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Ching
Ellis
Nelson
Gehan
Selfridge

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

OCT 1 0 1955

Crestline Uranium and Mining Co.
c/o Mr. Nathan Wechsler
1020 Vermont Avenue, N. W.
Washington, D. C.

Re: Docket No. DMEA-3843 (Uranium)
Macks and Wilkins Claims
Grand County, Utah

Gentlemen:

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

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

Careful study of all our information indicates to us that the probability of disclosing minable ore reserves by your proposed program is not sufficiently promising to justify Government participation. We regret to advise you, under these circumstances, that your application for exploration assistance is denied.

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

Sincerely yours,

Frank E. Johnson

Acting Administrator

MChing/gla
10-7-55
cc to: Admr.'s Reading File
Operating Committee
Docket
Messrs. JECrawford, Rm. 3641
THKiilsgaard, Rm. 5224
JOHosted, Rm. 3210, GSA
Code 700
Mr. Ching
DMEA Field Team, Region III (2)

R.C.S.

DOCKET COPY

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Ching
Ellis
Nelson

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

October 7, 1955

Summary of Proposed Project

Object: Denial of application for an exploration project.

Docket No.: DMEA-3843

Commodity: Uranium

Applicant: Crestline Uranium and Mining Company
320 South Main Street
Salt Lake City, Utah
Address communications to:
Mr. Nathan Wechsler
1010 Vermont Avenue, N.W.
Washington, D. C.

Property: Macks and Wilkins Claims, consisting of 14 claims in Secs. 3 and 4, T. 23 S., R. 22 E., and Secs. 5 and 8, T. 23 S., R. 23 E., Grand County, Utah.
Stanley J. Lake, President of applicant company, has option to purchase the property.

Date of Application: May 21, 1955

Amount of Application: $164,780.00

Work proposed: 29,600 feet of core and non-core drilling in 148 holes and 3 stages. Spacing on 400-foot, 200-foot, and down to 50-foot centers in each successive stage.

Estimated Costs:

29,600 feet drilling @$4.00/ft.	$118,400.00	
Bulldozing and assaying	3,000.00	
Labor, supervision & consultants	13,400.00	
Operating equipment	7,000.00	
Buildings, materials, misc.	8,000.00	
Contingencies	14,980.00	
Total		$164,780.00
Government participation @ 75%		$123,585.00

Field Team
Report: Dated September 7, 1955.
Glen Walker, Mining Engineer, USBM
Howard Albee, Geologist, USGS

Most of the known ore bodies of the Yellow Cat area are found in the Salt Wash member of the Morrison formation. The subject property is east of the area where most of the ore bodies have been found and south of the area where favorable Salt Wash sandstone has been delineated by USGS drilling. Most of the property is in the Summerville formation, which is not known to contain ore bodies. Only a small portion lies on the lowermost sandstone unit of the Salt Wash and no ore bodies are known to occur in this unit in this vicinity. Because the Salt Wash member has been largely removed by erosion, the geologic probability of finding uranium ore on the property is not good. It is recommended that the application be denied.

Commodity Group Comments:

Bureau of Mines - John E. Crawford - September 29, 1955

Reviewed Field Team report and discussed with AEC representative. Noted the unfavorable geological factors on the property and concurred with the recommendation of the Field Team that the application be denied.

Geological Survey - W. P. Williams - September 30, 1955.

The Field Team recommendation that the application be denied seems well founded since the Salt Wash member of the Morrison has been eroded from the claims in most places and previous Government drilling in the vicinity shows the area to be unfavorable for large ore deposits.

Rare and Miscellaneous Metals Division -
Michael Ching - October 5, 1955

The Applicant apparently assumed that the favorable geological conditions prevailing in the producing area to the west were also present on this property. By showing that the favorable host rock was largely absent on the property the examiners decisively eliminated it from further consideration as an exploration area.

Conclusions and Recommendations:

The possibility of finding a worthwhile ore body on the property is poor. It is recommended that the application be denied.

Ernest Wm. Ellis

Ernest Wm. Ellis

9/30/55 gla

IN REPLY REFER TO:

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

RECEIVED
SEP 30 1955

September 30, 1955

Memorandum

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

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

Subject: Review of Field Examination Report, DMEA 3843, Crestline Uranium and Mining Company, Mack and Wilkins claims, Grand County, Utah.

In their report of field examination, the examining team points out that the property does not offer possibilities for successful exploration because:

1) The ore host, the Salt Wash member of the Morrison, has been eroded from the claims in most places, and

2) previous Government drilling in the vicinity shows the area to be unfavorable for large ore deposits.

The recommendation that the application be denied seems well founded, and I agree with it.

WPWilliams

W. P. Williams

IN REPLY REFER TO:

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

RECEIVED
SEP 2 1955

September 30, 1955

Memorandum

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

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

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2) previous Government drilling in the vicinity shows the area to be unfavorable for large ore deposits.

The recommendation that the application be denied seems well founded, and I agree with it.

W. P. Williams

WPWilliams:iml
G-9/30/55

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

IN REPLY REFER TO:

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

September 30, 1955

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WPWilliams:iml
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Docket file
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IN REPLY REFER TO:

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

RECEIVED
SEP - - 1955

September 30, 1955

Memorandum

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

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

Subject: Review of Field Examination Report, DMEA 3043, Crestline Uranium and Mining Company, Hack and Wilkins claims, Grand County, Utah.

In their report of field examination, the examining team points out that the property does not offer possibilities for successful exploration because:

1) The ore host, the Salt Wash member of the Morrison, has been eroded from the claims in most places, and

2) previous Government drilling in the vicinity shows the area to be unfavorable for large ore deposits.

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W. P. Williams

WPWilliams:iml
G-9/30/55

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

9/30/55 gla

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

RECEIVED
SEP 30 1955

September 29, 1955

Memorandum

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

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

Subject: Report of Examination, DMEA Docket 3843, Crestline Uranium and Mining Company, Mack and Wilkins claims, Grand County, Utah

I have reviewed the report of examination, Crestline Uranium and Mining Company, DMEA Docket 3843; and I have discussed it with Joseph O. Hosted, Washington representative of the Atomic Energy Commission.

It has been indicated that most of the Mack and Wilkins claims are located in the Summerville formation which is not known to contain significant uranium mineralization. While a small segment of the claims lies on the lowermost sandstone unit of the Salt Wash formation, no economic grade mineralization is known to have occurred in this area. The geologic possibility of finding uranium on the property was not considered good by the Field Team. Therefore, we concur with the recommendation of the Field Team that the application be denied.

Our review of the application, as indicated in my memorandum of June 10, recommended denial because there was no information provided which would substantiate the geologic and mineralogic favorability of the claims.

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

John E. Crawford
John E. Crawford

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

RECEIVED

September 29, 1955

Memorandum

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

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John E. Crawford

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

RECEIVED
SEP 30 1955

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

John E. Crawford

9/29/55 gla

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

September 19, 1955

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Field Team, Region III

Subject: Joint Report of Examination, DMEA Docket 3843 (Uranium), Crestline Uranium and Mining Company, Mack and Wilkins claims, Grand County, Utah

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

The examining team concluded that there was little possibility of discovering a significant amount of uranium by the proposed exploration, and they recommend that the application be denied. We concur in this recommendation.

The application was discussed with representatives of the A.E.C.

W. M. Traver

E. N. Harshman

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
9-28-55
(date)

DMEA
Date Rec'd.

SEP 13 1955

BUREAU OF MINES
Denver, Colorado

Region III

Building 20
Denver Federal Center
Denver 2, Colorado
September 13, 1955

Memorandum

To: Executive Officer, DMEA Field Team, Region III

TRANSMITTED
SEP 19 1955

From: John F. Shaw
E. N. Harshman

Subject: DMEA 3843 (Uranium) Crestline Uranium and Mining Company, Mack and Wilkins claims, Grand County, Utah.

Enclosed are the original and ten copies of a Joint Engineering and Geologic Report by Glen Walker, mining engineer, and Howard Albee, geologist, covering docket DMEA 3843.

The applicant requested exploration assistance at an estimated cost of $164,780.00 to explore the Mack and Wilkins claims by 29,600 feet of plug-bit and core drilling. The property was examined on August 2, 1955. The examining team concluded that there was little possibility of discovering a significant amount of uranium by the proposed exploration. It is recommended that the application be denied.

John F. Shaw
John F. Shaw
Supervising Mining Engineer

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

Enclosures

cc 10
EHHarshman
DMEA 3843
Chron

JFS/em

9-28-55

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION III

DMEA 3843

Crestline Uranium and Mining Company

Mack and Wilkins Claims

Grand County, Utah

Uranium

By

Glen Walker
Mining Engineer
Bureau of Mines

Howard Albee
Geologist
Geological Survey

September 7, 1955

Reviewed by
DMEA OPERATING COMMITTEE
9-28-55
(Date)

DMEA 3843

CRESTLINE URANIUM AND MINING COMPANY
MACK AND WILKINS CLAIMS
GRAND COUNTY, UTAH

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Minable ore reserves 3
Present status 3
Geology and ore deposits 4
Project proposals with costs 6
Conclusions and recommendations 6

ILLUSTRATIONS

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1. Location Map, Mack and Wilkins Claims, Crestline Uranium and Mining Company, Grand County, Utah (DMEA 3843)	2
2. Geologic Map of Part of the Yellow Cat Area Showing Approximate Location of the Wilkins and Mack Groups of Claims, Crestline Uranium Company, Grand County, Utah	4

DMEA 3843

CRESTLINE URANIUM AND MINING COMPANY
MACK AND WILKINS CLAIMS
GRAND COUNTY, UTAH

Joint Engineering and Geologic Report

By

Glen Walker
Mining Engineer
Bureau of Mines

Howard Albee
Geologist
Geological Survey

DMEA 3843

CRESTLINE URANIUM AND MINING COMPANY
MACK AND WILKINS CLAIMS
GRAND COUNTY, UTAH

JOINT ENGINEERING AND GEOLOGIC REPORT

By Glen Walker and Howard Albee

INTRODUCTION

The Crestline Uranium and Mining Company, 320 South Main Street, Salt Lake City, Utah, requested assistance in the exploration for uranium on 14 claims in secs. 3 and 4, T. 23 S., R. 22 E., and secs. 5 and 8, T. 23 S., R. 23 E., Grand County, Utah. The work proposed in the application was set up in three stages as follows: Stage I consisted of 88 holes, average depth 200 feet, on 400-foot centers, totaling 17,600 feet, of which 6,600 feet were to be cored; Stage II, 40 - 200-foot holes on 200-foot centers around mineralized first stage holes, total footage 8,000 feet, with 3,000 feet cored; Stage III, 20 - 200-foot holes spaced perhaps as close as 50 feet to any hole, total footage 4,000 feet, with no amount of coring specified. The total project as outlined by the applicant included 29,600 feet of plug and BX core drilling to be done at a cost of $164,780.00 or $5.57 per foot. This latter figure appears about 30 percent too high.

An examination of the properties was made by a Region III DMEA examining team on August 2, 1955, and the application was discussed with representatives of the AEC.

The investigation indicated that only a very insignificant portion

of the land was covered by the Jurassic lower Salt Wash member, which is the principal ore-producing horizon in the Yellow Cat district. The location of the claims at the extreme eastern end of the district also places them in an unfavorable area as shown by the U. S. Geological Survey's drilling. It was, therefore, concluded that the probability of making a significant ore discovery was very slight.

It is recommended that the request for assistance be denied.

ACKNOWLEDGEMENTS

T. J. Warren of Grand Junction, Colorado, furnished guidance to the properties, but offered few, if any, comments on their potentialities.

LOCATION, TOPOGRAPHY AND PHYSICAL FEATURES

The 14 mining claims are in secs.3 and 4, T. 23 S., R. 22 E., and secs. 5 and 8, T. 23 S., R. 23 E., Grand County, Utah, see figure 1.

The surface of the claims is predominantly covered by the Jurassic Summerville formation, a silty sandstone, which erodes into gentle slopes with relief ranging from a few feet to a few tens of feet.

The climate is dry and semi-arid with the principal precipitation falling during violent storms in both summer and winter. Temperatures are also rather extreme.

The vegetation, which is hardly knee high, consists of "black brush" and "Mormon tea" with a scanty growth of a very short native grass. There is no timber suitable for mining purposes on the ground and all water would have to be hauled from Thompsons, Utah, about 20 miles to the northwest.

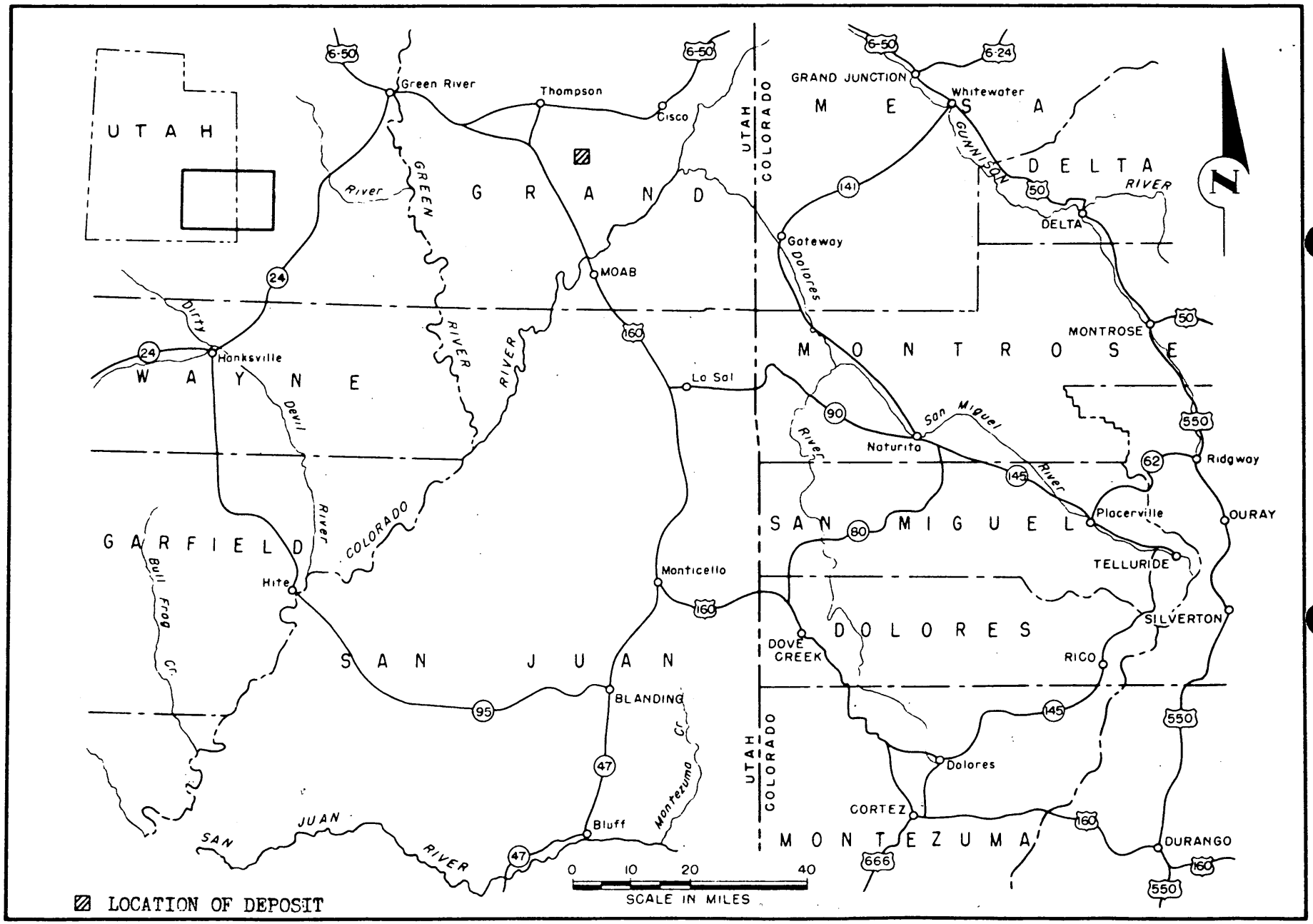


FIGURE 1- LOCATION MAP, MACK AND WILKINS CLAIMS, CRESTLINE URANIUM AND MINING COMPANY, GRAND COUNTY, UTAH.

DMEA 3843

Although the labor situation was not specifically investigated, there appears to be an ample supply as there are a number of producing mines in the Yellow Cat district.

HISTORY, PRODUCTION AND OWNERSHIP

The Wilkins group of claims was recorded in November of 1949 by Clarence Wilkins who signed an option agreement to sell the property to Stanley J. Lake in August 1954. The Mack group was located in December 1953 by T. J. Warren, who likewise agreed in July 1954 to sell the claims to Stanley J. Lake, one of the principals of the subject company.

No work, except some superficial dozer trenches, was noted. These excavations were no doubt dug in an attempt to conform to the mining regulation with regard to the discovery opening. There, of course, has been no ore production from the land.

The applicant's claim to the property was not investigated when it became apparent the Government would not be involved.

MINABLE ORE RESERVES

No known reserves of ore exist on the properties.

PRESENT STATUS

There has been no exploration of the land. The only excavations seen were the dozer trenches previously mentioned. There is no equipment of any kind on the property.

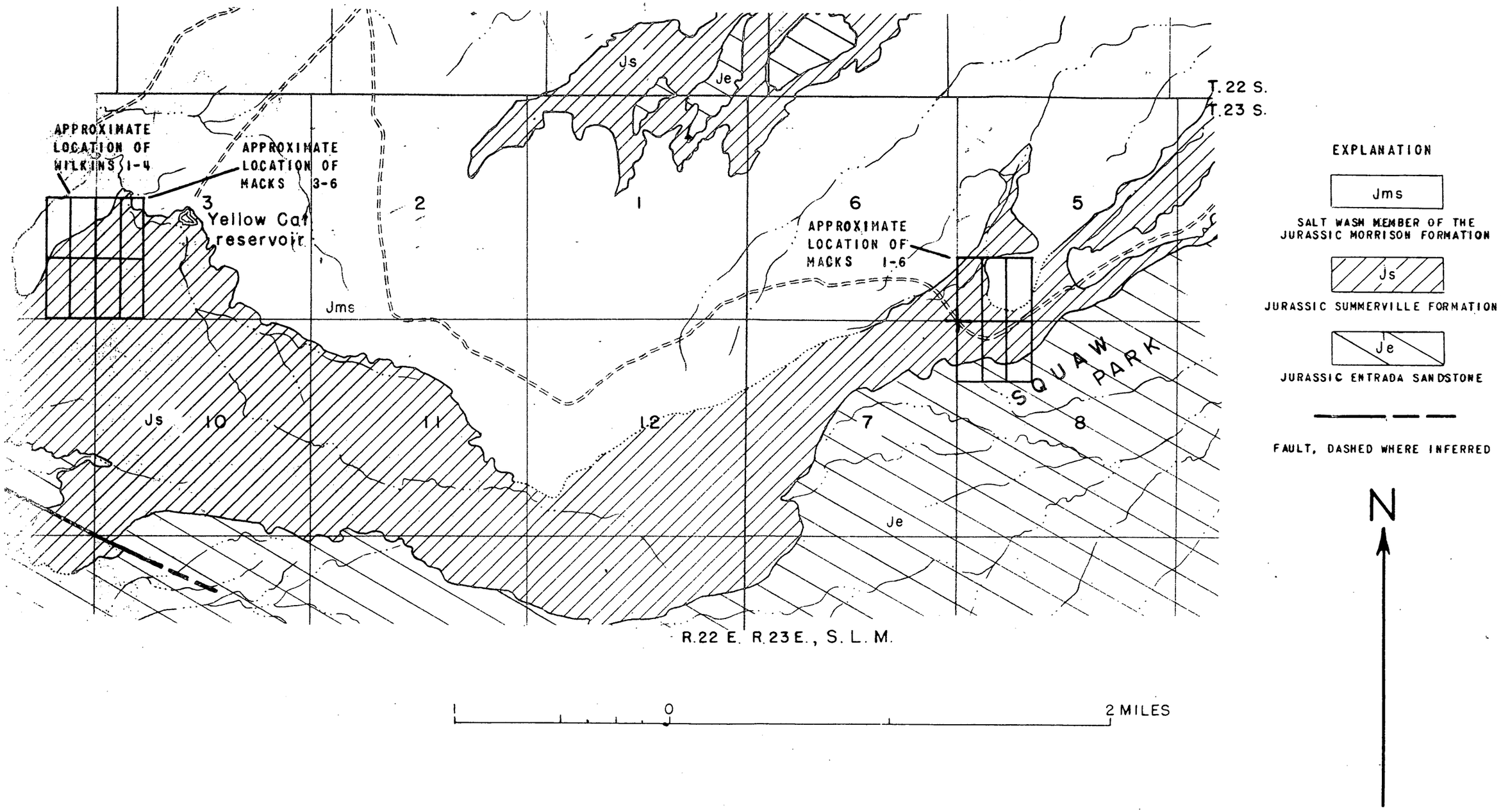
GEOLOGY AND ORE DEPOSITS

The Yellow Cat area of the Thompsons mining district embraces about 20 miles of outcrop of the Salt Wash member of the Morrison formation, along which there are numerous occurrences of uranium and vanadium. An area of about 5 square miles in the central part of the district contains most of the known ore bodies.

Rocks exposed in the area consist entirely of sediments of Jurassic and Cretaceous age. From the oldest to the youngest the formations are the Entrada sandstone, the Summerville formation, and the Morrison formation, all of upper Jurassic age, and the Cedar Mountain formation, the Dakota sandstone, and the Mancos shale, all of Cretaceous age.

The Entrada sandstone crops out and forms many square miles of bedrock in the southern part of the area. The Entrada is a gray to orange cross-bedded, massive weathering sandstone composed of fine to medium grains of quartz and is characteristically interspersed with stringers and pockets of very coarse, well rounded grains of sand. The Entrada is a cliff-forming unit and within the area of this report is about 300 feet thick.

The Summerville formation usually forms a short, steep slope between outcrops of the Morrison and Entrada formations, but locally it forms broad, nearly level areas. In general, it is of reddish hues, easily eroded, and forms a mantle that conceals the bedding on the gently sloping surfaces. True sandstones and mudstones are rare; the rocks can be classified mostly as sandy siltstone, silty sandstone, sandy



Note: BASE FROM GEOLOGIC MAP BY W. L. STOKES IN BULLETIN 46 URANIUM -VANADIUM DEPOSITS OF THOMPSON AREA, GRAND COUNTY, UTAH

Figure 2. GEOLOGIC MAP OF PART OF THE YELLOW CAT AREA SHOWING APPROXIMATE LOCATION OF THE WILKINS AND MACKS GROUPS OF CLAIMS, CRESTLINE URANIUM CO., GRAND COUNTY, UTAH

mudstone, etc., with minor amounts of true shale and sandstone. The Summerville contains scattered lenses of nodular limestone and concretionary chert. The Morrison formation of upper Jurassic age contains the carnotite deposits in the Thompsons district. The formation consists of two members which are, from lower to upper, the Salt Wash sandstone member and the Brushy Basin shale member.

The Salt Wash member consists of about equal proportions of gray, lenticular, cross-bedded sandstone and gray and red mudstone with some limestone and chert beds and in places conglomerate to conglomeratic sandstone lenses. The Salt Wash is about 250 feet thick in the area. Most of the ore bodies in the area are in the Salt Wash sandstone and the concentration of the larger deposits is in the lower 125 feet of Salt Wash.

The Brushy Basin shale member is mainly variegated mudstone with a few lenses of cross-bedded sandstone and conglomeratic sandstone. At least two of the older mines in the area are probably in the Brushy Basin member. The member is a slope-forming unit about 300 feet thick in the area.

The subject claims are east of the central part of the area where most of the ore bodies have been found and south of the area found to be underlain by a favorable part of the ore-bearing sandstone as delineated by U. S. Geological Survey drilling.

Most of the ground covered by the claims is in the Summerville formation. A small part of each group of claims does lie on some Salt Wash sandstone, but the basal sandstone has only a narrow thickness,

and no ore bodies are known to occur in it in the vicinity of the claims.

PROJECT PROPOSALS WITH COSTS

The applicant proposed drilling 29,600 feet of plug and BX core in 148 holes at an estimated cost of $164,780.00. The work was outlined in three stages. The first was 88 holes 200 feet deep, spaced in a 400-foot grid totaling 17,600 feet, 6,600 feet of which was coring. Stage II consisted of 40 holes 200 feet deep spaced 200 feet apart in the vicinity of "favorable" holes found in Stage I. It was proposed to do 3,000 feet of coring in Stage II.

The third part of the program called for 20, 200-foot holes spaced as close as 50 feet to other holes. The applicant neglected to stipulate the amount of coring to be done in the third stage.

The examining team does not recommend an exploration program for these claims.

CONCLUSIONS AND RECOMMENDATIONS

The subject claims are east of the productive part of the area and south of the area underlain by favorable Salt Wash sandstone. Most of the ground covered by the claims is in the Summerville formation, which is not known to contain ore bodies. A small portion of the claims lies on the lowermost sandstone unit of the Salt Wash. No ore bodies are known to occur in it in the vicinity of the claims.

The geologic probability of finding uranium ore on the subject claims is not good because the Salt Wash sandstone has been essentially removed by erosion. The U. S. Geological Survey drilling indicates

that the Salt Wash becomes less encouraging in the vicinity of the claims. It is recommended that the application for exploration assistance be denied.

/jw

9/23/55 gla

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

September 19, 1955

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Field Team, Region III

Subject: Joint Report of Examination, DMEA Docket 3843 (Uranium), Crestline Uranium and Mining Company, Mack and Wilkins claims, Grand County, Utah

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

The examining team concluded that there was little possibility of discovering a significant amount of uranium by the proposed exploration, and they recommend that the application be denied. We concur in this recommendation.

The application was discussed with representatives of the A.E.C.

W. M. Traver

W. M. Traver

E. H. Harshman

E. H. Harshman

Enclosures

16 1955

BUREAU OF MINES
Denver, Colorado

Region III

Building 20
Denver Federal Center
Denver 2, Colorado
September 13, 1955

Memorandum

To: Executive Officer, DMEA Field Team, Region III

TRANSMITTED
SEP 19 1955

From: John F. Shaw
E. N. Harshman

Subject: DMEA 3843 (Uranium) Crestline Uranium and Mining Company, Mack and Wilkins claims, Grand County, Utah.

Enclosed are the original and ten copies of a Joint Engineering and Geologic Report by Glen Walker, mining engineer, and Howard Albee, geologist, covering docket DMEA 3843.

The applicant requested exploration assistance at an estimated cost of $144,780.00 to explore the Mack and Wilkins claims by 29,600 feet of plug-hit and core drilling. The property was examined on August 2, 1955. The examining team concluded that there was little possibility of discovering a significant amount of uranium by the proposed exploration. It is recommended that the application be denied.

John F. Shaw
John F. Shaw
Supervising Mining Engineer

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

Enclosures

cc: 10
EWHarshman
DMEA 3843
Chron

JFS/em

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION III

DMEA 3943

Crestline Uranium and Mining Company

Mack and Wilkins Claims

Grand County, Utah

Uranium

By

Olen Walker
Mining Engineer
Bureau of Mines

Howard Albee
Geologist
Geological Survey

September 7, 1955

DMEA 3843

CRESTLINE URANIUM AND MINING COMPANY
MACK AND WILKINS CLAIMS
GRAND COUNTY, UTAH

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ILLUSTRATIONS

Figure — Follows Page

1. Location Map, Mack and Wilkins Claims, Crestline Uranium and Mining Company, Grand County, Utah (DMEA 3843) 2

2. Geologic Map of Part of the Yellow Cat Area Showing Approximate Location of the Wilkins and Mack Groups of Claims, Crestline Uranium Company, Grand County, Utah 4

DMGA 3843

CAMPBELLTOWN URANIUM AND MINING COMPANY
MACK AND WILKINS CLAIMS
GRAND COUNTY, UTAH

Joint Engineering and Geologic Report

By

Glen Walker
Mining Engineer
Bureau of Mines

Howard Albee
Geologist
Geological Survey

DMEA 3543

CRESTLINE URANIUM AND MINING COMPANY
MACK AND WILKINS CLAIMS
GRAND COUNTY, UTAH

JOINT ENGINEERING AND GEOLOGIC REPORT

By Glen Walker and Howard Albee

INTRODUCTION

The Crestline Uranium and Mining Company, 320 South Main Street, Salt Lake City, Utah, requested assistance in the exploration for uranium on 14 claims in secs. 3 and 4, T. 23 S., R. 22 E., and secs. 5 and 8, T. 23 S., R. 23 E., Grand County, Utah. The work proposed in the application was set up in three stages as follows: Stage I consisted of 58 holes, average depth 200 feet, on 400-foot centers, totaling 17,600 feet, of which 6,600 feet were to be cored; Stage II, 40 - 200-foot holes on 200-foot centers around mineralized first stage holes, total footage 8,000 feet, with 3,000 feet cored; Stage III, 20 - 200-foot holes spaced perhaps as close as 50 feet to any hole, total footage 4,000 feet, with no amount of coring specified. The total project as outlined by the applicant included 29,600 feet of plug and BX core drilling to be done at a cost of $164,780.00 or $5.57 per foot. This latter figure appears about 30 percent too high.

An examination of the properties was made by a Region III DMEA examining team on August 2, 1955, and the application was discussed with representatives of the AEC.

The investigation indicated that only a very insignificant portion

of the land was covered by the Jurassic lower Salt Wash member, which is the principal ore-producing horizon in the Yellow Cat district. The location of the claims at the extreme eastern end of the district also places them in an unfavorable area as shown by the U. S. Geological Survey's drilling. It was, therefore, concluded that the probability of making a significant ore discovery was very slight.

It is recommended that the request for assistance be denied.

ACKNOWLEDGEMENTS

T. J. Warren of Grand Junction, Colorado, furnished guidance to the properties, but offered few, if any, comments on their potentialities.

LOCATION, TOPOGRAPHY AND PHYSICAL FEATURES

The 14 mining claims are in secs.3 and 4, T. 23 S., R. 22 E., and secs. 5 and 8, T. 23 S., R. 23 E., Grand County, Utah, see figure 1.

The surface of the claims is predominantly covered by the Jurassic Summerville formation, a silty sandstone, which erodes into gentle slopes with relief ranging from a few feet to a few tens of feet.

The climate is dry and semi-arid with the principal precipitation falling during violent storms in both summer and winter. Temperatures are also rather extreme.

The vegetation, which is hardly knee high, consists of "black brush" and "Mormon tea" with a scanty growth of a very short native grass. There is no timber suitable for mining purposes on the ground and all timber would have to be hauled from Thompson, Utah, about 20 miles to the northwest.

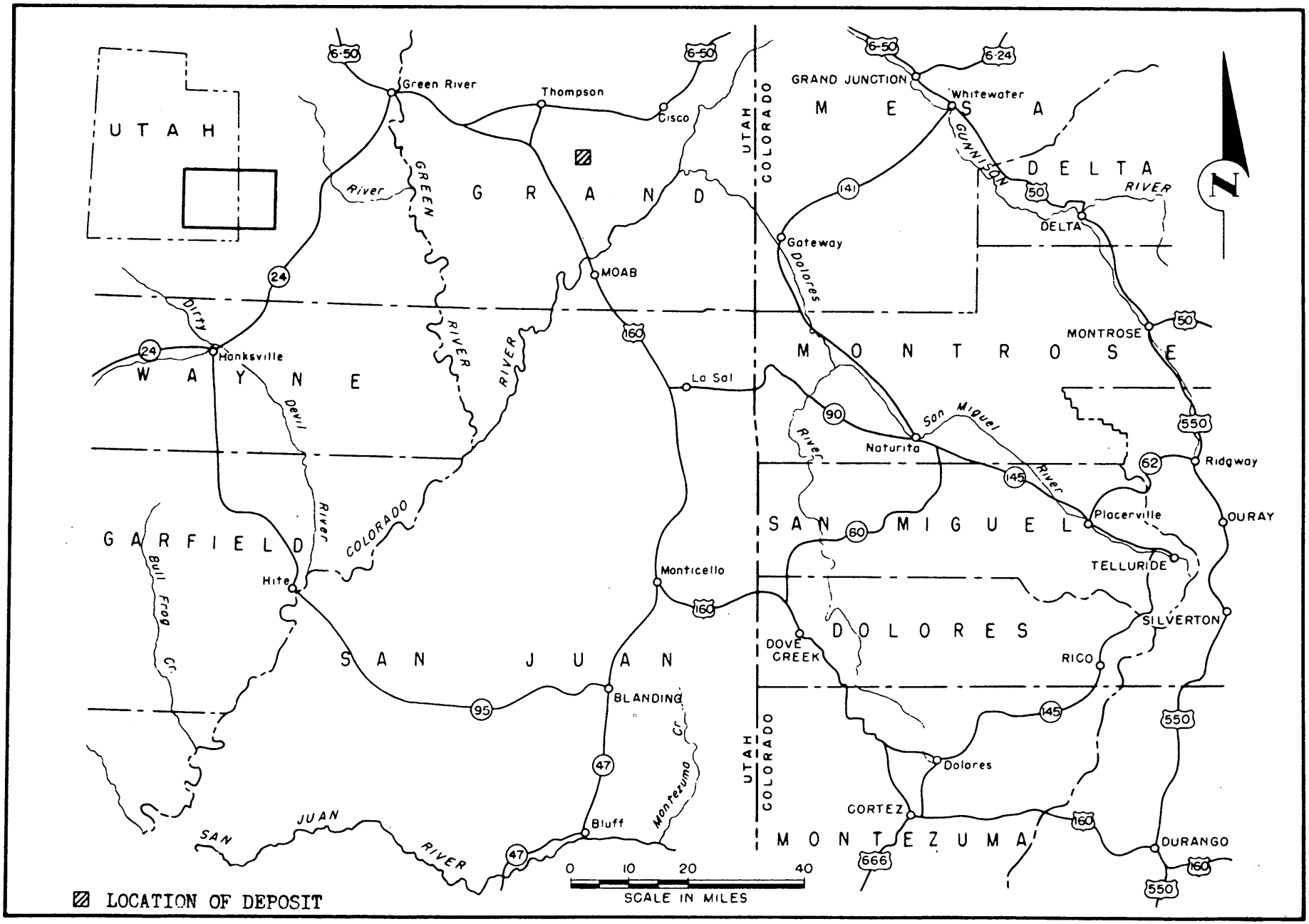


FIGURE 1- LOCATION MAP, MACK AND WILKINS CLAIMS, CRESTLINE URANIUM AND MINING COMPANY, GRAND COUNTY, UTAH.
DMEA 3843

Although the labor situation was not specifically investigated, there appears to be an ample supply as there are a number of producing mines in the Yellow Cat district.

HISTORY, PRODUCTION AND OWNERSHIP

The Wilkins group of claims was recorded in November of 1949 by Clarence Wilkins who signed an option agreement to sell the property to Stanley J. Lake in August 1954. The Mask group was located in December 1953 by T. J. Warren, who likewise agreed in July 1954 to sell the claims to Stanley J. Lake, one of the principals of the subject company.

No work, except some superficial dozer trenches, was noted. These excavations were no doubt dug in an attempt to conform to the mining regulation with regard to the discovery opening. There, of course, has been no ore production from the land.

The applicant's claim to the property was not investigated when it became apparent the Government would not be involved.

MINABLE ORE RESERVES

No known reserves of ore exist on the properties.

PRESENT STATUS

There has been no exploration of the land. The only excavations seen were the dozer trenches previously mentioned. There is no equipment of any kind on the property.

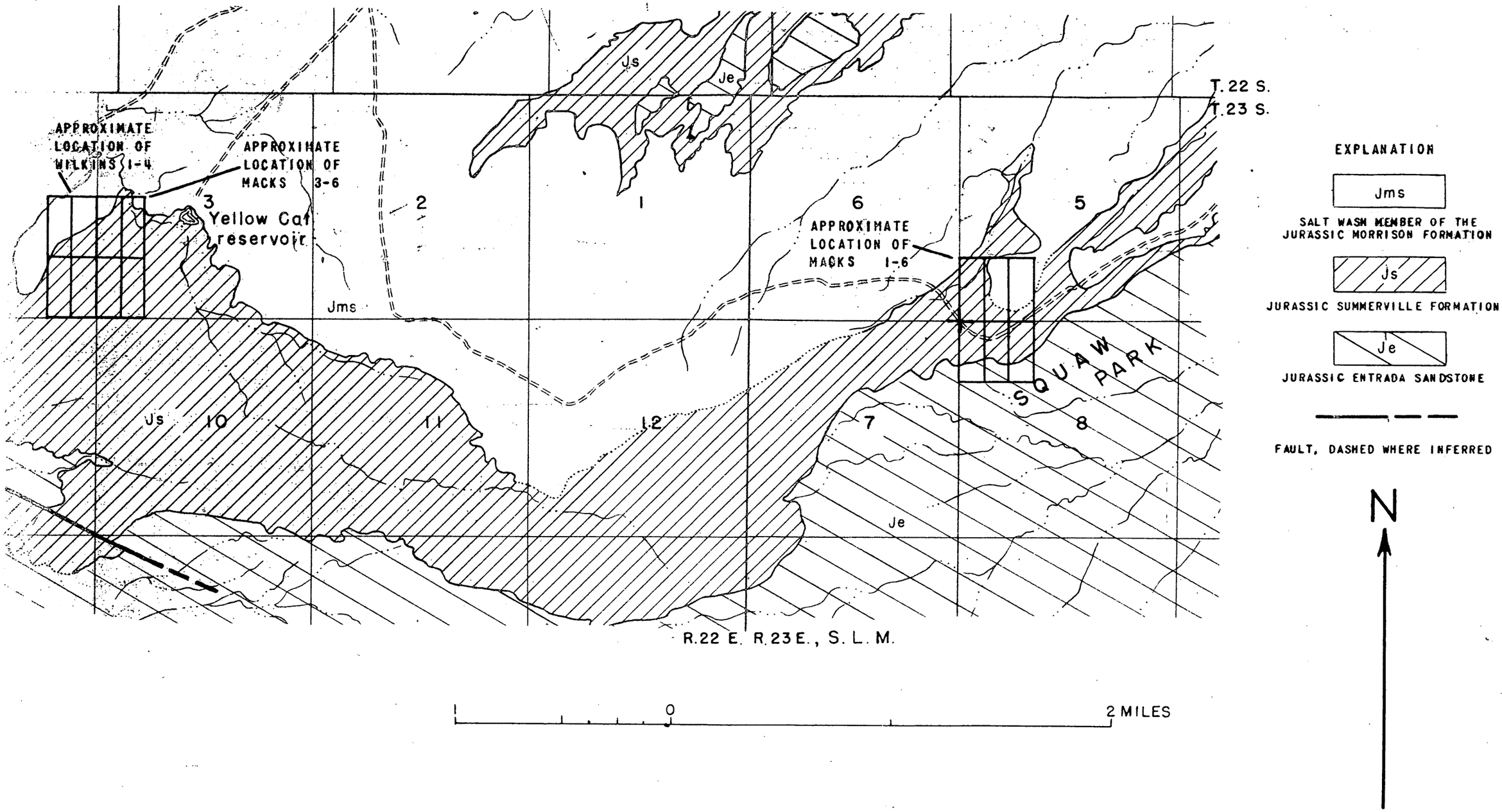
GEOLOGY AND ORE DEPOSITS

The Yellow Cat area of the Thompsons mining district embraces about 20 miles of outcrop of the Salt Wash member of the Morrison formation, along which there are numerous occurrences of uranium and vanadium. An area of about 5 square miles in the central part of the district contains most of the known ore bodies.

Rocks exposed in the area consist entirely of sediments of Jurassic and Cretaceous age. From the oldest to the youngest the formations are the Entrada sandstone, the Summerville formation, and the Morrison formation, all of upper Jurassic age, and the Cedar Mountain formation, the Dakota sandstone, and the Mancos shale, all of Cretaceous age.

The Entrada sandstone crops out and forms many square miles of bedrock in the southern part of the area. The Entrada is a gray to orange cross-bedded, massive weathering sandstone composed of fine to medium grains of quartz and is characteristically interspersed with stringers and pockets of very coarse, well rounded grains of sand. The Entrada is a cliff-forming unit and within the area of this report is about 300 feet thick.

The Summerville formation usually forms a short, steep slope between outcrops of the Morrison and Entrada formations, but locally it forms broad, nearly level areas. In general, it is of reddish hues, easily eroded, and forms a mantle that conceals the bedding on the gently sloping surfaces. True sandstones and mudstones are rare; the rocks can be classified mostly as sandy siltstone, silty sandstone, sandy



Note: BASE FROM GEOLOGIC MAP BY W. L. STOKES IN BULLETIN 46 URANIUM -VANADIUM DEPOSITS OF THOMPSON AREA, GRAND COUNTY, UTAH

Figure 2. GEOLOGIC MAP OF PART OF THE YELLOW CAT AREA SHOWING APPROXIMATE LOCATION OF THE WILKINS AND MACKS GROUPS OF CLAIMS, CRESTLINE URANIUM CO., GRAND COUNTY, UTAH

mudstone, etc., with minor amounts of true shale and sandstone. The Summerville contains scattered lenses of nodular limestone and concretionary chert. The Morrison formation of upper Jurassic age contains the carnotite deposits in the Thompsons district. The formation consists of two members which are, from lower to upper, the Salt Wash sandstone member and the Brushy Basin shale member.

The Salt Wash member consists of about equal proportions of gray, lenticular, cross-bedded sandstone and gray and red mudstone with some limestone and chert beds and in places conglomerate to conglomeratic sandstone lenses. The Salt Wash is about 250 feet thick in the area. Most of the ore bodies in the area are in the Salt Wash sandstone and the concentration of the larger deposits is in the lower 125 feet of Salt Wash.

The Brushy Basin shale member is mainly variegated mudstone with a few lenses of cross-bedded sandstone and conglomeratic sandstone. At least two of the older mines in the area are probably in the Brushy Basin member. The member is a slope-forming unit about 300 feet thick in the area.

The subject claims are east of the central part of the area where most of the ore bodies have been found and south of the area found to be underlain by a favorable part of the ore-bearing sandstone as delineated by U. S. Geological Survey drilling.

Most of the ground covered by the claims is in the Summerville formation. A small part of each group of claims does lie on some Salt Wash sandstone, but the basal sandstone has only a narrow thickness,

and no ore bodies are known to occur in it in the vicinity of the claims.

PROJECT PROPOSALS VIZE OCONO

The applicant proposed drilling 30,600 feet of plug and RX core in 146 holes at an estimated cost of $164,750.00. The work was outlined in three stages. The first was 88 holes 200 feet deep, spaced in a 400-foot grid totaling 17,600 feet, 6,600 feet of which was coring. Stage II consisted of 40 holes 200 feet deep spaced 200 feet apart in the vicinity of "favorable" holes found in Stage I. It was proposed to do 3,000 feet of coring in Stage II.

The third part of the program called for 18, 200-foot holes spaced as close as 30 feet to other holes. The applicant neglected to stipulate the amount of coring to be done in the third stage.

The examining team does not recommend an exploration program for these claims.

CONCLUSIONS AND RECOMMENDATIONS

The subject claims are east of the productive part of the area and south of the area underlain by favorable Salt Wash sandstone. Most of the ground covered by the claims is in the Summerville Formation, which is not known to contain ore bodies. A small portion of the claims lies on the Brushy Basin sandstone unit of the Salt Wash. No ore bodies are known to occur in it in the vicinity of the claims.

The geologic probability of finding uranium ore on the subject claims is not good because the Salt Wash sandstone has been essentially removed by erosion. The U. S. Geological Survey drilling indicates

that the Salt Wash becomes less encouraging in the vicinity of the claims. It is recommended that the application for exploration assistance be denied.

/jw

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

RECEIVED
JUL - 5 1955

224 New Customhouse
Denver 2, Colorado

June 28, 1955

Memorandum

To: J. F. Shaw (w/brochure)
J. W. Hasler

From: Field Team, Region III

Subject: Docket DMEA-3843 (Uranium), Crestline Uranium and Mining Co., Macks and Wilkins claims, Grand County, Utah

Enclosed is the application on the subject docket in the amount of $164,780.00. Also enclosed is a copy of a letter from the Chairman of the Operating Committee and reviews of the application by John Crawford and R. D. Trace.

A field examination and suitable reports are required.

W. M. TRAVER

W. M. Traver

E. N. Harshman

E. N. Harshman

DMEA Field Team, Region III

Enclosures

HMC:pw

cc: Sec.Op.Comm. (2) ✓
Harshman
Subject
Chron

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

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To: J. F. Shaw (w/brochure)
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Subject: Docket DMEA-3843 (Uranium), Crestline Uranium and Mining Co., Macho and Willing claims, Grand County, Utah

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W. M. TRAVER

W. M. Traver

E. N. Harshman

E. N. Harshman

DMEA Field Team, Region III

Enclosures

HMC:pw

cc: Sec.Op.Comm. (2)
Harshman
Subject
Chron

Surname 700

Ching
Ellis
Hedges
Kilegaard
Selfridge
H Johnson

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

JUN 23 1955

Crestline Uranium and Mining Co.
c/o Mr. Nathan Wechsler
1010 Vermont Avenue, N. W.
Washington, D. C.

Re: Docket No. DMEA-3843 (Uranium)
Macks and Wilkins Claims
Grand County, Utah

Gentlemen:

The application for assistance in exploring your property in Grand County, Utah, under the captioned docket number, has been reviewed by the Rare and Miscellaneous Metals Division of the Defense Minerals Exploration Administration. It has been referred to the Executive Officer of Region III at the following address:

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

The Regional Office will contact you in regard to your project if additional information is required.

Sincerely yours,

C. O. Mittendorf

Administrator

MChing:am
6-21-55
cc to: Admrl Reading File
Docket
Code 700
Mr. Ching
DMEA Field Team, Region III(2)

R.C.K.

Surname 700

Ching
Ellis
Selfridge
H. Johnson

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

JUN 23 1955

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

Re: Docket No. DMEA-3843 (Uranium)
Crestline Uranium and Mining Co.
Macks and Wilkins Claims
Grand County, Utah

Dear Mr. Traver:

The subject application is being referred to you for investigation, a field examination if warranted, and recommendation. A copy of the application was forwarded to you on June 1.

Enclosed are two copies each of comments and recommendations by John E. Crawford and R. D. Trace of the Uranium Commodity Committee, dated June 10 and June 15, 1955, respectively.

The Applicant's maps do not show the exact position of the claims and the report contains no geological and mineralogical information that is specifically applicable to the subject claims. The information given is of a general nature, applicable to the Thompsons area as a whole.

Despite these shortcomings we are referring the application to you because we understand that the Geological Survey has done some extensive drilling in this general area and the Field Team may be in a good position to appraise the application in the light of the results of such drilling.

We are not listing our requirements in connection with the property rights for the time being, as these may be obtained, if required, through the Applicant's Washington representative.

Sincerely yours,

George C. Selfridge
Chairman, Operating Committee (24B)

Enclosures

APPROVED:

J. H. Hedges (24B)
Member, Bureau of Mines

Thor H. Kiilsgaard (24B)
Member, Geological Survey

R.S.L.

Code 700
Mr. Ching
T.H.Kiilsgaard,Rm.5224
J.O.Hosted,Rm.3210,GSA

Messrs. J.E.Crawford,Rm.3641
Operating Committee Docket
cc to: Admr. Reading File

MChing:am
6-21-55

6/17/55-gla

IN REPLY REFER TO:

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

RECEIVED
JUN 16 1955

June 15, 1955

Re: DMEA-3843
Crestline U. & M. Co.
Macks & Wilkins claims
Yellow Cat District
Grand County, Utah
$164,780 - Uranium

Memorandum

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

From: R. D. Trace, U. S. Geological Survey

Subject: Review of application

The applicant proposes to drill about 30,000 feet (150 holes) in 3 phases, to explore the Salt Wash in the eastern part of the Yellow Cat district.

From 1951 to 1954, the Survey drilled 995 holes in the Yellow Cat area. Ore was found in this drilling particularly in the western part of the area. In general, the drilling in the eastern part of the area was not encouraging.

The applicant's claims, altho not precisely located on their map, appear to lay just south of a large number of Survey holes, nearly all of which were barren.

I suspect that this application should be denied, but I do not have the complete data here (on the Survey drilling) on which to base a denial.

I suggest that the application be referred to the Field Team. I doubt that the Survey will need to make an examination.

RDTrace

R. D. Trace

IN REPLY REFER TO:

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

RECEIVED
JUN 16 1955

June 15, 1955

Re: DMEA-3643
Crestline U. & M. Co.
Meeks & Wilkins claims
Yellow Cat District
Grand County, Utah
$104,780 - Uranium

Memorandum

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

From: R. D. Trace, U. S. Geological Survey

Subject: Review of application

The applicant proposes to drill about 30,000 feet (150 holes) in 3 phases, to explore the Salt Wash in the eastern part of the Yellow Cat district.

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I suggest that the application be referred to the Field Team. I doubt that the Survey will need to make an examination.

R. D. Trace

RDTrace:hlm
G-6/15/55

Copy to: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
J. E. Crawford, 3641 Interior
J. O. Kosted, 3210 GSA

6/13/55 gla

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

RECEIVED
JUN 13 1955

June 10, 1955

Memorandum

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

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

Subject: Application for assistance - DMEA Docket 3843, Crestline Uranium and Mining Company, Grand County, Utah

I have reviewed the attached application and have discussed it with Joseph O. Hosted, Washington representative of the Atomic Energy Commission.

We recommend that the application of Crestline Uranium and Mining Co. be denied, inasmuch as it does not provide information substantiating the geologic and mineralogic favorability of the claims.

The company apparently has conducted no previous exploration work on the claims. The proposed drilling program which would allow for holes on hypothetical 400-foot centers, because of lack of evidence of mineralization, appears to be purely prospecting or wildcatting in nature.

John E. Crawford
John E. Crawford

Attachment

June 1, 1955

Subject: DMEA-3843
Re: Exploration Assistance

Crestline Uranium & Mining Co.
Mr. Nathan Wechsler
1010 Vermont Ave., N.W.
Washington, D.C.

Gentlemen:

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

Your application has been assigned Docket Number DMEA-3843 and referred to the Rare & Miscellaneous Metals Division.

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

Sincerely yours,

Robert E. Adams, Chief
Operations Control and
Statistics Division

APPLICATION TO DMEA

CRESTLINE URANIUM AND MINING COMPANY

DMEA - 3843

Prepared by:

WECHSLER AND COMPANY
1010 Vermont Avenue, N.W.
Washington 5, D. C.

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
RECEIVED
JUN 1 1955

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

Not to be filled in by applicant

Docket No. 3843
Metal or Mineral Uranium
Date Received 6-1-55
Estimated Cost 164,780.00
Participation (Government %) 75

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:

Crestline Uranium and Mining Company
320 South Main Street
Salt Lake City, Utah

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

(*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

See appendix

(*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

(*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

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

See Page 1

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

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades. See Page 2

(*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 Page 3

(*d*) State the facts with respect to the accessibility of the project: Access roads, distances to shipping, supply and residence points. See Page 9

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

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

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

(*c*) The work will start within 20 days and be completed within 4 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 Page 14

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: See Page 13

(*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 Page 13

(*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 Page 13

(*c*) *Operating materials and supplies.*—Furnish an itemized list, including items of equipment costing less than $50 each, and power, water and fuel. See Page 13

(*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. See Page 13

(*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. See Page 14

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

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

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

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

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

Explain in detail on acompanying paper.

CERTIFICATION

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

Dated 5/25, 195_5

Crestline Uranium and Mining Company
(Applicant)

By Nathan Wechsler

Nathan Wechsler

Power of Attorney

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

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUN 1 1955

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, That Crestline Uranium and Mining Company, a Utah Corporation, does hereby make, constitute and appoint, NATHAN WECHSLER, his agents and attorneys, its true and lawful attorney to appear for it and represent it before the United States Department of Interior, Defense Minerals Exploration Administration, in connection with any matters involving application for aid in an exploration project in which it is a party, giving its said attorney full power to do everything whatsoever requisite and necessary to be done in these matters, and to execute all agreements in these matters, as fully as the undersigned might do if done in its own capacity, will full power of substitution and revocation at any time subsequent to the date hereof and prior to the revocation hereof.

It is requested that all communications addressed to the undersigned, regarding any matter in which the said attorney is hereby authorized to act, be addressed to:

Mr. Nathan Wechsler
1010 Vermont Avenue, N.W.
Washington, D.C.

All powers of attorney for this purpose heretofore filed or executed by us are hereby revoked.

IN WITNESS WHEREOF, the said CRESTLINE URANIUM AND MINING COMPANY, has executed this power of attorney in duplicate by causing its name to be hereunto signed by _____, its President, with its corporate seal affixed and attested by _____, its Secretary, this ____ day of _____, 1955 A. D.

CRESTLINE URANIUM AND MINING COMPANY

BY: _____
President

ATTEST:

_____
Secretary

STATE OF _____

COUNTY OF _____

On the ____ day of _____ A. D. 1955, personally appeared before me _____ and _____ who, being by me duly sworn, did say that they are the President and Secretary, respectively, of the above corporation, whose names are signed to the foregoing power of attorney, and who have acknowledged the same before me in the city and county aforesaid.

Witness my hand and notarial seal this ____ day of _____, 1955.

My Commission Expires:

_____
Notary Public

CRESTLINE URANIUM AND MINING COMPANY
Darling Building
320 South Main Street
Salt Lake City, Utah

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUN- 1 1955

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CRESTLINE URANIUM AND MINING COMPANY
Darling Building
320 South Main Street
Salt Lake City, Utah

ILLUSTRATIONS

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1. Location Map	1
2. Geologic Map	2
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APPENDIX

Documents Showing Control of Property:

A. Letter of August 9, 1954
from Coit and Graham, Attorneys

B. Letter of August 12, 1954
from Coit and Graham, Attorneys

C. Letter of August 25, 1954
from Coit and Graham, Attorneys

CRESTLINE URANIUM AND MINING COMPANY
Darling Building
320 South Main Street
Salt Lake City 1, Utah

GEOLOGICAL REPORT
ACCOMPANYING APPLICATION TO DMEA

I. NAME OF APPLICANT

A. The applicant is the Crestline Uranium and Mining Company, Darling Building, 320 South Main Street, Salt Lake City 1, Utah.

B. The Crestline Uranium and Mining Company is a corporation organized in and doing business under the laws of the State of Utah.

C. The following are the titles, names and addresses of officers:

1. President:

Stanley J. Lake
2542 Elm Avenue
Grand Junction, Colorado

2. Vice-President:

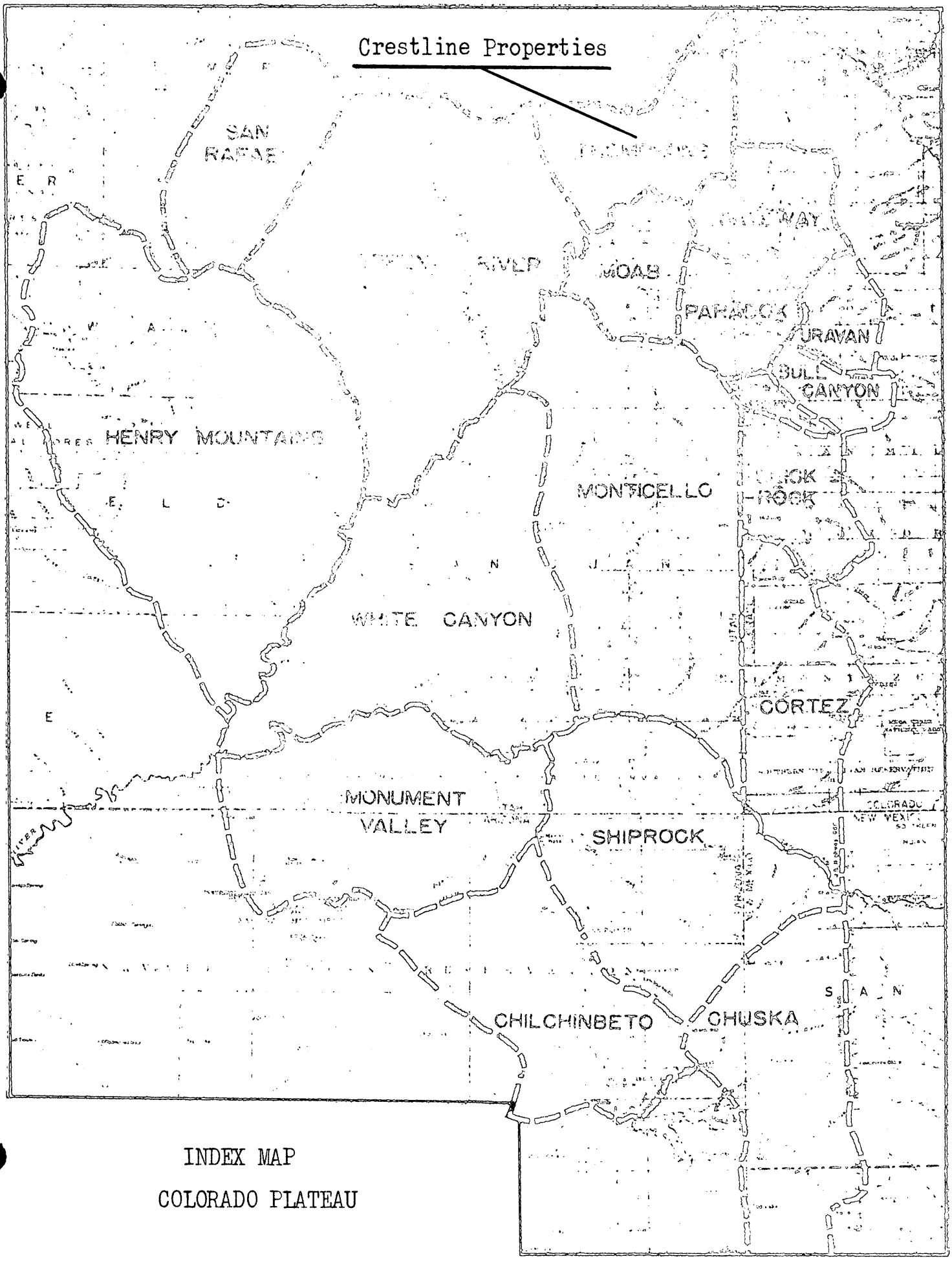
Louis M. Hitch
960 Main Street
Grand Junction, Colorado

3. Secretary-Treasurer:

A. U. Baldwin
2542 Elm Avenue
Grand Junction, Colorado

II. PROPERTY RIGHTS

Claims covered by this report are listed as follows:



INDEX MAP

COLORADO PLATEAU

NAME	TOWNSHIP	RANGE	SECTION	BOOK NO.	PAGE NO.
Macks Nos. 1,4,5,6	23 South	23 East	5&8	9J	451 & 597
Macks Nos. 3,4,5,6	23 South	22 East	3	9J	451 & 597
Macks Nos. 2,3	23 South	23 East	5	15	278 & 279
Wilkins 1,2,3,4	23 South	22 East	4	97	370 & 371

All in Grand County, Utah

The nearest town is Thompsons, Utah, seven miles to the northwest.

III. PHYSICAL DESCRIPTION

A. History of Production in Area

The Thompsons area, named for the town of Thompsons, the nearest settlement, comprises a tract of about 200 square miles in Grand County, Utah. Uranium-vanadium deposits are scattered along an outcrop of the Salt Wash sandstone member for about 20 miles. Most of the ore bodies are found in an area of about 5 square miles. The area has produced ore since 1911 and has been successively worked for radium, vanadium and uranium. The earlier discoveries were made on natural exposures and with passage of time, drilling has brought to light as many, if not more, deposits than are known from surface discoveries. The area is semi-arid with scant vegetation. There are no permanent streams except the Colorado River which skirts the eastern margin. Mining is possible throughout the year. Ore is trucked to the U.S.V. buying station at Thompsons.

B. Geologic Setting

1. Stratigraphy

a. Pre-Morrison Formations

Of the Pre-Morrison formations, only two, the Summerville and the Entrada are of direct interest. The Entrada sandstone forms a wide dip slope south of the area and makes up much of the surface of both sides of the Salt Valley anti-cline. The Entrada consists of the Moab Tongue above and the main mass of the formation below. The Moab Tongue is separated from the underlying rock by a thin parting plane which weathers in a distinct recess along the cliffs. The Entrada formation is a consistent cliff former over much of the plateau. Above the Entrada and separated from it by a lithologic break is the Summerville formation. The Summerville is about 60 feet thick and consists of silty sandstone and sandy siltstone with thinner shale and sandstone layers. The color is brownish red.

b. The Morrison Formation

(1) The Salt Wash Sandstone Member

The Salt Wash sandstone member of the Morrison Formation has been the chief producer of carnotite uranium ore on the plateau for a number of years. It is very well-exposed in the claim area and crops out in a belt from 1 to 4 miles wide. The Salt Wash member consists of about equal parts of sandstone and mudstone. These 2 constituents are arranged in a nonsystematic manner with the sandstone occurring as masses or channels surrounded by mudstone.

The Thompson area is unusual in that distinct levels of sand concentration are not well-marked and, therefore, rims are not well-displayed and mineralized materials may occur almost anywhere in the entire thickness of the Salt Wash. Analysis of the Salt Wash sediments showed that the contributing terrain was composed almost exclusively of sedimentary rocks but there were probably large falls of volcanic ash both in the contributing and depositional areas. The Salt Wash in this area is 275 feet thick.

(2) Brushy Basin Shale Member

The Brushy Basin member is predominantly mudstone, but channels of sandstone and conglomerate are common in certain areas. Much of the finer materials has been classified as bentonite. The member is characterized by the numerous outcrops indicative of the bentonitic type of weathering. The vari-colored banding appears to be traceable to volcanic minerals.

c. Post-Morrison Formations

In the Thompsons area, the Morrison formations is overlain by the Cedar Mountain formation. In places, it forms a continuous slope with the Brushy Basin. But in other places it forms a separate bench. The thickness is about 100 feet.

Above the Cedar Mountain lies the Dakota sandstone. The contact with the Cedar Mountain is difficult to locate by topographic expression. The dominant lithology is conglomeratic sandstone, which occurs in lenses or channels so that there is no consistent thickness or topographic expression.

Lying upon the Dakota, and forming many miles of low rolling topography along the northern edge of the Thompson area, is the Mancos shale. The formation consists of shaly siltstone interlayered with sandstone and bentonite beds, all with a dominant gray color. Some beds near the base are rich in organic matter, and local patches of relatively high radio-activity have been reported.

C. Structure

The claim area lies on the northeastern flank of the Salt Valley anticline, which is the dominating structural feature of the area. This structure is of the salt anticline type, which is characteristic of the northeastern part of the Paradox Basin. The Salt Valley anticline trends northwestward and the rocks on the flanks dip at rather low angles toward the Book Cliffs on the north and the Courthouse syncline on the southwest. The central part is a very complex dome of down-dropped splinters and blocks partly obscured by alluvium and showing in places solution remnants of the Paradox salt beds of Pennsylvanian age.

Outside of the major fault zone caused by collapse of the central salt masses, there are very few faults. A minor graben extends into the south-central part of the mineralized areas. This fault zone cuts the Salt Wash and actually passes very near several ore bodies but there is no evidence of significant connections between the faults and uranium mineralization.

Jointing is remarkably well-displayed in the Entrada sandstone just south of the claim area, but the Salt Wash and overlying beds in the mining area are not strongly jointed.

Ore Deposits. The uranium-vanadium deposits of the area are in the lower 250 feet of the Morrison formation, and most of them are in the thicker sandstone beds. Most of the larger deposits occur in the lower 125 feet of the Salt Wash sandstone member. The distribution of the deposits in general seems to have no relation to faults or folds. The nearest surface occurrence of igneous rock is a plug in Castle Creek Valley about 15 miles southeast of the area.

D. Mineralization and Minerology

The Uranium-vanadium deposits of the Morrison formation have usually been referred to as "carnotite deposits." No deposits consist entirely of vanadium minerals or entirely of uranium minerals, although part of a given deposit may be almost entirely vanadium-bearing and another part almost entirely uranium-bearing.

The ore ranges in grade from a fraction of a per cent for both U_3O_8 and V_2O_5 to about 5 per cent U_3O_8 and about 15 per cent V_2O_5. Carbonized material, present in most of the larger mines, has been reported to contain about 10 per cent U_3O_8. The ore minerals occur mostly in sandstone, coating the grains and partly or entirely filling the pore spaces. Thin clay films and shale pebbles are in places richly replaced by uranium-vanadium minerals.

Although the principal vanadium mineral is micaceous, its exact identity, composition, and properties have not been definitely established. The mineral is dark and colors the sandstone gray and greenish gray, and the color darkens as the vanadium content increases. The yellow uranium minerals, carnotite--$K_2(UO_2)_2(VO_4)_2 \cdot 1\text{-}3H_2O$--and tyuyamunite--$Ca(UO_2)_2(VO_4)_2 \cdot nH_2O$ are disseminated in the ore, and in places they constitute small high-grade bodies, either replacing fossil plants or impregnating sandstone. Corvusite--$V_2O_4 \cdot 6V_2O_5 \cdot nH_2O$--a purplish blue-black mineral, appears

to form mainly in localities where gypsum and organic matter are plentiful in the sandstone. Numerous other minerals are present, some in the form of local efflourescent coating, but they constitute little of the ore. Detailed discussion of the ore minerals may be found in publications by Hess (1933), Wischer (1942), and Weeks and Thompson (1954).

1. Ore Bodies

The individual ore deposits are governed primarily by the lithology, composition, and general arrangement of the sandstone lenses in which they lie. The presence of fossil plants or other organic remains appears to have been important in localizing mineralization. In general, the thicker, more continuous sandstone lenses are more likely to contain the larger uranium-vanadium deposits. Mudstone is usually barren except where it lies in contact with mineralized sandstone. Fine-grained sandstones, siltstones, and limestones are rarely mineralized, but sandstone with calcareous cement is apparently favorable for mineralization. Most of the ore is cont ined in medium- to medium-fine-grained sandstone, but conglomerates are well mineralized in several places.

The ore bodies range in size from thin irregular layers less than 5 feet wide and 15 feet long to more than 200 feet wide and 1,400 feet long. Ore bodies may be as much as 16 feet thick but they average about 3 feet in thickness. The yield of ore ranges from a few tons to several thousand tons, depending on size and grade of the deposits. In a general way the smaller deposits are likely to be of higher grade than the larger ones, but the grade depends on the type of materials making up the bulk of the ore, the amount of waste in the form of barren layers or siliceous pebbles, the amount and nature of the organic material present, and probably other factors not recognized at present.

Some ore bodies are characterized by curving zones of mineralized material that cross the bedding planes. These curved zones of ore are called "rolls". The ore and waste tend to separate along the roll surface, which greatly facilitates mining this type of body. Some deposits are made up of a single roll; others consist of many rolls.

Many ore bodies are simply single mineralized logs with aureoles of lower-grade ore. The shapes of others are evidently determined by irregular masses of fossil plant material.

2. Geologic Guides to Ore

The most important guides to ore in the Thompson area are sedimentary structures, organic material, gray mudstone and geobotanical analysis, limonite stain, and color or ore-bearing sandstone.

3. Sedimentary Structures

In the Thompson area the Salt Wash sandstone member of the Jurassic Morrison formation has few continuous horizontal sandstone layers, but it does have many discontinuous channels or lenses that are superimposed one above another so as to constitute a veritable maze. In numerous places upper channels have cut into lower channels. The movement of ground water upward and downward from bed to bed was probably less hindered than in areas where sandstone and ore are restricted by stratigraphic conditions to better defined horizontal levels or zones.

The ore appears to be confined mainly to the zone of thicker, more continuous sandstones regardless of their position in the Morrison formation. The more continuous interconnecting lenses were evidently correspondingly more favorable for the passage of the ore-bearing or ore--precipitating solutions than were the discontinuous lenses.

Many ore deposits lie along the edges of the sandstone lenses, but most of the larger deposits are located in the central part of the lenses. The majority of the ore deposits are found in the lower one-half of the sandstone lenses.

4. Organic Material

Nearly all of the ore deposits in the Thompson area contain organic material. Plant fossils that are found outside the deposits are usually silicified tree trunks. However, silicified trees have been observed within a few feet of carbonized trees in several ore deposits. Completely silicified trees in which no carbonaceous material is present are essentially barren of uranium and vanadium minerals. Dinosaur bones occur in some of the ore deposits, and many bones are replaced by uranium and vanadium minerals.

5. Gray Mudstone

The ore-bearing sandstone is interbedded with mudstone, and contains thin lenses of mudstone and mudstone-pebble conglomerate. This mudstone is normally red-brown, but near ore deposits the mudstone within and immediately beneath the ore-bearing sandstone is gray. In the larger deposits the mudstone above the ore-bearing sandstone is also gray. The combined thickness of the gray mudstone above and below the ore-bearing sandstone ranges from a film to more than 20 feet and average 13 feet. In plain view of the areas of gray mudstone are several times larger than the associated mineralized rock and offer more stable "targets" in delineating favorable ground.

E. Accessibility

The Macks claims Nos. 1-6 inclusive are located in Range 23 East, Township 23 South, Section 5, Seven miles east of Thompson on

U. S. Highway 50, sixteen miles southeast on good dirt roads to section 5; Macks claims 3, 4, 5, 6 in Section 3 and the Wilkins claims 1, 2, 3, and 4 in section 4, both groups of which are in Range 23 East, Township 23 South, are 7 miles east of Thompson on U. S. Highway 50, ten miles southeast over secondary roads.

F. Topography and Climate

The climate in the Thompson area is arid and precipitation is limited to 10 inches per year. Mining continues throughout the year and seasons without interruption because of inclement weather. Vegetation is sparse and does not interefere with development work.

IV. THE EXPLORATION PROJECT

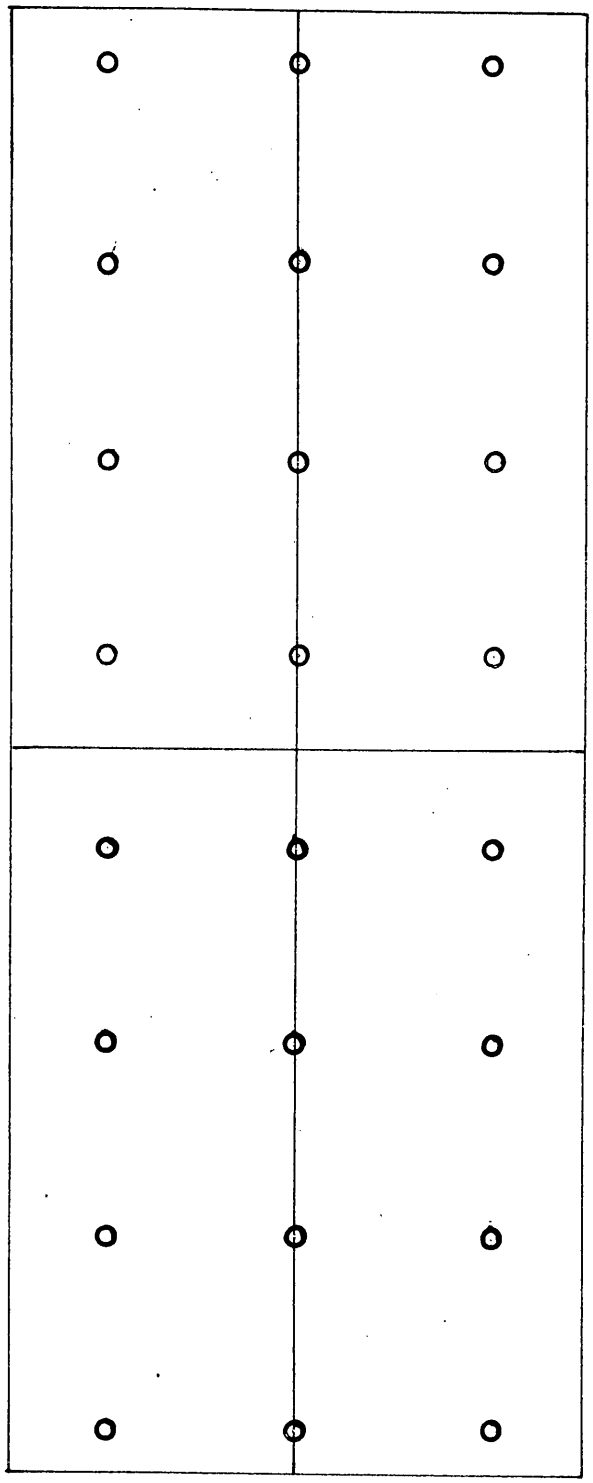
A. Objective

The sole objective of the exploration program is the discovery of uranium-vanadium ore.

B. Proposed work

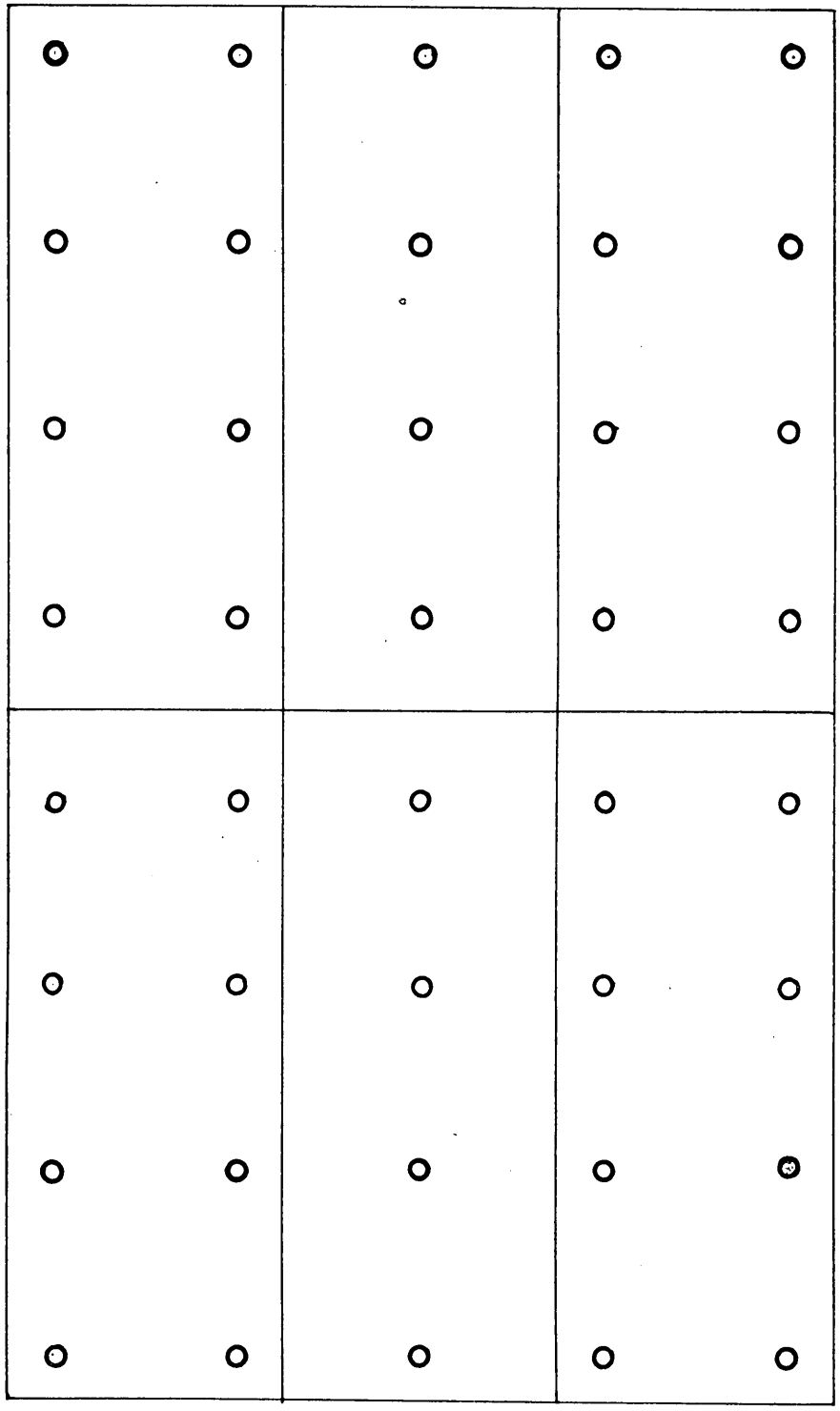
The program of proposed work submitted for your consideration and examination is, at best, only tentative, since it is fully realized that at this stage neither the full scope of the project, if approved, nor the direction it will take, can be determined with any certainty. With these limitations in mind, it is possible to formulate a general plan of exploration which may serve as a basis for later discussions between ourselves and your agency.

So far as may be anticipated at this time, the exploratory work may be divided conveniently into three stages; work in each new stage dependent upon the results obtained in the stage dependent upon the results obtained in the stage just completed. No rigid rules can be laid down, as any program, to be successful, must be reasonably flexible to permit alterations in plans as new data become available.



WILKINS CLAIMS 1-4
DRILL HOLE PATTERN

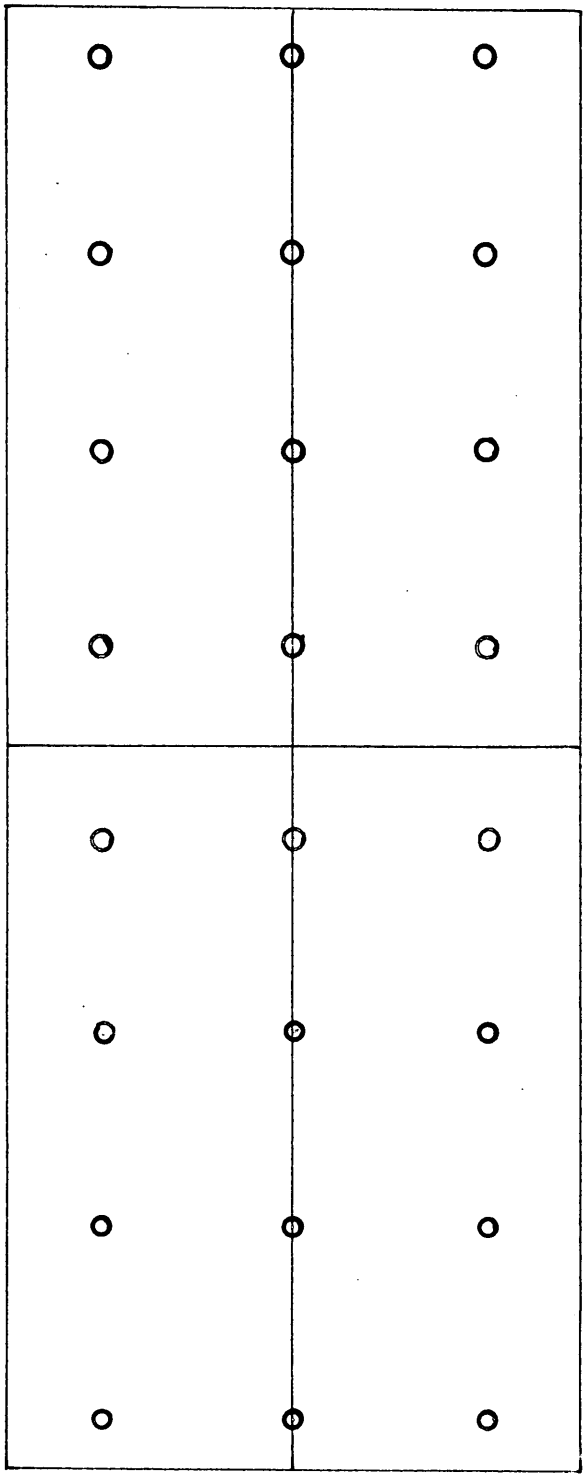
1INCH=400FEET



MACKS CLAIMS 1-6

DRILL HOLE PATTERN

1 INCH=400 FEET



MACKS CLAIMS 3-6

DRILL HOLE PATTERN

1INCH=400FEET

It is obvious that the major costs for any program in the area will be represented by the cost of drilling. The amount of drilling required to thoroughly prospect the ground will be the basic factor governing the length of the project, and this factor, in turn, will largely control the overall costs. It is important, therefore, that some tentative drilling footages and depths should be determined in order that a basis may be established for submitting this application to your agency.

Phase 1 - Reference to be diagram will show the approximate number of holes, spaced on 400 feet, which could be drilled within acreage available for exploration. It will be noted that the 14-claim group has been divided into three separate phases. Holes drilled on this coordinate spacing would be for the primary purpose of obtaining a better understanding of the sub-surface geologic conditions, especially those related to thicknesses, characteristics and mineralization of the formation. Data obtained in this Phase 1 drilling will help to establish within close limits the depths where coring of the formation should be commenced in subsequent holes.

The number of holes and the drilling footage for the area may be estimated as follows:

Phase 1:	88 holes	200 feet Average depth	17,600 feet Total footage

Since the ore occurs throughout the Salt Wash it may be expected that from 50 to 100 feet of coring will be necessary in each hole.

Using this average for Phase 1, it is estimated that the holes will require about 6,600 feet of coring and 11,000 feet of plugging with rotary bits.

It is suggested that core diameters should not be less than BX in size. The diameter of the hole from the surface to the top of the cored section will depend upon the equipment employed by the drilling contractor.

It is proposed to carry out standard radiometric drill-hole logging during this and subsequent phases of the work.

Phase 2 - An additional 40 holes will probably be sufficient to delineate favorable areas which are discovered as a result of first-phase drilling. These 40 holes would be drilled on 200 foot centers and would average the same depth as the 400-foot center holes.

Summary of Phase 1 and 2

A recapitulation of the drilling footages in Phases 1 and 2 is as follows:

Phase	Number of Holes	Feet of Coring	Feet of Non-Coring	Total Footage
1	88	6,600	11,000	17,600
2	40	3,000	5,000	8,000
	128	9,600	16,000	25,600

Phase 3 - The maximum amount of drilling which may be required in this phase is less easily calculated than for the previous two phases. The objective of this phase is to de-limit the size of ore bodies with more closely spaced holes, in some cases this interval may be as small as 50 feet.

If we assume for calculation purposes that 20 more holes are required to establish the size of any deposits found in Phase 1 and 2 drilling, an additional 4,000 feet would be required.

Summary of Phases 1, 2 and 3

According to our estimates, a total of approximately 29,600 feet of drilling will be required for this project.

V. ESTIMATE OF COSTS

Costs for the project have been projected on a 4-months period for purposes of estimation, and we have used the total drilling footage as a basis for calculations. These following costs, therefore, are based on a maximum figure, and for this reason the cost of the entire project will be considered as a whole.

Phases 1, 2, and 3

1. Independent Contracts

a.	29,600 feet drilling @ $4.00 per foot (includes stand-by time, casings, left in hole, etc.)	$118,400
b.	Clearing drill sites, bulldozing, etc.	2,000
c.	Assaying 200 samples @ $5.00 each	1,000
	Sub-total	$121,400

2. Labor, Supervision and Consultants

a.	Common labor	
	2 men @ $300 per month ($600 x 4 months)	$ 2,400
b.	Geologist ($600 per month x 4)	2,400
c.	Office 1 recording clerk ($300 per month x 4)	1,200
d.	Superintendent ($800 per month x 4)	3,300
e.	Consultants Mining Engineering & Geology	2,200
	Sub-total	$ 13,400

3. Operating Equipment

a.	Truck	$ 4,000
b.	Jeep Station wagon	3,000
	Sub-total	$ 7,000

4. Buildings

1 Butler Building with core storage facilities, equipment, etc.	$ 3,000
5. Operating Materials & Supplies	2,000
6. Miscellaneous	3,000

Summary of Estimated Costs

1. Independent Contracts	$121,400
2. Labor, Supervision and Consultants	13,400
3. Operating Equipment	7,000
4. Buildings	3,000
5. Operating Materials and Supplies	2,000
6. Miscellaneous	3,000
	$ 149,800
7. Add 10% for Contingencies	14,980
Total Estimated Cost	$ 164,780

VI. OPERATING EXPERIENCE AND BACKGROUND OF APPLICANT

The applicant, as a company, has had no previous operating background in exploration drilling.

VII. HISTORY OF OFFICERS

Mr. Stanley J. Lake, President and Director of the Corporation, received his education in Law and Business Administration at Montana State University in Missoula, Montana. He has been associated actively in the mining and oil business for eleven years. He presently owns interest in oil production in the Williston Basin in Eastern Montana, and mining and uranium interests in Colorado and Utah. Mr. Lake

recently has been devoting full time to the exploration and development of uranium properties on the Colorado Plateau.

Mr. T. J. Warren, Director and Vice-President of the Corporation, has been active in uranium, vanadium, and mining businesses in Utah and Colorado for the past fifteen years. Mr. Warren has operated and managed uranium mining properties on his own behalf and with various mining corporations. His experience in the operational phase of mine management will be utilized by the Corporation in like capacity.

Mr. Louis M. Hitch, Director and Vice-President, is an Attorney at Law, residing in Grand Junction, Colorado. He graduated in Law in 1931 and is a member of the Texas, Tennessee, and Mississippi Bar Associations. During the past fifteen years, Mr. Hitch has been employed as counsel for mining, and oil and gas companies, among which are Sohio Oil Company, Sells Petroleum, Inc., and Moore Exploration Company.

Mr. Douglas S. Borg, Director of the Corporation, is a resident of Salt Lake City, Utah. He obtained his educational training at the University of Utah, graduating with a B. S. Degree in Business and Accounting. Since that time he has been employed by an accounting firm in Salt Lake City, Utah. Mr. Borg's experience as an accountant will be used by the Board of Directors in an accounting and administrative capacity.

A. U. Baldwin has been associated and employed in the Oil and Uranium business for approximately three and one-half years. Prior to that time, A. U. Baldwin was associated with various firms in the State of California, working with personnel, which work involved

office management and public relations in which capacity the Board of Directors of this Corporation will utilize such services.

COIT AND GRAHAM
ATTORNEYS AT LAW
518 MAIN STREET
GRAND JUNCTION, COLORADO

LINCOLN D COIT
GEORGE S GRAHAM
GERALD ASHBY

August 9, 1954

DEPARTMENT OF THE INTERIOR
Bureau Minerals Administration
RECEIVED
JUN - 1 1955

Mr. Stanley J. Lake
Grand Junction, Colorado

Dear Mr. Lake:

We have been requested to render a title opinion in connection with the following unpatented mining claims, to-wit:

> Wilkins Claims No. 1, Wilkins Claims No. 2, Wilkins Claims No. 3 and Wilkins Claims No. 4 located in Section 4, Township 23 South, Range 22 East of the Salt Lake Meridian, Grand County Utah, Yellow Cat Mining District.

It is difficult to assert with certainty the validity of unpatented mining claims, because of non-record facts. The possessory rights which represent title under any valid mining claim do not arise out of any instrument of grant by the United States or out of any action by any officer or agency of the State or Federal Government. Rather, that possessory title arises as a matter of law out of the performance by the locator or locators (as to lands subject to location under the mining laws) of certain acts of location in compliance with the requirements of Federal and State law. Such possessory title, when validly initiated, endures unless lost through abandonment or through a forfeiture which results from an adverse location made while the prior location is in default in respect to performance of annual assessment work. Although title under a valid unpatented mining claim is not "legal title" in the usual sense of that term, the possessory title has been recognized by the Supreme Court of the United States as "property in the highest sense of that term". Only when a mining claim is patented is there an affirmative government grant under which legal title vests in the usual concept of real property ownership.

Any opinion as to the validity of the subject mining claims or any other unpatented mining claim must therefore be premised in part or upon certain assumptions of fact or acceptance of certain representations as to the facts. The question of whether

or not the lands upon which a mining claim was located, occupied at the time of location, a status rendering the lands located subject to any valid mining claim, is susceptible of determination from the records of the Land and Survey Office, Bureau of Land Management, where, in the instant matter, the situs of the claim in relation to the Public Land Surveys is known. The question of whether or not at the time of a particular mining location, all or any portion of the lands covered thereby were included within a prior mining location, is not susceptible of record determination because claims are not required to be described and are seldom described in a manner permitting any record identification of a location with a particular tract. This determination usually depends upon the knowledge of informed persons and evidences, if any, on the ground as to other locations. The frequently presented additional questions of performance of annual assessment labor and possible abandonment are voided under the particular circumstances relating to the mining claims which are the subject of this opinion.

The questions of whether or not the Notices of Location were posted and of whether or not the location monument and corner monuments were erected in the time and manner contemplated by the mining laws are not susceptible of record determination, although the recorded Notices of Location usually are recognized as giving rise to a presumption of compliance.

The questions of whether or not a mining claim is supported by a valid discovery and of whether, assuming discovery, the manner of occurrence of the mineral deposit required lode location or placer location, are questions of fact not answered in State or Federal records.

We have attempted repeatedly to obtain abstracts of title covering mining claims in the State of Utah, without success, consequently, any title opinion must be based on information furnished us by persons in interest.

We do know that Notices of Location covering Wilkins Claims No. 1, Wilkins Claims No. 2, Wilkins Claims No. 3 and Wilkins Claims No. 4 were duly recorded in the Recorder's Office of Grand County, Utah on November 26, 1949 and November 27, 1949 in Book 9J at Pages 370 and 371; said Notices of Location indicate that Clarence Wilkins is the locator.

We do not have in our files, but have seen an Option Agreement dated August 7, 1954, wherein Clarence Wilkins granted to Stanley J. Lake the first right and option to purchase the within described claims for the sum of $2,000.00, $800.00 to be paid within 120 days from August 7, 1954 and the balance to be paid out of royalty at the rate of 12½%. Said option agreement provides that when the purchase price is paid in full, the said Clarence Wilkins will no longer thereafter own any interest whatever in the within described claims.

We have no information as to any conflicting claims and do not know of any facts which tend to render the title to the claims herein described invalid.

Yours very truly,

COIT AND GRAHAM

By Lincoln D. Coit
Lincoln D. Coit

LDC/rs

COIT AND GRAHAM
ATTORNEYS AT LAW
818 MAIN STREET
GRAND JUNCTION, COLORADO

INCO N D COIT
S GRAHAM
ASHBY

August 12, 1954

Federal Mineral
RECE
JUN- 1 1955

Mr. Stanley J. Lake
Grand Junction, Colorado

Dear Mr. Lake:

We have been requested to render a title opinion in connection with the following unpatented mining claims, to-wit:

Macks Mining Claim No. 1
Macks Claims No. 4
Macks Claims No. 5
Macks Claims No. 6

located in Section 5 and Section 8, Township 23 South, Range 23 East of the Salt Lake Meridian, Grand County, Utah,

and

Macks Claims No. 3
Macks Claims No. 4
Macks Claims No. 5
Macks Claims No. 6

located in Section 3, Township 23 South, Range 23 East of the Salt Lake Meridian, Grand County, Utah.

It is difficult to assert with certainty the validity of unpatented mining claims, because of non-record facts. The possessory rights which represent title under any valid mining claim do not arise out of any instrument of grant by the United States or out of any action by any officer or agency of the State or Federal Government. Rather, that possessory title arises as a matter of law out of the performance by the locator or locators (as to lands subject to location under the mining laws) of certain acts of location in compliance with the requirements of Federal and State law. Such possessory title, when validly initiated, endures unless lost through abandonment or through a forfeiture which results from an adverse location made while the prior location is in default in respect to performance of annual assessment work. Although title under a valid unpatented mining claim is not "legal title" in the usual sense of that term, the possessory title has been recognized by the Supreme Court of the United States as "property in the highest sense of that term". Only when a mining claim is patented is there an affirmative

government grant under which legal title vests in the usual concept of real property ownership.

Any opinion as to the validity of the subject mining claims or any other unpatented mining claim must therefore be premised in part or upon certain assumptions of fact or acceptance of certain representations as to the facts. The question of whether or not the lands upon which a mining claim was located, occupied at the time of location, a status rendering the lands located subject to any valid mining claim, is susceptible of determination from the records of the Land and Survey Office, Bureau of Land Management, where, in the instant matter, the situs of the claim in relation to the Public Land Surveys is known. The question of whether or not at the time of a particular mining location, all or any portion of the lands covered thereby were included within a prior mining location, is not susceptible of record determination because claims are not required to be described and are seldom described in a manner permitting any record identification of a location with a particular tract. This determination usually depends upon the knowledge of informed persons and evidences, if any, on the ground as to other locations. The frequently presented additional questions of performance of annual assessment labor and possible abandonment are voided under the particular circumstances relating to the mining claims which are the subject of this opinion.

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We have attempted repeatedly to obtain abstracts of title covering mining claims in the State of Utah, without success, consequently, any title opinion must be based on information furnished us by persons in interest.

We do know that Notices of Location covering the within described claims were duly recorded in the Recorder's Office in Grand County, Utah on December 8, 1953 in Book 15 at Pages 277, 280, 281, 282, 283, 284, 285 and 286. Said Notices of Location

indicate that F. J. Warren is the locator.

We do not have in our files, but have seen an Agreement of Sale dated July 29, 1954, wherein F. J. Warren agrees to sell to Stanley J. Lake the within described claims for the total purchase price of $4500.00, payable as follows: $2000.00 on or before November 29, 1954 and $2500.00 out of a 12½% royalty on both mill receipts and any bonus paid on production. The agreement provides that when the entire purchase price has been paid to F. J. Warren, he will thereafter no longer own any interest in the premises.

We have no information as to any conflicting claims and do not know of any facts which tend to render the title to the claims herein described invalid.

Yours very truly,

COIT AND GRAHAM

By _____
Lincoln D. Coit

LDC/rm

COIT AND GRAHAM
ATTORNEYS AT LAW
518 MAIN STREET
GRAND JUNCTION COLORADO

LINCOLN D. COIT
GEORGE S. GRAHAM
GERALD J. ASHBY

August 25, 1954

DEPARTMENT OF THE INT.
Defense Minerals Administ.
RECEIVED
JUN-1 1955

Mr. Stanley J. Lake
Grand Junction, Colorado

Dear Mr. Lake:

We have been requested to render a title opinion in connection with the following unpatented mining claims, to-wit:

Macks No. 2 and Macks No. 3

located in Section 5, Township 23 South, Range 23 East of the Salt Lake Meridian, Grand County, Utah.

It is difficult to assert with certainty the validity of unpatented mining claims, because of non-record facts. The possessory rights which represent title under any valid mining claim do not arise out of any instrument of grant by the United States or out of any action by any officer or agency of the State or Federal Government. Rather, that possessory title arises as a matter of law out of the performance by the locator or locators (as to lands subject to location under the mining laws) of certain acts of location in compliance with the requirements of Federal and State law. Such possessory title, when validly initiated, endures unless lost through abandonment or through a forfeiture which results from an adverse location made while the prior location is in default in respect to performance of annual assessment work. Although title under a valid unpatented mining claim is not "legal title" in the usual sense of that term, the possessory title has been recognized by the Supreme Court of the United States as "property in the highest sense of that term". Only when a mining claim is patented is there an affirmative government grant under which legal title vests in the usual concept of real property ownership.

Any opinion as to the validity of the subject mining claims or any other unpatented mining claim must therefore be premised in part or upon certain assumptions of fact or acceptance of certain representations as to the facts. The question of whether or not the lands upon which a mining claim was located, occupied at the time of location, a status rendering the lands located subject to any valid mining claim, is susceptible of determination from the records

of the Land and Survey Office, Bureau of Land Management, where, in the instant matter, the situs of the claim in relation to the Public Land Surveys is known. The question of whether or not at the time of a particular mining location, all or any portion of the lands covered thereby were included within a prior mining location, is not susceptible of record determination because claims are not required to be described and are seldom described in a manner permitting any record identification of a location with a particular tract. This determination usually depends upon the knowledge of informed persons and evidences, if any, on the ground as to other locations. The frequently presented additional questions of performance of annual assessment labor and possible abandonment are voided under the particular circumstances relating to the mining claims which are the subject of this opinion.

The questions of whether or not the Notices of Location were posted and of whether or not the location monument and corner monuments were erected in the time and manner contemplated by the mining laws are not susceptible of record determination, although the recorded Notices of Location usually are recognized as giving rise to a presumption of compliance.

The questions of whether or not a mining claim is supported by a valid discovery and of whether, assuming discovery, the manner of occurance of the mineral deposit required lode location or placer location, are questions of fact not answered in State or Federal records.

We have attempted repeatedly to obtain abstracts of title covering mining claims in the State of Utah, without success, consequently, any title opinion must be based on information furnished us by persons in interest.

We do know that Notices of Location covering the within described claims were duly recorded in the Recorder's Office in Grand County, Utah, on December 8, 1954 in Book 15 at Pages 278 and 279. Said Notices of Location indicate that F. J. Warren is the locator.

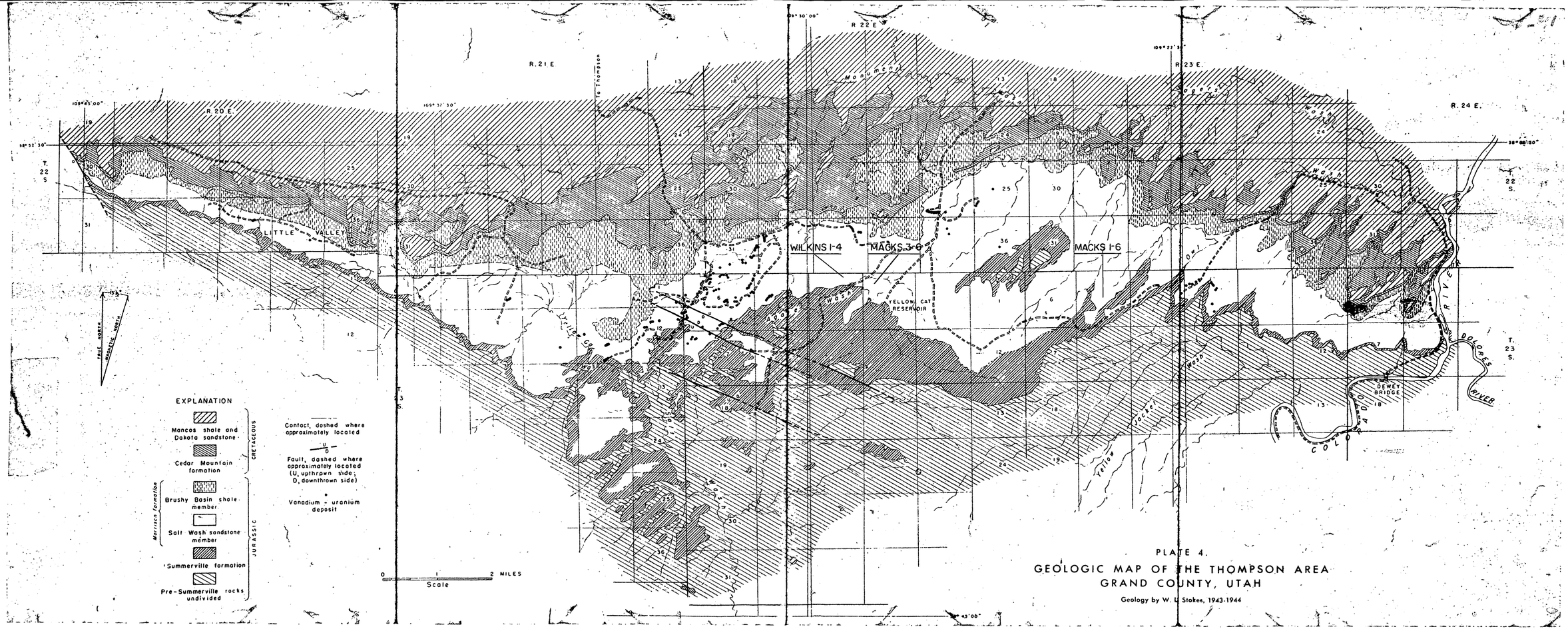

PLATE 4.

GEOLOGIC MAP OF THE THOMPSON AREA
GRAND COUNTY, UTAH

Geology by W. L. Stokes, 1943-1944

OCT 1 1987
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Lucas County Commissioners

We do not have in our files, but have seen an Option Agreement entered into on August 18, 1954, wherein T. J. Warren grants to Stanley J. Lake the exclusive right and option to purchase the within mentioned claims. The option price is $1,000.00 and payable as follows: $500.00 on or before 120 days from August 18, 1954 and the balance out of royalty at the rate of 12 per cent. The agreement provides that when the entire purchase price has been paid to T. J. Warren, he will thereafter no longer own any interest in the premises.

We have no information as to any conflicting claims and do not know of any facts which tend to render the title to the claims herein described invalid.

Yours very truly,

COIT AND GRAHAM

By _____
Lincoln D. Coit

LDC/rs

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

Form Approved.
Budget Bureau No. 42-R1085.2.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
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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. 3843
Metal or Mineral Uranium
Date Received ~~5-31-55~~ 1-55
Estimated Cost 164,780
Participation (Government %) 75

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:

Crestline Uranium and Mining Company
320 South Main Street
Salt Lake City, Utah

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

(*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

See appendix

(*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

(*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

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. See Page 1

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

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades. See Page 2

(*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 Page 3

(*d*) State the facts with respect to the accessibility of the project: Access roads, distances to shipping, supply and residence points. See Page 9

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

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

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

(*c*) The work will start within 20 days and be completed within 4 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 Page 14

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: See Page 13

(*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 Page 13

(*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 Page 13

(*c*) *Operating materials and supplies.*—Furnish an itemized list, including items of equipment costing less than $50 each, and power, water and fuel. See Page 13

(*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. See Page 13

(*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. See Page 14

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

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

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

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

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

Explain in detail on acompanying paper.

CERTIFICATION

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

Dated 1/21, 1955

Crestline Uranium and Mining Company
(Applicant)

By Nathan Wechsler

Nathan Wechsler

Power of Attorney

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

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, That Crestline Uranium and Mining Company, a Utah Corporation, does hereby make, constitute and appoint, NATHAN WECHSLER, his agents and attorneys, its true and lawful attorney to appear for it and represent it before the United States Department of Interior, Defense Minerals Exploration Administration, in connection with any matters involving application for aid in an exploration project in which it is a party, giving its said attorney full power to do everything whatsoever requisite and necessary to be done in these matters, and to execute all agreements in these matters, as fully as the undersigned might do if done in its own capacity, with full power of substitution and revocation at any time subsequent to the date hereof and prior to the revocation hereof.

It is requested that all communications addressed to the undersigned, regarding any matter in which the said attorney is hereby authorized to act, be addressed to:

Mr. Nathan Wechsler
1010 Vermont Avenue, N.W.
Washington, D.C.

All powers of attorney for this purpose heretofore filed or executed by us are hereby revoked.

IN WITNESS WHEREOF, the said CRESTLINE URANIUM AND MINING COMPANY, has executed this power of attorney in duplicate by causing its name to be hereunto signed by Stanley J. Lake, its President, with its corporate seal affixed and attested by G. U. Baldwin, its Secretary, this 26th day of March, 1955 A. D.

CRESTLINE URANIUM AND MINING COMPANY

BY: Stanley J. Lake
President

ATTEST:

G. U. Baldwin
Secretary

STATE OF Utah

COUNTY OF Salt Lake

On the 26th day of March A. D., 1955, personally appeared before me Stanley J. Lake and G. U. Baldwin who, being by me duly sworn, did say that they are the President and Secretary, respectively, of the above corporation, whose names are signed to the foregoing power of attorney, and who have acknowledged the same before me in the city and county aforesaid.

Witness my hand and notarial seal this 26th day of March, 1955.

My Commission Expires:

Francis E. Lund
Notary Public

CRESTLINE URANIUM AND MINING COMPANY
Darling Building
320 South Main Street
Salt Lake City, Utah

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
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JUN - 1 1955

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CRESTLINE URANIUM AND MINING COMPANY
Darling Building
320 South Main Street
Salt Lake City, Utah

ILLUSTRATIONS

Plate	Following Page
1. Location Map	1
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3. Grid Spacing 400 feet	10

APPENDIX

Documents Showing Control of Property:

A. Letter of August 9, 1954
from Coit and Graham, Attorneys

B. Letter of August 12, 1954
from Coit and Graham, Attorneys

C. Letter of August 25, 1954
from Coit and Graham, Attorneys

CRESTLINE URANIUM AND MINING COMPANY
Darling Building
320 South Main Street
Salt Lake City 1, Utah

GEOLOGICAL REPORT
ACCOMPANYING APPLICATION TO DMEA

I. NAME OF APPLICANT

A. The applicant is the Crestline Uranium and Mining Company, Darling Building, 320 South Main Street, Salt Lake City 1, Utah.

B. The Crestline Uranium and Mining Company is a corporation organized in and doing business under the laws of the State of Utah.

C. The following are the titles, names and addresses of officers:

1. President:

Stanley J. Lake
2542 Elm Avenue
Grand Junction, Colorado

2. Vice-President:

Louis M. Hitch
960 Main Street
Grand Junction, Colorado

3. Secretary-Treasurer:

A. U. Baldwin
2542 Elm Avenue
Grand Junction, Colorado

II. PROPERTY RIGHTS

Claims covered by this report are listed as follows:

NAME	TOWNSHIP	RANGE	SECTION	BOOK NO.	PAGE NO.
Macks Nos. 1,4,5,6	23 South	23 East	5&8	9J	451 & 597
Macks Nos. 3,4,5,6	23 South	22 East	3	9J	451 & 597
Macks Nos. 2,3	23 South	23 East	5	15	278 & 279
Wilkins 1,2,3,4	23 South	22 East	4	97	370 & 371

All in Grand County, Utah

The nearest town is Thompsons, Utah, seven miles to the northwest.

III. PHYSICAL DESCRIPTION

A. History of Production in Area

The Thompsons area, named for the town of Thompsons, the nearest settlement, comprises a tract of about 200 square miles in Grand County, Utah. Uranium-vanadium deposits are scattered along an outcrop of the Salt Wash sandstone member for about 20 miles. Most of the ore bodies are found in an area of about 5 square miles. The area has produced ore since 1911 and has been successively worked for radium, vanadium and uranium. The earlier discoveries were made on natural exposures and with passage of time, drilling has brought to light as many, if not more, deposits than are known from surface discoveries. The area is semi-arid with scant vegetation. There are no permanent streams except the Colorado River which skirts the eastern margin. Mining is possible throughout the year. Ore is trucked to the U.S.V. buying station at Thompsons.

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B. Geologic Setting

1. Stratigraphy

a. Pre-Morrison Formations

Of the Pre-Morrison formations, only two, the Summerville and the Entrada are of direct interest. The Entrada sandstone forms a wide dip slope south of the area and makes up much of the surface of both sides of the Salt Valley anti-cline. The Entrada consists of the Moab Tongue above and the main mass of the formation below. The Moab Tongue is separated from the underlying rock by a thin parting plane which weathers in a distinct recess along the cliffs. The Entrada formation is a consistent cliff former over much of the plateau. Above the Entrada and separated from it by a lithologic break is the Summerville formation. The Summerville is about 60 feet thick and consists of silty sandstone and sandy siltstone with thinner shale and sandstone layers. The color is brownish red.

b. The Morrison Formation

(1) The Salt Wash Sandstone Member

The Salt Wash sandstone member of the Morrison Formation has been the chief producer of carnotite uranium ore on the plateau for a number of years. It is very well-exposed in the claim area and crops out in a belt from 1 to 4 miles wide. The Salt Wash member consists of about equal parts of sandstone and mudstone. These 2 constituents are arranged in a nonsystematic manner with the sandstone occurring as masses or channels surrounded by mudstone.

The Thompson area is unusual in that distinct levels of sand concentration are not well-marked and, therefore, rims are not well-displayed and mineralized materials may occur almost anywhere in the entire thickness of the Salt Wash. Analysis of the Salt Wash sediments showed that the contributing terrain was composed almost exclusively of sedimentary rocks but there were probably large falls of volcanic ash both in the contributing and depositional areas. The Salt Wash in this area is 275 feet thick.

(2) Brushy Basin Shale Member

The Brushy Basin member is predominantly mudstone, but channels of sandstone and conglomerate are common in certain areas. Much of the finer materials has been classified as bentonite. The member is characterized by the numerous outcrops indicative of the bentonitic type of weathering. The vari-colored banding appears to be traceable to volcanic minerals.

c. Post-Morrison Formations

In the Thompsons area, the Morrison formations is overlain by the Cedar Mountain formation. In places, it forms a continuous slope with the Brushy Basin. But in other places it forms a separate bench. The thickness is about 100 feet.

Above the Cedar Mountain lies the Dakota sandstone. The contact with the Cedar Mountain is difficult to locate by topographic expression. The dominant lithology is conglomeratic sandstone, which occurs in lenses or channels so that there is no consistent thickness or topographic expression.

Lying upon the Dakota, and forming many miles of low rolling topography along the northern edge of the Thompson area, is the Mancos shale. The formation consists of shaly siltstone interlayered with sandstone and bentonite beds, all with a dominant gray color. Some beds near the base are rich in organic matter, and local patches of relatively high radio-activity have been reported.

C. Structure

The claim area lies on the northeastern flank of the Salt Valley anticline, which is the dominating structural feature of the area. This structure is of the salt anticline type, which is characteristic of the northeastern part of the Paradox Basin. The Salt Valley anticline trends northwestward and the rocks on the flanks dip at rather low angles toward the Book Cliffs on the north and the Courthouse syncline on the southwest. The central part is a very complex dome of down-dropped splinters and blocks partly obscured by alluvium and showing in places solution remnants of the Paradox salt beds of Pennsylvanian age.

Outside of the major fault zone caused by collapse of the central salt masses, there are very few faults. A minor graben extends into the south-central part of the mineralized areas. This fault zone cuts the Salt Wash and actually passes very near several ore bodies but there is no evidence of significant connections between the faults and uranium mineralization.

Jointing is remarkably well-displayed in the Entrada sandstone just south of the claim area, but the Salt Wash and overlying beds in the mining area are not strongly jointed.

Ore Deposits. The uranium-vanadium deposits of the area are in the lower 250 feet of the Morrison formation, and most of them are in the thicker sandstone beds. Most of the larger deposits occur in the lower 125 feet of the Salt Wash sandstone member. The distribution of the deposits in general seems to have no relation to faults or folds. The nearest surface occurrence of igneous rock is a plug in Castle Creek Valley about 15 miles southeast of the area.

D. Mineralization and Minerology

The Uranium-vanadium deposits of the Morrison formation have usually been referred to as "carnotite deposits." No deposits consist entirely of vanadium minerals or entirely of uranium minerals, although part of a given deposit may be almost entirely vanadium-bearing and another part almost entirely uranium-bearing.

The ore ranges in grade from a fraction of a per cent for both U_3O_8 and V_2O_5 to about 5 per cent U_3O_8 and about 15 per cent V_2O_5. Carbonized material, present in most of the larger mines, has been reported to contain about 10 per cent U_3O_8. The ore minerals occur mostly in sandstone, coating the grains and partly or entirely filling the pore spaces. Thin clay films and shale pebbles are in places richly replaced by uranium-vanadium minerals.

Although the principal vanadium mineral is micaceous, its exact identity, composition, and properties have not been definitely established. The mineral is dark and colors the sandstone gray and greenish gray, and the color darkens as the vanadium content increases. The yellow uranium minerals, carnotite--$K_2(UO_2)_2(VO_4)_2 \cdot 1\text{-}3H_2O$--and tyuyamunite--$Ca(UO_2)_2(VO_4)_2 \cdot nH_2O$ are disseminated in the ore, and in places they constitute small high-grade bodies, either replacing fossil plants or impregnating sandstone. Corvusite--$V_2O_4 \cdot 6V_2O_5 \cdot nH_2O$--a purplish blue-black mineral, appears

to form mainly in localities where gypsum and organic matter are plentiful in the sandstone. Numerous other minerals are present, some in the form of local efflourescent coating, but they constitute little of the ore. Detailed discussion of the ore minerals may be found in publications by Hess (1933), Wischer (1942), and Weeks and Thompson (1954).

1. Ore Bodies

The individual ore deposits are governed primarily by the lithology, composition, and general arrangement of the sandstone lenses in which they lie. The presence of fossil plants or other organic remains appears to have been important in localizing mineralization. In general, the thicker, more continuous sandstone lenses are more likely to contain the larger uranium-vanadium deposits. Mudstone is usually barren except where it lies in contact with mineralized sandstone. Fine-grained sandstones, siltstones, and limestones are rarely mineralized, but sandstone with calcareous cement is apparently favorable for mineralization. Most of the ore is cont ined in medium- to medium-fine-grained sandstone, but conglomerates are well mineralized in several places.

The ore bodies range in size from thin irregular layers less than 5 feet wide and 15 feet long to more than 200 feet wide and 1,400 feet long. Ore bodies may be as much as 16 feet thick but they average about 3 feet in thickness. The yield of ore ranges from a few tons to several thousand tons, depending on size and grade of the deposits. In a general way the smaller deposits are likely to be of higher grade than the larger ones, but the grade depends on the type of materials making up the bulk of the ore, the amount of waste in the form of barren layers or siliceous pebbles, the amount and nature of the organic material present, and probably other factors not recognized at present.

Some ore bodies are characterized by curving zones of mineralized material that cross the bedding planes. These curved zones of ore are called "rolls". The ore and waste tend to separate along the roll surface, which greatly facilitates mining this type of body. Some deposits are made up of a single roll; others consist of many rolls.

Many ore bodies are simply single mineralized logs with aureoles of lower-grade ore. The shapes of others are evidently determined by irregular masses of fossil plant material.

2. Geologic Guides to Ore

The most important guides to ore in the Thompson area are sedimentary structures, organic material, gray mudstone and geobotanical analysis, limonite stain, and color or ore-bearing sandstone.

3. Sedimentary Structures

In the Thompson area the Salt Wash sandstone member of the Jurassic Morrison formation has few continuous horizontal sandstone layers, but it does have many discontinuous channels or lenses that are superimposed one above another so as to constitute a veritable maze. In numerous places upper channels have cut into lower channels. The movement of ground water upward and downward from bed to bed was probably less hindered than in areas where sandstone and ore are restricted by stratigraphic conditions to better defined horizontal levels or zones.

The ore appears to be confined mainly to the zone of thicker, more continuous sandstones regardless of their position in the Morrison formation. The more continuous interconnecting lenses were evidently correspondingly more favorable for the passage of the ore-bearing or ore--precipitating solutions than were the discontinuous lenses.

Many ore deposits lie along the edges of the sandstone lenses, but most of the larger deposits are located in the central part of the lenses. The majority of the ore deposits are found in the lower one-half of the sandstone lenses.

4. Organic Material

Nearly all of the ore deposits in the Thompson area contain organic material. Plant fossils that are found outside the deposits are usually silicified tree trunks. However, silicified trees have been observed within a few feet of carbonized trees in several ore deposits. Completely silicified trees in which no carbonaceous material is present are essentially barren of uranium and vanadium minerals. Dinosaur bones occur in some of the ore deposits, and many bones are replaced by uranium and vanadium minerals.

5. Gray Mudstone

The ore-bearing sandstone is interbedded with mudstone, and contains thin lenses of mudstone and mudstone-pebble conglomerate. This mudstone is normally red-brown, but near ore deposits the mudstone within and immediately beneath the ore-bearing sandstone is gray. In the larger deposits the mudstone above the ore-bearing sandstone is also gray. The combined thickness of the gray mudstone above and below the ore-bearing sandstone ranges from a film to more than 20 feet and average 13 feet. In plain view of the areas of gray mudstone are several times larger than the associated mineralized rock and offer more stable "targets" in delineating favorable ground.

E. Accessibility

The Macks claims Nos. 1-6 inclusive are located in Range 23 East, Township 23 South, Section 5, Seven miles east of Thompson on

U. S. Highway 50, sixteen miles southeast on good dirt roads to section 5; Macks claims 3, 4, 5, 6 in Section 3 and the Wilkins claims 1, 2, 3, and 4 in section 4, both groups of which are in Range 23 East, Township 23 South, are 7 miles east of Thompson on U. S. Highway 50, ten miles southeast over secondary roads.

F. Topography and Climate

The climate in the Thompson area is arid and precipitation is limited to 10 inches per year. Mining continues throughout the year and seasons without interruption because of inclement weather. Vegetation is sparse and does not interefere with development work.

IV. THE EXPLORATION PROJECT

A. Objective

The sole objective of the exploration program is the discovery of uranium-vanadium ore.

B. Proposed work

The program of proposed work submitted for your consideration and examination is, at best, only tentative, since it is fully realized that at this stage neither the full scope of the project, if approved, nor the direction it will take, can be determined with any certainty. With these limitations in mind, it is possible to formulate a general plan of exploration which may serve as a basis for later discussions between ourselves and your agency.

So far as may be anticipated at this time, the exploratory work may be divided conveniently into three stages; work in each new stage dependent upon the results obtained in the stage dependent upon the results obtained in the stage just completed. No rigid rules can be laid down, as any program, to be successful, must be reasonably flexible to permit alterations in plans as new data become available.

It is obvious that the major costs for any program in the area will be represented by the cost of drilling. The amount of drilling required to thoroughly prospect the ground will be the basic factor governing the length of the project, and this factor, in turn, will largely control the overall costs. It is important, therefore, that some tentative drilling footages and depths should be determined in order that a basis may be established for submitting this application to your agency.

Phase 1 - Reference to be diagram will show the approximate number of holes, spaced on 400 feet, which could be drilled within acreage available for exploration. It will be noted that the 14-claim group has been divided into three separate phases. Holes drilled on this coordinate spacing would be for the primary purpose of obtaining a better understanding of the subsurface geologic conditions, especially those related to thicknesses, characteristics and mineralization of the formation. Data obtained in this Phase 1 drilling will help to establish within close limits the depths where coring of the formation should be commenced in subsequent holes.

The number of holes and the drilling footage for the area may be estimated as follows:

Phase 1:	88 holes	200 feet Average depth	17,600 feet Total footage

Since the ore occurs throughout the Salt Wash it may be expected that from 50 to 100 feet of coring will be necessary in each hole.

Using this average for Phase 1, it is estimated that the holes will require about 6,600 feet of coring and 11,000 feet of plugging with rotary bits.

It is suggested that core diameters should not be less than BX in size. The diameter of the hole from the surface to the top of the cored section will depend upon the equipment employed by the drilling contractor.

It is proposed to carry out standard radiometric drill-hole logging during this and subsequent phases of the work.

Phase 2 - An additional 40 holes will probably be sufficient to delineate favorable areas which are discovered as a result of first-phase drilling. These 40 holes would be drilled on 200 foot centers and would average the same depth as the 400-foot center holes.

Summary of Phase 1 and 2

A recapitulation of the drilling footages in Phases 1 and 2 is as follows:

Phase	Number of Holes	Feet of Coring	Feet of Non-Coring	Total Footage
1	88	6,600	11,000	17,600
2	40	3,000	5,000	8,000
	128	9,600	16,000	25,600

Phase 3 - The maximum amount of drilling which may be required in this phase is less easily calculated than for the previous two phases. The objective of this phase is to de-limit the size of ore bodies with more closely spaced holes, in some cases this interval may be as small as 50 feet.

If we assume for calculation purposes that 20 more holes are required to establish the size of any deposits found in Phase 1 and 2 drilling, an additional 4,000 feet would be required.

Summary of Phases 1, 2 and 3

According to our estimates, a total of approximately 29,600 feet of drilling will be required for this project.

V. ESTIMATE OF COSTS

Costs for the project have been projected on a 4-months period for purposes of estimation, and we have used the total drilling footage as a basis for calculations. These following costs, therefore, are based on a maximum figure, and for this reason the cost of the entire project will be considered as a whole.

Phases 1, 2, and 3

1. Independent Contracts

a.	29,600 feet drilling @ $4.00 per foot (includes stand-by time, casings, left in hole, etc.)	$118,400
b.	Clearing drill sites, bulldozing, etc.	2,000
c.	Assaying 200 samples @ $5.00 each	1,000
	Sub-total	$121,400

2. Labor, Supervision and Consultants

a.	Common labor	
	2 men @ $300 per month ($600 x 4 months)	$ 2,400
b.	Geologist ($600 per month x 4)	2,400
c.	Office 1 recording clerk ($300 per month x 4)	1,200
d.	Superintendent ($800 per month x 4)	3,300
e.	Consultants Mining Engineering & Geology	2,200
	Sub-total	$ 13,400

3. Operating Equipment

a.	Truck	$ 4,000
b.	Jeep Station wagon	3,000
	Sub-total	$ 7,000

4. Buildings

1 Butler Building with core storage facilities, equipment, etc.	$ 3,000
5. Operating Materials & Supplies	2,000
6. Miscellaneous	3,000

Summary of Estimated Costs

1. Independent Contracts	$121,400
2. Labor, Supervision and Consultants	13,400
3. Operating Equipment	7,000
4. Buildings	3,000
5. Operating Materials and Supplies	2,000
6. Miscellaneous	3,000
	$ 149,800
7. Add 10% for Contingencies	14,980
Total Estimated Cost	$ 164,780

VI. OPERATING EXPERIENCE AND BACKGROUND OF APPLICANT

The applicant, as a company, has had no previous operating background in exploration drilling.

VII. HISTORY OF OFFICERS

Mr. Stanley J. Lake, President and Director of the Corporation, received his education in Law and Business Administration at Montana State University in Missoula, Montana. He has been associated actively in the mining and oil business for eleven years. He presently owns interest in oil production in the Williston Basin in Eastern Montana, and mining and uranium interests in Colorado and Utah. Mr. Lake

recently has been devoting full time to the exploration and development of uranium properties on the Colorado Plateau.

Mr. T. J. Warren, Director and Vice-President of the Corporation, has been active in uranium, vanadium, and mining businesses in Utah and Colorado for the past fifteen years. Mr. Warren has operated and managed uranium mining properties on his own behalf and with various mining corporations. His experience in the operational phase of mine management will be utilized by the Corporation in like capacity.

Mr. Louis M. Hitch, Director and Vice-President, is an Attorney at Law, residing in Grand Junction, Colorado. He graduated in Law in 1931 and is a member of the Texas, Tennessee, and Mississippi Bar Associations. During the past fifteen years, Mr. Hitch has been employed as counsel for mining, and oil and gas companies, among which are Sohio Oil Company, Sells Petroleum, Inc., and Moore Exploration Company.

Mr. Douglas S. Borg, Director of the Corporation, is a resident of Salt Lake City, Utah. He obtained his educational training at the University of Utah, graduating with a B. S. Degree in Business and Accounting. Since that time he has been employed by an accounting firm in Salt Lake City, Utah. Mr. Borg's experience as an accountant will be used by the Board of Directors in an accounting and administrative capacity.

A. U. Baldwin has been associated and employed in the Oil and Uranium business for approximately three and one-half years. Prior to that time, A. U. Baldwin was associated with various firms in the State of California, working with personnel, which work involved

office management and public relations in which capacity the Board of Directors of this Corporation will utilize such services.

COIT AND GRAHAM
ATTORNEYS AT LAW
[illegible] STREET
GRAND JUNCTION, COLORADO

LINCOLN D COIT
GEORGE S GRAHAM
GERALD A HBY

August 9, 1954

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUN - 1 1955

Mr. Stanley J. Lake
Grand Junction, Colorado

Dear Mr. Lake:

We have been requested to render a title opinion in connection with the following unpatented mining claims, to-wit:

> Wilkins Claims No. 1, Wilkins Claims No. 2, Wilkins Claims No. 3 and Wilkins Claims No. 4 located in Section 4, Township 23 South, Range 22 East of the Salt Lake Meridian, Grand County Utah, Yellow Cat Mining District.

It is difficult to assert with certainty the validity of unpatented mining claims, because of non-record facts. The possessory rights which represent title under any valid mining claim do not arise out of any instrument of grant by the United States or out of any action by any officer or agency of the State or Federal Government. Rather, that possessory title arises as a matter of law out of the performance by the locator or locators (as to lands subject to location under the mining laws) of certain acts of location in compliance with the requirements of Federal and State law. Such possessory title, when validly initiated, endures unless lost through abandonment or through a forfeiture which results from an adverse location made while the prior location is in default in respect to performance of annual assessment work. Although title under a valid unpatented mining claim is not "legal title" in the usual sense of that term, the possessory title has been recognized by the Supreme Court of the United States as "property in the highest sense of that term". Only when a mining claim is patented is there an affirmative government grant under which legal title vests in the usual concept of real property ownership.

Any opinion as to the validity of the subject mining claims or any other unpatented mining claim must therefore be premised in part or upon certain assumptions of fact or acceptance of certain representations as to the facts. The question of whether

or not the lands upon which a mining claim was located, occupied at the time of location, a status rendering the lands located subject to any valid mining claim, is susceptible of determination from the records of the Land and Survey Office, Bureau of Land Management, where, in the instant matter, the situs of the claim in relation to the Public Land Surveys is known. The question of whether or not at the time of a particular mining location, all or any portion of the lands covered thereby were included within a prior mining location, is not susceptible of record determination because claims are not required to be described and are seldom described in a manner permitting any record identification of a location with a particular tract. This determination usually depends upon the knowledge of informed persons and evidences, if any, on the ground as to other locations. The frequently presented additional questions of performance of annual assessment labor and possible abandonment are voided under the particular circumstances relating to the mining claims which are the subject of this opinion.

The questions of whether or not the Notices of Location were posted and of whether or not the location monument and corner monuments were erected in the time and manner contemplated by the mining laws are not susceptible of record determination, although the recorded Notices of Location usually are recognized as giving rise to a presumption of compliance.

The questions of whether or not a mining claim is supported by a valid discovery and of whether, assuming discovery, the manner of occurrence of the mineral deposit required lode location or placer location, are questions of fact not answered in State or Federal records.

We have attempted repeatedly to obtain abstracts of title covering mining claims in the State of Utah, without success, consequently, any title opinion must be based on information furnished us by persons in interest.

We do know that Notices of Location covering Wilkins Claims No. 1, Wilkins Claims No. 2, Wilkins Claims No. 3 and Wilkins Claims No. 4 were duly recorded in the Recorder's Office of Grand County, Utah on November 26, 1949 and November 27, 1949 in Book 9J at Pages 370 and 371; said Notices of Location indicate that Clarence Wilkins is the locator.

We do not have in our files, but have seen an Option Agreement dated August 7, 1954, wherein Clarence Wilkins granted to Stanley J. Lake the first right and option to purchase the within described claims for the sum of $2,000.00, $800.00 to be paid within 120 days from August 7, 1954 and the balance to be paid out of royalty at the rate of 12½%. Said option agreement provides that when the purchase price is paid in full, the said Clarence Wilkins will no longer thereafter own any interest whatever in the within described claims.

We have no information as to any conflicting claims and do not know of any facts which tend to render the title to the claims herein described invalid.

Yours very truly,

COIT AND GRAHAM

By Lincoln D. Coit
Lincoln D. Coit

LDC/rs

COIT AND GRAHAM
ATTORNEYS AT LAW
516 MAIN STREET
GRAND JUNCTION, COLORADO

NCO N D COIT
S GRAHAM
ASHOY

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUN - 1 1955

August 12, 1954

Mr. Stanley J. Lake
Grand Junction, Colorado

Dear Mr. Lake:

We have been requested to render a title opinion in connection with the following unpatented mining claims, to-wit:

Macks Mining Claim No. 1
Macks Claims No. 4
Macks Claims No. 5
Macks Claims No. 6

located in Section 5 and Section 8, Township 23 South, Range 23 East of the Salt Lake Meridian, Grand County, Utah,

and

Macks Claims No. 3
Macks Claims No. 4
Macks Claims No. 5
Macks Claims No. 6

located in Section 3, Township 23 South, Range 23 East of the Salt Lake Meridian, Grand County, Utah.

It is difficult to assert with certainty the validity of unpatented mining claims, because of non-record facts. The possessory rights which represent title under any valid mining claim do not arise out of any instrument of grant by the United States or out of any action by any officer or agency of the State or Federal Government. Rather, that possessory title arises as a matter of law out of the performance by the locator or locators (as to lands subject to location under the mining laws) of certain acts of location in compliance with the requirements of Federal and State law. Such possessory title, when validly initiated, endures unless lost through abandonment or through a forfeiture which results from an adverse location made while the prior location is in default in respect to performance of annual assessment work. Although title under a valid unpatented mining claim is not "legal title" in the usual sense of that term, the possessory title has been recognized by the Supreme Court of the United States as "property in the highest sense of that term". Only when a mining claim is patented is there an affirmative

government grant under which legal title vests in the usual concept of real property ownership.

Any opinion as to the validity of the subject mining claims or any other unpatented mining claim must therefore be premised in part or upon certain assumptions of fact or acceptance of certain representations as to the facts. The question of whether or not the lands upon which a mining claim was located, occupied at the time of location, a status rendering the lands located subject to any valid mining claim, is susceptible of determination from the records of the Land and Survey Office, Bureau of Land Management, where, in the instant matter, the situs of the claim in relation to the Public Land Surveys is known. The question of whether or not at the time of a particular mining location, all or any portion of the lands covered thereby were included within a prior mining location, is not susceptible of record determination because claims are not required to be described and are seldom described in a manner permitting any record identification of a location with a particular tract. This determination usually depends upon the knowledge of informed persons and evidences, if any, on the ground as to other locations. The frequently presented additional questions of performance of annual assessment labor and possible abandonment are voided under the particular circumstances relating to the mining claims which are the subject of this opinion.

The questions of whether or not the Notices of Location were posted and of whether or not the location monument and corner monuments were erected in the time and manner contemplated by the mining laws are not susceptible of record determination, although the recorded Notices of Location usually are recognized as giving rise to a presumption of compliance.

The questions of whether or not a mining claim is supported by a valid discovery and of whether, assuming discovery, the manner of occurrence of the mineral deposit required lode location or placer location, are questions of fact not answered in State or Federal records.

We have attempted repeatedly to obtain abstracts of title covering mining claims in the State of Utah, without success, consequently, any title opinion must be based on information furnished us by persons in interest.

We do know that Notices of Location covering the within described claims were duly recorded in the Recorder's Office in Grand County, Utah on December 8, 1953 in Book 15 at Pages 277, 280, 281, 282, 283, 284, 285 and 286. Said Notices of Location

indicate that F. J. Warren is the locator.

We do not have in our files, but have seen an Agreement of Sale dated July 29, 1954, wherein F. J. Warren agrees to sell to Stanley J. Lake the within described claims for the total purchase price of $4500.00, payable as follows: $2000.00 on or before November 29, 1954 and $2500.00 out of a 12½% royalty on both mill receipts and any bonus paid on production. The agreement provides that when the entire purchase price has been paid to F. J. Warren, he will thereafter no longer own any interest in the premises.

We have no information as to any conflicting claims and do not know of any facts which tend to render the title to the claims herein described invalid.

Yours very truly,

COIT AND GRAHAM

By _____
Lincoln D. Coit

LDC/rm

COIT AND GRAHAM
ATTORNEYS AT LAW
518 MAIN STREET
GRAND JUNCTION COLORADO

LINDEN D COIT
GEORGE S GRAHAM
GERALD J ASHBY

August 25, 1954

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUN - 1 1955

Mr. Stanley J. Lake
Grand Junction, Colorado

Dear Mr. Lake:

We have been requested to render a title opinion in connection with the following unpatented mining claims, to-wit:

Macks No. 2 and Macks No. 3

located in Section 5, Township 23 South, Range 23 East of the Salt Lake Meridian, Grand County, Utah.

It is difficult to assert with certainty the validity of unpatented mining claims, because of non-record facts. The possessory rights which represent title under any valid mining claim do not arise out of any instrument of grant by the United States or out of any action by any officer or agency of the State or Federal Government. Rather, that possessory title arises as a matter of law out of the performance by the locator or locators (as to lands subject to location under the mining laws) of certain acts of location in compliance with the requirements of Federal and State law. Such possessory title, when validly initiated, endures unless lost through abandonment or through a forfeiture which results from an adverse location made while the prior location is in default in respect to performance of annual assessment work. Although title under a valid unpatented mining claim is not "legal title" in the usual sense of that term, the possessory title has been recognized by the Supreme Court of the United States as "property in the highest sense of that term". Only when a mining claim is patented is there an affirmative government grant under which legal title vests in the usual concept of real property ownership.

Any opinion as to the validity of the subject mining claims or any other unpatented mining claim must therefore be premised in part or upon certain assumptions of fact or acceptance of certain representations as to the facts. The question of whether or not the lands upon which a mining claim was located, occupied at the time of location, a status rendering the lands located subject to any valid mining claim, is susceptible of determination from the records

of the Land and Survey Office, Bureau of Land Management, where, in the instant matter, the situs of the claim in relation to the Public Land Surveys is known. The question of whether or not at the time of a particular mining location, all or any portion of the lands covered thereby were included within a prior mining location, is not susceptible of record determination because claims are not required to be described and are seldom described in a manner permitting any record identification of a location with a particular tract. This determination usually depends upon the knowledge of informed persons and evidences, if any, on the ground as to other locations. The frequently presented additional questions of performance of annual assessment labor and possible abandonment are voided under the particular circumstances relating to the mining claims which are the subject of this opinion.

The questions of whether or not the Notices of Location were posted and of whether or not the location monument and corner monuments were erected in the time and manner contemplated by the mining laws are not susceptible of record determination, although the recorded Notices of Location usually are recognized as giving rise to a presumption of compliance.

The questions of whether or not a mining claim is supported by a valid discovery and of whether, assuming discovery, the manner of occurance of the mineral deposit required lode location or placer location, are questions of fact not answered in State or Federal records.

We have attempted repeatedly to obtain abstracts of title covering mining claims in the State of Utah, without success, consequently, any title opinion must be based on information furnished us by persons in interest.

We do know that Notices of Location covering the within described claims were duly recorded in the Recorder's Office in Grand County, Utah, on December 8, 1954 in Book 15 at Pages 278 and 279. Said Notices of Location indicate that F. J. Warren is the locator.

We do not have in our files, but have seen an Option Agreement entered into on August 18, 1954, wherein L. J. Warren grants to Stanley J. Lake the exclusive right and option to purchase the within mentioned claims. The option price is $1,000.00 and payable as follows: $500.00 on or before 120 days from August 18, 1954 and the balance out of royalty at the rate of 12½ per cent. The agreement provides that when the entire purchase price has been paid to L. J. Warren, he will thereafter no longer own any interest in the premises.

We have no information as to any conflicting claims and do not know of any facts which tend to render the title to the claims herein described invalid.

Yours very truly,

COIT AND GRAHAM

By _____
Lincoln D. Coit

LDC/rs

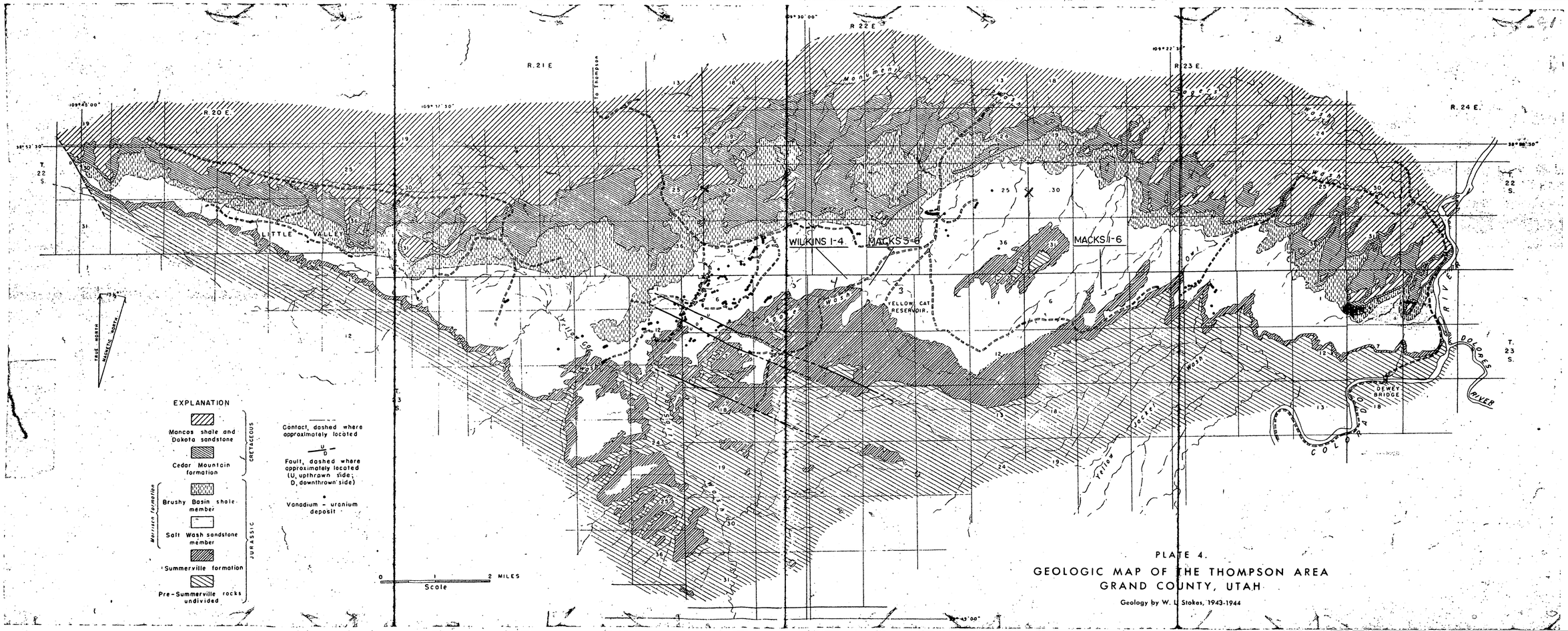

PLATE 4.

GEOLOGIC MAP OF THE THOMPSON AREA
GRAND COUNTY, UTAH

Geology by W. L. Stokes, 1943-1944

DEPARTMENT OF THE INTERIOR
Bureau of Mines Administration
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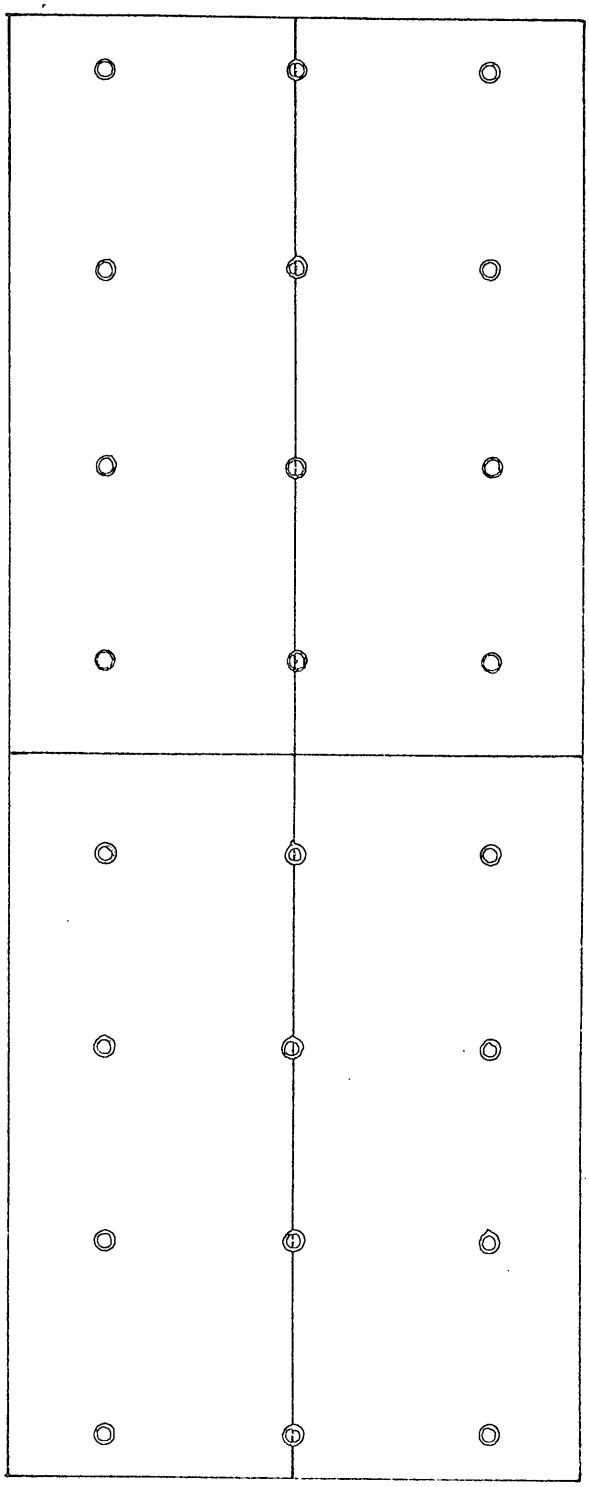
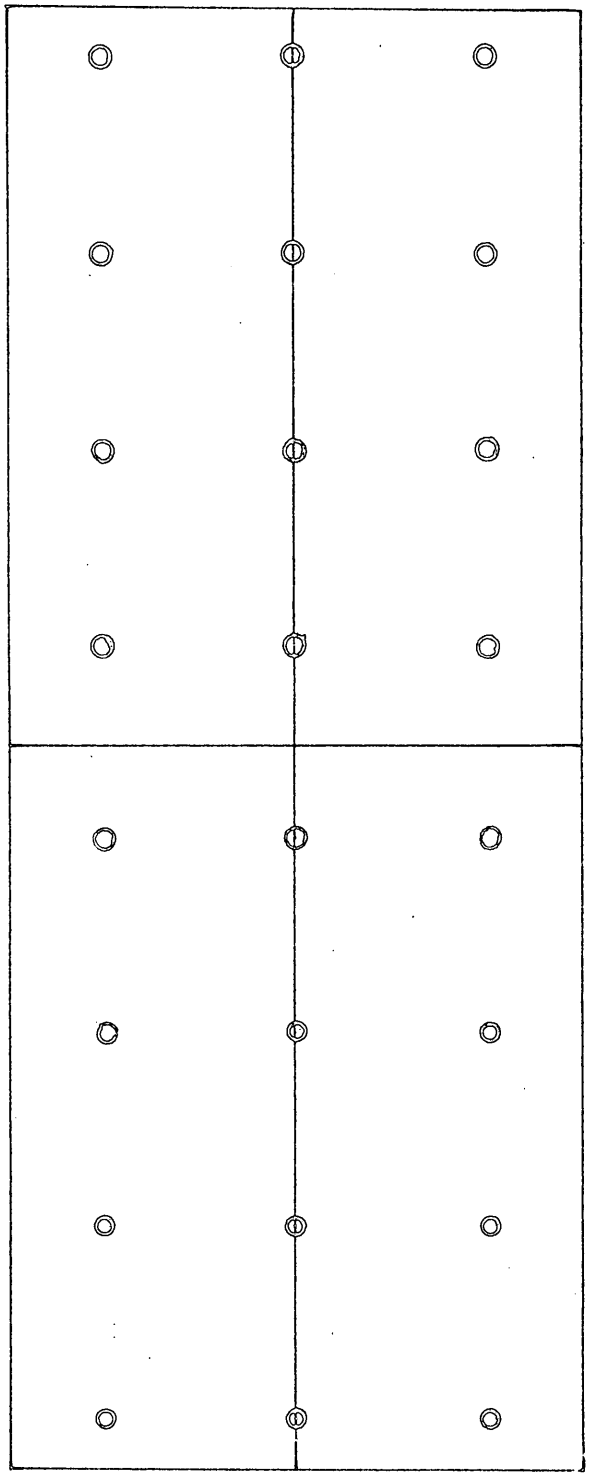
JUN - 1 1956



WILKINS CLAIMS 1-4
DRILL HOLE PATTERN

1INCH=400FEET



MACKS CLAIMS 3-6

DRILL HOLE PATTERN

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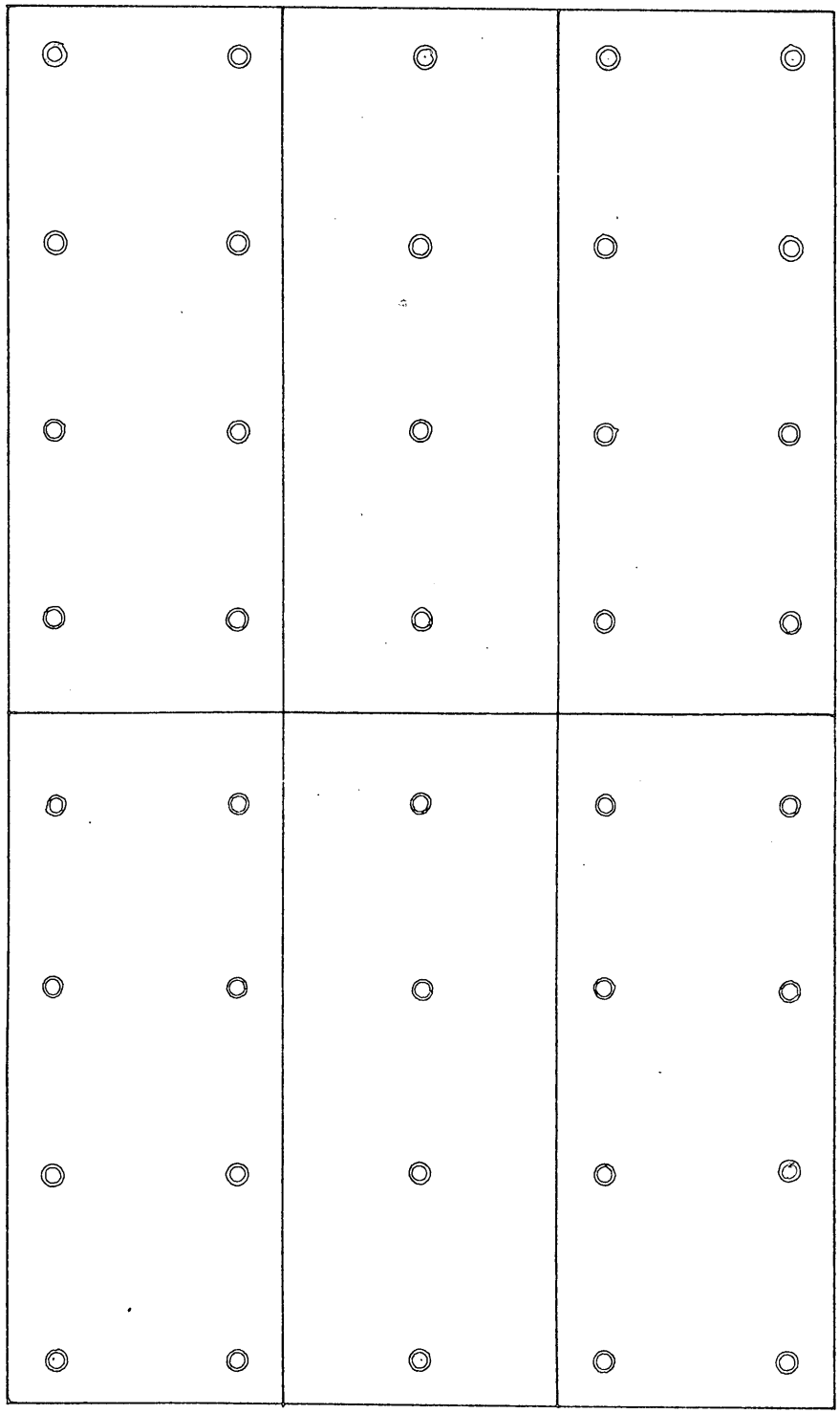
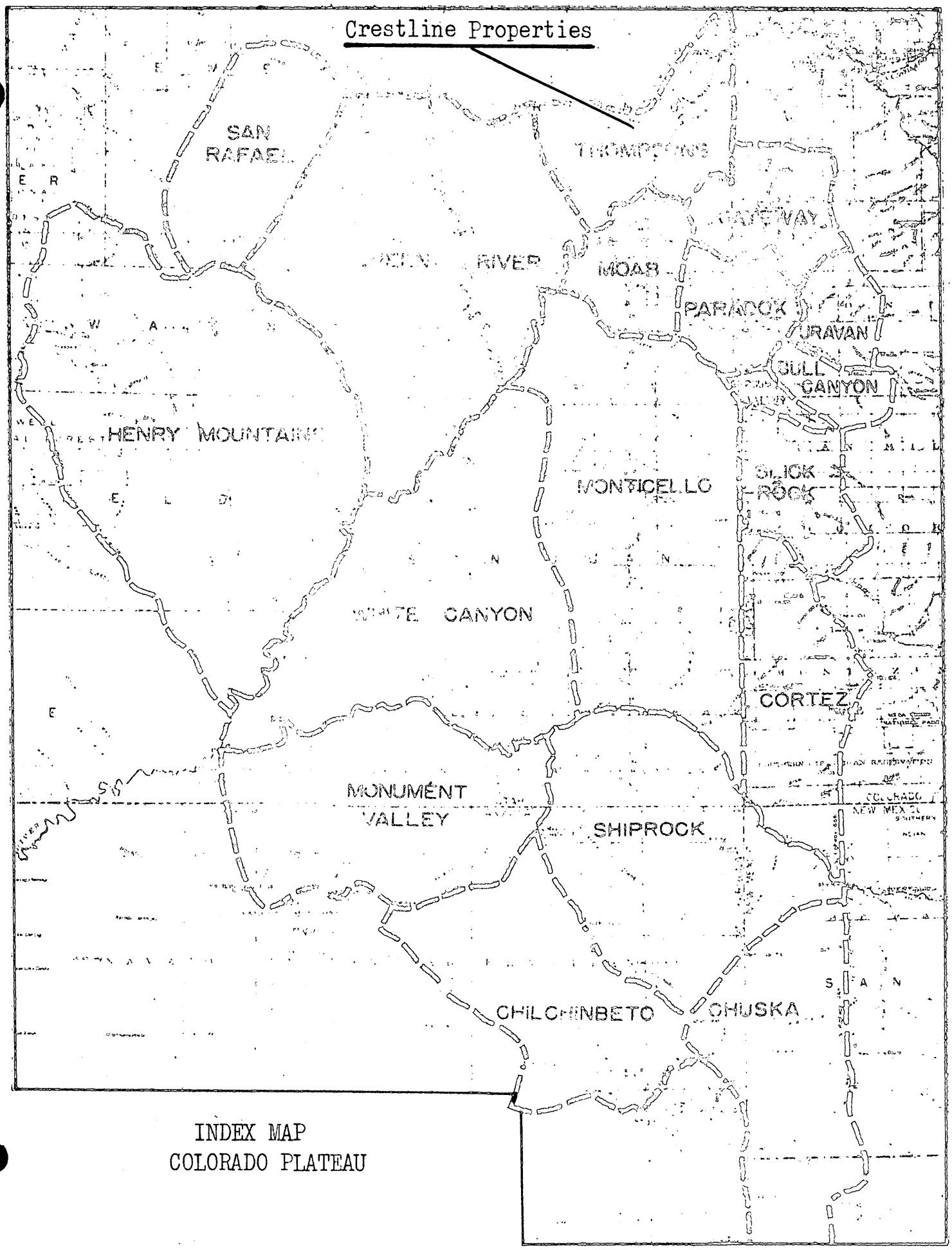


MACKS CLAIMS 1-6

DRILL HOLE PATTERN

1 INCH=400 FEET



INDEX MAP
COLORADO PLATEAU