SEP - 7 1955

Cal Alta Oil and Mining Company, Inc.
Guerneville, California

Re: Docket No. DMEA 3836 - Tungsten
Cal Alta(White Blossom) mine
Washoe County, Nevada

Gentlemen:

Your application for aid for an exploration project and other data available to us in Washington concerning the above referenced 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 our information, although noting a small amount of tungsten mineralization in surface open cuts and pits, and in underground workings of the Cal Alta (White Blossom) mine, indicates to us that the probability of disclosing minable tungsten ore reserves by your proposed program is not sufficiently promising to justify Government participation. Under these circumstances, we regret to advise you that your application is denied.

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

Sincerely yours,

E. O. Mittendorf

Administrator

SPHolt:foc
8-29-55
cc to: Docket
Code 400
Adm. Read. File
Operating Comm.
FT. Reg. II
Messrs. Holliday, USBM
Kiilsgaard, USGS

8/29/55

MEMORANDUM

To: Administrator, DMEA

From: Iron and Ferro-Alloys Division, DMEA

Subject: Denial of request for exploration assistance in the amount of $10,770.00
Docket No. DMEA 3836 - Tungsten
Cal Alta Oil and Mining Company, Inc.
Cal Alta (White Blowout) mine

The denial of the subject application is recommended by this Division based on the following information:

1. The applicant, Cal Alta Oil and Mining Company, Inc., Guerneville, California, requested exploration assistance in the amount of $10,770.00 for 1100 feet of diamond drilling in 7 holes in the Cal Alta mine.

2. The applicant controls by sub-lease from Sanford A. Bunce and Fred M. Crosby, lessees from the Southern Pacific Land Company, owners, the following property:

The N½ of NE¼, Sec. 21, T. 24 N., R. 24 E., M.D.B. and M., containing 80 acres, more or less, situated in Washoe County, Nevada.

3. The proposed program is (First Stage), by drilling 1100 feet in 7 diamond drill holes from underground stations in the Cal Alta (White Blowout) mine, to be followed, if results proved favorable by a second stage of 1700 more feet of diamond drilling. Assistance for the first stage drilling only is requested in this application.

4. In the area explored by the Cal Alta (White Blowout) mine sparse tungsten mineralization occurs both in surface cuts and underground workings, but there is little indication that minable bodies of tungsten ore will be discovered by work under the applicant's proposed program.

5. The Field Team concludes that there is little probability of making a significant discovery and recommends denial. The Commodity Divisions of the Geological Survey and the Bureau of Mines concur in this recommendation.

Thos. L. Chapman, Acting Chief
Iron and Ferro-Alloys Division

SPHolt:foc
8-29-55
cc to: Docket
Code 400
Adm. Read. File
Operating Comm.

IN REPLY REFER TO:

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

August 26, 1955

Re: DMEA 3836
Cal Alta Oil and Mining Co., Inc.
Cal Alta Mine (Adaven)
Washoe Co., Nev.
$27,412.00 - Tungsten

Only retained 400

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

From: N. E. Nelson, U. S. Geological Survey

Subject: Review of Field Team report.

The Cal Alta or Adaven mine, the subject of the application, has a record of small production from pods of scheelite-bearing tactite in a long and wide skarn zone.

The examiners conclude that no adequate target for diamond drilling is presented by the scattered pods and the cost of the project disproportionate to the probable discoveries that might conceivably be made.

I agree with the conclusions and concur with the denial recommendation of the Field Team.

N. E. Nelson

N. E. Nelson

NENelson:iml
G-8/26/55

cc: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
R. Holliday, 3513

400

JUN 16 1955

Mr. Spangler Richer, Executive Officer
DMEA Field Team, Region II
1605 Evans Avenue
Reno, Nevada

Re: Docket No. DMEA 3836 - Tungsten
Cal Alta Oil & Mining Co., Inc.
Cal Alta (White Kleenex) mine
Washoe County, Nevada

Dear Mr. Richer:

The above-docketed application for exploration assistance is being referred to your office for a field examination of the property.

Two copies of a relevant memorandum dated June 9, 1955, by T. H. Kiilsgaard, Geological Survey, are enclosed for your information.

Sincerely yours,

George C. Selfridge
Chairman, Operating Committee

Enclosure

FARutledge:fec 6/15/55
cc to: Docket
Code 400
Admr. Read. File
Operating Comm.
FT. REG. II
Messrs. Holliday, USBM
Kiilsgaard, USGS

APPROVED:

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

Thor H. Kiilsgaard
Member, Geological Survey

400

JUN 16 1955

Cal Alta Oil & Mining Co., Inc.
Genoaville, California

Re: Docket No. DMEA 3836 - Tungsten
Cal Alta (White Element) mine
Washoe County, Nevada

Gentlemen:

Reference is made to the above-docketed application for exploration assistance which has been reviewed by the Iron and Ferro-Alloys Division, Defense Minerals Exploration Administration, and referred to Mr. Spangler Richer, Executive Officer, DMEA Field Team, Region II, 1605 Evans Avenue, Reno, Nevada, for a field examination of the property.

Any assistance that you can give the members of the Field Team will be appreciated.

The enclosed "Consent to Lien" forms are to be executed by the owner of the property and returned to this Administration. The "Subordination Agreement" forms should be executed by Sanford A. Dance and Fred M. Crosby and returned also.

Sincerely yours,

Frank E. Johnson

ACTING Administrator

FARutledge:foc 6/15/55
cc to: Docket
Code 400
Admr. Read. File
Operating Comm.
FT. REG. II
Messrs. Holliday, USBM
Kiilsgaard, USGS

Enclosure

400

JUN 2 0 1955

Mr. Spangler Ricker, Executive Officer
DMEA Field Team, Region II
1605 Evans Avenue
Reno, Nevada

Re: Docket No. DMEA 3830 - Tungsten
Cal Alta Oil & Mining Co., Inc.
Cal Alta (White Blowout) mine
Washoe County, Nevada

Dear Mr. Ricker:

Reference is made to the above-docketed application for exploration assistance at the Cal Alta mine.

Copies of the two exhibits that the applicant asked to have returned have been prepared here and the original and one copy of each are enclosed for your use. Please return the two following original maps to the applicant when they are no longer needed: Encl. #14 - Surface Plan Cal Alta mine, and Encl. #15 - Underground Workings Cal Alta mine.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee

Approved:

J. H. Hedges

Member, Bureau of Mines

Thor H. Kiilsgaard

Member, Geological Survey

cc: Docket
FT, Reg. 2
Code 400
Oper. Committee
Adm. Read. File
Thor Kiilsgaard, USGS
Robt. Holliday, USBM

6/17/55
FARutledge/ls

IN REPLY REFER TO:

407

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

June 9, 1955

RECEIVED JUN 10 1955

Copy retained 400

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

From: T. N. Kiilsgaard, U. S. Geological Survey

Subject: Review of application, DMEA Docket 3836 (Tungsten), Cal Alta Oil & Mining Company, Nixon, Nevada

The applicant proposes a two-stage diamond drilling program, with 1100 feet of drilling in the first stage and 1700 feet in the second stage. Drilling costs are estimated at $9.79 per foot, the cost of work in Stage I to be $10,770. The cost of Stage II is not given but if drilling is at the same estimated cost as Stage I it would aggregate $16,643.00, making a total estimated contract cost of $27,413.00.

The work is designed to explore scheelite occurring in tactite, the tactite area having already been partially explored by 4 short adits and a 120-foot shaft. These workings are reported to have produced 157.76 tons of ore assaying 0.978% WO_3, and 5368 pounds of concentrate averaging 55.25% WO_3. From the applicant's maps it appears the tactite is a broad, indefinite zone and that none of the proposed drilling will explore those parts previously productive but will instead explore unknown tactite areas lying north and northeast of existing workings. There is little evidence on the maps to justify drilling in these target areas, but the maps are poorly prepared and there may be confirming evidence on the property making the drilling attractive.

I recommend referral of the application to the field for an examination of the property and for Field Team recommendations on further processing of the application.

TNKiilsgaard:hlm
G-6/9/55

T. N. Kiilsgaard

Copy to: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
R. W. Holliday, 3513 Interior

400

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

1605 Evans Avenue
Reno, Nevada

August 19, 1955

Memorandum

To: Operating Committee, DMEA, Interior Building
Washington 25, D. C.

From: Executive Officer, DMEA Field Team, Region II

Subject: Docket No. DMEA-3836 - Tungsten
Cal Alta Oil & Mining Co., Inc.
Cal Alta (White Blowout) Mine
Washoe County, Nevada

Reference is made to your letters of June 16 and June 20, 1955 regarding a field examination of the above subject property.

Attached are four copies of a report by B. H. Sheahan, Bureau of Mines and R. G. Reeves, Geological Survey in which a denial of exploration aid by the DMEA is recommended. Roscoe Smith and I concur in the recommendation.

The two copies of exhibits No. 14 and No. 15 are being returned to the applicant as suggested in your letter of June 20th.

S. Ricker

Attach.

SRicker:gh
cc: R. M. Smith
File

RECEIVED
AUG 22 1955

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

STRATEGIC MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY DEPARTMENT
REGION II

APPLICATION REPORT

NMM 3836 (Tungsten)
Cal Alta Oil & Mining Co., Incorporated
(Craven, Stoddard-Crosby, Crosby)
Nightingale Range, Washoe County, Nevada

by

B. J. Cheshem
Mining Engineer
U. S. Bureau of Mines

R. J. Reeves
Geologist
U. S. Geological Survey

RECEIVED

August 11, 1955

CONTENTS

	Page
Introduction	1
Conclusions and Recommendations	1
Location, Accessibility, and Local Resources	2
History and Production	3
Property and Ownership	4
Development	5
Geology	6
Ore Deposits	7
Ore Reserves	8
Proposed Exploration	9

ILLUSTRATIONS

Figure 1	Location map
2	Geologic map

INTRODUCTION

Mr. Wm. R. Brown, Vice President and General Manager of Cal Alta Oil and Mining Co., Inc., Guerneville, California, applied for Government assistance in a $27,412.00 diamond drilling exploration program with the Defense Minerals Exploration Administration to explore for tungsten at the White Blowout (Adaven, Crosby Stoddard) mine, Washoe County, Nevada.

The application was received on May 24, 1955 and was referred for a field examination on June 16, 1955. The property was examined by B. W. Cheshen, Mining Engineer of the Bureau of Mines, and R. G. Reeves and D. B. Tatlock, Geologists of the Geological Survey on July 19, 1955. The examiners were accompanied by T. F. Nelson, Consulting Mining Engineer retained by the company.

The scope of the examination included check sampling, lamping surfaces and underground workings with ultra violet light, geologic mapping and reviewing information in the application and in a previous report by an engineer[1] of the Bureau of Mines and other data on file.

CONCLUSIONS AND RECOMMENDATIONS

There was practically no geologic evidence on the property to justify 2800 feet of diamond drilling proposed by the applicant.

The probability of discovering a significant body of ore by diamond drilling or other means of exploration is negligible. The competency of the applicant is poor and repayment of an exploration

---

1/ George Holmes, Mining Engineer, U. S. Bureau of Mines, October 1, 1954, Report of Examination, Crosby Tungsten Mine, Washoe County, Nevada.

loan would be impossible because of the stringent terms and provisions of the lease, even though a minor ore body might be discovered.

It is recommended that the requested loan for exploration aid be denied.

LOCATION, ACCESSIBILITY, AND LOCAL RESOURCES

The property is located 9.8 miles by road northeast of Nixon, Washoe County, Nevada in sec. 21, T. 24 N., R. 24 E., MDB&M, at an altitude of approximately 4,600 feet on the west slope of the Nightingale Mountain Range (Fig. 1).

To reach the mine from Nixon, Nevada, follow paved Nevada State Highway No. 34 northerly 0.8 miles; turn right and follow a gravel road northeasterly 8 miles; turn right at road intersection and follow a narrow rough dirt road 1.0 mile easterly to the mine. The property is accessible all year and all but the last mile of road is maintained by the County and State.

The climate is arid with hot dry summers and cold winters. Vegetation is sparse.

A Sierra Pacific transmission line to the U. S. Gypsum plant near Gerlach passes about four miles southwest of the mine. Water for mine use is hauled from Nixon but a supply might be developed by drilling wells in the Winnemucca dry lake bed.

Reno, Nevada, the nearest supply point, is 60 miles by road southwest of the property by way of Fernley. The nearest custom tungsten mill is at Toulon, Nevada on U.S. Highway 40 and 75 miles distant.

Housing on the property consists of a one-room cabin. Miners are available at Reno and several other towns in the area and some labor

is available from the Piute Indian Reservation at Nixon. The prevailing wage scale for miners is $16.00 per day.

HISTORY AND PRODUCTION

Mr. Fred Crosby of Nixon and Mr. Carl Stoddard, a mining engineer of Reno, Nevada, acquired a lease on the property during the early 1940's. A few trenches were excavated to explore for scheelite.

In 1952, the Adaven Mining Company attempted to develop an open pit and also an underground mining operation. After expending approximately $30,000 the company became discouraged and operations were discontinued. Production amounted to 50 tons of hand sorted ore which assayed about 0.4 percent WO_3 and 157.76 tons which assayed 0.972 percent WO_3.

In October 1953, Dr. Wm. N. Makaroff and Dr. John M. Papove of the Cal Alta Oil and Mining Co., Inc., became interested in the property and acquired a sub-lease from Mr. Sanford A. Bunce and Fred M. Crosby. A dry concentrator was constructed and $80,000 was expended. The operations were unsuccessful and the concentrator a complete failure.

Early in 1955 the company retained Mr. Harve F. Nelson, Consulting Mining Engineer, to provide professional advice, and to prepare an application for Government assistance under the DMEA program. Mr. Nelson's services were obtained after the mill was constructed and operated. The plant was shut down after treating about 50 tons of ore which, because of dust losses, yielded a concentrate of lower grade than the heads.

PROPERTY AND OWNERSHIP

Mr. Sanford A. Bunce of Lovelock, Nevada, and Mr. Fred H. Crosby of Nixon, Nevada obtained leases on the property from S. P. Land Co. (Lease No. 23210-m and Lease No. 21575-m). Terms of the lease included payments of $200 per year, 9 percent royalty on gross sales on any ore produced. Other requirements include that at least 15 shifts of work be performed each month or pay the Southern Pacific Land Co. $300 per month in lieu of work.

Mr. Sanford A. Bunce and Mr. Fred H. Crosby made a preliminary lease agreement with Mr. Wm. N. Maksroff on October 17, 1953, and a formal mining lease with the Cal Alta Oil and Mining Co., Inc. (a Nevada corporation) was signed on March 1, 1954. Terms of the lease were exceptionally stringent. Some of these terms and conditions included:

(1) A 5 year period - Oct. 17, 1953 to Oct. 17, 1958.

(2) 15% royalty on calculated gross production with no deductions of any kind allowed.

(3) Pay and perform all work required by Southern Pacific Land Co., except 9% royalty.

(4) Work 90 shifts per month.

(5) Submit monthly a complete report to Sanford A. Bunce at Lovelock, Nevada.

(6) Pay all taxes and other expenses related to the lease.

(7) Construct a 50-ton per day capacity mill at the property according to the specifications of Bunce and Crosby.

(8) Tailings to belong to Bunce and Crosby.

(9) No shipments of ore and concentrates to be allowed without consent of Bunce and Crosby.

(10) It was further mutually agreed that the mill and equipment would revert to Bunce and Crosby unless removed within 60 days after termination of the lease.

Officers of Cal Alts Oil and Mining Co., Inc. include the following:

President: Dr. Wm. N. Makaroff, Guerneville, Calif.

Vice-President: Dr. John N. Popove, Box 64, Guernewood Park, Calif.

Vice-President & General Manager: Wm. R. Brown, Box 105, Cazadero, Sonoma County, Calif.

Resident Agent: S. A. Bunce, Court House, Lovelock, Nev.

Secretary-Treasurer: J. W. Cook

The competency of the applicant, Mr. Wm. R. Brown, is judged to be poor. He was not interviewed but was reported to be an elderly man with practically no mining experience. He is serving as General Manager without a salary.

DEVELOPMENT

On the surface there is approximately 1/4 mile of mine roads and a few shallow open cut prospect pits (Fig. 2).

The following facilities are at the property:

1 - 50-ton per day dry mill of no operational value.

<u>Mill building</u> (wood frame construction)

1 - Primary ore bin - 20-ton capacity
1 - Jaw crusher 8" x 15"
1 - Conveyor belt 14" x 20'
1 - Sec. crusher 26" dia. Simons
1 - Conveyor 14" x 30"
1 - Screen (S.M.S.Co.) - 26 mesh
1 - Hammer mill, dry impact type
1 - Electrostatic dry separator

Mill building (cont'd.)

1 - Shop with miscellaneous tools and parts.
1 - Power plant diesel generator - 100 h.p., poor condition
1 - Power plant diesel generator - 60 h.p., fair condition
1 - Supply shed with mine and mill supplies, poor condition

Mine equipment	Condition
1 - Air compressor unit, 210 c.f.m.	fair
3 - Rock drills with drill steel	2 fair, 1 poor
3 - Mine cars, 16 c.f. capacity	fair
1 Ton 12# to 16# per yard rail	fair
Miscellaneous 1-inch, 1½-inch, and 2-inch compressed air lines	fair
1 - Pickup truck, 1/2-Ton (1951 Dodge)	fair
1 - Truck, 1½-Ton flat bed	poor
1 - Tractor loader, Oliver 4042	poor
1 - Electric generator - 1½ h.p. for lights	fair

Underground development consists of a 216-foot vertical shaft, 370 feet of crosscuts, 380 feet of drifts, and 170 feet of raises.

GEOLOGY

The Gal Alta mine is underlain by pre-Tertiary thin bedded argillaceous limestone and limy clastic rock that have been intruded by granodiorite. The sedimentary rocks strike northwestarly and dip steeply northeast and southwest. Near their contact with the granodiorite, the sedimentary rocks have been metamorphosed to calc-silicate hornfels. A crescent shaped body of tactite 750 feet long and 150 feet wide has been formed in the sedimentary rocks along the intrusive contact. The tactite is dark brown to black and is made up mainly of black garnet, quartz, and epidote. Irregularly shaped quartz masses and veinlets cut the tactite and metasedimentary rocks. A circular mass of quartz about 750 feet in diameter that cuts the granodiorite, tactite, and metasediments crops out about 500 feet east of the portal of the No. 1 adit.

The metamorphic rocks are cut by two parallel shear zones, 25 feet apart, that trend N. 70° W.

ORE DEPOSITS

Tungsten ore bodies are localized along shear zones in and near the tactite, and scheelite is very sparsely distributed in the tactite and metasediments as far as 50 feet from the main ore bodies. The ore minerals are scheelite and some powellite, which are associated with varying amounts of pyrite, in a gangue of garnet, quartz, epidote, calcite, and hyalite opal.

The main ore body is in the southernmost of two parallel shear zones near the contact between the tactite and metasedimentary rocks. This body, about 50 feet long and 6 feet wide, is exposed at the surface and in a stope about 30 feet above the floor of the No. 1 adit. The ore body trends N. 70° W. and is vertical. The top of the stope is 30 feet below the surface. Small scheelite-bearing bodies, 10 to 15 feet long and 2 to 5 feet wide, exposed in the back of the drift along the southernmost shear zone probably represent the bottom of the body exposed in the stope.

The northernmost of the parallel shear zones has been intersected by four crosscuts but only a few scheelite crystals are evident in the three eastern crosscuts. The westernmost crosscut intersected 2 feet of ore in the shear.

Scheelite-bearing bodies are distributed sporadically along the contact on the surface between the granodiorite and the tactite. The largest of these exposed bodies is near the northwest end of the tactite zone. The scheelite-bearing material crops out at the surface,

and has been cut by the No. 2 adit (fig. 2) about 100 feet from the portal. A 100-foot drift trending S. 35° E. along the tactite-granodiorite contact exposed material containing sparsely disseminated scheelite. From the drift a raise was driven to the surface, and about 30 feet above the drift, intermediate drifts were driven from the raise along the contact both northwest and southeast. Scheelite-bearing material is exposed in the southeast end of the intermediate drift.

Scheelite is exposed in several other places along the contact between the granodiorite and the tactite. The best of these exposures are along the north edge of the tactite and are of marginal grade; none of them are more than a few feet long and 2 or 3 feet wide.

About 500 tons of ore averaging between 0.5 and 1.0 percent WO_3 were reportedly mined from a stoped out area southeast of the raise and above the intermediate drift.

ORE RESERVES

The main ore body is estimated to contain about 700 tons of measured ore in place and 200 tons of broken ore in the stope. A grab sample of the broken ore taken by the applicant's engineer assayed 0.65 percent WO_3. A check sample S-366 by the Bureau of Mines engineer assayed 0.18 percent WO_3. No other ore is indicated, but 2,000 or 3,000 tons of about the same grade may be inferred elsewhere along the two shear zones. One small pod assayed 1.02 percent WO_3 (S-365).

PROPOSED APPLICATION

The applicant proposes 2800 feet of diamond drilling to explore for scheelite bodies along the contact between the tactite and the granodiorite. Exploration of the contact at the surface by pits and bulldozer cuts, and lamping of the exposed portion of the contact, has not disclosed any ore bodies more than a few feet long, and these are separated by several hundred feet of non-mineralized contact. Therefore, no suitable targets for diamond drilling are evident, and the probability of discovering a minable body of ore by the diamond drilling proposed by the applicant is negligible.

Exploration by drifting and crosscutting in the No. 1 adit has been well executed and has resulted in the discovery of a small ore body. Further work on the western end of the northernmost shear zone in the No. 2 adit by the applicant is warranted, although not as a high project. The surface will be intersected in less than 100 feet by a drift along the shear zone on this level. Any ore bodies discovered will probably be small, from 500 to 1,500 tons; and low grade, probably not exceeding 0.75 percent.

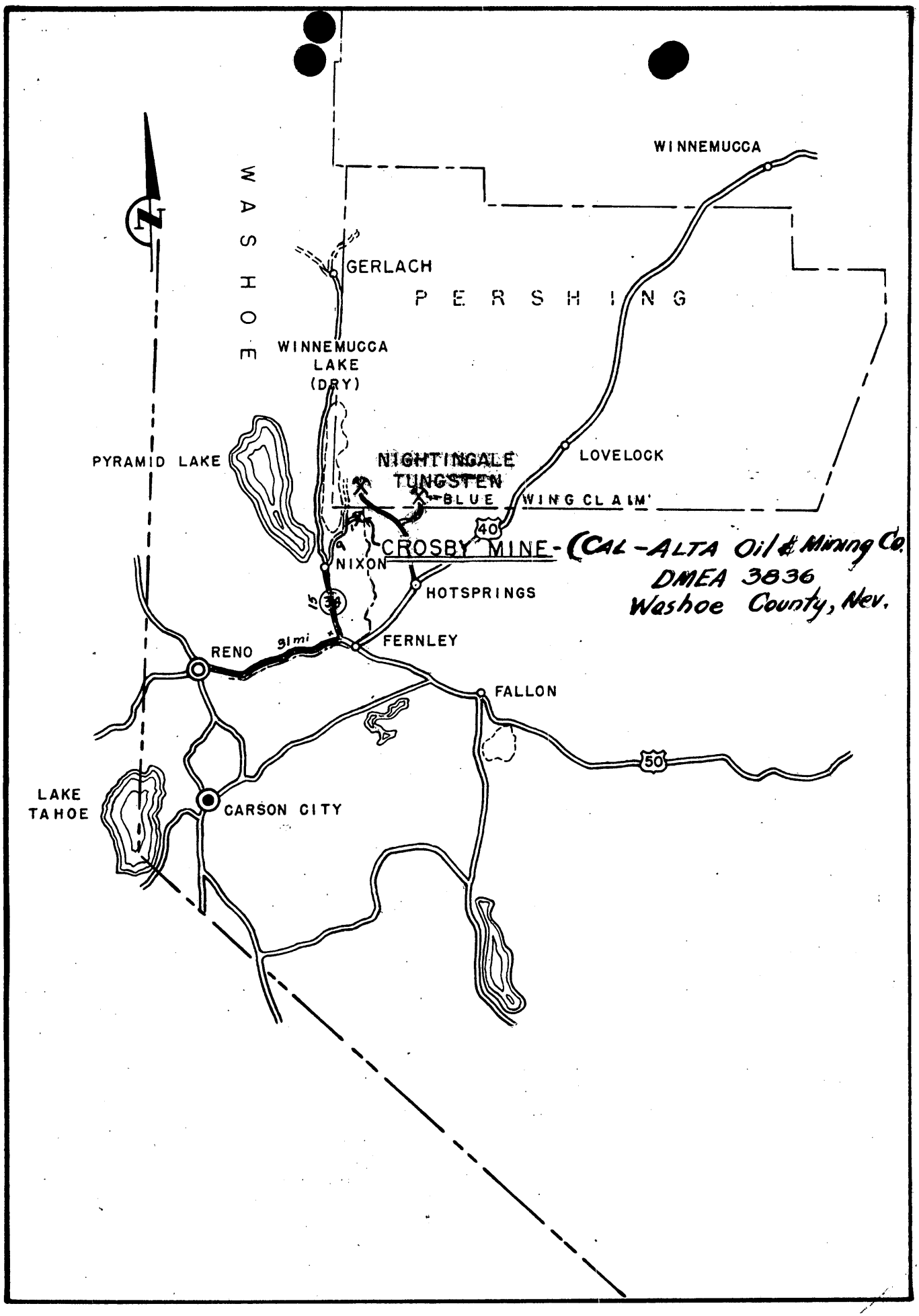

Figure 1. Location map.

DOCKET
SURNAME

400 Chapman
Hoff
Holliday
Davis
Nelson
Yager
Selfridge

SEP - 7 1955

Cal Alta Oil and Mining Company, Inc.
Guerneville, California

Re: Docket No. DMEA 3836 - Tungsten
Cal Alta(White Blowout) mine
Washoe County, Nevada

Gentlemen:

Your application for aid for an exploration project and other data available to us in Washington concerning the above referenced 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 our information, although noting a small amount of tungsten mineralization in surface open cuts and pits, and in underground workings of the Cal Alta (White Blowout) mine, indicates to us that the probability of disclosing minable tungsten ore reserves by your proposed program is not sufficiently promising to justify Government participation. Under these circumstances, we regret to advise you that your application is denied.

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

Sincerely yours,

C. O. Mittendorf

Administrator

SPHolt:foc
8-29-55
cc to: Docket
Code 400
Adm. Read. File
Operating Comm.
FT. Reg. II
Messrs. Holliday, USBM
Kiilsgaard, USGS

R.C.L.

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

September 2, 1955

MEMORANDUM

To: W. S. Martin, Chief, Iron & Ferro-Alloys, DMEA
Through: Chief, Ferrous Metals & Alloys Branch, Bureau of Mines

From: R.W. Holliday, Commodity Industry Analyst, Bureau of Mines

Subject: DMEA Docket No. 3836 - Tungsten
Cal-Alta Oil & Mining Company
Cal-Alta Mine
Washoe County, Nevada

Because of meager mineralization and lack of geologic evidence to support the proposal and because of lack of experience by the applicant, the examiner concludes that a discovery is unlikely.

I concur with the denial.

R. W. Holliday

September 2, 1955

MEMORANDUM

To: W. S. Martin, Chief, Iron & Ferro-Alloys, DMEA
Through: Chief, Ferrous Metals & Alloys Branch, Bureau of Mines

From: R.W. Holliday, Commodity Industry Analyst, Bureau of Mines

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RWHOLLIDAY/foc
9-2-55
cc to: File
Mr. Martin, DMEA (3)
Mr. Holliday, USBM
Mr. Melcher, USBM

September 2, 1955

MEMORANDUM

To: W. S. Martin, Chief, Iron & Ferro-Alloys, DMEA
Through: Chief, Ferrous Metals & Alloys Branch, Bureau of Mines

From: R.W. Holliday, Commodity Industry Analyst, Bureau of Mines

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Cal-Alta Oil & Mining Company
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R. W. Holliday

RWHOLLIDAY/fcc
9-2-55
cc to: File
Mr. Martin, DMEA (3)
Mr. Holliday, USBM
Mr. Melcher, USBM

FILE COPY
Surname:

Holliday
Davis
Nelson
yopes

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

September 2, 1955

MEMORANDUM

To: W. S. Martin, Chief, Iron & Ferro-Alloys, DMEA
Through: Chief, Ferrous Metals & Alloys Branch, Bureau of Mines

From: R.W. Holliday, Commodity Industry Analyst, Bureau of Mines

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Cal-Alta Oil & Mining Company
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Mr. Martin, DMEA (3)
Mr. Holliday, USBM
Mr. Melcher, USBM

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

MEMORANDUM

To: Administrator, DMEA

From: Iron and Ferro-Alloys Division, DMEA

Subject: Denial of request for exploration assistance in the amount of $10,770.00
Docket No. DMEA 3836 - Tungsten
Cal Alta Oil and Mining Company, Inc.
Cal Alta (White Blowout) mine

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2. The applicant controls by sub-lease from Sanford A. Bunce and Fred M. Crosby, lessees from the Southern Pacific Land Company, owners, the following property:

The N½ of NE¼, Sec. 21, T. 24 N., R. 24 E., M.D.B. and M., containing 80 acres, more or less, situated in Washoe County, Nevada.

3. The proposed program is (First Stage), by drilling 1100 feet in 7 diamond drill holes from underground stations in the Cal Alta (White Blowout) mine, to be followed, if results proved favorable by a second stage of 1700 more feet of diamond drilling. Assistance for the first stage drilling only is requested in this application.

4. In the area explored by the Cal Alta (White Blowout) mine sparse tungsten mineralization occurs both in surface cuts and underground workings, but there is little indication that minable bodies of tungsten ore will be discovered by work under the applicant's proposed program.

5. The Field Team concludes that there is little probability of making a significant discovery and recommends denial. The Commodity Divisions of the Geological Survey and the Bureau of Mines concur in this recommendation.

Thos. L. Chapman

Thos. L. Chapman, Acting Chief
Iron and Ferro-Alloys Division

DOCKET
SURNAME

400 Chapman
Holt
Holliday
Davis
Nelson

MEMORANDUM

To: Administrator, DMEA

From: Iron and Ferro-Alloys Division, DMEA

Subject: Denial of request for exploration assistance in the amount of $10,770.00
Docket No. DMEA 3836 - Tungsten
Cal Alta Oil and Mining Company, Inc.
Cal Alta (White Blowout) mine

The denial of the subject application is recommended by this Division based on the following information:

1. The applicant, Cal Alta Oil and Mining Company, Inc., Guerneville, California, requested exploration assistance in the amount of $10,770.00 for 1100 feet of diamond drilling in 7 holes in the Cal Alta mine.

2. The applicant controls by sub-lease from Sanford A. Bence and Fred M. Crosby, lessees from the Southern Pacific Land Company, owners, the following property:

The N½ of NE¼, Sec. 21, T. 24 N., R. 24 E., M.D.B. and M., containing 80 acres, more or less, situated in Washoe County, Nevada.

3. The proposed program is (First Stage), by drilling 1100 feet in 7 diamond drill holes from underground stations in the Cal Alta (White Blowout) mine, to be followed, if results proved favorable by a second stage of 1700 more feet of diamond drilling. Assistance for the first stage drilling only is requested in this application.

4. In the area explored by the Cal Alta (White Blowout) mine sparse tungsten mineralization occurs both in surface cuts and underground workings, but there is little indication that minable bodies of tungsten ore will be discovered by work under the applicant's proposed program.

5. The Field Team concludes that there is little probability of making a significant discovery and recommends denial. The Commodity Divisions of the Geological Survey and the Bureau of Mines concur in this recommendation.

Thos. L. Chapman, Acting Chief
Iron and Ferro-Alloys Division

SPHolt:foc
8-29-55
cc to: Docket
Code 400
Adm. Read. File
Operating Comm.

IN REPLY REFER TO:

Docket

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

Copy retained 400

August 26, 1955

Re: DMEA 3836
Cal Alta Oil and Mining Co., Inc.
Cal Alta Mine (Adaven)
Washoe Co., Nev.
$27,412.00 - Tungsten

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

From: N. E. Nelson, U. S. Geological Survey

Subject: Review of Field Team report.

The Cal Alta or Adaven mine, the subject of the application, has a record of small production from pods of scheelite-bearing tactite in a long and wide skarn zone.

The examiners conclude that no adequate target for diamond drilling is presented by the scattered pods and the cost of the project disproportionate to the probable discoveries that might conceivably be made.

I agree with the conclusions and concur with the denial recommendation of the Field Team.

N. E. Nelson

N. E. Nelson

IN REPLY REFER TO:

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

August 26, 1955

Re: DMEA 3836
Cal. Alta Oil and Mining Co., Inc.
Cal. Alta Mine (Adaven)
Washoe Co., Nev.
$27,412.00 - Tungsten

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I agree with the conclusions and concur with the denial recommendation of the Field Team.

N. E. Nelson

N. E. Nelson

NENelson:iml
G-8/26/55

cc: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
R. Holliday, 3513

IN REPLY REFER TO:

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

August 26, 1955

Re: DMEA 3036
Cal Alta Oil and Mining Co., Inc.
Cal Alta Mine (Adaven)
Mineral Co., Nev.
$27,412.00 - Tungsten

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

From: N. E. Nelson, U. S. Geological Survey

Subject: Review of Field Team report.

The Cal Alta or Adaven mine, the subject of the application, has a record of small production from pods of scheelite-bearing tactite in a long and wide skarn zone.

The examiners conclude that no adequate target for diamond drilling is presented by the scattered pods and the cost of the project disproportionate to the probable discoveries that might conceivably be made.

I agree with the conclusions and concur with the denial recommendation of the Field Team.

N. E. Nelson

N. E. Nelson

NENelson:iml
G-8/26/55

cc: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
R. Holliday, 3513

20 in Ea

Docket PRC

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

1605 Evans Avenue
Reno, Nevada

August 19, 1955

Memorandum

To: Operating Committee, DMEA, Interior Building
Washington 25, D. C.

From: Executive Officer, DMEA Field Team, Region II

Subject: Docket No. DMEA-3836 - Tungsten
Cal Alta Oil & Mining Co., Inc.
Cal Alta (White Blowout) Mine
Washoe County, Nevada

Reference is made to your letters of June 16 and June 20, 1955 regarding a field examination of the above subject property.

Attached are four copies of a report by B. H. Sheahan, Bureau of Mines and R. G. Reeves, Geological Survey in which a denial of exploration aid by the DMEA is recommended. Roscoe Smith and I concur in the recommendation.

The two copies of exhibits No. 14 and No. 15 are being returned to the applicant as suggested in your letter of June 20th.

S. Ricker

S. Ricker

Attach.

Reviewed by
DMEA OPERATING COMMITTEE
8-26-55
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION II

APPLICATION REPORT

DMEA 3836 (Tungsten)
Cal Alta Oil & Mining Co., Incorporated
(Adaven, Stoddard-Crosby, Crosby)
Nightingale Range, Washoe County, Nevada

by

B. H. Sheahan
Mining Engineer
U. S. Bureau of Mines

R. G. Reeves
Geologist
U. S. Geological Survey

Reviewed by
DMEA OPERATING COMMITTEE
8-26-55
(date)

August 11, 1955

CONTENTS

	Page
Introduction	1
Conclusions and Recommendations	1
Location, Accessibility, and Local Resources	2
History and Production	3
Property and Ownership	4
Development	5
Geology	6
Ore Deposits	7
Ore Reserves	8
Proposed Exploration	9

ILLUSTRATIONS

Figure 1	Location map
2	Geologic map

INTRODUCTION

Mr. Wm. R. Brown, Vice President and General Manager of Cal Alta Oil and Mining Co., Inc., Guerneville, California, applied for Government assistance in a $27,412.00 diamond drilling exploration program with the Defense Minerals Exploration Administration to explore for tungsten at the White Blowout (Adaven, Crosby Stoddard) mine, Washoe County, Nevada.

The application was received on May 24, 1955 and was referred for a field examination on June 16, 1955. The property was examined by B. H. Sheahan, Mining Engineer of the Bureau of Mines, and R. G. Reeves and D. B. Tatlock, Geologists of the Geological Survey on July 19, 1955. The examiners were accompanied by H. P. Nelson, Consulting Mining Engineer retained by the company.

The scope of the examination included check sampling, lamping surfaces and underground workings with ultra violet light, geologic mapping and reviewing information in the application and in a previous report by an engineer[1/] of the Bureau of Mines and other data on file.

CONCLUSIONS AND RECOMMENDATIONS

There was practically no geologic evidence on the property to justify 2800 feet of diamond drilling proposed by the applicant.

The probability of discovering a significant body of ore by diamond drilling or other means of exploration is negligible. The competency of the applicant is poor and repayment of an exploration

---

1/ George Holmes, Mining Engineer, U. S. Bureau of Mines, October 1, 1954, Report of Examination, Crosby Tungsten Mine, Washoe County, Nevada.

loan would be impossible because of the stringent terms and provisions of the lease, even though a minor ore body might be discovered.

It is recommended that the requested loan for exploration aid be denied.

LOCATION, ACCESSIBILITY, AND LOCAL RESOURCES

The property is located 9.8 miles by road northeast of Nixon, Washoe County, Nevada in sec. 21, T. 24 N., R. 24 E., MDB&M, at an altitude of approximately 4,600 feet on the west slope of the Nightingale Mountain Range (Fig. 1).

To reach the mine from Nixon, Nevada, follow paved Nevada State Highway No. 34 northerly 0.8 miles; turn right and follow a gravel road northeasterly 8 miles; turn right at road intersection and follow a narrow rough dirt road 1.0 mile easterly to the mine. The property is accessible all year and all but the last mile of road is maintained by the County and State.

The climate is arid with hot dry summers and cold winters. Vegetation is sparse.

A Sierra Pacific transmission line to the U. S. Gypsum plant near Gerlach passes about four miles southwest of the mine. Water for mine use is hauled from Nixon but a supply might be developed by drilling wells in the Winnemucca dry lake bed.

Reno, Nevada, the nearest supply point, is 60 miles by road southwest of the property by way of Fernley. The nearest custom tungsten mill is at Toulon, Nevada on U.S. Highway 40 and 75 miles distant.

Housing on the property consists of a one-room cabin. Miners are available at Reno and several other towns in the area and some labor

is available from the Piute Indian Reservation at Nixon. The prevailing wage scale for miners is $16.00 per day.

HISTORY AND PRODUCTION

Mr. Fred Crosby of Nixon and Mr. Carl Stoddard, a mining engineer of Reno, Nevada, acquired a lease on the property during the early 1940's. A few trenches were excavated to explore for scheelite.

In 1952, the Adaven Mining Company attempted to develop an open pit and also an underground mining operation. After expending approximately $30,000 the company became discouraged and operations were discontinued. Production amounted to 50 tons of hand sorted ore which assayed about 0.4 percent WO_3 and 157.76 tons which assayed 0.972 percent WO_3.

In October 1953, Dr. Wm. N. Makaroff and Dr. John N. Papove of the Cal Alta Oil and Mining Co., Inc., became interested in the property and acquired a sub-lease from Mr. Sanford A. Bunce and Fred M. Crosby. A dry concentrator was constructed and $80,000 was expended. The operations were unsuccessful and the concentrator a complete failure.

Early in 1955 the company retained Mr. Harve P. Nelson, Consulting Mining Engineer, to provide professional advice, and to prepare an application for Government assistance under the DMEA program. Mr. Nelson's services were obtained after the mill was constructed and operated. The plant was shut down after treating about 50 tons of ore which, because of dust losses, yielded a concentrate of lower grade than the heads.

PROPERTY AND OWNERSHIP

Mr. Sanford A. Bunce of Lovelock, Nevada, and Mr. Fred M. Crosby of Nixon, Nevada obtained leases on the property from S. P. Land Co. (Lease No. 23210-W and Lease No. 21575-W). Terms of the lease included payments of $200 per year, 9 percent royalty on gross sales on any ore produced. Other requirements include that at least 15 shifts of work be performed each month or pay the Southern Pacific Land Co. $300 per month in lieu of work.

Mr. Sanford A. Bunce and Mr. Fred M. Crosby made a preliminary lease agreement with Dr. Wm. N. Makaroff on October 17, 1953, and a formal mining lease with the Cal Alta Oil and Mining Co., Inc. (a Nevada corporation) was signed on March 1, 1954. Terms of the lease were exceptionally stringent. Some of these terms and conditions included:

(1) A 5 year period - Oct. 17, 1953 to Oct. 17, 1958.

(2) 15% royalty on calculated gross production with no deductions of any kind allowed.

(3) Pay and perform all work required by Southern Pacific Land Co., except 9% royalty.

(4) Work 90 shifts per month.

(5) Submit monthly a complete report to Sanford A. Bunce at Lovelock, Nevada.

(6) Pay all taxes and other expenses related to the lease.

(7) Construct a 50-ton per day capacity mill at the property according to the specifications of Bunce and Crosby.

(8) Tailings to belong to Bunce and Crosby.

(9) No shipments of ore and concentrates to be allowed without consent of Bunce and Crosby.

(10) It was further mutually agreed that the mill and equipment would revert to Bunce and Crosby unless removed within 60 days after termination of the lease.

Officers of Cal Alta Oil and Mining Co., Inc. include the following:

President: Dr. Wm. N. Makaroff, Guerneville, Calif.

Vice-President: Dr. John N. Papove, Box 64, Guernewood Park, Calif.

Vice-President & General Manager: Wm. R. Brown, Box 105, Cazadero, Sonoma County, Calif.

Resident Agent: S. A. Bunce, Court House, Lovelock, Nev.

Secretary-Treasurer: J. W. Cook

The competency of the applicant, Mr. Wm. R. Brown, is judged to be poor. He was not interviewed but was reported to be an elderly man with practically no mining experience. He is serving as General Manager without a salary.

DEVELOPMENT

On the surface there is approximately 1/4 mile of mine roads and a few shallow open cut prospect pits (Fig. 2).

The following facilities are at the property:

1 - 50-ton per day dry mill of no operational value.

Mill building (wood frame construction)

1 - Primary ore bin - 20-ton capacity
1 - Jaw crusher 8" x 15"
1 - Conveyor belt 14" x 20'
1 - Sec. crusher 28" dia. Simons
1 - Conveyor 14" x 30"
1 - Screen (S.W.E.Co.) - 26 mesh
1 - Hammer mill, dry impact type
1 - Electrostatic dry separator

Mill building (cont'd.)

1 - Shop with miscellaneous tools and parts.
1 - Power plant diesel generator - 100 h.p., poor condition
1 - Power plant diesel generator - 60 h.p., fair condition
1 - Supply shed with mine and mill supplies, poor condition

Mine equipment	Condition
1 - Air compressor unit, 210 c.f.m.	fair
3 - Rock drills with drill steel	2 fair, 1 poor
3 - Mine cars, 16 c.f. capacity	fair
1 Ton 12# to 16# per yard rail	fair
Miscellaneous 1-inch, 1½-inch, and 2-inch compressed air lines	fair
1 - Pickup truck, 1/2-Ton (1951 Dodge)	fair
1 - Truck, 1½-Ton Flat bed	poor
1 - Tractor loader, Oliver HG42	poor
1 - Electric generator - 1½ h.p. for lights	fair

Underground development consists of a 216-foot vertical shaft, 370 feet of crosscuts, 380 feet of drifts, and 170 feet of raises.

GEOLOGY

The Cal Alta mine is underlain by pre-Tertiary thin bedded argillaceous limestone and limy clastic rock that have been intruded by granodiorite. The sedimentary rocks strike northwesterly and dip steeply northeast and southwest. Near their contact with the granodiorite, the sedimentary rocks have been metamorphosed to calc-silicate hornfels. A crescent shaped body of tactite 750 feet long and 150 feet wide has been formed in the sedimentary rocks along the intrusive contact. The tactite is dark brown to black and is made up mainly of black garnet, quartz, and epidote. Irregularly shaped quartz masses and veinlets cut the tactite and metasedimentary rocks. A circular mass of quartz about 750 feet in diameter that cuts the granodiorite, tactite, and metasediments crops out about 500 feet east of the portal of the No. 1 adit.

The metamorphic rocks are cut by two parallel shear zones, 25 feet apart, that trend N. 70° W.

ORE DEPOSITS

Tungsten ore bodies are localized along shear zones in and near the tactite, and scheelite is very sparsely distributed in the tactite and metasediments as far as 50 feet from the main ore bodies. The ore minerals are scheelite and some powellite, which are associated with varying amounts of pyrite, in a gangue of garnet, quartz, epidote, calcite, and hyalite opal.

The main ore body is in the southernmost of two parallel shear zones near the contact between the tactite and metasedimentary rocks. This body, about 50 feet long and 6 feet wide, is exposed at the surface and in a stope about 30 feet above the floor of the No. 1 adit. The ore body trends N. 70° W. and is vertical. The top of the stope is 30 feet below the surface. Small scheelite-bearing bodies, 10 to 15 feet long and 2 to 5 feet wide, exposed in the back of the drift along the southernmost shear zone probably represent the bottom of the body exposed in the stope.

The northernmost of the parallel shear zones has been intersected by four crosscuts but only a few scheelite crystals are evident in the three eastern crosscuts. The westernmost crosscut intersected 2 feet of ore in the shear.

Scheelite-bearing bodies are distributed sporadically along the contact on the surface between the granodiorite and the tactite. The largest of these exposed bodies is near the northwest end of the tactite zone. The scheelite-bearing material crops out at the surface,

and has been cut by the No. 2 adit (fig. 2) about 100 feet from the portal. A 100-foot drift trending S. 35° E. along the tactite-granodiorite contact exposed material containing sparsely disseminated scheelite. From the drift a raise was driven to the surface and about 30 feet above the drift, intermediate drifts were driven along the contact both northwest and southeast. Scheelite-bearing material is exposed in the southeast end of the intermediate drift.

Scheelite is exposed in several other places along the contact between the granodiorite and the tactite. The best of these exposures are along the north edge of the tactite and are of marginal grade; none of them are more than a few feet long and 2 or 3 feet wide.

About 500 tons of ore averaging between 0.5 and 1.0 percent WO_3 were reportedly mined from a stoped out area southeast of the raise and above the intermediate drift.

ORE RESERVES

The main ore body is estimated to contain about 700 tons of measured ore in place and 200 tons of broken ore in the stope. A grab sample of the broken ore taken by the applicant's engineer assayed 0.65 percent WO_3. A check sample S-366 by the Bureau of Mines engineer assayed 0.18 percent WO_3. No other ore is indicated, but 2,000 or 3,000 tons of about the same grade may be inferred elsewhere along the two shear zones. One small pod assayed 1.02 percent WO_3 (S-365).

PROPOSED EXPLORATION

The applicant proposes 2800 feet of diamond drilling to explore for scheelite bodies along the contact between the tactite and the granodiorite. Exploration of the contact at the surface by pits and bulldozer cuts, and lamping of the exposed portion of the contact, has not disclosed any ore bodies more than a few feet long, and these are separated by several hundred feet of non-mineralized contact. Therefore, no suitable targets for diamond drilling are evident, and the probability of discovering a minable body of ore by the diamond drilling proposed by the applicant is negligible.

Exploration by drifting and crosscutting in the No. 1 adit has been well executed and has resulted in the discovery of a small ore body. Further work on the western end of the northernmost shear zone in the No. 2 adit by the applicant is warranted, although not as a DMEA project. The surface will be intersected in less than 100 feet by a drift along the shear zone on this level. Any ore bodies discovered will probably be small, from 500 to 1,500 tons; and low grade, probably not exceeding 0.75 percent.

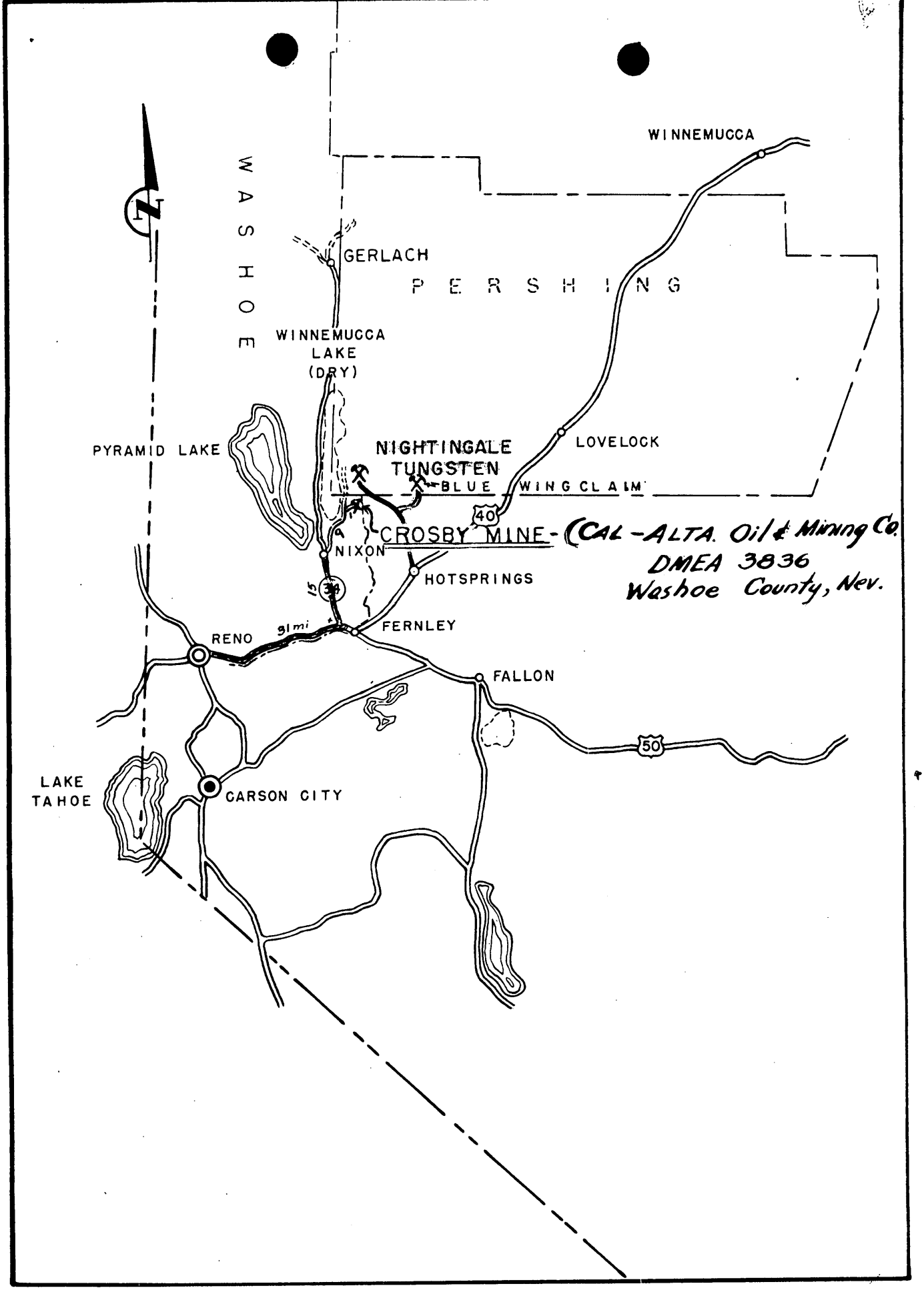


Figure 1. Location map.

DOCKET
Surname:
Rutledge
Martin
Selfridge
Johnson
Mitchell

400

JUN 2 0 1955

Mr. Spangler Ricker, Executive Officer
DMEA Field Team, Region II
1605 Evans Avenue
Reno, Nevada

Re: Docket No. DMEA 3836 - Tungsten
Cal Alta Oil & Mining Co., Inc.
Cal Alta (White Blowout) mine
Washoe County, Nevada

Dear Mr. Ricker:

Reference is made to the above-docketed application for exploration assistance at the Cal Alta mine.

Copies of the two exhibits that the applicant asked to have returned have been prepared here and the original and one copy of each are enclosed for your use. Please return the two following original maps to the applicant when they are no longer needed: Encl. #14 - Surface Plan Cal Alta mine, and Encl. #15 - Underground Workings Cal Alta mine.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (JHB)

Approved:

J. H. Hedges (JHB)
Member, Bureau of Mines

Thor H. Kiilsgaard (JHB)
Member, Geological Survey

cc: Docket
FT, Reg. 2
Code 400
Oper. Committee
Adm. Read. File
Thor Kiilsgaard, USGS
Robt. Holliday, USBM

6/17/55
FARutledge/ls

R.G.H.

DOCKET
SURNAME
Rutledge
Martin
Kiilsgaard
Gehm
Selfridge
Johnson

400

JUN 16 1955

Cal Alta Oil & Mining Co., Inc.
Guerneville, California

Re: Docket No. DMEA 3836 - Tungsten
Cal Alta (White Element) mine
Washoe County, Nevada

Gentlemen:

Reference is made to the above-docketed application for exploration assistance which has been reviewed by the Iron and Ferro-Alloys Division, Defense Minerals Exploration Administration, and referred to Mr. Spangler Ridner, Executive Officer, DMEA Field Team, Region II, 1605 Evans Avenue, Reno, Nevada, for a field examination of the property.

Any assistance that you can give the members of the Field Team will be appreciated.

The enclosed "Consent to Lien" forms are to be executed by the owner of the property and returned to this Administration. The "Subordination Agreement" forms should be executed by Sanford A. Bunce and Fred M. Crosby and returned also.

Sincerely yours,

Frank E. Johnson

ACTING Administrator

FARutledge:foc 6/15/55
cc to: Docket
Code 400
Admr. Read. File
Operating Comm.
FT. REG. II
Messrs. Holliday, USBM
Kiilsgaard, USGS

Enclosure

R.S.L.

DOCKET
SURNAME

400 Rutledge
Martin
Holliday
Selfridge
Fitzsimmons

JUN 16 1955

Mr. Spangler Richer, Executive Officer
DMEA Field Team, Region II
1605 Evans Avenue
Reno, Nevada

Re: Docket No. DMEA 3836 - Tungsten
Cal Alta Oil & Mining Co., Inc.
Cal Alta (White Element) mine
Washoe County, Nevada

Dear Mr. Richer:

The above-docketed application for exploration assistance is being referred to your office for a field examination of the property.

Two copies of a relevant memorandum dated June 9, 1955, by T. H. Kiilsgaard, Geological Survey, are enclosed for your information.

Sincerely yours,

George C. Selfridge
Chairman, Operating Committee (GHB)

Enclosure

FARutledge:foc 6/15/55
cc to: Docket
Code 400
Admr. Read. File
Operating Comm.
FT. REG. II
Messrs. Holliday, USBM
Kiilsgaard, USGS

APPROVED:

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

Thor H. Kiilsgaard (GHB)
Member, Geological Survey

R.G.S.

Docket

IN REPLY REFER TO:

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

WSM

RECEIVED

June 9, 1955

Copy retained 400

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

From: T. H. Kiilsgaard, U. S. Geological Survey

Subject: Review of application, DMEA Docket 3836 (Tungsten), Cal Alta Oil & Mining Company, Nixon, Nevada

The applicant proposes a two-stage diamond drilling program, with 1100 feet of drilling in the first stage and 1700 feet in the second stage. Drilling costs are estimated at $9.79 per foot, the cost of work in Stage I to be $10,770. The cost of Stage II is not given but if drilling is at the same estimated cost as Stage I it would aggregate $16,643.00, making a total estimated contract cost of $27,413.00.

The work is designed to explore scheelite occurring in tactite, the tactite area having already been partially explored by 4 short adits and a 120-foot shaft. These workings are reported to have produced 157.76 tons of ore assaying 0.972% WO_3, and 5368 pounds of concentrate averaging 55.25% WO_3. From the applicant's maps it appears the tactite is a broad, indefinite zone and that none of the proposed drilling will explore those parts previously productive but will instead explore unknown tactite areas lying north and northeast of existing workings. There is little evidence on the maps to justify drilling in these target areas, but the maps are poorly prepared and there may be confirming evidence on the property making the drilling attractive.

I recommend referral of the application to the field for an examination of the property and for Field Team recommendations on further processing of the application.

T. H. Kiilsgaard

T. H. Kiilsgaard

May 26, 1955

Memorandum

To: Executive Officer, DMEA Field Team, Region II

From: Chief, Operation's Control and Statistics Division

Subject: Assignment of Docket Number

There is listed below the assigned docket number to an application recently received from Region II.

DMEA -3836 Cal-Alta Oil & Mining Co.

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

May 26, 1955

Subject: DMEA 3836
Re: Exploration Assistance
Cal-Alta Mine

Cal-Alta Oil & Mining Co
Guemesville, California

Gentlemen:

The receipt of your application dated (undated) for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA 3836 and referred to the Iron & Ferro Alloys 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

dl 2n Ca

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

Department of the Interior
Defense Minerals Administration
RECEIVED
MAY 26 1955

1605 Evans Avenue
Reno, Nevada

May 24, 1955

Memorandum

To: Operating Committee, DMEA, Interior Building
Washington 25, D. C.

From: Executive Officer, DMEA Field Team, Region II

Subject: Loan Application
Cal-Alta Mine (Tungsten)
Cal-Alta Oil & Mining Co.
Washoe County, Nevada

Attached are three sets of MF-103, Application for Aid forms with attachments relative to above subject. The fourth set has been retained in our files.

S. Ricker

Attach.

BUREAU OF MINES
WASHINGTON, D. C.

MAY 26 7 52 AM '55

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
MAY 26 1955

1605 Evans Avenue
Reno, Nevada

May 24, 1955

Memorandum

To: Operating Committee, DMEA, Interior Building
Washington 25, D. C.

From: Executive Officer, DMEA Field Team, Region II

Subject: Loan Application
Cal-Alta Mine (Tungsten)
Cal-Alta Oil & Mining Co.
Washoe County, Nevada

Attached are three sets of MF-103, Application for Aid forms with attachments relative to above subject. The fourth set has been retained in our files.

S. Ricker

Attach.

CAL ALTA OIL & MINING CO., INC.
Guerneville, California

20 May 1955

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
MAY 23 1955

Defense Minerals Exploration Administration
U. S. Bureau of Mines
1605 Evans Street
Reno, Nevada

Attn: Mr. Ricker

Dear Sir:

Forwarded herewith is Application Form M.F. 103 (Encl.#1) for the Cal Alta Oil and Mining Company's property near Nixon, Nevada. Portions for which there is inadequate room have been answered herein under the paragraph of the Form.

The cost estimate has been given on an overall unit - cost basis, since the Questions and Answers pamphlet indicates this method to be more desirable for both the Government and the applicant. However, a breakdown of the estimate is given.

Please rush the processing of this application, in order that as much as possible of the exploration work can be accomplished during the summer. This will allow Prof. Nelson to have plenty of free time to get the project started before the opening of school.

4. Physical Description.--

(a) Stope preparation development work is being done to prepare approximately 800 tons of ore above Adit #1.

An old shaft approximately 120' deep exists on the property. It was sunk at an unknown date many years ago, probably in search for gold. One can enter it by windlass and rope.

The form adits have recently been driven. No. 1 has an overall length of 560 ft. of workings. Adit #2, #3 and #4 consist of 285', 50 and 7' respectively. All faces are accessible from the portals which can be reached by truck.

(b) Past production (see encls. #6, 7, 8, 9, 10 and 11):

Ore
157.76 tons @ 0.972% WO_3

Concentrates (not including above).

2188	lbs. of	59.90 %	WO_3
505	" "	33.83 %	"
663	" "	64.59 %	"
2012	" "	62.68 %	"

(Records of other production are unavailable).

Ore Reserve: 800 tons -- cut samples are being assayed and results will be furnished as soon as available.

(c) Geological features:--

The main contacts between tactite, granite, limestone and the so-called Quartz blowout are shown on the accompanying map (Encl #3). One print of the geological map of the area is made available (Encl. #14 and #15).

A band of tactite, averaging about 100 feet wide runs across the property. Any portion of this area is favorable for deposition of sheelite. To the north is the granite contact. It comes in contact with the quartz plug to the east and swings around its south side. A shear zone of tactite and limestone border along the south and west. The main orebody lies slightly in this zone near the contact. The other orebody was found along the tactite-granite contact.

(d) The mine can be reached from Nixon, Nevada, by 10.0 miles of graded road which is in good shape. Nixon is 50 miles northeast of Reno over paved State Highways No. 33 and 34. Railhead is 11.5 miles from mine.

Present mine workings are accessible by maintained roadways.

(e) Man power is available from neighboring towns of Nixon, Wadsworth or Fernley.

Any kind of materials, supplies and equipment are available in Reno, 60 miles away.

Water can be secured from the Truckee River at Nixon. Ample electric power is available from the company's two generators of 60 KW and 100 KW capacity.

5. (b) Proposed diamond core drilling is shown on the general map (Encl.#3). The work is divided into Stage I and Stage II. The first stage, with which we are now concerned, consists of 1100 feet of drilling in seven holes designed to cut across the favorable tactite zones and through the contacts into the granite. A possible program of approximately 1700 feet for the second stage is shown but will depend upon the outcome of Stage I. Holes No. 12, 13 and 14 are shown as being driven from the bottom of the old shaft. Any cost to rehabilitate this shaft is not to be charged to the Government.

5. (c) Within 10 days and completed within 3½ months.

5. (d) W. R. Brown, the applicant, has had over 30 years of experience in managing the operation of timber and other mills. The exploration work and the logging of the core are to be supervised by H. P. Nelson, Consulting Engineer, who is Professor of Mining at the University of Nevada and has had over 11 years of mine operating experience, including the supervision of an extensive drilling program at the San Pedro Unit of the American Smelting and Refining Company, near San Luis Potosi, Mexico.

6. Estimate of Cost: Unit cost of $9.79 per foot of hole, making a total of $10,770.

This unit cost is based on the following calculations using only the 1100 feet of Stage I.

(a) Diamond drilling (Lowest quoted price with bids requested from four drilling companies with the Cal Alta Co. will furnish the required compressed air, water and a helper. AX size was to be used for starting with every effect to carry it to the end but with the understanding that they could drop to EX if necessary to complete the hole).

Drilling --- $4.00 per foot x 1100 ----------$4400.00
Casing or cementing @ $1.50 per foot
300' (less than 30%) - 450.00
Hauling water @ $17.00/day for 60 days ------- 1020.00

(b) Labor and supervision:
1 - Sampler and Drill-helper @ $400/mo. x 3½ -- 1400.00
Engineering, consulting, accounting
@ $350./mo. x 3½ ---------- 1220.00

(c) Core boxes and other sampling supplies --- 125.00
2"air pipe - 250' + fittings @ $.30 ------- 75.00
1"water pipe 250' + Fittings @ $.10 ------- 25.00
Explosives - $25./cwt. ---------- 25.00
Oil and gasoline @ $10./day ---------- 480.00

(d) Operating equipment (owned apparatus on 5-year depreciation; -- rented at estimated cost).
1 - Compressor $3500 $\left(\frac{3500}{5 \times 12} \times 3\frac{1}{2} \text{ mo.} = \$60.\right)$------- 210.00
1 - Compressor (rented in Reno for approximately 1 mo. for long hole) ------- 100.00
1 - Pickup $1200 for transporting drilling personnel and supplies ---------- 70.00
1 - Drifter w/auxilliary equipment. $1000. 50.00
1 - Water tank and pump to fill from Truckee River-- Rent $30./mo. 100.00

(e) Rehabilitation and repairs: None.
(f) New buildings, improvements, installations, etc.: None.
(g) Miscellaneous:
Repairs to equipment at $40./mo. x 3½ = $140.00
Sampling and analysis
(Splitting and assaying 20' at 5' interval /hole
8 samples/hole x 7 @ $5.00 ---------- 280.00
Payroll taxes, insurance, etc. @ 12% ---------- 314.00
Preparing underground drill stations ---------- 50.00
Transportation of drillers & supplies
$4./day x 60---------- 240.00

7. (b) It is understood from the Questions and Answers pamphlet that under the unit cost contract the Government contributes its percentage of the costs agreed upon before hand. In this case, the company is prepared to pay its portion of the cost. If the actual cost form of contract is decided upon, the company is prepared to furnish its applicable equipment, its employees or cash according to what is best.

Mr. Nelson will be available to take your engineers or geologists to the property if desired. He can be reached at 523 W. 11th Street, Reno, - Phone 3-7603.

Very truly yours,

W. R. Brown
Vice-President & General Manager

Encls.:
#1 -- D.M.E.A. Form MF-103.
#2 -- U.S.G.S. Wadsworth Quad. Sheet.
#3 -- Map, Surface Contacts & Underground Workings.
#4 -- Lease No. 23210-W, Bunce & Crosby with Southern Pacific Land Co.
#5 -- Lease, Cal Alta Oil and Mining Co. with Bunce & Crosby.
#6 -- Production Sheet
#7 -- Production Sheet
#8 -- Production Sheet
#9 -- Production Sheet
#10 - Production Sheet
#11 - Production Sheet
#12 - Cross-section Map
#13 - Cross-section Map
#14 - Geological Map, Surface (1 copy only)
#15 - Geological Map, Underground (1 copy only)

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

RECEIVED
MAY 26 1955

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

Not to be filled in by applicant

Docket No. DMEA-3836
Metal or Mineral Tungsten
Date Received 5/25/55
Estimated Cost $10,770.00
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: Cal Alta Oil & Mining Co., Inc. (Nevada), Guerneville, California
President: Dr. Wm. N. Makaroff, Guerneville, Calif. (Sonoma County)
Vice-Pres.: Dr. John N. Papowe, Box 64, Guernewood Park, Calif. (Sonoma County)
Vice-Pres. & Gen. Mgr.: Wm. R. Brown, Box 105, Cazadero, Calif. (Sonoma County)

(*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. A Nevada Corporation.

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

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

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 N½ of NE¼ of Section 21, Township 24 North, Range 24 East, Mount Diablo Base and Meridian, containing 80 acres, more or less. (See Encl. #4 & 5).

(*b*) State any mine name by which the property is known. Cal Alta (also Adaven or White Blowout)

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

(*d*) If you are not the owner, submit with this application a copy of the lease, contract, or other document under which you control the property. See Encls. #4 & 5.

(*e*) If you own the land, describe any liens or encumbrances on it Not applicable.

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. Not applicable.

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

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

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

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

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

16—66551-1

Encl. #1

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

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

(*c*) The work will start within 10 days and be completed within 3½ months from the date of an exploration project contract.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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 _____, 195__

_____ (Applicant)

By _____

_____

_____

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

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

6-54-200
Approved as to form by General Counsel, February 15, 1954.

L-3263.

Lease No. 23210-W

R-21-24-24

This Lease, Made in duplicate July 1, 1954 by and between SOUTHERN PACIFIC LAND COMPANY, a corporation, hereinafter called LESSOR, and SANFORD A. BUNCH of Lovelock, Nevada and FRED H. CROSBY of Nixon, Nevada, hereinafter called LESSEE:

WITNESSETH: That LESSOR, for and in consideration of the payments hereinafter agreed to be paid to it by LESSEE, and in further consideration of the covenants and agreements to be kept and performed by LESSEE, as hereinafter written, does by these presents lease unto LESSEE for the period from July 1, 1954 to June 30, 1974, the following described land situated in the County of Washoe, State of Nevada, to-wit:

N½ of NE¼ of Section 21- - - - - - - - Township 24 North, Range 24 East,

Mount Diablo Base and Meridian, containing 80.00 acres, more or less.

FOR THE SOLE PURPOSE of examining, searching and testing for, opening and operating mines of, and extracting, reducing, treating, selling, and shipping any and all ores or minerals contained therein, subject to the exceptions, reservations, covenants and conditions in this lease set forth.

EXCEPTING AND RESERVING: All that portion of the above described leased premises lying within 200 feet on each side of the center line of each and every railroad track now constructed upon or adjacent to said leased premises; rights of way for pipe, telegraph, telephone and power transmission lines, ditches, flumes, public roads and trails, now constructed upon or adjacent to said leased premises; all coal, oil, petroleum, natural gas, naptha and other hydrocarbon substances and all rights thereto; and also the right to use said leased premises for any and all purposes not inconsistent with or which shall not interfere with the rights of the LESSEE to use said leased premises for the purposes herein leased.

THE LESSEE HEREBY COVENANTS AND AGREES:

1. That LESSEE will keep and perform all of the covenants and agreements herein contained and will pay unto LESSOR as minimum royalty the sum of Two Hundred and 00/100 (200.00) Dollars, per year, payable yearly- in advance, during the term of this lease; also within ten (10) days after the expiration of each and every calendar month of the term hereof, will pay unto LESSOR, as additional royalty

the percentage specified on the rider hereto attached and made a part hereof.

extracted and removed from said land during the preceding calendar month, but the royalty paid in advance shall be credited as payment on account of said royalty accruing during and within the concurrent lease year: Provided, that in the event the true value of any shipment of said ore or mineral cannot be determined by LESSEE, prior to rendering monthly statement to LESSOR, as hereinafter provided, LESSEE shall pay to LESSOR at the time of rendering such statement, eighty-five (85) per cent of the estimated royalty, based on careful sampling of said ore or mineral at point of shipment, and the true value of such shipment shall, as soon as possible thereafter, be determined and thereupon the balance of royalty thereon shall be paid to LESSOR, but such true value shall be determined and the balance of royalty shall be paid to LESSOR not later than ninety (90) days from the date of any such shipment.

2. During the term of this lease or any extension thereof, the LESSEE covenants and agrees to work at least 15 mine shifts per calendar month during the period beginning July 1 and ending June 30 of each year; a mine shift being hereby defined as one man working an eight (8) hour shift in actual mining or development upon the leased premises which contributes directly to the discovery or production of minerals and shall not include such work as road building, camp construction or maintenance. In the event of failure to work at least 15 mine shifts in such actual mining in any one month during the period specified, the Lessee shall pay a delay rental, in addition to the annual minimum rental, of One Hundred and 00/100 Dollars ($100.00) per month, in lieu of actual mining and, if no actual mining is performed for 3 consecutive months, then said delay rental shall be increased to, and LESSEE shall pay, Three Hundred and 00/100 Dollars ($300.00) per month during said period until actual mining is resumed at the rate of at least 15 mine shifts per month. Provided, however, that no delay rental or actual mining as herein defined will be required for the first month after the date of delivery of this lease to allow the LESSEE to assemble tools, material and workmen and to perform preparatory work. Any delay rentals paid hereunder shall not be credited to royalties accruing or to accrue under this lease and payment of said delay rentals shall not affect the right of LESSOR to terminate said lease for default as provided in paragraph 21 hereof. ~~It is understood and agreed that no work or delay rental shall be required during the period of each year beginning and ending~~. The obligations of the LESSEE in this respect shall be suspended only while the LESSEE'S compliance is prevented by the elements, accidents, strikes, lockouts, riots, delays in transportation, inability to secure materials in the open market, or interference by governmental action, or by any other causes beyond the reasonable control of the LESSEE whether similar or dissimilar to the causes specifically mentioned.

3. That LESSEE will, not later than the tenth (10th) day of each calendar month, during the term hereof, and including the calendar month next following the termination hereof, furnish to LESSOR at the office of its Land Commissioner, San Francisco, California, a statement in writing, under oath, accompanied by full and complete copies of all documents, including settlement sheets, certificates of analyses, and assays, pertaining to or governing settlement for any ore, mineral or metal disposed of and also full and complete reports of any reduction works or mill where the ore may be reduced or treated, and setting forth for the preceding calendar month:

(a) The cubic contents of earth and rock mined or excavated, and the number of tons thereof.
(b) The number of tons of ore or mineral mined and the gross value thereof.
(c) The number of tons of ore remaining on the dump on said premises.
(d) The kind, quantity and value of all minerals extracted and sold or otherwise disposed of.
(e) The disposition made of all ore or minerals mined, together with the dates of shipments, names and addresses of consignees, car numbers, initials and weights.
(f) That the said land is being worked independently of and not in connection with any other mine or mineral land.

Such statement and reports to be accompanied by draft payable to the LESSOR for the proper amount of the royalty due LESSOR as aforesaid.

4. That LESSEE will keep a full set of accounts and records, and will allow LESSOR, or its agents or employes, to examine them from time to time and to enter upon said land, and into any workings, mills or reduction works thereon, or wherever said ore may be worked or reduced, for the purpose of inspection to ascertain whether the terms and conditions of this agreement are being properly carried out, and take samples and make tests and measurements and affix notices.

5. That LESSEE will not interfere with, destroy or remove any fences on or enclosing said land; nor leave gates open; nor interfere with livestock grazing within such enclosures.

6. That LESSEE will not hold LESSOR nor Southern Pacific Company, nor any company wholly or in part affiliated with, owned, controlled or operated by either of them, liable for any injury to or death of persons or loss of or damage to property by fire, water, wreck or other casualty occurring upon the premises hereby leased, arising from the existence, maintenance or operation of any railroad owned or operated by said companies, or any of them, whether occurring through any fault or negligence of said companies, or any of them, or their employes, or by reason of any imperfections of the railroad, the roadbed, or the equipment operating thereon and LESSEE hereby releases and discharges and agrees to indemnify and save harmless LESSOR and said companies, and each of them, from and against any and all claims, liability, demands, causes of action, judgments, costs, expenses and attorney's fees arising or growing out of injury to or death of persons, or loss or destruction of or damage to property, from any cause resulting directly or indirectly from the operations of the LESSEE upon said leased premises, or from the use of said premises by the LESSEE.

7. That LESSEE will do any and all work, safeguarding against accidents and properly conserving said land and minerals, in a first class manner compatible with safe and economical mining; and will keep all workings in which ore is exposed clear of all loose rock, earth and rubbish, and will keep all surface openings securely covered or fenced against livestock.

8. That LESSEE will occupy and hold for LESSOR all cross or parallel lodes, dips, spurs, feeders, crevices or mineral deposits of any kind which may be discovered in working under this agreement.

9. That LESSEE will give LESSOR, before allowing any construction, alteration or repair to be done upon any property herein described situated in the State of Utah, a surety company bond acceptable to LESSOR, in a sum equal to the full contract price for any construction, alteration or repair to be done upon the premises referred to at the instance or request of LESSEE, conditioned that the LESSEE shall pay or cause to be paid all contractors, sub-contractors, laborers, operatives and other persons who may labor or furnish labor, materials, supplies or tools in the performance of such construction, alteration or repair.

Exhibit "A"

10. LESSEE will not construct, alter or repair structures of any character upon said leased premises without first obtaining the written consent of the Land Commissioner of LESSOR. LESSEE will fully pay for all materials joined or affixed to said leased premises, and pay in full all persons that perform labor upon said leased premises, and will not permit or suffer any mechanics' or material-men's liens of any kind or nature to be enforced against said land for any work done or materials furnished thereon at LESSEE'S instance or request.

11. That LESSEE will pay, prior to delinquency, all taxes and assessments levied and assessed on the mineral and mining rights in said leased premises, and on all personal property and improvements appurtenant to the leased premises which become a lien thereon or on the leased premises during the term of this lease and any and all production or severance taxes computed or based upon production of minerals, excepting, however, the taxes on the minerals which are excepted and reserved from this lease, and if not so paid by the LESSEE the LESSOR may, at its option, pay such taxes and assessments which are a lien on the real property, or on the mineral and mining rights, and any penalties and interest thereon, and the LESSEE will reimburse the LESSOR on demand in the full amount of such payments.

12. That LESSEE will not do or suffer to be done in or upon said leased premises any act or thing which is or may be a nuisance, and shall not use or permit others to use said leased premises, or any part thereof, for any unlawful or immoral purposes.

13. That LESSEE will not destroy, cut or remove, nor permit to be destroyed, cut or removed, on or from said land, any timber, trees or firewood, except as may be reasonably necessary in connection with Lessee's mining operations hereunder, and LESSEE will not divert or obstruct any stream of water on said leased premises, nor divert any water from said leased premises. LESSEE may, subject to existing rights, use any unappropriated water reasonably required for such mining operations.

14. That in case LESSOR shall bring suit to compel performance of or to recover for breach of, any covenant or condition herein written, LESSEE shall and will pay to LESSOR reasonable attorney fees in addition to the amount of judgment and costs.

IT IS HEREBY MUTUALLY COVENANTED AND AGREED:

15. That the royalties hereinbefore provided for shall be a lien upon any and all ores or minerals mined upon the said land, and upon any improvements erected upon the said land.

16. That this agreement is intended as, and is, a lease; and that LESSOR shall not be called upon or required to make any repairs, or incur any expense of any kind or nature upon or in connection with said land for and during the term of this agreement, but that all such expenses shall be borne by LESSEE.

17. That LESSEE may construct, maintain and use such roads, ditches, buildings, fixtures and machinery on, through and upon said land as may be necessary or convenient in carrying on mining operations; and at the termination hereof may remove all machinery, tools, appliances, and buildings and all personal property placed or constructed upon said premises by LESSEE, provided no default shall at such time exist in respect of any payments or rentals, or in respect of any covenants, agreements or conditions to be kept and performed by LESSEE; and provided further that all timbering and supports within the mine shall be left in good condition whensoever the LESSEE may vacate the premises, or this lease be terminated; also provided that all machinery, tools, appliances and buildings and all personal property remaining on said premises sixty (60) days after the termination (by notice or otherwise) of this lease, shall be held to have become the property of LESSOR and shall not be removed therefrom by LESSEE.

18. That in case LESSEE shall, except by LESSOR, be lawfully deprived of the possession of said premises, or any part thereof, LESSEE shall notify LESSOR in writing setting forth in full the circumstances in relation thereto, whereupon LESSOR may, at its option, either reinstall LESSEE in possession of said premises or terminate this lease and refund to LESSEE the pro rata amount of any rental theretofore paid in advance for the unexpired term of this lease from and after the receipt of such notice, whereupon no claims for damages of whatsoever kind or character incurred by LESSEE by reason of such dispossession shall be chargeable against LESSOR.

19. That in case LESSEE shall be adjudged a bankrupt, by either voluntary or involuntary proceedings, LESSOR may, at its option, terminate this lease by written notice. The receipt of rent or other payments from any person for the use of the demised premises after the date of adjudication of bankruptcy, shall not constitute a waiver of LESSOR'S option to terminate this lease. After termination by notice, LESSOR may re-enter the demised premises and take exclusive possession. The option of LESSOR herein provided also shall be exercisable in the event that LESSEE becomes insolvent or any action or proceedings for debtor relief of LESSEE be commenced by or against LESSEE or general debtor relief be sought by LESSEE by extra judicial means. Upon exercise of the option to terminate the estate and rights of LESSEE and any person claiming through the LESSEE by act of the parties or operation of law shall immediately terminate. If there are two or more LESSEES hereunder, or if LESSEE is a partnership, then the option of LESSOR to terminate the entire lease shall be exercisable in case any one of the LESSEES or partners is adjudged a bankrupt or becomes subject to or participates in any other proceedings or procedure herein mentioned.

20. Upon violation or breach by the LESSEE of any of the terms, covenants or conditions of this lease, and failure to take steps to remedy the default within thirty (30) days after written notice from LESSOR so to do, then, at the option of the LESSOR, notice of which shall be given to the LESSEE in writing, this lease shall forthwith cease and determine and all rights of the LESSEE in and to said land shall be at an end, whereupon LESSEE shall vacate said premises and surrender possession thereof to LESSOR. The waiver by LESSOR of any breach of any covenant or condition thereof shall not be deemed a waiver of any other or subsequent breach hereof nor of any other covenant or condition hereof.

21. That LESSEE may at any time surrender and terminate this lease upon giving notice in writing to LESSOR to that effect and paying all minimum rentals and royalties and any other sums due and payable to LESSOR to the effective date of such surrender.

22. That if there be more than one person named as LESSEE the LESSEE'S obligations shall be joint and several and the term LESSEE wherever used in this lease shall, unless otherwise specified, include the plural as well as the singular.

23. This lease shall inure to the benefit of and be binding upon the respective heirs, administrators, executors, successors and assigns of the parties hereto, but no assignment of this lease and no underleasing or subletting of the leased premises, or any part thereof, or any buildings or structures thereon shall be valid unless made with the written consent of the LESSOR.

Paragraphs A and B on the rider hereto attached are hereby made a part of this lease.

~~24. That the LESSEE shall have the option of renewing this lease for the additional term of _____ from the date of the~~ expiration of the term hereof, upon the same terms, covenants and conditions as herein set forth; provided ~~this lease shall not have been~~ terminated prior thereto and the LESSEE is not then in default with ~~respect to any of the LESSEE'S~~ obligations hereunder, and provided, further, that written notice ~~from LESSEE of the exercise~~ of such option shall be received by Land Commissioner of LESSOR not more than ~~six (6) months, but less than thirty (30) days prior to the expiration of said term.~~

That time is of the essence of this lease.

IN WITNESS WHEREOF, LESSOR and LESSEE have executed this lease on the day and year first herein written.

SOUTHERN PACIFIC LAND COMPANY

By L. Frandsen
Land Commissioner.

Witnessed by Ann Stephens

Sanford A. Bunce
Lessee.

~~MORTGAGEE~~ Fred M. Crosby
Lessee.

MINING LEASE

RIDER ATTACHED TO LEASE NO. 23210-W
FROM SOUTHERN PACIFIC LAND COMPANY TO SANFORD A. BUNCE AND FRED M. CROSBY
COVERING THE N½ OF THE NE¼ OF SEC. 21, TWP. 24N, RGE. 24E, M.D.B.& M.,
WASHOE COUNTY, NEVADA.

A. In addition to said minimum rental, Lessees covenant and agree to pay to Lessor royalty at the rate of 9% of the gross sale values of all ore, concentrates, metals and other products derived and recovered from their operation of the leased premises.

B. Lessees shall be privileged to assign this lease to a Nevada Corporation in which they are stockholders or to a co-partnership in which they are members, without first obtaining such written consent, provided, however, that the assignee shall execute and deliver to Lessor, prior to the effective date of such assignment, a written agreement by the assignee, in consideration of Lessor's consent thereto, to perform and abide by all of the covenants and conditions contained in this lease. Any such assignment shall be made without prejudice to the rights of the Lessor, and shall not relieve or release the Lessees or either of them from any of their obligations hereunder. No other assignment shall be made without the written consent of the Lessor as herein elsewhere provided.

2

MINING LEASE

THIS AGREEMENT, made and entered into this 1st day of March, A. D. 1954, by and between SANFORD A. BUNCE, of Lovelock, Nevada, and FRED M. CROSBY, of Wadsworth, Nevada, the parties of the first part, hereinafter called the Lessors, and the CAL-ALTA OIL AND MINING CO., INC., a Nevada corporation, having its principal office at Lovelock, Nevada, the party of the second part, hereinafter called the Lessee,

W I T N E S S E T H:

WHEREAS, the Lessors possess certain mining property hereinafter described, under and by virtue of a Lease Agreement with the Southern Pacific Land Company entered into on or about the 1st day of July, A. D. 1951, and identified as Lease No. 21575-W, reference to which said Lease Agreement is hereby made for greater particulars and description; and,

WHEREAS, the Lessee entered into a tentative Letter Agreement with the Lessors relating to the property leased by them as aforesaid, on or about the 17th day of October, 1953, reference to which said Letter Agreement is hereby made for greater certainty and particulars; and,

WHEREAS, Lessors have a stock interest in said company and are otherwise interested in the operation of the property, hereinafter specifically described, by the Lessee as appears from the aforesaid Letter Agreement and the provisions, terms and agreements herein contained; and,

WHEREAS, Lessee has operated said property under said Letter Agreement in a manner mutually satisfactory to the parties concerned and it is now the desire and wishes of both the Lessors and Lessee to enter into a firm agreement in furtherance of the Letter Agreement which has heretofore been operative,

Encl. #5

NOW THEREFORE, the Lessors, for and in consideration of the payments, covenants and agreements hereinafter provided for and by the Lessee to be paid, kept and performed, hereby give and grant unto the Lessee, its successors in interest and assigns, the sole and exclusive right to operate a mining enterprise upon the following described land situate in the County of Washoe, State of Nevada, to-wit:

> N½ of NE¼ of Section 21, Township 24 N., Range 24 E., M.D.B.&M., containing 80 acres, more or less, now under lease to the above named Lessors from the Southern Pacific Land Company under the written Lease Agreement hereinbefore identified.

TO HAVE AND TO HOLD the same from date hereof to and including the 17th day of October, 1958, at noon of said day, and so long as the undersigned have possessory rights under their Lease Agreement with the Southern Pacific Land Company, as aforesaid, subject to immediate termination or cancellation for a violation of any of the terms herein contained.

In consideration of such demise the said Lessee does covenant and agree with the Lessors as follows:

1. To pay unto the Lessors a gross royalty of Fifteen (15%) per cent of the gross returns on all ores mined, milled, treated, shipped or marketed from the property within Ten (10) days after Lessee's receipt of settlement in each instance, or same shall be paid by the party or agency purchasing the ore, concentrates or metals as requested by the Lessors, and the Lessee shall tender unto the Lessors a duplicate copy of all returns as soon as same are made available to it, or to be tendered by the purchasing agency concurrently with the payment made to the Lessee in each instance; and,

No deductions whatsoever shall be made from such gross returns for any purpose whatsoever, including transportation

or treatment charges, expenses of mining or operational costs of the Lessee or otherwise incurred by it.

"Gross Returns" shall be construed and is hereby defined as the value of the ore, concentrates, metals or other materials without any deductions therefrom whatsoever.

2. To perform all work, pay any and all rental, and penalties and otherwise generally and specifically abide by all of the terms, conditions and agreements set forth in Lease Agreement No. 21575-W hereinbefore specifically identified, except for the provision relating to the payment of royalty, all of which said royalty shall be borne by the Lessors.

3. Should the Lessee or any other party or parties Lessee interests therein, decide to place a mill or other reduction works on the demised premises, including additional lands acquired in the names of the Lessors, Lessee or such operating group shall cause a survey of that portion of the demised or additional premises to be used as such mill site, to be made and platted and same shall be considered separate and apart from the mining operational portion of such premises, assuming that such mill will not be erected on land where ore is known or shall be found to exist. Lessors agree to give unto the Lessee, or any parties they may interest in the operation of a mill, a lease on such area to be used for milling purposes which shall extend in time for the full period said mill is in operation and shall cost the Lessee, or such other party or parties, no more than One ($1.00) Dollar per year as rental insofar as the Lessors are concerned. Other factors relating to such mill or other reduction plant are contained in other provisions of this agreement and reference is made to same for particulars in that regard.

4. To work said demised property in a manner which

will gradually and systematically develop all potential ore bodies thereon or therein and otherwise continue and consummate a development program within one year from date hereof, exposing and opening all such ore bodies and utilizing same for the extraction of commercial ore.

Lessee's said development program shall be completed with the utilization of suitable equipment, including a bulldozer, compressor, hoist and any other machinery or endeavor which will prove advantageous for that purpose.

5. To do and perform all work in a good and miner-like fashion, doing all timbering, when such is necessary, with durable timber; to keep all drifts, shafts and tunnels free and clear of all loose material or rubbish; and, to comply with all laws and regulations of the County of Washoe, State of Nevada and the United States which apply to the operation of mining property, labor employed and all other matters incidental thereto.

6. To perform at least Ninety (90) mine shifts on or before the first day of April, 1954; and, at least Ninety (90) mine shifts on or before the first day of each succeeding month thereafter during the tenure of this agreement and/or your operation of said property, a mine shift being defined as one man working an eight (8) hour shift in actual mining or development upon the demised premises which contributes directly to the discovery or production of minerals and which shall not include such work as road building, camp or other construction, or maintenance.

7. To post notices of non-responsibility on behalf of the Lessors and the company owning the property and record or file a copy thereof with the County Recorder of Washoe County at Reno, Nevada, within the time and in the manner provided by law.

8. To carry Industrial Insurance in accordance with the laws of the State of Nevada upon any members of the Lessee's company participating in the mining operation and upon all persons employed by the Lessee in and about the land, premises and property herein leased.

9. To keep, preserve, maintain and indemnify and save harmless the Lessors, the Southern Pacific Land Company and the abovesaid property from all liens, liability or damage of any kind or character, by reason of or on account of any injury to its employees sustained during the course of their employment by the said Lessee, in, upon or around said property and premises and from any and all liability or damage whatsoever arising out of the operation of said property by the Lessee.

10. To not assign this agreement or sub-lease, sub-let or let to others any portion of the demised property without the written consent of the Lessors and their full authority to so do under terms and conditions mutually satisfactory to the said Lessors as expressed by them in writing.

11. To make a written report of the work and Lessee's findings in conjunction with the development and other activity on the demised premises as accomplished by the Lessee on or before the 3rd day of each month during the tenure of this agreement, in which said written monthly report there shall be included the following:

(a) Size and description of workings.

(b) Approximate amount of earth or materials removed in such excavations.

(c) Ore broke and ready for shipment during said period and the balance of ore remaining on hand at the commencement of such stated period.

(d) Computation of ore shipped during said period, with duly executed weight slips in duplicate evincing same.

(e) Specific value of ore treated during said period.

(f) Returns from all shipments made during such period with balances remaining due, if any, and such other factors or information as may be required of you from time to time by the undersigned.

(g) In determining the exact value of the ore where tungsten is being reduced, you shall utilize the exact weights for a given run with a complete analysis of the heads and tails and assay reports, and any other check system to reach a determination of the exact value of such mill run or runs during any monthly period of the average value of such ore on a per ton basis.

Such written report shall be mailed in duplicate to Sanford A. Bunce at Lovelock, Nevada, on or before the third day of each month, without grace.

12. To pay all personal property taxes, bullion taxes and any other assessments which may be levied against Lessee's operation of the property in full so that the Lessors shall be completely and fully absolved from any obligations in that regard or in any way whatsoever.

13. On or before June 17, 1954, Lessee shall cause to have erected and installed a suitable mill having a capacity of not less than Fifty (50) tons per day, on or adjacent to the demised premises for the purpose of treating ore therefrom, it being understood at this time that the Lessee has interested other parties in making said facility available on or before that date.

The milling facility shall be of a type which will make the best extraction possible; and, all tailings accruing therefrom shall be carefully impounded and shall become the property of the Lessors at the cessation of Lessee's operation of the property for any reason whatsoever.

No ore from the above described premises shall be

shipped to any other mill or reduction plant for the purpose of marketing same without the written consent of the Lessors.

The milling entity which is set up to handle the matters herein related shall be accomplished in a manner which will be agreeable to the Lessors; and any and all concentrates, metals or materials marketed from ore extracted from the demised property shall be accomplished and transacted in the following name or names:

Cal-Alta Oil & Mining Co., Inc.,
and Crosby and Bunce

and any and all returns therefrom shall be made in the name of said parties.

Should any crude ore be marketed from the premises, the above and foregoing policy shall apply.

Should the Lessee terminate this agreement or the operation of the property herein mentioned for any reason whatsoever, including mutual cancellation or termination for breach of contract as declared by Lessors, Lessee agrees that the milling organization or entity operating a mill on or adjacent to the demised property will accept ore from the Lessors or their assigns following such termination of operation of the property by the Lessee while said mill is still on property leased from the Lessors, and that the Lessee will so notify the mill operator or operators when a lease is given on the mill site by the Lessors as herein stated. The milling charge to be paid by the Lessors or their assignees for such service shall be the same as has applied prior thereto under arrangements with the Lessee.

14. To permit the Lessors and the owner to examine the demised premises, the reduction plant of the operator and all records relating to the property, reduction plant, sale or marketing of ore, concentrates, metals or materials at all

reasonable times, either in person or by and through their respective agent or agents.

IT IS FURTHER MUTUALLY UNDERSTOOD AND AGREED by and between the parties hereto that the above described premises and any additional land, water or water rights, or other appurtenances added thereto by the Lessee or the Lessors, except for the mill site hereinbefore mentioned which shall be governed by the terms previously stated, shall revert to and revest in the Lessors should this agreement be terminated for any reason whatsoever; and, the Lessee shall have Sixty (60) days within which to remove its equipment or other personalty from the premises, except that the mill can remain on the premises leased for that purpose under the terms and conditions hereinbefore specified, and except that Lessee shall leave upon said demised premises all personalty now belonging to the Lessors, including a cabin, mine cars, rail and track accessories,gallows frame; and all track and accessories, pipe and timber, including chutes ~~and chutes~~ placed by Lessee in the workings or above ground or now to be found in the workings or on the ground, as well as collar sets or portal timbering and other like improvements.

IT IS FURTHER MUTUALLY UNDERSTOOD AND AGREED that, if the Lessee shall fail, neglect or refuse to carry out any of the terms and conditions as provided herein, same shall constitute an automatic breach of this agreement and same shall be immediately considered null and void, cancelled and at an end and Lessee shall peaceably vacate said premises without the requirement of any legal action whatsoever or without any other steps to be taken by the Lessors, upon notice of such breach.

TIME IS THE ESSENCE of this agreement and every clause, condition and covenant therein contained; and all of the terms hereof shall inure to the benefit of and be binding upon the heirs,

executors, administrators, successors in interest or assigns of the respective parties hereto.

IN WITNESS WHEREOF the parties hereto have hereunto set their hands the day and year in this instrument first above written.

Sanford A. Bunce
SANFORD A. BUNCE

Fred M. Crosby
FRED M. CROSBY

"LESSORS"

CAL-ALTA OIL AND MINING CO., INC.,
a Nevada corporation

By: [illegible]
President

ATTEST: [illegible]
Secretary

"LESSEE"

State of California
County of Sonoma } SS

On this 20th day of April in the year One Thousand Nine Hundred and fifty-four before me Scott E. Saxe a Notary Public in and for the County of Sonoma, State of California, residing therein, duly commissioned and sworn, personally appeared Wm. N. Makaroff known to me to be the President and J.W. Cook known to me to be the Secretary of the Corporation that executed the within instrument and the officers who executed the within instrument on behalf of the Corporation therein named, and acknowledged to me that such Corporation executed the same.

In Witness Whereof, I have hereunto set my hand and affixed my Official Seal, the day and year in this certificate first above written.

Scott E. Saxe Notary Public
In and for said County of Sonoma State of California

CORPORATION ACKNOWLEDGEMENT
Form 1414 Bay Cities Printing Corp., Oakland
My Commission Expires My Commission Expires April 14, 1955

STATE OF NEVADA,)
: SS.
COUNTY OF PERSHING.)

On this 23rd day of April, A. D. one thousand nine hundred and fifty-four, personally appeared before me, the undersigned, a Notary Public in and for the County of Pershing, SANFORD A. BUNCE and FRED M. CROSBY, known to me to be the persons described in and who executed the foregoing instrument, who acknowledged to me that they 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 at my office in the City of Lovelock, County of Pershing, State of Nevada, the day and year in this Certificate first above written.

Roland M. Belanger
NOTARY PUBLIC

My Commission Expires:
October 19, 1957

Cal-Alta Oil & Mining Co., Inc.

Lovelock, Nevada

President
WM. N. MAKAROFF, M.D.
Guerneville, Calif.

Resident Agent
S. A. BUNCE
Court House
Lovelock, Nevada

Statement of Custom Ore Settlement Sheets - Getchell Mine, Inc.

	Delivery Dates : 3-2-54	3-10-54	3-29-54	4-9-54	4-19-54	4-27-54	Totals 6 deliveries
% Moisture	1.0	1.5	1.5	1.0	1.1	1.0	1.181 Av.
% WO 3	0.53	1.07	1.30	1.38	0.73	0.76	0.972 Av.
Gross Lbs.	87,220	92,960	96,460	99,180	100,470	98,260	574,550
Tare Lbs.	42,460	42,440	43,050	42,320	42,360	42,630	255,260
Net Net Lbs.	44,760	50,520	53,410	56,860	58,110	55,630	319,290
Moisture Lbs.	448	758	801	569	639	556	3,771
Net Dry Lbs.	44,312	49,762	52,609	56,291	57,471	55,074	315,519
Net Dry Tons	22.156	24.881	26.3045	28.1455	28.7355	27.537	157.7595
Contained STU WO3	11.743	26.623	34.196	38.841	20.977	20.928	153.308
PAYMENT :							
Pay for 80% contained STU WO3	9.394	21.298	27.357	31.073	16.782	16.742	122.646
per ton	($46.00)	($47.00)	($47.00)	($47.00)	($46.00)	($46.00)	($46.65 aver.)
	$432.12	$1,001.00	$1,285.78	$1460.43	$771.97	$770.13	$5,721.43
Less: Charges :							
Treatment of Net Dry Tons	(22.156)	(24.881)	(26.3045)	(28.1455)	(28.7355)	(27.537)	(157.7595)
@ $6.00	$132.94	$149.29	$157.83	$168.87	$172.41	$165.22	$ 946.56
Sampling & Assaying	10.00	10.00	10.00	10.00	10.00	10.00	60.00
Trucking Charge Wet Tons	(22.380)	(25.260)	(26.705)	(28.430)	(29.055)	(27.815)	(159.645)
@ $8.00	179.04	202.08	213.64	227.44	232.44	222.52	1,277.16
3% Tax	5.37	6.06	6.41	6.82	6.97	6.68	38.31
Total Deductions	$327.35	$367.43	$387.88	$413.13	$421.82	$404.42	$2,322.03
Net Proceeds	$104.77	$ 633.57	$897.90	$1047.30	$350.15	$365.71	$3,399.40

Proceeds	- 157.7595 Net Dry Tons -	$ 5,721.43	- Average per ton	$ 36.27
Charges		2,322.03	" " "	14.72
Net (before royalties)		$ 3,399.40		$ 21.55

CAL-ALTA OIL & MINING CO., INC.

J. W. Cook, Secretary-Treasurer
5-24-54

BLACK ROCK MINING CORPORATION

131 - 137 CLARKE STREET

BISHOP • CALIFORNIA

SETTLEMENT: Final

Date: July 1, 1952

LOT No. 3

Number of Sacks 22

Purchased from: Adaven Mining Co.

[redacted]: Box 41

[redacted]: Natoma, California

Material:

Produced from:

Gross Weight		Pounds
Truck Tare		
Sack Tare		
Net Weight	2,188	Pounds
Assay WO_3	59.90	% WO_3 Phos. 0.24%
Pounds WO_3	1,310.61	
Short Ton Units WO_3	65.53	
Contract Price	57.00	Per STU
Total Value	3,735.21	
Partial Settlement, Check No. 3410	2,743.75	
Final Settlement, Check No. 3671	991.46	
	3,735.21	

Final Settlement on all lots will be paid on receipt of assay.

Seller's Acceptance of THIS PAYMENT constitutes acknowledgment of Buyer's equity in this ore. Seller warrants unencumbered ownership and the right to sell and transfer this material to the Buyer.

For BLACK ROCK MINING CORPORATION

PAYMENT AND TERMS ACCEPTED

BLACK ROCK MINING CORPORATION

131 - 137 CLARKE STREET

BISHOP • CALIFORNIA

SETTLEMENT: Final

Date: June 2, 1952

LOT No. 2

Number of Sacks 5

Purchased from: Adaven Mining Corporation

~~Purchased from:~~ Natoma, California

~~Purchased from:~~

Material: Scheelite Concentrates

Produced from: White Blowout Mine

Gross Weight		Pounds
Truck Tare		
Sack Tare		
Net Weight	505	Pounds
Assay WO_3	33.83	% WO_3
Pounds WO_3	170.84	
Short Ton Units WO_3	8.542	
Contract Price	41.00	Per STU
Total Value	350.22	
Partial Settlement, Check No. 3282	281.58	
Final Settlement, Check No. 3412	68.64	
	$350.22	

Final Settlement on all lots will be paid on receipt of assay.

Seller's Acceptance of THIS PAYMENT constitutes acknowledgment of Buyer's equity in this ore. Seller warrants unencumbered ownership and the right to sell and transfer this material to the Buyer.

For BLACK ROCK MINING CORPORATION

PAYMENT AND TERMS ACCEPTED

BLACK ROCK MINING CORPORATION

131 - 137 CLARKE STREET

BISHOP • CALIFORNIA

SETTLEMENT: Final

Date: June 2, 1952

LOT No. 1

Number of Sacks 7

Purchased from: Adaven Mining Corporation

~~Purchased from:~~ Natoma, California

~~Purchased from:~~

Material: Scheelite Concentrates

Produced from: White Blowout Mine

Gross Weight		Pounds
Truck Tare		
Sack Tare		
Net Weight	663	Pounds
Assay WO_3	64.59	% WO_3
Pounds WO_3	428.23	
Short Ton Units WO_3	21.412	
Contract Price	58.00	Per STU
Total Value	1,241.90	
Partial Settlement, Check No. 3281	989.02	
Final Settlement, Check No. 3411	252.88	
	$1,241.90	

Final Settlement on all lots will be paid on receipt of assay.

Seller's Acceptance of THIS PAYMENT constitutes acknowledgment of Buyer's equity in this ore. Seller warrants unencumbered ownership and the right to sell and transfer this material to the Buyer.

For BLACK ROCK MINING CORPORATION

PAYMENT AND TERMS ACCEPTED

P. O. Box 353
Bishop, California

PURCHASE STATEMENT, Tungsten Ore Concentrate

June 2, 1952 195

Adaven Mining Corporation

Seller

Material 2,012 lbs. Producer's Lot or Delivery Number.

Assay: Tungstic Oxide 62.68 % WO_3 $ Penalty for under 60% WO_3

Molybdenum .63 % Mo 0.23 Mo Penalty for Excess

Phosphorus .291 % P 2.41 P " " "

Sulphur % S S " " "

Copper .025 % Cu Cu " " "

% " " "

Units, WO_3: 63.056 Handling Charge

$ 2.64 Total Deductions per Unit

Pay per Unit $ 62.50, less $ 2.64, Net pay per Unit $59.86

Pay: 63.056 Units @ $ 59.86 $ 3774.53

Provisional Settlement % $

Charges: Freight $ Blending $ Pkg. $

Upgrading $, Sampling $ 15.06, Assaying $ 28.00 $ 43.06

Net to Seller $ 3731.47

Advance Payment: 5-23-52 $1,800.00

$ 1800.00

To Seller: Bal. Provisional Final Chk. No. $ 1931.47

Acceptance of Final Settlement Payment closes this Sales-Purchase Transaction. Seller Warrants unencumbered ownership and right to assign, sell and transfer to the undersigned Assignee and/or Buyer.

Owner or Authorized Agent, Seller

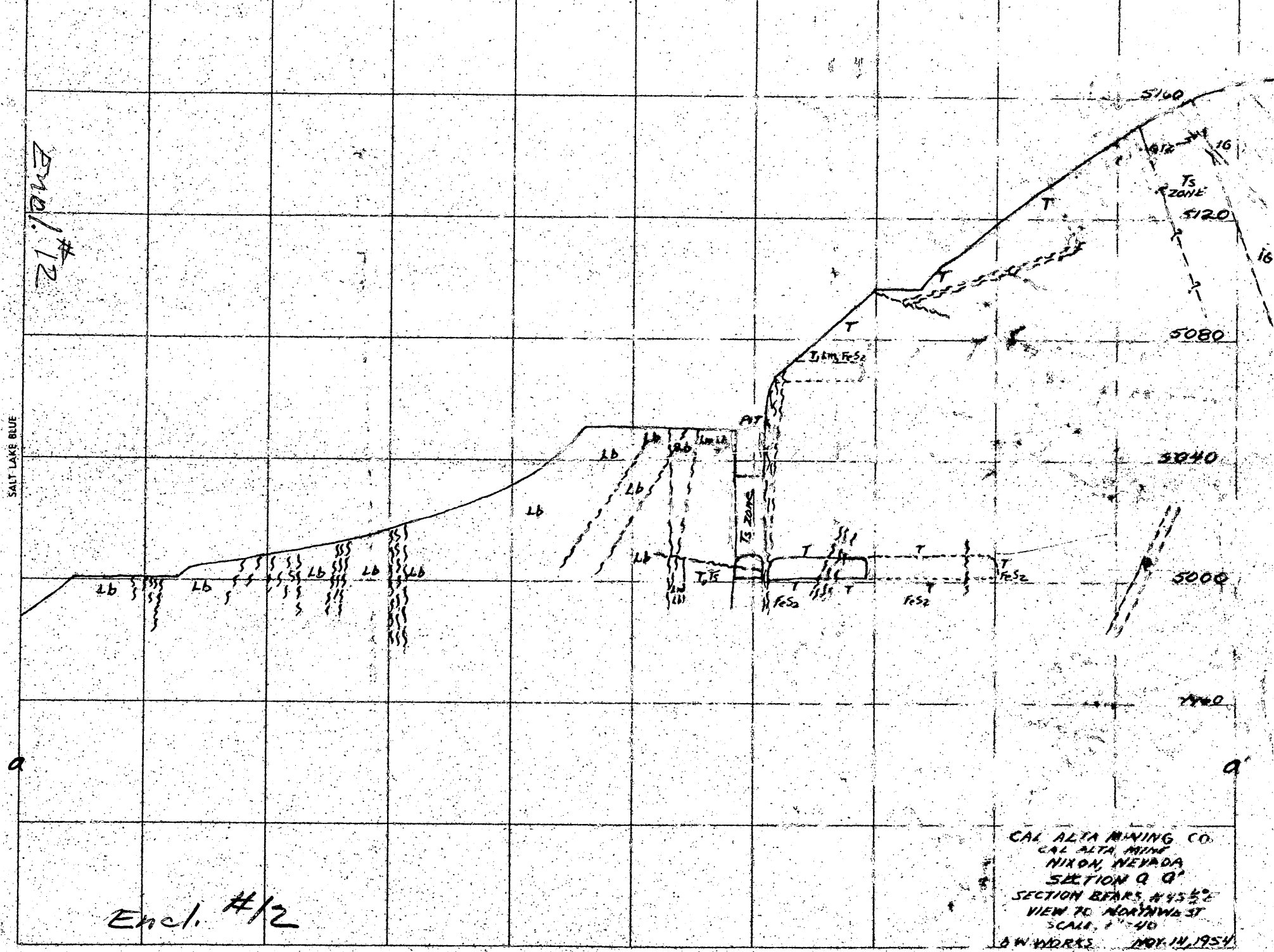
Assignee and/or Buyer

NOTICE: On acceptance of final Settlement, please sign and return one copy to Assignee and/or Buyer.

ADAVEN MINING CORPORATION
NATOMA, CALIFORNIA

BLACK ROCK MINING CORPORATION	LOT 1		$ 1,241.90
BLACK ROCK MINING CORPORATION	LOT 2		350.22
BLACK ROCK MINING CORPORATION	LOT 3		3,735.21
C. W. JONES			3,731.47
METALLURGICAL DEVELOPMENT CO.	FLOTATION CONCENTRATES		302.57
			$ 9,361.37
METALLURGICAL DEVELOPMENT CO.	MILLING	$ 3,884.00	
NORMAN C. PLUMMER	TRUCKING	1,900.00	5,784.00
			$ 3,577.37
ROYALTY 10%			$ 357.74

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
MAY 2 3 195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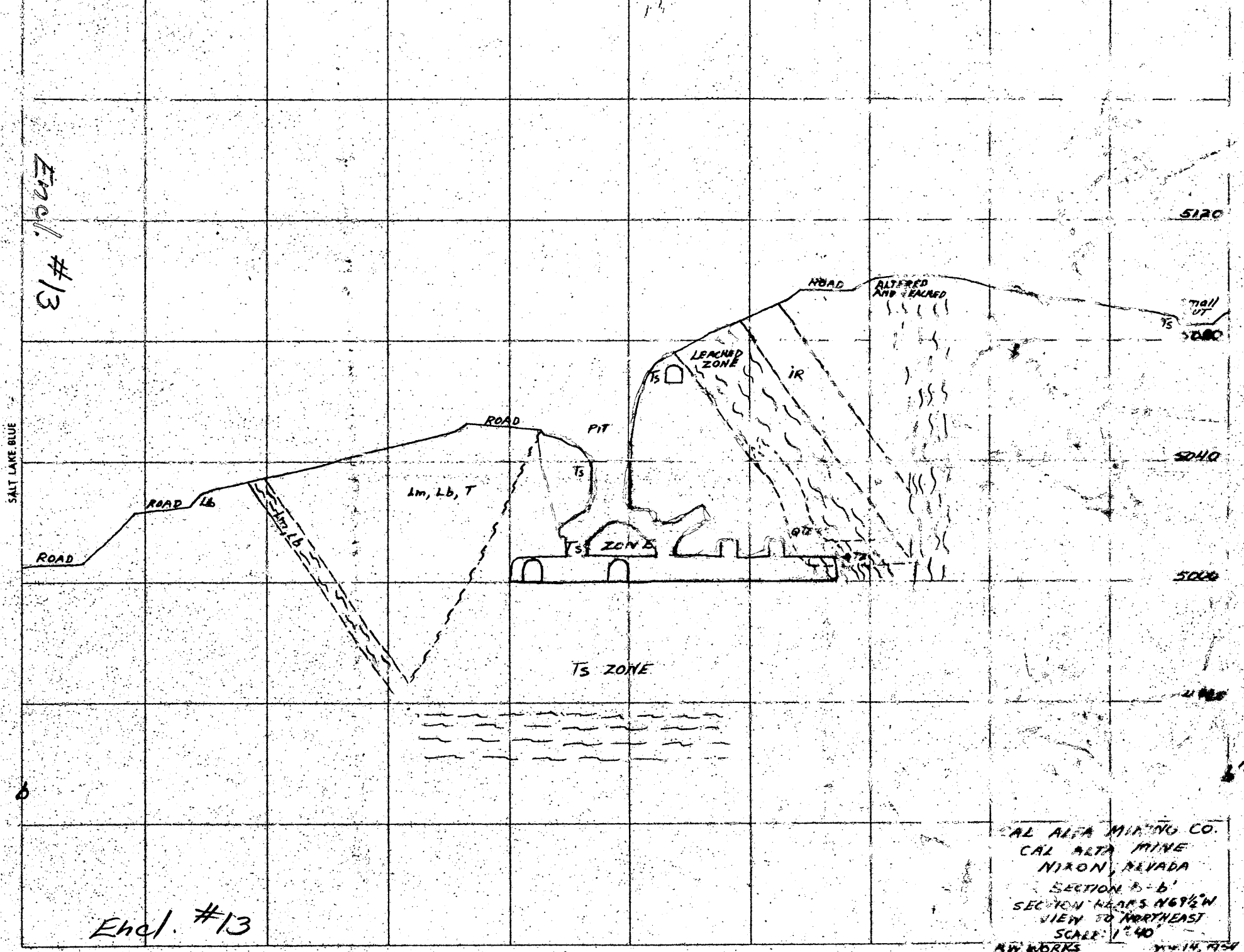
Encl. #12
SALT LAKE BLUE
CAL ALTA MINING CO.
CAL ALTA MINE
NIXON, NEVADA
SECTION a a'
SECTION BEARS N 45 1/2° E
VIEW TO NORTHWEST
SCALE 1" = 40'
D W WORKS NOV. 14, 1954

DEPARTMENT OF THE INTERIOR
Defense Minerals Exploration Adm
MAY 26 1955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CAL ALTA MINE
NIXON, NEVADA
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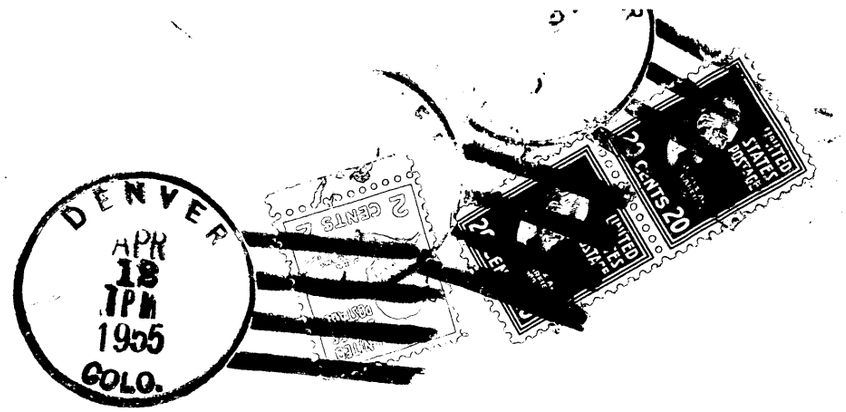
VIEW TO NORTHEAST
SCALE: 1" = 40'
AW WORKS
Encl. #13

DEPARTMENT OF THE INTERIOR
Leasing Minerals Administration
MAY 2 3 19

MUSTANG OIL & EXPLORATION CO.
721 Boston Bldg.
DENVER, COLORADO



DEFENSE MINERALS EXPLORATION ADMINISTRATION

DEPARTMENT OF THE INTERIOR

WASHINGTON 25, D.C.

I N D E X

Heading No.		Page No.
1.	NAME OF APPLICANT	1
2.	GENERAL	1
3.	PROPERTY RIGHTS	
	(a) Legal Description and Name of Property	2
	(b) Mine Name	3
	(c & d) Interest in the Lands and Record of Ownership	3
	(e) Outstanding Liens	3
	(f) Record of Title	4
4.	PHYSICAL DESCRIPTION OF PROPERTY	
	(a) Operations	4
	(b) Production and Ore Reserves	5
	(c) Geologic Features	5
	(d) Accessibility	5
	(e) Availability of Manpower, Equipment, Water, Power, etc.	5
5.	THE EXPLORATION PROJECT	
	(a) Minerals for which Exploration is Planned	6
	(b) Proposed Work	6
	Proposed Holes	6
	Logging and Sampling	7
	Geologic Control of Drilling	7
	Drilling Program	8
	(c) Beginning and Completion of Work	8
	(d) Ability of Applicant	8
6.	ESTIMATE OF COSTS	
	(a) Independent Contracts	11
	(b) Labor, Supervision, Consultants	12
	(c) Operating Materials and Supplies	12
	(d) Equipment Depreciation and Loss	12
	(e) Rehabilitation and Repairs	12
	(f) New Buildings, Improvements	12
	(g) Miscellaneous	13
	(h) Contingencies	13
7.	APPLICANTS SHARE OF COSTS	13

LIST OF SCHEDULES

1.	SUMMARY OF COSTS	14
	Project Cost	14
	Per Foot Unit Cost	14

I N D E X

Heading No.		Page No.
	LIST OF SCHEDULES	
2.	BREAKDOWN OF DRILLING AND CORING ZONES	15
	Plug-Drilling Zones	15
	Coring Zones	15
	LIST OF EXHIBITS	
Exhibit 1	Completed Form MF-103	17
Exhibit 2	Title Data	18
Exhibit 3	Mining Lease, Assignments and Other Title Documents	Pocket 1
Exhibit 4	Subordination Agreement (Form MF-201)	Pocket 1
Exhibit 5	Owner's Consent to Lien (Form MF-203)	Pocket 1
Exhibit 6	Subordination Agreement (Form MF-201)	Pocket 1
Exhibit 7	Subordination Agreement (Form MF-201)	Pocket 1
Exhibit 8	Geologic Report	-
Exhibit 9	Elevation and Depth Data	-
	LIST OF FIGURES	
Figure 1	Index Map of Utah	Pocket 2
Figure 2	General Geologic Map	Pocket 2
Figure 3	Detailed Structure and Topographic Map	Pocket 2
Figure 4	Isopac Map of the Ore Zone	Pocket 2

Notice pocket 1.

APPLICATION FOR DMEA PROJECT ON THE PITCHBLENDE GROUP OF CLAIMS BIG INDIAN MINING DISTRICT FOR ALLIED URANIUM MINES, INC. 708 Newhouse Building Salt Lake City, Utah

1. NAME OF APPLICANT - (See Form MF-103 attached as Exhibit 1)

   (a) Allied Uranium Mines, Inc., 708 Newhouse Building, Salt Lake City, Utah
   (b) A corporation in the State of Delaware
   (c) Titles, names, and addresses of Officers as follows:

   President, Michael N. Greene
   80 Warren Street
   New York, New York

   Vice-President in Charge of Exploration,
   Joseph J. Beeson
   Dooley Building
   Salt Lake City, Utah

   Vice-President in Charge of Drilling Operations,
   James L. McBride
   Spanish Fork, Utah

   Treasurer, Selig Ginsburg
   8425 - 10th Avenue
   Silver Springs, Maryland

   Secretary, Marc A. White
   1010 Vermont Avenue, N.W.
   Washington, D.C.

   Manager of Operations, Carl Ferderer
   708 Newhouse Building
   Salt Lake City, Utah

   (d) Omitted.

2. GENERAL -

This report, together with Form MF-103, attached as Exhibit 1, is an application for a Defense Minerals Exploration Administration exploration project contract of the short form or unit cost type. A two-phase exploration project has been proposed for exploring potential uranium lands in San Juan County, Utah (See Figure 1).

A $24,401.25 project is proposed to determine the amount of uranium-vanadium mineralization and favorable ground on

seven claims (some of which overlap each other) in the Big Indian District. The whole group of claims is shown on Figures 2 and 3, but only that area included within the double outline on Figure 3 is being considered in this application. The proposed project will consist of 6,975 feet of drilling and coring at an estimated unit cost of $3.50 per foot. Twenty-five percent, or $6,100.31 of the total expenditure, will be paid by the Allied Uranium Mines, Inc., the applicant herein; and the Defense Minerals Exploration Administration is asked to loan the balance of $18,300.94.

Locations for 32 holes are suggested and shown on Figure 3. The locations are designated A-1 through A-8 and B-1 through B-24 for Phase A and Phase B respectively. The Phase A holes are located approximately 600 to 1,000 feet apart and Phase B holes are approximately 250 feet apart. The locations of both phases are arranged in an irregular pattern to conform to topography and already constructed drill roads. Considerable drilling has already been done on the rest of the property; the results of which show that most of the subject claims lie in an area which appears favorable for uranium mineralization (See Figure 4). The 8-holes of Phase A, however, have been chosen to confirm the favorability of the whole area before the more detailed drilling of Phase B is begun. As the drilling progresses it may become evident that some of the proposed hole locations will fall on places geologically unfavorable for uranium mineralization. Consequently, the Allied Uranium Mines, Inc. would like the privilege of deciding whether or not certain of the holes, previously proposed, should be drilled on the basis of data collected from holes already drilled. When such holes are omitted, it is requested that, with the permission of the DMEA Field Team, the equivalent footage of holes eliminated be transferred to additional locations in the more favorable portions of the area.

3. PROPERTY RIGHTS -

(a) Legal Description and Name of Property -

The land upon which the exploration work is to be performed consists of 7 contiguous and partially overlapping unpatented mining claims which are referred to as part of the Pitchblende group of claims. The claims covered in the application are shown within the *bold* outline on Figure 3. The specific names and locations of the claims herein considered are as follows:

Serviceberry #1, located in the N 1/2 of Section 34, T. 30 S., R. 25 E., Salt Lake Meridian

Serviceberry #2, located in the N 1/2 of Section 34, T. 30 S., R. 25 E., Salt Lake Meridian

Serviceberry #3, located in the N 1/2 of Section 34, T. 30 S., R. 25 E., Salt Lake Meridian

Serviceberry #4, located in the N 1/2 of Section 34, T. 30 S., R. 25 E., Salt Lake Meridian

Pitchblende Extension #1, located in the N 1/2 of Section 34, T. 30 S., R. 25 E., Salt Lake Meridian

Pitchblende Extension #2, located in the N 1/2 of Section 34, T. 30 S., R. 25 E., Salt Lake Meridian

Pitchblende #4, located in the N 1/2 of Section 34, T. 30 S., R. 25 E., Salt Lake Meridian

These claims are located in the Big Indian portion of the Monticello Mining District of San Juan County, Utah, and their exact position with respect to the land grid and to each other is shown on Figure 3.

(b) Mine Name -

The Serviceberry mine is located on the Serviceberry #1 claim. Several different workings are partially developed in this mine. From very poor records, it appears that approximately 450 tons of ore worth $15,000 have been removed from these workings.

(c & d) Interest in the Lands and Record of Ownership -

The Allied Uranium Mines, Inc. earns, via the completion of a certain amount of drilling, 50% interest in the Pitchblende group of claims. The other interest is retained by the Apache Uranium Corporation who have a mining lease on the property. This lease plus the agreement with Allied Uranium Mines, Inc. and a letter amendment to the agreement are all recorded in the Montrose County records as shown in Exhibit 2. All of these documents tracing the chain of interest and operation to the Allied Uranium Mines Inc. plus an assignment of Royalty to Emerson and Hughes are attached together and included herewith as Exhibit 3. A number of other previous agreements are referenced in the above documents. These other documents have all been replaced and superceded by those of Exhibit 3.

(e) Outstanding Liens -

The Apache Uranium Corporation has retained a 50% working interest in the porperty as outlined above. The lien of the government, for money loaned by DMEA, is consented to by Apache Uranium Corporation and is to remain in effect until the amount loaned is returned to the Government in the event a commercial ore body is located on the herein described claims. (See Form MF-201, Subordination Agreement, attached as Exhibit 4.)

The original lessors and owners of the claims, G. O. Patterson et al, as shown in Exhibit 3, have retained a 15% royalty on the claims. Their royalty and interest is made subordinate to the lien of the Government by a DMEA loan by the Form MF-203, Owner's Consent to Lien, attached as Exhibit 5.

Another royalty of 2-1/2% is held and retained by Mr. David E. Hughes of Salt Lake City, Utah, and George E. Emerson of Steamboat Springs, Colorado, as outlined in the documents included in Exhibit 3. This royalty of 2-1/2% is made subordinate to the lien of the Government by a DMEA loan by the Form MF-201, Subordination Agreement, attached as Exhibit 6.

A further royalty of 1% is held by Carl R. Ferderer and Edward P. Taylor of Salt Lake City as outlined in the documents in Exhibit 3. This royalty, however, is made subordinate to the lien of the Government by a DMEA loan by the Form MF-201, Subordination Agreement, attached as Exhibit 7.

(f) Record of Title -

All of the final documents affecting the title to the 7 claims are recorded in the office of the County Recorder of San Juan County at Monticello, Utah. These documents are listed along with the recording information on Exhibit 2.

The location dates, recording dates, book and page numbers of the location notices are all shown on Exhibit 2.

4. PHYSICAL DESCRIPTION OF PROPERTY -

(a) Operations -

As stated above, a mine called the Serviceberry is located on the Serviceberry #1 claim. Several different workings have been partially developed in this mine. The records of production are old and incomplete; however, there appears to have been approximately 450 tons of ore valued at around $15,000 removed from the mine. Good showings of mineralization are exposed along some of the sides and faces of the drifts. A rough sample of this mineralization has been analyzed chemically and included as part of the geological report attached as Exhibit 8. Roads have been constructed to the mine and a cabin is located nearby. No other production facilities exist at the mine.

Some wagon drilling has been accomplished along the Chinle escarpment behind the mine; however, the records

of this drilling are of little use, since no lithological data was kept. The driller performing the work states that several of the holes were mineralized. Two holes drilled by Allied behind the mine (holes 1 and 2 on Figure 3) tend to verify this statement.

Allied has already drilled some 38 holes on the rest of the Pitchblende group of claims.

(b) Production and Ore Reserves -

The amount of past production is stated above in 4(a). Proven ore reserves on the property are very small due to lack of development and drilling. Some drilling around the mine has been done but has been insufficient to outline any definite reserves. The mineralization found in the two holes drilled recently by Allied (see Geologic Report, Exhibit 8) certainly encourages further exploration in this area.

(c) Geologic Features -

A brief geologic report is attached as Exhibit 8. This report gives information about the geology, mineralization on the property, proximity to large ore bodies, drilling accomplished thus far, and justification for further exploration.

(d) Accessibility -

The seven claims discussed herein are readily accessible by roads leading off the Dry Valley road. These roads are shown on Figure 3. The property is located within 45 miles of the ore purchasing depot at Moab.

Most of the roads to specific drill sites have already been constructed as shown in Figure 3. A small amount of bulldozing work will be necessary to improve the location sites and to make a few more drill roads.

The property is only about 45 miles southeast of Moab by road, and about 35 miles northeast of Monticello by road. Supplies and residential accomodations can be obtained at either town. Camp facilities can be made on the property.

(e) Availability of Manpower, Equipment, Water, Power, etc.

Manpower skilled in performing the type of drilling planned can be obtained in Moab, Monticello, or Grand Junction. Bulldozers and operators can be hired at Moab or Monticello. Contractors and drill rigs are available in the local towns as well as in Grand Junction and Salt Lake City.

Allied Uranium Mines, Inc. will supply geologic and engineering supervision as well as technical instruments to carry out the program efficiently and rapidly.

Water for drilling can be obtained at a spring about 2-1/2 miles east of the property.

There are no electrical power lines in the immediate vicinity, but no need for electricity is anticipated until mining operations begin. Mobile power units can be obtained when necessary.

5. THE EXPLORATION PROJECT -

(a) Minerals for Which Exploration is Planned -

It is planned to explore for all uranium and vanadium bearing minerals.

(b) Proposed Work -

It is proposed to drill sufficient holes, together with close geological control to adequately determine whether or not possibilities for commercial uranium-vanadium mineralization exists in the Chinle-D member of the Chinle formation on the seven claims. The drill rig for the project will be supplied by the local contractors. The required time to complete the project is estimated to be approximately three months.

A two-phase drilling program is proposed for the seven claims. Phase A, consisting of eight holes, is designed to first determine the favorability of the overall area. Phase B, consisting of 24 holes, will test the favorable areas for possible mineralization. The pattern of the holes is irregular but is largely dependent on terrain and already constructed drill roads and sites.

Proposed Holes -

Proposed locations for eight Phase A holes are shown and designated as A-1 through A-8 on Figure 3 as well as the twenty-four (24) Phase B proposed locations (B-1 through B-24). The depths, elevations and other data on these holes are tabulated on Exhibit 9. The proposed locations shown all seem to be in favorable areas from the data obtained to date. The 250-foot spacing of Phase B will not completely drill-out or outline an ore body, but should be sufficient to locate the presence of one, if complete use is made of all possible information. If no mineralization and highly favorable ground is found at any of the proposed locations, then further detailed drilling is probably not warranted. If through the course of the drilling

program it becomes apparent, from data obtained, that certain of the holes fall on unfavorable ground, it is desired that these holes not be drilled, and the footage saved be used for additional holes in the more favorable areas.

Logging and Sampling -

A geologist will be employed to supervise the drilling and logging of data obtained. He will also be responsible for the survey work, and proper location of the holes and drill rig. He will supervise the sampling of the cuttings, and drilling of the cores. The drillers will keep an accurate log of depths and drilling rates at all times. A detailed descriptive log will be kept of the cuttings and cores by the geologist.

All cores will be arranged and properly marked so that they can be examined by the supervisory personnel and the DMEA Field Team. The core from each will be carefully dropped out of the core barrel onto a wooden trough provided for that purpose. The geologist will then examine the core with a field gamma ray detecting device, as well as taking samples and completing the examination under a microscope. A megascopic description of the core will be made and included in the descriptive log for the hole. If any trace of mineralization is noted, the complete core will be arranged in a core box and carefully labeled. If radioactive mineralization is present, a proper sample will be taken for chemical analysis by a commercial laboratory for percentage of U_3O_8 and V_2O_5 contents. Core recovery will be recorded on all cores and the losses prorated proportionately with proper regard to lithology.

In addition to a detailed study and a log of the lithology of the cuttings and cores, each hole will be logged with a gamma ray probe to determine the presence of any radioactive mineralization near the bore. These logs will also be used for stratigraphic correlations and for the determination of sand lensing from hole to hole along with the core data.

Geologic Control of Drilling -

The Allied Uranium Mines, Inc. desires the privilege of not drilling some of the proposed hole locations if, in the opinion of the technical personnel of Allied and the DMEA Field Team, they fall in an area which appears unfavorable for mineralization from data obtained from previous drilling. Footage thus saved would be used in more favorable

areas. Criteria used to determine unfavorable ground will be similar to that used by the U.S.G.S. and A.E.C. in their drilling programs.

Drilling Program -

The Phase A holes will be drilled first to confirm the favorability of the overall area. Next, due to the mineralization showing in the Serviceberry mine and in the two holes drilled recently behind the mine, it is planned to drill the first Phase-B holes in this area. Subsequent holes will follow in the established favorable areas from previous data.

If good mineralization is obtained in any of the above holes, it may be desirable to drill additional holes in the immediate area to the extent of the limits of the contract, eliminating some holes in less favorable areas.

All drilling will consist of plug-bit drilling to the top of the favorable ore zone or, for lack of a better marker, approximately 50 feet above the contact between the Chinle and Cutler-Moenkopi formations. Since most all of the better mineralization in the Big Indian District occurs within this zone, it is proposed that only this zone be cored. Mineralization in other parts of the section will be determined by examination of the cuttings and the gamma ray log. Because of the frequent mineralization immediately above the contact between the Chinle and Moenkopi-Cutler, it is deemed essential that each hole be carried to a depth just beyond the contact zone.

A detailed breakdown of estimated elevations, depth to top of the Cutler, amount of plug-drilling, amount of core drilling, and depth of each hole is given in Exhibit 9.

(c) The work will start within 30 days and be completed within an additional 90 days from the date of an exploration project contract, unless weather prohibits.

(d) The Allied Uranium Mines, Inc. is a new company, but has already done considerable drilling for uranium mineralization. The company has experienced managerial, mining, and geological personnel and has access to consulting geologists and engineers who can supervise the exploration project:

Michael H. Greene - President of the company, has the following experience:

Graduate of George Washington University

Business executive with many years of experience in the fields of real estate, retail merchandising and personnel management.

Presently general manager of Colony-Tilly, an employment bureau in New York City.

Joe Beeson - Vice-President in charge of Exploration, has the following experience:

Graduate of Stanford University and the American Institute of Mining and Metallurgical Engineers.

1916-18 - Geologist and mine manager of Emma Consolidated Mines.

1919 - Present - Consulting geologist and engineer with examinations for large and small companies in western United States, Alaska, and South America.

1923-29 - Acquired the original properties and directed development of Lead-Silver Mines Company, serving as its president and general manager and later became part owner of its successor, the Bingham Prospect.

1928-35 - Located the original claims, helped organize and brought into production Park City Consolidated Mines Company, serving as its Vice-President and general manager.

1929-42 - Conducted special examinations for Utah Copper Company.

1942-47 - Served as a consultant to the War Production Board and Bureau of Mines, Washington, D. C.

1947 - and after - Returned to Salt Lake City to continue his consulting practice as a mining geologist and engineer.

James McBride - Vice-President in charge of Drilling Operations, has had the following experience:

Mechanical Engineer

Owner and Operator of the Mac Exploration Company, core drilling contractors.

Worked for several years for the Federal Government in the operation of construction equipment, direction of engineering field surveys, construction of airports and major dams.

Has done extensive core drilling operations for uranium on the Colorado Plateau for several years.

Dr. George Hansen - Geological Consultant and Director

Graduate of Utah State and Agricultural College and George Washington University.

1923-26 - Field Assistant for the U. S. Geological Survey.

Consultant Geologist for Texas Oil Co. Carter Oil Co., The State of Utah, and others.

Served as Chairman of the Geology Department at Brigham Young University for several years.

Consultant in uranium, mining, petroleum and water resources.

Stanford R. Mahoney - Director and Consulting Geologist

Graduated from the University of Utah.

He has done extensive geological and mining work for the Bureau of Mines and Geological Survey.

He has been practicing as a consulting geologist for various mining and petroleum companies for several years.

Has been engaged in extensive prospecting, exploratory and development work in the uranium field during the last five years.

Ted E. Enter, Selig Ginsburg, Marc A. White, and Herbert J. Cooney are associated with the company as Director, Treasurer, Secretary, and Underwriter, respectively.

They have all had considerable executive and business experience in both the Federal Government and private industry.

6. ESTIMATE OF COSTS -

The Allied Uranium Mines Inc. desires that this exploration project be placed on a unit cost basis. Schedule 1 gives a summary of the total estimated costs, both on a project and unit basis. Schedule 2 indicates the drilling and coring depths per hole as well as the amount at various depths. Custom assaying is based on an estimated 20 cores, sufficiently mineralized to require accurate chemical assays. The $8.00 per sample charged is based on charges of commercial assayers.

6.(a) Independent Contracts (See Schedule 2) -

Phase A
8-holes

1.	Plug drilling, 1315 ft. @$2.04 avg.		$ 2,682.50
(1a)	1105 ft. @$2.00 - 0-200'	$2,210.00	
(1b)	210 ft. @$2.25 - 200-400'	472.50	
2.	Core drilling, 400 ft. @$3.36 avg.		1,342.50
(1a)	250 ft. @$3.00 - 0-200'	$ 750.00	
(1b)	110 ft. @$3.75 - 200-400'	412.50	
(1c)	40 ft. @$4.50 - 400-600'	180.00	
3.	Road and Location Building		
(3a)	D-7 cat @ $100/day for 4 days		400.00
	Total Independent Contract Phase A		$ 4,425.00

Phase B
24-holes

1.	Plug drilling, 4180 ft. @$2.06 avg.		$ 8,631.25
(1a)	3125 ft. @$2.00 - 0-200'	$6,250.00	
(1b)	1045 ft. @$2.25 - 200-400'	2,351.25	
(1c)	10 ft. @$3.00 - 400' and over	30.00	
2.	Core drilling, 1080 ft. @$3.35 avg.		3,615.00
(2a)	640 ft. @$3.00 - 0-200'	$1,920.00	
(2b)	380 ft. @$3.75 - 200-400'	1,425.00	
(2c)	60 ft. @$4.50 - 400' and over	270.00	
3.	Road and Location Building		
(3a)	D-7 cat @ $100/day for 8 days		800.00
	Total Independent Contract Phase B		$13,046.25
	Total Project, Independent Contract Cost		$17,471.25

6.(b) **Labor, Supervision, Consultants**

		Phase A 1 month	Phase B 2 months
1.	Geological Supervision	$600.00	$1,200.00
2.	Field Assistant	400.00	800.00
3.	Assay costs - 20 samples @$8.00	40.00	120.00
		$1,040.00	$2,120.00

Total 6(b).....$ 3,160.00

6.(c) **Operating Materials and Supplies**

		Phase A	Phase B
1.	Drill log reproduction and supplies	$ 15.00	$ 45.00
2.	Core boxes	20.00	60.00
3.	Fuel and oil (3a) Auto-Supervisory $50/mo.	50.00	100.00
		$ 85.00	$ 205.00

Total 6(c).....$ 290.00

6.(d) **Equipment Depreciation and Loss**

		Phase A	Phase B
1.	Auto-Supervisory $50/mo.	$ 50.00	$ 100.00
2.	Loss of Casing 600 ft. of 4-1/2" casing	150.00	450.00
3.	Radiometric Counter and Probe	50.00	100.00
		$250.00	$ 650.00

Total 6(d).....$ 900.00

6.(e) **Rehabilitation and Repairs** - none assumed.

6.(f) **New Buildings, Improvements** - none.

6.(g) Miscellaneous

	Phase A	Phase B
1. Workmen's Compensation	$ 20.00	$ 40.00
2. Accounting and Monthly reports	100.00	200.00
	$120.00	$ 240.00

Total 6(g).....$ 360.00

6.(h) Contingencies

	Phase A	Phase B
1. Approximately 10% of the total amount of each phase is added to cover such things as increased drilling depths, supervisory costs, operating material and supplies, etc.	$595.00	$ 1,625.00

Total 6(h).....$ 2,220.00

(For Summary of costs - See Schedule 1)

7. APPLICANTS SHARE OF COSTS

In accordance with DMEA regulations, the Allied Uranium Mines, Inc. is prepared to pay 25% of the cost of the project in the following manner:

Allied Uranium Mines, Inc. will perform all of the necessary work and pay for all independent contracts, labor, material and supplies used. Reimbursement by DMEA will be in accordance with Schedule 1, less 25% on a unit basis, and brought up to date at the end of each month; i.e., the amount to be loaned by the Government for each foot of drilling performed will be 25% less than the amounts shown on Schedule 1; or, as shown at the bottom of the schedule, will amount to a total of $2.625 per unit. It is desired that DMEA payments to Allied be made on the 15th of the month for the footage of hole drilled during the previous month.

Respectfully submitted,

ALLIED URANIUM MINES, INC.

By W. Don Quigley
W. Don Quigley,
Consulting Geologist

WDQ/el

SCHEDULE I

Summary of Costs
Project Cost Per Foot of Hole
Basis 6,975 Feet of Drilling and Coring

	Phase A	Phase B	Project Cost	Per Foot Unit Cost
6 (a) Independent Contract				
1. Drilling	$ 2,682.50	$ 8,631.25	$11,313.75	$1.63
2. Coring	1,342.50	3,615.00	4,957.50	.71
3. Readwork	400.00	800.00	1,200.00	.17
(b) Labor, Supervision, Consultants	1,040.00	2,120.00	3,160.00	.45
(c) Operating Materials and Supplies	85.00	205.00	290.00	.04
(d) Equipment Depreciation and Loss	250.00	650.00	900.00	.13
(e) Rehabilitation and Repairs	None	None		None
(f) New Buildings, etc.	None	None		None
(g) Miscellaneous	120.00	240.00	360.00	.05
(h) Contingencies	595.00	1,625.00	2,220.00	.32
	$ 6,515.00	$17,886.25	$24,401.25	$3.50
DMEA, 75% Share Costs	$ 4,886.25	$13,414.69	$18,300.94	$2.625
Allied Uranium Mines, Inc. 25% Share of Costs	$ 1,628.75	$ 4,471.56	$ 6,100.31	$0.875

SCHEDULE 2

Breakdown of Drilling and Coring Zones

Phase A

Hole No.	Depth of Hole in Feet	Plug-Drilling Zones 0-200'	Plug-Drilling Zones 200'-400'	Plug-Drilling Zones 400' & over	Coring Zones 0-200'	Coring Zones 200'-400'	Coring Zones 400' & over
A-1	125	75			50		
A-2	440	200	190			10	40
A-3	120	70			50		
A-4	140	90			50		
A-5	200	150			50		
A-6	170	120			50		
A-7	250	200				50	
A-8	270	200	20			50	
Totals	1,715	1,105	210		250	110	40

Phase B

Hole No.	Depth of Hole in Feet	Plug-Drilling Zones 0-200'	Plug-Drilling Zones 200'-400'	Plug-Drilling Zones 400' & over	Coring Zones 0-200'	Coring Zones 200'-400'	Coring Zones 400' & over
B-1	400	200	150			50	
B-2	100	50			50		
B-3	40	40					
B-4	85	35			50		
B-5	370	200	120			50	
B-6	400	200	150			50	
B-7	25	25					
B-8	60	30			30		
B-9	160	110			50		
B-10	175	125			50		

SCHEDULE 2

(continued)

Phase B

Hole No.	Depth of Hole in Feet	Plug-Drilling Zones 0-200'	Plug-Drilling Zones 200'-400'	Plug-Drilling Zones 400' & over	Coring Zones 0-200'	Coring Zones 200'-400'	Coring Zones 400' & over
B-11	180	130			50		
B-12	80	30			50		
B-13	460	200	200	10			50
B-14	375	200	125			50	
B-15	200	150			50		
B-16	155	105			50		
B-17	410	200	160			40	10
B-18	240	190			10	40	
B-19	145	95			50		
B-20	295	200	45			50	
B-21	190	140			50		
B-22	200	150			50		
B-23	170	120			50		
B-24	345	200	95	—	—	50	—
Totals	5,260	3,125	1,045	10	640	380	60

Exhibit 1

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

MAY 25 1955

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

Not to be filled in by applicant

Docket No. DMEA 3834
Metal or Mineral Uranium
Date Received 5/25/55
Estimated Cost $24,401.25
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: Allied Uranium Mines, Incorporated
709 Newhouse Building Salt Lake City 11, Utah

(See attached sheets for names and addresses of Officers.)

(*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 7-lode mining claims known as Serviceberry #1 thru #4, Pitchblende Extension #1 and #2, and Pitchblende #4 located in Section 34, T. 30 S., R. 25 E., S.L.M., San Juan County, Utah.

(*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 Operator and lessee

(*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. attached hereto

(*e*) If you own the land, describe any liens or encumbrances on it See attached data

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

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

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

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

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

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

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

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

(*c*) The work will start within 30 days and be completed within 3 months from the date of an exploration project contract.

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

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

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

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

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

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

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

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

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

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

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

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

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

[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 May 20, 195 5

Allied Uranium Mines, Incorporated
(Applicant)

By Selig Rimburg
General Manager & 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

EXHIBIT 2

Division of Oil, Gas and Mining
Uranium Minerals Administration
RECEIVED
MAY 25 1955

TITLE DATA
RECORDED IN THE RECORDS OF SAN JUAN COUNTY, UTAH

CLAIM DATA

Claim Name	Location Date	Recording Date	Book	Page
Pitchblende Extension #1	Sept. 4, 1952	Sept. 8, 1952	13	209
Pitchblende Extension #2	Sept. 4, 1952	Sept. 8, 1952	13	210
Pitchblende #4	Sept. 4, 1952	Sept. 8, 1952	13	215
Serviceberry #1	June 11, 1940	June 15, 1940	R-1	164
Serviceberry #2	June 11, 1940	June 15, 1940	R-1	164
Serviceberry #3	July 2, 1952	July 15, 1952	13	140
Serviceberry #4	July 2, 1952	July 15, 1952	13	141

LEGAL DOCUMENTS DATA

1. A mining lease covering the above claims was made on November 20, 1954 between G. O. Patterson et al, "Lessors", and Apache Uranium Corporation, "Lessee". This lease was recorded in the records of San Juan County, Utah, on April 30, 1955 under Entry No. N-5139, in book 303, pages 86 to 97.

2. An operational agreement called "Modification and Supplemental Agreement" was made on February 2, 1955 between Apache Uranium Corporation and Allied Uranium Mines, Inc. This agreement was recorded in the records of San Juan County, Utah, on April 30, 1955 under Entry No. N-5140 in book 303, pages 98 to 104.

3. A modification letter was made to "3" above on February 12, 1955 and was recorded on April 30, 1955 in the records of San Juan County under Entry No. N-5141 in book 303, pages 105 and 106.

4. An Assignment of Overriding Royalty Agreement was made on April 30, 1955 between Apache Uranium Corporation, and David E. Hughes and George E. Emerson in which Apache assigned a 2-1/2% overriding royalty to Mr. Hughes and Mr. Emerson. This document is now being recorded in the records of San Juan County, Utah.

EXHIBIT B

GEOLOGICAL REPORT
ON
PITCHBLENDE PROPERTY,
RIO ARRIBA DISTRICT

OF

ALLIED URANIUM COMPANY

BY

W. DEN QUIGLEY
Consulting Geologist
Salt Lake City, Utah

May 4, 1955

GEOLOGIC REPORT ON
PITCHBLENDE PROPERTY, BIG INDIAN DISTRICT

Introduction

The Big Indian District has become one of the more famous uranium mining areas within the past year. It has been the site of several major discoveries of relatively large high-grade uranium ore bodies, since the development by Charles A. Steen of the important Mi Vida Mine in mid-1952. The discoveries cover an area approximately 10 miles long and several miles in width. Apparently, optimum sedimentary and lithological conditions exist over a rather large area, providing a favorable environment for precipitation of uranium bearing ore.

Mineralization is not continuous, but consists of lenticular ore bodies with intervening barren zones and unmineralized ground. The greatly expanded exploration program underway has added to the number of discoveries fairly regularly since the original ore body was found. Relatively shallow drilling along the Wingate escarpment was employed in the beginning, but now the deeper zones are being drilled downdip from the original discovery. The Allied Uranium Mines, Inc. property lies along a portion of the Wingate escarp, which bounds the Lisbon Valley region.

Depth to the favorable zone in the Chinle formation varies from a few feet to a maximum of approximately 700 ft. The property lies near the Continental ore body found in Section 36, at the southeast end of the Lisbon Valley structure in the Big Indian District. Mineralization occurs along the Chinle escarpment and recent drilling has uncovered additional mineralization behind the [illegible] escarpment.

Location and Accessibility

The Pitchblende group of claims in the Big Indian District, consists of 19 claims. There is considerable overlapping of the claims and a number of

different names included in the group. Figure 2 is an Index Map, showing the approximate location of the property in relation to the development and ore bodies in adjacent areas. Figure 2 is also a geologic map of the general area in which the claims are located. Figure 3 is a detailed map, showing structure, geology, location, drill-hole locations and cross-sections of the 19 claims described herein.

Detailed description of the claims, in regard to their location, is as follows:

Pitchblende Nos. 1, 2 and 3, located in Section 33, T. 30 S., R. 25 E., S.L.M.

Pitchblende No. 4, located in Section 34, T. 30 S., R 25 E., S.L.M.

Servicberry Nos. 1, 2, 3 and 4, located in Section 34, T. 30 S., R. 25 E., S.L.M.

Pitchblende Extension Nos. 1 and 2, located in Section 34, T. 30 S., R. 25 E., S.L.M.

Black King Nos. 1, 2 and 3, 3-1/2 and 3-1/2, located in Section 34, T. 30 S., R. 25 E., S.L.M.

Black King Nos. 4, 5, 6, 7, 8 and 9, located in Section 33, T. 30 S., R. 25 E., S.L.M.

The Big Indian District is located approximately 40 miles southeast of Moab, Utah. Good roads lead off the highway at several different points and cross over to the mining district and to the various mines and developments in the area. The described property has numerous roads already developed and drilling operations have been continuing on the property for some time. A good share of the drill roads have already been built.

The eastern edge of the District is marked by a steep cliff eroded from the Cutler, Chinle and Wingate formations. Westward from this escarpment the top of the Wingate, and successively the Kayenta and Navajo formations, form a dissected dip slope inclined westward to Dry Valley. Juniper, Pinion, Pine, Sagebrush and native grasses cover most of the gentle slopes. Only intermittent

streams are present near the District.

Stratigraphy

Rocks, ranging in age from Permian to Cretaceous, are exposed in and near the Big Indian District. Exposures of rocks younger than the Jurassic Navajo sandstone are limited to areas east of the Lisbon Valley fault. The floor of Big Indian Valley is underlain by the Permian Rico and Cutler formations. Triassic rocks lie unconformably on the siltstones of the Moenkopi-Cutler formations. The reddish-brown siltstones which underlie the ore-bearing unit are probably upper Cutler sediments, though the lack of fossil evidence precludes a definite statement that a thin remnant of the Triassic Moenkopi formation might not be present. Considerable channeling of the ore bearing unit into the underlying beds has been mapped.

The ore horizon, a silty sandstone unit in the lower part of the variegated Chinle formation, has been called Chinle-0 by various workers and Moenkopi by others. Properly, the Chinle-0 is probably part of the Moenkopi unit. It is unlikely that this unit is equivalent to the Shinarump conglomerate of other areas. The Shinarump conglomerate and some of the Moenkopi formations are probably absent because of local unconformities which have caused thinning of several other horizons.

Thinning and absence of Triassic and Jurassic sediments in the Big Indian District has resulted from considerable folding and sub-aerial erosion during Triassic and Jurassic time. This folding is related to intermittent disturbances produced by salt flowage in the Lisbon Valley structure, involving the Paradox formation and younger rocks, and to intermittent tectonic movements of areas near the rising Uncompahgre highland.

The mineralized unit (Chinle-0 or Moenkopi) consists of fine-grained, gray to greenish gray sandstone and siltstone with local conglomeratic lenses

and grey shale partings. Organic material occurs as particles disseminated through the sandstone matrix, and is concentrated in channels which occur locally throughout the unit. Changing thickness and local variations in the elevation of the top and bottom of this unit in drill holes, indicates scour and fill deposition in channels within the unit. Depositional environment appears to have been typical of a lowland floodplain. The abundance of organic material suggests deposition in a reducing environment, probably in stagnant swamps, oxbow lakes and meanders, thereby preserving the contained organic material. Carbonized wood fibers are the most common form of preservation; silicification not apparently being of much importance. The Chinle formation above the ore bearing unit consists of variegated shale, siltstones and fluviatile sandstone. The sandstones are especially prevalent in the upper portion and contain abundant silicified wood.

Locally, bleaching by reducing mineralizing solution has produced subdued buff to grey colors in parts of the Chinle formation.

The upper sandstone beds of the Chinle appear to grade conformably into the massive sandstone of the Wingate. The prominent escarpment which outlines the eastern margin of the district is formed by the Wingate sandstone of early Jurassic age.

As shown on Figure 3, the Cutler, Chinle and Wingate formations are exposed on the property. Most of the area lies on the Wingate formation with the escarpment running east-west along the north edge of the property. Drilling depths through the ore bearing horizon will vary from a few feet to approximately 700 feet over the full extent of the property.

Structure

The Big Indian District lies along the southwest flank of the large anticline known as the Lisbon Valley anticline which trends northeast-southwest for a distance of approximately sixteen miles. The northeast flank of the

structure has been deformed by faulting along the axis of the structure. A major northwest-southeast trending fault, downthrown to the east traverses Lisbon Valley for several miles, and is coincident with the axis of the structure. The Jurassic Morrison formation and overlying Burro Canyon and Dakota formations of Cretaceous age dip eastward from the Lisbon Valley fault. The Pennsylvania and Hermosa formation; the Rico and Cutler formations; Triassic and jurassic rocks dip west and southwest from the fault. These rocks on the west side of the fault form a broad anticlinal nose plunging about south 48 degrees west. The present mining area extends from the southwest flank through most of the arcuate structure to the northwest limb. Dips vary from 4 to 15 degrees ranging from west to southwest to south along the outcrop. Dips over the subject property average approximately 11 degrees south 25 degrees west.

Jointing is prominent in the outcrop of the Wingate and Kayenta formations. A northwest joint set is the most prominent, intersecting a northeast trending set which produces a distinctive conjugate joint system. The ore horizon in the Utex Mi Vida Mine is strongly jointed by the same joint system as is present in the surface rocks. This joint system may have been important in developing permeability and in providing access for mineralizing solutions to the relatively tight siltstone and fine grained sandstones of the district. Along with the joint system, occur minor faults intersecting at angles with the major fault and parallel to the major fault zone.

Ore Deposits

Theories of Origin

Greatly varying occurrences of uranium ores in the sedimentary rocks of the Colorado Plateau have resulted in numerous theories of origin. A syngenetic origin has been earlier ascribed to many of the so-called "carnotite" ores of the Plateau. Much research since the early studies has shown that the paragenetic relationship of the ore and gangue minerals is one of a series of

mineralizing stages which vary considerably in different deposits. These stages usually show extensive alteration of clays and volcanic sediments, re-solution of silicates, silicification, deposition of hydro-micas of vanadium uraninite and some accessory minerals. Subsequently, a period of oxidation resulted in development of carnotite, tyuyamunite and other secondary uranium and vanadium minerals were leached from associated volcanic sediments and concentrated in the sandstone. Numerous age determinations suggest that most deposits in both the Triassic and Jurassic rocks of the Plateau are of late Cretaceous or early Tertiary age, coinciding with igneous activity so prevalent at that time.

Though it is impossible at this stage to completely refute other arguments, the writer believes the evidence is very strong for an epigenetic origin associated in part with igneous activity under essentially low temperature hydrothermal environment. Mineralization of the Big Indian District probably occurred in conjunction with the widespread late Cretaceous and early Tertiary intrusive igneous activity which produced the laccolithic stocks of the La Sal, Henry, Abajo and other intrusive mountains of the Colorado Plateau. Faults and joints provided routes for solutions rising from the intrusions to enter the permeable sandstone units of the adjacent sediments. Structural movements associated with igneous activity aided in the development of a hydrostatic gradient which forced the solutions through the sediments. When they encountered a favorable chemical, stratigraphic, and structural environment the uranium and vanadium minerals were precipitated. Permeability variations, occurrence of certain clays such as montmorillinite, presence of vanadium minerals, and especially an abundance or organic material appear to strongly affect deposition of uranium minerals. Channeling appeared to provide a favorable combination of these conditions and many channels were the loci for deposition of commercial ore bodies.

Ore Occurrence

Considerable caution must still be observed in attempting to predict

favorable trends in the Big Indian District. Development to date has been largely limited to areas along the escarpment which forms the west side of Big Indian Wash. The known ore bodies appear to be tabular to lenticular in shape, ranging from a few feet to more than 30 feet in thickness. Horizontal dimensions of ore bodies which have been outlined by drilling range up to nearly 1500 x 600 ft. Tonnages in some cases exceed one-half million tons in single ore bodies. To date there are six or seven major ore bodies discovered in the Chinle formation in the Big Indian District. The sizes range from $3,000,000 to more than $15,000,000 in each body. Other smaller deposits have also been found. Drilling operations currently under way throughout the district are encountering new deposits from time to time.

Discoveries in the past several months mark this district as one of the most important potential uranium districts in the country. Core drill data in more highly developed areas suggests that many discoveries will be made in undrilled areas. Ore bodies occur in patches, separated by intervening areas of barren ground, a condition which makes it impossible to determine from the surface the location of subsurface occurrences. The apparent frequent occurrence of patches of ore, often as large as the intervening barren areas, is encouraging for drilling programs on the subject property.

Of greatest importance, appears to be the proper stratigraphic environment. The presence of organic material in abundance appears to be especially significant. Certain depositional and lithological conditions appear to be important in the formation of ore deposits.

The probable importance of scour and fill channels in localizing ore bodies has been pointed out above. An oversimplified concept that has gained wide circulation has been one which postulates a single ore bearing channel running through the district, along which the various ore bodies are distributed. The very nature of alluvial deposition precludes the preservation of entire channel deposits as new erosional cycles are superimposed on the old. Downstream

migration of meander belts, frequent changes in direction of stream flow, and a constant scouring of new channels into existing alluvial deposits, with resultant removal of segments of these deposits is typical of the fluviatile cycle. The concept which will probably match conditions actually disclosed by drilling is one of a series of disconnected segments of alluvial channels, remnants of many overlapping floodplains, and representing a long period of relatively stable lowland floodplain environment. Assuming favorable structural, chemical and temperature conditions were also widely distributed in the district, ore deposits should, therefore, be distributed irregularly throughout the area of favorable fluviatile environment.

The subject property has mineralization exposed on the surface. The mineralization is located on the Serviceberry No. 1 claim and an ore body of small dimensions has been exploited. From very poor records, it appears that approximately 450 tons of ore, worth $15,000.00, have been removed. Within the next mile east of the east boundary of the property, three other showings of mineralization are exposed. Some ore has been removed from one of these showings; the other two are undeveloped. The large Continental ore body is 1-1/4 miles southeast of the east boundary. Another recent large ore body, in which it is reported that the ore is as thick as 18 feet in places, is located just south of the Continental ore body.

Approximately 40 shallow wagon drill holes were drilled in a line about 25 feet apart behind the mine on the Serviceberry No. 1 and 2 claims. This line of holes ran east-west with about 20 holes on either side of the mine shown on Figure 3. The records of the holes are most incomplete and no lithological data were kept. General statements by the contractor and previous lessees claim that several of these holes were mineralized. The poor quality of the data on this early drilling makes it impossible to verify definite mineralization in the old drill holes; however, recent drilling by the Allied Uranium Mines, Inc. has proven mineralization in holes No. 1 and 2, shown on Figure 3. According to

Barnaby probe readings, Hole No. 1 had about a 6 feet zone averaging greater than 0.04% equivalent U_3O_8, and Hole No. 2 had about a 1 foot zone averaging around 0.06% equivalent U_3O_8.

A composite sample of the mineralization in the old workings of the mine was taken and analyzed. This sample, probably more correctly called a specimen, was composed of a small amount of material from several different places where mineralization was exposed along the sides of the old workings. The results of the analysis, a photostat copy of which is attached to this report, are as follows:

0.22% U_3O_8 0.04% V_2O_5

Drilling Program

The Allied Uranium Mines, Inc. have drilled approximately 38 holes on the property to date. The locations of these holes are shown on Figure 3 and are designated by numbers 1 through 38. All holes were drilled through the potential ore zone in the Chinle into the Moenkopi-Cutler formation below. Cores were taken of the potential zone in each hole. Drilling depths varied from 100 to 700 feet. The data from these holes were used in the construction of the structural contours, cross sections, thickness of strata, and stratigraphic column shown on Figure 3.

Lithological data from the holes show a wide variation in the thickness and composition of the so-called Monitoring member in the Chinle. It is suspected that some of this variation is due to improper identification of the top of the member, since the thickness varies from 100 to 215 feet over the property. This variation may also be insignificant; however, the thickness of the typical ore or channel sand within the member is of special concern. Isopac lines of this potential ore zone are shown on Figure 4. As shown, a channel and favorable zone, ranging in thickness from 5 to 40 feet, trends nearly east-west across the northern part of the property.

The exploration drilling thus far has been based on a rectangular grid pattern with the holes approximately 250 feet apart. Of course, the terrain and

accessibility have made it necessary to vary the locations somewhat. The spacing used in the drilling is the maximum that can be used without missing some evidence of possible mineralization. A few more holes may be placed in between present holes to completely test the area already drilled.

The drilling done so far has roughly delineated a channel or trend around which more detailed drilling should be accomplished. As mentioned above, however, the very nature of the irregularity of a depositional channel makes it impossible to definitely outline its boundaries through widespaced drilling.

D.M.E.A. Loan Application

A DMEA loan application amounting to a total of $24,401.25 has been prepared to cover the cost of a certain amount of additional drilling on a part of the Pitchblende group of claims now under lease with the Allied Uranium Mines, Inc. The claims included in this application are shown outlined in red on Figure 3. They are:

Serviceberry Nos. 1, 2, 3 and 4.

Pitchblende Extension Nos. 1 and 2.

Pitchblende No. 4.

A drilling program has been outlined in the application, consisting of 32 holes varying in depth from 35 to 460 feet through the ore zone. The proposed locations of these holes are shown on Figure 3 and designated as A-1 through A-8 and B-1 through B-24. No definite pattern was used since the topography and already constructed drill roads determine the location of the holes. An attempt was made, however, to keep the spacing of the Phase-A holes on 600 to 1000-feet centers and the spacing of Phase-B holes on 250-foot centers as near as possible. Any spacing greater than 250-foot in Phase-B could well miss valuable data which might lead to the location of an ore deposit. It is felt that this spacing with careful megascopic and microscopic examination of the sludge samples above the potential ore zone and of core samples through the ore zone, chemical tests, and radioactivity tests may

indirectly show the effects of mineralizing solutions, even though actual ore mineralization is not present.

Evaluation and Conclusion

The Pitchblende group of claims are located in a very favorable part of the Big Indian District. They lie along the Chinle and Wingate escarpment on the east side of district, and on the southwest flank of the Lisbon Valley anticline. The potential ore horizon, Chinle D-Mesabank in the Triassic Chinle formation, is exposed along the north margin of the property. Drilling depths through the ore-zone are relatively shallow, when compared to that farther away from the escarpment. The depths vary from 25 feet to 700 feet.

Large ore bodies are located within a few miles, both to the southwest and northwest of the property. A mine is located on the Serviceberry No. 1 claim, and mineralization has been found in drill holes 200 feet behind the mine. Further mineralization is located along the escarpment just east of the property.

Considerable drilling has already been accomplished; data from which show a favorable channel or lithological trend (see Figure 4) across the north side of the property. It appears possible that this favorable trend may extend across the Serviceberry No. 1 and Pitchblende Extension No. 2 claims.

Drill roads have already been made to most of the proposed hole locations outlined in the DMEA loan application. A large amount of data has been collected, showing the presence of favorable lithological conditions and typical grey, coarse-grained sandstone, with mudstone inclusions commonly associated with ore deposits in the region.

Similar structural, stratigraphic, and geologic conditions, with nearby proven ore bodies; the favorable lithological trend outlined; the evident mineralization on the surface and in drill holes, all support the conclusion that further drilling has a good chance of finding commercial ore on the claims covered by the

loan application. The proposed drilling program of $24,401.25 for 6,975 feet of drilling and coring seems quite justified.

W. Don Quigley
Consulting Geologist

WDQ:jb

P. O. BOX 1888
65 SOUTH WEST TEMPLE ST.

CERTIFICATE OF ASSAY

BLACK & DEASON

ASSAYERS AND CHEMISTS

TELEPHONE 3-2563

Don Quigley

SALT LAKE CITY 10, UTAH, April 1, 1955

ASSAY PER TON OF 2000 POUNDS

NAME	NO.	OUNCES GOLD	VALUE GOLD PER TON	SILVER OUNCES	WET LEAD %	~~XXXXXX~~ %	~~XXXXXX~~ %	~~XXXXXX~~ %	%	IRON %	%
						Uranium U_3O_8		Vanadium V_2O_5			
Allied Uranium						0.22		0.045			

CHARGES $ 8.00

Geo. L. Deason

DEPARTMENT OF THE INTERIOR
Bureau of Reclamation Administration
MAY 25 1955

EXHIBIT NO. 9

Elevation and Depth Data

Hole No.	Approximate Surface Elev. in Feet	Est. Depth in Feet to Top of Cutler	Est. Amt. of Plug-drilling in Feet	Est. Amt. of Core Drilling in Feet	Total Depth of Hole in Feet
Phase A					
A-1	6,975	125	75	50	125
A-2	7,190	440	390	50	440
A-3	6,930	120	70	50	120
A-4	6,915	140	90	50	140
A-5	6,990	200	150	50	200
A-6	6,960	170	120	50	170
A-7	6,955	250	200	50	250
A-8	6,930	270	220	50	270
Phase B					
B-1	7,200	400	350	50	400
B-2	6,915	100	50	50	100
B-3	6,930	40	40	0	40
B-4	6,935	85	35	50	85
B-5	7,155	370	320	50	370
B-6	7,155	400	350	50	400
B-7	6,875	25	25	0	25
B-8	6,885	60	30	30	60
B-9	6,945	160	110	50	160
B-10	6,950	175	125	50	175
B-11	6,945	180	130	50	180
B-12	6,910	80	30	50	80
B-13	7,120	460	410	50	460
B-14	7,105	375	325	50	200
B-15	6,990	200	150	50	200
B-16	6,965	155	105	50	155
B-17	7,105	410	360	50	410
B-18	6,970	240	190	50	170
B-19	6,925	145	95	50	145
B-20	6,970	295	245	50	295
B-21	6,910	190	140	50	190
B-22	6,855	200	150	50	200
B-23	6,860	170	120	50	170
B-24	6,945	345	295	50	345

surname copy

700

Ching
Ellis
Guhan
Kiilsgaard
Selfridge

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

OCT 13 1955

Mr. Selig Ginsburg
General Manager and Treasurer
Allied Uranium Mines, Incorporated
708 Newhouse Building
Salt Lake City 11, Utah

Re: Docket No. DMEA-3834 (Uranium)
Pitchblende Group
San Juan County, Utah

Dear Mr. Ginsburg:

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, although noting a small amount of uranium mineralization on your property, indicates to us that the probability of disclosing minable ore reserves by your proposed program is not sufficiently promising to justify Government participation. We regret to advise you, under these circumstances, that your application for exploration assistance is denied.

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

Sincerely yours,

Frank E. Johnson

Acting Administrator

MChing/gla
10-11-55
cc to: Admr.'s Reading File
Operating Committee
Docket
Messrs. JECrawford, Rm. 3641
THKiilsgaard, Rm. 5224
JOHosted, Rm. 3210, GSA
Code 700 Mr. Ching
DMEA Field Team, Region III (2)

7/26/55 gla

Geologist portion of report missing in this copy!

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

RECEIVED
SEP 26 1955

September 16, 1955

224 New Customhouse
Denver 2, Colorado

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Field Team, Region III

Subject: Report of Examination, DMEA Docket 3834 (Uranium), Allied Uranium Mines, Inc., Pitchblende and Service Berry group of claims, San Juan County, Utah

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

The lower Chinle in the area of the Service Berry Mine is found to thin considerably below the average thickness deemed necessary to obtain significant ore deposits.

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

W. M. Traver
W. M. Traver

E. M. Harshman
E. M. Harshman

Enclosures

Reviewed by
Operating Committee
9/30/55

14 1955
BUREAU OF MINES
Denver, Colorado
Region III

RECEIVED
SEP 26 1955

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

TRANSMITTED
SEP 16 1955

Memorandum

To: Executive Officer, DMEA Field Team, Region III

From: John F. Shaw

Subject: DMEA 3834 (Uranium) Allied Uranium Mines, Inc., Pitchblende-Serviceberry claim group, Lisbon Valley Mining District, San Juan County, Utah.

Enclosed are the original and ten copies of a "Summary, Conclusions, and Recommendations" by W. D. McMillan, mining engineer, and Donald D. Haynes, geologist, and the original and ten copies of an Engineering Report by W. D. McMillan, covering docket DMEA 3834.

The applicant requested exploration assistance in the amount of $24,401.25 to explore the Pitchblende-Serviceberry claims by 6,975 feet of plug-bit and core-bit drilling. A field examination was made on July 7, 1955. The examining team concluded that there was little possibility of discovering a significant amount of uranium by the proposed exploration. It is recommended that the application be denied.

John F. Shaw
John F. Shaw
Supervising Mining Engineer

Enclosures

cc 10
EWMarshman
DMEA 3834
Chron

JFS/em

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION III

DMEA 324

Allied Uranium Mines, Inc.

Pitchblende-Serviceberry Claim Group

Lisbon Valley Mining District

San Juan County, Utah

Uranium

By

W. D. McMillan
Mining Engineer
Bureau of Mines

Donald D. Haynes
Geologist
Geological Survey

September 9, 1955

DMRA 3834

ALLIED URANIUM MINES, INC.
PITCHBLENDE-SHRYICHEMSKY CLAIM GROUP
LISBON VALLEY MINING DISTRICT
SAN JUAN COUNTY, UTAH

Summary, Conclusions and Recommendations

By

W. D. McMillan
Mining Engineer
Bureau of Mines

Donald D. Baumer
Geologist
Geological Survey

DMRA 3834

ALLIED URANIUM MINES, INC.
PITCHBLENDE-SERVICEBERRY CLAIM GROUP
LISBON VALLEY MINING DISTRICT
SAN JUAN COUNTY, UTAH

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

By W. D. McMillan and Donald D. Haynes

An application has been made to the Defense Minerals Exploration Administration for Government assistance in the exploration of uranium claims in San Juan County, Utah, which have been leased by the applicant. Their proposal was for 32 plug-bit and core-bit diamond drill holes in two stages with estimated totals of 6,975 feet at an estimated cost of $24,401.23. Government participation at 75 percent would be $18,300.94.

A field examination was made on July 7, 1955.

The uranium ore-bearing formations on the Lisbon Valley district are the Lower Triassic Chinle sandstone beds with a thickness of more than 35 feet. Drill holes on the subject claims indicate a thickness of the ore sands less than that required for the discovery of significant ore bodies, and only two of 38 holes drilled by the applicant showed weak uranium mineralization.

It is therefore concluded that exploration with Government assistance is not merited.

It is recommended that the application be denied without prejudice.

DMRA 363

ALLIED URANIUM MINES, INC.

PROMELGERD-SHRYZCHEMOST CLAIM GROUP

LISBON VALLEY MINING DISTRICT

SAN JUAN COUNTY, UTAH

Engineering Report

By: W. D. McMillan
Mining Engineer
Bureau of Mines

DRMA 383A

ALLIED URANIUM MINES, INC.
PITCHBLENDE-SERVICEBERRY CLAIM GROUP
LISBON VALLEY MINING DISTRICT
SAN JUAN COUNTY, UTAH

CONTENTS

Engineering report	PAGE
Introduction	1
Acknowledgements	2
Location, topography and physical features	2
History, production and ownership	3
Minable reserves	4
Present status	4
Exploration and development	4
Mining equipment and other facilities	4
Conclusions and recommendations	4

ILLUSTRATIONS

Figure	Follows PAGE
1. Location map, Pitchblende-Serviceberry claim group, Allied Uranium Mines, Inc., Lisbon Valley Mining District, San Juan County, Utah	2

DMEA 3834

ALLIED URANIUM MINES, INC.
PITCHBLENDE-SERVICEBERRY CLAIM GROUP
LISBON VALLEY MINING DISTRICT
SAN JUAN COUNTY, UTAH

ENGINEERING REPORT

By W. D. McMillan

INTRODUCTION

Allied Uranium Mines, Incorporated, applied for Defense Minerals Exploration Assistance for uranium exploration of their Pitchblende-Serviceberry Claim Group in the Lisbon Valley Mining District, San Juan County, Utah. Their proposal was for a first stage plug and core-drilling of 8 holes spaced at 600 to 1,000 feet intervals over 7 claims, followed if favorable results were obtained, by a second stage of 24 holes at intervals of 250 feet over the same claims. The estimated total amount of drilling was 6,975 feet at an estimated total cost of $24,401.85; Government participation at 75 percent would be $18,300.94.

An examination was made on July 13, 1955, by a Region III DMEA examining team consisting of W. D. McMillan of the Bureau of Mines and Donald D. Haynes, Gordon Weir, and W. Edwin Sharpe of the Geological Survey, accompanied by Don Quigley, Geologist for the applicant.

The subject property is on the southwest flank of the Lisbon valley anticline. The Triassic Chinle formation is the chief ore-bearing formation of the region, but on the subject claims the lower chinle is thinner than the thickness deemed necessary for the discovery of significant

ore bodies and of the 38 diamond drill holes completed by the applicant, only two showed weak mineralization.

In view of these conditions, further exploration with Government assistance is not justified.

ACKNOWLEDGMENTS

Data on this property was obtained by personal observation, the experience of Gordon Weir of the Geological Survey in the Lisbon Valley Mining District, and the geological report by Don Quigley. Lithologic logs of the 38 wagon drill holes completed by the applicant were furnished by the U. S. Atomic Energy Commission.

LOCATION, TOPOGRAPHY, AND PHYSICAL FEATURES

The Pitchblende-Servicebery Claim Group consists of 7 claims located in sections 33 and 34, T. 30 S., R. 25 E., Salt Lake principal meridian, as shown on figure 1. They are on a ridge about 1/2 mile north of Lisbon Valley at a mean elevation of about 6,850 feet with a relief of 250 feet. Access is either north from Monticello on U. S. Highway 160 for 20 miles and thence northeast for 15 miles on a graded road or south from Moab on U. S. Highway 160 for 21 miles, thence east for 8 miles on Utah State Highway 46, and thence south on a graded road for 16 miles.

Vegetation consists principally of scrub pinons.

Markets for uranium ores are Monticello, 35 miles southwest and Moab, 45 miles northwest.

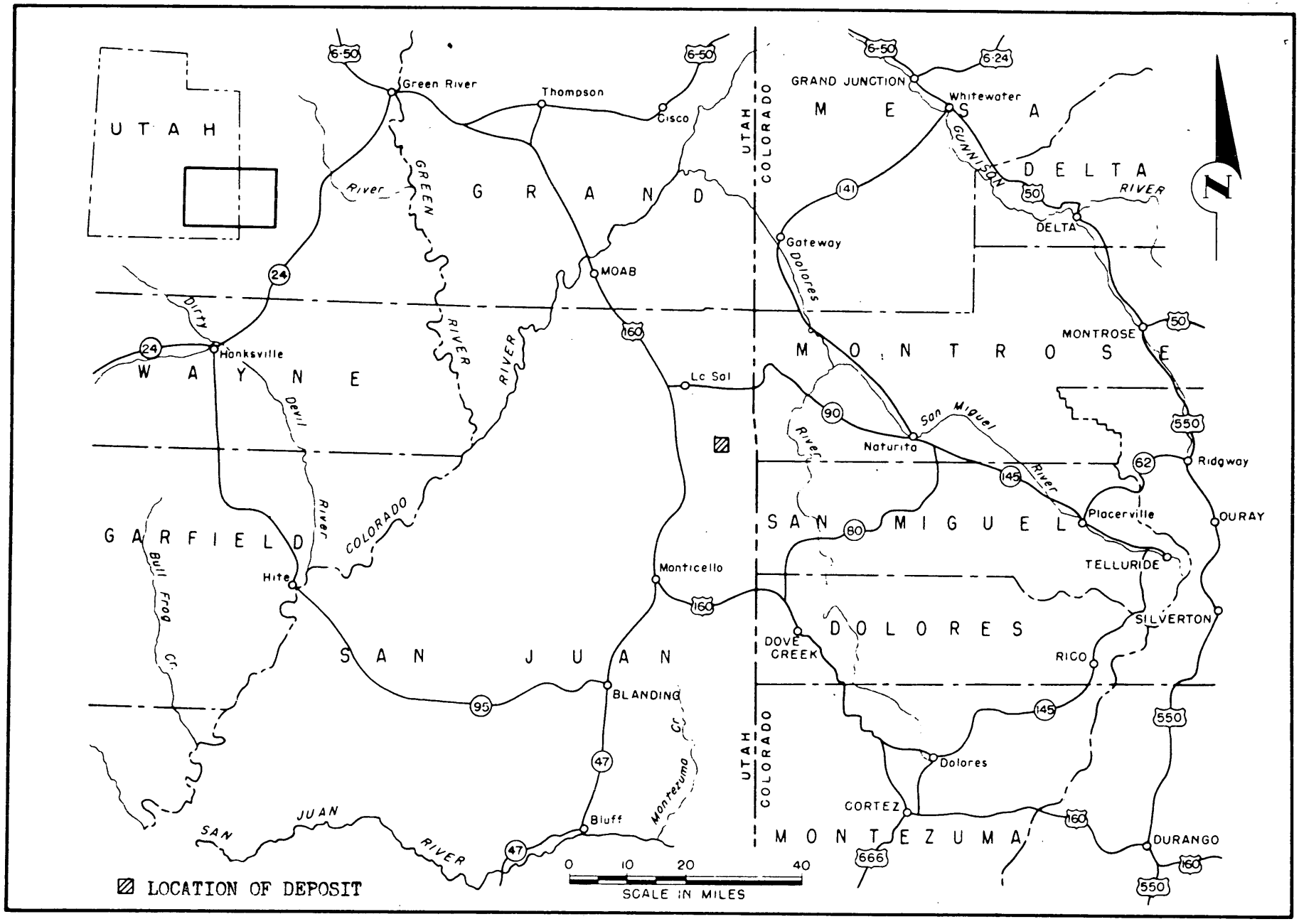


FIGURE 1 - LOCATION MAP, PITCHBLENDE-SERVICEBERRY CLAIM GROUP, ALLIED URANIUM MINES, INC., LISBON VALLEY MINING DISTRICT, SAN JUAN COUNTY, UTAH. DMEA 3834

Labor and supplies can be obtained at Monticello and Moab, where living accommodations are available. Camp facilities can be made on the property, and water for drilling and domestic purposes can be obtained from a spring about 2½ miles east of the property.

HISTORY, PRODUCTION AND OWNERSHIP

The mining history of the area dates from exploration for vanadium after World War I. On the Serviceberry No. 1 claim a mine known as the Serviceberry was partially developed. The records of production are old and incomplete but according to the applicant, it appears that production amounted to 430 tons with a value of $15,000.00, which would be about 0.02 percent uranium oxide. From an examination of the workings, this seems to be high.

The locations of the Pitchblende-Serviceberry claims subject of this application are Lyle Francis, G. O. Patterson, Milton C. Nielson, F. E. Jenkins and R. F. Jenkins. On November 20, 1954, the above parties gave a mining lease to Apache Uranium Corporation. On February 2, 1955, Apache Uranium Corporation made modification and supplemental agreement with the applicant, Allied Uranium Mines, Incorporated providing for a 50 percent interest with overriding royalty and a performance clause.

Examination of the records at the Recorder's office at Monticello showed that the location was valid. The status of Allied Uranium Mines, Incorporated would require verification, if a contract should be considered.

MINABLE RESERVES

Only a few tons of tons might be selectively mined from the former mine.

PRESENT STATUS

Exploration and Development

Former operators drove two 50 foot adits and drilled 40 wagon drill holes, from which no data are available. The only work done by the applicant consisted of 38 diamond core drill holes and roads through the claims to drill sites.

Mining Equipment and Other Facilities

None

CONCLUSIONS AND RECOMMENDATIONS

The Triassic Chinle uranium-bearing sandstone on the claims is thinner than the thickness considered necessary for the discovery of significant ore bodies. Also of the 38 diamond drill holes completed by the applicant, only two showed weak mineralization.

The examiner therefore recommends that the application be denied without prejudice.

/jv

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

RECEIVED
SEP 26 1955

IN REPLY REFER TO:
DMEA
Date Rec'd.
AUG 25 1955
BUREAU OF MINES
Denver, Colorado

August 24, 1955

TRANSMITTED
SEP 16 1955

Memorandum

To: Executive Officer, Field Team, Region III

From: E. N. Harshman

Subject: DMEA Docket 3834 (Uranium), Allied Uranium Mines, Inc., Pitchblende and Service Berry group of claims, San Juan County, Utah

Enclosed are 10 copies of a geologic report by D. D. Haynes, U. S. Geological Survey, covering his examination of the subject group of claims.

The potential ore-bearing horizon beneath the claims is the basal member of the Chinle formation. At the Service Berry mine, located on the subject claims, about 402 tons of ore containing 0.25 percent U_3O_8 have been produced. The logs from 38 holes drilled on the property were obtained from the AEC and carefully reviewed for lithology. The logs for 40 wagon drill holes also drilled on the property were not available for review.

Haynes concludes, from his study of the drill logs and from an examination of outcrops on the property, that the thickness of the lower Chinle ore horizon beneath the subject claims is considerably less than that necessary for significant uranium ore deposits. He recommends denial of the application for exploration assistance.

Although small ore deposits, similar to the one mined at the Service-Berry mine, might be found by the proposed exploration, it appears that denial of the application is justified by the data given in the report. It should be noted, however, that a contract has been awarded to the Walter Duncan Mining Co. (Idm-2796, DMEA 3582) for exploration of claims in part adjacent on the south to the claims of the Allied Uranium claims. Drilling on the Walter Duncan property has not yet been done on the claims adjacent to the Allied Uranium claims.

E. N. Harshman

E. N. Harshman
Member, Field Team

Enclosures (10)

ENHarshman:arh

MF-201
(Revised February 1953)

EXHIBIT 7

UNITED STATES

DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS EXPLORATION ADMINISTRATION

SUBORDINATION AGREEMENT

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, the undersigned is the holder of a mortgage, claim, lien, or encumbrance identified and described as follows*:

1% royalty on the Pitchblende group of claims, Big Indian District, San Juan County, Utah and which is described in the modification and supplemental agreement of February 2, 1955, and included in Exhibit 3.

upon that certain parcel of ground described in a proposed Exploration Project Contract

between ALLIED URANIUM MINES, INC.
708 Newhouse Building
Salt Lake City, Utah

and the United States of America;

NOW, THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, does by these presents subordinate all of his right, title, and interest in said mortgage, claim, lien, or encumbrance to the right, title, and interest of the United States of America under the provisions of said Exploration Project Contract, and any amendments thereof, and agrees that the lien and claim of the United States of America under the provisions of said Exploration Project Contract, and any amendments thereof, shall be prior to the undersigned's rights under the provisions of said mortgage, claim, lien, or encumbrance; and

The undersigned agrees to commit no act nor assert any right, title, or interest under said mortgage, claim, lien, or encumbrance that might contravene or conflict with the prior lien and claim of the United States of America under the provisions of said Exploration Project Contract, and any amendments thereof.

This undertaking and covenant shall be binding upon the heirs, successors, and assigns of the undersigned.

Dated this 5th day of May, 1955

Carl R. Ferderer [SEAL]
CARL R. FERDERER

Edward P. Taylor [SEAL]
EDWARD P. TAYLOR

I, _____, certify that I am the _____ (Secretary, etc.) of the corporation named herein; that _____ who signed this agreement was then _____ (President or Vice-President, etc.) of said corporation; that said agreement was duly signed for and in behalf of said corporation by authority of its governing body, and was within the scope of its corporate powers.

_____
[CORPORATE SEAL]

*Included date of the instrument, and if recorded, book, page, and county of record.

16-68181-1 U.S. GOVERNMENT PRINTING OFFICE

Exhibit 7

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
REC'D
MAY 2 5 1955

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(Revised February 1953)

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[CORPORATE SEAL]

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DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
MAY 25 1955

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(Revised February 1953)

EXHIBIT 4

UNITED STATES

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This undertaking and covenant shall be binding upon the heirs, successors, and assigns of the undersigned.

Dated this **4th** day of **May**, 195**5**

Stanford R. Mahoney [SEAL]

[SEAL]

I, **Stanford R. Mahoney**, certify that I am the **President** (Secretary, etc.) of the corporation named herein; that **I** who signed this agreement was then **President** (President or Vice-President, etc.) of said corporation; that said agreement was duly signed for and in behalf of said corporation by authority of its governing body, and was within the scope of its corporate powers.

APACHE URANIUM CORPORATION

[CORPORATE SEAL]

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This undertaking and covenant shall be binding upon the heirs, successors, and assigns of the undersigned.

Dated this 4th day of May, 1955

Stanford R. Mahoney [SEAL]

[SEAL]

I, Stanford R. Mahoney, certify that I am the President (Secretary, etc.) of the corporation named herein; that ? who signed this agreement was then President (President or Vice-President, etc.) of said corporation; that said agreement was duly signed for and in behalf of said corporation by authority of its governing body, and was within the scope of its corporate powers.

APACHE URANIUM CORPORATION

[CORPORATE SEAL]

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Exhibit 4

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EXHIBIT A

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This undertaking and covenant shall be binding upon the heirs, successors, and assigns of the undersigned.

Dated this 4th day of May, 1955

Stanford R. Mahney [SEAL]

[SEAL]

I, Stanford R. Mahney, certify that I am the President (Secretary, etc.) of the corporation named herein; that Stanford R. Mahney who signed this agreement was then President (President or Vice-President, etc.) of said corporation; that said agreement was duly signed for and in behalf of said corporation by authority of its governing body, and was within the scope of its corporate powers.

ALLIED URANIUM MINES, INC.

[CORPORATE SEAL]

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APACHE URANIUM CORPORATION

[CORPORATE SEAL]

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[redacted]

UNITED STATES

DEPARTMENT OF THE INTERIOR

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WHEREAS, the undersigned is the holder of a mortgage, claim, lien, or encumbrance identified and described as follows*:

[redacted]

upon that certain parcel of ground described in a proposed Exploration Project Contract

between [redacted]

and the United States of America;

NOW, THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, does by these presents subordinate all of his right, title, and interest in said mortgage, claim, lien, or encumbrance to the right, title, and interest of the United States of America under the provisions of said Exploration Project Contract, and any amendments thereof, and agrees that the lien and claim of the United States of America under the provisions of said Exploration Project Contract, and any amendments thereof, shall be prior to the undersigned's rights under the provisions of said mortgage, claim, lien, or encumbrance; and

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This undertaking and covenant shall be binding upon the heirs, successors, and assigns of the undersigned.

Dated this 5th day of [redacted], 195[redacted]

[redacted] [SEAL]

[redacted] [SEAL]

I, _____, certify that I am the _____

(Secretary, etc.) of the corporation named herein; that _____

who signed this agreement was then _____ (President or Vice-President, etc.) of said corporation; that said agreement was duly signed for and in behalf of said corporation by authority of its governing body, and was within the scope of its corporate powers.

_____ [CORPORATE SEAL]

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Dated this 5th day of **May**, 1955

Carl R. Ferderer [SEAL]
CARL R. FERDERER
Edward P. Taylor [SEAL]
EDWARD P. TAYLOR

I, _____, certify that I am the _____ (Secretary, etc.) of the corporation named herein; that _____ who signed this agreement was then _____ (President or Vice-President, etc.) of said corporation; that said agreement was duly signed for and in behalf of said corporation by authority of its governing body, and was within the scope of its corporate powers.

_____
[CORPORATE SEAL]

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16-68181-1 U.S. GOVERNMENT PRINTING OFFICE

Exhibit 7

(1)

Pitchblende

MINING LEASE

THIS MINING LEASE, made as of this 20th day of November, 1954, by and between G. O. PATTERSON, MILTON C. NIELSON, F. B. JENKINS, R. F. JENKINS and LYLE FRANCIS (hereinafter collectively referred to as "LESSORS"), First Parties, and APACHE URANIUM CORPORATION, a Utah corporation (hereinafter referred to as "LESSEE"), Second Party,

W I T N E S S E T H :

In consideration of the advance royalties paid and the royalties herein reserved and the covenants and agreements herein expressed by the LESSEE to be faithfully kept and performed, the parties hereto mutually and severally covenant and agree as follows:

I

RIGHTS GRANTED TO LESSEE

LESSORS do hereby demise, let and grant unto LESSEE all of the LESSORS' right, title, claim and interest in and to the following described unpatented lode mining claims and mining property (hereinafter sometimes referred to as "the leased premises"), together with the improvements thereon and incident thereto, situate in the Lisbon Valley Mining District, San Juan County, State of Utah, to-wit:

NAME OF CLAIM	ORIGINAL NOTICE OF LOCATION RECORDED Book	Page
Pitchblende Extension No. 1	13	207
Pitchblende Extension No. 2	13	208
Pitchblende No. 1	13	213
Pitchblende No. 2	13	214
Pitchblende No. 3	13	215
Pitchblende No. 4	13	216
Black King No. 1	15	186
Black King No. 2	15	187
Black King No. 3	15	188
Black King No. 4	15	189
Black King No. 5	15	190
Black King No. 6	15	191
Black King No. 7	15	192
Black King No. 8	15	193
Black King No. 9	15	195
Serviceberry No. 3	13	140
Serviceberry No. 4	13	164
Serviceberry No. 1	R1	164
Serviceberry No. 2	R1	164
Black King No. 2½	111	428
Pitchblende No. 3½	111	429
Black King No. 3½	111	429

TOGETHER WITH all and singular the tenements, hereditaments and appurtenances thereunto belonging or in any wise appertaining, together with all dips, spurs and minerals therein contained and appertaining, and together with any and all other property and all rights, real, personal or mixed, in, upon or appertaining to any of the mining claims or premises hereinabove described, EXCEPTING, how-

ever, all oil and gas and other liquid hydrocarbons.

TO HAVE AND TO HOLD unto said LESSEE, for a term of eight (8) years from the date hereof, subject to the performance by the LESSEE of all conditions, covenants and agreements herein contained by it to be kept and performed.

II

ROYALTIES

(a) Advance Royalty: LESSEE, for and in consideration of this Mining Lease and the leasehold interests herewith granted, does hereby pay LESSORS an advance royalty, receipt whereof is hereby acknowledged, which advance royalty is as follows:

(1) $6,000.00 in hand paid to G. O. Patterson, who is hereby designated by the several other Lessors as being their agent for the purpose of receiving such sum and who shall distribute to said other Lessors such sum in the proportions which their respective interests of ownership bear in the said mining claims hereinabove described in Section numbered I.

(2) An additional sum of $4,000.00 paid by the issuance to Lessors by Lessee in the proportions of ownership in said mining claims, as directed by Lessors, of 88,889 shares of Lessee's capital stock, such stock to be fully paid, non-assessable stock. Such stock is presently unregistered but Lessee hereby agrees to institute necessary and proper proceedings on or before June 30, 1955, to register said stock in compliance with applicable Federal and Utah State Laws and Regulations in order that such stock may be offered for sale to the public within the State of Utah through qualified Securities Brokers.

(b) Reserved Royalty: The LESSORS hereby reserve unto themselves a royalty interest of fifteen (15%) percent in and to all ores extracted from the leased premises. The term "fifteen (15%) percent royalty interest" as used herein, shall mean that the holder or holders of such royalty interest shall be entitled to fifteen (15%) percent of the gross returns, to be computed as hereinafter set out, from the sale of all ores extracted from said leased premises. PROVIDED EXPRESSLY that no exploratory or development or transportation allowance which may be paid to LESSEE by any governmental agency as to the leased premises, shall be deemed to constitute a portion of the gross purchase price for the purpose of determining the royalties payable hereunder, but any premium or bonus payment paid to LESSEE in connection with the production and sale of ores produced from said leased premises and based upon the quantity and/or quality of the minerals and ores so produced, shall be deemed as part of the purchase price in the computation of royalties to the extent that payment of royalty on such bonus or premium payments is not contrary to law or governmental regulation.

"Gross purchase price" is hereby construed to mean the then open market price payable at the nearest ore-buying station or the then prevailing minimum prices specified by the Atomic Energy Commission, whichever is the greater, for raw, unprocessed minerals and ores, mined, extracted and sold from the leased premises.

Penalties, if any, which may be imposed upon or assessed against LESSEE by the buyer of minerals produced and sold from the leased premises for reason of the existence of lime ($CaCO_3$) in the ore or impurities deleterious to buyer's extraction process or for any other reason deemed proper in buyer's judgment, shall be deducted from the gross purchase price and shall not constitute a portion of the gross purchase price for the purpose of determining the royalties payable hereunder; PROVIDED EXPRESSLY, that such penalties, if any, shall be the result of causes beyond the reasonable control of LESSEE.

LESSEE hereby covenants and agrees to pay to LESSORS a fifteen (15%) percent royalty to be computed as aforesaid as to all minerals extracted from the leased premises and marketed.

IT IS MUTUALLY UNDERSTOOD AND AGREED that LESSORS shall not receive said royalties hereinabove in this sub-section (b) of Section numbered II, and LESSEE shall not be obligated to pay such fifteen (15%) percent royalty until such time as LESSEE has recouped from said fifteen (15%) percent of said gross returns from the sale of all minerals and ores extracted and sold from the leased premises, the sum of TEN THOUSAND DOLLARS ($10,000.00), which sum represents said advance royalty paid to LESSORS by LESSEE as provided in Section numbered I of this Lease.

Any amount due and payable to LESSORS as reserved royalty, subject to LESSEE's right of recoupment of said advance royalty as stipulated in this subsection (b), on any shipment of ore extracted and shipped or sold hereunder shall be paid by LESSEE to LESSORS on or before the 15th day of the month next succeeding the calendar month during which LESSEE shall have received payment for such shipment.

All payments of reserved royalty hereunder by LESSEE to LESSORS shall be made by deposit thereof to the credit of LESSORS or their assigns

in the Bank at

Utah, or such other Bank as LESSORS may designate from time to time by written notice to LESSEE.

It is further understood and agreed that at such time as LESSEE has recouped said advance royalty as aforesaid, LESSORS and LESSEE shall, if possible, make proper and necessary arrangements whereby said reserved royalty of fifteen (15%) percent shall be deducted from the gross purchase price and shall be paid directly to LESSORS or their designated depositary by the mill or buyer of the ores produced, mined and sold from the leased premises. If such arrangements can be effected by LESSORS and LESSEE with such mill or buyer, then and in such event, the hereinabove provisions as to the manner and time of payment of said reserved royalty by LESSEE to LESSORS shall not apply.

III
WORK REQUIREMENTS

(a) LESSEE shall, within 30 days of the execution of this Lease, enter possession of the leased premises and shall commence exploratory and/or mining operations thereon.

(b) LESSEE agrees to complete, within one year from date hereof, a minimum of 30,000 feet of exploratory drilling operations. It is expressly understood and agreed by the parties hereto that LESSEE has heretofore performed certain exploratory drilling operations on the leased premises in the amount of 2,400 feet. Such previously conducted exploratory drilling shall be a credit towards the above specified minimum of 30,000 feet of exploratory drilling as required hereunder. Only drill holes which have been drilled to a depth sufficient to penetrate through probable ore-bearing horizon of the Mossback Member of the Chinle formation and which shall have been cored, radiometrically probed or chemically assayed shall be considered in the computation of the drilling requirements herein specified.

(c) It is mutually understood and agreed that in the event any of the mining properties or mining claims embraced within the area covered by the hereinabove described mining claims shall be lost to

13

adverse interests as a result of judicial proceedings or the acts of others than LESSEE, then and in such event or events the drilling requirement hereinabove in this Section specified to be performed in the initial year of this Lease shall be reduced proportionately by the amount of mining property or mining claim or claims so lost.

(d) In conducting mining operations upon the leased premises LESSEE agrees to mine the leased premises in a diligent and continuous manner during the life of this Lease and any extension thereof and shall, during such period or periods of mining operation, employ in the performance of such mining operations a minimum of 40 shifts of mining labor per month or the dollar equivalent thereof in mining, development or exploration work, which dollar equivalent shall be the average prevailing cost per man shift of labor as is then being paid for similar mining labor in the same general area in which the leased premises are situated. In the event that no deposit of ore capable of being profitably mined is discovered during the initial year's drilling program specified in subsection (b) of this Section numbered III, OR, in the event mining operations have been commenced but cannot be profitably maintained, then and in either of such events, LESSEE agrees to perform a minimum of additional exploratory or development work per month equal to the dollar equivalent (as hereinabove defined in this Section) of 40 shafts of mining labor. It is further understood and agreed that in the event LESSEE shall exceed such exploratory and development requirement in any monthly period, such excess may be credited against the current lease year requirements, PROVIDED, HOWEVER, that such excess may not be carried forward or credited against such minimum requirements of any succeeding or prior lease year or lease years.

(e) LESSEE shall perform annual labor or improvement work required by the laws of the United States upon or for the benefit of said mining claims hereinabove more particularly described and such annual labor or improvements shall be in an amount of not less than One Hundred Dollars ($100.00) per mining claim. LESSEE shall on or before the 15th day of May of each annual assessment year prepare and file or cause to be prepared and filed in the office of the County Recorder of the County in which said mining claims are located the necessary affidavit or affidavits of work done as required by the applicable statutes of the State of Utah.

IV

PROPER OPERATION REQUIRED

LESSEE shall conduct all operations and work hereunder in a manner necessary to good geologic engineering and mining practice so as to explore, develop and take out ore with due regard to the preservation of said hereinabove described mining claims and mining property as a workable mine and to the specific covenants herein reserved and in keeping with the applicable mining laws of the State of Utah and the United States and the applicable rules and regulations thereunder.

V

STATE AND FEDERAL ENACTMENTS
INDEMNIFICATION OF LESSOR

LESSEE, in the operation and development of the leased premises, shall be subject to all applicable Federal enactments, laws of the State of Utah and all Federal and State rules and regulations regarding Em-

ployees' Liability, Workmen's Compensation and Workmen's Old Age and Unemployment Insurance. LESSEE covenants and agrees to indemnify and hold harmless LESSORS from and against the payment of any and all damages, claims, costs and expenses due to the existence of such enactments, rules and regulations and of any and all claims, costs and expenses in connection therewith under any claim of subrogation provided for by such enactments or otherwise.

LESSEE shall further indemnify and hold harmless LESSORS from and against any and all damages, claims, costs and expenses arising out of damage to property or any injuries to or death of the employees of LESSEE or any other person whomsoever, other than LESSORS and those acting under them, where such injury, death or damage occurs because of or in connection with the use, operation or development in any manner of the leased premises whether such claims are based upon the right conferred by common law or by statute.

VI

LESSORS' RIGHT OF INSPECTION

LESSEE shall allow LESSORS and their agents to enter upon and into all parts of the leased premises for purposes of inspection, surveys or the taking of samples therefrom at such reasonable times as shall not interfere with the regular operations by LESSEE on the leased premises.

It is understood and agreed that LESSEE shall assume no responsibility for the safety of LESSORS or their agents when and while upon the leased premises for such inspection purposes, PROVIDED, HOWEVER, that LESSEE shall render to LESSORS and their agents any proper and reasonable assistance necessary for the making of such inspection.

VII

STATEMENTS TO BE FURNISHED

LESSEE shall, with respect to said royalty of fifteen (15%) percent reserved hereunder and payable to LESSORS after the return to LESSEE of said advance royalty as hereinabove provided, furnish, with each payment of royalties, to the designated depositary a statement setting out the basis upon which the royalty rate and the amount of royalties due was computed, UNLESS, however, arrangements, as hereinabove in Section numbered II (b) provided, are made whereby payments of said reserved royalty are made directly to LESSORS by the mill or buyer of the ores produced, mined and sold from the leased premises, then and in such event, LESSEE shall not be required to furnish said statement as to royalty payments.

VIII

BOOKS AND RECORDS

LESSORS and their authorized agents shall at any and all reasonable times be permitted to inspect all books and records including copies of maps, surveys, drilling logs and assay reports of the LESSEE relating to the leased premises in order to ascertain the correct amount of royalties due to LESSORS or to determine whether or not the provisions of this Lease are being complied with. LESSEE agrees to furnish to LESSORS, or such individual as they may designate, copies of drill logs and assay reports relating to LESSEE'S

operations on said leased premises. LESSEE shall not, however, be required to furnish such copies except at LESSORS' request and then, only in the event at least 30 days have elapsed since LESSORS' last request for such copies.

IX

NON-LIABILITY NOTICES

LESSEE shall keep posted in conspicuous places about the leased premises such notices as will inform whom it may concern that said leased premises are operated under this Lease and that LESSORS shall not be liable for any of the expenses or charges of operation.

X

PROPERTY TO BE KEPT FREE OF LIENS

LESSEE shall pay and satisfy all claims for materials, supplies and labor used or employed in connection with the development and operation of the mining claims and mining property hereby leased and shall keep said leased premises free of liens or encumbrances of any and every kind, except such as might result from State and County Tax Assessments not required to be paid by LESSEE or such as may result from the acts of others than the LESSEE or those in privity with it or such as may be created with the express written consent and agreement of the LESSORS.

XI

COVENANT AS TO ADVERSE CLAIMS

LESSORS make no representation or warranty as to the validity of said hereinabove described mining claims covered by this Lease. LESSORS do represent and covenant that said mining claims, and each of them, are free from liens and adverse claims of any kind or character by any person or persons claiming by, through or under them. LESSORS warrant and agree that they will defend the title to said unpatented lode mining claims against all persons claiming by, through or under them. In the event of failure of LESSORS to so defend said title through neglect or otherwise, LESSEE shall have the right in the name of the LESSORS to conduct such defense and the expenses of such proceedings shall be deductible from the royalties reserved and payable hereunder.

XII

TAXES

LESSEE shall pay all State and County Tax Assessments upon any and all structures and other improvements, machinery, equipment, tools, supplies and personal property whatsoever placed upon the leased premises by LESSEE.

LESSORS shall pay all State and County "net proceeds" taxes assessed against LESSORS on account of their receipt of royalties paid or to be paid to them by the LESSEE as hereinabove provided.

LESSEE shall pay all State and County "net proceeds" taxes

assessed against LESSEE and other taxes assessed against LESSEE on account of its operations hereunder.

XIII

LESSEE'S RIGHT OF SURRENDER

It is mutually understood and agreed that LESSEE may at any time, subsequent to the completion by LESSEE of the first year's drilling requirement as hereinabove set forth in Section numbered III, surrender and terminate this Lease as to all of the mining claims and mining property covered hereby upon giving thirty (30) days' notice in writing to LESSORS and upon paying to LESSORS all sums due and payable hereunder to LESSORS to the effective date of such sur render.

XIV

FORFEITURE AND TERMINATION

This Lease is made upon the condition that LESSEE shall perform all of the covenants and agreements herein set forth to be performed by it, and if at any time LESSEE shall fail for a period of thirty (30) days to make any royalty payment due hereunder within thirty (30) days from the date when payable or if there shall be any other default on the part of LESSEE due to other than acts of God, strikes, lock-outs, storms, floods, public enemy or casualty or any other cause beyond the reasonable control of LESSEE and such other default shall continue for a period of thirty (30) days after written notice of such other default being given by LESSEE, then and in either of such events, this Lease shall terminate and the leased premises shall revert to the LESSORS and the LESSEE shall deliver to LESSORS said leased premises.

In the event a dispute arises between the parties hereto as to whether a default has occurred with respect to LESSEE'S performance hereunder, such dispute may be resolved by arbitration in the following manner: The parties hereto shall select an arbitrator who shall hear such dispute, make such investigations or inquiries as he may deem necessary and advisable and his determination resulting therefrom, which shall be reduced to writing, shall be binding upon the parties hereto. In the event LESSORS and LESSEE are unable to select an arbitrator satisfactory and agreeable to both, then and in such event, each party shall nominate an arbitrator and the two arbitrators so named shall select a third. The majority determination of such so selected arbitrators shall be also reduced to writing and shall be binding upon the parties hereto.

IT IS MUTUALLY UNDERSTOOD AND AGREED that in the event LESSORS shall give LESSEE written notice of default as hereinabove in this Section provided, LESSEE may, within ten (10) days thereafter, give written notice to LESSORS that LESSEE desires to submit such issue of default to arbitration, naming in such written notice LESSEE'S nominee for arbitrator. Said written notice given by LESSEE to LESSORS, if timely given, shall operate to stay the forfeiture and termination of this Lease until such issue of default is determined by arbitration. If it shall be determined by such arbitration that LESSEE was in fact in default, then LESSEE shall have a period of twenty (20) days after service upon it of such determination to cure such default, otherwise this Lease shall terminate and the leased

premises shall revert to LESSORS and LESSEE agrees to deliver up to LESSORS peaceful possession of said hereinabove described mining claims.

XV

LESSEE'S OPTION OF RENEWAL

In consideration of the foregoing Lease and the expenditures to be made by LESSEE hereunder, LESSORS hereby grant to LESSEE the right and option, by written notice given by LESSEE to LESSORS at any time within 180 days prior to the termination of the original eight (8) year term of this Lease to renew this Lease for a further and additional term of eight (8) years, PROVIDED, that this Lease and option shall not have been sooner terminated in any manner and for any reason.

It is mutually and expressly understood and agreed that in the event of exercise by LESSEE of the option hereby granted for renewal and extension of the term of this Lease that the terms and conditions, covenants and agreements herein provided shall apply with respect to such renewal and extension, PROVIDED EXPRESSLY, HOWEVER, that LESSEE shall not pay the advance royalty hereinabove specified in Section numbered II of this Lease nor shall LESSEE be required to perform the drilling operations as provided in Section numbered III of this Lease during the initial year of this Lease. LESSEE shall, however, perform in the first year of said renewal period and for each successive year thereafter the minimum annual work requirements as more particularly hereinabove set out in Section numbered III (d).

XVI

ASSIGNABILITY OF LEASE

Except as hereinafter provided, LESSEE shall not at any time assign this Lease in whole or in part or sub-lease the whole or any part of the property hereby leased without written consent of the LESSORS first had and obtained.

~~It is recognized that certain negotiations have been entered into between LESSEE and a third party. In order that LESSEE shall be able to consummate such negotiations, it is expressly understood and agreed that LESSEE shall have an initial right of assignment of this Lease to said third party, which initial right of assignment shall not be subject to the consent of LESSORS.~~

The provisions of this Lease shall inure to the benefit of and shall be binding upon the successors and assigns of LESSORS and shall, subject to the limitations in this Section expressed, inure to and be binding upon the successors in interest and legal representatives of LESSEE.

XVII

MANNER OF GIVING NOTICE

Any written notice or other writing, ~~[illegible]~~ contemplated herein to be served upon LESSEE shall be sufficiently given if deposited in the United States mail, postage prepaid and registered and addressed to LESSEE as follows:

17

Apache Uranium Corporation
216 State Exchange Building
Salt Lake City, Utah

or at such other address as LESSEE may from time to time in writing designate.

Any written notice or other writing, [illegible] contemplated herein to be served upon LESSORS shall be sufficiently given if deposited in the United States mail, postage prepaid and registered and addressed to LESSORS as follows:

G. O. Patterson,
Moab,
Utah

or at such other address as LESSORS may from time to time in writing designate.

Service of notice by mail shall be deemed effective and complete upon the date of posting and mailing in accordance herewith.

It is understood and agreed that personal service of notice upon either party shall be deemed sufficient service of notice and no mailing of notice in the case of personal service shall be necessary.

XVIII

RIGHT OF WAY RESERVED

It is agreed that LESSORS have reserved unto themselves, their assignees or lessees, a right of way and easement to drive and excavate tunnels and drifts from and under claims herein leased for the purpose of mining and removing ore deposits situated upon claims of LESSORS not herein leased to lessees. Such drifts or tunnels shall be placed at such points or locations so as not to unreasonably interfere with the activities of LESSEES hereunder.

XIX

AGREEMENT FOR D.M.E.A. LOAN

In the event LESSEE should desire to finance a portion of its exploratory activities by means of a D.M.E.A. loan, then LESSORS agree to execute such consents to lien and other instruments as may be required of LESSORS as the claim owners in order to obtain such loan. It is understood and agreed between the parties that repayment of said loan shall be made from LESSEES share of gross proceeds as above specified and shall not decrease or diminish the royalty reserved to LESSORS herein.

XX

It is understood between the parties that LESSEE may decide to

18

finance the exploration project contemplated hereunder by means of a joint venture with a third party. It is agreed that such arrangement shall not be considered in violation of Paragraph XVI hereof, provided, however, that such arrangement shall not divest LESSEE of all of its leasehold interest hereunder or relieve LESSEE from its obligations for the performance of the terms and conditions of this lease.

IN WITNESS WHEREOF, the parties hereto have executed these presents as of the day and year first above written.

"LESSORS"

G. O. Patterson

Milton C. Nielson

F. B. Jenkins

R. F. Jenkins

Lyle Francis

"LESSEE"

APACHE URANIUM CORPORATION

By Stanford R. Mahoney
President

ATTEST:

Douglas H. Thompson
Secretary

CONSENT AND JOINDER

For and in consideration of the sum of One Dollar ($1.00) to each of the undersigned in hand paid, receipt of which is hereby acknowledged, the undersigned wives of G. O. Patterson, Milton C. Nielson, F. B. Jenkins, R. F. Jenkins and Lyle Francis, do hereby consent to and join in the foregoing Mining Lease to bind any interest which each of said undersigned wives have in or with respect to the therein described unpatented lode mining claim.

Irene S. Jenkins

Daisy E. Jenkins

Clara G. Francis

Cecilia M. Nielson

Emma R. Patterson

STATE OF UTAH)
: SS.
COUNTY OF Grand)

On the 8th day of March, 1955, personally appeared before me Irene S. Jenkins, Daisy E. Jenkins, Clara G. Francis, E. R. Patterson, F. B. Jenkins, R. F. Jenkins, Lyle Francis

signers of the above instrument, who duly acknowledged to me that they executed the same.

Notary Public
Residing at: Moab, Utah

My commission expires: 10-27-57

STATE OF UTAH)
: SS.
COUNTY OF)

On the day of , 1955, personally appeared before me

signers of the above instrument, who duly acknowledged to me that they executed the same.

Notary Public
Residing at:

My commission expires:

STATE OF UTAH)
: SS.
COUNTY OF Grand)

On the 8th day of March, 1955, personally appeared before me STANFORD R. MAHONEY, who being by me duly sworn did say that he is the President of APACHE URANIUM CORPORATION, and that the within and foregoing instrument was signed in behalf of said corporation by authority of a resolution of its board of directors and said STANFORD R. MAHONEY duly acknowledged to me that said corporation executed the same and that the seal affixed is the seal of said corporation.

Florence M. Schajer
Notary Public
Residing at: Moab, Utah

My commission expires: 10 27 57

STATE OF UTAH)
) ss
County of San Juan)

On the 26th day of March, A. D., 1955, personally appeared before me Milton C. Nelson and Estella M. Nelson the signer (s) of the above instrument, who duly acknowledged to me that they executed the same.

My commission expires:
1/4/58

L. Robert Anderson
Notary Public
Residing at Monticello, Utah

STATE OF UTAH)
) ss
County of Grand)

On the 28 day of March, A. D., 1955, personally appeared before me ~~Theodore W. McPhe~~ Edna L. Patterson the signer(s) of the above instrument, who duly acknowledged to me that she executed the same.

My commission expires:
March 2, 1957

Theodore W. McPhe
Notary Public
Residing at Moab, Utah

21-

MODIFICATION AND SUPPLEMENTAL AGREEMENT

THIS MODIFICATION AND SUPPLEMENTAL AGREEMENT, made and entered into this 2nd day of February, 1955, by and between APACHE URANIUM CORPORATION, a corporation, hereinafter for convenience referred to as "APACHE", First Party, and ALLIED URANIUM MINES, INC., a corporation, hereinafter for convenience referred to as "ALLIED", Second Party,

W I T N E S S E T H :

WHEREAS, under date of July 27, 1954, Stanford R. Mahoney and Jedda J. Mahoney, his wife, as First Parties, and Edward P. Taylor and Carl R. Ferderer, as Second Parties, entered into an Agreement (hereinafter sometimes referred to as "The Agreement") covering certain unpatented lode mining claims therein more particularly described and which are hereinafter identified as the "Paradox Group", situate in Montrose County, Colorado, (consisting of 20 claims or tracts) and the "Pitchblende Group" and "Ucola Group", both of which groups are situate in San Juan County, Utah (consisting of 19 claims or tracts and 50 claims or tracts, respectively),

WHEREAS, said Agreement of July 27, 1954, was thereafter amended by two instruments captioned "Addendum to Agreement" dated August 15, 1954 and October 8, 1954,

WHEREAS, by Agreement dated August 11, 1954, said S. R. Mahoney and Jedda J. Mahoney, husband and wife, as Assignors, assigned to Apache, as Assignee, all of said Assignors' rights and interests in, to and under said Paradox, Pitchblende and Ucola Groups, subject to the terms and conditions of said Agreement of July 27, 1954, as amended,

WHEREAS, under date of August 15, 1954, said Carl R. Ferderer and Edward P. Taylor, as Assignors, executed and delivered to Michael H. Greene of 80 Warren Street, New York City, New York, as Assignee, an Assignment of all and whatsoever Assignors' rights and interest in, to and under said Paradox, Pitchblende and Ucola Groups, reserving, however, to Assignors the following royalty interests:

CLAIM GROUP	ROYALTY INTEREST RESERVED
Paradox	
Pitchblende	3%
Ucola	1%
	2%,

WHEREAS, under date of September 30, 1954, said Michael H. Greene, as Assignor, assigned to Allied, as Assignee, said Assignors' interests in and to said groups of mining claims acquired by him as aforesaid, and

WHEREAS, it is the desire of the parties hereto to modify, amend and supplement said Agreement of July 27, 1954, as amended

NOW, THEREFORE, in consideration of the premises and the covenants and agreements herein contained, it is hereby mutually agreed as follows:

1. Paragraph numbered 2, page 1, of said Agreement, as amended, shall be deemed further modified and amended and the same is hereby modified and amended to read as follows:

"2. Second Party shall, in accordance with the terms and conditions of the options held by First Party, drill or cause to be drilled the following exploratory holes:

(a) Paradox Group: 40,000 feet of over-all rotary drilling (consisting of approximately 6 to 8 holes per claim, each drilled to a depth of 250 feet or to the estimated ore producing formation as determined by available geology; actual location, coring and depth to be determined by the parties hereto) PROVIDED, however, that Second Party shall not be required to expend in excess of the sum of $100,000 in performance of such exploratory drilling requirement and, PROVIDED, further, that the expenditure of not less than $100,000 shall satisfy and relieve Second Party of any further obligation with respect to such drilling requirement. The drilling requirement as herein in this sub-paragraph (a) specified or the expenditure of the sum of $100,000 in the performance of such drilling requirement and geological supervision must be completed on or before November 30, 1955.

(b) Pitchblende Group: 30,000 feet of over-all rotary drilling (consisting of approximately 4 holes per claim, each drilled to a depth of 400 feet or to the estimated ore producing formation as determined by available geology; actual location, coring and depth to be determined by the parties hereto). The drilling requirement herein in this sub-paragraph (b) specified must be performed by Second Party within 90 days after the date of execution and delivery of that certain Mining Lease presently being negotiated by and between G. O. Patterson et al, locators and owners of said Pitchblende Group of mining claims, as Lessors, and said Apache Uranium Corporation, as Lessee.

(c) Ucola Group: 79,000 feet of over-all rotary drilling (consisting of approximately 2 to 3 holes per claim, each drilled to depth of 1100 feet or through the estimated ore producing formation as determined by available geology; actual location, coring and depth to be determined by the parties hereto), PROVIDED, however, that Second Party shall not be required to expend a sum in excess of $100,000 in performance of such exploratory drilling requirement and, PROVIDED, further, that the expenditure of not less than $100,000 shall satisfy and relieve Second Party of any further obligation with respect

to such drilling requirement. Such exploratory drilling requirement shall be performed upon, and only upon the following named claims which comprise a portion of said Ucola Group: Frank H No. 5, Carl J Nos. 2, 3, 4, 5 and 6, Dick J No. 3, Don H No. 3, Marjorie F Nos. 1 and 2, Helen K No. 1, Thelma V. Nos. 1 and 2, Coney K Nos. 1, 2, 3, 4, 5 and 6, and Nancy F Nos. 1, 2, 3, 4 and 5 lode mining claims. Said drilling requirement as herein in this sub-paragraph (c) specified or the expenditure of the sum of $100,000 in the performance of such drilling requirement and geological supervision must be completed on or before November 30, 1955.

"In the event that ore in commercial quantitied is discovered on or in a particular area of any group the parties may agree to vary the exploratory drilling to concentrate the same in any particular area to the exclusion of any area within the group. The parties may also agree upon a different type of drilling such as wagon drilling in which event the differential in cost per foot shall be compensated for by greater or lesser drilling."

2. Paragraph numbered 3, pages 1 and 2 of said Agreement, as amended shall be deemed further modified and amended and the same is hereby modified and amended to read as follows:

"The drilling requirement hereinabove specified in paragraph numbered 2 (c) as to said Ucola Group shall be commenced by Second Party at the earliest practicable date and shall be prosecuted with due diligence with the view of obtaining the maximum amount of drilling and geologic data, it being contemplated that such information and data being required for a determination by the parties hereto in the exercise of that certain Option of July 8, 1954

entered into by Arthur Lyon & Joe H. Lyon, as Optionors

and Stanford R. Mahoney as Optionee, as to said Ucola Group. In the event said Option is exercised as to said Ucola Group of Mining Claims on or before July 1, 1955, Allied hereby agrees to pay at the time of exercise thereof, as a portion of the Option payment required to be paid, the sum of $20,000. Allied further agrees to pay, as its proportionate share of the payments specified under the terms of said Option, the further total sum of $10,000, on the dates therein specified. In the event said Option is exercised and Apache shall refuse or be unable to make the payments required to be paid under said Option on the dates subsequent to the date of exercise thereof, then and in such event, Allied may, at its option, pay all such sums so payable, including the above sum of $10,000, and shall, as to such additional sums, be reimbursed out of First Party's interest in any profits from the mining operations conducted on any of the groups or portions of groups of claims affected by this agreement."

3. Paragraph numbered 6 on the 2nd page of said Agreement shall be deemed modified and amended and the same is hereby modified and amended to read as follows:

"6. Upon the completion of the test hole drilling, with respect to all or any of the hereinabove named groups of mining claims, AND subject to the provisions of paragraphs 8 and 17 of Joint Operating Agreement attached hereto and made a part hereof as Exhibit A, Second Party shall be entitled (in the event First Party elects to accept the alternative provided in paragraphs 8 (b) and (d) of said Joint Operating Agreement) to his interest in such group or groups of claims upon which such exploratory drilling or expenditure of money in the performance of such drilling program has been made, as follows:

"(a) Paradox Group: Fifty Percent working interest reserving and providing to First Party a fully carried non-operating 50% working interest benefit to be computed and paid in the manner hereinafter set out in this paragraph numbered 6;

"(b) Pitchblende Group: Fifty Percent working interest, reserving and providing to First Party a fully carried non-operating 50% working interest benefit to be computed and paid in the manner hereinafter set out in this paragraph numbered 6;

"(c) Ucola Group: Fifty Percent working interest, reserving and providing to First Party a fully carried non-operating 50% working interest benefit to be computed and paid in the manner hereinafter set out in this paragraph numbered 6;

"PROVIDED EXPRESSLY that in the event First Party does not elect to accept the said alternative as provided in paragraph 8(b) of said Joint Operating Agreement, Second Party shall nevertheless be entitled to the working interests in the proportions and percentages hereinabove set out in sub-paragraphs (a), (b) and (c) of this paragraph 6, and the interest retained and reserved to First Party in the amounts and percentages as hereinabove set out shall not be fully carried non-operating working benefits and such interests retained and reserved to First Party as aforesaid shall be governed and shall be subject to the provisions of sub-paragraphs (a) or (c) of said paragraph 8 of said Joint Operating Agreement.

"In the computation of the fully carried non-operating 50% working interest benefit to be provided to First Party, a joint account of all income from the production from said groups of mining claims affected hereby and of development and operating charges shall be set up. Development and operating charges shall be charges against the joint account upon the basis provided for in the Accounting Procedure attached hereto and by reference made a part hereof as Exhibit B. First Party shall be entitled to 50% of any excess of joint account income under joint account charges. The 50% proportion of development and operating charges chargeable against First Parties 50% proportion of production shall be recoverable out of and only out of such income and First Party shall be under no obligation with respect to any excess of development and operating costs over production income except only as First Party's proportion of such

excess may be recoverable from First Party's proportion of future production income.

"It is mutually recognized and understood that there are outstanding and the interests of the parties hereto are subject to certain overriding royalty interests heretofore reserved as follows:

(a) Paradox Group----------10%

(b) Ucola Group----------15% plus 10% carried working interest if ore exceeds .4% of U_3O_8.

(c) Pitchblende----------17½%

"It is expressly understood by the parties hereto that the royalty interest of 17½% chargeable against said Pitchblende Group is contingent upon the consummation of present negotiations and the execution and delivery to Apache of said Mining Lease hereinabove referred to in paragraph 2 (b) and the reduction of the royalty interests aggregating 20% heretofore reserved under those two Mining Leases, both dated January 20, 1953, covering said Pitchblende Group and entered into by and between G. O. Patterson et al, as Lessors, and David E. Hughes and George E. Emmerson, as Lessees."

4. Apache does hereby release and discharge Allied of and from any and all future obligations and liabilities whatsoever under or in connection with said Agreement, insofar as said Agreement pertains to the hereinafter described mining claims comprising a portion of said Ucola group. Allied does hereby release and discharge Apache of and from any and all future obligations or requirements whatsoever under or in connection with said Agreement or any Assignments thereunder and Allied does hereby release, relinquish and forever quit claim to Apache all right, title, claim or any interest which Allied has or claims in or under said Agreement, or otherwise, insofar, and only insofar, as said Agreement covers the following named claims comprising a portion of said Ucola Group: George N Nos. 1, 2, 3 and 4, Frank H Nos. 1, 2, 3 and 4, Carl J No. 1, Raye L Nos. 1, 2 and 3, Ralph R Nos. 1, 2 and 3, Dick J Nos. 1 and 2, Trails End No. 1, Jocko No. 1, Carol Ann Nos. 1 and 2, Johnny C Nos. 1, 2 and 3 and Don H Nos. 1 and 2 mining claims.

5. It is mutually understood and agreed that Allied shall offer in public sale 300,000 shares of Allied Uranium Mines, Inc., capitol stock of an offering value of $1.00 per share. Eighty five (85%) per cent of the net proceeds resulting from such public sale of said stock shall be deposited in escrow in the First Security Bank of Salt Lake City, Utah, Exchange Place Branch, with appropriate escrow instructions to said Bank specifying the manner and times for the release and disposition of the monies so deposited.

6. The drilling performed and the sums of money heretofore expended by Allied in geological supervision and for drilling operations performed upon said Paradox, Pitchblende and Ucola Groups of mining claims, respectively, shall be applied against and shall constitute a credit on the drilling requirements specified in said Agreement of July 27, 1954, as modified herein.

7. In the negotiations presently being conducted by Apache to obtain a Mining Lease running from said G. O. Patterson et al, as Lessors, and Apache, as Lessee, covering said Pitchblende Group and the reduction of the said 20% royalty interests heretofore reserved thereunder to a royalty interest of 17½%, Allied hereby agrees to contribute and to pay to Apache the amount of $1,562.50 as its proportionate share of the cost of effecting such royalty reduction, said sum of $1,562.50 to be paid Apache by Allied upon execution and delivery to Apache of said above mentioned Mining Lease. Certified or photostatic copies of which Mining Lease and those necessary instruments which affect such royalty reduction, will be promptly furnished Allied by Apache.

8. Within 10 days succeeding the date of execution and delivery of this Modification and Supplemental Agreement and prior to the date of submission of any application for registration with the Securities Exchange Commission of a public offering of Allied Uranium Mines, Inc., stock, Allied agrees, at the option of Apache:

EITHER to deliver to Apache 175,000 shares of capitol stock of said Allied Uranium Mines, Inc., which stock shall, in the event Apache elects to accept such stock delivery, be guaranteed by Allied at a cash value of not less than $5,250.00

OR, pay to Apache the cash sum of $5,250.00

9. As amended, modified and supplemented hereby, said Agreement of July 27, 1954 shall remain in full force and effect.

IN WITNESS WHEREOF, these presents are executed as of the day and year first above written.

APACHE URANIUM CORP.

By Stanford R. Mahoney
President

ATTEST:

Douglas N. Thompson
Secretary

"FIRST PARTY"

ALLIED URANIUM MINES, INC.

By Michael H. Gisser
President

ATTEST:

Secretary

CONSENT AND JOINDER

For and in consideration of the sum of One Dollar ($1.00) in hand paid to each of the undersigned by Allied Uranium Mines, Inc., receipt whereof is hereby acknowledged, the undersigned do hereby jointly and severally join in, consent to and agree to be bound by said foregoing Modification and Supplemental Agreement as to any and all rights, claims and interests which have accrued to the undersigned by virtue of said Agreement of July 27, 1954, and any Assignments thereof, as fully and in all respects as if the undersigned had been named in and had executed said Modification and Supplemental Agreement.

Dated this 12th day of February, 1955.

Carl R. Ferderer

Edward P. Taylor

STATE OF UTAH)
COUNTY OF Salt Lake) ss.

On the 2nd day of February, 1955, personally appeared before me Stanford R. Mahoney & Douglas N. Thompson who being by me duly sworn did say that they are the President & Secretary of APACHE URANIUM CORP., and that the within and foregoing instrument was signed in behalf of said corporation by authority of a resolution of its board of directors and said duly acknowledged to me that said corporation executed the same and that the seal affixed is the seal of said corporation.

Notary Public
Residing at: Residing at Salt Lake City, Utah

My commission expires:
My Commission Expires Oct. 2, 1958

STATE OF UTAH New York)
COUNTY OF Suffolk) : ss.

On the 16 day of February, 1955, personally appeared before me Michael H. Greene, who being by me duly sworn did say that he is the President of ALLIED URANIUM MINES, INC., and that the within and foregoing instrument was signed in behalf of said corporation by authority of a resolution of its board of directors and said duly acknowledged to me that said corporation executed the same and that the seal affixed is the seal of said corporation.

Rose De Libero
Notary Public
Residing at:

ROSE DE LIBERO
NOTARY PUBLIC, STATE OF NEW YORK
No. 52-5967150
Qualified In Suffolk County
Commission Expires March 30, 1956

My commission expires:

STATE OF UTAH)
COUNTY OF Salt Lake) : ss.

On the 2nd day of February, 1955, personally appeared before me CARL R. FERDERER and EDWARD P. TAYLOR, signers of the above instrument, who duly acknowledged to me that they executed the same.

George D. Fehr
Notary Public
Residing at: Residing at Salt Lake City, Utah

My commission expires:

My Commission Expires Oct. 2, 1958

10

(3)

APACHE URANIUM CORPORATION
216 State Exchange Bldg
Salt Lake City, Utah

February 12, 1955

Allied Uranium Mines, Inc.
1010 Vermont Avenue, N.W.
Washington, D. C.

Gentlemen:

The following interpretations and changes are hereby recognized and agreed to as affecting that certain Modification and Supplemental Agreement dated February 2, 1955 entered into by and between Apache Uranium Corporation and Allied Uranium Mines, Inc:

1. The drilling requirements specified in paragraph 2 (a), (b) & (c) of said Modification and Supplemental Agreement shall be satisfied by the expenditure by Allied of a total sum which shall not exceed $262,400. In the event Allied shall expend such total sum for drilling and geological supervision, Allied shall then be entitled to its full fifty percent working interest in each of said groups of claims, excepting, of course, those claims comprising a portion of the Ucola Group which were released by Allied and quitclaimed to Apache under said Agreement. A firm commitment of 30,000 feet of drilling must be completed on the Pitchblende Group, for which an initial ceiling estimate of $62,400 was made to fulfill said commitment. However, in the event it becomes necessary to expend in excess of $62,400 on drilling and geological supervision to complete 30,000 feet of drilling on the Pitchblende Group, any sums so expended in excess of $62,400 shall be subtracted from and shall reduce, pro-rata, the commitments against the Ucola and Paradox Groups. For example, if in performance of such 30,000 foot drilling requirement Allied expends $20,000 in excess of such estimate of $62,400 on the Pitchblende Group, the commitment for the Ucola group shall be reduced by $10,000 and the commitment for the Paradox group shall be reduced by $10,000.

2. Those sums of $20,000 and $10,000, totaling $30,000, and any additional sums which may be paid under the terms and conditions of paragraph 3 of said Agreement, as modified and amended, with respect to the Ucola Group of claims, in the event the option to purchase said claims is exercised, shall be reimbursed to Allied out of Apache's interest in any profits resulting from the mining operations conducted on the Ucola Group of claims in which Allied and Apache share their 50-50 division of interest, and such reimbursement shall be computed on the basis more particularly set out in paragraph 6 of said Agreement.

Please acknowledge your acceptance of the above by appropriate signature in the space provided below.

Very truly yours,

APACHE URANIUM CORPORATION

/s/ By Stanford H. Mahoney
Pres.
Title

Accepted:
ALLIED URANIUM MINES, INC.

By William H. Greene
Pres.
Title

COPY

STATE OF UTAH)
) ss
COUNTY OF SALT LAKE)

On this 12th day of February, 1955, personally appeared before me Stanford R. Mahoney, who being by me duly sworn did say that he is an officer of Apache Uranium Corporation and that said instrument was signed in behalf of said Corporation by resolution of its Board of Directors, and said Stanford R. Mahoney acknowledged to me that said Corporation executed the same.

Given under my hand and seal this 12th day of Feb. 1955.

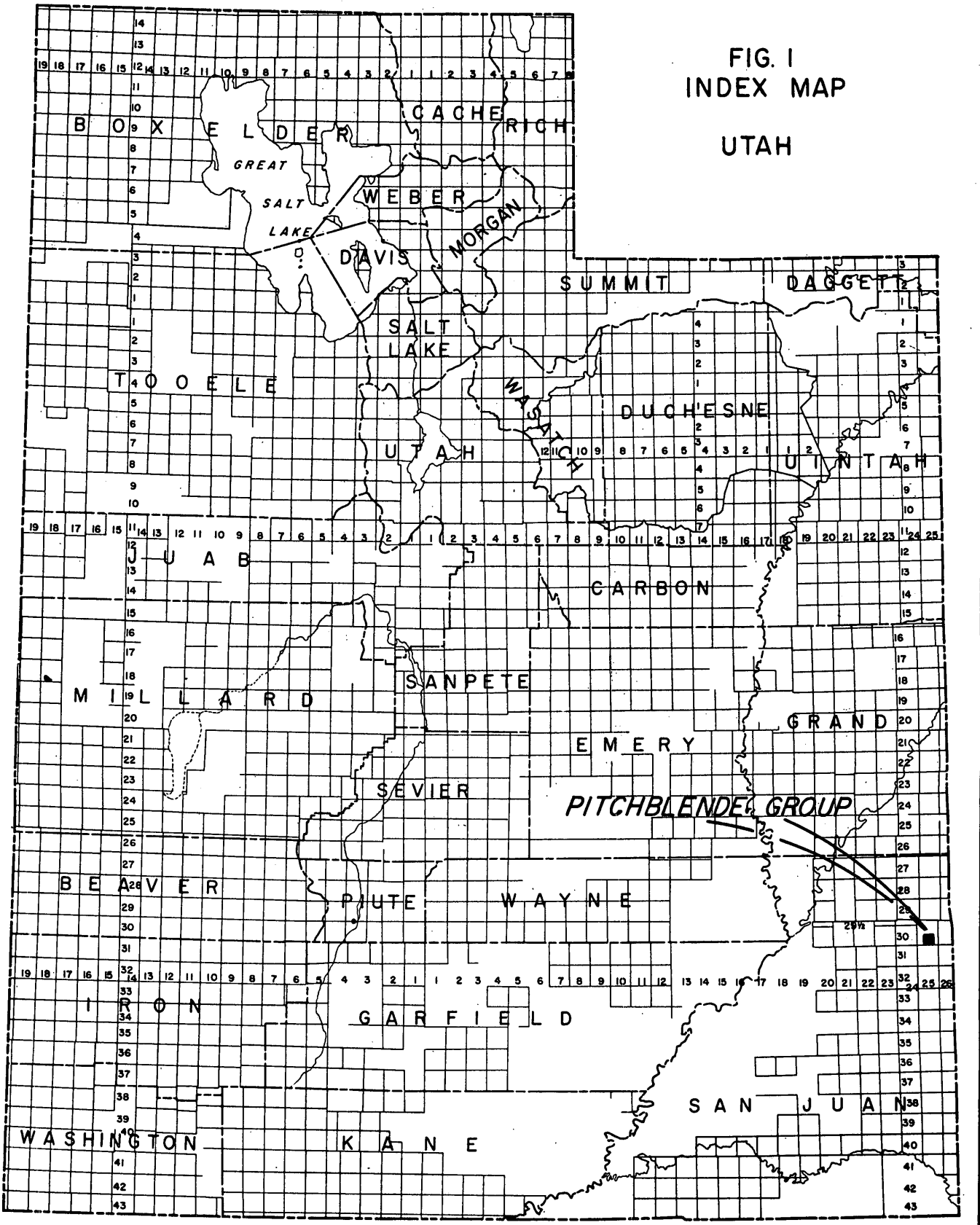
1953

My Commission Expires:
4-1-56

Darma N. Edwards
Notary Public
Residing at Salt Lake City, Utah

Exhibit 3

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
MAY 25 1955



WESTERN STATES MAP CO.

Figure 1

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
MAY 25 1955

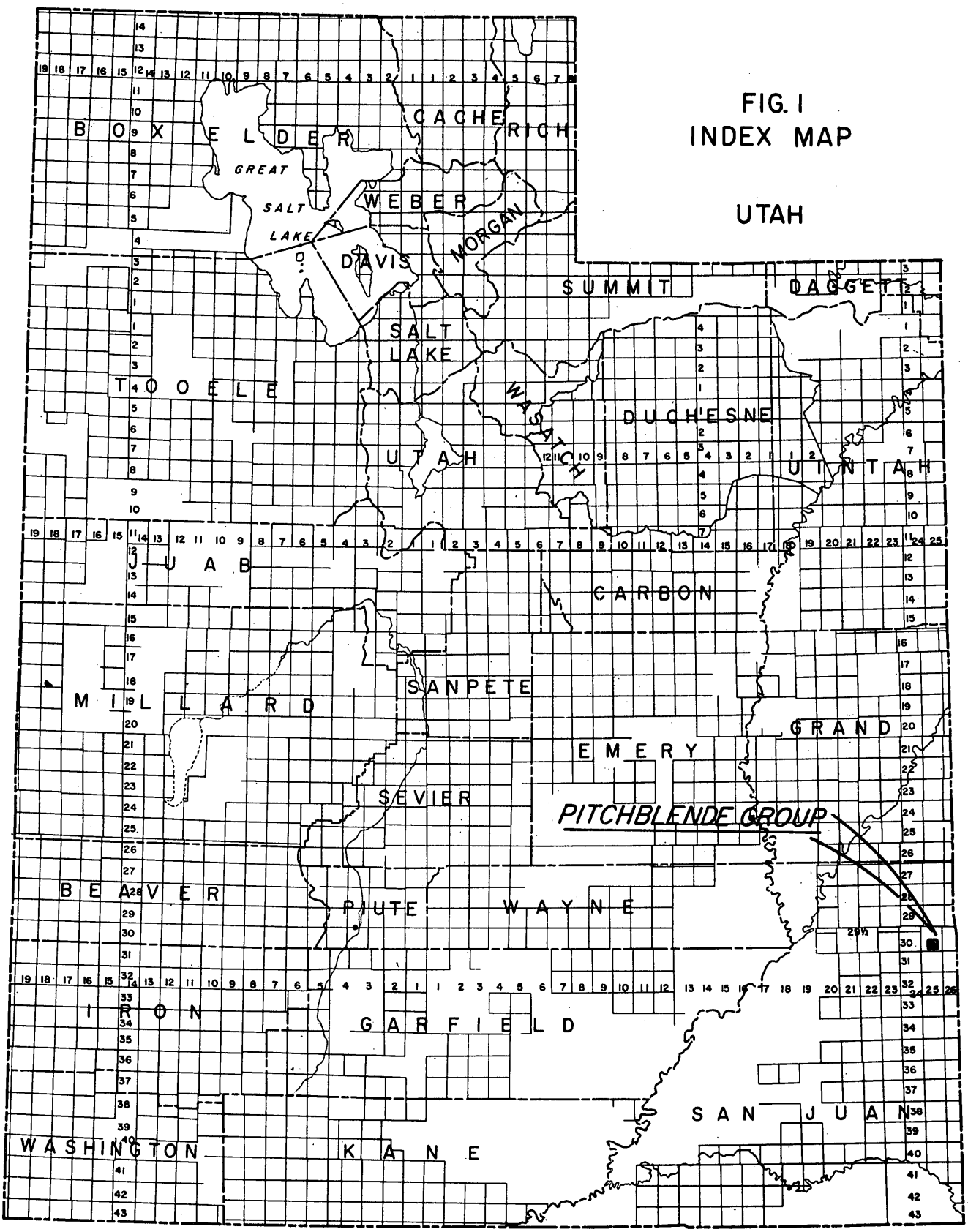


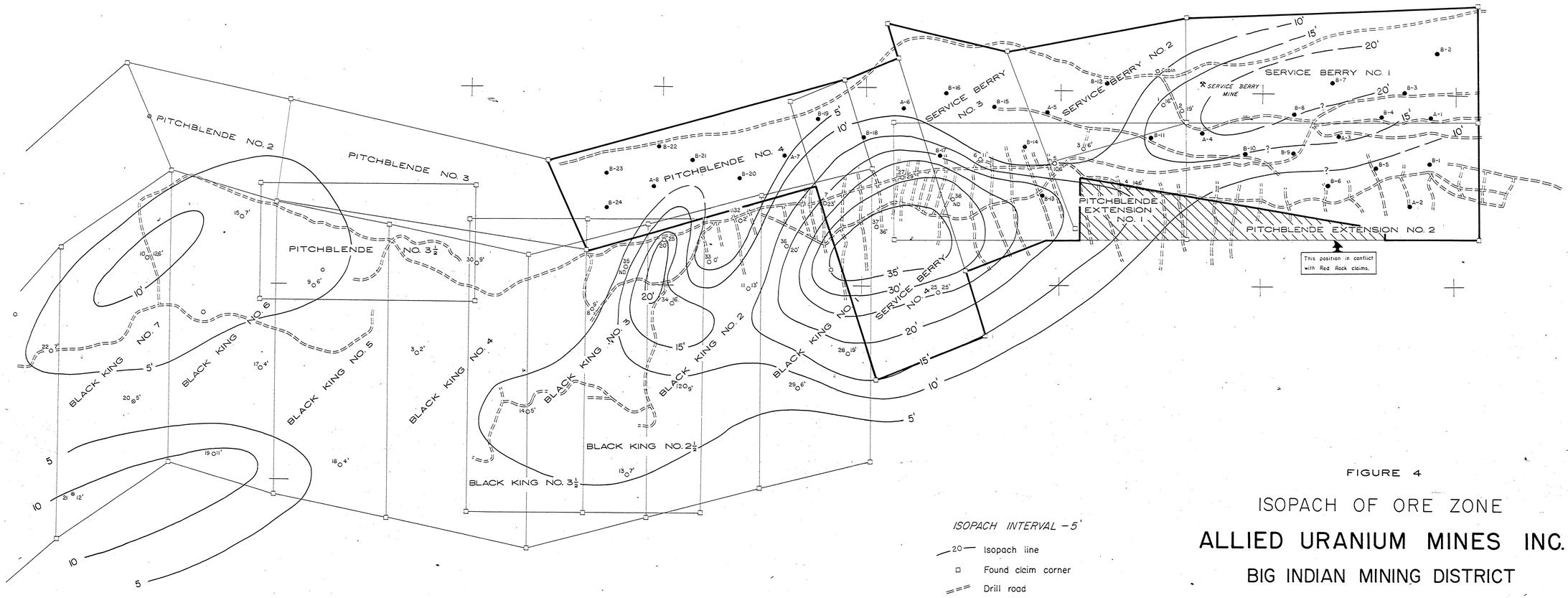
FIG. I
INDEX MAP

UTAH

WESTERN STATES MAP CO.

Figure 1

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
MAY 25 1955



ISOPACH INTERVAL – 5'

- 20 — Isopach line
- □ Found claim corner
- Drill road
- ● 0-5 Proposed drill site
- 3 ○ 2' Drill hole (& sand thickness)

GEOLOGY AND TOPOGRAPHY BY W. D. QUIGLEY

(CLAIMS SURVEY BY W.O. AMSBURY 6-9-54)

DRAFTED BY WESTERN STATES MAP CO.

MAY 5, 1955

FIGURE 4

ISOPACH OF ORE ZONE

ALLIED URANIUM MINES INC.

BIG INDIAN MINING DISTRICT

PITCHBLENDE GROUP OF CLAIMS

SECTIONS 33 & 34, T. 30 S. – R. 25 E. S.L.P.M.

SAN JUAN COUNTY, UTAH

SCALE 0 200 400 600 800 1000 FEET

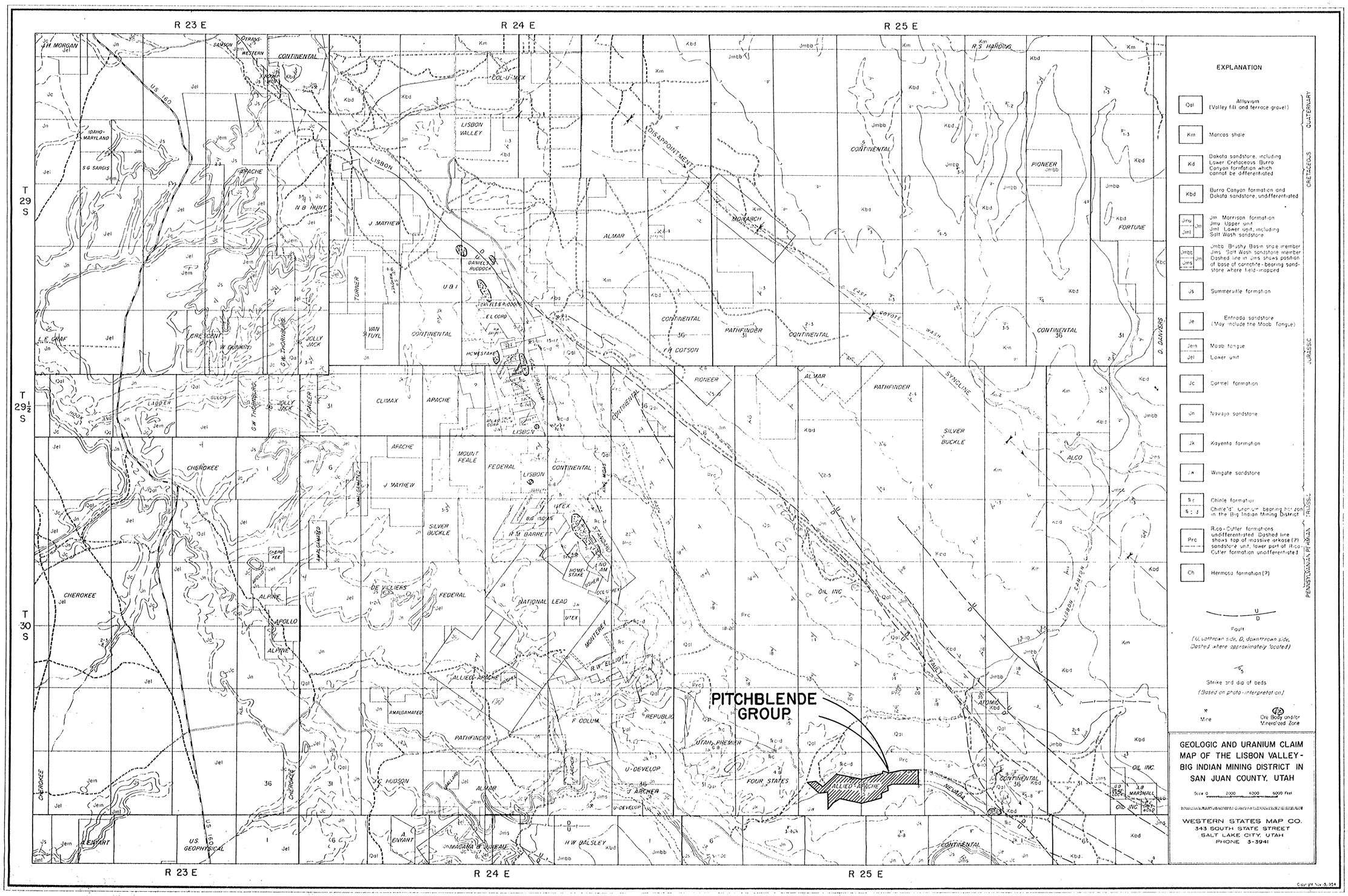
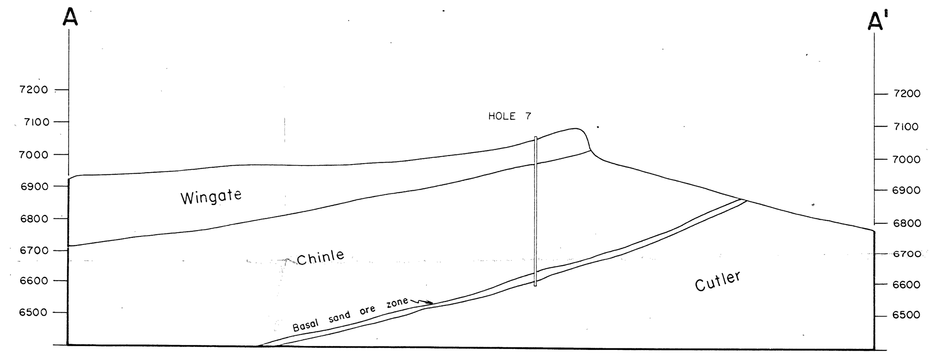
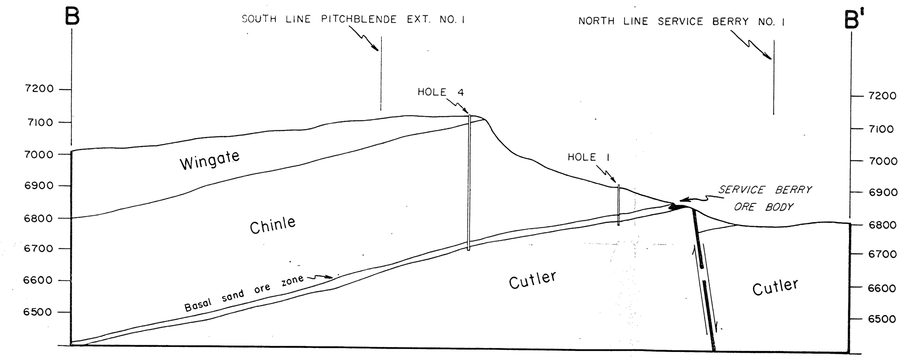


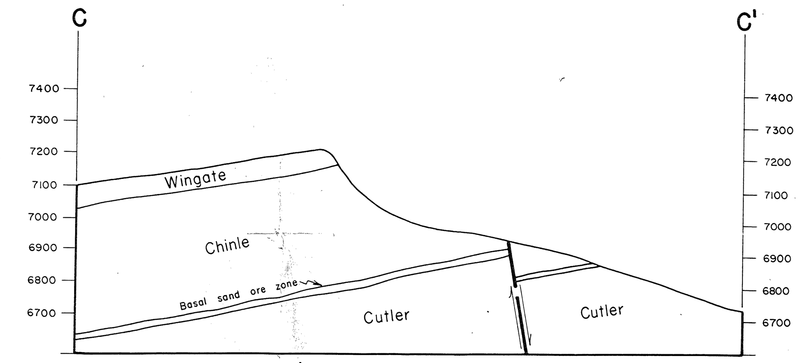
FIG. 2 - GEOLOGIC MAP SHOWING THE LOCATION OF THE PITCHBLENDE GROUP



CROSS-SECTION A-A'



CROSS-SECTION B-B'

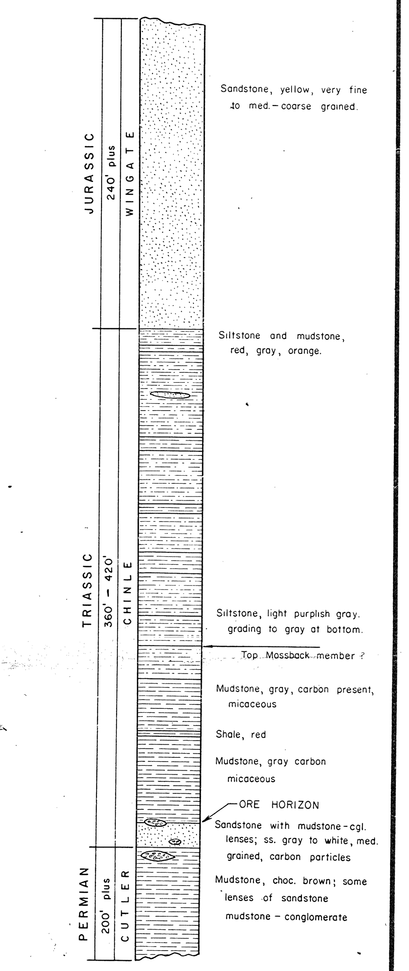


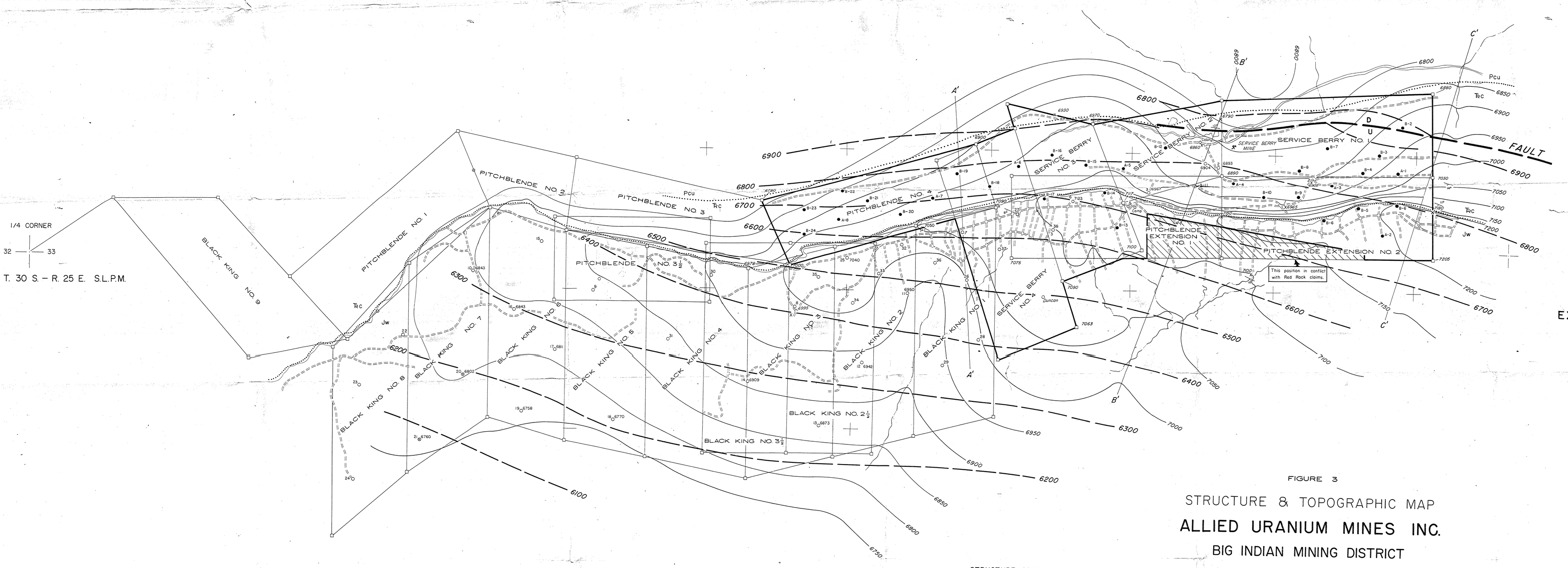
CROSS-SECTION C-C'

SCALE 0 100 200 300 400 500 600 700 800 FEET
VERTICAL AND HORIZONTAL

STRATIGRAPHIC COLUMN

SCALE 0 50 100 150 FEET
VERTICAL





STRUCTURE CONTOURS ON TOP CUTLER
STRUCTURE CONTOUR INTERVAL - 100'
TOPOGRAPHIC CONTOUR INTERVAL - 50'

GEOLOGY AND TOPOGRAPHY BY W.D. QUIGLEY
(CLAIMS SURVEY BY W.O. AMSBURY 6-9-54)
DRAFTED BY WESTERN STATES MAP CO.
MAY 5, 1955

FIGURE 3

STRUCTURE & TOPOGRAPHIC MAP

ALLIED URANIUM MINES INC.

BIG INDIAN MINING DISTRICT

PITCHBLENDE GROUP OF CLAIMS

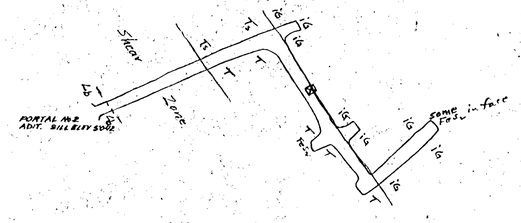
SECTIONS 33 & 34, T. 30 S. – R. 25 E. S.L.P.M.

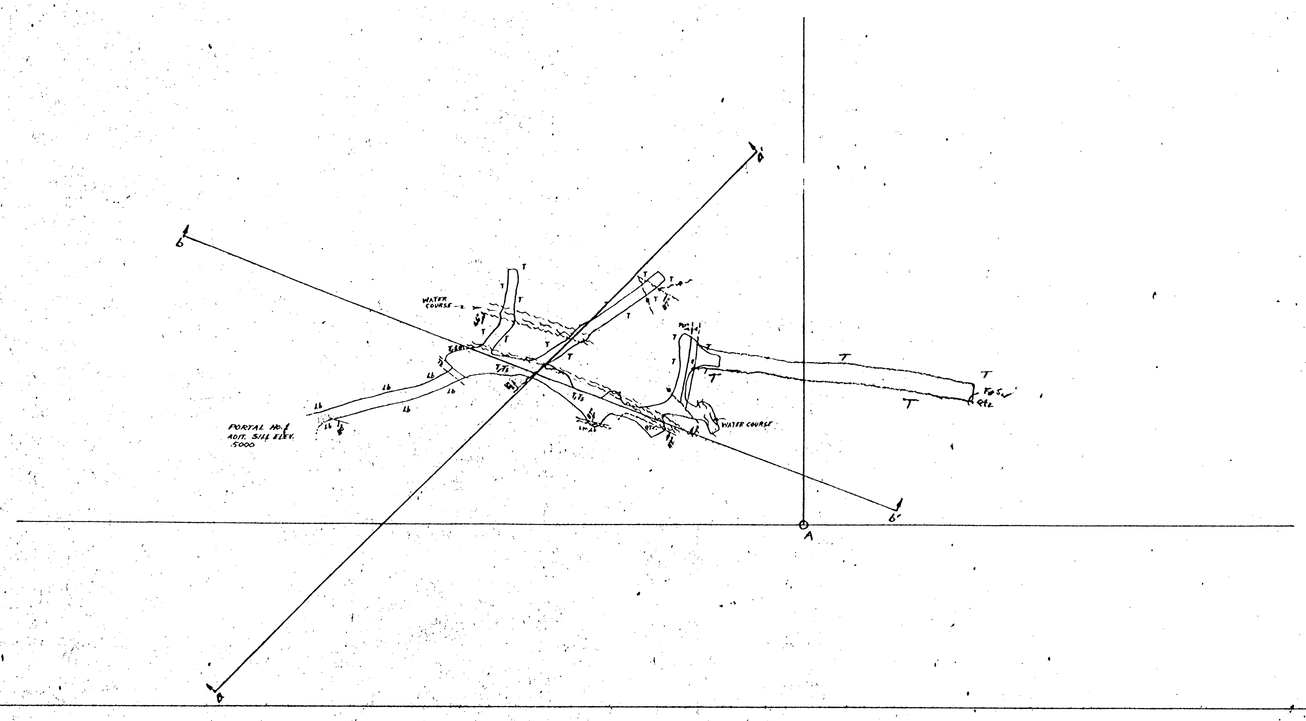
SAN JUAN COUNTY, UTAH

SCALE 0 200 400 600 800 1000 FEET

EXPLANATION

- Jw. — Wingate sandstone
- TRc — Chinle formation
- Pcu — Cutler group
- 6700 — Structure Contours
- 7000 — Topographic Contours
- D/U — Fault
- Formation Contact
- 18° — Strike and Dip
- 6967 — Found claim corner (& elev.)
- Drill road
- B-15 — Proposed drill site
- 12 6942 — Drill hole (& elevation)



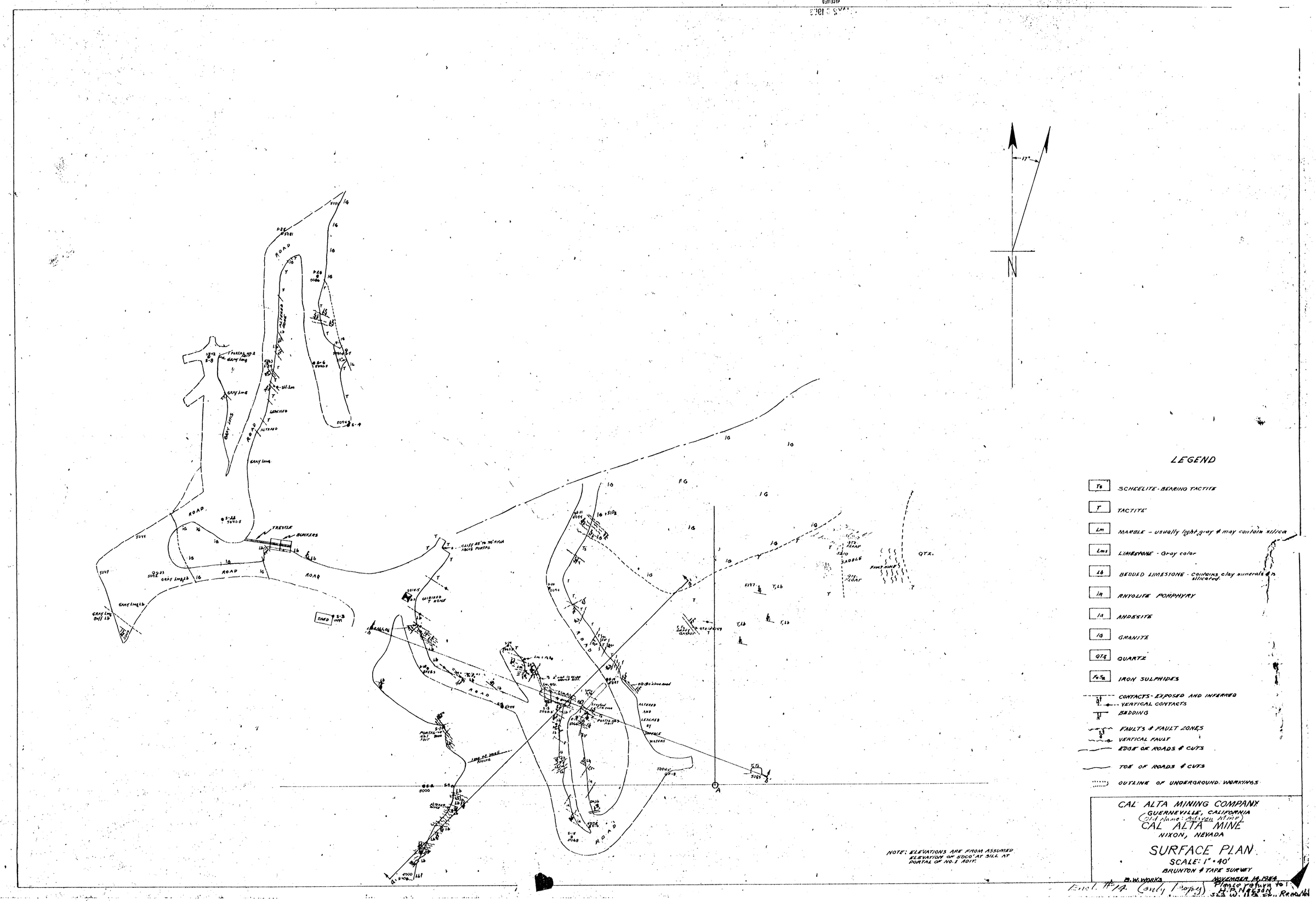


CAL ALTA MINING COMPANY
GUERNEVILLE, CALIFORNIA

CAL ALTA MINE
NIXON, NEVADA

UNDERGROUND WORKINGS
SCALE: 1" = 40'
BRUNTON & TAPE SURVEY
B.W. WORKS NOVEMBER 14, 1954

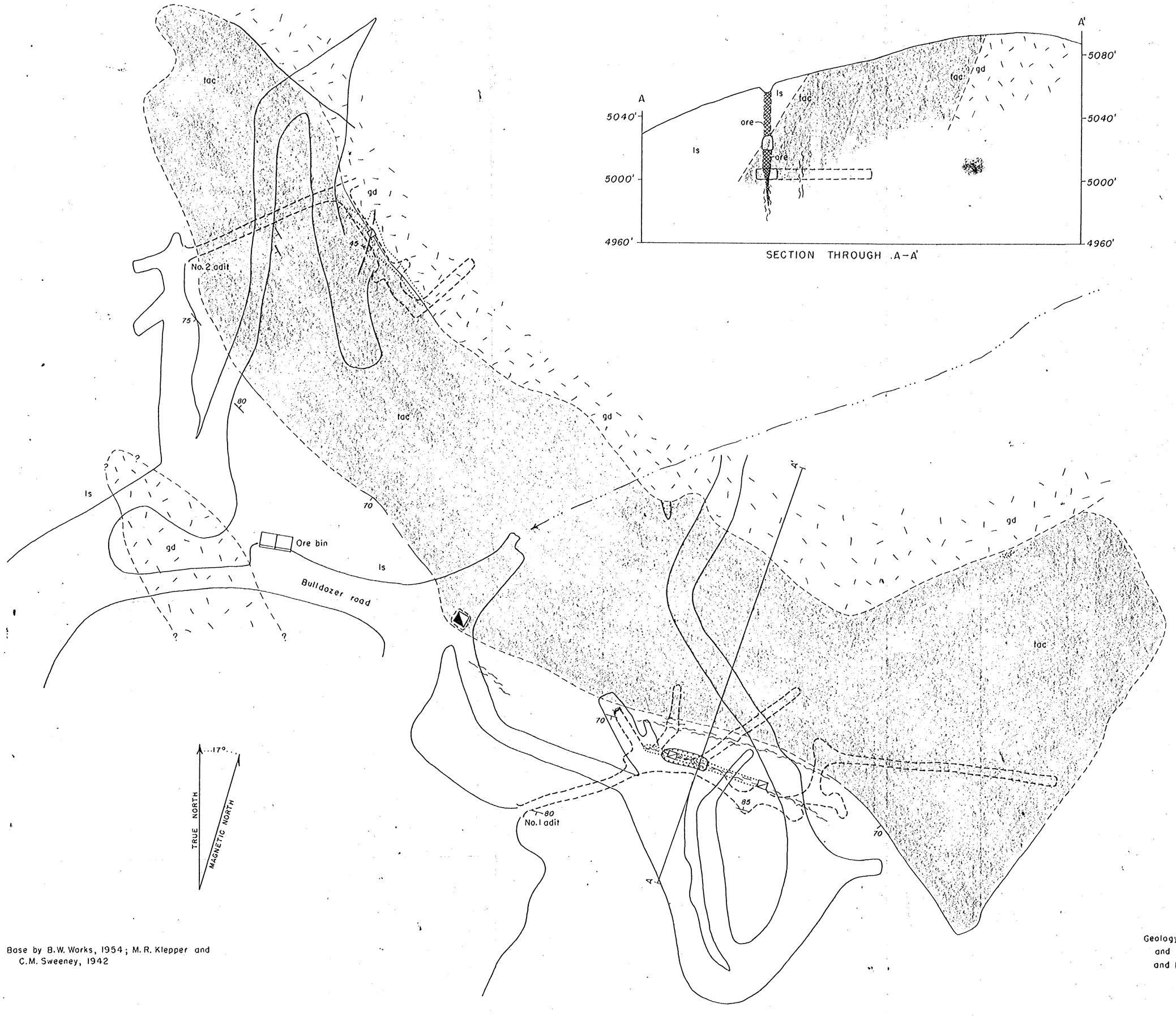
Encl. #15 (onto locking) Please Return to: H.P. NELSON



Encl. #14 (only 1 copy) Please return to: L.B. Nixon 522 W. 112 St., Reno, Nev.

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

DMEA 3836
(TUNGSTEN)



Base by B.W. Works, 1954; M.R. Klepper and C.M. Sweeney, 1942

Geology after M.R. Klepper and C.M. Swinney, 1942 and B.W. Works, 1954; modified by R.G. Reeves and D.B. Tatlock, 1955

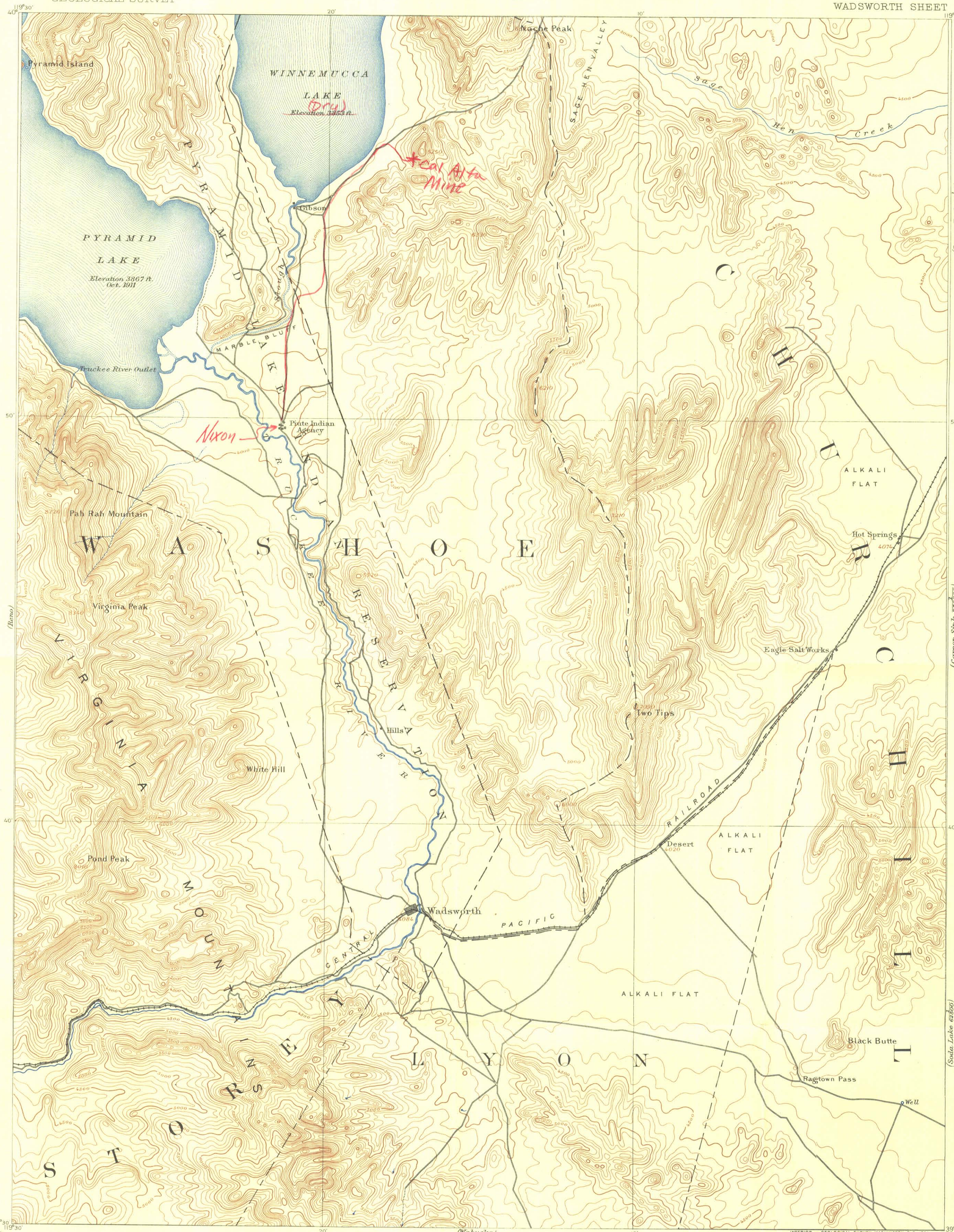
GEOLOGIC MAP OF THE CAL ALTA TUNGSTEN MINE, NIGHTINGALE RANGE, WASHOE COUNTY, NEVADA

40 0 40 80 Feet

Figure 2

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

NEVADA
WADSWORTH SHEET



A.H. Thompson, Geographer.
E.M. Douglas, Topographer in charge.
Triangulation by U.S. Coast and Geodetic Survey.
Topography by A.F. Dunnington.
Surveyed in 1890.

Scale $\frac{1}{125000}$

1 ½ 0 1 2 3 4 5 6 7 8 9 Miles

3000 1500 0 3000 6000 9000 12000 Yards

5000 0 5000 10000 15000 20000 25000 Feet

1 0 1 2 3 4 5 6 Kilometers

Contour interval 100 feet
Datum is mean sea level

INTERIOR — GEOLOGICAL SURVEY, WASHINGTON, D.C. 1954

Polyconic projection. To place on 1927 North American datum move projection lines 590 feet south and 380 feet west
Surveyed by reconnaissance methods

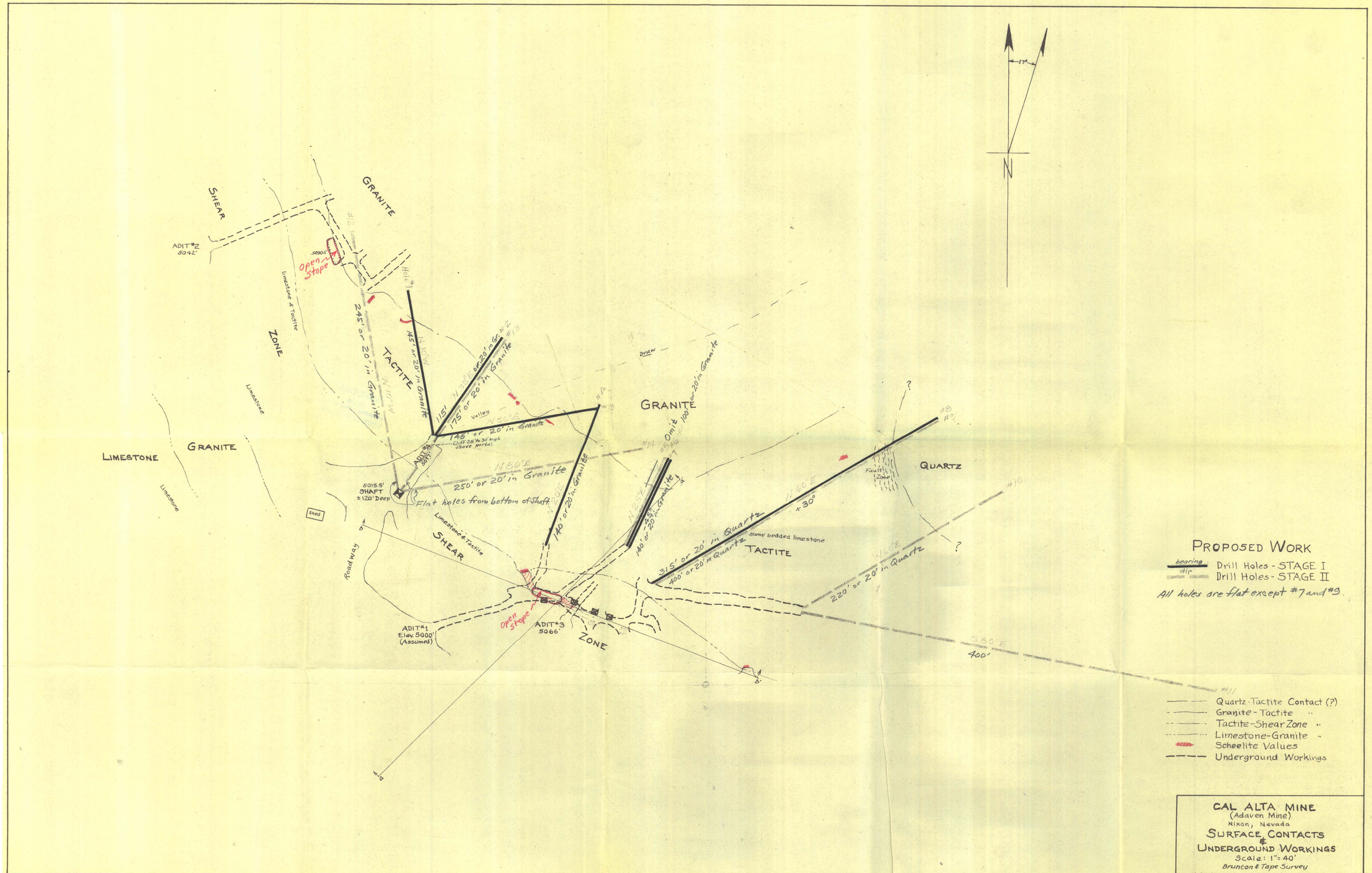
NEV.
WADSWORTH
N3930 – W11900/30

1890

FOR SALE BY U.S. GEOLOGICAL SURVEY, FEDERAL CENTER, DENVER, COLORADO OR WASHINGTON 25, D.C.
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

BRUNDIDGE'S
RENO, NEVADA

Encl. #2


N
17°
SHEAR
ZONE
GRANITE
TACTITE
ADIT #2
5042'
5090.5
Open Stope
Limestone & Tactite
Limestone
245' or 20' in Granite
Hole #1
145' or 20' in Granite
115'
N 30°E
140' or 20' in Gr. #2
175' or 20' in Granite
Valley
148' or 20' in Granite
Cliff 25' to 30' high above portal
ADIT #4
5017
N 80°E
250' or 20' in Granite
5015.5'
SHAFT
±120' Deep
Flat holes from bottom of Shaft
140' or 20' in Granite
N 25°E
145' or 20' in Granite
Omit
100' or 20' in Granite
DRAW
GRANITE
LIMESTONE
GRANITE
Limestone
Shed
Road Way
Limestone & Tactite
SHEAR
ZONE
ADIT #1
Elev. 5000'
(Assumed)
Open Stope
ADIT #3
5066'
315' or 20' in Quartz
400' or 20' in Quartz
N 60°E
+30°
some bedded limestone
TACTITE
Fault Zone
QUARTZ
220' or 20' in Quartz
N 60°E
400'
S 80°E
PROPOSED WORK
bearing
dip
Drill Holes - STAGE I
Drill Holes - STAGE II
All holes are flat except #7 and #9.
Quartz-Tactite Contact (?)
Granite-Tactite "
Tactite-Shear Zone "
Limestone-Granite "
Scheelite Values
Underground Workings
CAL ALTA MINE
(Adaven Mine)
Nixon, Nevada
SURFACE & UNDERGROUND WORKINGS
Scale: 1" = 40'
Brunton & Tape Survey
H.P. NELSON
29 APRIL 1955

Encl. #3