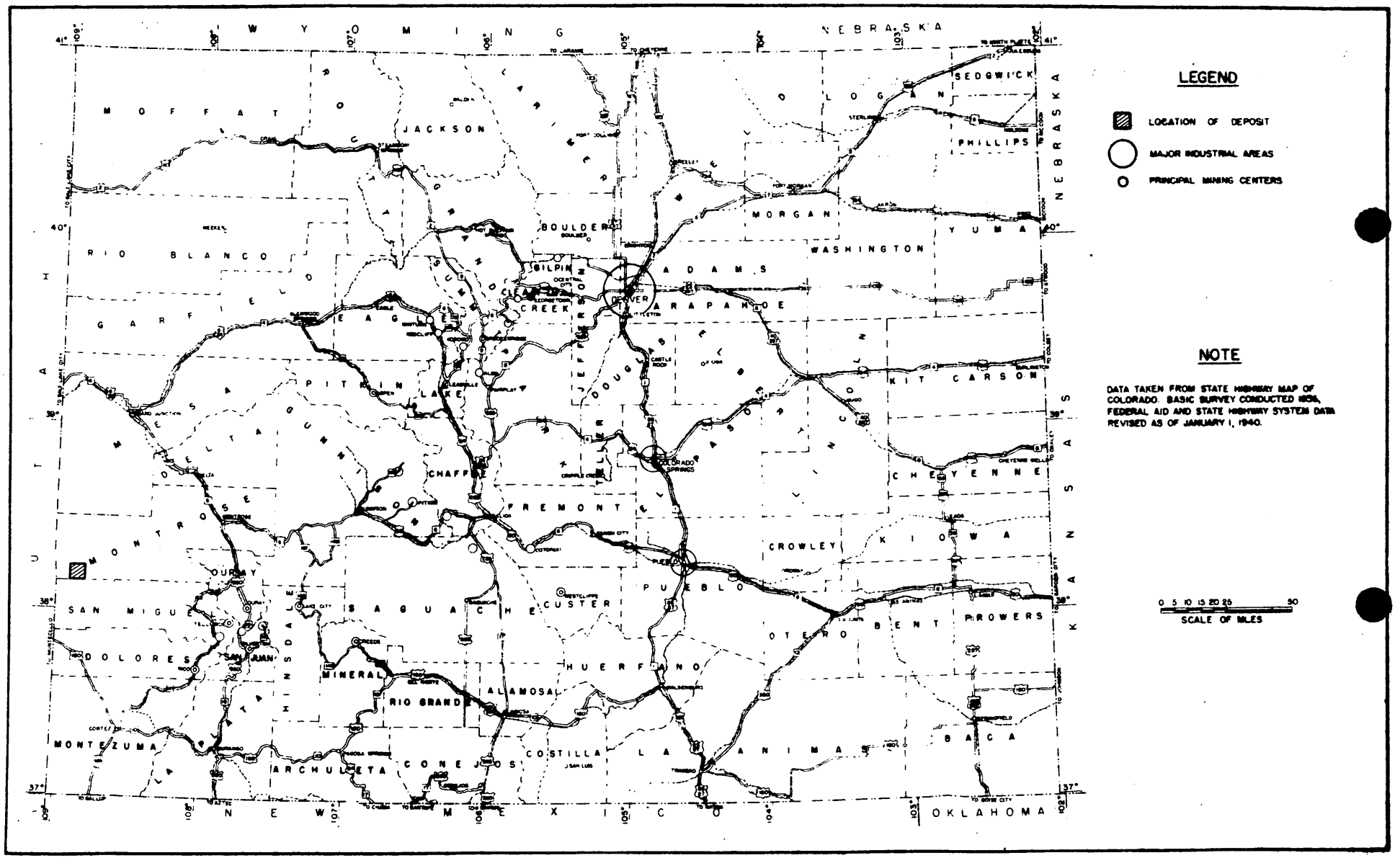

FIGURE 1. - LOCATION MAP, QUARREL GROUP, BULL CANYON MINING DISTRICT, MONTROSE COUNTY, COLORADO (DMEA 2738)

face of the rim rock on the Quarrel claims. However, the date "1922" is carved on the face of the cliff near the adit and total production is believed to have been about 15 tons.

OWNERSHIP AND EXTENT

The Quarrel, Quarrel No. 1, and Quarrel No. 2 lode mining claims are held under possessory rights by J. F. Anderson and H. C. Anderson, of Montrose, Colo., and J. F. McWilliams, of Olathe, Colo. The claims were leased to Lowell W. Staats and Floyd M. Blair, of Nucla, Colo., on April 24, 1952, for a period of 5 years and are said to be free and clear of all liens, encumbrances, and adverse claims.

DESCRIPTION OF THE DEPOSITS

The exposed rocks on the Quarrel claims are mostly flat-dipping sandstones and mudstones of the lower portion of the Salt Wash member of the Morrison (Upper Jurassic) formation, and they apparently rest conformably upon the Entrada formation which outcrops on the steep slope that drops abruptly into Bull Canyon. The uranium mineralization is known to occur in three small flat deposits. The lowest deposit has been developed by a 60-foot adit, which has been driven into the cliff about 120 feet below the top of the rim rock. A small "tree" was mined in this adit in 1949. Wagon drill holes, drilled as assessment work in 1952, failed to encounter an extension of the lower deposit, but one hole penetrated 18 inches of uranium-bearing material at a depth of 50 feet. A 25-foot offset hole penetrated a thinner section of this same material. A small, thin area of vanadium-bearing sandstone is exposed on top of the rim rock on the Quarrel No. 1 claim. As a whole,

the sandstone is dry and moderately soft, and would stand without support in small openings.

MINEABLE ORE RESERVES

Only small remnants of uranium mineralization remain in the 60-foot tunnel, and the examining team does not consider any of the three deposits of sufficient size to warrant mining.

PRESENT STATUS

Exploration and Development

Outside of the 60-foot adit on the Quarrel claims, all development consists of a few wagon drill holes, drilled vertically from surface.

Mining and Milling Equipment and other Facilities

There are no mining or milling equipment or other facilities on the property. The nearest available mills are at Naturita and Uravan. A fair mine road furnishes access to the claims.

PROJECT PROPOSALS, WITH COSTS

The applicants proposed to explore the claims with a wagon drilling program set up in three phases.

Phase I - A 200-foot drill pattern, covering the whole area with 33 holes averaging 125 feet in depth, or a total of 4,125 feet.

Phase II - Elimination of about one-third of the area as unfavorable and a 100-foot drill pattern on the balance, or 60 holes averaging 125 feet in depth--a total of 7,500 feet.

Phase III - About 40 additional holes to block out ore bodies, or 5,000 feet of drilling.

The costs of drilling these 133 holes, 125-feet-deep, has been estimated by the applicants as follows:

6,650 feet of wagon drilling under 50 feet, at $0.65 per foot	$ 4,322.50
9,975 feet of wagon drilling over 50 feet, at $1.00 per foot	9,975.00
Bulldozing drill sites, 50 hours at $10.00 per hour	500.00
Consultant-engineer, 15 days at $50.00 per day	750.00
Sampler, 3 months at $350.00 per month	1,050.00
Pickup, depreciation and operation, 1,000 miles at 10¢ per mile	100.00
	$16,697.50

The above drilling costs are based on an estimate by Robert Williams, drilling contractor.

Under the circumstances, the engineers made no analysis of the proposal or costs and suggest no alternate program.

CONCLUSIONS

Known uranium deposits in the Lower Scott Wash sandstones in this area are small. The holes drilled in 1952 indicate that the uranium deposits on the Quarrel claims are not of mineable size and it is the examining team's opinion that worthwhile mineable deposits will not be developed by further exploratory drilling.

RECOMMENDATIONS

It is recommended that the applicants' request for Government assistance in exploratory work on the Quarrel group of claims be denied.

kp

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

224 New Customhouse
Denver 2, Colorado

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JAN 5 1953

January 2, 1953

Mr. John I. Schumacher
1251 Elm Avenue
Grand Junction, Colorado

Re: Docket DMEA 2788

Dear Mr. Schumacher:

This will acknowledge receipt of your letter dated December 26 and enclosed map.

A check of the records in the Bureau of Land Management indicates that all of the land occupied by the Quarrel Group was withdrawn by the A. E. C. by Public Land Order 779 dated December 29, 1951.

In order that we may continue to process your application, will you please furnish us photostats of the original location certificates and any and all conveyances. We shall also need signed copy or photostat of your clearance from the Atomic Energy Commission to conduct mining operations on the Quarrel claims.

Very truly yours,

W. H. King

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

HMC:es

cc: Mittendorf
Docket
Chron.
Traver
Koschmann (2)

DMEA-2788

[illegible] Junction, [illegible]
[illegible] 11, [illegible]

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John A. Schumacher

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

Department of the Interior
Defense Minerals Administration
Denver
NOV 24 1952

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

Not to be filled in by applicant

Docket No. Dmea-2788
Metal or Mineral
Date Received 11-24-52
Estimated Cost
Participation (Government %)

INSTRUCTIONS

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

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

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

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

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

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract

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

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

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

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

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

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

(*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.*—State the mineral or minerals for which you wish to explore .....

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

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

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

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

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

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

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

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

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

(*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?

☒ Money ☐ Use of equipment owned by you ☐ Other

Explain in detail on acompanying paper.

CERTIFICATION

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

Dated October 27, 1952

Floyd Blais — Lowell Stants
(Applicant)
[illegible]

By .....

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

Dnra-2788

1 cy each 5 maps enclosed

® COLUMBIAN GLAZED CLASP NO. 75B
THE UNITED STATES ENVELOPE CO. SPRINGFIELD MASS.
7½ X 10½

LAND AND CATTLE
Box 727
[illegible], Colorado

[illegible] 12-103

[illegible]

[illegible]

[illegible]

(a) [illegible]

(b) [illegible]

(c) [illegible]

(d) [illegible]

(e) [illegible]

c. (a) See attached report

(c) See attached report

(d) See attached report

(e) See attached report

d. (a) Uranium and Vanadium

(b) See attached report

(c) See attached Form [illegible]-103

(d) Experience of applicant

Ferrell L. Kirk

1937-1939	Independent Naturita, Colorado	Owner & operator of uranium claims in Gypsum Valley
1940-1943	Vanadium Corporation of America engineering staff. Naturita, Colorado	Staking claims and sampling mines.
1943-1945	Independent Naturita, Colorado	Owner and operator of uranium claims in Gypsum Valley
1945-1947	Vanadium Corporation of America engineering staff Naturita, Colorado	Staking claims & sampling mines
1947-1948	U.S. Geological Survey Grand Jct., Colorado	Geologist on uranium exploration drill program
1948-1950	J.E. Slaplot Co. Tucla, Colorado	Staking uranium claims and superintendent
1950-1951	Atomic Energy Commission Grand Jct., Colorado	Mine examinations
1951-1952	J.E. Slaplot Co. Tucla, Colorado	Superintendent for mine operations

Lowell H. Watts

Experience in uranium mining started in 1948. Worked until present either leasing or working for either U.S. Vanadium or Vanadium Corporation of America. The last four years leasing on the Turner Mine on Monogram Hill. (See "How to Make Long Money Mining Uranium", Engineering and Mining Journal, 1952.

BLAIR AND STAATS
Box 207
Ouray, Colorado

[illegible]-205

(Page [illegible])

[illegible] - [illegible] All [illegible]

[illegible] Corporation [illegible]

[illegible]	U.S. Bureau of [illegible]	[illegible] Development Drilling [illegible]
19[illegible]-19[illegible]	U.S. Army	[illegible] Heavy & light equipment [illegible]
19[illegible]-19[illegible]	U.S. Bureau of [illegible]	[illegible] Development of phosphate, lead, zinc, and other metallics-Colorado field office.
19[illegible]-19[illegible]	U.S. Geological Survey	[illegible] Exploration drilling throughout Colorado Plateau
1951	Uranium Development Exploration Company	[illegible] Exploration, consulting, and diamond drilling for uranium and vanadium

C (a) All costs are computed on the basis that the exploration program will continue for 4 months, [illegible] actual [illegible] period will be 5 months allowing for inclimate weather.

(2) Drilling

6,650 ft. wagon drilling under 50' @ .65 per foot $ 4,322.50

9,076 ft. wagon drilling over 50' @ 1.00 per foot 9,076.00

(3) Hollcasing

[illegible] hours @ [illegible].00 per hour [illegible]

Total Contract Cost $1[illegible],797.50

[illegible] AND [illegible]
Box 507
[illegible], Colorado

-2-

5. (a) (1) [illegible]

[illegible] 2.00 [illegible]
(accounting, typing, transit rental, [illegible] regulation and social [illegible]) [illegible]

(2) [illegible]

[illegible] 320.00 per month [illegible]
Total labor cost 1,000.00

(c) None

(d) (1) Volume depreciation and operating expense
[illegible] 100 miles @ [illegible] per mile 100.00
Total operating equipment 100.00

(e) None

(f) None

(g) None

(h) [illegible] analysis will be done free of charge by VOM Mill at [illegible]. [illegible] will be done by [illegible].

7. (a) None

(b) None

REPORT OF EXAMINATION OF THE QUARREL CLAIMS, BULL CANYON, MONTROSE COUNTY, COLORADO

INTRODUCTION

This report covers an examination on the Quarrel Group Claims located in the Fawn Springs Area of Bull Canyon, Montrose County, Colorado and includes the following:

Quarrel

Quarrel No. 1

Quarrel No. 2

These claims, comprising approximately 40 acres, lie in Township 45 North, Range 18 West, New Mexico Principal Meridian. The sections are unsurveyed.

The above claims were located in 1949 by the Gregor Brothers and sold in 1950 to J. F. Anderson, Harold C. Anderson at Montrose, Colorado and J. B. McWilliams at Olathe, Colorado. They are held at the present by Lowell V. Staats and Floyd G. Blair at Nucla, Colorado, by lease agreement.

LOCATION AND PHYSIOGRAPHY

The claims listed above lie on a bench beside Wild Horse Draw at the head of Bull Canyon. This area is approximately 60 air miles and 120 road miles from Grand Junction, Colorado. The nearest town, Naturita, Colorado is 28 miles east.

This area is typical of the Colorado Plateau "rim rock" country, the distinguishing features being the well-exposed sandstone cliffs separated by comparatively flat-lying benches and steep, boulder-covered, eroded slopes. Vegetation in the area is of the semi-arid type and consists of sage brush, Pinon and Juniper. The elevation in the area ranges from 5500 to 7000 feet. Annual rainfall averages about 12 inches and the

deepest snow is about 17 inches but usually melts in two or three days. Mine production does not stop in the winter and with the newly-improved road network, ore haulage should not be interrupted by spring thaw more than 2 or 3 days following the most severe winter.

GEOLOGY

Formations exposed in the area range from Chinle or Dolores of Upper Triassic Age to Dakota of Lower Cretaceous Age. The Chinle is exposed in the Dolores River Canyon near the mouth of Bull Canyon and the Dakota cap encircles Bull Canyon on the north, east, and south. The Dakota overlies the ore-bearing Morrison formation which forms a series of rims and slopes.

The most pronounced structural features in the area are Paradox Valley and Gypsum Valley. Both are collapsed salt anticlines; the collapse being the result of removal of the underlying salt beds by ground water. Paradox Valley and Gypsum Valley are two of the three remnants of northwest trending salt anticlines in the Uravan Mineral Belt. Extensions of these valleys are found projected to the other side of the La Sal Mountains.

Due to the scarcity of primary uranium ores on the Colorado Plateau much controversy exists as to the origin of uranium ores, but most authorities agree that localization of the secondary carnotite mineral was brought about by ground water solutions. These authorities point out that the present location of the uranium deposit is where the solutions became trapped and precipitation followed. Another accepted criteria for localization is the affinity of carnotite for carbonaceous material. All these criteria indicate that the Quarry Claims are in a favorable area.

The ore beds on these claims are cross-bedded and lensed between impervious siltstone splits which provides good lithologic trapping conditions. The flat-lying beds provide a structural trapping condition for the solutions that traveled down the flanks of the anticlines and have become stagnate. The abundance of carbonaceous material is evident in the Quarrel Mine where the ore was concentrated in a "tree" and in rolls in the adjacent sandstone.

The Quarrel Claims are located within one mile of the Teapot Dome Mine (U.S.V.) which in the past has reportedly produced 100,000 tons of ore and within two miles of the newly discovered Dave Springs Mines (U.S.V.) which have the appearance of being as good as the Teapot Dome. The Dave Springs Mines are approximately 1/2 mile from the nearest rim and were discovered entirely by "wildcat" drilling. These claims are also located midway between the highly productive areas of Benson Hill on the flank of Paradox Valley and Bedding Ball Group on the flank of Cygnet Valley.

HISTORY AND PRODUCTION

The Quarrel Group Claims were in production in 1920 when a high grade "tree" which was exposed on the outcrop was mined. The present owners can only find records of one ton of ore that assayed 7.7% U_3O_8. The present workings, however, indicate that several hundred tons of lower grade ore was shipped. This "tree" which was mined trended about N 75 E which corresponds with other rolls of ore in the recognized ore trend in Bull Canyon.

RECENT EXPLORATION

Within the last year the present lessors have drilled four or five vacon drill holes as assessment work behind the Quarrel Mine, but it is

doubtful if they were deep enough to reach the lower ore zone. Several holes encountered thin streaks of low grade in the upper ore zone.

DEVELOPMENT

The only development work on these claims is approximately 60' of drift in the Quarrel Mine which at the present is open and dry. (See accompanying map).

No recent development work has been done due to lack of exploration drilling.

One sample was taken during the examination. All ore left in the mine is on the thinning edge of rolls and does not infer any reserves. The sample, it is felt, represents the grade of ore that has been mined and the grade of ore that is expected to be found. The results are as follows:

	U_3O_8	V_2O_5
Sample No. 1 - Q.	0.49%	3.77%

EXPLORATION PLAN

The deepest holes on these claims will be 150 feet which is about the limit of practical wagon drilling. Also, in view of water supply and costs, it is felt that diamond drilling is not advisable for this type of exploration. It is recommended that this drilling should be started by drilling out the complete area on 200 feet spacing with a diamond pattern, then closing down to a 100 foot pattern in the favorable areas. After this, the individual ore holes can be offset with 25 foot spacings to block out the ore bodies. Below is listed a breakdown of footage by each phase:

First Phase Drilling:

A 200 foot drill pattern would cover the whole area with 33 holes whose average depth would be 125 feet or a total of 4125 feet.

Second Phase Drilling

Post drilling in similar areas indicates that about 1/3 of the area will be eliminated as unfavorable. This would leave about 60 holes on 100 foot spacings and averaging 125 feet or 7500 feet.

Third Phase Drilling

About 40 holes will be necessary to block out the ore bodies or 5000 feet.

The total footage necessary will be 16,625 feet of wagon drilling.

GUIDES TO EXPLORATION

Favorable geologic criteria to intelligently guide an exploration program is evident from present exposures and in the mine workings. These criteria includes the altered green clays, both above and below the ore horizon, limonite stained sandstone, cross-bedding and carbon streaks. They would be carefully observed in the drilling and efforts should be made to observe the thickening and thinning of the sands and clays. Structural contours on the base of the ore sand would be valuable in extending ore bodies and locating new ore bodies. An effort should also be made to determine if the subsurface structure is in any way reflected on the surface topography so light be suggested by other ore bodies in Bull Canyon which favor draws in sage brush flats.

RESERVES

There are no positive, indicated or inferred reserves in the Quarrel Hill. Although mineralization is shown on the mine map, it is from the thinning edges of rolls.

LABOR AND LIVING CONDITIONS

Labor, both skilled and semi-skilled excepting diamond drillers, is in adequate supply. Prevailing wages for various types of labor is listed below:

Labor and muckers	1.25 per hour
Miners	1.50 per hour
Drillers, core & rotary	1.75 per hour

Labor and living conditions will have no effect on this proposed exploration program since the applicant will have several rotary drill contractors bid and the accepted contractor will furnish the labor and probably house them in a temporary camp.

GENERAL SUPPLIES

Fuel, oil, groceries, powder, and general supplies can be purchased in Naturita, Colorado, 30 miles from the Quarrel Group Claims. Heavy mining supplies and equipment can be procured in Grand Junction, Colorado.

Water, both for drilling and domestic purposes, must be hauled from Naturita. For this reason diamond drilling is considered impractical for this proposed exploration program.

ACCESS ROADS

The newly-improved road network into Bull Canyon will leave only two miles of graded dirt road that will not be all-weather. It will be kept open by other mining companies and drilling contractors in the area.

About 50 hours bulldozer work will be necessary to clear drill sites and do minor road work in the drill area.

CONCLUSION

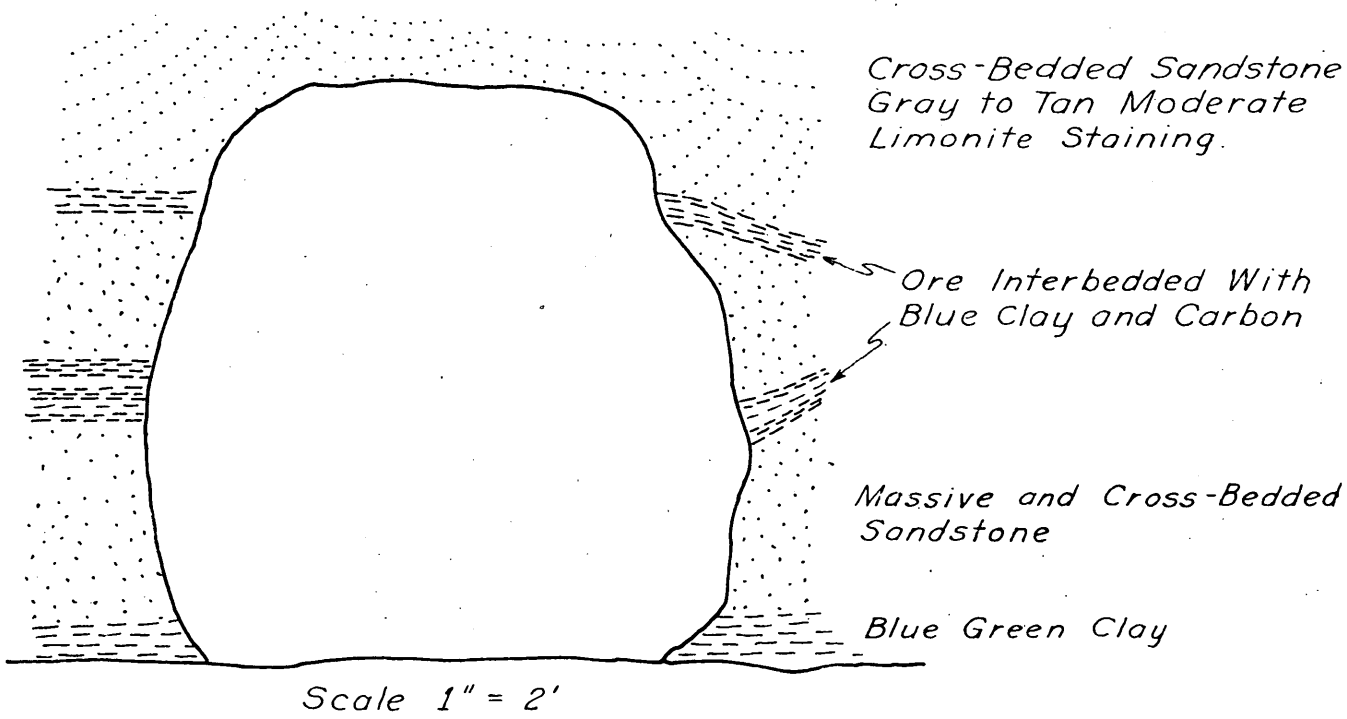
The Quarrel Group Claims offers an economical and feasible exploration program. Justification for this program can be found by studying the favorable geologic criteria on outcrop and in the mine.

Also indicative of a profitable exploration program is the location of the Marrel Claims relative to the Paradox Valley and Cyprus Valley mining areas and the other mines in Bull Canyon.

The judgment, integrity, and mining reputation of the applicants is excellent and they are thoroughly capable of carrying out the project efficiently. I strongly recommend the exploration program as outlined.

RICHARD BLUM
Strategic Minerals Exploration
Company Consultants

October 27, 1952



SECTION A – A'

FIGURE 2 A

SECTION THROUGH MINERALIZED ZONE – QUARREL MINE

Omega-2788

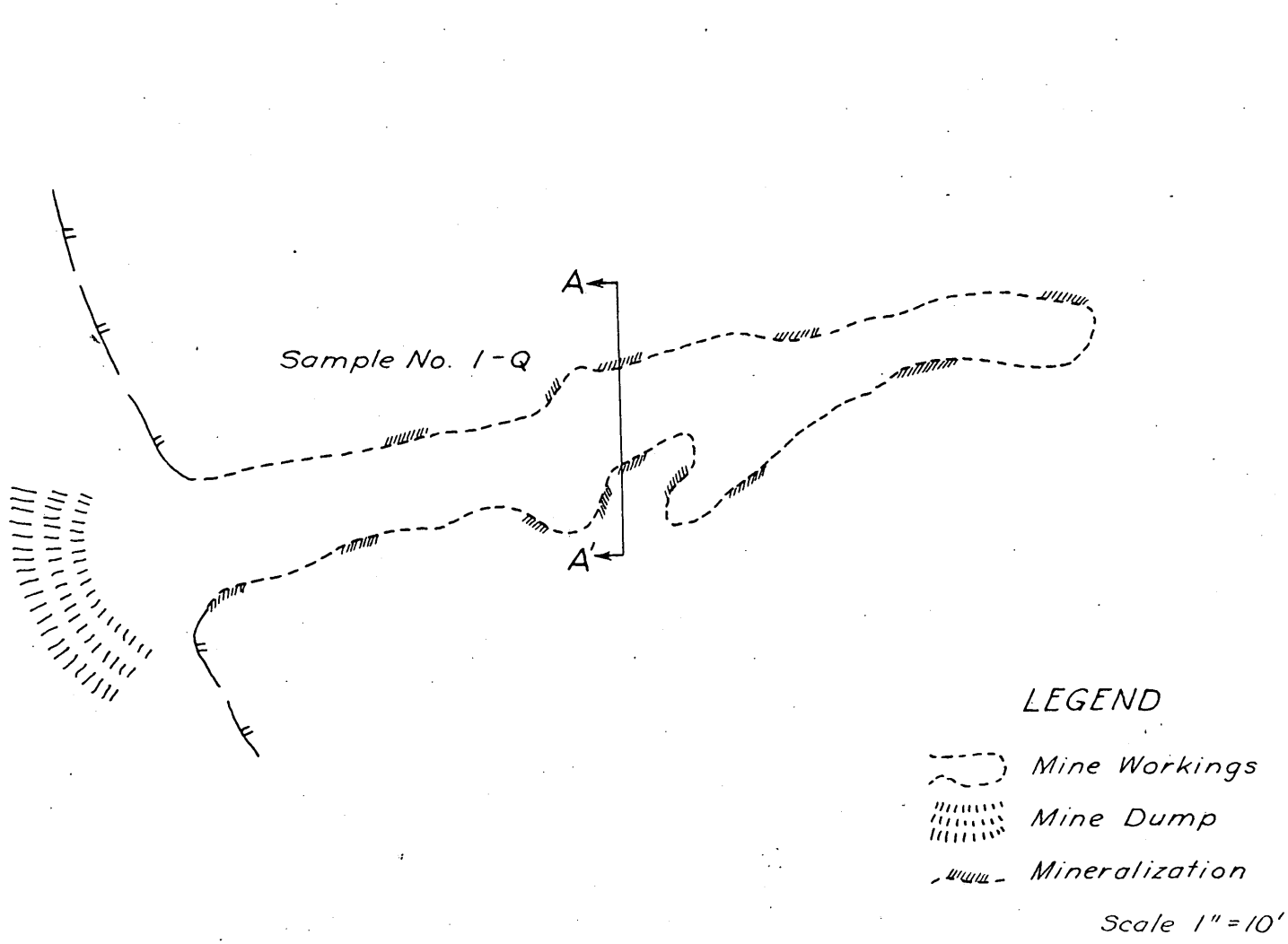


FIGURE 2B

QUARREL MINE QUARREL GROUP

Dmea-2288

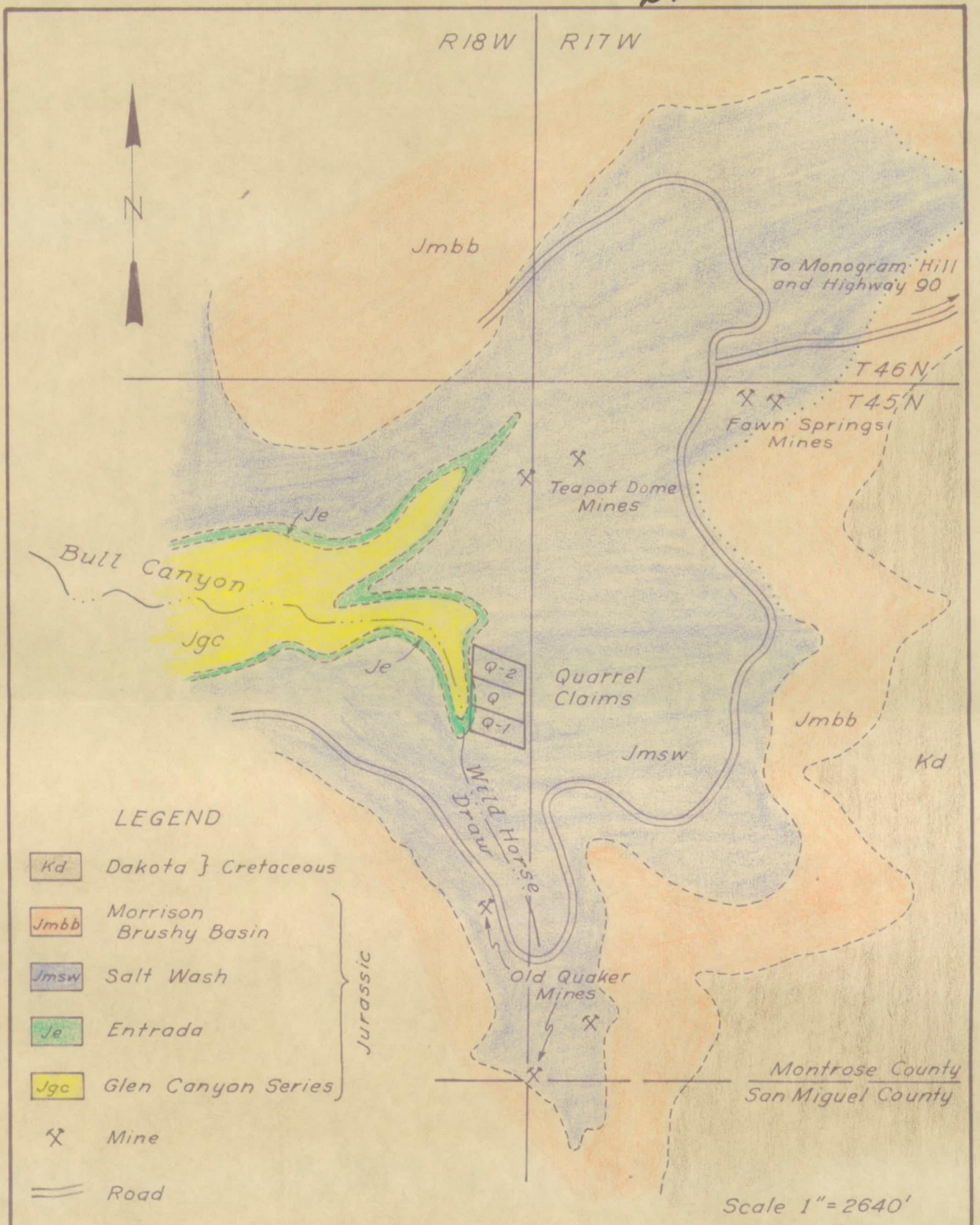


FIGURE I
GEOLOGIC MAP
OF EAST END OF BULL CANYON
SHOWING LOCATION OF QUARREL CLAIMS

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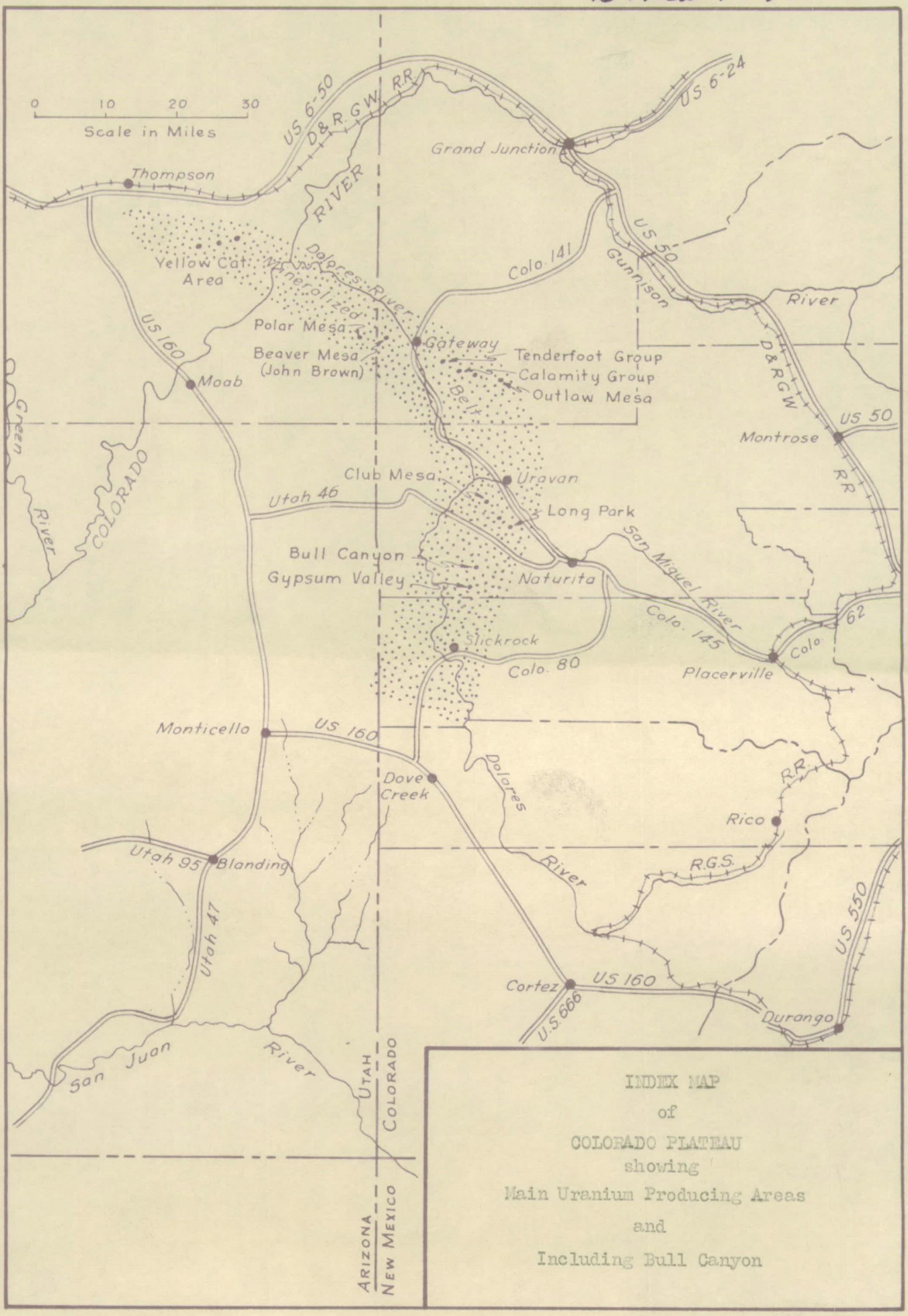

INDEX MAP
of
COLORADO PLATEAU
showing
Main Uranium Producing Areas
and
Including Bull Canyon

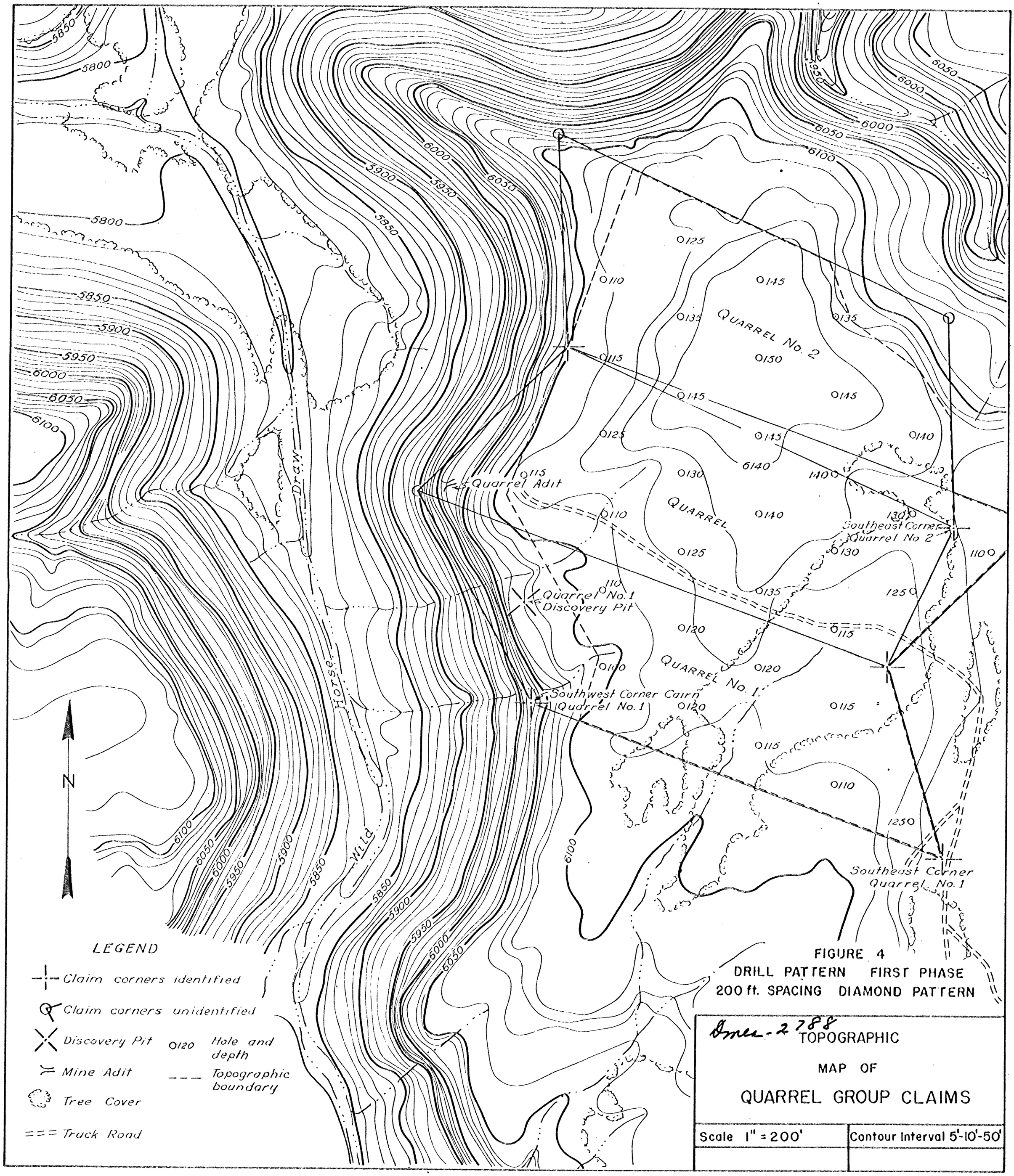

FIGURE 4
DRILL PATTERN FIRST PHASE
200 ft. SPACING DIAMOND PATTERN

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TOPOGRAPHIC MAP OF

QUARREL GROUP CLAIMS

Scale 1" = 200'	Contour Interval 5'-10'-50'

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

DEFENSE MINERALS EXPLORATION ADMINISTRATION
DOCKET 2788

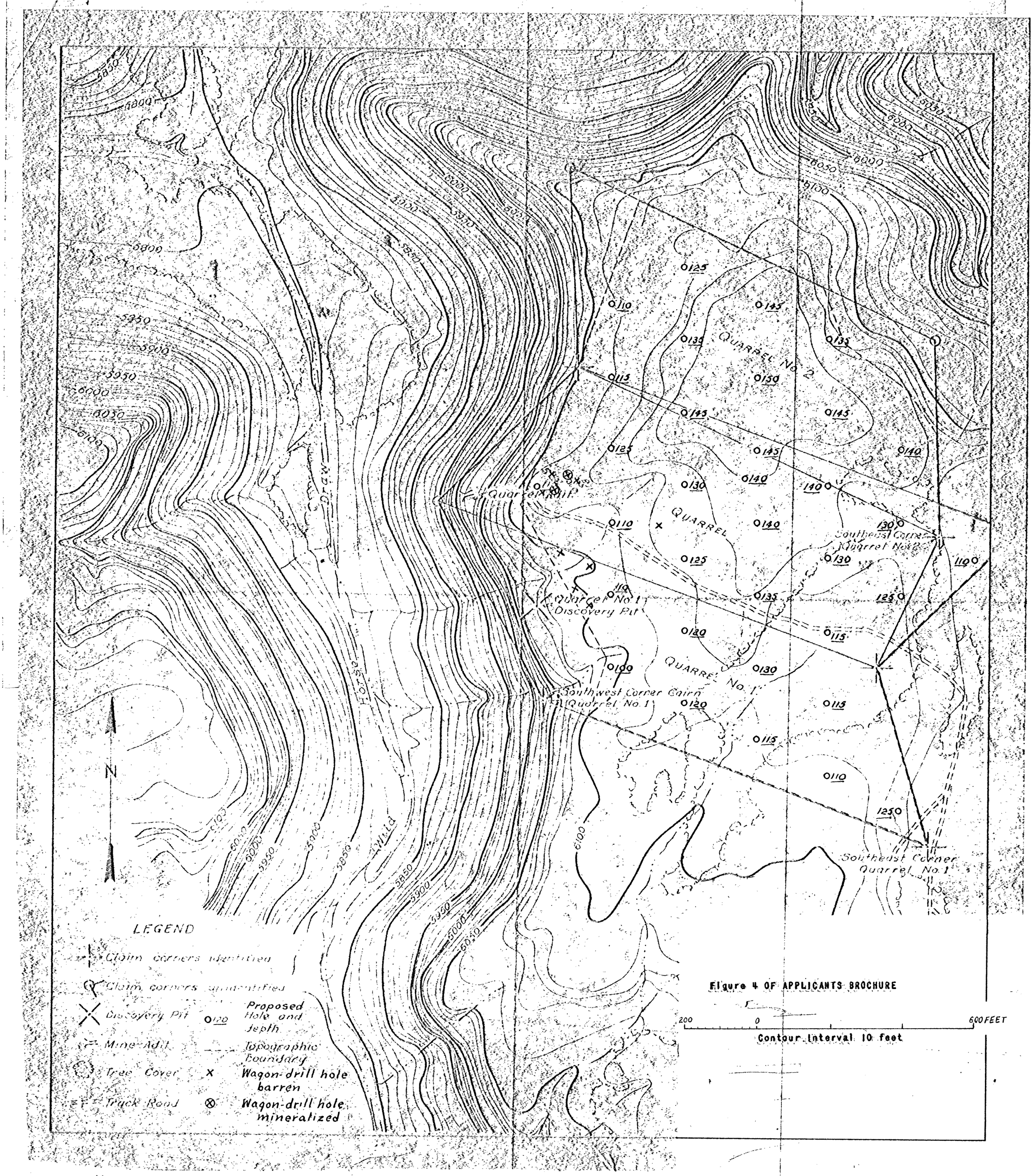

Figure 2 MAP OF QUARREL GROUP OF CLAIMS SHOWING LOCATION OF WAGON DRILL HOLES (FIRST PHASE) PROPOSED BY APPLICANTS