224 New Customhouse
Denver 2, Colorado

June 23, 1952

Memorandum

To: Acting Administrator, Defense Minerals Exploration Administration
Attention: 210

From: Field Team, Region IV

Subject: Final Report, DMA Docket 2023 (Lead-Copper), Ferrick & Pinello, No Name Mine, Saguache County, Colorado

Enclosed are four copies of the final report on DMA-2023.

The letter of denial was sent to the applicant November 2, 1951.

W. H. King

W. H. King

A. H. Koschmann

A. H. Koschmann

W.H.K.

Enclosure

1 Hole

HMC:fwo

cc: Subject, Chron

Mining Division
Region IV

November 19, 1951

Memorandum

To: W. M. Traver, Jr.

From: Chief, Mining Division, Region IV

Subject: DMA Engineering Reports

1. Reference is made to your memorandum of October 26, on the above subject.

We have reviewed the shortened reports on DMA 454, General Mining and Development Company; DMA 1477, Charles N. Bell, II, and DMA 2023, M. L. Ferrick and Tom Pinello.

As these are all denial reports, the shortened form used is adequate, with a material reduction in the section "Project Proposals with Costs", and elimination of the sections on "Production Plan" and "Summary, Cost of Project".

Please continue, however, to keep the engineering data in your files.

F. T. Allsman

WDM:lk

cc: DMA docket 454, 1477, 2023, chron.
Kaschmann
Wilson
Sharma

Mining Division
Region IV

October 30, 1972

Memorandum

To: DMA Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Final Report, DMA Project 2023, H. L. Fervick and Ben Tiangello, applicants, No Name Lead Copper Mine, Rico Mining District, Saguache County, Colorado.

The application of the subject docket was for an exploration loan of $15,700.00.

At the No Name Mine, galena sphalerite and chalcopyrite, with included gold and silver values occur in a two-inch vein.

The total production during the period 1909-67 was 64 tons of ore with an average of 0.37 ounces gold and 18 ounces silver per ton, 46.8 percent lead and 3.0 percent copper. Measurable, inferred and indicated reserves are only 61 tons of similar grade.

Due to the small reserves, the examining team recommends that we deny the loan, with which we concur.

Paul T. Allmann

WDM:oj
cc: DMA subject, chron.
AhKoschmann

WMT/dd

Mining Division
Date Rec'd.
OCT 26 1951
BUREAU OF MINES
Denver, Colorado

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Building 20
Denver Federal Center
October 26, 1951

Memorandum

To: Chief, Mining Division, Region IV

From: Chief, Colorado Branch, Mining Division

Subject: DMA Final Engineering Reports

We discussed recently on the telephone the necessity of shortening the engineering reports on DMA dockets if we are to keep abreast of our schedule with the engineering and stenographic personnel available.

The reports on the General Mining and Development Corporation, DMA 454, Pance Manganese Deposits, DMA 1477X, and No Name Lead Mine, DMA-2033, are typed and will be submitted shortly. You will note in all three we have shortened the reports appreciably and considered it justified, especially where the recommendations are obviously to be denials and where the participating Survey member of the examining team goes along with and submits a supporting report based on geological conditions. We have, however, worked up the engineering data as a basis for the denial and have these available in our files. I do not believe we have omitted any information from the reports that could be considered essential.

Perhaps a denial report should go into details more exhaustively than one of approval. After you have reviewed these reports, will you please advise me if, in your opinion, we have gone too far when, in the case of two of them, we reduced materially the section on "Project Proposals, with Costs" (9), and entirely eliminated section (10), "Production Plan (after completion of project)", and section (11), "Summary: Cost of Project", in the light of the fact that there is to be no project. We are badly in need of instructions from a higher level.

WMT

W. M. Traver, Jr.

cc PTAllsman
DMA General
DMA Chron.

226 New Customhouse
Denver 2, Colorado

November 2, 1951

Messrs. M. L. Ferrick
and Tom Pinello
5 Winfield
Colorado Springs, Colorado

Re: DMA Docket 2023

Gentlemen:

Your application for a loan to explore the No Name Copper Mine has been reviewed by the Defense Minerals Administration. We have a report of a field examination made on your property to help us in judging your application.

On the basis of the report, we must conclude that the chances of finding any significant new tonnage of copper ore by the exploration you propose are not favorable. The veins are narrow, past production has been small, and the actual present reserves are negligible. Under these circumstances, an expenditure of Government funds for the exploration you proposed is unwarranted. We regret, therefore, that your application must be denied.

We wish to thank you for bringing the property to our attention.

Very truly yours,

Paul T. Allaman

Paul T. Allaman for
J. H. East, Jr.
Executive Officer
DMA Field Team, Region IV

WDM:oj
cc: John M. Smith, Acting Chief
Administrative Management Division
WMTraver
AHKoschmann
DMA subject, chron.

DMA Form 3b.

DEFENSE MINERALS ADMINISTRATION

CONTROLLED DOCUMENT
Revised Abstract

DMA Docket No. 2023

Change: From		To	
I 1	☐	I 1	☐
I 2	☐	I 2	☐
I 3	☒	I 3	☒
I 4	☐	I 4	☐
I 5	☐	I 5	☐
I 6	☐	I 6	☐
III 1	☐	III 1	☐
III 2	☐	III 2	☒ Nov. 2, 1951
III 3	☐	III 3	☐
III 4	☐	III 4	☐

Add:

II 7 $ 15,700.00

II 8 $ - - - - - -

II 8a % _____

Initials of person preparing sheet W. D. M.

Date sheet prepared Nov. 2, 1951

SEP 14 1951

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

REGIONAL DIRECTOR'S
OFFICE
REGION IV
SEP 19 1951
BUREAU OF MINES
DENVER, COLORADO

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

Dear Sir:

We attach "Review of Application for Exploration Assistance" on:

Docket No. 2023

Commodity Lead-copper

Applicant M. L. Ferrick and Tom Pinello
5 Winfield, Colorado Springs, Colorado

Please expedite the consideration of this application with particular reference to the points raised in the attached "Review."

Very truly yours,

Tom Lyon
Chairman
Coordinating Committee

Lowell B. Moon
For Bureau of Mines

T. P. Thayer
For Geological Survey

6/5/51

Defense Minerals Administration

Review of Application for Exploration Assistance

Docket No. DMA-2023

Commodity Lead-copper

Total Amount $15,700

Govt. Participation 50% ($7,850)

1. Name and Address of Applicant M. L. Ferrick and Tom Pinello

5 Winfield, Colorado Springs, Colorado

2. Location of Property NW 1/4, NW 1/4, NW 1/4, Sec. 3, T. 46 N., R. 10 W., SE 1/4, SE 1/4, Sec. 33 and SW 1/4, SW 1/4, sec. 34, T. 47 N., R. 10 W., Saguache County, Colorado

3. Mineral or metal Lead, copper, gold, silver Is it listed in Section 9 of MO-5? Yes
If not, application will be rejected.

4. Geologic probability of discovery—based on data in application (question #16, 17, 18, 20 and 22)*

Mines or Survey reports, etc., do you rate chances:

a) Good

b) Poor

c) None

d) Don't know—needs field examination X

e) Is there an alternative and favorable project? Don't know
(If so, attach an explanation)

5. Is the applicant's right to the property clearly stated? Yes
(question 5, 6, 7)*

6. If applicant is a lessee, is a copy of the lease attached? Does not apply

Does the lease have sufficient time to run to cover a future productive period? Does not apply

*question numbers are those of MF-103

7. Are subordination agreements necessary? No

a) MF-201? _____

b) MF-202 _____

8. From the data presented, does the proposed project appear feasible from the point of view of:

a) Available manpower Yes

b) Equipment and supplies Don't know
(Question 14 plus general knowledge of availability)*

c) Accessibility (question 12)* Questionable

d) Water (question 13)* Yes

e) Power (question 13)* Yes

Is a field check needed on any of these points? Yes

9. Does the experience of the applicant appear to be adequate to assure that he can properly conduct the proposed project? (question 4)* Don't know

Is a field check needed on this point? Yes

10. Exhibit A. (questions 21 and 22)*

a) Is the project adequately described? Yes

If not, are there sufficient data given so that you can describe the project? See Exhibit A attached If so, attach a draft.

b) Is there an adequate map or sketch of the proposed work? No; should be obtained from applicant

c) Is the proposed work "exploration" under the definition of Section 8, MO-5? Yes

If not, what part of it is? _____

EXHIBIT "A"

Exploration project

The applicant's wish to explore a 6-inch vein which is exposed in a tunnel over a length of 90 ft. Two chip samples from the vein assayed 33.68% Pb and 0.98% Cu and 72.40% Pb and 2.13% Cu, respectively. The applicant proposes to extend the tunnel 500 ft. and sink a 100 ft. winze. Estimated expenditures are as follows:

Bunk House and shop at $500 each.....	$ 1,000
Equipment purchases.....	3,300
500 ft. of tunnel and 100 ft. of winze at $19 per ft.....	11,400
	$15,700

The applicant's contribution will be in the form of their labor.

Fixtures and improvements

Bunk House.....	$ 500
Shop.....	500
	1,000

Operating equipment

Equipment purchase:

Mine rail.....	250 $675
Mine car.....	50 $160 rent $3.00/mo.
210 c.f.m. compressor.....	3,000 $6000 rent 100/mo.
	$ 3,300 $6100/mo.

Equipment rental - Hoist..... 650 $1600 rent $27.00/mo.
3500# full air operated
rental 136.00/mo.

Labor and Supervision

10 monthly actual
9 months work.

2 Miners at $12 per day for 225 days....	5,400 no overtime
~~2 Supervision~~.....	~~2,700~~ m.e. Garrick
who - Hours & salary	~~$ 8,100~~
	5,400

Rehabilitation and repairs - none ?

1- Pneumatic drill ~~Hoses etc~~ $35.00/mo rental.

200 boxes powder	$2,175.00
caps	200.00
fuse	300.00
carbide	50.00
Bits	500.00
steel	500.00
800' 1" pipe + fittings	130.00
800' 2" pipe + fittings	300.00
small tools	100.00
fuel + oil + misc	2000.00
	7,024.00

Is this part a worthwhile exploration project?_____

d) Are the cost estimates detailed? Yes

Can they be summarized, as on page 2 of Procedural Instruction 5-A, from the available data? Yes If so, attach a draft. See exhibit A attached

e) Are the cost estimates reasonable? In part

f) Should more information be requested from applicant? Yes

g) Is a field examination necessary to complete Exhibit A? Yes

11. Exhibit B (question 23-d)*

a) Is it applicable? Yes

b) If so, are sufficient data furnished? Yes If so, attach a draft.

c) Is a field check needed? Yes, check possible need for road X

12. Exhibit C (question 23-e, f and g)*

a) Is it applicable? Yes

b) Sufficient data? Yes If so, attach a draft. See Exhibit A attached

c) Are rents and charges reasonable? Apparently

d) Is a field check needed? Yes

13. Exhibit D (question 23-a, b)*

a) Are there sufficient data? Yes

b) Is the schedule adequate for the work proposed? Yes

c) Is the schedule excessive for the work proposed? No

d) Are the proposed wages and salaries reasonable? No

e) Is a field check needed? Yes, on supervision

14. Exhibit E (question 23-c)*

a) Is it applicable? No

b) Sufficient data?

c) Reasonable?

d) Field check needed? No

15. In your judgment, can the proposed work be done in the proposed time? Yes

(All exploration must be completed within two years)

16. If field examination is not needed, attach your recommendation.

17. If field examination is needed, do you have any special instructions for the field team not indicated by your answers to the foregoing question? It is not stated by whom the supervision is to be done, whether by the applicants or by a third person. It will have to be determined whether the supervision should be allowed as part of the applicants' contribution. If not, the costs will have to be revised, if possible, so that the applicants' labor will be sufficient to meet their share of the cost or part of their contribution will have to be made in cash. Costs per ft. of tunnel and per ft. of winze should be estimated separately. The sample list referred to by the applicant was not attached to the docket when received.

Reviewed by: E. J. Lyons, GS

Returned herewith is:

1 copy Form MF-103

Date 9-10-51

97692

ANSWER to Question 4.

M. L. Ferrick over 50 years in mining.

Tom Pinello - 15 years mining experience
12 years general contracting experience.

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-2023

Date received 8-30-51

Participation

M. L. Ferrick
5 Winfield
Colorado Springs, Colorado
Tom Pinello
5 Winfield
Colorado Springs, Colorado

Name and address of applicant

Date August 22, 1951

DEFENSE MINERALS ADMINISTRATION WASHINGTON, D.C. AUG 30 8 00 AM '51

FILL IN THIS BLOCK

Date of application August 19, 1951

Estimated cost $15,700.00

Mineral or metal Primary, Lead. Secondary, Copper, Gold, Silver

Percentage of Government participation 48.4%

Location of mine Blake Mining District, Saguache County, Colorado

Date of filing MF-100

DMA Docket Number, if available 2023

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? Partnership

*2. If a partnership, state names and addresses of partners. M.L.Ferrick-Tom Pinello, 5 Winfield, Colo.Springs

*3. If a corporation, state names and addresses of officers, directors, and five largest stockholders. not applicable

*4. Describe the mining and general business experience of (a) the applicant, and (b) the person or persons who will manage the project. M.L.Ferrick, over 50 years in mining; Tom Pinello, 13 yrs. mining experience, 12 yrs. gen. contracting experience

*5. Are you the owner or the lessee of the property? Owners

6. If owner, state what claims, liens, or encumbrances, if any, are against the property. None

7. If lessee, attach a copy of the lease and state if it is in good standing. Not applicable

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. Not applicable

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)? See question No. 23

*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.

M. L. Ferrick, Tom Amello
(Name of company)

By _____
(Signature of authorized official)

August 22, 1951
(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

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.
Answer: One mining claim 600' x 1500' No Name (Not patented)

(b) Give the legal description of the exact parcel, plot, or area upon which the exploration is to be conducted.
Answer: Mining claim is situated in the NW-1/4 NW-1/4 NW-1/4 Section 3, T 46, R 10 W; the SE¼ SE¼ Section 33, T 47, R 10 W; SW¼SW¼ Section 34, T 47 R 10 W and the NE¼ NE¼ Section 34, T 46 R 10 W as follows:

Beginning at corner 1 in the NW¼NW¼ Section 3, T 46, R 10 W, N 45 E, 600 ft. to Corner No. 2; thence N 45 W. 1500 ft. to corner No. 3; thence S 45 W, 600 fet to corner No. 4; thence S 45 E, 1500 ft. to Corner No. 1, the place of beginning.

11. State the present and former names of the property, if any. None

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.
Answer: The mine is located about 6½ miles Southeasterly from the town of Villa Grove and about 6½ miles from highway 285. A county, dirt road in fair to good condition is within 4 miles of the location. Bridges on the County road are in need of minor repair. The mine is connected with the County road bytrails only.

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.
ANSWER: Springs within 1½ mile of the mine will supply all necessary water requirements.

14. Describe any existing useable facilities, equipment, buildings, or structure now on the property that will be devoted to the exploration work.
ANSWER: None

15. State in detail how the ore could be shipped and how and where milled.
ANSWER: Ore from the mine can be shipped by truck to either the smelter at Leadville, Colorado, or to Creed, Colorado.

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.
ANSWER: The vein and ore body was originally opened in 1911 by M. L. Ferrick. Small operations were conducted until 1913 when work was discontinued due to the low price of metal. Subsequent operations have consisted only of minor advancement of tunnel and the mining of a small amount of high grade lead ore from the previous development. These were stopped due to lack of finances.

16. History (Continued)

(b) State briefly the known history and production of adjoining and neighboring properties.

ANSWER: No mines are immediately adjoining this claim, however, the Andover and Elizabeth mines about ½ mile northwest are estimated to have produced about $120,000.00. The Lion -Wild Cat group to the southeast are estimated to have produced about $60,000.00.

(c) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.

ANSWER: None.

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				

ANSWER: Mine is not in operation.

18. Ore or mineral reserves: (If property 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.

ANSWER: Property has not been in operation.

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

ANSWER: Prospect is an unpatented mining claim.

THE EXPLORATION

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

ANSWER: Minerals: Lead, copper, gold and silver occurring in a lode or vein.

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

ANSWER: It is proposed to drive the tunnel 500 ft. on the vein and to sink a winze 100 ft. deep from the tunnel to determine the extent of the ore shoot and develop the unexplored portions of the vein. It is estimated that one year will be required to complete the work at the rate of the mining scale herein contemplated. (225 working days)

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

22. (Continued)
accompanied by supporting maps such as geological maps, maps of the proposed openings and assay maps, sample lists, and other pertinent data.

ANSWER: the 6 inch vein now opened in the tunnel and from which good ore has been mined shows good values in lead over a length of about 90 ft. in the tunnel. The vein also carries commercial values in Gold, Silver and Copper. About ½ mile to the northwest the Andover and Elizabeth produced about $120,000.00. The Lion-Wild Cat group about the same distance to the southeast produced about $60,000.00. No work has been done on the vein between the subject tunnel and these producers and it is believed that the prospects are excellent to develop a good body of high grade lead ore with commercial amounts of gold and silver and copper.

Sample No. 1, Grab sample dump Pb. 43.70%, Au. 1.20 oz., Ag. 6.80 oz.
Sample No. 2, Grab sample Au. 1.20 oz.
Sample No. 32, Chip sample, vein Pb. 33.68% Cu. 0.98%
Sample No. 33, Chip sample, vein Pb. 72.40% Cu. 2.13%
(Samples No. 32 and 33 represent a length of 90 ft. in the tunnel.)

See Sample list attached.

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 ages of each.

ANSWER: 2 miners at $12.00 ~~$8100.00~~ 5,400 ?

(b) Supervisors, by numbers and positions, with salaries of each.

ANSWER: Included above.

(c) Cost of necessary repairs to existing facilities, structures and buildings.

ANSWER: None.

(d) Cost of necessary installation or constructionof additional facilities, structures, and buildings.

ANSWER: Shop $500.00 Bunk House $500.00 1000.00

(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.

ANSWER: Mine rail $250.00 Mine car $50.00 300.00

(f) Cost of rental for equipment which the operator proposes to rent. 210 cu. ft. compressor w/ power 3000.00

ANSWER: Rental machines, hoist 650.00

(g) Rental value of items of equipment which the operator now owns and which will be devoted to the work.

ANSWER: Gasoline for power 1000.00

(h) Cost of materials and supplies, including items of equipment costing less than $50.00 each.

23.(Continued)
ANSWER TO (h) Powder, fuse, carbide grease oil, bits, steel and miscellaneous $1650.00

(i) Cost of power, water, utilities, and any other items not provided for above. Total $15700.00

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.
ANSWER: See answer to No. 21.

224 New Customhouse
Denver 2, Colorado

September 19, 1951

Memorandum

To: W. M. Traver (with brochure)

(Through Chief, Mining Division, Region IV)

A. H. Koschmann

From: DMA Field Team, Region IV

Subject: DMA Docket 2023, M. L. Ferrick and Tom Pinello, No Name lead Mine, Blake Mining District, Saguache County, Colorado

Enclosed herewith is application of the subject docket with a "Review" by the Coordinating Committee for an exploration loan of $15,700.

The applicants state that they have driven 90 feet on a six-inch vein, with an average lead content based on two samples of 53%. They propose to drift on this vein for 500 feet and then sink a winze 100 feet in any ore shoot found.

A field check is required to determine the presence of the reported vein.

If this examination is favorable, the report should include the data for Exhibit A, and the applicants should be requested to submit maps of the present and proposed workings.

J. H. East, Jr.

A. H. Koschmann

Enclosure

WDM:oj
cc: DMA Subject
Chronological
AHKoschmann

SEP 14 1951

Re: DMA-2023

REGIONAL DIRECTOR'S OFFICE
REGION IV
SEP 21 1951
BUREAU OF MINES
DENVER, COLORADO

Messrs. M. L. Perrick and
Tom Pinello
5 Winfield
Colorado Springs, Colorado

Gentlemen:

The Defense Minerals Administration has reviewed your application for a loan to explore your claim in Saguache County, Colorado and has referred it to Mr. J. H. East, Jr. Executive Officer, Field Term, 224 New Customhouse, Denver 2, Colorado for further information and advice.

Very truly yours,

SIGNED

Tom Lyon, Director
Supply Division

EJLyons:emp
Q 9-10-51
Copies to: J. H. East, Jr. Region Iv (2)
Chief, Lead-Zinc Br.
E. T. McKnight 4204 GSA
O. Bishop
Directors r. files 4214 GSA
Br. r. files 4214 GSA
Administrators r files
DMA docket files

Hannapeplis Tungsten Mine
Mr. J. P. Hammond, Manager
P.O. Box 500
Cananea, Arizona

Re: Docket No. DMA 207XH - Tungsten
Hannapeplis No. 22 Mine
Yavapai County, Arizona

Dear Mr. Hammond:

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

Chronopulos
2/11/52

cc: Admn. Reading File
Docket
R. W. Graham, WHRM
D. N. Lemmon, USGS
Field Exam Eng. IV
S. G. Selfridge
Q. L. Brewer

Mr. W.K.K. 97.5

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

G-MD-DML

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.

Don Lemmon

DMLemmon:gt

Copies to: Director's reading file
Branch reading file

W. H. K.
J. A. S.

W.M.K.
Phoenix
Denver

Mining Division
Date Rec'd.
MAR 7 - 1952
BUREAU OF MINES
Denver, Colorado

MINING DIVISION
REGION IV

March 5, 1952

Ledoux & Company, Inc.
155 Sixth Ave.
New York 13, N. Y.

Gentlemen:

At the request of Mr. John P. Zannaras of the Zannarapolis Tungsten mine at Congress, Arizona, we are mailing you pulps for eight samples which Mr. Zannaras would like to have you analyze for tungsten. I believe he is writing you about these samples.

Please send results of your analyses to Mr. Zannaras, with a copy to this office, and send statement of your account to him.

Sincerely yours,

Walter R. Storms, Chief
Arizona-New Mexico Branch

CC Ledoux (in package)
John P. Zannaras
W. H. King
DMA-2030X
DF

WRStorms:frj

J.A.J.

Mining Division
Region IV

January 24, 1958

Memorandum

To: Field Team, Region IV

From: Acting Chief, Mining Division, Region IV

Subject: Final Report, DMA Docket 2030, Hermosteolis No. 28 Claim, (Tungsten), J. P. Zamarona, Navajo County, Arizona

Enclosed are the original and seven copies of the Engineering Report by the Bureau of Mines and the many 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

JWK:jd

cc: Docket, chron.

F 100

[illegible] New Cornelia Mines
Ajo, Arizona

January 25, 1952

Memorandum

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

Through

From: Field Team, Region IV

Subject:- Final Report, DMEA Project 2020, Scheelite No. 22 Claim, (Tungsten), L. P. Summers, Appleton, Yavapai County, Arizona

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

The proposed exploration work, estimated to cost $20,257.50, is confined to the Scheelite Claim No. 22, which is part of a group of 20 claims owned by the applicant and partner. Claim No. 22 has been developed by a 75 foot inclined shaft, 2 small tunnels, and an open cut about 200 feet long by 40 feet wide with an average depth of 5 feet. A small stope has been opened at the bottom of the shaft.

The principal ore minerals are the hornfels rocks on the property. These rocks have been intruded by granodiorite. At Claim 22, 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 distributed along fractures in altered rocks. The samples of samples taken from the outcrops, ranging in width from 1.4 to 3.5 feet, assayed from 0.03 to 0.38 percent WO_3, and averaged 0.16 percent WO_3. Three of the 4 outcrops samples that averaged 0.08 percent WO_3 or less. The other sample, containing 0.44 percent WO_3, is representative of the mineral contained in a small high-grade pocket.

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 exploration probably would develop about the indicated tonnage of scheelite-bearing rock. However, there is no reason to believe the indicated reserves would contain more than 0.20 percent WO_3.

Scheelite-bearing rock containing 0.20 percent WO_3 would not be mined commercially 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

JHT:LA W.H.K.

cc: Docket, chron.

Western Union

224 New Customhouse, Denver, Colo.

of Mines, Region IV

COLLECT

Straight Telegram - Jan. 15, 1952

JHE:ftm

Joseph H. Morgan
321 Luhrs Building
Phoenix, Arizona

Reurtel. Report on DMA Docket 2030 mailed Washington today.

J. H. East, Jr.

KE-4151
Ext. 8155

CLASS OF SERVICE

This is a full-rate Telegram or Cablegram unless its deferred character is indicated by a suitable symbol above or preceding the address.

WESTERN UNION

1201

(21)

W. P. MARSHALL, PRESIDENT

SYMBOLS

DL=Day Letter

NL=Night Letter

LT=Int'l Letter Telegram

VLT=Int'l Victory Ltr.

The filing time shown in the date line on telegrams and day letters is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination

LA177

L PFD007 PD=PHOENIX ARIZ 15 1152A=

MR EAST=

US BUREAU OF MINES DVR=

PLEASE WIRE US COLLECT STATUS OF DMA NUMBER 2030 APPLICATION FOR EXPLORATION LOAN BY ZANNARAPOLIS NUMBER 28 FIELD EXAMINATION COMPLETED END OF NOVEMBER=

JOSEPH H MORGAN 321 LUHRS BLDG PHOENIX ARIZ

ATTORNEY FOR APPLICANT=

ZANNARAPOLIS =

US DIRECTOR OF OPERATIONS REGION IV JAN 15 1952 BUREAU OF MINES DENVER, COLO.

JAN 15 PM 12 26

No

$123,259.38. report recommends denial. Report in this office for a letter of transmittal to Wash. as soon as we can

SENDER IS AWAITING A SPEEDY

answer

PLEASE GIVE IT TO THE MESSENGER
OR TELEPHONE

WESTERN UNION

2477-D (10-48)

224 New Customhouse
Denver 2, Colorado

November 21, 1951

Mr. John F. Zamaras
Zamarapolis Tungsten Mine
P. O. Box 500
Congress, Arizona

Dear Mr. Zamaras:

Your undated letter to Mr. East has been referred to me for reply.

The application, DMA Docket 2030, was sent to Tucson, Arizona on October 17, 1951, and is the responsibility of the team comprising the Bureau of Mines and Geological Survey at Tucson to arrange for the examination.

It is suggested that you write to W. R. Storms, U. S. Bureau of Mines, Box 4097, University Station, Tucson, Arizona.

Yours very truly,

F. T. Allman, for
J. H. East, Jr., Executive Officer
DMA Field Team, Region IV

FTA:ld

cc: DMA docket, chron.
Kesselmann
Storms

Form 6-95

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

REFERENCE SLIP

DATE 11/19/51

REFERRED TO:

1. CAllsman
2.
3.
4.

FOR:

..... Action	..... Recommendation
..... Approval	..... Record of .....
..... Comment	
..... Conference	..... Referring to .....
..... Consideration	
..... Filing	..... Reply for signature of .....
..... Instructions	
..... Investigation	..... Rewriting
..... Initials	..... Signature
..... Mailing	..... Suggestions
..... Previous correspondence	..... Your information

REMARKS: Letter from Zanaras, Zannarapoplis Tungsten Mine , DMA 2030 inquiring as to approximate date of examination.

Check (X) before the items needing attention.

Initials of sender.

GPO 16—51162-1

JOHN PHILIP ZANNARAS
REGISTERED MINING ENGINEER

JOHN PIERCE ROBINSON JR.

OFFICE
REGION IV
NOV 1 0 1951
BUREAU OF MINES

ZANNARAPOLIS TUNGSTEN MINE

BOX 500
CONGRESS, ARIZONA

D.M.A 2030
ZANNARAPOLIS No 28

Mr. EAST.
U.S. Bureau of Mine.
Denver Colorado.

Dear Sir

I confirm my post card and letter recording the field ~~[illegible]~~ examination of the above application for our exploration loan.

Will you be kind enough to give me an idea (only approximately) when you expect to have your engineers examine our property.

We are ready any time.

Respectfully.

ZANNARAPOLIS TUNGSTEN MINE

J. P. Zannaras

WESTERN UNION

Mines, Region IV

STRAIGHT TELEGRAM

Telephoned 4:30 p.m. Nov. 21, 1951

Charles F. Willis
528 Title & Trust Bldg.
Phoenix, Arizona

PTA:ftm

Reurtel November 21. Mr. Zannaras was advised by letter today to contact W. R. Storms at Tucson since application DMA 2030 has been in hands of Bureau and Survey team for sometime. Lack of adequate engineering personnel due to Congressional limitations has prevented us from keeping current with examinations.

Accounts
DMA File

J. H. East, Jr.

Docket

Cable-
its de-
scriber is in-
a suitable
ove or pre-
ce address.

WESTERN UNION

(34)

1201

W. P. MARSHALL, PRESIDENT

SYMBOLS
DL=Day Letter
NL=Night Letter
LT=Int'l Letter Telegram
VLT=Int'l Victory Ltr.

The filing time shown in the date line on telegrams and day letters is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination

LA315

1951 NOV 21 PM 3 40

L PFA760 PD=PHOENIX ARIZ 21 325P=

J H EAST JR REGIONAL DIRECTOR=

U S BUREAU OF MINES REGION IV 224 NEW CUSTOM

HOUSE DVR=

PLEASE ADVISE BY WIRE STATUS OF ZANNARAPOLIS NUMBER TWENTY-EIGHT DMA 2030 APPLICATION FOR EXPLORATION LOAN AND WHEN YOU ANTICIPATE MAKING FIELD EXAMINATION. KINDEST REGARDS=

CHARLES F WILLIS=

sent to field Oct. 17

RECEIVED
DENVER, CO
1951
BUREAU OF MINES
DENVER, COLORADO

SENDER IS AWAITING A SPEEDY

answer

PLEASE GIVE IT TO THE MESSENGER
OR TELEPHONE

WESTERN UNION

2-477-D (6-48)

1951 NOV 21 PM 3 49

DENVER, COLO.

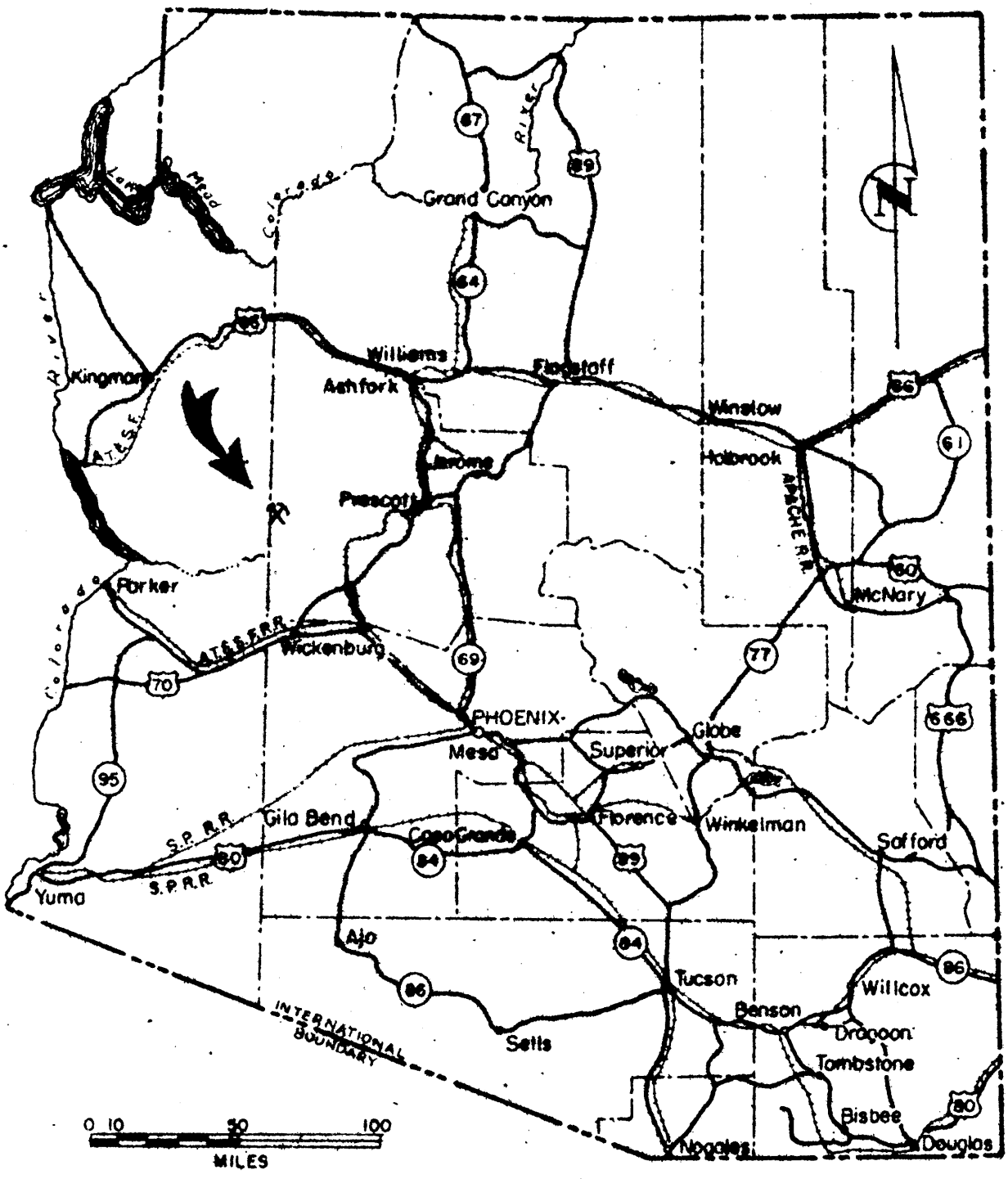

Figure 1. - Location map, Zannarapolis Tungsten Mine, Yavapai County, Arizona

D.M.A. 2030

Mining Division
Region IV

October 19, 1951

Memorandum

To: W. R. Sterns

From: Chief, Mining Division, Region IV

Subject: DMA Docket 2030, Zannarapolis Tungsten Mine

Enclosed herewith is a card from Mr. Zannaras, giving directions to reach his tungsten property for examination.

P. T. Allman

Enclosure

PTA:ld

cc: DMA docket, chron.
Koschmann

Mining Division
Region IV

October 24, 1951

Memorandum

To: W. R. Storms

From: Chief, Mining Division, Region IV

Subject: DMA Docket 2030, Zammarapolis Tungsten Mine, Box 500, Congress Arizona, John Philip Zammares, Applicant

Enclosed herewith is copy of a letter from J. P. Zammares which is self-explanatory. Also enclosed is his latest map giving directions to reach his property.

F. T. Allsman

Enclosures

FTA:ld

cc: DMA docket, chron.
Komchmann

JOHN PHILIP ZANNARAS
REGISTERED MINING ENGINEER

JOHN PIERCE ROBINSON JR.

ZANNARAPOLIS TUNGSTEN MINE

BOX 500
CONGRESS, ARIZONA

REGIONAL DIRECTOR'S OFFICE
REGION IV
OCT 22 1951
BUREAU OF MINES
DENVER, COLORADO

October 18th - 1951

OMA-2030 TUNGSTEN

Air Mail

Mr. J. H. East Jr.
224 New Customhouse. Bld.
DENVER 2. Colorado

Dear Sir

yesterday I mailed you a postal card from Congress informing you that we are ready for an examination by your Engineers -

But on returning to the mine I found that I have some business to attend at Phoenix from November 15th to November 20th. However any date prior or after Nov-15 to Nov 20th are alright with us.

On this opportunity I am enclosing a better map how to get to the mine

Respectfully
Zannarapolis Tungsten Mine
J. P. Zannaras

Zik Rex Gustenhouse
Denver 8, Colorado

October 17, 1951

Memorandum

To: W. R. Shamm (with brochure)

(Through Chief, Mining Division, Region IV)

From: C. A. Anderson
DMA Field Team, Region IV

Subject: DMA Docket 2030, Innamorpalis Tungsten Mine, applicant; Innamorpalis No. 26 Mine, Yavapai County, Arizona

Enclosed herewith is application of the subject docket for an exploration loan of $123,259.30 with a copy of a letter from the Supply Division.

The proposed work consists of 230 feet of shaft sinking and 780 feet of drifting.

Field investigators are required to determine the geological probability of discovery and the feasibility of the proposed work, with consideration given to alternative exploration phases.

Please return brochure with your report.

J. H. Eurich, Jr.

Per Oscar Turner
L. H. Eichhorn

Docket

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

224 Mar Customhouse
Denver 2, Colorado

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, Zamarapolis No. 28 Claim, (Tungsten), J. P. Zamarras, 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 Zamarapolis 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 feet 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 dominant 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 feet 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 Xanthopolis property probably is less than exposed at claim No. 26.

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

J. H. Eaton, Jr.

A. H. Koschmann

Enclosures

JHT:lf

cc: Docket, chron.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

January 24, 1952

Memorandum

To: Field Team, Region IV

From: Acting Chief, Mining Division, Region IV

Subject: Final Report, DMA Docket 2030, Zannarapolis No. 28 Claim, (Tungsten), J. P. Zannaras, 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

Arizona-New Mexico Branch
SOUTHWEST EXPERIMENT STATION
Box 4097
UNIVERSITY STATION

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

MINING DIVISION
REGION IV

TUCSON, ARIZONA

January 4, 1952

Mining Division
Date Rec'd.
JAN 7 - 1952
BUREAU OF MINES
Denver, Colorado

Memorandum

To : Paul T. Allsman, Denver, Colorado

From : Chief, Arizona-New Mexico Branch

Subject : Final Report, DMA Docket 2030X, Zannarapolis Tungsten Mine, Zannarapolis No. 28 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. N. Faick 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 R. Storms

Walter R. Storms

CC: P. T. Allsman (7)
C. A. Andersen
DMA-2030X
DF

OFFICE OF THE ADMINISTRATOR

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

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

Enclosures 8

RECEIVED
JAN 1952
U.S. Geological Survey
Mineral Resources Branch
Denver

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

DEFENSE MINERALS ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMA-2036K, Zannaraugolia Tungsten Mine

Zannaraugolia No. 2K

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. Renaslo[1] and John N. Faink[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

---

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 dominant 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 Zanzarapolis property probably is less than that exposed at claim no. 26.

It is recommended that the application for a loan to carry out explorations on claim no. 26 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 M. Faick
Geologist, U. S. Geological Survey

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

TUNGSTEN

CONTENTS

	Page
Introduction	1
General Geology	2
Geology and Proposed Exploration of Claim No. 28	4
Ore Reserves, Samples, Grade, and Production	6
Conclusions	8
Recommendations	9

ILLUSTRATIONS

		To Follow Page
Figure 1	Location Map	See Engineering Report
Figure 2	Zannarapolis Tungsten Mine, Yavapai County, Arizona	4
Figure 3	Underground Workings, Zannarapolis Tungsten Mine	5

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.

Knaukopf, K. B., and Stepper, 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. 28° 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-foot-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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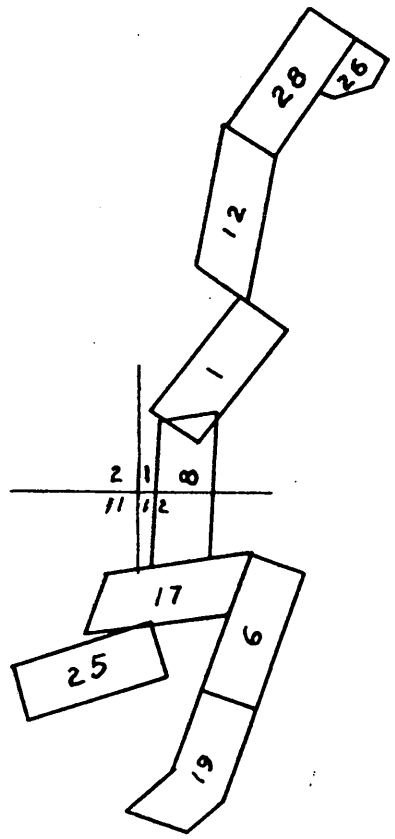
1/ Kranskopf, K. B. and Stopper, R., op. cit., p. 1.

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

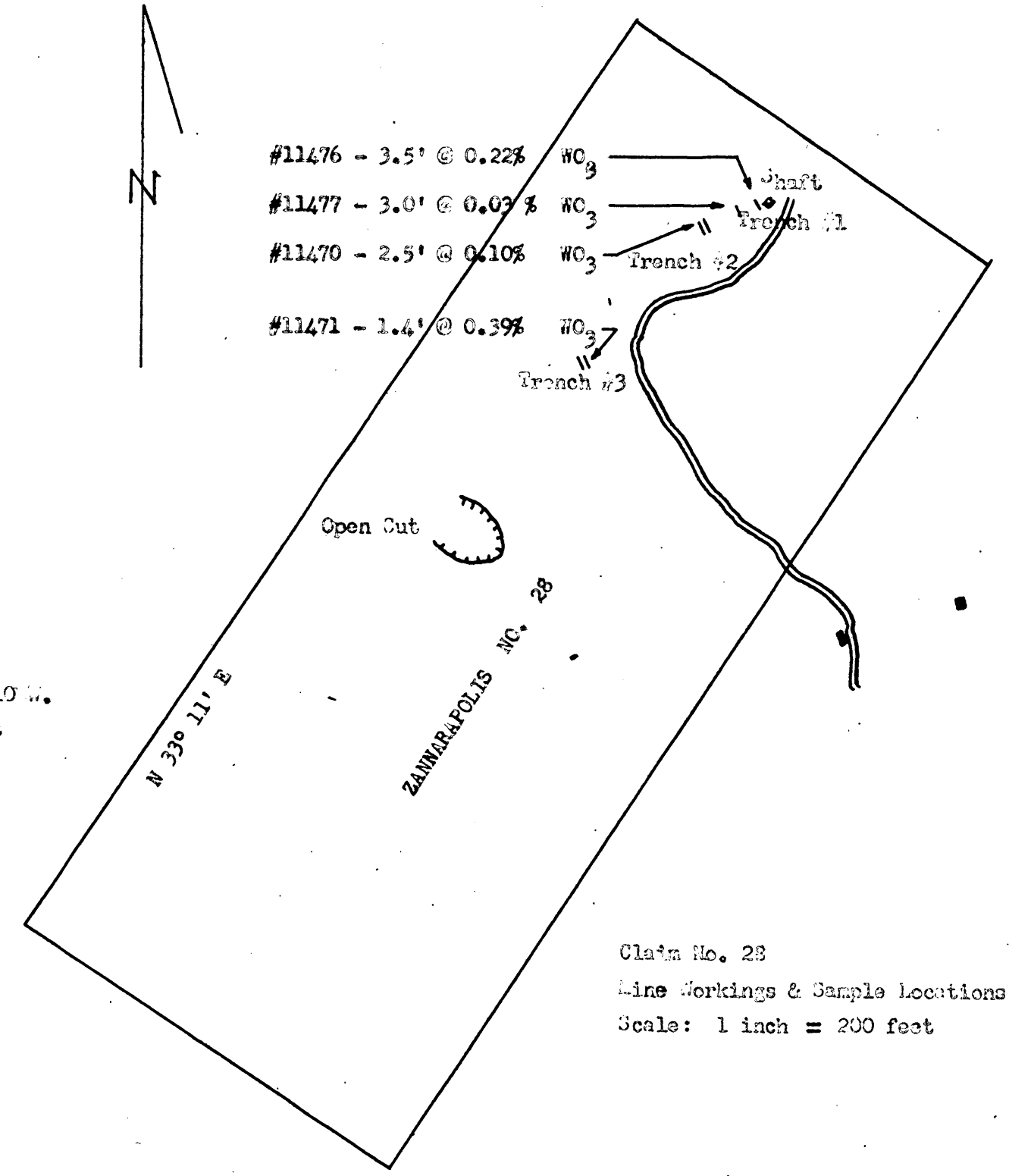
GEOLOGY AND PROPOSED EXPLORATION OF CLAIM NO. 28

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 M.M.A. 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.

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 planes of 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 arratically 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. Romulo
Mining Engineer
U. S. Bureau of Mines

January 1952

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

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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-203GK, 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 $123,299.38. 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. Falck, 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

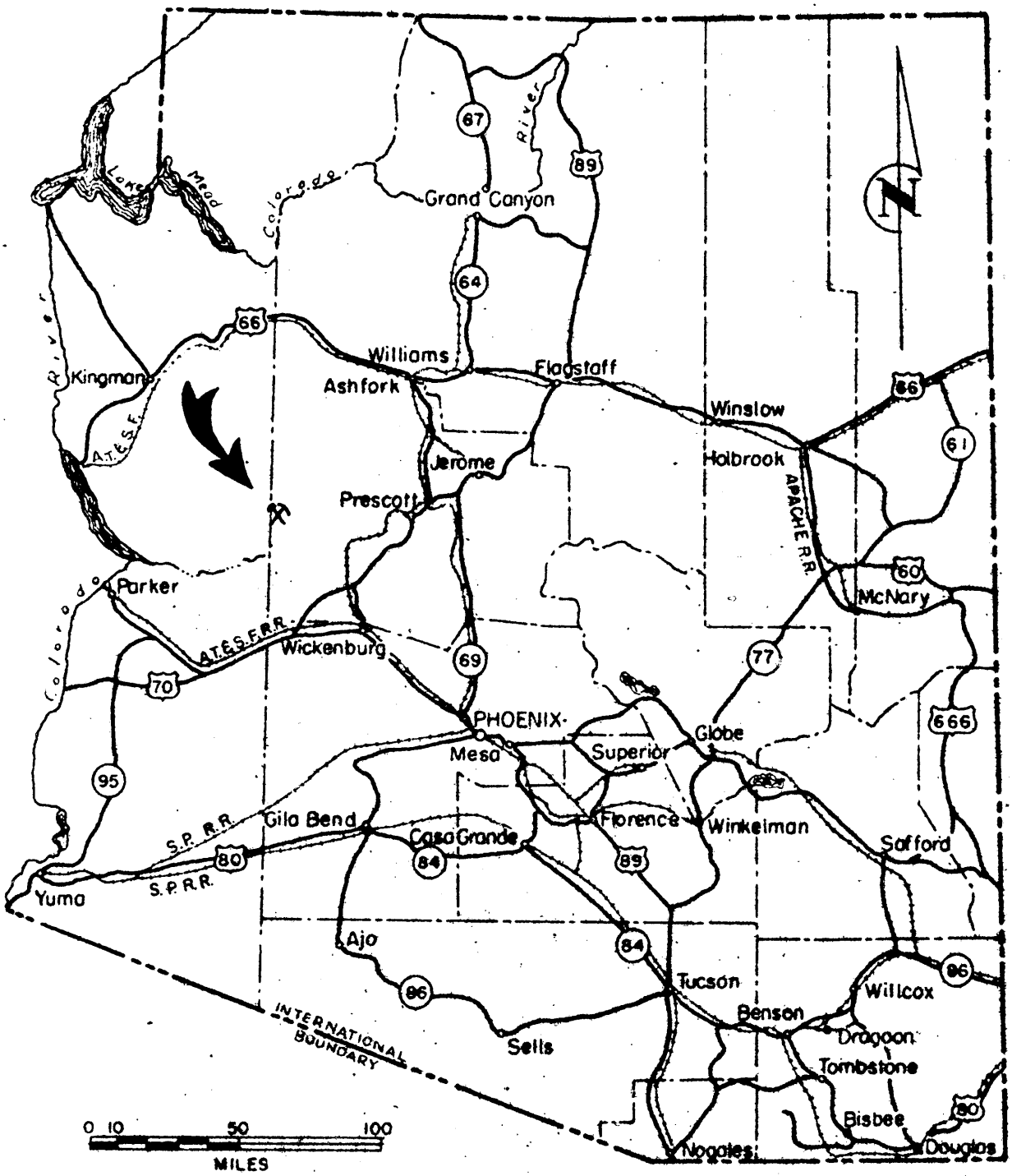

Figure 1. - Location map, Zannarapolis Tungsten Mine, Yavapai County, Arizona

D.M.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 Zannaraspolis 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. Geological 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. N., unpublished report, The Zannaras Tungsten Claims, Yavapai County, Ariz.
2/ Kranskopf, Konrad B. and Stopper, Robert, Confidential report, The Zannarapolis Tungsten Mine, Yavapai County, Ariz.
3/ Cummings, J. R., 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 worked intermittently and reached it's present depth of 75 feet during the latter part of 1948. During the last few years the mill has treated a small amount of custom ore, and ore from various parts of the Zannarupolis 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. F. 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. F. Zannaras, and J. F. Robinson, Jr., Box 500, Congress, Ariz., and S. F. 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 [1]

The dominant 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 ½-inch in tourmaline-bearing pegmatite.

DEPOSITS

General

Several widely scattered occurrences of scheelite were visited but a detailed examination was confined to Zamzampolis 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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[1] 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. Sampling of the mineralized

zones indicated that representative material was secured for assay.

The samples first were analyzed 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 analyzed 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. 20 cannot be made because; (1) there are insufficient surface exposures; (2) the mineralized zone from 6-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

Zamarapolis Claim No. 28

The proposed exploratory work is confined to Zamarapolis claim no. 28. This claim has been developed by a 75-foot inclined shaft, 2 small trenches, and an open-cut about 180 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 laboratory are located within a few hundred yards of the shaft. The laboratory 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. Theelite-bearing rock from this cut was crushed before being hauled to the mill. The crushing plant consists of a 10-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 20-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 Zamarripalis property is probably less than at claim no. 28.

RECOMMENDATIONS

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