FIELD DIRECTOR
OFFICE
REGION IV
JAN 7 1952
BUREAU OF MINES
DENVER, COLORADO
JAN 4 1952

Mr. Sheldon A. Heath
P.O. Box 38
Tucson, Arizona

Re: DMA Docket No. 627 - Tungsten
Mohave County, Arizona

Dear Mr. Heath:

We have now reviewed your application for an exploration loan and other data recently made available to us in Washington.

The information, while noting a small amount of marginal ore, indicates that, geologically, there is little probability of making a significant discovery.

We regret, therefore, to inform you that your application is denied.

We wish to thank you for your interest in the Defense Minerals Program, and for your patience and effort in this respect.

Sincerely yours,

C. O. Mittendorf

Acting Administrator
Defense Minerals Exploration
Administration

QLBrewer'lm
12/19/51

cc: Admn. Reading File
Mails and Files Mr.
C. O. Mittendorf
D. Lemmon, USGS
R. W. Geehan, USBM
✓ Field Team, Reg. IV
Docket
G. C. Selfridge
Q. L. Brewer

DMA

9-1-A

JAN 11 1952

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REGIONAL DIRECTOR'S
OFFICE
REGION IV
JAN 1 1952
BUREAU OF MINES
DENVER, COLORADO

Mr. Sheldon A. Heath
P.O. Box 38
Yucca, Arizona

Re: Docket DMA-62X - Tungsten
Evelyn, Little Maude and
Pioneer Tungsten Claims
Mohave County, Arizona

Dear Mr. Heath:

This is in reply to your letter of December 28, 1951, in which you requested the status of your application for an exploration loan.

A letter notifying you that the application had been denied was mailed on January 4. It has no doubt reached you by this time.

We thank you for your interest in the defense minerals program by calling our attention to the subject property.

Sincerely yours,

C. O. Mittendorf

Acting Administrator
Defense Minerals Exploration
Administration

GCSelfridge/COMittendorf/lm/fw
1/9/52

cc: Admr. Reading File
Mails & Files
C. O. Mittendorf
R. W. Geehan, USBM
D. M. Lemmon, USGS
Field Team, Reg. IV
Docket
G. C. Selfridge

MTE

Mining Division
Date Rec'd.
NOV 1 - 1951
BUREAU OF MINES
Denver, Colorado

MINING DIVISION
REGION IV

October 30, 1951

Register

Mr. Sheldon A. Heath
Yucca, Ariz.

Re: Docket 62X

My dear Mr. Heath:

Enclosed are the following data that you submitted to the Defense Minerals Administration with your loan application on the Dutch Flat tungsten group in Mohave County, Arizona, and which you asked our Mr. L. L. Farnham to return to you:

1 copy of Lease and Option;
1 Claim map;
6 Assay certificates;
6 Assay maps with sample list.

Thanking you for the assistance you gave our engineers when they examined your property, I am

Sincerely yours,

Walter R. Storms, Chief
Arizona-New Mexico Branch

CC P. T. Allsman
C. A. Anderson
DMA-62X
DF

WRStorms:frj

[illegible] Box Customhouse
Denver 2, Colorado

November 6, 1951

Memorandum

To: Executive Secretary, Defense Minerals Administration

From: DMA Field Team, Region IV

Subject: Final Report, DMA Docket 62-X, Sheldon Heath, applicant; Evelyn, Little Wanda and Pioneer Tungsten Claims, Dutch Flat Area, Mohave County, Arizona

Enclosed herewith are the original and two copies of the report on the subject docket.

We concur with the conclusions and recommendations of the examining team that the exploration loan of $37,500 be denied.

The brochure is enclosed.

J. H. Eaton, Jr.

A. H. Koschmann

WDM:oj
cc: DMA subject and chron.
AHKoschmann

Mining Division
Region IV

November 6, 1951

Memorandum

To: DMA Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Final Report, DMA Docket 62X, Shelton Heath, applicant; Evelyn, Little Monde and Pioneer Tungsten C Lains, Dutch Flat Area, Mohave County, Arizona

The application of the subject docket was for an exploration loan of [redacted].

The proposed exploration program was the sinking and drifting on the three claims listed above. Scheelite is the principal tungsten mineral, which is found in quartz veins occupying fracture zones in granitic rocks.

The indicated and inferred reserves in the Evelyn and Little Monde veins are estimated at 300 tons containing about 430 units of tungstic trioxide.

Because of the small tonnage and low grade of the reserve, the examining team recommends denial of the loan, with which we concur.

Paul T. Allemann

WDM:oj
cc: DMA Subject and chron.
AHKoschmann

Mining Division
Date Rec'd.

OCT 8 1951

BUREAU OF MINES
Denver, Colorado

MINING DIVISION
REGION IV

October 4, 1951

Re: DMA Docket 62X

Mr. Sheldon Heath
Box 38
Yucca, Arizona

My dear Mr. Heath:

In connection with your application (DMA Docket 62X) for a Government exploration loan on your Dutch Flat tungsten property about 40 miles south of Yucca, Mohave County, Arizona, we expect to have a DMA field team visit your property the latter part of next week or the first part of the following week (probably about October 12 or 15). This team will be composed of Mr. L. L. Farnham of the Bureau of Mines and Mr. C. S. Bromfield of the Geological Survey. They will be in Kingman early next week on another examination but expect to reach your property on Thursday or Friday. However, they may not get there until October 15.

I hope this time will be convenient for you.

Sincerely yours,

Walter R. Storms, Chief
Arizona-New Mexico Branch

CC P. T. Allsman
C. A. Anderson
DMA-62X
DF

WRStorms:frj

224 New Customhouse
Denver 2, Colorado

October 3, 1951

Mr. Sheldon Heath
Box 38
Tyson, Arkansas

Dear Mr. Heath:

This is in reply to your letter of September 26 regarding your DMA Docket 62-I, comprising exploration for tungsten. We have been advised that the field team from Tucson expect to make an examination of your property this week. They may have already contacted you.

Very truly yours,

J. H. Ernst, Jr.

J. H. Ernst, Jr.
Executive Officer
DMA Field Team, Region IV

PTA:oj
cc: WRStorms
CAAnderson
DMA Subject and Chron.

Yucca, Ariz.
Sept 26-51.

DMA 62X Tungsten,

Mr J. H. East Jr.,

REGIONAL DIRECTOR'S
OFFICE
REGION IV
OCT 1 1951
BUREAU OF MINES
DENVER, COLORADO

Dear Sir, -

On a letter dated Aug 1st-51, from Mr Tom Lyon, stating that a field examination of the Dutch Flat Property, through you, as soon as you could arrange for a geologist & engineer to make the examination.

To date, have received no information, in regard to the examination.

I would like to know the cause of the delay, as it costs money, to keep equipment, for a standby future operation.

With the <u>critical</u> Tungsten shortage on us, looks like something should be done.

Owing to all this delay, there is a good property & ample equipment to work it with, all laying idle.

So I urge you to get your engineers on the property. Resp. Sheldon Heath
Box 38 - Yucca, Ariz.

August 7, 1951

Memorandum

To: W. R. Sharma (with brochure)

(Through Chief, Mining Division)

Charles Anderson

From: DMA Field Team, Region IV

Subject: Docket DMA-42-X, Tungsten, Applicant - Sheldon Heath, Dutch Flat area, Mohave County, Arizona

Herewith is the brochure on the subject property. The applicant requests $30,000 for sinking and drifting on three claims, the Evelyn, Pioneer and Little Maude.

A geologic examination is required and if this is favorable, assistance is to be given to the applicant to draw up a proposal.

J. H. East, Jr.

A. H. Koschmann

Enclosure

cc: Charles Anderson
cc: DMA files
Chron.
Subject

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

REGIONAL DIRECTOR'S OFFICE
REGION IV
AUG 3 1951
BUREAU OF MINES
DENVER, COLORADO

August 3, 1951

Mr. Shelton Smith
P. O. Box 33
Globe, Gila County
Arizona

In reply please refer to
DMA File, under

Dear Mr. Smith:

We have received the additional data concerning the proposed exploration and development projects in the Dutch Flat area, Gila County, Arizona.

We have requested that a field examination of the property be made through Mr. [illegible], Executive Officer, DMA Field Team, Region IV, 224 New Customhouse, Denver, Colorado. Mr. [illegible] or his representative will get in touch with you as soon as a geologist or engineer is available to make the examination.

Very truly yours,

SIGNED

[illegible], Director
Supply Division

Lemon:jh

CC: A. L. Reading File
Reports and Records Unit
Mr. Holderer
Mr. Lemon
Field Team, Region IV - 2
Files

WOM

routed

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

224 New Customhouse
Denver 2, Colorado

November 6, 1951

Memorandum

To: Executive Secretary, Defense Minerals Administration

From: DMA Field Team, Region IV

Subject: Final Report, DMA Docket 62-X, Sheldon Heath, applicant; Evelyn, Little Maude and Pioneer Tungsten Claims, Dutch Flat Area, Mohave County, Arizona

Enclosed herewith are the original and two copies of the report on the subject docket.

We concur with the conclusions and recommendations of the examining team that the exploration loan of $37,500 be denied.

The brochure is enclosed.

J. H. East, Jr.

A. H. Koschmann

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

November 6, 1951

Memorandum

To: DMA Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Final Report, DMA Docket 62X, Sheldon Heath, applicant; Evelyn, Little Maude and Pioneer Tungsten C laims, Dutch Flat Area, Mohave County, Arizona

The application of the subject docket was for an exploration loan of $37,500.

The proposed exploration program was the sinking and drifting on the three claims listed above. Scheelite is the principal tungsten mineral, which is found in quartz veins occupying fracture zones in gneissic rocks.

The indicated and inferred reserves in the Evelyn and Little Maude veins are estimated at 300 tons containing about 430 units of tungstic trioxide.

Because of the small tonnage and low grade of the reserve, the examining team recommends denial of the loan, with which we concur.

Paul T. Allsman

Paul T. Allsman

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Arizona-New Mexico Branch
[redacted]
Box 4097
UNIVERSITY STATION

MINING DIVISION
REGION IV

TUCSON, ARIZONA

October 30, 1951

Memorandum

To : Paul T. Allsman, Denver, Colorado

From : Chief, Arizona-New Mexico Br., Mining Div., Region IV

Subject : Final Report, DMA Docket 62X, Shelton Heath's Evelyn, Little Maude and Pioneer Tungsten Claims, Dutch Flat Area, Mohave County, Ariz.

Enclosed are original and 7 copies of the above report by Lloyd L. Farnham of the Bureau of Mines. Although C. S. Bromfield of the Geological Survey accompanied Farnham, a separate geological report will not be submitted by the Geological Survey. Bromfield concurs with Farnham's conclusions and recommendations.

This report has my approval.

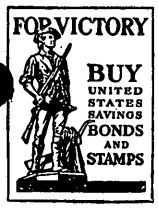
Brochure is enclosed.

Walter R. Storms

pta Walter R. Storms

CC P. T. Allsman (7)
C. A. Anderson
DMA 62X
DF

Mining Division
Date Rec'd.
NOV 5 1951
BUREAU OF MINES
Denver, Colorado



UNITED STATES
DEPARTMENT OF THE INTERIOR
OSCAR L. CHAPMAN, SECRETARY

DEFENSE MINERALS ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMA-62X, Shelton Heath's Evelyn, Little Maude and Pioneer Tungsten Claims, Dutch Flat Area, Mohave County, Arizona

L. L. Farnham, Mining Engineer
U. S. Bureau of Mines

October 1951

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

By L. L. Farnham[1]

In May 1951, Sheldon Heath applied fo the Defense Minerals Administration for an exploration loan of $37,500. The application was docketed as DMA-62X. The requested loan was to be used for further sinking and drifting on 3 tungsten claims, known as the Evelyn, Little Maude No. 1, and the Pioneer. These claims are members of what is known as the Dutch Flat group and are located in the Mohave Mountains about 43 miles south of Yucca, Mohave County, Ariz. The property was visited by a DMA field team during the week of October 8, 1951.

Scheelite, the principal tungsten mineral was found in narrow quartz veins occupying fracture zones in gneissic rocks. Since 1936 the recorded production of tungsten from the area has amounted to about 225 unites of WO_3.

Minute amounts of tungsten occur in several of the veins in the district but only in the Evelyn and Little Maude claims was it found concentrated in appreciable quantities. A lenticular ore shoot in the Evelyn vein produced about 150 tons of ore that contained approximately 200 units of WO_3. This ore body was mined to a depth of 50 feet below the outcrop and in that distance yielded about 3 tons of ore for each vertical foot. The other undeveloped scheelite concentration, in the Little Maude vein, was limited to a strike length of 25 feet with a width of one foot and was estimated to have an average grade of not over 1.5 percent WO_3.

1/ Mining Engineer, U. S. Bureau of Mines, Tucson, Ariz.

The indicated and inferred reserves in the Evelyn and Little Maude veins were of the order of some 300 tons of ore containing in the neighborhood of 430 units of WO_3. No ore approaching a mineable grade was evident in the Pioneer vein.

Due to the size of the deposits in relation to their grade, it appears that they could not be mined profitably at this time. In any event the amount of tungsten that these Dutch Flat ore bodies can be expected to yield is so limited that further exploration does not seem warranted. Therefore, it is recommended that the application for a loan be denied.

SHELTON HEATH'S EVELYN, LITTLE MAUDE AND PIONEER TUNGSTEN CLAIMS
DUTCH FLAT AREA, MOHAVE COUNTY, ARIZONA
DMA-62X

Engineering Report

By L. L. Farnham
Mining Engineer
U. S. Bureau of Mines

October 1951

SHELTON HEATH'S EVELYN, LITTLE MAUDE AND PIONEER TUNGSTEN CLAIMS
DUTCH FLAT AREA, MOHAVE COUNTY, ARIZONA
DMA-62X

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INTRODUCTION

This report describes the results of the field examination of the Dutch Flat tungsten prospects made in connection with the loan application of Sheldon A. Heath of Yucca, Arizona to the Defense Minerals Administration, DMA Docket 62X. The applicant requested an exploration loan amounting to $37,500 for the purpose of sinking and drifting on 3 tungsten claims known as the Evelyn, Pioneer and Little Maude No. 1, all of which are members of what is known as the Dutch Flat group, situated in southwestern Mohave County, Ariz. The writer visited the property during the week of October 8, 1951.

ACKNOWLEDGMENTS

Thanks are due Earl Heath, the father of the applicant, for the help he extended the writer during the examination. Acknowledgments also are made to the engineers and geologists of the Bureau of Mines and Geological Survey whose data are used in this report.

LOCATION AND PHYSICAL FEATURES

The Dutch Flat group of claims is situated on the southwesterly slope of the Crossman Peak area in the Mohave (Chemehuevis) Mountains of Mohave County, Ariz. The claims occupy parts of Sec. 19, 20, 29 and 30, T. 14 N., R. 18 W. and are about 43 miles south of Yucca, a station on the Santa Fe railroad. The winding desert road that leads to the property leaves U. S. Highway 66 about 5 miles south of Yucca. Due to the numerous branching roads it is difficult to

describe the route and it would be almost impossible for a stranger to find the claims without the aid of a guide. The last 9 miles of the road follows several sand washes, portions of which, if traveled much, soon become impassable to ordinary automobiles.

The Dutch Flat group, contrary to the implication as suggested by the name, occupies an area of very rugged topography. The altitude of the various mine workings ranges from about 3,500 to 5,000 feet above sea level. Rainfall is limited so that only a scant growth of desert vegetation covers the region.

HISTORY AND PRODUCTION

The claims first were location in 1912 and were worked originally on a small scale for gold. The presence of tungsten in the area was not detected until the mid-thirties, whereupon a local small crude mill, formerly built for the treatment of the gold ores, was used to concentrate the tungsten-bearing quartz. Between 1936 and 1943, available records show that the Dutch Flat group produced 2,240 pounds of scheelite concentrates containing 78 units of WO_3, and that 148 units were contained in 34 tons of selected ore that was treated in the Boriana mill. Of this total production, amounting to some 225 units, it appears that about 168 units came from the Evelyn vein[1/] and 21 units from the Little Maude. The source of the remaining 36 units is not known but probably came largely from the Evelyn claims.

1/ Formerly known as the Gold Crown.

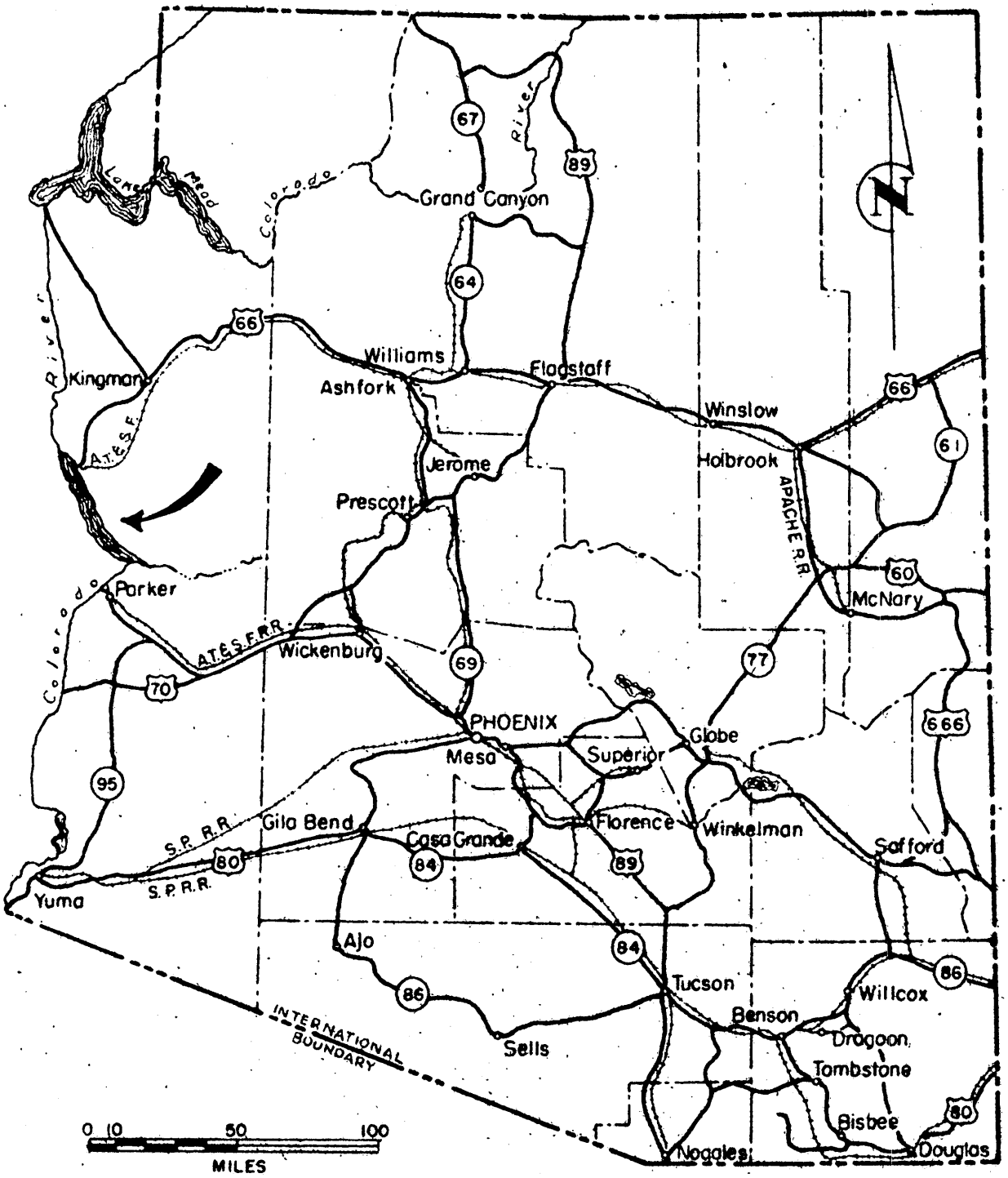

Fig. 1, LOCATION MAP, DUTCH FLAT TUNGSTEN AREA
MOHAVE COUNTY, ARIZONA

DMA-62X

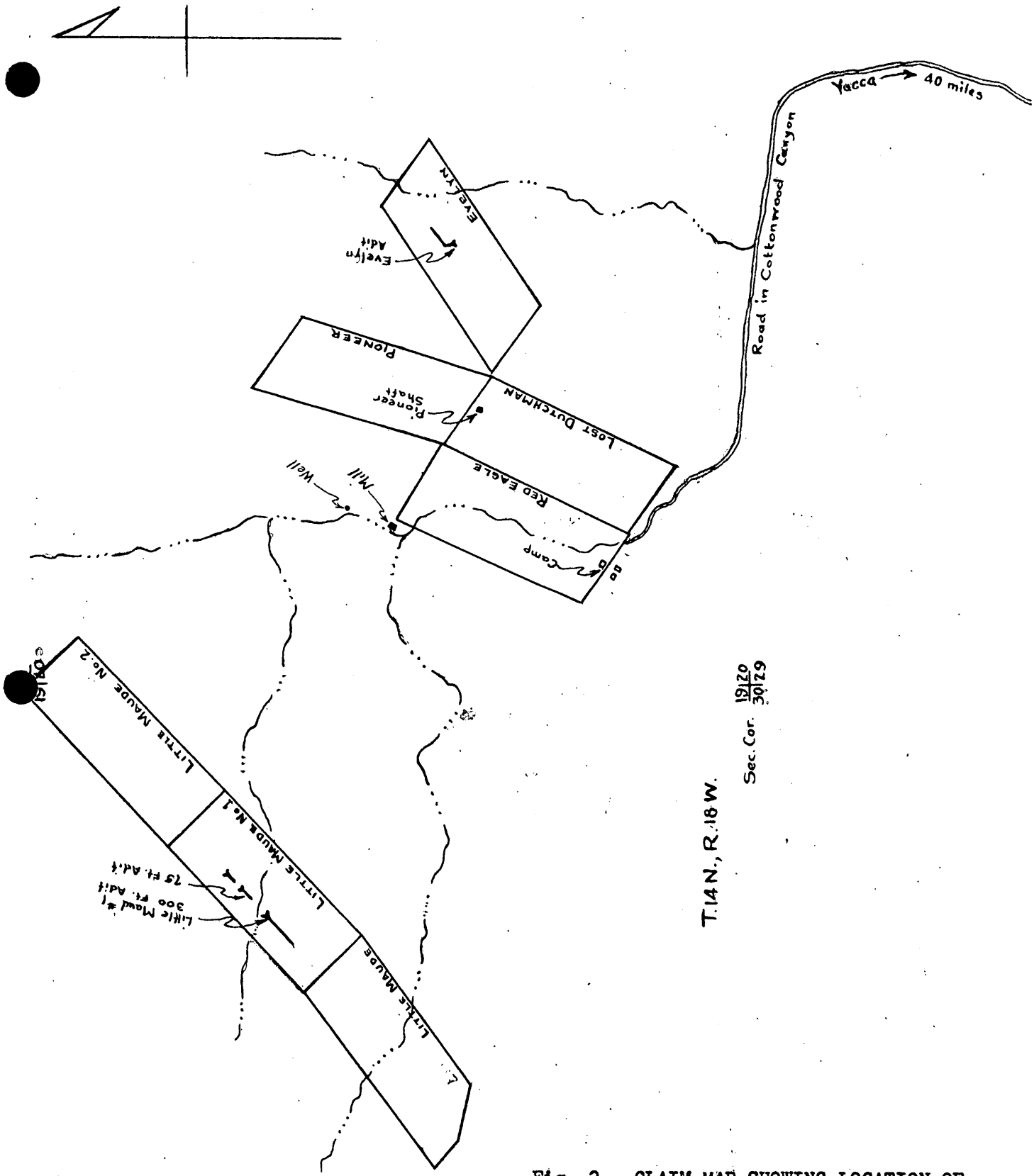

Fig. 2, CLAIM MAP SHOWING LOCATION OF PROPOSED EXPLORATION
Scale 1"=1,000 ft.

DMA-62X

OWNERSHIP AND EXTENT

Title to the Dutch Flat group of 25 unpatented mining claims is held by Julius Eaton of Yucca, Ariz.

The applicant, Shelton Heath, has a 3-year lease and option to purchase the group for $20,000, payable by a royalty of 10 percent of the value of the ore produced, or by cash, on or before December 1953. The buyer is obligated under the terms of the lease to perform 50 man-shifts of work per month for at least 8 months of each year.

DESCRIPTION OF THE DEPOSITS

There are 3 localities on the Dutch Flat group that have produced tungsten ore from narrow quartz veins which occupy fracture zones in gneissic rocks. Of these the Evelyn and Little Maude veins are nearly vertical northeastward trending fissures, while the Pioneer vein strikes northwest and dips 30 degrees southwesterly. Scheelite, the principal tungsten mineral, is associated with the quartz in which it usually occurs as thin erratic streaks aligned more or less parallel to the walls of the veins. The quartz ranges in thickness from mere stringers to short pods that attain widths of 3 feet. Regardless of the width of the vein the scheelite usually is found distributed in a band of the quartz that seldom exceeds 18 inches in thickness.

As observed under ultra-violet light, small specks of scheelite were widespread within the veins but areas containing appreciable quantities were limited to 2 short isolated lenses. Small amounts of

galena, pyrite and specularite were present in the quartz and minor quantities of gold and silver were associated with the sulphide minerals.

The largest tungsten ore shoot in the area was found in the Evelyn vein where it had a maximum stope length of 50 feet. The tungsten concentration in the Little Maude vein was limited to a strike length of about 25 feet. The exploration of these occurrences was confined to such shallow depths that little could be observed regarding the behavior of the ore shoots along the dip. They were lenticular in plan and presumably they will have the same tendency to pinch and swell along the dip.

The most striking feature in the area was the large number of intrusive dikes, which range from basic to felsitic varities. They were of varied size, age and attitude. Some cut the veins and by so doing, frequently interferred with the continuity of the quartz (fig. 4 & 6).

ORE RESERVES

The Evelyn vein has been the principal producer and the only one of the group where any serious attempt was made to mine tungsten ore. Near the center of the Evelyn adit, the vein had been stoped above the back of the drift for a maximum distance of 50 feet (fig. 6). Though largely filled and inaccessible, it was estimated that the stope

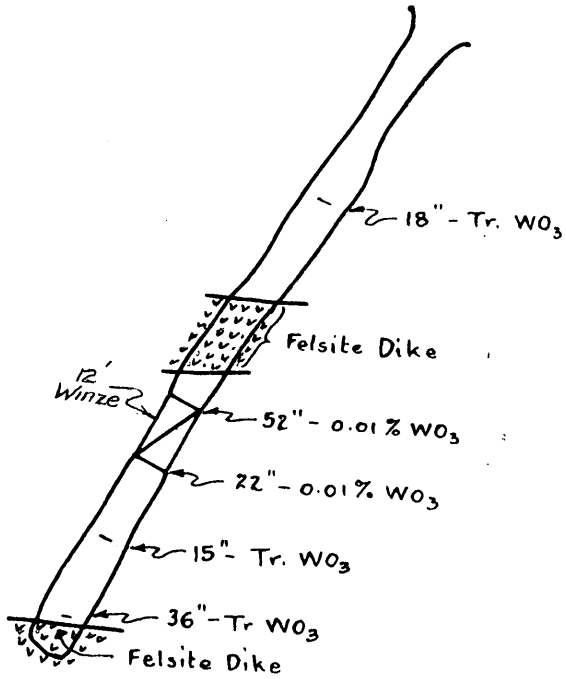

Fig. 4, ASSAY PLAN, LITTLE MAUDE 75-FT. ADIT

Scale 1"=20 ft.

DMA-62X

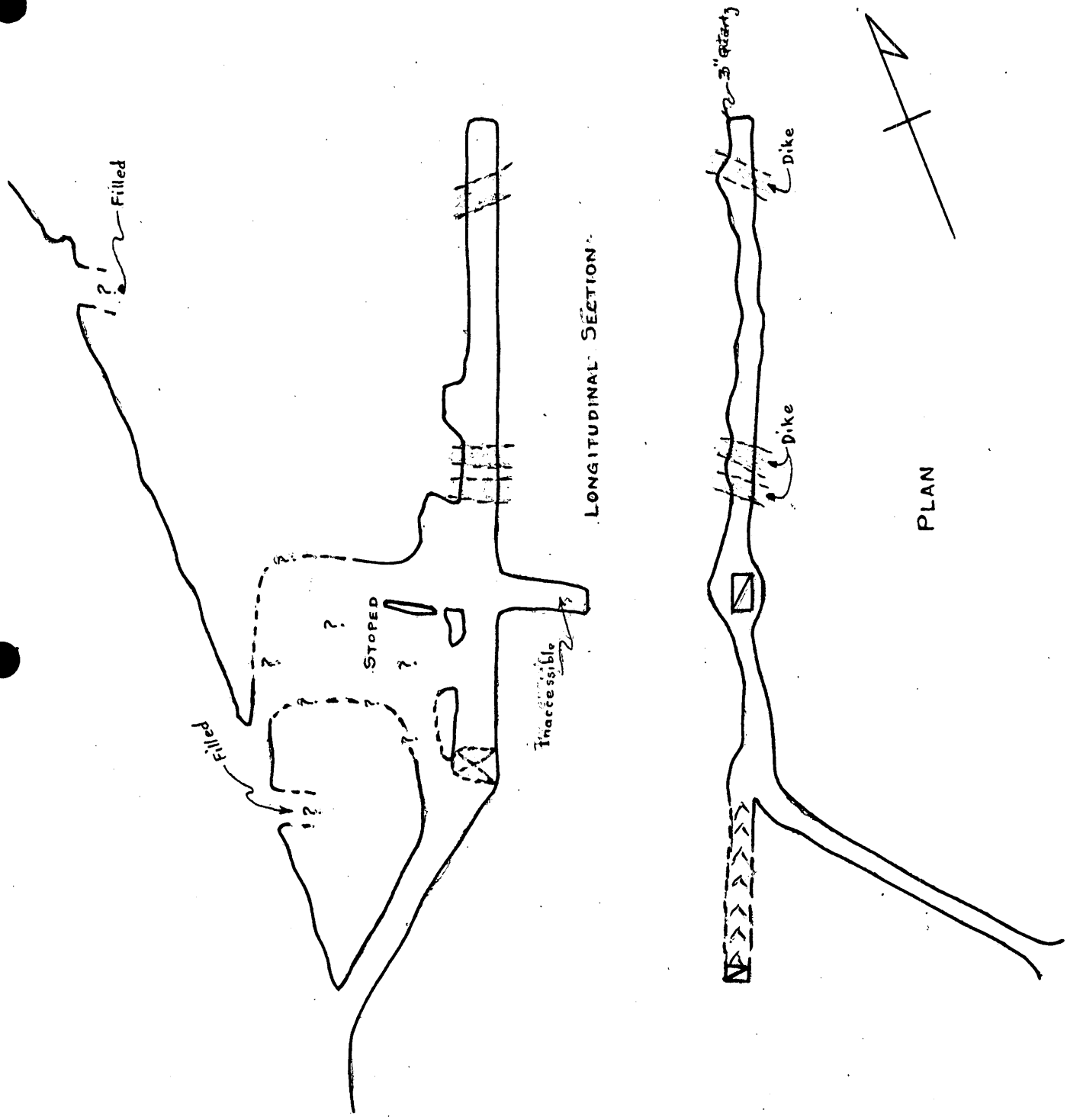

Fig. 6, MINE WORKINGS ON EVELYN CLAIM

Scale 1"=30 ft.

DMA-62X

had produced about 150 tons of ore containing, according to the available records, approximately 200 units of WO_3. As the average height of the stoped area was about 50 feet, it evidently yielded about 3 tons of ore per vertical foot. The vein is said to persist to the bottom of a winze which is about 20 feet below the adit level. This winze was not accessible at the time of the visit. If the ore shoot continues downward in its former size and grade to the depth of the winze, the indicated ore would amount to about 60 tons. Assuming a like persistence for an additional 50 feet below the bottom of the winze, the inferred reserves would amount to 150 tons. Thus the total ore reserves of the Evelyn would be of the order of 210 tons containing 280 units of WO_3.

The Little Maude vein is credited with a production of 21 units of WO_3. This came from the 330-foot adit where, for a length of about 25 feetalong the back of the drift, ultra-violet light showed appreciable amounts of scheelite. In the other portions of the vein only occasional specks of scheelite were evident. An assay map of this adit was submitted by the applicant (fig. 3). Of the 15 samples shown on the map only 2 contained an appreciable tungsten content. However, these 2 samples were cut across a width of 42 inches which was greatly in excess of the apparent width of the tungsten concentration. The results of 4 samples taken in the ore shoot by O. M. Bishop of the Bureau of Mines, showed an average content of 1.26 percent WO_3 over a width of 14 inches.

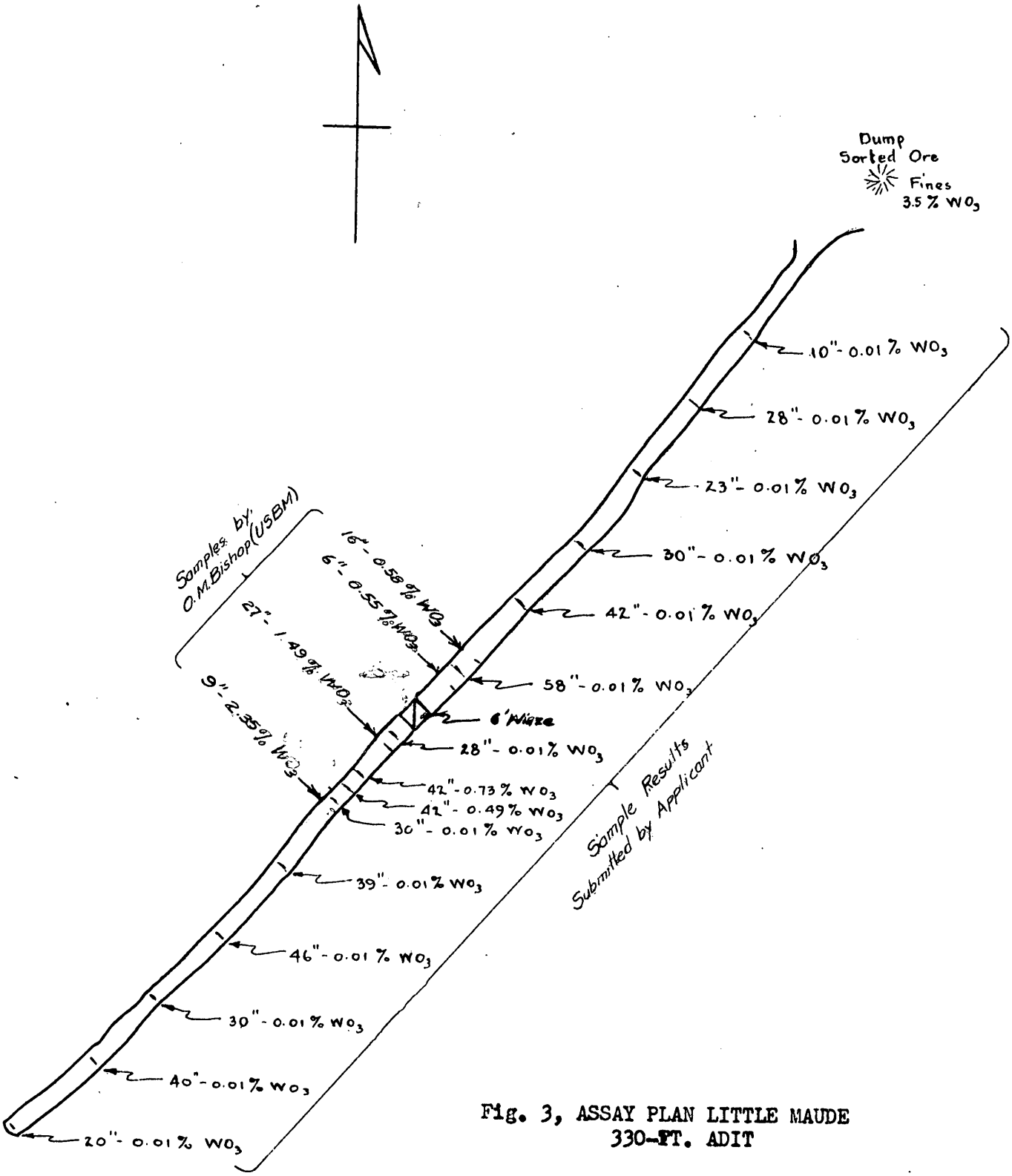

Fig. 3, ASSAY PLAN LITTLE MAUDE
330-FT. ADIT

Scale 1"= 40 ft.

DMA-62X

Judging from the sampling and the observations of the vein under ultra-violet light, it appears that for a length of 25 feet and with a width of 1.0 feet, this portion of the Little Maude vein will average between 1.0 and 1.5 percent WO_3. Assuming the persistence of this area for a distance of 25 feet upward and a like distance downward, the inferred ore would amount to about 100 tons containing between 100 and 150 units of WO_3.

The 75 foot adit on the Little Maude No. 1 claim is a few hundred feet northeast of the 330 foot adit and was apparently driven on the northerly extension of the Little Maude vein. In this 75 foot adit only traces of tungsten were present in the quartz segment lying between the transverse felsite dikes (fig. 4).

The incline shaft on the Pioneer vein followed a schistose fracture zone in which small disconnected quartz lenses and stringers were irregularly distributed within the zone. The vein matter attained widths of as much as 3.5 feet but the quartz seldom exceeded a width of 6 inches. A few units of tungsten was said to have been recovered by picking the scheelite-bearing quartz out of the shaft dump. The five samples taken in this shaft by Bishop of the Bureau of Mines showed little more than traces of tungsten. An assay map submitted by the applicant showed like results (fig. 5). A sample cut across the outcrop of the Pioneer vein at a point 16 0 feet northwest of the shaft contained 0.01 percent WO_3. Thus no ore was evident on the Pioneer vein.

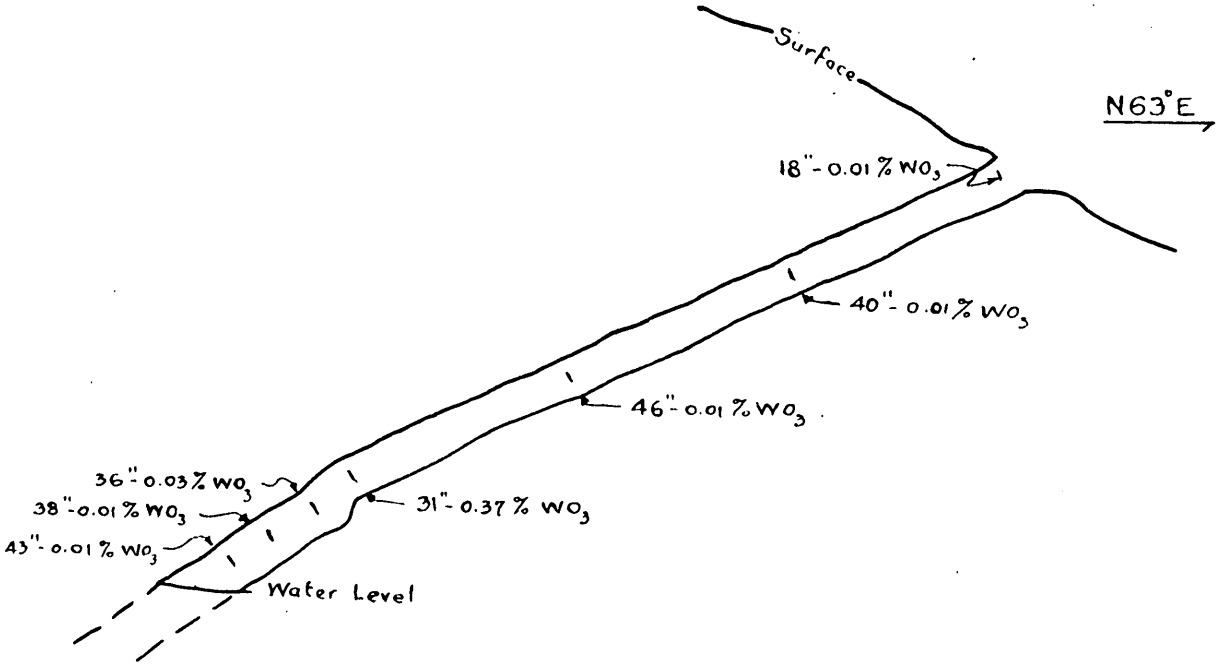

Fig. 5, ASSAY SECTION, PIONEER INCLINE SHAFT

Scale 1"=40 ft.

DMA-62X

PRESENT STATUS

As shown on the accompanying maps, the exploration work on the claims has been limited to short shallow adits that have followed the veins into the steep hillsides. The exception to this method of exploration was the work on the Pioneer vein where an incline shaft followed the vein down its dip for over 100 feet.

PROPOSED EXPLORATION

The proposed exploration work as set forth in the application is as follows:

Evelyn claim:

Extend adit 100 feet
Sink winze an additional 50 feet
Drift 100 feet from winze.

Pioneer claim:

Sink present shaft an additional 50 feet.
Drift 150 feet.
Raise 100 feet.

Little Maude No. 1 claim:

Sink winze 50 feet.
Drift from winze 50 feet.
Raise 50 feet.

No estimate of the cost of this work was submitted by the applicant. It is the opinion of the writer that this underground work would probably cost about $25,000.

The applicant lists the following additional expenditures:

Camp rehabilitation, repairs to well, pipe lines and tanks	$2,000
Hoist, headframe and hoist house	3,000
General supplies	2,000
Miscellaneous and contingencies	6,000
Total	$13,000

The cost of constructing the necessary roads to the working sites were not given by the applicant. Thus the sum of $37,500, as requested in the application, is hardly adequate to cover the proposed work.

According to the applicant the following equipment was owned by him and would be available for use on the project:

1 - R4 Caterpillar Angle Dozer
1 - 50-60 Pull Grader
1 - Scarifier and road drag.
1 - 60 cfm Smith portable compressor.
1 - 105 cfm Rix semi-portable compressor.
1 - Tugger hoist.
3 - Jackhammer drills.
1 - Power saw with 5 H.P. gasoline engine
1 - 1½-ton Chevrolet truck.
Miscellaneous small tools, drill steel and air hose.

The bulk of this appears to be road building equipment. It was not on the property at the time of the visit. The applicant thought the rental allowance on this equipment would be sufficient to cover his share of the total cost of the proposed exploration.

At the time the property was visited, about 9 miles of the road leading to the mine camp were practically impassable to other than vehicles with 4-wheel-drives. The last mile of the road was completely washed out. Burro trails leading from the camp served the mine workings on the Evelyn, Pioneer and Little Maude claims.

Before attempting any serious mining operations on the claims it would be necessary to construct about 6 miles of road in order to reach the camp, and an additional 2 miles to reach the sites of the proposed work. This road construction probably would cost between $5,000 and $8,000.

PRODUCTION COSTS

The mineable portions of the Evelyn and Little Maude veins average about 1 foot in width and are confined to a maximum strike length of 50 feet. Owing to the very limited tonnage that could be developed per foot of depth the cost of the necessary development work would probably exceed $25 a ton. Resuing, or cut-and-fill would be necessary in mining the ore. This cost would be in the neighborhood of $30 a ton.

The Boriana tungsten mine, about 60 miles by road from Dutch Flat, is being reopened and the mill rebuilt. It is reported that the Boriana mill will treat custom ore. If so, this would be the most logical market for Dutch Flat ore. Assuming that ore was produced from the Evelyn and Little Maude ore bodies and was milled at Boriana, the costs would be approximately as follows:

Development and mining	$55 a ton
Transportation (60 miles at 15 cents a mile)	9
Milling	5
Royalty (minimum)	6
Total	$75 a ton

Assuming a mill recovery of 80 percent of the tunsten, paid for at $60 a unit, the realized mill value of an ore containing 1.5 percent WO_3 would be $72 a ton. This is probably an optimistic estimate as

to both the operating costs and realized value of the Dutch Flat ores. The small producers of tungsten ores are at the mercy of private ore buyers and currently are being paid on the basis of not over $50 a unit for the recoverable tungsten trioxide.

Thus it appears that the small ore bodies on the Dutch Flat property probably would prove submarginal as they were in the past. In any event their potential production would be relatively insignificant.

CONCLUSIONS AND RECOMMENDATIONS

Since 1936, when scheelite was first discovered in the narrow quartz veins of the Dutch Flat area, the production has amounted to about 225 units of WO_3. Although traces of scheelite were present in several of the veins of the district, in only 2 occurrences was it found concentrated in appreciable quantities. The principal production came from a small lenticular ore shoot which had a maximum stope length of 50 feet and an average vein thickness of 1 foot. The other undeveloped exposure was limited to a length along the drift of 25 feet and a width of about 1 foot.

The indicated and inferred reserves in these 2 oreshoots were estimated of the order of 300 tons of ore containing about 430 units of WO_3.

It was estimated that the cost of producing tungsten ore from these small ore bodies would amount to $75 a ton and if exploited, little, of any profit would result.

The outcrops of the veins in the area are well exposed and relatively free of cover. They were well prospected for gold prior to the detection of tungsten. Since the discovery of scheelite, the veins were explored further and no doubt have been examined many times under ultra-violet light. Thus, there seems little likelihood that, in these veins, any noteworthy tungsten occurrences still remain undiscovered. As the potential of the 2 known ore bodies is so small, further exploration does not seem warranted.