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Surname copy
Murphy
Ellis
Johnson
Kiilsgaard
Selfridge
T Johnson

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

MAY 12 1955

Mr. L. A. Smith
Secretary-Treasurer
Vivian Uranium Mining Co., Inc.
139 North Virginia Street
Reno, Nevada

Re: Docket No. DMEA-3602 (Uranium)
State School Land Leases Nos.
5947, 5948, and 5949
San Juan County, Utah

Dear Mr. Smith:

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. Such denial, however, is made without prejudice. In the event further work on your part discloses new and more favorable evidence of ore deposition on the property, we shall be pleased to consider a new application.

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

Sincerely yours,

C. O. Mittendorf (fw)

Administrator

FMMurphy/gla
5-11-55
cc to: Admr.'s Reading File
Operating Committee
Docket
Code 700
Mr. Murphy
DMEA Field Team, Region III (2)
Messrs. J. E. Crawford, Rm. 3641
T. H. Kiilsgaard, Rm. 5224
J. O. Hosted, Rm. 3210, GSA

R.C.S.

Murphy

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

May 11, 1955

Summary of Proposed Project

Object: Denial of application for an exploration project.

Docket No.: DMEA-3602

Commodity: Uranium

Applicant: Vivian Uranium Mining Co., Inc.
Mr. L. A. Smith, Secretary-Treasurer
139 North Virginia Street
Reno, Nevada

Property: Utah State School Leases, Nos. 5947, 5948, and 5949, comprising about 179.84 acres of land in Secs. 2 and 3, T. 29 S., R. 23 E.,
San Juan County, Utah

Date of application: December 10, 1954

Amount of application: $37,650.00

Work proposed: Eight diamond drill holes aggregating 11,400 feet. Two of these holes estimated at 1800 feet in depth and six of them at 1300 feet each.

Estimated cost of work:

9,400 feet of non-core and 2,000 feet core drilling, average $3.25/ft.	$37,050.00
Access road and drill site preparation, 6 days @ $100/day	600.00
Total estimated cost of project	$37,650.00

Field Team's Report of Examination:

Date requested: December 28, 1954
Date received: April 29, 1955

Field Team recommends denial, (excerpts):

Two of the proposed holes are planned to penetrate both the potentially mineralized Salt Wash member of the

Morrison formation and the Moss Back member of the Chinle formation. Six of the eight holes are planned to explore only the Moss Back.

At the Highway claim the mineralized sandstones are thin, partly reddish, massive, and the associated mudstone is largely red; these lithologic characteristics indicate that the Salt Wash is unfavorable for significant ore deposits and, by extension, the Salt Wash underlying the Utah State land lease is also unfavorable.

The Moss Back is covered by 1500 feet or more of younger sediments on the Vivian Uranium Mining Company property. The nearest exposure of the Moss Back is about six miles to the southeast.

Until the Moss Back member is drilled on or near the property, the exploration potential of the property will remain unknown. Therefore, it is recommended that the application for a loan to explore the Moss Back member of the Vivian Uranium Company property be denied.

Commodity Committee Members' Comments:

U. S. Geological Survey:

E. L. Newcomb, May 4, 1955.

Concurs with Field Team's recommendation that the subject application be denied.

U. S. Bureau of Mines:

J. E. Crawford, May 6, 1955.

Concurs with Field Team's denial.

Rare and Miscellaneous Metals Division:

F. M. Murphy, May 11, 1955.

We concur with the Field Team that the present application to explore the Moss Back member of the Chinle formation be denied because of the lack of specific data which would justify the deep drilling (holes about 1500 feet in depth each) required to penetrate this formation. Moreover, from the geological data given in the Field Team's report, it does not appear that the Salt Wash member of the Morrison formation occurring on this property would be worth exploring.

However, this Division recommends that the subject application should be denied without prejudice, because future work on or nearby the property might disclose target mineralization trends which would warrant the deep drilling required to penetrate the Chinle formation.

Ernest Wm. Ellis

Ernest Wm. Ellis

5/9/55 gla

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

Defense Minerals Administration
RECEIVED
MAY 9 - 1955

May 6, 1955

Memorandum

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee

From: Bureau of Mines Member
Uranium Commodity Committee

Subject: Report of Examination, DMEA Docket 3602, Vivian Uranium Mining Co., School Land Lease, San Juan County, Utah

I have reviewed the Field Team report of examination of Vivian Uranium Mining Co., DMEA Docket 3602; and I have discussed it with Joseph O. Hosted, Washington representative of the Atomic Energy Commission.

We concur with the recommendation of the Field Team that the application for exploration assistance of the Vivian Uranium Mining Co. be denied.

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.

MAY 6 - 1955

May 6, 1955

Memorandum

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee

From: Bureau of Mines Member
Uranium Commodity Committee

Subject: Report of Examination, DMEA Docket 3602, Vivian Uranium Mining Co., School Land Lease, San Juan County, Utah

I have reviewed the Field Team report of examination of Vivian Uranium Mining Co., DMEA Docket 3602; and I have discussed it with Joseph O. Hosted, Washington representative of the Atomic Energy Commission.

We concur with the recommendation of the Field Team that the application for exploration assistance of the Vivian Uranium Mining Co. be denied.

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

John E. Crawford

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

RECEIVED

May 6, 1955

Memorandum

To: Ernest William Ellis, DMEA Member
Uranium Commodity Committee

From: Bureau of Mines Member
Uranium Commodity Committee

Subject: Report of Examination, DMEA Docket 3602, Vivian Uranium Mining Co., School Land Lease, San Juan County, Utah

I have reviewed the Field Team report of examination of Vivian Uranium Mining Co., DMEA Docket 3602; and I have discussed it with Joseph O. Hosted, Washington representative of the Atomic Energy Commission.

We concur with the recommendation of the Field Team that the application for exploration assistance of the Vivian Uranium Mining Co. be denied.

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

John E. Crawford

5/5/55 gla

IN REPLY REFER TO:

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

Minerals Administration
RECEIVED

May 4, 1955

Re: DMEA-3602
Vivian Uranium
Mining Company
(School Land Lease)
San Juan Co., Utah
$37,650 - Uranium

Memorandum

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

From: E. L. Newcomb, U. S. Geological Survey

Subject: Review of Field Team examination report

The Field Team has recommended the application be denied.

There is no evidence of favorable or mineralized ground on the applicant's property.

Morrison deposits a mile or more from the State School lease cannot be reasonably used as favorable evidence substantiating the proposed drilling. The proposal to explore the Moss Back member of the Chinle is not feasible inasmuch as the Moss Back is at a depth of over 1500 feet and the nearest exposure of Moss Back is 6 miles away and known ore bodies are 5 miles southeast of the property. To project the mineralized Moss Back a distance of several miles is not geologically sound.

There are no feasible geologic targets presently known on the property. I recommend this application be denied.

E. L. Newcomb

E. L. Newcomb

IN REPLY REFER TO:

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

May 4, 1955

Re: DMEA-3302
Vivian Uranium
Mining Company
(School Land Lease)
San Juan Co., Utah
$37,250 - Uranium

Memorandum

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

From: E. L. Newcomb, U. S. Geological Survey

Subject: Review of Field Team examination report

The Field Team has recommended the application be denied.

There is no evidence of favorable or mineralized ground on the applicant's property.

Morrison deposits a mile or more from the State School lease cannot be reasonably used as favorable evidence substantiating the proposed drilling. The proposal to explore the Moss Back member of the Chinle is not feasible inasmuch as the Moss Back is at a depth of over 1500 feet and the nearest exposure of Moss Back is 6 miles away and known ore bodies are 5 miles southeast of the property. To project the mineralized Moss Back a distance of several miles is not geologically sound.

There are no feasible geologic targets presently known on the property. I recommend this application be denied.

E. L. Newcomb

ELNewcomb:hlm
G-5/4/55

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

IN REPLY REFER TO:

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

May 4, 1955

Re: DMEA-3602
Vivian Uranium
Mining Company
(School land Lease)
San Juan Co., Utah
$37,050 - Uranium

Memorandum

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

From: E. L. Newcomb, U. S. Geological Survey

Subject: Review of Field Team examination report

The Field Team has recommended the application be denied.

There is no evidence of favorable or mineralized ground on the applicant's property.

Morrison deposits a mile or more from the State School lease cannot be reasonably used as favorable evidence substantiating the proposed drilling. The proposal to explore the Moss Back member of the Chinle is not feasible inasmuch as the Moss Back is at a depth of over 1500 feet and the nearest exposure of Moss Back is 6 miles away and known ore bodies are 5 miles southeast of the property. To project the mineralized Moss Back a distance of several miles is not geologically sound.

There are no feasible geologic targets presently known on the property. I recommend this application be denied.

E. L. Newcomb

ELNewcomb:hlm
G-5/4/55

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

IN REPLY REFER TO:

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

Defense Minerals Administration
RECEIVED
MAY 5 - 1955

May 4, 1955

Re: DMEA-3.02
Vivian Uranium
Mining Company
(School Land Lease)
San Juan Co., Utah
$37,450 - Uranium

Memorandum

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

From: E. L. Newcomb, U. S. Geological Survey

Subject: Review of Field Team examination report

The Field Team has recommended the application be denied.

There is no evidence of favorable or mineralized ground on the applicant's property.

Morrison deposits a mile or more from the State School lease cannot be reasonably used as favorable evidence substantiating the proposed drilling. The proposal to explore the Moss Back member of the Chinle is not feasible inasmuch as the Moss Back is at a depth of over 1500 feet and the nearest exposure of Moss Back is 6 miles away and known ore bodies are 5 miles southeast of the property. To project the mineralized Moss Back a distance of several miles is not geologically sound.

There are no feasible geologic targets presently known on the property. I recommend this application be denied.

E. L. Newcomb

ELNewcomb:hlm
G-5/4/55

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

5/5/55 gh

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

... THE INTERIOR
...erals Administration
RECEIVED
APR 29 1955

224 New Customhouse
Denver 2, Colorado

April 22, 1955

Memorandum

To: Secretary to the Operating Committee, DMEA

From: DMEA Field Team, Region III

Subject: Report of Examination, DMEA Docket 3602 (Uranium), Vivian Uranium Mining Co., School Land Lease, San Juan County, Utah

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

We concur in the recommendation of the field examiners that the application be denied.

W. M. Traver

W. M. Traver

E. N. Harshman

E. N. Harshman

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
5-4-55
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
1600 EAST FIRST SOUTH STREET
SALT LAKE CITY 1, UTAH

TRANSMITTED
APR 22 1955

DMEA
Date Rec'd.
APR 18 1955
BUREAU OF MINES
Denver, Colorado

APR 28 1955

April 15, 1955

Memorandum

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

From: Stephen R. Wilson

Subject: Docket No. DMEA-3602 (Uranium), Vivian Uranium Mining Co., San Juan County, Utah

Attached are the original and 10 copies of an engineering report covering examination of the subject property. The report was prepared by W. E. Young. Also included are the required copies of a separate section, Summary, Conclusions and Recommendations, and a copy of the geologic report transmitted to this office by your memorandum dated March 28, 1955.

The applicant has requested a loan of $37,650 for 11,400 feet of diamond drilling in eight holes. The diamond drilling is proposed to penetrate the Salt Wash member of the Morrison formation and the Moss Back member of the Chinle formation. These members do not outcrop on the applicant's property. Inasmuch as potential ore-bearing beds are not exposed and the applicant has not demonstrated existence of specific exploratory targets, the examiners recommend that the loan request be denied. I concur in this recommendation.

The application has been discussed with members of the Atomic Energy Commission.

Stephen R. Wilson
Stephen R. Wilson

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
5-4-55
(date)

DMEA
Date Rec'd.
APR 18 1955
BUREAU OF MINES
Denver, Colorado

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

By G. W. Weir, C. L. Sudsen and W. E. Young

Vivian Uranium Mining Co., lessee of uranium property in San Juan County, Utah, owned by the State of Utah, has applied for DMEA assistance under docket No. DMEA-[illegible]. The area was examined by DMEA personnel February 18, 1955, to appraise the loan request. The applicant has proposed a diamond drilling project consisting of eight holes aggregating 11,[illegible] feet, and estimated to cost $27,[illegible].

Rocks exposed in the area of the Vivian property consist principally of the Entrada sandstone formation and the Brushy Basin member of the Morrison formation, both Jurassic in age. One outcrop of the Salt Wash member of the Morrison formation lies immediately adjacent to the applicant's property. Much of the applicant's property is covered by alluvium or colluvium consisting chiefly of blocks of quartzite.

The applicant has proposed diamond drilling to penetrate the Salt Wash member of the Morrison formation and the Moss Back member of the Chinle formation. No specific targets in either member have been outlined. The Moss Back member is probably overlain by 1,[illegible] feet of younger sediments.

Reviewed by
DMEA OPERATING COMMITTEE
5-4-55
(date)

The potential ore-bearing beds are not exposed on the applicant's property, and the nearest outcrops of the beds appear geologically unfavorable. In addition, the applicant has not demonstrated the existence of specific exploratory targets on the property. It is therefore recommended that the request for EMRA assistance be denied.

DEPARTMENT OF THE INTERIOR
Bureau of Mines Administration
RECEIVED
APR 29 1955

VIVIAN URANIUM MINING CO.
SAN JUAN COUNTY, UTAH
DMEA-3602
Uranium

Engineering Report

By W. E. Young
Mining Engineer
Bureau of Mines

Reviewed by
DMEA OPERATING COMMITTEE
5-4-55
(5000)

VIVIAN URANIUM MINING CO.
SAN JUAN COUNTY, UTAH

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History and production	3
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ILLUSTRATIONS

Fig. 1 Location map, Vivian Uranium Mining Co., San Juan County, Utah

SUMMARY

Vivian Uranium Mining Co., San Juan County, Utah, has made application for a DMEA loan to explore uranium property by diamond drilling. A field examination was made to ascertain the feasibility of the proposed project from a geologic standpoint. One outcrop of a known potentially favorable formation is exposed on the property. This occurrence of low-grade, carnotite-type mineralization had been explored and abandoned. The applicant has proposed diamond drilling at eight other locations to test the underlying formations. The required drilling footage requested by the applicant is 11,400 feet, estimated to cost $37,650.

Because of the low grade of the known mineralization and lack of any specific target other than potentially favorable formations, the examining team recommends that the application for a loan be denied.

INTRODUCTION

The property of the Vivian Uranium Mining Co. was examined February 15, 1955, by a geologist of the Geological Survey and an engineer of the Bureau of Mines. The examination was made at the request of the Regional Field Team to determine the advisability of granting a Government assistance loan. William Ferguson and Harry Bolster, representing the applicant, accompanied the examiners over the property.

The applicant proposes to explore the property by drilling eight diamond drill holes at a cost of $37,650.

LOCATION, TOPOGRAPHY AND PHYSICAL FEATURES

The property is located approximately 23 miles southeast of Moab, Utah, in Secs. 2 and 3, T. 29 S., R. 23 E., San Juan County, Utah (fig. 1). Most of the property is in the valley and covered with alluvium. The Morrison formation outcrops and makes an escarpment in one location. Utah Highway 46 passes through the property.

HISTORY AND PRODUCTION

The Vivian property is leased from the State of Utah. Some work has been done in the past on the outcropping Salt Wash member of the Morrison formation. It is reported that a few tons of carnotite-type ore were shipped. No exploratory work has been done recently on any part of the property.

GENERAL GEOLOGY

Most of the property under consideration lies in a valley and is covered with alluvium. The eastern part of the property has exposures of the Brushy Basin member of the Morrison formation. At one location, on the Highway claim, an outcropping exposure of the Salt Wash sandstone has been exploited in a small way for uranium. A few tons of low-grade, carnotite-type ore has been shipped. No recent development work has been done at this location for some time. There is no evidence of other

mineralized ground in the vicinity. The nearest occurrences of uranium mineralization known are the Rattlesnake mine of the Continental Uranium Co. about 1 mile southeast, and the Browns Hole deposits, 2 miles north. Both occurrences are in the Salt Wash sandstone. Uranium occurrences in the Chinle formation of the Big Indian district are about 5 miles south of the Vivian property. The Chinle is covered by at least 1,500 feet of younger sediments on the property of the Vivian Uranium Mining Co.

PROJECT PROPOSALS

The applicant proposes to explore the property by drilling eight diamond drill holes. Two of the holes are designed to penetrate both the Salt Wash member of the Morrison formation and the Moss Back member of the Chinle formation. Six are designed to explore only the Moss Back member. The cost of the work is estimated by the applicant to be $37,650. No mention is made of any target other than the specified formations, and none is known by the examining team. Because of this, it is considered that the proposed drilling is of wildcat nature.

CONCLUSIONS AND RECOMMENDATIONS

The Moss Back member of the Chinle formation is deeply buried on the property. The Salt Wash member of the Morrison formation is also deeply buried except for an outcrop in one location. The exposure of mineralization in the Salt Wash at this location is considered too poor

to justify the risk involved in undertaking the proposed project. For this reason the examining team recommends that the application for a loan be denied.

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Defense Minerals Exploration Administration

DMEA DEPARTMENT OF THE INTERIOR
Date Received Minerals Administration
RECEIVED
MAR APR 29 1955
BUREAU OF
Denver, Colorado

March 8, 1955

Memorandum

To: Field Team, Region III

From: E. N. Harshman

Subject: DMEA Docket 3602, Vivian Uranium Mining Company, State School Land Lease, San Juan County, Utah

Enclosed are 11 copies of a geologic report by G. W. Weir and C. L. Dodson, U. S. Geological Survey, on the subject application for exploration assistance.

The applicant proposes to drill eight holes totalling 11,400 feet, of which 2,000 feet will be core drilled, to explore the Salt Wash member of the Morrison formation and the Moss Back member of the Chinle formation. Weir and Dodson conclude that there is no evidence of mineralized or favorable ground on the property and therefore, there is no known target for exploration. They recommend that this application be denied.

I concur with this recommendation.

for D R Mackown
E. N. Harshman
Member, Field Team

Enclosure

TRANSMITTED
APR 22 1955

Reviewed by
DMEA OPERATING COMMITTEE
5-4-55
(date)

MINERAL DEPOSITS
DMEA
RECEIVED
MAR 7 1955
U. S.
GEOLOGICAL SURVEY
DENVER, COLORADO

DEPARTMENT OF THE INT
Mining Minerals Commission
RECEIVED
APR 29 1955

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

March 3, 1955

Memorandum

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

From: W. P. Williams

Subject: DMEA 3602, Vivian Uranium Mining Company, State School Land Lease, San Juan County, Utah

Transmitted herewith are 11 copies of a geologic report by G. W. Weir and C. L. Dodson, covering a field examination of the above-referenced property.

Because the ore-bearing zones, consisting of the Moss Back member of the Chinle formation and the Salt Wash member of the Morrison formation, are not exposed on the property, geologic conditions in the nearest outcrops of the ore-bearing zones are unfavorable and because the applicant has not demonstrated the existence of geologic targets on the property, Weir and Dodson recommend that the application for DMEA assistance be denied. I concur with their recommendations.

This application has been discussed with Mr. Louis Garbrecht, Staff Geologist, Exploration Division, U. S. Atomic Energy Commission, Grand Junction Operations Office. The Commission had no specific data available regarding evaluation of the property.

We are returning the brochure for this application.

WPW/mlr
Enclosures

DMEA OPERATING COMMITTEE
5-4-55
(date)

W P Williams
W. P. Williams
Geologist

UNITED STATES DEPARTMENT OF THE INTERIOR

DOUGLAS McKAY, SECRETARY

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

DMEA 3602, Vivian Uranium Mining Company, State School Land Lease, San Juan County, Utah

Uranium

Geologic Report

by

G. W. Weir and C. L. Dodson
U. S. Geological Survey

March 4, 1955

Reviewed by
DMEA OPERATING COMMITTEE
5-4-55
(date)

INTRODUCTION AND SUMMARY

The Vivian Uranium Mining Company, Inc., have applied to the Defense Minerals Exploration Administration for a loan to explore for uranium by diamond drilling on Utah State Leases Nos. 5947, 5948, and 5949 in secs. 2 and 3, T. 29 S., R. 23 E., San Juan County, Utah (figs. 1 and 2). The property was examined on February 15, 1955, by Mr. William Young, Bureau of Mines and Messrs. G. W. Weir and C. L. Dodson, Geological Survey, accompanied by Messrs. William Fergusson and Harry Bolster, representing the applicants.

The applicants propose a drilling program consisting of eight holes. Two holes are planned to penetrate both the potentially mineralized Salt Wash member of the Morrison formation and the Moss Back member of the Chinle formation. Six of the proposed eight holes are planned to explore only the Moss Back member. The applicants estimate total required footage to be 11,400 feet. The applicants estimate total cost of the program to be $37,650.00.

The potentially ore-bearing formations are not exposed on the property. Because there is no indication of favorable or mineralized ground on or near the property, the examining team recommends that the application for a loan be denied.

GEOLOGY

The general geologic setting of the Vivian Uranium Mining Company property is shown on figure 2. A generalized stratigraphic column for the area is given in table 1. Most of the property is covered by a thin mantle of fine-grained alluvium or by colluvium consisting largely of jumbled blocks of dense quartzite. Bedrock formations exposed on the property include the Entrada sandstone and the Brushy Basin member of the Morrison formation.

No evidence of favorable or mineralized ground on the property is known. The applicant's brochure calls attention to the Continental Uranium Company's Rattlesnake mine (see fig. 2) which is an uncommonly large and high-grade carnotite-type deposit in the upper part of the Salt Wash member of the Morrison formation. However, the Rattlesnake deposit is more than a mile away from the Vivian Uranium Mining Company property and probably has little significance for the specific evaluation of the Vivian Uranium Mining Company property. Other deposits in the Salt Wash mentioned in the geologic report accompanying the application are from a few to more than 20 miles distant.

The nearest ore deposit is the Highway claim (see fig.2) which is about a tenth of a mile from the property line. The Highway claim contains several shows of mineralized rock in the upper part of the Salt Wash member. Total production is estimated to be only 10-20 tons of medium- to low-grade carnotite-type ore. Despite considerable recent development work, no material of ore grade and thickness is

exposed and no reserves are known. At the Highway claim the mineralized sandstones are thin, partly reddish, massive and the associated mudstone is largely red; these lithologic characteristics indicate that the Salt Wash is unfavorable for significant ore deposits and, by extension, the Salt Wash underlying the Utah State land lease is also unfavorable. Therefore, it is recommended that the application to explore the Salt Wash member on the Vivian Uranium Mining Company property be denied.

The applicants plan to concentrate most of the proposed drilling on the Moss Back member of the Chinle formation. The Moss Back is covered by 1,500 feet or more of younger sediments on the Vivian Uranium Mining Company property. The nearest exposure of the Moss Back is about six miles to the southeast. The geologic report accompanying the application notes the recent discovery of large ore bodies in the Moss Back about 5 miles southeast of the property. In the examining geologist's opinion, the geologic characteristics of the Moss Back member can be projected only relatively short distances. The geologic situation 5 miles or more distant cannot be used to appraise the Vivian Uranium Mining Company property. Until the Moss Back member is drilled on or near the property, the exploration potential of the property will remain unknown. Therefore, it is recommended that the application for a loan to explore the Moss Back member of the Vivian Uranium Company property be denied.

CONCLUSIONS AND RECOMMENDATIONS

The Vivian Uranium Mining Company have applied for a loan to explore by drilling the Salt Wash member of the Morrison formation and the Moss Back member of the Chinle formation underlying property in secs. 2 and 3, T. 29 S., R. 23 E., San Juan County, Utah. Because there is no evidence of mineralized or favorable ground on the property, it is recommended that the application for a loan be denied.

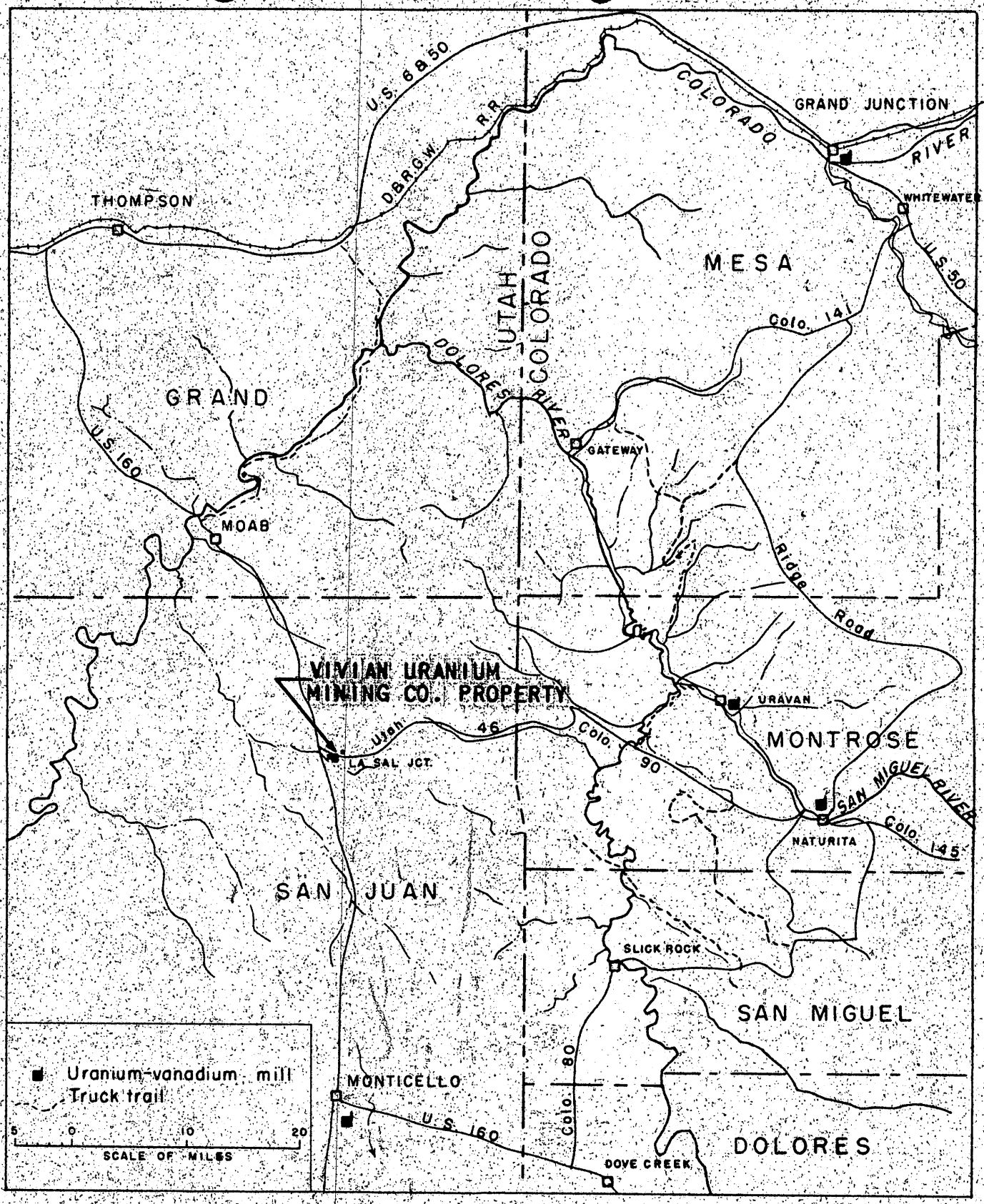

Figure 1. INDEX MAP OF PART OF COLORADO PLATEAU SHOWING LOCATION OF VIVIAN MINING CO., INC. PROPERTY, SAN JUAN COUNTY, UTAH

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
APR 29 1955

Table 1.-- Generalized stratigraphic section of rocks exposed in and near Big Indian Wash, Lisbon Valley area, Colorado-Utah

System or series	Group	Formation	Estimated thickness (feet)	Character of rocks
Quaternary		Alluvium	0-50	Sandy and silty material in part cemented in streams and valleys
		Gravel	0-50	Boulders, cobbles, and pebbles in sandy matrix, unconsolidated.
Upper Cretaceous		Mancos shale	200	Gray marine shale, fossiliferous at base; covers parts of mesas. Upper part removed by erosion.
Upper Cretaceous		Dakota sandstone	50-100	Gray and brown sandstone, brown carbonaceous shale and impure coal.
Lower Cretaceous		Burro Canyon	160-250	Brown conglomerate and sandstone and bright green and reddish shale and mudstone; commonly silicified to a dense quartzite in the Lisbon Valley faults zone.
Upper Jurassic		Morrison	300-420	Brushy Basin member; varicolored mudstone; some sandstone and conglomerate lenses commonly near base.
			300-375	Salt Wash member; light colored sandstone and red and gray mudstone.

700

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

Ellis
Kulagaard
Johnson
Lefridge
Jefferson

DEC 28 1954

Mr. L. A. Smith, Secretary-Treasurer
Vivian Uranium Mining Co., Inc.
139 North Virginia Street
Reno, Nevada

Re: Docket No. DMEA-3602 (Uranium)
State School Land Leases
San Juan County, Utah

Dear Mr. Smith:

The application for assistance in exploring your property in San Juan County, Utah, under the above-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 IV at the following address:

Mr. W. H. King
Executive Officer
DMEA Field Team, Region IV
224 New Customhouse Bldg.
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

EWEllis/gla
12-27-54
cc to: Admr.'s Reading File
Docket
DMEA Field Team, Region IV (2)
Code 700

R.C.S.

700

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

Ellis
Selfridge
Johnson
Mittendorf

Mr. W. H. King
Executive Officer
DMEA Field Team, Region IV
224 New Customhouse Building
Denver 2, Colorado

DEC 28 1954

Re: Docket No. DMEA-3602 (Uranium)
Vivian Uranium Mining Co., Inc.
State School Land Leases
San Juan County, Utah

Dear Mr. King:

The captioned application is referred to Region IV Field Team for a field examination (if deemed advisable) and recommendation. A copy of the application was forwarded to your office on December 14.

Enclosed are copies of memoranda dated December 21, 1954, from John E. Crawford and E. L. Newcomb, members of the Uranium Commodity Committee.

Also enclosed for attachment to your copy of the application are copies of the Utah State Leases Nos. 5947, 5948, and 5949. If a project is recommended, it will be necessary for the state land lessees, Messrs. Sargis and Hayes, to obtain a consent to their assignment of interest in said leases from the State of Utah.

In the agreement between Samson Uranium and Lynne Smith, first page, the number of acres in Parcel Lease No. 5947 is given as 40 acres, while the lease proper shows the plot to contain 79.84 acres. This should be investigated. Also Parcel 3, Lease No. 5949, shows 80 acres, while the lease proper states this plot to contain 160.00 acres. The latter, however, is corrected on page 9 of the agreement. However, it is not too clear that Sherwood Green properly represents Sargis and Hayes or that the latter are part of the partnership forming the Samson Uranium group.

Furthermore, if a project is recommended, since the Applicant will undoubtedly be unable to obtain Owner's Consent to Lien from the State of Utah, it will be necessary for the Applicant to furnish a Performance Bond or other suitable guarantee for the protection of the Government.

Sincerely yours,

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

APPROVED:

C. H. JOHNSON
Member, Bureau of Mines (24B)

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

Messrs. J. E. Crawford, Rm. 3641
T. H. Kiilsgaard, Rm. 5224
H. O. Hosted, Rm. 3210, GSA
Code 700

EWEllis/gla 12/27/54
cc to: Admr.'s Reading File
Operating Committee
Docket

12/23/54 gla

IN REPLY REFER TO:

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
DEC 22 1954

December 21, 1954

Re: DMEA-3602
Vivian Uranium Mining Co.
(Utah State School Leases)
San Juan Co., Utah
$37,650 - Uranium

Memorandum

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

From: E. L. Newcomb, U. S. Geological Survey

Subject: Review of application

The applicant has proposed a limited program of deep drilling to test the Salt Wash member of the Morrison formation and the Mossback member of the Chinle formation. A total of 8 holes will be drilled on 500-foot centers.

Although the applicant's school section leases are located in the Lisbon Valley-Big Indian Wash area, there is no positive evidence presently available which indicates the presence of uranium on the properties proposed for exploration assistance. The proposed drilling is planned for the main purpose of determining whether exploration is really justified on these school leases.

The applicant's consulting geologist, Mr. R. A. Teichman, Jr., formerly with the A.E.C., has listed several A.E.C. reports as sources of geologic information pertinent to our general consideration of the application. Other than the Bureau of Mines I.C. 7669, none of these reports are identified by an A.E.C. publication number or REM designation. Mr. Hastad has informed me that the Big Indian Wash report by G. P. Dix, Jr. has been prepared as REM -4022 (A.E.C.--unclassified) and REM-10 (A.E.C.--classified). We do not know which of these two reports has been included in Mr. Teichman's list. All of these reports are available in the A.E.C. Grand Junction office and undoubtedly can be consulted by members of the Field Team.

In order that a complete review of all data can be made, I recommend the application be referred to the Field Team. The major purpose of the field referral is to evaluate the proposed exploration at Grand Junction where pertinent data may be available either in unpublished material or in classified files of the U.S.G.S. and A.E.C.

E. L. Newcomb

E. L. Newcomb

IN REPLY REFER TO:

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

Defense Minerals Administration
RECEIVED
DEC 22 1954

December 21, 1954

Re: DMEA-3602
Vivian Uranium Mining Co.
(Utah State School Leases)
San Juan Co., Utah
$37,650 - Uranium

Memorandum

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From: E. L. Newcomb, U. S. Geological Survey

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ELNewcomb:edf
Copy to: J. E. Crawford, 3641 Interior
DMEA (3)
Director's reading, 4212 Branch reading, 4212

E. L. Newcomb

12/23/54 vgla

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
DEC 22 1954

December 21, 1954

Memorandum

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

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

Subject: DMEA Docket No. 3602, Vivian Uranium Mining Co., Inc., 139 North Virginia Street, Reno, Nevada

I have reviewed the application included in the subject docket and have discussed it with Joseph O. Hosted, representative of the Atomic Energy Commission.

The application's merit is based primarily on the geologic and geographic proximity of the subject property to known uranium producers in the Big Indian Wash-Lisbon Valley district. There are no indications that the applicant has conducted any preliminary exploration of the property with subsequent discovery of interesting uranium mineralization. If the attached application is approved, it will have to be on geologic premise alone.

Mr. Hosted suggests that the application be referred to the field team for study and consultation with Ernest R. Gordon, Atomic Energy Commission, Grand Junction, Colorado. If applications made solely on the geologic favorability of an area are to be considered by DMEA, then I concur with Mr. Hosted's suggestion that it be referred to the field team. Otherwise, I recommend that the application be denied for the lack of evidence of mineralization.

John E. Crawford

John E. Crawford

Attachment

RICHARD A. TEICHMAN
Consulting Geologist
520 Hall Ave.
Grand Junction, Colorado

12/15/54 gla

RECEIVED
DEC 13 1954

Mine Examination

Property Evaluation

December 8, 1954.

Defense Minerals Exploration Administration
Department of the Interior
Interior Bldg.,
Washington 25, D.C.

DMEA-3602

Gentlemen:

Enclosed please find four copies each of Utah State School Leases No.s 5947, 5948 and 5949. These leases should have been attached to the Vivian Uranium Mining Company application for a DMEA loan which was recently submitted.

It would be appreciated if these leases would be attached to the applications to complete them.

The Vivian Uranium Mining Company offices are located at 139 No. Virginia St., Reno, Nevada.

Sincerly,

Richard A. Teichman

RICHARD A. TEICHMAN JR.
Consulting Geologist

RT/rg

ENCL:

(4) Lease 5947
(4) Lease 5948
(4) Lease 5949

cc: Mr. Lynne A. Smith
426 Lowell St.,
Palo Alto, California.

Proof Read

COPY

L E 7 f

MINERAL LEASE NO. 5947

UTAH STATE LEASE

FOR

APPLICATION NO. 4162

GRANT: School

URANIUM AND VANADIUM

THIS INDENTURE OF LEASE AND AGREEMENT entered into in duplicate this 5th day of February 19 54, by and between the State Land Board, acting in behalf of the State of Utah, hereinafter called the Lessor, and

S. G. SARGIS AND JOHN K. HAYES

party of the second part, hereinafter called the Lessee, under and pursuant to Title 65, Utah Code Annotated, 1953.

WITNESSETH: That the Lessor, in consideration of the rents and royalties to be paid and the covenants to be observed by the Lessee, as hereinafter set forth, does hereby grant and lease to the Lessee the exclusive right and privilege to mine, remove, and dispose of all of the said minerals in, upon, or under the following described tract of land situated in San Juan county, State of Utah, to-wit:

Lots One (1) and Two (2) of Section Two (2), Township Twenty-Nine (29) South, Range Twenty-Three (23) East, Salt Lake Meridian,

containing a total of 79.84 acres, more or less, together with the right to use and occupy so much of the surface of said land as may be required for all purposes reasonably incident to the mining, removal, and disposal of said minerals, according to the provisions of this lease, for a period of ten years, beginning January 2nd, first succeeding the date of issuance hereof, and as long thereafter as said minerals may be produced in commercial quantities from said lands, upon condition that at the end of each twenty (20) year period succeeding the first day of the year in which this lease is issued, such re-adjustment of terms and conditions may be made as the Lessor may determine to be necessary in the interest of the State.

ARTICLE I

It is expressly understood and agreed that this lease is granted subject in all respects to and under the conditions of the laws of the State of Utah and existing Rules and Regulations or Rules and Regulations as may be hereafter approved and adopted by the State Land Board.

ARTICLE II

It is further expressly understood and agreed that this lease covers only the mining, removal, and disposal of the minerals specified in this lease, but the Lessee shall promptly notify the Lessor of the discovery of any minerals excepting those enumerated herein.

ARTICLE III

The Lessee in consideration of the granting of the rights and privileges aforesaid, hereby covenants and agrees as follows:

FIRST: To pay to the Lessor as rental for the land covered by this lease the sum of Fifty (50) Cents per acre per annum. All such annual payments of rental to be made in advance on the 2nd day of January of each year, except the rental for the year in which this lease is issued, which is payable on the execution of this lease, such rental to be credited against the royalties as they accrue for the year.

SECOND: To pay a royalty of 12½% of the gross amount received for or the gross value of the leased substances, including the State's royalty share of any bonus received by the Lessee from the sale of the leased substances. The basis for computing the amount due to the Lessor shall be as follows:

(a) If the leased substance extracted are sold under a bonafide contract of sale the amount of money or its equivalent actually received by the owner, Lessee, or other person operating the leased premises from the sale of the leased substances less a reasonable cost, if any, of transporting the leased substances from the place where extracted to the place where under the contract of sale, the leased substances are to be delivered.

(b) If the leased substances extracted are treated at a mill, smelter, processing plant, or reduction works which receives the leased substances from independent sources and which is owned or controlled by the same interests owning or controlling the mine, such disposal shall be treated as a sale within the meaning of this section for the purpose of determining gross proceeds or otherwise, and in such determination a rate or charge for sampling, assaying, milling, smelting, or refining the leased substances therefrom shall be deducted which shall not exceed an amount to be determined by applying the same rates as are applied by such mill, smelter, or reduction works or competing works, and ores of substantially like character and in like quantities received from independent sources. In the event of controversy the Lessor shall have the power to determine such rates and charges. Transportation charges may also be deducted as provided in sub-division (a) hereof.

(c) If a mill or other reduction works is operated exclusively in connection with a mine such mill or reduction works shall be treated as a part of the mine and the cost of operating such mill or reduction works shall, for the purpose of fixing the royalty imposed by this lease, be regarded as part of the cost of mining, and the cost of assaying, sampling, smelting, refining, and transportation only shall be deducted as herein provided.

THIRD: Said royalties to be paid quarterly on or before the 15th day of the month next succeeding the quarter in which the material is produced.

FOURTH: To prepare and forward to the State Land Office, on or before the 15th day of the month next succeeding the quarter in which the material is produced, a certified statement as to the production, market, and price received on all of the leased substances disposed of from said lands, and such other additional information as the State Land Board may from time to time require.

FIFTH: That at the option of the Lessor it may require the payment of royalties in kind, F.O.B., at the lease-site; the amount being 12½% of the leased substances extracted.

SIXTH: To commence actual operations upon the land included herein on or before and there after to diligently operate the property in accordance with the provisions contained in this lease. Failure to so continue the operation of the land included herein for a period of more than six (6) months without prior written approval of the State Land Board shall be cause for forfeiture, and that upon the violation of this provision or any of the other terms of this lease the Lessor may at its option after thirty (30) days notice by registered mail cancel this lease. After the expiration of the said thirty (30) days and the cancellation of the lease no notice of such cancellation need be given the Lessee.

SEVENTH: To keep at the mine office clear, accurate and detailed maps on tracing cloth, on a scale not more than 50 feet to the inch, of the workings in each section of the leased lands and on the lands adjacent, and to be so arranged with reference to a public land corner that the maps can be readily and correctly superimposed, and to furnish to the Lessor annually, or upon demand, certified copies of such maps and such written statements of operations as may be called for. All surveys shall be made by a licensed engineer and all maps certified to by him.

EIGHTH: To not at any time fence any watering place upon the lands leased where the same is the only accessible and feasible source of water incident to the lands leased. Nor shall the Lessee or assigns at any time permit or contribute to the pollution of any surface or subsurface water available, naturally or otherwise, for domestic or irrigation use.

NINTH: To not sell, assign, mortgage, pledge, hypothicate, or otherwise transfer or incumber this lease or any intetrest therein, nor sublet any portion of the leased premises, or any of the rights and privileges herein granted, without the writtten consent of the Lessor being first had and obtained.

ARTICLE IV

The Lessor hereby excepts and reserves from the operation of this lease:

FIRST: The right to permit for joint or several use such easements or rights-of-way upon, through, or in the land hereby leased as may be necessary or appropriate to the working of these or other lands belonging to or administrated by the Lessor containing mineral deposits or for other use.

SECOND: The right to use, lease, sell, or otherwise dispose of the surface of said lands or any part thereof, under existing State Laws or Laws hereafter enacted, insofar as said surface is not necessary for the use of the Lessee in the mining, removal, or disposal of the leased substances therein, and to lease other mineral deposits, excepting those enumerated herein which may be contained in said lands.

ARTICLE V

Upon cancellation of this lease for any cause herein the Lessee shall be entitled to remove from the lease holdings only personal property prior to complete fulfillment of the provisions of this lease, and that improvements attached to the land such as buildings, timbering, or other construction or construction material in place, shall remain undisturbed upon the ground and the property surrendered in good usable condition.

ARTICLE VI

It is mutually understood and agreed that it shall be the responsibility of the Lessee to slope the sides of all operations of a surface nature to an angle of not less than 45° or to erect a barrier around such operation as the State Land Board may require. Such sloping or fencing shall become a normal part of the operation of the lease so as to keep pace with such operation to the extent that such operation shall not constitute a hazard.

ARTICLE VII

It is mutually understood and agreed by the parties hereto that all of the terms, covenants, conditions, and obligations in this lease contained, shall be binding upon the heirs, executors, administrators, and assigns of the Lessee.

ARTICLE VIII

It is mutually understood and agreed that the Lessee may terminate this lease at any time upon giving three (3) months notice in writing to the Lessor and upon payment of all rents and royalties and other sums due and payable to the Lessor, and upon complying with the terms of this lease with respect to the preservation of the workings in such order and condition as to permit of the continued operation of the leased premises.

ARTICLE IX

It is mutually understood and agreed by and between the parties hereto that the Lessor, its officers and agents, shall have the right at all times to go in and upon the leased lands and premises, during the term of said lease to inspect the work done and the progress thereof on said lands and the products obtained therefrom, and to post any notices on the said lands that it may deem fit and proper; and also shall permit any authorized representatives of the Lessor to examine all books and records pertaining to operations under this lease, and to make copies of and extracts from the same, if desired.

ARTICLE X

It is mutually understood and agreed that this lease is issued only under such title as the State of Utah may now hold, the Lessor shall not be liable for any damages sustained by the Lessee, nor shall the Lessee be entitled to or claim any refund of rentals or royalties or other monies therefore paid to the Lessor.

ARTICLE XI

LESSEE agrees to observe faithfully the provisions of Title 65, Chapter 1, Section 18, Utah Code Annotated 1953.

IN WITNESS WHEREOF, the parties have hereunto subscribed their names the day and year first above written.

STATE OF UTAH, STATE LAND BOARD

By /s/ A. N. Smith
EXECUTIVE SECRETARY — LESSOR

/s/ John K. Hayes

/s/ S. G. Sargis

LESSEE

APPROVED AS TO FORM:
E. R. CALLISTER
Attorney General

By /s/ Robert H. Ruggeri

STATE OF UTAH
COUNTY OF SALT LAKE } ss.

On the 13 day of April 19 54, personally appeared before me A. N. Smith who being by me duly sworn did say that he is the Executive Secretary of the State Land Board of the State of Utah and that said instrument was signed in behalf of said Board by resolution of the Board, and said A. N. Smith acknowledged to me that said Board executed the same in behalf of the State of Utah.

Given under my hand and seal this 13 day of April 19 54

My commission Expires: October 13, 1956

/s/ Ruth Sperry
Notary Public, residing at:
Salt Lake City, Utah

STATE OF UTAH
COUNTY OF UTAH } ss.

On the 6th day of April 19 54, personally appeared before me John K. Hayes and S. G. Sargis, the signer of the above instrument, who duly acknowledged to me that they executed the same.

Given under my hand and seal this 6th day of April 19 54.

My commission Expires: August 16, 1956.

/s/ Allen B. Sorensen
Notary Public, residing at:
Provo, Utah

STATE OF UTAH
COUNTY OF } ss.

On the day of 19 , personally appeared before me

who being by me duly sworn did say that he is an officer of and that said instrument was signed in behalf of said corporation by resolution of its Board of Directors, and said acknowledged to me that said corporation executed the same.

Given under my hand and seal this day of 19

My commission Expires:

Notary Public, residing at:

Proof Read

COPY

L E 7 f

MINERAL LEASE NO. 5947

UTAH STATE LEASE
FOR

APPLICATION NO. 4162

GRANT: School

URANIUM AND VANADIUM

THIS INDENTURE OF LEASE AND AGREEMENT entered into in duplicate this 5th day of February 19 54, by and between the State Land Board, acting in behalf of the State of Utah, hereinafter called the Lessor, and

S. G. SARGIS AND JOHN K. HAYES

party of the second part, hereinafter called the Lessee, under and pursuant to Title 65, Utah Code Annotated, 1953.

WITNESSETH: That the Lessor, in consideration of the rents and royalties to be paid and the covenants to be observed by the Lessee, as hereinafter set forth, does hereby grant and lease to the Lessee the exclusive right and privilege to mine, remove, and dispose of all of the said minerals in, upon, or under the following described tract of land situated in San Juan county, State of Utah, to-wit:

Lots One (1) and Two (2) of Section Two (2), Township Twenty-Nine (29) South, Range Twenty-Three (23) East, Salt Lake Meridian,

containing a total of 79.84 acres, more or less, together with the right to use and occupy so much of the surface of said land as may be required for all purposes reasonably incident to the mining, removal, and disposal of said minerals, according to the provisions of this lease, for a period of ten years, beginning January 2nd, first succeeding the date of issuance hereof, and as long thereafter as said minerals may be produced in commercial quantities from said lands, upon condition that at the end of each twenty (20) year period succeeding the first day of the year in which this lease is issued, such re-adjustment of terms and conditions may be made as the Lessor may determine to be necessary in the interest of the State.

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SECOND: To pay a royalty of 12½% of the gross amount received for or the gross value of the leased substances, including the State's royalty share of any bonus received by the Lessee from the sale of the leased substances. The basis for computing the amount due to the Lessor shall be as follows:

(a) If the leased substance extracted are sold under a bonafide contract of sale the amount of money or its equivalent actually received by the owner, Lessee, or other person operating the leased premises from the sale of the leased substances less a reasonable cost, if any, of transporting the leased substances from the place where extracted to the place where under the contract of sale, the leased substances are to be delivered.

(b) If the leased substances extracted are treated at a mill, smelter, processing plant, or reduction works which receives the leased substances from independent sources and which is owned or controlled by the same interests owning or controlling the mine, such disposal shall be treated as a sale within the meaning of this section for the purpose of determining gross proceeds or otherwise, and in such determination a rate or charge for sampling, assaying, milling, smelting, or refining the leased substances therefrom shall be deducted which shall not exceed an amount to be determined by applying the same rates as are applied by such mill, smelter, or reduction works or competing works, and ores of substantially like character and in like quantities received from independent sources. In the event of controversy the Lessor shall have the power to determine such rates and charges. Transportation charges may also be deducted as provided in sub-division (a) hereof.

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FIFTH: That at the option of the Lessor it may require the payment of royalties in kind, F.O.B., at the lease-site; the amount being 12½% of the leased substances extracted.

SIXTH: To commence actual operations upon the land included herein on or before and there after to diligently operate the property in accordance with the provisions contained in this lease. Failure to so continue the operation of the land included herein for a period of more than six (6) months without prior written approval of the State Land Board shall be cause for forfeiture, and that upon the violation of this provision or any of the other terms of this lease the Lessor may at its option after thirty (30) days notice by registered mail cancel this lease. After the expiration of the said thirty (30) days and the cancellation of the lease no notice of such cancellation need be given the Lessee.

SEVENTH: To keep at the mine office clear, accurate and detailed maps on tracing cloth, on a scale not more than 50 feet to the inch, of the workings in each section of the leased lands and on the lands adjacent, and to be so arranged with reference to a public land corner that the maps can be readily and correctly superimposed, and to furnish to the Lessor annually, or upon demand, certified copies of such maps and such written statements of operations as may be called for. All surveys shall be made by a licensed engineer and all maps certified to by him.

EIGHTH: To not at any time fence any watering place upon the lands leased where the same is the only accessible and feasible source of water incident to the lands leased. Nor shall the Lessee or assigns at any time permit or contribute to the pollution of any surface or subsurface water available, naturally or otherwise, for domestic or irrigation use.

NINTH: To not sell, assign, mortgage, pledge, hypothicate, or otherwise transfer or incumber this lease or any intetrest therein, nor sublet any portion of the leased premises, or any of the rights and privileges herein granted, without the writtten consent of the Lessor being first had and obtained.

ARTICLE IV

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FIRST: The right to permit for joint or several use such easements or rights-of-way upon, through, or in the land hereby leased as may be necessary or appropriate to the working of these or other lands belonging to or administrated by the Lessor containing mineral deposits or for other use.

SECOND: The right to use, lease, sell, or otherwise dispose of the surface of said lands or any part thereof, under existing State Laws or Laws hereafter enacted, insofar as said surface is not necessary for the use of the Lessee in the mining, removal, or disposal of the leased substances therein, and to lease other mineral deposits, excepting those enumerated herein which may be contained in said lands.

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It is mutually understood and agreed that it shall be the responsibility of the Lessee to slope the sides of all operations of a surface nature to an angle of not less than 45° or to erect a barrier around such operation as the State Land Board may require. Such sloping or fencing shall become a normal part of the operation of the lease so as to keep pace with such operation to the extent that such operation shall not constitute a hazard.

ARTICLE VII

It is mutually understood and agreed by the parties hereto that all of the terms, covenants, conditions, and obligations in this lease contained, shall be binding upon the heirs, executors, administrators, and assigns of the Lessee.

ARTICLE VIII

It is mutually understood and agreed that the Lessee may terminate this lease at any time upon giving three (3) months notice in writing to the Lessor and upon payment of all rents and royalties and other sums due and payable to the Lessor, and upon complying with the terms of this lease with respect to the preservation of the workings in such order and condition as to permit of the continued operation of the leased premises.

ARTICLE IX

It is mutually understood and agreed by and between the parties hereto that the Lessor, its officers and agents, shall have the right at all times to go in and upon the leased lands and premises, during the term of said lease to inspect the work done and the progress thereof on said lands and the products obtained therefrom, and to post any notices on the said lands that it may deem fit and proper; and also shall permit any authorized representatives of the Lessor to examine all books and records pertaining to operations under this lease, and to make copies of and extracts from the same, if desired.

ARTICLE X

It is mutually understood and agreed that this lease is issued only under such title as the State of Utah may now hold, the Lessor shall not be liable for any damages sustained by the Lessee, nor shall the Lessee be entitled to or claim any refund of rentals or royalties or other monies there[illegible]re paid to the Lessor.

ARTICLE XI

LESSEE agrees to observe faithfully the provisions of Title 65, Chapter 1, Section 18, Utah Code Annotated 1953.

IN WITNESS WHEREOF, the parties have hereunto subscribed their names the day and year first above written.

STATE OF UTAH, STATE LAND BOARD

By /s/ A. N. Smith
EXECUTIVE SECRETARY — LESSOR

/s/ John K. Hayes

/s/ S. G. Sargis

LESSEE

APPROVED AS TO FORM:
E. R. CALLISTER
Attorney General

By /s/ Robert H. Ruggeri

STATE OF UTAH
COUNTY OF SALT LAKE } ss.

On the 13 day of April 19 54, personally appeared before me A. N. Smith who being by me duly sworn did say that he is the Executive Secretary of the State Land Board of the State of Utah and that said instrument was signed in behalf of said Board by resolution of the Board, and said A. N. Smith acknowledged to me that said Board executed the same in behalf of the State of Utah.

Given under my hand and seal this 13 day of April 19 54

My commission Expires: October 13, 1956

/s/ Ruth Sperry
Notary Public, residing at:
Salt Lake City, Utah

STATE OF UTAH
COUNTY OF UTAH } ss.

On the 6th day of April 19 54, personally appeared before me John K. Hayes and S. G. Sargis, the signer of the above instrument, who duly acknowledged to me that they executed the same.

Given under my hand and seal this 6th day of April 19 54.

My commission Expires: August 16, 1956.

/s/ Allen B. Sorensen
Notary Public, residing at:
Provo, Utah

STATE OF UTAH
COUNTY OF } ss.

On the day of 19 , personally appeared before me

who being by me duly sworn did say that he is an officer of and that said instrument was signed in behalf of said corporation by resolution of its Board of Directors, and said acknowledged to me that said corporation executed the same.

Given under my hand and seal this day of 19

My commission Expires:

Notary Public, residing at:

COPY

Proof Read

L E 7 f

MINERAL LEASE NO. 5947

UTAH STATE LEASE

FOR

APPLICATION NO. 4162

GRANT: School

URANIUM AND VANADIUM

THIS INDENTURE OF LEASE AND AGREEMENT entered into in duplicate this 5th day of February 19 54, by and between the State Land Board, acting in behalf of the State of Utah, hereinafter called the Lessor, and

S. G. SARGIS AND JOHN K. HAYES

party of the second part, hereinafter called the Lessee, under and pursuant to Title 65, Utah Code Annotated, 1953.

WITNESSETH: That the Lessor, in consideration of the rents and royalties to be paid and the covenants to be observed by the Lessee, as hereinafter set forth, does hereby grant and lease to the Lessee the exclusive right and privilege to mine, remove, and dispose of all of the said minerals in, upon, or under the following described tract of land situated in San Juan county, State of Utah, to-wit:

Lots One (1) and Two (2) of Section Two (2), Township Twenty-Nine (29) South, Range Twenty-Three (23) East, Salt Lake Meridian,

containing a total of 79.84 acres, more or less, together with the right to use and occupy so much of the surface of said land as may be required for all purposes reasonably incident to the mining, removal, and disposal of said minerals, according to the provisions of this lease, for a period of ten years, beginning January 2nd, first succeeding the date of issuance hereof, and as long thereafter as said minerals may be produced in commercial quantities from said lands, upon condition that at the end of each twenty (20) year period succeeding the first day of the year in which this lease is issued, such re-adjustment of terms and conditions may be made as the Lessor may determine to be necessary in the interest of the State.

ARTICLE I

It is expressly understood and agreed that this lease is granted subject in all respects to and under the conditions of the laws of the State of Utah and existing Rules and Regulations or Rules and Regulations as may be hereafter approved and adopted by the State Land Board.

ARTICLE II

It is further expressly understood and agreed that this lease covers only the mining, removal, and disposal of the minerals specified in this lease, but the Lessee shall promptly notify the Lessor of the discovery of any minerals excepting those enumerated herein.

ARTICLE III

The Lessee in consideration of the granting of the rights and privileges aforesaid, hereby covenants and agrees as follows:

FIRST: To pay to the Lessor as rental for the land covered by this lease the sum of Fifty (50) Cents per acre per annum. All such annual payments of rental to be made in advance on the 2nd day of January of each year, except the rental for the year in which this lease is issued, which is payable on the execution of this lease, such rental to be credited against the royalties as they accrue for the year.

SECOND: To pay a royalty of 12½% of the gross amount received for or the gross value of the leased substances, including the State's royalty share of any bonus received by the Lessee from the sale of the leased substances. The basis for computing the amount due to the Lessor shall be as follows:

(a) If the leased substance extracted are sold under a bonafide contract of sale the amount of money or its equivalent actually received by the owner, Lessee, or other person operating the leased premises from the sale of the leased substances less a reasonable cost, if any, of transporting the leased substances from the place where extracted to the place where under the contract of sale, the leased substances are to be delivered.

(b) If the leased substances extracted are treated at a mill, smelter, processing plant, or reduction works which receives the leased substances from independent sources and which is owned or controlled by the same interests owning or controlling the mine, such disposal shall be treated as a sale within the meaning of this section for the purpose of determining gross proceeds or otherwise, and in such determination a rate or charge for sampling, assaying, milling, smelting, or refining the leased substances therefrom shall be deducted which shall not exceed an amount to be determined by applying the same rates as are applied by such mill, smelter, or reduction works or competing works, and ores of substantially like character and in like quantities received from independent sources. In the event of controversy the Lessor shall have the power to determine such rates and charges. Transportation charges may also be deducted as provided in sub-division (a) hereof.

(c) If a mill or other reduction works is operated exclusively in connection with a mine such mill or reduction works shall be treated as a part of the mine and the cost of operating such mill or reduction works shall, for the purpose of fixing the royalty imposed by this lease, be regarded as part of the cost of mining, and the cost of assaying, sampling, smelting, refining, and transportation only shall be deducted as herein provided.

THIRD: Said royalties to be paid quarterly on or before the 15th day of the month next succeeding the quarter in which the material is produced.

FOURTH: To prepare and forward to the State Land Office, on or before the 15th day of the month next succeeding the quarter in which the material is produced, a certified statement as to the production, market, and price received on all of the leased substances disposed of from said lands, and such other additional information as the State Land Board may from time to time require.

FIFTH: That at the option of the Lessor it may require the payment of royalties in kind, F.O.B., at the lease-site; the amount being 12½% of the leased substances extracted.

SIXTH: To commence actual operations upon the land included herein on or before and there after to diligently operate the property in accordance with the provisions contained in this lease. Failure to so continue the operation of the land included herein for a period of more than six (6) months without prior written approval of the State Land Board shall be cause for forfeiture, and that upon the violation of this provision or any of the other terms of this lease the Lessor may at its option after thirty (30) days notice by registered mail cancel this lease. After the expiration of the said thirty (30) days and the cancellation of the lease no notice of such cancellation need be given the Lessee.

SEVENTH: To keep at the mine office clear, accurate and detailed maps on tracing cloth, on a scale not more than 50 feet to the inch, of the workings in each section of the leased lands and on the lands adjacent, and to be so arranged with reference to a public land corner that the maps can be readily and correctly superimposed, and to furnish to the Lessor annually, or upon demand, certified copies of such maps and such written statements of operations as may be called for. All surveys shall be made by a licensed engineer and all maps certified to by him.

EIGHTH: To not at any time fence any watering place upon the lands leased where the same is the only accessible and feasible source of water incident to the lands leased. Nor shall the Lessee or assigns at any time permit or contribute to the pollution of any surface or subsurface water available, naturally or otherwise, for domestic or irrigation use.

NINTH: To not sell, assign, mortgage, pledge, hypothicate, or otherwise transfer or incumber this lease or any intetrest therein, nor sublet any portion of the leased premises, or any of the rights and privileges herein granted, without the writtten consent of the Lessor being first had and obtained.

ARTICLE IV

The Lessor hereby excepts and reserves from the operation of this lease:

FIRST: The right to permit for joint or several use such easements or rights-of-way upon, through, or in the land hereby leased as may be necessary or appropriate to the working of these or other lands belonging to or administrated by the Lessor containing mineral deposits or for other use.

SECOND: The right to use, lease, sell, or otherwise dispose of the surface of said lands or any part thereof, under existing State Laws or Laws hereafter enacted, insofar as said surface is not necessary for the use of the Lessee in the mining, removal, or disposal of the leased substances therein, and to lease other mineral deposits, excepting those enumerated herein which may be contained in said lands.

ARTICLE V

Upon cancellation of this lease for any cause herein the Lessee shall be entitled to remove from the lease holdings only personal property prior to complete fulfillment of the provisions of this lease, and that improvements attached to the land such as buildings, timbering, or other construction or construction material in place, shall remain undisturbed upon the ground and the property surrendered in good usable condition.

ARTICLE VI

It is mutually understood and agreed that it shall be the responsibility of the Lessee to slope the sides of all operations of a surface nature to an angle of not less than 45° or to erect a barrier around such operation as the State Land Board may require. Such sloping or fencing shall become a normal part of the operation of the lease so as to keep pace with such operation to the extent that such operation shall not constitute a hazard.

ARTICLE VII

It is mutually understood and agreed by the parties hereto that all of the terms, covenants, conditions, and obligations in this lease contained, shall be binding upon the heirs, executors, administrators, and assigns of the Lessee.

ARTICLE VIII

It is mutually understood and agreed that the Lessee may terminate this lease at any time upon giving three (3) months notice in writing to the Lessor and upon payment of all rents and royalties and other sums due and payable to the Lessor, and upon complying with the terms of this lease with respect to the preservation of the workings in such order and condition as to permit of the continued operation of the leased premises.

ARTICLE IX

It is mutually understood and agreed by and between the parties hereto that the Lessor, its officers and agents, shall have the right at all times to go in and upon the leased lands and premises, during the term of said lease to inspect the work done and the progress thereof on said lands and the products obtained therefrom, and to post any notices on the said lands that it may deem fit and proper; and also shall permit any authorized representatives of the Lessor to examine all books and records pertaining to operations under this lease, and to make copies of and extracts from the same, if desired.

ARTICLE X

It is mutually understood and agreed that this lease is issued only under such title as the State of Utah may now hold, the Lessor shall not be liable for any damages sustained by the Lessee, nor shall the Lessee be entitled to or claim any refund of rentals or royalties or other monies therefore paid to the Lessor.

ARTICLE XI

LESSEE agrees to observe faithfully the provisions of Title 65, Chapter 1, Section 18, Utah Code Annotated 1953.

IN WITNESS WHEREOF, the parties have hereunto subscribed their names the day and year first above written.

STATE OF UTAH, STATE LAND BOARD

By /s/ A. N. Smith
EXECUTIVE SECRETARY — LESSOR

/s/ John K. Hayes

/s/ S. G. Sargis

LESSEE

APPROVED AS TO FORM:
E. R. Callister
Attorney General

By /s/ Robert H. Ruggeri

STATE OF UTAH
COUNTY OF SALT LAKE } ss.

On the 13 day of April 19 54, personally appeared before me A. N. Smith who being by me duly sworn did say that he is the Executive Secretary of the State Land Board of the State of Utah and that said instrument was signed in behalf of said Board by resolution of the Board, and said A. N. Smith acknowledged to me that said Board executed the same in behalf of the State of Utah.

Given under my hand and seal this 13 day of April 19 54.

My commission Expires: October 13, 1956

/s/ Ruth Sperry
Notary Public, residing at:
Salt Lake City, Utah

STATE OF UTAH
COUNTY OF UTAH } ss.

On the 6th day of April 19 54, personally appeared before me John K. Hayes and S. G. Sargis, the signer of the above instrument, who duly acknowledged to me that they executed the same.

Given under my hand and seal this 6th day of April 19 54.

My commission Expires: August 13, 1956

/s/ Allen B. Sorensen
Notary Public, residing at:
Provo, Utah

STATE OF UTAH
COUNTY OF } ss.

On the day of 19, personally appeared before me

who being by me duly sworn did say that he is an officer of and that said instrument was signed in behalf of said corporation by resolution of its Board of Directors, and said acknowledged to me that said corporation executed the same.

Given under my hand and seal this day of 19

My commission Expires:

Notary Public, residing at:

Proof Read

C O P Y

L E 7 f

MINERAL LEASE NO. 5948

UTAH STATE LEASE
FOR

APPLICATION NO. 4162

GRANT:

URANIUM AND VANADIUM

THIS INDENTURE OF LEASE AND AGREEMENT entered into in duplicate this 5th day of February 19 54, by and between the State Land Board, acting in behalf of the State of Utah, hereinafter called the Lessor, and

S. G. SARGIS AND JOHN K. HAYES

party of the second part, hereinafter called the Lessee, under and pursuant to Title 65, Utah Code Annotated, 1953.

WITNESSETH: That the Lessor, in consideration of the rents and royalties to be paid and the covenants to be observed by the Lessee, as hereinafter set forth, does hereby grant and lease to the Lessee the exclusive right and privilege to mine, remove, and dispose of all of the said minerals in, upon, or under the following described tract of land situated in San Juan county, State of Utah, to-wit:

Northeast Quarter (NE¼) of the Southeast Quarter (SE¼) of Section Three (3), Township Twenty-Nine (29) South, Range Twenty-Three (23) East, Salt Lake Meridian,

containing a total of 40.00 acres, more or less, together with the right to use and occupy so much of the surface of said land as may be required for all purposes reasonably incident to the mining, removal, and disposal of said minerals, according to the provisions of this lease, for a period of ten years, beginning January 2nd, first succeeding the date of issuance hereof, and as long thereafter as said minerals may be produced in commercial quantities from said lands, upon condition that at the end of each twenty (20) year period succeeding the first day of the year in which this lease is issued, such re-adjustment of terms and conditions may be made as the Lessor may determine to be necessary in the interest of the State.

ARTICLE I

It is expressly understood and agreed that this lease is granted subject in all respects to and under the conditions of the laws of the State of Utah and existing Rules and Regulations or Rules and Regulations as may be hereafter approved and adopted by the State Land Board.

ARTICLE II

It is further expressly understood and agreed that this lease covers only the mining, removal, and disposal of the minerals specified in this lease, but the Lessee shall promptly notify the Lessor of the discovery of any minerals excepting those enumerated herein.

ARTICLE III

The Lessee in consideration of the granting of the rights and privileges aforesaid, hereby covenants and agrees as follows:

FIRST: To pay to the Lessor as rental for the land covered by this lease the sum of Fifty (50) Cents per acre per annum. All such annual payments of rental to be made in advance on the 2nd day of January of each year, except the rental for the year in which this lease is issued, which is payable on the execution of this lease, such rental to be credited against the royalties as they accrue for the year.

SECOND: To pay a royalty of 12½% of the gross amount received for or the gross value of the leased substances, including the State's royalty share of any bonus received by the Lessee from the sale of the leased substances. The basis for computing the amount due to the Lessor shall be as follows:

(a) If the leased substance extracted are sold under a bonafide contract of sale the amount of money or its equivalent actually received by the owner, Lessee, or other person operating the leased premises from the sale of the leased substances less a reasonable cost, if any, of transporting the leased substances from the place where extracted to the place where under the contract of sale, the leased substances are to be delivered.

(b) If the leased substances extracted are treated at a mill, smelter, processing plant, or reduction works which receives the leased substances from independent sources and which is owned or controlled by the same interests owning or controlling the mine, such disposal shall be treated as a sale within the meaning of this section for the purpose of determining gross proceeds or otherwise, and in such determination a rate or charge for sampling, assaying, milling, smelting, or refining the leased substances therefrom shall be deducted which shall not exceed an amount to be determined by applying the same rates as are applied by such mill, smelter, or reduction works or competing works, and ores of substantially like character and in like quantities received from independent sources. In the event of controversy the Lessor shall have the power to determine such rates and charges. Transportation charges may also be deducted as provided in sub-division (a) hereof.

(c) If a mill or other reduction works is operated exclusively in connection with a mine such mill or reduction works shall be treated as a part of the mine and the cost of operating such mill or reduction works shall, for the purpose of fixing the royalty imposed by this lease, be regarded as part of the cost of mining, and the cost of assaying, sampling, smelting, refining, and transportation only shall be deducted as herein provided.

THIRD: Said royalties to be paid quarterly on or before the 15th day of the month next succeeding the quarter in which the material is produced.

FOURTH: To prepare and forward to the State Land Office, on or before the 15th day of the month next succeeding the quarter in which the material is produced, a certified statement as to the production, market, and price received on all of the leased substances disposed of from said lands, and such other additional information as the State Land Board may from time to time require.

FIFTH: That at the option of the Lessor it may require the payment of royalties in kind, F.O.B., at the lease-site; the amount being 12½% of the leased substances extracted.

SIXTH: To commence actual operations upon the land included herein on or before and there after to diligently operate the property in accordance with the provisions contained in this lease. Failure to so continue the operation of the land included herein for a period of more than six (6) months without prior written approval of the State Land Board shall be cause for forfeiture, and that upon the violation of this provision or any of the other terms of this lease the Lessor may at its option after thirty (30) days notice by registered mail cancel this lease. After the expiration of the said thirty (30) days and the cancellation of the lease no notice of such cancellation need be given the Lessee.

SEVENTH: To keep at the mine office clear, accurate and detailed maps on tracing cloth, on a scale not more than 50 feet to the inch, of the workings in each section of the leased lands and on the lands adjacent, and to be so arranged with reference to a public land corner that the maps can be readily and correctly superimposed, and to furnish to the Lessor annually, or upon demand, certified copies of such maps and such written statements of operations as may be called for. All surveys shall be made by a licensed engineer and all maps certified to by him.

EIGHTH: To not at any time fence any watering place upon the lands leased where the same is the only accessible and feasible source of water incident to the lands leased. Nor shall the Lessee or assigns at any time permit or contribute to the pollution of any surface or subsurface water available, naturally or otherwise, for domestic or irrigation use.

NINTH: To not sell, assign, mortgage, pledge, hypothicate, or otherwise transfer or incumber this lease or any intetrest therein, nor sublet any portion of the leased premises, or any of the rights and privileges herein granted, without the writtten consent of the Lessor being first had and obtained.

ARTICLE IV

The Lessor hereby excepts and reserves from the operation of this lease:

FIRST: The right to permit for joint or several use such easements or rights-of-way upon, through, or in the land hereby leased as may be necessary or appropriate to the working of these or other lands belonging to or administrated by the Lessor containing mineral deposits or for other use.

SECOND: The right to use, lease, sell, or otherwise dispose of the surface of said lands or any part thereof, under existing State Laws or Laws hereafter enacted, insofar as said surface is not necessary for the use of the Lessee in the mining, removal, or disposal of the leased substances therein, and to lease other mineral deposits, excepting those enumerated herein which may be contained in said lands.

ARTICLE V

Upon cancellation of this lease for any cause herein the Lessee shall be entitled to remove from the lease holdings only personal property prior to complete fulfillment of the provisions of this lease, and that improvements attached to the land such as buildings, timbering, or other construction or construction material in place, shall remain undisturbed upon the ground and the property surrendered in good usable condition.

ARTICLE VI

It is mutually understood and agreed that it shall be the responsibility of the Lessee to slope the sides of all operations of a surface nature to an angle of not less than 45° or to erect a barrier around such operation as the State Land Board may require. Such sloping or fencing shall become a normal part of the operation of the lease so as to keep pace with such operation to the extent that such operation shall not constitute a hazard.

ARTICLE VII

It is mutually understood and agreed by the parties hereto that all of the terms, covenants, conditions, and obligations in this lease contained, shall be binding upon the heirs, executors, administrators, and assigns of the Lessee.

ARTICLE VIII

It is mutually understood and agreed that the Lessee may terminate this lease at any time upon giving three (3) months notice in writing to the Lessor and upon payment of all rents and royalties and other sums due and payable to the Lessor, and upon complying with the terms of this lease with respect to the preservation of the workings in such order and condition as to permit of the continued operation of the leased premises.

ARTICLE IX

It is mutually understood and agreed by and between the parties hereto that the Lessor, its officers and agents, shall have the right at all times to go in and upon the leased lands and premises, during the term of said lease to inspect the work done and the progress thereof on said lands and the products obtained therefrom, and to post any notices on the said lands that it may deem fit and proper; and also shall permit any authorized representatives of the Lessor to examine all books and records pertaining to operations under this lease, and to make copies of and extracts from the same, if desired.

ARTICLE X

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ARTICLE XI

LESSEE agrees to observe faithfully the provisions of Title 65, Chapter 1, Section 18, Utah Code Annotated 1953.

IN WITNESS WHEREOF, the parties have hereunto subscribed their names the day and year first above written.

STATE OF UTAH, STATE LAND BOARD

By /s/ A. N. Smith
EXECUTIVE SECRETARY — LESSOR

/s/ John K. Hayes

/s/ S. G. Sargis

LESSEE

APPROVED AS TO FORM:
E. R. CALLISTER
Attorney General

By/s/ Robert H. Ruggeri

STATE OF UTAH
COUNTY OF SALT LAKE } ss.

On the 13 day of April 1954, personally appeared before me A. N. Smith who being by me duly sworn did say that he is the Executive Secretary of the State Land Board of the State of Utah and that said instrument was signed in behalf of said Board by resolution of the Board, and said A. N. Smith acknowledged to me that said Board executed the same in behalf of the State of Utah.

Given under my hand and seal this 13 day of April 1954

My commission Expires: October 13, 1956

/s/ Ruth Sperry
Notary Public, residing at: Salt Lake City, Utah

STATE OF UTAH
COUNTY OF UTAH } ss.

On the 6th day of April 1954, personally appeared before me John K. Hayes and S. G. Sargis the signer of the above instrument, who duly acknowledged to me that they executed the same.

Given under my hand and seal this 6th day of April 1954.

My commission Expires: Aug. 16, 1956.

/s/ Allen B. Sorensen
Notary Public, residing at: Provo, Utah

STATE OF UTAH
COUNTY OF } ss.

On the day of 19 , personally appeared before me

who being by me duly sworn did say that he is an officer of and that said instrument was signed in behalf of said corporation by resolution of its Board of Directors, and said acknowledged to me that said corporation executed the same.

Given under my hand and seal this day of 19

My commission Expires:

Notary Public, residing at:

Proof Read

COPY

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MINERAL LEASE NO. 5948

UTAH STATE LEASE

FOR

APPLICATION NO. 4162

GRANT:

URANIUM AND VANADIUM

THIS INDENTURE OF LEASE AND AGREEMENT entered into in duplicate this 5th day of February 19 54, by and between the State Land Board, acting in behalf of the State of Utah, hereinafter called the Lessor, and

S. G. SARGIS AND JOHN K. HAYES

party of the second part, hereinafter called the Lessee, under and pursuant to Title 65, Utah Code Annotated, 1953.

WITNESSETH: That the Lessor, in consideration of the rents and royalties to be paid and the covenants to be observed by the Lessee, as hereinafter set forth, does hereby grant and lease to the Lessee the exclusive right and privilege to mine, remove, and dispose of all of the said minerals in, upon, or under the following described tract of land situated in San Juan county, State of Utah, to-wit:

Northeast Quarter (NE¼) of the Southeast Quarter (SE¼) of Section Three (3), Township Twenty-Nine (29) South, Range Twenty-Three (23) East, Salt Lake Meridian,

containing a total of 40.00 acres, more or less, together with the right to use and occupy so much of the surface of said land as may be required for all purposes reasonably incident to the mining, removal, and disposal of said minerals, according to the provisions of this lease, for a period of ten years, beginning January 2nd, first succeeding the date of issuance hereof, and as long thereafter as said minerals may be produced in commercial quantities from said lands, upon condition that at the end of each twenty (20) year period succeeding the first day of the year in which this lease is issued, such re-adjustment of terms and conditions may be made as the Lessor may determine to be necessary in the interest of the State.

ARTICLE I

It is expressly understood and agreed that this lease is granted subject in all respects to and under the conditions of the laws of the State of Utah and existing Rules and Regulations or Rules and Regulations as may be hereafter approved and adopted by the State Land Board.

ARTICLE II

It is further expressly understood and agreed that this lease covers only the mining, removal, and disposal of the minerals specified in this lease, but the Lessee shall promptly notify the Lessor of the discovery of any minerals excepting those enumerated herein.

ARTICLE III

The Lessee in consideration of the granting of the rights and privileges aforesaid, hereby covenants and agrees as follows:

FIRST: To pay to the Lessor as rental for the land covered by this lease the sum of Fifty (50) Cents per acre per annum. All such annual payments of rental to be made in advance on the 2nd day of January of each year, except the rental for the year in which this lease is issued, which is payable on the execution of this lease, such rental to be credited against the royalties as they accrue for the year.

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(a) If the leased substance extracted are sold under a bonafide contract of sale the amount of money or its equivalent actually received by the owner, Lessee, or other person operating the leased premises from the sale of the leased substances less a reasonable cost, if any, of transporting the leased substances from the place where extracted to the place where under the contract of sale, the leased substances are to be delivered.

(b) If the leased substances extracted are treated at a mill, smelter, processing plant, or reduction works which receives the leased substances from independent sources and which is owned or controlled by the same interests owning or controlling the mine, such disposal shall be treated as a sale within the meaning of this section for the purpose of determining gross proceeds or otherwise, and in such determination a rate or charge for sampling, assaying, milling, smelting, or refining the leased substances therefrom shall be deducted which shall not exceed an amount to be determined by applying the same rates as are applied by such mill, smelter, or reduction works or competing works, and ores of substantially like character and in like quantities received from independent sources. In the event of controversy the Lessor shall have the power to determine such rates and charges. Transportation charges may also be deducted as provided in sub-division (a) hereof.

(c) If a mill or other reduction works is operated exclusively in connection with a mine such mill or reduction works shall be treated as a part of the mine and the cost of operating such mill or reduction works shall, for the purpose of fixing the royalty imposed by this lease, be regarded as part of the cost of mining, and the cost of assaying, sampling, smelting, refining, and transportation only shall be deducted as herein provided.

THIRD: Said royalties to be paid quarterly on or before the 15th day of the month next succeeding the quarter in which the material is produced.

FOURTH: To prepare and forward to the State Land Office, on or before the 15th day of the month next succeeding the quarter in which the material is produced, a certified statement as to the production, market, and price received on all of the leased substances disposed of from said lands, and such other additional information as the State Land Board may from time to time require.

FIFTH: That at the option of the Lessor it may require the payment of royalties in kind, F.O.B., at the lease-site; the amount being 12½% of the leased substances extracted.

SIXTH: To commence actual operations upon the land included herein on or before and there after to diligently operate the property in accordance with the provisions contained in this lease. Failure to so continue the operation of the land included herein for a period of more than six (6) months without prior written approval of the State Land Board shall be cause for forfeiture, and that upon the violation of this provision or any of the other terms of this lease the Lessor may at its option after thirty (30) days notice by registered mail cancel this lease. After the expiration of the said thirty (30) days and the cancellation of the lease no notice of such cancellation need be given the Lessee.

SEVENTH: To keep at the mine office clear, accurate and detailed maps on tracing cloth, on a scale not more than 50 feet to the inch, of the workings in each section of the leased lands and on the lands adjacent, and to be so arranged with reference to a public land corner that the maps can be readily and correctly superimposed, and to furnish to the Lessor annually, or upon demand, certified copies of such maps and such written statements of operations as may be called for. All surveys shall be made by a licensed engineer and all maps certified to by him.

EIGHTH: To not at any time fence any watering place upon the lands leased where the same is the only accessible and feasible source of water incident to the lands leased. Nor shall the Lessee or assigns at any time permit or contribute to the pollution of any surface or subsurface water available, naturally or otherwise, for domestic or irrigation use.

NINTH: To not sell, assign, mortgage, pledge, hypothicate, or otherwise transfer or incumber this lease or any intetrest therein, nor sublet any portion of the leased premises, or any of the rights and privileges herein granted, without the writtten consent of the Lessor being first had and obtained.

ARTICLE IV

The Lessor hereby excepts and reserves from the operation of this lease:

FIRST: The right to permit for joint or several use such easements or rights-of-way upon, through, or in the land hereby leased as may be necessary or appropriate to the working of these or other lands belonging to or administrated by the Lessor containing mineral deposits or for other use.

SECOND: The right to use, lease, sell, or otherwise dispose of the surface of said lands or any part thereof, under existing State Laws or Laws hereafter enacted, insofar as said surface is not necessary for the use of the Lessee in the mining, removal, or disposal of the leased substances therein, and to lease other mineral deposits, excepting those enumerated herein which may be contained in said lands.

ARTICLE V

Upon cancellation of this lease for any cause herein the Lessee shall be entitled to remove from the lease holdings only personal property prior to complete fulfillment of the provisions of this lease, and that improvements attached to the land such as buildings, timbering, or other construction or construction material in place, shall remain undisturbed upon the ground and the property surrendered in good usable condition.

ARTICLE VI

It is mutually understood and agreed that it shall be the responsibility of the Lessee to slope the sides of all operations of a surface nature to an angle of not less than 45° or to erect a barrier around such operation as the State Land Board may require. Such sloping or fencing shall become a normal part of the operation of the lease so as to keep pace with such operation to the extent that such operation shall not constitute a hazard.

ARTICLE VII

It is mutually understood and agreed by the parties hereto that all of the terms, covenants, conditions, and obligations in this lease contained, shall be binding upon the heirs, executors, administrators, and assigns of the Lessee.

ARTICLE VIII

It is mutually understood and agreed that the Lessee may terminate this lease at any time upon giving three (3) months notice in writing to the Lessor and upon payment of all rents and royalties and other sums due and payable to the Lessor, and upon complying with the terms of this lease with respect to the preservation of the workings in such order and condition as to permit of the continued operation of the leased premises.

ARTICLE IX

It is mutually understood and agreed by and between the parties hereto that the Lessor, its officers and agents, shall have the right at all times to go in and upon the leased lands and premises, during the term of said lease to inspect the work done and the progress thereof on said lands and the products obtained therefrom, and to post any notices on the said lands that it may deem fit and proper; and also shall permit any authorized representatives of the Lessor to examine all books and records pertaining to operations under this lease, and to make copies of and extracts from the same, if desired.

ARTICLE X

It is mutually understood and agreed that this lease is issued only under such title as the State of Utah may now hold, the Lessor shall not be liable for any damages sustained by the Lessee, nor shall the Lessee be entitled to or claim any refund of rentals or royalties or other monies theretofore paid to the Lessor.

ARTICLE XI

LESSEE agrees to observe faithfully the provisions of Title 65, Chapter 1, Section 18, Utah Code Annotated 1953.

IN WITNESS WHEREOF, the parties have hereunto subscribed their names the day and year first above written.

STATE OF UTAH, STATE LAND BOARD

By /s/ A. N. Smith
EXECUTIVE SECRETARY — LESSOR

/s/ John K. Hayes

/s/ S. G. Sargis

LESSEE

APPROVED AS TO FORM:
E. R. CALLISTER
Attorney General

By /s/ Robert H. Ruggeri

STATE OF UTAH
COUNTY OF SALT LAKE } ss.

On the 13 day of April 1954, personally appeared before me A. N. Smith who being by me duly sworn did say that he is the Executive Secretary of the State Land Board of the State of Utah and that said instrument was signed in behalf of said Board by resolution of the Board, and said A. N. Smith acknowledged to me that said Board executed the same in behalf of the State of Utah.

Given under my hand and seal this 13 day of April 19 54

My commission Expires: October 13, 1956

/s/ Ruth Sperry
Notary Public, residing at: Salt Lake City, Utah

STATE OF UTAH
COUNTY OF UTAH } ss.

On the 6th day of April 19 54, personally appeared before me John K. Hayes and S. G. Sargis the signer of the above instrument, who duly acknowledged to me that they executed the same.

Given under my hand and seal this 6th day of April 19 54.

My commission Expires: Aug. 16, 1956.

/s/ Allen B. Sorensen
Notary Public, residing at: Provo, Utah

STATE OF UTAH
COUNTY OF } ss.

On the day of 19 , personally appeared before me

who being by me duly sworn did say that he is an officer of and that said instrument was signed in behalf of said corporation by resolution of its Board of Directors, and said acknowledged to me that said corporation executed the same.

Given under my hand and seal this day of 19

My commission Expires:

Notary Public, residing at:

Proof Read

COPY

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MINERAL LEASE NO. 5948

UTAH STATE LEASE

FOR

APPLICATION NO. 4162

GRANT:

URANIUM AND VANADIUM

THIS INDENTURE OF LEASE AND AGREEMENT entered into in duplicate this 5th day of February 19 54, by and between the State Land Board, acting in behalf of the State of Utah, hereinafter called the Lessor, and

S. G. SARGIS AND JOHN K. HAYES

party of the second part, hereinafter called the Lessee, under and pursuant to Title 65, Utah Code Annotated, 1953.

WITNESSETH: That the Lessor, in consideration of the rents and royalties to be paid and the covenants to be observed by the Lessee, as hereinafter set forth, does hereby grant and lease to the Lessee the exclusive right and privil San Juan move, and dispose of all of the said minerals in, upon, or under the following described tract of land situated in county, State of Utah, to-wit:

Northeast Quarter (NE¼) of the Southeast Quarter (SE¼) of Section Three (3), Township Twenty-Nine (29) South, Range Twenty-Three (23) East, Salt Lake Meridian,

containing a total of 40.00 acres, more or less, together with the right to use and occupy so much of the surface of said land as may be required for all purposes reasonably incident to the mining, removal, and disposal of said minerals, according to the provisions of this lease, for a period of ten years, beginning January 2nd, first succeeding the date of issuance hereof, and as long thereafter as said minerals may be produced in commercial quantities from said lands, upon condition that at the end of each twenty (20) year period succeeding the first day of the year in which this lease is issued, such re-adjustment of terms and conditions may be made as the Lessor may determine to be necessary in the interest of the State.

ARTICLE I

It is expressly understood and agreed that this lease is granted subject in all respects to and under the conditions of the laws of the State of Utah and existing Rules and Regulations or Rules and Regulations as may be hereafter approved and adopted by the State Land Board.

ARTICLE II

It is further expressly understood and agreed that this lease covers only the mining, removal, and disposal of the minerals specified in this lease, but the Lessee shall promptly notify the Lessor of the discovery of any minerals excepting those enumerated herein.

ARTICLE III

The Lessee in consideration of the granting of the rights and privileges aforesaid, hereby covenants and agrees as follows:

FIRST: To pay to the Lessor as rental for the land covered by this lease the sum of Fifty (50) Cents per acre per annum. All such annual payments of rental to be made in advance on the 2nd day of January of each year, except the rental for the year in which this lease is issued, which is payable on the execution of this lease, such rental to be credited against the royalties as they accrue for the year.

SECOND: To pay a royalty of 12½% of the gross amount received for or the gross value of the leased substances, including the State's royalty share of any bonus received by the Lessee from the sale of the leased substances. The basis for computing the amount due to the Lessor shall be as follows:

(a) If the leased substance extracted are sold under a bonafide contract of sale the amount of money or its equivalent actually received by the owner, Lessee, or other person operating the leased premises from the sale of the leased substances less a reasonable cost, if any, of transporting the leased substances from the place where extracted to the place where under the contract of sale, the leased substances are to be delivered.

(b) If the leased substances extracted are treated at a mill, smelter, processing plant, or reduction works which receives the leased substances from independent sources and which is owned or controlled by the same interests owning or controlling the mine, such disposal shall be treated as a sale within the meaning of this section for the purpose of determining gross proceeds or otherwise, and in such determination a rate or charge for sampling, assaying, milling, smelting, or refining the leased substances therefrom shall be deducted which shall not exceed an amount to be determined by applying the same rates as are applied by such mill, smelter, or reduction works or competing works, and ores of substantially like character and in like quantities received from independent sources. In the event of controversy the Lessor shall have the power to determine such rates and charges. Transportation charges may also be deducted as provided in sub-division (a) hereof.

(c) If a mill or other reduction works is operated exclusively in connection with a mine such mill or reduction works shall be treated as a part of the mine and the cost of operating such mill or reduction works shall, for the purpose of fixing the royalty imposed by this lease, be regarded as part of the cost of mining, and the cost of assaying, sampling, smelting, refining, and transportation only shall be deducted as herein provided.

THIRD: Said royalties to be paid quarterly on or before the 15th day of the month next succeeding the quarter in which the material is produced.

FOURTH: To prepare and forward to the State Land Office, on or before the 15th day of the month next succeeding the quarter in which the material is produced, a certified statement as to the production, market, and price received on all of the leased substances disposed of from said lands, and such other additional information as the State Land Board may from time to time require.

FIFTH: That at the option of the Lessor it may require the payment of royalties in kind, F.O.B., at the lease-site; the amount being 12½% of the leased substances extracted.

SIXTH: To commence actual operations upon the land included herein on or before and there after to diligently operate the property in accordance with the provisions contained in this lease. Failure to so continue the operation of the land included herein for a period of more than six (6) months without prior written approval of the State Land Board shall be cause for forfeiture, and that upon the violation of this provision or any of the other terms of this lease the Lessor may at its option after thirty (30) days notice by registered mail cancel this lease. After the expiration of the said thirty (30) days and the cancellation of the lease no notice of such cancellation need be given the Lessee.

SEVENTH: To keep at the mine office clear, accurate and detailed maps on tracing cloth, on a scale not more than 50 feet to the inch, of the workings in each section of the leased lands and on the lands adjacent, and to be so arranged with reference to a public land corner that the maps can be readily and correctly superimposed, and to furnish to the Lessor annually, or upon demand, certified copies of such maps and such written statements of operations as may be called for. All surveys shall be made by a licensed engineer and all maps certified to by him.

EIGHTH: To not at any time fence any watering place upon the lands leased where the same is the only accessible and feasible source of water incident to the lands leased. Nor shall the Lessee or assigns at any time permit or contribute to the pollution of any surface or subsurface water available, naturally or otherwise, for domestic or irrigation use.

NINTH: To not sell, assign, mortgage, pledge, hypothicate, or otherwise transfer or incumber this lease or any intetrest therein, nor sublet any portion of the leased premises, or any of the rights and privileges herein granted, without the writtten consent of the Lessor being first had and obtained.

ARTICLE IV

The Lessor hereby excepts and reserves from the operation of this lease:

FIRST: The right to permit for joint or several use such easements or rights-of-way upon, through, or in the land hereby leased as may be necessary or appropriate to the working of these or other lands belonging to or administrated by the Lessor containing mineral deposits or for other use.

SECOND: The right to use, lease, sell, or otherwise dispose of the surface of said lands or any part thereof, under existing State Laws or Laws hereafter enacted, insofar as said surface is not necessary for the use of the Lessee in the mining, removal, or disposal of the leased substances therein, and to lease other mineral deposits, excepting those enumerated herein which may be contained in said lands.

ARTICLE V

Upon cancellation of this lease for any cause herein the Lessee shall be entitled to remove from the lease holdings only personal property prior to complete fulfillment of the provisions of this lease, and that improvements attached to the land such as buildings, timbering, or other construction or construction material in place, shall remain undisturbed upon the ground and the property surrendered in good usable condition.

ARTICLE VI

It is mutually understood and agreed that it shall be the responsibility of the Lessee to slope the sides of all operations of a surface nature to an angle of not less than 45° or to erect a barrier around such operation as the State Land Board may require. Such sloping or fencing shall become a normal part of the operation of the lease so as to keep pace with such operation to the extent that such operation shall not constitute a hazard.

ARTICLE VII

It is mutually understood and agreed by the parties hereto that all of the terms, covenants, conditions, and obligations in this lease contained, shall be binding upon the heirs, executors, administrators, and assigns of the Lessee.

ARTICLE VIII

It is mutually understood and agreed that the Lessee may terminate this lease at any time upon giving three (3) months notice in writing to the Lessor and upon payment of all rents and royalties and other sums due and payable to the Lessor, and upon complying with the terms of this lease with respect to the preservation of the workings in such order and condition as to permit of the continued operation of the leased premises.

ARTICLE IX

It is mutually understood and agreed by and between the parties hereto that the Lessor, its officers and agents, shall have the right at all times to go in and upon the leased lands and premises, during the term of said lease to inspect the work done and the progress thereof on said lands and the products obtained therefrom, and to post any notices on the said lands that it may deem fit and proper; and also shall permit any authorized representatives of the Lessor to examine all books and records pertaining to operations under this lease, and to make copies of and extracts from the same, if desired.

ARTICLE X

It is mutually understood and agreed that this lease is issued only under such title as the State of Utah may now hold, the Lessor shall not be liable for any damages sustained by the Lessee, nor shall the Lessee be entitled to or claim any refund of rentals or royalties or other monies theretofore paid to the Lessor.

ARTICLE XI

LESSEE agrees to observe faithfully the provisions of Title 65, Chapter 1, Section 18, Utah Code Annotated 1953.

IN WITNESS WHEREOF, the parties have hereunto subscribed their names the day and year first above written.

STATE OF UTAH, STATE LAND BOARD

By /s/ A. N. Smith
EXECUTIVE SECRETARY — LESSOR

APPROVED AS TO FORM:
H. R. CALLISTER
Attorney General

By/s/ Robert M. Emmert

/s/ John K. Hayes

/s/ E. A. Sargis

LESSEE

STATE OF UTAH
COUNTY OF SALT LAKE } ss.

On the 13 day of April 1954, personally appeared before me A. N. Smith who being by me duly sworn did say that he is the Executive Secretary of the State Land Board of the State of Utah and that said instrument was signed in behalf of said Board by resolution of the Board, and said A. N. Smith acknowledged to me that said Board executed the same in behalf of the State of Utah.

Given under my hand and seal this 13 day of April 19 54

My commission Expires: October 13, 1956

/s/ Ruth Sperry
Notary Public, residing at: Salt Lake City, Utah

STATE OF UTAH
COUNTY OF UTAH } ss.

On the 6th day of April 19 54, personally appeared before me John K. Hayes and E. A. Sargis the signer of the above instrument, who duly acknowledged to me that they executed the same.

Given under my hand and seal this 6th day of April 19 54.

My commission Expires: Aug. 16, 1956.

/s/ Allen E. Sorensen
Notary Public, residing at: Provo, Utah

STATE OF UTAH
COUNTY OF } ss.

On the day of 19 , personally appeared before me

who being by me duly sworn did say that he is an officer of and that said instrument was signed in behalf of said corporation by resolution of its Board of Directors, and said acknowledged to me that said corporation executed the same.

Given under my hand and seal this day of 19

My commission Expires:

Notary Public, residing at:

Proof Read

C O P Y

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MINERAL LEASE NO. 5949

UTAH STATE LEASE

FOR

APPLICATION NO. 4162

GRANT: ---School---

URANIUM AND VANADIUM

THIS INDENTURE OF LEASE AND AGREEMENT entered into in duplicate this 5th day of February 19 54, by and between the State Land Board, acting in behalf of the State of Utah, hereinafter called the Lessor, and

S. G. SARGIS AND JOHN K. HAYES

party of the second part, hereinafter called the Lessee, under and pursuant to Title 65, Utah Code Annotated, 1953.

WITNESSETH: That the Lessor, in consideration of the rents and royalties to be paid and the covenants to be observed by the Lessee, as hereinafter set forth, does hereby grant and lease to the Lessee the exclusive right and privilege to mine, remove, and dispose of all of the said minerals in, upon, or under the following described tract of land situated in San Juan county, State of Utah, to-wit:

Southwest Quarter (SW¼) of Section Two (2), Township Twenty-Nine (29) South, Range Twenty-Three (23) East, Salt Lake Meridian,

containing a total of 160.00 acres, more or less, together with the right to use and occupy so much of the surface of said land as may be required for all purposes reasonably incident to the mining, removal, and disposal of said minerals, according to the provisions of this lease, for a period of ten years, beginning January 2nd, first succeeding the date of issuance hereof, and as long thereafter as said minerals may be produced in commercial quantities from said lands, upon condition that at the end of each twenty (20) year period succeeding the first day of the year in which this lease is issued, such re-adjustment of terms and conditions may be made as the Lessor may determine to be necessary in the interest of the State.

ARTICLE I

It is expressly understood and agreed that this lease is granted subject in all respects to and under the conditions of the laws of the State of Utah and existing Rules and Regulations or Rules and Regulations as may be hereafter approved and adopted by the State Land Board.

ARTICLE II

It is further expressly understood and agreed that this lease covers only the mining, removal, and disposal of the minerals specified in this lease, but the Lessee shall promptly notify the Lessor of the discovery of any minerals excepting those enumerated herein.

ARTICLE III

The Lessee in consideration of the granting of the rights and privileges aforesaid, hereby covenants and agrees as follows:

FIRST: To pay to the Lessor as rental for the land covered by this lease the sum of Fifty (50) Cents per acre per annum. All such annual payments of rental to be made in advance on the 2nd day of January of each year, except the rental for the year in which this lease is issued, which is payable on the execution of this lease, such rental to be credited against the royalties as they accrue for the year.

SECOND: To pay a royalty of 12½% of the gross amount received for or the gross value of the leased substances, including the State's royalty share of any bonus received by the Lessee from the sale of the leased substances. The basis for computing the amount due to the Lessor shall be as follows:

(a) If the leased substance extracted are sold under a bonafide contract of sale the amount of money or its equivalent actually received by the owner, Lessee, or other person operating the leased premises from the sale of the leased substances less a reasonable cost, if any, of transporting the leased substances from the place where extracted to the place where under the contract of sale, the leased substances are to be delivered.

(b) If the leased substances extracted are treated at a mill, smelter, processing plant, or reduction works which receives the leased substances from independent sources and which is owned or controlled by the same interests owning or controlling the mine, such disposal shall be treated as a sale within the meaning of this section for the purpose of determining gross proceeds or otherwise, and in such determination a rate or charge for sampling, assaying, milling, smelting, or refining the leased substances therefrom shall be deducted which shall not exceed an amount to be determined by applying the same rates as are applied by such mill, smelter, or reduction works or competing works, and ores of substantially like character and in like quantities received from independent sources. In the event of controversy the Lessor shall have the power to determine such rates and charges. Transportation charges may also be deducted as provided in sub-division (a) hereof.

(c) If a mill or other reduction works is operated exclusively in connection with a mine such mill or reduction works shall be treated as a part of the mine and the cost of operating such mill or reduction works shall, for the purpose of fixing the royalty imposed by this lease, be regarded as part of the cost of mining, and the cost of assaying, sampling, smelting, refining, and transportation only shall be deducted as herein provided.

THIRD: Said royalties to be paid quarterly on or before the 15th day of the month next succeeding the quarter in which the material is produced.

FOURTH: To prepare and forward to the State Land Office, on or before the 15th day of the month next succeeding the quarter in which the material is produced, a certified statement as to the production, market, and price received on all of the leased substances disposed of from said lands, and such other additional information as the State Land Board may from time to time require.

FIFTH: That at the option of the Lessor it may require the payment of royalties in kind, F.O.B., at the lease-site; the amount being 12½% of the leased substances extracted.

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SEVENTH: To keep at the mine office clear, accurate and detailed maps on tracing cloth, on a scale not more than 50 feet to the inch, of the workings in each section of the leased lands and on the lands adjacent, and to be so arranged with reference to a public land corner that the maps can be readily and correctly superimposed, and to furnish to the Lessor annually, or upon demand, certified copies of such maps and such written statements of operations as may be called for. All surveys shall be made by a licensed engineer and all maps certified to by him.

EIGHTH: To not at any time fence any watering place upon the lands leased where the same is the only accessible and feasible source of water incident to the lands leased. Nor shall the Lessee or assigns at any time permit or contribute to the pollution of any surface or subsurface water available, naturally or otherwise, for domestic or irrigation use.

NINTH: To not sell, assign, mortgage, pledge, hypothicate, or otherwise transfer or incumber this lease or any intetrest therein, nor sublet any portion of the leased premises, or any of the rights and privileges herein granted, without the writtten consent of the Lessor being first had and obtained.

ARTICLE IV

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FIRST: The right to permit for joint or several use such easements or rights-of-way upon, through, or in the land hereby leased as may be necessary or appropriate to the working of these or other lands belonging to or administrated by the Lessor containing mineral deposits or for other use.

SECOND: The right to use, lease, sell, or otherwise dispose of the surface of said lands or any part thereof, under existing State Laws or Laws hereafter enacted, insofar as said surface is not necessary for the use of the Lessee in the mining, removal, or disposal of the leased substances therein, and to lease other mineral deposits, excepting those enumerated herein which may be contained in said lands.

ARTICLE V

Upon cancellation of this lease for any cause herein the Lessee shall be entitled to remove from the lease holdings only personal property prior to complete fulfillment of the provisions of this lease, and that improvements attached to the land such as buildings, timbering, or other construction or construction material in place, shall remain undisturbed upon the ground and the property surrendered in good usable condition.

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ARTICLE VII

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ARTICLE VIII

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ARTICLE IX

It is mutually understood and agreed by and between the parties hereto that the Lessor, its officers and agents, shall have the right at all times to go in and upon the leased lands and premises, during the term of said lease to inspect the work done and the progress thereof on said lands and the products obtained therefrom, and to post any notices on the said lands that it may deem fit and proper; and also shall permit any authorized representatives of the Lessor to examine all books and records pertaining to operations under this lease, and to make copies of and extracts from the same, if desired.

ARTICLE X

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ARTICLE XI

LESSEE agrees to observe faithfully the provisions of Title 65, Chapter 1, Section 18, Utah Code Annotated 1953.

IN WITNESS WHEREOF, the parties have hereunto subscribed their names the day and year first above written.

STATE OF UTAH, STATE LAND BOARD

By /s/ A. N. Smith
EXECUTIVE SECRETARY — LESSOR

/s/ John K. Hayes

/s/ S. G. Sargis

LESSEE

APPROVED AS TO FORM:
E. R. CALLISTER
Attorney General

By/s/ Robert H. Ruggeri

STATE OF UTAH
COUNTY OF } ss.

On the 13 day of April 19 54, personally appeared before me A. N. Smith who being by me duly sworn did say that he is the Executive Secretary of the State Land Board of the State of Utah and that said instrument was signed in behalf of said Board by resolution of the Board, and said A. N. Smith acknowledged to me that said Board executed the same in behalf of the State of Utah.

Given under my hand and seal this 13 day of April 19 54

My commission Expires: October 13, 1956

/s/ Ruth Sperry
Notary Public, residing at: Salt Lake City, Utah

STATE OF UTAH
COUNTY OF UTAH } ss.

On the 6th day of April 19 54, personally appeared before me John K. Hayes and S. G. Sargis, the signer of the above instrument, who duly acknowledged to me that they executed the same.

Given under my hand and seal this 6th day of April 19 54.

My commission Expires: Aug. 16, 1956.

/s/ Allen B. Sorensen
Notary Public, residing at: Provo, Utah

STATE OF UTAH
COUNTY OF } ss.

On the day of 19, personally appeared before me

who being by me duly sworn did say that he is an officer of and that said instrument was signed in behalf of said corporation by resolution of its Board of Directors, and said acknowledged to me that said corporation executed the same.

Given under my hand and seal this day of 19

My commission Expires:

Notary Public, residing at:

Proof Read

COPY

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MINERAL LEASE NO. 5949

UTAH STATE LEASE

FOR

APPLICATION NO. 4162

GRANT: ---School---

URANIUM AND VANADIUM

THIS INDENTURE OF LEASE AND AGREEMENT entered into in duplicate this 5th day of February 19 54, by and between the State Land Board, acting in behalf of the State of Utah, hereinafter called the Lessor, and

S. G. SARGIS AND JOHN K. HAYES

party of the second part, hereinafter called the Lessee, under and pursuant to Title 65, Utah Code Annotated, 1953.

WITNESSETH: That the Lessor, in consideration of the rents and royalties to be paid and the covenants to be observed by the Lessee, as hereinafter set forth, does hereby grant and lease to the Lessee the exclusive right and privilege to mine, remove, and dispose of all of the said minerals in, upon, or under the following described tract of land situated in San Juan county, State of Utah, to-wit:

Southwest Quarter (SW¼) of Section Two (2), Township Twenty-Nine (29) South, Range Twenty-Three (23) East, Salt Lake Meridian,

containing a total of 160.00 acres, more or less, together with the right to use and occupy so much of the surface of said land as may be required for all purposes reasonably incident to the mining, removal, and disposal of said minerals, according to the provisions of this lease, for a period of ten years, beginning January 2nd, first succeeding the date of issuance hereof, and as long thereafter as said minerals may be produced in commercial quantities from said lands, upon condition that at the end of each twenty (20) year period succeeding the first day of the year in which this lease is issued, such re-adjustment of terms and conditions may be made as the Lessor may determine to be necessary in the interest of the State.

ARTICLE I

It is expressly understood and agreed that this lease is granted subject in all respects to and under the conditions of the laws of the State of Utah and existing Rules and Regulations or Rules and Regulations as may be hereafter approved and adopted by the State Land Board.

ARTICLE II

It is further expressly understood and agreed that this lease covers only the mining, removal, and disposal of the minerals specified in this lease, but the Lessee shall promptly notify the Lessor of the discovery of any minerals excepting those enumerated herein.

ARTICLE III

The Lessee in consideration of the granting of the rights and privileges aforesaid, hereby covenants and agrees as follows:

FIRST: To pay to the Lessor as rental for the land covered by this lease the sum of Fifty (50) Cents per acre per annum. All such annual payments of rental to be made in advance on the 2nd day of January of each year, except the rental for the year in which this lease is issued, which is payable on the execution of this lease, such rental to be credited against the royalties as they accrue for the year.

SECOND: To pay a royalty of 12½% of the gross amount received for or the gross value of the leased substances, including the State's royalty share of any bonus received by the Lessee from the sale of the leased substances. The basis for computing the amount due to the Lessor shall be as follows:

(a) If the leased substance extracted are sold under a bonafide contract of sale the amount of money or its equivalent actually received by the owner, Lessee, or other person operating the leased premises from the sale of the leased substances less a reasonable cost, if any, of transporting the leased substances from the place where extracted to the place where under the contract of sale, the leased substances are to be delivered.

(b) If the leased substances extracted are treated at a mill, smelter, processing plant, or reduction works which receives the leased substances from independent sources and which is owned or controlled by the same interests owning or controlling the mine, such disposal shall be treated as a sale within the meaning of this section for the purpose of determining gross proceeds or otherwise, and in such determination a rate or charge for sampling, assaying, milling, smelting, or refining the leased substances therefrom shall be deducted which shall not exceed an amount to be determined by applying the same rates as are applied by such mill, smelter, or reduction works or competing works, and ores of substantially like character and in like quantities received from independent sources. In the event of controversy the Lessor shall have the power to determine such rates and charges. Transportation charges may also be deducted as provided in sub-division (a) hereof.

(c) If a mill or other reduction works is operated exclusively in connection with a mine such mill or reduction works shall be treated as a part of the mine and the cost of operating such mill or reduction works shall, for the purpose of fixing the royalty imposed by this lease, be regarded as part of the cost of mining, and the cost of assaying, sampling, smelting, refining, and transportation only shall be deducted as herein provided.

THIRD: Said royalties to be paid quarterly on or before the 15th day of the month next succeeding the quarter in which the material is produced.

FOURTH: To prepare and forward to the State Land Office, on or before the 15th day of the month next succeeding the quarter in which the material is produced, a certified statement as to the production, market, and price received on all of the leased substances disposed of from said lands, and such other additional information as the State Land Board may from time to time require.

FIFTH: That at the option of the Lessor it may require the payment of royalties in kind, F.O.B., at the lease-site; the amount being 12½% of the leased substances extracted.

SIXTH: To commence actual operations upon the land included herein on or before and there after to diligently operate the property in accordance with the provisions contained in this lease. Failure to so continue the operation of the land included herein for a period of more than six (6) months without prior written approval of the State Land Board shall be cause for forfeiture, and that upon the violation of this provision or any of the other terms of this lease the Lessor may at its option after thirty (30) days notice by registered mail cancel this lease. After the expiration of the said thirty (30) days and the cancellation of the lease no notice of such cancellation need be given the Lessee.

SEVENTH: To keep at the mine office clear, accurate and detailed maps on tracing cloth, on a scale not more than 50 feet to the inch, of the workings in each section of the leased lands and on the lands adjacent, and to be so arranged with reference to a public land corner that the maps can be readily and correctly superimposed, and to furnish to the Lessor annually, or upon demand, certified copies of such maps and such written statements of operations as may be called for. All surveys shall be made by a licensed engineer and all maps certified to by him.

EIGHTH: To not at any time fence any watering place upon the lands leased where the same is the only accessible and feasible source of water incident to the lands leased. Nor shall the Lessee or assigns at any time permit or contribute to the pollution of any surface or subsurface water available, naturally or otherwise, for domestic or irrigation use.

NINTH: To not sell, assign, mortgage, pledge, hypothicate, or otherwise transfer or incumber this lease or any intetrest therein, nor sublet any portion of the leased premises, or any of the rights and privileges herein granted, without the writtten consent of the Lessor being first had and obtained.

ARTICLE IV

The Lessor hereby excepts and reserves from the operation of this lease:

FIRST: The right to permit for joint or several use such easements or rights-of-way upon, through, or in the land hereby leased as may be necessary or appropriate to the working of these or other lands belonging to or administrated by the Lessor containing mineral deposits or for other use.

SECOND: The right to use, lease, sell, or otherwise dispose of the surface of said lands or any part thereof, under existing State Laws or Laws hereafter enacted, insofar as said surface is not necessary for the use of the Lessee in the mining, removal, or disposal of the leased substances therein, and to lease other mineral deposits, excepting those enumerated herein which may be contained in said lands.

ARTICLE V

Upon cancellation of this lease for any cause herein the Lessee shall be entitled to remove from the lease holdings only personal property prior to complete fulfillment of the provisions of this lease, and that improvements attached to the land such as buildings, timbering, or other construction or construction material in place, shall remain undisturbed upon the ground and the property surrendered in good usable condition.

ARTICLE VI

It is mutually understood and agreed that it shall be the responsibility of the Lessee to slope the sides of all operations of a surface nature to an angle of not less than 45° or to erect a barrier around such operation as the State Land Board may require. Such sloping or fencing shall become a normal part of the operation of the lease so as to keep pace with such operation to the extent that such operation shall not constitute a hazard.

ARTICLE VII

It is mutually understood and agreed by the parties hereto that all of the terms, covenants, conditions, and obligations in this lease contained, shall be binding upon the heirs, executors, administrators, and assigns of the Lessee.

ARTICLE VIII

It is mutually understood and agreed that the Lessee may terminate this lease at any time upon giving three (3) months notice in writing to the Lessor and upon payment of all rents and royalties and other sums due and payable to the Lessor, and upon complying with the terms of this lease with respect to the preservation of the workings in such order and condition as to permit of the continued operation of the leased premises.

ARTICLE IX

It is mutually understood and agreed by and between the parties hereto that the Lessor, its officers and agents, shall have the right at all times to go in and upon the leased lands and premises, during the term of said lease to inspect the work done and the progress thereof on said lands and the products obtained therefrom, and to post any notices on the said lands that it may deem fit and proper; and also shall permit any authorized representatives of the Lessor to examine all books and records pertaining to operations under this lease, and to make copies of and extracts from the same, if desired.

ARTICLE X

It is mutually understood and agreed that this lease is issued only under such title as the State of Utah may now hold, the Lessor shall not be liable for any damages sustained by the Lessee, nor shall the Lessee be entitled to or claim any refund of rentals or royalties or other monies therefore paid to the Lessor.

ARTICLE XI

LESSEE agrees to observe faithfully the provisions of Title 65, Chapter 1, Section 18, Utah Code Annotated 1953.

IN WITNESS WHEREOF, the parties have hereunto subscribed their names the day and year first above written.

STATE OF UTAH, STATE LAND BOARD

By /s/ A. N. Smith
EXECUTIVE SECRETARY — LESSOR

/s/ John K. Hayes

/s/ S. G. Sargis

LESSEE

APPROVED AS TO FORM:
E. R. CALLISTER
Attorney General

By/s/ Robert H. Ruggeri

STATE OF UTAH
COUNTY OF } ss.

On the 13 day of April 19 54, personally appeared before me A. N. Smith who being by me duly sworn did say that he is the Executive Secretary of the State Land Board of the State of Utah and that said instrument was signed in behalf of said Board by resolution of the Board, and said A. N. Smith acknowledged to me that said Board executed the same in behalf of the State of Utah.

Given under my hand and seal this 13 day of April 19 54

My commission Expires: October 13, 1956

/s/ Ruth Sperry
Notary Public, residing at: Salt Lake City, Utah

STATE OF UTAH
COUNTY OF UTAH } ss.

On the 6th day of April 19 54, personally appeared before me John K. Hayes and S. G. Sargis, the signer of the above instrument, who duly acknowledged to me that they executed the same.

Given under my hand and seal this 6th day of April 19 54.

My commission Expires: Aug. 16, 1956.

/s/ Allen B. Sorensen
Notary Public, residing at: Provo, Utah

STATE OF UTAH
COUNTY OF } ss.

On the day of 19, personally appeared before me

who being by me duly sworn did say that he is an officer of and that said instrument was signed in behalf of said corporation by resolution of its Board of Directors, and said acknowledged to me that said corporation executed the same.

Given under my hand and seal this day of 19

My commission Expires:

Notary Public, residing at:

Proof Read

COPY

LE7 f

MINERAL LEASE NO. 5949

UTAH STATE LEASE

FOR

APPLICATION NO. 4162

GRANT: ---School---

URANIUM AND VANADIUM

THIS INDENTURE OF LEASE AND AGREEMENT entered into in duplicate this 5th day of February 19 54, by and between the State Land Board, acting in behalf of the State of Utah, hereinafter called the Lessor, and

S. G. DAVIS AND JOHN R. HAYES

party of the second part, hereinafter called the Lessee, under and pursuant to Title 65, Utah Code Annotated, 1953.

WITNESSETH: That the Lessor, in consideration of the rents and royalties to be paid and the covenants to be observed by the Lessee, as hereinafter set forth, does hereby grant and lease to the Lessee the exclusive right and privilege to mine, remove, and dispose of all of the said minerals in, upon, or under the following described tract of land situated in San Juan county, State of Utah, to-wit:

Southwest Quarter (SW¼) of Section Two (2), Township Twenty-Nine (29) South, Range Twenty-Three (23) East, Salt Lake Meridian,

containing a total of 160.00 acres, more or less, together with the right to use and occupy so much of the surface of said land as may be required for all purposes reasonably incident to the mining, removal, and disposal of said minerals, according to the provisions of this lease, for a period of ten years, beginning January 2nd, first succeeding the date of issuance hereof, and as long thereafter as said minerals may be produced in commercial quantities from said lands, upon condition that at the end of each twenty (20) year period succeeding the first day of the year in which this lease is issued, such re-adjustment of terms and conditions may be made as the Lessor may determine to be necessary in the interest of the State.

ARTICLE I

It is expressly understood and agreed that this lease is granted subject in all respects to and under the conditions of the laws of the State of Utah and existing Rules and Regulations or Rules and Regulations as may be hereafter approved and adopted by the State Land Board.

ARTICLE II

It is further expressly understood and agreed that this lease covers only the mining, removal, and disposal of the minerals specified in this lease, but the Lessee shall promptly notify the Lessor of the discovery of any minerals excepting those enumerated herein.

ARTICLE III

The Lessee in consideration of the granting of the rights and privileges aforesaid, hereby covenants and agrees as follows:

FIRST: To pay to the Lessor as rental for the land covered by this lease the sum of Fifty (50) Cents per acre per annum. All such annual payments of rental to be made in advance on the 2nd day of January of each year, except the rental for the year in which this lease is issued, which is payable on the execution of this lease, such rental to be credited against the royalties as they accrue for the year.

SECOND: To pay a royalty of 12½% of the gross amount received for or the gross value of the leased substances, including the State's royalty share of any bonus received by the Lessee from the sale of the leased substances. The basis for computing the amount due to the Lessor shall be as follows:

(a) If the leased substance extracted are sold under a bonafide contract of sale the amount of money or its equivalent actually received by the owner, Lessee, or other person operating the leased premises from the sale of the leased substances less a reasonable cost, if any, of transporting the leased substances from the place where extracted to the place where under the contract of sale, the leased substances are to be delivered.

(b) If the leased substances extracted are treated at a mill, smelter, processing plant, or reduction works which receives the leased substances from independent sources and which is owned or controlled by the same interests owning or controlling the mine, such disposal shall be treated as a sale within the meaning of this section for the purpose of determining gross proceeds or otherwise, and in such determination a rate or charge for sampling, assaying, milling, smelting, or refining the leased substances therefrom shall be deducted which shall not exceed an amount to be determined by applying the same rates as are applied by such mill, smelter, or reduction works or competing works, and ores of substantially like character and in like quantities received from independent sources. In the event of controversy the Lessor shall have the power to determine such rates and charges. Transportation charges may also be deducted as provided in sub-division (a) hereof.

(c) If a mill or other reduction works is operated exclusively in connection with a mine such mill or reduction works shall be treated as a part of the mine and the cost of operating such mill or reduction works shall, for the purpose of fixing the royalty imposed by this lease, be regarded as part of the cost of mining, and the cost of assaying, sampling, smelting, refining, and transportation only shall be deducted as herein provided.

THIRD: Said royalties to be paid quarterly on or before the 15th day of the month next succeeding the quarter in which the material is produced.

FOURTH: To prepare and forward to the State Land Office, on or before the 15th day of the month next succeeding the quarter in which the material is produced, a certified statement as to the production, market, and price received on all of the leased substances disposed of from said lands, and such other additional information as the State Land Board may from time to time require.

FIFTH: That at the option of the Lessor it may require the payment of royalties in kind, F.O.B., at the lease-site; the amount being 12½% of the leased substances extracted.

SIXTH: To commence actual operations upon the land included herein on or before and there after to diligently operate the property in accordance with the provisions contained in this lease. Failure to so continue the operation of the land included herein for a period of more than six (6) months without prior written approval of the State Land Board shall be cause for forfeiture, and that upon the violation of this provision or any of the other terms of this lease the Lessor may at its option after thirty (30) days notice by registered mail cancel this lease. After the expiration of the said thirty (30) days and the cancellation of the lease no notice of such cancellation need be given the Lessee.

SEVENTH: To keep at the mine office clear, accurate and detailed maps on tracing cloth, on a scale not more than 50 feet to the inch, of the workings in each section of the leased lands and on the lands adjacent, and to be so arranged with reference to a public land corner that the maps can be readily and correctly superimposed, and to furnish to the Lessor annually, or upon demand, certified copies of such maps and such written statements of operations as may be called for. All surveys shall be made by a licensed engineer and all maps certified to by him.

EIGHTH: To not at any time fence any watering place upon the lands leased where the same is the only accessible and feasible source of water incident to the lands leased. Nor shall the Lessee or assigns at any time permit or contribute to the pollution of any surface or subsurface water available, naturally or otherwise, for domestic or irrigation use.

NINTH: To not sell, assign, mortgage, pledge, hypothicate, or otherwise transfer or incumber this lease or any intetrest therein, nor sublet any portion of the leased premises, or any of the rights and privileges herein granted, without the writtten consent of the Lessor being first had and obtained.

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The Lessor hereby excepts and reserves from the operation of this lease:

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SECOND: The right to use, lease, sell, or otherwise dispose of the surface of said lands or any part thereof, under existing State Laws or Laws hereafter enacted, insofar as said surface is not necessary for the use of the Lessee in the mining, removal, or disposal of the leased substances therein, and to lease other mineral deposits, excepting those enumerated herein which may be contained in said lands.

ARTICLE V

Upon cancellation of this lease for any cause herein the Lessee shall be entitled to remove from the lease holdings only personal property prior to complete fulfillment of the provisions of this lease, and that improvements attached to the land such as buildings, timbering, or other construction or construction material in place, shall remain undisturbed upon the ground and the property surrendered in good usable condition.

ARTICLE VI

It is mutually understood and agreed that it shall be the responsibility of the Lessee to slope the sides of all operations of a surface nature to an angle of not less than 45° or to erect a barrier around such operation as the State Land Board may require. Such sloping or fencing shall become a normal part of the operation of the lease so as to keep pace with such operation to the extent that such operation shall not constitute a hazard.

ARTICLE VII

It is mutually understood and agreed by the parties hereto that all of the terms, covenants, conditions, and obligations in this lease contained, shall be binding upon the heirs, executors, administrators, and assigns of the Lessee.

ARTICLE VIII

It is mutually understood and agreed that the Lessee may terminate this lease at any time upon giving three (3) months notice in writing to the Lessor and upon payment of all rents and royalties and other sums due and payable to the Lessor, and upon complying with the terms of this lease with respect to the preservation of the workings in such order and condition as to permit of the continued operation of the leased premises.

ARTICLE IX

It is mutually understood and agreed by and between the parties hereto that the Lessor, its officers and agents, shall have the right at all times to go in and upon the leased lands and premises, during the term of said lease to inspect the work done and the progress thereof on said lands and the products obtained therefrom, and to post any notices on the said lands that it may deem fit and proper; and also shall permit any authorized representatives of the Lessor to examine all books and records pertaining to operations under this lease, and to make copies of and extracts from the same, if desired.

ARTICLE X

It is mutually understood and agreed that this lease is issued only under such title as the State of Utah may now hold, the Lessor shall not be liable for any damages sustained by the Lessee, nor shall the Lessee be entitled to or claim any refund of rentals or royalties or other monies therefore paid to the Lessor.

ARTICLE XI

LESSEE agrees to observe faithfully the provisions of Title 65, Chapter 1, Section 18, Utah Code Annotated 1953.

IN WITNESS WHEREOF, the parties have hereunto subscribed their names the day and year first above written.

STATE OF UTAH, STATE LAND BOARD

By /s/ A. R. Smith
EXECUTIVE SECRETARY — LESSOR

/s/ John K. Hayes

/s/ S. G. Sargis

LESSEE

APPROVED AS TO FORM:
E. R. CALLISTER
Attorney General

By/s/ Robert H. Rugeri

STATE OF UTAH
COUNTY OF } ss.

On the 13 day of April 19 54, personally appeared before me A. R. Smith who being by me duly sworn did say that he is the Executive Secretary of the State Land Board of the State of Utah and that said instrument was signed in behalf of said Board by resolution of the Board, and said A. R. Smith acknowledged to me that said Board executed the same in behalf of the State of Utah.

Given under my hand and seal this 13 day of April 19 54

My commission Expires: October 13, 1956

/s/ Ruth Sperry
Notary Public, residing at: Salt Lake City, Utah

STATE OF UTAH
COUNTY OF UTAH } ss.

On the 6th day of April 19 54, personally appeared before me John K. Hayes and S. G. Sargis, the signer of the above instrument, who duly acknowledged to me that they executed the same.

Given under my hand and seal this 6th day of April 19 54.

My commission Expires: Aug. 16, 1956.

/s/ Allen D. Sorensen
Notary Public, residing at: Provo, Utah

STATE OF UTAH
COUNTY OF } ss.

On the day of 19 , personally appeared before me

who being by me duly sworn did say that he is an officer of and that said instrument was signed in behalf of said corporation by resolution of its Board of Directors, and said acknowledged to me that said corporation executed the same.

Given under my hand and seal this day of 19

My commission Expires:

Notary Public, residing at:

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

December 14, 1954
Subject: DMEA-3602
Re: Exploration Assistance

Vivian Uranium Mining Co. Inc.
139 North Virginia Street
Reno, Nevada

Gentlemen:

The receipt of your application dated December 10, 1954 for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA-3602 and referred to the Rare and Miscellaneous Metals Division.

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

Sincerely yours,

Robert E. Adams, Chief
Operations Control and
Statistics Division

60932

(R[illegible]F-103
([illegible] April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
DEC 10 1954

Form Approved. [illegible] 1035.2.

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

Not to be filled in by applicant

Docket No. 3602
Metal or Mineral Uranium
Date Received
Estimated Cost $37,650
Participation (Government %)

INSTRUCTIONS

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

Vivian Uranium Mining Co. Inc.
139 North Virginia Street
Reno, Nevada.

(*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 attached

(*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.

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

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

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

See Attached

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

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

16—66551-1

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

(*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 ..... days and be completed within ..... months from the date of an exploration project contract.

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

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

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

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

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

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

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

(*f*) *New buildings, improvements, installations.*—Furnish a detailed list showing the cost of any necessary buildings, fixed improvements, or installations to be purchased, installed or constructed for the benefit of the exploration project.

(*g*) *Miscellaneous.*—Furnish a detailed list showing the cost of repairs to and maintenance of operating equipment (not including initial rehabilitation or repairs of the Operator's equipment), analytical work, accounting, workmen's compensation and employers' liability insurance, and payroll taxes.

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

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

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

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

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

Explain in detail on acompanying paper.

CERTIFICATION

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

Dated December 10, 1954., 195...

Vivian Uranium Mining Corporation Inc.
(Applicant)

By L. A. Smith

Sectretary-Treasurer

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

Vivian Uranium Mining Co. Inc.
139 North Virginia Street
Reno, Nevada.

Form
MF-103

UNITED STATES DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS EXPLORATION ADMINISTRATION

1. NAME OF APPLICANT

(a.) Vivian Uranium Mining Co. Inc.,
139 North Virginia Street
Reno, Nevada.

(b.) A Corporation; Incorporated in the Stateof Nevada.

(c.) Mr. Bert C. Austin, President
983 Mills Bldg.,
San Francisco, California.

Mr. Charles J. Ayres, Vice-President and Director
Shasta County, California

Mr. Lynne A. Smith, Secretary-Treasurer
426 Lowell St.,
Palo Alto, California.

(d.) Not Applicable

3. APPLICANTS PROPERTY RIGHTS

(a.) The land for which the exploration project is being proposed was obtained under lease, by Mr. Lynne A. Smith, from the Samson Uranium Corporation, a partnership, which obtained the ground as a Utah State School lease. Information relative to the

agreements between Smith and the Samson Uranium Company will be found in attached legal documents. Complete descriptions of the parcels of land leased be Smith are also included.

(b.) None

(c.) Lessee under contract; see attached legal documents.

(d.) See above

(e.) The properties under consideration are Utah State School leases subject to a 12½% royalty to the State of Utah.

(f.) Not applicable

4. PHYSICAL DESCRIPTION

(a.) Not applicable, except for geologic study

(b.) None

(c.) See attached geologic report

(d.) The area can be reached by traveling 24 miles south of the Town of Moab, Utah over U.S. Highway 160; thence in an easterly direction over ~~U.S.~~ Utah State Highway 46 for a distance of about 2½ miles to the properties under discussion. The Town of Moab is the nearest shipping and supply point.

(e.) An abundance of materials, supplies and manpower is available in the Town of Moab, Utah.

5. THE EXPLORATION PROGRAM

(a.) Uranium

(b.) The proposed program will be an exploration drilling program on the properties previously described. Reference to the Drill Hole Map in the attached Geologic Report will show the relationship of the proposed drill holes to the property boundaries and to lithologic contacts. However, two of the proposed 8 holes will be designed to penetrate the Salt Wash and the Mossback member of the Chinle, while 6 of the proposed 8 holes will be designed to explore the Mossback member of the Chinle formation.

A total of 8 holes are planned. Two of the holes will average 1800 feet in depth and 6 of the holes will average 1300 feet in depth.

(c.) Work will start within two months and be completed within 6 months.

(d.) Mr. Bert C. Austin, President of Vivian Uranium Mining Co. Inc., is also President and General Manager of Idaho-Maryland Mines Corporation, 983 Mills Bldg., San Francisco, California. Operation of the Company mine at Grass Valley, California is under his direction.

Mr. L. A. Smith, Secretary-Treasurer, is a Mining Engineer, and was manager of the Crescent Pacific mine for the past 8 years. He was a partner in the

operation of the Castro Chrome mine in San Luis Obispo County, California. He was the manager of the ~~Siskiyou~~ McKeen gold mine in Siskiyou County, California. Direction of the program will be under the direction of the above officers of the Company while actual field work will be performed by a geologist familiar with the Plateau and uranium deposits.

6. ESTIMATE OF COSTS

(a.) Total estimated project footage is 11,400 feet, for which an overall flat rate bid of $ 3.25/ft has been received from the Swank Drilling Company of Moab, Utah. About 2,000 feet out of the estimated total will be core type drilling.

TOTAL COST 11,400 feet	$ 37,050.00
Some road work and drill site construction will be required also, and the time is estimated at 6 days @ $100.00/day	$ 600.00
TOTAL PROJECT COST	$ 37,650.00

(b-h) Not Applicable, or None

7. (a.) Vivian Uranium Mining Co. Inc., has deposited $15,000.00 in escrow with the Nevada Agency and Trust Co. to be used to pay their share of costs in the event a loan is granted. (Please see

Vivian Uranium Mining Co., Inc.
139 North Virginia Street
Reno, Nevada.

Form
MF-103

attached statement from the Nevada Agency and Trust Company.)

CERTIFICATION

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

Dated; December 10, 1954.

VIVIAN URANIUM MINING CO., INC.

By

GEOLOGIC REPORT ON THE NORTH BIG INDIAN WASH - LISBON VALLEY DISTRICT, SAN JUAN COUNTY, UTAH.

T. 29 S., R. 23 E.

SLPM

By

RICHARD A. TEICHMAN JR.

Consulting Geologist
Moab, Utah.

October, 1954.

RICHARD A. TEICHMAN
Consulting Geologist
1244 E. Elm Ave.
Grand Junction, Colorado

Mine Examination | Property Evaluation

November, 1954.

Mr. L. A. Smith
Mining Engineer
426 Lovell St.,
Palo Alto, California.

Dear Mr. Smith:

The following is a geological report on the uranium possibilities of the North Big Indian Wash-Lisbon Valley district, T. 29 S., R. 23 E., SLPM, San Juan County, Utah, with specific reference being made to Utah State School Leases No. 5947, 5948 and 5949, Section 2 and 3, T. 29 S., R. 23 E.

Pursuant to your instructions I have included recommendations for further development of the properties.

Sincerly,

Richard A. Teichman Jr.

RICHARD A. TEICHMAN JR.

Consulting Geologist

RT/rg

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4. Proposed Drill Hole Location Map
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INTRODUCTION

A geologic reconnaissance of the Big Indian Wash-Lisbon Valley district was carried out during the latter part of October, 1954, at the request of Mr. L. A. Smith of Palo Alto, California.

The North Big Indian Wash- Lisbon Valley District is located within T. 29 S., R. 23 E., SLPM, San Juan County, Utah, which is in the southeastern part of the state.

The objectives of the reconnaissance were :

1. To examine those parts of sections 2 and 3, T. 29 S., R. 23 E., embraced within Utah State School Leases numbered 5947, 5948 and 5949.

   Lease No. 5947, Lot 2, section 2, T. 29 S., R.23 E., consisting of 40 acres.
   Lease No. 5948, NE$\frac{1}{4}$SE$\frac{1}{4}$, section 3, T. 29 S., R.23 E., consistingof 40 acres.
   Lease No. 5949, SW$\frac{1}{4}$, section 2, T. 29 S., R. 23 E., consisting of 160 acres.

2. To determine whether or not the properties were located in a district considered to be geologically favorable for the occurence of uranium ores.
3. To assess the possibilities of production of commercial quantities of uranium ores from the district.
4. To determine whether or not further exploration

and or development work on the properties was warranted.

The portions of the Utah State School Leases under consideration in this report are located immediately north of the Big Indian Mining District (unorganized) in San Juan County, Utah.

The area can be reached by traveling 24 miles south pf Moab, Utah on U. S. Highway 160, a good paved road; thence in an easterly direction over Utah 46, a good gravelled road for a distance of about 2½ miles to the properties. (See attached map)

PAST AND PRESENT MINING AND EXPLORATION ACTIVITY, PRIVATE AND GOVERNMENT

The only record of production from the area east of the Lisbon Valley Fault is from a Copper deposit in the Cretaceous Dakota formation, from which the Ohio Copper Company mined an unknown amount of copper carbonates and sulfides during the first world war.

No record of any uranium production from the area east of the fault can be located, but mines are in operation several miles to the east near La Sal, Utah, and in the Wray mesa district. These mines, the Yellow Bird, and the Raven have been good producers of uranium ores.

Within the district, between the town of La Sal, Utah and the area under consideration , the Heeter-Logan Company of Arizona conducted a modest drilling program on the Evans property in sections 31 and 33, T. 28 S.,

R. 24 E. All holes were collared in the Cretaceous Mancos Shale and Dakota sandstones and presumably bottomed in the Salt Wash sandstone member of the Jurassic Morrison formation. Results of the drilling indicate the presence of several mineralized horizons within the Salt Wash member of the Morrison and within the lower part of the Brushy Basin member of the Morrison. It is anticpated that this drilling will be continued in the furture and that more care will be taken in saving cores from the holes.

The Continental Uranium Company of Grand Junction, Colorado is conducting mining operations in the Rattlesnake area which is located in section 12, T. 29 S., R. 23 E., SLPM, San Juan County, Utah. Several development drifts have been driven into the lower sandstone member of the Salt Wash and ore is being shipped. Results of recent core drilling is reported to be excellent. The average grade of the ore is reported to be .40% uranium and 2.00 % vanadium.

Mr. Walt Gramlich of Moab, Utah is conducting mining operations in the Blue Jay mine in the Browns Hole district about 2 miles north of the areas under discussion. Production is from the upper sandstone lenses of the Salt Wash. One load of ore, recently shipped, assayed 4.0 % uranium and was valued at $ 4,000.00. The ore at the Blue Jay mine is found in logs, rolls and small pockets, and the grade is very high.

South of the school section under discussion lies the famous Big Indian Wash district and the Mi Vida mine of Charles Steen, the San Juan shaft of the Cal Uranium Company, the Continental Uranium Company mine in the southern part of the wash, the Hudson-Homestake mine, the Little Beaver-Homestake mine and the Standard Uranium Company mine. All production in the Big Indian Wash district is from the Mossback member of the Triassic Chinle formation. Average grade of the ore is .35 % uranium and 1.50 % vanadium. (Only the ores from the Steen mine, the Continental Uranium Co. mine and from the Homestake-Little Beaver mine assay in vanadium. All other production is essentially vanadium-free.

In addition to the operating properties in the Big Indian Wash district, several new deposits of ore have been blocked out in the central (north central) part of the Wash northwest of the Cal Uranium Company San Juan shaft on what is known as the Radon and the Ruddock-Daniel properties. In addition to these discoveries, plotted on the attached map, the Homestake Mining Company of San Francisco, California has blocked out a deposit of 71,000 tons on the "Peace" and the "Cherib" claims, north of the Radon property. Thus, it would appear that the properties in the northern part of the district are favorable for the occurrence of deposits of uranium ores.

Although the United States Atomic Energy Commission has established a field camp in the Big Indian Wash district, it is not anticipated that any immediate plans have or will be made for the north Big Indian Wash area.

The Commission has established this field camp to serve private individuals and corporations conducting exploration programs in in the area, and as a collecting station for information relative to the geology of the district.

GEOMORPHOLOGY AND CLIMATE

The elevation within the North Big Indian Wash-Lisbon Valley District ranges from 6 ,400 on the Morrison formation near the Redd Ranch, to 7,000 feet on the Dakota Sandstone near the Browns Hole District. The lease properties, parts of Utah State School Sections, are located on the edge of the La Sal Mountain alluvial fan, and between small mesas capped by Dakota Sandstone.

The district is bisected by the Lisbon Valley fault, and shows the amount of displacement along the fault by having the Dakota Sandstone and the Brushy Basin member of the Morrison formation facing each other across the fault.

In the Big Indian Wash-Lisbon Valley areas the streams are subsequent, intermittent and in a stage of early maturity. After leaving the valleys, the streams are consequent and of late maturity. Drainage for the area as a whole displays a dendritic pattern. The northern part of Big Indian Wash drains westward through Big Indian Wash to Hatch Wash, thence to the Colorado River. The streams in the area are in a stage of downcutting due to rejuvenation.

On the east side of the Lisbon Valley Fault there are no permanent land forms in the immediate area. The surface is a flat saucer shaped area unbroken by outcrops. The area gets

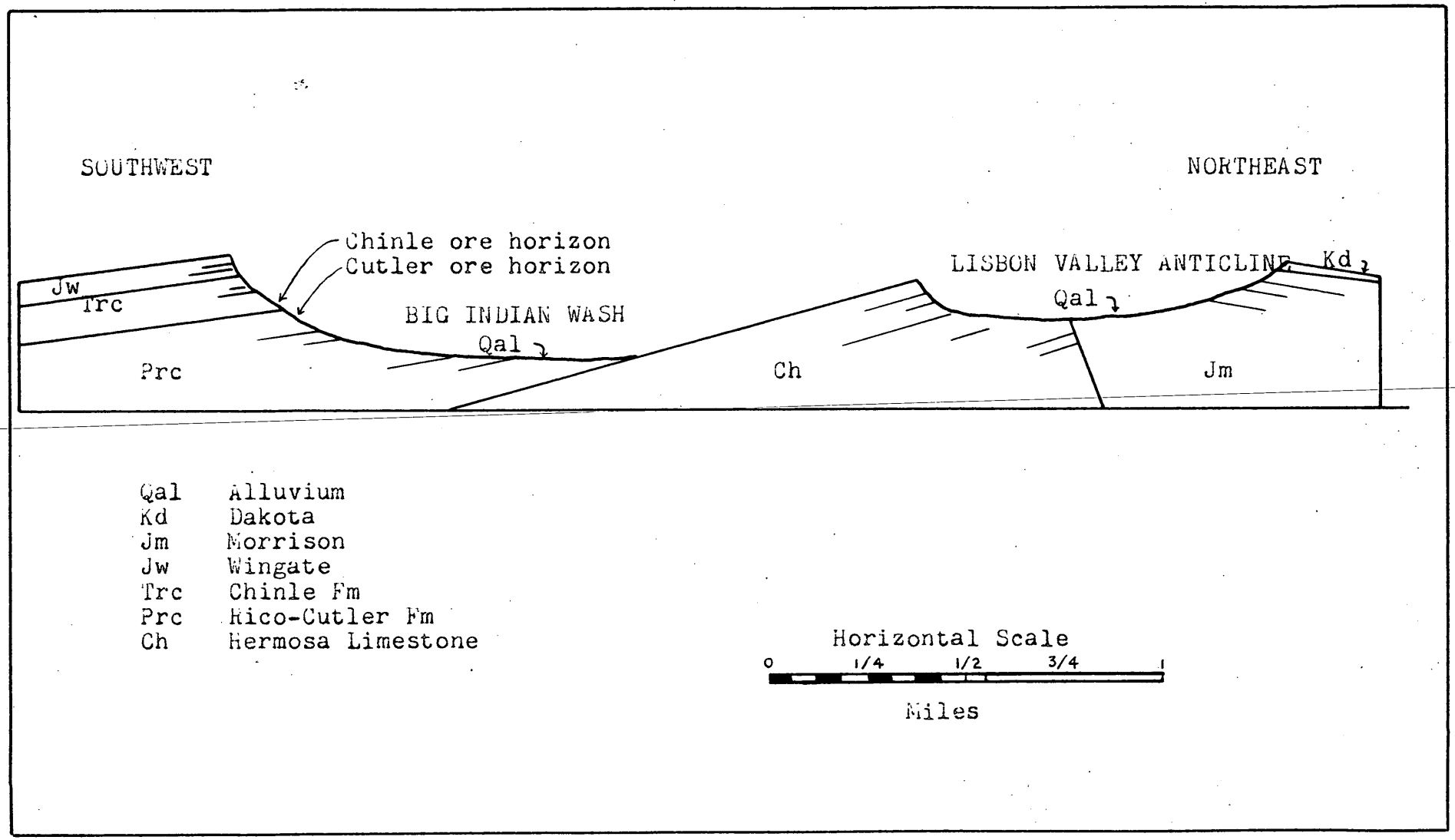


FIGURE -2- GEOLOGIC CROSS SECTION: LISBON VALLEY ANTICLINE IN THE VICINITY OF UTEX AND BIG BUCK MINES, BIG INDIAN WASH, SAN JUAN COUNTY, UTAH.

its shape from the prefaulted Lisbon Valley Anticline on the South and the intrusive La Sal Mountains bending the sediments upwards to the north.

A small, year round creek drains the Lisbon Valley area westward and forms a dendritic drainage pattern in a stage of early youth. It is used for stock, irrigation and drill water.

The climate of the North Big Indian Wash-Lisbon Valley area is semi-arid with moderate amounts of rain and snow. Precipitation amounts to about 20 inches a year. Working conditions are good throughout the year.

TECTONIC STRUCTURES

Big Indian Wash is located midway between two major laccolithic intrusives; the La Sal Mountains and the Abajo Mountains, and approximately one mile east of the Lisbon Valley-Dolores anticline.

The Lisbon Valley-Dolores anticline trends northwest from a point approximately 20 miles west of the San Miguel Mountains where it joins the Gypsum Valley anticline, to a point 20 miles east of the Upheaval Dome in the Inter-River area northwest of Moab, Utah.

Determination of the attitude and displacement of the Lisbon Valley fault is difficult due to the presence of alluvium in the fault zone. However, present field evidence from cross sections and drill hole data show the fault to be hinged in the northern part of Big Indian Wash, with a displacement of about 200 feet in the vicinity of the properties under discussion.

A pronounced joint system is present in the Big Indian Wash District and study of aerial photographs indicates that

in the northern part of the district where private development is currently centered, that is near Section 23 and 24 T. 29 S., R. 23 E., the joints strike in a northwesterly direction. In several places well-developed conjugate joint sets have been developed and field evidence indicates that these joint sets are intimately associated with mineralization.

On the east side of Lisbon Valley Fault Stereoscopic study of aerial photograph shows some preference of drainage for lithologic changes, but indicates no pronounced fault or joint system. However, the Dakota Sandstone in the vicinity of the Copper Mine is badly fractured and shows some small compressional faults.

GEOLOGY

Previous geologic reports on the Big Indian Wash-Lisbon Valley areas are:

1. Interim Report on the Examination of Big Indian Wash Uranium Properties, San Juan County, Utah. April, 1949, by Charles A. Rasor, USAEC.

   This report recommended that the Pre-Salt Wash formations in the Big Indian Wash District be studied in detail.

2. The Uranium Deposits of Big Indian Wash, by George P. Dix Jr., USAEC.

3. Bureau of Mines Information Circular 7669, Uranium Operations of the Utex Exploration Co. in the Big Indian District, San Juan County, Utah, by Steen, Dix, Hazen and McLellan, October19, 1953.

   This report briefly described geology, mining operations and the mineralogy of the Utex Mine.

4. Geologic Report on the Big Indian Wash District, by Teichman, R., McLelland, J., and Fisk, I., USAEC (Unpub) 1954.

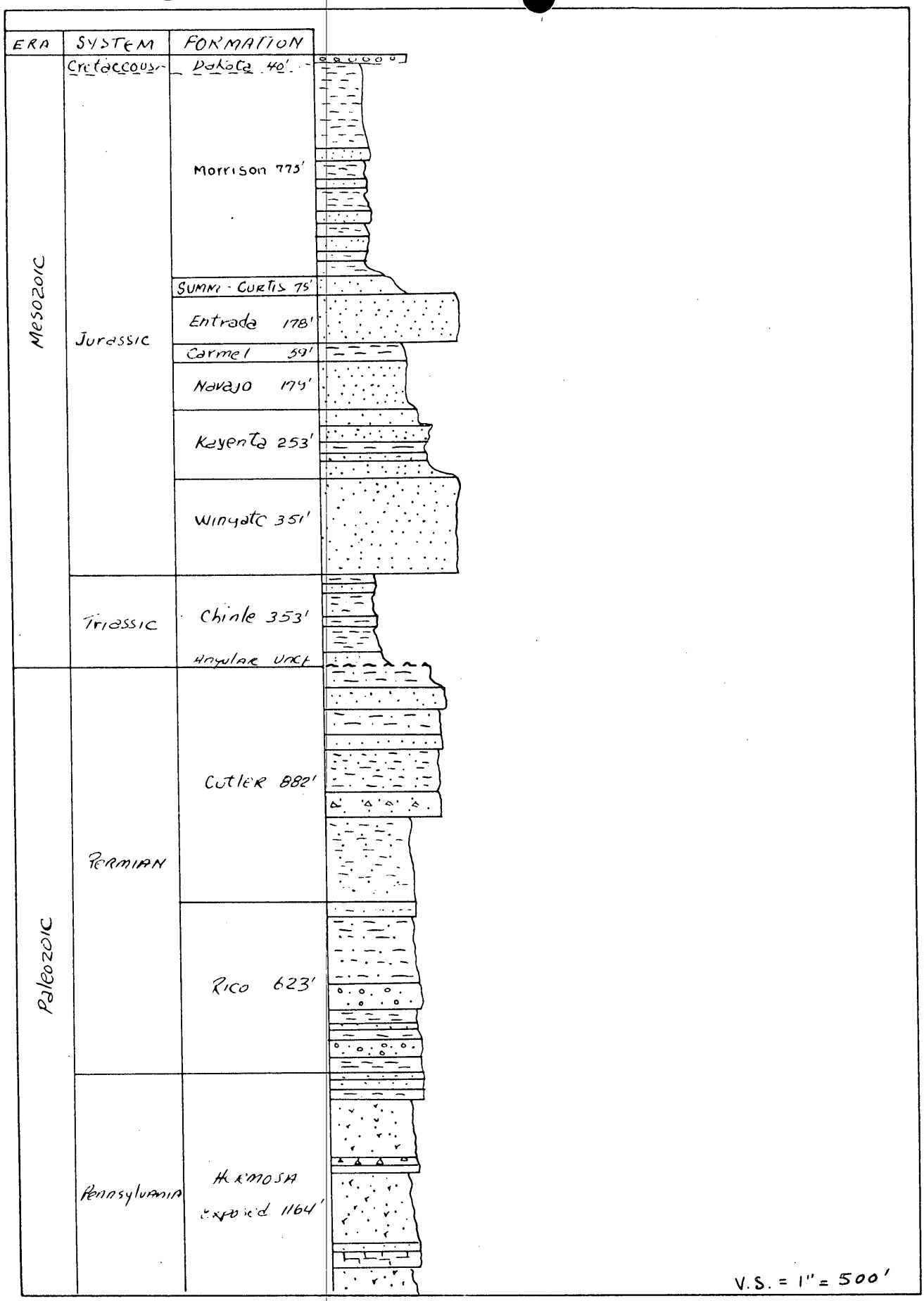


FIG. - 3 STRATIGRAPHIC SECTION, NORTH BIG INDIAN WASH and Lisbon Valley, San Juan County, UTAH.

This report outlined the geology and mineralogy of the Big Indian Wash District.

5. Geology of the South Big Indian Wash-North Lisbon Valley areas, by Teichman, R., and McLelland, J. for the Pathfinder Corporation, 1954.

This report outlined the geology and assessed the possibilities of production of commercial quantities of uranium ores from the South Big Indian and the North Lisbon Valley Districts.

The rocks exposed in the North Big Indian Wash-Lisbon Valley District range in age from the Pennsylvanian Hermosa limestone to the Cretaceous Mancos shale. ~~The principal ore-bearing horizon on the northeast side of the Lisbon Valley fault in the area covered by Lease No. 5947 is the Salt Wash Member of the Jurassic Morrison formation.~~ The principal ore-bearing horizon on the West side of the Lisbon Valley Fault in the Big Indian Wash area is the Mossback member of the Chinle Formation. However, in the northern part of the Big Indian Wash-Lisbon Valley District the fault hinges and the displacement is approximately 200 feet with the favorable horizons being both the Mossback member of the Triassic Chinle formation at a depth of about 12 to 14 hundred feet and the Salt Wash Member of the Jurassic Morrison formation at a depth of from 2 to 5 hundred feet.

ECONOMIC GEOLOGY

In the School Lease areas under discussion, two potential ore producing horizons must be considered. First, the area covered by School Lease No. 5947, on the northeast side of the Lisbon Valley fault, in School Section 2, is capped by the Brushy Basin member of the Jurassic Morrison formation. Therefore in this area, the most important potential producing horizons are:

1. The Salt Wash Member of the Jurassic Morrison formation

2. The Mossback member of the Triassic Chinle formation.

Drilling depths to the Salt Wash member of the Morrison formation will average between 200 and 500 feet, mineralization is of the carnotite-tyuyamunite type and corvusite is the principal vanadium mineral found in the district. Examination of Salt Wash deposits in and about the district indicate that the type of deposit to be expected would be the "log"or "roll" type. In drilling for this type deposit drill hole spacings must be closer than normally used to delineate favorable ground within the Salt Wash member of the Morrison formation.

The second important producing horizon to be considered is the Mossback member of the Triassic Chinle formation. Drilling depths to the Mossback in this area would average between 1600 and 1800 feet. Mineralization is of the uraninite type and it is doubtful if vanadium minerals would be encountered. Examination of other Mossback deposits in and about the Big Indian Wash District indicate that the type of the deposit to be expected would be the large lenticular type of deposit probably in excess of 1,000 feet long in one dimension and in excess of 500 feet long in the second dimension. In drilling for this type deposit, drill hole spacings can be farther apart than normally used to delineate favorable ground, say for instance, in Salt Wash drilling.

Lease ground 5948 and 5949 (See attached Map) is for the most part located west of the Lisbon Valley fault, but as has been

noted the fault hinges in this area and the displacement is of the order of 200 feet. In the major part of Lease areas 5948 and 5949 conditions prevail which are very similar to those in Lease Area 5947. However, in the southwestern part of Lease Ground 5948 and 4949 it is to be noted that Jurassic entrada sandstone crops out. Thus indicating that the only favorable horizon would be the Mossback member of the Chinle formation, the Salt Wash Member of the Morrison having been completely eroded out.

In the central part of the Big Indian Wash area, uranium mineralization is found in the lower part of the Triassic Chinle formation (Mossback), and in the upper part of the Cutler formation. The mineralized zone within the Chinle is exposed at the Utex Exploration Company Mine, southeast of the mine shaft. Mineralization within the Cutler formation is confined to 5 arkosic sandstone lenses. Four of these lenses are within a hundred feet of the Cutler-Chinle contact and one is within 150 feet of the contact.

A continuous outcrop of the Chinle ore zone, composed of sandstone, siltstone, and conglomorates, extends for 8 miles across the Big Indian Wash District and South into the lower part of the Lisbon Valley. Mineralization also, has been noted on the rim in the extreme southern part of the area near the Service Berry Mine, and near the Western Mine Development Company Discovery. (Now Continental)

Four large ore deposits have been discovered and are operating in the area. They are: The Utex Mine, located in July 1951 by Charles Steen, The Cal Uranium Company ore-

body located in the northern part of Big Indian Wash, and the Continental Uranium Ore-body located in the Southern part of Big Indian Wash. In addition, two other deposits are reaching the production stage, they are, the Homestake-Little Beaver deposit southwest of the Steen Mine, and the Homestake-Hudson deposit located north of the Cal Uranium Company shaft in the northern part of Big Indian Wash. Also in recent months several large deposits of uranium ore have been blocked out by the Homestake Mining Company on the "Peace" and "Cherib" Claim located in the northern part of Big Indian Wash about 3 miles southeast of the properties under discussion and by the Cal Uranium Co. of Moab Utah; the deposits lying between the Homestake-Peace and Cherib deposit and the Cal Uranium Company San Juan Shaft.

Study of the cores from the northern part of the Big Indian Wash area indicates that the ore, mainly disemenated uraninite, is confined to three closely spaces horizons within the Mossback member of the Triassic Chinle. The host rock consists of a gray, medium-grained, poorly cemented, micaceous sandstone, to a gray-green siltstone. The ore horizons are separated by 1 to 2 feet of barren mudstones and siltstones. These barren mudstones are composed of the Illite and Montmorillonite-type. The sandstone contains pyrite and marcasite. Muscovite is found along the bedding plains. Calcite is the most common cementing material, and is accompanied by iron oxide and vanadium minerals. Uraninite, the major ore mineral, is present in irregular pods and lenses within the host rock and as material between clastic grains.

On the east side of the Lisbon Valley fault there has been some small amount of work undertaken by private organizations to examine and to evaluate the Salt Wash member of the Jurassic Morrison formation. There has been some drilling done in the area but little information is available because no dill cores were taken and not many of the holes were gamma ray logged by the United States Atomic Energy Commission Gamma Ray Logging unit. The holes drilled, were drilled to depths of 650 to 850 feet. The upper Salt Wash sandstone leases are the major uranium and vanadium ore producing horizons in the area examined. The Cal Uranium Company of Moab, Utah has drilled three holes east of the Lisbon Valley fault and just a mile northeast of the Big Indian Copper Mine to depths of approximately 700 feet. Of the three holes drilled, one showed definite signs of mineralization at two different stratigraphic horizons: One within the Brushy Basin member of the Morrison and the other within the upper sandstone lense of the Salt Wash member of the Morrison formation.

This information was obtained from the gamma ray log records of the United States Atomic Energy Commission. The records are available at the USAEC field camp in the Big Indian Wash District and the drill logs carry the prefix Brown 4, 5, and 7. From core examination of the other holes, some copper mineralization was seen in the lower Dakota sandstone, near the Big Indian Copper Mine. The cores of the Salt Wash taken from the drill holes by the Cal Uranium Company, indicates that

the host rock, that is the upper sandstone of the Salt Wash, is a gray to tan sandstone, carbonaceous in places and containing noticable amounts of clay. There were no chemical asseys made on the mineralized parts of the core for uranium, vanadium or copper.

The Salt Wash exposed in the district as a whole is mineralized. The Vanadium Queen Mine, The Yellow Bird Mine, in the east, The Raven Group to the southeast, The Waterfall and Wilson groups to the south, The Rattlesnake group to the south, and the Yellow Circle and Browns Hole group to the northwest. The tonage of these deposits range between 2 and 10,000 tons.

In considering the favorable producing horizons in the area immediately surrounding the School Leases under consideration, it is to be noted that approximately one mile southeast of the properties the Rattlesnake Mine, owned by the Continental Uranium Mining Company of Grand Junction Colorado is now in the production stage and shipping ~~grade~~ uranium ore to the mill. Results of recent core drillings on the property are reported to have been excellent. North of the School Leases under consideration is the Browns Hole District at a distance of only 2 miles. Some mention has previously been made of the value of the ore shipped from the Browns Hole District.

Three miles southeast of the School Leases under consideration are the newly developed deposits of the Homestake Mining Company on the "Peace" and "Cherib" Claims and the newly developed deposits of the Cal Uranium Company on the Queen Ann, Split

Rock, Valley, Quail, and Neutron Claims, so it would seem logical to suspect that some favorable results can be expected in the exploration of the School Section Leases herein considered.

CONCLUSIONS AND RECOMMENDATIONS

During the course of the geologic investigation of the North Big Indian Wash-Lisbon Valley District the following conclusions were reached:

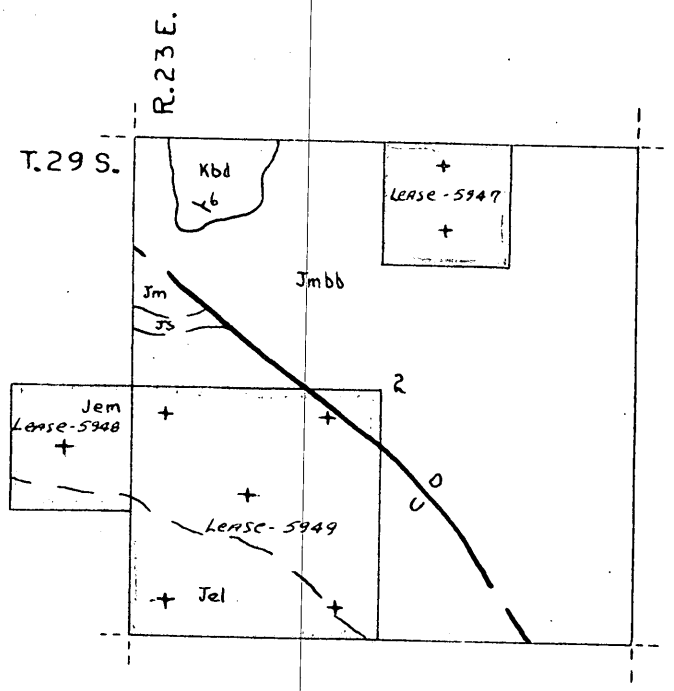
1. The areas investigated (legal description previously given) appear to be favorably located with respect to known uranium ore deposits and favorable producing horizons.
2. Drilling depths to the favorable Salt Wash horizon will range between 2 and 4 hundred feet.
3. Drilling depths to the favorable Mossback member of the Chinle formation will range between 1200 and 1400 feet, on leases 5948 & 5949; to 1800 feet on lease 5947.
4. Available field evidence indicates that ore has been found in the Mossback member of the Triassic Chinle formation along the Lisbon Valley fault as far northwest as drilling has progressed to the present time. (To a point about 3 miles southeast of Lease No. 5949.)

On the basis of the foregoing conclusions the following recommendations are made:

1. It is suggested that some consideration be given to the further exploration (by diamond drilling) of the property held under School Section Leases No. 5947, 5948, and 5949. It is recommended that drilling be done on 500 foot centers to delineate favorable ground within both the Salt Wash member

of the Jurassic Morrison formation and within the Mossback Member of the Triassic Chinle formation. If ore-bearing horizons are discovered within the Mossback member of the Chinle formation it is unlikely that closer spaced drilling will be necessary in the initial stages of the drilling program. However, if mineralization is located within the Salt Wash member of the Morrison formation it is recommended that drilling in favorable Salt Wash areas be done on 250 foot and then 100 foot centers for maximum coverage.

2. At the present time it is recommended that only about 8 holes be drilled on the properties with 2 of the ~~all~~ 8 holes being designed to explore both the Salt Wash member of the Morrison formation and the Mossback member of the Chinle formation and 6 holes designed to explore the mossback. It is further recommended that government aid in the form of a DMEA LOAN be requested to finance the drilling of these 8 holes.



DRILL HOLE LOCATION MAP

VIVIAN URANIUM MINING CO.

Big Indian Wash District
San Juan County, Utah.

0 1000 2000
Scale in Feet

N

—KEY—

Kbd = Dakota Ss
Jmbb = Brushy Basin (mem. of Mokr.)
Jm = Morrison Fm (undiv.)
Jem, Jel = Entrada Ss
= Fault
= Contact
+ = DRILL SITE

FIGURE- 4. - Proposed Drill Hole Location Map, Vivian Uranium Mining Co. School Section Lease, Big Indian Wash District, San Juan County, Utah.

CABLE ADDRESS
"NATCO"

MAILING ADDRESS
P. O. BOX 2540

NEVADA AGENCY AND TRUST COMPANY
ESTABLISHED 1903
CHENEY BUILDING, 139 NORTH VIRGINIA STREET
RENO, NEVADA

October 11, 1954

Green, Green & Plumley
Attorneys at Law
219 South D Street
Madera, California

Attention: Sherwood Green

Gentlemen:

This is to advise you that this day Lynne Smith, named Lessee in that certain agreement made and entered into between Samson Uranium, a corporation therein called Lessor, dated September 22, 1954, has deposited with us the sum of $15,000.00, pursuant to the terms and conditions designated in Paragraph 3a., on pages 2 and 3 of said agreement.

Very truly yours,

Hayes E. Shaffer, President

HES:hv

Samson Uranium does consent to assignment of this agreement to the Union Uranium Mining Co. Inc. corporation, provided that concurrently with the said assignment said corporation assumes and agrees to perform the terms of said agreement as consideration of said assignment, and that a copy of the assignment be forwarded to Samson Uranium by the said corporation, accompanied by evidence of the authority for execution.

Dated: October 22, 1954.

SAMSON URANIUM

By Sherwood Green

ASSIGNMENT OF AGREEMENT

The undersigned, LYNNE SMITH, in consideration of the sum of Ten Dollars ($10.00), lawful money of the United States of America, to whom in hand paid and for other good and valuable consideration, the receipt whereof is hereby acknowledged, does hereby assign, transfer, convey and set over unto VIVIAN URANIUM MINING CO., INC., a Nevada corporation, all of his right, title and interest in and to that certain Agreement, dated the 22nd day of September, 1954, by and between Samson Uranium, a partnership, therein named "Lessors", and Lynne Smith, therein named "Lessee", a copy of said Agreement being attached hereto, made a part hereof and incorporated herein with the same force and effect as if set out at length herein.

Dated: This 11th day of October, 1954.

Lynne Smith

Lynne Smith

STATE OF NEVADA,)
) ss.
COUNTY OF WASHOE.)

On this 11th day of October, 1954, personally appeared before me, a Notary Public in and for said County and State aforesaid, LYNNE SMITH, known to me to be the person described in and who executed the above instrument and who acknowledged to me that he executed the same, freely and voluntarily, and for the uses and purposes therein mentioned.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, the day and year in this certificate first above written.

Hilary E. Murphy

NOTARY PUBLIC, in and for said County and State.

My Commission expires:
October 29, 1954.

A G R E E M E N T

THIS AGREEMENT, made and entered into by and between SAMSON URANIUM, a partnership, herein called "LESSORS", and LYNNE SMITH, as LESSEE, herein called "SMITH",

W I T N E S S E T H:

In consideration of the sum of One Dollar ($1.00) in hand paid by Smith to Lessors, the receipt of which is hereby acknowledged, and in consideration of the agreements of Smith herein contained, Lessors hereby assign, transfer and convey to Smith all of their right, title and interest in and to those portions of Utah State leases specifically hereinafter set forth, covering the lands hereinafter described, situated in San Juan County, State of Utah:

Parcel 1: That portion of State of Utah Lease No. 5947, covering the West one-half (W½) of Lots One (1) and Two (2) of Section Two (2), Township 29 South, Range 23 East, containing 40 acres, more or less;
79.84

Parcel 2: All of State of Utah Lease No. 5948, covering the Northeast quarter of Southeast quarter (NE¼ of SE¼) of Section Three (3), Township 29 South, Range 23 East, containing 40 acres, more or less;

Parcel 3: That portion of State of Utah lease No. 5949, covering the Northwest quarter of Southwest quarter (NW¼ of SW¼) and the Southeast quarter of Southwest quarter (SE¼ of SW¼) of Section Two (2), Township 29 South, Range 23 East, containing 80 acres.
160

Lessors and Smith agree as follows:

1. Lessors agree to apply to the State of Utah for the consent of the State of Utah to the assignments of interest in said leases (and the interests therein assigned as herein provided) to Smith, and such consent shall be a condition precedent to any liability of Smith, hereunder.

2. Smith will pay all rentals and royalties accruing to the State of Utah for the use of said lands described in Parcels 1, 2 and 3 from the effective date of this agreement, except

rentals for the year 1954 already paid the State of Utah. Any reduction hereafter made in the rents and royalties now provided in said existing leases numbered 5947, 5948 and 5949 to be paid to the State of Utah shall be credited equally to the parties hereto. Smith shall pay the Lessors one-half (1/2) of the amount of such reduction at the same times, on the same terms, and in the same manner as rents and royalties are paid hereunder to the Lessors.

3. Smith agrees to pay Lessors the sum of Two Thousand Dollars ($2,000.00), by mailing a check in that amount, payable to Samson Uranium, to Sherwood Green for Lessors, at P. O. Box 1019, Madera, California, on or before Wednesday, September 22, 1954, which sum is a payment of advance royalties in addition to the royalties hereinafter provided to be paid, and which sum shall in no event be returnable to Smith.

3a. Smith will pay to Lessors seven and one-half per cent (7-1/2%) of the proceeds of mineral production from said lands with respect to all ore delivered from said lands which is sold by Smith at a price of not to exceed Fifty Dollars ($50.00) per short ton (of 2,000 pounds) and ten per cent (10%) of such proceeds with respect to all ore delivered from said lands which is sold by Smith at a price exceeding Fifty Dollars ($50.00) per short ton. All ore shall be delivered as mined without dilution as to grade. The term "proceeds" as used in this paragraph shall mean gross proceeds and shall include all bonus payments, premiums and allowances of every nature, except that it shall not include any haulage allowance paid by the United States Atomic Energy Commission or any similar payment for transporting ore from said lands to a purchase depot. No

ores or minerals (other than samples for assaying or inspection) shall be delivered from the properties except for sale or processing for ultimate sale.

As additional consideration, Smith agrees to deposit, on or before October 10, 1954, Fifteen thousand dollars ($15,000.00) with the First National Bank in Madera, Madera, California, or at Smith's option with the First Security Bank of Utah, Provo, Utah, or other escrow agent selected by the parties, in escrow, and immediately make an application to D.M.E.A. for a loan to drill the properties herein described and to use the $15,000.00 as "match money" in applying for said loan. If D.M.E.A. refuses to make a loan for the drilling of the properties, this agreement shall be immediately terminated and be of no force and effect, unless within five (5) days of the date of refusal of the D.M.E.A. loan, Smith elects to drill Parcel 1, in which event drilling shall commence within twenty (20) days from the date of Smith's election to drill Parcel 1, which drilling shall proceed as hereinafter provided. If D.M.E.A. refuses to make a loan for the drilling of the properties, and Smith does not elect to drill said Parcel 1 as above provided, and this agreement is terminated, the $15,000.00 deposited by Smith in escrow is to be returned to Smith. If the D.M.E.A. loan is granted, the $15,000.00 deposited by Smith is to be used with the proceeds from the D.M.E.A. loan for the purpose of drilling these properties. Smith is to pay all expenses for geologists, legal and other expenses in connection with the D.M.E.A. loan.

4. Smith will perform all of the obligations created by said leases from the State of Utah with respect to said lands described in this agreement.

5. Smith will hold Lessors harmless from any liability resulting from Smith's operation of said lands, except liability for all taxes, including income taxes, upon the proceeds received by Lessors hereunder; provided, however, that any severance taxes now or hereafter imposed by the State of Utah, or any county or political subdivision thereof, shall be borne equally by the respective parties hereto.

6. Lessors agree, at their expense, to obtain permission from any holders of surface rights on said lands described in this agreement for entry by Smith upon said property to perform his obligations under this agreement.

7. If a D.M.E.A. loan is granted, Smith agrees to immediately begin to drill said properties and to continue said drilling with the best equipment reasonably procurable for the purpose in the area. Smith will perform such drilling on a reasonably continuous basis except when such performance is delayed or interrupted because of strikes, acts of God, inclement weather or other causes beyond the control of Smith, provided that if Smith, in his drilling operations on any parcel encounters ore in commercial quantities and is actively engaged in the developing and mining of the same that he may suspend his drilling requirements on the remainder of that parcel with the exception of such requirements as will satisfy the Utah Land Board. All of said drilling will be completed within eighteen (18) months from the date of the granting of said D.M.E.A. loan.

MINING - If ore in commercial quantities is encountered in the drilling so that, in ordinary mining practices, it would be reasonable to extract and sell the same, Smith then agrees to sink a shaft to said ore and mine the same, work to proceed

on a reasonably continuous basis except when such performance is delayed or interrupted because of strikes, acts of God, inclement weather or other causes beyond the control of Smith, and to perform in said mining operations not less than one hundred (100), eight (8) hour man shifts per month, so long as commercial ore is available to be mined. Said mining is to be conducted in accordance with the best mining practices common in the Colorado Plateau Area.

Smith agrees to procure and furnish Lessors with evidence that he carries adequate compensation insurance and to save Lessors harmless in all respects in connection with said mining operations. Lessors may post on the properties such notices of non-responsibility as they elect to post, and Smith agrees that said notices shall remain on the property during the operations thereon.

If minerals (other than those referred to in said leases from the State of Utah covering the properties described herein) are discovered in commercial quantities in the prospecting of any of said properties by Smith, the Lessors agree to apply to the State of Utah for a lease or leases covering such minerals and if such lease or leases is or are granted to the Lessors by the State of Utah, such lease or leases shall be assigned to Smith with the provisions for the payment of a royalty to be arrived at by agreement or by arbitration if the parties cannot agree.

8. Lessors may enter on the property at all times for the purpose of inspecting the operations conducted thereon by Smith and shall be permitted to sample and to do any surveying that they desire to do on said property at Lessors' expense. Smith will make available to Lessors for inspection or copying all maps, engineers reports, core loggings and assays including assays of cores and core sludge. Smith shall furnish Lessors a

duplicate of all settlement sheets for ore sold.

9. Smith shall make any payment required under paragraph 3a herein within ten (10) days after receipt by Smith of proceeds with respect to which such payments are required. Any such payment may be made to any Bank in Utah selected by the parties who will receive such payment on behalf of Lessors and all their partners or their successors in interest, and Smith shall not be responsible for the disposition or distribution of any such payment made to said Bank, but shall be deemed to have fully satisfied paragraph 3a herein and this paragraph 9 upon such payment to said Bank.

10. Lessors represent that the lands described herein are actually leased by the State of Utah to Lessors (or in the names of certain thereof) and that said leases are duly executed by the parties and that Lessors have performed all of the things to be done under the terms of said leases up to the time of the execution of this agreement and that said leases are not in default.

In the event that the State of Utah does not have paramount title to the property described herein, or in the event that the United States Government or the State of Utah exercises any rights in such a way that the parties hereto are prevented from mining upon or operating said properties or any thereof, as herein provided, then as to such property or properties Smith or Lessors at their option may terminate this agreement. In such event, neither party shall have any liability one to the other for anticipated profits or for expenditures made on said lands.

OK RDS. ~~11. Lessors agree that if, after examination of any of the parcels referred to herein, by engineers or geologists of Smith, it is not desirable in Smith's judgment, to drill such parcel,~~

~~then the lease covering such parcel shall terminate and Smith shall re-assign the same to Lessors. In such event, Lessors will assign to Smith a lease on equivalent acreage to be selected by Smith out of any of the property of the Lessors covered by State lease of the State of Utah, on the same terms and conditions as herein set forth, provided that said acreage must be selected from lands held under lease by Lessors and upon which no prior commitment has been made by Lessors.~~

OK RAS.

12. Smith agrees that he will comply with all laws, rules and regulations of the United States and the State of Utah in the mining and operation of said premises described herein and in the performance of this agreement.

13. Smith may at any time abandon this agreement upon ten (10) days' notice to Lessors to that effect, whereupon all of Smith's rights and liabilities hereunder shall cease and terminate except for his liability to pay all royalties then due, and all payments made to Lessors up to the time of such abandonment shall be forfeited by Smith. In the event of such abandonment by Smith, he shall have the consent of Lessors to remove, within four (4) months of the date of such abandonment, all movable materials, buildings, machinery or equipment placed by Smith upon the leased premises; provided, however, that Smith may not exercise such right until he shall have paid to Lessors all royalties or other payments then due to them.

14. This agreement shall extend to, and be binding upon, all successors of Smith, and of Lessors (and of the individual partners of Lessors), their heirs, executors, personal representatives and assigns, provided that Smith shall not assign his rights hereunder without the prior consent of the Lessors, evidenced by the signature of any one of the partners of the

partnership, and assignee assumes the obligations thereof.

15. Smith agrees that time in the making of payments and performance of the agreements by him to be performed are of the essence of this agreement, and upon any failure to make payments when due or to perform any of the other terms of this agreement, Lessors, at their option, may declare this lease terminated, and re-enter and repossess themselves of the premises, the right of re-entry being expressly reserved, and Lessors shall have any other rights as provided by the laws of the State of Utah for the breach of an agreement of this nature; PROVIDED, HOWEVER, that if at any time Smith shall violate any of the terms, conditions, or covenants hereof, Lessors may declare Smith's rights terminated, and may re-enter the premises and evict Smith therefrom, using such force as may be necessary, and retain all sums theretofor paid by Smith, the right of re-entry being expressly reserved, provided, however, that before any such declaration may be made, Lessors shall give Smith notice in writing specifically directing attention to the breach or breaches complained of, and Smith shall have thirty(30) days thereafter within which to remedy said breach or breaches, except for the $15,000 deposit which is to be deposited by October 10, 1954, as provided in paragraph 3a herein, and the application to the D.M.E.A. for a loan as provided in paragraph 3a herein.

All notices to be mailed under the terms of this agreement to Smith shall be addressed and mailed to:

Lynne Smith
Room 635 Merchants Exchange Bldg.
San Francisco, California

State of California
City and County of San Francisco } ss.

On this 12th day of October in the year of One Thousand Nine Hundred and fifty-four before me, ROSAMOND M. MELLOR, a Notary Public, in and for the City and County of San Francisco, residing therein, duly commissioned and sworn, personally appeared S. G. Sargis

known to me to be the person described in, whose name is subscribed to the within instrument and acknowledged to me that he executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal in the said City and County of San Francisco, the day and year in this certificate first above written.

Rosamond M. Mellor

NOTARY PUBLIC
In and for the City and County of San Francisco, State of California

My Commission Expires September 23, 1956

GENERAL

It is mutually agreed that the aforegoing agreement be amended so that PARCEL 3 shall read:

"Parcel 3: All of State of Utah lease No. 5949, covering the Southwest quarter of Section Two (2), Township 29 South, Range 23 East, containing 160 acres."

and in all other particulars it shall remain unchanged.

Dated: October 22, 1954.

SAMSON URANIUM

By Sherwood Green

Lynne Smith

Lynne Smith

16. It is expressly agreed that Lessors or its agents or representatives have made no representations or warranty that there is Uranium or other valuable minerals in said land above described, and Smith is entering into this agreement upon his own investigation in regard to the possible minerals contents of said lands.

IN WITNESS WHEREOF, the parties hereto have hereunto set their hands and seals as of the 22 day of September, 1954.

SAMSON URANIUM, a partnership, Lessors

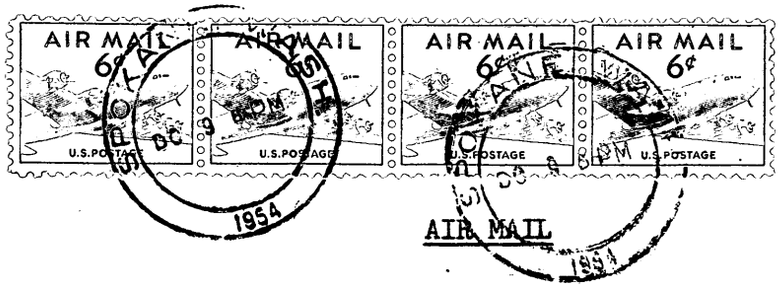
By _____

_____
LYNNE SMITH, Lessee

SPOKANE 2, WASHINGTON

OFFICIAL BUSINESS

(PMGC)



AIR MAIL

Mr. George C. Selfridge, Chairman
DMEA Operating Committee
Department of the Interior
Washington 25, D. C.

CABLE ADDRESS
"NATCO"

MAILING ADDRESS
P. O. BOX 2540

NEVADA AGENCY AND TRUST COMPANY
ESTABLISHED 1903
CHENEY BUILDING, 139 NORTH VIRGINIA STREET
RENO, NEVADA

October 11, 1954

Green, Green & Plumley
Attorneys at Law
219 South D Street
Madera, California

Attention: Sherwood Green

Gentlemen:

This is to advise you that this day Lynne Smith, named Lessee in that certain agreement made and entered into between Samson Uranium, a corporation therein called Lessor, dated September 22, 1954, has deposited with us the sum of $15,000.00, pursuant to the terms and conditions designated in Paragraph 3a., on pages 2 and 3 of said agreement.

Very truly yours,

Hayes E. Shaffer, President

HES:hv

Samson Uranium does consent to assignment of this agreement to the Union Uranium Mining Co. Inc. corporation, provided that concurrently with the said assignment said corporation assumes and agrees to perform the terms of said agreement as consideration of said assignment, and that a copy of the assignment be forwarded to Samson Uranium by the said corporation, accompanied by evidence of the authority for execution.

Dated: October 22, 1954.

SAMSON URANIUM

By Sherwood Green

ASSIGNMENT OF AGREEMENT

The undersigned, LYNNE SMITH, in consideration of the sum of Ten Dollars ($10.00), lawful money of the United States of America, to whom in hand paid and for other good and valuable consideration, the receipt whereof is hereby acknowledged, does hereby assign, transfer, convey and set over unto VIVIAN URANIUM MINING CO., INC., a Nevada corporation, all of his right, title and interest in and to that certain Agreement, dated the 22nd day of September, 1954, by and between Samson Uranium, a partnership, therein named "Lessors", and Lynne Smith, therein named "Lessee", a copy of said Agreement being attached hereto, made a part hereof and incorporated herein with the same force and effect as if set out at length herein.

Dated: This 11th day of October, 1954.

Lynne Smith

Lynne Smith

STATE OF NEVADA,)
) ss.
COUNTY OF WASHOE.)

On this 11th day of October, 1954, personally appeared before me, a Notary Public in and for said County and State aforesaid, LYNNE SMITH, known to me to be the person described in and who executed the above instrument and who acknowledged to me that he executed the same, freely and voluntarily, and for the uses and purposes therein mentioned.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, the day and year in this certificate first above written.

Hilary E. Murray

NOTARY PUBLIC, in and for said County and State.

My Commission expires:
October 29, 1954.

A G R E E M E N T

THIS AGREEMENT, made and entered into by and between SAMSON URANIUM, a partnership, herein called "LESSORS", and LYNNE SMITH, as LESSEE, herein called "SMITH",

W I T N E S S E T H:

In consideration of the sum of One Dollar ($1.00) in hand paid by Smith to Lessors, the receipt of which is hereby acknowledged, and in consideration of the agreements of Smith herein contained, Lessors hereby assign, transfer and convey to Smith all of their right, title and interest in and to those portions of Utah State leases specifically hereinafter set forth, covering the lands hereinafter described, situated in San Juan County, State of Utah:

Parcel 1: That portion of State of Utah Lease No. 5947, covering the West one-half (W½) of Lots One (1) and Two (2) of Section Two (2), Township 29 South, Range 23 East, containing 40 acres, more or less;

Parcel 2: All of State of Utah Lease No. 5948, covering the Northeast quarter of Southeast quarter (NE¼ of SE¼) of Section Three (3), Township 29 South, Range 23 East, containing 40 acres, more or less;

Parcel 3: That portion of State of Utah lease No. 5949, covering the Northwest quarter of Southwest quarter (NW¼ of SW¼) and the Southeast quarter of Southwest quarter (SE¼ of SW¼) of Section Two (2), Township 29 South, Range 23 East, containing 80 acres.

Lessors and Smith agree as follows:

1. Lessors agree to apply to the State of Utah for the consent of the State of Utah to the assignments of interest in said leases (and the interests therein assigned as herein provided) to Smith, and such consent shall be a condition precedent to any liability of Smith, hereunder.

2. Smith will pay all rentals and royalties accruing to the State of Utah for the use of said lands described in Parcels 1, 2 and 3 from the effective date of this agreement, except

rentals for the year 1954 already paid the State of Utah. Any reduction hereafter made in the rents and royalties now provided in said existing leases numbered 5947, 5948 and 5949 to be paid to the State of Utah shall be credited equally to the parties hereto. Smith shall pay the Lessors one-half (1/2) of the amount of such reduction at the same times, on the same terms, and in the same manner as rents and royalties are paid hereunder to the Lessors.

3. Smith agrees to pay Lessors the sum of Two Thousand Dollars ($2,000.00), by mailing a check in that amount, payable to Samson Uranium, to Sherwood Green for Lessors, at P. O. Box 1019, Madera, California, on or before Wednesday, September 22, 1954, which sum is a payment of advance royalties in addition to the royalties hereinafter provided to be paid, and which sum shall in no event be returnable to Smith.

3a. Smith will pay to Lessors seven and one-half per cent (7-1/2%) of the proceeds of mineral production from said lands with respect to all ore delivered from said lands which is sold by Smith at a price of not to exceed Fifty Dollars ($50.00) per short ton (of 2,000 pounds) and ten per cent (10%) of such proceeds with respect to all ore delivered from said lands which is sold by Smith at a price exceeding Fifty Dollars ($50.00) per short ton. All ore shall be delivered as mined without dilution as to grade. The term "proceeds" as used in this paragraph shall mean gross proceeds and shall include all bonus payments, premiums and allowances of every nature, except that it shall not include any haulage allowance paid by the United States Atomic Energy Commission or any similar payment for transporting ore from said lands to a purchase depot. No

ores or minerals (other than samples for assaying or inspection) shall be delivered from the properties except for sale or processing for ultimate sale.

As additional consideration, Smith agrees to deposit, on or before October 10, 1954, Fifteen thousand dollars ($15,000.00) with the First National Bank in Madera, Madera, California, or at Smith's option with the First Security Bank of Utah, Provo, Utah, or other escrow agent selected by the parties, in escrow, and immediately make an application to D.M.E.A. for a loan to drill the properties herein described and to use the $15,000.00 as "match money" in applying for said loan. If D.M.E.A. refuses to make a loan for the drilling of the properties, this agreement shall be immediately terminated and be of no force and effect, unless within five (5) days of the date of refusal of the D.M.E.A. loan, Smith elects to drill Parcel 1, in which event drilling shall commence within twenty (20) days from the date of Smith's election to drill Parcel 1, which drilling shall proceed as hereinafter provided. If D.M.E.A. refuses to make a loan for the drilling of the properties, and Smith does not elect to drill said Parcel 1 as above provided, and this agreement is terminated, the $15,000.00 deposited by Smith in escrow is to be returned to Smith. If the D.M.E.A. loan is granted, the $15,000.00 deposited by Smith is to be used with the proceeds from the D.M.E.A. loan for the purpose of drilling these properties. Smith is to pay all expenses for geologists, legal and other expenses in connection with the D.M.E.A. loan.

4. Smith will perform all of the obligations created by said leases from the State of Utah with respect to said lands described in this agreement.

5. Smith will hold Lessors harmless from any liability resulting from Smith's operation of said lands, except liability for all taxes, including income taxes, upon the proceeds received by Lessors hereunder; provided, however, that any severance taxes now or hereafter imposed by the State of Utah, or any county or political subdivision thereof, shall be borne equally by the respective parties hereto.

6. Lessors agree, at their expense, to obtain permission from any holders of surface rights on said lands described in this agreement for entry by Smith upon said property to perform his obligations under this agreement.

7. If a D.M.E.A. loan is granted, Smith agrees to immediately begin to drill said properties and to continue said drilling with the best equipment reasonably procurable for the purpose in the area. Smith will perform such drilling on a reasonably continuous basis except when such performance is delayed or interrupted because of strikes, acts of God, inclement weather or other causes beyond the control of Smith, provided that if Smith, in his drilling operations on any parcel encounters ore in commercial quantities and is actively engaged in the developing and mining of the same that he may suspend his drilling requirements on the remainder of that parcel with the exception of such requirements as will satisfy the Utah Land Board. All of said drilling will be completed within eighteen (18) months from the date of the granting of said D.M.E.A. loan.

MINING - If ore in commercial quantities is encountered in the drilling so that, in ordinary mining practices, it would be reasonable to extract and sell the same, Smith then agrees to sink a shaft to said ore and mine the same, work to proceed

on a reasonably continuous basis except when such performance is delayed or interrupted because of strikes, acts of God, inclement weather or other causes beyond the control of Smith, and to perform in said mining operations not less than one hundred (100), eight (8) hour man shifts per month, so long as commercial ore is available to be mined. Said mining is to be conducted in accordance with the best mining practices common in the Colorado Plateau Area.

Smith agrees to procure and furnish Lessors with evidence that he carries adequate compensation insurance and to save Lessors harmless in all respects in connection with said mining operations. Lessors may post on the properties such notices of non-responsibility as they elect to post, and Smith agrees that said notices shall remain on the property during the operations thereon.

If minerals (other than those referred to in said leases from the State of Utah covering the properties described herein) are discovered in commercial quantities in the prospecting of any of said properties by Smith, the Lessors agree to apply to the State of Utah for a lease or leases covering such minerals and if such lease or leases is or are granted to the Lessors by the State of Utah, such lease or leases shall be assigned to Smith with the provisions for the payment of a royalty to be arrived at by agreement or by arbitration if the parties cannot agree.

8. Lessors may enter on the property at all times for the purpose of inspecting the operations conducted thereon by Smith and shall be permitted to sample and to do any surveying that they desire to do on said property at Lessors' expense. Smith will make available to Lessors for inspection or copying all maps, engineers reports, core loggings and assays including assays of cores and core sludge. Smith shall furnish Lessors a

duplicate of all settlement sheets for ore sold.

9. Smith shall make any payment required under paragraph 3a herein within ten (10) days after receipt by Smith of proceeds with respect to which such payments are required. Any such payment may be made to any Bank in Utah selected by the parties who will receive such payment on behalf of Lessors and all their partners or their successors in interest, and Smith shall not be responsible for the disposition or distribution of any such payment made to said Bank, but shall be deemed to have fully satisfied paragraph 3a herein and this paragraph 9 upon such payment to said Bank.

10. Lessors represent that the lands described herein are actually leased by the State of Utah to Lessors (or in the names of certain thereof) and that said leases are duly executed by the parties and that Lessors have performed all of the things to be done under the terms of said leases up to the time of the execution of this agreement and that said leases are not in default.

In the event that the State of Utah does not have paramount title to the property described herein, or in the event that the United States Government or the State of Utah exercises any rights in such a way that the parties hereto are prevented from mining upon or operating said properties or any thereof, as herein provided, then as to such property or properties Smith or Lessors at their option may terminate this agreement. In such event, neither party shall have any liability one to the other for anticipated profits or for expenditures made on said lands.

OK RDS. ~~11. Lessors agree that if, after examination of any of the parcels referred to herein, by engineers or geologists of Smith, it is not desirable in Smith's judgment, to drill such parcel,~~

~~then the lease covering such parcel shall terminate and Smith shall re-assign the same to Lessors. In such event, Lessors will assign to Smith a lease on equivalent acreage to be selected by Smith out of any of the property of the Lessors covered by State lease of the State of Utah, on the same terms and conditions as herein set forth, provided that said acreage must be selected from lands held under lease by Lessors and upon which no prior commitment has been made by Lessors.~~

12. Smith agrees that he will comply with all laws, rules and regulations of the United States and the State of Utah in the mining and operation of said premises described herein and in the performance of this agreement.

13. Smith may at any time abandon this agreement upon ten (10) days' notice to Lessors to that effect, whereupon all of Smith's rights and liabilities hereunder shall cease and terminate except for his liability to pay all royalties then due, and all payments made to Lessors up to the time of such abandonment shall be forfeited by Smith. In the event of such abandonment by Smith, he shall have the consent of Lessors to remove, within four (4) months of the date of such abandonment, all movable materials, buildings, machinery or equipment placed by Smith upon the leased premises; provided, however, that Smith may not exercise such right until he shall have paid to Lessors all royalties or other payments then due to them.

14. This agreement shall extend to, and be binding upon, all successors of Smith, and of Lessors (and of the individual partners of Lessors), their heirs, executors, personal representatives and assigns, provided that Smith shall not assign his rights hereunder without the prior consent of the Lessors, evidenced by the signature of any one of the partners of the

partnership, and assignee assumes the obligations thereof.

15. Smith agrees that time in the making of payments and performance of the agreements by him to be performed are of the essence of this agreement, and upon any failure to make payments when due or to perform any of the other terms of this agreement, Lessors, at their option, may declare this lease terminated, and re-enter and repossess themselves of the premises, the right of re-entry being expressly reserved, and Lessors shall have any other rights as provided by the laws of the State of Utah for the breach of an agreement of this nature; PROVIDED, HOWEVER, that if at any time Smith shall violate any of the terms, conditions, or covenants hereof, Lessors may declare Smith's rights terminated, and may re-enter the premises and evict Smith therefrom, using such force as may be necessary, and retain all sums theretofor paid by Smith, the right of re-entry being expressly reserved, provided, however, that before any such declaration may be made, Lessors shall give Smith notice in writing specifically directing attention to the breach or breaches complained of, and Smith shall have thirty(30) days thereafter within which to remedy said breach or breaches, except for the $15,000 deposit which is to be deposited by October 10, 1954, as provided in paragraph 3a herein, and the application to the D.H.E.A. for a loan as provided in paragraph 3a herein.

All notices to be mailed under the terms of this agreement to Smith shall be addressed and mailed to:

Lynne Smith
Room 635 Merchants Exchange Bldg.
San Francisco, California

State of California
City and County of San Francisco } ss.

On this 12th day of October in the year of One Thousand Nine Hundred and fifty-four before me, ROSAMOND M. MELLOR, a Notary Public, in and for the City and County of San Francisco, residing therein, duly commissioned and sworn, personally appeared S. G. Sargis

known to me to be the person described in, whose name is subscribed to the within instrument and acknowledged to me that he executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal in the said City and County of San Francisco, the day and year in this certificate first above written.

Rosamond M. Mellor

NOTARY PUBLIC
In and for the City and County of San Francisco, State of California

My Commission Expires September 23, 1956

GENERAL

It is mutually agreed that the aforegoing agreement be amended so that PARCEL 3 shall read:

"Parcel 3: All of State of Utah lease No. 5949, covering the Southwest quarter of Section Two (2), Township 29 South, Range 23 East, containing 160 acres."

and in all other particulars it shall remain unchanged.

Dated: October 22, 1954.

SAMSON URANIUM

By Sherwood Green

Lynne Smith

Lynne Smith

16. It is expressly agreed that Lessors or its agents or representatives have made no representations or warranty that there is Uranium or other valuable minerals in said land above described, and Smith is entering into this agreement upon his own investigation in regard to the possible minerals contents of said lands.

IN WITNESS WHEREOF, the parties hereto have hereunto set their hands and seals as of the 22 day of September, 1954.

SAMSON URANIUM, a partnership, Lessors

By _____

_____
LYNNE SMITH, Lessee

4/29/55 gla

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

224 New Customhouse
Denver 2, Colorado

April 22, 1955

May 6,

Memorandum

To: Secretary to the Operating Committee, DMEA

From: DMEA Field Team, Region III

Subject: Report of Examination, DMEA Docket 3602 (Uranium), Vivian Uranium Mining Co., School Land Lease, San Juan County, Utah

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

We concur in the recommendation of the field examiners that the application be denied.

W. M. Traver
W. M. Traver

E. N. Harshman
E. N. Harshman

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
1600 EAST FIRST SOUTH STREET
SALT LAKE CITY 1, UTAH

DMEA
Date Rec'd.
APR 18 1955
BUREAU OF MINES
Denver, Colorado

TRANSMITTED
APR 22 1955

April 18, 1955

Memorandum

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

From: Stephen R. Wilson

Subject: Docket No. DMEA-3602 (Uranium), Vivian Uranium Mining Co., San Juan County, Utah

Attached are the original and 10 copies of an engineering report covering examination of the subject property. The report was prepared by W. E. Young. Also included are the required copies of a separate section, Summary, Conclusions and Recommendations, and a copy of the geologic report transmitted to this office by your memorandum dated March 28, 1955.

The applicant has requested a loan of $37,050 for 11,400 feet of diamond drilling in eight holes. The diamond drilling is proposed to penetrate the Salt Wash member of the Morrison formation and the Moss Back member of the Chinle formation. These members do not outcrop on the applicant's property. Inasmuch as potential ore-bearing beds are not exposed and the applicant has not demonstrated existence of specific exploratory targets, the examiners recommend that the loan request be denied. I concur in this recommendation.

The application has been discussed with members of the Atomic Energy Commission.

Stephen R. Wilson
Stephen R. Wilson

Enclosures

DMEAA
Date Rec'd
APR 18 1955
BUREAU OF MINES
Denver, Colorado

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

By D. W. Weir, C. L. Sidon and W. H. Young

Vivian Uranium Mining Co., lessee of uranium property in San Juan County, Utah, owned by the State of Utah, has applied for DMEA assistance under Docket No. DMEA-[illegible]. The area was examined by DMEA personnel February 18, 1954, to appraise the loan request. The applicant has proposed a diamond drilling project consisting of eight holes aggregating 11,000 feet, and estimated to cost $37,000.

Rocks exposed in the area of the Vivian property consist principally of the Entrada sandstone formation and the Brushy Basin member of the Morrison formation, both Jurassic in age. The outcrop of the Salt Wash member of the Morrison formation lies immediately adjacent to the applicant's property. Much of the applicant's property is covered by alluvium or colluvium consisting chiefly of blocks of quartzite.

The applicant has proposed diamond drilling to penetrate the Salt Wash member of the Morrison formation and the Moss Back member of the Chinle formation. No specific targets in either member have been outlined. The Moss Back member is probably overlain by 1,500 feet of younger sediments.

The potential ore-bearing beds are not exposed on the applicant's property, and the nearest outcrops of the beds appear geologically unfavorable. In addition, the applicant has not demonstrated the existence of specific exploratory targets on the property. It is therefore recommended that the request for EMEA assistance be denied.

VIVIAN URANIUM MINING CO.,
SAN JUAN COUNTY, UTAH
[illegible]
Uranium

Engineering Report

By V. L. Young
Mining Engineer
Bureau of Mines

VIVIAN URANIUM MINING Co.
SAN JUAN COUNTY, UTAH

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ILLUSTRATIONS

Fig. 1 Location map, Vivian Uranium Mining Co., San Juan County, Utah

SUMMARY

Vivian Uranium Mining Co., San Juan County, Utah, has made application for a DMEA loan to explore uranium property by diamond drilling. A field examination was made to ascertain the feasibility of the proposed project from a geologic standpoint. One outcrop of a known potentially favorable formation is exposed on the property. This occurrence of low-grade, carnotite-type mineralization had been explored and abandoned. The applicant has proposed diamond drilling at eight other locations to test the underlying formations. The required drilling footage requested by the applicant is 11,400 feet, estimated to cost $37,050.

Because of the low grade of the known mineralization and lack of any specific target other than potentially favorable formations, the examining team recommends that the application for a loan be denied.

INTRODUCTION

The property of the Vivian Uranium Mining Co. was examined February 18, 1956, by a geologist of the Geological Survey and an engineer of the Bureau of Mines. The examination was made at the request of the Regional Field Team to determine the advisability of granting a Government assistance loan. William Ferguson and Harry Bolster, representing the applicant, accompanied the examiners over the property.

The applicant proposes to explore the property by drilling eight diamond drill holes at a cost of $57,000.

LOCATION, TOPOGRAPHY AND PHYSICAL FEATURES

The property is located approximately 22 miles southeast of Moab, Utah, in Secs. 2 and 3, T. 30 S., R. 24 E., San Juan County, Utah (fig. 1). Most of the property is in the valley and covered with alluvium. The Morrison formation outcrops and makes an escarpment in one location. Utah Highway 46 passes through the property.

HISTORY AND PRODUCTION

The Vivian property is leased from the State of Utah. Some work has been done in the past on the outcropping Salt Wash member of the Morrison formation. It is reported that a few tons of carnotite-type ore were shipped. No exploratory work has been done recently on any part of the property.

GENERAL GEOLOGY

Most of the property under consideration lies in a valley and is covered with alluvium. The eastern part of the property has exposures of the Brushy Basin member of the Morrison formation. At one location, on the Highway claim, an outcropping exposure of the Salt Wash sandstone has been exploited in a small way for uranium. A few tons of low-grade, carnotite-type ore has been shipped. No recent development work has been done at this location for some time. There is no evidence of other

mineralized ground in the vicinity. The nearest occurrences of uranium mineralization known are the Rattlesnake mine of the Continental Uranium Co. about 1 mile southeast, and the Brown Hole deposits, 2 miles north. Both occurrences are in the Salt Wash sandstone. Uranium occurrences in the Chinle formation of the Big Indian district are about 5 miles south of the Vivian property. The Chinle is covered by at least 1,500 feet of younger sediments on the property of the Vivian Uranium Mining Co.

PROJECT PROPOSALS

The applicant proposes to explore the property by drilling eight diamond drill holes. Two of the holes are designed to penetrate both the Salt Wash member of the Morrison formation and the Moss Back member of the Chinle formation. Six are designed to explore only the Moss Back member. The cost of the work is estimated by the applicant to be $27,000. No mention is made of any target other than the specified formations, and none is known by the examining team. Because of this, it is considered that the proposed drilling is of wildcat nature.

CONCLUSIONS AND RECOMMENDATIONS

The Moss Back member of the Chinle formation is deeply buried on the property. The Salt Wash member of the Morrison formation is also deeply buried except for an outcrop in one location. The exposure of mineralization in the Salt Wash at this location is considered too poor

to justify the risk involved in undertaking the proposed project. For this reason the examining team recommends that the application for a loan be denied.

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

DMEA
Date Rec'd
MAR 1955
BUREAU OF MINES
Denver, Colorado
RECEIVED
APR 29 1955

Defense Minerals Exploration Administration

March 8, 1955

Memorandum

To: Field Team, Region III

From: E. N. Marshman

Subject: DMEA Docket 3602, Vivian Uranium Mining Company, State School Land Lease, San Juan County, Utah

Enclosed are 11 copies of a geologic report by G. W. Weir and C. L. Dodson, U. S. Geological Survey, on the subject application for exploration assistance.

The applicant proposes to drill eight holes totalling 11,400 feet, of which 2,000 feet will be core drilled, to explore the Salt Wash member of the Morrison formation and the Moss Back member of the Chinle formation. Weir and Dodson conclude that there is no evidence of mineralized or favorable ground on the property and therefore, there is no known target for exploration. They recommend that this application be denied.

I concur with this recommendation.

for D R Mackeren
E. N. Marshman
Member, Field Team

Enclosure

TRANSMITTED
APR 22 1955

DEPARTMENT OF THE INT.
Defense Minerals Adm.
DMEA
APR 29 1955

MINERAL DEPOSITS
DMEA
RECEIVED
MAR 7 1955
U. S.
GEOLOGICAL SURVEY
DENVER, COLORADO

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

March 3, 1955

Memorandum

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

From: W. P. Williams

Subject: DMEA 3602, Vivian Uranium Mining Company, State School Land Lease, San Juan County, Utah

Transmitted herewith are 11 copies of a geologic report by G. W. Weir and C. L. Dodson, covering a field examination of the above-referenced property.

Because the ore-bearing zones, consisting of the Moss Back member of the Chinle formation and the Salt Wash member of the Morrison formation, are not exposed on the property, geologic conditions in the nearest outcrops of the ore-bearing zones are unfavorable and because the applicant has not demonstrated the existence of geologic targets on the property, Weir and Dodson recommend that the application for DMEA assistance be denied. I concur with their recommendations.

This application has been discussed with Mr. Louis Garbrecht, Staff Geologist, Exploration Division, U. S. Atomic Energy Commission, Grand Junction Operations Office. The Commission had no specific data available regarding evaluation of the property.

We are returning the brochure for this application.

WPW/mlr
Enclosures

W P Williams
W. P. Williams
Geologist

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
APR 29 1955

UNITED STATES DEPARTMENT OF THE INTERIOR

DOUGLAS McKAY, SECRETARY

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

DMEA 3602, Vivian Uranium Mining Company, State School Land Lease, San Juan County, Utah

Uranium

Geologic Report

by

G. W. Weir and C. L. Dodson
U. S. Geological Survey

March 4, 1955

INTRODUCTION AND SUMMARY

The Vivian Uranium Mining Company, Inc., have applied to the Defense Minerals Exploration Administration for a loan to explore for uranium by diamond drilling on Utah State Leases Nos. 5947, 5948, and 5949 in secs. 2 and 3, T. 29 S., R. 23 E., San Juan County, Utah (figs. 1 and 2). The property was examined on February 15, 1955, by Mr. William Young, Bureau of Mines and Messrs. G. W. Weir and C. L. Dodson, Geological Survey, accompanied by Messrs. William Fergusson and Harry Bolster, representing the applicants.

The applicants propose a drilling program consisting of eight holes. Two holes are planned to penetrate both the potentially mineralized Salt Wash member of the Morrison formation and the Moss Back member of the Chinle formation. Six of the proposed eight holes are planned to explore only the Moss Back member. The applicants estimate total required footage to be 11,400 feet. The applicants estimate total cost of the program to be $37,650.00.

The potentially ore-bearing formations are not exposed on the property. Because there is no indication of favorable or mineralized ground on or near the property, the examining team recommends that the application for a loan be denied.

GEOLOGY

The general geologic setting of the Vivian Uranium Mining Company property is shown on figure 2. A generalized stratigraphic column for the area is given in table 1. Most of the property is covered by a thin mantle of fine-grained alluvium or by colluvium consisting largely of jumbled blocks of dense quartzite. Bedrock formations exposed on the property include the Entrada sandstone and the Brushy Basin member of the Morrison formation.

No evidence of favorable or mineralized ground on the property is known. The applicant's brochure calls attention to the Continental Uranium Company's Rattlesnake mine (see fig. 2) which is an uncommonly large and high-grade carnotite-type deposit in the upper part of the Salt Wash member of the Morrison formation. However, the Rattlesnake deposit is more than a mile away from the Vivian Uranium Mining Company property and probably has little significance for the specific evaluation of the Vivian Uranium Mining Company property. Other deposits in the Salt Wash mentioned in the geologic report accompanying the application are from a few to more than 20 miles distant.

The nearest ore deposit is the Highway claim (see fig.2) which is about a tenth of a mile from the property line. The Highway claim contains several shows of mineralized rock in the upper part of the Salt Wash member. Total production is estimated to be only 10-20 tons of medium- to low-grade carnotite-type ore. Despite considerable recent development work, no material of ore grade and thickness is

exposed and no reserves are known. At the Highway claim the mineralized sandstones are thin, partly reddish, massive and the associated mudstone is largely red; these lithologic characteristics indicate that the Salt Wash is unfavorable for significant ore deposits and, by extension, the Salt Wash underlying the Utah State land lease is also unfavorable. Therefore, it is recommended that the application to explore the Salt Wash member on the Vivian Uranium Mining Company property be denied.

The applicants plan to concentrate most of the proposed drilling on the Moss Back member of the Chinle formation. The Moss Back is covered by 1,500 feet or more of younger sediments on the Vivian Uranium Mining Company property. The nearest exposure of the Moss Back is about six miles to the southeast. The geologic report accompanying the application notes the recent discovery of large ore bodies in the Moss Back about 5 miles southeast of the property. In the examining geologist's opinion, the geologic characteristics of the Moss Back member can be projected only relatively short distances. The geologic situation 5 miles or more distant cannot be used to appraise the Vivian Uranium Mining Company property. Until the Moss Back member is drilled on or near the property, the exploration potential of the property will remain unknown. Therefore, it is recommended that the application for a loan to explore the Moss Back member of the Vivian Uranium Company property be denied.

CONCLUSIONS AND RECOMMENDATIONS

The Vivian Uranium Mining Company have applied for a loan to explore by drilling the Salt Wash member of the Morrison formation and the Moss Back member of the Chinle formation underlying property in secs. 2 and 3, T. 29 S., R. 23 E., San Juan County, Utah. Because there is no evidence of mineralized or favorable ground on the property, it is recommended that the application for a loan be denied.

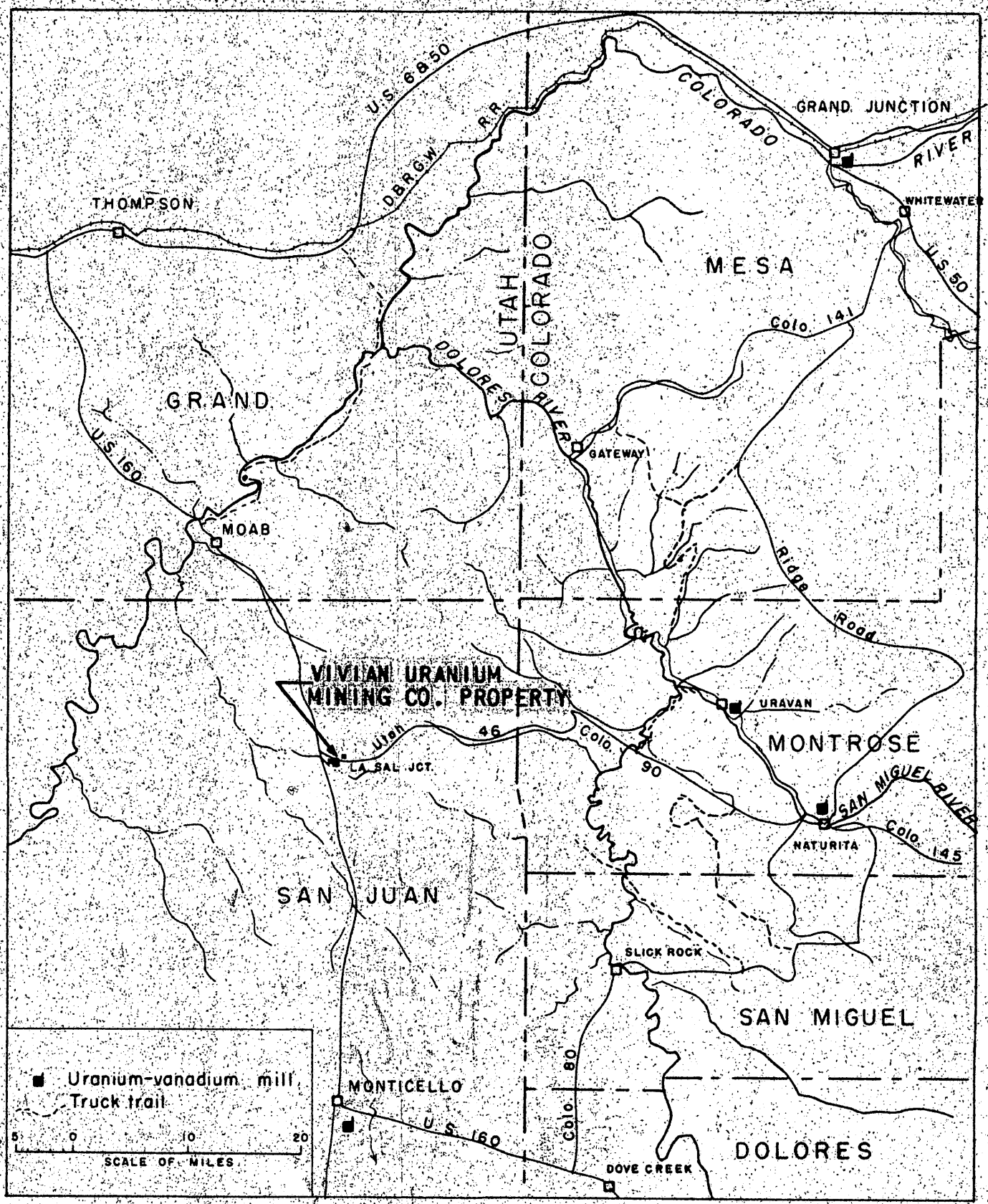
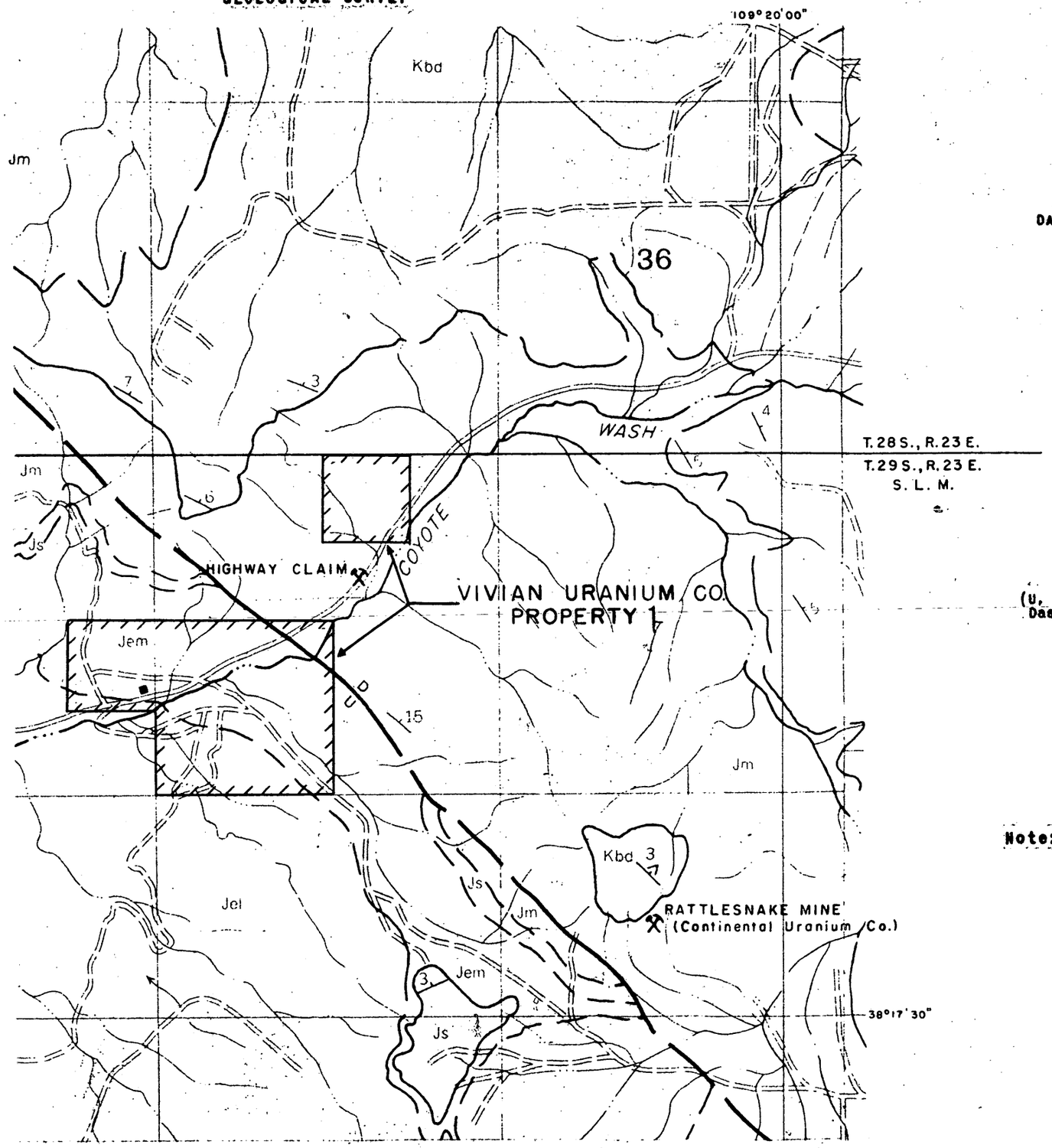


Figure 1. INDEX MAP OF PART OF COLORADO PLATEAU SHOWING LOCATION OF VIVIAN MINING CO., INC. PROPERTY, SAN JUAN COUNTY, UTAH

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

DEFENSE MINERALS EXPLORATION ADMINISTRATION
DOCKET NO. 3602



EXPLANATION

CRETACEOUS

Kbd — BURRO CANYON FORMATION AND DAKOTA SANDSTONE, UNDIFFERENTIATED

JURASSIC

Jm — MORRISON FORMATION

Js — SUMMERVILLE FORMATION

Jem / Jel — ENTRADA SANDSTONE
MOAB TONGUE, Jem:
LOWER UNIT, Jel

FORMATION CONTACT
(Dashed where inferred)

FAULT
(U, upthrown side, D, downthrown side
Dashed where approximately located)

5
STRIKE AND DIP OF BEDS

N

Note: GEOLOGY AND LAND LINES FROM U.S.G.S.
PHOTOGEOLOGIC QUADRANGLE MT. PEALE-6

0 — 1 MILE

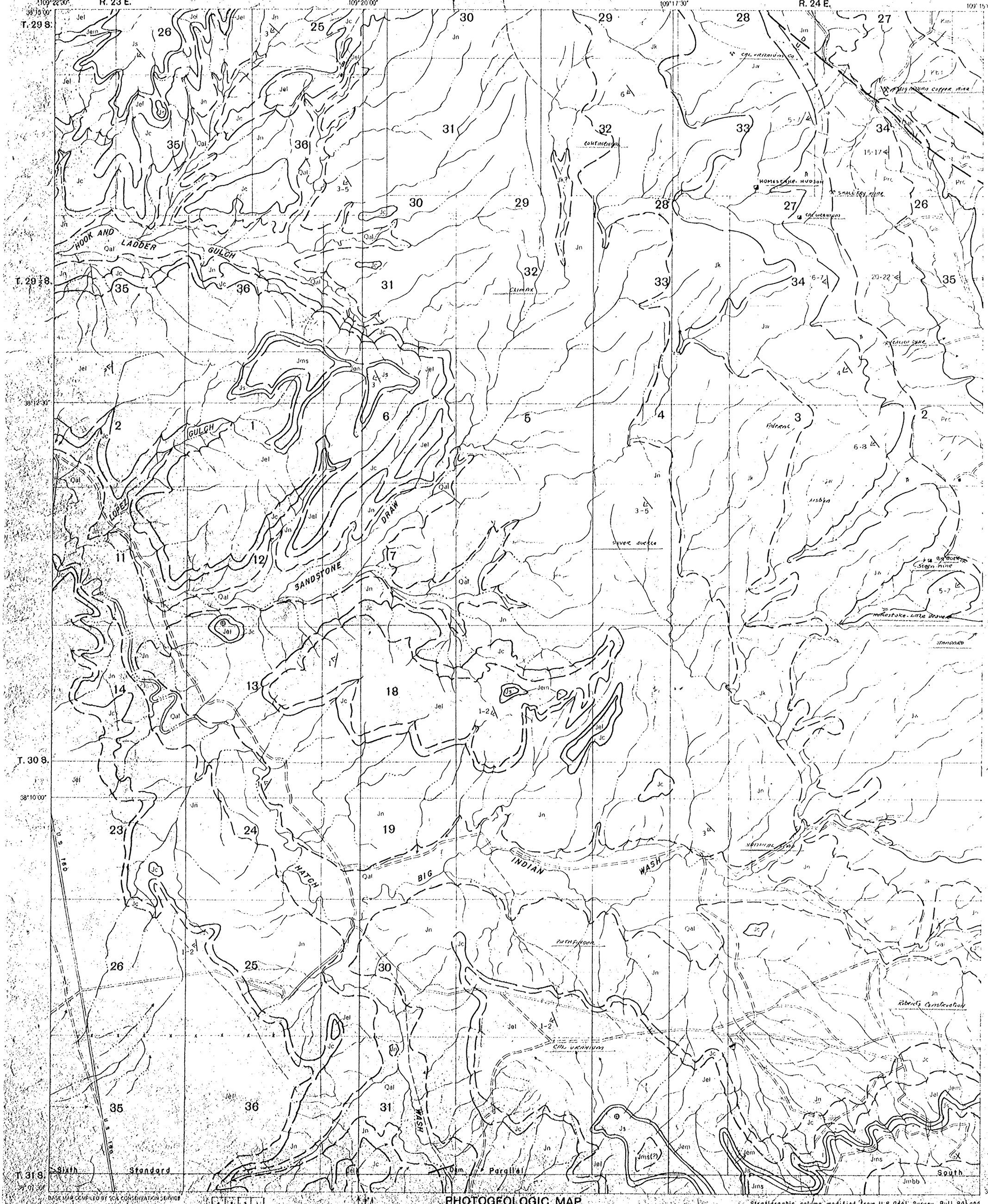
Figure 2. GEOLOGIC MAP OF THE VIVIAN URANIUM MINING PROPERTY AND VICINITY SAN JUAN COUNTY, UTAH

U. S. DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH THE
ATOMIC ENERGY COMMISSION

COMPILATION OF PHOTOGEOLOGY AND SURFACE GEOLOGY
COLORADO PLATEAU AREA, UNITED STATES

TRACE ELEMENTS MEMORANDUM REPORT 380 - A



EXPLANATION

Qal	Alluvium (Valley fill and terrace gravel)	QUATERNARY
Kmn	Mancos shale	CRETACEOUS — Upper
Kbd	Burro Canyon formation and Dakota sandstone, undifferentiated	CRETACEOUS — Upper and Lower
Jmbb / Jms	Morrison formation: Brushy Basin shale member, Jmbb; Salt Wash sandstone member, Jms	JURASSIC — Upper
Js	Summerville formation	JURASSIC — Upper
Jem / Jel	Entrada sandstone: Moab tongue, Jem; lower unit, Jel	JURASSIC — Upper and Middle
Jc	Carmel formation	JURASSIC — Upper and Middle
Jn	Navajo sandstone	JURASSIC (?)
Jk	Kayenta formation	JURASSIC (?)
Jw	Wingate sandstone	JURASSIC (?)
TR	Triassic rocks undifferentiated	TRIASSIC — Upper (?)
Prc	Rico - Cutler formations undifferentiated	PERMIAN

Contact
(Can be accurately located within 30 feet horizontally)

Contact
(Can be approximately located within 30 to 200 feet horizontally)

Contact
(Cannot be located accurately; probable error greater than 200 feet)

Probable or doubtful contact

Fault
(Dashed where approximately located, U, upthrown side; D, downthrown side)

Strike and dip of beds
(Based on photo-interpretation)

Horizontal beds

Mine or quarry

Prospect or open cut

Primary road

Secondary road

Trail

Fence

BASE MAP COMPILED BY SCS CONSERVATION SERVICE
U.S. DEPT. OF AGRICULTURE

MT. PEALE QUADRANGLE

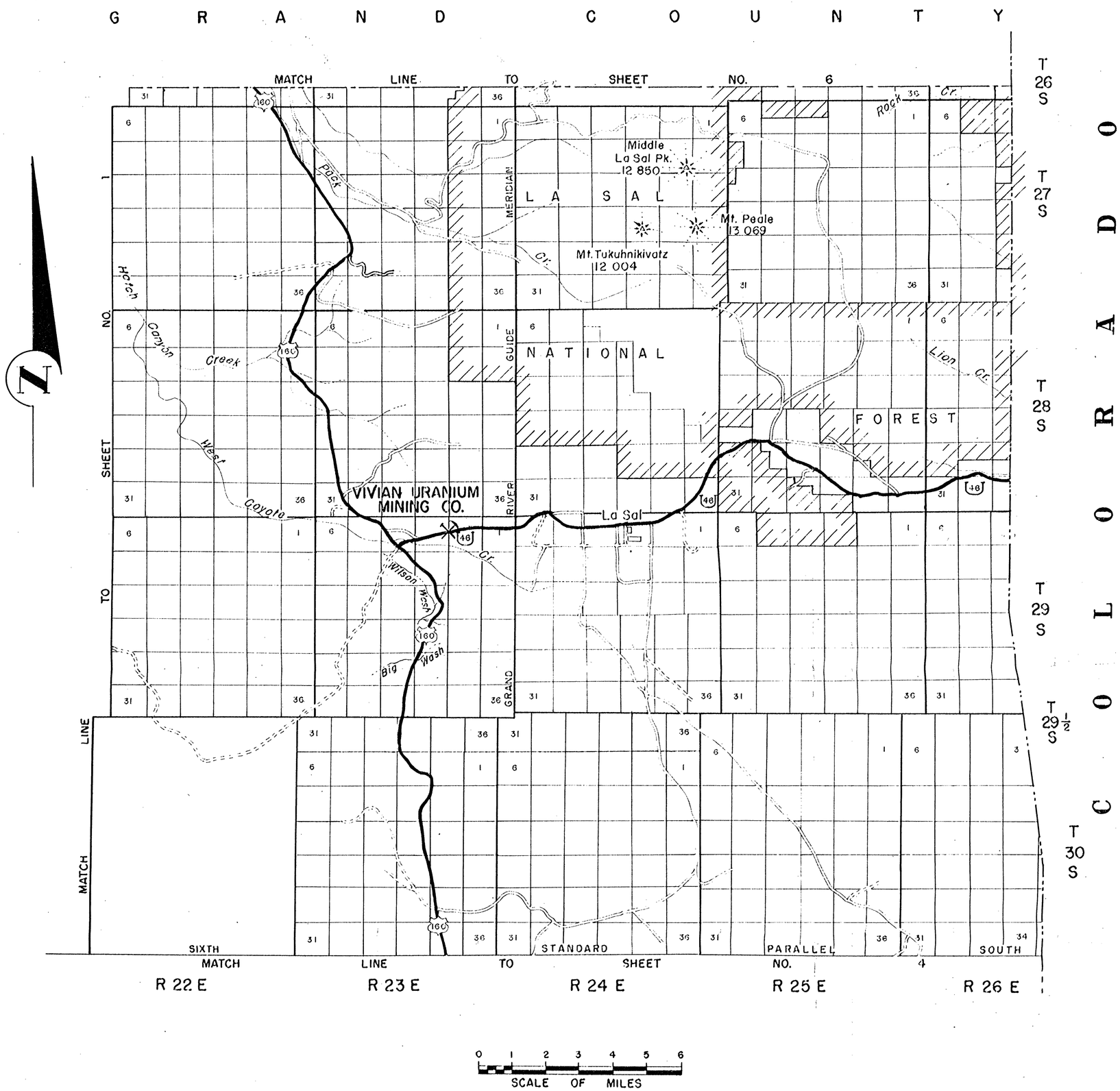
PHOTOGEOLOGIC MAP
MT. PEALE - 11
SAN JUAN COUNTY, UTAH

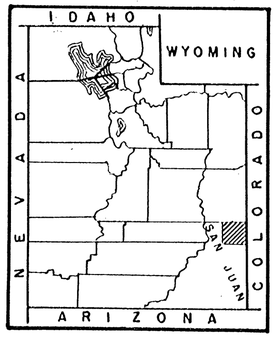
PHOTOGEOLOGY BY R. J. HACKMAN AND G. E. TOLBERT
SCALE 1:24,000

REVISED OCTOBER 1962

Stratigraphic column modified from U.S. Geol. Survey Bull. 841 and U.S. Geol. Survey Strategic Minerals Inv., Geologic map of vanadium region of southwestern Colorado and southeastern Utah, by R. P. Fischer, 1944.

M8-3.11-1





U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Fig. 1 DMEA Docket No. 3602

STATE : UTAH

COUNTY : SAN JUAN

Sheet 2 of 11

Location Map

ENGINEER : W. E. YOUNG	DATE : APR. 18, 1955
TRACED: APR. 1955, BY: A. P. T. S.	1900 - 324 - C
CHECKED :	

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

DEFENSE MINERALS EXPLORATION ADMINISTRATION
DOCKET NO. 3602

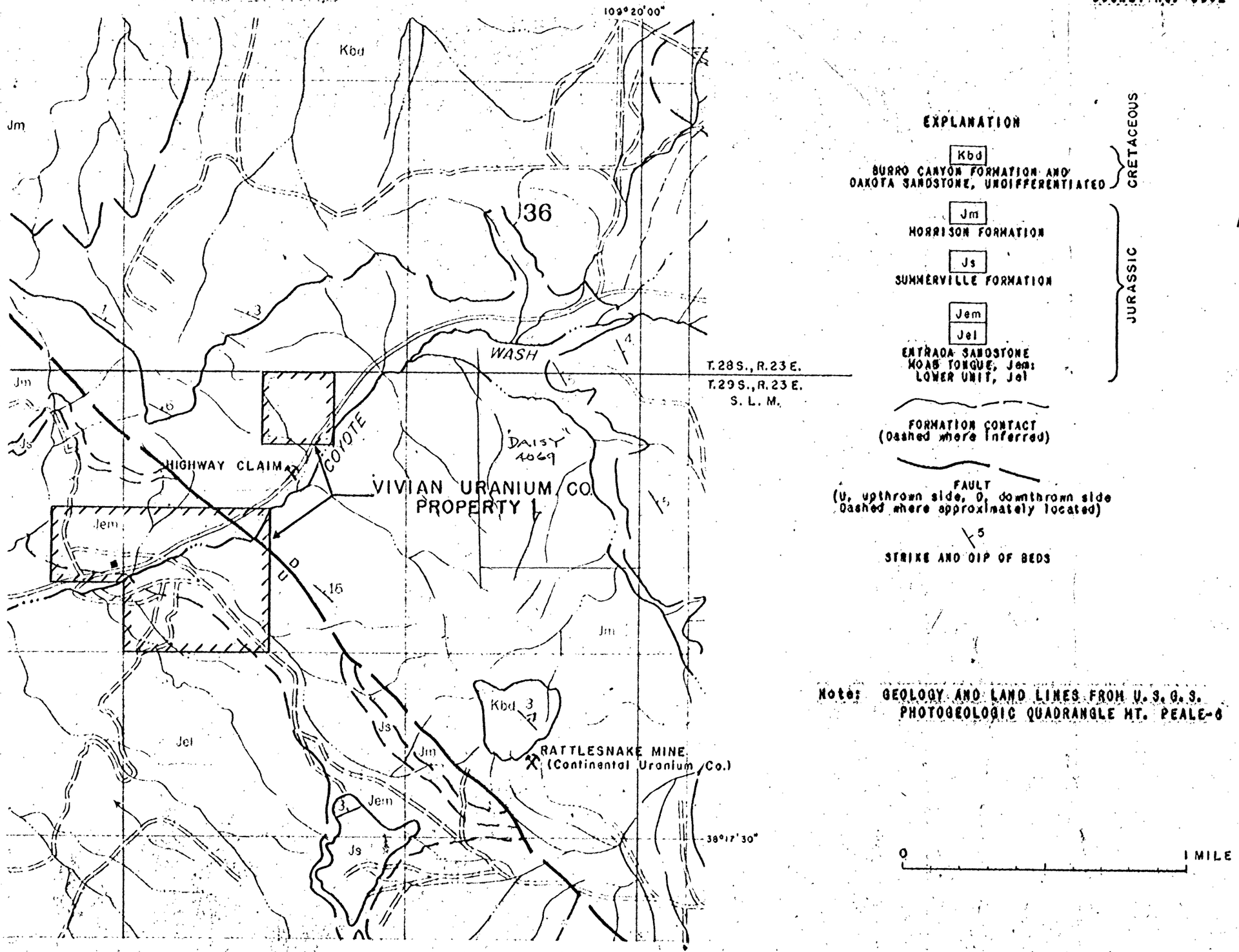


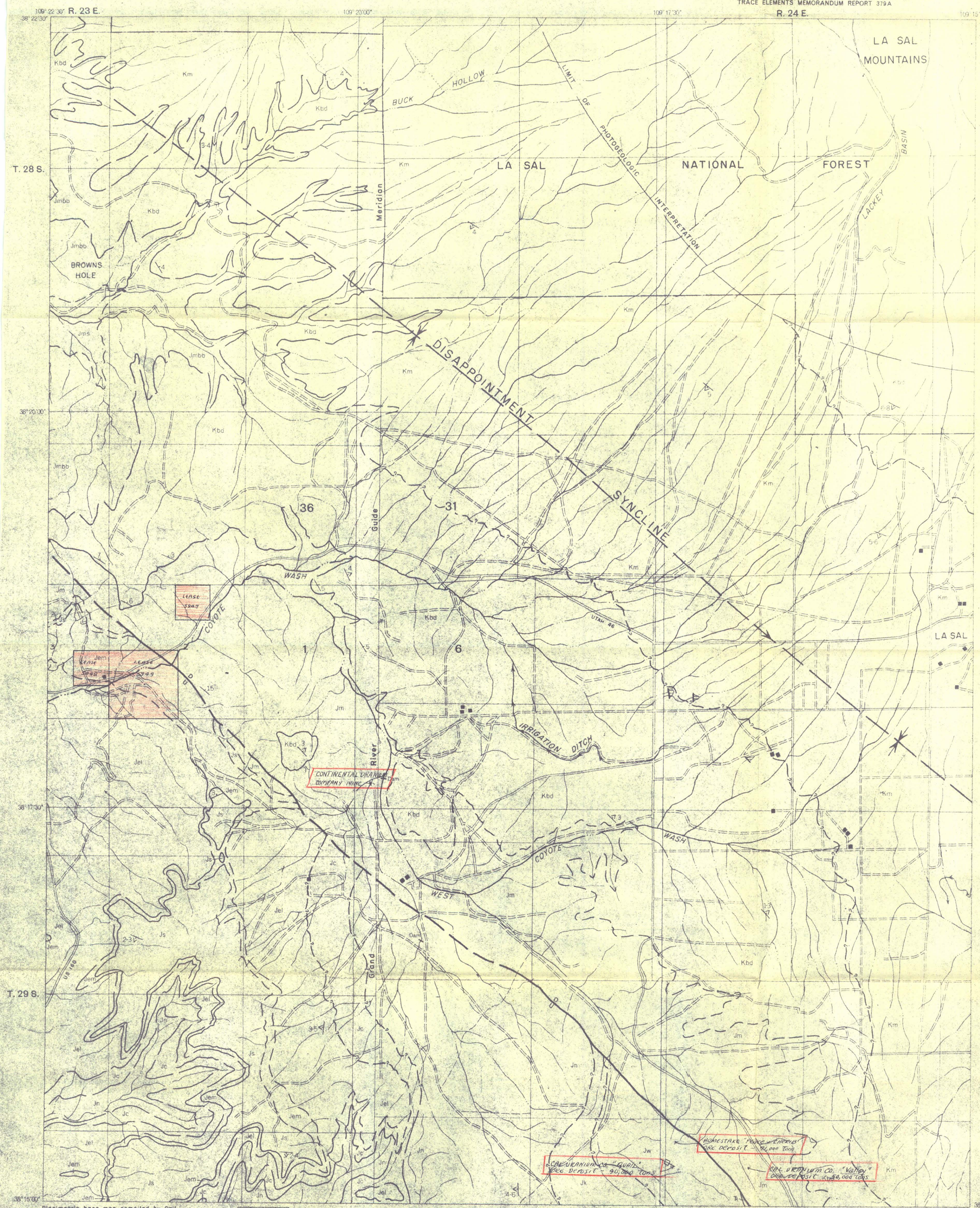
Figure 2. GEOLOGIC MAP OF THE VIVIAN URANIUM MINING PROPERTY AND VICINITY SAN JUAN COUNTY, UTAH

U.S. DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH THE
ATOMIC ENERGY COMMISSION

COMPILATION OF PHOTOGEOLOGY AND SURFACE GEOLOGY
COLORADO PLATEAU AREA, UNITED STATES

TRACE ELEMENTS MEMORANDUM REPORT 379A



EXPLANATION

CRETACEOUS

Upper — Km — Mancos shale

Upper and Lower — Kbd — Burro Canyon formation and Dakota sandstone, undifferentiated

JURASSIC

Upper — Jm (Jmbb, Jms) — Morrison formation; Brushy Basin shale member, Jmbb; Salt Wash sandstone member, Jms

Upper — Js — Summerville formation

Middle and Upper — Jem, Jel — Entrada sandstone; Moab tongue, Jem; lower unit, Jel

Middle and Upper — Jc — Carmel formation

JURASSIC (?) — Jn — Navajo sandstone

Jk — Kayenta formation

Jw — Wingate sandstone

TRIASSIC — TR — Triassic rocks, undifferentiated

Contact
(Can be accurately located within 30 feet horizontally)

Contact
(Can be approximately located within 30 to 200 feet horizontally)

Contact
(Cannot be located accurately; probable error greater than 200 feet)

Probable or doubtful contact

Fault
(U, upthrown side; D, downthrown side. Dashed where approximately located)

Syncline
Showing trace of axial plane and direction of plunge
(Approximately located)

Strike and dip of beds
(Based on field measurement)

Strike and dip of beds
(Based on photo-interpretation)

Strike of approximately vertical joints
(Based on photo-interpretation)

Uninterpretable linear feature on photograph
(May be geologically significant)

Primary road

Secondary road

Trail

National forest boundary

Planimetric base map compiled by Soil Conservation Service, U.S. Dept. of the Agriculture

4	3	2	1
5	6	7	8
12	11	10	9
13	14	15	16

MT. PEALE QUADRANGLE

TRUE NORTH — MAGNETIC NORTH 16°

PHOTOGEOLOGIC MAP
MT. PEALE - 6
SAN JUAN COUNTY, UTAH

PHOTOGEOLOGY BY C. E. TOLBERT AND R. J. HACKMAN
PHOTOGEOLOGY UNIT, ALASKAN GEOLOGY BRANCH
SCALE 1:24,000
MARCH 1953

Roads as classified in this map series are as follows: Primary roads are maintained and graded; traversable by two-wheel-drive vehicles; secondary roads are traversable possibly by two-wheel-drive vehicles; trails are not traversable by four-wheel-drive vehicles except locally. When other information is lacking, roads are classified by their appearance on aerial photographs.

Stratigraphic column modified from U.S. Geol. Survey Bull. 841, 1933.

This map is preliminary and has not been edited or reviewed for conformity with U.S. Geological Survey standards and nomenclature.

M8-3.6-1