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CONTROLLED DOCUMENT

Immanuelpolis Tungsten Mine
Mr. J. P. Immanuel, Manager
P.O. Box 580
Congress, Arizona

Re: Docket No. DMA 2038K - Tungsten
Immanuelpolis No. 28 Mine
Yavapai County, Arizona

Dear Mr. Immanuel:

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

The information notes a small amount of marginal ore and indicates that there is little probability of making a significant mineral 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 effort in this respect.

Sincerely yours,

C. O. Mittenderf

Acting Administrator
Defense Minerals Exploration
Administration

CLBrewer'lm
2/11/52

cc: Admin. Reading File
Docket
H. W. Gochan, USGS
H. N. Lemmon, USGS
Field Team Reg. IV
G. S. Selfridge
C. L. Brewer

February 11, 1952

Memorandum

To: Acting Administrator, Defense Minerals Exploration Administration

From: Iron and Ferro-Alloy Division, Defense Minerals Exploration Administration

Subject: Denial of exploration project in the amount of $123,259.38
Docket No. DMA 2030X - Tungsten
Mammarapolis No. 28 Mine
Yavapai County, Arizona

The subject application was denied by this Division for the following reasons:

1. The ore-bearing formation is an epidote-diopside rock occurring as replacements of the lime-rich portions of a chistose pre-Cambrian sedimentary complex which has been intruded by granodiorite. The epidote-diopside rock is present in lenses and discontinuous layers in the schist.

2. Past production shows only 10 tons of 1.94 percent WO_3 ore and 1-1/2 tons of 35 to 45 percent concentrates which resulted from milling "many hundred" tons of ore.

3. Surface exposures are poor; only a few test pits have been made; the scheelite is distributed erratically within the ore bearing rock; eight USBM samples range from .01 to .04 percent WO_3, the four samples cut across the "vein" average 2.6 ft. at .16 percent WO_3 and the four samples chipped from exposed faces averaged, arithmetically, .17 percent WO_3, although one face showed .64 percent WO_3. Samples from the outcrops and from a depth of 75 feet are represented.

4. The ore-occurrence is sparadic and sub-marginal, and there is no reason to believe that any additional excavation will reveal either continuity of ore or enhancement of grade.

5. The Commodity Division recommends denial.

cc: Admn. Reading File
Docket
G. C. Selfridge
Q. L. Brewer

G. C. Selfridge, Acting Chief
Iron and Ferro-Alloy Division

QLBrewer'lm - 2/11/52

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

February 14, 1951

Memorandum

To: [illegible] Selfridge

From: [illegible] Geehan, Bureau of Mines

Subject: Exploration Application DMA-2030
Zannarapella No. 28 Mine Tungsten
Yavapai County, Arizona

I agree that the subject application should be denied because of the sporadic nature of the ore and the low grade of even the better zones, combined with the data in the Field Team Report that indicates no favorable area that might be better than those now exposed. I have approved the letter to the applicant.

However, I do not agree with the data in the letter to the Acting Administrator, and have not approved it, for the following reasons:

(1) I fail to see what bearing point 1 has on the rejection.

(2) The Field Team Report indicates that there is considerable uncertainty regarding the amount of ore milled. I believe that a statement to the effect that all available data indicates that the grade of ore milled was less than 0.2 percent would be more to the point.

(3) In "3" the facts that surface exposures are poor and that only a few test pits have been made, do not have any bearing on the rejection of an exploration loan.

Robert W. Geehan

cc: E. W. Geehan
Mr. Katlin
Perrons M&A
Files
Mr. Selfridge

RWGeehan:elk

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

February 24, 1952

Memorandum

To: C. L. Selfridge

From: R. W. Geehan, Bureau of Mines

Subject: Exploration Application — MMA-20305
Zannarapolis No. 28 Mine — Tungsten
Yavapai County, Arizona

I agree that the subject application should be denied because of the sporadic nature of the ore and the low grade of even the better zones, combined with the data in the Field Team Report that indicates no favorable area that might be better than those now exposed. I have summarized the letter to the applicant.

However, I do not agree with the data in the letter to the Acting Administrator, and have not summarized it, for the following reasons:

(1) I fail to see what bearing point 1 has on the rejection.

(2) The Field Team Report indicates that there is considerable uncertainty regarding the amount of ore milled. I believe that a statement to the effect that all available data indicates that the grade of ore milled was less than 0.2 percent would be more to the point.

(3) In "3" the facts that surface exposures are poor and that only a few test pits have been made, do not have any bearing on the rejection of an exploration loan.

Robert W. Geehan

CC: R. W. Geehan
Mr. Katlin
Ferrous M&A
Files
Mr. Selfridge

RWGeehan:elk

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

G-ID-DML

February 6, 1952

Memorandum

To: George C. Gilfridge, DMEA

From: D. M. Lemmon, U.S.G.S.

Subject: Field report DMEA 2030 - Tungsten
Zannarapolis No. 28 claim
Yavapai County, Arizona

The Zannarapolis No. 28 claim was examined by T. M. Romelo of the Bureau of Mines and J. M. Faick of the Geological Survey in November 1951. Their report shows that there is little chance of finding commercial ore on the property.

I concur with the Field Team recommendation that the exploration project costing $123,259.38 be denied.

D M Lemmon

DMLemmon:gt

Copies to: Director's reading file
Branch reading file

A.R.
2-19-52

FILE COPY
SURNAME:

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

Brewer
Geehan
Selfridge
Lemon
Thayer
Johnson

FEB 19 1952

Zannarapolis Tungsten Mine
Mr. J. P. Zannaras, Manager
P.O. Box 500
Congress, Arizona

Re: Docket No. DMA 2030X - Tungsten
Zannarapolis No. 28 Mine
Yavapai County, Arizona

Dear Mr. Zannaras:

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

The information notes a small amount of marginal ore and indicates that there is little probability of making a significant mineral 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 effort in this respect.

Sincerely yours,

C. O. Mittendorf (for) CC 2/19

Acting Administrator
Defense Minerals Exploration
Administration

QLBrewer'lm
2/11/52

cc: Admn. Reading File
Docket
R. W. Geehan, USBM
D. M. Lemmon, USGS
Field Team Reg. IV
G. C. Selfridge
Q. L. Brewer

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

February 14, 1952

Memorandum

To: G. C. Selfridge

From: R. W. Geehan, Bureau of Mines

Subject: Exploration Application
Zannarapolis No. 28 Mine
Yavapai County, Arizona

DMA-2030X
Tungsten

I agree that the subject application should be denied because of the sporadic nature of the ore and the low grade of even the better zones, combined with the data in the Field Team Report that indicates no favorable area that might be better than those now exposed. I have surnamed the letter to the applicant.

However, I do not agree with the data in the letter to the Acting Administrator, and have not surnamed it, for the following reasons:

(1) I fail to see what bearing point 1 has on the rejection.

(2) The Field Team Report indicates that there is considerable uncertainty regarding the amount of ore milled. I believe that a statement to the effect that all available data indicates that the grade of ore milled was less than 0.2 percent would be more to the point.

(3) In "3" the facts that surface exposures are poor and that only a few test pits have been made, do not have any bearing on the rejection of an exploration loan.

Robert W. Geehan

Robert W. Geehan

FILE COPY
SURNAME:

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

Brewer
Selfridge

February 11, 1952

Memorandum

To: Acting Administrator, Defense Minerals Exploration Administration

From: Iron and Ferro-Alloy Division, Defense Minerals Exploration Administration

Subject: Denial of exploration project in the amount of $123,259.38
Docket No. DMA 2030X - Tungsten
Zannarapolis No. 28 Mine
Yavapai County, Arizona

The subject application was denied by this Division for the following reasons:

1. The ore-bearing formation is an epidote-diopside rock occurring as replacements of the lime-rich portions of a schistose pre-Cambrian sedimentary complex which has been intruded by granodiorite. The epidote-diopside rock is present in lenses and discontinuous layers in the schist.

2. Past production shows only 10 tons of 1.94 percent WO_3 ore and 1-1/2 tons of 35 to 45 percent concentrates which resulted from milling "many hundred" tons of ore.

3. Surface exposures are poor; only a few test pits have been made; the scheelite is distributed erratically within the ore bearing rock; eight USBM samples range from .01 to .04 percent WO_3, the four samples cut across the "vein" average 2.6 ft. at .16 percent WO_3 and the four samples chipped from exposed faces averaged, arithmetically, .17 percent WO_3, although one face showed .64 percent WO_3. Samples from the outcrops and from a depth of 75 feet are represented.

4. The ore-occurrence is sporadic and sub-marginal, and there is no reason to believe that any additional excavation will reveal either continuity of ore or enhancement of grade.

5. The Commodity Division recommends denial.

cc: Admn. Reading File
Docket
G. C. Selfridge
Q. L. Brewer

SIGNED
G. C. Selfridge, Acting Chief
Iron and Ferro-Alloy Division

QLBrewer:lm - 2/11/52

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

February 11, 1952

Memorandum

To: Acting Administrator, Defense Minerals Exploration Administration

From: Iron and Ferro-Alloy Division, Defense Minerals Exploration Administration

Subject: Denial of exploration project in the amount of $123,259.38
Docket No. DMA 2030X - Tungsten
Zannarapolis No. 28 Mine
Yavapai County, Arizona

The subject application was denied by this Division for the following reasons:

1. The ore-bearing formation is an epidote-diopside rock occurring as replacements of the lime-rich portions of a schistose pre-Cambrian sedimentary complex which has been intruded by granodiorite. The epidote-diopside rock is present in lenses and discontinuous layers in the schist.

2. Past production shows only 10 tons of 1.94 percent WO_3 ore and 1-1/2 tons of 35 to 45 percent concentrates which resulted from milling "many hundred" tons of ore.

3. Surface exposures are poor; only a few test pits have been made; the scheelite is distributed erratically within the ore bearing rock; eight USBM samples range from .01 to .04 percent WO_3, the four samples cut across the "vein" average 2.6 ft. at .16 percent WO_3 and the four samples chipped from exposed faces averaged, arithmetically, .17 percent WO_3, although ~~one face~~ two small high grade zones showed .64 percent WO_3. Samples from the outcrops and from a depth of 75 feet are represented.

4. The ore-occurrence is sporadic and sub-marginal, and there is no reason to believe that any additional excavation will reveal either continuity of ore or enhancement of grade.

5. The Commodity Division recommends denial.

G. C. Selfridge

G. C. Selfridge, Acting Chief
Iron and Ferro-Alloy Division

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

224 New Customhouse
Denver 2, Colorado

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
FEB 1 1952

January 25, 1952

Memorandum

To: Secretary to the Operating Committee, Defense Minerals Exploration Administration

From: Field Team, Region IV

Subject:- Final Report, DMA Docket 2030, Zannarapolis No. 28 Claim, (Tungsten), J. P. Zannaras, Applicant, Yavapai County, Arizona

Enclosed are the original and two copies of the report pertaining to the above docket. The brochure is also enclosed.

The proposed exploration work, estimated to cost $123,259.38, is confined to the Zannarapolis Claim No. 28, which is part of a group of 30 claims owned by the applicant and partner. Claim No. 28 has been developed by a 75 foot inclined shaft, 2 small trenches, and an open cut about 100 feet long by 60 feet wide with an average depth of 3 feet. A small stope has been opened at the bottom of the shaft.

Mica schists and amphibolites are the dominent rocks on the property. These rocks have been intruded by granodiorite. At claim 28, scheelite-bearing rock is exposed at 4 outcrops, on one of which the 75 foot shaft was sunk. The scheelite occurs as tiny crystals that are generally localized along fractures in altered schist. The assays of samples taken from the outcrops, ranging in width from 1.4 to 3.5 feet, varied from 0.03 to 0.39 percent WO_3, and averaged 0.16 percent WO_3. Three of the 4 underground samples each assayed 0.02 percent WO_3 or less. The other samples, containing 0.64 percent WO_3, is representative of the material contained in 2 small high-grade zones.

The indicated reserves are estimated at 20 tons of scheelite-bearing rock, containing less than 0.20 percent WO_3 per foot of depth. The proposed explorations probably would develop several times the indicated tonnage of scheelite-bearing rock. However, there is no reason to believe the inferred reserves would contain more than 0.20 percent WO_3.

Scheelite-bearing rock containing 0.20 percent WO_3 could not be mined economically because the market value of concentrates produced from either "run-of-mine" material or sorted material would be less than mining costs.

The extent and degree of tungsten mineralization at other places on the Zannarapolis property probably is less than exposed at claim No. 28.

We concur in the conclusions of the examining team that the chances of developing economic ore are unfavorable and therefore, recommend that the application for Government assistance in exploration work be denied.

J. H. East, Jr.

A. H. Koschmann

Enclosures

Mining Division
Region IV

January 24, 1952

Reviewed by
DMEA OPERATING COMMITTEE
2-4-52
(date) [illegible]

Memorandum

To: Field Team, Region IV

From: Acting Chief, Mining Division, Region IV

Subject: Final Report, DMA Docket 2030, Sammarpolis No. 22 Claim, (Tungsten), J. P. Zammarez, Yavapai County, Arizona

Enclosed are the original and seven copies of the Engineering Report by the Bureau of Mines and the same number of copies of the section on Summary, Conclusions and Recommendations by the Bureau of Mines, and Geological Survey, pertaining to the above application. The brochure is also enclosed.

It has been recommended that the application for Government assistance in exploration work be denied.

W. H. King
W. H. King

Enclosures

WHK:jd

cc: Docket, chron.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
FEB 1 1952

Mining Division
Date Rec'd.
JAN 4 1952
BUREAU OF MINES
Denver, Colorado

January 4, 1952

Memorandum

To : Paul T. Allsman, Denver, Colorado

From : Chief, Arizona-New Mexico Branch

Subject : Final Report, DMA Docket 2039K, Zannatapolis Tungsten Mine, Zannatapolis No. 20 Claim, Yavapai County, Ariz.

Enclosed are original and 7 copies of the section on Summary, Conclusions and Recommendations by T. M. Romslo of the Bureau of Mines and J. M. Falck of the Geological Survey, and the section on Engineering by Romslo, for the above report. A section on Geology will be submitted by the Geological Survey.

This report has my approval.

Brochure is enclosed.

Walter F. Storms

CC: P. T. Allsman (7)
C. A. Anderson
DMA-2039K
DF

WFStorms:als

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

200 New Customhouse
Denver 2, Colorado

January 7, 1951

Memorandum

To: DMA Field Team, Region IV

From: A. H. Koschmann

Subject: DMA Docket 2030, Zannarapolis No. 28 Claim (Tungsten), J. P. Zannaras, Yavapai County, Arizona

Enclosed are the original and 7 copies of the geologic report by J. N. Faick of the U. S. Geological Survey covering the above docket.

It has been recommended that the loan be denied.

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

December 29, 1951

Memorandum

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

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

Subject: Geologic Report, DMA 2030, Zannarapolis No. 28 Claim (Tungsten), J. P. Zannaras, Yavapai County, Arizona

Enclosed are the original and 7 copies of the above report by J. N. Faick of the Geological Survey. This report and the recommendation that an exploration loan be denied because the tungsten bearing material is low grade and sporadic in distribution have my approval.

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

Enclosures 8

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

DEFENSE MINERALS ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMA-2030X, Zannarapolis Tungsten Mine

Zannarapolis No. 28

Yavapai County, Ariz.

T. M. Romslo, Mining Engineer
U. S. Bureau of Mines

J. N. Faick, Geologist
U. S. Geological Survey

January 1952

als

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

By T. M. Romslo[1] and John N. Faick[2]

The Zannarapolis Tungsten mine, Yavapai County, Ariz. was examined in connection with an application for Governmental assistance on a proposed exploratory project. The examination was made by the Defense Minerals Administration as part of its program authorized by the Defense Production Act of 1950. It was made to determine if Governmental participation on the proposed work was justified.

The application was submitted by one of the 3 owners of the property, J. P. Zannaras, Box 500, Congress, Ariz. It requested that a Governmental loan be granted for the purpose of carrying out an exploratory program designed to develop substantial reserves of tungsten ore. The applicant submitted estimates that indicated the work could be completed in 445 days at a cost of $123,259.38. The work, confined to Zannarapolis claim no. 28, involved the repairing of a headframe, the sinking of a water well, the deepening of a shaft from 70-to 300-feet, and the driving of drifts for 240 feet on each of 3 shaft levels. The applicant offered to finance 25 percent of the cost of the project by supplying supervision and part of the necessary equipment.

The property is about 30 air miles northwest of Congress, Ariz. It has been operated intermittently since its discovery by 2 of the present owners in 1941. It has been developed by a few small open cuts and a 75-foot shaft. Production has been about 10 tons of sorted

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

ore containing 1.94 percent WO_3, and 3,000 pounds of concentrates containing 35 to 45 percent WO_3. The sorted ore was recovered from material mined from an open cut on claim no. 19 and from muck removed from the shaft on claim no. 28. The concentrates were recovered from scheelite-bearing rock that was mined from 3 or more places on the property. Milling was done at the owner's gravity concentrator, located on Burro Creek about 12 miles from the mine camp.

Present operations are confined to claim no. 25 where a small scheelite bearing zone is being prepared for surface mining.

Mica schists and amphibolites are the dominent rocks on the property. These rocks have been intruded by granodiorite. At claim 28, scheelite-bearing rock is exposed at 4 outcrops, one of which has been partially developed by a 75-foot shaft. The scheelite occurs as tiny crystals that are generally localized along fractures in altered schist. The assays of samples taken from the outcrops, ranging in width from 1.4 to 3.5 feet, varied from 0.03 to 0.39 percent WO_3, and averaged 0.16 percent WO_3. Three of the 4 underground samples each assayed 0.02 percent WO_3 or less. The other samples, containing 0.64 percent WO_3, is representative of the material contained in 2 small high-grade zones.

The indicated reserves are estimated at 20 tons of scheelite-bearing rock, containing less than 0.20 percent WO_3 per foot of depth. The proposed explorations probably would develop several times the indicated tonnage of scheelite-bearing rock. However, there is no reason to believe

the inferred reserves would contain more than 0.20 percent WO_3. Scheelite-bearing rock containing 0.2 percent WO_3 could not be mined economically because the market value of concentrates produced from either "run-of-mine" material or sorted material would be less than the mining cost.

The extent and degree of tungsten mineralization at other places on the Zannarapolis property probably is less than that exposed at claim no. 28.

It is recommended that the application for a loan to carry out explorations on claim no. 28 be denied because the chances of developing economic ore are unfavorable.

ZANNARAPOLIS TUNGSTEN MINE
ZANNARAPOLIS NO. 28
YAVAPAI COUNTY, ARIZONA
DMA 2030

TUNGSTEN

Geology

By
John N. Faick
Geologist, U. S. Geological Survey

ZANNARAPOLIS TUNGSTEN MINE
ZANNARAPOLIS NO. 28
YAVAPAI COUNTY, ARIZONA
DMA 2030

TUNGSTEN

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INTRODUCTION

The Zannarapolis Tungsten mine, Claim No. 28, was examined by a DMA examining team in November, 1951, relative to an application from Mr. J. P. Zannaras for financial assistance for exploration. This property is located in Yavapai county about 35 miles north of Congress, Arizona, and 7 airline miles southwest of Bagdad. The property is accessible by about 40 miles of improved roads from either Congress or Hillside; both communities with railroad facilities.

The Zannarapolis property consists of 30 claims of which 8 lode claims and one millsite claim are patented. Several examinations of the property have been made by engineers and geologists for different agencies of the Federal Government and these investigations have resulted in the confidential reports listed below. In addition to this list, but not seen by the writer, is an engineering report prepared for the Reconstruction Finance Corporation. In the reports listed, the property has been regarded as unfavorable with reference to economic considerations.

Bishop, O. M., The Zannaras Tungsten Claims, Yavapai County, Arizona: Unpublished Report, U.S. Bur. of Mines, 8 pp., 1942.

Knauskopf, K. B., and Stopper, R., The Zannarapolis Tungsten Mine, Yavapai County, Arizona: U.S. Geol. Survey, Unpublished Report, 4 pp., 1943.

Cummings, J. B., Zannarapolis Tungsten Property, Yavapai County, Arizona: Summary Report, U.S. Bur. of Mines, Unpublished, 1 p., 1946.

Cummings, J. B., Zannarapolis Tungsten Property, Yavapai County, Arizona: Unpublished Supplemental Examination Report,

U. S. Bur. of Mines, Parts I, 7 pp. and Part II, 3pp., 1946.

Of the 30 Zannarapolis claims application has been made for financial assistance only on No. 28. Examination was largely confined to this claim and the remainder of the property was examined only in a reconnaissance manner as it had been carefully studied by previous investigators.

GENERAL GEOLOGY

The area in the vicinity of the Zannarapolis claims is underlain by Precambrian schist probably formed from fine clastic and limey sediments and volcanics by regional metamorphism. The principal rocks are a series of muscovite and biotite schists in which the foliation is nearly vertical and strikes from N. 20° E. to N. 60° E. The schists have been complexly intruded by granodiorite near the southeastern edge of the property and granite or monzonite is reported to be exposed both east and west of the property and about 2000 to 3000 feet distant, but was not seen by this writer. The distribution of intrusive rocks suggest that these may underlie most of the area at comparatively shallow depths of a few hundred feet.

Epidote-diopside rock, probably representing lime-rich parts of the old sedimentary sequence, is present both as lenses and as fairly continuous layers in the schist. It is reported that some of the layers range up to a maximum of 20 feet wide and can be followed for at least 800 feet. Lenses and layers of epidote-diopside rock are reported to be very numerous but apparently are more or less confined to the south end of the Zannarapolis group of claims and are not especially significant on Claim No. 28, where biotite schist is dominant.

Scheelite is the only tungsten mineral observed and its occurrence is reported[1] in at least 3 different modes as shown below:

1. Small grains disseminated in epidote-diopside rock.
2. Crystals up to an inch long in quartz veins.
3. Crystals up to 1/4 inch in tourmaline-bearing pegmatite.

Examples of the most common mode of occurrence wherein scheelite is present in epidote-diopside rock is well exposed in many parts of the property. Small crystals are scattered through a fine-grained greenish rock usually containing quartz and probably feldspar in addition to epidote and diopside. Patches of calcite and brown garnet appear locally. The second mode is found near the north end of the property where nominal amounts of scheelite are present as crystals ranging in size up to 1/2 inch long in quartz-biotite schist. This scheelite is intimately associated with small amounts of epidote, which is thought to represent weak hydrothermal alteration of the schist; and with veins and pods of quartz that are generally less than 3 inches wide and from several inches to a few feet long. Other minerals observed are pyrite, magnetite, garnet, calcite, fluorite, and rhodonite but the relationship of these to the scheelite is not apparent. The third mode of occurrence with scheelite present in a pegmatite dike near the schist-granodiorite contact was not visited during this examination because it was previously reported that the 2-feet-wide dike did not appear to be of commercial grade and because the applicant is not intent on exploring it.

Of the three classes of occurrence mentioned above most exploration and development have been done on the first type, and it

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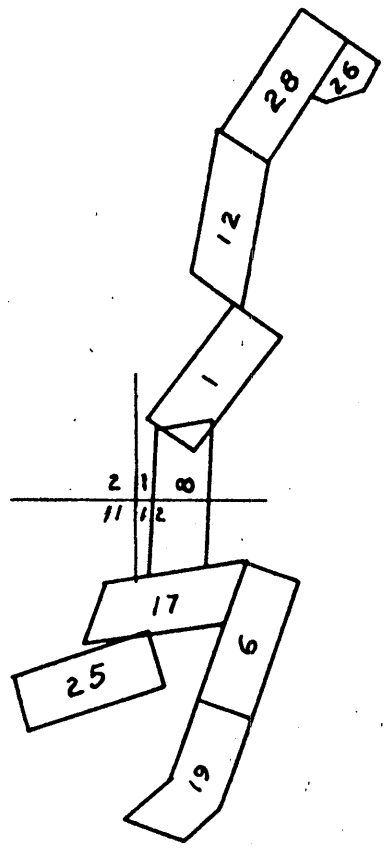
1/ Krauskopf, K. B. and Stopper, R., op. cit., p. 1.

is proposed by the applicant to extend exploration on the second type. Type 3 is relatively unimportant and not considered for exploration.

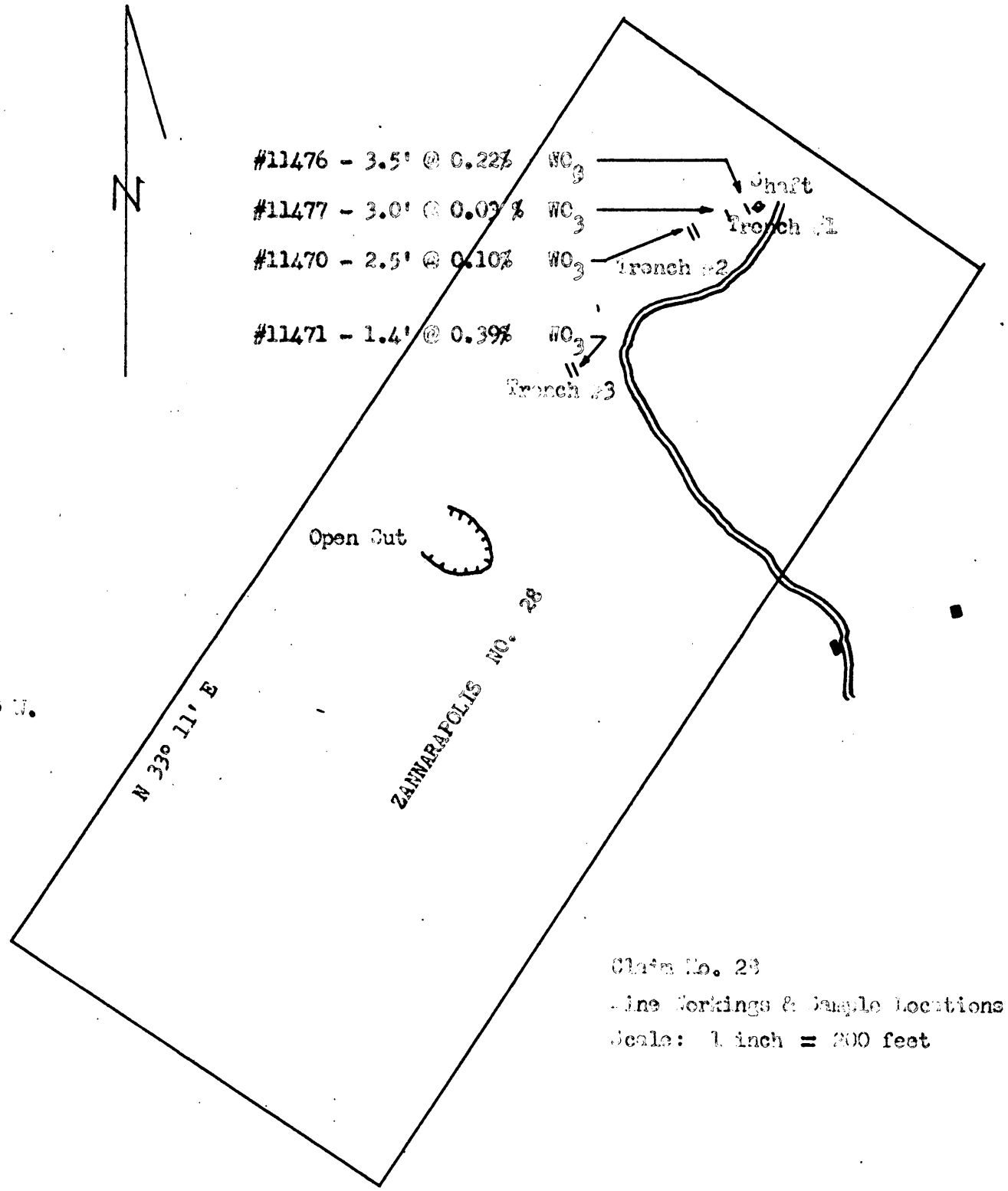
GEOLOGY AND PROPOSED EXPLORATION OF CLAIM NO. 28

The scheelite on Claim No. 28 is thought to be the same occurrence mentioned by Krauskopf and Stopper (item No. 2 on page 3 of this report) as the best chance on the Zannarapolis claims for development. Here the ore appears to be richer and the molybdenum content of the ore is lower than elsewhere. Scheelite in nominal amounts is exposed in an area of about 10 square feet in the open cut near the center of the claim (see Fig. 2) and as a zone about 1.5 feet wide in cut No. 3. It is also present in a zone about 3.5 feet wide at the collar of the shaft, in a zone about 3 feet wide in trench No. 1 about 20 feet west of the shaft, and in a zone about 3 feet wide in trench No. 2. The last 3 occurrences were stated by Mr. Zannaras, the applicant, to represent a continuous vein containing scheelite, which he proposes to explore.

The mineralized zone is poorly defined but its supposed course on the surface can be traced obliquely across the schistosity in a direction S. 70° W. from the shaft and is marked by iron stain, probably derived by the oxidation of pyrite. The country rock is a moderately silicified schist and tends to crop out because of the slightly greater resistence to weathering. The zone may not be continuous but may represent an alignment of isolated lenticular masses in which scheelite is more or less concentrated. Residual soil and rocks along this zone are estimated in places to contain about 1/2 percent tungsten, but this reflects surficial concentration wherein



Zannarapolis Patented Claims
Sec. 1, 2, 11, 12, T. 13 N., R. 10 W.
Scale: 1 inch = 2000 feet



Claim No. 28
Mine Workings & Sample Locations
Scale: 1 inch = 200 feet

FIGURE 2 - ZANNARAPOLIS TUNGSTEN MINE, YAVAPAI COUNTY, ARIZONA

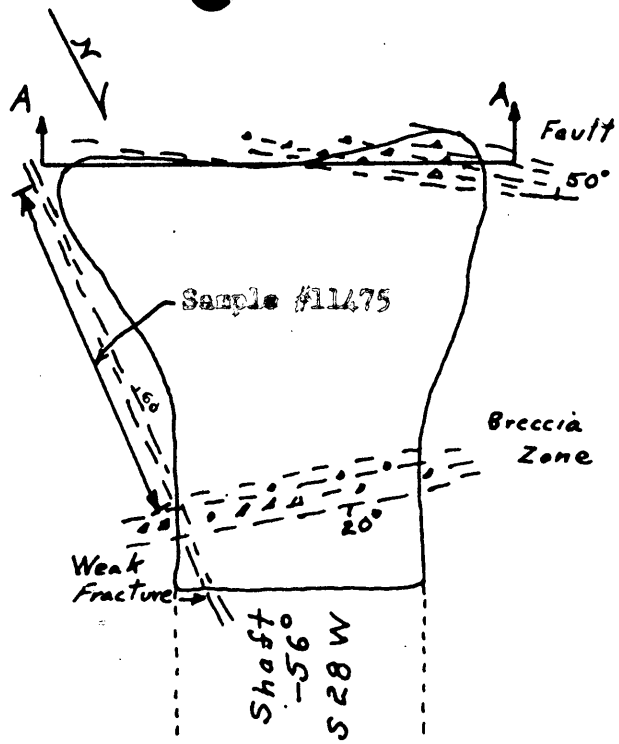
. . . 2030

the amount of tungsten is greater than in the underlying bedrock. This is a visual estimate with the aid of an ultraviolet light.

This mineralized zone has been partially explored by an inclined shaft about 75 feet deep, but it is closely timbered so that inspection of the geology is impossible. At the bottom of the shaft a station or stope was cut which is roughly 14 feet long, 10 feet wide and 8 feet high and this has exposed 3 sets of fractures or faults as sketched on Figure 3. The small amount of movement that has taken place along the faults has shattered the country rock to form breccia zones from a couple of inches to 2 feet thick. In these breccia zones and the adjacent country rock slightly more than the normal amount of scheelite has been deposited.

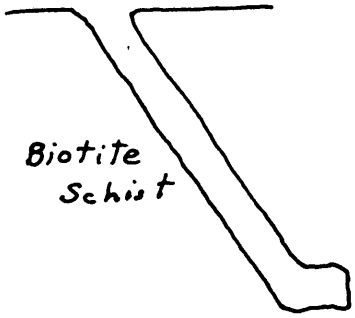
On the west side of the south face of the shaft station, Mr. Zannaras attempted to point out to the examiners the zone he proposed to explore and he considered it to be the same zone as exposed on the surface. It was noted, however, that at this point in the shaft station there is no favorable bed, structure, or concentration of mineralization trending in the direction of the proposed exploration. Sample No. 11473, which represents chip samples from the west half of the south face of the shaft station, yielded only 0.01 percent tungsten for this zone, consequently the proposed exploration does not appear to be justified. It would be better to drift on the mineralized faults but this cannot be recommended because of the very low content of tungsten and the improbability of discovering economic ore. During this examination no mineral occurrences were observed which warranted exploration, therefore no alternate proposals are considered.

Sample #	Assay Results Percent WO_3
11472	0.64
11473	0.01
11474	0.01
11475	0.02



PLAN AT BOTTOM OF THE SHAFT

Scale: 1 inch = 6 feet

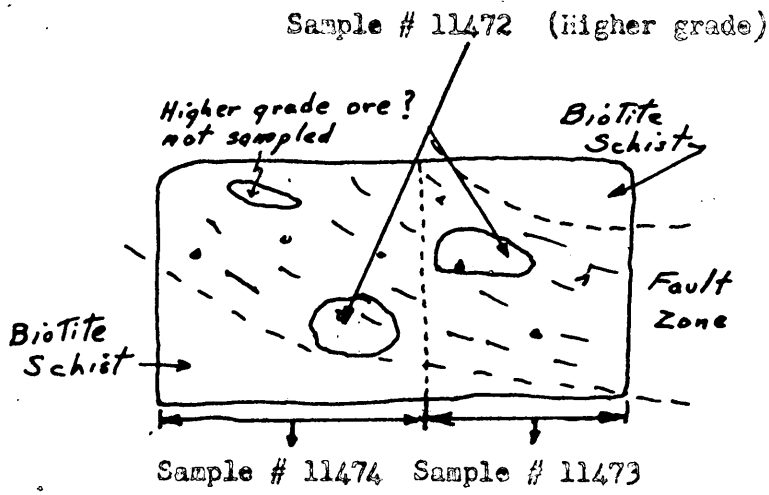


CROSS SECTION OF SHAFT

(facing southeast)

Shaft Bearing S 28° W

Scale: 1 inch = 40 feet



SECTION AA

FIGURE 3 - UNDERGROUND WORKINGS, ZANNARAPOLIS TUNGSTEN MINE (CLAIM 28), YAVAPAI COUNTY, ARIZONA D.M.A. 2030

ORE RESERVES, SAMPLES, GRADE, AND PRODUCTION

It is impossible to estimate ore reserves on Claim No. 28 because of the (1) poor surface exposures, (2) lack of test pits or trenches, (3) erratic, spotty distribution of scheelite in fractures and planesof schistosity, and (4) in the only underground workings a large part of the supposed ore zone is concealed. It appears as if the ore is not continuous on the surface along the mineralized zone trending S. 70° W. from the shaft, but the ore may occur in 4 shoots averaging about 2.5 feet to 3 feet wide and about 20 feet long. This amounts to an indicated 20 tons per foot of depth, but this is thought to be the minimum estimate and the actual deposit may be much larger. If the mineralized zone is continuous for a length of 150 feet and with average widths of 6 feet, which is easily possible, then the reserves would amount to about 60 tons per foot of depth; which amount is regarded as indicative of the magnitude of inferred ore reserves. Average grade could not be determined but is estimated to be about 0.15 percent or about 3 pounds tungsten per ton of ore.

Four samples were taken from surface cuts and trenches (Fig. 2) and 4 were taken underground (Fig. 3). Data on these samples are as follows:

USBM No.	Sample Width or Area	Description	Percent WO_3
11470	2.5 ft.	Trench 2.Quartz, epidote, and scheelite in biotite schist.	0.10
11471	1.4 ft.	Trench 3.Biotite schist containing quartz veins and scheelite.	0.39
11472	8 sq. ft.	Chip samples of high grade zones from fault in south face of shaft station.	0.64
11473	49 sq. ft.	Chip sample of right side of south face of shaft station, not including higher grade portions.	0.01

USBM No.	Sample Width or Area	Description	Percent
11474	64 sq. ft.	Chip sample of left side of south face of shaft station not including higher grade portions.	0.01
11475	80 sq. ft.	Random chip samples from east wall of shaft station along fractures zone.	0.02
11476	3.5 ft.	Scheelite in weathered biotite schist at collar of shaft.	0.22
11477	3.0 ft.	Scheelite in biotite schist in Trench 1 a small cut 20 ft. west of shaft.	0.03

The above assays by the Tucson office of the U. S. Bureau of Mines are check analyses on determinations made by a private assay office and are somewhat higher than the results submitted by the private firm. Check samples were requested because it was thought the first assays reported considerably less tungsten than was quantitatively estimated with the aid of an ultraviolet light. It appears that the visual estimates on the ore may be inaccurate and misleading and that much of the scheelite seen with the aid of the ultraviolet light occurs as films, scales or very thin crystals, otherwise the assays would probably reveal more tungsten.

The reader should note that the highest grade sample containing 0.64 percent tungsten was especially selected material. It is presumed that a limited amount of this grade ore could be obtained by hand sorting with the aid of an ultraviolet light, or possibly a higher grade product could be produced by very careful sorting. Ten tons of selected ore shipped to the stockpile in Phoenix yielded 1.94 percent tungsten. About 3000 pounds of concentrate containing 35 to 45 percent tungsten were produced by the Zannarapolis mill on Burro Creek. It is not known how much ore or what grade was required to

obtain this amount of concentrate but it is roughly estimated that many hundred or possibly a thousand tons were milled from which about 0.1 to 0.2 percent tungsten were recovered.

CONCLUSIONS

From this brief examination of the Zannarapolis Tungsten property it is concluded that:

1. Scheelite in very small amounts is of wide sporadic distribution and occurs erratically in faults and fractures or as disseminations in (a) epidote-diopside rock, (b) biotite schist containing epidote and quartz, and (c) in pegmatite dikes associated with tourmaline.

2. The scheelite deposit is not economic because of the very low tungsten content, usually a small fraction of one percent, and no mineral occurrences were observed which warrant exploration.

3. Production of many hundreds of tons of ore have resulted in marketing of only 10 tons of selected ore containing 1.94 percent tungsten, and about 3000 pounds of concentrate containing from 35 to 45 percent tungsten.

4. It is certain that production has been from ore at least as good as that observed by this writer and is a fair measure of the quality of the deposit, and there is no reason to expect worthwhile quantities of better grade ore from any part of the property.

5. It is certain that production has been made at a substantial loss, and that additional loss will be incurred from any production in the near future.

RECOMMENDATIONS

It is recommended that the application for an exploration loan be denied because the tungsten deposit is so low grade that it is uneconomic to mine, and will remain uneconomic under most anticipated conditions. Where the applicant proposes underground exploration there is no favorable bed, structure or concentration of mineralization, therefore the proposed exploration does not appear justified. No alternate proposals are considered because no mineral occurrences were observed which warranted exploration.

ZANNARAPOLIS TUNGSTEN MINE
ZANNARAPOLIS NO. 28
YAVAPAI COUNTY, ARIZ.
DMA-2030X

Engineering Report

By T. M. Romslo
Mining Engineer
U. S. Bureau of Mines

January 1952

ZANNARAPOLIS TUNGSTEN MINE
ZANNARAPOLIS NO. 28
YAVAPAI COUNTY, ARIZ.
DMA-2030X

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Conclusions	11
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Figure		Following page
1	Location map	1
2	Zannarapolis Tungsten Mine (See Geological report)	
3	Underground workings (See Geological report)	

INTRODUCTION

The Zannarapolis Tungsten mine, Yavapai County, Ariz. was examined in connection with an application for Governmental aid on a proposed exploratory project. The application, docketed as DMA-2030X, was made September 27, 1951 by J. P. Zannaras. The examination was carried out by the Defense Minerals Administration as part of its program authorized by the Defense Production Act of 1950.

The applicant proposed that an exploratory project be carried out on Zannarapolis claim number 28. His estimates indicated that the work could be completed in 445 days at a cost of $123,259.38. The project involved the repairing of a head frame, the sinking of a water well, the deepening of a shaft from 70 to 300 feet, and the driving of drifts for 240 feet from each of 3 shaft levels. The applicant offered to finance 25 percent of the project's cost by supplying supervision and part of the necessary equipment.

The examination was made November 28 and 29, 1951 by J. N. Faick, Geological Survey, and B. C. Brown and T. M. Romslo, Bureau of Mines.

LOCATION AND ACCESSIBILITY

The property is about 30 air-miles northwest of Congress, Ariz., a village on U. S. Highway 89. Congress is 16 miles north of Wickenburg (fig. 1). It also is a station on the Ashfork-Phoenix Branch of the Santa Fe Railroad. The property may be reached from Congress by traveling 0.1 mile north on the highway, thence 2.4 miles southwesterly on state highway 71 and thence 31.5 miles northwesterly on the new Kingman road to a junction that is signed "Bagdad". The mine camp is

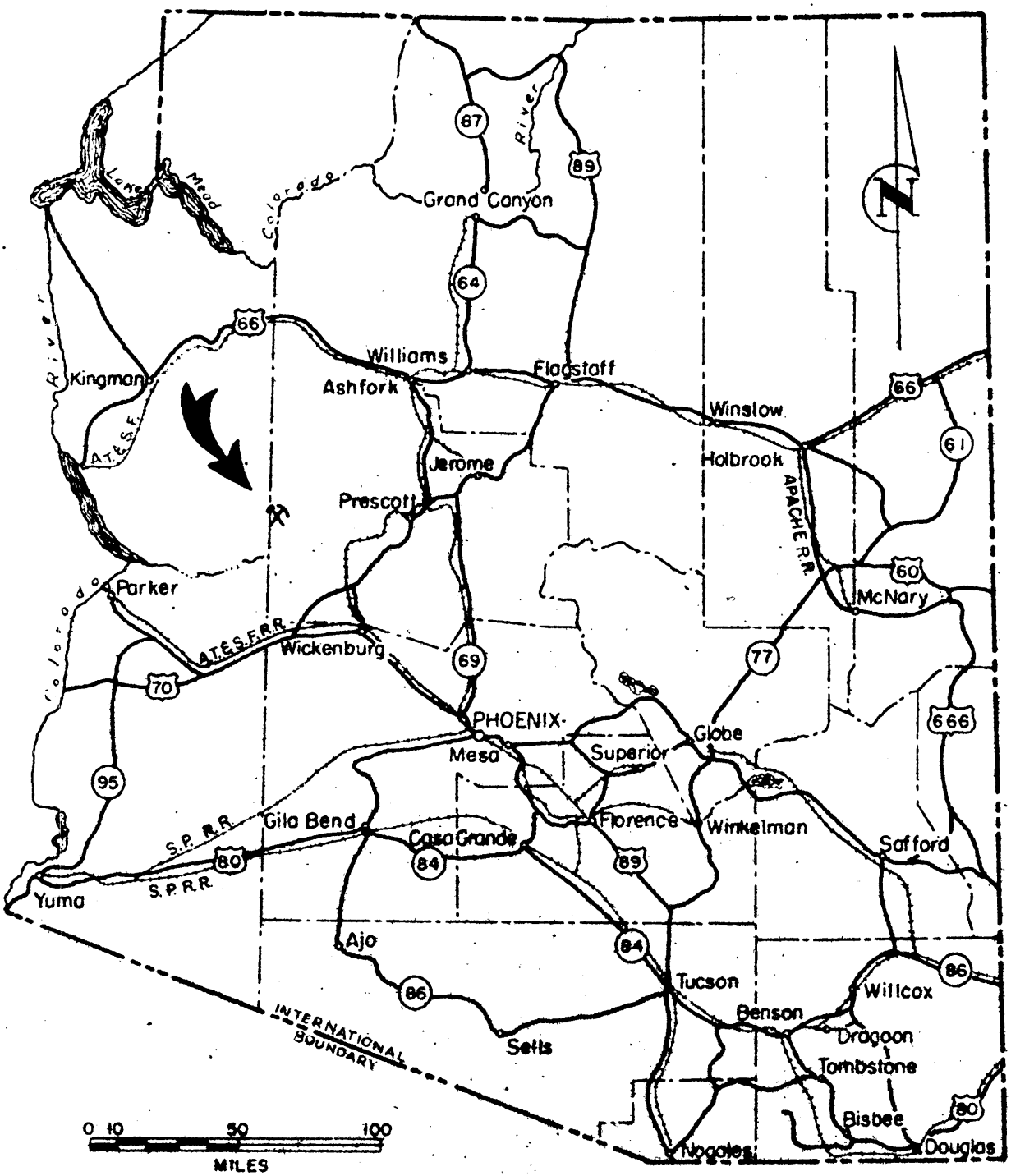

Figure 1. - Location map, Zannarapolis Tungsten Mine, Yavapai County, Arizona

D.N.A. 2030

6.3 miles northerly from the junction on a road that forks at 2 places. Signs at each fork designate the road that leads to the Zannarapolis property. After leaving paved state highway 71 all travel is over graded roads that contain no excessive grades.

The applicant's ore concentrator is situated on Burro Creek, about 12.5 miles westerly by road from the mine camp. Approximately 5 miles of the road is graded and the remainder is unimproved. The villages of Congress and Hillside, each about 40 road miles from the mine, are the nearest railroad shipping points.

PHYSICAL FEATURES AND CLIMATE

The property is on the south slope of the Grayback Mountains at an average altitude of about 3,500 feet. The topography is moderately rugged.

The climate, hot summers and moderate winters, is typical of the intermediate altitudes of central Arizona. Precipitation is mainly as heavy rainfalls during July and August, and light showers during January and February. Drainage is southward to Santa Maria Creek. There are no permanent streams in the district.

Vegetation is scant and of the usual desert variety. There is no timber suitable for mining purposes on the property.

Water for domestic purposes is hauled to the mine from Congress. Water for mining purposes is obtained from a well on the property. The supply of water from the well would not be adequate for a small scale operation. The source of water for the mill is Burro Creek. Zannaras has stated that their water right is sufficient for a 200-ton a day plant.

HISTORY AND PRODUCTION

The property was discovered in 1941 by J. P. Zannaras and J. P. Robinson. It was examined June 4, 1942 by an engineer of the Bureau of Mines.[1] At that time 2 open cuts had been excavated on claim no. 19 and a concentrator had been installed near Burro Creek. Approximately 7 tons of ore had been milled to produce about 40 pounds of rather dirty concentrates. Shortly thereafter the property was examined by the Reconstruction Finance Corporation to determine if a requested loan for development of the property was justified. According to Zannaras, the Corporation's offer of a $5,000 loan was not accepted because it represented but a small part of the cost of the proposed work. The property was again examined May 20, 1943 by the U. S. Geologcal Survey.[2] Information given in that report indicates that little or no development work had been done on the property since the Bureau's examination. Preliminary mill runs had shown a considerable loss of scheelite in the slimes. No concentrates had been shipped. Later in 1943 a shaft was started on claim no. 28 and 10 tons of ore, containing 1.94 percent WO_3, was shipped to the Government stockpile at Phoenix. This ore was sorted from materials mined from the open cut on claim no. 19 and from the shaft on claim no. 28. The shaft was 25 feet deep in April 1946 when the property was again examined by the Bureau of Mines.[3] Intermittent operation of the mill from 1942

1/ Bishop, O. M., unpublished report, The Zannaras Tungsten Claims, Yavapai County, Ariz.

2/ Kranskoft, Konrad B. and Stopper, Robert, Confidential report, The Zannarapolis Tungsten Mine, Yavapai County, Ariz.

3/ Cummings, J. B., Supplemental examination report no. 5, Zannarapolis Tungsten Property, Yavapai County, Ariz.

to 1946 had yielded 700 pounds of concentrate that was stored at the mill.

Since 1946 the shaft was owrked intermittently and reached it's present depth of 75 feet during the latter part of 1949. During the last few years the mill has treated a small amount of custom ore, and ore from various parts of the Zannarapolis property. A total of about 3,000 pounds of concentrates, containing 35 to 45 percent WO_3, have been shipped to the Kennametal Corporation. During the current examination a mineralized zone on claim 19 was being developed for open-pit mining.

A summary of the above production data shows that shipments from the mine consist of 10 tons of sorted ore containing 1.94 percent WO_3, and 3,000 pounds of concentrates that assayed 35 to 45 percent WO_3. These concentrates were marketed at $65 a unit, F.O.B. Phoenix, according to J. P. Zannaras.

PROPERTY AND OWNERSHIP

The property consists of a group of 30 lode mining claims and one millsite claim in T. 13 N., R. 10 W., Yavapai County, Ariz. The millsite claim and 8 of the mining claims are patented.

The property is owned by J. P. Zannaras, and J. P. Robinson, Jr., Box 500, Congress, Ariz., and C. P. Zannaras of New York, N. Y.

The only known encumbrance against the property is held by Kennametal, Inc., P. O. Box 231, Latrobe, Pennsylvania. The owners have received $10,000 from the corporation as an advance payment on tungsten concentrates.

GEOLOGY AND MINERALOGY 4/

The dominent rocks on the property are mica schists and amphibolites. These rocks have strikes that vary from N. 20° E. to N. 60 E., and dips that are vertical or steep in both directions. Granodiorite intrudes the rocks to form contacts with strongly metamorphised schist.

Scheelite, the only tungsten mineral noted, occurs under 3 conditions: (1) small grains disseminated in epidote-diopside rock; (2) crystals up to an inch long in quartz veins; and (3) crystals up to ¼-inch in tourmaline-bearing pegmatite.

DEPOSITS

General

Several widely scattered occurrences of scheelite were visited but a detailed examination was confined to Zannarapolis claim no. 28 because: (1) this claim is the site of the proposed exploratory work; (2) the applicant stated, during the examination, that this claim contained the best showings; and (3) information obtained from reports on previous examinations of the property indicated that claim no. 28 contained the highest concentration of scheelite.

Claim No. 28

The mineralized zone is confined to a ridge that follows the strike of the well-defined schistosity. The shaft is located at the north end of the zone that extends southward for about 1,000 feet (fig. 2 in Geological Report). Outcrops of scheelite bearing rock

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4/ Extracted from a previously cited report, see footnote 2.

occur at widely scattered places, probably as lenses, within the zone. The outcrops are composed mainly of silicified schist that is cut by discontinuous veinlets of quartz. Epidote is commonly present in small amounts. Scheelite is closely associated with quartz and the epidote rock, and also occurs at random along fractures in the silicified schist. It occurs as crystals that are generally 1/8-inch or less in diameter. Scheelite also is present in the float between outcrops.

The silicified zone exposed at the bottom of the shaft is fractured to a fairly high degree and the schistosity is not readily observable. Scheelite is present mainly along fractures and is most highly concentrated at 2 places where low-angle shears are intersected by fractures of steep dip. Except for these differences, the surface and underground occurrences of scheelite are similar.

Eight samples, 4 each from the surface and underground, were taken during the current examination. Sampling on the surface was confined to a shallow trench cut across each of 4 small mineralized outcrops (fig. 2). Each of the samples contained 10 to 20 pounds of material that was chipped from the face of a trench. The 4 underground samples, each 15 to 20 pounds by weight, were taken at the stope from the bottom of the shaft (fig. 3). One of the samples was obtained from 2 high-grade zones in the south face of the stope. The remainder of this stope face was sampled in 2 sections, the right and left-hand halves of the face. Each of these samples was obtained by chipping material from 9 places. The other sample was secured by chipping material from about 15 places at the east face of the stope. Lamping of the mineralized

zones indicated that representative material was secured for assay.

The samples first were analysed at the Jacobs Assay Office, Tucson, Ariz. These assays were not accepted because lamping had indicated that some of the samples contained a higher WO_3 content than reported by Jacobs. The Southwest Experiment Station of the Bureau of Mines then analysed the original pulps and reported acceptable assays. These assays are shown on figures 2 and 3 and are shown in the following table that also contains the assays by Jacobs.

Sample No.	Percent WO_3 Jacobs	Percent WO_3 U.S.B.M.
11470	0.05	0.10
11471	0.06	0.39
11472	0.19	0.64
11473	0.05	0.01
11474	0.04	0.01
11475	0.06	0.02
11476	0.05	0.22
11477	0.03	0.03

ORE RESERVES

A reasonably accurate estimate of the tonnage reserves of scheelite bearing rock at claim no. 28 cannot be made because; (1) there are insufficient surface exposures; (2) the mineralized zone from 0-to 60-feet in the shaft is not accessible for inspection; and (3) the mineralized zone at the bottom of the shaft has no definable altitude. The 4 mineralized zones on the surface have an average width of 2.6 feet and an indicated strike length of about 20 feet. They appear to be outcrops of lens-shaped deposits. The indicated reserves in the 4 deposits have been estimated at 20 tons per foot of depth.

However, it is probable that other mineralized zones are present and that the deposits may be more extensive than indicated. Therefore, it is reasonable to assume that the inferred reserves of scheelite bearing rock may be several times the indicated reserves.

The 4 surface samples showed a WO_3 content that ranged from 0.03 to 0.39 percent, and averaged 0.16 percent. The assays of underground samples at the south face showed an average WO_3 content of 0.06 percent over a width of 15 feet. Within a width of 7 feet, that would include the 2 small zones of 0.64 WO_3, the average WO_3 content is about 0.11 percent. These data indicate that the deposits contain an average of less than 0.20 percent WO_3.

The following estimates show that scheelite-bearing rock, containing as much as 0.20 percent WO_3, does not constitute economic ore. Mill recovery on this grade of material might be as high as 70 percent. On this basis, 1 ton of "run-of-mine" muck would yield about 3 pounds of concentrate valued at less than $9. It is indicated that an operation of this type would be unprofitable because under optimum conditions the production costs would be $35 to $40 a ton. Sorting before milling would be an alternate method of production. The following estimates show that this method also would result in an unprofitable operation. The ratio of high-to low-grade material is probably highest at the south face of the underground workings. There, sorting of 6 tons of "run-of-mine" muck would probably yield 1 ton containing 0.64 percent WO_3. Milling of 1 ton of sorted ore probably would yield about 9

pounds of concentrates valued at approximately $28. On that basis, the "run-of-mine" ore would be valued at less than $5 a ton. Mining costs alone would exceed the value of the ore. Sorting to a lesser or greater degree than indicated in the above estimates would produce no material economic change in the operation.

PRESENT STATUS

Operations

No ore is being produced nor is the concentration mill being operated at present (November 1951).

Mining operations are confined to preparatory work for surface mining of a small scheelite bearing zone on claim number 25. This work is being done by J. P. Robinson, one of the owners, and one laborer. The principal equipment in use is a portable compressor and an International High-Lift loader.

Mine Workings and Equipment

Zannarapolis Claim No. 28

The proposed exploratory work is confined to Zannarapolis claim no. 28. This claim has been developed by a 75-foot inclined shaft, 2 small trenches, and an open-cut about 100 feet long, 60 feet wide and an average of 3 feet deep (fig. 2). A small stope has been opened at the bottom of the shaft (fig. 3). The shaft contains 1-½ compartments and is timbered to a depth of about 60 feet.

The shaft is equiped with a small headframe, and a skip that is powered by a 15 H.P. Fairbanks-Morse hoist. Air for drilling is supplied

by a 125 cubic foot Ingersoll Rand Compressor. A 5 H.P. Fairbanks-Morse generator provides electrical current for blasting and lighting. The surface plant also includes a small ore bin, a 4 inch by 8-inch Blake-type crusher, a picking-belt installed in a dark-room, and a ramp for loading trucks. Two mine cars are located near the shaft.

Mine Camp

A 4-room house, a 23-foot trailer, and a 1-room chemical labratory are located within a few hundred yards of the shaft. The labratory contains all equipment and supplies necessary for the analysis of ores by both wet and fire methods.

Claim No. 19

The principal working on this claim is a side-hill cut about 30 feet long, 30 feet wide and an average of about 15 feet deep. Sheelite-bearing rock from this cut was crushed before being hauled to the mill. The crushing plant consists of a 40-ton bin, and a 8 inch by 15 inch crusher driven by a 15 H.P. motor. Power was furnished by a 40 KVA 440-volt generator that is installed near the crushing plant.

Other

There are several other small pits on the property.

Mill

The mill is 12.5 miles by road from the mine. It is on the east bank of Burro creek at an altitude of about 180 feet above the stream. Crushed ore from a 25-ton bin is carried by a 10-inch belt feeder to a 3-½ by 7-foot ball mill that is in closed circuit with a drag classifier. Overflow from the classifier goes to an impact amalgamator,

thence to a primary concentrating table, and thence to a secondary concentrating table.

Power is supplied by a 90 H.P. Buda Diesel engine connected to the equipment by line shafts and belts.

All equipment is installed on concrete foundations and is housed in a metal-sheeted building.

Water for milling purposes is pumped from Burro Creek and is stored in two 14-foot inside-diameter by 6-foot deep concrete tanks. It flows by gravity from the storage tanks to a smaller constant-head tank that controls the flow of water to the mill. A third 14-foot diameter by 6-foot deep tank has been built for use as a pulp-thickner.

CONCLUSIONS

The indicated tungsten reserves on claim no. 28 are 20 tons of scheelite-bearing rock containing less than 0.20 percent WO_3 per foot of depth.

The proposed exploratory work probably could develop reserves that would amount to several times the indicated reserves. However, there is no reason to believe the scheelite content of these inferred reserves would be higher than that of the indicated reserves.

The tungsten deposits of claim no. 28 cannot be exploited at a profit because the mining costs alone would exceed the value of the scheelite-bearing rock.

The degree and extent of scheelite mineralization at other places on the Zannarapolis property is probably less than at claim no. 28.

RECOMMENDATIONS

The application for a loan to carry out explorations at claim no. 28 should be denied because the proposed work would not develop economic ore.

IN REPLY REFER TO:

G-MD-DML

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

February 6, 1952

Memorandum

To: George C. Selfridge, DMEA

From: D. M. Lemmon, U.S.G.S.

Subject: Field report DMA 2030 - Tungsten
Zannarapolis No. 28 claim
Yavapai County, Arizona

The Zannarapolis No. 28 claim was examined by T. M. Romelo of the Bureau of Mines and J. N. Faick of the Geological Survey in November 1951. Their report shows that there is little chance of finding commercial ore on the property.

I concur with the Field Team recommendation that the exploration project costing $123,259.38 be denied.

Dwight M. Lemmon

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

REGIONAL DIRECTOR'S OFFICE
REGION IV
OCT 15 1951
BUREAU OF MINES
DENVER, COLORADO

OCT 12 1951

WRD
10-22-51

Mr. Jack H. East, Jr., Executive Officer
DMA Field Team, Region IV
224 New Customhouse Bldg.
Denver 2, Colorado

Subject: DMA-2030 Tungsten, Exploration project
costing $123,259.38
Zannarapolis Tungsten Mine
Box 500, Congress, Arizona

Dear Mr. East:

We are enclosing a copy of the subject application form MF-103 for a field appraisal. Please have your engineers check the following:

1-More surface exploration appears necessary before such extensive underground work.

2-Determine the practicability of diamond drilling compared to the proposed sinking and drifting.

3-Report on the geology and apparent grade of the deposit with a lamp and any necessary assays.

4-Applicant's share of cost $17,600 for two supervisors is top heavy and the rental items are out of line.

5-Costs are excessive and include many questionable items, as waterwell $5,900, three Servel refrigerators $1,200 and etc.

6-Competence of applicant.

7-Suggest a stage project-surface trenching and/or test pitting and sampling to be followed by other work- if the property merits an exploration project.

8-Investigate the possibility of other more favorable projects in the vicinity. The applicant presumably owns 30 claims of which he is applying on only one.

9-If approval of a project is recommended, please prepare the contract forms and exhibits. It will be necessary to secure a subordination agreement from Kennametal Inc., which has a lien for $10,000.

Very truly yours,

A. B. Parsons
Acting Director, Supply Division

Enclosure

Approved:

Bureau of Mines

Geological Survey

OCT 17 1951

REGIONAL DIRECTOR'S
OFFICE
REGION IV
OCT 15 1951
BUREAU OF MINES
DENVER, COLORADO

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8-Investigate the possibility of other more favorable projects in the vicinity. The applicant presumably owns 30 claims of which he is applying on only one.

9. If approval of a project is recommended, please prepare the contract forms and exhibits. It will be necessary to secure a subordination agreement from Kennametal Inc., which has a lien for $10,000.

Very truly yours,

A. B. Parsons
Acting Director, Supply Division

Approved:

Bureau of Mines

Geological Survey

OCT 12 1955

Mr. Jack H. East, Jr., Executive Officer
DMA Field Team, Region IV
224 New Customhouse Bldg.
Denver 2, Colorado

Subject: DMA-2030 Tungsten, Exploration project
costing $123,259.39
Zammarepelis Tungsten Mine
Box 500, Congress, Arizona

Dear Mr. East:

We are enclosing a copy of the subject application form MF-103 for a field appraisal. Please have your engineers check the following:

1-More surface exploration appears necessary before such extensive underground work.

2-Determine the practicability of diamond drilling compared to the proposed sinking and drifting.

3-Report on the geology and apparent grade of the deposit with a lamp and any necessary assays.

4-Applicant's share of cost $17,600 for two supervisors is top heavy and the rental items are out of line.

5-Costs are excessive and include many questionable items, as waterwell $5,000, three servel refrigerators $1,200 and etc.

6-Competence of applicant.

7-Suggest a stage project-surface trenching and for test pitting and sampling to be followed by other work- if the property merits an exploration project.

8-Investigate the possibility of other more favorable projects in the vicinity. The applicant presumably owns 30 claims of which he is applying on only one.

9-If approval of a project is recommended, please prepare the contract forms and exhibits. It will be necessary to secure a subordination agreement from Kennametal Inc., which has a lien for $10,000.

Very truly yours,

A. B. Parsons
Acting Director, Supply Division

Approved:

Bureau of Mines

Geological Survey

Zannarapolis Tungsten Mine
Box 500
Congress, Arizona

In reply please refer to
DMA-2030 Tungsten

Gentlemen:

Your application for an exploration loan is being referred to Mr. J. H. East, Jr., 224 New Customhouse Building, Denver 2, Colorado, for a field appraisal.

Please contact Mr. East and offer your co-operation.

Very truly yours

SIGNED

A. B. Parsons
Acting Director, Supply Division

Zannaraolis Tungsten Mine
Box 500
Congress, Arizona

In reply please refer to
DMA-2030 Tungsten

Gentlemen:

Your application for an exploration loan is being referred to Mr. J. H. East, Jr., 224 New Customhouse Building, Denver 2, Colorado, for a field appraisal.

Please contact Mr. East and offer your co-operation.

Very truly yours,

SIGNED

A. B. Parsons
Acting Director, Supply Division

Form MF-103
(April 1951)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Budget Bureau No. 42-R1035.
Approval expires 6-30-51.

APPLICATION FOR AID FOR AN EXPLORATION PROJECT PURSUANT TO MINERAL ORDER 5, UNDER DEFENSE PRODUCTION ACT OF 1950

DO NOT FILL IN THIS BLOCK

Docket No. DMA-2030

Date received 10-28-51

Participation

REVISED

Zannarapolis Tungsten Mine
Box 500
Congress, Arizona

Name and address of applicant

Date Sept. 27, 1951

DEFENSE MINERALS ADMINISTRATION WASHINGTON, D.C. SEP 28 3 47 PM '51

FILL IN THIS BLOCK

Date of application August 28, 1951

Estimated cost $123,259.38

Mineral or metal Tungsten (Scheelite)

Percentage of Government participation 75%

Location of mine Yavapai County

Date of filing MF-100

DMA Docket Number, if available DMA 2030

INSTRUCTIONS

Read Mineral Order 5, Regulations Governing Government Aid in Defense Projects, before completing this application. Submit four signed copies of the application to Defense Minerals Administration, Department of the Interior, Washington 25, D. C., or to the nearest field executive officer thereof, with your name and address on each sheet of the application and all accompanying papers. If any question is inapplicable, or if you cannot answer it, so state on the form. Where the space provided for answer is insufficient, answer on a separate sheet, annex it to the application form, and refer to it in space for answer. If the application is approved, you will be presented with an exploration project contract on Form MF-200, for your signature.

THE APPLICANT

*1. Is applicant an individual, partnership, or corporation?
*2. If a partnership, state names and addresses of partners.
*3. If a corporation, state names and addresses of officers, directors, and five largest stockholders.
*4. Describe the mining and general business experience of (*a*) the applicant, and (*b*) the person or persons who will manage the project.
*5. Are you the owner or the lessee of the property?
6. If owner, state what claims, liens, or encumbrances, if any, are against the property.
7. If lessee, attach a copy of the lease and state if it is in good standing.

NOTE.—It will be necessary to procure and attach to the exploration project contract agreements of claimants, lienors, encumbrances and lessors subordinating their interests in the property to the interest of the Government under the contract.

8. Furnish current financial statement, showing assets and liabilities, and a profit and loss statement.
9. How much money is applicant prepared to invest in proposed project? Is it sufficient to pay your part of the cost of the project as detailed in question 23 of this application form, in accordance with the regulations on Government participation (Section 9 of Mineral Order 5)?

*If you have already answered these questions on MF-100, you are not required to answer the questions for this application.

16—64067-1

THE PROPERTY

10. (*a*) Give a description of the real property that will be in any way involved in the exploration project, including any existing mine or operating property.
    (*b*) Give the legal description of the exact parcel, plot, or area upon which the exploration is to be conducted.

    NOTE.—If both areas are the same, so state. The only obligation to repay the Government is from the net earnings from any commercial discovery made in the area specified in (*b*) above in which the exploration is to be conducted, and the expenditure of funds which may be charged as costs of the project must be limited to that area or to work necessary to perform the exploration in that area.

*11. State the present and former names of the property, if any.

*12. State, in detail, the location of the property with reference to towns, railroads, roads, shipping points, including distances and directions and kinds and conditions of roads.

*13. State source and quantity of water available for operations and its sufficiency at all seasons.
State amount of power to be used, rate per hour or other cost, and source.

*14. Describe any existing useable facilities, equipment, buildings, or structure now on the property that will be devoted to the exploration work.

15. State in detail how the ore could be shipped and how and where milled.

*16. History:
    (*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for any past suspensions of operations.
    (*b*) State briefly the known history and production of adjoining and neighboring properties.
    (*c*) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.

*17. Production:
    (*a*) If mine is in production, furnish the following information:

	Tons per day	*Grade or analysis*	*Cost per ton*	*Net value per ton*
(1) Mining				
(2) Milling				
(3) Shipped or sold				

*18. Ore or mineral reserves: (If property is or has been operating.)
    (*a*) Describe the ore or mineral deposits briefly.
    (*b*) Submit available maps and assay data.
    (*c*) Give estimated tonnage and grade of each class of ore reserves.

19. State any conditions or circumstances regarding the property not sufficiently brought out by the foregoing questions.

THE EXPLORATION

20. For what mineral or minerals and for what types of deposits and ores will the exploration be conducted?

21. Describe briefly, but concisely, the proposed work and the estimated time required to complete it.

    NOTE.—The Government will not participate in a project that will require more than 2 years to complete.

22. Furnish statement of the geological basis of the project with particular emphasis on factors leading the operator to expect the finding of commercial ore bodies. This statement should be accompanied by supporting maps such as geological maps, maps of the proposed openings and assay maps, sample lists, and other pertinent data.

THE REQUIREMENTS AND COSTS

23. Tabulate in the form of an itemized statement with a sum for each item the estimated requirements and costs of the project so that the total will give the estimated cost of the project in which the Government will participate, as follows:
    (*a*) Labor, by numbers and classes (miners, muckers, millmen, etc.), with wages of each.
    (*b*) Supervisors, by numbers and positions, with salaries of each.
    (*c*) Cost of necessary repairs to existing facilities, structures, and buildings.
    (*d*) Cost of necessary installation or construction of additional facilities, structures, and buildings.
    (*e*) Cost of items of equipment, not now owned by the applicant which must be purchased for operations at a cost of $50 or more each.
    (*f*) Cost of rental for equipment which the operator proposes to rent.
    (*g*) Rental value of items of equipment which the operator now owns and which will be devoted to the work.
    (*h*) Cost of materials and supplies, including items of equipment costing less than $50 each.
    (*i*) Cost of power, water, utilities, and any other items not provided for above.

24. Furnish a time schedule of the project, stated in terms of months after project is approved, showing progress expected to be accomplished and the money expected to be spent.

CERTIFICATION

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this form and accompanying papers is correct and complete to the best of their knowledge and belief.

ZANNARAPOLIS TUNGSTEN MINE
(Name of company)

By J. H. Zannara
(Signature of authorized official)

September 27, 1951
(Date)

Manager
(Title)

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.

*Same as footnote on page 1.

16—64067-1 U. S. GOVERNMENT PRINTING OFFICE

1. Applicant is partnership.

2. Name of Partners: John Philip Zannaras, Box 500, Congress, Ariz.
John Pierce Robinson, Jr. " " "

3. Inapplicable.

4. Experience of Applicants:

J. P. Zannaras, Applicant and Manager, is a registered Mining Engineer (License 1269). 1924 Graduate of Lehigh University of Bethlehem, Pa. Member of A.I.M.E., member of the Mineralogical Society of America with many years of practical mining experience.

John Pierce Robinson, Jr., Applicant, Mine Supt., two years college, son of a miner, first experience in coal mining more than 10 years of practical mining experience. (Sinking shafts, open pit mine, etc.)

5. Owners of property (Zannarapolis No. 28, patented for which application is made).

6. Zannarapolis No. 28 is one of the Zannarapolis group of 30 mining claims for which group a certain encumbrance exists to the Kennametal, Inc., P.O. Box 231, Latrobe, Pa. for the amount of $10,000.00 advance against purchases of concentrates.

7. Inapplicable.

8. Zannarapolis No. 28 was not operating and therefore no financial statement available.

9. Applicant is prepared to invest $30,814.87 in the form of salaries of the applicants and use of their equipment, and it is sufficient to cover the applicant's contribution of 25%.

10. Description of Real Property: (a & b) Zannarapolis No. 28 patented claim is one of the Zannarapolis No. 1-30 mining claims of which eight are patented claims and one patented millsite located in Township 13 N, Range 10 W, Gila & S.R. Meridian.

11. Zannarapolis No. 28 (present name -- no former names).

12. Location of Mine: Zannarapolis No. 28 is located about 35 miles Northwest of Congress Junction, about 5 miles easterly from the new Kingman cut-off road. Shipping point of concentrates will be Congress, Arizona.

12. (Cont'd). The road to the Mine is in excellent condition, 30 miles of which on the Kingman Cut-off Road can be traveled by cars at 60 miles an hour.

13. Water Supply: Water to be used for this project will come from Burro Creek on which Creek applicants have a water right since 1940. Such water is available throughout the year.

14. Facilities: Facilities on property are the following:

15 h.p. Fairbanks Morse Hoist
125 cu. ft. Ingersoll Rand Compressor
5 K.V.A. Fairbanks Morse Generator for blasting and lights.
Head frame, skip, ore bin, picking belt, dark room, 2 mine cars, truck loading ramp, 70' - 6' x 8' inside dimensions, incline two compartment shaft, completely timbered, 1 cub. yard cement mixer, blower for ventilation.

21 x 28 four room house, 23' trailer and chemical laboratory.

1 - TD 6 International High Lift.
1 - 2-1/2 ton International Dump Truck
1 - 1-1/2 ton Chevrolet General Service Truck

15. Milling of Ore: The ore on this project will be milled at the applicants' mill on Burro Creek, which mill is now producing Scheelite concentrates from Zannarapolis No. 19. The concentrates will be shipped from Congress, Arizona.

16. History: (a) A 70' shaft has been sunk.

During World War II, 10 tons of ore was shipped to the stockpile of the Metal Reserves, Phoenix, Arizona, which assayed 1.94%.

The width of the vein was about 8' at the hanging wall. However, the entire ore is not expected to run 1.94%. A fair average of .70 to 1% could be expected.

(b) The following properties are on the same contact as the Zannarapolis group:

Old Dick Mine and Copper King Mine - these two mines expected to lead the zinc production in Arizona. During World War No. 1 a lens of 9 million pounds of zinc sulphite was taken from the Copper King.

Bagdad Mine producing 4,000 tons daily.

Hillside Mine 1,000 ft. deep without bottoming of the ore.

(c) Not available.

17. Mine not in production.

18. (a) The ore consists of Scheelite occurring in tactites with epidote and garnet. Vein strikes in a Northeasterly direction and dips Westerly 70 degrees.

(b) Assays taken in 2 ft. width of the vein in the shaft show as per attached photostats
1.94% WO3, 1.92% WO3, 1.88% WO3, 1.74% WO3.

Attached map of proposed work extending the present shaft. The drifts follow the outcrops of the vein.

The ore will be mined by selective mining and it is estimated that a 4 ft. width of the vein can be mined which it is estimated to run 0.7% WO3.

(c) Estimated ore reserve is 240 ft. x 300 ft. x 4 ft. 288,000 cu. ft. or 28,800 tons of 0.7 WO3 of present market valuation in excess of $1,000,000.00.

19. It is believed that conditions have been sufficiently detailed in the above questions.

THE EXPLORATION

20. Exploration to be made for Tungsten (Scheelite)

21. Work to be done: Present shaft to be extended to 300 ft. depth and 3 drifts of 240 ft. each to be driven in the direction of the outcrops.
Time Required: 445 days.

22. Attached herewith geologic sketch of the 15 miles from the Zannarapolis group to the Hillside Mine. Under 17 we attached a map of the proposed exploration work.

The applicant, J. P. Zannaras, registered mine engineer, has made an 11 year study of this territory. And the geologic sketch is a result of this study.

Under 17 we also attached assays taken from this vein.

On the geologic sketch attached herewith we explain the reasons which lead us to expect the finding of large commercial ore bodies of Scheelite, and our present work to the 70' level has already proven our expectations.

LAB FORM 1

ARIZONA TESTING LABORATORIES

ANALYTICAL AND CONSULTING CHEMISTS
ASSAYERS, MINING ENGINEERS

PHONE 3-6272 | 823 EAST VAN BUREN STREET | P. O. BOX 1888

CERTIFICATE OF ANALYSIS

Phoenix, Ariz., December 15, 1943

No. 49962

Sample of Tungsten Ore Received 12/11/43, 194

From METALS RESERVE COMPANY

Marked P-6 Mr. W. M. Snow

We have employed official methods in the examination of the above sample, and find the results as follows:

Moisture	1.20%
Analysis on dry basis	
Tungsten (WO_3)	1.92%

9.9553 Tons @ $36.36 = $358.34

REGISTERED ASSAYER
CERTIFICATE EXPIRES
CLAUDE E. McLEAN
DEC. 31, 1943
ARIZONA, U.S.A.

Respectfully submitted,
ARIZONA TESTING LABORATORIES,

By [signature]
Claude E. McLean Chief Chemist

LAB FORM 1

ARIZONA TESTING LABORATORIES

ANALYTICAL AND CONSULTING CHEMISTS
ASSAYERS, MINING ENGINEERS

PHONE 3-6272 823 EAST VAN BUREN STREET P. O. BOX 1888

CERTIFICATE OF ANALYSIS

Phoenix, Ariz., February 3, 194 4

No. 50693

Sample of Tungsten Ore Received 1/31, 194

From ARIZONA TESTING LABORATORIES

Marked Smith-Emery #241349

We have employed official methods in the examination of the above sample, and find the results as follows:

Tungsten (WO_3)	1.88%

Respectfully submitted,
ARIZONA TESTING LABORATORIES,

By
Claude E. McLean Chief Chemist

LAB FORM 1

ARIZONA TESTING LABORATORIES

ANALYTICAL AND CONSULTING CHEMISTS
ASSAYERS, MINING ENGINEERS

PHONE 3-6272 | 823 EAST VAN BUREN STREET | P. O. BOX 1888

CERTIFICATE OF ANALYSIS

Phoenix, Ariz., February 11, 1944

No. 50807

Sample of Tungsten Ore Received 2/7, 194

From ARIZONA TESTING LABORATORIES

Marked Ledoux & Co. #554817 P-6 # 49962

We have employed official methods in the examination of the above sample, and find the results as follows:

Tungsten (WO_3) 1.94%

Respectfully submitted,
ARIZONA TESTING LABORATORIES,
By
Claude E. McLean Chief Chemist

FORM 8-8-42-50M-F. & K. INC.

LEDOUX & COMPANY,
(Inc.)

ENGINEERS, CHEMISTS AND ASSAYERS

155 SIXTH AVENUE, NEW YORK

RR **REPORT OF ASSAY**

No. 554817 New York, Jan. 6, 1944

Our assay of the sample of TUNGSTEN ORE

From Zannarapolis Tungsten Mine

Marked: P-6
#49962

and submitted to us, shows:

After drying:

Tungstic Oxide - - - - - 1.74%
(WO3)

* * * * *

To Zannarapolis Tungsten Mine

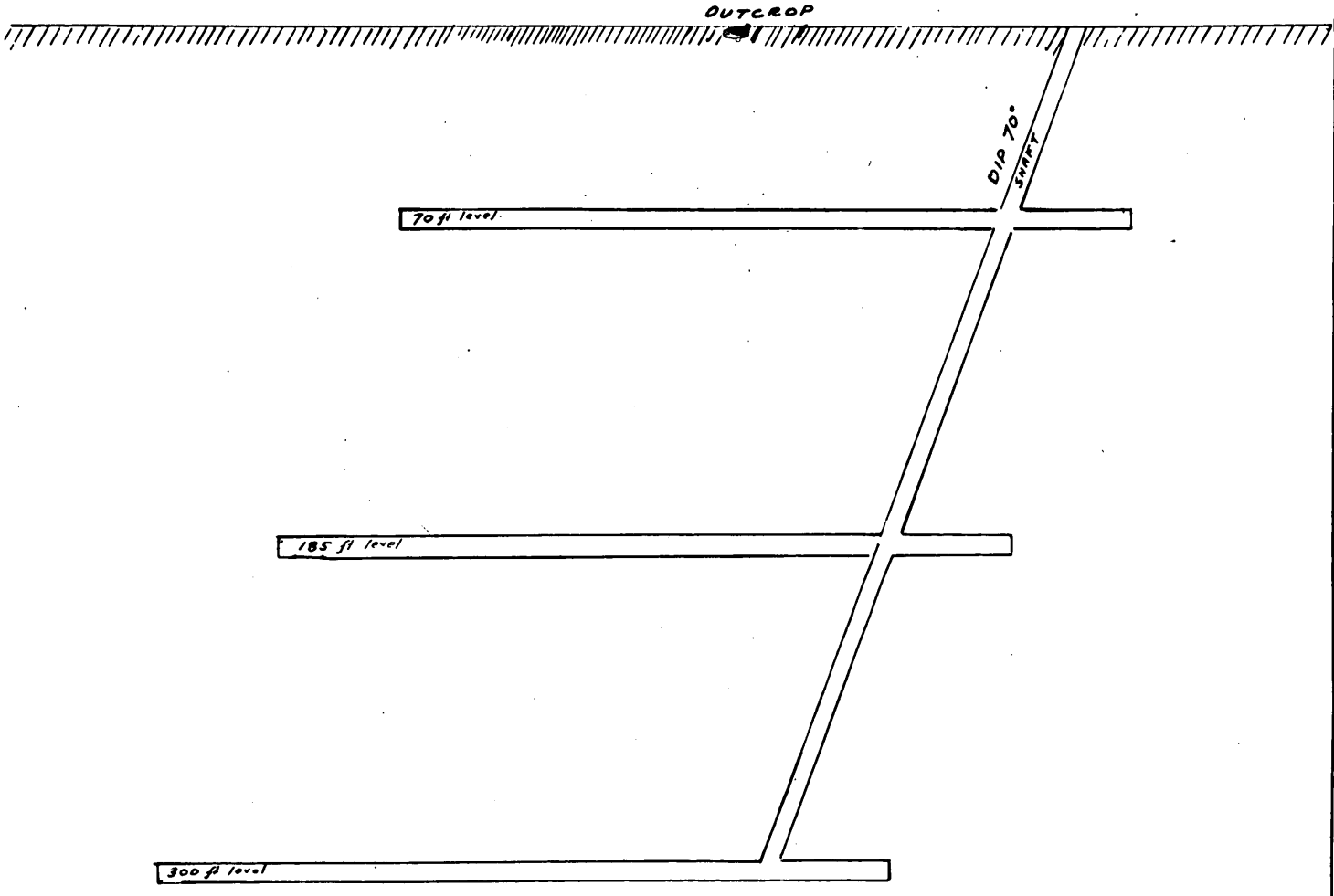
LEDOUX & COMPANY, INC.

[illegible]

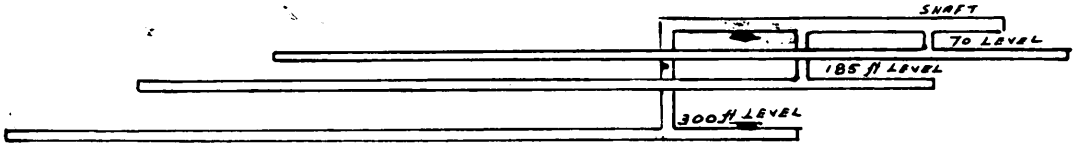
ZANNARAPOLIS TUNGSTEN MINE

J P ZANNARAS, J P ROBINSON Jr.

PROPOSED EXPLORATION OF OUTCROPING SCHEELITE FROM PRESENT 70 FT LEVEL TO 300 FT LEVEL AND THREE 240 FT DRIFTS.



LONGIT. SEC IN PLANE OF VEIN



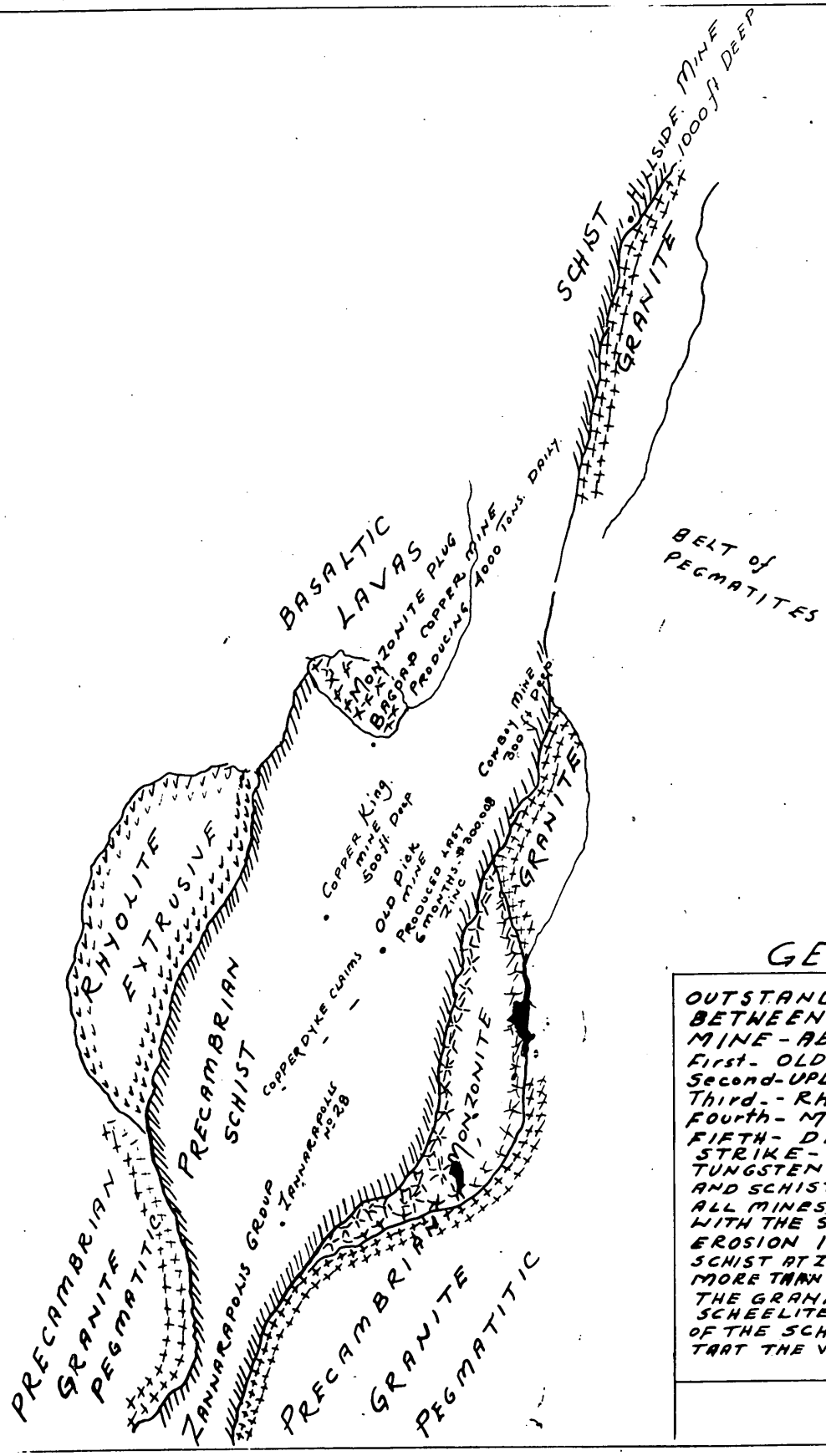
PLAN-RELATIVE HORIZONTAL PROJECTION OF SHAFT AND DRIFTS

D.M.A-2030

ZANNARAPOLIS Nº 28.

ASSAY-REPORTS, SHAFT VEIN 2 FEET WIDE 10 TONS SAMPLE METALS RESERVE

ARIZONA TEST LAB	1.92% WO_3
SMITH-EMERY	1.88% WO_3
LEDOUX & Co	1.94% WO_3
2 ft VEIN LEDOUX	1.74% WO_3
EXPECTED 4 ft vein	0.70% WO_3



D.M.A 2030

GEOLOGIC SKETCH

OUTSTANDING GEOLOGIC FEATURES BETWEEN ZANNARAPOLIS AND HILLSIDE MINE - ABOUT FIFTEEN MILES BELT

First - OLDEST ROCK PRECAMBRIAN SCHIST
Second - UPLIFTED BY PRECAMBRIAN GRANITE
Third - - RHYOLITE - EXTRUSIVE AND INTRUSIVE
Fourth - MONZONITE INTRUSION
FIFTH - DIORITE.

STRIKE - IN GENERAL NORTH EASTERLY
TUNGSTEN MINERALIZATION NEAR GRANITE AND SCHIST CONTACT - IN TACTITES.
ALL MINES ON THIS BELT AND ON THE SAME CONTACT WITH THE SCHEELITE VEINS ARE VERY DEEP.
EROSION IN THE TUNGSTEN BELT PROVES THAT THE SCHIST AT ZANNARAPOLIS No 28 WILL EXTEND IN DEPTH MORE THAN 300 FEET AND THEREFORE ALSO THE VEIN.
THE GRANITE CONTACT AND THE FACT THAT THE SCHEELITE VEINS STRIKE WITH THE SCHISTOZITY OF THE SCHIST ARE FAVORABLE CHARACTERISTICS THAT THE VEINS ARE OF DEEP SEATED ORIGIN.

SCALE 1" = 1 mile

22. (Cont'd). The outcrops indicate that the width and the quality of the ore will be sustained for the length of the drifts.

This property has been examined by the U.S. Geological Survey and Dr. Krauskopf of Stanford University then with the Government Tungsten Division personally recommended with the R.F.C. for a loan of $40,000.00 for further development on Zannarapolis No. 28.

The R.F.C. offered us, to start with, a $5,000.00 loan which we refused as being too small to our investment which now exceeds $80,000.00 and we never received any government loan on this property or any other property of ours.

THE REQUIREMENTS AND COSTS

23. (a) LABOR -

Shaft (day)	2 Muckers	@ $14.00	115 days		$ 3,220.00
	1 Hoist Man	@ 12.00	115 "		1,380.00
	1 Helper	@ 12.00	115 "		1,380.00
Shaft (Night)	1 Driller	@ 15.00	115 "		1,725.00
	1 Helper	@ 14.00	115 "		1,610.00
	1 Hoist Man	@ 12.00	115 "		1,380.00
Drift (Night)	1 Driller	@ 15.00	300 "		4,500.00
	1 Helper	@ 14.00	300 "		4,200.00
	1 Top Man	@ 12.00	300 "		3,600.00
Drift (Day)	2 Muckers	@ 14.00	300 "		8,400.00
	1 Helper	@ 12.00	300 "		3,600.00
	1 Top Man	@ 12.00	300 "		3,600.00
					$ 38,595.00

(b) SUPERVISORS

2 Supervisors @ $20.00 daily (offered by the Applicants) $ 17,600.00

(c) COST OF NECESSARY REPAIRS

Repairs of Head Frame, and rearranging Hoist:

Lumber	$ 626.00	
Cement	135.00	
Reinforcing Rods . . .	50.00	
Steel Rods	200.00	
Labor	2,000.00	
Miscellaneous	225.00	$ 3,236.00

(d) COST OF NECESSARY INSTALLATIONS

Water Well, to be drilled 400 ft. from shaft:

Well	3,500.00 (300 ft. deep)	
Pump	1,600.00	
Pipe	200.00	
Tank	300.00	
Road to the Well	300.00	$ 5,900.00

(e) COST OF ITEMS OF EQUIPMENT

2 House trailers	1,000.00
2 Butane Stoves	300.00
3 Servel Refrigerators .	1,200.00

Brought Forward . . $ 65,331.00

TOTAL BROUGHT FORWARD . . . . . $ 65,331.00

(e) COST OF ITEMS OF EQUIPMENT (Cont'd)

1 Loader	$ 3,000.00	
2 Large Mineralights	600.00	
1 Dump - 2-1/2 Ton Truck	3,000.00	
Tools (Vise, wrenches, pipe threading machine, pipe cutters, saws, anvil, hammers, etc.)	500.00	
1 Atlas Air Hammer, with Jack Legs . . .	900.00	$ 10,500.00

(f) None

(g) RENTAL VALUE

15 h.p. Fairbanks Morse Hoist	
125 cu. ft. Ingersoll Rand Compressor	$250.00 per Mo.
5 h.p. Fairbanks Morse Generator for blasting and lights.	
Ventilator Blower	
1 cu. yard cement mixer	
Head frame, skip, ore bin, picking belt, dark room, 2 mine cars, truck loading ramp.	75.00 per Mo.
21 x 28 four room house, 23' trailer and chemical laboratory	150.00 per Mo.
1 TD 6 International High Lift	200.00 " "
1 2-1/2 Ton International Dump Truck	150.00 " "
1 1-1/2 Ton Chevrolet General Service Truck	150.00 " "

(h) COST OF MATERIALS AND SUPPLIES

Lumber	$ 11,199.00	
Rail	2,064.00	
Holding Bolts	981.36	
Ventilation Tube	1,122.00	
Electric Wire, including conduit .	336.00	
Explosives	2,476.00	
Steel	885.00	
Bits	3,020.00	
Air and Water Lines	677.50	
Ladder	119.28	
Miscellaneous Supplies	2,928.00	$ 25,808.14

(i) COST OF POWER

Power	$ 8,173.44	
Transportation	3,500.00	
Repairs	2,500.00	
Insurance	4,243.80	
Taxes (Social Security)	1,203.00	
Clerical Work	2,000.00	$ 21,620.24

GRAND TOTAL $123,259.38

25% of $123,259.38 or . . . . . $ 30,814.87
Offered by Applicant as follows:

Supervision	17,600.00
Rental of their Equipment . . .	13,214.87
	$ 30,814.87

24. TIME SCHEDULE

30 days - Repair Head Frame and Well Drilling
15 " - Sinking from present 70 ft. level to 100 ft. level
100 " - Drifting 240 ft. in 100 ft. level
50 " - Sinking to 200 ft. level
100 " - Drifting 240 ft. in 200 ft. level
50 " - Sinking to 300 ft. level
100 " - Drifting 240 Ft. in 300 ft. level

All equipment must be purchased upon approval of the loan.

Form MF-103
(April 1951)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Budget Bureau No. 42-R1035.
Approval expires 6-30-51.

APPLICATION FOR AID FOR AN EXPLORATION PROJECT PURSUANT TO MINERAL ORDER 5, UNDER DEFENSE PRODUCTION ACT OF 1950

DO NOT FILL IN THIS BLOCK

Docket No. DMA 4 - 2030

Date received 9-28-51

Participation

REVISED

DEFENSE MINERALS ADMINISTRATION WASHINGTON, D.C.
SEP 28 3 47 PM '51

Zannarapolis Tungsten Mine
Box 500
Congress, Arizona

Name and address of applicant

Date Sept. 27, 1951

FILL IN THIS BLOCK

Date of application August 28, 1951

Estimated cost $123,259.38

Mineral or metal Tungsten (Scheelite)

Percentage of Government participation 75%

Location of mine Yavapai County

Date of filing MF-100

DMA Docket Number, if available DMA 2030

INSTRUCTIONS

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6. If owner, state what claims, liens, or encumbrances, if any, are against the property.
7. If lessee, attach a copy of the lease and state if it is in good standing.

NOTE.—It will be necessary to procure and attach to the exploration project contract agreements of claimants, lienors, encumbrances and lessors subordinating their interests in the property to the interest of the Government under the contract.

8. Furnish current financial statement, showing assets and liabilities, and a profit and loss statement.
9. How much money is applicant prepared to invest in proposed project? Is it sufficient to pay your part of the cost of the project as detailed in question 23 of this application form, in accordance with the regulations on Government participation (Section 9 of Mineral Order 5)?

*If you have already answered these questions on MF-100, you are not required to answer the questions for this application.

16—64067-1

THE PROPERTY

10. (*a*) Give a description of the real property that will be in any way involved in the exploration project, including any existing mine or operating property.
    (*b*) Give the legal description of the exact parcel, plot, or area upon which the exploration is to be conducted.

    NOTE.—If both areas are the same, so state. The only obligation to repay the Government is from the net earnings from any commercial discovery made in the area specified in (*b*) above in which the exploration is to be conducted, and the expenditure of funds which may be charged as costs of the project must be limited to that area or to work necessary to perform the exploration in that area.

*11. State the present and former names of the property, if any.

*12. State, in detail, the location of the property with reference to towns, railroads, roads, shipping points, including distances and directions and kinds and conditions of roads.

*13. State source and quantity of water available for operations and its sufficiency at all seasons.
State amount of power to be used, rate per hour or other cost, and source.

*14. Describe any existing useable facilities, equipment, buildings, or structure now on the property that will be devoted to the exploration work.

15. State in detail how the ore could be shipped and how and where milled.

*16. History:
    (*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for any past suspensions of operations.
    (*b*) State briefly the known history and production of adjoining and neighboring properties.
    (*c*) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.

*17. Production:
    (*a*) If mine is in production, furnish the following information:

	Tons per day	*Grade or analysis*	*Cost per ton*	*Net value per ton*
(1) Mining				
(2) Milling				
(3) Shipped or sold				

*18. Ore or mineral reserves: (If property is or has been operating.)
    (*a*) Describe the ore or mineral deposits briefly.
    (*b*) Submit available maps and assay data.
    (*c*) Give estimated tonnage and grade of each class of ore reserves.

19. State any conditions or circumstances regarding the property not sufficiently brought out by the foregoing questions.

THE EXPLORATION

20. For what mineral or minerals and for what types of deposits and ores will the exploration be conducted?

21. Describe briefly, but concisely, the proposed work and the estimated time required to complete it.

    NOTE.—The Government will not participate in a project that will require more than 2 years to complete.

22. Furnish statement of the geological basis of the project with particular emphasis on factors leading the operator to expect the finding of commercial ore bodies. This statement should be accompanied by supporting maps such as geological maps, maps of the proposed openings and assay maps, sample lists, and other pertinent data.

THE REQUIREMENTS AND COSTS

23. Tabulate in the form of an itemized statement with a sum for each item the estimated requirements and costs of the project so that the total will give the estimated cost of the project in which the Government will participate, as follows:
    (*a*) Labor, by numbers and classes (miners, muckers, millmen, etc.), with wages of each.
    (*b*) Supervisors, by numbers and positions, with salaries of each.
    (*c*) Cost of necessary repairs to existing facilities, structures, and buildings.
    (*d*) Cost of necessary installation or construction of additional facilities, structures, and buildings.
    (*e*) Cost of items of equipment, not now owned by the applicant which must be purchased for operations at a cost of $50 or more each.
    (*f*) Cost of rental for equipment which the operator proposes to rent.
    (*g*) Rental value of items of equipment which the operator now owns and which will be devoted to the work.
    (*h*) Cost of materials and supplies, including items of equipment costing less than $50 each.
    (*i*) Cost of power, water, utilities, and any other items not provided for above.

24. Furnish a time schedule of the project, stated in terms of months after project is approved, showing progress expected to be accomplished and the money expected to be spent.

CERTIFICATION

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this form and accompanying papers is correct and complete to the best of their knowledge and belief.

ZANNARAPOLIS TUNGSTEN MINE
(Name of company)

By J. B. Zannard
(Signature of authorized official)

September 27, 1951
(Date)

Manager
(Title)

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.

*Same as footnote on page 1.

16—64067-1 U. S. GOVERNMENT PRINTING OFFICE

1. Applicant is partnership.

2. Name of Partners: John Philip Zannaras, Box 500, Congress, Ariz.
John Pierce Robinson, Jr. " " "

3. Inapplicable.

4. Experience of Applicants:

J. P. Zannaras, Applicant and Manager, is a registered Mining Engineer (License 1269). 1924 Graduate of Lehigh University of Bethlehem, Pa. Member of A.I.M.E., member of the Mineralogical Society of America with many years of practical mining experience.

John Pierce Robinson, Jr., Applicant, Mine Supt., two years college, son of a miner, first experience in coal mining more than 10 years of practical mining experience. (Sinking shafts, open pit mine, etc.)

5. Owners of property (Zannarapolis No. 28, patented for which application is made).

6. Zannarapolis No. 28 is one of the Zannarapolis group of 30 mining claims for which group a certain encumbrance exists to the Kennametal, Inc., P.O. Box 231, Latrobe, Pa. for the amount of $10,000.00 advance against purchases of concentrates.

7. Inapplicable.

8. Zannarapolis No. 28 was not operating and therefore no financial statement available.

9. Applicant is prepared to invest $30,814.87 in the form of salaries of the applicants and use of their equipment, and it is sufficient to cover the applicant's contribution of 25%.

10. Description of Real Property: Zannarapolis No. 28 patented claim
(a & b) is one of the Zannarapolis No. 1-30 mining claims of which eight are patented claims and one patented millsite located in Township 13 N, Range 10 W, Gila & S.R. Meridian.

11. Zannarapolis No. 28 (present name -- no former names).

12. Location of Mine: Zannarapolis No. 28 is located about 35 miles Northwest of Congress Junction, about 5 miles easterly from the new Kingman cut-off road. Shipping point of concentrates will be Congress, Arizona.

12. (Cont'd). The road to the Mine is in excellent condition, 30 miles of which on the Kingman Cut-off Road can be traveled by cars at 60 miles an hour.

13. Water Supply: Water to be used for this project will come from Burro Creek on which Creek applicants have a water right since 1940. Such water is available throughout the year.

14. Facilities: Facilities on property are the following:

15 h.p. Fairbanks Morse Hoist
125 cu. ft. Ingersoll Rand Compressor
5 K.V.A. Fairbanks Morse Generator for blasting and lights.
Head frame, skip, ore bin, picking belt, dark room, 2 mine cars, truck loading ramp, 70' - 6' x 8' inside dimensions, incline two compartment shaft, completely timbered, 1 cub. yard cement mixer, blower for ventilation.

21 x 28 four room house, 23' trailer and chemical laboratory.

1 - TD 6 International High Lift.
1 - 2-1/2 ton International Dump Truck
1 - 1-1/2 ton Chevrolet General Service Truck

15. Milling of Ore: The ore on this project will be milled at the applicants' mill on Burro Creek, which mill is now producing Scheelite concentrates from Zannarapolis No. 19. The concentrates will be shipped from Congress, Arizona.

16. History: (a) A 70' shaft has been sunk.

During World War II, 10 tons of ore was shipped to the stockpile of the Metal Reserves, Phoenix, Arizona, which assayed 1.94%.

The width of the vein was about 8' at the hanging wall. However, the entire ore is not expected to run 1.94%. A fair average of .70 to 1% could be expected.

(b) The following properties are on the same contact as the Zannarapolis group:

Old Dick Mine and Copper King Mine - these two mines expected to lead the zinc production in Arizona. During World War No. 1 a lens of 9 million pounds of zinc sulphite was taken from the Copper King.

Bagdad Mine producing 4,000 tons daily.

Hillside Mine 1,000 ft. deep without bottoming of the ore.

(c) Not available.

17. Mine not in production.

18. (a) The ore consists of Scheelite occurring in tactites with epidote and garnet. Vein strikes in a Northeasterly direction and dips Westerly 70 degrees.

(b) Assays taken in 2 ft. width of the vein in the shaft show as per attached photostats 1.94% WO3, 1.92% WO3, 1.88% WO3, 1.74% WO3.

Attached map of proposed work extending the present shaft. The drifts follow the outcrops of the vein.

The ore will be mined by selective mining and it is estimated that a 4 ft. width of the vein can be mined which it is estimated to run 0.7% WO3.

(c) Estimated ore reserve is 240 ft. x 300 ft. x 4 ft. 288,000 cu. ft. or 28,800 tons of 0.7 WO3 of present market valuation in excess of $1,000,000.00.

19. It is believed that conditions have been sufficiently detailed in the above questions.

THE EXPLORATION

20. Exploration to be made for Tungsten (Scheelite)

21. Work to be done: Present shaft to be extended to 300 ft. depth and 3 drifts of 240 ft. each to be driven in the direction of the outcrops.
Time Required: 445 days.

22. Attached herewith geologic sketch of the 15 miles from the Zannarapolis group to the Hillside Mine. Under 17 we attached a map of the proposed exploration work.

The applicant, J. P. Zannaras, registered mine engineer, has made an 11 year study of this territory. And the geologic sketch is a result of this study.

Under 17 we also attached assays taken from this vein.

On the geologic sketch attached herewith we explain the reasons which lead us to expect the finding of large commercial ore bodies of Scheelite, and our present work to the 70' level has already proven our expectations.

LAB FORM 1

ARIZONA TESTING LABORATORIES

ANALYTICAL AND CONSULTING CHEMISTS
ASSAYERS, MINING ENGINEERS

PHONE 3-6272 | 823 EAST VAN BUREN STREET | P. O. BOX 1888

CERTIFICATE OF ANALYSIS

Phoenix, Ariz., December 15, 1943

No. 49962

Sample of Tungsten Ore Received 12/11/43, 194

From METALS RESERVE COMPANY

Marked P-6 Mr. W. M. Snow

We have employed official methods in the examination of the above sample, and find the results as follows:

Moisture	1.20%
Analysis on dry basis	
Tungsten (WO_3)	1.92%

9.8553 Tons @ $36.36 = $358.34

REGISTERED ASSAYER CERTIFICATE DEC 31, 1943 ARIZONA, U.S.A.

Respectfully submitted,
ARIZONA TESTING LABORATORIES,

By Claude E. McLean Chief Chemist

LAB FORM 1

ARIZONA TESTING LABORATORIES

ANALYTICAL AND CONSULTING CHEMISTS
ASSAYERS, MINING ENGINEERS

PHONE 3-6272 823 EAST VAN BUREN STREET P. O. BOX 1888

CERTIFICATE OF ANALYSIS

Phoenix, Ariz., February 3, 194 4

No. 50693

Sample of Tungsten Ore Received 1/31, 194

From ARIZONA TESTING LABORATORIES

Marked Smith-Emery #241349

We have employed official methods in the examination of the above sample, and find the results as follows:

Tungsten (WO_3)	1.88%

Respectfully submitted,
ARIZONA TESTING LABORATORIES,

By
Claude H. McLean Chief Chemist

LAB FORM 1

ARIZONA TESTING LABORATORIES

ANALYTICAL AND CONSULTING CHEMISTS
ASSAYERS, MINING ENGINEERS

PHONE 3-6272 823 EAST VAN BUREN STREET P. O. BOX 1888

CERTIFICATE OF ANALYSIS

Phoenix, Ariz., February 11, 1944

No. 50807

Sample of Tungsten Ore Received 2/7, 194

From ARIZONA TESTING LABORATORIES

Marked Ledoux & Co. #554817 P-6 # 49962

We have employed official methods in the examination of the above sample, and find the results as follows:

Tungsten (WO_3)	1.94%

Respectfully submitted,
ARIZONA TESTING LABORATORIES,
By
Claude E. McLean Chief Chemist

FORM 5-8-42-50M-F. & K. INC.

LEDOUX & COMPANY,
(Inc.)

ENGINEERS, CHEMISTS AND ASSAYERS

155 SIXTH AVENUE, NEW YORK

RR

REPORT OF ASSAY

No. 554817 New York, Jan. 6, 1944

Our assay of the sample of TUNGSTEN ORE

From Zannarapolis Tungsten Mine

Marked: P-6
#49962

and submitted to us, shows:

After drying:

Tungstic Oxide - - - - - 1.74%
(WO_3)

* * * * *

To Zannarapolis Tungsten Mine

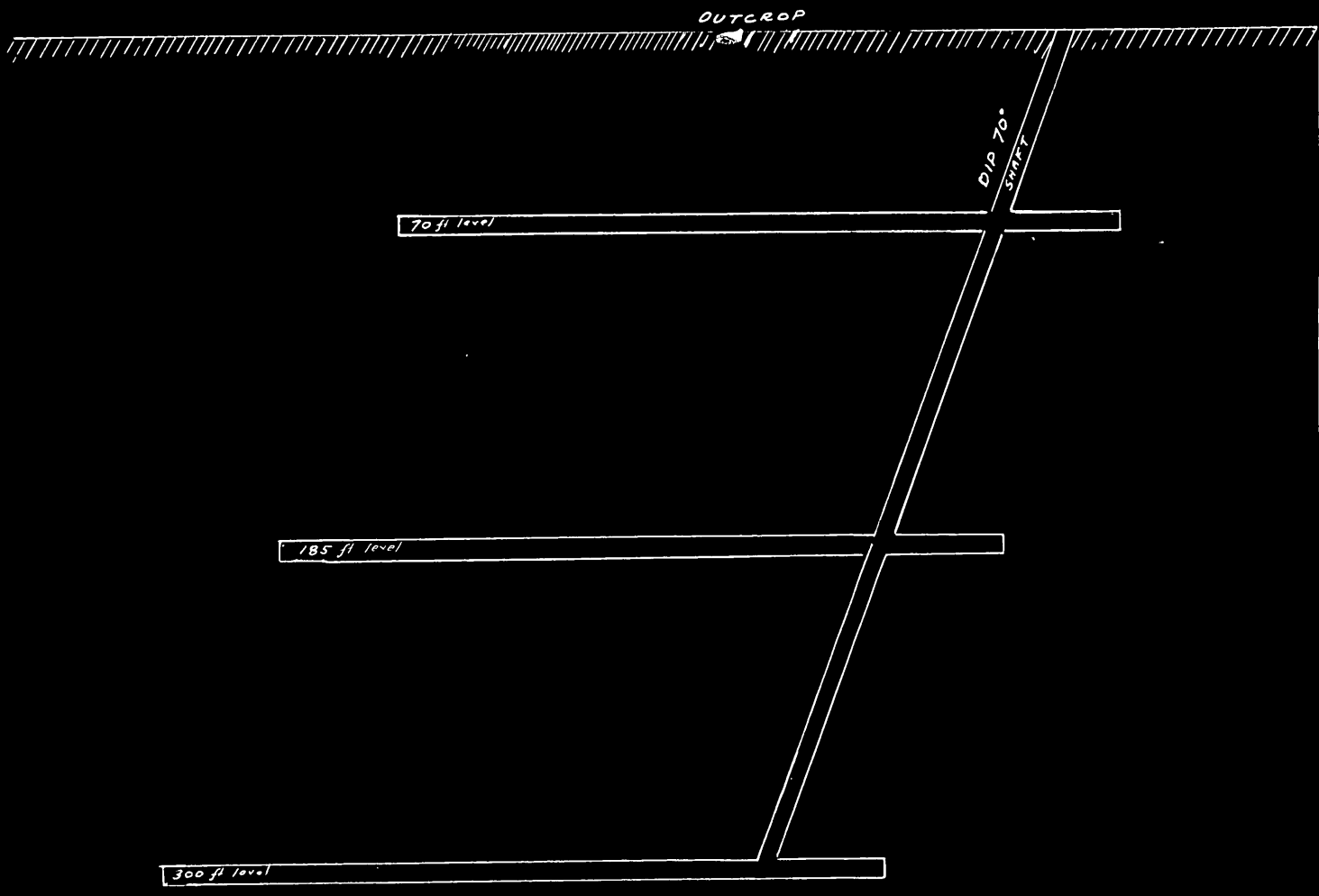
LEDOUX & COMPANY, INC.

[illegible]

ZANNARAPOLIS TUNGSTEN MINE

J P ZANNARAS, J P ROBINSON Jr.

PROPOSED EXPLORATION OF OUTCROPING SCHEELITE FROM PRESENT 70 FT LEVEL TO 300 FT LEVEL AND THREE 240 FT DRIFTS.



LONGIT. SEC IN PLANE OF VEIN

PLAN-RELATIVE HORIZONTAL PROJECTION OF SHAFT AND DRIFTS

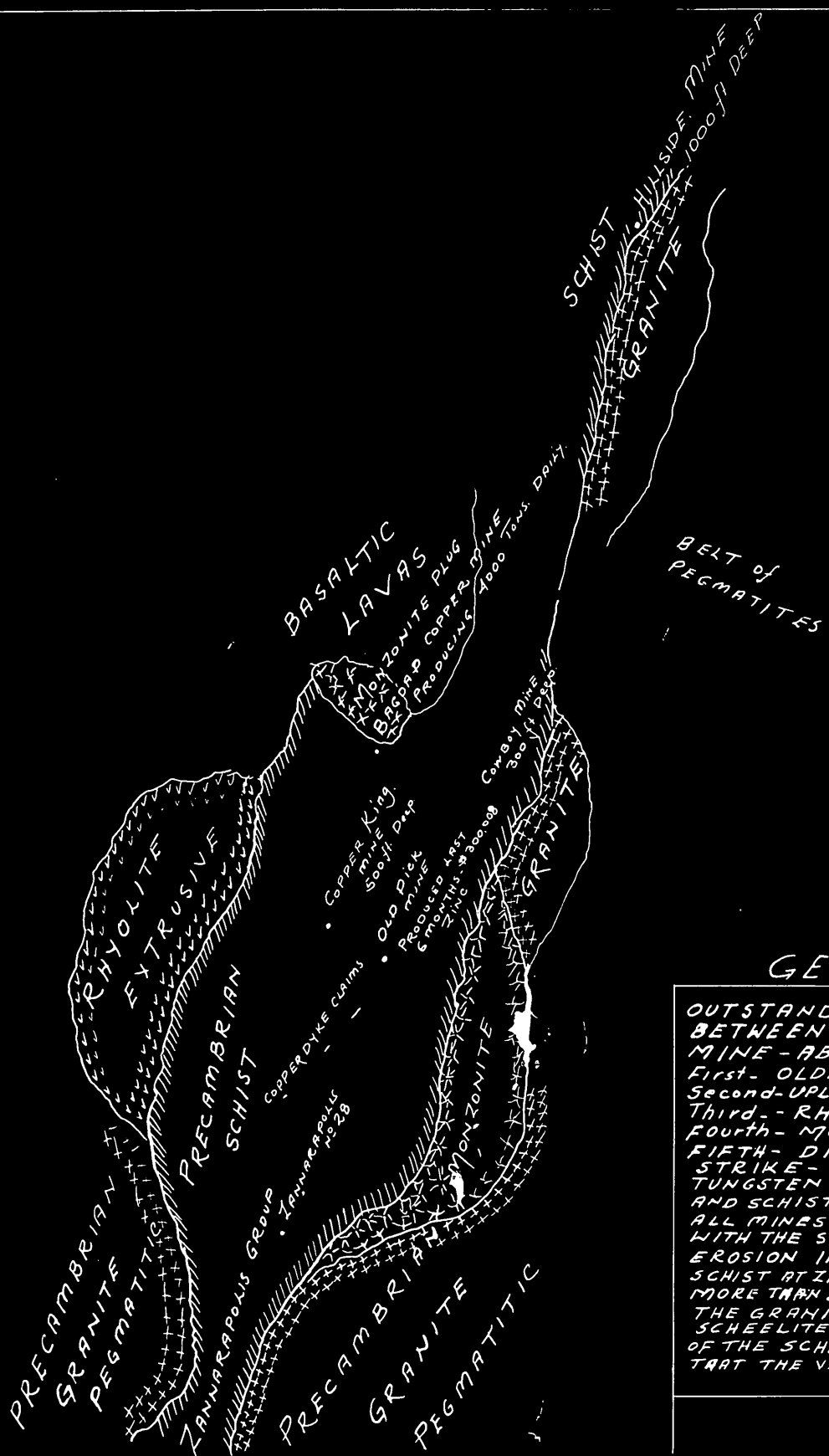
D.M.A-2030

ZANNARAPOLIS Nº 28.

ASSAY-REPORTS, SHAFT VEIN 2 FEET WIDE 10 TONS

SAMPLE METALS RESERVE

ARIZONA TEST LAB	1.92% WO_3
SMITH-EMERY	1.88% WO_3
LEDOUX & Co	1.94% WO_3
2 ft VEIN LEDOUX	1.74% WO_3
EXPECTED 4 ft Vein	0.70% WO_3



D.M.A 2030

GEOLOGIC SKETCH

OUTSTANDING GEOLOGIC FEATURES BETWEEN ZANNARAPOLIS AND HILLSIDE MINE - ABOUT FIFTEEN MILES BELT

First - OLDEST ROCK PRECAMBRIAN SCHIST
Second - UPLIFTED BY PRECAMBRIAN GRANITE
Third - RHYOLITE - EXTRUSIVE AND INTRUSIVE
Fourth - MONZONITE INTRUSION
FIFTH - DIORITE

STRIKE - IN GENERAL NORTH EASTERLY
TUNGSTEN MINERALIZATION NEAR GRANITE AND SCHIST CONTACT - IN TACTITES.

ALL MINES ON THIS BELT AND ON THE SAME CONTACT WITH THE SCHEELITE VEINS ARE VERY DEEP.

EROSION IN THE TUNGSTEN BELT PROVES THAT THE SCHIST AT ZANNARAPOLIS No 28 WILL EXTEND IN DEPTH MORE THAN 300 FEET AND THEREFORE ALSO THE VEIN.

THE GRANITE CONTACT AND THE FACT THAT THE SCHEELITE VEINS STRIKE WITH THE SCHISTOZITY OF THE SCHIST ARE FAVORABLE CHARACTERISTICS THAT THE VEINS ARE OF DEEP SEATED ORIGIN.

SCALE 1" = 1 mile

22. (Cont'd). The outcrops indicate that the width and the quality of the ore will be sustained for the length of the drifts.

This property has been examined by the U.S. Geological Survey and Dr. Krauskopf of Stanford University then with the Government Tungsten Division personally recommended with the R.F.C. for a loan of $40,000.00 for further development on Zannarapolis No. 28.

The R.F.C. offered us, to start with, a $5,000.00 loan which we refused as being too small to our investment which now exceeds $80,000.00 and we never received any government loan on this property or any other property of ours.

THE REQUIREMENTS AND COSTS

23. (a) LABOR -

Shaft (day)	2 Muckers	@ $14.00	115 days		$ 3,220.00
	1 Hoist Man	@ 12.00	115 "		1,380.00
	1 Helper	@ 12.00	115 "		1,380.00
Shaft (Night)	1 Driller	@ 15.00	115 "		1,725.00
	1 Helper	@ 14.00	115 "		1,610.00
	1 Hoist Man	@ 12.00	115 "		1,380.00
Drift (Night)	1 Driller	@ 15.00	300 "		4,500.00
	1 Helper	@ 14.00	300 "		4,200.00
	1 Top Man	@ 12.00	300 "		3,600.00
Drift (Day)	2 Muckers	@ 14.00	300 "		8,400.00
	1 Helper	@ 12.00	300 "		3,600.00
	1 Top Man	@ 12.00	300 "		3,600.00
					$ 38,595.00

(b) SUPERVISORS

2 Supervisors @ $20.00 daily (offered by the Applicants) $ 17,600.00

(c) COST OF NECESSARY REPAIRS

Repairs of Head Frame, [illegible] and rearranging Hoist:

Lumber	$ 626.00	
Cement	135.00	
Reinforcing Rods . . .	50.00	
Steel Rods	200.00	
Labor	2,000.00	
Miscellaneous	225.00	$ 3,236.00

(d) COST OF NECESSARY INSTALLATIONS

Water Well, to be drilled 400 ft. from shaft:

Well	3,500.00 (300 ft. deep)	
Pump	1,600.00	
Pipe	200.00	
Tank	300.00	
Road to the Well	300.00	$ 5,900.00

(e) COST OF ITEMS OF EQUIPMENT

2 House trailers	1,000.00
2 Butane Stoves	300.00
3 Servel Refrigerators .	1,200.00

Brought Forward . . $ 65,331.00

TOTAL BROUGHT FORWARD . . . . . $ 65,331.00

(e) COST OF ITEMS OF EQUIPMENT (Cont'd)

1 Loader	$ 3,000.00	
2 Large Mineralights	600.00	
1 Dump - 2-1/2 Ton Truck	3,000.00	
Tools (Vise, wrenches, pipe threading machine, pipe cutters, saws, anvil, hammers, etc.)	500.00	
1 Atlas Air Hammer, with Jack Legs . . .	900.00	$ 10,500.00

(f) None

(g) RENTAL VALUE

15 h.p. Fairbanks Morse Hoist	
125 cu. ft. Ingersoll Rand Compressor	$250.00 per Mo.
5 h.p. Fairbanks Morse Generator for blasting and lights.	
Ventilator Blower	
1 cu. yard cement mixer	
Head frame, skip, ore bin, picking belt, dark room, 2 mine cars, truck loading ramp.	75.00 per Mo.
21 x 28 four room house, 23' trailer and chemical laboratory	150.00 per Mo.
1 TD 6 International High Lift	200.00 " "
1 2-1/2 Ton International Dump Truck	150.00 " "
1 1-1/2 Ton Chevrolet General Service Truck	150.00 " "

(h) COST OF MATERIALS AND SUPPLIES

Lumber	$ 11,199.00	
Rail	2,064.00	
Holding Bolts	981.36	
Ventilation Tube	1,122.00	
Electric Wire, including conduit .	336.00	
Explosives	2,476.00	
Steel	885.00	
Bits	3,020.00	
Air and Water Lines	677.50	
Ladder	119.28	
Miscellaneous Supplies	2,928.00	$ 25,808.14

(i) COST OF POWER

Power	$ 8,173.44	
Transportation	3,500.00	
Repairs	2,500.00	
Insurance	4,243.80	
Taxes (Social Security)	1,203.00	
Clerical Work	2,000.00	$ 21,620.24

GRAND TOTAL $123,259.38

25% of $123,259.38 or . . . . . $ 30,814.87
Offered by Applicant as follows:

Supervision	17,600.00
Rental of their Equipment . . .	13,214.87
	$ 30,814.87

24. TIME SCHEDULE

30 days - Repair Head Frame and Well Drilling
15 " - Sinking from present 70 ft. level to 100 ft. level
100 " - Drifting 240 ft. in 100 ft. level
50 " - Sinking to 200 ft. level
100 " - Drifting 240 ft. in 200 ft. level
50 " - Sinking to 300 ft. level
100 " - Drifting 240 Ft. in 300 ft. level

All equipment must be purchased upon approval of the loan.

Excerpt from Monthly Report, Region IV, Mining Division, dated November 21, 1951, to December 20, 1951.

DMA-2030X - Zannarapolis Tungsten Mine, Yavapai County, Ariz.

Applicant wanted an exploration loan to sink a shaft and drift on his tungsten-bearing deposit on Burro Creek east of Bagdad.

Property has been visited and examiners are writing their report.

340
FILE COPY
SURNAME:

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

Holderer
Wa Shaw
Gubay
AMP

Mr. Jack H. East, Jr., Executive Officer
DMA Field Team, Region IV
224 New Customhouse Bldg.
Denver 2, Colorado

a.t.c.

Subject: ~~DMA-2030~~ Tungsten, Exploration project
costing $123,259.38
Zannarapolis Tungsten Mine
~~Box 300, Congress, Arizona~~

Dear Mr. East:

We are enclosing a copy of the subject application form MF-103 for a field appraisal. Please have your engineers check the following:

1-More surface exploration appears necessary before such extensive underground work.

2-Determine the practicability of diamond drilling compared to the proposed sinking and drifting.

3-Report on the geology and apparent grade of the deposit with a lamp and an necessary assays.

4-Applicant's share of cost $17,600 for two supervisors is top heavy and the rental items are out of line.

5-Costs are excessive and include many questionable items, as waterwell $5,900, three Servel refrigerators $1,200 and etc.

6-Competence of applicant.

7-Suggest a stage project-surface trenching and for test pitting and sampling to be followed by other work- if the property merits an exploration project.

8-Investigate the possibility of other more favorable projects in the vicinity. The applicant presumably owns 30 claims of which he is applying on only one.

9-If approval of a project is recommended, please prepare the contract forms and exhibits. It will be necessary to secure a subordination agreement from Kennametal Inc., which has a lien for $10,000.

Very truly yours,

SIGNED S.J. 10-12

A. B. Parsons
Acting Director, Supply Division

Approved:

Bureau of Mines

Geological Survey

TJBallard:ll 10/9/51
CC: DMA Docket File
Adm. Reading File
Mr. Lemmon
Mr. Geehan
Mr. Holderer

FILE COPY
SURNAME:
340

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

Holderer
Geehan

OCT 12 1951

Zannarapolis Tungsten Mine
Box 500
Congress, Arizona

In reply please refer to
DMA-2030 Tungsten

Gentlemen:

Your application for an exploration loan is being referred to Mr. J. H. East, Jr., 224 New Customhouse Building, Denver 2, Colorado, for a field appraisal.

Please contact Mr. East and offer your co-operation.

Very truly yours,

SIGNED 10-12

A. B. Parsons
Acting Director, Supply Division

TJBallard:ll 10/9/51
CC: DMA Docket File
Adm. Reading File
Mr. Lemmon
Mr. Geehan
Mr. Holderer
Field Team, Region IV

Mr. Jack H. East, Jr., Executive Officer
DMA Field Team, Region IV
224 New Customhouse Bldg.
Denver 2, Colorado

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costing $123,259.38
Zemmarapolis Tungsten Mine
Box 500, Congress, Arizona

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SIGNED

A. B. Parsons
Acting Director, Supply Division

Approved:

Bureau of Mines

Geological Survey

TJBallard:ll 10/9/51
DD: DMA Docket File
Adm. Reading File
Mr. Lemmon
Mr. Geehan
Mr. Holderer

Zannaraolis Tungsten Mine
Box 500
Congress, Arizona

In reply please refer to
DMA-2030 Tungsten

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Very truly yours

SIGNED

A. B. Parsons
Acting Director, Supply Division

TJBallard:ll 10/9/51
CC: DMA Docket File
Adm. Reading File
Mr. Lemmon
Mr. Geehan
Mr. Holderer
Field Team, Region IV

DMA Form 2

DEFENSE MINERALS ADMINISTRATION
Status Change Notice

DMA Docket No. 2030

To: Reports and Records Branch

From: _____

Date: _____

The following action has been taken this date on the above Controlled Document.

Forwarded to _____

Type of request changed to:

_____

Denied ☐ Withdrawn ☐

Approved in amount of $ _____

Other action, specify:

_____

Interior—Duplicating Section, Washington, D. C. 1626

STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO : Mr. George Holderer DATE: September 12, 1951

FROM : T. P. Thayer Thayer

SUBJECT: DMA-2030 - Zannarapolis No. 28

I can find no record of the previous application in our files, nor any maps or sections showing plan of work. Krauskopf's report referred to, applies mainly to Zannarapolis Claim #19. "Six assays made for R.F.C. were as follows:

Sample no.	Arizona Assay Office	Analyst Jacobs (Tucson, Ariz.)	Le Doux (New York)
1	0.78	0.84	0.95
2	0.15	0.31	0.50
3	0.21	ND	ND
4	Tr	ND	ND
5	0.04	ND	ND
6	1.30	1.26	1.43

1. High-grade sample picked by Mr. Zannaras from the dump at the big cut, using ultraviolet light. Represents the best ore which can be sorted from this dump.
2. Picked by Mr. Zannaras from the dump at the big cut. Represents the type of ore which Mr. Zannaras expects to sort for milling.
3. From dump at small cut southwest of the big one. Any piece showing scheelite was included.
4. Taken in daylight from part of the big dump containing only fine material.
5. Forty-pound sample taken in daylight from the big dump by chipping fragments from large blocks.
6. Taken in daylight from pile of previously sorted ore from small pit 100 feet northeast of big cut. "

" Reserves. The assays indicate that 0.5% ore is the best that can be easily sorted for milling at the large cut. If the ore-bearing layer is assumed to be continuous as far as the small cut to the southwest, and if its average width is ten feet, about 1000 tons are available above the lowest level exposed in the big cut. Of this perhaps 1/5 could be sorted as 0.5% ore. With the present mill and at the present price (1943) of tungsten this would probably be submarginal ore."

It would seem to be only fair to ask Mr. Zannara whether he got the RFC loan, and if so, what the results were.

This may have to go to field ultimately, but before then, applicant should provide maps. Offhand, $140,000 seems like a lot of money for ore Krauskopf indicated would average 0.5% WO_3 after handsorting.

Call R.F.C.

Spica

Mr. J. P. Zannaras
Zannarapolis Tungsten Mine
Box 500
Congress, Arizona

In reply please refer to
DMA-2030

Dear Mr. Zannaras:

In reviewing your application, we find a number of questions on which we need additional information. In answer to question 18 you say, "Inapplicable." Question 18 asks you in section (a) to describe the ore or mineral deposit. Section (b) asks for maps and assay data. These are applicable.

In answer to question 22, you have failed to support your statements with maps, assays, cross sections, geological maps, or maps of the proposed work in relationship with topographical features and ore outcrops.

An exploration loan is only for exploration work. Therefore, we cannot agree to the rental of equipment for mining or milling or for the construction of facilities not directly related to the project. It will be necessary for you to submit revised cost figures, omitting those items not directly related to exploration. An example of this is; the ore bin is not related to exploration while your headframe is a related item.

In your application you say that the Government's Tungsten Division personally recommended the Reconstruction Finance Corporation loan for $40,000 for further development. Did this loan go through and, if so, how was the money used?

Very truly yours,

George B. Holderer

George B. Holderer
Chief, Tungsten Branch

CHJacoby:ec
9/19/51

CC: Adm. Reading File
DMA Docket File
Mr. Holderer

Mr. J. P. Zannaras
Zannarapolis Tungsten Mine
Box 500
Congress, Arizona

In reply please refer to
DMA-2030

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9/19/51

CC: Adm. Reading File
DMA Docket File
Mr. Holderer

STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO : Mr. George Holderer DATE: October 8, 1951

FROM : T. P. Thayer Thayer

SUBJECT: DMA-2030 Zannarapolis Tungsten

The new application doesn't help much more on geology than the previous one, although it includes more detailed estimates of equipment, including refrigerators and gas stoves.

Mr. C. A. Anderson tells me that the applicant is a visionary without practical mining experience. A field referral is necessary, and when it is made the following items should be checked, among other you may wish to add:

1. Geology and apparent grade of the deposit as estimated with a lamp.
2. Competence of the applicant; seriously in question.
3. Need for a water well at cost of $6,000.
4. Possibility of diamond drilling, instead of underground work, or step by step contract.
5. Possibility of other more worthwhile projects in the vicinity.

Mr. George Holderer

October 8, 1951

T. P. Thayer

DMA-2030 Zannarapolis Tungsten

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TPThayer:gt

Form MF-103
(April 1951)

U. DEPARTMENT OF THE INTERI
DEFENSE MINERALS ADMINISTRATION

Budget Bureau No. 42-R1035.
Approval expires 6-30-51.

APPLICATION FOR AID FOR AN EXPLORATION PROJECT PURSUANT TO MINERAL ORDER 5, UNDER DEFENSE PRODUCTION ACT OF 1950

DO NOT FILL IN THIS BLOCK

Docket No. DMA-2030

Date received 9-28-51

Participation

DEFENSE MINERALS ADMINISTRATION WASHINGTON, D. C.
SEP 28 3 47 PM '51

REVISED

Zannarapolis Tungsten Mine
Box 500
Congress, Arizona

Name and address of applicant

Date Sept. 27, 1951

FILL IN THIS BLOCK

Date of application August 28, 1951

Estimated cost $123,259.38

Mineral or metal Tungsten (Scheelite)

Percentage of Government participation 75%

Location of mine Yavapai County

Date of filing MF-100

DMA Docket Number, if available DMA 2030

INSTRUCTIONS

Read Mineral Order 5, Regulations Governing Government Aid in Defense Projects, before completing this application. Submit four signed copies of the application to Defense Minerals Administration, Department of the Interior, Washington 25, D. C., or to the nearest field executive officer thereof, with your name and address on each sheet of the application and all accompanying papers. If any question is inapplicable, or if you cannot answer it, so state on the form. Where the space provided for answer is insufficient, answer on a separate sheet, annex it to the application form, and refer to it in space for answer. If the application is approved, you will be presented with an exploration project contract on Form MF-200, for your signature.

THE APPLICANT

*1. Is applicant an individual, partnership, or corporation?
*2. If a partnership, state names and addresses of partners.
*3. If a corporation, state names and addresses of officers, directors, and five largest stockholders.
*4. Describe the mining and general business experience of (*a*) the applicant, and (*b*) the person or persons who will manage the project.
*5. Are you the owner or the lessee of the property?
6. If owner, state what claims, liens, or encumbrances, if any, are against the property.
7. If lessee, attach a copy of the lease and state if it is in good standing.

NOTE.—It will be necessary to procure and attach to the exploration project contract agreements of claimants, lienors, encumbrances and lessors subordinating their interests in the property to the interest of the Government under the contract.

8. Furnish current financial statement, showing assets and liabilities, and a profit and loss statement.
9. How much money is applicant prepared to invest in proposed project? Is it sufficient to pay your part of the cost of the project as detailed in question 23 of this application form, in accordance with the regulations on Government participation (Section 9 of Mineral Order 5)?

*If you have already answered these questions on MF-100, you are not required to answer the questions for this application.

16—64067-1

THE PROPERTY

10. (*a*) Give a description of the real property that will be in any way involved in the exploration project, including any existing mine or operating property.
    (*b*) Give the legal description of the exact parcel, plot, or area upon which the exploration is to be conducted.

    NOTE.—If both areas are the same, so state. The only obligation to repay the Government is from the net earnings from any commercial discovery made in the area specified in (*b*) above in which the exploration is to be conducted, and the expenditure of funds which may be charged as costs of the project must be limited to that area or to work necessary to perform the exploration in that area.

*11. State the present and former names of the property, if any.

*12. State, in detail, the location of the property with reference to towns, railroads, roads, shipping points, including distances and directions and kinds and conditions of roads.

*13. State source and quantity of water available for operations and its sufficiency at all seasons.
State amount of power to be used, rate per hour or other cost, and source.

*14. Describe any existing useable facilities, equipment, buildings, or structure now on the property that will be devoted to the exploration work.

15. State in detail how the ore could be shipped and how and where milled.

*16. History:
    (*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for any past suspensions of operations.
    (*b*) State briefly the known history and production of adjoining and neighboring properties.
    (*c*) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.

*17. Production:
    (*a*) If mine is in production, furnish the following information:

	Tons per day	*Grade or analysis*	*Cost per ton*	*Net value per ton*
(1) Mining				
(2) Milling				
(3) Shipped or sold				

*18. Ore or mineral reserves: (If property is or has been operating.)
    (*a*) Describe the ore or mineral deposits briefly.
    (*b*) Submit available maps and assay data.
    (*c*) Give estimated tonnage and grade of each class of ore reserves.

19. State any conditions or circumstances regarding the property not sufficiently brought out by the foregoing questions.

THE EXPLORATION

20. For what mineral or minerals and for what types of deposits and ores will the exploration be conducted?

21. Describe briefly, but concisely, the proposed work and the estimated time required to complete it.

    NOTE.—The Government will not participate in a project that will require more than 2 years to complete.

22. Furnish statement of the geological basis of the project with particular emphasis on factors leading the operator to expect the finding of commercial ore bodies. This statement should be accompanied by supporting maps such as geological maps, maps of the proposed openings and assay maps, sample lists, and other pertinent data.

THE REQUIREMENTS AND COSTS

23. Tabulate in the form of an itemized statement with a sum for each item the estimated requirements and costs of the project so that the total will give the estimated cost of the project in which the Government will participate, as follows:
    (*a*) Labor, by numbers and classes (miners, muckers, millmen, etc.), with wages of each.
    (*b*) Supervisors, by numbers and positions, with salaries of each.
    (*c*) Cost of necessary repairs to existing facilities, structures, and buildings.
    (*d*) Cost of necessary installation or construction of additional facilities, structures, and buildings.
    (*e*) Cost of items of equipment, not now owned by the applicant which must be purchased for operations at a cost of $50 or more each.
    (*f*) Cost of rental for equipment which the operator proposes to rent.
    (*g*) Rental value of items of equipment which the operator now owns and which will be devoted to the work.
    (*h*) Cost of materials and supplies, including items of equipment costing less than $50 each.
    (*i*) Cost of power, water, utilities, and any other items not provided for above.

24. Furnish a time schedule of the project, stated in terms of months after project is approved, showing progress expected to be accomplished and the money expected to be spent.

CERTIFICATION

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this form and accompanying papers is correct and complete to the best of their knowledge and belief.

ZANNARAPOLIS TUNGSTEN MINE
(Name of company)

By J. P. Zannarad
(Signature of authorized official)

September 27, 1951
(Date)

Manager
(Title)

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.

*Same as footnote on page 1.

16—64067-1 U. S. GOVERNMENT PRINTING OFFICE

1. Applicant is partnership.

2. Name of Partners: John Philip Zannaras, Box 500, Congress, Ariz.
John Pierce Robinson, Jr. " " "

3. Inapplicable.

4. Experience of Applicants:

J. P. Zannaras, Applicant and Manager, is a registered Mining Engineer (License 1269). 1924 Graduate of Lehigh University of Bethlehem, Pa. Member of A.I.M.E., member of the Mineralogical Society of America with many years of practical mining experience.

John Pierce Robinson, Jr., Applicant, Mine Supt., two years college, son of a miner, first experience in coal mining more than 10 years of practical mining experience. (Sinking shafts, open pit mine, etc.)

5. Owners of property (Zannarapolis No. 28, patented for which application is made).

6. Zannarapolis No. 28 is one of the Zannarapolis group of 30 mining claims for which group a certain encumbrance exists to the Kennametal, Inc., P.O. Box 231, Latrobe, Pa. for the amount of $10,000.00 advance against purchases of concentrates.

7. Inapplicable.

8. Zannarapolis No. 28 was not operating and therefore no financial statement available.

9. Applicant is prepared to invest $36,814.87 in the form of salaries of the applicants and use of their equipment, and it is sufficient to cover the applicant's contribution of 25%.

10. Description of Real Property: (a & b) Zannarapolis No. 28 patented claim is one of the Zannarapolis No. 1-30 mining claims of which eight are patented claims and one patented millsite located in Township 13 N, Range 10 W, Gila & S.R. Meridian.

11. Zannarapolis No. 28 (present name -- no former names).

12. Location of Mine: Zannarapolis No. 28 is located about 35 miles Northwest of Congress Junction, about 5 miles easterly from the new Kingman cut-off road. Shipping point of concentrates will be Congress, Arizona.

12. (Cont'd). The road to the Mine is in excellent condition, 30 miles of which on the Kingman Cut-off Road can be traveled by cars at 60 miles an hour.

13. Water Supply: Water to be used for this project will come from Burro Creek on which Creek applicants have a water right since 1940. Such water is available throughout the year.

14. Facilities: Facilities on property are the following:

15 h.p. Fairbanks Morse Hoist
125 cu. ft. Ingersoll Rand Compressor
5 K.V.A. Fairbanks Morse Generator for blasting and lights.
Head frame, skip, ore bin, picking belt, dark room, 2 mine cars, truck loading ramp, 70' - 6' x 8' inside dimensions, incline two compartment shaft, completely timbered, 1 cub. yard cement mixer, blower for ventilation.

21 x 28 four room house, 23' trailer and chemical laboratory.

1 - TD 6 International High Lift.
1 - 2-1/2 ton International Dump Truck
1 - 1-1/2 ton Chevrolet General Service Truck

15. Milling of Ore: The ore on this project will be milled at the applicants' mill on Burro Creek, which mill is now producing Scheelite concentrates from Zannarapolis No. 19. The concentrates will be shipped from Congress, Arizona.

16. History: (a) A 70' shaft has been sunk.

During World War II, 10 tons of ore was shipped to the stockpile of the Metal Reserves, Phoenix, Arizona, which assayed 1.94%.

The width of the vein was about 8' at the hanging wall. However, the entire ore is not expected to run 1.94%. A fair average of .70 to 1% could be expected.

(b) The following properties are on the same contact as the Zannarapolis group:

Old Dick Mine and Copper King Mine - these two mines expected to lead the zinc production in Arizona. During World War No. 1 a lens of 9 million pounds of zinc sulphite was taken from the Copper King.

Bagdad Mine producing 4,000 tons daily.

Hillside Mine 1,000 ft. deep without bottoming of the ore.

(c) Not available.

17. Mine not in production.

18. (a) The ore consists of Scheelite occurring in tactites with epidote and garnet. Vein strikes in a Northeasterly direction and dips Westerly 70 degrees.

(b) Assays taken in 2 ft. width of the vein in the shaft show as per attached photostats
1.94% WO3, 1.92% WO3, 1.88% WO3, 1.74% WO3.

Attached map of proposed work extending the present shaft. The drifts follow the outcrops of the vein.

The ore will be mined by selective mining and it is estimated that a 4 ft. width of the vein can be mined which it is estimated to run 0.7% WO3.

(c) Estimated ore reserve is 240 ft. x 300 ft. x 4 ft. 288,000 cu. ft. or 28,800 tons of 0.7 WO3 of present market valuation in excess of $1,000,000.00.

19. It is believed that conditions have been sufficiently detailed in the above questions.

THE EXPLORATION

20. Exploration to be made for Tungsten (Scheelite)

21. Work to be done: Present shaft to be extended to 300 ft. depth and 3 drifts of 240 ft. each to be driven in the direction of the outcrops.
Time Required: 445 days.

22. Attached herewith geologic sketch of the 15 miles from the Zannarapolis group to the Hillside Mine. Under 17 we attached a map of the proposed exploration work.

The applicant, J. P. Zannaras, registered mine engineer, has made an 11 year study of this territory. And the geologic sketch is a result of this study.

Under 17 we also attached assays taken from this vein.

On the geologic sketch attached herewith we explain the reasons which lead us to expect the finding of large commercial ore bodies of Scheelite, and our present work to the 70' level has already proven our expectations.

LAB FORM 1

ARIZONA TESTING LABORATORIES

ANALYTICAL AND CONSULTING CHEMISTS
ASSAYERS, MINING ENGINEERS

PHONE 3-6272 | 823 EAST VAN BUREN STREET | P. O. BOX 1888

CERTIFICATE OF ANALYSIS

Phoenix, Ariz., December 15, 1943

No. 49962

Sample of Tungsten Ore Received 12/11/43, 194

From METALS RESERVE COMPANY

Marked P-6 Mr. W. M. Snow

We have employed official methods in the examination of the above sample, and find the results as follows:

Moisture	1.20%
Analysis on dry basis	
Tungsten (WO_3)	1.92%

9.8553 Tons @ $36.36 = $358.34

REGISTERED ASSAYER
CERTIFICATE EXPIRES
DEC. 31, 1943
ARIZONA, U.S.A.

Respectfully submitted,
ARIZONA TESTING LABORATORIES,
By
Claude E. McLean Chief Chemist

LAB FORM 1

ARIZONA TESTING LABORATORIES

ANALYTICAL AND CONSULTING CHEMISTS
ASSAYERS, MINING ENGINEERS

PHONE 3-6272 823 EAST VAN BUREN STREET P. O. BOX 1888

CERTIFICATE OF ANALYSIS

Phoenix, Ariz., February 3, 194 4

No. 50693

Sample of Tungsten Ore Received 1/31, 194

From ARIZONA TESTING LABORATORIES

Marked Smith-Emery #241349

We have employed official methods in the examination of the above sample, and find the results as follows:

Tungsten (WO_3)	1.88%

Respectfully submitted,
ARIZONA TESTING LABORATORIES,

By
Claude E. McLean Chief Chemist

LAB FORM 1

ARIZONA TESTING LABORATORIES

ANALYTICAL AND CONSULTING CHEMISTS
ASSAYERS, MINING ENGINEERS

PHONE 3-6272 823 EAST VAN BUREN STREET P. O. BOX 1888

CERTIFICATE OF ANALYSIS

Phoenix, Ariz., February 11, 1944

No. 50807

Sample of Tungsten Ore Received 2/7, 194

From ARIZONA TESTING LABORATORIES

Marked Ledoux & Co. #554817 P-6 # 49962

We have employed official methods in the examination of the above sample, and find the results as follows:

Tungsten (WO_3)	1.94%

Respectfully submitted,
ARIZONA TESTING LABORATORIES,
By Claude E. McLean
Claude E. McLean Chief Chemist

FORM 8-8-42-50M-F. & K. INC.

LEDOUX & COMPANY,
(Inc.)

ENGINEERS, CHEMISTS AND ASSAYERS

155 SIXTH AVENUE, NEW YORK

RR

REPORT OF ASSAY

No. 554817 New York, Jan. 6, 1944

Our assay of the sample of TUNGSTEN ORE

From Zannarapolis Tungsten Mine

Marked: P-6
#49962

and submitted to us, shows:

After drying:

Tungstic Oxide - - - - - 1.74%
(WO_3)

* * * * *

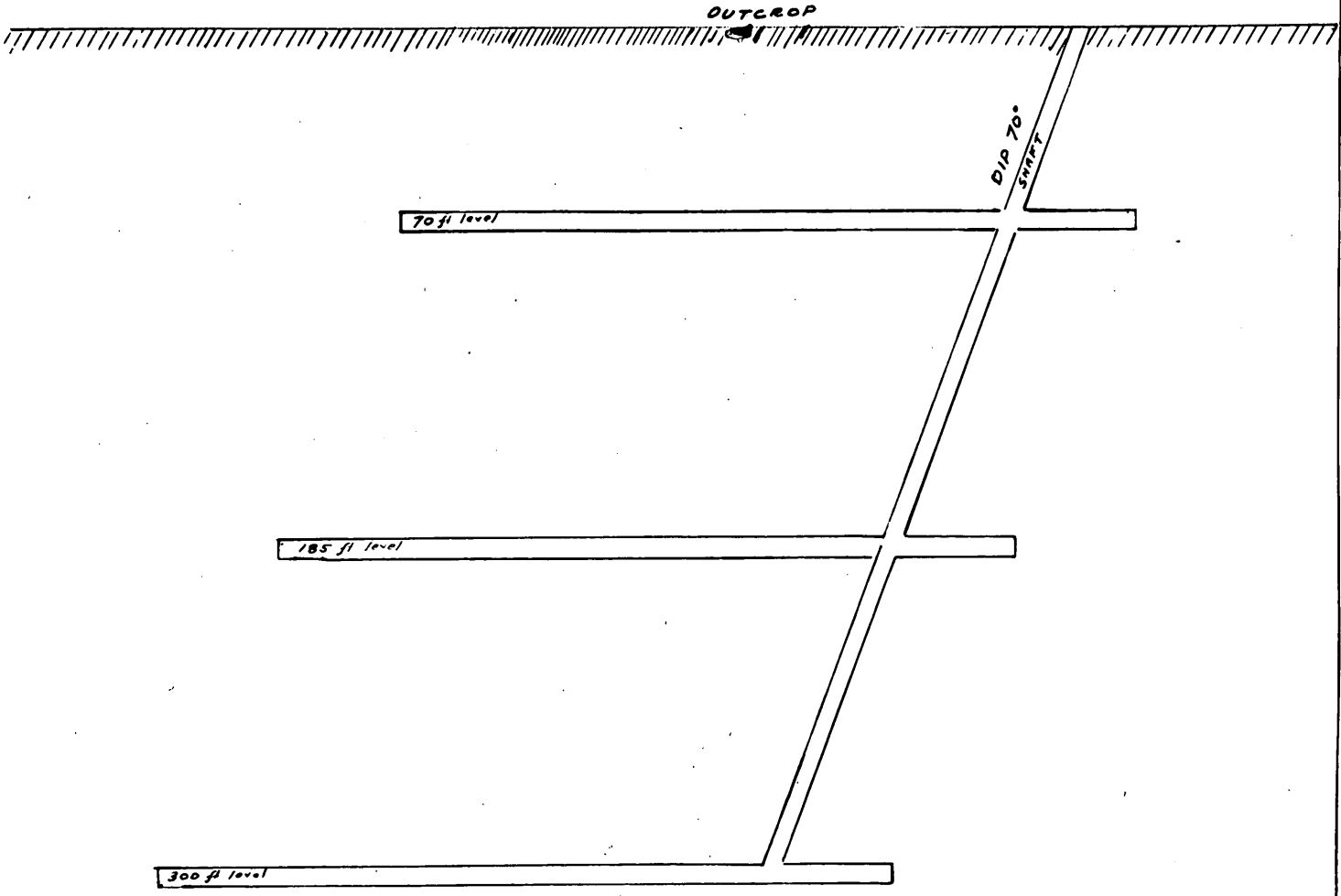
To Zannarapolis Tungsten Mine

LEDOUX & COMPANY, INC.

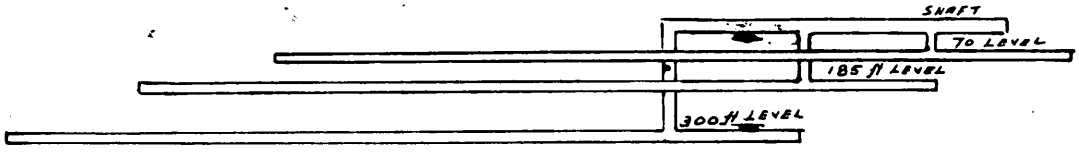
R. T. Brunton

ZANNARAPOLIS TUNGSTEN MINE J P ZANNARAS, J P ROBINSON Jr.

PROPOSED EXPLORATION OF OUTCROPING SCHEELITE
FROM PRESENT 70 FT LEVEL TO 300 FT LEVEL AND THREE 240 FT DRIFTS.



LONGIT. SEC IN PLANE OF VEIN



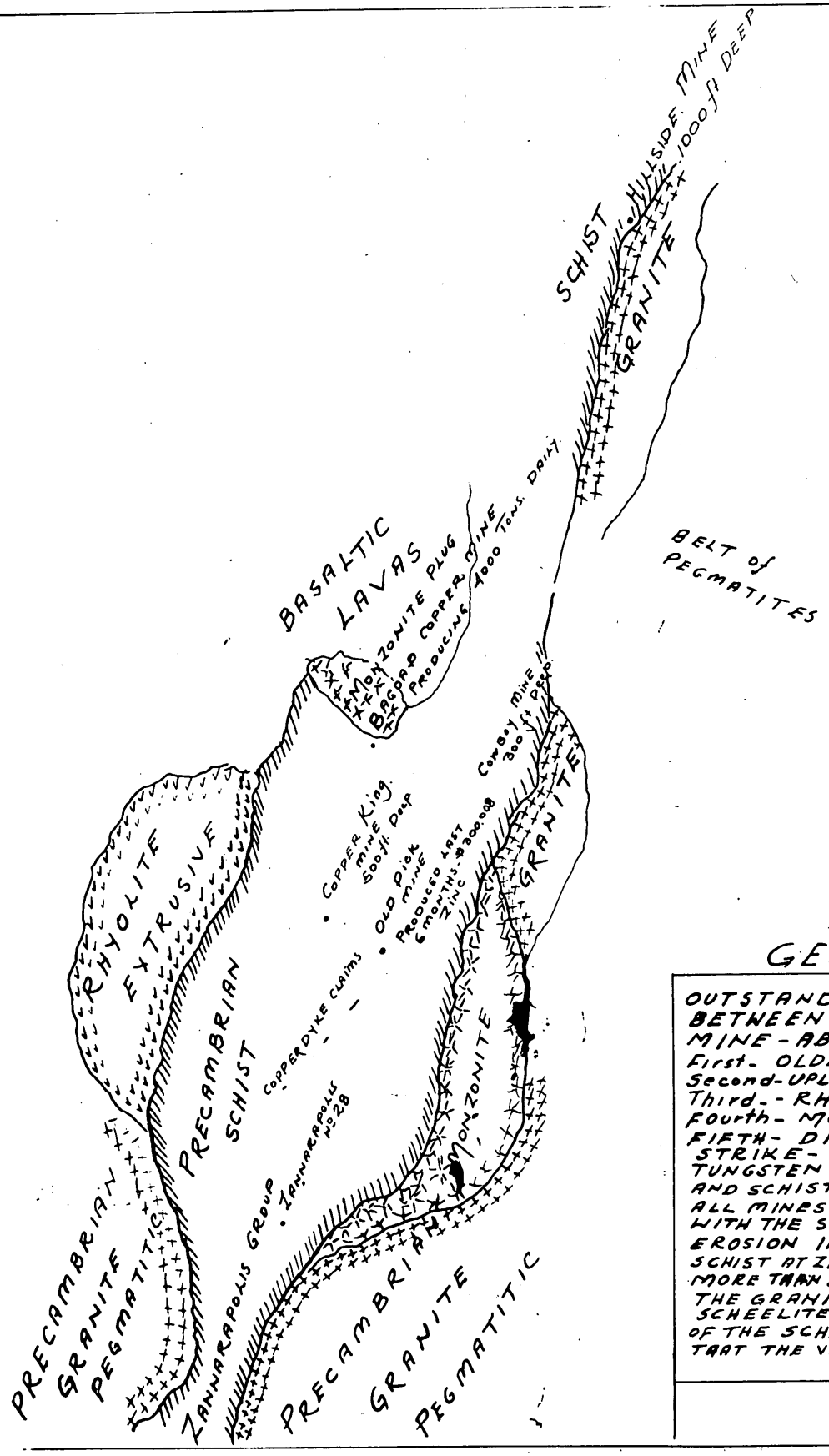
PLAN-RELATIVE HORIZONTAL PROJECTION
OF SHAFT AND DRIFTS

D.M.A-2030

ZANNARAPOLIS Nº 28.
ASSAY-REPORTS, SHAFT
VEIN 2 FEET WIDE 10 TONS

SAMPLE METALS RESERVE

ARIZONA TEST LAB	1.92% WO_3
SMITH-EMERY	1.88% WO_3
LEDOUX & Co.	1.94% WO_3
2 ft VEIN LEDOUX	1.74% WO_3
EXPECTED 4 ft Vein	0.70% WO_3



D.M.A 2030

GEOLOGIC SKETCH

OUTSTANDING GEOLOGIC FEATURES BETWEEN ZANNARAPOLIS AND HILLSIDE MINE - ABOUT FIFTEEN MILES BELT

First - OLDEST ROCK PRECAMBRIAN SCHIST
Second - UPLIFTED BY PRECAMBRIAN GRANITE
Third - - RHYOLITE - EXTRUSIVE AND INTRUSIVE
Fourth - MONZONITE INTRUSION
FIFTH - DIORITE

STRIKE - IN GENERAL NORTH EASTERLY
TUNGSTEN MINERALIZATION NEAR GRANITE AND SCHIST CONTACT - IN TACTITES.
ALL MINES ON THIS BELT AND ON THE SAME CONTACT WITH THE SCHEELITE VEINS ARE VERY DEEP.
EROSION IN THE TUNGSTEN BELT PROVES THAT THE SCHIST AT ZANNARAPOLIS No 28 WILL EXTEND IN DEPTH MORE THAN 300 FEET AND THEREFORE ALSO THE VEIN.
THE GRANITE CONTACT AND THE FACT THAT THE SCHEELITE VEINS STRIKE WITH THE SCHISTOZITY OF THE SCHIST ARE FAVORABLE CHARACTERISTICS THAT THE VEINS ARE OF DEEP SEATED ORIGIN.

SCALE 1" = 1 mile

22. (Cont'd). The outcrops indicate that the width and the quality of the ore will be sustained for the length of the drifts.

This property has been examined by the U.S. Geological Survey and Dr. Krauskopf of Stanford University then with the Government Tungsten Division personally recommended with the R.F.C. for a loan of $40,000.00 for further development on Zannarapolis No. 28.

The R.F.C. offered us, to start with, a $5,000.00 loan which we refused as being too small to our investment which now exceeds $80,000.00 and we never received any government loan on this property or any other property of ours.

THE REQUIREMENTS AND COSTS

23. (a) LABOR -

Shaft (day)	2 Muckers	@ $14.00	115 days		$ 3,220.00
	1 Hoist Man	@ 12.00	115 "		1,380.00
	1 Helper	@ 12.00	115 "		1,380.00
Shaft (Night)	1 Driller	@ 15.00	115 "		1,725.00
	1 Helper	@ 14.00	115 "		1,610.00
	1 Hoist Man	@ 12.00	115 "		1,380.00
Drift (Night)	1 Driller	@ 15.00	300 "		4,500.00
	1 Helper	@ 14.00	300 "		4,200.00
	1 Top Man	@ 12.00	300 "		3,600.00
Drift (Day)	2 Muckers	@ 14.00	300 "		8,400.00
	1 Helper	@ 12.00	300 "		3,600.00
	1 Top Man	@ 12.00	300 "		3,600.00
					$ 38,595.00

(b) SUPERVISORS

2 Supervisors @ $20.00 daily (offered by the Applicants) $ 17,600.00

(c) COST OF NECESSARY REPAIRS

Repairs of Head Frame [redacted] and rearranging Hoist:

Lumber	$ 626.00	
Cement	135.00	
Reinforcing Rods . . .	50.00	
Steel Rods	200.00	
Labor	2,000.00	
Miscellaneous	225.00	$ 3,236.00

(d) COST OF NECESSARY INSTALLATIONS

Water Well, to be drilled 400 ft. from shaft:

Well	3,500.00 (300 ft. deep)	
Pump	1,600.00	
Pipe	200.00	
Tank	300.00	
Road to the Well	300.00	$ 5,900.00

(e) COST OF ITEMS OF EQUIPMENT

2 House trailers	1,000.00
2 Butane Stoves	300.00
3 Servel Refrigerators .	1,200.00

Brought Forward . . $ 65,331.00

TOTAL BROUGHT FORWARD . . . . . $ 65,331.00

(e) COST OF ITEMS OF EQUIPMENT (Cont'd)

1 Loader	$ 3,000.00	
2 Large Mineralights	600.00	
1 Dump - 2-1/2 Ton Truck	3,000.00	
Tools (Vise, wrenches, pipe threading machine, pipe cutters, saws, anvil, hammers, etc.)	500.00	
1 Atlas Air Hammer, with Jack Legs . . .	900.00	$ 10,500.00

(f) None

(g) RENTAL VALUE

15 h.p. Fairbanks Morse Hoist	
125 cu. ft. Ingersoll Rand Compressor	$250.00 per Mo.
5 h.p. Fairbanks Morse Generator for blasting and lights.	
Ventilator Blower	
1 cu. yard cement mixer	
Head frame, skip, ore bin, picking belt, dark room, 2 mine cars, truck loading ramp.	75.00 per Mo.
21 x 28 four room house, 23' trailer and chemical laboratory	150.00 per Mo.
1 TD 6 International High Lift	200.00 " "
1 2-1/2 Ton International Dump Truck	150.00 " "
1 1-1/2 Ton Chevrolet General Service Truck	150.00 " "

(h) COST OF MATERIALS AND SUPPLIES

Lumber	$ 11,199.00	
Rail	2,064.00	
Holding Bolts	981.36	
Ventilation Tube	1,122.00	
Electric Wire, including conduit .	336.00	
Explosives	2,476.00	
Steel	885.00	
Bits	3,020.00	
Air and Water Lines	677.50	
Ladder	119.28	
Miscellaneous Supplies	2,928.00	$ 25,808.14

(i) COST OF POWER

Power	$ 8,173.44	
Transportation	3,500.00	
Repairs	2,500.00	
Insurance	4,243.80	
Taxes (Social Security)	1,203.00	
Clerical Work	2,000.00	$ 21,620.24

GRAND TOTAL $123,259.38

25% of $123,259.38 or . . . . . $ 30,814.87
Offered by Applicant as follows:

Supervision	17,600.00
Rental of their Equipment . . .	13,214.87
	$ 30,814.87

24. TIME SCHEDULE

30 days - Repair Head Frame and Well Drilling
15 " - Sinking from present 70 ft. level to 100 ft. level
100 " - Drifting 240 ft. in 100 ft. level
50 " - Sinking to 200 ft. level
100 " - Drifting 240 ft. in 200 ft. level
50 " - Sinking to 300 ft. level
100 " - Drifting 240 Ft. in 300 ft. level

All equipment must be purchased upon approval of the loan.

Form MF-103
(April 1951)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Budget Bureau No. 42-R1035.
Approval expires 6-30-51.

DEFENSE MINERALS ADMINISTRATION WASHINGTON, D. C.
SEP 28 3 47 PM '51

APPLICATION FOR AID FOR AN EXPLORATION PROJECT PURSUANT TO MINERAL ORDER 5, UNDER DEFENSE PRODUCTION ACT OF 1950

DO NOT FILL IN THIS BLOCK

Docket No. DMA-2030

Date received 9-28-51

Participation

REVISED

Zannarapolis Tungsten Mine
Box 500
Congress, Arizona

Name and address of applicant

Date Sept. 27, 1951

FILL IN THIS BLOCK

Date of application August 28, 1951

Estimated cost $123,259.38

Mineral or metal Tungsten (Scheelite)

Percentage of Government participation 75%

Location of mine Yavapai County

Date of filing MF-100

DMA Docket Number, if available DMA 2030

INSTRUCTIONS

Read Mineral Order 5, Regulations Governing Government Aid in Defense Projects, before completing this application. Submit four signed copies of the application to Defense Minerals Administration, Department of the Interior, Washington 25, D. C., or to the nearest field executive officer thereof, with your name and address on each sheet of the application and all accompanying papers. If any question is inapplicable, or if you cannot answer it, so state on the form. Where the space provided for answer is insufficient, answer on a separate sheet, annex it to the application form, and refer to it in space for answer. If the application is approved, you will be presented with an exploration project contract on Form MF-200, for your signature.

THE APPLICANT

*1. Is applicant an individual, partnership, or corporation?
*2. If a partnership, state names and addresses of partners.
*3. If a corporation, state names and addresses of officers, directors, and five largest stockholders.
*4. Describe the mining and general business experience of (*a*) the applicant, and (*b*) the person or persons who will manage the project.
*5. Are you the owner or the lessee of the property?
6. If owner, state what claims, liens, or encumbrances, if any, are against the property.
7. If lessee, attach a copy of the lease and state if it is in good standing.

NOTE.—It will be necessary to procure and attach to the exploration project contract agreements of claimants, lienors, encumbrances and lessors subordinating their interests in the property to the interest of the Government under the contract.

8. Furnish current financial statement, showing assets and liabilities, and a profit and loss statement.
9. How much money is applicant prepared to invest in proposed project? Is it sufficient to pay your part of the cost of the project as detailed in question 23 of this application form, in accordance with the regulations on Government participation (Section 9 of Mineral Order 5)?

*If you have already answered these questions on MF-100, you are not required to answer the questions for this application.

16—64067-1

THE PROPERTY

10. (*a*) Give a description of the real property that will be in any way involved in the exploration project, including any existing mine or operating property.
    (*b*) Give the legal description of the exact parcel, plot, or area upon which the exploration is to be conducted.

    NOTE.—If both areas are the same, so state. The only obligation to repay the Government is from the net earnings from any commercial discovery made in the area specified in (*b*) above in which the exploration is to be conducted, and the expenditure of funds which may be charged as costs of the project must be limited to that area or to work necessary to perform the exploration in that area.

*11. State the present and former names of the property, if any.

*12. State, in detail, the location of the property with reference to towns, railroads, roads, shipping points, including distances and directions and kinds and conditions of roads.

*13. State source and quantity of water available for operations and its sufficiency at all seasons.
State amount of power to be used, rate per hour or other cost, and source.

*14. Describe any existing useable facilities, equipment, buildings, or structure now on the property that will be devoted to the exploration work.

15. State in detail how the ore could be shipped and how and where milled.

*16. History:
    (*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for any past suspensions of operations.
    (*b*) State briefly the known history and production of adjoining and neighboring properties.
    (*c*) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.

*17. Production:
    (*a*) If mine is in production, furnish the following information:

	Tons per day	*Grade or analysis*	*Cost per ton*	*Net value per ton*
(1) Mining				
(2) Milling				
(3) Shipped or sold				

*18. Ore or mineral reserves: (If property is or has been operating.)
    (*a*) Describe the ore or mineral deposits briefly.
    (*b*) Submit available maps and assay data.
    (*c*) Give estimated tonnage and grade of each class of ore reserves.

19. State any conditions or circumstances regarding the property not sufficiently brought out by the foregoing questions.

THE EXPLORATION

20. For what mineral or minerals and for what types of deposits and ores will the exploration be conducted?

21. Describe briefly, but concisely, the proposed work and the estimated time required to complete it.

    NOTE.—The Government will not participate in a project that will require more than 2 years to complete.

22. Furnish statement of the geological basis of the project with particular emphasis on factors leading the operator to expect the finding of commercial ore bodies. This statement should be accompanied by supporting maps such as geological maps, maps of the proposed openings and assay maps, sample lists, and other pertinent data.

THE REQUIREMENTS AND COSTS

23. Tabulate in the form of an itemized statement with a sum for each item the estimated requirements and costs of the project so that the total will give the estimated cost of the project in which the Government will participate, as follows:
    (*a*) Labor, by numbers and classes (miners, muckers, millmen, etc.), with wages of each.
    (*b*) Supervisors, by numbers and positions, with salaries of each.
    (*c*) Cost of necessary repairs to existing facilities, structures, and buildings.
    (*d*) Cost of necessary installation or construction of additional facilities, structures, and buildings.
    (*e*) Cost of items of equipment, not now owned by the applicant which must be purchased for operations at a cost of $50 or more each.
    (*f*) Cost of rental for equipment which the operator proposes to rent.
    (*g*) Rental value of items of equipment which the operator now owns and which will be devoted to the work.
    (*h*) Cost of materials and supplies, including items of equipment costing less than $50 each.
    (*i*) Cost of power, water, utilities, and any other items not provided for above.

24. Furnish a time schedule of the project, stated in terms of months after project is approved, showing progress expected to be accomplished and the money expected to be spent.

CERTIFICATION

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this form and accompanying papers is correct and complete to the best of their knowledge and belief.

ZANNARAPOLIS TUNGSTEN MINE
(Name of company)

By J. H. Zannara
(Signature of authorized official)

September 27, 1951
(Date)

Manager
(Title)

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.

*Same as footnote on page 1.

16—64067-1 U. S. GOVERNMENT PRINTING OFFICE

1. Applicant is partnership.

2. Name of Partners: John Philip Zannaras, Box 500, Congress, Ariz.
John Pierce Robinson, Jr. " " "

3. Inapplicable.

4. Experience of Applicants:

J. P. Zannaras, Applicant and Manager, is a registered Mining Engineer (License 1269). 1924 Graduate of Lehigh University of Bethlehem, Pa. Member of A.I.M.E., member of the Mineralogical Society of America with many years of practical mining experience.

John Pierce Robinson, Jr., Applicant, Mine Supt., two years college, son of a miner, first experience in coal mining more than 10 years of practical mining experience. (Sinking shafts, open pit mine, etc.)

5. Owners of property (Zannarapolis No. 28, patented for which application is made).

6. Zannarapolis No. 28 is one of the Zannarapolis group of 30 mining claims for which group a certain encumbrance exists to the Kennametal, Inc., P.O. Box 231, Latrobe, Pa. for the amount of $10,000.00 advance against purchases of concentrates.

7. Inapplicable.

8. Zannarapolis No. 28 was not operating and therefore no financial statement available.

9. Applicant is prepared to invest $30,814.87 in the form of salaries of the applicants and use of their equipment, and it is sufficient to cover the applicant's contribution of 25%.

10. Description of Real Property: Zannarapolis No. 28 patented claim
(a & b) is one of the Zannarapolis No. 1-30 mining claims of which eight are patented claims and one patented millsite located in Township 13 N, Range 10 W, Gila & S.R. Meridian.

11. Zannarapolis No. 28 (present name -- no former names).

12. Location of Mine: Zannarapolis No. 28 is located about 35 miles Northwest of Congress Junction, about 5 miles easterly from the new Kingman cut-off road. Shipping point of concentrates will be Congress, Arizona.

12. (Cont'd). The road to the Mine is in excellent condition, 30 miles of which on the Kingman Cut-off Road can be traveled by cars at 60 miles an hour.

13. Water Supply: Water to be used for this project will come from Burro Creek on which Creek applicants have a water right since 1940. Such water is available throughout the year.

14. Facilities: Facilities on property are the following:

15 h.p. Fairbanks Morse Hoist
125 cu. ft. Ingersoll Rand Compressor
5 K.V.A. Fairbanks Morse Generator for blasting and lights.
Head frame, skip, ore bin, picking belt, dark room, 2 mine cars, truck loading ramp, 70' - 6' x 8' inside dimensions, incline two compartment shaft, completely timbered, 1 cub. yard cement mixer, blower for ventilation.

21 x 28 four room house, 23' trailer and chemical laboratory.

1 - TD 6 International High Lift.
1 - 2-1/2 ton International Dump Truck
1 - 1-1/2 ton Chevrolet General Service Truck

15. Milling of Ore: The ore on this project will be milled at the applicants' mill on Burro Creek, which mill is now producing Scheelite concentrates from Zannarapolis No. 19. The concentrates will be shipped from Congress, Arizona.

16. History: (a) A 70' shaft has been sunk.

During World War II, 10 tons of ore was shipped to the stockpile of the Metal Reserves, Phoenix, Arizona, which assayed 1.94%.

The width of the vein was about 8' at the hanging wall. However, the entire ore is not expected to run 1.94%. A fair average of .70 to 1% could be expected.

(b) The following properties are on the same contact as the Zannarapolis group:

Old Dick Mine and Copper King Mine - these two mines expected to lead the zinc production in Arizona. During World War No. 1 a lens of 9 million pounds of zinc sulphite was taken from the Copper King.

Bagdad Mine producing 4,000 tons daily.

Hillside Mine 1,000 ft. deep without bottoming of the ore.

(c) Not available.

17. Mine not in production.

18. (a) The ore consists of Scheelite occurring in tactites with epidote and garnet. Vein strikes in a Northeasterly direction and dips Westerly 70 degrees.

(b) Assays taken in 2 ft. width of the vein in the shaft show as per attached photostats
1.94% WO3, 1.92% WO3, 1.88% WO3, 1.74% WO3.

Attached map of proposed work extending the present shaft. The drifts follow the outcrops of the vein.

The ore will be mined by selective mining and it is estimated that a 4 ft. width of the vein can be mined which it is estimated to run 0.7% WO3.

(c) Estimated ore reserve is 240 ft. x 300 ft. x 4 ft. 288,000 cu. ft; or 28,800 tons of 0.7 WO3 of present market valuation in excess of $1,000,000.00.

19. It is believed that conditions have been sufficiently detailed in the above questions.

THE EXPLORATION

20. Exploration to be made for Tungsten (Scheelite)

21. Work to be done: Present shaft to be extended to 300 ft. depth and 3 drifts of 240 ft. each to be driven in the direction of the outcrops.
Time Required: 445 days.

22. Attached herewith geologic sketch of the 15 miles from the Zannarapolis group to the Hillside Mine. Under 17 we attached a map of the proposed exploration work.

The applicant, J. P. Zannaras, registered mine engineer, has made an 11 year study of this territory. And the geologic sketch is a result of this study.

Under 17 we also attached assays taken from this vein.

On the geologic sketch attached herewith we explain the reasons which lead us to expect the finding of large commercial ore bodies of Scheelite, and our present work to the 70' level has already proven our expectations.

LAB FORM 1

ARIZONA TESTING LABORATORIES

ANALYTICAL AND CONSULTING CHEMISTS
ASSAYERS, MINING ENGINEERS

PHONE 3-6272 | 823 EAST VAN BUREN STREET | P. O. BOX 1888

CERTIFICATE OF ANALYSIS

Phoenix, Ariz., December 15, 1943

No. 49962

Sample of Tungsten Ore Received 12/11/43, 194

From METALS RESERVE COMPANY

Marked P-6 Mr. W. M. Snow

We have employed official methods in the examination of the above sample, and find the results as follows:

Moisture	1.20%
Analysis on dry basis	
Tungsten (WO_3)	1.92%

9.8553 Tons @ $36.36 = $358.34

REGISTERED ASSAYER
CERTIFICATE EXPIRES
CLAUDE E. McLEAN
DEC. 31, 1943
ARIZONA, U.S.A.

Respectfully submitted,
ARIZONA TESTING LABORATORIES,

By [signature]
Claude E. McLean Chief Chemist

LAB FORM 1

ARIZONA TESTING LABORATORIES

ANALYTICAL AND CONSULTING CHEMISTS
ASSAYERS, MINING ENGINEERS

PHONE 3-6272 823 EAST VAN BUREN STREET P. O. BOX 1888

CERTIFICATE OF ANALYSIS

Phoenix, Ariz., February 3, 194 4

No. 50693

Sample of Tungsten Ore Received 1/31, 194

From ARIZONA TESTING LABORATORIES

Marked Smith-Emery #241349

We have employed official methods in the examination of the above sample, and find the results as follows:

Tungsten (WO_3)	1.88%

Respectfully submitted,
ARIZONA TESTING LABORATORIES,

By
Claude E. McLean Chief Chemist

LAB FORM 1

ARIZONA TESTING LABORATORIES

ANALYTICAL AND CONSULTING CHEMISTS
ASSAYERS, MINING ENGINEERS

PHONE 3-6272 823 EAST VAN BUREN STREET P. O. BOX 1888

CERTIFICATE OF ANALYSIS

Phoenix, Ariz., February 11, 1944

No. 50807

Sample of Tungsten Ore Received 2/7, 194

From ARIZONA TESTING LABORATORIES

Marked Ledoux & Co. #554817 P-6 # 49962

We have employed official methods in the examination of the above sample, and find the results as follows:

Tungsten (WO_3) 1.94%

Respectfully submitted,
ARIZONA TESTING LABORATORIES,
By
Claude E. McLean Chief Chemist

FORM 5-8-42-50M-F. & K. INC.

LEDOUX & COMPANY,
(Inc.)

ENGINEERS, CHEMISTS AND ASSAYERS

155 SIXTH AVENUE, NEW YORK

RR **REPORT OF ASSAY**

No. 554817 New York, Jan. 6, 1944

Our assay of the sample of TUNGSTEN ORE

From Zannarapolis Tungsten Mine

Marked: P-6
#49962

and submitted to us, shows:

After drying:

Tungstic Oxide - - - - - 1.74%
(WO_3)

* * * * *

To Zannarapolis Tungsten Mine

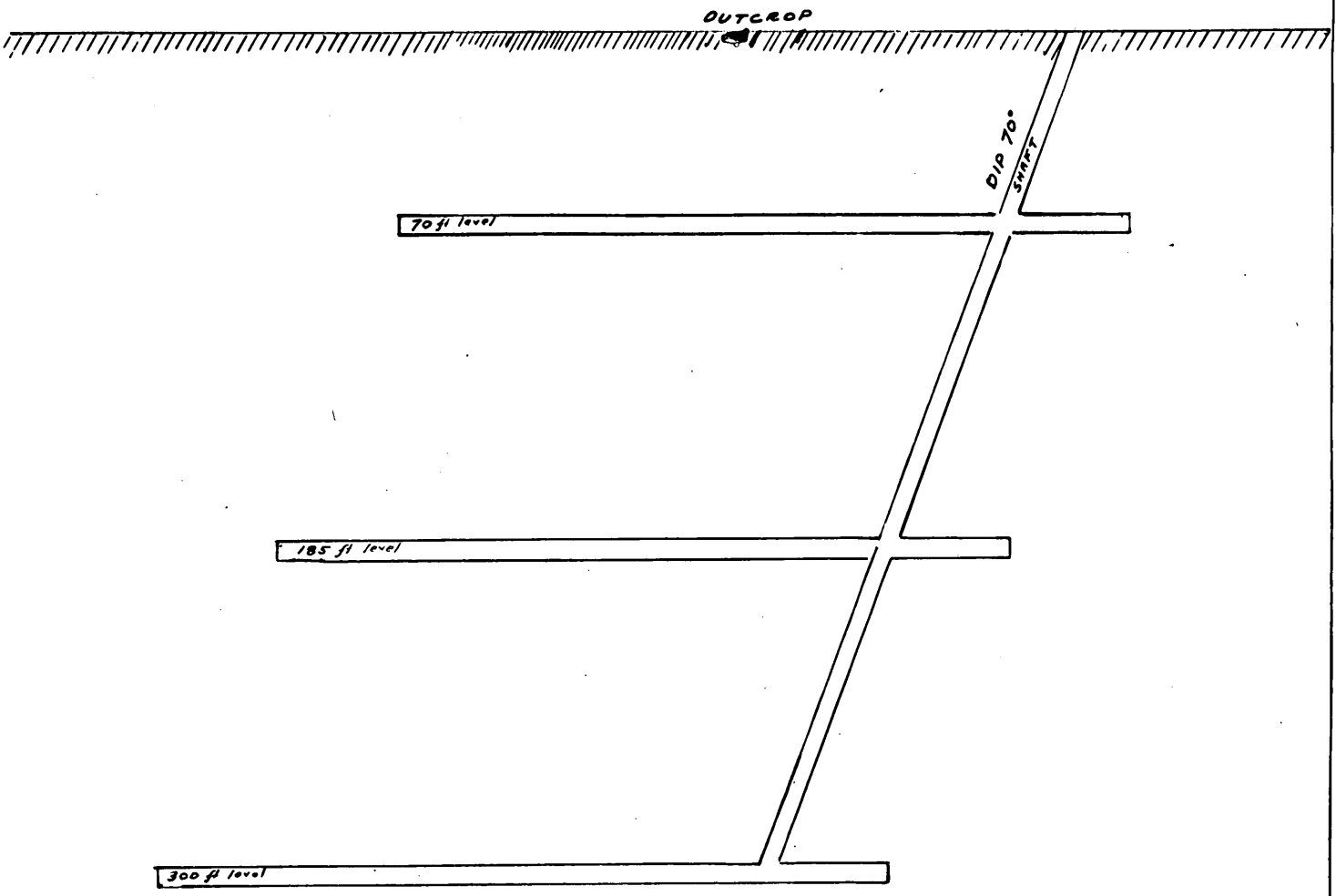
LEDOUX & COMPANY, INC.

[signature]

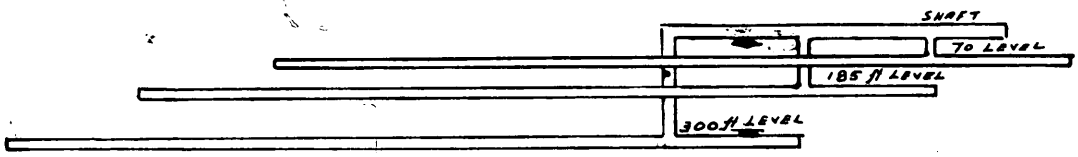
ZANNARAPOLIS TUNGSTEN MINE

J P ZANNARAS, J P ROBINSON Jr.

PROPOSED EXPLORATION OF OUTCROPING SCHEELITE FROM PRESENT 70 FT LEVEL TO 300 FT LEVEL AND THREE 240 FT DRIFTS.



LONGIT. SEC IN PLANE OF VEIN



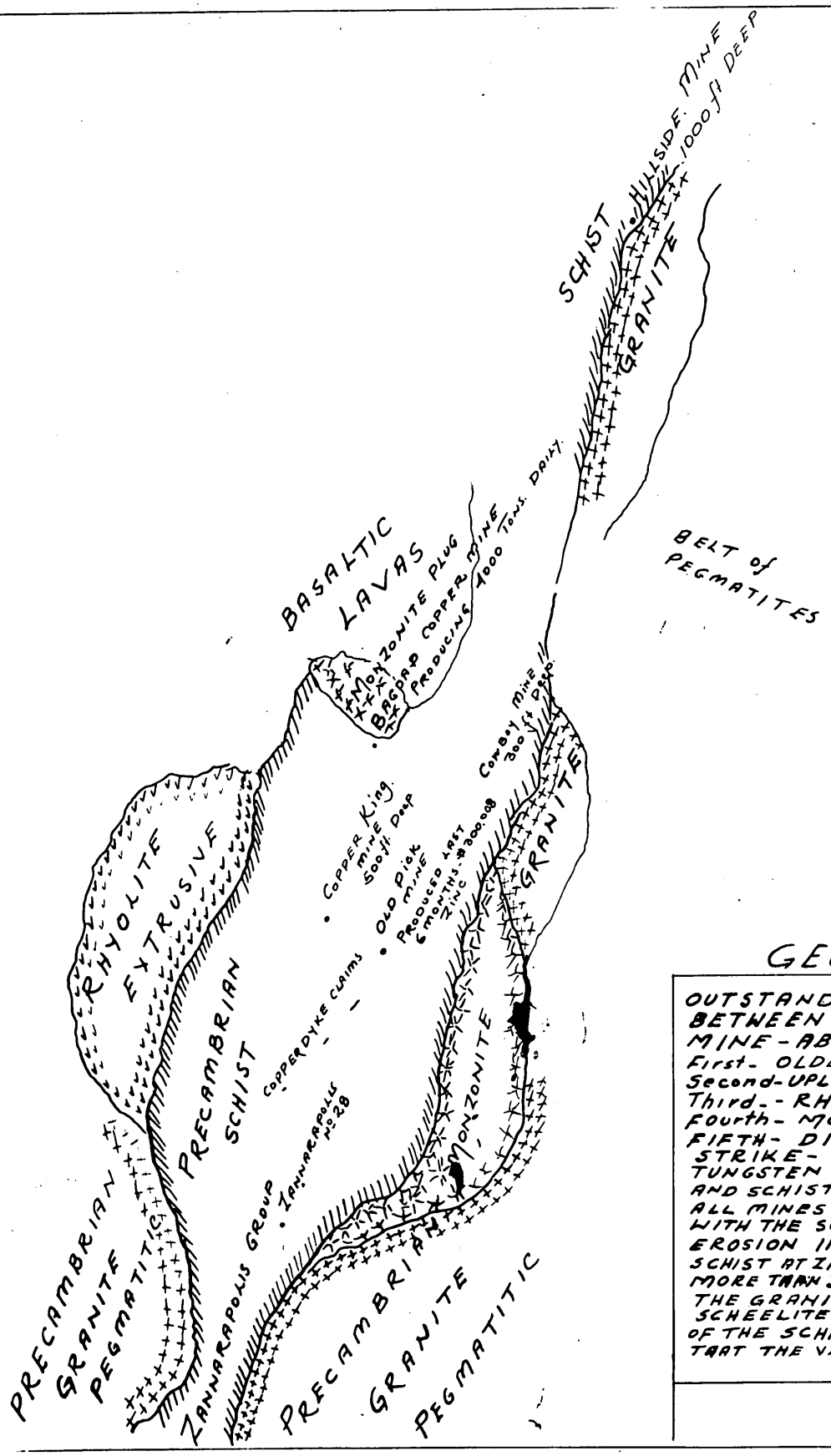
PLAN-RELATIVE HORIZONTAL PROJECTION OF SHAFT AND DRIFTS

D.M.A-2030

ZANNARAPOLIS Nº 28.

ASSAY-REPORTS, SHAFT VEIN 2 FEET WIDE 10 TONS SAMPLE METALS RESERVE

ARIZONA TEST LAB	1.92% WO_3
SMITH-EMERY	1.88% WO_3
LEDOUX & Co.	1.94% WO_3
2 ft VEIN LEDOUX	1.74% WO_3
EXPECTED 4 ft Vein	0.70% WO_3



D.M.A 2030

GEOLOGIC SKETCH

OUTSTANDING GEOLOGIC FEATURES BETWEEN ZANNARAPOLIS AND HILLSIDE MINE - ABOUT FIFTEEN MILES BELT

First - OLDEST ROCK PRECAMBRIAN SCHIST
Second - UPLIFTED BY PRECAMBRIAN GRANITE
Third - - RHYOLITE - EXTRUSIVE AND INTRUSIVE
Fourth - MONZONITE INTRUSION
FIFTH - DIORITE

STRIKE - IN GENERAL NORTH EASTERLY

TUNGSTEN MINERALIZATION NEAR GRANITE AND SCHIST CONTACT - IN TACTITES.

ALL MINES ON THIS BELT AND ON THE SAME CONTACT WITH THE SCHEELITE VEINS ARE VERY DEEP.

EROSION IN THE TUNGSTEN BELT PROVES THAT THE SCHIST AT ZANNARAPOLIS NO 28 WILL EXTEND IN DEPTH MORE THAN 300 FEET AND THEREFORE ALSO THE VEIN.

THE GRANITE CONTACT AND THE FACT THAT THE SCHEELITE VEINS STRIKE WITH THE SCHISTOZITY OF THE SCHIST ARE FAVORABLE CHARACTERISTICS THAT THE VEINS ARE OF DEEP SEATED ORIGIN.

SCALE 1" = 1 mile

22. (Cont'd). The outcrops indicate that the width and the quality of the ore will be sustained for the length of the drifts.

This property has been examined by the U.S. Geological Survey and Dr. Krauskopf of Stanford University then with the Government Tungsten Division personally recommended with the R.F.C. for a loan of $40,000.00 for further development on Zannarapolis No. 28.

The R.F.C. offered us, to start with, a $5,000.00 loan which we refused as being too small to our investment which now exceeds $80,000.00 and we never received any government loan on this property or any other property of ours.

THE REQUIREMENTS AND COSTS

23. (a) LABOR -

Shaft (day)	2 Muckers	@ $14.00	115 days		$ 3,220.00
	1 Hoist Man	@ 12.00	115 "		1,380.00
	1 Helper	@ 12.00	115 "		1,380.00
Shaft (Night)	1 Driller	@ 15.00	115 "		1,725.00
	1 Helper	@ 14.00	115 "		1,610.00
	1 Hoist Man	@ 12.00	115 "		1,380.00
Drift (Night)	1 Driller	@ 15.00	300 "		4,500.00
	1 Helper	@ 14.00	300 "		4,200.00
	1 Top Man	@ 12.00	300 "		3,600.00
Drift (Day)	2 Muckers	@ 14.00	300 "		8,400.00
	1 Helper	@ 12.00	300 "		3,600.00
	1 Top Man	@ 12.00	300 "		3,600.00
					$ 38,595.00

(b) SUPERVISORS

2 Supervisors @ $20.00 daily (offered by the Applicants) $ 17,600.00

(c) COST OF NECESSARY REPAIRS

Repairs of Head Frame, ~~enlarging~~ and rearranging Hoist:

Lumber	$ 626.00	
Cement	135.00	
Reinforcing Rods . . .	50.00	
Steel Rods	200.00	
Labor	2,000.00	
Miscellaneous	225.00	$ 3,236.00

(d) COST OF NECESSARY INSTALLATIONS

Water Well, to be drilled 400 ft. from shaft:

Well	3,500.00 (300 ft. deep)	
Pump	1,600.00	
Pipe	200.00	
Tank	300.00	
Road to the Well	300.00	$ 5,900.00

(e) COST OF ITEMS OF EQUIPMENT

2 House trailers	1,000.00
2 Butane Stoves	300.00
3 Servel Refrigerators .	1,200.00

Brought Forward . . $ 65,331.00

TOTAL BROUGHT FORWARD . . . . . $ 65,331.00

(e) COST OF ITEMS OF EQUIPMENT (Cont'd)

1 Loader	$ 3,000.00	
2 Large Mineralights	600.00	
1 Dump - 2-1/2 Ton Truck	3,000.00	
Tools (Vise, wrenches, pipe threading machine, pipe cutters, saws, anvil, hammers, etc.)	500.00	
1 Atlas Air Hammer, with Jack Legs . . .	900.00	$ 10,500.00

(f) None

(g) RENTAL VALUE

15 h.p. Fairbanks Morse Hoist		
125 cu. ft. Ingersoll Rand Compressor	$250.00 per Mo.	
5 h.p. Fairbanks Morse Generator for blasting and lights.		
Ventilator Blower		
1 cu. yard cement mixer		
Head frame, skip, ore bin, picking belt, dark room, 2 mine cars, truck loading ramp.	75.00 per Mo.	
21 x 28 four room house, 23' trailer and chemical laboratory	150.00 per Mo.	
1 TD 6 International High Lift	200.00 " "	
1 2-1/2 Ton International Dump Truck	150.00 " "	
1 1-1/2 Ton Chevrolet General Service Truck	150.00 " "	

(h) COST OF MATERIALS AND SUPPLIES

Lumber	$ 11,199.00	
Rail	2,064.00	
Holding Bolts	981.36	
Ventilation Tube	1,122.00	
Electric Wire, including conduit .	336.00	
Explosives	2,476.00	
Steel	885.00	
Bits	3,020.00	
Air and Water Lines	677.50	
Ladder	119.28	
Miscellaneous Supplies	2,928.00	$ 25,808.14

(i) COST OF POWER

Power	$ 8,173.44	
Transportation	3,500.00	
Repairs	2,500.00	
Insurance	4,243.80	
Taxes (Social Security)	1,203.00	
Clerical Work	2,000.00	$ 21,620.24

GRAND TOTAL $123,259.38

25% of $123,259.38 or	$ 30,814.87
Offered by Applicant as follows:	
Supervision	17,600.00
Rental of their Equipment . . .	13,214.87
	$ 30,814.87

24. TIME SCHEDULE

30	days	- Repair Head Frame and Well Drilling
15	"	- Sinking from present 70 ft. level to 100 ft. level
100	"	- Drifting 240 ft. in 100 ft. level
50	"	- Sinking to 200 ft. level
100	"	- Drifting 240 ft. in 200 ft. level
50	"	- Sinking to 300 ft. level
100	"	- Drifting 240 Ft. in 300 ft. level

All equipment must be purchased upon approval of the loan.

JOHN PHILIP ZANNARAS
REGISTERED MINING ENGINEER

JOHN PIERCE ROBINSON JR.

ZANNARAPOLIS TUNGSTEN MINE

BOX 500
CONGRESS, ARIZONA

September 27, 1951

Mr. George B. Holderer
Chief, Tungsten Branch
U.S. Department of the Interior
Defense Minerals Administration
Washington 25, D.C.

Re: DMA-2030

Dear Sir:

Referring to your letter of September 20th, in accordance with your instructions we are submitting herewith a revised application, which we believe answers more fully Questions 18 and 22.

If any additional information is required kindly let us know so that we can submit it as soon as possible.

Respectfully,

ZANNARAPOLIS TUNGSTEN MINE

JPZ:N

John Ph. Zannaras, Mgr.

FILE CO
SURNA

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

Holderer
Jacoby

SEP 20 1951

Q.E.C.

Mr. J. P. Zannaras
Zannarapolis Tungsten Mine
Box 500
Congress, Arizona

In reply please refer to
DMA-2030

Dear Mr. Zannaras:

In reviewing your application, we find a number of questions on which we need additional information. In answer to question 18 you say, "Inapplicable." Question 18 asks you in section (a) to describe the ore or mineral deposit. Section (b) asks for maps and assay data. These are applicable.

In answer to question 22, you have failed to support your statements with maps, assays, cross sections, geological maps, or maps of the proposed work in relationship with topographical features and ore outcrops.

An exploration loan is only for exploration work. Therefore, we cannot agree to the rental of equipment for mining or milling or for the construction of facilities not directly related to the project. It will be necessary for you to submit revised cost figures, omitting those items not directly related to exploration. An example of this is; the ore bin is not related to exploration while your headframe is a related item.

In your application you say that the Government's Tungsten Division personally recommended the Reconstruction Finance Corporation loan for $40,000 for further development. Did this loan go through and, if so, how was the money used?

Very truly yours,

George B. Holderer

George B. Holderer
Chief, Tungsten Branch

CHJacoby:ec
9/19/51

CC: Adm. Reading File
DMA Docket File
Mr. Holderer

September 4, 1951

Mr. John Ph. Zannaras, Manager
Zannarapolis Tungsten Mine
Box 500
Congress, Arizona

Subject: DMA-2030
Re: Exploration Loan
Zannarapolis No. 28

My dear Mr. Zannaras:

This will acknowledge receipt of your application dated August 27, 1951 for a loan under the Defense Production Act of 1950.

Your application was assigned Docket Number DMA-2030 and referred to the Ferro Alloys Branch.

Kindly refer to DMA-2030 in any future correspondence relating to your application.

Sincerely yours,

Robert E. Adams

Robert E. Adams, Chief
Reports and Records Unit

2463

JOHN PHILIP ZANNARAS
REGISTERED MINING ENGINEER

JOHN PIERCE ROBINSON JR.

ZANNARAPOLIS TUNGSTEN MINE

BOX 500
CONGRESS, ARIZONA

DM A-2030

August 27, 1951

DEFENSE MINERALS ADMINISTRATION
WASHINGTON, D.C.
AUG 31 1 42 PM '51

Dr. James Boyd
Director of D.M.A.
Dept. of Interior Bldg.
Washington 25, D.C.

Application for $140,879.14 Exploration Loan for Zannarapolis No. 28, with 25% participation by Applicant Patented Mining Claim for Tungsten-Scheelite

Dear Sir:

On April 2, 1951 we submitted an application for an Exploration Loan which has been filed with you.

In accordance with your instructions we are submitting today this application in detailed form and respectfully request that preference be given to it as if submitted on April 2nd.

Respectfully,

ZANNARAPOLIS TUNGSTEN MINE

J.Ph. Zannaras

JPZ:N

John Ph. Zannaras

Form MF-103
(April 1951)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Budget Bureau No. 42-R1035.
Approval expires 6-30-51.

APPLICATION FOR AID FOR AN EXPLORATION PROJECT PURSUANT TO MINERAL ORDER 5, UNDER DEFENSE PRODUCTION ACT OF 1950

DO NOT FILL IN THIS BLOCK

Docket No. DMA-2030

Date received 9-3-51

Participation

ZANNARAPOLIS TUNGSTEN MINE
Box 500
Congress, Arizona

DEFENSE MINERALS ADMINISTRATION WASHINGTON, D. C.
AUG 31 1 42 PM '51

Name and address of applicant

Date April 2, 1951

FILL IN THIS BLOCK

Date of application April 2, 1951

Estimated cost $140,879.04

Mineral or metal Tungsten Concentrates (Scheelite)

Percentage of Government participation $35,219.76

Location of mine Yavapai County, Arizona

Date of filing MF-100 May 9, 1951

DMA Docket Number, if available 2030

INSTRUCTIONS

Read Mineral Order 5, Regulations Governing Government Aid in Defense Projects, before completing this application. Submit four signed copies of the application to Defense Minerals Administration, Department of the Interior, Washington 25, D. C., or to the nearest field executive officer thereof, with your name and address on each sheet of the application and all accompanying papers. If any question is inapplicable, or if you cannot answer it, so state on the form. Where the space provided for answer is insufficient, answer on a separate sheet, annex it to the application form, and refer to it in space for answer. If the application is approved, you will be presented with an exploration project contract on Form MF-200, for your signature.

THE APPLICANT

*1. Is applicant an individual, partnership, or corporation?
*2. If a partnership, state names and addresses of partners.
*3. If a corporation, state names and addresses of officers, directors, and five largest stockholders.
*4. Describe the mining and general business experience of (*a*) the applicant, and (*b*) the person or persons who will manage the project.
*5. Are you the owner or the lessee of the property?
6. If owner, state what claims, liens, or encumbrances, if any, are against the property.
7. If lessee, attach a copy of the lease and state if it is in good standing.

NOTE.—It will be necessary to procure and attach to the exploration project contract agreements of claimants, lienors, encumbrances and lessors subordinating their interests in the property to the interest of the Government under the contract.

8. Furnish current financial statement, showing assets and liabilities, and a profit and loss statement.
9. How much money is applicant prepared to invest in proposed project? Is it sufficient to pay your part of the cost of the project as detailed in question 23 of this application form, in accordance with the regulations on Government participation (Section 9 of Mineral Order 5)?

*If you have already answered these questions on MF-100, you are not required to answer the questions for this application.

16—64067-1

THE PROPERTY

10. (*a*) Give a description of the real property that will be in any way involved in the exploration project, including any existing mine or operating property.
    (*b*) Give the legal description of the exact parcel, plot, or area upon which the exploration is to be conducted.

    NOTE.—If both areas are the same, so state. The only obligation to repay the Government is from the net earnings from any commercial discovery made in the area specified in (*b*) above in which the exploration is to be conducted, and the expenditure of funds which may be charged as costs of the project must be limited to that area or to work necessary to perform the exploration in that area.

*11. State the present and former names of the property, if any.
*12. State, in detail, the location of the property with reference to towns, railroads, roads, shipping points, including distances and directions and kinds and conditions of roads.
*13. State source and quantity of water available for operations and its sufficiency at all seasons.
State amount of power to be used, rate per hour or other cost, and source.
*14. Describe any existing useable facilities, equipment, buildings, or structure now on the property that will be devoted to the exploration work.
15. State in detail how the ore could be shipped and how and where milled.
*16. History:
    (*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for any past suspensions of operations.
    (*b*) State briefly the known history and production of adjoining and neighboring properties.
    (*c*) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.
*17. Production:
    (*a*) If mine is in production, furnish the following information:

	Tons per day	*Grade or analysis*	*Cost per ton*	*Net value per ton*
(1) Mining				
(2) Milling				
(3) Shipped or sold				

*18. Ore or mineral reserves: (If property is or has been operating.)
    (*a*) Describe the ore or mineral deposits briefly.
    (*b*) Submit available maps and assay data.
    (*c*) Give estimated tonnage and grade of each class of ore reserves.
19. State any conditions or circumstances regarding the property not sufficiently brought out by the foregoing questions.

THE EXPLORATION

20. For what mineral or minerals and for what types of deposits and ores will the exploration be conducted?
21. Describe briefly, but concisely, the proposed work and the estimated time required to complete it.

    NOTE.—The Government will not participate in a project that will require more than 2 years to complete.
22. Furnish statement of the geological basis of the project with particular emphasis on factors leading the operator to expect the finding of commercial ore bodies. This statement should be accompanied by supporting maps such as geological maps, maps of the proposed openings and assay maps, sample lists, and other pertinent data.

THE REQUIREMENTS AND COSTS

23. Tabulate in the form of an itemized statement with a sum for each item the estimated requirements and costs of the project so that the total will give the estimated cost of the project in which the Government will participate, as follows:
    (*a*) Labor, by numbers and classes (miners, muckers, millmen, etc.), with wages of each.
    (*b*) Supervisors, by numbers and positions, with salaries of each.
    (*c*) Cost of necessary repairs to existing facilities, structures, and buildings.
    (*d*) Cost of necessary installation or construction of additional facilities, structures, and buildings.
    (*e*) Cost of items of equipment, not now owned by the applicant which must be purchased for operations at a cost of $50 or more each.
    (*f*) Cost of rental for equipment which the operator proposes to rent.
    (*g*) Rental value of items of equipment which the operator now owns and which will be devoted to the work.
    (*h*) Cost of materials and supplies, including items of equipment costing less than $50 each.
    (*i*) Cost of power, water, utilities, and any other items not provided for above.
24. Furnish a time schedule of the project, stated in terms of months after project is approved, showing progress expected to be accomplished and the money expected to be spent.

CERTIFICATION

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this form and accompanying papers is correct and complete to the best of their knowledge and belief.

Zannarapolis Tungsten Mine — (Name of company)

By [signature] — (Signature of authorized official)

August 27 1951 — (Date)

Managing Owner — (Title)

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.

*Same as footnote on page 1.

16—64067-1 U. S. GOVERNMENT PRINTING OFFICE

1. Applicant is partnership.

2. Name of Partners: John Philip Zannaras, Box 500, Congress, Ariz.
Constantine Philip Zannaras " " "
John Pierce Robinson, Jr. " " "

3. Inapplicable.

4. Experience of Applicants:

J. P. Zannaras, Applicant and Manager, is a registered Mining Engineer (License 1269). 1924 Graduate of Lehigh University of Bethlehem, Pa. Member of A.I.M.E., member of the Mineralogical Society of America with many years of practical mining experience.

John Pierce Robinson, Jr., Applicant, Mine Supt., two years college, son of a miner, first experience in coal mining more than 10 years of practical mining experience. (Sinking shafts, open pit mine, etc.)

5. Owners of property (Zannarapolis No. 28, patented for which application is made).

6. Zannarapolis No. 28 is one of the Zannarapolis group of 30 mining claims for which group a certain encumbrance exists to the Kennametal, Inc., P.O. Box 231, Latrobe, Pa. for the amount of $10,000 advance against purchases of concentrates.

7. Inapplicable.

8. Zannarapolis No. 28 was not operating and therefore no financial statement available.

9. Applicant is prepared to invest $35,219.76 in the form of salaries of the applicants and use of their equipment, and it is sufficient to cover the applicant's contribution of 25%.

10. Description of Real Property: (a & b) Zannarapolis No. 28 patented claim is one of the Zannarapolis No. 1-30 mining claims of which eight are patented claims and one patented millsite located in Township 13 N, Range 10 W, Gila & S.R. Meridian.

11. Zannarapolis No. 28 (present name -- no former names).

12. Location of Mine: Zannarapolis No. 28 is located about 35 miles Northwest of Congress Junction, about 5 miles easterly from the new Kingman cut-off road. Shipping point of concentrates will be Congress Arizona.

12. (Cont'd) The road to the Mine is in excellent condition, 30 miles of which on the Kingman cut-off road can be traveled by cars at 60 miles an hour.

13. Water Supply: Water to be used for this project will come from Burro Creek on which creek applicants have a water right since 1940. Such water is available throughout the year.

14. Facilities: Facilities on property are the following:

15 h.p. Fairbanks Morse Hoist
125 cu. ft. Ingersoll Rand Compressor
5 h.p. Fairbanks Morse Generator for blasting and lights.
Head frame, skip, ore bin, picking belt, dark room, 2 mine cars, 4 x 8" Blake type Crusher, truck loading ramp, 70' - 6' x 8' incline two compartment shaft, completely timbered.

However, the following facilities adjoin the property and will be used for this project.

21 x 28 four room house, 23' trailer and chemical laboratory.

8 x 15" Pacific type Crusher driven by 15 h.p. a.c. G.E. motor.

40 ton ore bin

40 KVA 440 volts A.C. LeRoy Electric Generator.

1 - TD 6 International High Lift.

Also, the following equipment is owned by the applicants of which use will be made in this project:

2 - 7000 gal. Concrete Water Tanks
1 - 700 gal. Concrete constant Head Tank
1 - 35 ton Bin
1 - Feeder
1 - 3-1/2 x 7' Ball Mill
1 - 27" x 14' Dorr Classifier
1 - Primary Deister Concentrating Table
1 - Secondary Deister Concentrating Table
1 - 7000 gal. Thickening Tank
1 - Case Engine for prime mover
1 - Buda 90 h.p. Diesel Engine prime mover
1 - 5 x 5" Meyers Pump driven by gas engine
2000 feet of pipe line
Large Concrete wall for tailings
1 - House 1000 square feet
1 - 2-1/2 ton International Dump Truck
1 - 1-1/2 ton Chevrolet General Service Truck

15. Milling of Ore: The ore on this project will be milled at the applicants' mill on Burro Creek, which mill is now producing Scheelite concentrates from Zannarapolis No. 19. The concentrates will be shipped from Congress, Arizona.

16. History: (a) A 70' shaft has been sunk.

During World War II, 10 tons of ore was shipped to the stockpile of the metal reserves, Phoenix, Arizona, which assayed 1.94%.

The width of the vein was about 8' at the hanging wall. However, the entire ore is not expected to run 1.94%. A fair average of .70 to 1% could be expected.

(b) The following properties are on the same contact as the Zannarapolis group:

Old Dick Mine and Copper King Mine - these two mines expected to lead the zinc production in Arizona. During World War No. 1 a lens of 9 million pounds of zinc sulphite was taken from the Copper King.

Bagdad Mine producing 4,000 tons daily.

Hillside Mine 1,000 ft. deep without bottoming of the ore.

(c) Not available.

17. Mine not in production.

18. Inapplicable.

19. It is believed that conditions have been sufficiently detailed in the above questions.

THE EXPLORATION

20. Exploration to be made for Tungsten (Scheelite)

21. Work to be done: Present shaft to be extended to 300 ft. depth and three drifts of 240 ft. each to be driven in the direction of the outcrops. A larger bin to be constructed so if any ore is taken out while cutting the vein during the exploration may be shipped to the mill for concentration. A larger head frame to replace the present temporary one.

21. (Cont'd) Time Required: 445 days.

22. All mines on this contact where there is an Zannarapolis group located, like the Hillside Mine, are of great depth and therefore it is a logical conclusion that the Scheelite veins which outcrop in the Zannarapolis group would be extended to considerable depth to warrant the spending of this money for further exploration.

The mineralization occurs near the contact of Precambrian Granite against Precambrian Schist. Scheelite veins occur in tactites composed mostly of Epidote and Garnet. The veins strike Northeasterly and run with the Schistozity of the Schist, occurring in Black Crystaline Schist.

This property has been examined by the U. S. Geological Survey and Dr. Krauskopf of Stanford University then with the Government Tungsten Division personally recommended with the R.F.C. for a loan of $40,000.00 for further development on Zannarapolis No. 28.

THE REQUIREMENTS AND COSTS

23. (a) LABOR

Shaft (day)	2 Muckers	@	$14.00	115	days	$ 3,220.00
	1 Hoist Man	@	12.00	115	"	1,380.00
	1 Helper	@	12.00	115	"	1,380.00
Shaft (night)	1 Driller	@	15.00	115	"	1,725.00
	1 Helper	@	14.00	115	"	1,610.00
	1 Hoist Man	@	12.00	115	"	1,380.00
Drift (night)	1 Driller	@	15.00	300	"	4,500.00
	1 Helper	@	14.00	300	"	4,200.00
	1 Top Man	@	12.00	300	"	3,600.00
Drift (day)	2 Muckers	@	14.00	300	"	8,400.00
	1 Helper	@	12.00	300	"	3,600.00
	1 Top Man	@	12.00	300	"	3,600.00
						$ 38,595.00

(b) SUPERVISORS

2 Supervisors @ $20.00 daily (offered by the Applicants) $ 17,600.00

(c) COST OF NECESSARY REPAIRS

Repairs of Head Frame enlarging ore bin and rearranging Hoist:

Lumber	$ 626.00	
Cement	135.00	
Reinforcing Rods	50.00	
Steel Rods	200.00	
Ore Gate	150.00	
Labor	2,000.00	
Miscellaneous	75.00	$ 3,236.00

(d) COST OF NECESSARY INSTALLATIONS

Water Well, to be drilled 400 ft. from shaft:

Well (300 ft. deep). . . .	$ 3,500.00	
Pump	1,600.00	
Pipe	200.00	
Tank	300.00	
Road to the Well	300.00	$ 5,900.00

(e) COST OF ITEMS OF EQUIPMENT

2 House trailers	$ 1,000.00
2 Butane Stoves	300.00
3 Servel Refrigerators . .	1,200.00

Brought Forward . . . $ 65,331.00

TOTAL BROUGHT FORWARD . . . . . $ 65,331.00

(e) COST OF ITEMS OF EQUIPMENT (Cont'd)

1 Loader	$ 3,000.00	
2 Large Mineralights	600.00	
1 Dump - 2-1/2 Ton Truck	3,000.00	
Tools (Vise, wrenches, pipe threading machine, pipe cutters, saws, anvil, hammers, etc.)	500.00	
1 Atlas Air Hammer, with Jack Legs . .	900.00	$ 10,500.00

(f) None

(g) RENTAL VALUE

15 h.p. Fairbanks Morse Hoist
125 cu. ft. Ingersoll Rand Compressor
5 h.p. Fairbanks Morse Generator for blasting and lights.
Head frame, skip, ore bin, picking belt, dark room, 2 mine cars, 4 x 8" Blake type Crusher, truck loading ramp.
21 x 28 four room house, 23' trailer and chemical laboratory
8 x 15" Pacific type crusher driven by 15 h.p. a.c. G.E. motor.
24" x 14" Allis Chalmers Crushing Rolls driven by two a.c. motors 20 h.p.
40 ton ore bin
40 KVA 440 volts A.C. LeRoy Electric Generator
1 TD 6 International High Lift
2 7000 gal. Concrete Water Tanks
1 700 gal. Concrete constant Head Tank
1 35 Ton Bin
1 Feeder
1 3-1/2 x 7' Ball Mill
1 27" x 14' Dorr Classifier
1 Primary Deister Concentrating Table
1 Secondary Deister Concentrating Table
1 7000 gal. Thickening Tank
1 Case Engine for Prime Mover
1 Buda 90 HP Diesel Engine Prime Mover
1 5 x 5" Meyers Pump driven by gas engine
2000 feet of pipe line
Large Concrete wall for tailings
1 House 1000 square feet
1 2-1/2 ton International Dump Truck
1 1-1/2 Ton Chevrolet General Service Truck $ 17,619.76

Brought Forward . . . $ 93,450.76

TOTAL BROUGHT FORWARD . . . . . $ 93,450.76

(h) COST OF MATERIALS AND SUPPLIES

Lumber	$ 11,199.00	
Rail	2,064.00	
Holding Bolts	981.36	
Ventilation Tube	1,122.00	
Electric Wire, including conduit .	336.00	
Explosives	2,476.00	
Steel	885.00	
Bits	3,020.00	
Air and Water Lines	677.50	
Ladder	119.28	
Miscellaneous Supplies	2,928.00	$ 25,808.14

(i) COST OF POWER

Power	$ 8,173.44	
Transportation	3,500.00	
Repairs	2,500.00	
Insurance	4,243.80	
Taxes (Social Security).	1,203.00	
Clerical Work.	2,000.00	$ 21,620.24
	GRAND TOTAL	$140,879.14

25% of $140,879.14 . . . . . $ 35,219.76
Offered by Applicant as follows:

Supervision	17,600.00
Rental of their Equipment . . .	17,619.76
	$ 35,219.76

24. TIME SCHEDULE

30 days - Repair Head Frame and Well Drilling
15 " - Sinking from present 70 ft. level to 100 ft. level
100 " - Drifting 240 ft. in 100 ft. level
50 " - Sinking to 200 ft. level
100 " - Drifting 240 ft. in 200 ft. level
50 " - Sinking to 300 ft. level
100 " - Drifting 240 ft. in 300 ft. level

All equipment must be purchased upon approval of the loan.

Form MF-103
(April 1951)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Budget Bureau No. 42-R1035.
Approval expires 6-30-51.

APPLICATION FOR AID FOR AN EXPLORATION PROJECT PURSUANT TO MINERAL ORDER 5, UNDER DEFENSE PRODUCTION ACT OF 1950

DO NOT FILL IN THIS BLOCK

Docket No. DMA 2030

Date received 9-3-51

Participation

DEFENSE MINERALS ADMINISTRATION WASHINGTON, D. C.
AUG 3 42 PM

ZANNARAPOLIS TUNGSTEN MINE
Box 500
Congress, Arizona

Name and address of applicant

Date April 2, 1951

FILL IN THIS BLOCK

Date of application April 2, 1951

Estimated cost $140,879.14

Mineral or metal Tungsten Concentrates (Scheelite)

Percentage of Government participation $35,219.76

Location of mine Yavapai County, Arizona

Date of filing MF-100 May 9, 1951

DMA Docket Number, if available 2030

INSTRUCTIONS

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*1. Is applicant an individual, partnership, or corporation?
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THE PROPERTY

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August 27 1957 Managing Owner
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16—64067-1 U. S. GOVERNMENT PRINTING OFFICE

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The width of the vein was about 8' at the hanging wall. However, the entire ore is not expected to run 1.94%. A fair average of .70 to 1% could be expected.

(b) The following properties are on the same contact as the Zannarapolis group:

Old Dick Mine and Copper King Mine - these two mines expected to lead the zinc production in Arizona. During World War No. 1 a lens of 9 million pounds of zinc sulphite was taken from the Copper King.

Bagdad Mine producing 4,000 tons daily.

Hillside Mine 1,000 ft. deep without bottoming of the ore.

(c) Not available.

17. Mine not in production.

18. Inapplicable.

19. It is believed that conditions have been sufficiently detailed in the above questions.

THE EXPLORATION

20. Exploration to be made for Tungsten (Scheelite)

21. Work to be done: Present shaft to be extended to 300 ft. depth and three drifts of 240 ft. each to be driven in the direction of the outcrops. A larger bin to be constructed so if any ore is taken out while cutting the vein during the exploration may be shipped to the mill for concentration. A larger head frame to replace the present temporary one.

21. (Cont'd) Time Required: 445 days.

22. All mines on this contact where there is an Zannarapolis group located, like the Hillside Mine, are of great depth and therefore it is a logical conclusion that the Scheelite veins which outcrop in the Zannarapolis group would be extended to considerable depth to warrant the spending of this money for further exploration.

The mineralization occurs near the contact of Precambrian Granite against Precambrian Schist. Scheelite veins occur in tactites composed mostly of Epidote and Garnet. The veins strike Northeasterly and run with the Schistozity of the Schist, occurring in Black Crystaline Schist.

This property has been examined by the U. S. Geological Survey and Dr. Krauskopf of Stanford University then with the Government Tungsten Division personally recommended with the R.F.C. for a loan of $40,000.00 for further development on Zannarapolis No. 28.

THE REQUIREMENTS AND COSTS

23. (a) LABOR

Shaft (day)	2 Muckers	@	$14.00	115	days	$ 3,220.00
	1 Hoist Man	@	12.00	115	"	1,380.00
	1 Helper	@	12.00	115	"	1,380.00
Shaft (night)	1 Driller	@	15.00	115	"	1,725.00
	1 Helper	@	14.00	115	"	1,610.00
	1 Hoist Man	@	12.00	115	"	1,380.00
Drift (night)	1 Driller	@	15.00	300	"	4,500.00
	1 Helper	@	14.00	300	"	4,200.00
	1 Top Man	@	12.00	300	"	3,600.00
Drift (day)	2 Muckers	@	14.00	300	"	8,400.00
	1 Helper	@	12.00	300	"	3,600.00
	1 Top Man	@	12.00	300	"	3,600.00
						$ 38,595.00

(b) SUPERVISORS

2 Supervisors @ $20.00 daily (offered by the Applicants) $ 17,600.00

(c) COST OF NECESSARY REPAIRS

Repairs of Head Frame enlarging ore bin and rearranging Hoist:

Lumber	$ 626.00	
Cement	135.00	
Reinforcing Rods	50.00	
Steel Rods	200.00	
Ore Gate	150.00	
Labor	2,000.00	
Miscellaneous	75.00	$ 3,236.00

(d) COST OF NECESSARY INSTALLATIONS

Water Well, to be drilled 400 ft. from shaft:

Well (300 ft. deep). . . .	$ 3,500.00	
Pump	1,600.00	
Pipe	200.00	
Tank	300.00	
Road to the Well	300.00	$ 5,900.00

(e) COST OF ITEMS OF EQUIPMENT

2 House trailers	$ 1,000.00
2 Butane Stoves	300.00
3 Servel Refrigerators . .	1,200.00

Brought Forward . . . $ 65,331.00

TOTAL BROUGHT FORWARD . . . . . $ 65,331.00

(e) COST OF ITEMS OF EQUIPMENT (Cont'd)

1 Loader	$ 3,000.00	
2 Large Mineralights	600.00	
1 Dump - 2-1/2 Ton Truck	3,000.00	
Tools (Vise, wrenches, pipe threading machine, pipe cutters, saws, anvil, hammers, etc.)	500.00	
1 Atlas Air Hammer, with Jack Legs . .	900.00	$ 10,500.00

(f) None

(g) RENTAL VALUE

15 h.p. Fairbanks Morse Hoist
125 cu. ft. Ingersoll Rand Compressor
5 h.p. Fairbanks Morse Generator for blasting and lights.
Head frame, skip, ore bin, picking belt, dark room, 2 mine cars, 4 x 8" Blake type Crusher, truck loading ramp.
21 x 28 four room house, 23' trailer and chemical laboratory
8 x 15" Pacific type crusher driven by 15 h.p. a.c. G.E. motor.
24" x 14" Allis Chalmers Crushing Rolls driven by two a.c. motors 20 h.p.
40 ton ore bin
40 KVA 440 volts A.C. LeRoy Electric Generator
1 TD 6 International High Lift
2 7000 gal. Concrete Water Tanks
1 700 gal. Concrete constant Head Tank
1 35 Ton Bin
1 Feeder
1 3-1/2 x 7' Ball Mill
1 27" x 14' Dorr Classifier
1 Primary Deister Concentrating Table
1 Secondary Deister Concentrating Table
1 7000 gal. Thickening Tank
1 Case Engine for Prime Mover
1 Buda 90 HP Diesel Engine Prime Mover
1 5 x 5" Meyers Pump driven by gas engine
2000 feet of pipe line
Large Concrete wall for tailings
1 House 1000 square feet
1 2-1/2 ton International Dump Truck
1 1-1/2 Ton Chevrolet General Service Truck $ 17,619.76

Brought Forward . . .$ 93,450.76

TOTAL BROUGHT FORWARD . . . . . $ 93,450.76

(h) COST OF MATERIALS AND SUPPLIES

Lumber	$ 11,199.00	
Rail	2,064.00	
Holding Bolts	981.36	
Ventilation Tube	1,122.00	
Electric Wire, including conduit .	336.00	
Explosives	2,476.00	
Steel	885.00	
Bits	3,020.00	
Air and Water Lines	677.50	
Ladder	119.28	
Miscellaneous Supplies	2,928.00	$ 25,808.14

(i) COST OF POWER

Power	$ 8,173.44	
Transportation	3,500.00	
Repairs	2,500.00	
Insurance	4,243.80	
Taxes (Social Security).	1,203.00	
Clerical Work.	2,000.00	$ 21,620.24
	GRAND TOTAL	$140,879.14

25% of $140,879.14 . . . . . $ 35,219.76
Offered by Applicant as follows:

Supervision	17,600.00
Rental of their Equipment . . .	17,619.76
	$ 35,219.76

24. TIME SCHEDULE

30 days - Repair Head Frame and Well Drilling
15 " - Sinking from present 70 ft. level to 100 ft. level
100 " - Drifting 240 ft. in 100 ft. level
50 " - Sinking to 200 ft. level
100 " - Drifting 240 ft. in 200 ft. level
50 " - Sinking to 300 ft. level
100 " - Drifting 240 ft. in 300 ft. level

All equipment must be purchased upon approval of the loan.

Form MF-103
(April 1951)

U. DEPARTMENT OF THE INTERI

DEFENSE MINERALS ADMINISTRATION

Budget Bureau No. 42-R1035.
Approval expires 6-30-51.

APPLICATION FOR AID FOR AN EXPLORATION PROJECT PURSUANT TO MINERAL ORDER 5, UNDER DEFENSE PRODUCTION ACT OF 1950

DO NOT FILL IN THIS BLOCK

Docket No. DMA-2030

Date received 9-5-51

Participation

DEFENSE MINERALS ADMINISTRATION WASHINGTON, D. C. AUG 31 1 42 PM '51

ZANNARAPOLIS TUNGSTEN MINE
Box 500
Congress, Arizona

Name and address of applicant

Date April 2, 1951

FILL IN THIS BLOCK

Date of application April 2, 1951

Estimated cost $140,879.14

Mineral or metal Tungsten Concentrates (Scheelite)

Percentage of Government participation $35,219.76

Location of mine Yavapai County, Arizona

Date of filing MF-100 May 9, 1951

DMA Docket Number, if available 2030

INSTRUCTIONS

Read Mineral Order 5, Regulations Governing Government Aid in Defense Projects, before completing this application. Submit four signed copies of the application to Defense Minerals Administration, Department of the Interior, Washington 25, D. C., or to the nearest field executive officer thereof, with your name and address on each sheet of the application and all accompanying papers. If any question is inapplicable, or if you cannot answer it, so state on the form. Where the space provided for answer is insufficient, answer on a separate sheet, annex it to the application form, and refer to it in space for answer. If the application is approved, you will be presented with an exploration project contract on Form MF-200, for your signature.

THE APPLICANT

*1. Is applicant an individual, partnership, or corporation?
*2. If a partnership, state names and addresses of partners.
*3. If a corporation, state names and addresses of officers, directors, and five largest stockholders.
*4. Describe the mining and general business experience of (*a*) the applicant, and (*b*) the person or persons who will manage the project.
*5. Are you the owner or the lessee of the property?
6. If owner, state what claims, liens, or encumbrances, if any, are against the property.
7. If lessee, attach a copy of the lease and state if it is in good standing.

NOTE.—It will be necessary to procure and attach to the exploration project contract agreements of claimants, lienors, encumbrances and lessors subordinating their interests in the property to the interest of the Government under the contract.

8. Furnish current financial statement, showing assets and liabilities, and a profit and loss statement.
9. How much money is applicant prepared to invest in proposed project? Is it sufficient to pay your part of the cost of the project as detailed in question 28 of this application form, in accordance with the regulations on Government participation (Section 9 of Mineral Order 5)?

*If you have already answered these questions on MF-100, you are not required to answer the questions for this application.

16—64067-1

THE PROPERTY

10. (*a*) Give a description of the real property that will be in any way involved in the exploration project, including any existing mine or operating property.
    (*b*) Give the legal description of the exact parcel, plot, or area upon which the exploration is to be conducted.

    NOTE.—If both areas are the same, so state. The only obligation to repay the Government is from the net earnings from any commercial discovery made in the area specified in (*b*) above in which the exploration is to be conducted, and the expenditure of funds which may be charged as costs of the project must be limited to that area or to work necessary to perform the exploration in that area.

*11. State the present and former names of the property, if any.
*12. State, in detail, the location of the property with reference to towns, railroads, roads, shipping points, including distances and directions and kinds and conditions of roads.
*13. State source and quantity of water available for operations and its sufficiency at all seasons.
State amount of power to be used, rate per hour or other cost, and source.
*14. Describe any existing useable facilities, equipment, buildings, or structure now on the property that will be devoted to the exploration work.
15. State in detail how the ore could be shipped and how and where milled.
*16. History:
    (*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for any past suspensions of operations.
    (*b*) State briefly the known history and production of adjoining and neighboring properties.
    (*c*) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.
*17. Production:
    (*a*) If mine is in production, furnish the following information:

	Tons per day	*Grade or analysis*	*Cost per ton*	*Net value per ton*
(1) Mining				
(2) Milling				
(3) Shipped or sold				

*18. Ore or mineral reserves: (If property is or has been operating.)
    (*a*) Describe the ore or mineral deposits briefly.
    (*b*) Submit available maps and assay data.
    (*c*) Give estimated tonnage and grade of each class of ore reserves.
19. State any conditions or circumstances regarding the property not sufficiently brought out by the foregoing questions.

THE EXPLORATION

20. For what mineral or minerals and for what types of deposits and ores will the exploration be conducted?
21. Describe briefly, but concisely, the proposed work and the estimated time required to complete it.

    NOTE.—The Government will not participate in a project that will require more than 2 years to complete.

22. Furnish statement of the geological basis of the project with particular emphasis on factors leading the operator to expect the finding of commercial ore bodies. This statement should be accompanied by supporting maps such as geological maps, maps of the proposed openings and assay maps, sample lists, and other pertinent data.

THE REQUIREMENTS AND COSTS

23. Tabulate in the form of an itemized statement with a sum for each item the estimated requirements and costs of the project so that the total will give the estimated cost of the project in which the Government will participate, as follows:
    (*a*) Labor, by numbers and classes (miners, muckers, millmen, etc.), with wages of each.
    (*b*) Supervisors, by numbers and positions, with salaries of each.
    (*c*) Cost of necessary repairs to existing facilities, structures, and buildings.
    (*d*) Cost of necessary installation or construction of additional facilities, structures, and buildings.
    (*e*) Cost of items of equipment, not now owned by the applicant which must be purchased for operations at a cost of $50 or more each.
    (*f*) Cost of rental for equipment which the operator proposes to rent.
    (*g*) Rental value of items of equipment which the operator now owns and which will be devoted to the work.
    (*h*) Cost of materials and supplies, including items of equipment costing less than $50 each.
    (*i*) Cost of power, water, utilities, and any other items not provided for above.
24. Furnish a time schedule of the project, stated in terms of months after project is approved, showing progress expected to be accomplished and the money expected to be spent.

CERTIFICATION

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this form and accompanying papers is correct and complete to the best of their knowledge and belief.

Zannarapolis Tungsten Mine — By [signature] (Signature of authorized official)
(Name of company)

August 27 - 1951 — Managing Owner
(Date) (Title)

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.

*Same as footnote on page 1.

16—64067-1 U. S. GOVERNMENT PRINTING OFFICE

1. Applicant is partnership.

2. Name of Partners: John Philip Zannaras, Box 500, Congress, Ariz.
Constantine Philip Zannaras " " "
John Pierce Robinson, Jr. " " "

3. Inapplicable.

4. Experience of Applicants:

J. P. Zannaras, Applicant and Manager, is a registered Mining Engineer (License 1269). 1924 Graduate of Lehigh University of Bethlehem, Pa. Member of A.I.M.E., member of the Mineralogical Society of America with many years of practical mining experience.

John Pierce Robinson, Jr., Applicant, Mine Supt., two years college, son of a miner, first experience in coal mining more than 10 years of practical mining experience. (Sinking shafts, open pit mine, etc.)

5. Owners of property (Zannarapolis No. 28, patented for which application is made).

6. Zannarapolis No. 28 is one of the Zannarapolis group of 30 mining claims for which group a certain encumbrance exists to the Kennametal, Inc., P.O. Box 231, Latrobe, Pa. for the amount of $10,000 advance against purchases of concentrates.

7. Inapplicable.

8. Zannarapolis No. 28 was not operating and therefore no financial statement available.

9. Applicant is prepared to invest $35,219.76 in the form of salaries of the applicants and use of their equipment, and it is sufficient to cover the applicant's contribution of 25%.

10. Description of Real Property: Zannarapolis No. 28 patented claim
(a & b) is one of the Zannarapolis No. 1-30 mining claims of which eight are patented claims and one patented millsite located in Township 13 N, Range 10 W, Gila & S.R. Meridian.

11. Zannarapolis No. 28 (present name -- no former names).

12. Location of Mine: Zannarapolis No. 28 is located about 35 miles Northwest of Congress Junction, about 5 miles easterly from the new Kingman cut-off road. Shipping point of concentrates will be Congress Arizona.

12. (Cont'd) The road to the Mine is in excellent condition, 30 miles of which on the Kingman cut-off road can be traveled by cars at 60 miles an hour.

13. Water Supply: Water to be used for this project will come from Burro Creek on which creek applicants have a water right since 1940. Such water is available throughout the year.

14. Facilities: Facilities on property are the following:

15 h.p. Fairbanks Morse Hoist
125 cu. ft. Ingersoll Rand Compressor
5 h.p. Fairbanks Morse Generator for blasting and lights.
Head frame, skip, ore bin, picking belt, dark room, 2 mine cars, 4 x 8" Blake type Crusher, truck loading ramp, 70' - 6' x 8' incline two compartment shaft, completely timbered.

However, the following facilities adjoin the property and will be used for this project.

21 x 28 four room house, 23' trailer and chemical laboratory.

8 x 15" Pacific type Crusher driven by 15 h.p. a.c. G.E. motor.

40 ton ore bin

40 KVA 440 volts A.C. LeRoy Electric Generator.

1 - TD 6 International High Lift.

Also, the following equipment is owned by the applicants of which use will be made in this project:

2 - 7000 gal. Concrete Water Tanks
1 - 700 gal. Concrete constant Head Tank
1 - 35 ton Bin
1 - Feeder
1 - 3-1/2 x 7' Ball Mill
1 - 27" x 14' Dorr Classifier
1 - Primary Deister Concentrating Table
1 - Secondary Deister Concentrating Table
1 - 7000 gal. Thickening Tank
1 - Case Engine for prime mover
1 - Buda 90 h.p. Diesel Engine prime mover
1 - 5 x 5" Meyers Pump driven by gas engine
2000 feet of pipe line
Large Concrete wall for tailings
1 - House 1000 square feet
1 - 2-1/2 ton International Dump Truck
1 - 1-1/2 ton Chevrolet General Service Truck

15. Milling of Ore: The ore on this project will be milled at the applicants' mill on Burro Creek, which mill is now producing Scheelite concentrates from Zannarapolis No. 19. The concentrates will be shipped from Congress, Arizona.

16. History: (a) A 70' shaft has been sunk.

During World War II, 10 tons of ore was shipped to the stockpile of the metal reserves, Phoenix, Arizona, which assayed 1.94%.

The width of the vein was about 8' at the hanging wall. However, the entire ore is not expected to run 1.94%. A fair average of .70 to 1% could be expected.

(b) The following properties are on the same contact as the Zannarapolis group:

Old Dick Mine and Copper King Mine - these two mines expected to lead the zinc production in Arizona. During World War No. 1 a lens of 9 million pounds of zinc sulphite was taken from the Copper King.

Bagdad Mine producing 4,000 tons daily.

Hillside Mine 1,000 ft. deep without bottoming of the ore.

(c) Not available.

17. Mine not in production.

18. Inapplicable.

19. It is believed that conditions have been sufficiently detailed in the above questions.

THE EXPLORATION

20. Exploration to be made for Tungsten (Scheelite)

21. Work to be done: Present shaft to be extended to 300 ft. depth and three drifts of 240 ft. each to be driven in the direction of the outcrops. A larger bin to be constructed so if any ore is taken out while cutting the vein during the exploration may be shipped to the mill for concentration. A larger head frame to replace the present temporary one.

21. (Cont'd) Time Required: 445 days.

22. All mines on this contact where there is an Zannarapolis group located, like the Hillside Mine, are of great depth and therefore it is a logical conclusion that the Scheelite veins which outcrop in the Zannarapolis group would be extended to considerable depth to warrant the spending of this money for further exploration.

The mineralization occurs near the contact of Precambrian Granite against Precambrian Schist. Scheelite veins occur in tactites composed mostly of Epidote and Garnet. The veins strike Northeasterly and run with the Schistozity of the Schist, occurring in Black Crystaline Schist.

This property has been examined by the U. S. Geological Survey and Dr. Krauskopf of Stanford University then with the Government Tungsten Division personally recommended with the R.F.C. for a loan of $40,000.00 for further development on Zannarapolis No. 28.

THE REQUIREMENTS AND COSTS

23. (a) LABOR

Shaft (day)	2 Muckers	@	$14.00	115	days	$ 3,220.00
	1 Hoist Man	@	12.00	115	"	1,380.00
	1 Helper	@	12.00	115	"	1,380.00
Shaft (night)	1 Driller	@	15.00	115	"	1,725.00
	1 Helper	@	14.00	115	"	1,610.00
	1 Hoist Man	@	12.00	115	"	1,380.00
Drift (night)	1 Driller	@	15.00	300	"	4,500.00
	1 Helper	@	14.00	300	"	4,200.00
	1 Top Man	@	12.00	300	"	3,600.00
Drift (day)	2 Muckers	@	14.00	300	"	8,400.00
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	1 Top Man	@	12.00	300	"	3,600.00
						$ 38,595.00

(b) SUPERVISORS

2 Supervisors @ $20.00 daily (offered by the Applicants) $ 17,600.00

(c) COST OF NECESSARY REPAIRS

Repairs of Head Frame enlarging ore bin and rearranging Hoist:

Lumber	$ 626.00	
Cement	135.00	
Reinforcing Rods	50.00	
Steel Rods	200.00	
Ore Gate	150.00	
Labor	2,000.00	
Miscellaneous	75.00	$ 3,236.00

(d) COST OF NECESSARY INSTALLATIONS

Water Well, to be drilled 400 ft. from shaft:

Well (300 ft. deep). . . .	$ 3,500.00	
Pump	1,600.00	
Pipe	200.00	
Tank	300.00	
Road to the Well	300.00	$ 5,900.00

(e) COST OF ITEMS OF EQUIPMENT

2 House trailers	$ 1,000.00
2 Butane Stoves	300.00
3 Servel Refrigerators . .	1,200.00

Brought Forward . . . $ 65,331.00

TOTAL BROUGHT FORWARD . . . . . $ 65,331.00

(e) COST OF ITEMS OF EQUIPMENT (Cont'd)

1 Loader	$ 3,000.00	
2 Large Mineralights	600.00	
1 Dump - 2-1/2 Ton Truck	3,000.00	
Tools (Vise, wrenches, pipe threading machine, pipe cutters, saws, anvil, hammers, etc.)	500.00	
1 Atlas Air Hammer, with Jack Legs . .	900.00	$ 10,500.00

(f) None

(g) RENTAL VALUE

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125 cu. ft. Ingersoll Rand Compressor
5 h.p. Fairbanks Morse Generator for blasting and lights.
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21 x 28 four room house, 23' trailer and chemical laboratory
8 x 15" Pacific type crusher driven by 15 h.p. a.c. G.E. motor.
24" x 14" Allis Chalmers Crushing Rolls driven by two a.c. motors 20 h.p.
40 ton ore bin
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1 700 gal. Concrete constant Head Tank
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1 Primary Deister Concentrating Table
1 Secondary Deister Concentrating Table
1 7000 gal. Thickening Tank
1 Case Engine for Prime Mover
1 Buda 90 HP Diesel Engine Prime Mover
1 5 x 5" Meyers Pump driven by gas engine
2000 feet of pipe line
Large Concrete wall for tailings
1 House 1000 square feet
1 2-1/2 ton International Dump Truck
1 1-1/2 Ton Chevrolet General Service Truck $ 17,619.76

Brought Forward . . .$ 93,450.76

TOTAL BROUGHT FORWARD . . . . . $ 93,450.76

(h) COST OF MATERIALS AND SUPPLIES

Lumber	$ 11,199.00	
Rail	2,064.00	
Holding Bolts	981.36	
Ventilation Tube	1,122.00	
Electric Wire, including conduit .	336.00	
Explosives	2,476.00	
Steel	885.00	
Bits	3,020.00	
Air and Water Lines	677.50	
Ladder	119.28	
Miscellaneous Supplies	2,928.00	$ 25,808.14

(i) COST OF POWER

Power	$ 8,173.44	
Transportation	3,500.00	
Repairs	2,500.00	
Insurance	4,243.80	
Taxes (Social Security).	1,203.00	
Clerical Work.	2,000.00	$ 21,620.24
	GRAND TOTAL	$140,879.14

25% of $140,879.14 . . . . . $ 35,219.76
Offered by Applicant as follows:

Supervision	17,600.00
Rental of their Equipment . . .	17,619.76
	$ 35,219.76

24. TIME SCHEDULE

30 days - Repair Head Frame and Well Drilling
15 " - Sinking from present 70 ft. level to 100 ft. level
100 " - Drifting 240 ft. in 100 ft. level
50 " - Sinking to 200 ft. level
100 " - Drifting 240 ft. in 200 ft. level
50 " - Sinking to 300 ft. level
100 " - Drifting 240 ft. in 300 ft. level

All equipment must be purchased upon approval of the loan.

Form MF-100
(April 1951)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Budget Bureau No. 42-R1035.
Approval expires 6-30-51.

APPLICATION FOR AID FOR AN EXPLORATION PROJECT PURSUANT TO MINERAL ORDER 5, UNDER DEFENSE PRODUCTION ACT OF 1950

DO NOT FILL IN THIS BLOCK

Docket No. DMA-2020

Date received 9-3-51

Participation

DEFENSE MINERALS ADMINISTRATION WASHINGTON, D. C.
AUG 31 1951

ANNARAPOLIS TUNGSTEN MINE
Box 500
Congress, Arizona

Name and address of applicant

Date April 2, 1951

FILL IN THIS BLOCK

Date of application April 2, 1951

Estimated cost $140,879.14

Mineral or metal Tungsten Concentrates (Scheelite)

Percentage of Government participation $35,219.76

Location of mine Yavapai County, Arizona

Date of filing MF-100 May 9, 1951

DMA Docket Number, if available 2020

INSTRUCTIONS

Read Mineral Order 5, Regulations Governing Government Aid in Defense Projects, before completing this application. Submit four signed copies of the application to Defense Minerals Administration, Department of the Interior, Washington 25, D. C., or to the nearest field executive officer thereof, with your name and address on each sheet of the application and all accompanying papers. If any question is inapplicable, or if you cannot answer it, so state on the form. Where the space provided for answer is insufficient, answer on a separate sheet, annex it to the application form, and refer to it in space for answer. If the application is approved, you will be presented with an exploration project contract on Form MF-200, for your signature.

THE APPLICANT

*1. Is applicant an individual, partnership, or corporation?
2. If a partnership, state names and addresses of partners.
3. If a corporation, state names and addresses of officers, directors, and five largest stockholders.
4. Describe the mining and general business experience of (*a*) the applicant, and (*b*) the person or persons who will manage the project.
5. Are you the owner or the lessee of the property?
6. If owner, state what claims, liens, or encumbrances, if any, are against the property.
7. If lessee, attach a copy of the lease and state if it is in good standing.

NOTE.—It will be necessary to procure and attach to the exploration project contract agreements of claimants, lienors, encumbrances and lessors subordinating their interests in the property to the interest of the Government under the contract.

Furnish current financial statement, showing assets and liabilities, and a profit and loss statement.

How much money is applicant prepared to invest in proposed project? Is it sufficient to pay your part of the cost of the project as detailed in question 23 of this application form, in accordance with the regulations on Government participation (Section 9 of Mineral Order 5)?

*If you have already answered these questions on MF-100, you are not required to answer the questions for this application.

16—64067-1

THE PROPERTY

10. (*a*) Give a description of the real property that will be in any way involved in the exploration project, including any existing mine or operating property.
    (*b*) Give the legal description of the exact parcel, plot, or area upon which the exploration is to be conducted.

    NOTE.—If both areas are the same, so state. The only obligation to repay the Government is from the net earnings from any commercial discovery made in the area specified in (*b*) above in which the exploration is to be conducted, and the expenditure of funds which may be charged as costs of the project must be limited to that area or to work necessary to perform the exploration in that area.

*11. State the present and former names of the property, if any.
*12. State, in detail, the location of the property with reference to towns, railroads, roads, shipping points, including distances and directions and kinds and conditions of roads.
*13. State source and quantity of water available for operations and its sufficiency at all seasons.
State amount of power to be used, rate per hour or other cost, and source.
*14. Describe any existing useable facilities, equipment, buildings, or structure now on the property that will be devoted to the exploration work.
15. State in detail how the ore could be shipped and how and where milled.
*16. History:
    (*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for any past suspensions of operations.
    (*b*) State briefly the known history and production of adjoining and neighboring properties.
    (*c*) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.
*17. Production:
    (*a*) If mine is in production, furnish the following information:

	Tons per day	*Grade or analysis*	*Cost per ton*	*Net value per ton*
(1) Mining				
(2) Milling				
(3) Shipped or sold				

*18. Ore or mineral reserves: (If property is or has been operating.)
    (*a*) Describe the ore or mineral deposits briefly.
    (*b*) Submit available maps and assay data.
    (*c*) Give estimated tonnage and grade of each class of ore reserves.
19. State any conditions or circumstances regarding the property not sufficiently brought out by the foregoing questions.

THE EXPLORATION

20. For what mineral or minerals and for what types of deposits and ores will the exploration be conducted?
21. Describe briefly, but concisely, the proposed work and the estimated time required to complete it.

    NOTE.—The Government will not participate in a project that will require more than 2 years to complete.

22. Furnish statement of the geological basis of the project with particular emphasis on factors leading the operator to expect the finding of commercial ore bodies. This statement should be accompanied by supporting maps such as geological maps, maps of the proposed openings and assay maps, sample lists, and other pertinent data.

THE REQUIREMENTS AND COSTS

23. Tabulate in the form of an itemized statement with a sum for each item the estimated requirements and costs of the project so that the total will give the estimated cost of the project in which the Government will participate, as follows:
    (*a*) Labor, by numbers and classes (miners, muckers, millmen, etc.), with wages of each.
    (*b*) Supervisors, by numbers and positions, with salaries of each.
    (*c*) Cost of necessary repairs to existing facilities, structures, and buildings.
    (*d*) Cost of necessary installation or construction of additional facilities, structures, and buildings.
    (*e*) Cost of items of equipment, not now owned by the applicant which must be purchased for operations at a cost of $50 or more each.
    (*f*) Cost of rental for equipment which the operator proposes to rent.
    (*g*) Rental value of items of equipment which the operator now owns and which will be devoted to the work.
    (*h*) Cost of materials and supplies, including items of equipment costing less than $50 each.
    (*i*) Cost of power, water, utilities, and any other items not provided for above.
24. Furnish a time schedule of the project, stated in terms of months after project is approved, showing progress expected to be accomplished and the money expected to be spent.

CERTIFICATION

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this form and accompanying papers is correct and complete to the best of their knowledge and belief.

LANNHEAPOLIS TUNGSTEN MINE — By [signature]
(Name of company) (Signature of authorized official)

August 27 - 1951 — Managing Owner
(Date) (Title)

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.

*Same as footnote on page 1.

16—64067-1 U. S. GOVERNMENT PRINTING OFFICE

1. Applicant is partnership.

2. Name of Partners: John Philip Zannaras, Box 500, Congress, Ariz.
Constantine Philip Zannaras " " "
John Pierce Robinson, Jr. " " "

3. Inapplicable.

4. Experience of Applicants:

J. P. Zannaras, Applicant and Manager, is a registered Mining Engineer (License 1269). 1924 Graduate of Lehigh University of Bethlehem, Pa. Member of A.I.M.E., member of the Mineralogical Society of America with many years of practical mining experience.

John Pierce Robinson, Jr., Applicant, Mine Supt., two years college, son of a miner, first experience in coal mining more than 10 years of practical mining experience. (Sinking shafts, open pit mine, etc.)

5. Owners of property (Zannarapolis No. 28, patented for which application is made).

6. Zannarapolis No. 28 is one of the Zannarapolis group of 30 mining claims for which group a certain encumbrance exists to the Kennametal, Inc., P.O. Box 231, Latrobe, Pa. for the amount of $10,000 advance against purchases of concentrates.

7. Inapplicable.

8. Zannarapolis No. 28 was not operating and therefore no financial statement available.

9. Applicant is prepared to invest $35,219.76 in the form of salaries of the applicants and use of their equipment, and it is sufficient to cover the applicant's contribution of 25%.

10. Description of Real Property: Zannarapolis No. 28 patented claim
(a & b) is one of the Zannarapolis No. 1-30 mining claims of which eight are patented claims and one patented millsite located in Township 13 N, Range 10 W, Gila & S.R. Meridian.

11. Zannarapolis No. 28 (present name -- no former names).

12. Location of Mine: Zannarapolis No. 28 is located about 35 miles Northwest of Congress Junction, about 5 miles easterly from the new Kingman cut-off road. Shipping point of concentrates will be Congress Arizona.

12. (Cont'd) The road to the Mine is in excellent condition, 30 miles of which on the Kingman cut-off road can be traveled by cars at 60 miles an hour.

13. Water Supply: Water to be used for this project will come from Burro Creek on which creek applicants have a water right since 1940. Such water is available throughout the year.

14. Facilities: Facilities on property are the following:

15 h.p. Fairbanks Morse Hoist
125 cu. ft. Ingersoll Rand Compressor
5 h.p. Fairbanks Morse Generator for blasting and lights.
Head frame, skip, ore bin, picking belt, dark room, 2 mine cars, 4 x 8" Blake type Crusher, truck loading ramp, 70' - 6' x 8' incline two compartment shaft, completely timbered.

However, the following facilities adjoin the property and will be used for this project.

21 x 28 four room house, 23' trailer and chemical laboratory.

8 x 15" Pacific type Crusher driven by 15 h.p. a.c. G.E. motor.

40 ton ore bin

40 KVA 440 volts A.C. LeRoy Electric Generator.

1 - TD 6 International High Lift.

Also, the following equipment is owned by the applicants of which use will be made in this project:

2 - 7000 gal. Concrete Water Tanks
1 - 700 gal. Concrete constant Head Tank
1 - 35 ton Bin
1 - Feeder
1 - 3-1/2 x 7' Ball Mill
1 - 27" x 14' Dorr Classifier
1 - Primary Deister Concentrating Table
1 - Secondary Deister Concentrating Table
1 - 7000 gal. Thickening Tank
1 - Case Engine for prime mover
1 - Buda 90 h.p. Diesel Engine prime mover
1 - 5 x 5" Meyers Pump driven by gas engine
2000 feet of pipe line
Large Concrete wall for tailings
1 - House 1000 square feet
1 - 2-1/2 ton International Dump Truck
1 - 1-1/2 ton Chevrolet General Service Truck

15. Milling of Ore: The ore on this project will be milled at the applicants' mill on Burro Creek, which mill is now producing Scheelite concentrates from Zannarapolis No. 19. The concentrates will be shipped from Congress, Arizona.

16. History: (a) A 70' shaft has been sunk.

During World War II, 10 tons of ore was shipped to the stockpile of the metal reserves, Phoenix, Arizona, which assayed 1.94%.

The width of the vein was about 8' at the hanging wall. However, the entire ore is not expected to run 1.94%. A fair average of .70 to 1% could be expected.

(b) The following properties are on the same contact as the Zannarapolis group:

Old Dick Mine and Copper King Mine - these two mines expected to lead the zinc production in Arizona. During World War No. 1 a lens of 9 million pounds of zinc sulphite was taken from the Copper King.

Bagdad Mine producing 4,000 tons daily.

Hillside Mine 1,000 ft. deep without bottoming of the ore.

(c) Not available.

17. Mine not in production.

18. Inapplicable.

19. It is believed that conditions have been sufficiently detailed in the above questions.

THE EXPLORATION

20. Exploration to be made for Tungsten (Scheelite)

21. Work to be done: Present shaft to be extended to 300 ft. depth and three drifts of 240 ft. each to be driven in the direction of the outcrops. A larger bin to be constructed so if any ore is taken out while cutting the vein during the exploration may be shipped to the mill for concentration. A larger head frame to replace the present temporary one.

21. (Cont'd) Time Required: 445 days.

22. All mines on this contact where there is an Zannarapolis group located, like the Hillside Mine, are of great depth and therefore it is a logical conclusion that the Scheelite veins which outcrop in the Zannarapolis group would be extended to considerable depth to warrant the spending of this money for further exploration.

The mineralization occurs near the contact of Precambrian Granite against Precambrian Schist. Scheelite veins occur in tactites composed mostly of Epidote and Garnet. The veins strike Northeasterly and run with the Schistozity of the Schist, occurring in Black Crystaline Schist.

This property has been examined by the U. S. Geological Survey and Dr. Krauskopf of Stanford University then with the Government Tungsten Division personally recommended with the R.F.C. for a loan of $40,000.00 for further development on Zannarapolis No. 28.

THE REQUIREMENTS AND COSTS

23. (a) LABOR

Shaft (day)	2 Muckers	@	$14.00	115	days	$ 3,220.00
	1 Hoist Man	@	12.00	115	"	1,380.00
	1 Helper	@	12.00	115	"	1,380.00
Shaft (night)	1 Driller	@	15.00	115	"	1,725.00
	1 Helper	@	14.00	115	"	1,610.00
	1 Hoist Man	@	12.00	115	"	1,380.00
Drift (night)	1 Driller	@	15.00	300	"	4,500.00
	1 Helper	@	14.00	300	"	4,200.00
	1 Top Man	@	12.00	300	"	3,600.00
Drift (day)	2 Muckers	@	14.00	300	"	8,400.00
	1 Helper	@	12.00	300	"	3,600.00
	1 Top Man	@	12.00	300	"	3,600.00
						$ 38,595.00

(b) SUPERVISORS

2 Supervisors @ $20.00 daily (offered by the Applicants) $ 17,600.00

(c) COST OF NECESSARY REPAIRS

Repairs of Head Frame enlarging ore bin and rearranging Hoist:

Lumber	$ 626.00	
Cement	135.00	
Reinforcing Rods	50.00	
Steel Rods	200.00	
Ore Gate	150.00	
Labor	2,000.00	
Miscellaneous	75.00	$ 3,236.00

(d) COST OF NECESSARY INSTALLATIONS

Water Well, to be drilled 400 ft. from shaft:

Well (300 ft. deep). . . .	$ 3,500.00	
Pump	1,600.00	
Pipe	200.00	
Tank	300.00	
Road to the Well	300.00	$ 5,900.00

(e) COST OF ITEMS OF EQUIPMENT

2 House trailers	$ 1,000.00
2 Butane Stoves	300.00
3 Servel Refrigerators . .	1,200.00

Brought Forward . . . $ 65,331.00

TOTAL BROUGHT FORWARD . . . . . $ 65,331.00

(e) COST OF ITEMS OF EQUIPMENT (Cont'd)

1 Loader	$ 3,000.00	
2 Large Mineralights	600.00	
1 Dump - 2-1/2 Ton Truck	3,000.00	
Tools (Vise, wrenches, pipe threading machine, pipe cutters, saws, anvil, hammers, etc.)	500.00	
1 Atlas Air Hammer, with Jack Legs . .	900.00	$ 10,500.00

(f) None

(g) RENTAL VALUE

15 h.p. Fairbanks Morse Hoist
125 cu. ft. Ingersoll Rand Compressor
5 h.p. Fairbanks Morse Generator for blasting and lights.
Head frame, skip, ore bin, picking belt, dark room, 2 mine cars, 4 x 8" Blake type Crusher, truck loading ramp.
21 x 28 four room house, 23' trailer and chemical laboratory
8 x 15" Pacific type crusher driven by 15 h.p. a.c. G.E. motor.
24" x 14" Allis Chalmers Crushing Rolls driven by two a.c. motors 20 h.p.
40 ton ore bin
40 KVA 440 volts A.C. LeRoy Electric Generator
1 TD 6 International High Lift
2 7000 gal. Concrete Water Tanks
1 700 gal. Concrete constant Head Tank
1 35 Ton Bin
1 Feeder
1 3-1/2 x 7' Ball Mill
1 27" x 14' Dorr Classifier
1 Primary Deister Concentrating Table
1 Secondary Deister Concentrating Table
1 7000 gal. Thickening Tank
1 Case Engine for Prime Mover
1 Buda 90 HP Diesel Engine Prime Mover
1 5 x 5" Meyers Pump driven by gas engine
2000 feet of pipe line
Large Concrete wall for tailings
1 House 1000 square feet
1 2-1/2 ton International Dump Truck
1 1-1/2 Ton Chevrolet General Service Truck $ 17,619.76

Brought Forward . . .$ 93,450.76

TOTAL BROUGHT FORWARD . . . . . $ 93,450.76

(h) COST OF MATERIALS AND SUPPLIES

Lumber	$ 11,199.00	
Rail	2,064.00	
Holding Bolts	981.36	
Ventilation Tube	1,122.00	
Electric Wire, including conduit .	336.00	
Explosives	2,476.00	
Steel	885.00	
Bits	3,020.00	
Air and Water Lines	677.50	
Ladder	119.28	
Miscellaneous Supplies	2,928.00	$ 25,808.14

(i) COST OF POWER

Power	$ 8,173.44	
Transportation	3,500.00	
Repairs	2,500.00	
Insurance	4,243.80	
Taxes (Social Security).	1,203.00	
Clerical Work.	2,000.00	$ 21,620.24
	GRAND TOTAL	$140,879.14

25% of $140,879.14 . . . . . $ 35,219.76
Offered by Applicant as follows:

Supervision	17,600.00
Rental of their Equipment . . .	17,619.76
	$ 35,219.76

24. TIME SCHEDULE

30 days - Repair Head Frame and Well Drilling
15 " - Sinking from present 70 ft. level to 100 ft. level
100 " - Drifting 240 ft. in 100 ft. level
50 " - Sinking to 200 ft. level
100 " - Drifting 240 ft. in 200 ft. level
50 " - Sinking to 300 ft. level
100 " - Drifting 240 ft. in 300 ft. level

All equipment must be purchased upon approval of the loan.