DMA Form 1

DEFENSE MINERALS ADMINISTRATION
Control Slip

CONTROLLED DOCUMENT

DMA Docket No. 144

DO NOT DETACH THIS SLIP

Action on this document is recorded and controlled in Reports and Records Branch. Any movement of this document between divisions or offices of DMA or movement outside DMA must be reported to the Reports and Records Branch. Actions taken that affect status of the case must also be reported.

This document has been recorded as a Loan application.

Any action taken to change the type of request for assistance must be promptly reported to the Reports and Records Branch. Use DMA Form 2 for submitting these reports.

Routing Slip

To:	Div. Supply Div.	Date	Aug 9, 1951
To:	Pres. Mitchenden	Date	8-9-51
To:	P.E.D.	Date	8/10/51
To:	Legal	Date	?
To:	Reports + Records	Date	11/12/51
To:		Date	
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DO NOT DETACH

CONTROLLED DOCUMENT

Removed from 144X docket & placed in DNIA-2131

1- Copy Agreement Casey & Dillon - T.M.M.Co
1- " " Casey - Cooper - Cooper
1- " " Wanda Murray - T.M.M.Co
1- " " " " - Cooper & Ray
1- " " Casey & Dillon - T.M.M.Co

JAN 3 1952

FILE COPY
140 SURNAME:

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

OCT 17 1951

Liebert
Hofflund
Mittendorf

Q. E. C.

Mr. Byron D. Woodside, Director
Office of Defense Expansion
Defense Production Administration
Washington 25, D. C.

Re: Tungsten Mining and Milling Company
DMA Docket No. 144 - 302 Loan File

My dear Mr. Woodside:

Forwarded herewith is the file relative to the application of Tungsten Mining and Milling Company, 611 Hutton Building, Spokane, Washington (DMA Docket No. 144), for a loan in the amount of $50,000 under section 302 of the Defense Production Act of 1950, as amended. The loan funds are to be used to purchase mining equipment, purchase and install additional mill equipment and for working capital to mine and mill a tailings pond for the recovery of tungsten. The file contains a copy of the complete application with attached memoranda, a copy of the Field Team report and two copies of the report and proposal of this Administration evaluating the project. We have not received a report from the Reconstruction Finance Corporation relative to the application.

The Defense Minerals Administration considers that the project as described in the loan application and modified in our report and proposal is feasible to the extent that feasibility can be evaluated without judgment regarding the financial aspects of the project or the financial aspects of the operation of the borrower, that there is a general critical shortage of tungsten and of milling facilities in the area for the recovery of tungsten from low-grade deposits, and that the expansion of production of tungsten is essential in the interest of national defense.

This Administration recommends that the Defense Production Administration issue a certificate of essentiality to the Reconstruction Finance Corporation covering the project.

Kindly furnish the Defense Minerals Administration with a copy of the certificate when executed.

8 f 10/19

Sincerely yours,

C. O. Mittendorf

Acting Administrator

Copy to:
Repts. & Records
Admin. Reading File
J. G. Liebert
J. L. Hofflund
C. O. Mittendorf
Admin. DMPA
F. T. Ronan (RFC)
F. E. Johnson
Chron.
Pending

I concur OCT 16 1951, 195__

(Signed) JESS LARSON

Administrator, Defense Materials Procurement Agency

JGLiebert/bjl (10

R & R Br.

REPORT AND PROPOSAL ON APPLICATION FOR GOVERNMENT LOAN UNDER SECTION 302 OF THE DEFENSE PRODUCTION ACT OF 1950

September 28, 1951

TO: Defense Production Administration

FROM: Defense Minerals Administration

SUBJECT: DMA Docket No. 144
Tungsten Mining and Milling Company
611 Hutton Building
Spokane, Washington

Amount of loan requested - $50,000.00
Amount of loan recommended - $50,000.00

1. The loan funds will be used to purchase Caterpillar tractor for mining, purchase and install additional mill equipment, and for working capital in order to mine and mill 300 tons of old mill tailings per day.

2. Applicant holds the Rainbow, Haskins and Moylidnite unpatented mining claims under an assigned lease. These claims are located in Section 14, T.29 N., R. 37 E.W.M., Stevens County, Washington. Applicant also holds under lease the Germania mine, comprising the Seidlitz, Zieten, Roon, Moltke and Blnecher, lode mining claims (Survey No. 1230, the Exodus and Exodus Fraction, Patented Lode Mining claims (Survey No. 1088), and the Magda and Oakland unpatented mining claims; all located in Sections 13, 23 and 24, T.29 N., R. 37 E.W.M., Stevens County, Washington.

The patented claims comprise approximately 697.85 acres on which are located certain mining and milling equipment.

Expanded production of tungsten can be realized by adding equipment to present mill for treatment of old tailings estimated to contain 120,000 tons averaging 0.15% tungsten trioxide (WO_3). Approximately 20,000 tons of alluvial material containing about 0.35% recoverable WO_3 is also reported as available, but has not been considered in calculations. The mine still has undeveloped areas of potential tungsten production.

It is anticipated that production will be at the rate of 10,125 units of tungsten trioxide (WO_3) per year of 300 operating days. The operation should be at capacity within 2 to 4 months after funds are received.

The nature of expenditures to be made from loan funds is set forth below:

Additional mine equipment (Caterpillar tractor and blade)	$ 18,500.00
Additional mill equipment	33,800.00
Building facilities (22' X 120')	15,000.00
Storage bin (30 ton)	700.00
Working capital	17,000.00
	$ 85,000.00
Amount of loan	50,000.00
Funds necessary to be injected by applicant	$ 35,000.00

3. Based upon data submitted by the applicant and the report of the DMA Field Team, it is estimated that after expenditures of loan funds, a production of 33.75 units of tungsten trioxide (WO_3) will be obtained per day.

Estimated Cost and Profit

	Per ton ore
Cost of mining	$ 0.75
Cost of milling (75% recovery in 25% WO_3 concentrate)	1.50
Packing, trucking & freight charges	.22
Royalty (10% on net less freight)	.41
	$ 2.88
Income per ton ($38.00 per unit for 25% WO_3)	$ 4.27
(Wah Chang Trading Corp. - $38.00 per unit for 20% WO_3 concentrate or better)	1.39
Income taxes, interest on loan, ins. etc.	.69
Available for loan repayment	$ .70

Total available for loan repayment - $84,000.00

4. Applicant states that local bank in Spokane, Washington would only make loans if guaranteed by the Government. RFC evidently not contacted for loan under the RFC Act.

5. Tungsten is in critical short supply. The production contemplated herein is within the program for increasing the supply of domestic tungsten. The production can be obtained in a short period of time at nominal cost. The total cost of the project for the expected increase in production is high, but the urgent need for tungsten in the defense program justifies the proposed expenditures.

6. The funds contemplated herein are to increase the production by completing mill. It is believed sufficient reserves of tailings and alluvial material, of sufficient grade, are available to sustain the contemplated operations. The foreseeable net returns from the operations are adequate to repay the loan and potential returns may be more than adequate. The project has been determined to be feasible from an operating point of view and with respect to its technical aspects. Although the risk to the Government will be above average, the urgent need for tungsten justifies the risk.

7. There is no question of military security involved.

8. All requirements of the project are available or will be available as needed. This includes mechanical equipment, supplies, labor, transportation, roads and power.

9. The personnel who will be in charge of operations will be experienced in this type of work and the management is considered competent. However, technical personnel and management should be employed satisfactory to RFC.

10. This is a small business operation as evidenced by the extent of the proposed operations. Benefits will accrue principally to the applicant and small local business furnishing supplies for the operation.

11. Applicant states that Necessity Certificates for accelerated amortization are in the process of filing. The applicant also filed an application for an Exploration Project in the amount of $55,134.00, which was denied under date of June 14, 1951.

12. The production contemplated cannot be increased by other means than those proposed. Increased shifts or use of other facilities will not accomplish the purpose. The production contemplated from this expansion is highly desirable and will become available in a short time to relieve current and critical shortages of tungsten.

13. Defense Minerals Administration considers that the expansion of the production of tungsten contemplated by the use of the loan funds is necessary to National Defense and recommends that a loan be approved in the amount of $50,000.00, provided the additional funds required are obtained from other sources.

Frank E. Johnson
Examiner

Approved by:
C. O. Mittendorf
Production Expansion Division

C. O. Mittendorf
Acting Administrator

OCT 4 1951

Mr. Frank T. Ronan
Director, Office of Loans
Reconstruction Finance Corporation
811 Vermont Avenue, N. W.
Washington 25, D. C.

Re: Docket No. D-146
[illegible] Mining [illegible] Company
Application for a Government Loan

Dear Mr. Ronan:

Reference is made to our letter of August 20, 1951, transmitting the subject application for a loan and requesting a credit report on the applicant.

Pursuant to procedures set forth in letter dated September 14, 1951, received from Defense Production Administration, we are forwarding herewith a second copy of the application of American Mining and Milling Company for a Government loan in the amount of $[illegible],000.00, together with copies of related documents previously sent to you.

Sincerely yours,

C. O. Wittendorf

Acting Administrator

Enclosure

FEJohnson/meb
9/28/51
cc to: Admr's Reading Files
Reports & Records
Messrs. Wittendorf/Glund
Mr. Woodside (DPA)
Mr. Larson (DPA)
Mr. Johnson
Docket

PHKB

R. H. Ridgway

DEFENSE MINERALS ADMINISTRATION

Referral of Applications for Government Aid

Docket No. DMA - 144

Commodity: tungsten

Name of Applicant: Tungsten Mining & Milling Company
(P. H. Casey, Pres. & Gen.Mgr.)

Address of Applicant: Post Office Box 794
Spokane, Washington

Name of Property: Germania Mine

Location of Property: Stevens County, Washington

Nature of Application: Loan for equipment and salaries to permit the recovery of tungsten

Action Dates

Application: 12/5/50

Received: 12/13/50

Acknowledged:

Referred to FERROUS METALS Committee: 12/15/50

1-9-51 - [illegible] [illegible] for [illegible]

Mr. Ridgway

DEFENSE MINERALS ADMINISTRATION

Referral of Applications for Government Aid

Docket No. DMA- 144

Commodity: tungsten

Name of Applicant: Tungsten Mining and Milling Company

Address of Applicant: Mr. Ridgway: Attached is a letter from A. J. Walsh Acting Commissioner, General Services Administration to James Boyd. Also attached is a letter P. H. Casey, president, Tungsten Mining & Milling Company to G.S.A., dated 12/14/50. Also attached are reports on The Germania Mine.

Name of Property:

Location of Property:

Nature of Application:

Action Dates

Application:

Received:

Acknowledged:

Referred to _____ Committee:

Proposal to ship beans of 300 Tons ea. 54% in 1951 $\left.\frac{1620}{9720}\right\}$ = 10,000 units

Jan 10 '56

Waiting on letter from Hobbs of USGS for examination upon app. for plant

FILE COPY
SURNAME:

410

FEJohnson
Attendant

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

OCT 4 1951

Mr. Frank T. Ronan
Director, Office of Loans
Reconstruction Finance Corporation
811 Vermont Avenue, N. W.
Washington 25, D. C.

Re: Docket No. DMA - 144
Tungsten Mining and Milling Company
Application for a Government Loan

Dear Mr. Ronan:

Reference is made to our letter of August 20, 1951, transmitting the subject application for a loan and requesting a credit report on the applicant.

Pursuant to procedures set forth in letter dated September 14, 1951, received from Defense Production Administration, we are forwarding herewith a second copy of the application of Tungsten Mining and Milling Company for a Government loan in the amount of $50,000.00, together with copies of related documents previously sent to you.

Sincerely yours,

C. O. Mittendorf

Acting Administrator

Enclosure

FEJohnson/meb
9/28/51
cc to: Admr's Reading Files
Reports & Records
Messrs.Mittendorf/Olund
Mr. Woodside (DPA)
Mr. Larson (DMPA)
Mr. Johnson
Docket

FILE COPY
SURNAME:

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

FEJohnson
Mittendorf
Schroeder

G. E. C.

Mr. Chauncey Y. Dodds
Director, Office of Loans
Reconstruction Finance Corporation
811 Vermont Avenue, N. W.
Washington 25, D. C.

Re: Docket DMA-144
Tungsten Mining & Milling Co.
Application For a Government Loan

Dear Mr. Dodds:

There are enclosed documents relating to the application of Tungsten Mining & Milling Company, for a loan in the amount of $85,000.00 as follows:

Application for a Government Loan Not to Exceed $50,000.00 (Form MF-102).
General Technical Data (Form MF-100).
Copy of Agreement dated May 5, 1951 between Paul H. Casey and Lillian H. Casey, and Hartley Cooper.
Copy of Lease Modification Agreement dated May 9, 1950 between Wanda Murray and Tungsten Mining & Milling Company.
Copy of Lease dated May 9, 1950 between Paul H. Casey and Joe H. Dillon and Tungsten Mining & Milling Company.
Map of mining claims.
Copy of report dated May 22, 1950 on the Germania Mine by Henry Becker.
Copy of Report of DMA Field Team.
Copy of Metallurgical Report of USBM.
Flow sheet of proposed mill.

Applicant originally applied for a loan of $50,000.00. The amount was increased to $85,000.00 in conference with the DMA Field Team.

Please arrange to have a credit investigation made of this applicant and furnish us with a report thereon. Since the DMA Field Team has examined the property it will not be necessary for RFC to make a field examination.

Sincerely yours,

W. C. SCHROEDER

BJ 8/21

Acting Administrator

Enclosures-10

FEJohnson/bjs
8/17/51

cc to: Adm. Reading File
Reports and Records
Mr. Holderer
Mr. Mittendorf, Mr. Olund
Mr. Lyon
Mr. Rove
Mr. Moon
Mr. Johnson
Docket copy

FILE COPY
SURNAME:

Holderer
Ballard

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

August 8, 1951

Memorandum

To: Director, Production Expansion Division

Through: Director, Supply Division

From: Tungsten Branch

Subject: DMA-144 — Tungsten
Tungsten Mining and Milling Company
711 Hutton Building
Spokane, Washington

The application of the subject company for a loan of $85,000 to rebuild their mill is approved for the entire amount as outlined in our covering memorandum attached.

George B. Holderer
Chief, Tungsten Branch

Approved:

Tom Lyon

Director, Supply Division

TJBallard:awj

cc:File
Adm. Reading File
Reports & Records Unit
Mr. Holderer

REPORT AND RECOMMENDATIONS OF
COMMODITY COMMITTEE ON APPLICATION
FOR GOVERNMENT ASSISTANCE

Docket No. DMA-144
Commodity-Tungsten

A. Name and address of applicant:
Tungsten Mining and Milling Company
711 Hutton Building
Spokane, Washington

B. Property:
Tailing Dump, Germania Mine, Stevens County, Washington.

C. Conclusions:

1. The project may recover 13,500 units of WO_3 according to the indicated recovery of 75 per cent in beneficiation tests.
2. The proposal appears to be technically feasible. Estimated costs are as follows:

Loading and hauling tailings to mill bin	$ .50 per ton
Milling cost including supplies, labor overhead, and etc.,	$ 1.50 per ton
Total cost before taxes	$ 2.00 per ton

Cost of loading, hauling and milling 120,000 tons	$240,000
Freight @ $1.88 CWT	$ 23,587
Loan principal (interest not included)	$ 85,000
Total cost before taxes	$348,587

13,500 units @ $39 for 25% ore	$526,500
Profit before taxes	$177,913

In addition to the tailing dump there is an unknown amount of alluvial material on the hillside containing appreciable amounts of tungsten, which might provide up to 7,000 additional units.

3. Requirements for equipment can be met by purchase.
4. Financing is by Government loan for $85,000. Method of repayment is to be determined.
5. The applicant has engaged competent metallurgical consultants to place the mill in operation.

D. Recommendation:
Based upon the beneficiation tests, a loan of $85,000 to rebuild the mill is justified.

E. Proposal:
A Government loan of $85,000 to rebuild the mill and treat 120,000 tons of tailings.

F. The proposal is in accord with the program for expansion of tungsten production.

G. Technical Feasibility:
1. Reserves in the tailing dump are approximately 120,000 tons averaging 0.15% WO_3. Beneficiation tests indicate a 75 per cent recovery or 13,500 units of 25 per cent WO_3 ore. Additional reserves may be available up to 7,000 units in tungsten bearing alluvial material.
2. The mill will be revamped to handle 300 tons per day (24 hrs.)
3. New mill equipment and construction will amount to $49,500.
4. Ore will be concentrated to plus 25 per cent WO_3 and shipped to Wah Chang via Reardan. Wah Chang will pay $39 for 20 per cent WO_3 f.o.b. their plant.
5. Applicant does not state when production will begin after funds are available. It is presumed at least 3 months would be necessary to obtain and install the new machinery.

H. Project requirements:
1. New equipment is required for the mill to enable the applicant to treat the low grade tailings. Applicant in his revised estimate proposes to spend $49,500 on the mill equipment and construction, $18,500 for a caterpillar tractor and use $17,000 as working capital.
2. The new equipment can be purchased.
3. Roads are adequate.
4. Manpower requirement of 10 men is available.
5. Millpower is diesel-electric.

I. Financing:
1. The proposed financing as revised is a direct loan of $85,000. The loan is to be repaid out of smelter returns at a rate to be determined. The gross recoverable value of the tungsten ore is $526,500 and should be enough to pay off the loan.
2. The revised amount requested is adequate.

George B. Holderer
Chief, Tungsten Branch

Approved:
Tom Lyon

Director, Supply Division

TJBallard:awj

cc:File
Adm. Reading File
Reports & Records Unit
Mr. Holderer

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

340

August 8, 1951

Memorandum

To: Director, Production Expansion Division

Through: Director, Supply Division

From: Tungsten Branch

Subject: DMA-144 — Tungsten
Tungsten Mining and Milling Company
711 Hutton Building
Spokane, Washington

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Chief, Tungsten Branch

Approved:

Tom Lyon

Director, Supply Division

TJBallard:awj

cc:File
Adm. Reading File
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Mr. Holderer

REPORT AND RECOMMENDATIONS OF
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FOR GOVERNMENT ASSISTANCE

Docket No. DMA-144
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2. The proposal appears to be technically feasible. Estimated costs are as follows:

Loading and hauling tailings to mill bin	$ .50 per ton
Milling cost including supplies, labor overhead, and etc.,	$ 1.50 per ton
Total cost before taxes	$ 2.00 per ton

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Freight @ $1.88 C/T	$ 23,587
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In addition to the tailing dump there is an unknown amount of alluvial material on the hillside containing appreciable amounts of tungsten, which might provide up to 7,000 additional units.

3. Requirements for equipment can be met by purchase.
4. Financing is by Government loan for $85,000. Method of repayment is to be determined.
5. The applicant has engaged competent metallurgical consultants to place the mill in operation.

D. Recommendation:
Based upon the beneficiation tests, a loan of $85,000 to rebuild the mill is justified.

E. Proposal:
A Government loan of $85,000 to rebuild the mill and treat 120,000 tons of tailings.

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2. The new equipment can be purchased.
3. Roads are adequate.
4. Manpower requirement of 10 men is available.
5. Millpower is diesel-electric.

I. Financing:
1. The proposed financing as revised is a direct loan of $85,000. The loan is to be repaid out of smelter returns at a rate to be determined. The gross recoverable value of the tungsten ore is $520,500 and should be enough to pay off the loan.
2. The revised amount requested is adequate.

George B. Holderer
Chief, Tungsten Branch

Approved:
Tom Lyon

TJBallard:awj

cc:File
Adm. Reading File
Reports & Records Unit
Mr. Holderer

Director, Supply Division

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

340

August 8, 1951

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To: Director, Production Expansion Division

Through: Director, Supply Division

From: Tungsten Branch

Subject: DMA-144 — Tungsten
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711 Hutton Building
Spokane, Washington

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George B. Holderer
Chief, Tungsten Branch

Approved:

Tom Lyon

Director, Supply Division

TJBallard:awj

cc:File
Adm. Reading File
Reports & Records Unit
Mr. Holderer

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COMMODITY COMMITTEE ON APPLICATION
FOR GOVERNMENT ASSISTANCE

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Total cost before taxes	$348,587
13,500 units @ $39 for 65% ore	$526,500
Profit before taxes	$177,913

In addition to the tailing dump there is an unknown amount of alluvial material on the hillside containing appreciable amounts of tungsten, which might provide up to 7,000 additional units.

3. Requirements for equipment can be met by purchases.
4. Financing is by Government loan for $85,000. Method of repayment is to be determined.
5. The applicant has engaged competent metallurgical consultants to place the mill in operation.

D. Recommendation:
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F. The proposal is in accord with the program for expansion of tungsten production.

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5. Applicant does not state when production will begin after funds are available. It is presumed at least 3 months would be necessary to obtain and install the new machinery.

H. Project requirements:

1. New equipment is required for the mill to enable the applicant to treat the low grade tailings. Applicant in his revised estimate proposes to spend $49,500 on the mill equipment and construction, $10,500 for a crawler tractor and use $17,000 as working capital.
2. The new equipment can be purchased.
3. Roads are adequate.
4. Manpower requirement of 10 men is available.
5. Millpower is diesel-electric.

I. Financing:

1. The proposed financing as revised is a direct loan of $85,000. The loan is to be repaid out of smelter returns at a rate to be determined. The gross recoverable value of the tungsten ore is $526,500 and should be enough to pay off the loan.
2. The revised amount requested is adequate.

George B. Holderer
Chief, Tungsten Branch

Approved:

TJBallard:awj

Tom Lyon

cc:File
Adm. Reading File
Reports & Records Unit
Mr. Holderer

Director, Supply Division

August 8, 1951

Memorandum

To: Director, Production Expansion Division

Through: Director, Supply Division

From: Tungsten Branch

Subject: DMA-144 — Tungsten
Tungsten Mining and Milling Company
711 Hutton Building
Spokane, Washington

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George R. Holderer
Chief, Tungsten Branch

Approved:

Tom Lyon

Director, Supply Division
TJBallard:awj

cc: File
Adm. Reading File
Reports & Records Unit
Mr. Holderer

REPORT AND RECOMMENDATIONS OF
COMMODITY COMMITTEE ON APPLICATION
FOR GOVERNMENT ASSISTANCE

Docket No. DMA-144
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A. Name and address of applicant:
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711 Hutton Building
Spokane, Washington

B. Property:
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C. Conclusions:

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F. The proposal is in accord with the program for expansion of tungsten production.

G. Technical Feasibility:
1. Reserves in the tailing dump are approximately 120,000 tons averaging 0.15% WO_3. Beneficiation tests indicate a 75 per cent recovery or 13,500 units of 25 per cent WO_3 ore. Additional reserves may be available up to 7,000 units in tungsten bearing alluvial material.
2. The mill will be revamped to handle 300 tons per day (24 hrs.)
3. New mill equipment and construction will amount to $49,500.
4. Ore will be concentrated to plus 25 per cent WO_3 and shipped to Wah Chang via Reardan. Wah Chang will pay $39 for 20 per cent WO_3 f.o.b. their plant.
5. Applicant does not state when production will begin after funds are available. It is presumed at least 3 months would be necessary to obtain and install the new machinery.

H. Project requirements:
1. New equipment is required for the mill to enable the applicant to treat the low grade tailings. Applicant in his revised estimate proposes to spend $49,500 on the mill equipment and construction, $18,500 for a caterpiller tractor and use $17,000 as working capital.
2. The new equipment can be purchased.
3. Roads are adequate.
4. Manpower requirement of 10 men is available.
5. Millpower is diesel-electric.

I. Financing:
1. The proposed financing as revised is a direct loan of $85,000. The loan is to be repaid out of smelter returns at a rate to be determined. The gross recoverable value of the tungsten ore is $526,500 and should be enough to pay off the loan.
2. The revised amount requested is adequate.

George B. Holderer
Chief, Tungsten Branch

Approved:

Tom Lyon

Director, Supply Division

TJBallard:awj

cc:File
Adm. Reading File
Reports & Records Unit
Mr. Holderer

8/8/51

List of File to P.E.D.
144 Tungsten Mng. & Milling

2 - referral sheets
1-letter Tungsten Mining & Milling to G. S. A. 12/14/50
1-report by Henry Becker 5/22/50
1-letter Weissenborn to Boyd 12/7/50
1-letter Tungsten Mng. & Milling to U. S. G. S. 12/5/50
1-report by Henry Becker
1-letter Gen. Electric to Greene 3/15/43
1-Mill flow sheet
1-letter Ridgway to Casey 12/22/50
1-copy letter Admin. to Walsh 1/12/51
1-letter Hobbs to Lemmon 1/18/51
1-copy letter Davidson to Weissenborn 2/26/51
1-copy letter Bradley to Weissenborn 3/7/51
1-letter Weissenborn to Bradley 5/2/51
1-copy letter Wah Chang to T.M. & M. Co 5/15/51
1-copy letter Wah Chang to T. M. & M. Co. 7/27/50
1-copy assay report 8/7/50
1-copy assay report & settlement 3/15/50
1-copy letter N.P.R.R. 5/15/50
1-Memo on results beneficiation tests by Bardill 7/12/51
1-print proposed flow sheet
1-letter Weissenborn to Strobel 7/25/51
1-Memo Field Team to Lyon 7/25/51
3-Copies MF-102 with attachments 5/31/51

FILE COPY
SURNAME:

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

340

Holden
Mailed

August 7, 1951

Memorandum

To: Administrative Management Division

Through: Director, Supply Division

From: Tungsten Branch

Subject: DMA-144
Tungsten Mining and Milling Company
711 Hutton Building
Spokane, Washington

We are enclosing two copies of MT-100 of the subject docket which please forward to Mr. Speaker for mine serialization.

An application for an $85,000 loan to rebuild their mill has been tentatively approved, and they no doubt will need a priority number to secure the necessary equipment.

George B. Holderer

George B. Holderer
Chief, Tungsten Branch

Attachments

TJBallard:awj

cc:File
Adm. Reading File
Reports & Records Unit
Mr. Holderer

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
1207 N. Division
Spokane 2, Wash.

Give DL a copy

July 25, 1951

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUL 30 1951
LAWRENCE F. STROBEL
Executive Secretary

AUG 2 1951
Recd by
Mr. Kalderen

Mr. L. F. Strobel
Executive Secretary
Defense Minerals Administration
Department of Interior
Washington 25, D. C.

Dear Mr. Strobel:

Enclosed are four copies of a memo from J. D. Bardill, Metallurgist, U.S. Bureau of Mines, four copies of a Field Team report and other supporting data concerning the application of the Tungsten Mining and Milling Company for a loan to build a mill. We received a request by letter to appraise the property; I do not find any word that we ever received the application itself from the Washington office of the DMA.

Sincerely yours,

A. E. Weissenborn
A. E. Weissenborn
Executive Officer, DMA
Field Team, Region II

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

1207 N. Division
Spokane 2, Wash.

July 25, 1951

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
JUL 30 1951
Executive Secretary

MEMORANDUM

To: Tom Lyon, Director Supply Division

From: Field Team, Region II

Subject: Application of Tungsten Mining and Milling Corp.
Docket DMA 144

Enclosed herewith are four copies of a memorandum from John D. Bardill, Metallurgist, U.S. Bureau of Mines, concerning the application of the Tungsten Mining and Milling Corporation for a loan to rebuild a concentrator at the Germania mine, Stevens County, Washington.

A contour map was made of the Germania tailing dump and a number of auger holes and grab samples were taken. It is estimated that there are in excess of 120,000 tons of tailings in this dump.

Although the sampling cannot be considered complete, it is believed to be reasonably indicative of the tungsten content. A thorough sampling job would be costly and time consuming, and is considered beyond the function of the Field Team. The tungsten distribution is somewhat erratic but it is believed that the dump as a whole will average reasonably close to the 0.15 percent WO_3 claimed by the applicant.

Tests by the Bureau of Mines indicated that a mill employing the applicant's original flow sheet would yield neither a satisfactory recovery of the tungsten nor a marketable concentrate. Further tests, however, indicate that by making certain changes and additions a saleable concentrate might be obtained with reasonably good recovery of the tungsten.

At the suggestion of the local DMA staff, the applicant retained as consultants C. Y. Garber and Frank McKinley, recognized metallurgists in the Coeur d'Alene district. A flow sheet was worked out which is believed will enable 25 percent WO_3 concentrate to be obtained with 75 percent recovery of the tungsten. The changes in the mill will require a loan of $85,000 rather than the $50,000 originally requested. The flow sheet, the cost of the required plant, and an estimate of milling costs are described in detail in Mr. Bardill's report.

Attached are copies of a letter supplied by the applicant showing that freight rates on tungsten concentrates from Reardan to New York will be $1.88 per CWT in carload lots. Also attached are copies of a letter from the Wah Chang Corporation quoting a price of $38 per unit for 20 percent tungsten concentrates. We have been advised that Wah Chang now is offering $39 a unit.

According to DMA Field Team estimates, a production of around 13,500 units of tungsten might be expected from treating the tailing dump. In addition to the above, there is an unknown amount

of alluvial material on the hillside containing appreciable amounts of tungsten. Part of this material was mined by General Electric; a considerable amount, probably in excess 20,000 tons, remains. Its grade has been estimated by Emigh (see report accompanying application) as around 7 pounds of recoverable tungsten per ton. In the opinion of the Field Team only a mill run test would determine accurately the tungsten content of the alluvium. Consequently, no attempt was made to sample the hillslope. The feasibility of the project has been appraised only on basis of the recovery of tungsten from the tailing dump. Inspection of the hillside indicates, however, that there is a good possibility that considerable tungsten can be recovered from that source. Assuming 20,000 tons of tungsten-bearing material are present and accepting Emigh's figure of 7 pounds per ton of recoverable tungsten, there is a possibility that an additional 7,000 units might be recoverable, making a total recovery of 20,500 units.

Although the applicant has not yet presented an exploration project acceptable to the DMA, certain exploration possibilities, nevertheless, do exist in the form of new discoveries and ore remaining in the mine. As the mine is in bad condition and no exploration is in progress at present, no weight has been given to this in considering the feasibility of the proposal.

Mr. Paul Casey of the Tungsten Mining and Milling Company is believed to be an energetic and competent business man. He has lacked technical guidance and some of his proposals have been ill-advised.

Nevertheless, he is willing to accept technical advice. He has stated his intention of employing Garber and McKinley as metallurgical consultants to place the mill in operation. It is believed that once the mill is running efficiently, the crew will be able to operate it with only occasional supervision. The grade of the mill tailing is low and a number of factors cannot be adequately appraised without more investigation than the Field Team regards its proper function. Consequently, there is a certain element of risk in the proposal. Nevertheless, there is the potentiality of producing in a relatively short time an appreciable amount of tungsten. The Field Team believes that this more than justifies the risk.

The Field Team agrees with Bardill's conclusions and recommends that a loan of $85,000 be granted subject to the condition stated in Bardill's report.

There have been many unavoidable delays in obtaining the necessary information to reach the conclusions listed above. It is hoped that the application can be processed with as little additional delay as possible.

Field Team, Region II

A. E. Weissenborn

A. E. Weissenborn, Exec. Officer
(U. S. Geological Survey)

Glenn C. Reed

Glenn C. Reed, Acting for
M. E. Volin, Member
(U. S. Bureau of Mines)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
401 Post Office Building,
Spokane 1, Washington

July 12, 1951

MEMORANDUM

To: DMA Field Team, Region II

From: John D. Bardill, U. S. Bureau of Mines Metallurgist

Subject: Metallurgy of old Germania mine mill tailings - Tungsten Mining & Milling Company, Stevens County, Washington - DMA Docket #144.

Mr. P. H. Casey, president of the Tungsten Mining & Milling Company, has requested a Defense Minerals Administration production loan of $85,000. The funds are intended to provide working capital and for the purchase of several items of new equipment to recover wolframite-scheelite concentrates from the old mill tailings from the Germania mine and tungsten-bearing alluvium back of the mill. The tailings dump is estimated to contain about 120,000 tons of recoverable material containing about 0.15 percent WO_3. The alluvium containing about 7 pounds of recoverable wolframite per ton is estimated at 20,000 tons. Only tailings are considered in this report.

Under a separate proposal an exploratory loan is being requested to prospect for the possible extension of the vein system. If this exploratory program should prove successful, additional ore reserves would be available.

Rejects from 15 posthole auger samples of the old mill tailings dump and tailings in the creek bottom taken by Eric Erickson, Bureau of Mines, were mixed and used for metallurgical testing. The sample of mixed rejects assayed about 0.12 percent WO_3 and should not be considered representative of the entire tailings dump; however, results of metallurgical testing should be fairly indicative of recoverable tungsten concentrate possibilities. The test work at Albany was very limited in scope principally because of the short time allowed for the work and shortage of competent tungsten analysts in the laboratory, created by recent personnel transfers to other stations.

A screen analysis of the sample indicated reasonably uniform distribution of the tungsten in the various grain sizes and showed about 90 percent of the material to be plus 100-mesh, and 66 percent plus 20-mesh.

The company's original flow sheet proposed grinding to minus 1/8-inch. The sample was ground to minus 4-mesh (0.185-inch) screened into plus 20-mesh and minus 20-mesh portions. The minus 4 plus 20-mesh fraction was jigged in a laboratory Denver Mineral Jig, and the minus 20-mesh fraction tabled on a laboratory size shaking table. The following results were obtained:

Jigging and Tabling Tests

Product	% Wt.	% WO_3	% WO_3 Distribution
-4 + 20-mesh			
Jig concentrate	2.8	0.55	15.7
" middling	5.7	0.07	4.1
" tailing	57.5	0.02	11.7
	66.0		31.5
-20-mesh			
Table concentrate	0.4	11.7	50.7
" middling #1	3.0	0.17	5.3
" middling #2	0.8	0.75	6.4
" tailing	29.8	0.02	6.1
	34.0		68.5
Calculated head	100.0	0.095	100.0

There was an insufficient quantity of the table concentrate to make further tests to attempt to upgrade it to a plus 20 percent WO_3 grade.

The table concentrate contained an appreciable quantity of iron pyrite, indicating further tabling would not materially upgrade it without excessive tungsten losses. During the tabling tests the uppermost band of concentrate on the table was largely wolframite, which graded into another less distinct band consisting of a mixture of wolframite, iron sulphides, and scheelite followed by a band of scheelite concentrate, then middlings and finally tailings. The heavy iron sulphides mixed with the wolframite and scheelite precludes a higher grade concentrate by tabling.

Miscroscopic examination of the coarse material indicates that all of it should be ground to at least minus 20-mesh to obtain satisfactory liberation of the tungsten minerals from the gangue. Based on the results of the jigging and tabling tests a less than 20 percent WO_3 concentrate will be made in the jig mill plant now under construction unless the flow sheet is modified. The plant will probably yield better tungsten recoveries in the alluvium than on the old mill tailings because the former will contain relatively larger pieces of wolframite, for which the jigs will be satisfactory. Jigs are primarily intended for concentrating coarse material.

Mr. C. Y. Garber and Mr. Frank McKinley, mill superintendent and assistant mill superintendent, respectively, at Bunker Hill & Sullivan Mining and Concentrating Company, Kellogg, Idaho, have recently been retained as metallurgical consultants by Mr. Casey. They have just completed several beneficiation tests on a sample of the mill tailings. The results of test and method of procedure with discussion by Mr. Garber is taken verbatim from a memorandum report to me as follows:

"Our examination indicates these tailings to be mostly minus 1/2 inch. They are the mill rejects from a previous operation in which only Harz jigs were used to extract a high grade wolframite concentrate. The values remaining obviously are contained in middling particles. Further crushing to free the tungsten minerals is indicated, followed by concentration on fine jigs and tables and final cleaning by grinding and flotation.

We accordingly collected about 200 pounds of the material from various places on the dump and tested it in the laboratory as follows:

Sample was crushed to pass 8 mesh.

Oversize on 20 mesh was jigged, making a tailing to waste and a low-grade concentrate.

Jig concentrate was ground in rod mill to pass 20 mesh and combined with minus 20 mesh feed.

All minus 20 mesh was then tabled, making a tailing to waste and a tungsten concentrate. This concentrate was ground to pass 65 mesh and pyrite removed by flotation. Resulting flotation tailings became the concentrate.

GERMANIA TEST #2

Sample Crushed to Pass 8 Mesh

55.0%
-8 +20 Mesh to Jig

60.4%
-20 Mesh + Jig Conc. + Jig Hutch
+ Jig Midd to Table

	% Wt.	WO_3 %	WO_3 Contents	WO_3 % Dist.
Au Conc. 0.3 oz./ton	0.26	0.000	.0000	00.00
Table Conc. after flot.	0.42	25.77	.1082	72.37
" Midd #2	2.27	0.353	.0080	5.35
" Midd #1	12.60	0.01	.0013	0.87
" Tails	37.60	0.018	.0068	4.55
" Slimes	7.21	0.24	.0173	11.57
Jig Tails	39.64	0.02	.0079	5.29
	100.00	0.1495	.1495	100.00

The above test indicates 100 tons of mill feed will produce 0.42 ton of tungsten concentrate daily, assaying 25.77% WO_3.

Considerable money has been spent on the plant for the installation of screens, rolls and jigs, which probably will handle 300 tons in 24 hours. It would seem best to use the equipment and set-up as started and complete plans for a 300 ton plant. (See accompanying flowsheet.)

On the flowsheet, dotted lines are intended to indicate that a rougher concentrate will be made and stored for a suitable period. Then, probably once a month, this rougher concentrate will be ground in the rod mill and cleaned by floating out the pyrites."

The table concentrate before flotation contained about 15.9 percent WO_3 which checks roughly with Bureau of Mines tabling tests.

The results of the Garber and McKinley tests should be accepted in whole without question.

In addition to the mill equipment already on hand at the property, the following items are estimated to be necessary to place the 300-ton mill in operation according to the attached flowsheet by Garber and McKinley. Some of the equipment may have been used.

Estimated Costs

	Complete, place, provide drives, launders, etc., for three jigs now under construction,	$ 3,000
1 -	Single deck vibrating screen, 3' x 5',	800
1 -	Hydraulic classifier,	500
1 -	3' x 5' rod mill with drive,	4,000
1 -	2-Cell, 24-inch flotation machine,	800
10 -	Concentrating tables,	12,000
1 -	Building for tables, 22' x 120',	15,000
1 -	Dewatering drag,	1,200
3 -	Slurry pumps,	1,500
1 -	30-ton storage bin,	700
1 -	Thickener, 20' x 10',	4,000

(Estimated Costs, cont.)

Mill equipment installation,	$ 6,000
1 - Caterpillar tractor with angle blade,	18,500
Working capital for two months,	17,000
Total,	$85,000

Mr. K. C. Li, Chairman, Wah Chang Corporation, New York, N. Y., told me on the phone that less than 20 percent WO_3 concentrates are not acceptable. Mr. Clarence Hall, Superintendent, Black Rock Mining Company, (Wah Chang Corp. subsidiary) Bishop, California, also advised me that ore or concentrates containing wolframite are not acceptable at the U. S. Vanadium Company plant at Bishop because their chemical plant only treats scheelite concentrates. Wah Chang Corporation will purchase plus 20 percent WO_3 concentrates without penalty for impurities at $39 per unit WO_3 f.o.b. Glen Cove, N. Y.

Based on the results of the Bureau of Mines and Garber-McKinley tests, a concentrate of plus 25 percent WO_3 content should be made with an overall tungsten recovery of plus 75 percent.

The following results should be anticipated from the proposed milling plant:

Measured tailings on dump,	120,000 tons	
Estimated WO_3 content,	0.15 %	
Total WO_3 units in tailings,	18,000	
Recoverable WO_3 units @ 75% recovery in a plus 25% WO_3 concentrate,	13,500	
Gross value f.o.b. Glen Cove, N. Y. @ $39 per unit,		$526,500
Estimated tons of 25% WO_3 concentrate @ 0.42% of 120,000 @ 10% moisture,	555	
Freight - truck from mine to Reardan, Wash. @ $4.50 per ton, plus railroad from Reardan to Glen Cove, N. Y. @ $38 per ton, or $42.50 per ton x 555,		$ 23,587.50
Say, ...		$ 24,000.00

Estimated Operating Costs:

Loading and hauling tailings to mill bin,	$0.50 per ton
Milling cost including supplies, labor, power, overhead, etc.,	1.50 " "
Total cost before taxes,	$2.00 per ton
Total estimated cost to load, haul and mill tailings, 120,000 tons x $2.00,	$240,000
Estimated possible profit after deducting freight, operating costs, proposed $85,000 on DMA production loan, but before taxes,	$167,500

The tungsten content of the alluvium and underground ore should add materially to the profits.

Recommendations

The loan should be approved subject to the following conditions:

1. Present mill must be modified according to recommended attached flowsheet or other flowsheet satisfactory to DMA field team.

2. The entire tailings dump of an estimated 120,000 tons must be milled. Sluicing the dump to concentrate the tungsten as originally proposed will result in excessive losses to the extent where the operation will not be profitable.

3. The company shall employ a competent mining engineer and metallurgist satisfactory and agreeable to the DMA field team during the life of the loan or so long as the team considers their services necessary.

John D. Bardill

John D. Bardill

cc: S. M. Shelton
M. E. Volin
DMA (2)
J. D. Bardill
File

FILE COPY
SURNAME:

Ballard
Brady

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

June 14, 1951

Tungsten Mining and Milling Company
711 Hutton Building
Spokane, Washington

In reply please refer
to DMA 144-X

Gentlemen:

Your application for a loan to finance 75 percent of the proposed $55,134 exploration program at the Germania mine has been carefully reviewed by the Defense Minerals Administration.

The Germania mine was exhausted by previous operators, and it is very doubtful if workable orebodies could be found at the south end of the old workings in consequence of the exploration that you propose.

It is therefore necessary that your application for an exploration loan must be denied.

Very truly yours,

Tom Lyon

Tom Lyon
Chairman, Supply Division

TJBallard:ec

CC: Adm. Reading File
Mr. Strobel
Mr. Bradley
Files

6/5/51

Defense Minerals Administration

Review of Application for Exploration Assistance

Docket No. 144-x

Commodity Tungsten

Total Amount $55,134.00

Govt. Participation $41,350.50

1. Name and Address of Applicant Tungsten Mining and Milling Co.
711 Hutton Building, Spokane, Washington

2. Location of Property Germania mine, sec. 13, T. 29 N., R. 37 E., W. M.,
Stevens County, Washington

3. Mineral or metal Tungsten (wolframite) Is it listed in Section 9 of MO-5?

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 Data submitted does not appear favorable for finding much commercial ore in fringe zone of old mine.

c) None

d) Don't know—needs field examination

e) Is there an alternative and favorable project? ~~Substitute~~ diamond drilling for the proposed drifting on the Moltke claim.
(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? Yes

Does the lease have sufficient time to run to cover a future productive period? Yes

*question numbers are those of MF-103

7. Are subordination agreements necessary? Yes

a) MF-201? Have been requested by Weissenborn from applicant.

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 Yes
(Question 14 plus general knowledge of availability)*

c) Accessibility (question 12)* Yes

d) Water (question 13)* Yes

e) Power (question 13)* Yes

Is a field check needed on any of these points? No

9. Does the experience of the applicant appear to be adequate to assure that he can properly conduct the proposed project? (question 4)* Unknown

Is a field check needed on this point? _____

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? _____ If so, attach a draft.

b) Is there an adequate map or sketch of the proposed work? Yes

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

If not, what part of it is? _____

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.

e) Are the cost estimates reasonable? Yes

f) Should more information be requested from applicant? no

g) Is a field examination necessary to complete Exhibit A? no

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? no

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

a) Is it applicable? Yes

b) Sufficient data? Yes If so, attach a draft.

c) Are rents and charges reasonable? yes

d) Is a field check needed? No

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

a) Are there sufficient data? Yes 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? yes

e) Is a field check needed? no

14. Exhibit E (question 23-c)*

a) Is it applicable? No

b) Sufficient data?

c) Reasonable?

d) Field check needed?

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? Field examination now being made in connection with former application for loan to build mill.

The Tungsten commodity committee recommends that the application for ~~and~~ an exploration project be denied. ~~The Germania mine was exhausted by~~ previous operators, and it is very doubtful if workable orebodies could be ~~found at the south end of the old workings in consequence of exploration~~ through a 600-foot crosscut located 100 feet above the adit level of the old ~~mine. The proposal to drift 600 feet on the Moltke vein, if it can be found~~ in bulldozer trenches, is premature. If the vein is found, it could be tested ~~more cheaply by core drilling from the surface.~~

The applicant's statement that the mine contains 35,000 tons of ~~measured ore averaging 2.8 percent of WO_3 is irresponsible. The tonnages noted~~ on the longitudinal projection as "minable at $40 to $50 per unit) were probably estimated before World War II, and are probably not commercial ore at present prices.

Reviewed by: Dwight M. Vemmon

Geo R Holdsar

Date June 12, 1951

Approved Reject without suspension pending further data

Tom Lyon

P. R. Bradley

6-13-51

97692

List of File to Strobel
DMA 144-X - Tungsten
Tungsten Mining and Milling Co.
711 Hutton Building
Spokane, Washington

1- Review of application by Commodity Committee (Form)
1- Copy letter Weissenborn to Strobel 5/31/51
1- Exploration application & attachment
1- MF-100 and attachment
1- Copy agreement Casey & Dillon and Tungsten Mng & Milling
1- " modification " Mrs. Murray " " " "
4- Photostats topogr., geologic & claim map
4- Prints Longitudinal mine section

6/5/51

Defense Minerals Administration

Review of Application for Exploration Assistance

Denied

Docket No. 144-x

Commodity Tungsten

Total Amount $55,134.00

Govt. Participation $41,350.50

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711 Hutton Building, Spokane, Washington

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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 Data submitted does not appear favorable for finding much commercial ore in fringe zone of old mine.

c) None

d) Don't know—needs field examination

e) Is there an alternative and favorable project? Substitute diamond drilling for the proposed drifting on the Moltke claim.
(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? Yes

Does the lease have sufficient time to run to cover a future productive period? Yes

*question numbers are those of MF-103

7. Are subordination agreements necessary? Yes

a) MF-201? Have been requested by Weissenborn from applicant.

b) MF-202 _____

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a) Available manpower Yes

b) Equipment and supplies Yes
(Question 14 plus general knowledge of availability)*

c) Accessibility (question 12)* Yes

d) Water (question 13)* Yes

e) Power (question 13)* Yes

Is a field check needed on any of these points? No

9. Does the experience of the applicant appear to be adequate to assure that he can properly conduct the proposed project? (question 4)* Unknown

Is a field check needed on this point? _____

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

a) Is the project adequately described? Yes

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b) Is there an adequate map or sketch of the proposed work? Yes

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

If not, what part of it is? _____

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.

e) Are the cost estimates reasonable? Yes

f) Should more information be requested from applicant? no

g) Is a field examination necessary to complete Exhibit A? no

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? no

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

a) Is it applicable? Yes

b) Sufficient data? Yes If so, attach a draft.

c) Are rents and charges reasonable? yes

d) Is a field check needed? No

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

a) Are there sufficient data? Yes ~~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? yes

e) Is a field check needed? no

14. Exhibit E (question 23-c)*

a) Is it applicable? No

b) Sufficient data?

c) Reasonable?

d) Field check needed?

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? Field examination now being made in connection with former application for loan to build mill.

The Tungsten commodity committee recommends that the application for ~~and~~ an exploration project be denied. The Germania mine was exhausted by previous operators, and it is very doubtful if workable orebodies could be found at the south end of the old workings in consequence of exploration through a 600-foot crosscut located 100 feet above the adit level of the old mine. The proposal to drift 600 feet on the Moltke vein, if it can be found in bulldozer trenches, is premature. If the vein is found, it could be tested more cheaply by core drilling from the surface.

The applicant's statement that the mine contains 35,000 tons of measured ore averaging 2.8 percent of WO_3 is irresponsible. The tonnages noted on the longitudinal projection as "minable at $40 to $50 per unit) were probably estimated before World War II, and are probably not commercial ore at present prices.

Reviewed by: ~~Dwight W. Lemmon~~

Date June 12, 1951

97692

Dma-144X

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION
WASHINGTON 25, D. C.
So. 157 Howard Street
Spokane, Washington

June 7, 1951

Memorandum

To: L. F. Strobel
Executive Secretary
Defense Minerals Administration

From: Field Team, Region II

Subject: Transmittal of Exploration Contract, Tungsten Mining and Milling Company

Enclosed are five copies of an Exploration Contract drawn up by the Field Team in collaboration with Mr. Paul Casey, President of Tungsten Mining and Milling Company. Five copies of Landlord's Subordination Agreement are attached. Also attached is a letter from Mr. Casey in which he states his approval of drifting included in the contract that was not included in his exploration application previously submitted.

The Field Team believes that the proposed exploratory project is well conceived and that estimates of cost and time are reasonable, and therefore recommends that it be approved.

By Field Team, Region II

A. E. Weissenborn

A. E. Weissenborn, Exec. Officer
(U. S. Geological Survey)

Glenn C. Rice, for:

M. E. Volin, Member
(U. S. Bureau of Mines)

Enclosures

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

So. 157 Howard Street
Spokane, Washington

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(U. S. Geological Survey)

M. E. Volin, Member
(U. S. Bureau of Mines)

Enclosures

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

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A. E. Weissenborn, Exec. Officer
(U. S. Geological Survey)

M. E. Volin, Member
(U. S. Bureau of Mines)

Enclosures

Dma-144 X

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

So. 157 Howard Street
Spokane, Washington

June 7, 1951

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By Field Team, Region II

A. D. Weissenborn, Exec. Officer
(U. S. Geological Survey)

E. E. Volin, Member
(U. S. Bureau of Mines)

Enclosures

Tungsten MINING & MILLING CO.

POST OFFICE BOX 794 ◆ PHONE MADISON 6812 ◆ SPOKANE, WASHINGTON

P. H. CASEY, PRESIDENT AND GEN. MGR.
JOE DILLON, VICE PRESIDENT
L. M. CASEY, SECRETARY
H. C. COOPER, TREASURER

June 5, 1951

Mr. A. E. Weisenborn,
Executive Office,
N. M. A. Field Office,
Region 1,
Spokane, Washington.

Dear Mr. Weisenborn:

This is in reference to our discussion regarding the changes that you have suggested in the Tungsten Mining & Milling Company's proposal for exploring the Germania Mine. These changes provide for an additional three hundred feet of drifting on the Exodus and Norton veins from the proposed tunnel.

I believe that this could be done at about thirty dollars a foot, and this would add another nine thousand dollars to the total cost of the exploration project. I am very much in favor of doing this additional work as it will open up the Exodus and Norton veins as well as permit an easier access to the old Germania workings, which are now rather difficult to get at.

I trust that this additional work can be embodied in the exploration contract, even though it is not called for in our original application for assistance in exploration.

Thanking you for your cooperation, I am

Very truly yours,
TUNGSTEN MINING &
MILLING CO.,

By P. H. Casey

PHC:lc

dmc 144X
(new docket is 2447)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
So. 157 Howard Street
Spokane, Washington

May 31, 1951

Mr. L. F. Strobel
Executive Secretary
Defense Minerals Administration
Department of Interior
Washington 25, D. C.

Dear Mr. Strobel:

Enclosed herewith are four copies of MF-100 and MF-103 for an exploration contract on the Tungsten Mining and Milling Companies, Germania mine, Stevens County, Washington. Please note that this is the same property as Docket DMA-144; however, the new application does not supersede the old, but supplements it. The original application was for a mill to treat the old tailings and elluvial material on the hillside--it is still valid and is still under consideration at this office (a report will be forthcoming in the near future after conference with the applicant regarding revisions in his proposed flow-sheet and some other revisions in his plans). The new application is for underground exploration.

The veins at the Germania mine are narrow, but are remarkably persistent in their lateral extension, although development in the Germania mine itself is reported to indicate that they are decreasing in grade on the lowest level. A very considerable amount of tungsten was produced prior to and during the early part of World War II, mostly from the Exodus vein. The proposed exploration will explore the lateral extension of the Exodus vein and will also explore the Seidlitz group of veins, which have never been extensively developed but which have interesting showings. At previous prices of tungsten, these veins were too narrow to be attractive. At present prices, they appear to be worth some exploration. The proposed exploration appears to be reasonable with the exception that is cited below, and the plan proposed and the estimates of cost and time schedule are all given in considerable detail. The subordination agreement is lacking, but the applicant has stated that he will submit this within the next few days.

The proposed crosscut on the Blucher claim is designed only to intersect the Norton and Exodus veins. This, in my opinion, would not be sufficient to determine whether either vein is of any value in this area and I believe that the Exodus vein should be drifted on to the Northeast to connect with the old Germania workings. The Norton should likewise be opened by exploration. The Exodus drift would also permit access to ore reported blocked out in the Germania workings.

Approximately 200 feet of drifting would accomplish this (the exact distance cannot be determined as the old mine maps do not indicate this beyond doubt), and the work would be accomplished at an additional cost of approximately $6,000. A hundred feet of drifting on the Norton vein would cost another $6,000. I believe that Mr. Casey, the applicant, will agree to do this, but I will forward a statement from him in writing on this matter within the next few days. Because of the extent of stoping on the Exodus vein, the old Germania workings are badly caved and, although it might be possible to clean them out, rehabilitate them, and do the exploration from the lower level of the Germania mine, it might cost more to accomplish this than to drive a new drift in virgin ground as proposed by the applicant.

Sincerely yours,

A. E. Weissenborn

A. E. Weissenborn
Executive Officer, DMA
Field Team, Region II

Enclosures

cc: M. E. Volin

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUN 5 - 1951
LANDON F. STROBEL
Executive Secretary

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
So. 157 Howard Street
Spokane, Washington

May 31, 1951

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Executive Secretary
Defense Minerals Administration
Department of Interior
Washington 25, D. C.

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Sincerely yours,

A. E. Weissenborn
Executive Officer, DMA
Field Team, Region II

Enclosures

cc: M. E. Volin

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
So. 157 Howard Street
Spokane, Washington

May 31, 1951

Mr. L. F. Strobel
Executive Secretary
Defense Minerals Administration
Department of Interior
Washington 25, D. C.

144-X

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Sincerely yours,

A. E. Weissenborn
Executive Officer, DMA
Field Team, Region II

Enclosures

cc: M. E. Velin

COPY

(3)

WAH CHANG CORPORATION
MINERS SMELTERS
TUNGSTEN

MINERALS
AND
METALS

WOOLWORTH BUILDING
NEW YORK 7, N. Y.

Cable Address
"Wahchang" New York
All standard Codes

May 15, 1951

Mr. P. H. Casey
Tungsten Mining & Milling Co.
P. O. Box 794
Spokane, Washington

Dear Mr. Casey:

Thank you for your letter of May 11th.

For 20% material or higher, we will pay $38, regardless of impurities, F.o.b. our plant and for 65% material meeting P-57 Specifications, $65. If the material is high grade but does not meet P-57 Specifications, we will negotiate a price after the impurities are determined by Messrs. Ledoux & Co. Since the prices we have mentioned are F.o.b. our plant, it is not necessary for us to quote you on carload or less than carload basis. You are in a better position to determine the freight charges from Spokane, Washington to Glen Cove, N. Y.

In regard to the 3rd paragraph of your letter, we are in this case processors. According to our understanding of the regulations, you can sell to us and we can buy from you within the OPS regulations. If we buy ore and process it, we will have to report it to the Government who will allocate accordingly. If you are required to report disposition of your production to the Government, you can inform them that it was sold to us for resale or processing when required.

We are very glad to know that you are getting along well and that you will soon have a shipment to make. I would appreciate it if you will let us know how many tons you expect to produce each month and the approximate quality of your production.

Always at your service,

Sincerely yours,

WAH CHANG CORPORATION

K. C. Li
Chairman

KCL/mb

COPY

WAH CHANG CORPORATION
MINERS SMELTERS

July 27, 1950

AIRMAIL

Mr. P. H. Casey:

Referring to the last paragraph of Mr. K. C. Li's letter to you dated July 25th, we wish to give you our Plant laboratory's analysis of the 9 bags of Tungsten Concentrates as follows:

H2O	-	.15	S	-	11.11
WO3	-	53.32	As	-	.21
Sn	-	trace	P		trace

The material is coarse and in the neighborhood of plus 20.

Our Plant has asked that you kindly let us know if they should experiment with and treat this material for your account. Will you please advise us by return mail.

Very truly yours,

WAH CHANG CORPORATION

T. F. Moran
Treasurer

TFM:ap

COPY

DATE AUGUST 7, 1950

REPORT OF WEIGHT AND ASSAY

ASSAY FOR

MARKS

EX. TUNGSTEN MINING & MILLING COMPANY

TUNGSTEN ORE

9 BAGS

GROSS WEIGHT _ _ _ _ _ _ _ _ _ _ _ _ _ _ 1,086 LBS.

NET WEIGHT _ _ _ _ _ _ _ _ _ _ _ _ _ _ 1,071 LBS.

* * *

MOISTURE - .15%

AFTER DRYING:

TUNGSTIC OXIDE (WO3) _ _ _ _ _ _ _ _ _ _ _ _ _ 53.32%

WAH CHANG SMELTING and REFINING COMPAN
of AMERICA, Inc.

COPY

NEW york 7, August 15, 1950

Tungsten Mining & Milling Company

W 2207 Riverside, Apt. 104, Spokane, Wash.

In account with WAH CHANG CORPORATION
WOOLWORTH BUILDING
233 BROADWAY

---

9 bags Tungsten Ore

1,071 lbs. net weight
2 " less moisture .15%
1,069 " net dry weight

WO3 - 53.32%

Stu WO3 - 28.4995 @ $21.00 per STU WO3	$ 598.49	
Less: Freight to Wah Chang Smelting and Refining Company of American, Inc.	59.07	
		$ 539.42

WAH CHANG CORPORATION

FS:ra

COPY

NORTHERN PACIFIC RAILWAY COMPANY

May 17, 1951
File J-71-A

Mr. P. H. Casey
Tungsten Mining & Milling Co., Ltd.
2230 West Pacific, Apt. 6
Spokane, Washington

Dear Mr. Casey:

Referring to your recent discussion with Mr. Kirkvold about movement of Tungsten ore to New York.

Rail rates are as follows: $1.88 per CWT with carload minimum of 60,000 lbs; LCL rate is $6.00 per CWT. These rates apply from either Reardan or Spokane.

Trust we will have the pleasure of handling some of your tonnage.

Yours very truly,

General Agent

TOK/n

LANDON F. STROBEL

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
So. 157 Howard Street
Spokane, Washington

Tungsten Mining + Milling Co.

May 2, 1951

RECEIVED
MAY 4 - 1951
LANDON F. STROBEL
Executive Secretary

Mr. P. R. Bradley
Chairman, Tungsten Commodity Committee
Defense Minerals Administration
Department of Interior
Washington 25, D. C.

Dear Mr. Bradley:

This letter is an interim report on the application for a production loan at the Germania mine, Stevens County, Washington, Docket DMA-144. I understand that Mr. C. Girard Davidson will probably be in to see you concerning the application and I feel that, although we cannot give you a final decision on the application, you will undoubtedly wish to be informed concerning its status.

The Germania application involves the recovery of tungsten from old tailing dumps, from the creek bottom below the dumps, and from elluvial material on the hillside above the mill. Appraisal of the application has been hampered and delayed because, until quite recently, the entire area was covered with two to three feet of snow, which made an examination impossible.

We have now made a contour map by planetable of the dump and have taken a number of samples from two auger holes and from grab samples at various places in the dump and on the creek bottom. No attempt was made to sample the dump completely, but the objective was to obtain a number of more or less typical samples that would give an approximate check on the operators' claims as to grade. Neither auger hole penetrated completely through the dump--one was lost at a depth of 20.5 feet; the other at 12 feet, where it hit a boulder.

On the basis of the planetable map, we conclude that the dump contains approximately 128,000 tons of mill tailing, which is not far out of line with the amount claimed by the applicant. The dump samples, although admittedly incomplete, averaged 0.135 percent WO_3, an amount that approximates the 0.15 percent WO_3 claimed by the applicant. Samples from the creek bottom averaged only 0.12 percent WO_3, which does not confirm the applicant's belief that there is a heavy concentration of tungsten here. This is not surprising, however, as due to weather conditions, the samples were from only the upper layer of alluvium; it might be expected that the tungsten will tend to concentrate near bed rock.

DMA-144

C. GIRARD DAVIDSON
ATTORNEY AT LAW

April 27, 51

PORTLAND, OREGON
610 EQUITABLE BUILDING
BEACON 4151

WASHINGTON, D. C.
715 CAFRITZ BUILDING
REPUBLIC 6444

MF-500

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

REFERENCE SLIP

DATE 5/4/'51

REFERRED TO:
1. Mr. Bradley
2.
3.
4.

Rec. 3624

FOR:

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

REMARKS:

Acct'd by DMA - MAY 1 1951
MGM

Check (X) before the items needing attention.

LANDON F. STROBEL

GPO 16—63815-1

Initials of sender.

Philadelphia, Pa.
April 26, 1951
Martin D. C. Levin
President
Davidson Mining
Corp., C.G.D called
& received Washington
Rept. on Arizona.

Experimental recovery of tungsten in a sluice box by the operators suggests that the creek bottom is moderately rich in tungsten. The tungsten content of the creek bottom is not particularly significant in any event, as the tonnage involved is not large.

General Electric mined considerable elluvial material from the hillside in back of the mill and undoubtedly some of the material remains. As there appears to be no practicable way of determining the average grade except by means of a large-scale mill run test, no attempt was made to estimate grade and tonnage. It is my feeling that if the proposal cannot be justified on the tonnage in the dump, we had better forget the whole business.

The amount of tungsten recoverable from the dump is not known at present, but the separation of even small amounts of a heavy mineral like tungsten from a predominantly quartz gangue may not be too difficult a problem unless the bulk of the tailings were in slime. As you know, the difficult separation of scheelite from garnet has been successfully accomplished on a commercial scale (in the Osgood Mountains, Nevada) from ore that had to be mined and crushed and that contained only 0.35 percent WO_3. However, the question of recovery is still an open one. Tests by the Bureau of Mines laboratory are in progress. Until these tests are completed, we cannot give a definite decision; however, although the grade is admittedly low, it is my own opinion that at present prices for tungsten, the operation could be successful--barring unexpected difficulties with the metallurgy. Even if only 0.10 percent WO_3 were recovered per ton of dump, a production of 12,800 units of WO_3 from the dump might be expected. I should add that the above represents my own opinion and not necessarily that of the field team. I had expected to talk to Mr. Volin of the Bureau of Mines at Albany by telephone, but because I forgot about daylight savings time, was unable to contact him.

We shall advise you immediately after the Bureau tests are completed.

Sincerely yours,

A. E. Weissenborn

A. E. Weissenborn
Executive Officer, DMA
Field Team, Region II

cc: M. E. Volin
Glenn Reed

BUREAU OF MINES
WASHINGTON, D. C.

MAY 4 11 24 AM '55

FILE COPY
SURNAME:

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

Mellard
Mylcolm
Strobel

April 20, 1951

Hon. Warren G. Magnuson
United States Senate
Washington 25, D. C.

In reply please refer to
DMA-144

Dear Senator Magnuson:

This will acknowledge receipt of your memorandum dated March 5, with attached correspondence from your constituent, Mr. P. H. Casey, of Tungsten Mining & Milling Co., Spokane, Washington.

The various data submitted by the company is not sufficiently complete to pass on the application for a loan. However, we have requested the DMA Field Team to examine the property and report on their findings to the Tungsten Branch of DMA.

A first visit to the property was made in January, but due to heavy snows very little could be accomplished. The matter has again been brought to the attention of the Field Team, however, and it is expected their report on the property will be forthcoming as soon as weather conditions permit.

Sincerely yours,

JAMES DOUGLAS

Acting
Administrator

Enclosure

TJBallard:mem

cc: Adm. Reading File
Mr. Strobel
Mr. Bradley
Files

Dmc - 144

256

FILE COPY
SURNAME:

Lemmon
Gehan

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

March 7, 1951

Mr. A. E. Weissenborn
Executive Officer, DMA Field Team, Region II
So. 157 Howard Street
Spokane 8, Washington

DMA docket number 144
Germania tungsten

Dear Mr. Weissenborn:

Thank you for the copy of Hobbs' letter of January 18 regarding a visit to the Germania mine. The original letter was apparently mislaid in DMA.

We appreciate the difficulties involved in checking the applicant's statement of reserves at this time of year, but feel that you should be in a better position to make a recommendation than we are here. The statement by Henry Becker suggests that the material is of very low grade and could probably not be worked successfully without good management and planning. Will you give me your recommendations about the following?

1. Management of the company
2. Metallurgy of the proposed plant
3. Adequacy of funds requested
4. Present status of equipment on property
5. Feasibility of the proposal, especially with regard to mining and milling costs

The price basis for tungsten has not been definitely established, but our consideration of loans is tentatively based on the assumption that a ceiling of $65 per unit will be imposed, and that the price will not drop below $50 for a five year period.

Sincerely yours,

/s George B. Holden
for P. B. Bradley, Jr.
Chief, Tungsten Branch

DMLemmon:gt

Copies to: ~~Surname copy~~ Mr. Douglas
Dr. Boyd's Adm. reading file
Mr. Strobel
Mr. Bradley
Files

Germ 144

856

COPY

TUNGSTEN MINING & MILLING CO.
POST OFFICE BOX 794 - Phone Madison 6812
SPOKANE WASHINGTON

March 2, 1951

Hon. Warren G. Magnuson
State of Washington
Washington, D. C.

Dear Sir:

Several months ago we made application to the Defense Minerals Administration for a loan of $50,000.00 to be used for payroll and purchase of bulldozer.

We know that you are aware of Tungsten being in very short supply and the government is stockpiling the same, also the government is supposed to have a program of helping small business.

We are operating the old Germania mine which was operated by the General Electric Company during the last war. The effort to put the Germania back into production was not done on account of the Korean incident, as we have been working and developing this property for the last five years. We have completely renovated the mill and buildings and have ninety per cent of our machinery and equipment installed. We also spent several years in surveying and testing the placer ground thoroughly and our engineers report, which the department has on hand with our application, shows that we have over fifty thousand units of Tungsten on top of the ground without doing any mining. With this additional capital we have applied for we can be producing tungsten concentrates within the next sixty days.

I was informed here by Mr. Weissenborn of the Geological Survey that our application was the first to go in from this district, however, I realize they must be swamped with work in Washington in that department which would necessarily slow up their action.

There is no doubt in my mind that you are certainly behind helping industry and mining in the State of Washington and I would certainly appreciate it if there is anything you could do to help cut the red tape and speed the processing of our requested loan. Another thing

I might mention is that we have spent over a hundred thousand dollars in developing and getting our plant ready to go.

Our docket number with the Defense Minerals Administration is DMA-144.

Thanking you for anything you might do for us on this matter, I am

Very truly yours,

(sgd.) P. H. Casey

P. H. Casey

PHC:lc

c
o
p
y

LANDON T. STROBEL

Mr. Ridgway

MAR 15 1951 DMA-144

Tungsten MINING & MILLING CO.

POST OFFICE BOX 794 • PHONE MADISON 6812 • SPOKANE, WASHINGTON

Answered by D. Ballard 4/20/51

P. H. CASEY, PRESIDENT AND GEN. MGR.
JOE DILLON, VICE PRESIDENT
L. M. CASEY, SECRETARY
H. C. COOPER, TREASURER

March 2, 1951

DMA 144

Hon. Warren G. Magnuson,
State of Washington,
Washington, D.C.

Dear Sir:

Several months ago we made application to the Defense Minerals Administration for a loan of $50,000.00 to be used for payroll and purchase of bulldozer.

We know that you are aware of Tungsten being in very short supply and the government is stockpiling the same, also the government is supposed to have a program of helping small business.

We are operating the old Germania mine which was operated by the General Electric Company during the last war, The effort to put the Germania back into production was not done on account of the Korean incident, as we have been working and developing this property for the last five years. We have completely renovated the mill and buildings and have ninety per cent of our machinery and equipment installed. We also spent several years in surveying and testing the placer groundthoroughly and our engineers report, which the department has on hand with our application, shows that we have over fifty thousand units of Tungsten on top of the ground without doing any mining. With this additional capital we have applied for we can be producing Tungsten concentrates within the next sixty days.

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I might mention is that we have spent over a hundred thousand dollars in developing and getting our plant ready to go.

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Thanking you for anything you might do for us on this matter, I am

Very truly yours,

P.H. Casey

P.H. Casey

PHC:lc

MAR 19 1951

Telephone
Beacon 4151

Washington, D. C.
815 Cafritz Building

C. GIRAD DAVIDSON
Attorney at Law
Equitable Building
Portland 4, Oregon

Copy

February 26, 1951

Re: DMA no. 144 Tungsten Mining and Milling Company

Dear Al:

You will recall that when I was in Spokane about a month ago we talked about the Tungsten Mining and Milling Company and the possibility of that Company securing financial assistance in the production of tungsten. You stated that you had sent the file on to Washington and I indicated that I would do what I could to push it through.

I have just returned from Washington, and while there I discussed the matter with Tom Miller, Associate Director of the Bureau of Mines; Tom Nolan, Assistant Director of the Geological Survey; and, Mr. Bradley of the Defense Minerals Administration who is particularly responsible for tungsten. Tom Nolan is familiar with the Germania mine and we talked about it to some extent. Mr. Bradley said that they had requested information from Mr. Hobbs of the Geological Survey on this but there is nothing in the file to indicate that he had ever replied. The files back there are rather mixed up and this would not mean that he has not replied. I wonder if you would mind talking to Mr. Hobbs about it and, if possible, get him to write them again using the above file number of the Defense Minerals Administration because that is the only way they will get it to the right man.

I may get over to Spokane in the next week or so. If I do, I certainly will drop in and see you.

With all good wishes,

Sincerely yours,

C. Girard Davidson

Mr. A. E. Weissenborn,
Regional Director,
United States Geological Survey,
Spokane,
Washington.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
So. 157 Howard Street
Spokane 8, Washington

144

January 18, 1951

Air Mail

Mr. Dwight M. Lemmon
Mineral Deposits Branch
U. S. Geological Survey
Washington 25, D. C.

Dear Dwight:

The day before your letter arrived requesting information on the Germania placer proposition, Al Weissenborn and I had visited the property with Mr. Casey, the applicant for a production loan. Our trip was what might be termed a token visit since a foot of snow and an incipient new storm discouraged any thought of an appraisal of the potential placer material. We were able, however, to get a better picture of the situation and can pass along to you some of our impressions.

There is no question but what a considerable amount of wolframite and scheelite remains in the old dumps and tailings, and more likely than not, recoverable in part. Only a part of the eluvial material has been adequately tested--some by milling when General Electric owned the property and some by sampling. A moderate tonnage of such material is available, but the exact amount is unknown. The same is true about the volume of what the company calls "creek bottom enrichment." This is true placer material derived in part from a natural reworking of old tailings by spring run-off and a concentration of tungsten minerals in the narrow stream bed below the tailings pond.

In all three types of material--eluvial, old tailings and dumps, and stream placer--the big question is grade. We have no reliable data of our own on this. The Bureau of Mines is reported to have taken samples of the tailings pile, but as yet we cannot run down the results. When we do, the information will be sent to you. It is reported that General Electric Company sampling showed the eluvial material to average 0.3 percent WO_3 and the tailings to average 0.17 percent WO_3.

We have written to Ralph Thurston at Philipsburg, Montana, to get what information he may have on the Black Pine mine. He has visited the place recently and has knowledge of the Bureau of Mines project. When we get his dope, we will send it to you post haste.

Welcome back to the fold, both of you! And what a welcome, huh? I hope that Paul and I didn't do too much damage to the "tungsten program." We will try our best to get what dope you need from these parts, so call on us when necessary.

With best wishes, I am,

Sincerely yours,

Warren

Warren Hobbs

FILE COPY
SURNAME:

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

Geehan
Hedges
Bailey

January 12, 1951

Mr. A. J. Walsh
Acting Commissioner
Emergency Procurement Service
General Services Administration
Washington 25, D. C.

My dear Mr. Walsh:

Reference is made to your letter of January 2, regarding the proposal of Tungsten Mining and Milling Co. of Spokane, Washington.

This firm has applied for a loan to cover the completion of a mill and for operating capital. A preliminary report has been requested from a geologist of the U. S. Geological Survey, who is familiar with the property. The reports you forwarded will be helpful in the consideration of the proposed loan, Docket No. DMA-144.

Sincerely yours,

JAMES BOYD

Administrator

JAS

RWGeehan/mjb

Copy to: Administrator's file
J. H. Hedges
R. W. Geehan
Ferrous M&A
Files

DMA-144

858

GENERAL SERVICES ADMINISTRATION

Emergency Procurement Service
Washington 25, D. C.

Stockpiling
Acc. 1/12/51

JAN 2 1951

Proposal
retained in
Stockpiling
Proc. file

RESTRICTED

"This material contains information affecting the national defense of the United States within the meaning of the Espionage Laws, Title 18 U. S. C., Sections 793 and 794. Its transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law."

Dr. James Boyd
Acting Deputy Director
Defense Minerals Administration
Department of the Interior,
Washington 25, D. C.

Dear Dr. Boyd:

Attached for appropriate action by your Administration is a letter proposal dated December 14, 1950, from the Tungsten Mining and Milling Co. of Spokane, Washington.

It will be noted that in the fifth paragraph of the letter the supplier states that negotiations are in progress between itself and the Bureau of Mines regarding a loan to complete a mill and for operating capital.

Two reports relative to the producing property, one prepared by G. Donald Emigh and the other by Henry Becker, are also attached for your information.

Very truly yours,

A. J. Walsh,
Acting Commissioner

Enclosures

BUREAU OF MINES
WASHINGTON, D.C.
JAN 4 8 03 AM '51

GENERAL SERVICES ADMINISTRATION

Emergency Procurement Service
Washington 25, D. C.

JAN 2 1951

RESTRICTED

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Acting Deputy Director
Defense Minerals Administration
Department of the Interior,
Washington 25, D. C.

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Two reports relative to the producing property, one prepared by G. Donald Emigh and the other by Henry Becker, are also attached for your information.

Very truly yours,

A. J. Walsh,
Acting Commissioner

Enclosures

FILE COPY
SURNAME:

R.W.H.

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

December 22, 1950

Mr. P. H. Casey, Pres. & Gen. Mgr.,
Tungsten Mining & Milling Company
P. O. Box 794
Spokane, Washington:

Dear Mr. Casey:

Reference is made to your letter of December 5, requesting a loan of $50,000 for operation of the Germania tungsten mine, Stevens County, Washington.

The proposal is now under consideration. It is probable that a field examination of the deposit will be necessary before final action is taken.

In future correspondence regarding this proposal, please refer to Docket No. DMA - 144.

Very truly yours,

ROBERT H. RIDGWAY
Acting Chairman
Ferrous Metals Committee

RWGeehan/mjb

Copy to: R. H. Ridgway
R. W. Geehan
Files

Docket 144

Letter & proposal kept in Mr. Geehan's file

DMA-144
RE

108901

Tungsten MINING & MILLING CO.

POST OFFICE BOX 794 • PHONE MADISON 6812 • SPOKANE, WASHINGTON

P. H. CASEY, PRESIDENT AND GEN. MGR.
JOE DILLON, VICE PRESIDENT
L. M. CASEY, SECRETARY
H. C. COOPER, TREASURER

December 14, 1950.

General Services Administration,
Emergency Procurement Service,
Washington 25, D.C.

Gentlemen: Att. Raymond Eberly.

Sorry that your letter of October 27th was not answered sooner, but I have been away for some time.

As you requested I am enclosing herewith a report from G. Donald Emigh and also one from Henry Becker, and you will note that the property is the old Germania Mine located in Stevens County, Washington, which was worked by General Electric in the early thirties.

In order for our concentrate to meet the specifications in P-57, it will be necessary that we ship our material to the Wah Chang Corporation, Long Island to have it up-graded and some of the impurities removed. It is possible for us to turn out a sixty-five or seventy per cent concentrate at our mill, but economically it may be much more profitable to ship a lower grade concentrate.

In view of these facts we would like to make a proposal to ship six minimum carloads, thirty tons each of WO_3 as follows: one carload in May, June, July, August, September and October, the price to be the market quotation on day of shipment plus the freight to New York. Our shipping point would be Spokane, Washington.

The dates that I quote for delivery would depend entirely on negotiations that are now in progress with the Bureau of Mines regarding a loan to complete our mill and for operating capital until a shipment can be made. If this loan is granted we can be in operation within sixty days, as our mill is almost completely ready to go.

At the expiration of the contract in October wewould have enough developement work completed to be able to estimate our future shipments.

We do not have the exact record of the production of the Germania Mine, but no doubt the Bureau of Mines has this information. For milling and concentrating we are using a washing plant, jaw crusher two sets of roll crushers, vibrating screen, three Hartz jigs and

STRATEGIC AND CRITICAL
MATERIALS BRANCH
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BUREAU OF FEDERAL SUPPLY

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one Galvez jig for the clean-up of the fines.

In July we shipped a thousand pounds of concentrates to Wah Chang which we had run through a pilot mill and the following is the analysis he returned to us:

H_2O	-	.15	S	-	11.11
WO_3	-	53.32	As	-	.21
Sn	-	trace	P	-	trace
Mo		.11			

Trusting this is the information you desire, we remain

Very truly yours,
TUNGSTEN MINING & MILLING CO.,

P. H. Casey

P.H. Casey
President

PHC:lc
2 Enc.

STRATEGIC AND CRITICAL
MATERIALS BRANCH
DEC 18 2 26 PM '5
BUREAU OF FEDERAL SUPPLY

~~DIRECTOR~~
R B Moore

DMB-144

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
So. 157 Howard Street
Spokane 8, Washington

December 7, 1950

Dr. James Boyd
Deputy Administrator
Defense Minerals Administration
Department of Interior
Washington 25, D. C.

Dear Dr. Boyd:

I am enclosing a request for a DMA production loan from the Tungsten Mining and Milling Co. of Spokane, Washington, operators of the Germania mine in Stevens County, Washington.

As yet we do not have a supply of loan application forms; consequently, I have requested Mr. Casey, President of the company to write up his proposal and send it to me. This proposal is enclosed, together with a flow sheet and a report by Mr. Henry Becker, Superintendent of the mine before and during the time that the General Electric Co. operated the property. Probably more information will be required before a decision can be reached; the information will, I hope, be sufficient for preliminary consideration.

The proposition is a loan for equipment and salaries to permit the recovery of tungsten from dumps, float (the "breakover" of Mr. Becker's report), and alluvial material in the creek--including tailings washed into the streams and, in part, reconcentrated there. It does not involve the mining of "new" ore from the mine, although Mr. Casey believes that this might be done later. Although neither Mr. Casey nor Mr. Becker so state in their reports, I have heard that there is an appreciable tonnage of ore broken in the old stopes that might also be treated. If Mr. Casey's facts can be substantiated, the proposition seems worthy of serious consideration.

The Spokane office of the Bureau of Mines report that they have little or no pertinent information on the property. There is some information in the Survey files here and I think it possible that there may be more in the Survey's commodity files in Washington. Mr. S. W. Hobbs of the Spokane USGS staff is familiar with the property; he is now enroute to Spokane from Washington and should arrive next week. I will forward Mr. Hobbs' appraisal of the proposition to you as soon as possible.

RECEIVED
DEC 13 1950
BUREAU OF MINES
OFFICE OF DIRECTOR

Should the DMA regard the property as eligible for a production loan, we will undoubtedly be required to substantiate Mr. Casey's estimates of grade and tonnage of dumps, float, and alluvial material and check his proposed method of recovery. Most of the work would seem to fall to mining engineers and metallurgists of the Bureau of Mines. The proposition should stand on its own feet and should not require the finding of new ore, although if it were sound in itself and the chances of finding more ore in the mine were considered good, Mr. Casey's case would be strengthened. We do not plan to make any field examination until instructed to do so by the Operating Committee.

Will you please advise me whether communications of this nature should in the future be sent to you as Deputy Administrator or direct to Mr. Williston as Chairman of the Operating Committee?

Sincerely yours,

A. E. Weissenborn

Enclosures

A. E. Weissenborn
Regional Geologist

cc: Glen Reed, Bur. of Mines, Albany, Ore.
Olaf N. Rove, USGS, Washington, D.C.

BUREAU OF MINES
WASHINGTON, D. C.

DEC 13 7 46 AM '50

DMR-144

Tungsten MINING & MILLING CO.

POST OFFICE BOX 794 • PHONE MADISON 6812 • SPOKANE, WASHINGTON

P. H. CASEY, PRESIDENT AND GEN. MGR.
JOE DILLON, VICE PRESIDENT
L. M. CASEY, SECRETARY
H. C. COOPER, TREASURER

December 5, 1950

U.S. Department of Geological Survey,
Spokane, Washington.

Dear Sir: Att. Mr. A.E. Weissenborn.

Several days ago I contacted Mr. Gray of the Spokane Eastern Bank regarding a loan for our mining operation. He informed me that it was impossible for the bank to handle this loan and suggested that I contact you in regard to the new mining loans being made by the government.

Our mill is nearly ready to go into operation as we have approximately ninety per cent of our machinery installed and all of our buildings remodled and repaired. We expect to be able to mill between four and five hundred tons of ore a day and to be able to ship a car load of sixty-five to seventy per cent Tungsten concentrates at thirty to forty-five day intervals.

At this point we find ourselves considerably slowed up on account of lack of finances. We are still in need of some equipment and finances for payroll and salaries for a month or six weeks period until our first car of concentrates is milled.

We would greatly appreciate it if you will give us what information you have regarding these loans as we would like to make an application for same. Our requirements for equipment and payroll would be approximately fifty thousand dollars.

Thanking you, we are

Very truly yours,
TUNGSTEN MINING & MILLING CO.,

P.H. Casey

P.H. Casey

PHC:lc

DMR-144

Tungsten MINING & MILLING CO.

POST OFFICE BOX 794 • PHONE MADISON 6812 • SPOKANE, WASHINGTON

P. H. CASEY, PRESIDENT AND GEN. MGR.
JOE DILLON, VICE PRESIDENT
L. M. CASEY, SECRETARY
H. C. COOPER, TREASURER

Report on the old Germania Mine, Stevens County, Washington, now operated by the Tungsten Mining & Milling Company.

1. The property consists of some fifty claims of patented and leased ground.

2. BUILDINGS & EQUIPMENT.

   Blacksmith shop, bunk house, drying shed and tool shed. These buildings have been repaired and in condition for operating. The bunk house is equipped with modern plumbimg, oil heat, propane gas for cooking and hot water. The roads to and on the property are in good condition.

   The machinery on the property and mostly installed, includes the following: Washing plant, crusher, vibrating screen, two sets of crusher rolls, one Galvez Jig, material for three Hartz Jigs, electric motors for all machinery, Diesel Power Plant with 60 KW Generator, Mill, blacksmith shop and bunk house all wired with switches and starters installed, Acetlyne Welding Equipment, Lincoln Electric Welding Equipment mounted on utility motor truck, one Allis Chalmers Dozer, one five ton Auto Car dump truck, one new Studebaker 3/4 ton Pickup, miscellaneous tools, pipe, etc. Two fifty thousand gallon wooden water tanks, one completely installed and in excellent condition.

3. Amount of ore in dump and placer ground on hillside that was a breakover from the main vein. A conservative estimate of one hundred and fifty thousand tons in the dump averages .16% of WO3, or twenty four thousand units. The creek bottom, average width of about twenty feet - four feet deep - seven hundred to a thousand feet long from which thirty two samples were taken that averaged $132.00 per ton at the old price of $28.50 per unit, and there is approximately from four to five thousand tons in this area of the creek bottom. There is approximately two hundred thousand tons of breakover from the vein on the hillside just above the hill. A large tonnage has previously been run from this hillside averaging three pounds of Tungsten to the ton.

Tungsten MINING & MILLING CO.

POST OFFICE BOX 794 • PHONE MADISON 6812 • SPOKANE, WASHINGTON

P. H. CASEY, PRESIDENT AND GEN. MGR.
JOE DILLON, VICE PRESIDENT
L. M. CASEY, SECRETARY
H. C. COOPER, TREASURER

4. There are six known veins on the property that should be prospected by either diamond drilling or driving on the vein itself, also extensive prospecting can be done by buldozer as we have already uncovered several veins in this manner.

5. ADDITIONAL FUNDS NEEDED.

Our work has been slowed down in the last month on account of lack of funds. We estimate we will need approximately fifty thousand dollars in order to get out our first car of concentrates. Money is needed for salaries, general running expense and machinery - namely a new angle buldozer as two are necessary on the property, pipe, pumps, dragline and other miscellaneous items.

With the necessary amount of funds we should be able to have our first car of concentrates ready for shipment in March, unless an unusually severe winter hinders our operation.

The estimated appraisal of buildings, tools, machinery and equipment, exclusive of land or mining claims, is $75,000.00.

DMR-144

REPORT

ON THE TUNGSTEN PLACER POSSIBILITIES

AT THE GERMANIA MINE

OF THE

TUNGSTEN MINING AND MILLING COMPANY

- - - - - - - - - - -

The writer being thoroughly familiar with the above property will attempt to give as close an estimate as possible of tonnages and values contained in tailing dumps, mine waste dump and break-over of vein matter, scattered over a wide area below the out-croppings of the Germania mine vein system.

Having been superintendent of operations at the Germania Mine, before and during the ownership of the General Electric Company, the writer has run thousands of tons of this material through the mill and knows through experience the average recovery (three pounds of 70% tungsten concentrate) on such an operation.

There are at present about 200,000 tons of break-over left on the hill, containing according to mill-run about 300 tons of 70% tungsten concentrate, or 21,000 units.

It is very difficult to make an estimate of mill tailings left below the mill building, as large quantities of them have been worked farther down the creek by spring freshets.

The writer estimates about 150,000 tons. Samples taken over the dumps at random average 0.16% of WO_3, or 24,000 units; but

here we must consider that we will lose perhaps 25% in running these tailings through the mill again, but we still would recover 18,000 units.

Next, we will consider a strip of creek-bottom, where tailings from the mill dump have been washed over and the heavier middlings and tungsten particles have been deposited.

The average width of this strip is about 20 feet, depth about 4 feet, and 700 feet in length.

Tonnage would be as follows: 20 x 4 x 700 equals 56,000 Cubic Feet, or 3111 tons.

Thirty-two (32) samples taken by C. F. Dean on this piece of ground average $132.00 per ton, at a price of $28.50 dollars per unit. We would have about 4.6 units per ton; and at a 75% recovery, we still would have 10733 units recovered.

There is a mine waste dump about 100 feet north of the mill buildings, containing by estimate about 2500 tons apparently running better than 5 pounds of 70%, or 437 units.

Summarizing, we now have the following:

Break-over from Vein Outcroppings	21,000 units
Mill Tailing Recoverable	18,000 units
Creek-bottom enrichment	10,733 units
Mine Waste Dump	437 units
TOTAL - - - - - - - - -	50,170 Units

UNDERGROUND WORKINGS

Ore left in the underground workings of the Germania Mine, left there by the General Electric Company on account of the low price per unit ($14.50) and the narrowness of the veins (3 to 6 inches).

These veins can be worked at the right price, and I am giving the tonnage according to Hewitt's survey, a copy of which is attached:

9,750	tons workable	at	$35.00 to $45.00	per unit
22,200	"	"	" $45.00 to $55.00	per unit
3,600	"	"	" $40.00 to $50.00	per unit

or a total of 35,550 tons minable at a price of about $45.00 per unit.

I am referring you now to a copy of G. Donald Emigh, which is attached to this report. Mr. Emigh was the geologist for the General Electric Company.

There are good surface showings on the Seidlitz and Boon claims, but not much has been done to prove or disprove any tonnage here.

The Norton vein mentioned by Emigh on Page 7 of his report is now included in a lease of Indian land covering the south extension of the Germania vein system, and this lease is owned by the Tungsten Mining & Milling Company. Here also, mostly surface work has been done, but a good showing exists near the south end of this lease (about 18 inches of quartz with tungsten) in the face of a 100 foot tunnel, and this may be the southern extension of the Exodus vein system; but further development work would have to be done to prove this.

MACHINERY AND EQUIPMENT REQUIREMENTS

Milling and concentrating of tailings and break-over material would require the reconditioning of the mill building now on the property; the installation of equipment such as: Washing plant, jaw crusher, crushing rolls, screens (either revolving or vibrating) Harts jigs (3), one concentrating table, conveyor belt, feeder, belting, pulleys, shafting, etc., and of course an ample power plant.

The writer makes an estimate of $40,000 for this purpose, but quite a saving might be made by purchasing used machinery.

A flow-sheet for this type of ore is attached to this report.

Henry Becker.

Date May. 22. 1950

LAMP DEPARTMENT
GENERAL ELECTRIC
COMPANY

TUNGSTEN MINE DIVISION
H. H. BARROWS, MANAGER

1648 SIXTEENTH STREET
OAKLAND, CALIF.

March 15, 1943.

Mr. R. B. Greene,
Germania Consolidated Mines, Inc.
306 Park Place,
Spokane, Washington

Dear Mr. Greene;

We have decided to discontinue the operation of our Germania Mine and are contemplating moving our equipment to one of our other properties.

Our Germania property still has some good values underground and considerable placer values which we feel could be profitably operated at the present price of $30.00 per unit but due to the shortage of man-power and our desire to concentrate our activity to fewer properties, we have decided to hold the Germania Mine for future reserve.

On the property we have a completely equipped 250 ton mill, and R D 7 Catterpilar with bulldozer, P & H shovel two dump trucks, two portable and one stationary compressors a mine locomotive and complete drilling equipment and supplies.

Would you be interested in purchasing our equipment at its depreciated value and leasing the Mine on a 10% royalty basis.

The equipment would be conservatively priced but we must have cash for the same.

If you are interested, please let us know as soon as possible as we are planning to move the equipment before April 1st.

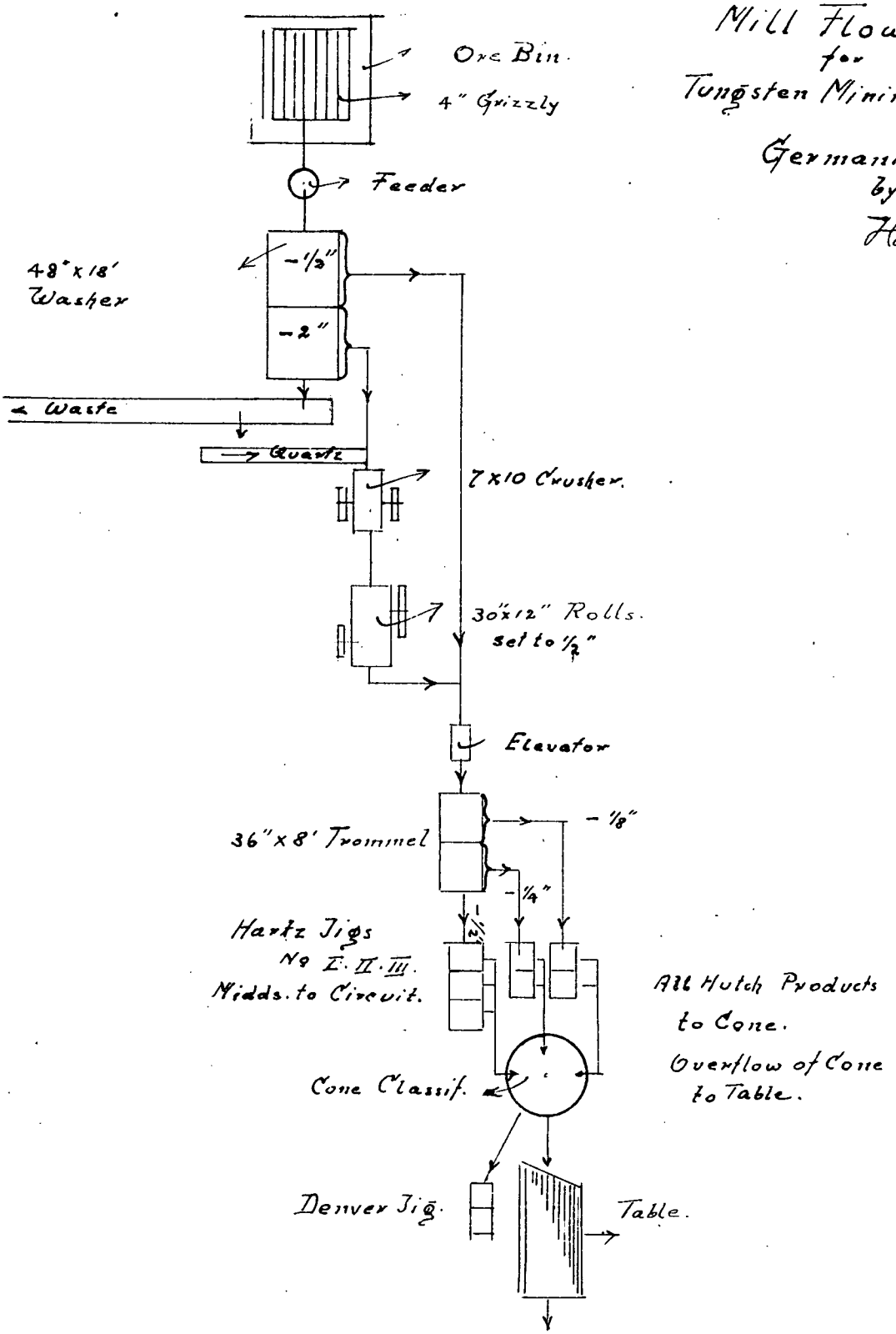
Yours very truly,

H H Barrows.

H H Barrows

DMR-149

Mill Flow Sheet
for
Tungsten Mining & Milling Comp's
Germania Mine.
by.
Henry Becker.



Form MF
(April

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 144-X

Date received 6-5-51

Participation

Tungsten Mining & Milling Co.
711 Hutton Building
Spokane, Wash.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUN 5 - 1951
LANDON F. STROBEL
Executive Secretary

May 28, 1951

Name and address of applicant

FILL IN THIS BLOCK

Date of application May 28, 1951

Estimated cost $55,134.00

Mineral or metal Tungsten

Percentage of Government participation 75

Location of mine Sec. 13, T29N R 37 E.W.M.
Stevens County, Wash.

Date of filing MF-100 May 28, 1951

DMA Docket Number, if available 144

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.

Tungsten Mining & Milling Co.
(Name of company)

By Paul H. Casey
(Signature of authorized official)

May 28, 1951
(Date)

Paul H. Casey
President
(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

8. Financial statement filed with M.F. 102 in Docket No. 144.
9. $13,783.50 Yes.
23. a.

2 Miners 500 shifts at 14.00	7000.00
1 Miner 100 " " 14.00	1400.00
1 Laborer 130 " " 12.00	1560.00
1 Bulldozer Op. 25 days at $15.00	375.00
1 Blacksmith 35 days at $16.00	560.00
1 Truck driver 35 days at $12.00	420.00
b. Supt. 1/4 time at $400.00	1200.00
c.	
d. Road Construction	2500.00
e. Compressor 225 cu. ft.	4000.00
Mucking machine	3500.00
Drifter (Drill)	700.00
Column & arm	250.00
Mine cars 3-10 cu. ft.	300.00
Pressure tank	40.00
Blower fan	150.00
Ventube 600 ft. at 50¢	300.00
Rail 2400 ft. 20# at 140/ton	1120.00
Ties 800 at 35¢	280.00
2" pipe 600 ft. at 50¢	300.00
	10,940.00
g. Bulldozer 200 hrs. at $8.00	1600.00
Truck 12 Mo. at $50.00	600.00
	28,995.00
h. Drillsteel	50.00
Bits	1000.00
Powder 10,000 lbs at 18¢	1800.00
Caps and fuse at 50¢ a ft. of drift	600.00
Fuel for compressor, etc.	700.00
Miscellaneous small tools	500.00
Timber 20,000 ft. at 65	1300.00
	34,945.00
i. Engineering & overhead	5000.00
Sampling and assaying	1000.00
	40,945.00
Contingency 20%	8,189.00
	49,134.00
1000 ft. core drilling at $6.00	6,000.00
	55,134.00

Schedule of Work and Cost

24.	1st Month	150 Hrs. bulldozing Rental	1200.00
		Operator 19 shifts	285.00
		Equipment purchase	
		Item 23 e.	10940.00
		20 Ft. drifting at $30.00	600.00
	2nd to 6th Month	116 Ft. drifting at $30.00	3480.00
		5 Hrs. bulldozing at $10.00	50.00
	7th to 10th Month	100 Ft. drifting at $30.00	3000.00
		5 Hrs. bulldozing at $10.00	50.00
	11th to 12th Month	100 Ft. drifting at $30.00	3000.00
		5 Hrs. bulldozing at $10.00	50.00
		500 Ft. core drilling at $6.00	3000.00

W. 1217 - 8th
Spokane 9, Washington
May 28, 1951

Paul H. Casey, President
Tungsten Mining and Milling Co.
711 Hutton Building
Spokane, Washington

Dear Mr. Casey:

This is a summary report of a brief examination of your Germania mine in Stevens County, Washington, made for the purpose of gathering data to support recommendations for exploration work to develop additional reserves of tungsten ore. I visited the property on May 19 in company with Mr. Harry Cooper and you, and again on May 25 in company with Mr. Cooper. General data concerning situation of the mine, extent of property, mineralization, etc. is tabulated in the accompanying forms.

The geology of the district as reported by C. Donald Emigh for the General Electric Co. in 1936 and by Lincoln R. Page of the U.S. Geological Survey in 1943, (unpublished report) consists of the intrusion of a small granite batholith into argillite of the Deer Trail series of metamorphic rocks. Narrow but persistent quartz-wolframite veins transect the granite and also extend into the argillite. The largest of the veins that have been mined is the Exodus that has been developed for 1800 feet along the strike and 650 feet down the dip. At the south end of the Exodus vein the Norton system of veins is offset about 300 feet east of the Exodus vein. The Norton veins have been exposed by short adits south of the Spokane Indian Reservation boundary.

The Seidlitz vein system may extend in a northeasterly direction from the contact of granite with the argillite roof pendant, 3600 feet to a 6 inch quartz-wolframite vein exposed in open cuts east of the road just north of the north end line of the Roon claim. At least 2 other narrow quartz stringers are exposed in the road cut north of this vein.

Recommendations

Bluecher Drift: From a point 240' north of the Spokane Indian Reservation Boundary near the center line of the Bluecher Lode at approximate altitude 3673', drive an adit. N22W 600 feet. (See accompanying map.)

This adit will intersect the Norton veins 440 feet northeast of the exposure in the Lower Norton adit where 2-10" veins are exposed at altitude 3700'. It also will intersect the Exodus vein 600 ft. from the portal about 100 feet above the main level in the Germania mine. According to Becker's map 10 to 20,000 tons of ore remain in the Exodus vein above the level of the proposed adit.

Paul H. Casey

May 28, 1951

Moltke Drift: From a point just above creek level on the southwest extension of the unnamed vein exposed in open cuts northeast of the road (see map) the portal of an old caved adit may be observed. It is proposed to use a bulldozer to excavate a trench at the level of this adit to open the adit as much as possible and expose possible veins in the foot wall and hanging wall.. Approximately 600 feet of drift will then be driven on the most promising of the veins southwest toward the parallel vein exposed in shallow open cuts. Core drill holes to cross-cut the foot wall and hanging walls will be drilled from the end of this drift and possibly from other stations in the drift

Respectfully submitted,

John W. Cole
Mining Engineer

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
No. 157 Howard Street
Spokane, Washington

May 31, 1951

Mr. E. P. Strobel
Executive Secretary
Defense Minerals Administration
Department of Interior
Washington 25, D. C.

Dear Mr. Strobel:

Enclosed herewith are four copies of MT-100 and MT-109 for an exploration contract on the Tungsten Minerals and Milling Companies, Germania mine, Stevens County, Washington. Please note that this is the same property as Docket MT-114; however, the new application does not supersede the old, but supplements it. The original application was for a mill to treat the old tailings and alluvial material on the hillside—it is still valid and is still under consideration at this office (a report will be forthcoming in the near future after conference with the applicant regarding revisions in his proposed flow-sheet and some other revisions in his plans). The new application is for underground exploration.

The veins of the Germania mine are narrow, but are remarkably persistent in their lateral extension, although development in the Germania mine itself is reported to indicate that they are decreasing in grade on the lowest level. A very considerable amount of tungsten was produced prior to and during the early part of World War II, mostly from the Exodus vein. The proposed exploration will explore the lateral extension of the Exodus vein and will also explore the Stellite group of veins, which have never been extensively developed but which have interesting showings. At previous prices of tungsten, these veins were too narrow to be attractive. At present prices, they appear to be worth some exploration. The proposed exploration appears to be reasonable with the exception that is cited below, and the plan proposed and the estimates of cost and time schedule are all given in considerable detail. The subordination agreement is lacking, but the applicant has stated that he will submit this within the next few days.

The proposed crosscut on the Blucher claim is designed only to intersect the Norton and Exodus veins. This, in my opinion, would not be sufficient to determine whether either vein is of any value in this area and I believe that the Exodus vein should be drifted on to the Northeast to connect with the old Germania workings. The Norton should likewise be opened by exploration. The Exodus drift would also permit access to ore reported blocked out in the Germania workings.

Approximately 200 feet of drifting would accomplish this (the exact distance cannot be determined as the old mine maps do not indicate this beyond doubt), and the work would be accomplished at an additional cost of approximately $6,000. A hundred feet of drifting on the Norton vein would cost another $6,000. I believe that Mr. Casey, the applicant, will agree to do this, but I will forward a statement from him in writing on this matter within the next few days. Because of the extent of stoping on the Lenius vein, the old Germania workings are badly caved and, although it might be possible to clean them out, rehabilitate them, and do the exploration from the lower level of the Germania mine, it might cost more to accomplish this than to drive a new drift in virgin ground as proposed by the applicant.

Sincerely yours,

[illegible] Silsbee
Executive Officer, [illegible]
Field Team, Region II

Enclosures

cc: M. [illegible] Volin

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUN 5 - 1951
LANDON F. STROBEL
Executive Secretary

Form MF-100
(March 1951)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Form approved.
Budget Bureau No. 42-R1026.

GENERAL TECHNICAL DATA
FOR USE UNDER THE
DEFENSE PRODUCTION ACT OF 1950

NOT TO BE FILLED IN BY APPLICANT

Docket No. dmm 1448

Date received 6-5-51

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUN 5-1951
LANDON F. STROBEL
Executive Secretary

Tungsten Mining and Milling Company
711 Hutton Building
Spokane, Washington

Name and address of applicant

Date May 23, 1951

INSTRUCTIONS

This form is to be filed with Defense Minerals Administration, Department of the Interior, Washington 25, D. C. It should be accompanied by appropriate application form when a specific type of Government assistance is requested, in the form of (1) loan, (2) purchase contract, (3) Government guarantee of a private loan, (4) Necessity Certificate pursuant to the provisions of Sec. 124-A (Amortization Deduction) of Internal Revenue Code, 1950, (5) priorities or allocation of mining equipment, and maintenance, repair and operating supplies, and (6) other forms of Government assistance that might arise under the Act. Submit four (4) signed copies of the form and accompanying papers. Name and address should be stamped or typed on each sheet of this form and all accompanying papers. *When a question is inapplicable it should be so stated on the form.* Additional sheets may be attached in answering any questions or in supplying additional information. (IF YOU CANNOT ANSWER A QUESTION, SO STATE.) If a question is answered elsewhere indicate where answered. It is not necessary to answer it again.

GENERAL TECHNICAL DATA

Supply the following information on separate sheets, arranged, numbered, and lettered as indicated:

1. Materials produced:
   (*a*) What are the chief mine, mill, or smelter products?
   (*b*) What are the byproducts, if any?
2. Name(s) and type(s) of mine(s), mill(s), smelter(s), refinery(ies), pit(s), quarry (ies), drilling operation(s). Include old names of property, if any. Show extent of workings, including the following:
   (*a*) Linear feet of shafts.
   (*b*) Linear feet of drifts and crosscuts.
   (*c*) Linear feet of tunnels or adits.
   (*d*) Linear feet of other mine openings (explain briefly).

   Indicate whether mine is flooded or not. Describe any pumping problems. Give size or productive capacity.
3. For each operation listed above supply the following:
   (*a*) Distance and direction from nearest town and shipping point.
   (*b*) Mining district.
   (*c*) Township, Section, Range.
   (*d*) County, State.
4. (*a*) State whether or not property is now in operation, and if in operation, by whom operated.
   (*b*) Are you operating this property as:
   - ☐ Owner.
   - ☒ Lessee.
   - ☐ Contractor.
5. Number of years in production 1907-1914; 1932-1943 - Total 18 Years

   If not in production or operation, estimated date when production will begin Aug. 1, 1951
6. Experience of operators:

   Describe the mining and general business experience of (*a*) the applicant, and (*b*) the person or persons who manage the project.
7. History:
   (*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for suspension of operation.
   (*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.

8. Names and addresses of Officers, Directors, or Partners, and in addition thereto, the five largest stockholders if applicant is a corporation.

Name and Address (a)	Official Title (If officer is also director indicate by "D") (b)	Total of Annual Salary, Commissions, Bonuses, Etc., Received From Applicant and Affiliates During Last Fiscal Year (c)	Estimated Net Worth Outside of Interest in Applicant (d)	Number of Shares Held in Applicant Corporation: Common (e)	Number of Shares Held in Applicant Corporation: Preferred (f)	Life Insurance Carried for Benefit of Applicant: Amount (g)	Life Insurance Carried for Benefit of Applicant: Net Cash Surrender Value After Loans (h)
Paul H. Casey	Pres. "D"	None	$88,000	300,000		None	
Joe Dillon	V. Pres. "D"	None	60,000	300,000			
H. C. Cooper	Treas. "D"	None	10,000	600,000			
L. M. Casey	Secr. "D"	None	Joint with P. H.	Casey			
Chas. Dean	"D"	None		100,000			
	Total		x x x x x			x x x x x	x x x x x

If more lines are needed continue on separate sheet.

9. Capital Stock Issues:

For Corporate Applicants

Item	Authorized (a)	Outstanding (b)	Par Value (c)	Number of Shares Outstanding (d)	Dividend Rate Last Paid* (e)
Common stock 5,000,000	$ 500,000	$ 189,416.10	$ .10	1,894,610	
Preferred stock	$	$	$		

*Indicate period covered.

10. Production: **Not in production**

Item	Kind of Product (a)	1948 Total (b)	1949 Total (c)	1950 Total (d)	Present Average Monthly (e)
1. Quantity of product mined or quarried (Short, long, metric tons; barrels; pounds; etc.)					
2. Quantity of product processed (specify unit of measure and type of process)					
3. Quantity and grade of product sold or shipped (specify units of measure)					

11. Do you contemplate a change in the present average monthly rate of production? If so, state estimated maximum monthly production and basis of change.

12. Ore or Mineral Reserves:

(a) Describe the ore or min[illegible] deposit briefly. Accompany the application [illegible] any available report on the geology and ore reserves.

GENERAL TECHNICAL DATA

1. a. Tungsten (Wolframite)
   b. None

2. Germania Mine - Underground mine - Tailing Pond - Elluvial Deposits -

   a. 150 feet
   b. 5,000 feet
   c. 200 feet
   d. 1,000 feet, development raises

   150 and 75 foot levels flooded - to be used as reservoir for mill water

3. a. Springdale - 28 miles
   b. Deer Trail
   c. T 29 N, R 37 EWM
   d. Stevens County, Washington

4. a. Mill construction in progress
   b. As Lessee

   Owners: Paul H. Casey and Joe Dillon
   Lessee: Tungsten Mining & Milling Co.

5.

6. a. Tungsten Mining & Milling Co. organized to operate this mine.
   b. Harry C. Cooper, Superintendent, 35 years general mining and drilling experience.
   Paul H. Casey 30 years business experience, including garage operations, warehouse and transfer business and importing and exporting business.

7. a. See History in report by G. Donald Emigh attached.
   b. Germania Consolidated now operating south of Germania mine.
   c. Refer to Docket No. 144
   Report by Emigh 1936
   Report by Becker 1950
   Report by Page 1942 (In U.S.G.S. files)

11. 600 Tons to washing plant - 300 tons to mill from washing plant
   Should produce at least 24 units of WO_3 per day.

12. a. See reports in Docket No. 144
   b. (1) See attached Longitudinal section
   c. (1) Tailings 125,000 Tons 0.16% WO_3
   Elluvium 200,000 Tons 8 lbs. recoverable Wolframite per ton
   Creek Bottom 3,111 Tons
   (2) Assay map by U.S.B.M. in U.S.B.M. files

13. 28 miles from Springdale - good country road.

14. Large Reservoir of water in mine workings.
Water supply greater than in previous operation.
Ample creek supply within 3,000 feet against 200 ft. head.

15. 250 Horsepower diesel connected to 75 K.V.A. generator.

16. 7 Men (millwrights and laborers) installing machinery in mill.

17. Buildings
(1) Mill Building
(2) Blacksmith Shop
(3) Tool Shed
(4) Garage with grease pit
(5) 12 Room Boarding House
(6) 4 or 5 Cabins

Equipment
(1) Trommel Screen
(2) Jaw Crusher
(3) Two sets rolls
(4) Vibrating Screen
(5) 3 Hartz Jigs
(6) 1 Galvez Jig
(7) Conveyors
(8) Sandpump
(9) 3,000 - 6 inch pipe
(10) 2,000 - 4 inch pipe
(11) Dump Truck - 1½ Ton Auto Car
(12) AC Tractor with Isaacson Dozer
(13) Studebaker Pickup
(14) Utility Truck - 1½ Ton International
(15) Lincoln Welder
(16) Acetylene Welder
(17) 2 - 50,000 Gal. Wood stave water tanks - 1 installed

(*b*) If deposit is other than placer:

(1) Submit assay plans and/or sections showing location and size of proved (measured) and probable (indicated) ore or mineral reserve.

(2) State the tonnage (indicate type of ton) and grade of each class of ore reserve, as above, and show how computed. Tabulated total ore reserve as follows:

TOTAL ORE OR MINERAL RESERVES

Ore or Mineral Reserve	Estimated Tons (a)	Metal or Mineral Content Per Ton (Grade) (b)	Gross Value Per Ton (c)	Recoverable Unit Value Per Ton (d)	Estimated Cost of Production Per Ton (e)
Measured (proved)	35,000	2.8 WO_3	$168.00	150.00	$22.00
Indicated (probable)					

(*c*) If placer:

(1) Give estimated total yardage and average marketable mineral content of each deposit.

(2) Submit map showing location of placer deposit and surrounding area, with all test holes or pits. Submit logs of each hole and test pit with depth and average value of each.

(3) Describe gravel, stating whether fine, medium or coarse; loose, tight, cemented, or frozen, and whether it contains stumps or boulders more than 1 foot in diameter; if so, how large, and in what proportion.

(4) Describe bedrock, giving type (granite, sandstone, shale, etc.) and state whether it is hard or soft, smooth, uneven or rough.

(5) Describe overburden, stating whether loose, tight, or cemented; fine or coarse textured; furnish estimate of average thickness and total amount.

(6) Tabulate the reserves using the form outlined above for ore or mineral reserves.

13. Access Roads:

Give road distances to shipping, supply and residence points, stating kind and condition of roads.

14. Water Supply:

State source and quantity of water available for operations and whether sufficient for all seasons of year.

15. Power:

State amount of power used, rate per hour, and source thereof.

16. Labor:

State number and classes (miners, muckers, millmen, etc.) of men employed during a recent representative payroll period.

17. Equipment and Facilities:

Describe present equipment on the property, including buildings. (State condition.) List major pieces of equipment now owned or controlled and in serviceable condition available for this operation.

18. Are there any particular conditions or circumstances affecting your operations that are not described above? If so, explain.

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.

Tungsten Mining & Milling Co.
(Name of company)

By Paul H. Casey
(Signature of authorized official)

May 23, 1951
(Date)

Paul H. Casey
President
(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.

U. S. GOVERNMENT PRINTING OFFICE 16—63792-1

Form MF-100
(March 1951)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Form approved.
Budget Bureau No. 42-R1026.

Holdsen

GENERAL TECHNICAL DATA
FOR USE UNDER THE
DEFENSE PRODUCTION ACT OF 1950

NOT TO BE FILLED IN BY APPLICANT

Docket No. DMA 1444X

Date received 6-5-51

Tungsten Mining and Milling Company
711 Hutton Building
Spokane, Washington

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUN 5-1951
LANDON F. STROBEL
Executive Secretary

Name and address of applicant

Date May 23, 1951

INSTRUCTIONS

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   (*b*) What are the byproducts, if any?
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   (*a*) Linear feet of shafts.
   (*b*) Linear feet of drifts and crosscuts.
   (*c*) Linear feet of tunnels or adits.
   (*d*) Linear feet of other mine openings (explain briefly).

   Indicate whether mine is flooded or not. Describe any pumping problems. Give size or productive capacity.
3. For each operation listed above supply the following:
   (*a*) Distance and direction from nearest town and shipping point.
   (*b*) Mining district.
   (*c*) Township, Section, Range.
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4. (*a*) State whether or not property is now in operation, and if in operation, by whom operated.
   (*b*) Are you operating this property as:
   - ☐ Owner.
   - ☒ Lessee.
   - ☐ Contractor.
5. Number of years in production 1907-1914; 1932-1943 - Total 18 Years

   If not in production or operation, estimated date when production will begin Aug. 1, 1951
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   Describe the mining and general business experience of (*a*) the applicant, and (*b*) the person or persons who manage the project.
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   (*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for suspension of operation.
   (*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.

8. Names and addresses of Officers, Directors, or Partners, and in addition thereto, the five largest stockholders if applicant is a corporation.

Name and Address (a)	Official Title (If officer is also director indicate by "D") (b)	Total of Annual Salary, Commissions, Bonuses, Etc., Received From Applicant and Affiliates During Last Fiscal Year (c)	Estimated Net Worth Outside of Interest in Applicant (d)	Number of Shares Held in Applicant Corporation: Common (e)	Number of Shares Held in Applicant Corporation: Preferred (f)	Life Insurance Carried for Benefit of Applicant: Amount (g)	Life Insurance Carried for Benefit of Applicant: Net Cash Surrender Value After Loans (h)
Paul H. Casey	Pres. "D"	None	$88,000	300,000		None	
Joe Dillon	V. Pres. "D"	None	60,000	300,000			
H. C. Cooper	Treas. "D"	None	10,000	600,000			
L. M. Casey	Secr. "D"	None	Joint with P. H.	Casey			
Chas. Dean	"D"	None		100,000			
	Total		x x x x x			x x x x x	x x x x x

If more lines are needed continue on separate sheet.

9. Capital Stock Issues:

For Corporate Applicants

Item	Authorized (a)	Outstanding (b)	Par Value (c)	Number of Shares Outstanding (d)	Dividend Rate Last Paid* (e)
Common stock 5,000,000	$ 500,000	$ 189,416.10	$ .10	1,894,610	
Preferred stock	$	$	$		

*Indicate period covered.

10. Production: Not in production

Item	Kind of Product (a)	1948 Total (b)	1949 Total (c)	1950 Total (d)	Present Average Monthly (e)
1. Quantity of product mined or quarried (Short, long, metric tons; barrels; pounds; etc.)					
2. Quantity of product processed (specify unit of measure and type of process)					
3. Quantity and grade of product sold or shipped (specify units of measure)					

11. Do you contemplate a change in the present average monthly rate of production? If so, state estimated maximum monthly production and basis of change.

12. Ore or Mineral Reserves:

(a) Describe the ore or mineral deposit briefly. Accompany the application by any available report on the geology and ore reserves.

Continuation Sheet 1
Form MF-100

GENERAL TECHNICAL DATA

1. a. Tungsten (Wolframite)
   b. None

2. Germania Mine - Underground mine - Tailing Pond - Elluvial Deposits -

   a. 150 feet
   b. 5,000 feet
   c. 200 feet
   d. 1,000 feet, development raises

   150 and 75 foot levels flooded - to be used as reservoir for mill water

3. a. Springdale - 28 miles
   b. Deer Trail
   c. T 29 N, R 37 EWM
   d. Stevens County, Washington

4. a. Mill construction in progress
   b. As Lessee

   Owners: Paul H. Casey and Joe Dillon
   Lessee: Tungsten Mining & Milling Co.

5.

6. a. Tungsten Mining & Milling Co. organized to operate this mine.
   b. Harry C. Cooper, Superintendent, 35 years general mining and drilling experience.
   Paul H. Casey 30 years business experience, including garage operations, warehouse and transfer business and importing and exporting business.

7. a. See History in report by G. Donald Emigh attached.
   b. Germania Consolidated now operating south of Germania mine.
   c. Refer to Docket No. 144
   Report by Emigh 1936
   Report by Becker 1950
   Report by Page 1942 (In U.S.G.S. files)

11. 600 Tons to washing plant - 300 tons to mill from washing plant
Should produce at least 24 units of WO_3 per day.

12. a. See reports in Docket No. 144
   b. (1) See attached Longitudinal section
   c. (1) Tailings 125,000 Tons 0.16% WO_3
   Elluvium 200,000 Tons 3 lbs. recoverable Wolframite per ton
   Creek Bottom 3,111 Tons
   (2) Assay map by U.S.B.M. in U.S.B.M. files

13. 28 miles from Springdale - good country road.

14. Large Reservoir of water in mine workings.
Water supply greater than in previous operation.
Ample creek supply within 3,000 feet against 200 ft. head.

15. 250 Horsepower diesel connected to 75 K.V.A. generator.

16. 7 Men (millwrights and laborers) installing machinery in mill.

17. Buildings
(1) Mill Building
(2) Blacksmith Shop
(3) Tool Shed
(4) Garage with grease pit
(5) 12 Room Boarding House
(6) 4 or 5 Cabins

Equipment
(1) Trommel Screen
(2) Jaw Crusher
(3) Two sets rolls
(4) Vibrating Screen
(5) 3 Hartz Jigs
(6) 1 Galvez Jig
(7) Conveyors
(8) Sandpump
(9) 3,000 - 6 inch pipe
(10) 2,000 - 4 inch pipe
(11) Dump Truck - 1½ Ton Auto Car
(12) AC Tractor with Isaacson Dozer
(13) Studebaker Pickup
(14) Utility Truck - 1½ Ton International
(15) Lincoln Welder
(16) Acetylene Welder
(17) 2 - 50,000 Gal. Wood stave water tanks - 1 installed

(*b*) If deposit is other than placer:

(1) Submit assay plans and/or sections showing location and size of proved (measured) and probable (indicated) ore or mineral reserve.

(2) State the tonnage (indicate type of ton) and grade of each class of ore reserve, as above, and show how computed. Tabulated total ore reserve as follows:

TOTAL ORE OR MINERAL RESERVES

Ore or Mineral Reserve	Estimated Tons (a)	Metal or Mineral Content Per Ton (Grade) (b)	Gross Value Per Ton (c)	Recoverable Unit Value Per Ton (d)	Estimated Cost of Production Per Ton (e)
Measured (proved)	35,000	2.8 WO_3	$168.00	150.00	$22.00
Indicated (probable)					

(*c*) If placer:

(1) Give estimated total yardage and average marketable mineral content of each deposit.

(2) Submit map showing location of placer deposit and surrounding area, with all test holes or pits. Submit logs of each hole and test pit with depth and average value of each.

(3) Describe gravel, stating whether fine, medium or coarse; loose, tight, cemented, or frozen, and whether it contains stumps or boulders more than 1 foot in diameter; if so, how large, and in what proportion.

(4) Describe bedrock, giving type (granite, sandstone, shale, etc.) and state whether it is hard or soft, smooth, uneven or rough.

(5) Describe overburden, stating whether loose, tight, or cemented; fine or coarse textured; furnish estimate of average thickness and total amount.

(6) Tabulate the reserves using the form outlined above for ore or mineral reserves.

13. Access Roads:

Give road distances to shipping, supply and residence points, stating kind and condition of roads.

14. Water Supply:

State source and quantity of water available for operations and whether sufficient for all seasons of year.

15. Power:

State amount of power used, rate per hour, and source thereof.

16. Labor:

State number and classes (miners, muckers, millmen, etc.) of men employed during a recent representative payroll period.

17. Equipment and Facilities:

Describe present equipment on the property, including buildings. (State condition.) List major pieces of equipment now owned or controlled and in serviceable condition available for this operation.

18. Are there any particular conditions or circumstances affecting your operations that are not described above? If so, explain.

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.

Tungsten Mining & Milling Co.
(Name of company)

By Paul H. Casey
(Signature of authorized official)

May 23, 1951
(Date)

Paul H. Casey
President
(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.

U. S. GOVERNMENT PRINTING OFFICE 16—63792-1

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

340

August 7, 1951

Memorandum

To: Administrative Management Division

Through: Director, Supply Division

From: Tungsten Branch

Subject: DMA-144
Tungsten Mining and Milling Company
711 Hutton Building
Spokane, Washington

We are enclosing two copies of MF-100 of the subject docket which please forward to Mr. Speaker for mine serialization.

An application for an $85,000 loan to rebuild their mill has been tentatively approved, and they no doubt will need a priority number to secure the necessary equipment.

George B. Holderer
Chief, Tungsten Branch

Attachments

Dma-144X

MF-202

LANDLORD'S SUBORDINATION AGREEMENT

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, the undersigned is the owner in fee simple of that certain parcel of ground in the county of [illegible], State of [illegible], described in a certain Exploration Project Contract dated [illegible], 1951, between [illegible], the Lessee of said property, and the United States of America;

NOW, THEREFORE, the undersigned, as Lessor of said property under lease dated [illegible] (effective to [illegible]) does by these presents subordinate all of his right, title, and interest under the provisions of said lease to the right, title, and interest of the United States of America under the provisions of said Exploration Project Contract, and agrees that the lien and claim of the United States of America under the provisions of said contract shall be prior to the undersigned's rights to rentals or royalties under the terms of said lease; and

The undersigned further agrees that if said leasehold interest should be surrendered or if said lease should terminate at any time prior to the expiration of the rights of the United States of America under said Exploration Project Contract, the undersigned shall assume and does hereby assume all of the obligations of the Lessee under said Exploration Project Contract to make repayment to the United States of America according to the terms of said contract; and

The undersigned agrees to commit no act, nor assert any claim under judicial process or otherwise that may contravene or conflict with the prior lien and claim of the United States of America under the provisions of said Exploration Project Contract.

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

Dated this [illegible] day of [illegible], 1951

Paul H. Casey

Joe T. Dillon

U. S. GOVERNMENT PRINTING OFFICE 940768

Form MF-103
(April 1951)

U. DEPARTMENT OF THE INTER R

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/144X

Date received 6-5-51

Participation

Tungsten Mining & Milling Co.
711 Hutton Building
Spokane, Wash.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUN 5-1951
LANDON F. STROBEL
Executive Secretary

Name and address of applicant

Date May 28, 1951

FILL IN THIS BLOCK

Date of application May 28, 1951

Estimated cost $55,134.00

Mineral or metal Tungsten

Percentage of Government participation 75

Location of mine Sec. 13, T29N R 37 E.W.M.
Stevens County, Wash.

Date of filing MF-100 May 28, 1951

DMA Docket Number, if available 144

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.

Tungsten Mining & Milling Co.
(Name of company)

By Paul H. Casey
(Signature of authorized official)

May 28, 1959
(Date)

Paul H. Casey President
(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

8. Financial statement filed with M.F. 102 in Docket No. 144.
9. $13,783.50 Yes.

23. a.	2 Miners 500 shifts at 14.00	7000.00
	1 Miner 100 " " 14.00	1400.00
	1 Laborer 130 " " 12.00	1560.00
	1 Bulldozer Op. 25 days at $15.00	375.00
	1 Blacksmith 35 days at $16.00	560.00
	1 Truck driver 35 days at $12.00	420.00
b.	Supt. 1/4 time at $400.00	1200.00
c.		
d.	Road Construction	2500.00
e.	Compressor 225 cu. ft.	4000.00
	Mucking machine	3500.00
	Drifter (Drill)	700.00
	Column & arm	250.00
	Mine cars 3-10 cu. ft.	300.00
	Pressure tank	40.00
	Blower fan	150.00
	Ventube 600 ft. at 50¢	300.00
	Rail 2400 ft. 20# at 140/ton	1120.00
	Ties 800 at 35¢	280.00
	2" pipe 600 ft. at 50¢	300.00
		10,940.00
g.	Bulldozer 200 hrs. at $8.00	1600.00
	Truck 12 Mo. at $50.00	600.00
		28,995.00
h.	Drillsteel	50.00
	Bits	1000.00
	Powder 10,000 lbs at 18¢	1800.00
	Caps and fuse at 50¢ a ft. of drift	600.00
	Fuel for compressor, etc.	700.00
	Miscellaneous small tools	500.00
	Timber 20,000 ft. at 65	1300.00
		34,945.00
i.	Engineering & overhead	5000.00
	Sampling and assaying	1000.00
		40,945.00
	Contingency 20%	8,189.00
		49,134.00
	1000 ft. core drilling at $6.00	6,000.00
		55,134.00

Schedule of Work and Cost

24.	1st Month	150 Hrs. bulldozing Rental	1200.00
		Operator 19 shifts	285.00
		Equipment purchase	
		Item 23 e.	10940.00
		20 Ft. drifting at $30.00	600.00
	2nd to 6th Month	116 Ft. drifting at $30.00	3480.00
		5 Hrs. bulldozing at $10.00	50.00
	7th to 10th Month	100 Ft. drifting at $30.00	3000.00
		5 Hrs. bulldozing at $10100	50.00
	11th to 12th Month	100 Ft. drifting at $30.00	3000.00
		5 Hrs. bulldozing at $10.00	50.00
		500 Ft. core drilling at $6.00	3000.00

W. 1217 - 8th
Spokane 9, Washington
May 28, 1951

Paul H. Casey, President
Tungsten Mining and Milling Co.
711 Hutton Building
Spokane, Washington

Dear Mr. Casey:

This is a summary report of a brief examination of your Germania mine in Stevens County, Washington, made for the purpose of gathering data to support recommendations for exploration work to develop additional reserves of tungsten ore. I visited the property on May 19 in company with Mr. Harry Cooper and you, and again on May 25 in company with Mr. Cooper. General data concerning situation of the mine, extent of property, mineralization, etc. is tabulated in the accompanying forms.

The geology of the district as reported by C. Donald Emigh for the General Electric Co. in 1936 and by Lincoln R. Page of the U.S. Geological Survey in 1943, (unpublished report) consists of the intrusion of a small granite batholith into argillite of the Deer Trail series of metamorphic rocks. Narrow but persistent quartz-wolframite veins transect the granite and also extend into the argillite. The largest of the veins that have been mined is the Exodus that has been developed for 1800 feet along the strike and 650 feet down the dip. At the south end of the Exodus vein the Norton system of veins is offset about 300 feet east of the Exodus vein. The Norton veins have been exposed by short adits south of the Spokane Indian Reservation boundary.

The Seidlitz vein system may extend in a northeasterly direction from the contact of granite with the argillite roof pendant, 3600 feet to a 6 inch quartz-wolframite vein exposed in open cuts east of the road just north of the north end line of the Room claim. At least 2 other narrow quartz stringers are exposed in the road cut north of this vein.

Recommendations

Bluecher Drift: From a point 240' north of the Spokane Indian Reservation Boundary near the center line of the Bluecher Lode at approximate altitude 3675±, drive an adit. N22W 600 feet. (See accompanying map.)

This adit will intersect the Norton veins 440 feet northeast of the exposure in the Lower Norton adit where 2-10" veins are exposed at altitude 3700±. It also will intersect the Exodus vein 600 ft. from the portal about 100 feet above the main level in the Germania mine. According to Becker's map 10 to 20,000 tons of ore remain in the Exodus vein above the level of the proposed adit.

Paul H. Casey

May 28, 1951

Moltke Drift: From a point just above creek level on the southwest extension of the unnamed vein exposed in open cuts northeast of the road (see map) the portal of an old caved adit may be observed. It is proposed to use a bulldozer to excavate a trench at the level of this adit to open the adit as much as possible and expose possible veins in the foot wall and hanging wall.. Approximately 600 feet of drift will then be driven on the most promising of the veins southwest toward the parallel vein exposed in shallow open cuts. Core drill holes to cross-cut the foot wall and hanging walls will be drilled from the end of this drift and possibly from other stations in the drift

Respectfully submitted,

John W. Cole
Mining Engineer

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 144X

Date received 6-5-51

Participation

Tungsten Mining & Milling Co.
711 Hutton Building
Spokane, Wash.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUN 5-1951
LANDON F. STROBEL
Executive Secretary

Name and address of applicant

Date May 28, 1951

FILL IN THIS BLOCK

Date of application May 28, 1951

Estimated cost $55,134.00

Mineral or metal Tungsten

Percentage of Government participation 75

Location of mine Sec. 13, T29N R 37 E.W.M.
Stevens County, Wash.

Date of filing MF-100 May 28, 1951

DMA Docket Number, if available 144

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.

Tungsten Mining & Milling Co.
(Name of company)

By Paul H. Casey
(Signature of authorized official)
Paul H. Casey
President
(Title)

May 28, 1951
(Date)

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

Cont.
Form A

8. Financial statement filed with M.F. 102 in Docket No. 144.
9. $13,783.50 Yes.

23. a.	2 Miners 500 shifts at 14.00	7000.00
	1 Miner 100 " " 14.00	1400.00
	1 Laborer 130 " " 12.00	1560.00
	1 Bulldozer Op. 25 days at $15.00	375.00
	1 Blacksmith 35 days at $16.00	560.00
	1 Truck driver 35 days at $12.00	420.00
b.	Supt. 1/4 time at $400.00	1200.00
c.		
d.	Road Construction	2500.00
e.	Compressor 225 cu. ft.	4000.00
	Mucking machine	3500.00
	Drifter (Drill)	700.00
	Column & arm	250.00
	Mine cars 3-10 cu. ft.	300.00
	Pressure tank	40.00
	Blower fan	150.00
	Ventube 600 ft. at 50¢	300.00
	Rail 2400 ft. 20# at 140/ton	1120.00
	Ties 800 at 35¢	280.00
	2" pipe 600 ft. at 50¢	300.00
		10,940.00
g.	Bulldozer 200 hrs. at $8.00	1600.00
	Truck 12 Mo. at $50.00	600.00
		28,995.00
h.	Drillsteel	50.00
	Bits	1000.00
	Powder 10,000 lbs at 18¢	1800.00
	Caps and fuse at 50¢ a ft. of drift	600.00
	Fuel for compressor, etc.	700.00
	Miscellaneous small tools	500.00
	Timber 20,000 ft. at 65	1300.00
		34,945.00
i.	Engineering & overhead	5000.00
	Sampling and assaying	1000.00
		40,945.00
	Contingency 20%	8,189.00
		49,134.00
	1000 ft. core drilling at $6.00	6,000.00
		55,134.00

Schedule of Work and Cost

24.	1st Month	150 Hrs. bulldozing Rental	1200.00
		Operator 19 shifts	285.00
		Equipment purchase	
		Item 23 e.	10940.00
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	2nd to 6th Month	116 Ft. drifting at $30.00	3480.00
		5 Hrs. bulldozing at $10.00	50.00
	7th to 10th Month	100 Ft. drifting at $30.00	3000.00
		5 Hrs. bulldozing at $10.00	50.00
	11th to 12th Month	100 Ft. drifting at $30.00	3000.00
		5 Hrs. bulldozing at $10.00	50.00
		500 Ft. core drilling at $6.00	3000.00

W. 1217 - 8th
Spokane 9, Washington
May 28, 1951

Paul H. Casey, President
Tungsten Mining and Milling Co.
711 Hutton Building
Spokane, Washington

Dear Mr. Casey:

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The Seidlitz vein system may extend in a northeasterly direction from the contact of granite with the argillite roof pendant, 3600 feet to a 6 inch quartz-wolframite vein exposed in open cuts east of the road just north of the north end line of the Roon claim. At least 2 other narrow quartz stringers are exposed in the road cut north of this vein.

Recommendations

Bluecher Drift: From a point 240' north of the Spokane Indian Reservation Boundary near the center line of the Bluecher Lode at approximate altitude 3675', drive an adit. N22W 600 feet. (See accompanying map.)

This adit will intersect the Norton veins 440 feet northeast of the exposure in the Lower Norton adit where 2-10" veins are exposed at altitude 3700'. It also will intersect the Exodus vein 600 ft. from the portal about 100 feet above the main level in the Germania mine. According to Becker's map 10 to 20,000 tons of ore remain in the Exodus vein above the level of the proposed adit.

Paul H. Casey

May 28, 1951

Moltke Drift: From a point just above creek level on the southwest extension of the unnamed vein exposed in open cuts northeast of the road (see map) the portal of an old caved adit may be observed. It is proposed to use a bulldozer to excavate a trench at the level of this adit to open the adit as much as possible and expose possible veins in the foot wall and hanging wall.. Approximately 600 feet of drift will then be driven on the most promising of the veins southwest toward the parallel vein exposed in shallow open cuts. Core drill holes to cross-cut the foot wall and hanging walls will be drilled from the end of this drift and possibly from other stations in the drift

Respectfully submitted,

John W. Cole
Mining Engineer

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 144-X

Date received 6-5-51

Participation

Tungsten Mining & Milling Co.
711 Hutton Building
Spokane, Wash.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JUN 5-1951
LANDON F. STROBEL
Executive Secretary

Name and address of applicant

Date May 28, 1951

FILL IN THIS BLOCK

Date of application May 28, 1951

Estimated cost $55,134.00

Mineral or metal Tungsten

Percentage of Government participation 75

Location of mine Sec. 13, T29N R 37 E.W.M.
Stevens County, Wash.

Date of filing MF-100 May 28, 1951

DMA Docket Number, if available 144

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.
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(Name of company)

By Paul H. Casey
(Signature of authorized official)

May 28, 1951
(Date)

Paul H. Casey President
(Title)

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

Continuation Sheet 1
Form MF-103

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Paul H. Casey May 28, 1951

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Respectfully submitted,

John W. Cole

John W. Cole
Mining Engineer

OMA-144

A GEOLOGICAL REPORT

on the

GERMANIA MINE

OF THE GENERAL ELECTRIC COMPANY

Stevens County
Wash.

- - - - -

G. Donald Emigh, November, 1936

- - - - -

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GEOLOGY	3
ORE DEPOSITS	4
DESCRIPTIONS OF VEINS	5
SUGGESTIONS IN DEVELOPMENT WORK	11
CONCLUSIONS	16

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INTRODUCTION

This report of the Germania Mine property embodies a study made of the property in September and October, 1936. The study had in general a two-fold purpose: 1. to map the veins in order to ascertain their number, locations and size, thereby guiding future development work; and 2. to determine the possibilities of the area being a future tungsten producer.

The Germania property was first located in 1894.[1] In 1907 it passed into the hands of a German promoter, who in the years from 1907-1914 spent considerable money developing and mining the tungsten mineral wolframite. From 1914-1932 the mine had no production except for a small quantity of wolframite "high-graded" by hand during the World War. In 1932 the property was acquired by J. A. Scollard and associates, who opened the old German workings, built a mill, and produced considerable tungsten concentrates up to the taking over of the mine by the General Electric Company on October 1, 1936.

During this examination, maps were made, both of the surface and of the underground working. The surface map covered about 1¼ square miles and covered essentially only the ground owned by the General Electric Company. A traverse was carried southward, however, for about a mile to tie in other tungsten veins. This surface map was made to a scale of 1" =400'.

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1 Bancroft, Howland, "The Ore Deposits of Northeastern Wash." U.S.G.S. Bull. 550, 1914.

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No triangulation system was set up because of lack of time, but closed traverses were run with a plane table and permanent numbered stakes were set at each station. The underground mapping was done with a Brunton compass and tape to a scale of 1" = 40'.

GEOGRAPHY

The Germania Mine is located in Stevens County, Washington, about fifty miles by airline northwest of Spokane. Up to the time of acquisition of the property by the General Electric Company, the mine was ninety miles by road from Spokane, and the last twelve miles was over a steep, narrow road which climbed a 1000-foot summit before dipping down to the mine. Snow makes this road impassable in winter. The General Electric Company has just completed six miles of new road which follows a water grade all the way from the mine, shortens the distance to Spokane thirty-five miles and avoids the heavy snow belt. To reach the mine now, one travels on pavement to Springdale; then takes a gravel road west toward Wellpinit for about twenty miles; then turns off to the north for some eight miles farther to reach the mine.

The Germania Mine is in the Huckleberry Mountains at an elevation of about 3600 feet above sea level. The higher peaks and ridges of the range are some 600-1200 feet above the mine buildings. Fig. 1 is a panorama of the mine and surrounding country and shows the general character of the region. The region has been heavily timbered, but forest fires have thinned

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the trees, thereby allowing the underbrush to become so thick that in places it is difficult to walk. In the summer and fall the region is dry, and little or no water runs in the valley; but during the winter months - usually from November to May - snow covers the country.

GEOLOGY

Bancroft[1] has described briefly the geology and mineralization of this region.

There are two general types of rock in the vicinity of the mine, igneous and sedimentary. The latter are made up of thin beds of limestone, shale and quartzite. These have been intruded by later igneous rocks of a granite composition which moved along possibly as a molten mass dissolving the sedimentary rocks with which it came in contact. In places unabsorbed remnants of the sedimentary rocks are left as "islands" now completely surrounded by granite. Bancroft describes dark-colored dikes. These were not seen in this area, but there are aplite dikes paralleling the veins.

Besides the main granite mass are areas of a granite porphyry having a ground mass resembling the granite but containing an abundance of feldspar crystals, some of which are often an inch or more long. This rock is found along with the granite in the Germania Mine, and makes up the wallrock of most of the 150 foot level. Just what its relationship is to the granite is

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1 Op. cit. (?) ibid?

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uncertain. Either it is a phase of the granite or is a different rock. The writer is inclined to believe it is a younger rock than the granite.

ORE DEPOSITS

The ore deposits are quartz filled veins striking N.E. - S.W. and dipping steeply to S.E. They are in granite on the Germania property, but in other places are said to occur also in the sedimentary rocks. The veins are narrow - having a maximum width of 24 inches - but are persistent. The Exodus vein, for example, has been followed for about 1800 feet, and maintains a width of from 7-24 inches.

The minerals in the vein are quartz, mica, fluorite, tourmaline, calcite, wolframite, ferrotungstite, scheelite, pyrite, arsenopyrite, galenobismutite, molybdenite, gold and silver. Quartz makes up at least 90% of the vein filling. Mica, pyrite and wolframite are next most abundant. The mineralization in the quartz comes in bunches - this being especially true of the wolframite. This black iron tungstate occurs usually as bunches of elongated crystals, individuals of which are sometimes four inches long. Masses of almost pure wolframite crystals, weighing several hundred pounds, have been found. The quartz and wolframite were the first minerals deposited as the others can be seen cutting these two. The alteration of wolframite to ferrotungstite and probably scheelite is common. In fact, the black wolframite crystals in the quartz usually have a "rind" of one or both of these minerals that may be up to

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READING ROOM

1/8 inch wide. The crystals will be crossed also by veinlets of these secondary minerals formed along rocks. The wolframite crystals are very seldom found in the wallrock, but are usually associated with quartz.

In places along the veins can be found irregular bunches of pegmatite - an intergrowth of coarse feldspar and quartz. Half a mile south of the Keith mine is a large vein of this same coarse pegmatite which carries a little worlframite. This particular vein showed a gradition from pegmatite to quartz veins. The same thing was seen in the Keith Mine where wolframite is found also in pegmatite.

Wall rock alteration is common and characteristically the same. The feldspars in the granite are replaced by a mass of white mica, and at a more advanced stage the wall rock is entirely a mass of mica.

DESCRIPTIONS OF VEINS

In the area covered by the surface map there are in general three vein systems - the Exodus and Seidlitz systems on the General Electric property, and the Keith system about a mile to the southwest. This classification is arbitrary, as it is doubtful if one could crosscut a hundred feet anywhere in the region without cutting a quartz stringer, but it appears to be true that there is a concentration of wider quartz stringers in three three areas. These three systems will now be described:

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A. Exodus System

In this system will be placed the Exodus, La Franz (La Franz), Norton, and other associated veins and veinlets. So far, this has been the most productive system in the Germania Mine, on the Exodus vein. The system - as one sees on the vein system map - is at least 4400 feet long, and its southward extension is as yet unknown, being covered with thick soil.

a. Exodus Vein

The Exodus vein has the best surface showing of any vein in the area. The vein is from 6 to 24 in. wide for a distance of at least 1700 feet. What it will do beyond is uncertain, as no great amount of work has as yet been done on it, but surface indications are that it will soon feather down and possibly split into 1-4 inch stringers. The vein has been exposed vertically for 600 feet -- 450 feet above the main level and 150 feet below. Here again - as along the strike of the vein - the vein is remarkably even in width. The average ore milled from this vein has run about 4% in wolframite.[1] Work on 75 and 150-foot levels has so far shown an almost barren quartz vein.

b. La Franz vein

This is more or less a "hypothetical" vein.

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[1] Information from Henry Becker

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There has been very little work done on it, and whether it exists as a single vein or as a series of parallel veins is not known. Surface float would indicate a 2-8 inch quartz vein with tungsten paralleling the Exodus vein and some 200-300 feet to the north of it. This vein was probably cut in the north crosscut driven from near the portal of the main level, and if so it is here made of two stringers - one, 1-inch; the other, 2-inches wide.

c. Norton Vein

F. M. Norton has recently done some prospecting on a vein south of the east surface showing of the Exodus vein. Surface cuts and a short tunnel near the surface show a quartz vein from 4-12 inches wide, which carries considerable wolframite. As can be seen from the maps, this vein projects into the hanging wall of the Exodus vein and is probably a parallel vein to the Exodus. It may be picking up as the Exodus vein feathers out to the south.

Other Veins in Exodus System

On both ends of the Exodus system are quartz stringers from 1-4 inches wide and carrying well in tungsten. Where they extend to the south is not known, as a heavy overburden of coil covers the surface. To the north they can be traced better but here also they are small. Quartz stringers are found crossing Probeck Point in the north center of Section 13. They

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strike directly for the Exodus system, and are probably the northward extension of this system.

B. Seidlitz System

The Seidlitz System made up of the Seidlitz, Roon, Molke, Mazda, and other veins. It is potentially important because there is considerable quartz and tungsten present. On its north end it splits in two directions - the Molke to the northeast; the Roon and Mazda move tnothe east. A glance at the vein system map shows the convergence of the Molka, Roon and Mazda veins into the Seidlitz vein proper. Just what happens to the system southward is not known as a thick overburden of soil completely covers all the surfaces.

a. Molke Vein

The Molke vein as shown in surface cuts is from 4-10 inches wide. It contains much sulfides, but no tungsten was seen. It is exposed for about 80 feet but beyond that both ends are lost in the overburden.

b. Roon vein

The Roon vein has been exposed for at least 400 feet, and projection to other exposures indicate it may be 2000 feet long. In the 400 feet it is from 3-10 inches wide and should carry considerable tungsten. It is particularly interesting because it is the only vein of any size found which may cross-section 13 and continue on to the northeast.

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c. Mazda Vein

The Mazda vein was only recently found. It parallels the Roon vein, being some 200 feet to the south of it. It has been opened in surface cuts for 400 feet and is a quartz vein 4-6 inches wide carrying tungsten. Surface cuts indicate this vein dips north into the Roon vein, but this reverse dip may be carried by the down-hill creep of surface soil.

d. Seidlitz Vein

The name Seidlitz is applied to several parallel quartz stringers which are from 1-10 inches wide. As can be seen from the vein system map, these stringers may be the Molke, Roon and Mazda veins after they have converged. A little stoping has been done on these veins, and some rich ore reported obtained. Whether the Seidlitz vein continues southward is not known, as it is covered with soil. According to Becker, considerable prospecting has been done to the south and rich float found, but no veins located. Along the ridge trail in the vicinity of stakes 204-207 are several quartz stringers and the granite is altered. This may be the Seidlitz system.

C. Keith System

The Keith System was mapped for the purpose of getting its relationship to the vein on the General Electric property and to ascertain the possibility of a continuous

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zone of mineralization in between. The veins in the Keith system have the same characteristics of mineralization, wallrock, strike and dip as the Exodus and Seidlitz veins. The system has been exposed in the surface for 2000 feet. The main vein is from 8-16 inches wide and contains wolframite. To the south it splits into two, possibly three, veins containing from 3-8 inches of quartz. To the north the vein feathers down into quartz stringers from 1-4 inches wide. The remarkable thing about the Keith vein is its behavior with depth. At the surface is a strong quartz vein with considerable wolframite, while at 140 feet depth crosscutting and drifting show a narrow 1-3 inch glassy quartz vein, indistinct walls, very little tungsten and much molybdenite.

Half a mile south of the Keith vein, and on the strike of the system, is a large pegmatite vein which in places wells to a width of 10 - 15 feet. In one place it was seen to carry some wolframite, but as a whole it looks to be barren.

This completes a brief sketch of the three principal vein systems, and we find they have much in common. All are in granite; all have essentially the same strike and dip; all have the same type of mineralization; and all are narrow quartz veins which maintain uniform widths for long distances. This last

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feature is interesting because in most fissures formed by unequal stresses in the rocks, the walls weave and curve; and movement along the break brings concave surfaces opposite each other, forming open lenses and convex surfaces together to form "tight" spots. Then when the ore solutions move along the fissure, they fill the open "pods" forming lenticular ore bodies. This condition does not exist in the Germania vein, and the question arises - "why?" It is possible in this area that the movement was along jointing planes because a strong set of joints in the granite everywhere parallel the veins. And that they are joints - and not the result of shearing - is evidenced by the two complimentary joints set at right angles to this main jointing.

SUGGESTIONS IN DEVELOPMENT WORK

In most mining operations the object of development work is to open new ore which can be worked immediately. At the Germania Mine, however, development work can be carried on with either or both of two purposes in mind: (1) Opening ore to be mined now; or (2) opening veins too small to be mined now but which could be mined with higher tungsten prices. No matter which of the two is the more important, a fairly comprehensive explanation program should be adopted, as it is as important for the General Electric Company to know that it has a limited supply of tungsten at the Germania as it is to know that it has a supply ample for many years. Following is a list of suggested development work. Obviously, no set program can be

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outlined, as the work will be influenced by day-to-day developments, but at the present time the following appear to be things which logically should be done:

A. Underground Development

1. The Exodus vein probably is the largest vein on the property; and, in spite of the fact that a large section of it has been mined, continues to be the most important potential single ore supply. It should be explored to the north, to the south, and down. The main adit should be pushed southward for the remaining 600 feet to the property end-line, and if the ore looks promising a raise should be driven through to the surface, not only to explore the vein further but to facilitate future mining work and to aid ventilation. Drifting both to the north and the south should be continued on the 150 foot level. Drifting southward offers the most promising possibility of ore in the mine, and drifting northward should be in vein material for 2000 feet. Exploration of the vein at depth is important, because, even though the vein on the 150-foot level now looks barren, the writer feels that as long as quartz is present, the possibilities for tungsten are good.

2. After the main drift has been pushed ahead close to the south end of the property, the possible existence of hanging-wall and footwall veins should be determined. There are possibly two in the hanging wall -- the narrow

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split off the Exodus vein which has already been drifted on for thirty feet, and the Norton vein; and it is possible that these two are the same. The Norton vein is the most distant, but may be found at about 300 feet from the Exodus vein. The La Frahz vein in the footwall should be investigated also. It should be about 200 feet from the Exodus vein.

Cross-cutting for parallel leads is a necessary and important phase of mining. And it is particularly important here where there is strong evidence of parallel veins. The uniform width of the veins of this region make crosscutting almost as satisfactory a form of exploration as drifting, as one feels no great hesitancy in projecting even a small 5-inch vein for 300 feet between two points at which it has been cut. Crosscutting can be done either by actually driving a crosscut or by diamond drilling. The writer prefers the latter, as it costs only $1.50 - $1.75 a foot and is four times faster than breaking rock.

3. On the Rozelle level the hanging-wall vein should be either drifted on or cross-cut to, because it appears possible that this is the vein showing at the surface. This work could well be delayed, however, until stoping to the surface on the footwall veins shows whether or not this is true.

4. The Seidlitz vein system should be prospected as soon

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as possible. Kirkwood's new tunnel should be driven ahead 100 feet to cut the vein at about 115 feet of depth. The upper tunnel on the east slope of the hill - station 189 on dump - which was driven to cross-cut for the Seidlitz vein, appears to have cut the vein right at the portal. Here it is composed of half a dozen quartz stringers varying in width from 1 - 4 inches and contained in a zone about 15 feet wide. The crosscut to the northwest cut through the zone and into barren rock but no work was done to the south to catch the south boundary of the mineralized zone. A few feet of cross-cut should be driven in this direction.

B. Surface development

The bulldozer and caterpiller at the mine will be useful in scraping away surface soil and exposing veins. There are several places where such work can be done to advantage.

1. The dozer can be used to open the old road from the Germania to the Seidlitz. It is not likely that any vein of importance will be found, but it should be possible to determine for sure where the Seidlitz crosses.

2. The Bulldozer can open the old road down the west side of West Sand Creek to the old mill. Particular care should be taken to look for the place where the Molke, Roon and Mazda veins cross. If the veins look promising, the dozer can be taken half way up the hill toward the upper old Seidlitz road and be used to trench again for the veins. This work should be done in the vicinity where

the vein system map shows a convergence of the Molke, Roon and Mazda veins.

3. The dozer should be used to cut the bank along the road to Fruitland, especially in the vicinity of Stake 16. This is about where the Exodus vein should cross.

4. The dozer can be used to trench for the La Franz vein between Stations 95 and 106, and it can also be used to trench for the same vein on the hillside to the south of Station 98.

5. The Roon vein should be traced on east into the next section which is open to mineral location.

6. The Mazda vein should also be prospected far to the east. This would have to be done by hand, but later, if a timber road is constructed into the area, the dozer could be used for trenching.

7. About one-half a mile north of Section 13 is a quartz vein 10 - 18 inches wide, which is exposed on the ridge about 300 feet south of and 100 feet above the old Rearden road. The vein strikes N 27° E., dips 75° E and is in granite. It is barren with quartz containing mica and tourmaline, but it resembles the Germania veins and strikes toward the Exodus system. It should be staked and more surface prospecting done. To the west of it an old shaft has been sunk. The granite is now a spongy mass of iron oxide - indicating leached sulfides, and is

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different from any other the writer saw and appears to be a vertical shoot of perhaps 20 diameters. It would be located on the same claim as the quartz veins.

8. Some prospecting should be done near the top of the long ridge which is across the valley and to the south of the Seidlitz vein. There is some quartz float on this ridge and considerable alteration of the granite.

CONCLUSION

The important question concerning the Germania Mine property is "What is its possibilities as a tungsten producer?" "Is the tungsten present, and if so, what will it cost to mine it?" Let us consider first the character of the veins themselves.

The veins are narrow but persistent along their strike. The popular idea is that tungsten mineralization goes deep, but a word of caution here. Recent work has indicated that tungsten deposits may be formed near the surface. The depth to which mineralization extends is governed usually not so much by the kind of minerals as by the character of the fissures. Some fissures go deep; others are formed near the surface. Certain features at the Germania property might indicate that the tungsten mineralization does not go deep. The work below the main level of the Germania mine, so far has shown a smaller quartz vein, less tungsten, and possibly more molyhdenite. The Keith Mine is interesting; at the surface is a wide quartz vein with considerable tungsten, and at 140 feet to a hard, glassy, blue

quartz which in places is a pegmamolybdenite. This may not be the rule, but it is possible that with a little more depth the exodus vein will behave in the same manner.

The veins do not pinch and swell, so that the likelihood of a small stringer swelling in to a bonanza vein several feet wide is small. It is possible, however, for paralell stringers to come together and form a larger vein, and this may happen in the Seidlitz system, although not likely. The coarsely crystalline, muggy type of quartz found in the veins sometimes indicates a near-surface deposit. Another point to bear in mind is that the veins are near the very top of the granite body and that this might indicate -- although not necessarily so -- a locus of shallow deposition. The Keith surface outcrop, for instance, is within a couple of hundred feet of the overhead sedimentary rocks, and this is also true of the Exodus outcrop, although here the sedimentary rocks have been removed by erosion. With the above points in mind, let us now consider a phase of development work at the Germania property which has not as yet been touched on.

The suggestion has been made that a long crosscut be driven from the vicinity of the old mill northeast to cut the Seidlitz and Exodus veins as well as any in between. This would necessitate a crosscut about 2600 feet long. It would tap the Exodus vein about 200 feet below the 150-foot level, would drain itself and would provide a level from which to work both the Exodus and Seidlitz veins.

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The plan would be also to move the mill down to the creek below the portal of the crosscut. This crosscut will be a very good idea if the ore is there; but if it is not, it may be a little more expensive prospecting than could be done otherwise. This 2600-foot crosscut could be driven for perhaps $20,000. The present incline shaft in the Germania mine could be deepened 200 feet for probably $5,000 and be at the same point the crosscut would cut the vein. It would still be necessary, however, to prospect the Seidlitz vein - something the crosscut has already done. Diamond drilling may be satisfactory here. It would cost about $1.75 a foot and would be at least five times faster than crosscutting. Its only purpose would be to ascertain the existence and width of the veins and not the values. Or if it were decided not to prospect by drilling, a 1000-foot crosscut could be driven from the mill to cut the Seidlitz, and later extended 1600 feet more to cut the Exodus if the showing on the latter vein justified. Diamond drilling seems a logical way to prospect the Roon, Molke and Mazda veins. They are located in such a position that no depth can be attained by crosscutting, and it would be necessary to sink a shaft to explore them. If drilling showed wide veins below the surface, then would be the time to sink and crosscut.

An estimation of the amount of tungsten in reserve on the Germania property is difficult. If all the stringers in the Seidlitz system were mined, possibly several thousand tons of Wolframite could be obtained at a cost of perhaps $40 - 100 a unit.

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The same could be said of the Exodus system, although if development work shows the Exodus vein to be wide and rich in depth, mining costs will be much cheaper. Scollard showed mining costs of $7.00 a unit at one time, but it is unlikely this can be approached again. At that time mining was being done on a 20-inch vein, and most of the ore was already broken and laying in the stopes.

There are two other possible sources of wolframite at the property -- old dumps and mill tailings, and placer deposits.

The amount of tungsten in the former is not large. There are perhaps 30,000 - 40,000 tons of mill tailings, which run .2% WO_3. About 4/5 of these are from the new mill and 1/5 from the old German mill. This means about 60 tons of wolframite, but this amount could not be gotten because a mill cannot make a 100% extraction. The various mine dumps on the property could be profitably sorted by hand if tungsten were selling for, say $30. a unit; but only a small tonnage of wolframite could be obtained in this manner.

The wolframite in the soil and concentrated in the gulches offers a larger supply than can be obtained from the mill tailings or old dumps. Samples were taken from holes averaging three feet deep and covering a stretch of ground extending from the pump house up the gulch west as far as the upper tunnel. This is a stretch of ground about 150 feet wide and 900 feet long and none of the holes reached bed-rock. The samples were screened, passed over a mill table, and the concentrates weighed. The

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samples showed that the top three feet of soil carries from 3 to 15 pounds of wolframite to the ton, averaging about 7 pounds.

Eight samples were taken, beginning from McLane's old cabin below the Seidlitz vein and running up the gulch as far as the Exodus vein. These samples were disappointing, as they showed only from 1 - 2 pounds of wolframite to the ton of soil. Sampling to bed-rock probably will raise this figure a little.

Without considerable more testing being done, the writer hesitates to say just how much tungsten can be obtained from placer deposits. A systematic test should be made by opening holes down to bedrock and passing the material over the mill table. It would be better yet to run large samples through the mill. It appears likely that there are several hundred tons of wolframite in placer deposits on the property. If wolframite were badly needed, it would pay to test carefully the gulches in this area, particularly the one below the Keith vein system.

G. Donald Emigh
November 25, 1936

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LAMP DEPARTMENT

GENERAL ELECTRIC

COMPANY

Tungsten Mine Division
H. H. Barrows, Manager

1648 Sixteenth Street
Oakland, Calif.

March 15, 1943.

Mr. R. B. Greene,
Germania Consolidated Mines, Inc.
306 Park Place,
Spokane, Washington

Dear Mr. Greene;

We have decided to discontinue the operation of our Germania Mine and are contemplating moving our equipment to one of our other properties.

Our Germania property still has some good values underground and considerable placer values which we feel could be profitably operated at the present price of $30.00 per unit but due to the shortage of man-power and our desire to concentrate our activity to fewer properties, we have decided to hold the Germania Mine for future reserve.

On the property we have a completely equipped 250 ton mill, and R D 7 Catterpilar with bulldozer, P & H shovel, two dump trucks, two portable and one stationary compressors, a mine locomotive and complete drilling equipment and supplies.

Would you be interested in purchasing our equipment at its depreciated value and leasing the Mine on a 10% royalty basis.

The equipment would be conservatively priced but we must have cash for the same.

If you are interested, please let us know as soon as possible as we are planning to move the equipment before April 1st.

Yours very truly,

H. H. Barrows.

/s/ H. H. BARROWS

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REPORT

ON THE TUNGSTEN PLACER POSSIBILITIES

AT THE GERMANIA MINE

OF THE

TUNGSTEN MINING AND MILLING COMPANY

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The writer being thoroughly familiar with the above property will attempt to give as close an estimate as possible of tonnages and values contained in tailing dumps, mine waste dump and breakover of vein matter, scattered over a wide area below the outcroppings of the Germania mine vein system.

Having been superintendent of operations at the Germania Mine, before and during the ownership of the General Electric Company, the writer has run thousands of tons of this material through the mill and knows through experience the average recovery (three pounds of 70% tungsten concentrate) on such an operation.

There are at present about 200,000 tons of break-over left on the hill, containing according to mill-run about 300 tons of 70% tungsten concentrate, or 21,000 units.

It is very difficult to make an estimate of mill tailings left below the mill building, as large quantities of them have been worked farther down the creek by spring freshets.

The writer estimates about 150,000 tons. Samples taken over the dumps at random average 0.16% of $W.O_3$, or 24,000 units; but here we must consider that we will lose perhaps 25% in running these tailings through

the mill again, but we still would recover 18,000 units.

Next, we will consider a strip of creek-bottom, where tailings from the mill dump have been washed over and the heavier middlings and tungsten particles have been deposited.

The average width of this strip is about 20 feet, depth about 4 feet, and 700 feet in length.

Tonnage would be as follows: 20 x 4 x 700 equals 56,000 Cubic Feet, or 3111 tons.

Thirty-Two (32) samples taken by C. F. Dean on this piece of ground average $132.00 per ton, at a price of $28.50 dollars per unit. We would have about 4.6 units per ton; and at a 75% recovery, we still would have 10733 units recovered.

There is a mine waste dump about 100 feet north of the mill buildings, containing by estimate about 2500 tons apparently running better than 5 pounds of 70%, or 437 units.

Summarizing, we now have the following:

Break-over from Vein Outcroppings	21,000 units
Mill Tailing Recoverable	18,000 units
Creek-bottom enrichment	10,733 units
Mine Waste Dump	437 units
TOTAL - - - - - - - - - -	50,170 units

UNDERGROUND WORKINGS

Ore left in the underground workings of the Germania Mine, left there by the General Electric Company on account of the low price per unit ($14.50) and the narrowness of the veins (3 to 6 inches).

These veins can be worked at the right price, and I am giving the tonnage according to Hewitt's survey, a copy of which is attached:

9,750	tons	workable	at	$35.00 to $45.00 per unit
22,200	"	"	"	$45.00 to $55.00 per unit
3,600	"	"	"	$40.00 to $50.00 per unit

or a total of 35,550 tons minable at a price of about $45.00 per unit.

I am referring you now to a copy of G. Donald Emigh, which is attached to this report. Mr. Emigh was the geologist for the General Electric Company.

There are good surface showings on the Seidlitz and Roon claims, but not much has been done to prove or disprove any tonnage here.

The Norton vein mentioned by Emigh on Page 6 of his report is now included in a lease of Indian land covering the south extension of the Germania vein system, and this lease is owned by the Tungsten Mining & Milling Company. Here also, mostly surface work has been done, but a good showing exists near the south end of this lease (about 18 inches of quartz with tungsten) in the face of a 100 foot tunnel, and this may be the southern extension of the Exodus vein system; but further development work would have to be done to prove this.

MACHINERY AND EQUIPMENT REQUIREMENTS

Milling and concentrating of tailings and break-over material would require the reconditioning of the mill building now on the property; the installation of equipment such as: Washing plant, jaw crusher, crushing rolls, screens (either revolving or vibrating) Hartz jigs (3), one concentrating table, conveyor belt, feeder, belting, pulleys, shafting, etc., and of course an ample power plant.

The writer makes an estimate of $40,000 for this purpose, but quite a saving might be made by purchasing used machinery.

A flow-sheet for this type of ore is attached to this report.

/s/ HENRY BECKER .M.E.

Date May 22, 1950

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

March 7, 1951

DMA 144

Mr. [illegible] Heisenborn
Executive Officer, DMA Field Team, Region II
No. 157 Howard Street
Spokane 8, Washington

DMA docket number 144
Germania Tungsten

Dear Mr. Heisenborn:

Thank you for the copy of Noble's letter of January 18 regarding a visit to the Germania mine. The original letter was apparently misfiled in DMA.

We appreciate the difficulties involved in checking the applicant's statement of reserves at this time of year, but feel that you should be in a better position to make a recommendation than we are here. The statement by Henry Becker suggests that the material is of very low grade and could probably not be worked successfully without good management and planning. Will you give us your recommendations about the following?

1. Management of the company
2. Metallurgy of the proposed plant
3. Adequacy of funds requested
4. Present status of equipment on property
5. Feasibility of the proposal, especially with regard to mining and milling costs

The price basis for tungsten has not been definitely established, but our consideration of loans is tentatively based on the assumption that a ceiling of $65 per unit will be imposed, and that the price will not drop below $50 for a five year period.

Sincerely yours,

/s/ George B. Holderer

for R. R. Bradley, Jr.
Chief, Tungsten Branch

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Copies to: Surname copy
Dr. Boyd's Adm. reading file
Mr. Strobel
Mr. Bradley
Files

A GEOLOGICAL REPORT

on the

GERMANIA MINE

OF THE GENERAL ELECTRIC COMPANY

Stevens County
Wash.

- - - - - -

G. Donald Emigh, November, 1936

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INTRODUCTION

This report of the Germania Mine property embodies a study made of the property in September and October, 1936. The study had in general a two-fold purpose: 1. to map the veins in order to ascertain their number, locations and size, thereby guiding future development work; and 2. to determine the possibilities of the area being a future tungsten producer.

The Germania property was first located in 1894.[1] In 1907 it passed into the hands of a German promoter, who in the years from 1907-1914 spent considerable money developing and mining the tungsten mineral wolframite. From 1914-1932 the mine had no production except for a small quantity of wolframite "high-graded" by hand during the World War. In 1932 the property was acquired by J. A. Scollard and associates, who opened the old German workings, built a mill, and produced considerable tungsten concentrates up to the taking over of the mine by the General Electric Company on October 1, 1936.

During this examination, maps were made, both of the surface and of the underground working. The surface map covered about 1¼ square miles and covered essentially only the ground owned by the General Electric Company. A traverse was carried southward, however, for about a mile to tie in other tungsten veins. This surface map was made to a scale of 1" = 400'.

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1 Bancroft, Howland, "The Ore Deposits of Northeastern Washington" U.S.G.S. Bull. 550, 1914.

No triangulation system was set up because of lack of time, but closed traverses were run with a plane table and permanent numbered stakes were set at each station. The underground mapping was done with a Brunton compass and tape to a scale of 1" = 40'.

GEOGRAPHY

The Germania Mine is located in Stevens County, Washington, about fifty miles by airline northwest of Spokane. Up to the time of acquisition of the property by the General Electric Company, the mine was ninety miles by road from Spokane, and the last twelve miles was over a steep, narrow road which climbed a 1000-foot summit before dipping down to the mine. Snow makes this road impassable in winter. The General Electric Company has just completed six miles of new road which follows a water grade all the way from the mine, shortens the distance to Spokane thirty-five miles and avoids the heavy snow belt. To reach the mine now, one travels on pavement to Springdale; then takes a gravel road west toward Wellpinit for about twenty miles; then turns off to the north for some eight miles farther to reach the mine.

The Germania Mine is in the Huckleberry Mountains at an elevation of about 3600 feet above sea level. The higher peaks and ridges of the range are some 600-1200 feet above the mine buildings. Fig. 1 is a panorama of the mine and surrounding country and shows the general character of the region. The region has been heavily timbered, but forest fires have thinned the trees, thereby allowing the underbrush to become so thick that in places it is difficult to walk. In the summer and fall the region is dry, and little or no water runs in the valley; but during

the winter months - usually from November to May - snow covers the country.

GEOLOGY

Bancroft[1] has described briefly the geology and mineralization of this region.

There are two general types of rock in the vicinity of the mine, igneous and sedimentary. The latter are made up of thin beds of limestone, shale and quartzite. These have been intruded by later igneous rocks of a granite composition which moved along possibly as a molten mass dissolving the sedimentary rocks with which it came in contact. In places unabsorbed remnants of the sedimentary rocks are left as "islands" now completely surrounded by granite. Bancroft describes dark-colored dikes. These were not seen in this area, but there are aplite dikes paralleling the veins.

Besides the main granite mass are areas of a granite porphyry having a ground mass resembling the granite but containing an abundance of feldspar crystals, some of which are often an inch or more long. This rock is found along with the granite in the Germania Mine, and makes up the wallrock of most of the 150 foot level. Just what its relationship is to the granite is uncertain. Either it is a phase of the granite or is a different rock. The writer is inclined to believe it is a younger rock than the granite.

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1 Op. cit. (?) ibid?

ORE DEPOSITS

The ore deposits are quartz filled veins striking N.E.-S.W. and dipping steeply to S.E. They are in granite on the Germania property, but in other places are said to occur also in the sedimentary rocks. The veins are narrow - having a maximum width of 24 inches - but are presistent. The exodus vein, for example, has been followed for about 1800 feet, and maintains a width of from 7-24 inches.

The minerals in the vein are quartz, mica, fluorite, tourmaline, calcite, wolframite, ferrotungstite, scheelite, pyrite, arsenopyrite, galenobismutite, molybdenite, gold and silver. Quartz makes up at least 90% of the vein filling. Mica, pyrite and wolframite are next most abundant. The mineralization in the quartz comes in bunches - this being especially true of the wolframite. This black iron tungstate occurs usually as bunches of elongated crystals, individuals of which are sometimes four inches long. Masses of almost pure wolframite crystals, weighing several hundred pounds, have been found. The quartz and wolframite were the first minerals deposited as the others can be seen cutting these two. The alteration of wolframite to ferrotungstite and probably scheelite is common. In fact, the black wolframite crystals in the quartz usually have a "rind" of one or both of these minerals that may be up to 1/8 inch wide. The crystals will be crossed also by veinlets of these secondary minerals formed along rocks. The wolframite crystals are very seldom found in the wallrock, but are usually associated with quartz.

In places along the veins can be found irregular bunches of pegmatite - an intergrowth of coarse feldspar and quartz. Half a mile south of the Keith mine is a large vein of this same coarse pegmatite which

carries a little wolframite. This particular vein showed a gradition from pegmatite to quartz veins. The same thing was seen in the Keith Mine where wolframite is found also in pegmatite.

Wall rock alteration is common and characteristically the same. The feldspars in the granite are replaced by a mass of white mica, and at a more advanced stage the wall rock is entirely a mass of mica.

DESCRIPTIONS OF VEINS

In the area covered by the surface map there are in general three vein systems - the Exodus and Seidlitz systems on the General Electric property, and the Keith system about a mile to the southwest. This classification is arbitrary, as it is doubtful if one could crosscut a hundred feet anywhere in the region without cutting a quartz stringer, but it appears to be true that there is a concentration of wider quartz stringers in these three areas. These three systems will now be described:

A. Exodus System

In this system will be placed the Exodus, La Franz (La Franz), Norton, and other associated veins and veinlets. So far, this has been the most productive system in the Germania Mine, on the Exodus vein. The system - as one sees on the vein system map - is at least 4400 feet long, and its southward extension is as yet unknown, being covered with thick soil.

a. Exodus Vein

The Exodus vein has the best surface showing of any vein in the area. The vein is from 6 to 24 in. wide for a distance of at least 1700 feet. What it will do beyond is uncertain, as no great amount of work has as yet been done on it, but surface indications are that

it will soon feather down and possibly split into 1-4 inch stringers. The vein has been exposed vertically for 600 feet -- 450 feet above the main level and 150 feet below. Here again - as along the strike of the vein - the vein is remarkably even in width. The average ore milled from this vein has run about 4% in wolframite.[1] Work on 75 and 150-foot levels has so far shown an almost barren quartz vein.

b. La Franz Vein

This is more or less a "hypothetical" vein. There has been very little work done on it, and whether it exists as a single vein or as a series of parallel veins is not known. Surface float would indicate a 2-8 inch quartz vein with tungsten paralleling the Exodus vein and some 200-300 feet to the north of it. This vein was probably cut in the north crosscut driven from near the portal of the main level, and if so it is here made of two stringers - one, 1-inch; the other, 2-inches wide.

c. Norton Vein

F. M. Norton has recently done some prospecting on a vein south of the east surface showing of the Exodus vein. Surface cuts and a short tunnel near the surface show a quartz vein from 4-12 inches wide, which carries considerable wolframite. As can be seen from the maps, this vein projects into the hanging wall of the Exodus vein and is probably a parallel vein to the Exodus. It may be picking up as the Exodus vein feathers out to the south.

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1 Information from Henry Becker

Other Veins in Exodus System

On both ends of the Exodus system are quartz stringers from 1-4 inches wide and carrying well in tungsten. Where they extend to the south is not known, as a heavy overburden of soil covers the surface. To the north they can be traced better but here also they are small. Quartz stringers are found crossing Probeck Point in the north center of Section 13. They strike directly for the Exodus system, and are probably the northward extension of this system.

B. Seidlitz System

The Seidlitz System made up of the Seidlitz, Roon, Molke, Mazda, and other veins. It is potentially important because there is considerable quartz and tungsten present. On its north end it splits in two directions - the Molke to the northeast; the Roon and Mazda move to the east. A glance at the vein system map shows the convergence of the Molke, Roon and Mazda veins into the Seidlitz vein proper. Just what happens to the system southward is not known as a thick overburden of soil completely covers all the surfaces.

a. Molke Vein

The Molke vein as shown in surface cuts is from 4-10 inches wide. It contains much sulfides, but no tungsten was seen. It is exposed for about 80 feet but beyond that both ends are lost in the overburden.

b. Roon Vein

The Roon vein has been exposed for at least 400 feet, and projection to other exposures indicate it may be 2000 feet long. In the 400 feet it is from 3-10 inches wide and should carry considerable tung-

sten. It is particularly interesting because it is the only vein of any size found which may cross-section 13 and continue on to the northeast.

c. Mazda Vein

The Mazda vein was only recently found. It parallels the Roon vein, being some 200 feet to the south of it. It has been opened in surface cuts for 400 feet and is a quartz vein 4-6 inches wide carrying tungsten. Surface cuts indicate this vein dips north into the Roon vein, but this reverse dip may be carried by the down-hill creep of surface soil.

d. Seidlitz Vein

The name Seidlitz is applied to several parallel quartz stringers which are from 1-10 inches wide. As can be seen from the vein system map, these stringers may be the Molke, Roon and Mazda veins after they have converged. A little stoping has been done on these veins, and some rich ore reported obtained. Whether the Seidlitz vein continues southward is not known, as it is covered with soil. According to Becker, considerable prospecting has been done to the south and rich float found, but no veins located. Along the ridge trail in the vicinity of stakes 204-207 are several quartz stringers and the granite is altered. This may be the Seidlitz system.

C. Keith System

The Keith System was mapped for the purpose of getting its relationship to the vein on the General Electric property and to ascertain the possibility of a continuous zone of mineralization in between. The veins in the Keith system have the same characteristics of mineralization, wall-

rock, strike and dip as the Exodus and Seidlitz veins. The system has been exposed in the surface for 2000 feet. The main vein is from 8-16 inches wide and contains wolframite. To the south it splits into two, possibly three, veins containing from 3-8 inches of quartz. To the north the vein feathers down into quartz stringers from 1-4 inches wide. The remarkable thing about the Keith vein is its behavior with depth. At the surface is a strong quartz vein with considerable wolframite, while at 140 feet depth crosscutting and drifting show a narrow 1-3 inch glassy quartz vein, indistinct walls, very little tungsten and much molybdenite.

Half a mile south of the Keith vein, and on the strike of the system, is a large pegmatite vein which in places wells to a width of 10 - 15 feet. In one place it was seen to carry some wolframite, but as a whole it looks to be barren.

This completes a brief sketch of the three principal vein systems, and we find they have much in common. All are in granite; all have essentially the same strike and dip; all have the same type of mineralization; and all are narrow quartz veins which maintain uniform widths for long distances. This last feature is interesting because in most fissures formed by unequal stresses in the rocks, the walls weave and curve; and movement along the break brings concave surfaces opposite each other, forming open lenses and convex surfaces together to form "tight" spots. Then when the ore solutions move along the fissure, they fill the open "pods" forming lenticular ore bodies. This condition does not exist in the Germania vein, and the question arises - "why?" It is possible in this area that the movement was along jointing planes because a strong set of joints

in the granite everywhere parallel the veins. And that they are joints - and not the result of shearing - is evidenced by the two complimentary joints set at right angles to this main jointing.

SUGGESTIONS IN DEVELOPMENT WORK

In most mining operations the object of development work is to open new ore which can be worked immediately. At the Germania Mine, however, development work can be carried on with either or both of two purposes in mind: (1) Opening ore to be mined now; or (2) opening veins too small to be mined now but which could be mined with higher tungsten prices. No matter which of the two is the more important, a fairly comprehensive explanation program should be adopted, as it is as important for the General Electric Company to know that it has a limited supply of tungsten at the Germania as it is to know that it has a supply ample for many years. Following is a list of suggested development work. Obviously, no set program can be outlined, as the work will be influenced by day-to-day developments, but at the present time the following appear to be things which logically should be done:

A. Underground Development

1. The Exodus vein probably is the largest vein on the property; and, in spite of the fact that a large section of it has been mined, continues to be the most important potential single ore supply. It should be explored to the north, to the south, and down. The main adit should be pushed southward for the remaining 600 feet to the property end-line, and if the ore looks promising a raise should be driven through to the surface, not only to explore the vein further but to

facilitate future mining work and to aid ventilation. Drifting both to the north and the south should be continued on the 150 foot level. Drifting southward offers the most promising possibility of ore in the mine, and drifting northward should be in vein material for 2000 feet. Exploration of the vein at depth is important, because, even though the vein on the 150-foot level now looks barren, the writer feels that as long as quartz is present, the possibilities for tungsten are good.

2. After the main drift has been pushed ahead close to the south end of the property, the possible existence of hanging-wall and footwall veins should be determined. There are possibly two in the hanging wall -- the narrow split off the Exodus vein which has already been drifted on for thirty feet, and the Norton vein; and it is possible that these two are the same. The Norton vein is the most distant, but may be found at about 300 feet from the Exodus vein. The La Franz vein in the footwall should be investigated also. It should be about 200 feet from the Exodus vein.

Cross-cutting for parallel leads is a necessary and important phase of mining. And it is particularly important here where there is a strong evidence of parallel veins. The uniform width of the veins of this region make crosscutting almost as satisfactory a form of exploration as drifting, as one feels no great hesitancy in projecting even a small 5-inch vein for 300 feet between two points at which it has been cut. Crosscutting can be done either by actually driving a crosscut or by diamond drilling. The writer prefers the latter,

as it costs only $1.50 - $1.75 a foot and is four times faster than breaking rock.

3. On the Rozelle level the hanging-wall vein should be either drifted on or cross-cut to, because it appears possible that this is the vein showing at the surface. This work could well be delayed, however, until stoping to the surface on the footwall veins shows whether or not this is true.

4. The Seidlitz vein system should be prospected as soon as possible. Kirkwood's new tunnel should be driven ahead 100 feet to cut the vein at about 115 feet of depth. The upper tunnel on the east slope of the hill - station 189 on dump - which was driven to cross-cut for the Seidlitz vein, appears to have cut the vein right at the portal. Here it is composed of half a dozen quartz stringers varying in width from 1 - .4 inches and contained in a zone about 15 feet wide. The crosscut to the northwest cut through the zone and into barren rock but no work was done to the south to catch the south boundary of the mineralized zone. A few feet of crosscut should be driven in this direction.

B. Surface development

The bulldozer and caterpiller at the mine will be useful in scraping away surface soil and exposing veins. There are several places where such work can be done to advantage.

1. The dozer can be used to open the old road from the Germania to the Seidlitz. It is not likely that any vein of importance will be found, but it should be possible to determine for sure where the

Seidlitz crosses.

2. The Bulldozer can open the old road down the west side of West Sand Creek to the old mill. Particular care should be taken to look for the place where the Molke, Roon and Mazda veins cross. If the veins look promising, the dozer can be taken half way up the hill toward the upper old Seidlitz road and be used to trench again for the veins. This work should be done in the vicinity where the vein system map shows a convergence of the Molke, Roon and Mazda veins.

3. The dozer should be used to cut the bank along the road to Fruitland, especially in the vicinity of Stake 18. This is about where the Exodus vein should cross.

4. The dozer can be used to trench for the La Franz vein between Stations 95 and 106, and it can also be used to trench for the same vein on the hillside to the south of Station 98.

5. The Roon vein should be traced on east into the next section which is open to mineral location.

6. The Mazda vein should also be prospected far to the east. This would have to be done by hand, but later, if a timber road is constructed into the area, the dozer could be used for trenching.

7. About one-half a mile north of Section 13 is a quartz vein 10 - 18 inches wide, which is exposed on the ridge about 300 feet south of and 100 feet above the old Rearden road. The vein strikes N 27° E., dips 75° E. and is in granite. It is barren with quartz containing mica and tourmaline, but it resembles the Germania veins and strikes

toward the Exodus system. It should be staked and more surface prospecting done. To the west of it an old shaft has been sunk. The granite is now a spongy mass of iron oxide - indicating leached sulfides, and is different from any other the writer saw and appears to be a vertical shoot of perhaps 20 diameters. It would be located on the same claim as the quartz veins.

8. Some prospecting should be done near the top of the long ridge which is across the valley and to the south of the Seidlitz vein. There is some quartz float on this ridge and considerable alteration of the granite.

CONCLUSION

The important question concerning the Germania Mine property is "What is its possibilities as a tungsten producer?" "Is the tungsten present, and if so, what will it cost to mine it?" Let us consider first the character of the veins themselves.

The veins are narrow but persistent along their strike. The popular idea is that tungsten mineralization goes deep, but a word of caution here. Recent work has indicated that tungsten deposits may be formed near the surface. The depth to which mineralization extends is governed usually not so much by the kind of minerals as by the character of the fissures. Some fissures go deep; others are formed near the surface. Certain features at the Germania property might indicate that the tungsten mineralization does not go deep. The work below the main level of the Germania mine, so far has shown a smaller quartz vein, less tungsten, and possibly more molybdenite. The Keith Mine is interesting; at the

surface is a wide quartz vein with considerable tungsten, and at 140 feet to a hard, glassy, blue quartz which in places is a pegmamolybdenite. This may not be the rule, but it is possible that with a little more depth the exodus vein will behave in the same manner.

The veins do not pinch and swell, so that the likelihood of a small stringer swelling in to a bonanza bein several feet wide is small. It is possible, however, for parallel stringers to come together and form a larger vein, and this may happen in the Seidlitz system, although not likely. The coarsely crystalline, muggy type of quartz found in the veins sometimes indicates a near-surface deposit. Another point to bear in mind is that the veins are near the very top of the granite body and that this might indicate -- although not necessarily so -- a locus of shallow deposition. The Keith surface outcrop, for instance, is within a couple of hundred feet of the overhead sedimentary rocks, and this is also true of the Exodus outcrop, although here the sedimentary rocks have been removed by erosion. With the above points in mind, let us now consider a phase of development work at the Germania property which has not as yet been touched on.

The suggestion has been made that a long crosscut be driven from the vicinity of the old mill northeast to cut the Seidlitz and Exodus veins as well as any in between. This would necessitate a crosscut about 2600 feet long. It would tap the Exodus vein about 200 feet below the 150-foot level, would drain itself and would provide a level from which to work both the Exodus and Seidlitz veins.

The plan would be also to move the mill down to the creek below

the portal of the crosscut. This crosscut will be a very good idea if the ore is there; but if it is not, it may be a little more expensive prospecting than could be done otherwise. This 2600-foot crosscut could be driven for perhaps $20,000. The present incline shaft in the Germania mine could be deepened 200 feet for probably $5,000 and be at the same point the crosscut would cut the vein. It would still be necessary, however, to prospect the Seidlitz vein - something the crosscut has already done. Diamond drilling may be satisfactory here. It would cost about $1.75 a foot and would be at least five times faster than crosscutting. Its only purpose would be to ascertain the existence and width of the veins and not the values. Or if it were decided not to prospect by drilling, a 1000-foot crosscut could be driven from the mill to cut the Seidlitz, and later extended 1600 feet more to cut the Exodus if the showing on the latter vein justified. Diamond drilling seems a logical way to prospect the Roon, Molke and Mazda veins. They are located in such a position that no depth can be attained by crosscutting, and it would be necessary to sink a shaft to explore them. If drilling showed wide veins below the surface, then would be the time to sink and crosscut.

An estimation of the amount of tungsten in reserve on the Germania property is difficult. If all the stringers in the Seidlitz system were mined, possibly several thousand tons of Wolframite could be obtained at a cost of perhaps $40 - 100 a unit. The same could be said of the Exodus system, although if development work shows the Exodus vein to be wide and rich in depth, mining costs will be much cheaper. Scollard showed mining costs of $7.00 a unit at one time, but it is unlikely this

can be approached again. At that time mining was being done on a 20-inch vein, and most of the ore was already broken and laying in the stopes.

There are two other possible sources of wolframite at the property -- old dumps and mill tailings, and placer deposits.

The amount of tungsten in the former is not large. There are perhaps 30,000 - 40,000 tons of mill tailings, which run .2% WO_3. About 4/5 of these are from the new mill and 1/5 from the old German mill. This means about 60 tons of wolframite, but this amount could not be gotten because a mill cannot make a 100% extraction. The various mine dumps on the property could be profitably sorted by hand if tungsten were selling for, say $30. a unit; but only a small tonnage of wolframite could be obtained in this manner.

The wolframite in the soil and concentrated in the gulches offers a larger supply than can be obtained from the mill tailings or old dumps. Samples were taken from holes averaging three feet deep and covering a stretch of ground extending from the pump house up the gulch west as far as the upper tunnel. This is a stretch of ground about 150 feet wide and 900 feet long and none of the holes reached bed-rock. The samples were screened, passed over a mill table, and the concentrates weighed. The samples showed that the top three feet of soil carries from 3 to 15 pounds of wolframite to the ton, averaging about 7 pounds.

Eight samples were taken, beginning from McLane's old cabin below the Seidlitz vein and running up the gulch as far as the Exodus vein. These samples were disappointing, as they showed only from 1 - 2 pounds of wolframite to the ton of soil. Sampling to bed-rock probably will

raise this figure a little.

Without considerable more testing being done, the writer hesitates to say just how much tungsten can be obtained from placer deposits. A systematic test should be made by opening holes down to bedrock and passing the material over the mill table. It would be better yet to run large samples through the mill. It appears likely that there are several hundred tons of wolframite in placer deposits on the property. If wolframite were badly needed, it would pay to test carefully the gulches in this area, particularly the one below the Keith vein system.

G. Donald Emigh

November 25, 1936

(Copy)

MF-200
(April 1951)

Docket No. DMA 144X

Commodity _____

UNITED STATES OF AMERICA
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

EXPLORATION PROJECT CONTRACT [1]

It is agreed this _____ day of _____, 195___, between the United States of America, acting through the Department of the Interior, Defense Minerals Administration, hereinafter called the "Government," and [2] _____

hereinafter called the "Operator," as follows:

1. *Authority for contract.* This agreement is entered into under the authority of the Defense Production Act of 1950, pursuant to Mineral Order 5, entitled "Regulations Governing Government Aid in Defense Exploration Projects."

2. *Operator's property rights.* The exploration project shall be conducted on that certain property situated in the State of _____, County of _____ described as follows: [3] _____

with respect to which the Operator represents and undertakes: [4]

(*a*) That he is the sole owner, in possession and entitled to possession, and that the property is subject only to the following claims, liens, or encumbrances as to each of which the subordination agreement of the holder is attached: _____

(*b*) That he is a lessee, in possession and entitled to possession, and the subordination agreement of the lessor is attached.

3. *Exploration project.* The Operator, within ten days from the date of this contract shall commence work on a project of exploration for [5] _____, shall prosecute the work efficiently, expertly, in a workmanlike manner, in accordance with good mining standards, with suitable and adequate equipment, materials, and labor, all properly designed to bring the project to completion within a period of [6] _____ from the date of this contract. The exploration project and the work to be performed are more fully described on Exhibit "A" attached hereto, which, with any maps or drawings thereto attached, is made a part of this contract.

4. *Performance of the work.* The work shall be performed by the Operator, under his sole direction and control: *Provided,* That with the consent of the Government and its written approval of the contract or contracts, all or any part of the work may be performed by the Operator through contract or contracts with independent contractors. The Government shall have the right to enter and observe and inspect the work at all reasonable times, and the Operator shall provide the Government with all available means for doing so. The Government may consult with and advise the Operator on all phases of the work.

5. *Fixtures and improvements.* The Operator shall devote the land and all existing improvements, facilities, buildings, installations, and appurtenances to the purposes of the exploration project without any allowance for the use, rental value, depreciation, depletion, or other cost of acquiring, owning, or holding possession thereof. Attached hereto, marked "Exhibit 'B'," is a detailed list of additional facilities, buildings, and fixtures, to be purchased, installed, or erected by the Operator, with the estimated cost of each, to which the Government will contribute its agreed pro-rata share of the cost. The difference between the cost of such additional facilities, buildings, or fixtures, and the salvage value thereof at the conclusion of the work, shall be charged as a cost of the project to which the Government has contributed its pro-rata share.

6. *Operating equipment.* Attached hereto, marked "Exhibit 'C'," is a detailed list of operating equipment divided into categories of items to be rented, purchased, or furnished by the Operator, with the allowable rental, purchase price, or rental value, as the case may be, annexed to each. As to equipment purchased for the project, the Government will contribute its agreed pro-rata share of the cost thereof, and the difference between the cost and the salvage value at the conclusion of the work shall be charged as a cost of the project to which the Government has contributed its pro-rata share.

[1] If sufficient space is not provided in any blank, use an extra sheet of paper and refer to it in the blank.
[2] State name, address, and nature of organization if any.
[3] Give legal description or enough to identify the property.
[4] Strike out the provision not applicable.
[5] Name of mineral.
[6] Not in excess of 2 years.

7. *Title to and disposition of property.* All facilities, buildings, fixtures, equipment, or other items costing more than $50 each, paid for or purchased with funds contributed jointly by the Operator and the Government, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the termination of the contract, if they have any salvage value, shall be disposed of for their joint account unless the Government, in writing, waives its interest in any such items. The Government may require the dismantling, severance from land, and removal of any such items in order to realize its interest in the salvage value thereof, and the cost of any such removal and of the disposal of the items shall be for the joint account of the parties in proportion to their respective interests.

8. *Labor and supervision.* Attached hereto, marked "Exhibit 'D'," is an itemized schedule of labor, by numbers and classes (miners, muckers, millmen, etc.), and of supervisors, by numbers and positions, with the maximum wages or salaries that may be paid to each as an allowable cost of the project.

9. *Rehabilitation and repairs.* Attached hereto, marked "Exhibit 'E'," is a detailed schedule of existing facilities, buildings, installations, and fixtures, with a statement of the cost of any necessary rehabilitation or repairs to put into useful and operable condition, which cost shall be allowed as a cost of the project.

10. *Allowable costs of the project.* The allowable costs of the project in which the Government will participate are limited to the necessary, reasonable, direct costs of performing the exploration work, including the costs of materials, supplies, engineering, power, water, and utilities, including items of equipment costing less than $50 each; and the costs referred to in Articles 5, 6, 8, and 9, and the exhibits annexed to and referred to in the contract. Although the Government may pay part of the cost of new or additional facilities, structures, buildings, and equipment, only the depreciation on such items, computed as indicated in Articles 5 and 6, will be charged as a cost of the project. No items of general overhead, corporate management, interest, or any other indirect costs not expressly allowed by these regulations, or work performed or costs incurred before the date of this contract, shall be allowed as costs of the project in which the Government will participate.

11. *Participation by the Government.* At the end of the first full calendar month after the Operator has commenced work under the project, and at the end of each succeeding calendar month, the Operator shall submit to the Government a voucher for payment with a detailed statement of work done and allowable costs (as defined in Article 10 of this agreement) incurred, in a form and with supporting data acceptable to the Government. After approving the voucher, the Government shall pay to the Operator 75 percent of the sum of such costs incurred; *Provided,* That the aggregate total of all sums paid by the Government under this agreement shall not exceed $[illegible], which is 75 percent of the agreed estimated total cost of this project, $[illegible].

12. *Accounts and audits.* The Operator shall keep suitable records and accounts of operations, which the Government may inspect and audit at any time. The Government may at any time require an audit of the Operator's records and accounts by a certified public accountant, the cost thereof to be treated as a cost of the project. The Operator shall keep and preserve said records and accounts for at least 3 years after the completion of the project or the termination of this contract.

13. *Progress reports.* The Operator shall provide the Government with monthly reports of progress in form and content satisfactory to the Government, and upon the completion of the project or termination of the contract shall provide the Government with a comprehensive geologic and engineering report, including an estimate of ore reserves, to the best of his ability. Four copies of all reports shall be furnished to the Government.

14. *Repayment by Operator.* If, upon the completion of the exploration project or termination of the contract, the Government considers that a discovery or development has resulted from the work from which commercial production of ore may be made, the Government, within 6 months thereafter shall so certify to the Operator, particularly describing and delimiting its estimate of the discovery or the development. Thereafter, if and as ore is produced as a result of such discovery or development, the Operator and his successor in interest shall be and become obligated to pay to the Government a percentage royalty on the net smelter returns or other net proceeds realized from such ore, concentrates, or metal produced within ten (10) years from the date of this contract, until the total amount contributed by the Government, without interest, is fully repaid or said 10 years have elapsed, whichever occurs first, as follows:

Of net smelter returns or other net proceeds not in excess of eight dollars ($8.00) per ton of ore: One and one-half (1½) percent.

Of net smelter returns or other net proceeds in excess of eight dollars ($8.00) per ton of ore: One and one-half (1½) percent, plus one-half (½) percent additional for each full fifty cents ($0.50) in excess of eight dollars ($8.00) per ton of ore, but not in excess of a maximum of five (5) percent.

This obligation to repay from net returns or proceeds shall be and remain a claim and lien upon the property which is the subject of the exploration project and upon any production resulting from such discovery or development, in favor of the Government, until fully paid, or until said 10-year period has elapsed; and this claim and lien and the Government's right to repayment shall survive any termination of the contract, whether by completion of the exploration project or otherwise. This article is not to be construed as imposing any obligation on the Operator or his successor in interest to produce ore from any such discovery or development.

15. *No assignment of contract.* Without the written consent of the Government, the Operator shall not assign or otherwise transfer or hypothecate this contract or any rights thereunder.

16. *Termination and completion.* The Government may, at any time, by written notice to the Operator, terminate this contract: (*a*) If the Operator fails to provide his share of the money necessary to prosecute operations pursuant to the terms of the contract; (*b*) if the Operator, in the opinion of the Government, fails to prosecute operations pursuant to the terms of the contract; or (*c*) if in the opinion of the Government, operations up to the time of the notice have not indicated the probability of making any worthwhile discovery and in the opinion of the Government further operations are not justified. Upon the completion of the project or any termination of the contract the Operator shall render to the Government a full and final accounting of his operations under the contract and his expenditures of money; shall dispose of any unused materials, supplies, and equipment for the joint account of the Operator and the Government in the proportion of their respective interests; and shall pay to the Government its pro-rata share of any money remaining.

Executed in triplicate the day and year first above written.

Tungsten Mining & Milling Co.
(Operator)

By P. V. Casey Pres.

THE UNITED STATES OF AMERICA

By

U. S. GOVERNMENT PRINTING OFFICE 16—64066-1

Exhibit A

The exploration will consist of the following:

(1) A crosscut adit will be driven about 600 feet in a N82W direction from a point 240 feet north of the Spokane Indian Reservation boundary near the center line of the Bluecher Lode claim (see map attached). This adit will intersect the Norton veins 440 feet northeast of the exposure in the Lower Norton adit where 2-10" veins are exposed at altitude 3700. It also will intersect the Exodus vein 600 ft. from the portal about 100 feet above the main level in the Germania mine. From this crosscut 150 feet of drifts will be driven along both the Norton and Exodus veins. According to Decker's map attached to applicant's original application for Government assistance (Docket [illegible]-144) between 10,000 and 20,000 tons of ore remain in the Exodus vein above the level of the proposed adit. This ore will be tapped by one of the proposed drifts.

(2) The caved adit just above creek level on the southward extension of the unnamed vein on the Moltke Claim will be reopened and extended in a [illegible] direction for 500 feet along this vein (see map attached).

(3) 1000 feet of core drilling will be done to test known parallel veins in the hanging wall and the footwall of the unnamed vein from adit on Moltke Claim (item 2 above). Holes to be drilled from points 300 feet and 600 feet from the portal.

Exhibit A (con't)

Quarterly Progress Schedule*

1st quarter: Purchase and install equipment; do surface work in preparation for mining; cross-cut 200 feet in adit on Bluecher claim.

2nd quarter: Cross-cut 200 feet in Bluecher adit. Rehabilitate caved adit on Moltke claim.

3rd quarter: Cross-cut 200 feet in Bluecher adit. Drift 200 feet in Moltke adit.

4th quarter: Cross-cut 100 feet and drift 100 feet in Bluecher adit. Drift 200 feet in Moltke adit.

5th quarter: Drift 200 feet in Bluecher adit, and drift 200 feet in Moltke adit.

6th quarter: Drill 1000 feet of diamond drill core holes in hanging wall and footwall of vein in Moltke adit.

* If adequate labor is available it might be possible to finish this schedule in one year. In no event will it require more than 2 years to complete the work scheduled.

Summary of Cost of Project

Purchase of equipment (see Exhibit C).....	$ 12,684
Bulldozing, 200 hours @ $10/ hr.	2,000
Crosscutting, 600 feet @ $29/foot.....	17,400
Drifting, 900 feet @ $29/ foot.....	26,100
Diamond drilling, 1000 feet @ $6/foot.....	6,000
	$ 64,184

Exhibit B

No additional facilities, buildings, or fixtures are to be purchased, installed, or erected.

Exhibit C

List of Operating Equipment

1. To be rented:

	Rental cost
1 bulldozer (Allis Chalmers-Jameson)	18.00/hr.

2. To be purchased:

	Purchase Price
1 compressor 125 cu. ft.	$ 4000.00
1 mucking machine	3500.00
2 drifters (Drill)	1400.00
2 column & arm	500.00
3 mine cars 10 cu. ft.	300.00
1 pressure tank	44.00
1 blower fan	190.00
ventube 900 ft. at 50¢	450.00
rail 3000 ft. 20# at 140/ton	1400.00
ties 1000 ft. at 35¢	350.00
2" pipe 900 ft. at 50¢	450.00

3. To be furnished by operator:

	Rental Credit
1950 Studebaker 3/4 ton pickup truck	250.00/mo.
I. R. or equivalent underground diamond core drill	1.50/ft.

Exhibit D

Schedule of Labor and Supervisors

4 Miners @ 14.00 per shift
1 Laborer @ 12.00 per shift, part time
1 Bulldozer operator @ 15.00 per shift, part time
1 Blacksmith @ 15.00 per shift, part time
1 Truck driver @ 12.00 per shift, part time
1 Superintendent-- quarter time--$400/ mo.
1 Engineer, part time (included in figure for engineering & overhead) $400/mo.
1 Bookkeeper, part time (included in figure for engineering & overhead) $300/mo.
1 Diamond drill operator, $20 per shift
1 Diamond drill helper, $10 per shift

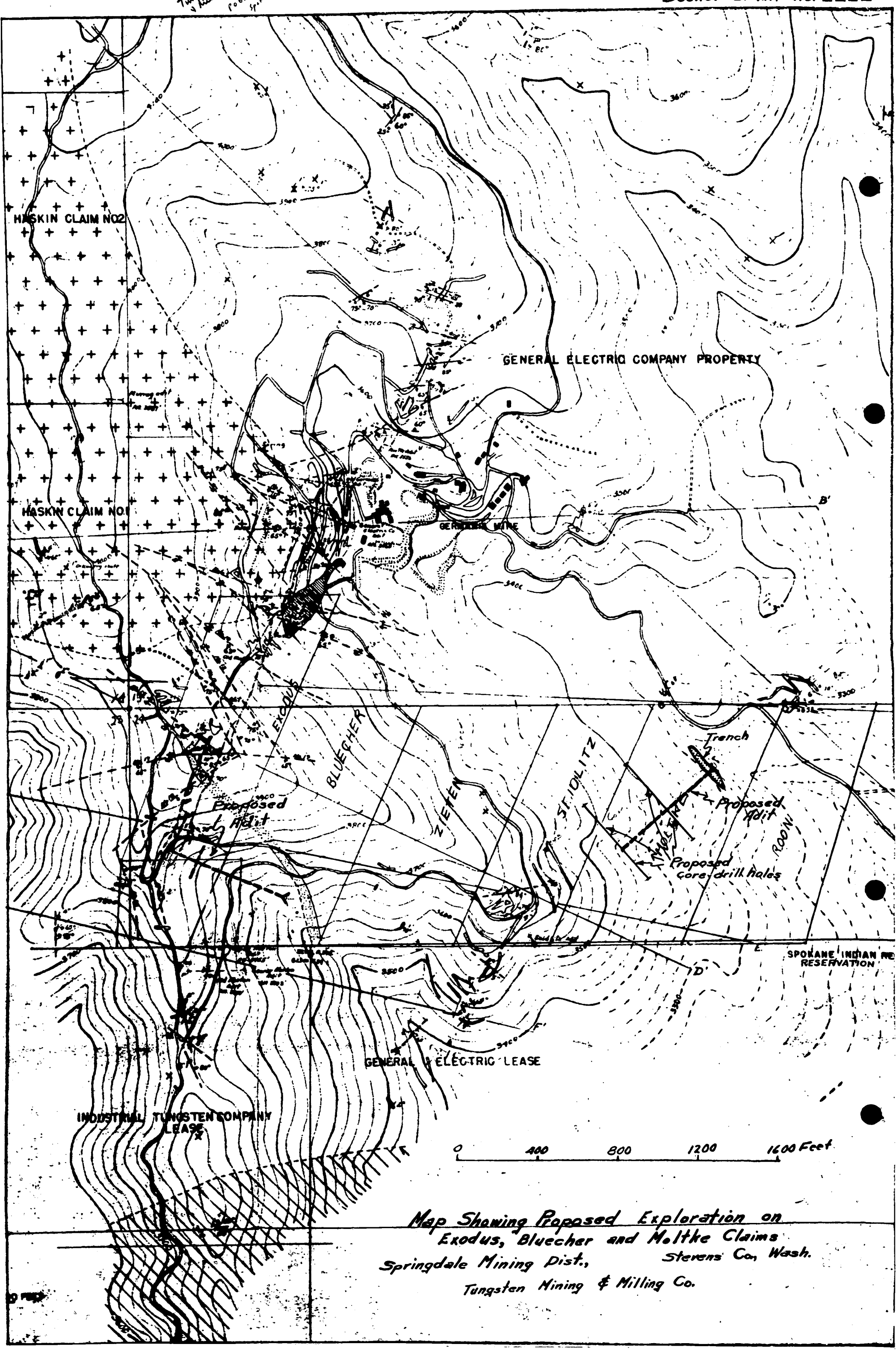
Exhibit E

List of Existing Facilities, Buildings, Installations, and Fixtures

No existing facilities, buildings, installations, or fixtures are to be rehabilitated or repaired.

Tungsten Mining & Milling Co.
P.O. Box 794
Spokane

Docket D.M.A. No. ____



Map Showing Proposed Exploration on
Exodus, Bluecher and Moltke Claims
Springdale Mining Dist., Stevens Co. Wash.
Tungsten Mining & Milling Co.

Form MF-102
(April 1951)

U. S. DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS ADMINISTRATION

Form approved.
Budget Bureau No. 42-R1028.

MF-102 Should Be Filed With General Technical Data Form MF-100

APPLICATION FOR GOVERNMENT LOAN
Not to Exceed $50,000
Under the Defense Production Act of 1950

Not to be filled in by applicant

Docket No. DMA-144

Date received 5/31/51

Name and address of applicant

[illegible]

Date of application

[illegible]

Amount of loan requested [illegible]

Terms of loan requested

[illegible]

If you have already filed MF-100, give date filed ....., type of assistance requested ..... DMA docket number (if available) .....

[illegible]

INSTRUCTIONS

Application should be filed with Defense Minerals Administration, Department of the Interior, Washington 25, D. C. Submit four copies of this application and four copies of General Technical Data Form MF-100. If the latter form has been filed previously with an application for Government assistance, it is not necessary to file it again. However, the applicant should indicate in space provided above the type of assistance previously applied for (loans, procurement contract, etc.) and DMA docket number, if available.

Name and address of applicant should be stamped or typed on each sheet of the application and all accompanying papers. *When a question is inapplicable, it should be so stated on the form.* Additional sheets may be attached in answering any questions or in supplying additional information. IF YOU CANNOT ANSWER A QUESTION, SO STATE. If a question is answered elsewhere in the application, indicate where answered. It is not necessary to answer it again.

1. PURPOSE OF LOAN:

Give a brief general statement of the purpose of the loan requested, including in the table below estimated amounts for such major purposes as land acquisition, building construction, purchase of plant, purchase of equipment, working capital, repayment of debt, etc. Statement should make clear whether funds will be used for expansion of capacity, development of technological processes, or production of essential materials.

General Statement.

[illegible]

NATURE OF EXPENDITURE	AMOUNT
[illegible]	[illegible]
[illegible]	[illegible]

TOTAL AMOUNT APPLIED FOR [illegible]

Supply the following information on separate sheets, arranged, numbered, and lettered as indicated:

2. PROPOSED METHOD FOR REPAYMENT OF LOAN:
   State how loan will be repaid and proposed schedule of repayment.
3. CLAIMS AGAINST GOVERNMENT:
   Explain in detail, stating amount of each claim filed and amount recovered, if any. If no such claim has been filed, so state.
4. EMPLOYMENT:
   Will loan result in an increase in the number of employees? If so, how many?
5. INSURANCE:
   State kind and amount of all insurance carried in favor of applicant. (Fire, public liability, etc.)

6. RECENT EFFORTS TO OBTAIN CREDIT:

State efforts to obtain credit, within 60 days preceding date of application, from banks, RFC, or other sources. If refused, give reasons and submit copy of refusal. If a bank will participate in the loan, state name of bank and amount of participation.

7. NECESSITY CERTIFICATES:

List any applications made for Necessity Certificates for tax amortization (under section 124A of the Internal Revenue Code) giving date of application, Government file number, estimated total cost of facilities on each application, and action taken by Government.

8. OWNERSHIP OF PROPERTY:

Show how property is held. Attach copy of deeds, leases, or other documents conveying to applicant the present interest of the applicant in the mining property.

9. LEGAL DESCRIPTION OF PROPERTY:

(*a*) Give name and mineral survey number of patented claims, if any, and a map.
(*b*) Give names, dates of location, and place, date book, and page record of all unpatented locations, and a map.
(*c*) If property is other than mining claims, give description by lot numbers, metes and bounds, or according to accepted legal practice.
(*d*) If mineral rights are separated from surface rights, or if any conflicting or overlapping rights exist in the property give full explanation.

10. GEOLOGY AND TOPOGRAPHY:

Submit all available information and maps.

11. EXISTING DEVELOPMENT:

(*a*) Furnish all pertinent information with regard to the ore body or mineral deposit. If maps and sections of the mine are not available, pencil sketches are acceptable. However, such sketches should, if possible, be drawn to scale, or if not, dimensions should be shown. Give all available assays of samples, stating clearly how samples were taken, giving width and location of each sample. Show the location, value, and width of each sample on maps submitted.
(*b*) Submit certificates, when available, giving analysis of each sample and number each sample to correspond with sample numbers on the maps submitted.
(*c*) State type of mine, whether tunnel or shaft, and show in detail the existing workings. State distance along dip of vein between levels and to surface. Indicate condition of workings, noting on map caved areas and those areas which it is proposed to make accessible.

12. IF EXPLORATION OR DEVELOPMENT OF MINE IS ANTICIPATED:

(*a*) State clearly and in detail the proposed work.
(*b*) Sketch the proposed work on any maps submitted.
(*c*) Submit cost estimates.

13. MINING:

(*a*) Describe mining methods briefly.
(*b*) Detail all mining costs including power, water, transportation, etc.
(*c*) State time required to reach production.

14. MILLING:

(*a*) State how and where ore is to be milled.
(*b*) State capacity, percentage of extraction, ratio of concentration, and submit flow sheet, if ore is to be milled by applicant.
(*c*) Detail the milling costs and transportation costs, if any.
(*d*) Explain tailing disposal.
(*e*) Explain source of water and whether it is suitable.
(*f*) Detail the marketing of concentrates and submit actual or proposed smelter contracts, if available.

15. Submit any available informative data not covered in the preceding paragraphs.

16. NAMES AND ADDRESSES OF OFFICERS, DIRECTORS, OR PARTNERS, AND IN ADDITION THERETO, THE FIVE LARGEST STOCKHOLDERS IF A CORPORATION:

Name and Address (a)	Official Title (If officer is also director, indicate by "D") (b)	Total of Annual Salary, Commissions, Bonuses, Etc., Received From Applicant and Affiliates During Last Fiscal Year (c)	Estimated Net Worth Outside of Applicant (d)	Number of Shares Held in Applicant: Common (e)	Number of Shares Held in Applicant: Preferred (f)	Life Insurance Carried for Benefit of Applicant: Amount (g)	Life Insurance Carried for Benefit of Applicant: Net Cash Surrender Value After Loans (h)
F. H. Casey, Pres, Gn'l Mgr	(D)	none	80,000	300,000	-	None	--
Joe Dillon, Vice President	(D)	none	60,000	300,000	--	None	--
E. C. Cooper, Treas.	(D)	None	10,000	600,000	--	None	--
L. H. Casey, Secretary	(D)	None	Joint with F. H. Casey			--	--
Charles Dean	(D)	None	16,000	100,000	--	x x x x	x x x x
	Total			1,300,000			

CAPITAL STOCK ISSUES
FOR CORPORATE APPLICANTS

ITEM	AUTHORIZED (a)	OUTSTANDING (b)	PAR VALUE (c)	NUMBER OF SHARES OUTSTANDING (d)	DIVIDEND RATE LAST PAID (e)
Common stock	$ [illegible]	$ [illegible]	$.10	1,801,129	None
Preferred stock	$ [illegible]	$			

17. COMPENSATION SCHEDULE:

INSTRUCTIONS: The schedule shall show the amount of compensation being paid to all employees of applicant receiving compensation at a rate in excess of $5,000 per annum computed on a full-time basis. Any compensation in excess of this amount must receive Government approval.

18. COLLATERAL OFFERED AS SECURITY FOR LOAN:

BRIEF DESCRIPTION	DATE ACQUIRED	COST TO APPLICANT	PRESENT NET BOOK VALUE	APPRAISED	STATE BY WHOM APPRAISED AND DATE
Real estate (describe): Copies of leases attached (Murray lease)	5/5/50	25,000 $ 50,000	$ Not ascertained		
Buildings (describe): Mill bldg., garage Blacksmith shop bunkhouse, misc. bldgs	(5/5/50)	incl above	balance sheet attached		
Machinery, equipment, and other chattels exclusive of office furniture and fixtures (describe):	see balance sheet attached				

FUTURE PRODUCTION DESCRIPTION	DATE EXPECTED TO REACH FULL PRODUCTION	GROSS VALUE	NET VALUE
Hope to start this summer and to produce tungsten for four or five years. Estimates vary on gross and net value. Lowest estimate of tailings by Henry Lacker $1,170,000 gross.			

19. CURRENT FINANCIAL STATEMENT:

ASSETS		LIABILITIES	
CURRENT:		CURRENT:	
1. Cash see attached financial statement		1. Notes payable	$
2. Notes receivable		2. Accounts payable	
3. Accounts receivable		3. Other	
4. Inventories		4. Accrued (interest, taxes, rent, etc.)	
TOTAL		TOTAL	
FIXED AND OTHER:		FIXED AND OTHER:	
5. Plant: Lands		5. Mortgage debt	
Buildings		6. Contracts, leases, royalty	
Ores		7. Other (describe)	
6. Machinery		TOTAL	
7. Equipment, furniture, etc.			
TOTAL		10. Contingent (describe)	

20. CONDENSED COMPARATIVE STATEMENT OF INCOME AND EXPENSES:

For years ended _____
(Insert date of end of fiscal year)

(000.00 omitted)

	(Figures for 3 Preceding Years)			Current Year as of Date of Financial Statement
	19____	19____	19____	
1. Net sales of ores or concentrates				
2. Cost of production — See attached balance sheet				
3. Gross profit on sales (line 1 minus line 2)				
4. Other income (itemize)				
5. Total (line 3 plus line 4)				
6. Salaries (officers or partners)*				
7. Selling and all other expenses				
8. Total of lines 6 and 7				
9. Profit or loss before depreciation and Federal taxes (line 5 minus line 8)				
10. Depreciation				
11. Federal income and excess profits taxes				
12. Net profit or loss (line 9 minus lines 10 and 11)				

NOTE.—If applicant is incorporated an analysis of surplus should be given in detail for each of the years shown in the above tabulation.

*To include all payments of any kind (commissions, bonuses, withdrawals) to officers or partners.
NOTE.—If years included in the above tables are not adequately representative of applicant's financial experience, information may be submitted for additional years.

21. NOTES PAYABLE, MORTGAGE DEBT, AND LIENS: See attached balance sheet

List notes payable, giving maturity dates, amounts, character of collateral and names of guarantor(s) and/or endorser(s). Give names and addresses of holders of notes.

List names and addresses of holders of mortgages, maturity dates, interest rates, amounts paid and amounts unpaid.

List names and addresses of holders of liens against production, quantity involved, amounts of principal and interest due and dates of repayment.

22. AGREEMENT AS TO COMPENSATION FOR SERVICES RENDERED OR TO BE RENDERED TO APPLICANT IN CONNECTION WITH APPLICATION AND/OR LOAN:

No fees or commission shall be paid by applicant for the purpose of procuring a loan. Reasonable compensation may be made for proper services actually rendered to applicant in preparing this application. If such services have been rendered, state kind of services and charges for same. Applicant agrees that all such compensation intended to be paid from the proceeds of the loan, if granted, shall be subject to approval by the Government.

_____
(Applicant)

23. The applicant hereby certifies that the statements made in the foregoing application and all exhibits and documents submitted in connection therewith are true and correct statements to the best of applicant's information and belief and are submitted as a basis for credit.

Dated May 23, 1951, 19____
Witness:

(For individual applicants)

_____
(Signature)

Witness:

(For partnership applicants)

_____
(Full name of firm)

By _____, a general partner
(Signature)

(For corporate applicants)

[Corporate Seal] TUNGSTEN MINING AND MILLING COMPANY
(Full corporate name of applicant)

Attest. By P. H. Casey (Signature) Pres and Gnl. MNGR (Title)
P. H. Casey

L. M. Casey (Signature) Secretary (Title)
L. M. Casey

The United States Criminal Code, 18 U. S. C., Sec. 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.

16—64195-1 U. S. GOVERNMENT PRINTING OFFICE

2. PROPOSED METHOD FOR TREATMENT: 10% of proceeds from all shipments of concentrates.

3. CLAIMS AGAINST GOVERNMENT: None

4. EMPLOYMENT: An increase of about ten employees will result.

5. BOND AMOUNT: Fire: $10,000
Public Liability: $25,000 and 50,000

6. BANKS THAT TO BE OPERATED CLAIMS: Spokane and Eastern branch of Seattle First National Bank and the Washington Trust Company, Both Spokane, Wash. Would only make loans if guaranteed by government.

7. PROGRESS OF WORKING PLAN: In process of drilling.

8. NAMES OF OTHER LEASE: Gregory, 20 owned by W. E. O Dee and Joe Dillon, copies of leases attached.

9. LEGAL DESCRIPTION OF LEASE: Attached

10. GEOLOGY AND TOPOGRAPHY: Already submitted in docket 144 and previous reports.

11. EXISTING DEVELOPMENT: This information furnished in reports 100 and 103.

12. INFORMATION ON PLANT AND EQUIPMENT: Already submitted in reports 100 and 103.

13. Mining: Same as 11 & 12

14: MILLING: Same as 11 & 12. Also see Bureau of Mines field survey

TUNGSTEN MINING & MILLING COMPANY

Summary of Increase to Development
November 1, 1950 to March 31, 1951

Development Balance November 1, 1950		$47,156.03
Board & Room Receipts	$77.00	
Purchases-Material & Supplies	2,255.21	
Repairs & Maintenance-Machinery & Equipmt	935.44	
Labor	389.35	
Fuel-Transportation Equipment	664.83	
Repairs & Maintenance-Transportation Eqpmt	1,085.60	
Camp Supplies	821.85	
Equipment Rental	116.35	
Outside Labor	1,100.00	
Insurance	112.99	
Payroll Taxes	62.02	
Officers Salaries	8,000.00	
Total Increase to Development		15,466.64
Balance March 31, 1951		$62,622.67

CAPITAL SURPLUS

Balance November 1, 1950		$172,480.45
Less-Stock Sold at Discount	3,290.00	
Less-Commissions Paid	75.00	
Total Decrease		3,365.00
Capital Surplus Balance March 31, 1951		$169,115.45

EARNED SURPLUS

Balance November 1, 1950 (Deficit)		$7,201.46
Light & Power	$89.90	
Telephone	65.97	
Advertising	24.98	
Office Supplies	13.83	
General Expense	80.30	
Taxes & Licenses	32.75	
Legal & Accounting	83.75	
Travel	924.83	
Group Insurance	27.00	
Total Additions to Earned (Deficit)		1,343.31
Balance (Deficit) March 31, 1951		$8,544.77

CUNOCAR ACCOUNTING SERVICE

TUNGSTEN MINING & MILLING COMPANY

Balance Sheet
As of March 31, 1951

ASSETS

Bank		$386.00	
Employee Advance		35.50	
Advance- Cooper		690.68	
Total Current Assets			$1,112.18
Office Equipment		134.17	
Camp Equipment		453.79	
Mine Machinery & Equipment		12,444.14	
Small Tools		36.64	
Transportation Equipment		15,801.83	
Lease With Option - Murray		192,050.00	
Lease With Option - Casey & Cooper		180,223.47	
Development		62,622.67	
Total Fixed Assets		463,766.71	
Less-Depreciation Reserve		996.17	
Net Value Fixed Assets			462,770.54
Organization Expense			250.00
Total Assets			$464,132.72

LIABILITIES

Accounts Payable		709.86	
Contract Payable - Murray		30,000.00	
Contract Payable - Casey & Dillon		25,000.00	
Loan Payable - Casey	24,772.25		
Loan Payable - Dillon	13,601.83		
Total Loans Payable		38,374.08	
Accrued Salary - Casey	5,500.00		
Accrued Salary - Dillon	2,200.00		
Accrued Salary - Cooper	12,362.00		
Total Accrued Officers Salaries		20,062.00	
Total Liabilities			114,145.94
Common Stock Authorized		500,000.00	
Less-Public Offering # 1	166,697.40		
Less- Treasury Stock	143,886.50		
Total Unissued		310,583.90	
Stock Outstanding			189,416.10
Surplus		172,480.45	
Less-Stock Sold at Discount		3,290.00	
Less-Commissions Paid		75.00	
Less-Earned Deficit		8,544.77	
Surplus March 31, 1951			160,570.68
Total Liabilities & Capital			$464,132.72

CUNOCAR ACCOUNTING SERVICE

MF-200
(April 1951)

Docket No. DMA 144X

Commodity _____

UNITED STATES OF AMERICA
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

EXPLORATION PROJECT CONTRACT [1]

It is agreed this _____ day of _____, 195__, between the United States of America, acting through the Department of the Interior, Defense Minerals Administration, hereinafter called the "Government," and [2] Kingston Mining & Milling Company

hereinafter called the "Operator," as follows:

1. *Authority for contract.* This agreement is entered into under the authority of the Defense Production Act of 1950, pursuant to Mineral Order 5, entitled "Regulations Governing Government Aid in Defense Exploration Projects."

2. *Operator's property rights.* The exploration project shall be conducted on that certain property situated in the State of Washington, County of Stevens described as follows: [3] on the Alice and Bluestone Lode Mining Claim, Contracted as Survey No. [illegible] in sec. 26, T. [illegible], R. 37., L. M., and on the Overlook Lode Mining Claim, Survey No. 1000 in secs. 23, 26, and 35, T. [illegible], R. 37., L. M., all in the Metaline Mining Dist., Stevens Co., Wash.

with respect to which the Operator represents and undertakes: [4]

(*a*) That he is the sole owner, in possession and entitled to possession, and that the property is subject only to the following claims, liens, or encumbrances as to each of which the subordination agreement of the holder is attached: _____

(*b*) That he is a lessee, in possession and entitled to possession, and the subordination agreement of the lessor is attached.

3. *Exploration project.* The Operator, within ten days from the date of this contract shall commence work on a project of exploration for [5] Kingston Polymetallic Concentrate, shall prosecute the work efficiently, expertly, in a workmanlike manner, in accordance with good mining standards, with suitable and adequate equipment, materials, and labor, all properly designed to bring the project to completion within a period of [6] two years from the date of this contract. The exploration project and the work to be performed are more fully described on Exhibit "A" attached hereto, which, with any maps or drawings thereto attached, is made a part of this contract.

4. *Performance of the work.* The work shall be performed by the Operator, under his sole direction and control: *Provided,* That with the consent of the Government and its written approval of the contract or contracts, all or any part of the work may be performed by the Operator through contract or contracts with independent contractors. The Government shall have the right to enter and observe and inspect the work at all reasonable times, and the Operator shall provide the Government with all available means for doing so. The Government may consult with and advise the Operator on all phases of the work.

5. *Fixtures and improvements.* The Operator shall devote the land and all existing improvements, facilities, buildings, installations, and appurtenances to the purposes of the exploration project without any allowance for the use, rental value, depreciation, depletion, or other cost of acquiring, owning, or holding possession thereof. Attached hereto, marked "Exhibit 'B'," is a detailed list of additional facilities, buildings, and fixtures, to be purchased, installed, or erected by the Operator, with the estimated cost of each, to which the Government will contribute its agreed pro-rata share of the cost. The difference between the cost of such additional facilities, buildings, or fixtures, and the salvage value thereof at the conclusion of the work, shall be charged as a cost of the project to which the Government has contributed its pro-rata share.

6. *Operating equipment.* Attached hereto, marked "Exhibit 'C'," is a detailed list of operating equipment divided into categories of items to be rented, purchased, or furnished by the Operator, with the allowable rental, purchase price, or rental value, as the case may be, annexed to each. As to equipment purchased for the project, the Government will contribute its agreed pro-rata share of the cost thereof, and the difference between the cost and the salvage value at the conclusion of the work shall be charged as a cost of the project to which the Government has contributed its pro-rata share.

[1] If sufficient space is not provided in any blank, use an extra sheet of paper and refer to it in the blank.
[2] State name, address, and nature of organization if any.
[3] Give legal description or enough to identify the property.
[4] Strike out the provision not applicable.
[5] Name of mineral.
[6] Not in excess of 2 years.

7. *Title to and disposition of property.* All facilities, buildings, fixtures, equipment, or other items costing more than $50 each, paid for or purchased with funds contributed jointly by the Operator and the Government, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the termination of the contract, if they have any salvage value, shall be disposed of for their joint account unless the Government, in writing, waives its interest in any such items. The Government may require the dismantling, severance from land, and removal of any such items in order to realize its interest in the salvage value thereof, and the cost of any such removal and of the disposal of the items shall be for the joint account of the parties in proportion to their respective interests.

8. *Labor and supervision.* Attached hereto, marked "Exhibit 'D'," is an itemized schedule of labor, by numbers and classes (miners, muckers, millmen, etc.), and of supervisors, by numbers and positions, with the maximum wages or salaries that may be paid to each as an allowable cost of the project.

9. *Rehabilitation and repairs.* Attached hereto, marked "Exhibit 'E'," is a detailed schedule of existing facilities, buildings, installations, and fixtures, with a statement of the cost of any necessary rehabilitation or repairs to put into useful and operable condition, which cost shall be allowed as a cost of the project.

10. *Allowable costs of the project.* The allowable costs of the project in which the Government will participate are limited to the necessary, reasonable, direct costs of performing the exploration work, including the costs of materials, supplies, engineering, power, water, and utilities, including items of equipment costing less than $50 each; and the costs referred to in Articles 5, 6, 8, and 9, and the exhibits annexed to and referred to in the contract. Although the Government may pay part of the cost of new or additional facilities, structures, buildings, and equipment, only the depreciation on such items, computed as indicated in Articles 5 and 6, will be charged as a cost of the project. No items of general overhead, corporate management, interest, or any other indirect costs not expressly allowed by these regulations, or work performed or costs incurred before the date of this contract, shall be allowed as costs of the project in which the Government will participate.

11. *Participation by the Government.* At the end of the first full calendar month after the Operator has commenced work under the project, and at the end of each succeeding calendar month, the Operator shall submit to the Government a voucher for payment with a detailed statement of work done and allowable costs (as defined in Article 10 of this agreement) incurred, in a form and with supporting data acceptable to the Government. After approving the voucher, the Government shall pay to the Operator 75 percent of the sum of such costs incurred; *Provided,* That the aggregate total of all sums paid by the Government under this agreement shall not exceed $ 49,100.50, which is 75 percent of the agreed estimated total cost of this project, $ 65,134.

12. *Accounts and audits.* The Operator shall keep suitable records and accounts of operations, which the Government may inspect and audit at any time. The Government may at any time require an audit of the Operator's records and accounts by a certified public accountant, the cost thereof to be treated as a cost of the project. The Operator shall keep and preserve said records and accounts for at least 3 years after the completion of the project or the termination of this contract.

13. *Progress reports.* The Operator shall provide the Government with monthly reports of progress in form and content satisfactory to the Government, and upon the completion of the project or termination of the contract shall provide the Government with a comprehensive geologic and engineering report, including an estimate of ore reserves, to the best of his ability. Four copies of all reports shall be furnished to the Government.

14. *Repayment by Operator.* If, upon the completion of the exploration project or termination of the contract, the Government considers that a discovery or development has resulted from the work from which commercial production of ore may be made, the Government, within 6 months thereafter shall so certify to the Operator, particularly describing and delimiting its estimate of the discovery or the development. Thereafter, if and as ore is produced as a result of such discovery or development, the Operator and his successor in interest shall be and become obligated to pay to the Government a percentage royalty on the net smelter returns or other net proceeds realized from such ore, concentrates, or metal produced within ten (10) years from the date of this contract, until the total amount contributed by the Government, without interest, is fully repaid or said 10 years have elapsed, whichever occurs first, as follows:

Of net smelter returns or other net proceeds not in excess of eight dollars ($8.00) per ton of ore: One and one-half (1½) percent.

Of net smelter returns or other net proceeds in excess of eight dollars ($8.00) per ton of ore: One and one-half (1½) percent, plus one-half (½) percent additional for each full fifty cents ($0.50) in excess of eight dollars ($8.00) per ton of ore, but not in excess of a maximum of five (5) percent.

This obligation to repay from net returns or proceeds shall be and remain a claim and lien upon the property which is the subject of the exploration project and upon any production resulting from such discovery or development, in favor of the Government, until fully paid, or until said 10-year period has elapsed; and this claim and lien and the Government's right to repayment shall survive any termination of the contract, whether by completion of the exploration project or otherwise. This article is not to be construed as imposing any obligation on the Operator or his successor in interest to produce ore from any such discovery or development.

15. *No assignment of contract.* Without the written consent of the Government, the Operator shall not assign or otherwise transfer or hypothecate this contract or any rights thereunder.

16. *Termination and completion.* The Government may, at any time, by written notice to the Operator, terminate this contract: (*a*) If the Operator fails to provide his share of the money necessary to prosecute operations pursuant to the terms of the contract; (*b*) if the Operator, in the opinion of the Government, fails to prosecute operations pursuant to the terms of the contract; or (*c*) if in the opinion of the Government, operations up to the time of the notice have not indicated the probability of making any worthwhile discovery and in the opinion of the Government further operations are not justified. Upon the completion of the project or any termination of the contract the Operator shall render to the Government a full and final accounting of his operations under the contract and his expenditures of money; shall dispose of any unused materials, supplies, and equipment for the joint account of the Operator and the Government in the proportion of their respective interests; and shall pay to the Government its pro-rata share of any money remaining.

Executed in triplicate the day and year first above written.

Tungsten Mining & Milling Co.
(Operator)

By P. N. Casey Pres.

THE UNITED STATES OF AMERICA

By

U. S. GOVERNMENT PRINTING OFFICE 16—64066-1

Exhibit A

The exploration will consist of the following:

(1) A crosscut adit will be driven about 600 feet in a N22W direction from a point 240 feet north of the Spokane Indian Reservation boundary near the center line of the Bluecher Lode claim (see map attached). This adit will intersect the Norton veins 440 feet northeast of the exposure in the Lower Norton adit where 2-10" veins are exposed at altitude 3700. It also will intersect the Exodus vein 600 ft. from the portal about 100 feet above the main level in the Germania mine. From this crosscut 150 feet of drifts will be driven along both the Norton and Exodus veins. According to Becker's map attached to applicant's original application for Government assistance (Docket [illegible]-144) between 10,000 and 20,000 tons of ore remain in the Exodus vein above the level of the proposed adit. This ore will be tapped by one of the proposed drifts.

(2) The caved adit just above creek level on the southward extension of the unnamed vein on the Moltke Claim will be reopened and extended in a N20W direction for 600 feet along this vein (see map attached).

(3) 1000 feet of core drilling will be done to test known parallel veins in the hanging wall and the footwall of the unnamed vein from adit on Moltke Claim (item 2 above). Holes to be drilled from points 300 feet and 600 feet from the portal.

Exhibit A (con't)

Quarterly Progress Schedule*

1st quarter: Purchase and install equipment; do surface work in preparation for mining; cross-cut 200 feet in adit on Blucher claim.

2nd quarter: Cross-cut 200 feet in Blucher adit. Rehabilitate caved adit on Moltke claim.

3rd quarter: Cross-cut 200 feet in Blucher adit. Drift 200 feet in Moltke adit.

4th quarter: Cross-cut 100 feet and drift 100 feet in Blucher adit. Drift 200 feet in Moltke adit.

5th quarter: Drift 200 feet in Blucher adit, and drift 200 feet in Moltke adit.

6th quarter: Drill 1000 feet of diamond drill core holes in hanging wall and footwall of vein in Moltke adit.

* If adequate labor is available it might be possible to finish this schedule in one year. In no event will it require more than 2 years to complete the work scheduled.

Summary of Cost of Project

Purchase of equipment (see Exhibit C).....	$ 12,584
Bulldozing, 200 hours @ $10/ hr.	2,050
Crosscutting, 600 feet @ $29/foot.....	17,400
Drifting, 900 feet @ $29/ foot.....	26,100
Diamond drilling, 1000 feet @ $6/foot.....	6,000
	$ 64,134

Exhibit B

No additional facilities, buildings, or fixtures are to be purchased, installed, or erected.

Exhibit C

List of Operating Equipment

1. To be rented:

	Rental cost
1 bulldozer (Allis Chalmers-Ienneson)	$3.00/hr.

2. To be purchased:

	Purchase Price
1 compressor 225 cu. ft.	$ 4000.00
1 mucking machine	3500.00
2 drifters (Drill)	1400.00
2 column & arm	500.00
3 mine cars 10 cu. ft.	300.00
1 pressure tank	44.00
1 blower fan	190.00
vent-be 900 ft. at 50¢	450.00
rail 3000 ft. 20# at 140/ton	1400.00
ties 1000 ft. at 35¢	350.00
2" pipe 900 ft. at 50¢	450.00

3. To be furnished by operator:

	Rental Credit
1950 Studebaker 3/4 ton pickup truck	$50.00/mo.
I. H. or equivalent underground diamond core drill	1.50/ft.

Exhibit D

Schedule of Labor and Supervisors

4 Miners 14.00 per shift
1 Laborer 12.00 per shift, part time
1 Bulldozer operator 15.00 per shift, part time
1 Blacksmith 16.00 per shift, part time
1 Truck driver 12.00 per shift, part time
1 Superintendent-- quarter time--$400/ mo.
1 Engineer, part time (included in figure for engineering & overhead)$400/mo.
1 Bookkeeper, part time (included in figure for engineering & overhead) $300/mo.
1 Diamond drill operator, 20 per shift
1 Diamond drill helper, 15 per shift

Exhibit E

List of Existing Facilities, Buildings, Installations, and Fixtures

No existing facilities, buildings, installations, or fixtures are to be rehabilitated or repaired.

MF-200
(April 1951)

Docket No. DMA dma
Commodity 144X

UNITED STATES OF AMERICA
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

EXPLORATION PROJECT CONTRACT [1]

It is agreed this _____ day of _____, 195__, between the United States of America, acting through the Department of the Interior, Defense Minerals Administration, hereinafter called the "Government," and [2] Tungsten Mining & Milling Company

hereinafter called the "Operator," as follows:

1. *Authority for contract.* This agreement is entered into under the authority of the Defense Production Act of 1950, pursuant to Mineral Order 5, entitled "Regulations Governing Government Aid in Defense Exploration Projects."

2. *Operator's property rights.* The exploration project shall be conducted on that certain property situated in the State of Washington, County of Stevens described as follows: [3] on the Colville and Bluebird Lode Mining Claims, designated as Survey No. 1230 in sec. 24, T. 28N., R. 37E., W. M., and on the Fraction Lode Mining Claim, Survey No. 1028 in secs. 13, 24, and 23, T. 28N., R. 37E., W. M., all in the Springdale Mining Dist., Stevens Co., Wash.
with respect to which the Operator represents and undertakes: [4]

(*a*) That he is the sole owner, in possession and entitled to possession, and that the property is subject only to the following claims, liens, or encumbrances as to each of which the subordination agreement of the holder is attached: _____

(*b*) That he is a lessee, in possession and entitled to possession, and the subordination agreement of the lessor is attached.

3. *Exploration project.* The Operator, within ten days from the date of this contract shall commence work on a project of exploration for [5] tungsten (wolframite & scheelite) shall prosecute the work efficiently, expertly, in a workmanlike manner, in accordance with good mining standards, with suitable and adequate equipment, materials, and labor, all properly designed to bring the project to completion within a period of [6] two years from the date of this contract. The exploration project and the work to be performed are more fully described on Exhibit "A" attached hereto, which, with any maps or drawings thereto attached, is made a part of this contract.

4. *Performance of the work.* The work shall be performed by the Operator, under his sole direction and control: *Provided,* That with the consent of the Government and its written approval of the contract or contracts, all or any part of the work may be performed by the Operator through contract or contracts with independent contractors. The Government shall have the right to enter and observe and inspect the work at all reasonable times, and the Operator shall provide the Government with all available means for doing so. The Government may consult with and advise the Operator on all phases of the work.

5. *Fixtures and improvements.* The Operator shall devote the land and all existing improvements, facilities, buildings, installations, and appurtenances to the purposes of the exploration project without any allowance for the use, rental value, depreciation, depletion, or other cost of acquiring, owning, or holding possession thereof. Attached hereto, marked "Exhibit 'B'," is a detailed list of additional facilities, buildings, and fixtures, to be purchased, installed, or erected by the Operator, with the estimated cost of each, to which the Government will contribute its agreed pro-rata share of the cost. The difference between the cost of such additional facilities, buildings, or fixtures, and the salvage value thereof at the conclusion of the work, shall be charged as a cost of the project to which the Government has contributed its pro-rata share.

6. *Operating equipment.* Attached hereto, marked "Exhibit 'C'," is a detailed list of operating equipment divided into categories of items to be rented, purchased, or furnished by the Operator, with the allowable rental, purchase price, or rental value, as the case may be, annexed to each. As to equipment purchased for the project, the Government will contribute its agreed pro-rata share of the cost thereof, and the difference between the cost and the salvage value at the conclusion of the work shall be charged as a cost of the project to which the Government has contributed its pro-rata share.

[1] If sufficient space is not provided in any blank, use an extra sheet of paper and refer to it in the blank.
[2] State name, address, and nature of organization if any.
[3] Give legal description or enough to identify the property.
[4] Strike out the provision not applicable.
[5] Name of mineral.
[6] Not in excess of 2 years.

7. *Title to and disposition of property.* All facilities, buildings, fixtures, equipment, or other items costing more than $50 each, paid for or purchased with funds contributed jointly by the Operator and the Government, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the termination of the contract, if they have any salvage value, shall be disposed of for their joint account unless the Government, in writing, waives its interest in any such items. The Government may require the dismantling, severance from land, and removal of any such items in order to realize its interest in the salvage value thereof, and the cost of any such removal and of the disposal of the items shall be for the joint account of the parties in proportion to their respective interests.

8. *Labor and supervision.* Attached hereto, marked "Exhibit 'D'," is an itemized schedule of labor, by numbers and classes (miners, muckers, millmen, etc.), and of supervisors, by numbers and positions, with the maximum wages or salaries that may be paid to each as an allowable cost of the project.

9. *Rehabilitation and repairs.* Attached hereto, marked "Exhibit 'E'," is a detailed schedule of existing facilities, buildings, installations, and fixtures, with a statement of the cost of any necessary rehabilitation or repairs to put into useful and operable condition, which cost shall be allowed as a cost of the project.

10. *Allowable costs of the project.* The allowable costs of the project in which the Government will participate are limited to the necessary, reasonable, direct costs of performing the exploration work, including the costs of materials, supplies, engineering, power, water, and utilities, including items of equipment costing less than $50 each; and the costs referred to in Articles 5, 6, 8, and 9, and the exhibits annexed to and referred to in the contract. Although the Government may pay part of the cost of new or additional facilities, structures, buildings, and equipment, only the depreciation on such items, computed as indicated in Articles 5 and 6, will be charged as a cost of the project. No items of general overhead, corporate management, interest, or any other indirect costs not expressly allowed by these regulations, or work performed or costs incurred before the date of this contract, shall be allowed as costs of the project in which the Government will participate.

11. *Participation by the Government.* At the end of the first full calendar month after the Operator has commenced work under the project, and at the end of each succeeding calendar month, the Operator shall submit to the Government a voucher for payment with a detailed statement of work done and allowable costs (as defined in Article 10 of this agreement) incurred, in a form and with supporting data acceptable to the Government. After approving the voucher, the Government shall pay to the Operator 25 percent of the sum of such costs incurred; *Provided,* That the aggregate total of all sums paid by the Government under this agreement shall not exceed $48,100.50, which is 75 percent of the agreed estimated total cost of this project, $64,134.

12. *Accounts and audits.* The Operator shall keep suitable records and accounts of operations, which the Government may inspect and audit at any time. The Government may at any time require an audit of the Operator's records and accounts by a certified public accountant, the cost thereof to be treated as a cost of the project. The Operator shall keep and preserve said records and accounts for at least 3 years after the completion of the project or the termination of this contract.

13. *Progress reports.* The Operator shall provide the Government with monthly reports of progress in form and content satisfactory to the Government, and upon the completion of the project or termination of the contract shall provide the Government with a comprehensive geologic and engineering report, including an estimate of ore reserves, to the best of his ability. Four copies of all reports shall be furnished to the Government.

14. *Repayment by Operator.* If, upon the completion of the exploration project or termination of the contract, the Government considers that a discovery or development has resulted from the work from which commercial production of ore may be made, the Government, within 6 months thereafter shall so certify to the Operator, particularly describing and delimiting its estimate of the discovery or the development. Thereafter, if and as ore is produced as a result of such discovery or development, the Operator and his successor in interest shall be and become obligated to pay to the Government a percentage royalty on the net smelter returns or other net proceeds realized from such ore, concentrates, or metal produced within ten (10) years from the date of this contract, until the total amount contributed by the Government, without interest, is fully repaid or said 10 years have elapsed, whichever occurs first, as follows:

Of net smelter returns or other net proceeds not in excess of eight dollars ($8.00) per ton of ore: One and one-half (1½) percent.

Of net smelter returns or other net proceeds in excess of eight dollars ($8.00) per ton of ore: One and one-half (1½) percent, plus one-half (½) percent additional for each full fifty cents ($0.50) in excess of eight dollars ($8.00) per ton of ore, but not in excess of a maximum of five (5) percent.

This obligation to repay from net returns or proceeds shall be and remain a claim and lien upon the property which is the subject of the exploration project and upon any production resulting from such discovery or development, in favor of the Government, until fully paid, or until said 10-year period has elapsed; and this claim and lien and the Government's right to repayment shall survive any termination of the contract, whether by completion of the exploration project or otherwise. This article is not to be construed as imposing any obligation on the Operator or his successor in interest to produce ore from any such discovery or development.

15. *No assignment of contract.* Without the written consent of the Government, the Operator shall not assign or otherwise transfer or hypothecate this contract or any rights thereunder.

16. *Termination and completion.* The Government may, at any time, by written notice to the Operator, terminate this contract: (*a*) If the Operator fails to provide his share of the money necessary to prosecute operations pursuant to the terms of the contract; (*b*) if the Operator, in the opinion of the Government, fails to prosecute operations pursuant to the terms of the contract; or (*c*) if in the opinion of the Government, operations up to the time of the notice have not indicated the probability of making any worthwhile discovery and in the opinion of the Government further operations are not justified. Upon the completion of the project or any termination of the contract the Operator shall render to the Government a full and final accounting of his operations under the contract and his expenditures of money; shall dispose of any unused materials, supplies, and equipment for the joint account of the Operator and the Government in the proportion of their respective interests; and shall pay to the Government its pro-rata share of any money remaining.

Executed in triplicate the day and year first above written.

Tungsten Mining & Milling Co.
(Operator)

By P. H. Casey Pres.

THE UNITED STATES OF AMERICA

By

U. S. GOVERNMENT PRINTING OFFICE 16—64066-1

Exhibit A

The exploration will consist of the following:

(1) A crosscut adit will be driven about 600 feet in a N22W direction from a point 240 feet north of the Spokane Indian Reservation boundary near the center line of the Bluecher Lode claim (see map attached). This adit will intersect the Norton veins 440 feet northeast of the exposure in the Lower Norton adit where 2-10" veins are exposed at altitude 3700. It also will intersect the Exodus vein 600 ft. from the portal about 100 feet above the main level in the Germania mine. From this crosscut 150 feet of drifts will be driven along both the Norton and Exodus veins. According to Becker's map attached to applicant's original application for Government assistance (Docket DMA-144) between 10,000 and 20,000 tons of ore remain in the Exodus vein above the level of the proposed adit. This ore will be tapped by one of the proposed drifts.

(2) The caved adit just above creek level on the southward extension of the unnamed vein on the Moltke Claim will be reopened and extended in a S50W direction for 600 feet along this vein (see map attached).

(3) 1000 feet of core drilling will be done to test known parallel veins in the hanging wall and the footwall of the unnamed vein from adit on Moltke Claim (item 2 above). Holes to be drilled from points 300 feet and 600 feet from the portal.

Exhibit A (con't)

Quarterly Progress Schedule*

1st quarter: Purchase and install equipment; do surface work in preparation for mining; cross-cut 200 feet in adit on Bluecher claim.

2nd quarter: Cross-cut 200 feet in Bluecher adit. Rehabilitate caved adit on Moltke claim.

3rd quarter: Cross-cut 200 feet in Bluecher adit. Drift 200 feet in Moltke adit.

4th quarter: Cross-cut 100 feet and drift 100 feet in Bluecher adit. Drift 200 feet in Moltke adit.

5th quarter: Drift 200 feet in Bluecher adit, and drift 200 feet in Moltke adit.

6th quarter: Drill 1000 feet of diamond drill core holes in hanging wall and footwall of vein in Moltke adit.

* If adequate labor is available it might be possible to finish this schedule in one year. In no event will it require more than 2 years to complete the work scheduled.

Summary of Cost of Project

Purchase of equipment (see Exhibit C)	$ 12,584
Bulldozing, 205 hours @ $10/ hr.	2,050
Crosscutting, 600 feet @ $29/foot	17,400
Drifting, 900 feet @ $29/ foot	26,100
Diamond drilling, 1000 feet @ $6/foot	6,000
	$ 64,134

Exhibit B

No additional facilities, buildings, or fixtures are to be purchased, installed, or erected.

Exhibit C

List of Operating Equipment

1. To be rented:

	Rental cost
1 bulldozer (Allis Chalmers-Isaacson)	$8.00/hr.

2. To be purchased:

	Purchase Price
1 compressor 225 cu. ft.	$ 4000.00
1 mucking machine	3500.00
2 drifters (Drill)	1400.00
2 column & arm	500.00
3 mine cars 10 cu. ft.	300.00
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1 blower fan	190.00
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rail 3000 ft. 20# at 140/ton	1400.00
ties 1000 ft. at 35¢	350.00
2" pipe 900 ft. at 50¢	450.00

3. To be furnished by operator:

	Rental Credit
1950 Studebaker 3/4 ton pickup truck	$50.00/mo.
I. R. or equivalent underground diamond core drill	1.50/ft.

Exhibit D

Schedule of Labor and Supervisors

4 Miners @ 14.00 per shift
1 Laborer @ 12.00 per shift, part time
1 Bulldozer operator @ 15.00 per shift, part time
1 Blacksmith @ 15.00 per shift, part time
1 Truck driver @ 12.00 per shift, part time
1 Superintendent--quarter time--$400/ mo.
1 Engineer, part time (included in figure for engineering & overhead)$400/mo.
1 Bookkeeper, part time (included in figure for engineering & overhead) $300/mo.
1 Diamond drill operator, $20 per shift
1 Diamond drill helper, $15 per shift

Exhibit E

List of Existing Facilities, Buildings, Installations, and Fixtures

No existing facilities, buildings, installations, or fixtures are to be rehabilitated or repaired.

MF-200
(April 1951)

Docket No. DMA 144X

Commodity _____

UNITED STATES OF AMERICA
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

EXPLORATION PROJECT CONTRACT [1]

It is agreed this _____ day of _____, 195___, between the United States of America, acting through the Department of the Interior, Defense Minerals Administration, hereinafter called the "Government," and [2] Tungsten Mining & Milling Company hereinafter called the "Operator," as follows:

1. *Authority for contract.* This agreement is entered into under the authority of the Defense Production Act of 1950, pursuant to Mineral Order 5, entitled "Regulations Governing Government Aid in Defense Exploration Projects."

2. *Operator's property rights.* The exploration project shall be conducted on that certain property situated in the State of Washington, County of Stevens described as follows: [3] on the Moltke and Bluecher Lode Mining Claims, designated as Survey No. 1230 in sec. 24, T. 29N., R. 37E., W. M., and on the Exodus Lode Mining Claim, Survey No. 1088 in secs. 13, 24, and 23, T. 29N., R. 37E., W. M., all in the Springdale Mining Dst., Stevens Co., Wash. with respect to which the Operator represents and undertakes: [4]

(*a*) That he is the sole owner, in possession and entitled to possession, and that the property is subject only to the following claims, liens, or encumbrances as to each of which the subordination agreement of the holder is attached: _____

(*b*) That he is a lessee, in possession and entitled to possession, and the subordination agreement of the lessor is attached.

3. *Exploration project.* The Operator, within ten days from the date of this contract shall commence work on a project of exploration for [5] tungsten (wolframite & sheelite) shall prosecute the work efficiently, expertly, in a workmanlike manner, in accordance with good mining standards, with suitable and adequate equipment, materials, and labor, all properly designed to bring the project to completion within a period of [6] two years from the date of this contract. The exploration project and the work to be performed are more fully described on Exhibit "A" attached hereto, which, with any maps or drawings thereto attached, is made a part of this contract.

4. *Performance of the work.* The work shall be performed by the Operator, under his sole direction and control: *Provided,* That with the consent of the Government and its written approval of the contract or contracts, all or any part of the work may be performed by the Operator through contract or contracts with independent contractors. The Government shall have the right to enter and observe and inspect the work at all reasonable times, and the Operator shall provide the Government with all available means for doing so. The Government may consult with and advise the Operator on all phases of the work.

5. *Fixtures and improvements.* The Operator shall devote the land and all existing improvements, facilities, buildings, installations, and appurtenances to the purposes of the exploration project without any allowance for the use, rental value, depreciation, depletion, or other cost of acquiring, owning, or holding possession thereof. Attached hereto, marked "Exhibit 'B'," is a detailed list of additional facilities, buildings, and fixtures, to be purchased, installed, or erected by the Operator, with the estimated cost of each, to which the Government will contribute its agreed pro-rata share of the cost. The difference between the cost of such additional facilities, buildings, or fixtures, and the salvage value thereof at the conclusion of the work, shall be charged as a cost of the project to which the Government has contributed its pro-rata share.

6. *Operating equipment.* Attached hereto, marked "Exhibit 'C'," is a detailed list of operating equipment divided into categories of items to be rented, purchased, or furnished by the Operator, with the allowable rental, purchase price, or rental value, as the case may be, annexed to each. As to equipment purchased for the project, the Government will contribute its agreed pro-rata share of the cost thereof, and the difference between the cost and the salvage value at the conclusion of the work shall be charged as a cost of the project to which the Government has contributed its pro-rata share.

[1] If sufficient space is not provided in any blank, use an extra sheet of paper and refer to it in the blank.
[2] State name, address, and nature of organization if any.
[3] Give legal description or enough to identify the property.
[4] Strike out the provision not applicable.
[5] Name of mineral.
[6] Not in excess of 2 years.

7. *Title to and disposition of property.* All facilities, buildings, fixtures, equipment, or other items costing more than $50 each, paid for or purchased with funds contributed jointly by the Operator and the Government, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the termination of the contract, if they have any salvage value, shall be disposed of for their joint account unless the Government, in writing, waives its interest in any such items. The Government may require the dismantling, severance from land, and removal of any such items in order to realize its interest in the salvage value thereof, and the cost of any such removal and of the disposal of the items shall be for the joint account of the parties in proportion to their respective interests.

8. *Labor and supervision.* Attached hereto, marked "Exhibit 'D'," is an itemized schedule of labor, by numbers and classes (miners, muckers, millmen, etc.), and of supervisors, by numbers and positions, with the maximum wages or salaries that may be paid to each as an allowable cost of the project.

9. *Rehabilitation and repairs.* Attached hereto, marked "Exhibit 'E'," is a detailed schedule of existing facilities, buildings, installations, and fixtures, with a statement of the cost of any necessary rehabilitation or repairs to put into useful and operable condition, which cost shall be allowed as a cost of the project.

10. *Allowable costs of the project.* The allowable costs of the project in which the Government will participate are limited to the necessary, reasonable, direct costs of performing the exploration work, including the costs of materials, supplies, engineering, power, water, and utilities, including items of equipment costing less than $50 each; and the costs referred to in Articles 5, 6, 8, and 9, and the exhibits annexed to and referred to in the contract. Although the Government may pay part of the cost of new or additional facilities, structures, buildings, and equipment, only the depreciation on such items, computed as indicated in Articles 5 and 6, will be charged as a cost of the project. No items of general overhead, corporate management, interest, or any other indirect costs not expressly allowed by these regulations, or work performed or costs incurred before the date of this contract, shall be allowed as costs of the project in which the Government will participate.

11. *Participation by the Government.* At the end of the first full calendar month after the Operator has commenced work under the project, and at the end of each succeeding calendar month, the Operator shall submit to the Government a voucher for payment with a detailed statement of work done and allowable costs (as defined in Article 10 of this agreement) incurred, in a form and with supporting data acceptable to the Government. After approving the voucher, the Government shall pay to the Operator 75 percent of the sum of such costs incurred; *Provided,* That the aggregate total of all sums paid by the Government under this agreement shall not exceed $48,100.50, which is 75 percent of the agreed estimated total cost of this project, $64,134.

12. *Accounts and audits.* The Operator shall keep suitable records and accounts of operations, which the Government may inspect and audit at any time. The Government may at any time require an audit of the Operator's records and accounts by a certified public accountant, the cost thereof to be treated as a cost of the project. The Operator shall keep and preserve said records and accounts for at least 3 years after the completion of the project or the termination of this contract.

13. *Progress reports.* The Operator shall provide the Government with monthly reports of progress in form and content satisfactory to the Government, and upon the completion of the project or termination of the contract shall provide the Government with a comprehensive geologic and engineering report, including an estimate of ore reserves, to the best of his ability. Four copies of all reports shall be furnished to the Government.

14. *Repayment by Operator.* If, upon the completion of the exploration project or termination of the contract, the Government considers that a discovery or development has resulted from the work from which commercial production of ore may be made, the Government, within 6 months thereafter shall so certify to the Operator, particularly describing and delimiting its estimate of the discovery or the development. Thereafter, if and as ore is produced as a result of such discovery or development, the Operator and his successor in interest shall be and become obligated to pay to the Government a percentage royalty on the net smelter returns or other net proceeds realized from such ore, concentrates, or metal produced within ten (10) years from the date of this contract; until the total amount contributed by the Government, without interest, is fully repaid or said 10 years have elapsed, whichever occurs first, as follows:

Of net smelter returns or other net proceeds not in excess of eight dollars ($8.00) per ton of ore: One and one-half (1½) percent.

Of net smelter returns or other net proceeds in excess of eight dollars ($8.00) per ton of ore: One and one-half (1½) percent, plus one-half (½) percent additional for each full fifty cents ($0.50) in excess of eight dollars ($8.00) per ton of ore, but not in excess of a maximum of five (5) percent.

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15. *No assignment of contract.* Without the written consent of the Government, the Operator shall not assign or otherwise transfer or hypothecate this contract or any rights thereunder.

16. *Termination and completion.* The Government may, at any time, by written notice to the Operator, terminate this contract: (*a*) If the Operator fails to provide his share of the money necessary to prosecute operations pursuant to the terms of the contract; (*b*) if the Operator, in the opinion of the Government, fails to prosecute operations pursuant to the terms of the contract; or (*c*) if in the opinion of the Government, operations up to the time of the notice have not indicated the probability of making any worthwhile discovery and in the opinion of the Government further operations are not justified. Upon the completion of the project or any termination of the contract the Operator shall render to the Government a full and final accounting of his operations under the contract and his expenditures of money; shall dispose of any unused materials, supplies, and equipment for the joint account of the Operator and the Government in the proportion of their respective interests; and shall pay to the Government its pro-rata share of any money remaining.

Executed in triplicate the day and year first above written.

Tungsten Mining & Milling Co.
(Operator)

By P. H. Casey Pres.

THE UNITED STATES OF AMERICA

By

U. S. GOVERNMENT PRINTING OFFICE 16—64066-1

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Crosscutting, 600 feet @ $29/foot	17,400
Drifting, 900 feet @ $29/ foot	26,100
Diamond drilling, 1000 feet @ $6/foot	6,000
	$ 64,134

Exhibit B

No additional facilities, buildings, or fixtures are to be purchased, installed, or erected.

Exhibit C

List of Operating Equipment

1. To be rented:

	Rental cost
1 bulldozer (Allis Chalmers-Isaacson)	$8.00/hr.

2. To be purchased:

	Purchase Price
1 compressor 225 cu. ft.	$ 4000.00
1 mucking machine	3500.00
2 drifters (Drill)	1400.00
2 column & arm	500.00
3 mine cars 10 cu. ft.	300.00
1 pressure tank	44.00
1 blower fan	190.00
ventube 900 ft. at 50¢	450.00
rail 3000 ft. 20# at 140/ton	1400.00
ties 1000 ft. at 35¢	350.00
2" pipe 900 ft. at 50¢	450.00

3. To be furnished by operator:

	Rental Credit
1950 Studebaker 3/4 ton pickup truck	$50.00/mo.
I. R. or equivalent underground diamond core drill	1.50/ft.

Exhibit D

Schedule of Labor and Supervisors

4 Miners @ 14.00 per shift
1 Laborer @ 12.00 per shift, part time
1 Bulldozer operator @ 15.00 per shift, part time
1 Blacksmith @ 16.00 per shift, part time
1 Truck driver @ 12.00 per shift, part time
1 Superintendent--Quarter time--$400/ mo.
1 Engineer, part time (included in figure for engineering & overhead)$400/mo.
1 Bookkeeper, part time (included in figure for engineering & overhead) $300/mo.
1 Diamond drill operator, $20 per shift
1 Diamond drill helper, $15 per shift

Exhibit E

List of Existing Facilities, Buildings, Installations, and Fixtures

No existing facilities, buildings, installations, or fixtures are to be rehabilitated or repaired.

MF-200
(April 1951)

Docket No. DMA 144X

Commodity _____

UNITED STATES OF AMERICA
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

EXPLORATION PROJECT CONTRACT [1]

It is agreed this _____ day of _____, 195___, between the United States of America, acting through the Department of the Interior, Defense Minerals Administration, hereinafter called the "Government," and [2] Tungsten Mining & Milling Company hereinafter called the "Operator," as follows:

1. *Authority for contract.* This agreement is entered into under the authority of the Defense Production Act of 1950, pursuant to Mineral Order 5, entitled "Regulations Governing Government Aid in Defense Exploration Projects."

2. *Operator's property rights.* The exploration project shall be conducted on that certain property situated in the State of Washington, County of Stevens described as follows: [3] on the Moltke and Bluecher Lode Mining Claims, designated as Survey No. 1230 in sec. 24, T. 29N., R. 37E., W. M., and on the Exodus Lode Mining Claim, Survey No. 1088 in secs. 13, 24, and 23, T. 29N., R. 37E., W. M., all in the Springdale Mining Dst., Stevens Co., Wash. with respect to which the Operator represents and undertakes: [4]

(*a*) That he is the sole owner, in possession and entitled to possession, and that the property is subject only to the following claims, liens, or encumbrances as to each of which the subordination agreement of the holder is attached: _____

(*b*) That he is a lessee, in possession and entitled to possession, and the subordination agreement of the lessor is attached.

3. *Exploration project.* The Operator, within ten days from the date of this contract shall commence work on a project of exploration for [5] tungsten (wolframite & sheelite) and prosecute the work efficiently, expertly, in a workmanlike manner, in accordance with good mining standards, with suitable and adequate equipment, materials, and labor, all properly designed to bring the project to completion within a period of [6] two years from the date of this contract. The exploration project and the work to be performed are more fully described on Exhibit "A" attached hereto, which, with any maps or drawings thereto attached, is made a part of this contract.

4. *Performance of the work.* The work shall be performed by the Operator, under his sole direction and control: *Provided,* That with the consent of the Government and its written approval of the contract or contracts, all or any part of the work may be performed by the Operator through contract or contracts with independent contractors. The Government shall have the right to enter and observe and inspect the work at all reasonable times, and the Operator shall provide the Government with all available means for doing so. The Government may consult with and advise the Operator on all phases of the work.

5. *Fixtures and improvements.* The Operator shall devote the land and all existing improvements, facilities, buildings, installations, and appurtenances to the purposes of the exploration project without any allowance for the use, rental value, depreciation, depletion, or other cost of acquiring, owning, or holding possession thereof. Attached hereto, marked "Exhibit 'B'," is a detailed list of additional facilities, buildings, and fixtures, to be purchased, installed, or erected by the Operator, with the estimated cost of each, to which the Government will contribute its agreed pro-rata share of the cost. The difference between the cost of such additional facilities, buildings, or fixtures, and the salvage value thereof at the conclusion of the work, shall be charged as a cost of the project to which the Government has contributed its pro-rata share.

6. *Operating equipment.* Attached hereto, marked "Exhibit 'C'," is a detailed list of operating equipment divided into categories of items to be rented, purchased, or furnished by the Operator, with the allowable rental, purchase price, or rental value, as the case may be, annexed to each. As to equipment purchased for the project, the Government will contribute its agreed pro-rata share of the cost thereof, and the difference between the cost and the salvage value at the conclusion of the work shall be charged as a cost of the project to which the Government has contributed its pro-rata share.

[1] If sufficient space is not provided in any blank, use an extra sheet of paper and refer to it in the blank.
[2] State name, address, and nature of organization if any.
[3] Give legal description or enough to identify the property.
[4] Strike out the provision not applicable.
[5] Name of mineral.
[6] Not in excess of 2 years.

7. *Title to and disposition of property.* All facilities, buildings, fixtures, equipment, or other items costing more than $50 each, paid for or purchased with funds contributed jointly by the Operator and the Government, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the termination of the contract, if they have any salvage value, shall be disposed of for their joint account unless the Government, in writing, waives its interest in any such items. The Government may require the dismantling, severance from land, and removal of any such items in order to realize its interest in the salvage value thereof, and the cost of any such removal and of the disposal of the items shall be for the joint account of the parties in proportion to their respective interests.

8. *Labor and supervision.* Attached hereto, marked "Exhibit 'D'," is an itemized schedule of labor, by numbers and classes (miners, muckers, millmen, etc.), and of supervisors, by numbers and positions, with the maximum wages or salaries that may be paid to each as an allowable cost of the project.

9. *Rehabilitation and repairs.* Attached hereto, marked "Exhibit 'E'," is a detailed schedule of existing facilities, buildings, installations, and fixtures, with a statement of the cost of any necessary rehabilitation or repairs to put into useful and operable condition, which cost shall be allowed as a cost of the project.

10. *Allowable costs of the project.* The allowable costs of the project in which the Government will participate are limited to the necessary, reasonable, direct costs of performing the exploration work, including the costs of materials, supplies, engineering, power, water, and utilities, including items of equipment costing less than $50 each; and the costs referred to in Articles 5, 6, 8, and 9, and the exhibits annexed to and referred to in the contract. Although the Government may pay part of the cost of new or additional facilities, structures, buildings, and equipment, only the depreciation on such items, computed as indicated in Articles 5 and 6, will be charged as a cost of the project. No items of general overhead, corporate management, interest, or any other indirect costs not expressly allowed by these regulations, or work performed or costs incurred before the date of this contract, shall be allowed as costs of the project in which the Government will participate.

11. *Participation by the Government.* At the end of the first full calendar month after the Operator has commenced work under the project, and at the end of each succeeding calendar month, the Operator shall submit to the Government a voucher for payment with a detailed statement of work done and allowable costs (as defined in Article 10 of this agreement) incurred, in a form and with supporting data acceptable to the Government. After approving the voucher, the Government shall pay to the Operator 75 percent of the sum of such costs incurred; *Provided,* That the aggregate total of all sums paid by the Government under this agreement shall not exceed $48,100.50, which is 75 percent of the agreed estimated total cost of this project, $64,134.

12. *Accounts and audits.* The Operator shall keep suitable records and accounts of operations, which the Government may inspect and audit at any time. The Government may at any time require an audit of the Operator's records and accounts by a certified public accountant, the cost thereof to be treated as a cost of the project. The Operator shall keep and preserve said records and accounts for at least 3 years after the completion of the project or the termination of this contract.

13. *Progress reports.* The Operator shall provide the Government with monthly reports of progress in form and content satisfactory to the Government, and upon the completion of the project or termination of the contract shall provide the Government with a comprehensive geologic and engineering report, including an estimate of ore reserves, to the best of his ability. Four copies of all reports shall be furnished to the Government.

14. *Repayment by Operator.* If, upon the completion of the exploration project or termination of the contract, the Government considers that a discovery or development has resulted from the work from which commercial production of ore may be made, the Government, within 6 months thereafter shall so certify to the Operator, particularly describing and delimiting its estimate of the discovery or the development. Thereafter, if and as ore is produced as a result of such discovery or development, the Operator and his successor in interest shall be and become obligated to pay to the Government a percentage royalty on the net smelter returns or other net proceeds realized from such ore, concentrates, or metal produced within ten (10) years from the date of this contract, until the total amount contributed by the Government, without interest, is fully repaid or said 10 years have elapsed, whichever occurs first, as follows:

Of net smelter returns or other net proceeds not in excess of eight dollars ($8.00) per ton of ore: One and one-half (1½) percent.

Of net smelter returns or other net proceeds in excess of eight dollars ($8.00) per ton of ore: One and one-half (1½) percent, plus one-half (½) percent additional for each full fifty cents ($0.50) in excess of eight dollars ($8.00) per ton of ore, but not in excess of a maximum of five (5) percent.

This obligation to repay from net returns or proceeds shall be and remain a claim and lien upon the property which is the subject of the exploration project and upon any production resulting from such discovery or development, in favor of the Government, until fully paid, or until said 10-year period has elapsed; and this claim and lien and the Government's right to repayment shall survive any termination of the contract, whether by completion of the exploration project or otherwise. This article is not to be construed as imposing any obligation on the Operator or his successor in interest to produce ore from any such discovery or development.

15. *No assignment of contract.* Without the written consent of the Government, the Operator shall not assign or otherwise transfer or hypothecate this contract or any rights thereunder.

16. *Termination and completion.* The Government may, at any time, by written notice to the Operator, terminate this contract: (*a*) If the Operator fails to provide his share of the money necessary to prosecute operations pursuant to the terms of the contract; (*b*) if the Operator, in the opinion of the Government, fails to prosecute operations pursuant to the terms of the contract; or (*c*) if in the opinion of the Government, operations up to the time of the notice have not indicated the probability of making any worthwhile discovery and in the opinion of the Government further operations are not justified. Upon the completion of the project or any termination of the contract the Operator shall render to the Government a full and final accounting of his operations under the contract and his expenditures of money; shall dispose of any unused materials, supplies, and equipment for the joint account of the Operator and the Government in the proportion of their respective interests; and shall pay to the Government its pro-rata share of any money remaining.

Executed in triplicate the day and year first above written.

Tungsten Mining & Milling Co.
(Operator)

By P. H. Casey Pres.

THE UNITED STATES OF AMERICA

By

U. S. GOVERNMENT PRINTING OFFICE 16—64066-1

Exhibit A

The exploration will consist of the following:

(1) A crosscut adit will be driven about 600 feet in a N22W direction from a point 240 feet north of the Spokane Indian Reservation boundary near the center line of the Bluecher Lode claim (see map attached). This adit will intersect the Norton veins 440 feet northeast of the exposure in the Lower Norton adit where 2-10" veins are exposed at altitude 3700. It also will intersect the Exodus vein 600 ft. from the portal about 150 feet above the main level in the Germania mine. From this crosscut 150 feet of drifts will be driven along both the Norton and Exodus veins. According to Becker's map attached to applicant's original application for Government assistance (Docket DMA-144) between 10,000 and 20,000 tons of ore remain in the Exodus vein above the level of the proposed adit. This ore will be tapped by one of the proposed drifts.

(2) The caved adit just above creek level on the southward extension of the unnamed vein on the Moltke Claim will be reopened and extended in a S50W direction for 600 feet along this vein (see map attached).

(3) 1000 feet of core drilling will be done to test known parallel veins in the hanging wall and the footwall of the unnamed vein from adit on Moltke Claim (item 2 above). Holes to be drilled from points 300 feet and 600 feet from the portal.

Exhibit A (con't)

Quarterly Progress Schedule*

1st quarter: Purchase and install equipment; do surface work in preparation for mining; cross-cut 200 feet in adit on Bluecher claim.

2nd quarter: Cross-cut 200 feet in Bluecher adit. Rehabilitate caved adit on Moltke claim.

3rd quarter: Cross-cut 200 feet in Bluecher adit. Drift 200 feet in Moltke adit.

4th quarter: Cross-cut 100 feet and drift 100 feet in Bluecher adit. Drift 200 feet in Moltke adit.

5th quarter: Drift 200 feet in Bluecher adit, and drift 200 feet in Moltke adit.

6th quarter: Drill 1000 feet of diamond drill core holes in hanging wall and footwall of vein in Moltke adit.

* If adequate labor is available it might be possible to finish this schedule in one year. In no event will it require more than 2 years to complete the work scheduled.

Summary of Cost of Project

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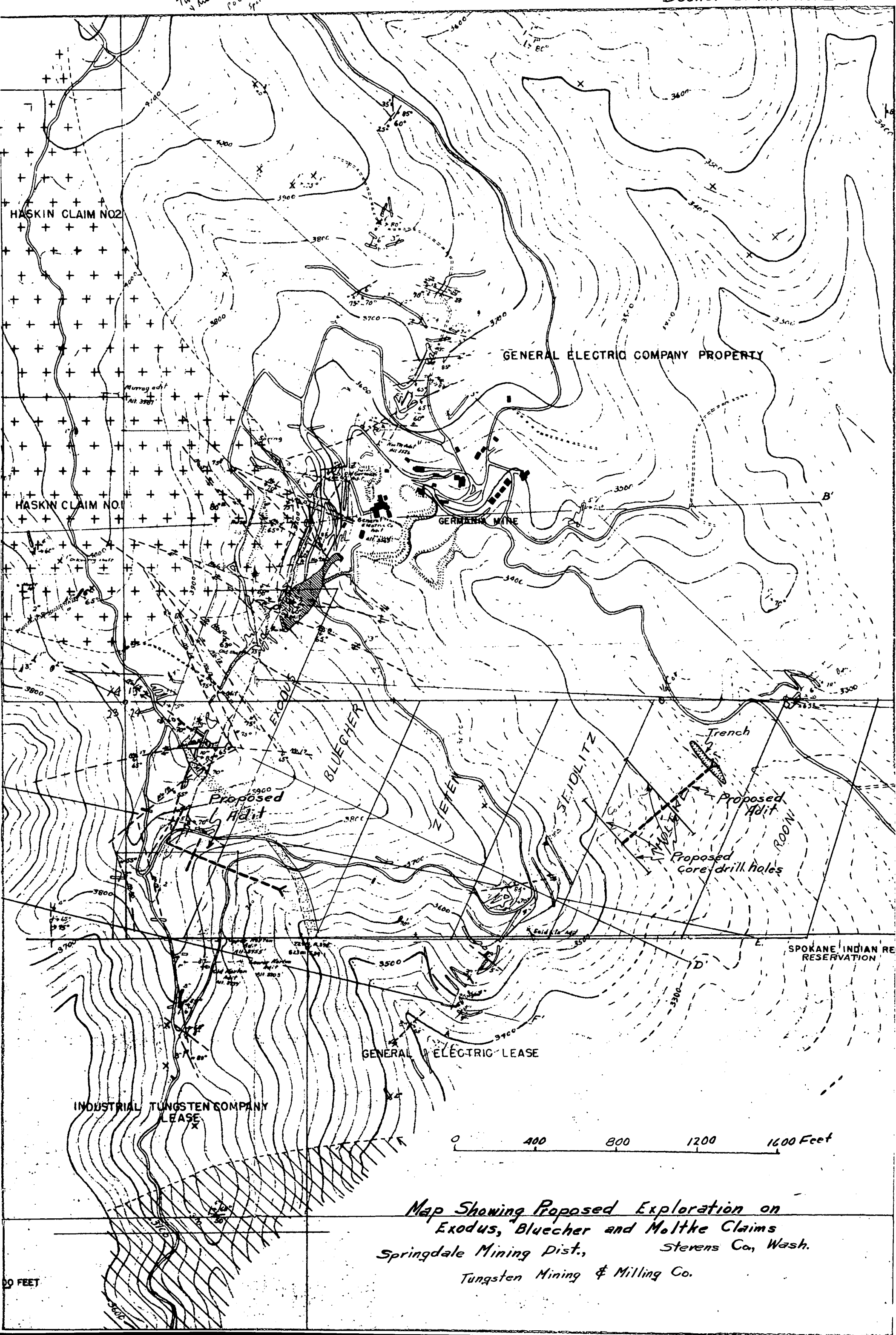
Tungsten Mining & Milling Co.
P.O. Box 794
Spokane

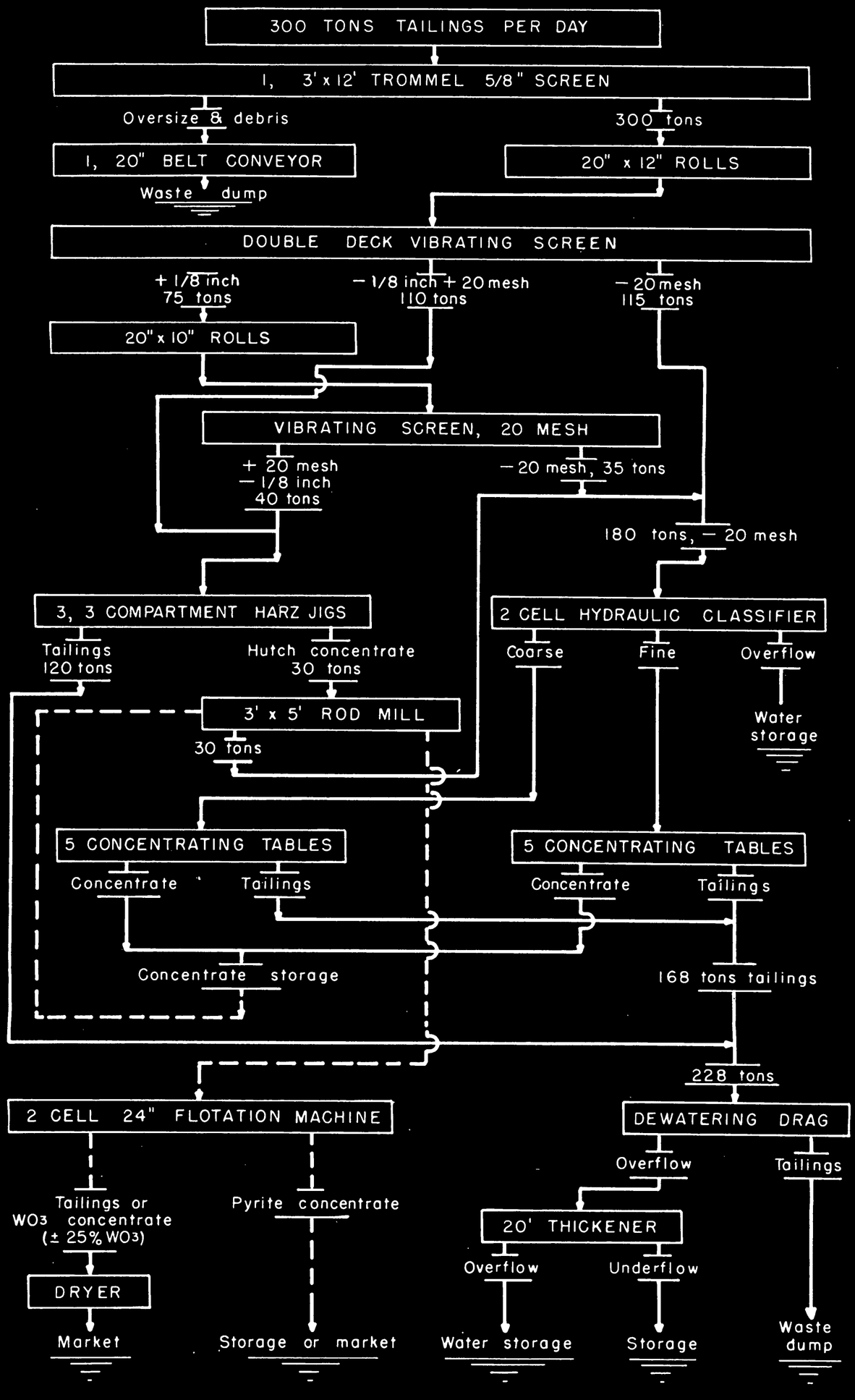
Docket D.M.A. No. ____



Map Showing Proposed Exploration on
Exodus, Bluecher and Moltke Claims
Springdale Mining Dist., Stevens Co., Wash.
Tungsten Mining & Milling Co.

dma-144 x

Proposed flow sheet for Germania Tungsten mill
Tungsten Mining and Milling Company
Wellpinit, Stevens County, Washington.
300 TONS PER DAY OLD MILL TAILINGS CAPICITY



BATCH OPERATION
CONTINUOUS OPERATION

Flow sheet by
C.Y. Garber and Frank McKinley-Kellogg, Idaho.
July 1951

Proposed flow sheet for Germania Tungsten mill

Tungsten Mining and Milling Company

Wellpinit, Stevens County, Washington.

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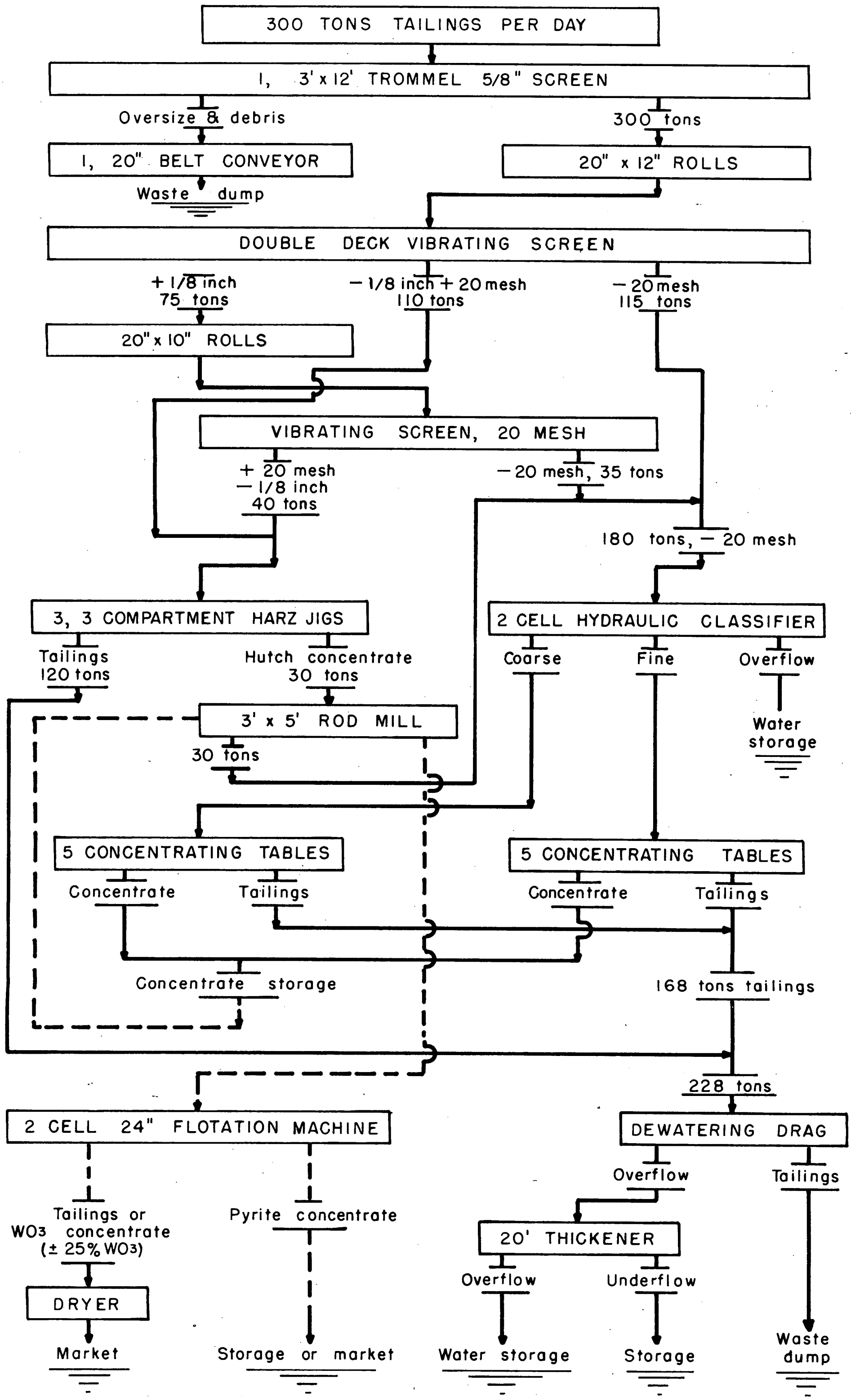

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Tungsten Mining & Milling Co.
P.O. Box 794
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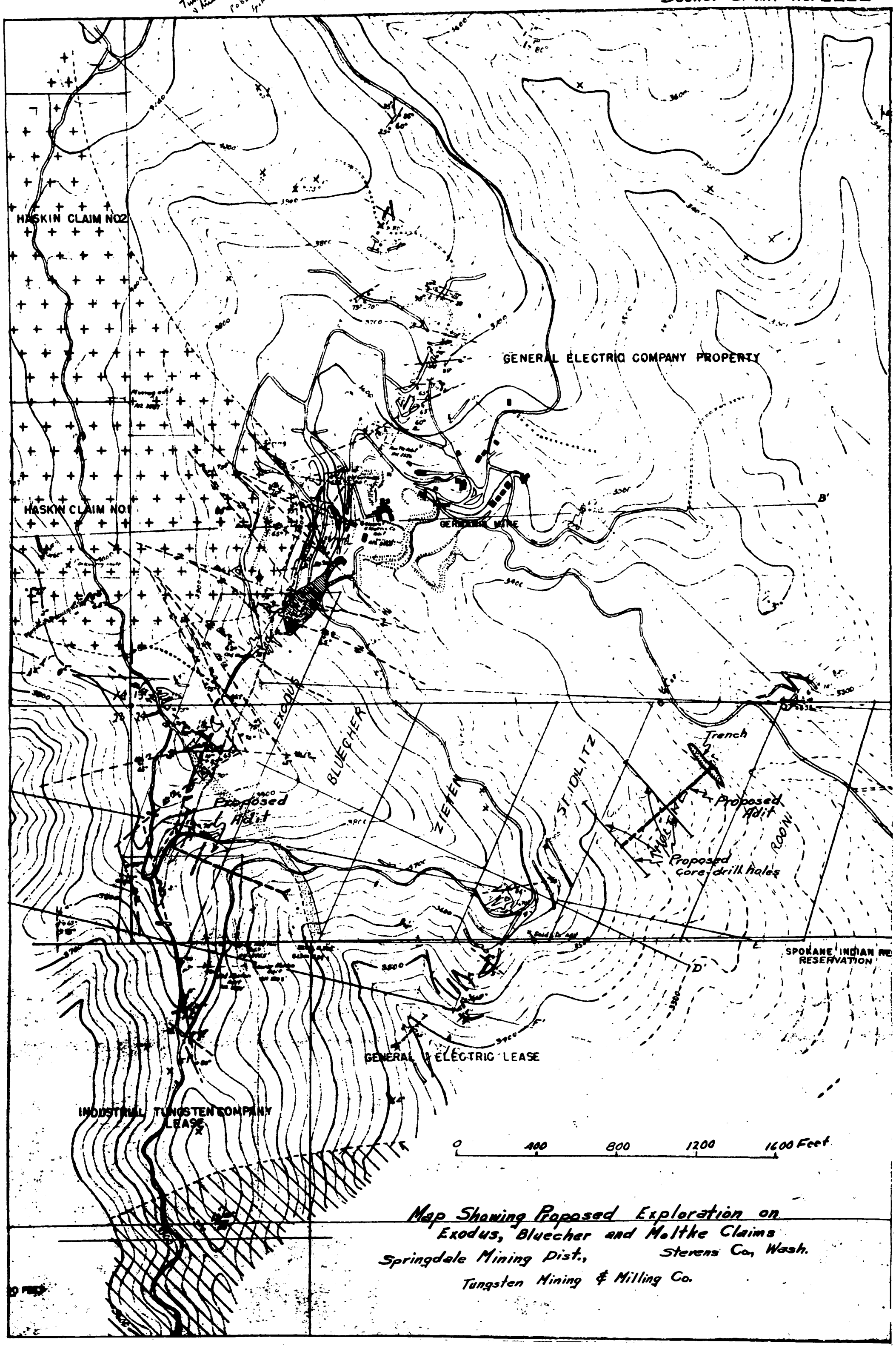
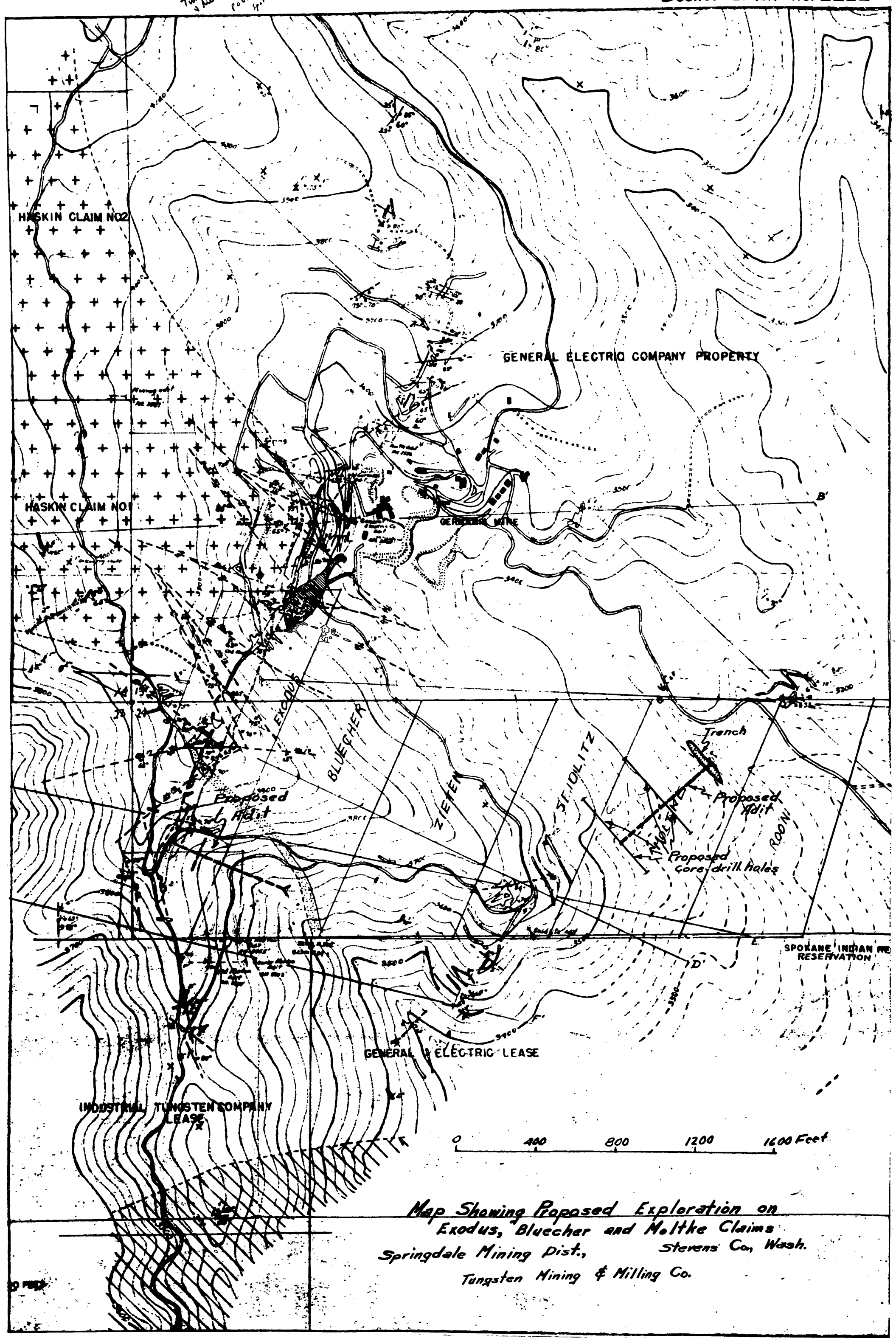


Map Showing Proposed Exploration on
Exodus, Bluecher and Moltke Claims
Springdale Mining Dist., Stevens Co., Wash.
Tungsten Mining & Milling Co.

Dma-144X

Tungsten Mining & Milling Co.
P.O. Box 794
Spokane

Docket D.M.A. No. ____



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Dma-144 X

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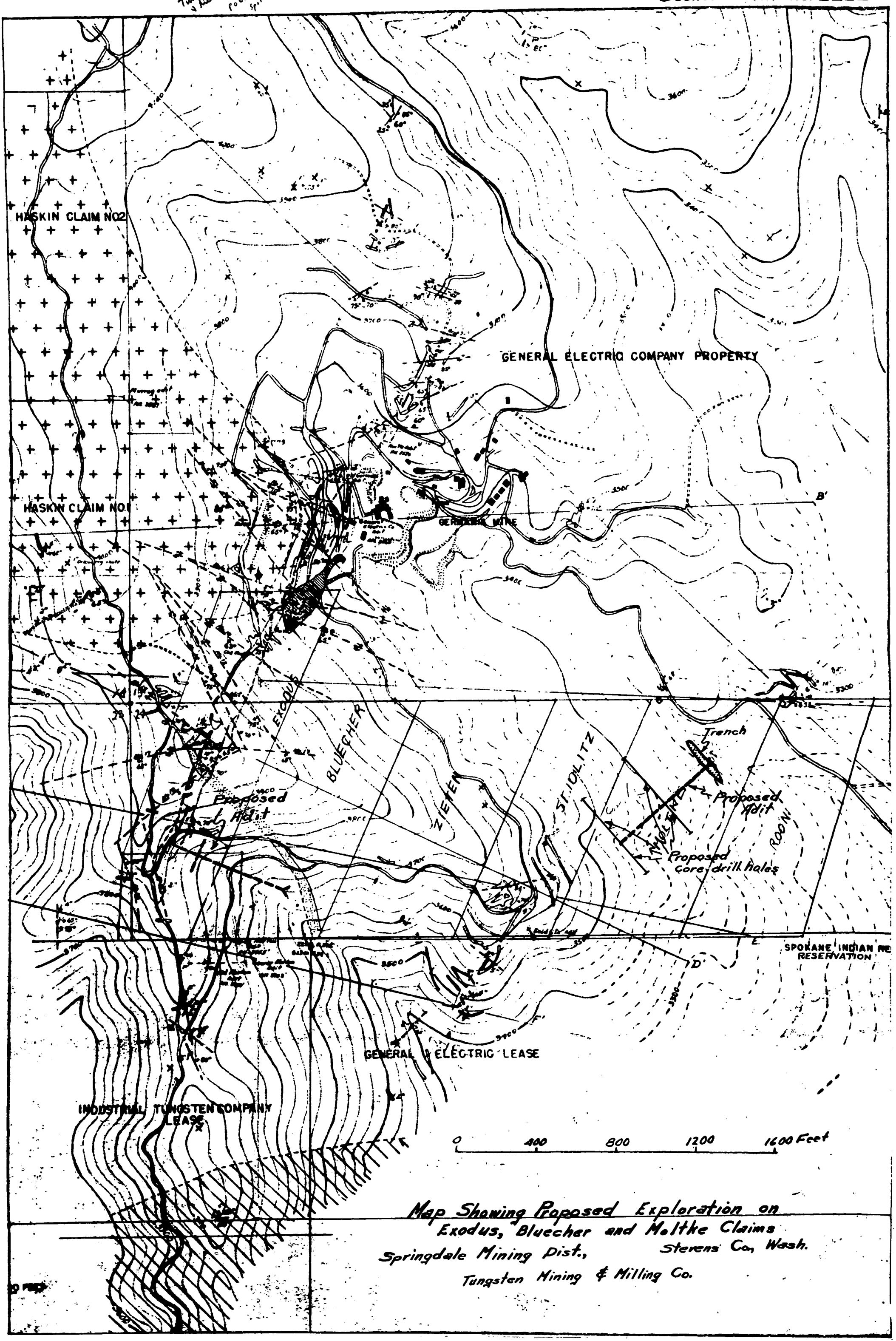

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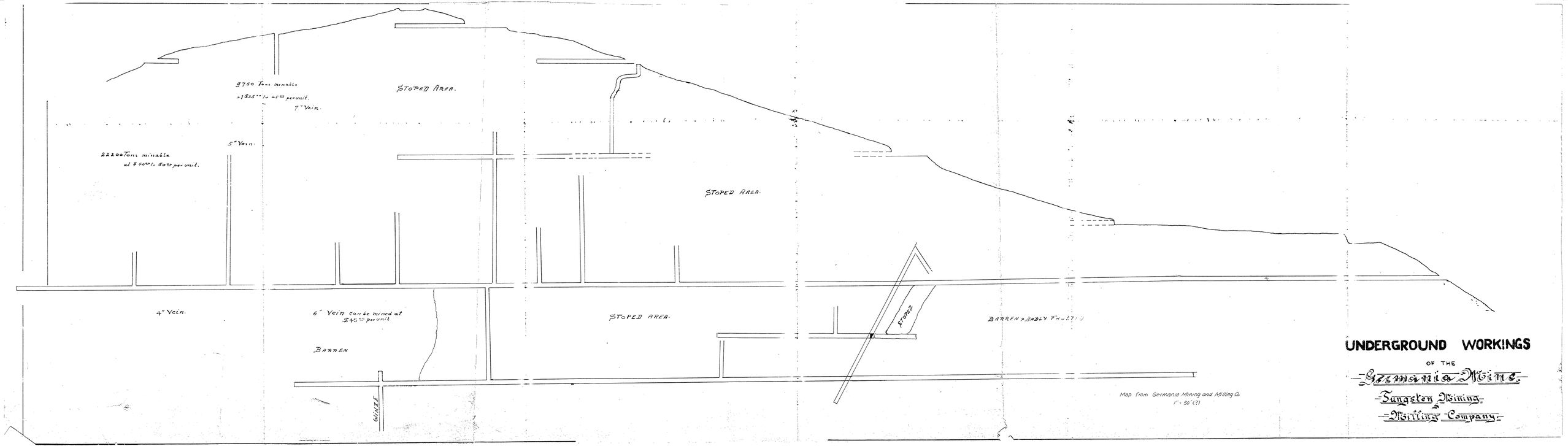
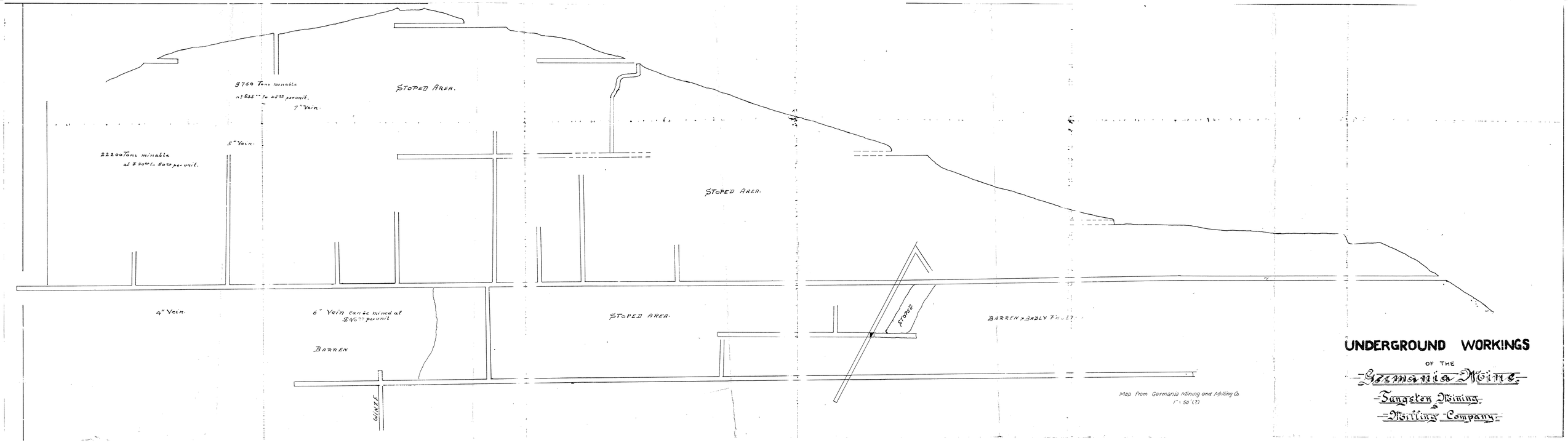
Dma-144X


9750 Tons minable
at $35.00 to 45.00 per unit.
7" Vein.
STOPED AREA.
5" Vein.
22200 Tons minable
at $ 40.00 to 50.00 per unit.
STOPED AREA.
4" Vein.
6" Vein can be mined at
$45.00 per unit
BARREN
STOPED AREA.
STOPED
BARREN & BADLY FAULTED
WINZE
Map from Germania Mining and Milling Co.
1" = 50' (?)
UNDERGROUND WORKINGS
OF THE
Germania Mine.
Tungsten Mining
&
Milling Company.



UNDERGROUND WORKINGS

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