UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

224 NEW CUSTOMHOUSE
DENVER 2, COLORADO

July 17, 1951

Memorandum

To: DMA Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: DMA Docket 1057, Final Report, I. D. Budd's El Oso Tungsten Prospect, Gila County, Arizona

The application by I. D. Budd was for a production loan totalling $73,000, with an initial expenditure of $8,000 to mine and stockpile tungsten ore, the balance of $65,000 to be used for camp and mill construction.

The deposits consist of numerous small gash veins with lenses of quartz associated with pegmatites containing small crystals of wolframite coated with scheelite. There are not any mineable reserves, and inferred reserves are only a few hundred tons of less than 0.5 percent tungstic trioxide. Due to the isolated location of the property, the small size and the low grade of the ore, the examiners conclude that exploitation is not commercial and they recommend denial of the loan application.

We concur with their recommendation.

Paul T. Allsman

P. T. Allsman

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

200 New Customhouse
Denver 2, Colorado

July 30, 1951

Memorandum

To: DMA Field Team, Region IV

From: A. H. Koschmann

Subject: Geologic Report on DMA Docket 1057, I. D. Budd's Mazatzal Mountain Tungsten Property, Gila County, Arizona

Enclosed are the original and 7 copies of the above geologic report by C. S. Bromfield of the Geological Survey.

A. H. Koschmann

A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Enclosures (8)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
P.O. Box 4126, University Station
Tucson, Arizona

July 23, 1951
Registered Mail
Return Receipt Requested

Memorandum

To: Mr. A. H. Koschmann, Denver, Colorado

From: Mr. A. F. Shride, Tucson, Arizona

Subject: Geologic Report on DMA Docket 1057, I. D. Budd's Mazatzal Mountain Tungsten Property, Gila County, Arizona

Enclosed are the original and 7 copies of the above geologic report by C. S. Bromfield of the Geological Survey. This report and the recommendations that both development and exploration loans be denied have my approval.

A. F. Shride
A. F. Shride
Acting District Supervisor
Arizona-New Mexico

Enclosures 8

JUL 1951
RECEIVED
U.S. Geological Survey
Mineral Deposits Branch
Denver

Mining Division
Date Rec'd.
JUL 16 1951
BUREAU OF MINES
Denver, Colorado

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

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

MINING BRANCH
REGION IV

TUCSON, ARIZONA

July 11, 1951

Memorandum

To : Paul T. Allsman, Denver, Colorado

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

Subject : Final Report, DMA Docket 1057, I. D. Budd's El Oso Tungsten Prospect, Gila County, Ariz.

Enclosed are original and 7 copies of the section on Summary, Conclusions and Recommendations by L. L. Farnham of the Bureau of Mines and C. S. Bromfield of the Geological Survey, and the section on Engineering by Farnham for the above report.

This report has my approval.

Brochure is enclosed.

Walter R. Storms

Walter R. Storms

CC P. T. Allsman
C. A. Anderson
DMA 1057
DF

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

DEFENSE MINERALS ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMA-1057, I. D. Budd's Kl Oso Tungsten Prospect

Gila County, Arizona

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

C. S. Bromfield, Geologist
U. S. Geological Survey

July 1951

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

By L. L. Farnham[1] and C. S. Bromfield[2]

In April 1951, I. D. Budd of Tonto Basin, Gila County, Ariz., applied to the Defense Minerals Administration for a production loan totaling $73,000. The applicant requested an initial $8,000 with which to mine and stockpile between 2,000 and 3,000 tons of tungsten ore having an estimated content of 1.5 percent WO_3. If this proved successful then an additional loan of $65,000 was desired with which to construct a suitable camp and mill. The property was visited by the writers in June 1951.

El Oso group of 17 unpatented mining claims is located near the crest of the Mazatzal mountains of Gila County, Ariz. A $20,000 Reconstruction Finance Corporation loan was expended upon the property in 1942. Little if any tungsten was produced as a result of that work.

Numerous small gash veins, showing some tungsten minerals, have been found on several of the claims. Small crystals of wolframite coated with scheelite occur sparingly in narrow discontinuous lenses of quartz associated with pegmatites. A few hundred tons of tungsten-bearing quartz can be inferred, but it is considered to be below milling grade. Former sampling and the results of samples taken during this investigation indicate an average content of about 0.5 percent WO_3. The estimated operating costs at El Oso property

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1/ Mining Engineer, U. S. Bureau of Mines
2/ Geologist, U. S. Geological Survey

will exceed the gross recoverable value on this grade of material.

The possibilities of finding significant amounts of better ore by further exploration are not considered favorable.

It is recommended that the request for a production loan be denied and that no further consideration be given for an exploration loan.

Geology

I. D. HUDD'S EL CAO TUNGSTEN PROSPECT
GILA COUNTY, ARIZONA

Geology and Ore Reserves

By Calvin S. Bromfield
Geologist, U. S. Geological Survey

I. D. BURD'S EL OSO TUNGSTEN PROSPECT
GILA COUNTY, ARIZONA

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Fig. 3 El Oso and El Oso No. 1 Tungsten	See Engineering Report
Fig. 4 Tunnel - El Oso Tungsten	" " "
Fig. 5 Assay Map El Oso No. 4 Tungsten	" " "

GENERAL GEOLOGY

The El Oso claims are situated on the crest of the Mazatzal Mountains about 14 miles northwest of Roosevelt Dam, Arizona. The Mazatzal range is composed largely of Precambrian granite which in the vicinity of the El Oso claims is intruded by granite porphyry. Cutting the granite and granite porphyry are aplite dikes, bodies of pegmatite, and quartz veins. Within the quartz veins tungsten deposits occur. According to Maury[1] joint planes influence the distribution of the pegmatites and also of the quartz veins. There are several directions of jointing which are persistent in the area, a north-northeast set which is nearly vertical, a northwest-southeast set which dips northeast at comparatively low angles, and a nearly horizontal set. Post-ore faulting has taken place along the north-northeast joints and the flat joints and has interrupted the tungsten bearing quartz veins. In addition, quartz veins are discontinuous along the strike.

ORE DEPOSITS

The tungsten minerals present in the El Oso area are wolframite and scheelite. These minerals are scattered in small grains throughout most of the quartz veins of the area, but only in places are they sufficiently concentrated to constitute ore shoots.

Scheelite occurs in halos surrounding wolframite and as scattered grains. Molybdenite was observed in one specimen of material from the workings of the El Oso and El Oso No. 1 claims; however, it appears to be quite rare. The gangue is largely glassy iron-stained quartz which quite commonly contains coarse crystals of pink feldspar.

1/ Maury, F. S., El Oso Mine, Gila and Maricopa County, Arizona: U. S. Bur. Mines War Minerals Memorandum, p. 3, August 1943.

El Oso and El Oso No. 1 Claims

Other than a few test pits and a shallow shaft the only underground workings in the El Oso area are on the claims known as the El Oso and El Oso No. 1. On these claims a southwesterly trending crosscut-adit and two drifts develop two tungsten bearing quartz veins. The northernmost vein strikes almost due west and the southern vein strikes N. 40° - 50° W. (fig. 3).

On the surface the northernmost vein has been outlined by several pits over a strike length of 200 feet while underground this vein has been cut by a drift going east from the adit. The vein is discontinuous to the west as it does not cross the adit (see fig. 4). In this drift the vein has been developed for a length of 20 feet and consists of a quartz vein from two to four feet wide which contains scattered grains of scheelite and wolframite. Pink feldspar is common. It is on this vein that work is progressing. A grab sample from the ore bin representing this material assayed a trace of WO_3.

The southernmost of the two quartz veins on the El Oso and El Oso No. 1 claims has been prospected on the surface over a length of 180 feet by two shallow pits, a 25 foot shaft, and a 12 foot shaft (fig. 3). The vein has been offset slightly at the surface by several north-northeast faults. The adit intersects this vein at about 115 feet below the surface outcrop. At this point the vein also is cut up into several disconnected segments by three faults which trend slightly east of north (fig. 4). On the faults observed movement is not great.

El Oso No. 4 Claim

On the El Oso No. 4 claim there are a number of shallow pits, an 18 foot vertical shaft and an open cut, each on a quartz vein carrying some values in tungsten. Insufficient work has been done on the El Oso No. 4 claim to prove whether these workings are on one or several veins (see fig. 5). Small scale faulting such as is present on the El Oso and El Oso No. 1 claims may cause the apparent discrepancy in alignment of the workings or the workings may be on two or more veins. The quartz veins strike N. 80° W. and have a nearly vertical to slight northerly dip and an average width of two feet.

Samples from the test pits and shaft are shown on figure 5. Two samples from near the bottom of the shaft assayed 1.18 and 1.07 WO_3 respectively. Two grab samples from the dump ran 0.61 and 0.27 percent WO_3 respectively. The other samples from the El Oso No. 4 claim assay less than 0.4 percent WO_3 except for a 2.7 percent assay from a pit at the west end of the vein. A sample from a pit 8 feet from this high sample and on the same vein assayed 0.01 percent WO_3. Values are erratic and generally of low grade; random high grade sheets are of small size.

ORE RESERVES

There are no measured ore reserves on the El Oso claims.

In 1943 a detailed examination[1] was made of the El Oso tungsten claims in conjunction with an access road application. At the time of this examination indicated ore reserves were estimated as follows:

1/ Op. cit., P. 5-6.

El Oso and El Oso No. 1: Quartz exposed in drift, 800 tons containing 0.20% WO_3. This is not ore. In shafts, test pits, surface trenches and dumps, 450 tons containing 0.48 percent WO_3.

El Oso No. 4: Trenches, test pits, shaft, opencut, and dumps, 125 tons containing 0.90 percent WO_3.

El Oso No. 7: Test pit and surface exposure, 50 tons containing 0.38 percent WO_3.

Total indicated ore - 625 tons averaging 0.55 percent WO_3.

These estimates are still valid as none of this vein material has been mined. The writer believes the estimate is of the proper order of magnitude.

In addition to the indicated ore the writer infers from 200 to 400 tons of material averaging better than 0.5 percent WO_3 and perhaps 1000 to 2000 tons of vein material averaging from 0.10 percent to 0.5 percent WO_3.

CONCLUSION

Three factors are of importance in the consideration of the El Oso claims for an exploration loan. The first factor is the obviously small size of the ore shoots. These small shoots, apparently erratically distributed, would make difficult targets which only could be found by blind drifting.

The second factor is the probable low grade of these shoots when found. Present work indicates most shoots average between 0.1 and 0.5 percent WO_3. With exploration a few small shoots averaging over 0.5 percent might be found.

The third factor to consider is that the veins are commonly interrupted by faults as on the El Oso and El Oso No. 1 and possibly on the El Oso No. 4. The faults are of small displacement and cause the vein to be broken up into small segments, and there is a suggestion that they may be further interrupted in a vertical direction by flat joints and aplite dikes. This segmentation would complicate the process of finding and extracting the small ore sheets.

It is concluded that because the veins are faulted and segmented, and therefore difficult to explore, that exploration of the small, low grade sheets is not warranted.

I. D. BUDD'S EL OSO TUNGSTEN PROSPECT
GILA COUNTY, ARIZONA
BMA-1057

Engineering Report

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

July 1951

Engineering

I. D. BUDD'S EL OSO TUNGSTEN PROSPECT
GILA COUNTY, ARIZONA
DMA-1057

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INTRODUCTION

This report describes the results of an examination of El Oso tungsten property made in connection with the loan application of I. D. Budd of Tonto Basin, Gila County, Ariz. to the Defense Minerals Administration, DMA Docket No. 1057. The examining team visited the property on June 12, 1951.

The applicant requested a loan totaling $73,000 to be used for the following purposes. An initial production loan of $8,000 with which to mine and stockpile between 2,000 and 3,000 tons of tungsten ore having an estimated content of 1.5 percent WO_3. If this proved successful, then the applicant desired an additional loan of $65,000 for the construction of a camp ($15,000) and a 35-ton gravity-type mill ($50,000).

ACKNOWLEDGMENTS

Acknowledgments are hereby made to I. D. Budd, the applicant, and K. P. Lancaster, his partner, for the courtesies extended the examining team during the visit to the property. Special acknowledgments are due the former engineers and geologists of both the U. S. Bureau of Mines and the Arizona Bureau of Mines for the maps and other data used in this report.

LOCATION AND PHYSICAL FEATURES

El Oso group is located near the crest of the Mazatzal Mountains about 5 miles northwest of Four Peaks (Fig. 1). The property is reached from Roosevelt, Ariz. over 18 miles of the Tonto Basin road to Lock Cline's ranch. A branch road to the southwest leaves the highway at this point and for 12 miles follows ridges and switchbacks on its winding course to the mine. The last 10 miles of this road was completed recently by the applicant.

The altitude at Cline's ranch is about 2,200 feet, while the mine is nearly 6,000 feet above sea level. The topography varies from very rough to only moderately rugged in the vicinity of the mine workings. The upper portions of the mountains are well covered with scrub oak and manzanita thickets. Some good stands of yellow pine cover small areas on the claims. Climatic conditions are favorable for work at this altitude from spring to late fall, but snows would hamper operations during the winter months.

HISTORY AND PRODUCTION

The claims were located in 1941. In 1942, a Reconstruction Finance Corporation loan of $20,000 was expended in exploration on the property. There is no record of any tungsten production, and if there was, it could hardly have consisted of more than a few tons of sorted ore.

OWNERSHIP AND EXTENT

El Oso group consists of 17 unpatented mining claims (Fig. 2). The applicant, with two other partners, has a lease and option to purchase the property for $35,000, payable by a 20 percent royalty on net mill returns. Paul and Grady Harrison of Payson, Ariz. are the owners of the claims.

DESCRIPTION OF THE DEPOSITS

Numerous small quartz veins in granite, showing minor amounts of tungsten minerals, have been found on several of the claims. The principal tungsten mineralization occurs on El Oso, and El Oso No. 4 claims where the major amount of exploration has been done (Fig. 2). Small crystals of Wolframite, Usually coated with some scheelite, occur sporadically in glassy quartz associated with pegmatites. The quartz bodies are not continuous and range in width from 6 inches to occasionally as much as 5 feet (2 feet would be a fair average). All appear as disconnected quartz segments. None have shown a continuous strike length greater than 30 feet and the majority are much less. Their vertical continuity is likewise limited by sudden termination against flat joints within the granite. The quartz and pegmatite bodies appear to have been emplaced in the granite along an irregular system of nearly vertical joints. Two other systems of strong joints cross the former and appear to have interrupted the fissures in which the quartz was deposited. Small post-mineral faults further complicate the continuity of the quartz.

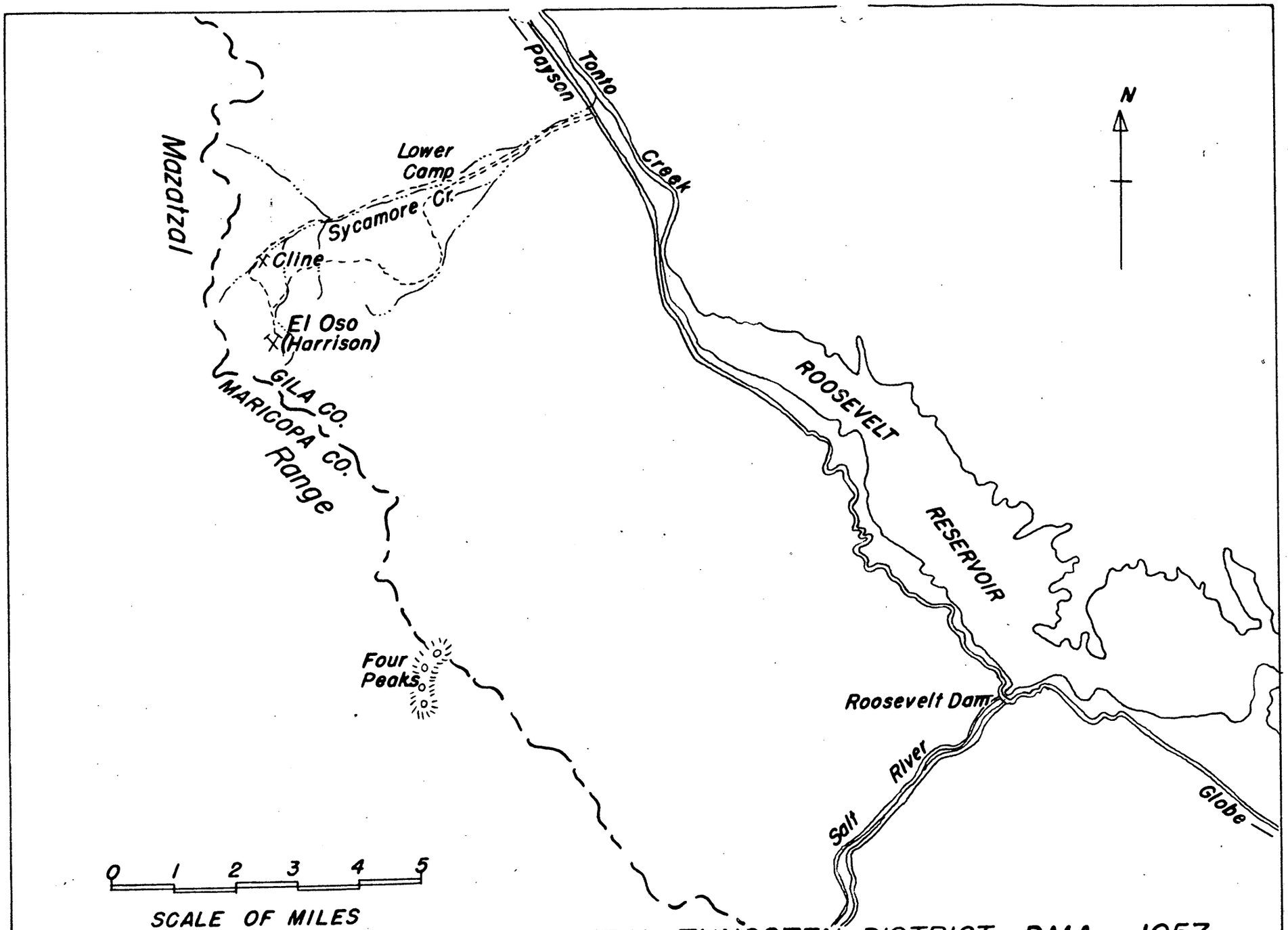


FIG. 1 LOCATION MAP OF MAZATZAL TUNGSTEN DISTRICT – DMA – 1057

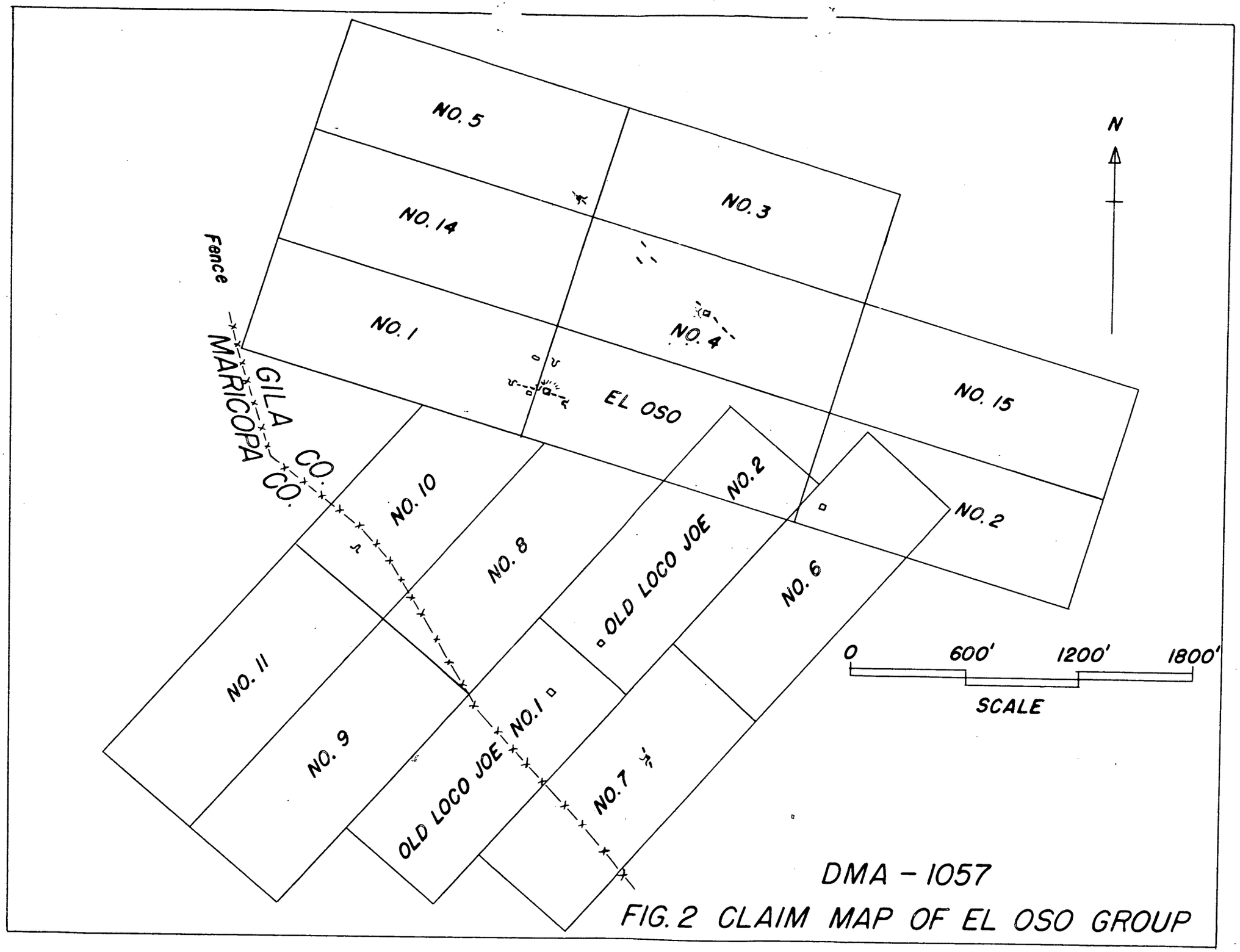


FIG. 2 CLAIM MAP OF EL OSO GROUP

MINEABLE ORE RESERVES

Under the conditions existing at El Oso property there are no mineable ore reserves. Although a few hundred tons of tungsten-bearing material may be inferred, it is considered to be too low in grade to have commercial significance.

PRESENT STATUS

The principal mine workings are located on El Oso claim. They consist of a crosscut adit, 235 feet long, together with some 200 feet of lateral work on this level. A vertical shaft about 25 feet deep, and several open cuts have explored the quartz outcrops. The work on the adit level was done with the funds of the $20,000 Reconstruction Finance Corporation's loan. Drifting and crosscutting on the adit level found several quartz segments but no stoping was attempted. Recent work on the east side of the adit has exposed a quartz body about 2 feet wide and 20 feet long. A raise was being started on this at the time of the examination. A grab sample taken from the ore bin and representing the material broken in this raise, assayed a trace of WO_3 (Fig. 4).

The location of the 25-foot vertical shaft and other surface cuts are shown in figure 3. A large grab sample taken from the quartz that had come from the shaft assayed 0.35 percent WO_3.

On the El Oso No. 4 claim an 10-foot shaft, several pits, and open cuts have exposed disconnected quartz segments ranging in width from 6 inches to 2 feet (fig. 5). A grab sample of the quartz coming from the shaft assayed 0.27 percent WO_3, while a grab sample

SAMPLE NO.	LENGTH	DESCRIPTION	% WO_3
2562	1.5	Quartz	0.01
2563	2.2	" (5' from bot.)	0.63
2564	2.0	Quartz & granite (4' from bot.)	0.91
2565	3.0	Quartz	0.28
2566	2.5	"	0.20
2567	4.0	"	0.76
2568	Grab	" quartz	0.43

Notes:
Elev. Sta. 1 assumed 6100
Geology by Arizona Bureau of Mines.

LEGEND
- Quartz - q
- Probable trend of quartz
- Test pit
- Dump
- Transit sta., no., & elev.

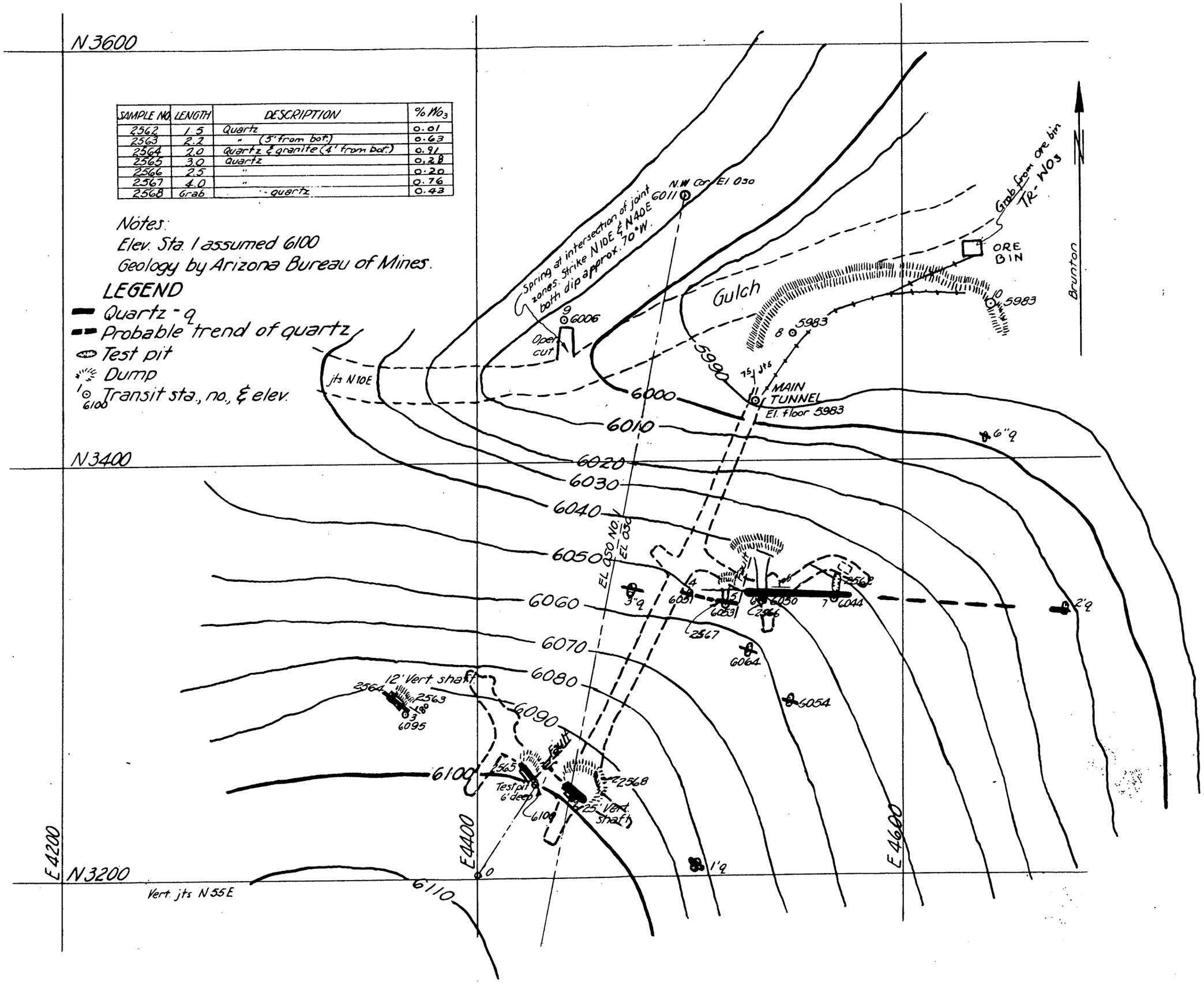
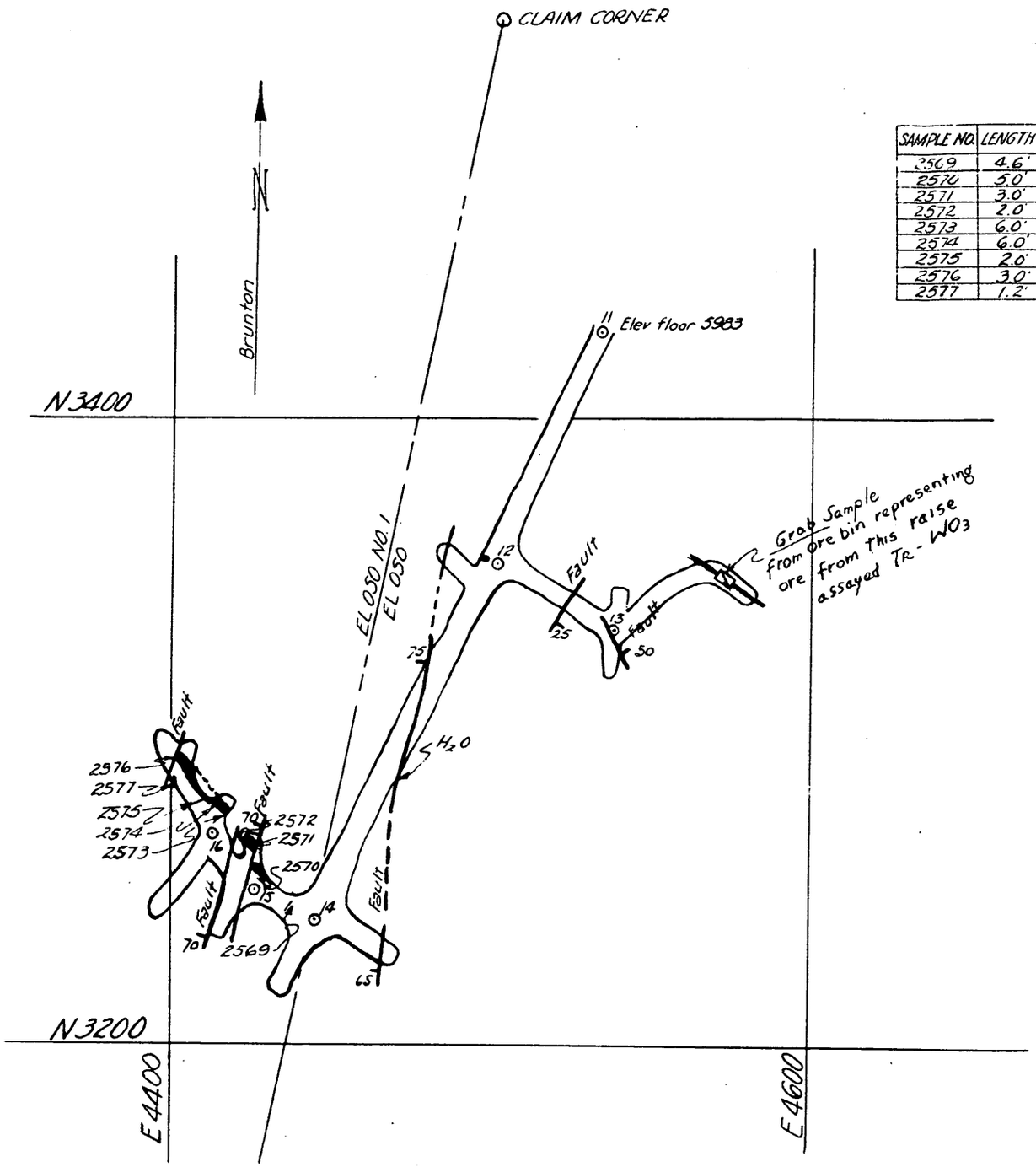


FIG. 3 - EL OSO & EL OSO NO. 1 TUNGSTEN DMA-1057

50' 0 50' 100'



SAMPLE NO.	LENGTH	DESCRIPTION	% WO_3
2569	4.6'	Quartz & granite	0.19
2570	5.0'	Quartz	0.28
2571	3.0'	"	0.55
2572	2.0'	"	0.27
2573	6.0'	Quartz & granite	0.13
2574	6.0'	"	0.03
2575	2.0'	Quartz	0.01
2576	3.0'	"	0.26
2577	1.2'	"	0.01

FIG. 4 - TUNNEL - EL OSO TUNGSTEN

50' 0 50' 100'

DMA - 1057

SAMPLE NO	LENGTH	DESCRIPTION	% WO_3
2551	1.0'	Quartz	0.91
2552	0.3'	"	0.01
2553	0.7'	"	0.40
2554	5.0'	Quartz & granite porphyry	0.22
2555	2.2'	" "	0.25
2556	2.0'	Quartz	0.01
2557	grab dump	"	0.61
2558	2.0'	" (near floor)	0.16
2559	1.2'	"	0.01
2560	1.3'	"	1.18
2561	1.5'	"	1.07
2550	0.3'	"	2.73

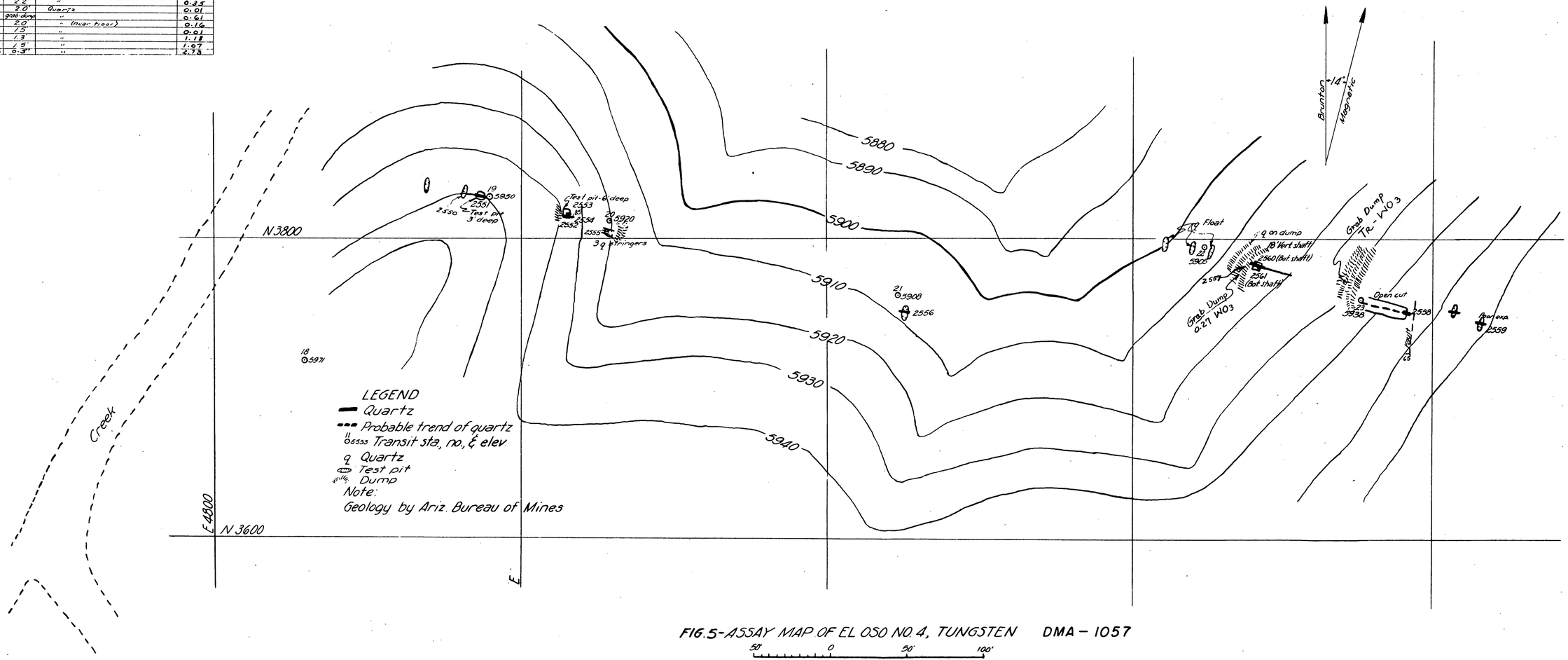


FIG. 5 - ASSAY MAP OF EL OSO NO. 4, TUNGSTEN DMA - 1057

50' 0 50' 100'

of the quartz from the open cut showed but a trace of tungsten.

Equipment and Other Facilities

A 315 c.f.m. gasoline-driven compressor with two drills and other small tools comprise the mining equipment. No milling facilities exist upon the property. The army tents, one serving as a cook house and the other for sleeping purposes, constitute the camp facilities for the 3 men that were employed at the time of the examination. A spring near the portal of the adit furnishes water for domestic purposes but it is doubtful that it could supply sufficient water for a mill.

PROJECT PROPOSALS

The applicant's request for a loan is divided into two stages. In the first place he desired $8,000 to mine and stockpile between 2,000 and 3,000 tons of 1.5 percent tungsten ore. If this initial stage proved successful then he desired an additional $63,000 for a mill and camp facilities.

All existing facts show that there is little likelihood that stage one of the applicant's proposal could prove successful. The 28 samples taken on the property in 1943 by the U. S. Bureau of Mines gave an average of about 0.5 percent WO_3. The results of the check samples taken at the time of this examination were much less. The location, widths and assay results of the samples are shown on the attached maps.

Considering the isolated location of the property and the character of the small scattered deposits, a tungsten content of 0.5 percent would not be profitable at current tungsten prices.

SUMMARY

Owing to the erratic distribution of the small quartz bodies,, mining costs, including exploration, development and extraction, would probably exceed $20 a ton. The cost of concentration in a small mill would not be less than $6 a ton. An operating cost of at least $26 a ton is indicated. With a mill recovery of 80 percent of the tungsten and a realized price of $60 per unit of WO_3, the gross value of ore containing 0.5 percent WO_3 at the mine would be about $24 a ton. The marketing cost of the concentrates and a 20 percent royalty would further reduce this gross value. Thus it does not appear that El Oso property could add worthwhile amounts of tungsten to the national supply.

CONCLUSIONS AND RECOMMENDATIONS

The tungsten deposits of El Oso group are below milling grade. The small disconnected quartz segments containing the tungsten minerals would be difficult to find and costly to mine. The operating costs, including exploration, development, mining and milling, are estimated at $26 per ton. The estimated gross recoverable value of the inferred reserves is less than $24 a ton. It does not seem reasonable to expect that further exploration would disclose any significant amounts of higher grade ore.

Therefore, it is recommended that the request for a production loan be denied and no further consideration be given for an exploration loan.