DMA Form 1

DEFENSE MINERALS ADMINISTRATION
Control Slip

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DMEA ~~DMA~~ Docket No. 2447

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EXPLORATION PROJECT

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To:	Code 400, Rm. 3538	Date	3-25-52
To:	Oper Com.	Date	5-12-52
To:	Oper Comm.	Date	11-3-52
To:	Oper Comm.	Date	11-28-52
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Excerpt from "The Mining Record -- Thursday, January 27, 1955"

Page 8, column 2.

Plmea 2447

TUNGSTEN MINING IN WASHINGTON IS GETTING MORE ORE

Spokane, Wash.--Although data on tungsten production as yet are not available, reports of operations in the state during the year indicated some increase in activity, and it was expected that output would be somewhat in excess of the quantity produced in 1953. At the Germania Consolidated Mines, Inc., property in Stevens County, H. W. Traver and Henry Ewing stepped up output of tungsten concentrates from an area which included the Keith, Norton, and Seidlitz mines.

Concentrates produced at the property were shipped to the Big It mill near Pinehurst, Idaho, for further upgrading before sale to the government. At the nearby Germania mine, Penticton Tungsten Mines, Inc., which obtained the property under a lease and purchase option in the latter part of 1953, began operations in the spring. The Germania mine, once the nation's leading source of tungsten, was discovered in 1894.

Further work which included mill improvements and additional exploration was undertaken by Big Q Tungsten Mine, Inc., at its property in Stevens County, and in the same area Sunshine Mining Co. continued exploratory work at its Little King prospect. Operations were resumed after a winter shutdown by Border Lord Mining Corp. at its property located in an isolated section of Okanogan county near the Canadian border. Paul Floyd and Frank Birch began development of the Addy Mining Co. property in Stevens county under a lease and purchase option agreement reached late in the year. Tungsten concentrates produced as a by-product of its copper output by Kromona Mines Corp. were stockpiled pending a decision to install additional concentrating equipment. The Kromona property is located in the Sultan mining district of Snohomish country.

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

XXXXXXXXXXXXXXXXX
No. 157 Howard Street
Spokane 4, Washington

400

November 23, 1953

Memorandum

2447 denied 11/28/52.

To: DMEA Field Team, Region II

From: Willard P. Puffett, Geologist, U. S. Geological Survey

WPP

Subject: Visit to Germania Consolidated mine, Stevens County, Washington
Docket No. DMEA 2447 (tungsten)

A visit was made to the Germania Consolidated mine on Monday, November 16, 1953 to obtain some information regarding operations at the neighboring Germania mine. Mr. W. S. Anderson of the U. S. Bureau of Mines accompanied me. Mr. Bill Travos, mine foreman, was at the Germania Consolidated mines.

Although a request for exploration assistance was denied the Germania Consolidated Mines, Inc., on November 28, 1952, mining operations have continued intermittently since that date. A visit to the workings was made to inspect the new work since the last visit on August 23, 1952.

The stope above the south drift on the Lower Adit level has been extended upward to the Norton Intermediate level. Mr. Travos stated this stope is still filled with rock (ore?), which is drawn down intermittently when other operations fail to furnish sufficient rock for the mill. No inspection was made of this stope.

Most of the mining operations have been confined to that area above the 65-foot raise above the extreme northeast extension of the Lower Adit level workings. Here the drift on the vein has been extended approximately 100 feet to the south and approximately 20 additional feet to the north. In order to comply with safety regulations, the raise has been extended above the 65-foot level for nearly 40 feet. This raise will eventually be extended to the surface, approximately 100 more feet.

No detailed map was made of the workings, but an inspection of the veins exposed in the workings failed to find any significant amounts of tungsten minerals, though considerable pyrite and molybdenite was observed. The exposed vein averaged 5 to 8 inches in thickness.

Mr. Travos stated that an analysis for columbium and tantalum had been obtained from a firm in Los Angeles on a specimen of rock from the mine. The vein was checked with a Geiger counter in an effort to detect radioactive minerals but no radioactive anomaly was indicated. No minerals resembling columbium were seen in the workings or in examples of concentrates from the mill.

Distribution:
DMEA (Orig. & 3)
UKMM (2)
Docket
Puffett

GERMANIA MINE IS MINING TUNGSTEN

Spokane, Wash.--Operations at the Stevens county, property of Germania Consolidated Mines, Inc., are stepped up to take advantage of the government's guaranteed price for tungsten. Yield has been about one ton 65 percent tungstic oxide monthly. Ore is taken from stopes Keith and Norton mines. H. W. Traver is in charge of the company's operations. Mr. Traver and his partner, Henry Ewing, have leased the nearby Seidlitz mine from the firm and have installed a gasoline-powered air compressor and double-drum hoist and slusher.

Amea 2447

Copied from The Mining Record-Thursday, October 22, 1953
Page 7.

GERMANIA GROUND HAS TUNGSTEN ORE

Spokane, Wash--About 25 tons of ore is being broken daily at Germania Consolidated Mines, Inc., tungsten property in Stevens county. Production is in high-grade jig tailings. A lower grade product is being sent for upgrading to the Big It Mining & Milling Co.

Q.Mea -2447

Copied from Engineering and Mining Journal-Vol. 154, No. 8
August 1953

Operations have been resumed at Germania Consolidated Mines' tungsten property in Stevens County where bulldozing has uncovered a promising show of tungsten.

Copied from Engineering and Mining Journal-Vol. 154, No. 8
August 1953

Operations have been resumed at Germania Consolidated Mines' tungsten property in Stevens County where bulldozing has uncovered a promising show of tungsten.

400

IN REPLY REFER TO:

G-MD-CF

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
NOV 19 1952

November 19, 1952

Memorandum

To: George C. Selfridge

From: T. P. Thayer

Subject: DMEA 2AA7-Tungsten Germania Consolidated Mines, Inc.
Stevens County, Washington

The Field Team report appears to bear out Mr. Lemmon's recommendations of April 2, 1952. The field team examination reveals lengthy exposures of narrow, low-grade veins, and no specific geologic target was indicated. Exploration, therefore, would just add a few hundred more feet of workings to the present extensive system. In view of the scattered nature of the ore bunches, representative sampling of mill heads would seem to be the best method of sampling, and the failure of the operators to do this must be regarded as an indication of their technical competence.

It is recommended that the application be denied on the grounds stated by Mr. Lemmon.

T. P. Thayer

TPThayer:gt

Copy retained 400

Administrator, DMEA

November 20, 1952

Iron and Ferro-Alloy Division, DMEA

Denial of exploration project in the amount of $89,700
Docket No. DMEA 2447 - Tungsten
Germania Consolidated Mines, Inc.
Keith and Norton Properties
Stevens County, Washington

The denial of the subject application by this Division is based on the following information:

1. Wolframite is irregularly distributed through narrow quartz veins in granite. The values in the veins appear to decrease on depth.

2. Up to 1946, production was 2,405 units of WO_3 from about 4,850 tons of ore milled. This indicates a recoverable value of about 0.5 percent of WO_3. The operation was not financially successful and mining of this grade of ore in narrow veins, even at the present high prices, would not be successful financially.

3. The properties were examined in August, 1943, and in August, 1944, by S. W. Hobbs of the U. S. Geological Survey. Only the No. 3 level was accessible at this time and most of the ore has been stoped above this level. The veins were 8 inches or less in width.

4. Arthur Lakes, mining engineer and geologist, examined the properties in 1945 and stated that investment in the properties would be highly speculative.

5. The Field Team of Region II recommends denial. The Commodity Division of the U. S. Geological Survey concurs with this recommendation.

George C. Selfridge

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

TLChapman'lm
11/20/52

cc: Admn. Reading File
Docket
G. C. Selfridge
T. L. Chapman

NOV 28 1952

Germania Consolidated Mines, Inc.
Suite 401
Empire State Building
Spokane 1, Washington

Re: Docket No. DMMA 2487 - Tungsten
Keith and Norton Properties
Okanogan County, Washington

Gentlemen:

Your application for exploration assistance and other information available to us in Washington have been carefully reviewed.

This information, while showing wolframite occurrences in narrow veins, indicates to us that the probability of opening up substantial ore bodies of a mineable grade is not sufficiently promising to justify Government participation. We regret, therefore, to inform you that your application is denied.

We wish to thank you for your interest in the Defense Minerals Program and for bringing this property to our attention.

Sincerely yours,

C. O. Mittendorf

Administrator

TLChapman'lm
11/20/52

cc: Admn. Reading File
Docket
R. W. Goehm, DMBC
D. K. Lemmon, DMDS
Field Team Reg. II
Operating Committee
H. G. Selfridge
T. L. Chapman

402

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

So. 157 Howard Street
Spokane 4, Washington

November 7, 1952

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
NOV 17 1952

Amer 2-47

Mr. F. E. Johnson, Chairman
Operating Committee, DMEA
Dept. of the Interior
Washington 25, D. C.

Dear Mr. Johnson:

In reference to your letter of November 3, this is to advise you that a report on the Germania Consolidated Mines, Inc. in Stevens County, Washington was mailed to you on the 27th of October. A denial was recommended.

Sincerely yours

A. S. Weissenborn
Executive Officer, DMEA
Field Team, Region II

cc: USGS (2)

400

NOV 3 1952

Mr. A. E. Weissenborn
Executive Officer, DMEA Region II
South 157 Howard Street
Spokane 8, Washington

Re: Docket No. DMEA 2447 - Tungsten
Germania Consolidated Mines, Inc.
Norton property
Stevens County, Washington

Dear Mr. Weissenborn:

Reference is made to the subject docket. According to the "Monthly Progress Report" for August from Region II, a field examination of this property had been made and a field report was pending.

It would be appreciated if we could be informed when this report may be expected.

Sincerely yours,

(signed) FRANK E. JOHNSON

Chairman, Operating Committee

Approved:

J. H. Hedges

Member, Bureau of Mines

G. R. Finkel, Jr.

Member, Geological Survey

Fahnstedge:lo
10/31/52

cc: Docket
Adm. Head. File
Field Team, Reg. 2
Op. Committee
T. Fahnstedge
G. C. Selfridge
D. M. Lemmon, USGS
M. J. Geehan, USBM

Nmia 2447

Copied from the Mining World February 1955, Page 95

Penticton Tungsten Mines, Ltd. is installing machinery at its Germania mine-mill in southwestern Stevens County, Washington to raise capacity to 400 tons daily from the present 300 tons. Milling was halted early in the winter by freezing of ponds supplying water, but two shipments of concentrates were made before the freeze-up. The initial shipment of 2½ tons graded better than 63 percent tungsten trioxide. Ore is mined by openpitting above the main adit of the old Germania mine. Frank Eichelberger of Spokane is company president, and Wellman Clark, secretary-treasurer.

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
~~WASHINGTON 25, D.C.~~
So. 157 Howard Street
Spokane 4, Washington

November 23, 1953

Memorandum

To: DMEA Field Team, Region II

From: Willard P. Puffett, Geologist, U. S. Geological Survey

Subject: Visit to Germania Consolidated mine, Stevens County, Washington
Docket No. DMEA 2447 (tungsten)

A visit was made to the Germania Consolidated mine on Monday, November 16, 1953 to obtain some information regarding operations at the neighboring Germania mine. Mr. W. S. Anderson of the U. S. Bureau of Mines accompanied me. Mr. Bill Travos, mine foreman, was at the Germania Consolidated mines.

Although a request for exploration assistance was denied the Germania Consolidated Mines, Inc., on November 28, 1952, mining operations have continued intermittently since that date. A visit to the workings was made to inspect the new work since the last visit on August 23, 1952.

The stope above the south drift on the Lower Adit level has been extended upward to the Norton Intermediate level. Mr. Travos stated this stope is still filled with rock (ore?), which is drawn down intermittently when other operations fail to furnish sufficient rock for the mill. No inspection was made of this stope.

Most of the mining operations have been confined to that area above the 65-foot raise above the extreme northeast extension of the Lower Adit level workings. Here the drift on the vein has been extended approximately 100 feet to the south and approximately 20 additional feet to the north. In order to comply with safety regulations, the raise has been extended above the 65-foot level for nearly 40 feet. This raise will eventually be extended to the surface, approximately 100 more feet.

No detailed map was made of the workings, but an inspection of the veins exposed in the workings failed to find any significant amounts of tungsten minerals, though considerable pyrite and molybdenite was observed. The exposed vein averaged 5 to 8 inches in thickness.

Mr. Travos stated that an analysis for columbium and tantalum had been obtained from a firm in Los Angeles on a specimen of rock from the mine. The vein was checked with a Geiger counter in an effort to detect radioactive minerals but no radioactive anomaly was indicated. No minerals resembling columbium were seen in the workings or in examples of concentrates from the mill.

Distribution:
DMEA (Orig. & 3)
USBM (2)
Docket
Puffett

Ulmer 2447

Copied from The Mining Record-Thursday, October 22, 1953
Page 7.

GERMANIA GROUND HAS TUNGSTEN ORE

Spokane, Wash--About 25 tons of ore is being broken daily at Germania Consolidated Mines, Inc., tungsten property in Stevens county. Production is in high-grade jig tailings. A lower grade product is being sent for upgrading to the Big It Mining & Milling Co.

FILE COPY
SURNAME:

Chapman
Selfridge
Gerhard
Hedges
Krabil
R. Johnson

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

NOV 28 1952

Germania Consolidated Mines, Inc.
Suite 401
Empire State Building
Spokane 1, Washington

Re: Docket No. DMEA 2447 - Tungsten
Keith and Berton Properties
Stevens County, Washington

Gentlemen:

Your application for exploration assistance and other information available to us in Washington have been carefully reviewed.

This information, while showing wolframite occurrences in narrow veins, indicates to us that the probability of opening up substantial ore bodies of a mineable grade is not sufficiently promising to justify Government participation. We regret, therefore, to inform you that your application is denied.

We wish to thank you for your interest in the Defense Minerals Program and for bringing this property to our attention.

Sincerely yours,

C. O. Mittendorf (fw) 11-28-52

Administrator

TLChapman'lm
11/20/52

cc: Admn. Reading File
Docket
R. W. Geehan, USBM
D. M. Lemmon, USGS
Field Team Reg. II
Operating Committee
G. C. Selfridge
T. L. Chapman

FILE COPY
SURNAME:

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

Administrator, DMEA

November 20, 1952

Chapman
Selfridge
Gulfan

Iron and Ferro-Alloy Division, DMEA

Denial of exploration project in the amount of $89,700
Docket No. DMEA 2447 - Tungsten
Germania Consolidated Mines, Inc.
Keith and Norton Properties
Stevens County, Washington

The denial of the subject application by this Division is based on the following information:

1. Wolframite is irregularly distributed through narrow quartz veins in granite. The values in the veins appear to decrease on depth.

2. Up to 1946, production was 2,405 units of WO_3 from about 4,850 tons of ore milled. This indicates a recoverable value of about 0.5 percent of WO_3. The operation was not financially successful and mining of this grade of ore in narrow veins, even at the present high prices, would not be successful financially.

3. The properties were examined in August, 1943, and in August, 1944, by S. W. Hobbs of the U. S. Geological Survey. Only the No. 3 level was accessible at this time and most of the ore has been stoped above this level. The veins were 8 inches or less in width.

4. Arthur Lakes, mining engineer and geologist, examined the properties in 1945 and stated that investment in the properties would be highly speculative.

5. The Field Team of Region II recommends denial. The Commodity Division of the U. S. Geological Survey concurs with this recommendation.

George C. Selfridge

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

TLChapman'lm
11/20/52

cc: Admn. Reading File
~~Docket~~
G. C. Selfridge
T. L. Chapman

STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO : Administrator, DMEA

DATE: November 20, 1952

FROM : Iron and Ferro-Alloy Division, DMEA

SUBJECT: Denial of exploration project in the amount of $89,700
Docket No. DMEA 2447 - Tungsten
Germania Consolidated Mines, Inc.
Keith and Norton Properties
Stevens County, Washington

The denial of the subject application by this Division is based on the following information:

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2. Up to 1946, production was 2,405 units of WO_3 from about 4,850 tons of ore milled. This indicates a recoverable value of about 0.5 percent of WO_3. The operation was not financially successful and mining of this grade of ore in narrow veins, even at the present high prices, would not be successful financially.

3. The properties were examined in August, 1943, and in August, 1944, by S. W. Hobbs of the U. S. Geological Survey. Only the No. 3 level was accessible at this time and most of the ore has been stoped above this level. The veins were 8 inches or less in width.

4. Arthur Lakes, mining engineer and geologist, examined the properties in 1945 and stated that investment in the properties would be highly speculative.

5. The Field Team of Region II recommends denial. The Commodity Division of the U. S. Geological Survey concurs with this recommendation.

G. C. Selfridge.

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

Docket

IN REPLY REFER TO:

G-MD-CF

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
NOV 19 1952

November 19, 1952

GCS 11/21/52

Memorandum

To: George C. Selfridge

From: T. P. Thayer

Subject: DMEA 2447-Tungsten Germania Consolidated Mines, Inc.
Stevens County, Washington

The Field Team report appears to bear out Mr. Lemmon's recommendations of April 2, 1952. The field team examination reveals lengthy exposures of narrow, low-grade veins, and no specific geologic target was indicated. Exploration, therefore, would just add a few hundred more feet of workings to the present extensive system. In view of the scattered nature of the ore bunches, representative sampling of mill heads would seem to be the best method of sampling, and the failure of the operators to do this must be regarded as an indication of their technical competence.

It is recommended that the application be denied on the grounds stated by Mr. Lemmon.

T. P. Thayer

T. P. Thayer

Copy Returned 400

2447 Docket

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
~~WASHINGTON 25, D. C.~~
So. 157 Howard Street
Spokane 4, Washington

GCL 11/19/52

November 7, 1952

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
NOV 17 1952

Mr. F. E. Johnson, Chairman
Operating Committee, DMEA
Dept. of the Interior
Washington 25, D. C.

Amen 2447

Dear Mr. Johnson:

In reference to your letter of November 3, this is to advise you that a report on the Germania Consolidated Mines, Inc. in Stevens County, Washington was mailed to you on the 27th of October. A denial was recommended.

Rec'd 11/6
Said deny
O.C. approved
11/13.

Sincerely yours

A. E. Weissenborn

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

cc: USBM (2)

400

FILE COPY
SURNAME:

Rutledge
Selfridge

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

NOV 3 1952

Mr. A. N. Weissenborn
Executive Officer, DMEA Region II
South 157 Howard Street
Spokane 8, Washington

Re: Docket No. DMEA 2447 - Tungsten
Germania Consolidated Mines, Inc.
Norton property
Stevens County, Washington

Dear Mr. Weissenborn:

Reference is made to the subject docket. According to the "Monthly Progress Report" for August from Region II, a field examination of this property had been made and a field report was pending.

It would be appreciated if we could be informed when this report may be expected.

Sincerely yours,

(signed) FRANK E. JOHNSON

Chairman, Operating Committee

11/3/52

Approved:

T. H. Hedges

Member, Bureau of Mines

G. R. Finkel Jr.

Member, Geological Survey

FARutledge:ls
10/31/52

cc: Docket
Admn. Read.File
Field Team, Reg. 2
Op. Committee
F. A. Rutledge
G. C. Selfridge
D. M. Lemmon, USGS
R. W. Geehan, USBM

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
~~WASHINGTON, D.C.~~
So. 157 Howard Street
Spokane 4, Washington

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
NOV 3 1952

11/20/52

October 28, 1952

Memorandum:

To: DMEA Field Team, Region II

From: Willard P. Puffett, U. S. Geological Survey

Subject: Docket DMEA No. 2447-Tungsten. Supplemental Information to Field Examination Report dated 9/19/52, Germania Consolidated Mines, Stevens County, Washington.

Inasmuch as the field examiner's report recommending denial of the above-captioned application did not specifically state the grade of the millheads current at the Germania Consolidated Mine, the following information is submitted as a supplemental memorandum to the main report.

Information regarding grade of the millheads was requested from the applicant. They state that this information is not available as adequate records have not been kept concerning such data. Apparently the organization of their mining operations is such that they have never systematically sampled the mine-run ore or the resulting sorted ore which is concentrated in the mill. The Applicant states that from June 1951 to March 1952 9,882 pounds of concentrates have been shipped, but it is not known what tonnage of ore this represents. WO_3 content varied from 69 to 73 percent.

The operators did submit a sample of ore to Mr. Bardill of the Bureau of Mines when he was conducting tests on up-grading the concentrates from the mill. Mr. Bardill states this ore sample assayed 0.39% WO_3 but he did not know what the sample represents. It may be that this sample was representative of the sorted ore which is run through the mill.

No samples were taken in the main mine workings to check the tungsten content of the veins. Actually, there were only barren quartz veins exposed and it seemed to the field examiner that visual examination of these veins was sufficient on which to base an estimate that the enclosed tungsten content was very low.

Willard P. Puffett, Geologist

Dist: DMEA, Wash. orig & 3
USBM (2)
USGS (SRO)
Puffett
Docket

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
~~WASHINGTON 25, D.C.~~
So. 157 Howard Street
Spokane 4, Washington

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
NOV 3 1952

October 27, 1952

Mr. F. E. Johnson, Chairman
Operating Committee, DMEA
Department of the Interior
Washington 25, D. C.

Re: Docket DMEA-2447 (Tungsten)
Germania Consolidated Mines, Inc.
Stevens County, Washington

Dear Mr. Johnson:

Attached is a report by Willard P. Puffett, dated September 19, 1952, together with supplemental information dated October 18, 1952, recommending a denial of an application submitted by Germania Consolidated Mines for the exploration of the Germania Consolidated Mine in Stevens County. The denial is made because the known veins on the property are too narrow and too sparsely mineralized to merit exploration, which is borne out by the fact that the current ~~opening~~ operation does not appear to be profitable. There is little reason to expect that further exploration could uncover wider or richer veins.

Exploration of the adjacent Germania Mine of the Tungsten Mining and Milling Corporation, now being explored under Contract Idm-E214, has not been very encouraging to date. Some work still remains to be done on this contract and should the results prove more favorable than they are, reconsideration of the Germania Consolidated (Docket DMEA-2447) might be in order, but at the moment, the mediocre results of the Tungsten Mining and Milling exploration do not give much grounds for encouragement for further discovery in the district.

By DMEA Field Team, Region II

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

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

Enclosures
cc: USBM (2)
Puffett

400

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

[redacted]

No. 157 Normal Street
Spokane 1, Washington

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
NOV 3 1952

October 27, 1952

Mr. F. E. Johnson, Chairman
Operating Committee, DMEA
Department of the Interior
Washington 25, D. C.

Re: Domestic DMEA-2247 (Tungsten)
Germania Consolidated Mines, Inc.
Stevens County, Washington

Dear Mr. Johnson:

Attached is a report by William P. Puffett, dated September 19, 1952, together with supplemental information dated October 18, 1952, recommending a denial of an application submitted by Germania Consolidated Mines for the exploration of the Germania Consolidated Mine in Stevens County. The denial is made because the known veins on the property are too small and too poorly mineralized to merit exploration, which is borne out by the fact that the current operation does not appear to be profitable. There is little reason to expect that further exploration will uncover veins of better quality.

Exploration of the adjacent Germania Mine of the Tungsten Mining and Milling Corporation, for which a separate Contract IOm-E214, has not been very encouraging to date. There still remains to be done an examination, should the results prove more favorable than they are, of the Germania Consolidated (Docket DMEA-2247) which is in order, but at the present, the mediocre results of the Tungsten Mining and Milling exploration do not give much grounds for encouragement for further discovery in the district.

By DMEA Field Exm, Region II

Reviewed by
DMEA OPERATING COMMITTEE

11-10-52
(date)

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

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

Enclosures
cc: USBM (2)
Puffett

MF-500

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

REFERENCE SLIP

DATE 11/7

REFERRED TO:

1. ~~Opal Cave~~
2. ~~Lanham~~
3. 400
4.

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: Agended 10/10

Check (X) before the items needing attention.

Frank E. Johnson
(FEJ) *Initials of sender.*

GPO 16—63815-1

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION
~~WASHINGTON 25, D. C.~~
So. 157 Howard Street
Spokane 4, Washington

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
NOV 8 1952

11/13/52

October 23, 1952

Memorandum:

To: DMA Field Team, Region II

From: Willard P. Puffett, U. S. Geological Survey

Subject: Docket DMA No. 2447-Tungsten. Supplemental Information to Field Examination Report dated 9/19/52, Germania Consolidated Mines, Stevens County, Washington.

Inasmuch as the field examiner's report recommending denial of the above-captioned application did not specifically state the grade of the millheads current at the Germania Consolidated Mine, the following information is submitted as a supplemental memorandum to the main report.

Information regarding grade of the millheads was requested from the applicant. They state that this information is not available as adequate records have not been kept concerning such data. Apparently the organization of their mining operations is such that they have never systematically sampled the mine-run ore or the resulting sorted ore which is concentrated in the mill. The Applicant states that from June 1951 to March 1952 9,882 pounds of concentrates have been shipped, but it is not known what tonnage of ore this represents. WO_3 content varied from 69 to 73 percent.

The operators did submit a sample of ore to Mr. Hardill of the Bureau of Mines when he was conducting tests on up-grading the concentrates from the mill. Mr. Hardill states this ore sample assayed 0.32% WO_3 but he did not know what the sample represents. It may be that this sample was representative of the sorted ore which is run through the mill.

No samples were taken in the main mine workings to check the tungsten content of the veins. Actually, there were only barren quartz veins exposed and it seemed to the field examiner that visual examination of these veins was sufficient on which to base an estimate that the enclosed tungsten content was very low.

Willard P. Puffett, Geologist

Dist: DMA, Wash. orig & 3
DMA (2)
USGS (SNG)
Puffett
Docket

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION
WASHINGTON 25, D. C.
So. 157 Howard Street
Spokane 4, Washington

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
NOV 8 1952

11/13/52

September 19, 1952

Memorandum

To: DMEA Field Team, Region II

From: Willard P. Puffett, Geologist, U. S. Geological Survey

Subject: Field Examination of Germania Consolidated Mine, Stevens County, Washington, Docket No. DMEA-2447-Tungsten.

Name and Address of Applicant

Germania Consolidated Mines, Inc.
Suite 401
Empire State Building
Spokane 1, Washington

Recommendation

It is recommended that the application of Germania Consolidated Mines, Inc. for exploration assistance at the Germania Consolidated Mine be denied. The known veins on the property are too narrow and too sparsely mineralized with tungsten minerals to merit exploration.

Summary of Field Examination

The first field examination of the Germania Consolidated Mine was on June 23 and 24, 1952. Henry Franz, vice president and supervisor of operations, and Bill Travos, mine manager were at the mine and accompanied me during the examination. Approximately 10 hours were spent in the examination, during which time previously unmapped workings were mapped and various surface areas were inspected for possible bulldozing sites.

Reviewed by
DMEA OPERATING COMMITTEE

11-10-52
(date)

Another brief examination was made of the mine on August 23, 1952. On this inspection I was accompanied by E. H. Roseboom, U. S. Geological Survey, and E. A. Magill, U. S. Bureau of Mines. Further information was obtained concerning probable millhead grade of ore being produced and samples were taken of reportedly high-grade and mill-run grade ore. Six hours were spent on this second examination.

Name and Location of Property

The Germania Consolidated Mine is in the southwestern part of Stevens County, Washington, about 20 miles from a small Indian settlement of Wellpinit, and 63 miles from Spokane. Via a different route, it is 63 miles to Davenport, Washington, a railroad shipping point. This mine is a consolidation of the Keeth property and the Norton property, plus some undeveloped property. These properties are in Secs. 23 and 26, T. 29 N., R. 37 E., Stevens County, Washington.

Description of Workings

Accessible workings at the time of the examination include a 670-foot adit crosscut to the east at an elevation of 3150 feet. A 215-foot drift to the north has been made from this crosscut at a distance of 545 feet from the portal. From the north end of this drift a 100-foot long crosscut has been made to the east at the end of which a 65-foot raise has been driven at plus 70 degrees, following a narrow vein of quartz. A 42-foot long drift has been made on the vein at the top of the raise.

At the east end of the main adit crosscut, a drift 105 feet long has been made to the south. Another drift to the south has been made from the main adit crosscut. This drift is 370 feet long, and above the level a stope 105 feet long and nearly 60 feet high (August 23) has been made.

A raise near the junction of the main adit and north and south drifts was accessible. From this raise access was gained to the haulage level beneath an old stope that began 65 feet above the adit level. No inspection could be made of the stope.

In addition to the above outlined accessible workings, the operator's maps show a shaft sunk from the surface for a distance of slightly more than 200 feet, at the bottom of which 150 feet of drifting to the south has been done; above this a 60-foot high stope has been made. Also indicated are 160 feet of crosscuts and 850 feet of drifts at a higher elevation above the main adit level. There has been considerable stoping done on the upper levels.

Slightly more than one-half mile north of the main workings on the north slope of a low range of hills are two other underground tunnels,

one, a 300-foot long drift and the other a crosscut approximately 250 feet long from which a short drift has been driven.

Surface facilities include a 5-room boarding house, 2 bunk houses, trailer house, compressor and machine shops, powder house, pump house, bulldozer shed, and one building housing a small mill.

Geologic Setting

The rocks underlying the area in which the Germania Consolidated Mine is located are mainly granities belonging to the Loon Lake batholith of Mesozoic Age. To the north, bordering the igneous rocks is a series of metamorphosed sediments assigned to the Deer Trail Argillites of Paleozoic age, and a remnant of these sediments is indistinctly outlined along a crest of a hill to the northeast of the main workings of the mine.

In the granites, narrow wolframite-mineralized quartz veins have been explored and it is from these that production of tungsten has been obtained, both at the Germania Consolidated mine and the Germania Mine one mile to the north. These quartz veins are very persistent in orientation, striking between 20 to 30 degrees east of north and dipping very steeply to the east. The width of the veins is uniform along strike, pinching and swelling being only gradual and over long distances. Wolframite, scheelite, molybdenite, pyrite, fluorite, and pyrrhotite are the most important minerals that have been found in the veins, the tungsten minerals being the only ones of economic value. Generally the veins have narrow mica selvages and in places these greisenized border zones make up the major portion of the vein.

There has been considerable fracturing of the rocks in the vicinity of the quartz veins but two general fault systems are indicated. One set of faults strikes nearly north-south and dips from 60 to 85 degrees to the east whereas a nearly east-west set possesses nearly vertical dips. These faults result in minor offsets of the quartz veins.

Considerable previous information has been obtained by government agencies concerning the Germania Consolidated mine workings as a result of investigations made during World War II. S. W. Hobbs of the U. S. Geological Survey office, Spokane made a number of visits to the property in 1944 during which he mapped workings on the main adit level. Lincoln Page, U. S. Geological Survey, Denver, also has mapped the major portion of the rest of the mine workings. Insofar as I have been able to determine, no official publications have resulted from either of the two above-mentioned field studies.

According to the map made by Lincoln Page, the Keeth upper adit, at an elevation of 3324 feet, drifted more than 300 feet on a vein that ranged in thickness of 6 inches at the south end to a maximum of 18 inches 140 feet farther north and then gradually thinned to 6 inches at the face.

On the 3259-foot level, drifting had been done for 450 feet on a vein that ranged in thickness from 2 inches to 12 inches. These two drifts are now inaccessible and no information is available concerning wolframite content of the vein.

The workings about which Mr. Hobbs reported in 1944 were available for inspection at the time of the current field examination. Also a 65-foot raise, and drifts 105 feet long and 370 feet long plus the 105-foot long stope were accessible. The 370-foot drift explored, at an elevation of 3152 feet, the vein mapped by Page in two upper adits. The raise and 105-foot long drift explores a quartz vein 100 feet farther to the east.

In the raise the east vein ranges in thickness from 5 to 14 inches and dips 75 degrees to the east. In a 43-foot drift at the top of this raise, the quartz vein strikes N. 10° E., and ranges in thickness from 2 to 8 inches. The south face of this drift contains a broken area 11 inches wide in which the vein occurs. Near the north end of the drift, a cross-cutting 10-inch wide vein is exposed. This vein strikes N. 27° W., dips 75 degrees to the east, and contains scattered flakes of molybdenite. At no other place in the mine workings is this particular quartz vein exposed. In the drift to the south from the main adit crosscut, the east vein ranges in thickness from 4 to 8 inches.

As exposed in the drift to the south from the main adit crosscut and in the stope above this drift, the west vein ranges in thickness from 4 to 8 inches. In the back of the stope this vein is continuously exposed and over the stope length of 105 feet, the persistence in thickness of the vein from 6 to 8 inches seemed remarkable.

In the crosscut on the north end of the property a narrow quartz vein, averaging not more than 5 inches wide was exposed. The drift on the north end of the property followed one and sometimes two narrow quartz veins aggregating not more than 8 to 10 inches in thickness.

Although the two main quartz veins exposed in the mine workings are persistent along strike and fairly consistent in width, the enclosed tungsten mineral content is very sporadic in occurrence. The main tungsten mineral, wolframite, occurs, or is reported by the present operator to occur as isolated bunches of crystals probably not averaging more than 3 or 4 inches in diameter. Only very scattered evidences of this mineral were observed in the accessible workings. Certainly insufficient quantities of this mineral were seen on which to hypothecate any estimate of ore grade. In Mr. Hobb's report an estimate of not more than 1 percent WO_3 for the vein material was made. Inasmuch as little evidence of tungsten minerals were seen, no samples were taken along the veins during the current examination.

The operator stated though that, regardless of the apparent paucity of wolframite in the veins, sufficient quantity of this material

does occur so that a measureable quantity is recovered from rock currently being processed in the mill. No mill head samples have been taken so there is no method of determining the grade of rock being milled.

Mr. Trevos stated that the drift on the north end of the property followed a vein which was richer in tungsten than those veins in the mine workings. Just prior to the second examination trip he had sampled this vein throughout its length by drilling random holes up-dip on the vein and saving the drill cuttings. As he still retained these drill cuttings, they were quartered and split by the examining team and a sample was obtained. The resulting assay value of the sample was 0.63 percent WO_3. Another sample was taken from the dump in front of the north crosscut. This assayed 0.24 percent WO_3.

Proposed Exploration

The applicant has proposed an exploration project which consists of bulldozing favorable locations on the surface, drifting to the north on the west vein from the main adit level and raising to the surface on the vein; raising on the east vein and driving a drift to the south at an elevation between 65 and 100 feet above the main adit level. The applicant is of the opinion that although the exposed vein is not of minable width on the main adit level, former operations have shown that the vein is much wider near the surface, hence the need for raising. Mr. Page's maps show that in the uppermost workings the exposed veins were up to 18 inches wide, so there is some basis for the applicant's assumption.

Feasibility of Proposal

If the tungsten-bearing veins on the mine property were of minable width and grade, the applicant's proposed exploration program could be considered feasible. Insofar as the field examining team has been able to determine though, the vein only occasionally obtain a width of more than 8 inches and the contained tungsten is of very low percentage.

Tungsten is being currently produced at the Germania Consolidated Mine. Sufficient records have not been kept, or at least were not made available to the examining team to determine whether this tungsten is being economically produced. Indications were though, that the operation is sub-marginal at best and if no better ore is soon found, the present operation will not be long sustained.

Although it would probably be of benefit to the government if this mine could be put on a paying basis and more ore reserves indicated as a result of more exploration, indications are that the veins on the property are too narrow and too sparsely mineralized to substantiate an assumption that any discovery will result from further exploration on the known veins.

cc: DMEA(4)
USBM(2)
USGS(SRO)
Puffett

Willard P. Puffett

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
NOV 3 1952

So. 157 Howard Street
Spokane 4, Washington

September 19, 1952

Memorandum

To: DMEA Field Team, Region II

From: Willard P. Puffett, Geologist, U. S. Geological Survey

Subject: Field Examination of Germania Consolidated Mine, Stevens County, Washington, Docket No. DMEA-2447-Tungsten.

Name and Address of Applicant

Germania Consolidated Mines, Inc.
Suite 401
Empire State Building
Spokane 1, Washington

Recommendation

It is recommended that the application of Germania Consolidated Mines, Inc. for exploration assistance at the Germania Consolidated Mine be denied. The known veins on the property are too narrow and too sparsely mineralized with tungsten minerals to merit exploration.

Summary of Field Examination

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cc: DMEA(4)
USBM(2)
USGS(SRO)
Puffett

Willard P. Puffett

Willard P. Puffett

400

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

So. 157 Howard Street
Spokane 4, Washington

August 11, 1952

Mrs. E. J. Fisher, Secretary
Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane 1, Washington

Re: Docket DMEA-2447, Tungsten
Germania Consolidated Mines, Inc.
Stevens County, Washington

Dear Mrs. Fisher:

In answer to your inquiry of August 5, 1952, concerning the application for aid in an exploration project at the Germania Consolidated property, I want to first state that your application is still being given consideration and you will be notified as quickly as possible when a final decision is obtained. There is, as you state, only a limited time left this season in which surface work can be carried out, but if you obtain a contract, there is no reason this part of the project cannot be delayed until weather permits next Spring.

The DMEA schedule concerning rental on equipment furnished by the operator, itemized now as depreciation allowance, has been generally quite rigidly fixed as a per-month allowance of one-sixtieth of the replacement value of the item.

Yours very truly,

Willard P. Puffett
For: A. E. Weissenborn
Executive Officer, DMEA
Field Team, Region II

cc: DMEA (2)
USBM (2)
W.P.Puffett (1)

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

So. 157 Howard Street
Spokane 4, Washington

August 11, 1952

Mrs. E. J. Fisher, Secretary
Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane 1, Washington

Re: Docket DMEA-2447, Tungsten
Germania Consolidated Mines, Inc.
Stevens County, Washington

Dear Mrs. Fisher:

In answer to your inquiry of August 9, 1952, concerning the application for aid in an exploration project at the Germania Consolidated property, I want to first state that your application is still being given consideration and you will be notified as quickly as possible when a final decision is obtained. There is, as you state, only a limited time left this season in which surface work can be carried out, but if you obtain a contract, there is no reason this part of the project cannot be delayed until weather permits next Spring.

The DMEA schedule concerning rental on equipment furnished by the operator, itemized now as depreciation allowance, has been generally quite rigidly fixed as a per-month allowance of one-sixtieth of the replacement value of the item.

Yours very truly,

Willard P. Puffett
For: A. L. Weissenborn
Executive Officer, DMEA
Field Team, Region II

cc: DMEA (2)
USBM (2)
W.P.Puffett (1)

MF-500

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

REFERENCE SLIP

DATE 8-14-52

REFERRED TO:
1. Code 400-RM 3538
2.
3.
4.

To Field Team

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

on 5/17 No report to date

REMARKS:

Check (X) before the items needing attention.

Adams
Initials of sender.

GPO 16—63815-1

FILE COPY
SURNAME:

Chapman
Selfridge
Kjellmark

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

MAY 12 1952

Germania Consolidated Mines, Inc.
Suite 401, Empire State Building
Spokane 1, Washington

Re: Docket No. DMEA 2447X - Tungsten
Germania Mines
Stevens County, Washington

Gentlemen:

Your application for assistance in exploring the above noted property has been reviewed by the Iron and Ferro-Alloy Division of the Defense Minerals Exploration Administration and has been referred to Mr. A. H. Weissenborn, Executive Officer, DMEA Field Team Region II, South 157 Howard Street, Spokane 8, Washington, for a field examination.

The Regional Office will contact you at an early date in regard to the examination of your property. Any assistance that you can render the members of the field team in the examination will be appreciated.

Sincerely yours,

C. O. Mittendorf (fw) 5/12

Acting Administrator
Defense Minerals Exploration
Administration

TLChapman'lm
5/9/52

cc: Admn. Reading File
Docket
R. W. Geehan, USBM
D. M. Lemmon, USGS
Field Team Reg. II
G. C. Selfridge
T. L. Chapman
Operating Committee

400

Germania Consolidated Mines, Inc.
Suite 401, Empire State Building
Spokane 1, Washington

Re: Docket No. DMEA 2447X - Tungsten
Germania Mines
Stevens County, Washington

Gentlemen:

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Sincerely yours,

C. O. Mittendorf

Acting Administrator
Defense Minerals Exploration
Administration

TLChapman:lm
5/9/52

cc: Admn. Reading File
Docket
R. W. Graham, USBM
D. M. Lemmon, USGS
Field Team Reg. II
G. C. Selfridge
M. L. Chapman
Operating Committee

Docket Copy

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

Chapman
Selfridge

MAY 12 1953

Mr. A. S. Weissenborn
Executive Officer, Region II
South 157 Howard Street
Spokane 8, Washington

Dear Sir:

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

Applicant Cornwall Consolidated Mines, Inc.

Docket No. [illegible]

Commodity Tungsten

Amount $ 89,700.00

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

Sincerely yours,

(signed) FRANK E. JOHNSON

Chairman, Operating Committee
Defense Minerals Exploration
Administration

APPROVED:

Jo. H. Hedges

Member, Bureau of Mines

D. M. Lemmon

Member, Geological Survey

13759

Defense Minerals Administration

Review of Application for Exploration Assistance

Docket No. 2447

Commodity Tungsten

Total Amount $89,700.00

Govt. Participation $67,275.00

1. Name and Address of Applicant Germania Consolidated Mines, Inc. Suite 401, Empire State Building Spokane 1, Washington.

2. Location of Property Colville Indian Reservation 480 acres in Sections 23, and 24, T29N. R.37E, Stevens County, Washington.

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

If not, application will be rejected.

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

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

a) Good

b) Poor

c) None

d) Don't know--needs field examination Yes.

e) Is there an alternative and favorable project? Dont know. (If so, attach an explanation)

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

6. If applicant is a lessee, is a copy of the lease attached? 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? Indian Reservation Land.

a) MF-201? _____

b) MF-202? _____

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

a) Available manpower Yes.

b) Equipment and supplies 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)* _____
Should be investigated.

Is a field check needed on this point? _____

10. Exhibit A. (question 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? No. Work is mainly development.

If not, what part of it is? Drift northeast on 3 level 200 to 300 feet; Raise 150 to 200 feet. Drift southwest on 3 level 200 feet and raise to surface. Do some trenching on surface above this area.

Drill raises from end of crosscuts on East vein.

Is this part a worthwhile exploration project? yes.

d) Are the cost estimates detailed? Centrally.

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

e) Are the cost estimates reasonable? yes.

f) Should more information be requested from applicant?_____

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

11. Exhibit B (question 23-d)*

a) Is it applicable? No.

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

c) Is a field check needed?_____

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

a) Is it applicable? yes.

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

c) Are rents and charges reasonable?_____

d) Is a field check needed? yes.

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

a) Are there sufficient data? yes.

b) Is the schedule adequate for the work proposed? yes.

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

d) Are the proposed wages and salaries reasonable? yes.

e) Is a field check needed?_____

14. Exhibit E (question 23-c)*

a) Is it applicable? Yes.

b) Sufficient data?

c) Reasonable?

d) Field check needed? Yes.

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? The matter of exploration work should be taken up with the applicant and find out if he would be agreeable to a plan on the order of that outlined in 10(c)

Reviewed by: P H Chapman

Date 5/9/52

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

May 5, 1952

Memorandum

To: George C. Selfridge, DMEA

From: Robert W. Geehan, Bureau of Mines

Subject: Germania Consolidated DMEA-2447, Tungsten
Stevens County, Washington

Our records indicate 1951 shipments of 277 units. At the end of 1951, the firm also had 11 tons of middlings on hand. In February of 1952, there were shipments of 17 units.

The loan requested, $89,700, covers a program that is, in part, development rather than exploration. The actual exploration needed could be covered by a much less ambitious program. However, because of the nature of the veins, it is not probable that any significant discovery would be made.

It is recommended that the present application be rejected. An application covering real exploration would be worth further consideration.

Robert W. Geehan

Robert W. Geehan

Attachment

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
MAY 6 1952

George C. Selfridge

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

400

May 5, 1952

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Robert W. Geehan

Attachment

George C. Selfridge

Mr. R. W. Geehan, U. S. Bureau of Mines May 2, 1952

Iron and Ferro Alloy Division, DMEA

Docket No. DMEA 2447 - Tungsten
Germania Consolidated Mines, Inc.
Leased Indian Lands
Stevens County, Washington

A review of our files indicates that we have not received a memorandum from you on the subject docket, a copy of which was sent to your office on March 25, 1952.

George C. Selfridge

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

GCSelfridge'lm
5/2/52

cc: Admn. Reading File
Docket
✓ G. C. Selfridge

IN REPLY REFER TO:

G-MD-DML

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

April 2, 1952

Memorandum

To: George C. Selfridge, DMEA

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

Subject: Exploration application $89,700 DMEA 2447 - Tungsten
Germania Consolidated Mines, Inc.
Suite 401, Empire State Bldg.
Spokane 1, Washington

Property: Keith and Norton properties
Secs. 23 and 26, T. 29 N., R. 37 E.
Colville Indian Agency
Deer Trail district
Stevens County, Washington
(one mile SW from Germania mine of Tungsten Mining and Milling Co. - DMA 144 and 2131)

Proposal: It is proposed to block out ore for mining by driving raises from the number 3 level and sublevels from the raises. Total work involves 180 feet of drift on the No. 3 level, 1,015 feet of raise (6 raises), 780 feet of drift on intermediate levels, stope preparation along 500 feet of vein at the No. 3 level, and surface stripping.

Most of the proposal involves mine development rather than exploration.

Past production: Up to 1946, production was 2,405 units WO_3 from about 4,850 tons of ore milled. To make this production, required about 2,350 feet of crosscut and drift, 200 feet of shaft, and substantial amounts of raises and stopes. The operation was not financially successful, and probably would not be successful today at current costs despite a high price for tungsten.

The application states that about 343 units were produced in 1951.

Field investigations: The deposit was examined in August 1943 by S. W. Hobbs of the Geological Survey, and again on August 3, 1944. According to Hobbs, only No. 3 level, the lowest, was accessible

in 1943 and much of the better vein material above this level had been stoped. The veins on No. 3 level were 8 inches or less in width.

The applicant submitted a report dated October 8, 1945 by Arthur Lakes, mining engineer and geologist. Lakes investigated the property September 25-27 and October 2-3, 1945. Lakes was able to enter the No. 3 level and the intermediate drift 60 feet above the No. 3 level. Lakes prepared maps and projections and a report in which he stated (p.d.): "While I cannot definitely condemn the property by its showings and productive potentialities, I cannot recommend it with assurance that it will promise reasonable return on investment. I consider it highly speculative with chances for loss that must be considered by anyone investing in this property."

Geology: Wolframite is irregularly distributed through 2 or 3 narrow quartz veins in granite. The veins are 8 inches or less wide and contain about 1.0 percent of WO_3. The vertical range of mineralization is only a few hundred feet, and the Level 3 workings appear to be near the lower limit.

Recommendation:

It is recommended that the application be denied for the following reasons:

1. The work proposed is largely mine development, not exploration.
2. There is little chance of making a significant discovery.
3. The known ore deposit is too small and low-grade to warrant the expenditures proposed.
4. The mine is sufficiently developed to pay its own way if the material is ore.

D M Lemmon

DMLemmon:gt

ROUGH DRAFT 4/4/42

Memorandum

To: Acting Administrator, DMEA

From: Iron and Ferro-Alloy Division, DMEA

Subject: Denial of exploration project in the amount of $89,700
Docket No. DMEA 2447X - Tungsten
Germania Consolidated Mines, Inc.
Keith and Norton Properties
Stevens County, Washington

The denial of the subject application by this Division is based on the following information:

1. Wolframite is irregularly distributed through 2 or 3 narrow quartz veins in granite. The veins are 8 inches or less in width and contain about 1.00 per cent WO_3. The lowest level in the mine (No. 3) appears to be near the bottom of mineralization. Above the No. 3 level much of the better material has been stoped. Most of the proposed work would be mine development.

2. Up to 1946, production was 2,405 units WO_3, ~~form~~ from about 4,850 tons of ore milled. This production required about 2,350 feet of crosscut and drift, 200 feet of shaft, and substantial amounts of raises and stopes. The operation was not financially successful and probably would not be successful today despite the present high price for tungsten. Production in 1951 was only 343 units.

3. The deposit was examined in August, 1943, and again on August 3, 1944, by S. W. Hobbs of the Geological Survey. Only the No. 3 level was accessible in 1943.

The applicant submitted a report by Arthur Lakes, mining engineer and geologist, dated October 8, 1945. Lakes was able to enter the No. 3 level and the intermediate drift 60 feet above the No. 3. He stated that investment in this property would be "highly speculative".

4. No examination was made by DMEA field team.

5. The Commodity Division of the USGS recommends denial as "the work proposed is largely mine development" and "there is little chance of making a significant discovery".

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

ROUGH DRAFT

4/4/52

Germania Consolidated Mines, Inc.
Suite 401
Empire State Building
Spokane 1, Washington

Re: Docket No. DMEA 2447X - Tungsten
Keith and Norton Properties
Stevens County, Washington

Dear Sirs:

Your application for aid for an exploration project and other reports relating to the above noted properties have been carefully reviewed.

The information indicates that, geologically, there is little probability of making a significant mineral discovery. We regret, therefore, to inform you that your application is denied.

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

Sincerely yours,

Acting Administrator
Defense Minerals Exploration
Administration

DMEA-2447

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

No. 157 Howard Street
Spokane 4, Washington

March 19, 1952

Mr. Frank E. Johnson
Chairman, Operating Committee
Defense Minerals Exploration Administration
Department of Interior
Washington 25, D. C.

Dear Mr. Johnson:

Enclosed are three copies of an application by the Germania Consolidated Mines, Inc., Spokane, Washington and a copy of a report by Arthur Lakes.

One copy of the application is being retained for the use of this office.

Sincerely yours,

Elton A. Youngberg
For: A. E. Weissenborn
Executive Officer, DMEA
Field Team, Region II

Enclosure
cc: USBM, Spokane

Form MF-103
(Revised June 1951)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Budget Bureau No. 42-R1035.1.

MF-103 Should Be Filed With General Technical Data Form MF-100

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

Not To Be Filled in by Applicant

Docket No. DMEA-2447
Metal or Mineral
Date Received 3-24-52
Amount $
Participation (Government %)

GERMANIA CONSOLIDATED MINES, INC.
SUITE 401
EMPIRE STATE BUILDING
SPOKANE 1, WASHINGTON

Name and address of applicant

Date March 15, 1952

MAR 24 1952

If you have already filed MF-100, give date filed March 15, 1952 type of assistance requested Loan,

DMA Docket Number (if available) Serial No. U.S.-0745

INSTRUCTIONS

Read Mineral Order 5, Regulations Governing Government Aid in Defense Projects, before completing this application. Submit four copies each, of the signed application form, General Technical Data Form MF-100, and answers to questions as specified, to Defense Minerals Administration, Department of the Interior, Washington 25, D. C., or to the nearest field executive office thereof, with your name and address on each sheet of the application and all accompanying papers. If you have previously filed MF-100, it is not necessary to file it again. However, you should indicate in space provided above the type of assistance previously applied for (loans, procurement contracts, etc.) and DMA Docket Number, if available. *When a question is inapplicable it should be so stated in the form.* Additional sheets should be attached in answering any questions or in supplying additional information. IF YOU CANNOT ANSWER A QUESTION, SO STATE.

1. (*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*) If you are not the owner of the property, submit a copy of the lease, purchase option, or other agreements under which you are authorized to operate the property with each copy of your application.

   (*c*) Give the legal description of the exact parcel, plot, or area upon which the exploration is to be conducted.

   NOTE: (1) 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 (*c*) 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.

   (2) If applicant is not the owner of the property or if there are any liens or encumbrances against the property, copy of agreements of claimants, lienors, encumbrances, and lessors subordinating their interests in the property to the interest of the Government under the Exploration Project Contract will be required for attachment to the Contract.

2. (*a*) What metals or minerals do you expect to find?

   (*b*) Furnish statement of the geologic features of your property, giving type of ore deposit and reasons for expecting to find commercial ore bodies. Illustrate with maps or sketches. If you have a geologic or engineering report, or assay maps showing width and grade, please send them with application, stating whether or not you wish to have them returned.

The information requested in questions 3, 4, 5, 6, 7, 8, and 9 below should be answered specifically and in detail, as this information will be attached to and incorporated as part of the Exploration Project Contract, if such contract is entered into with you by the Government.

ANSWER EACH QUESTION ON SEPARATE SHEETS OF PAPER AND SUBMIT A COPY OF EACH ANSWER FOR EACH COPY OF YOUR APPLICATION.

3. (*a*) Describe fully the proposed work and give the total cost of the project.

   (*b*) State the time required to start the project and to complete it.

4. Submit a map or sketch of the property involved showing a plan (and cross section, if needed) of the present mine workings and the *location of the proposed exploration work* as related to geologic features, such as contacts, veins, ore-bearing beds, etc.

5. Furnish an itemized list 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.

6. Furnish a detailed list of additional facilities, buildings, and fixtures to be purchased, installed, or erected by you, with the estimated cost of each item.

7. Furnish a detailed list of operating equipment, separated into items to be—

   (*a*) Rented

   (*b*) Purchased

   (*c*) Furnished by you

   with the rental, purchase price, or depreciation of each item, as the case may be, to be charged as a cost of the project.

8. Furnish an itemized schedule of labor, by numbers and classes (miners, muckers, etc.) and of supervisors by numbers and positions, with the maximum wages or salaries to be paid to each.

9. Furnish a detailed list with estimated cost of each item for materials, supplies, engineering, assaying, accounting, power, water, utilities, and any other items not provided for above.

10. (*a*) How much are you prepared to invest in the proposed project?

    (*b*) Is this amount sufficient to pay your part of the cost of the project, in accordance with the regulations on Government participation (Sec. 9 of MO–5)?

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

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.

GERMANIA CONSOLIDATED MINES, INC.
(Name of company)

By Julius A. Franz
(Signature of authorized official)

March 18, 1952
(Date)

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—64067-2

Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane 1, Washington

M. F. 103, Sec. 1

(a) The company holds leases from the Department of the Interior (Colville Indian Agency) on the SW¼ NE¼ and NW¼ SE¼, Sec. 26, Twp. 29N, R. 37E, WM and NE¼ SE¼ and Lot 5, Sec. 23, Twp. 29N, R. 37E, WM (Lease No. 65) formerly known as the Norton Property; also SW¼ SE¼ of Sec. 23, Twp. 29N, R. 37E, WM (Lease No. 73) formerly known as the Keeth Property; and has applied for a lease on the SE¼ SE¼ Sec. 23 and the NE¼ NE¼ Sec. 26, Twp. 29N, R. 37E, WM and the NW¼ NE¼ Sec. 26, Twp. 29N, R. 37E, WM. It also owns by warranty deed Lots 1, 2, 3 and 4, Sec. 23, Twp. 29N, R. 37E, WM, outside the Reservation, comprising in all approximately 480 acres.

(b) Copies of assignment of Leases submitted with Form M. F. 100.

(c) SW¼ SE¼, Sec. 23 and NW¼ NE¼, Sec. 26, Twp. 29N, R. 37E, WM.

(1) This area is included in answer to Sec. 1 (a)

(2) Leases of Indian lands require payment of 10% royalty of net proceeds of smelter returns.

No mortgages or liens.

M. F. 103, Sec. 2

(a) It is expected that Wolframite, Scheelite and Molybdenite will be found.

(b) See Arthur Lakes' Report dated Oct. 8, 1945.

Refer to map by W. H. Simons, dated February 1, 1952.

The proposed exploration and development is to prepare the mine for increased production and to block out ore of a sufficient determined value to warrant enlarging and

M. F. 103, Sec. 2 (Cont)

modernizing milling facilities for more efficient production.

The plan of development is outlined on the map by W. H. Simons, which accompanies this application and is divided as follows:

MIDDLE VEIN

Drive N.E. a distance of about 180 ft.

Put up a double compartment raise to the surface at the end of proposed new drift.

From this raise drive two intermediate drifts, blocking out the ore under surface exposures as shown at the edge of old stopes.

Break down the back and prepare for stoping the ground that is not already prepared on both sides of the main No. 3 crosscut between the present #2 chute, north, and the present end of tunnel, south. Put in two more raises to the No. 2 level, a distance of 95 feet each.

EAST VEIN

Put up a two-compartment raise at the end of the main No. 3 crosscut, approximately 190 feet. Put up present raise to the surface, a distance of approximately 170 feet. Drive an intermediate between these raises, a distance of approximately 230 ft. and southerly to the fault, an approximate distance of 90 feet. Put up a raise to the surface in the center of this block. All on vein formation.

Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane 1, Washington

M. F. 103, Sec. 2 (Cont)

SURFACE

Stripping on the surface should be done Southwest of the cut below the Norton shaft on the middle and East veins and on the East vein between present surface cuts A and H.

SUMMARY

The foregoing program totals 180 feet of main drifting; 780 feet of intermediate drifts, 825 feet of double compartment raises, 190 feet of single compartment raises and breaking down the back and preparing for stoping 500 feet of tunnel; stripping as outlined.

In doing this work arrangements should be made to keep the mill feed separate during the various operations, using the present milling facilities as a sampler, carefully recording the width, length and height of the total mined and the width of the vein. Arrangements should be made to calculate the amount sorted out and regular samples taken of the feed following the rolls, the tailings and the concentrates.

This is the only method that will give definite data on the ore reserves, as sampling in the mine is impossible due to the irregularity of the ore occurrence in the vein.

Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane 1, Washington

M. F. 103, Sec. 3

(a) Proposed work is fully described in M. F. 103, Sec. 2 (above) See accompanying map by W. H. Simons, dated Feb. 1, 1952.

COST OF PROPOSED DEVELOPMENT

Main drifting	180 ft. at $32	$ 5,760.00
Intermediate drifts	780 ft. at $28	21,840.00
Double compartment raises	825 ft. at $40	33,000.00
Single compartment raises	190 ft. at $30	5,700.00
Preparing tunnel for stoping	500 ft. at $25	12,500.00
Stripping		2,000.00
		$80,800.00
Mucking machine		3,500.00
5 - 1½ T. dump cars		1,000.00
10 T. 16# rail, fish plates & bolts		1,400.00
2,000 ft. 2" air line		1,000.00
		$87,700.00
New elevator in mill		1,000.00
		$88,700.00
Machinery repairs		1,000.00
		$89,700.00

The balance of the materials needed is covered in the prices per foot.

(b) This project can be started as soon as funds are available and can be completed within one year, the limiting factor being the present capacity of the mill.

Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane 1, Washington

M. F. 103, Sec. 4

See accompanying maps by W. H. Simons, dated Feb. 1, 1952, and report by Arthur Lakes, dated Oct. 8, 1945.

Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane 1, Washington

M. F. 103, Sec. 5

See M. F. 100, Sec. 17

See M. F. 300, Sec. 3

All existing facilities, buildings and installations are sufficient for this program excepting those shown in the estimate. New elevator in the mill is imperative. A vibrating screen and picking belt are desirable but not necessary and have not been included in this estimate.

Germania Consolidated Mines, Inc,
401 Empire State Building
Spokane 1, Washington

M. F. 103, Sec. 6

No additional facilities, building installations or fixtures are contemplated except as outlined above.

Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane 1, Washington

M. F. 103, Sec. 7

(a) None.

(b) Mucking machine, rail, pipe, vent pipe and fan, 5 - 1½ ton ore cars; stoper steel.

See estimate M. F. 103, Sec. 3(a).

(c) See M. F. 100, Sec. 17.

A fair rental on these installations and equipment should be charged against this project, this to be agreed upon by officers of company and DMA before operations are started.

		Rental
Buildings at cost		$ 3,750.00
Hercules Power Unit at cost		4,273.32
Atlas Rock Drill with pneumatic pusher, grinder, raising feed, steel, etc.	at cost	1,271.17
E.V.A. Single Drum Hoist	at cost	642.00
Other Machinery & Equip.	at cost	12,500.00
Mill & Equipment	at cost	4,175.00
Camp Equipment	at cost	1,000.00

Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane 1, Washington

M. F. 103, Sec. 8

The crew necessary to carry out this project should consist of

1 supervisor	$300 per mo.
1 dump man	$12 per day
3 mill men	$350 per mo.
2 trammers	$12 per day
4 miners	$12.50 per day

This is the going wage at this time.

Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane 1, Washington

M. F. 103, Sec. 9

Due to the amount of assaying necessary to determine the values in this ore body and of the mill feed, it is believed that $3,000 should be included for engineering and assaying. Accounting costs will approximate $1,000.

Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane, Washington

M. F. 103, Sec. 10

(a) The Germania Consolidated Mines is prepared to invest approximately $10,000.00 in this project.

(b) This amount is not sufficient to pay its part of the cost of the project, in accordance with the regulations on Government participation, but it is believed that sale of WO_3 from present opened stopes will enable us to furnish funds to meet regulations as outlined in Sec. 9 of NO-5 of Defense Production Act of 1950.

Form MF-100
(May 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. DMEA-2447

Date received 3-24-52

MAR 24 1952

GERMANIA CONSOLIDATED MINES, INC.
SUITE 401,
BOOTH STATE BUILDING
SPOKANE 1, WASHINGTON.

Name and address of applicant

Date March 5, 1952

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) priorities or allocation of mining equipment, and maintenance, repair and operating supplies, and (5) 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 _____

   If not in production or operation, estimated date when production will begin _____
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)
Julius A. Frans	President	None	Unknown	130,000	None	None	
Henry J. Frans	V.president	None	"	50000	None	None	
[illegible] I. Fisher	Sec-Treas	300.00 None	"	6000	None	None	
[illegible] Byron, Director	St'holder	None	"	50000	None	None	
David Calo		None	"	65000	None	None	
[illegible] C. Loop	Dir ctor	None	"	6000	None	None	
Frank & Rose Healey	"	None	"	65000	None	None	
[illegible] Schneller	"	None	"	65000	None	None	
Walter D. Krehbiel	"	None	"	60000	None	None	
	Total	300 00	x x x x x	435000		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	$16100 00	$ 1¢	1 610 500	None
Preferred stock	$	$	$		

*Indicate period covered.

10. 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.)	Wolframite				
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.

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GENERAL TECHNICAL DATA.

M. F. 100, Sec. 1 Materials Produced.

(a) The main product recovered is wolframite with small amounts of sheelite occurring generally as a skim on the wolframite crystals.

(b) Appreciable amounts of molybdenite are recovered but are not taken into consideration in the calculations herein.

M. F. 100, Sec. 2.

1. The mine is at the present time known as the Germania Consolidated Mines, and is a consolidation of the Keeth Mine and the Norton Mine, as well as undeveloped property.

The mine on the Keeth property is developed by two adits known as # 1 and #3 and by an extension of the adit from the Norton, known as Adit #2. The Norton property is developed by a 200-foot shaft as well as the adit. A short tunnel about 70 feet long has been driven on the east vein from the surface some 700 feet southeast of the shaft.

The present mill is of the gravity type comprised of a 12 x 24 jaw crusher, 1 set of 10" x 24" rolls, one bull jig, one medium jig, one Denver jig and a concentrating table. This is in fair condition with the exception of the elevator from the rolls to the bull jig. This should be replaced entirely by an elevator of double the capacity.

The present mill can handle about 40 tons per day. With the addition of a shaking screen and picking belt in place of the present grizzly, sorting costs could be lowered and capacity increased somewhat, as well as a better product sent to

the crusher. Since three quarters of the rock mineral in the drifts is waste, this sorting is important in the plan under consideration.

(a) Linear feet of shafts is 220 feet and consists of a shaft on the vein in the Norton property.

(b) Linear feet of cross cuts amount to 935 feet, 150 feet of which is on the No. 2 tunnel level and the valance on the No. 3 tunnel.

(c) Tunnels and adits amount to 1250 feet. (See accompanying map.)

(d) Other openings in the mine are (1) intermediate 260 feet long (2) 200-foot level in the shaft 150 feet long, (3) 475 feet of raises. (See map)

All openings now are inaccessible except the No. 3 tunnel level and a portion of the intermediate.

The shaft is now full of water and must be unwatered. Once unwatered, no pumping problem should be experienced as the mine makes very little water.

M. F. 100, Sec. 3.

(a) The camp is 63 miles north of Davenport, Washington, Which is a shipping point. Product is shipped from Spokane, Washington, 40 miles from Davenport, by rail. Shipping by Auto Freight would permit shipment from Davenport and this arrangement is now under consideration by tungsten purchaser. The highway is paved or gravelled within six miles of the mine. This six miles is an unsurfaced mountain road and very much in need of some line changes and surfacing.

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The climate is moderate and the property would be accessible the year around with the improvement of this mountain road.

(b) None

(c) The workings under consideration are in the SW¼ of SE¼ of Sec. 23 and the NW¼ of the NE¼ of Sec. 26, Twp. 29 N., R37E, W.M.

(d) Stevens County, Washington.

M. F. 100, Sec. 4.

(a) The property is now being operated on a limited scale by the Germania Consolidated Mines, Inc., a corporation organized under the laws of the State of Washington.

(b) The company holds leases from the Department of the Interior (Colville Indian Agency) on the SW¼ of NE¼ and NW¼ of SE¼, Sec. 26, Twp. 29 N, R37 E, WM and NE¼ of SE¼ and Lot 5, Sec. 23, Twp. 29 N, R37E, W. M. (Lease No. 65) known as the Norton property; also SW¼ of SE¼ of Sec. 23, Twp. 29 N, R 37 E, W. M. (Lease No. 73) known as the Keeth property; and has applied for lease on the SE¼SE¼ Sec. 23 and the Ne¼NE¼ Sec. 26, Twp. 29 N., R37E., WM, and the NW¼NE¼ Sec. 26, Twp. 29N., R 37 E., W.M. It also owns by warranty deed Lots 1-2-3-4- Sec. 23, TwP. 29 N., R 37 E. WM. outside the Reservation.

M. F. 100, Sec. 5.

The property has been in production intermittently since 1934. Now in limited production. (See Arthur Lakes report and map by W. H. Simons.

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M. F. 100, Sec. 6.

(a) President and vice president are prominent grain, seed and cattle raisers of southeastern Washington who have been identified with this mine since it was taken over by Germania Consolidated Mines., Inc., and have mining interests in Montana and Idaho. Vice president has overall supervision of the operations.

One director has been prominently identified with the mining business for thirty years and is familiar with the operation of mines and methods of ore production as well as purchasing supplies, etc.

Another director is office manager and is thoroly familiar with mine laws, state and Government requirements and accounting procedure.

(b) Employee in charge of operations worked in the mine for approximately eight years under former ownership, worked for present owners before and after World War II and has a thorough knowledge of the property, its potential ore veins and ore conditions in tunnels and crosscuts now inaccessible, but in his opinion, worthy of exploration.

M. F. 100, Sec. 7

(a) Quote from Arthur Lakes' Report pages 2 and 3

"Mr. Jas. Keeth acquired his 40 acre tract and opened the middle vein by what are now the No. 1 and No. 3 adit tunnels. Mr. Norton acquired the 40 acre tract south of the Keeth property and opened it up with what is now known as the No. 2 adit and by a 200-foot shaft with sub-levels at the No. 2 level and the 200 foot level. Later the Norton property

was acquired by the Industrial Tungsten Co. and more recently, the Keeth, Northn and other properties were consolidated into the present holdings of the Germania Consolidated Mines, Inc., and the SW drift driven on the "Middle" vein at No. 3 tunnel level.

Keeth installed a small, effective mill at portal of No. 3 tunnel and made some attractive wolframite concentrates. The Industrial Company built a mill at Hoot Owl Creek about three quarters of a mile southwest of their mine workings and hauled ore to it. (Map B) This latter mill was abandoned and dismantled but the Keeth mill is now in good working condition.

Stope maps show that most production was made from "Middle" vein on the Keeth property, a considerable proportion by leasers. The Norton property produced from two stopes down to 200-shaft level on "West" vein. (Map C) The "East" vein which has greatest surficial length was not mined but some cuts at north and south extremities provided good ore, according to Mr. Smith who stated that these cuts showed as good ore as cut exposures on "Middle" and "West" veins.

Production from the combined properties is reputed more than $100,000. Partial records at hand show that leasers in 1934-1935-36 produced $34,033.85 worth of ore, no tons stated, when prices were $13 to $15.50 per unit of 20 pounds. I am informed that they made a profit after mining, milling and royalties and market changes. In 1942 Mr. Keeth produced 15.71 tons of concentrates varying from 64.63% to 72.18

wolframite content, for which he received $24,232.10 after freight, treatment and marketing changes. He sold also $4,000 worth, no tonnage given, to Metals Reserve during this period. It is presumed in this report that Mr. Keeth received War price of about $30 per unit of 20-pounds, or $1.50 per pound of contained WO_3."

When price of tungsten went down after World War II, while cost of labor and supplies continued high, the property could not be operated at a profit.

M. F. 100, Sec. 7

(b) Adjoining property to the N. E. is the Tungsten Mining and Milling Company, formerly known as the Germania Mines. Again quoting from Mr. Lakes' report: "The Germania Mines, adjoining this property to the Northeast, was first developed by Germans prior to World War I. When hostilities between United States and Germany were imminent, the main tunnel portal was caved in and the mill burned to the ground by German employees. Later the mine was acquired by a former engineer and eventually was sold to the General Electric Company who explored underground surface stripped earth containing residual ore and float. The underground work apparently did not achieve expected results and the mine was abandoned by General Electric Company in 1938, just before price increase originated by World War II. Since then, except for small sporadic leasing, the property has been idle, mill dismantled and now has every appearance of complete abandonment though it is said that some ore possibilities remain underground. This property was the most developed and held prime interest of this district."

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Since the date of Mr. Lakes' report, this property has been opened by Tungsten Mining and Milling Company, who will work over dump estimated at 300,000 tons and will do further exploration and development work. It is believed that all data on this operation is in the files of DMA office.

(c) See report by Arthur Lakes, Oct. 8, 1942 and maps by W. H. Simons dated February 1, 1952.

M. F. 100, Sec. 8.

Completed on Form MF-100

M. F. 100, Sec. 9

Completed on Form MF-100

M. F. 100, Sec. 10

1. No production in 1948, 1949 and 1950. No average monthly production can be furnished at this time as shipments have been intermittent.
2. None in 1948, 1949 and 1950. Price of tungsten did not warrant processing. See above relating to monthly processing.
3. Product sold in 1951 was wolframite concentrates, shipments having been made intermittently since June, 1951. During this period 9,882 lbs of concentrates have been shipped, company's net proceeds being $16,617.98, no proceeds having yet been received from last shipment. Only jig concentrates have been shipped, table concentrates having been stockpiled for further processing. Average WO_3 content is from 69% to 73%.

M. F. 100, Sec. 11

The purpose of the development outlined herein is to prepare the mine for a production of 150 tons per day and to block

M. F. 100, Sec. 11 (Cont)

out ore reserves of a sufficient determined value to warrant enlarging and modernizing present mill, or possibly to erect a new milling plant. It is proposed to increase the monthly rate of production to not less than five tons monthly.

M. F. 100, Sec. 12.

(a) Two narrow quartz filled veins from a few inches to three feet in width have been formed roughly parallel about 100 feet apart in a shear zone some 200 feet wide. The general direction of the shear zone is N 20° East with a dip of 70° to 80° to the southeast.

This shear zone and veins have been traced from Hoot Owl Creek to the Old Germania Mine, a distance of over two miles. The host rock is an adidic granite, a portion of that granodiorite batholith, which extends from south of the Spokane River into British Columbia.

The wolframite occurs as irregular distributed nodules within the quartz. Stoping experience seems to indicate, however, that within the mineralized zone a certain consistency in the relation between the mineral and the quartz can be depended upon.

For a more detailed description of the deposit see Report by Arthur Lakes, dated October 8, 1945.

(b) (1) See map and sections by Wm. H. Simons dated Feb. 1, 1952. No assay maps are available as the irregular distribution of the mineral in the vein makes it impossible to determine values by underground sampling.

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M. F. 100, Sec. 12 (cont)

(b) (2) Due to the fact that the veins will average only about 1 foot in width, to compute the tonnage to be milled it is necessary to multiply the minimum stoping width of three feet by the area to get the cubical contents. The figure of three feet is used because the method used is shrinkage stoping which requires no timber in the stopes, and only sufficient clearance for the men to work is necessary.

The present developed ore reserves, using this method of calculation, amounts to about 15,000 tons.

Under the new development program an additional 33,500 tons will be blocked out, making a total of 48,500 tons available.

It is extremely difficult to arrive at a value of these ore reserves, as no records have been kept in the past of mill heads, tails or of the amount of ore sorted out by hand. Mr. Lakes' assumption of a 1.6% wolframite withing the vein, (see his report page 12) is probably as good as can be arrived at as it was based upon the experiences of the men who operated these properties for a number of years. For lack of more definite information, that figure is being used.

With no hand sorting, as contemplated in a new or modernized mill, this would give an average content 0.53% wolframite in the mill feed. Using an 80% recovery value and a $2.50 per pound value for the wolframite, this gives us a recoverable of $21.20, Mining costs will be about $7.00, milling

$3.00 and development $3.00 giving a total cost of $13.00, indicating a profit of about $8.20 per ton mined.

This gives us a net profit on the present developed ore of $123,000 and $274,700 on the ore to be blocked out by the proposed development, or a total of $397,700 out of which to pay for the proposed development and new or modernized mill and surface facilities.

It is realized that the above is predicated upon data that is little more than a guess as to the Wolframite content of the ore and the assumption that the price of WO_3 will remain somewhere near its present level.

M. F. 100, Sec. 13

See M. F. 100, Sec. 3

M. F. 100, Sec. 14

Water is taken from Hoot Owl Creek, a distance of 1200 feet from the present workings and is pumped against a head of 190 feet and is ample for milling and domestic purposes.

M. F. 100, Sec. 15

Present power is by deisel engines but electric power can be brought in at a cost of about $7,000.

M. F. 100, Sec. 16.

1 supervisor, 4 miners, 2 trammers, 2 mill men, 1 surface man, 1 shopman.

M. F. 100, Sec. 17.

Buildings: 1 5-room boarding house, 1½ story, equipped; 1 bunk house, equipped; 1 2-room bunk house, equipped; 1 trailer house; 1 compressor house and machine shop; 1 iron lined mill building; 1 shed for bulldozer; 3 frame

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M. F. 100, Sec. 17 (cont)

garages, 1 frame woodshed; 1 corrugated roof oil shed; 1 log lined cellar for food storage; 1 powder house; 1 pump house.

Equipment.

1 Hercules DRXC Standard Power Unit, with electric starting system, oil bath air cleaner and clutch power take-off - new April, 1951

1 Atlas Rock Drill; 1 raising feed, 1 pneumatic pusher, 1 rotary ~~grid~~ grinder, complete - new November 1951

1 Gardner-Denver leyner completely reconditioned November, 1951
1 CP stoper
1 GD No. 99 stoper
1 CP No. 5 leyner (defective)
1 7½ x 7½ Worthington compressor
1 Gas engine for pumping system
1 Int. Harvester Gas engine
1 Fairbanks Morse Gas engine
1 2' x 5' air receiver (underground)
1 30" X 4' air receiver
1 wood saw new (Homelite) new December, 1951
3 ore cars
1 Galion Hoist,
1 tugger hoist
1 IR Model EVA hoist - new September, 1951
Complete small equipment, such as vises, wrenches, drill presses, blowers, welding outfit, thread cutters, grinder,

1 tractor with dozer
1 International 1½ ton truck
1 Dodge ½ ton truck

1 12-24 in crusher
1 10x 24 set rolls
1 electric generator for lights
1 centrifugal pump
1 sand pump
4 jigs
Water tanks for mill and domestic water supply

1 Berkeley pump for water supply - new 1951

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M. F. 100 Sec. 18

Leases of Indian lands from the Department of the Interior are subject to royalties as indicated in copies of leases attached. No subordination of these royalties has been requested inasmuch as royalties are payable to the Department of the Interior, with which this application is being filed, and it was believed doubtful that one agency of the Interior Department would subordinate to another. If subordination agreements are mandatory, an effort will be made to obtain them, but it is hoped this requirement may be adjusted by the agencies concerned.

(*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)					
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.

GERMANIA CONSOLIDATED MINES, INC.
(Name of company)

By Julius A. Franz
(Signature of authorized official)

March 18, 1952
(Date)

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 5-157 b
(April 1940)

CONTRACT NO. I. _____ IND. _____

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF INDIAN AFFAIRS

MINING LEASE—TRIBAL INDIAN LANDS

(FOR MINERALS OTHER THAN OIL AND GAS)

_____ Tribe, State of _____

THIS INDENTURE OF LEASE, made and entered into in quintuplicate this _____ day of _____, 19____, by and between _____

_____

_____

of _____, State of _____

for and on behalf of the _____ Tribe of Indians, designated herein as lessor, and _____

of _____, State of _____

herein designated as lessee:

WITNESSETH

1. That the lessor , for and in consideration of $1, receipt whereof is hereby acknowledged, and of the royalties, covenants, stipulations, and conditions hereinafter contained and hereby agreed to be paid and observed by the lessee, doth hereby demise, grant, and lease unto the said lessee, the following-described tract of land lying and being within the _____ Reservation, County of _____ and State of _____, to wit: _____

_____

_____

of section _____, township _____, range _____, _____ meridian, and containing _____ acres, more or less, for the full term of 10 years from the date of approval hereof, for the sole purpose of prospecting for and mining minerals, as follows: _____

_____

the lessee to occupy so much only of the surface of said land as may be reasonably necessary to carry on the work of prospecting for, mining, milling, storing, and removing such minerals.

2. The term "Superintendent" as used herein shall refer to the superintendent or other official in charge of the Indian Agency having jurisdiction over the lands leased.

3. In consideration of the foregoing, the lessee hereby agrees:

(*a*) ROYALTY.—To pay, or cause to be paid, to the Superintendent, for the use and benefit of the lessor, or to the Treasurer of said Tribe where the tribe is organized under the act of June 18, 1934 (48 Stat. 984), as royalties, the sums of money as follows, to-wit:*

All royalties accruing for any month shall be due and payable on or before the 25th day of the month succeeding.

(*b*) ANNUAL RENTAL.—To pay, or cause to be paid, to the Superintendent for the use and benefit of the lessor, or to the Treasurer of said Tribe where the tribe is organized under the act of June 18, 1934 (48 Stat. 984), in advance beginning with the date of approval of the lease, as annual rental, the following: 25 cents per acre for the first calendar year or fraction thereof, 50 cents per acre per annum for the second and third years, and $1 per acre per annum in advance for each and every calendar year thereafter during the continuance of the lease; it being understood and agreed that said sum so paid shall be a credit on the royalties accruing during the year for which the payment of annual rental is made, and that said annual rental when paid shall not be refunded to the lessee because of any subsequent surrender or cancelation hereof.

(*c*) DILIGENCE, PREVENTION OF WASTE.—To exercise diligence in the conduct of prospecting and mining operations; to carry on development and operations in a workmanlike manner and to the fullest possible extent; to commit no waste on the said land and to suffer none to be committed upon the portion in his occupancy or use; to comply with all the requirements of the laws of the State in which the land is located; to take appropriate steps for the preservation of the property and the health and safety of workmen; promptly to surrender and return the premises upon the termination of this lease to whomsoever shall be lawfully entitled thereto, in as good condition as received, excepting for the ordinary wear and tear and unavoidable accidents in their proper use; not to remove therefrom any buildings or permanent improvements erected thereon during the said term by the said lessee, but said buildings and improvements shall remain a part of said land and become the property of lessor, excepting the office fixtures and records, personal property, tools, pumping and drilling outfits, boilers, engines, and mining machinery, which shall remain the property of the lessee and may be removed at any time prior to 60 days after the termination of the lease by forfeiture or otherwise, provided the payments agreed upon by this lease have been made and the lease terms and regulations applicable thereto have been fully complied with, but not otherwise; not to permit any nuisance to be maintained on the premises under lessee's control, nor allow any intoxicating liquors to be sold or given away for any purpose on such premises; and not to use such premises for any other purposes than those authorized in this lease.

(*d*) DEVELOPMENT.—The land described herein shall not be held by the lessee for speculative purposes, but in good faith for mining the minerals specified; and the failure by the lessee in the diligent development and continued operation of the mine or mines, except when operations may be interrupted by strikes, the elements, or casualties not attributable to the lessee, shall be held as a want of compliance with the purposes of this lease and shall render it subject to cancelation: *Provided*, That whenever the Secretary of the Interior shall consider the marketing facilities inadequate or the economic conditions unsatisfactory, he may authorize the suspension of operations for such time as he may deem advisable, but such action will not release the lessee from the payment of the advance annual rental.

(*e*) MONTHLY STATEMENTS.—To keep an accurate account of all mining operations, showing the sales, prices, dates, purchasers, and the whole amount of minerals mined, the amount removed, and the gross receipts derived therefrom, and to furnish the Superintendent or the Treasurer of said Tribe if payments are made to him, sworn

* Here insert the royalties agreed upon in accordance with applicable regulations.

monthly reports thereon not later than the 25th of the succeeding month; and all sums due as royalty and advance rental shall be a lien on all implements, tools, movable machinery, and all other personal chattels used in operation upon said property, and upon all of the unsold minerals obtained from the land herein leased, as security for payment of said sums. An audit of the lessee's accounts and books shall be made annually or at such times as may be directed by the Superintendent by certified public accountants approved by the Secretary of the Interior and at the expense of the lessee. The lessee shall furnish free of cost a copy of such audits to the Secretary of the Interior through the Superintendent within 30 days after the completion of each auditing.

(*f*) REGULATIONS.—To abide by and conform to any and all regulations of the Secretary of the Interior now or hereafter in force relative to such leases: *Provided,* That no regulations hereafter approved shall effect a change in rate of royalty, the annual rental herein specified, or the term of this lease, without the written consent of the parties to this lease.

(*g*) ASSIGNMENT OF LEASE.—Not to assign this lease or any interest therein by an operating agreement or otherwise nor to sublet any portion of the leased premises, except with the approval of the Secretary of the Interior. If this lease is divided by the assignment of an entire interest in any part of it, each part shall be considered a separate lease under all the terms and conditions of the original lease.

(*h*) BOND.—To furnish such bond as may be required by the regulations of the Secretary of the Interior conditioned upon compliance with the terms of this lease.

4. MILLING.—All ores or minerals mined on said land shall be cleaned and prepared for market thereon, and no ore or crushed material shall be removed therefrom to be cleaned or prepared for market without the written consent of the Secretary of the Interior.

5. INSPECTION.—The leased premises and producing operations, improvements, machinery, and fixtures thereon and connected therewith and all books and accounts of the lessee shall be open at all times for inspection by agents of the lessor or any duly authorized representative of the Secretary of the Interior.

6. DISPOSITION OF SURFACE.—The lessor expressly reserves the right to lease, sell, or otherwise dispose of the surface of the lands embraced within this lease under existing law or laws hereafter enacted, such disposition to be subject at all times to the right of the lessee herein to the use of so much of said surface as is necessary in the extraction and removal of the minerals from the land herein described in accordance with this lease.

7. SURRENDER AND TERMINATION.—The lessee shall have the right at any time during the term hereof to surrender and terminate this lease or any part thereof upon the payment of all rentals, royalties, and other obligations due and payable to the lessor, and the further sum of $1, upon a showing satisfactory to the Secretary of the Interior that full provision has been made for the conservation and protection of the property, the lease to continue in full force and effect as to the lands not so surrendered. If this lease has been recorded lessee shall file a recorded release with his application to the Superintendent for termination of this lease.

8. CANCELATION AND FORFEITURE.—When, in the opinion of the Secretary of the Interior, there has been a violation of any of the terms and conditions of this lease before restrictions are removed, the Secretary of the Interior shall have the right at any time after 30 days' notice to the lessee, specifying the terms and conditions violated, and after a hearing, if the lessee shall so request within 30 days of receipt of notice, to declare this lease null and void, and the lessor shall then be entitled and authorized to take immediate possession of the land.

9. HEIRS AND SUCCESSORS IN INTEREST.—It is further covenanted and agreed that each obligation hereunder shall extend to and be binding upon, and every benefit hereof shall inure to, the heirs, executors, administrators, successors of, or assigns of the respective parties hereto.

10. GOVERNMENT EMPLOYEES CANNOT ACQUIRE LEASE.—No lease, assignment thereof, or interest therein will be approved to any employee or employees of the United States Government whether connected with the Indian Service or otherwise, and no employee of the Interior Department shall be permitted to acquire any interest in such leases by ownership of stock in corporations having leases or in any other manner.

IN WITNESS WHEREOF, the said parties have hereunto subscribed their names and affixed their seals on the day and year first above mentioned.

Two witnesses to execution by lessor:

.... [SEAL]

P. O. .....

.... [SEAL]

P. O. .....

Two witnesses to execution by lessee:

.... [SEAL]

P. O. .....

.....

P. O. ..... Attest: .....

ACKNOWLEDGMENT OF LESSOR

STATE OF .....
} ss:
COUNTY OF .....

Before me, a notary public, on this ..... day of ....., 19.....

personally appeared .....

....., to me known to be the identical person, who executed the within and foregoing lease, and acknowledged to me that ..... executed the same in ..... official capacit..... as .....

as ..... free and voluntary act and deed for the uses and purposes therein set forth.

..... *Notary Public.*

My commission expires .....

UNITED STATES DEPARTMENT OF THE INTERIOR

Washington, D. C., ..., 19.....

The within lease is hereby ..... approved.

..... *Assistant Secretary of the Interior.*

Filed for record this ..... day of ....., 19.....

at ..... o'clock ..... m. .....

By .....

Rental received, $.....

U. S. GOVERNMENT PRINTING OFFICE : 1947 O - 746054

5-154 b
(August 1939)

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF INDIAN AFFAIRS

BOND

TO ACCOMPANY MINING LEASES

Know All Men by These Presents, That _____ of _____, as principal, and _____, a corporation of the State of Maryland, with its principal office in _____ of _____, as surety, are held and firmly bound unto the United States of America in the sum of _____ dollars, lawful money of the United States of America, for the payment of which well and truly to be made, we bind ourselves, and each of us, our and each of our heirs, executors, administrators, successors, or assigns, jointly and severally, firmly by these presents.

Sealed with our seals and dated this _____ day of _____, 19__.

The condition of this obligation is such that whereas the above-bounden _____, as principal, entered into a certain indenture of lease, dated _____ with _____

for the lease of a tract of land described as follows: _____

and located in the _____ in the State of _____ for _____ mining purposes for the period of _____ years from the date of approval thereof, and as much longer thereafter as the lease shall be continued in force in the manner provided for therein.

Now, if the above-bounden principal herein shall faithfully carry out and observe all the obligations assumed in said indenture of lease, and shall observe all the laws of the United States, and regulations made, or which shall be made thereunder, for the government of trade and intercourse with Indian Tribes, and all the rules and regulations that have been, or may be, lawfully prescribed by the Secretary of the Interior relative to mining leases on the said Reservation, then this obligation shall be null and void; otherwise to remain in full force and effect.

Provided, That in event supervision over all the leased tract to which this bond applies is relinquished by the Secretary of the Interior and lessee shall have made all payments then due under the lease and shall have fully performed all obligations on his part to be performed up to the time of relinquishment of supervision, this bond shall be of no further force and effect.

The rate of premium charged on this bond is $_____; the total premium paid is $_____

16—11481

[OVER]

Signed and sealed in the presence of—

WITNESSES:

/s/ [illegible]

P. O. [illegible]

/s/ [illegible]

P. O. [illegible]

as to [illegible] [SEAL]

/s/ [illegible]

P. O. [illegible]

/s/ [illegible]

P. O. [illegible]

as to /s/ [illegible] [SEAL]

/s/ [illegible]

P. O. [illegible]

/s/ [illegible]

P. O. [illegible]

as to /s/ [illegible] [SEAL]

P. O.

P. O.

as to [SEAL]

(Two witnesses to each signature)

DEPARTMENT OF THE INTERIOR,

APPROVED:

Washington, D. C., [illegible]

(Sgd.) [illegible]

Assistant Secretary of the Interior.

U. S. GOVERNMENT PRINTING OFFICE 16—11481

5-154e
(May 1949)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

CONTRACT No.

ASSIGNMENT OF MINING LEASE

WHEREAS, the Secretary of the Interior has heretofore approved [illegible]

mining lease, dated [illegible], 19[illegible], entered into by and between [illegible], lessor,

and [illegible], lessee,

covering the following-described lands in the [illegible]
(Insert name of Reservation, Pueblo, Nation, etc., as needed)

in the State of [illegible]

[illegible]

NOW, THEREFORE, for and in consideration of [illegible]

[illegible] dollars ($[illegible]), the receipt of which is hereby acknowledged, the said [illegible]

the owner of the above-described lease, hereby bargains, sells, transfers, assigns, and conveys [illegible]

[illegible] right, title, and interest in and to said lease,

subject to the approval of the Secretary of the Interior, to [illegible]

[illegible], of [illegible]

Said assignment to be effective from date of approval hereby by the Secretary of the Interior.

IN WITNESS WHEREOF, the said assignor has hereunto set [illegible] hand and seal, this [illegible]

day of [illegible], 19[illegible]

[illegible]

16—11683-2

[OVER]

ACKNOWLEDGMENT OF CORPORATION

STATE OF .....
COUNTY OF ..... } *ss:*

Before me, a notary public, in and for said county and State on this ..... day of ....., 19..... personally appeared ..... to me known to be the identical person who subscribed the name of the maker thereof to the foregoing instrument as its ..... and acknowledged to me that he executed the same as his free and voluntary act and deed, and as the free and voluntary act and deed of such corporation, for the uses and purposes therein set forth.

.....
Notary Public.

My commission expires ....., 19.....

ACKNOWLEDGMENT OF INDIVIDUAL

STATE OF .....
COUNTY OF ..... } *ss:*

Before me, a notary public, in and for said county and State, on this ..... day of ....., 19..... personally appeared .....

.....

.....

....., to me known to be the identical person ... who executed the within and foregoing instrument, and acknowledged to me that ..... executed the same as ..... free and voluntary act and deed for the uses and purposes therein set forth.

.....
Notary Public.

My commission expires ....., 19.....

ACCEPTANCE BY ASSIGNEE

The assignee in the above and foregoing assignment, made subject to the approval of the Secretary of the Interior, hereby accepts such assignment and agrees to fulfill all the obligations, conditions, and stipulations in said described indenture of lease, when assigned, and the rules and regulations of the Secretary of the Interior applicable thereto, and to furnish proper bond guaranteeing a faithful compliance with said lease and this agreement.

IN WITNESS WHEREOF, the said assignee has hereunto set ..... hand and seal this ..... day of ....., 19.....

.....

.....

.....

CONSENT OF SURETY

The ....., of ....., surety for ..... on the bond accompanying the lease above described, hereby consents to the assignment and transfer of said lease as above made and agrees that said bond shall remain in force and effect covering obligations of assignee.

Dated at ..... this ..... day of ....., 19.....

.....

.....

.....

UNITED STATES
DEPARTMENT OF THE INTERIOR,

Washington, D. C., ...

APPROVED:

.....
Commissioner of Indian Affairs.

16—11683-2 U. S. GOVERNMENT PRINTING OFFICE

5-154m
(August 1939)

COPY

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF INDIAN AFFAIRS

BOND

(To cover obligations of assignees and drillers)

Know All Men by These Presents, that [illegible]

[illegible]

of [illegible], as principal , and [illegible]

[illegible]

of [illegible], as sureties, are held and firmly bound unto the United States of America in the sum of [illegible] dollars, lawful money of the United States, for the payment of which well and truly to be made, we bind ourselves and each of us, our heirs, successors, executors, or administrators, jointly and severally, firmly by these presents.

Sealed with our seals and dated this [illegible] day of [illegible], 19[illegible]

The condition of this obligation is such that whereas [illegible]

[illegible], as lessee.

entered into a [illegible] certain indenture of lease, dated [illegible]

with [illegible], lessor,

for the lease of a tract of land described as follows: [illegible]

[illegible]

and located in the [illegible], in the State of [illegible]

for [illegible] mining purposes for the period of [illegible] years from the date of approval thereof and as much longer thereafter as the lease shall be continued in force in the manner provided for therein.

WHEREAS, thereafter [illegible]

[illegible]

[illegible]

assigned [illegible] right, title, and interest in

and to the above-described lease to the above-bounden [illegible]

[illegible]

and subject to all the conditions and provisions in said lease contained.

16—11684

Now, if the above-bounden principal herein shall faithfully carry out and observe all the obligations assumed in said indenture and assignment of lease, and shall observe all the laws of the United States, and regulations made, or which shall be made thereunder, for the government of trade and intercourse with Indian tribes, and all the rules and regulations that have been, or may be, lawfully prescribed by the Secretary of the Interior, relative to mining leases on the said reservation, then this obligation shall be null and void; otherwise to remain in full force and effect.

Provided, That in event supervision over all the leased tract to which this bond applies is relinquished by the Secretary of the Interior and lessee shall have made all payments then due under the lease and shall have fully performed all obligations on his part to be performed up to the time of relinquishment of supervision, this bond shall be of no further force and effect.

The rate of premium charged on this bond is $[illegible]; the total premium paid is $[illegible].

Signed and sealed in the presence of—

Witnesses *

[illegible]

P. O., [illegible]

P. O., [illegible]

as to [illegible] [SEAL]

[illegible]

P. O., [illegible]

P. O., [illegible]

as to [illegible] [SEAL]

[illegible]

P. O., [illegible]

P. O., [illegible]

as to [illegible] [SEAL]

[illegible]

P. O., [illegible]

P. O., [illegible]

as to [illegible] [SEAL]

* Two witnesses to all signatures.

DEPARTMENT OF THE INTERIOR,

Washington, D. C., [illegible]

APPROVED:

[illegible]

Assistant Secretary.

16—11684 U. S. GOVERNMENT PRINTING OFFICE

Contract No. 28. 4
J 20 Ind

MINING LEASE OF UNALLOTTED LANDS ON SPOKANE INDIAN RESERVATION.

THIS LEASE, made and entered into in quadriplicate this 5th day of August, 1929, by and between the Secretary of the Interior, party of the first part, hereinafter called the Lessor, by reason of theauthority vested in him in Section 24 of the Indian Appropriation Act for the fiscal year ending June 30, 1917 (Pub. No. 30), and William D. Scott of Chamber of Commerce Bldg., Spokane, Wash., State of Washington, party of the second part, hereinafter called the Lessee

WITNESSETH:

1. The Lessor, for and in consideration of the royalties, covenants, stipulations, and conditions hereinafter contained, and hereby agreed to be paid, observed and performed by the Lessee, doth hereby demise, grant, lease and let unto the Lessor for the term of twenty-five years (with privilege of renewal provided conditions and circumstances warrant) from the date of signing hereof by the Secretary of the Interior, for the purpose of mining, all the deposits of Minerals in or under the following described lands, to-wit:

SW/4 of NE/4 & NW/4 of SE/4, Section 26, Twp. 29 N., Range 37 E., WM. NE/4 of SE/4 & Lot 5, Section 23, TWP 29 N., Range 37 E., WM.

containing 160 acres more or less, the same being within said reservation, with the exclusive right to prospect for, mine and extract the minerals above named and no others, and to occupy and use so much only of the surface of said land as may reasonably be necessary to carry on the work of prospecting for, mining, extracting, storing, and removing such minerals; also the right to obtain from wells or other sources on said land by means of pipe lines or otherwise a sufficient supply of water to carry on said operations, and the right to pass over and cross said reservation for the purpose of said work.

2. The lessee hereby agrees to pay or cause to be paid to the Superintendent or other office of the United States having jurisdiction over the leased premises, hereinafter called the office in charge, for the use and benefit of the Indians of said reservation, annually in advance, a royalty of 50 cents per acre for the first year beginning with the date of execution of lease, and $1 per acre for the second and each succeeding year, all rent paid in any year to be credited on the royalty for that year if production begins therein; and the following royalties:

(a) For substances other than gold, silver, copper, lead, zinc, tungsten, coal, asphaltum, and allied substances 10 per cent of the value at the nearest shipping point of all ores, metals, or minerals marketed, payable quarterly.

(b) For gold, silver, copper, lead, zinc, and tungsten 10 per cent, payable quarterly, to be computed on the gross values of the ores as shown by reduction returns, after deduction freight and treatment charges. Duplicate reduction returns shall be filed by the Lessee with the Superintendent or other officer in charge of the reservation from which the ores are taken within twenty days after the reduction of the ores, and the royalty shall be paid to the Superintendent or other officer in charge within ten days after the end of the quarter within which such returns are made.

(c) For coal 10 cents per ton of 2,000 pounds, mine run, or coal as taken from the mine, including what is commonly called slack, payable quarterly.

(d) For asphaltum and allied substances 10 cents per ton of 2,000 pounds for crude material, or 60 cents per ton for refined products, payable quarterly.

(e) On all precious or semiprecious stones the value of which isdetermined by carat weight, 25 per cent of the market value as shown by the lessee's records in the manner aforesaid.

The above mentioned rates of royalty shall be subject to readjustment at the end of each five years at such equitable rates, conforming to the prevailing commercial practice, as conditions at the time shall justify.

There shall be expended annually in development work on each lease a sum of not less than $5 per acre.

The royalties on all products mined under this lease shall be based on sworn quarterly reports and shall be paid within twenty days after the close of each quarter.

3. The Lessee shall immediately upon notification of the signing of this lease by the Secretary of the Interior proceed to develop and work said mineral deposits, and during the entire term of this lease he shall prosecute such mining operations on said lands to the fullest practicable extent, the state of the market being considered; and his neglect or refusal to conduct actual mining operations for a period of six months at any one time (unless exempted by the Secretary of the Interior) shall operate as a forfeiture of all of his rights, under this lease, without any action or declaration of forfeiture by the Department of the Interior. Within twenty days after the close of each quarter he shall file with the officer in charge a quarterly report, verified by oath, showing the character and value of the development work performed and the gross output of his mining operations hereunder during the quarter; and within twenty days after the close of each calendar year he shall file with the officer in charge of the reservation a sworn annual report, induplicate, showing the character and value of the development work performed in that year.

4. The Lessee shall at all times conduct operations in a workmanlike manner, protect all mines and deposits, and not commit nor suffer an waste upon the reservation; and if it be necessary to use any wood, stone, coal, or other material thereon, he shall first obtain written permission from the officer in charge and shall pay to him for the Indians the current prices for all such material taken. He shall take good care of the land herein described, and not permit any nuisance to be maintained nor any intoxicating liquor to be sold or given away thereon for use as a beverage; he shall not use or permit the use ofsaid lands and premises for any other purpose than as herein authorized, and at the expiration of this lease or a renewal thereof he shall return the same to the owners in as good condition as received, excepting for the ordinary wear and tear and unavoidable accidents in their proper use.

5. The Lessee shall keep an accurate account of said operations, showing the whole amount of mineral mined or extracted and all mineral shipped, smelted, used or disposed of; and the officer in charge and other proper representatives of the Department shall have the right at all times during the existence of this lease, and for six months thereafter, to make such reasonable examination of the papers and books of account of the said Lessee, and of the mines, as may be necessary to obtain all information desired; and there is hereby created alien on all implements, tools, movable machiner, and other personal chattels belonging to the Lessee used in the said mining operations, and upon all minerals obtained from the land herein leased, as secrity for the quarterly payment of said royalty.

6. The Lessee in selecting employees shall give preference so far as possible to Indians of the reservation who may be able and willing to perform the kind of labor required; and he shall not retain in his employ any person objectionable to the officer in charge or the Indians. With each quarterly report he shall furnish the names and addresses of his employees.

7. The Lessee shall not interfere with any personal or property rights or any legitimate industry or occupation of the Indians without first obtaining consent in writing and paying proper compensation, approved by the officer in charge; nor obstruct any road or trail now in use, without permission of the officer in charge, and the right to cross the lands leased by the usual methods and in a manner not inconsistent with the mining operations herein provided for, is reserved to the Indians; and all rights to make and accept allotments within the boundaries of this lease of any lands deemed suitable for agriculture are hereby reserved.

8. The Lessee shall not, without the consent of the Secretary of the Interior, assign or sublet any part of the lands leased, He may, however, surrender the lease for concellation with the consent of the Secretary, but the Lessee or assignee should surrender his copy of thelease to the officer in charge, and all royalties and other obligations due and accrued to date of completion of application for cancellation, in addition to a cancellation fee of one dollar, must be paid and discharged before such application will be considered, provided that if the lease has been recorded the Lessee or assignee shall execute a release, record the same in proper recording office, and file the release with the officer in charge.

An application for cancellation will be considered as completed on the date such application is filed in the office of the officer in charge, provided the foregoing requirements have been fully observed; and in event of extinguishment of the Indian title to said lands, this lease and all rights hereunder shall terminate without action or declaration by the Department; and on any such termination, or on expiration of the lease, the Lessee shall have sixty days in which to remove his buildings, machinery and other property, in the absence of violation of the conditions of this lease.

9. In the event of failure or neglect of the Lessee to perform any obligations under this lease, the Secretary of the Interior may, without prejudice to any other remedy, treat the same as sufficient cause for the termination thereof by him, unless within thirty days after notice the Lessee shall correct such failure and make good any loss caused thereby; and if thereafter such failure or neglect be repeated, the Secretary may at any time within thirty days declare this lease forfeited and terminated. Thereupon the Lessee shall vacate the premises within thirty days of notice of such termination, and on his failure so to do the Secretary shall have the right to enter and take possession thereof, using such force as may be necessary to remove the Lessee therefrom; and any property of the Lessee or his successors on said premises may be removed by him or his representatives only with the consent of the Secretary within such reasonable time as may be fixed by the Secretary, not exceeding sixty days from such termination, and any of said property remaining thereon after the time so fixed for its removal shall become the property of the Indians, and may be treated as such by the officer in charge.

10. This lease is made and accepted subject to existing law and any laws hereafter enacted as to the said reservation, also to the regulations relative to such leases heretofore or hereafter prescribed by the Secretary of the Interior; and in no event shall the United States or the Secretary be liable in damages or otherwise under the provisions hereof.

The obligations and agreements hereinbefore expressed shall extend to and be binding upon the successors in interest of the parties hereto.

11. Before this lease shall be in effect the Lessee shall furnish a satisfactory bond with two or more personal sureties or with an acceptable company authorized to act as sole surety.

12. No prospector, locator, or mine owner shall keep stock of any kind on the lands leased except by permit of such rates as may from time to time be established.

Signed and sealed this _____ day of _____ 19
(Stamped) Sep. 14 1929

WITNESSES:

A.H. STILES

D. T. FOX

JOHN H. EDWARDS (SEAL)
Assistant Secretary of the Interior

WILLIAM D. SCOTT (SEAL)
Lessee

5--154 e
(Must be executed in quadruplicates.)

ASSIGNMENT OF MINING LEASE #65

Whereas the Secretary of the Interior has heretofore approved Tungsten mining lease dated Aug. 5, 1929, entered into by and between William D. Scott, Chamber of Commerce Bldg., Spokane, Wash., lessee and Secretary of the Interior, lessor, covering the following described land in the Spokane Reservation, State of Washington;

SW/4 of NE/4 & NW/4 of SE/4, Sec. 26, Twp 29 N., Range 37, EWM. NE/4 of SE/4 & Lot 5, Sec. 23, Twp 29N., Range 37, EWM,

Now, therefore and in consideration of one dollar and other considerations ( ) dollars, the receipt of which is hereby acknowledged, the said William D. Scott, the lessee in the above-described lease, hereby bargains, sells, transfers, assigns, and conveys his right, title and interest of the lessee in and to said lease, subject to the approval of the Secretary of the Interior to Fred N. Norton.

In witness whereof the said lessee has hereunto set his hand and seal this 15th day of April 1935.

(Signed) William D. Scott

ACKNOWLEDGMENT OF INDIVIDUAL

STATE OF WASHINGTON)
) ss:
County of Spokane)

Be it remembered that on this day came before me, the undersigned Notary Public within and for the State and County aforesaid, duly commissioned and acting as such, WILLIAM D. SCOTT, to me personally well know, and stated that _____ executed the foregoing and annexed instrument of the consideration and purposes therein mentioned and set forth; and I do hereby so certify.

Witness my hand and seal on this 15th day of April, 1935.

FRED L. PRESCOTT
Notary Public
Spokane, Wash.

My commission expires
see seal

SEAL

Acceptance by Assignee.

The assignee in the above and foregoing assignment, made subject to the approval of the Secretary of the Interior, hereby accepts such assignment and agrees to fulfill all the obligations, conditions and stipulations in said described indenture of lease, when assigned, and the rules and regulations of the Secretary of the Interior, so far as applicable thereto, and to furnish proper bond guaranteeing a faithful compliance with said lease and this agreement.

In Witness Whereof the said assignee has hereunto set his hand and seal this 15th day of April, 1935.

DEPARTMENT OF THE INTERIOR

WASHINGTON, D. C. Dec. 18, 1936.

Approved: OSCAR L. CHAPMAN
Assistant Secretary of the Interior

(STAMP)

COPY

ASSIGNMENT OF MINING LEASE

- - - -

WHEREAS, the Secretary of the Interior has heretofore approved Tungsten mining lease, dated August 5, 1929, entered into by and between William D. Scott, lessee, and the Officer in Charge of the Colville Tribe of Indians, lessor, and assignment of said lease dated April 15, 1935, to Fred N. Norton, covering the following described land in the Colville Reservation, State of Washington

SW/4 of NE/4 and NW/4 of SE/4 Sec. 26, Twp. 29, N, Range 37, EWM NE/4 of SE/4 and Lot 5, Sec. 23, Twp. 29, N. Range 37, EWM

NOW, THEREFORE, for and in consideration of Seven Hundred Fifty and no/100 ($750.00) dollars, the receipt of which is hereby acknowledged, Earl T. Norton and Perry N. Norton, executors of the estate of Fred N. Norton, deceased, the lessee in the above-described lease, hereby bargains, sells, transfers, assigns, and conveys all right, title, and interest of the lessee in and to said lease, subject to the approval of the Secretary of the Interior to Germania Consolidated Mines, Inc., a Washington corporation.

IN WITNESS WHEREOF the said lessee has hereunto set their hand and seal this 2nd day of April, 1946.

ESTATE OF FRED N. NORTON, Deceased

By (Signed) Earl T. Norton

(Signed) Perry W. Norton
Executors

- - - - - - - - -

STATE OF WASHINGTON, COUNTY OF SPOKANE, ss:

Be it remembered that on this day came before me, the undersigned Notary Public within and for the State and County aforesaid, duly commissioned and acting as such, EARL T. NORTON, and PERRY W. NORTON, to me

personally well known, and stated that they executed the foregoing and annexed instrument for the consideration and purposes therein mentioned and set forth; and I do hereby so certify.

Witness my hand and seal on this 2nd day of April, 1946.

(SEAL)

(Signed) J. L. Thomas
NOTARY PUBLIC in and for the State of Washington, residing at Spokane

My commission expires June 17, 1948.

- - - - - - -

ACCEPTANCE BY ASSIGNEE

The assignee in the above and foregoing assignment, made subject to the approval of the Secretary of the Interior, hereby accepts such assignment and agrees to fulfill all the obligations, conditions, and stipulations in said described indenture of lease, when assigned, and the rules and regulations of the Secretary of the Interior, so far as applicable thereto, and to furnish proper bond guaranteeing a faithful compliance with said lease and this agreement.

IN WITNESS WHEREOF the said assignee has caused this acceptance to be signed by its duly authorized officers and the corporate seal to be affixed this 2nd day of April, 1946.

GERMANIA CONSOLIDATED MINES, INC.

(SEAL)

(Signed) Julius A. Franz
President

(Signed) Ray B. Greene
Secretary

METALLURGICAL REPORT

February 11, 1952

Memorandum

To: H. Gordon Poole, Chief, Nonferrous Metals Branch

From: P. H. Floyd, Acting Head, Mineral Dressing Section

Subject: Report of upgrading tests on the tungsten gravity rougher concentrate of the Germania Mines, Inc. - Hunters, Washington (Heads 210).

This low-grade tungsten concentrate was a jig and table product of the Germania Consolidated Mines, Inc. milling operation, and it was submitted by that company through Mr. J. D. Bardill of the Mining Division, U.S.B.M., Region II. Mr. Bardill requested that appropriate tests be performed to produce tungsten and molybdenum concentrates of a commercial grade. This laboratory was successful in producing a tungsten concentrate of 63.2 percent tungstic oxide with 96.7 percent recovery and a minimum of deleterious elements to meet current market specifications. No molybdenum concentrate of economic consequence was produced. The processes used for this upgrading work were: screening, magnetic roasting and separation, sulfide flotation, hydraulic classification and tabling.

The sub-grade concentrate, as received, was properly sampled and submitted to routine analysis and examination.

Chemical Analysis

Oz Per ton		Assay Percent				
Au	Ag	WO_3	S	Mo	Pb	Cu
0.005*	1.6	16.9	30.1	0.49	0.05	0.15

*Less than

Spectrographic Analysis

More than 10 percent:	Fe
5 to 10 percent:	None
1 to 5 percent:	Al, Ca, Si, W
0.1 to 1 percent:	Bi, Cu, Pb, Mn, Mo, Na
0.01 to 0.1 percent:	As, Be, Mg, Co, Ti, Cb, Zr, Ba
0.001 to 0.01 percent:	Ag, Ni

The petrographic examination revealed this low-grade concentrate to consist predominantly of pyrite intimately associated with a small amount of chalcopyrite. The predominant tungsten mineral was ferberite associated with a minor amount of scheelite; the scheelite was present as minute veinlets in the ferberite. Molybdenite was present in small quantities and bismuthinite and

galena were detected in trace amounts. The gangue minerals observed were: quartz, feldspar, and magnetite. The tungsten minerals, even though locked with each other, were liberated almost completely from the gangue in all size ranges. The pyrite was completely liberated.

A screen analysis was performed on the head sample to determine the size distribution.

Screen Analysis	Weight Percent
Plus 14 mesh	13.5
14/20 mesh	10.0
20/28 mesh	10.4
28/35 mesh	11.3
35/48 mesh	13.7
Minus 48 mesh	41.1

Am examination of the products of this screen analysis revealed the tungsten values as well as the sulfide and gangue minerals to be evenly spread throughout the entire range of sizes.

Discussion of the Beneficiation Problem

The upgrading of this low-grade ferberite-scheelite product called for the removal of sulfide minerals, magnetic minerals, and siliceous minerals. It was suggested that the pyrite, the most abundant gangue mineral, be removed by sulfide flotation. However, such a procedure would require fine grinding of the pulp and consequently complicate the removal of the other gangue minerals, i.e., the siliceous gangue and the magnetite. It is imperative that the low-grade concentrate, to be upgraded, be kept as coarse grained as possible because it is only possible to make good siliceous gangue removal by gravity concentration and to make good magnetite removal by magnetic separation. It may be further observed that under the best of sulfide flotation conditions it would be extremely difficult to remove the pyrite to an adequate degree; the market specifications of tungsten products demand a maximum sulfur content of 0.5 percent.

Preliminary observation that the minerals were almost completely liberated pointed to the fact that no grinding was required for grain liberation. The pyrite could very effectively be removed by a magnetic roast and separation along with the contained magnetite. Such a procedure would allow the subsequent separation of a clean molybdenite product by sulfide flotation of the molybdenite from the magnetic separation non-magnetic product. Further, molybdenite would float at grain sizes as coarse as 35-mesh; consequently very little size reduction would be necessary for molybdenite sulfide flotation step. The siliceous gangue could be subsequently removed from the final ferberite-scheelite product by table concentration.

Test Work

A test sample of the low-grade ferberite-scheelite concentrate was screened on a 48-mesh screen. The undersize was carefully hydraulically sized to check the possibility of siliceous gangue and pyrite removal by tabling prior to drying, and magnetic roasting magnetic separation. The individual classifier products were passed over the laboratory shaking table and the following observations were made:

1. The siliceous gangue minerals could be removed in a tungsten free tailing to the extent of 17 percent of the original bulk weight.

2. The pyrite would not separate to any appreciable degree as a tungsten free tailing.

3. The coarse classifier fractions would not respond to the table separation as well as the finer table fraction responded.

4. It was impossible to cut a finished tungsten concentrate from the table of any bulk that was below the maximum sulfur content allowable in finished marketable concentrates.

5. The table tailing product produced contained considerable molybdenite and consequently complicated the recovery of molybdenum because further treatment of this product would be necessary.

Because of the negligible advantage to be gained by a preliminary gravity upgrading step, this first step was abandoned. The advantage that could have been gained should have been relegated to the original roughing concentration stage. Therefore, the removal of the largest bulk of gangue mineral (the pyrite), without size reduction and sulfide flotation, by magnetic roast and separation was the logical alternative.

A second test sample of the ferberite-scheelite rougher concentrate was taken and subjected to a magnetizing roast. This roast was conducted in a muffle furnace at 700°C; the draft was reduced to a minimum to prevent over-oxidation of the pyrite. The roasted material was screened into three products for magnetic separation on the laboratory cross-belt separator: plus 20-mesh, minus 20-mesh, plus 48-mesh, and minus 48-mesh. Approximately 85 percent of the total pyrite was removed in this operation along with all the magnetite. A second magnetizing roast and separation was necessary to remove the pyrite sufficiently in the tungsten products. The magnetic tailing removed contained 59.9 percent of the weight bulk, 0.71 percent tungstic oxide and 0.27 percent ~~tungstic oxide and~~ molybdenum. A finished ferberite concentrate containing 38.6 percent of the total tungsten value was also produced

as a high intensity magnetic product in this operation. A non-magnetic middling was produced that contained 30.0 percent of the original bulk with the balance of the tungsten values, the molybdenite, and the siliceous gangue minerals. There was no difficulty experienced with this preliminary magnetic separation upgrading procedure; a study of the roasting problem could probably evolve a one-stage magnetising roast procedure.

The residual non-magnetic tungsten-molybdenum product assayed 35.0 percent tungstic oxide and 1.48 percent molybdenum. The molybdenite was found to float readily to grain size as coarse as 35-mesh; therefore the non-magnetic product was stage ground in a ball mill through a 35-mesh screen. The resulting pulp was subjected to sulfide flotation for the removal of the molybdenite. A collector combination of sodium silicate, fuel oil, reagent 404, and amyl xanthate readily removed this mineral; however, an appreciable portion of the slimed tungsten values were floated in the rougher concentrate. This rougher concentrate was subjected to a cleaning stage that involved drying and a flash roast at 700°C prior to repulping for the cleaner flotation. This cleaning procedure gave an excellent elimination of the tungsten values from the final molybdenite concentrate with good molybdenum recovery in that concentrate.

The residual pulp from the molybdenum cleaning operation contained ferberite locked with scheelite, and the siliceous gangue minerals. The pyrite and molybdenite had been removed very effectively in the previous steps with a minimum of grain size reduction, and thus this product was in a condition where gravity upgrading would separate the tungsten minerals from the siliceous gangue minerals. The material was removed from the flotation cell, dewatered, and subjected to hydraulic classification. The classifier fractions were passed separately over the laboratory shaking table. The products resulting from this step were a ferberite-scheelite concentrate of marketable grade, a table slime, a table middling, and a table tailing.

A study of the assays of the various middling products revealed that the molybdenum flotation middlings and the circuit slimes could be added to the final concentrates with several percent increased tungsten recovery and no ill effect on the market specifications of the final tungsten product, providing their combined sulfur content of approximately eight percent was reduced to approximately two percent. These two minor products were subjected to a sulfur roast at 700°C for one hour. A subsequent assay for sulfur demonstrated it to be reduced to below the specified maximum sulfur allowable.

Complete metallurgical data for this test is presented in Table 1 and Table 2, and a procedure flowsheet is presented in Figure 1.

Summary and Conclusions:

An examination of the product suggested a preliminary upgrading step by hydraulic classification and tabling. However, efforts in this direction proved that only a small gain could be made, and consequently it was not incorporated into the major test procedure. Further observations eliminated the possibility of sulfide flotation procedures for the removal of pyrite because of difficulties arising after the required grinding in the satisfactory removal of the siliceous gangue and magnetite.

A combination procedure of screening, magnetic roasting, and magnetic separation, flotation, grinding, hydraulic classification, and tabling was adopted. The procedure gave little difficulty, and any disadvantage arising from the apparent complexities could be eliminated by the observation that the rougher concentrate entering the upgrading stage would be of a high enough grade that it would represent a small percent of the mill head bulk, and of sufficient value to warrant specialized complex upgrading if adequate recovery with market grade products could be produced.

The results obtained were satisfactory from the standpoint of the production of a tungsten product that contained 63.2 percent tungstic oxide with a 96.7 percent recovery. This product meets current market specifications in all respects. The results obtained in the molybdenum beneficiation are of doubtful economic interest. The concentrate produced assayed 33.8 percent molybdenum with a 50.9 percent recovery. It must be observed, however, that the molybdenum content of the tungsten rougher concentrate submitted for beneficiation was only 0.49 percent. With this low content of molybdenum in the head sample and since molybdenum was of a secondary consideration to the much more valuable tungsten content, little better results could be expected and no additional work towards this molybdenum recovery was warranted.

The test results represents the sample submitted for beneficiation only and represents the ore in question only to the extent that the sample represents that ore. This project is considered complete and further work is not anticipated.

Test Engineer:
P. H. Floyd (Signed) P. H. Floyd

P. H. Floyd

cc:
Floyd (2) m/f
Volin (2) r/f
Bardill (1) d/f
Germania Consolidated Mines, Inc.
401 Empire State Bldg.
Spokane 1, Washington

U. S. BUREAU OF MINES
Albany, Oregon
Mineral Dressing Section
Metallurgical Data

December 10, 1951

TABLE I

Test No. 2806
Test Engineer: P. H. Floyd
Head No. & Ore: Head 210. Germania Consolidated Mines, Inc., Tungsten Concentrate
Treatment: Combined: Screening, hydraulic classification, magnetic roast and separation, sulfide flotation, and tabling.

Product	Weight Grams	Assay WO_3	Mo	S	Cu	Bi	Pb	Distribution WO_3	Percent Mo	Albany Assay No.
WO_3 Conc. #1	142.6	67.8	0.23	0.05	0.02	0.08	0.10*	38.6	3.7	29173
WO_3 Conc. #2	44.6	67.5	0.33	0.02	0.02	0.08	0.10*	12.0	1.7	29174
WO_3 Conc. #3	154.2	64.4	0.24	0.55	0.02	0.2	0.10*	39.6	4.1	29175
Mo Conc.	13.4	0.4	33.8	30.0	0.72	6.5	2.40	0.0	50.9	29176
Mo Midd.	25.4	31.4	2.6	7.4	0.95	9.3	0.10*	3.2	7.4	29177
Magnetic Rej.	845.6	0.71	0.27	35.2	0.01*			2.4	25.6	29178
Table Midd.	114.4	1.80	0.35	0.62				0.8	4.5	29179
Table Tailing	43.4	0.08	0.35	0.20				0.0	1.7	29180
Circuit Slimes	28.4	30.4	0.12	8.1	0.12	0.2	0.10*	3.4	0.4	29181
Calculated Sulfur Roasted	136.3			100.0						(Calc.)
Calculated Total Head**	1484.3	16.9	0.60					100.0	100.0	(Calc.)

* Less than

**Calculated from WO_3 balance after extra care was taken to check complete WO_3 assay reports.

U. S. BUREAU OF MINES
Albany, Oregon
Mineral Dressing Section
Metallurgical Data

TABLE II

February 1, 1952

Test No. 2843
Test Engineer: P. H. Floyd
Head No. & Ore: Head 210 - Germania Consolidated Mines, Inc., Tungsten Concentrate
Roasting of Mo middling and circuit slimes to reduce sulfur and thus to add these products to final tungsten product.

Product	Weight Grams	Assay WO_3	Mo	S	Cu	Bi	Pb	Distribution WO_3	Percent Mo	Albany Assay No.
Combined Mo Midd. Plus Circuit Slimes:										
	53.8	30.9	1.29	7.77	0.51	4.49	0.10*			(Calc.)
Combined Mo Midd. Plus Circuit Slime Roasted 700°C for 1 hour:										
	42.8	38.8	1.62	0.23	0.64	5.64	0.10*			(Calc.)
WO_3 Conc. #1, #2, and #3 plus roasted Mo Midd. Plus Circuit Slime to Make Final Ferberite Product:										
Final Ferb. Prod.	384.2	63.2	0.40	0.27	0.09	0.75	0.10*	96.7	17.3	(Calc.)

*Less than

Weight Percent of Test Products:

Final Ferberite Prod.	25.9
Mo Concentrate	0.9
Magnetic Rejects	57.0
Table Middling	7.7
Table Tailing	2.9
	94.4*

* Note the magnetizing roast and middling roast removed 32.0 percent of the sulfur and therefore accounts for the balance of the percent weight distribution.

Figure 1 - Test Flowsheet

Low-grade Ferberite-scheelite Concentrate

Magnetizing Roast

Screens (14 and 48 mesh)

Magnetic Separator (Each screen product separate)

Magnetic Rejects (Low intensity)

High Intensity Product and Non-Magnetic Product

Magnetizing Roast

Magnetic Separator

Combined Magnetic Reject

Non-magnetic Product

Ferberite Concentrate #1

35 Mesh Screen

O.S. U.S.

Grind

Molybdenite Rougher Flotation

Rougher Concentrate Dried and Roasted

Hydraulic Classifier

Repulped and Cleaner Flotation

Tabling of Individual Classifier Products

Mo Concentrate

Mo Middling

Ferberite-Scheelite Concentrate #2 and #3

Table Tailing

Circuit Slimes

Table Middling

FILE COPY 400
SURNAME:

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

Mr. R. W. Gechan, U. S. Bureau of Mines

May 2, 1952

Selfridge.

Iron and Ferro Alloy Division, DMEA

Docket No. DMEA 2447 - Tungsten
Germania Consolidated Mines, Inc.
Leased Indian Lands
Stevens County, Washington

A review of our files indicates that we have not received a memorandum from you on the subject docket, a copy of which was sent to your office on March 25, 1952.

George C. Selfridge

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

GCSelfridge'lm
5/2/52

cc: Admn. Reading File
✓ Docket
G. C. Selfridge

IN REPLY REFER TO:

G-MD-DML

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

DMA 144 on Sampling Tailing Dumps etc

April 2, 1952

See also & Met. Rept by Bardill July 12, 1957

Memorandum

To: George C. Selfridge, DMEA

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

Subject: Exploration application $89,700 DMEA 2447 - Tungsten
Germania Consolidated Mines, Inc.
Suite 401, Empire State Bldg.
Spokane 1, Washington

Property: Keith and Norton properties
Secs. 23 and 26, T. 29 N., R. 37 E.
Colville Indian Agency
Deer Trail district
Stevens County, Washington
(one mile SW from Germania mine of Tungsten Mining and Milling Co. - DMA 144 and 2131)

Proposal: It is proposed to block out ore for mining by driving raises from the number 3 level and sublevels from the raises. Total work involves 180 feet of drift on the No. 3 level, 1,015 feet of raise (6 raises), 780 feet of drift on intermediate levels, stope preparation along 500 feet of vein at the No. 3 level, and surface stripping.

Most of the proposal involves mine development rather than exploration.

Past production: Up to 1946, production was 2,405 units WO_3 from about 4,850 tons of ore milled. To make this production, required about 2,350 feet of crosscut and drift, 200 feet of shaft, and substantial amounts of raises and stopes. The operation was not financially successful, and probably would not be successful today at current costs despite a high price for tungsten.

The application states that about 343 units were produced in 1951.

Field investigations: The deposit was examined in August 1943 by S. W. Hobbs of the Geological Survey, and again on August 3, 1944. According to Hobbs, only No. 3 level, the lowest, was accessible

in 1943 and much of the better vein material above this level had been stoped. The veins on No. 3 level were 8 inches or less in width.

The applicant submitted a report dated October 8, 1945 by Arthur Lakes, mining engineer and geologist. Lakes investigated the property September 25-27 and October 2-3, 1945. Lakes was able to enter the No. 3 level and the intermediate drift 60 feet above the No. 3 level. Lakes prepared maps and projections and a report in which he stated (p.d.): "While I cannot definitely condemn the property by its showings and productive potentialities, I cannot recommend it with assurance that it will promise reasonable return on investment. I consider it highly speculative with chances for loss that must be considered by anyone investing in this property."

Geology: Wolframite is irregularly distributed through 2 or 3 narrow quartz veins in granite. The veins are 8 inches or less wide and contain about 1.0 percent of WO_3. The vertical range of mineralization is only a few hundred feet, and the Level 3 workings appear to be near the lower limit.

Recommendation:

It is recommended that the application be denied for the following reasons:

1. The work proposed is largely mine development, not exploration.
2. There is little chance of making a significant discovery.
3. The known ore deposit is too small and low-grade to warrant the expenditures proposed.
4. The mine is sufficiently developed to pay its own way if the material is ore.

Dwight M. Lemmon

DMEA-2447

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

No. 157 Howard Street
Spokane 4, Washington

March 20, 1952

Mr. Frank L. Johnson
Chairman, Operating Committee
Defense Minerals Exploration Administration
Department of Interior
Washington 25, D. C.

Dear Mr. Johnson:

Enclosed are three copies of an application by the Germania Consolidated Mines, Inc., Spokane, Washington and a copy of a report by Arthur Lakes.

One copy of the application is being retained for the use of this office.

Sincerely yours,

Elton A. Youngberg
For: A. I. Weissenborn
Executive Officer, DMEA
Field Team, Region II

Enclosure
cc: USBM, Spokane

Form MF-103
(Revised June 1951)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Budget Bureau No. 42-R1035.1.

MF-103 Should Be Filed With General Technical Data Form MF-100

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

Not To Be Filled in by Applicant

Docket No. DMEA-2447
Metal or Mineral
Date Received 3-24-52
Amount $
Participation (Government %)

MAR 24 1952

GERMANIA CONSOLIDATED MINES, INC.
SUITE 401
EMPIRE STATE BUILDING
SPOKANE 1, WASHINGTON

Name and address of applicant

Date March 15, 1952

If you have already filed MF-100, give date filed March 15, 1952 type of assistance requested Loan U.S.-,

DMA Docket Number (if available) Serial No. 0745

INSTRUCTIONS

Read Mineral Order 5, Regulations Governing Government Aid in Defense Projects, before completing this application. Submit four copies each, of the signed application form, General Technical Data Form MF-100, and answers to questions as specified, to Defense Minerals Administration, Department of the Interior, Washington 25, D. C., or to the nearest field executive office thereof, with your name and address on each sheet of the application and all accompanying papers. If you have previously filed MF-100, it is not necessary to file it again. However, you should indicate in space provided above the type of assistance previously applied for (loans, procurement contracts, etc.) and DMA Docket Number, if available. *When a question is inapplicable it should be so stated in the form.* Additional sheets should be attached in answering any questions or in supplying additional information. IF YOU CANNOT ANSWER A QUESTION, SO STATE.

1. (*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*) If you are not the owner of the property, submit a copy of the lease, purchase option, or other agreements under which you are authorized to operate the property with each copy of your application.

   (*c*) Give the legal description of the exact parcel, plot, or area upon which the exploration is to be conducted.

   NOTE: (1) 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 (*c*) 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.

   (2) If applicant is not the owner of the property or if there are any liens or encumbrances against the property, copy of agreements of claimants, lienors, encumbrances, and lessors subordinating their interests in the property to the interest of the Government under the Exploration Project Contract will be required for attachment to the Contract.

2. (*a*) What metals or minerals do you expect to find?

   (*b*) Furnish statement of the geologic features of your property, giving type of ore deposit and reasons for expecting to find commercial ore bodies. Illustrate with maps or sketches. If you have a geologic or engineering report, or assay maps showing width and grade, please send them with application, stating whether or not you wish to have them returned.

The information requested in questions 3, 4, 5, 6, 7, 8, and 9 below should be answered specifically and in detail, as this information will be attached to and incorporated as part of the Exploration Project Contract, if such contract is entered into with you by the Government.

ANSWER EACH QUESTION ON SEPARATE SHEETS OF PAPER AND SUBMIT A COPY OF EACH ANSWER FOR EACH COPY OF YOUR APPLICATION.

3. (*a*) Describe fully the proposed work and give the total cost of the project.

   (*b*) State the time required to start the project and to complete it.

4. Submit a map or sketch of the property involved showing a plan (and cross section, if needed) of the present mine workings and the *location of the proposed exploration work* as related to geologic features, such as contacts, veins, ore-bearing beds, etc.

5. Furnish an itemized list 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.

6. Furnish a detailed list of additional facilities, buildings, and fixtures to be purchased, installed, or erected by you, with the estimated cost of each item.

7. Furnish a detailed list of operating equipment, separated into items to be—

   (*a*) Rented

   (*b*) Purchased

   (*c*) Furnished by you

   with the rental, purchase price, or depreciation of each item, as the case may be, to be charged as a cost of the project.

8. Furnish an itemized schedule of labor, by numbers and classes (miners, muckers, etc.) and of supervisors by numbers and positions, with the maximum wages or salaries to be paid to each.

9. Furnish a detailed list with estimated cost of each item for materials, supplies, engineering, assaying, accounting, power, water, utilities, and any other items not provided for above.

10. (*a*) How much are you prepared to invest in the proposed project?

    (*b*) Is this amount sufficient to pay your part of the cost of the project, in accordance with the regulations on Government participation (Sec. 9 of MO–5)?

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

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.

GERMANIA CONSOLIDATED MINES, INC.
(Name of company)

By Julius A. Franz
(Signature of authorized official)

March 18, 1952
(Date)

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—64067-2

Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane 1, Washington

M. F. 103, Sec. 1

(a) The company holds leases from the Department of the Interior (Colville Indian Agency) on the SW¼ NE¼ and NW¼ SE¼, Sec. 26, Twp. 29N, R. 37E, WM and NE¼ SE¼ and Lot 5, Sec. 23, Twp. 29N, R. 37E, WM (Lease No. 65) formerly known as the Norton Property; also SW¼ SE¼ of Sec. 23, Twp. 29N, R. 37E, WM (Lease No. 73) formerly known as the Keeth Property; and has applied for a lease on the SE¼ SE¼ Sec. 23 and the NE¼ NE¼ Sec. 26, Twp. 29N, R. 37E, WM and the NW¼ NE¼ Sec. 26, Twp. 29N, R. 37E, WM. It also owns by warranty deed Lots 1, 2, 3 and 4, Sec. 23, Twp. 29N, R. 37E, WM, outside the Reservation, comprising in all approximately 480 acres.

(b) Copies of assignment of Leases submitted with Form M. F. 100.

(c) SW¼ SE¼, Sec. 23 and NW¼ NE¼, Sec. 26, Twp. 29N, R. 37E, WM.

(1) This area is included in answer to Sec. 1 (a)

(2) Leases of Indian lands require payment of 10% royalty of net proceeds of smelter returns.

No mortgages or liens.

M. F. 103, Sec. 2

(a) It is expected that Wolframite, Scheelite and Molybdenite will be found.

(b) See Arthur Lakes' Report dated Oct. 8, 1945.

Refer to map by W. H. Simons, dated February 1, 1952.

The proposed exploration and development is to prepare the mine for increased production and to block out ore of a sufficient determined value to warrant enlarging and

Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane 1, Washington

M. F. 103, Sec. 2 (Cont)

modernizing milling facilities for more efficient production.

The plan of development is outlined on the map by W. H. Simons, which accompanies this application and is divided as follows:

MIDDLE VEIN

Drive N.E. a distance of about 180 ft.

Put up a double compartment raise to the surface at the end of proposed new drift.

From this raise drive two intermediate drifts, blocking out the ore under surface exposures as shown at the edge of old stopes.

Break down the back and prepare for stoping the ground that is not already prepared on both sides of the main No. 3 crosscut between the present #2 chute, north, and the present end of tunnel, south. Put in two more raises to the No. 2 level, a distance of 95 feet each.

EAST VEIN

Put up a two-compartment raise at the end of the main No. 3 crosscut, approximately 190 feet. Put up present raise to the surface, a distance of approximately 170 feet. Drive an intermediate between these raises, a distance of approximately 230 ft. and southerly to the fault, an approximate distance of 90 feet. Put up a raise to the surface in the center of this block. All on vein formation.

Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane 1, Washington

M. F. 103, Sec. 2 (Cont)

SURFACE

Stripping on the surface should be done Southwest of the cut below the Norton shaft on the middle and East veins and on the East vein between present surface cuts A and H.

SUMMARY

The foregoing program totals 180 feet of main drifting; 780 feet of intermediate drifts, 825 feet of double compartment raises, 190 feet of single compartment raises and breaking down, the back and preparing for stoping 500 feet of tunnel; stripping as outlined.

In doing this work arrangements should be made to keep the mill feed separate during the various operations, using the present milling facilities as a sampler, carefully recording the width, length and height of the total mined and the width of the vein. Arrangements should be made to calculate the amount sorted out and regular samples taken of the feed following the rolls, the tailings and the concentrates.

This is the only method that will give definite data on the ore reserves, as sampling in the mine is impossible due to the irregularity of the ore occurrence in the vein.

Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane 1, Washington

M. F. 103, Sec. 3

(a) Proposed work is fully described in M. F. 103, Sec. 2 (above) See accompanying map by W. H. Simons, dated Feb. 1, 1952.

COST OF PROPOSED DEVELOPMENT

Main drifting	180 ft. at $32	$ 5,760.00
Intermediate drifts	780 ft. at $28	21,840.00
Double compartment raises	825 ft. at $40	33,000.00
Single compartment raises	190 ft. at $30	5,700.00
Preparing tunnel for stoping	500 ft. at $25	12,500.00
Stripping		2,000.00
		$80,800.00
Mucking machine		3,500.00
5 - 1½ T. dump cars		1,000.00
10 T. 16# rail, fish plates & bolts		1,400.00
2,000 ft. 2" air line		1,000.00
		$87,700.00
New elevator in mill		1,000.00
		$88,700.00
Machinery repairs		1,000.00
		$89,700.00

The balance of the materials needed is covered in the prices per foot.

(b) This project can be started as soon as funds are available and can be completed within one year, the limiting factor being the present capacity of the mill.

Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane 1, Washington

M. F. 103, Sec. 4

See accompanying maps by W. H. Simons, dated Feb. 1, 1952, and report by Arthur Lakes, dated Oct. 8, 1945.

Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane 1, Washington

M. F. 103, Sec. 5

See M. F. 100, Sec. 17

See M. F. 300, Sec. 3

All existing facilities, buildings and installations are sufficient for this program excepting those shown in the estimate. New elevator in the mill is imperative. A vibrating screen and picking belt are desirable but not necessary and have not been included in this estimate.

Germania Consolidated Mines, Inc,
401 Empire State Building
Spokane 1, Washington

M. F. 103, Sec. 6

No additional facilities, building installations or fixtures are contemplated except as outlined above.

Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane 1, Washington

M. F. 103, Sec. 7

(a) None.

(b) Mucking machine, rail, pipe, vent pipe and fan, 5 - 1½ ton ore cars; stoper steel.

See estimate M. F. 103, Sec. 3(a).

(c) See M. F. 100, Sec. 17.

A fair rental on these installations and equipment should be charged against this project, this to be agreed upon by officers of company and DMA before operations are started.

		Rental
Buildings at cost		$ 3,750.00
Hercules Power Unit at cost		4,273.32
Atlas Rock Drill with pneumatic pusher, grinder, raising feed, steel, etc.	at cost	1,271.17
E.V.A. Single Drum Hoist	at cost	642.00
Other Machinery & Equip.	at cost	12,500.00
Mill & Equipment	at cost	4,175.00
Camp Equipment	at cost	1,000.00

Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane 1, Washington

M. F. 103, Sec. 8

The crew necessary to carry out this project should consist of

1 supervisor	$300 per mo.
1 dump man	$12 per day
3 mill men	$350 per mo.
2 trammers	$12 per day
4 miners	$12.50 per day

This is the going wage at this time.

Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane 1, Washington

M. F. 103, Sec. 9

Due to the amount of assaying necessary to determine the values in this ore body and of the mill feed, it is believed that $3,000 should be included for engineering and assaying. Accounting costs will approximate $1,000.

Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane, Washington

M. F. 103, Sec. 10

(a) The Germania Consolidated Mines is prepared to invest approximately $10,000.00 in this project.

(b) This amount is not sufficient to pay its part of the cost of the project, in accordance with the regulations on Government participation, but it is believed that sale of WO_3 from present opened stopes will enable us to furnish funds to meet regulations as outlined in Sec. 9 of MO-5 of Defense Production Act of 1950.

Form MF-100
(May 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. DMEA-2447

Date received 3-24-52

GERMANIA CONSOLIDATED MINES, INC.
SUITE 401,
EMPIRE STATE BUILDING
SPOKANE 1, WASHINGTON.

Name and address of applicant

Date March 5, 1952

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) priorities or allocation of mining equipment, and maintenance, repair and operating supplies, and (5) 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 _____

   If not in production or operation, estimated date when production will begin _____
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)
Julius A. Franz	President	None	Unknown	130,000	None	None	
Henry J. Franz	V.president	None	"	59000	None	None	
E. I. Fisher	Sec-Treas	600.00 ~~None~~	"	6000	None	None	
B. O. Myron, Director		None	"	30000	None	None	
David Salo	St'kholder	None	"	65000	None	None	
H. G. Loop	Director	None	"	5000	None	None	
Frank & Rose Nealey	"	None	"	55000	None	None	
G. G. Schneller	"	None	"	55000	None	None	
Walter D. Krehbiel	"	None	"	50000	None	None	
	Total	600 00	x x x x x	455000		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	$ 16195 00	$ 1~~00~~	1 619 500	None
Preferred stock	$	$	$		

*Indicate period covered.

10. 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.)	Wolframite				
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.

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GENERAL TECHNICAL DATA.

M. F. 100, Sec. 1 Materials Produced.

(a) The main product recovered is wolframite with small amounts of sheelite occurring generally as a skim on the wolframite crystals.

(b) Appreciable amounts of molybdenite are recovered but are not taken into consideration in the calculations herein.

M. F. 100, Sec. 2.

1. The mine is at the present time known as the Germania Consolidated Mines, and is a consolidation of the Keeth Mine and the Norton Mine, as well as undeveloped property.

The mine on the Keeth property is developed by two adits known as # 1 and #3 and by an extension of the adit from the Norton, known as Adit #2. The Norton property is developed by a 200-foot shaft as well as the adit. A short tunnel about 70 feet long has been driven on the east vein from the surface some 700 feet southeast of the shaft.

The present mill is of the gravity type comprised of a 12 x 24 jaw crusher, 1 set of 10" x 24" rolls, one bull jig, one medium jig, one Denver jig and a concentrating table. This is in fair condition with the exception of the elevator from the rolls to the bull jig. This should be replaced entirely by an elevator of double the capacity.

The present mill can handle about 40 tons per day. With the addition of a shaking screen and picking belt in place of the present grizzly, sorting costs could be lowered and capacity increased somewhat, as well as a better product sent to

the crusher. Since three quarters of the rock mineral in the drifts is waste, this sorting is important in the plan under consideration.

(a) Linear feet of shafts is 220 feet and consists of a shaft on the vein in the Norton property.

(b) Linear feet of cross cuts amount to 935 feet, 150 feet of which is on the No. 2 tunnel level and the balance on the No. 3 tunnel.

(c) Tunnels and adits amount to 1250 feet. (See accompanying map.)

(d) Other openings in the mine are (1) intermediate 260 feet long (2) 200-foot level in the shaft 150 feet long, (3) 475 feet of raises. (See map)

All openings now are inaccessible except the No. 3 tunnel level and a portion of the intermediate.

The shaft is now full of water and must be unwatered. Once unwatered, no pumping problem should be experienced as the mine makes very little water.

M. F. 100, Sec. 3.

(a) The camp is 63 miles north of Davenport, Washington, Which is a shipping point. Product is shipped from Spokane, Washington, 40 miles from Davenport, by rail. Shipping by Auto Freight would permit shipment from Davenport and this arrangement is now under consideration by tungsten purchaser. The highway is paved or gravelled within six miles of the mine. This six miles is an unsurfaced mountain road and very much in need of some line changes and surfacing.

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The climate is moderate and the property would be accessible the year around with the improvement of this mountain road.

(b) None

(c) The workings under consideration are in the SW$\frac{1}{4}$ of SE$\frac{1}{4}$ of Sec. 23 and the NW$\frac{1}{4}$ of the NE$\frac{1}{4}$ of Sec. 26, Twp. 29 N., R37E, W.M.

(d) Stevens County, Washington.

M. F. 100, Sec. 4.

(a) The property is now being operated on a limited scale by the Germania Consolidated Mines, Inc., a corporation organized under the laws of the State of Washington.

(b) The company holds leases from the Department of the Interior (Colville Indian Agency) on the SW$\frac{1}{4}$ of NE$\frac{1}{4}$ and NW$\frac{1}{4}$ of SE$\frac{1}{4}$, Sec. 26, Twp. 29 N, R37 E, WM and NE$\frac{1}{4}$ of SE$\frac{1}{4}$ and Lot 5, Sec. 23, Twp. 29 N, R37E, W. M. (Lease No. 65) known as the Norton property; also SW$\frac{1}{4}$ of SE$\frac{1}{4}$ of Sec. 23, Twp. 29 N, R 37 E, W. M. (Lease No. 73) known as the Keeth property; and has applied for lease on the SE$\frac{1}{4}$SE$\frac{1}{4}$ Sec. 23 and the Ne$\frac{1}{4}$NE$\frac{1}{4}$ Sec. 26, Twp. 29 N., R37E., WM, and the NW$\frac{1}{4}$NE$\frac{1}{4}$ Sec. 26, Twp. 29N., R 37 E., W.M. It also owns by warranty deed Lots 1-2-3-4- Sec. 23, TwP. 29 N., R 37 E. WM. outside the Reservation.

M. F. 100, Sec. 5.

The property has been in production intermittently since 1934. Now in limited production. (See Arthur Lakes report and map by W. H. Simons.

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M. F. 100, Sec. 6.

(a) President and vice president are prominent grain, seed and cattle raisers of southeastern Washington who have been identified with this mine since it was taken over by Germania Consolidated Mines., Inc., and have mining interests in Montana and Idaho. Vice president has overall supervision of the operations.

One director has been prominently identified with the mining business for thirty years and is familiar with the operation of mines and methods of ore production as well as purchasing supplies, etc.

Another director is office manager and is thoroly familiar with mine laws, state and Government requirements and accounting procedure.

(b) Employee in charge of operations worked in the mine for approximately eight years under former ownership, worked for present owners before and after World War II and has a thorough knowledge of the property, its potential ore veins and ore conditions in tunnels and crosscuts now inaccessible, but in his opinion, worthy of exploration.

M. F. 100, Sec. 7

(a) Quote from Arthur Lakes' Report pages 2 and 3

"Mr. Jas. Keeth acquired his 40 acre tract and opened the middle vein by what are now the No. 1 and No. 3 adit tunnels. Mr. Norton acquired the 40 acre tract south of the Keeth property and opened it up with what is now known as the No. 2 adit and by a 200-foot shaft with sub-levels at the No. 2 level and the 200 foot level. Later the Norton property

was acquired by the Industrial Tungsten Co. and more recently, the Keeth, Northn and other properties were consolidated into the present holdings of the Germania Consolidated Mines, Inc., and the SW drift driven on the "Middle" vein at No. 3 tunnel level.

Keeth installed a small, effective mill at portal of No. 3 tunnel and made some attractive wolframite concentrates. The Industrial Company built a mill at Hoot Owl Creek about three quarters of a mile southwest of their mine workings and hauled ore to it. (Map B) This latter mill was abandoned and dismantled but the Keeth mill is now in good working condition.

Stope maps show that most production was made from "Middle" vein on the Keeth property, a considerable proportion by leasers. The Norton property produced from two stopes down to 200-shaft level on "West" vein. (Map C) The "East" vein which has greatest surficial length was not mined but some cuts at north and south extremities provided good ore, according to Mr. Smith who stated that these cuts showed as good ore as cut exposures on "Middle" and "West" veins.

Production from the combined properties is reputed more than $100,000. Partial records at hand show that leasers in 1934-1935-36 produced $34,033.85 worth of ore, no tons stated, when prices were $13 to $15.50 per unit of 20 pounds. I am informed that they made a profit after mining, milling and royalties and market changes. In 1942 Mr. Keeth produced 15.71 tons of concentrates varying from 64.63% to 72.18

wolframite content, for which he received $24,232.10 after freight, treatment and marketing changes. He sold also $4,000 worth, no tonnage given, to Metals Reserve during this period. It is presumed in this report that Mr. Keeth received War price of about $30 per unit of 20-pounds, or $1.50 per pound of contained WO_3."

When price of tungsten went down after World War II, while cost of labor and supplies continued high, the property could not be operated at a profit.

M. F. 100, Sec. 7

(b) Adjoining property to the N. E. is the Tungsten Mining and Milling Company, formerly known as the Germania Mines. Again quoting from Mr. Lakes' report: "The Germania Mines, adjoining this property to the Northeast, was first developed by Germans prior to World War I. When hostilities between United States and Germany were imminent, the main tunnel portal was caved in and the mill burned to the ground by German employees. Later the mine was acquired by a former engineer and eventually was sold to the General Electric Company who explored underground surface stripped earth containing residual ore and float. The underground work apparently did not achieve expected results and the mine was abandoned by General Electric Company in 1938, just before price increase originated by World War II. Since then, except for small sporadic leasing, the property has been idle, mill dismantled and now has every appearance of complete abandonment though it is said that some ore possibilities remain underground. This property was the most developed and held prime interest of this district."

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Since the date of Mr. Lakes' report, this property has been opened by Tungsten Mining and Milling Company, who will work over dump estimated at 300,000 tons and will do further exploration and development work. It is believed that all data on this operation is in the files of DMA office.

(c) See report by Arthur Lakes, Oct. 8, 1942 and maps by W. H. Simons dated February 1, 1952.

M. F. 100, Sec. 8.

Completed on Form MF-100

M. F. 100, Sec. 9

Completed on Form MF-100

M. F. 100, Sec. 10

1. No production in 1948, 1949 and 1950. No average monthly production can be furnished at this time as shipments have been intermittent.

2. None in 1948, 1949 and 1950. Price of tungsten did not warrant processing. See above relating to monthly processing.

3. Product sold in 1951 was wolframite concentrates, shipments having been made intermittently since June, 1951. During this period 9,882 lbs of concentrates have been shipped, company's net proceeds being $16,617.98, no proceeds having yet been received from last shipment. Only jig concentrates have been shipped, table concentrates having been stockpiled for further processing. Average WO_3 content is from 69% to 73%.

4.941 tons
70 o/o
343 units WO_3

M. F. 100, Sec. 11

The purpose of the development outlined herein is to prepare the mine for a production of 150 tons per day and to block

M. F. 100, Sec. 11 (Cont)

out ore reserves of a sufficient determined value to warrant enlarging and modernizing present mill, or possibly to erect a new milling plant. It is proposed to increase the monthly rate of production to not less than five tons monthly.

M. F. 100, Sec. 12.

(a) Two narrow quartz filled veins from a few inches to three feet in width have been formed roughly parallel about 100 feet apart in a shear zone some 200 feet wide. The general direction of the shear zone is N 20° East with a dip of 70° to 80° to the southeast.

This shear zone and veins have been traced from Hoot Owl Creek to the Old Germania Mine, a distance of over two miles. The host rock is an adidic granite, a portion of that granodiorite batholith, which extends from south of the Spokane River into British Columbia.

The wolframite occurs as irregular distributed nodules within the quartz. Stoping experience seems to indicate, however, that within the mineralized zone a certain consistency in the relation between the mineral and the quartz can be depended upon.

For a more detailed description of the deposit see Report by Arthur Lakes, dated October 8, 1945.

(b) (1) See map and sections by Wm. H. Simons dated Feb. 1, 1952. No assay maps are available as the irregular distribution of the mineral in the vein makes it impossible to determine values by underground sampling.

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M. F. 100, Sec. 12 (cont)

(b) (2) Due to the fact that the veins will average only about 1 foot in width, to compute the tonnage to be milled it is necessary to multiply the minimum stoping width of three feet by the area to get the cubical contents. The figure of three feet is used because the method used is shrinkage stoping which requires no timber in the stopes, and only sufficient clearance for the men to work is necessary.

The present developed ore reserves, using this method of calculation, amounts to about 15,000 tons.

33,500 tons 0.88
16 [illegible]

Under the new development program an additional 33,500 tons will be blocked out, making a total of 48,500 tons available.

It is extremely difficult to arrive at a value of these ore reserves, as no records have been kept in the past of mill heads, tails or of the amount of ore sorted out by hand. Mr. Lakes' assumption of a 1.6% wolframite withing the vein, (see his report page 12) is probably as good as can be arrived at as it was based upon the experiences of the men who operated these properties for a number of years. For lack of more definite information, that figure is being used.

With no hand sorting, as contemplated in a new or modernized mill, this would give an average content 0.53% wolframite in the mill feed. Using an 80% recovery value and a $2.50 per pound value for the wolframite, this gives us a recoverable of $21.20, Mining costs will be about $7.00, milling

$3.00 and development $3.00 giving a total cost of $13.00, indicating a profit of about $8.20 per ton mined.

This gives us a net profit on the present developed ore of $123,000 and $274,700 on the ore to be blocked out by the proposed development, or a total of $397,700 out of which to pay for the proposed development and new or modernized mill and surface facilities.

It is realized that the above is predicated upon data that is little more than a guess as to the Wolframite content of the ore and the assumption that the price of WO_3 will remain somewhere near its present level.

M. F. 100, Sec. 13

See M. F. 100, Sec. 3

M. F. 100, Sec. 14

Water is taken from Hoot Owl Creek, a distance of 1200 feet from the present workings and is pumped against a head of 190 feet and is ample for milling and domestic purposes.

M. F. 100, Sec. 15

Present power is by deisel engines but electric power can be brought in at a cost of about $7,000.

M. F. 100, Sec. 16.

1 supervisor, 4 miners, 2 trammers, 2 mill men, 1 surface man, 1 shopman.

M. F. 100, Sec. 17.

Buildings: 1 5-room boarding house, 1½ story, equipped; 1 bunk house, equipped; 1 2-room bunk house, equipped; 1 trailer house; 1 compressor house and machine shop; 1 iron lined mill building; 1 shed for bulldozer; 3 frame

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M. F. 100, Sec. 17 (cont)

garages, 1 frame woodshed; 1 corrugated roof oil shed; 1 log lined cellar for food storage; 1 powder house; 1 pump house.

Equipment.

1 Hercules DRXC Standard Power Unit, with electric starting system, oil bath air cleaner and clutch power take-off - new April, 1951

1 Atlas Rock Drill; 1 raising feed, 1 pneumatic pusher, 1 rotary ~~grid~~ grinder, complete - new November 1951

1 Gardner-Denver leyner completely reconditioned November, 1951
1 CP stoper
1 GD No. 99 stoper
1 CP No. 5 leyner (defective)
1 7½ x 7½ Worthington compressor
1 Gas engine for pumping system
1 Int. Harvester Gas engine
1 Fairbanks Morse Gas engine
1 2' x 5' air receiver (underground)
1 30" X 4' air receiver
1 wood saw new (Homelite) new December, 1951
3 ore cars
1 Galion Hoist,
1 tugger hoist
1 IR Model EVA hoist - new September, 1951
Complete small equipment, such as vises, wrenches, drill presses, blowers, welding outfit, thread cutters, grinder,

1 tractor with dozer
1 International 1½ ton truck
1 Dodge ½ ton truck

1 12-24 in crusher
1 10x 24 set rolls
1 electric generator for lights
1 centrifugal pump
1 sand pump
4 jigs
Water tanks for mill and domestic water supply

1 Berkeley pump for water supply - new 1951

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M. F. 100 Sec. 18

Leases of Indian lands from the Department of the Interior are subject to royalties as indicated in copies of leases attached. No subordination of these royalties has been requested inasmuch as royalties are payable to the Department of the Interior, with which this application is being filed, and it was believed doubtful that one agency of the Interior Department would subordinate to another. If subordination agreements are mandatory, an effort will be made to obtain them, but it is hoped this requirement may be adjusted by the agencies concerned.

(*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)					
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.

GERMANIA CONSOLIDATED MINES, INC.
(Name of company)

By Julius A. Krumz
(Signature of authorized official)

March 18, 1952
(Date)

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

Mining Lease No. 73

COPY

Form 5-157 b
(April 1940)

CONTRACT NO. I-20- IND. 3762
Being a renewal of Mining Lease No. 6, Cont. I-20-ind.781.

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF INDIAN AFFAIRS

MINING LEASE—TRIBAL INDIAN LANDS

(FOR MINERALS OTHER THAN OIL AND GAS)

Spokane Tribe, State of Washington

THIS INDENTURE OF LEASE, made and entered into in quintuplicate this 23rd day of March, 1942, by and between F. A. GROSS, SUPT., COLVILLE INDIAN AGENCY

of NESPELEM, State of WASHINGTON

for and on behalf of the SPOKANE Tribe of Indians, designated herein as lessor, and JAMES KEITH E. 1027 SPRAGUE AVENUE SPOKANE

of , State of WASHINGTON

herein designated as lessee:

WITNESSETH

1. That the lessor , for and in consideration of $1, receipt whereof is hereby acknowledged, and of the royalties, covenants, stipulations, and conditions hereinafter contained and hereby agreed to be paid and observed by the lessee, doth hereby demise, grant, and lease unto the said lessee, the following-described tract of land lying and being within the SPOKANE Reservation, County of STEVENS and State of WASHINGTON, to wit: The SW/4 of the SE/4 of

of section 23, township 29N., range 37E., W.M., meridian, and containing 40 acres, more or less, for the full term of 10 years from the date of approval hereof, for the sole purpose of prospecting for and mining minerals, as follows: GOLD, SILVER, COPPER LEAD AND TUNGSTEN.

This lease provides for a preference right to be accorded the lessee for the renewal of the lease at the expiration of the 10 year period subject to reasonable terms to be set by the Department of the Interior and the Tribal Business Council at that time.

the lessee to occupy so much only of the surface of said land as may be reasonably necessary to carry on the work of prospecting for, mining, milling, storing, and removing such minerals.

2. The term "Superintendent" as used herein shall refer to the superintendent or other official in charge of the Indian Agency having jurisdiction over the lands leased.

3. In consideration of the foregoing, the lessee hereby agrees:

(*a*) ROYALTY.—To pay, or cause to be paid, to the Superintendent, for the use and benefit of the lessor, or to the Treasurer of said Tribe where the tribe is organized under the act of June 18, 1934 (48 Stat. 984), as royalties, the sums of money as follows, to-wit:* OF NOT LESS THAN TEN PER CENT ON A MONTHLY BASIS, TO BE COMPUTED ON THE VALUE OF THE BULLION AS SHOWN BY MINT RETURNS AFTER DEDUCTING FORWARDING CHARGES TO POINT OF SALE, AND TO BE COMPUTED ON THE VALUE OF ORES AND CONCENTRATES AS SHOWN BY REDUCTION RETURNS AFTER DEDUCTING FREIGHT CHARGES TO THE POINT OF SALE. DUPLICATE RETURNS SHALL BE FILED BY THE LESSEE WITH THE SUPERINTENDENT WITHIN 10 DAYS AFTER THE END OF THE MONTH. PROVIDED, HOWEVER, THAT THE LESSEE SHALL PAY MONTHLY A ROYALTY OF NOT LESS THAN TEN PER CENT OF THE VALUE OF THE ORES AND CONCENTRATES SOLD AT THE MINE, F.O.B. THE MINE.

All royalties accruing for any month shall be due and payable on or before the 25th day of the month succeeding.

(*b*) ANNUAL RENTAL.—To pay, or cause to be paid, to the Superintendent for the use and benefit of the lessor, or to the Treasurer of said Tribe where the tribe is organized under the act of June 18, 1934 (48 Stat. 984), in advance beginning with the date of approval of the lease, as annual rental, the following: 25 cents per acre for the first calendar year or fraction thereof, 50 cents per acre per annum for the second and third years, and $1 per acre per annum in advance for each and every calendar year thereafter during the continuance of the lease; it being understood and agreed that said sum so paid shall be a credit on the royalties accruing during the year for which the payment of annual rental is made, and that said annual rental when paid shall not be refunded to the lessee because of any subsequent surrender or cancelation hereof.

(*c*) DILIGENCE, PREVENTION OF WASTE.—To exercise diligence in the conduct of prospecting and mining operations; to carry on development and operations in a workmanlike manner and to the fullest possible extent; to commit no waste on the said land and to suffer none to be committed upon the portion in his occupancy or use; to comply with all the requirements of the laws of the State in which the land is located; to take appropriate steps for the preservation of the property and the health and safety of workmen; promptly to surrender and return the premises upon the termination of this lease to whomsoever shall be lawfully entitled thereto, in as good condition as received, excepting for the ordinary wear and tear and unavoidable accidents in their proper use; not to remove therefrom any buildings or permanent improvements erected thereon during the said term by the said lessee, but said buildings and improvements shall remain a part of said land and become the property of lessor, excepting the office fixtures and records, personal property, tools, pumping and drilling outfits, boilers, engines, and mining machinery, which shall remain the property of the lessee and may be removed at any time prior to 60 days after the termination of the lease by forfeiture or otherwise, provided the payments agreed upon by this lease have been made and the lease terms and regulations applicable thereto have been fully complied with, but not otherwise; not to permit any nuisance to be maintained on the premises under lessee's control, nor allow any intoxicating liquors to be sold or given away for any purpose on such premises; and not to use such premises for any other purposes than those authorized in this lease.

(*d*) DEVELOPMENT.—The land described herein shall not be held by the lessee for speculative purposes, but in good faith for mining the minerals specified; and the failure by the lessee in the diligent development and continued operation of the mine or mines, except when operations may be interrupted by strikes, the elements, or casualties not attributable to the lessee, shall be held as a want of compliance with the purposes of this lease and shall render it subject to cancelation: *Provided,* That whenever the Secretary of the Interior shall consider the marketing facilities inadequate or the economic conditions unsatisfactory, he may authorize the suspension of operations for such time as he may deem advisable, but such action will not release the lessee from the payment of the advance annual rental.

(*e*) MONTHLY STATEMENTS.—To keep an accurate account of all mining operations, showing the sales, prices, dates, purchasers, and the whole amount of minerals mined, the amount removed, and the gross receipts derived therefrom, and to furnish the Superintendent or the Treasurer of said Tribe if payments are made to him, sworn

* Here insert the royalties agreed upon in accordance with applicable regulations.

monthly reports thereon not later than the 25th of the succeeding month; and all sums due as royalty and advance rental shall be a lien on all implements, tools, movable machinery, and all other personal chattels used in operation upon said property, and upon all of the unsold minerals obtained from the land herein leased, as security for payment of said sums. An audit of the lessee's accounts and books shall be made annually or at such times as may be directed by the Superintendent by certified public accountants approved by the Secretary of the Interior and at the expense of the lessee. The lessee shall furnish free of cost a copy of such audits to the Secretary of the Interior through the Superintendent within 30 days after the completion of each auditing.

(*f*) REGULATIONS.—To abide by and conform to any and all regulations of the Secretary of the Interior now or hereafter in force relative to such leases: *Provided,* That no regulations hereafter approved shall effect a change in rate of royalty, the annual rental herein specified, or the term of this lease, without the written consent of the parties to this lease.

(*g*) ASSIGNMENT OF LEASE.—Not to assign this lease or any interest therein by an operating agreement or otherwise nor to sublet any portion of the leased premises, except with the approval of the Secretary of the Interior. If this lease is divided by the assignment of an entire interest in any part of it, each part shall be considered a separate lease under all the terms and conditions of the original lease.

(*h*) BOND.—To furnish such bond as may be required by the regulations of the Secretary of the Interior conditioned upon compliance with the terms of this lease.

4. MILLING.—All ores or minerals mined on said land shall be cleaned and prepared for market thereon, and no ore or crushed material shall be removed therefrom to be cleaned or prepared for market without the written consent of the Secretary of the Interior.

5. INSPECTION.—The leased premises and producing operations, improvements, machinery, and fixtures thereon and connected therewith and all books and accounts of the lessee shall be open at all times for inspection by agents of the lessor or any duly authorized representative of the Secretary of the Interior.

6. DISPOSITION OF SURFACE.—The lessor expressly reserves the right to lease, sell, or otherwise dispose of the surface of the lands embraced within this lease under existing law or laws hereafter enacted, such disposition to be subject at all times to the right of the lessee herein to the use of so much of said surface as is necessary in the extraction and removal of the minerals from the land herein described in accordance with this lease.

7. SURRENDER AND TERMINATION.—The lessee shall have the right at any time during the term hereof to surrender and terminate this lease or any part thereof upon the payment of all rentals, royalties, and other obligations due and payable to the lessor, and the further sum of $1, upon a showing satisfactory to the Secretary of the Interior that full provision has been made for the conservation and protection of the property, the lease to continue in full force and effect as to the lands not so surrendered. If this lease has been recorded lessee shall file a recorded release with his application to the Superintendent for termination of this lease.

8. CANCELATION AND FORFEITURE.—When, in the opinion of the Secretary of the Interior, there has been a violation of any of the terms and conditions of this lease before restrictions are removed, the Secretary of the Interior shall have the right at any time after 30 days' notice to the lessee, specifying the terms and conditions violated, and after a hearing, if the lessee shall so request within 30 days of receipt of notice, to declare this lease null and void, and the lessor shall then be entitled and authorized to take immediate possession of the land.

9. HEIRS AND SUCCESSORS IN INTEREST.—It is further covenanted and agreed that each obligation hereunder shall extend to and be binding upon, and every benefit hereof shall inure to, the heirs, executors, administrators, successors of, or assigns of the respective parties hereto.

10. GOVERNMENT EMPLOYEES CANNOT ACQUIRE LEASE.—No lease, assignment thereof, or interest therein will be approved to any employee or employees of the United States Government whether connected with the Indian Service or otherwise, and no employee of the Interior Department shall be permitted to acquire any interest in such leases by ownership of stock in corporations having leases or in any other manner.

IN WITNESS WHEREOF, the said parties have hereunto subscribed their names and affixed their seals on the day and year first above mentioned.

Two witnesses to execution by lessor:

/s/ F. F. LeClaire

P. O. Nespelem, Washington

/s/ Mary Tonasket

P. O. Nespelem, Washington

/s/ F. A. Gross [SEAL]
F. A. Gross, Superintendent,
Colville Indian Agency.

[SEAL]

Two witnesses to execution by lessee:

/s/ Norma G. Dolfe

P. O. 405 So. Maple, Spokane, Wash.

/s/ W. S. Balin

P. O. 128 W. 26th Spokane, Wn.

/s/ James Keith [SEAL]
James Keith

Attest:

ACKNOWLEDGMENT OF LESSOR

STATE OF WASHINGTON }
COUNTY OF OKANOGAN } ss:

Before me, a notary public, on this 27th day of March, 19 42 personally appeared F. A. GROSS, SUPERINTENDENT, to me known to be the identical person, who executed the within and foregoing lease, and acknowledged to me that HE executed the same in HIS official capacity as SUPT. OF THE COLVILLE INDIAN AGENCY as HIS free and voluntary act and deed for the uses and purposes therein set forth.

(SEAL)

/s/ Melvin L. Robertson
Melvin L. Robertson *Notary Public.*
Nespelem, Washington.

My commission expires Jan. 22, 1943

UNITED STATES DEPARTMENT OF THE INTERIOR

Washington, D. C., APR - 4 1942, 19

The within lease is hereby approved.

(Sgd.) OSCAR L. CHAPMAN
Assistant Secretary of the Interior.

Filed for record this day of , 19

at o'clock m.

By

Rental received, $

U. S. GOVERNMENT PRINTING OFFICE : 1947 O - 746054

5-154 b
(August 1939)

Part of Mining Lease No. 73,
Cont. I-20-ind. No. 3762.

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF INDIAN AFFAIRS

C O P Y

BOND

TO ACCOMPANY MINING LEASES

Know All Men by These Presents, That JAMES KEETH
E. 1027 Sprague Avenue,
of Spokane, Washington, as principal, and FIDELITY AND DEPOSIT COMPANY
OF MARYLAND, a corporation of the State of Maryland, with its principal office in
Baltimore, Maryland
of BALTIMORE, MARYLAND, as surety, are held and firmly bound unto the United States of America in the sum of *****ONE THOUSAND*****($1,000.00)********** dollars, lawful money of the United States of America, for the payment of which well and truly to be made, we bind ourselves, and each of us, our and each of our heirs, executors, administrators, successors, or assigns, jointly and severally, firmly by these presents.

Sealed with our seals and dated this 23rd day of March, 1942

The condition of this obligation is such that whereas the above-bounden JAMES KEETH, as principal, entered into a certain indenture of lease, dated Mar. 23, 1942. with F. A. GROSS, SUPERINTENDENT OF THE COLVILLE AND SPOKANE INDIAN RESERVATIONS

for the lease of a tract of land described as follows: The SW/4 of the SE/4 of Sec. 23, Twp. 29N., R. 37 E.W.M., containing 40 acres, more or less.

and located in the Spokane Reservation in the State of Washington for (LODE) TRIBAL mining purposes for the period of TEN (10) years from the date of approval thereof, and as much longer thereafter as the lease shall be continued in force in the manner provided for therein.

Now, if the above-bounden principal herein shall faithfully carry out and observe all the obligations assumed in said indenture of lease, and shall observe all the laws of the United States, and regulations made, or which shall be made thereunder, for the government of trade and intercourse with Indian Tribes, and all the rules and regulations that have been, or may be, lawfully prescribed by the Secretary of the Interior relative to mining leases on the said Reservation, then this obligation shall be null and void; otherwise to remain in full force and effect.

Provided, That in event supervision over all the leased tract to which this bond applies is relinquished by the Secretary of the Interior and lessee shall have made all payments then due under the lease and shall have fully performed all obligations on his part to be performed up to the time of relinquishment of supervision, this bond shall be of no further force and effect.

The rate of premium charged on this bond is $10.00 per M; the total premium paid is $10.00

16—11481

[OVER]

Signed and sealed in the presence of—

WITNESSES:

/s/ Norma G. Dilfo

P. O. 405 So. Maple, Spokane, Wash.

/s/ W. S. Eakin

P. O. 123 W 26th Spokane, Wash.

as to /s/ James Kooth [SEAL]
James Kooth, Principal

/s/ Julia Guiltnan

P. O. West 1-4th Ave. Spokane, Wash.

/s/ Lola Larson

P. O. E. 303 Gordon, Spokane, Wash.

FIDELITY AND DEPOSIT COMPANY OF MARYLAND

as to /s/ M. Deal [SEAL]
By M. Deal, Atty. in fact.

/s/ Olive I. Magnus

P. O. W.2203 Pacific Ave. Spokane, Wash.

/s/ Norma G. Dilfo

P. O. 405 So. Maple, Spokane, Wash.

Attest:

as to /s/ W. S. McCrea [SEAL]
W. S. McCrea, General Agent.

P. O.

P. O.

as to [SEAL]

(Two witnesses to each signature)

DEPARTMENT OF THE INTERIOR,

APPROVED:

Washington, D. C., APR - 4 1942

(Sgd.) OSCAR L. CHAPMAN

Assistant Secretary of the Interior.

U. S. GOVERNMENT PRINTING OFFICE 16—11481

5-154c
(May 1949)

Lease No. 73

C O P Y

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

CONTRACT NO.
I-20-Ind-3762

ASSIGNMENT OF MINING LEASE

WHEREAS, the Secretary of the Interior has heretofore approved Mining (Lode) mining lease, dated March 23, 1942, entered into by and between F. A. Gross, Superintendent, the Officer in Charge of the Colville and Spokane Indian Reservations, lessor, and James Keeth, lessee, covering the following-described lands in the Spokane Indian Reservation (Insert name of Reservation, Pueblo, Nation, etc., as needed) in the State of Washington.

The SW4 SE4, Section 23, Twp., 29N., R. 37E., W.M., containing 40 acres, more or less.

NOW, THEREFORE, for and in consideration of assumption of rent due and to become due under lease dollars ($120.00), the receipt of which is hereby acknowledged, the said Walter J. Keeth, executor of the estate of James Keeth, deceased. the owner of the above-described lease, hereby bargains, sells, transfers, assigns, and conveys All right, title, and interest in and to said lease, subject to the approval of the Secretary of the Interior, to Germania Consolidate Mines, Inc., a corporation, of in the State of Washington

Said assignment to be effective from date of approval hereby by the Secretary of the Interior.

IN WITNESS WHEREOF, the said assignor has hereunto set his hand and seal, this 23 day of oct., 1950

Estate of James Keeth, deceased.
By: /s/ Walter J. Keeth, Executor

16—11683-2

[OVER]

ACKNOWLEDGMENT OF CORPORATION

STATE OF _____ } ss:
COUNTY OF _____

Before me, a notary public, in and for said county and State on this _____ day of _____, 19____ personally appeared _____ to me known to be the identical person who subscribed the name of the maker thereof to the foregoing instrument as its _____ and acknowledged to me that he executed the same as his free and voluntary act and deed, and as the free and voluntary act and deed of such corporation, for the uses and purposes therein set forth.

My commission expires _____, 19____

_____
Notary Public.

ACKNOWLEDGMENT OF INDIVIDUAL

STATE OF Washington } ss:
COUNTY OF Spokane

Before me, a notary public, in and for said county and State, on this _____ day of _____, 19____ personally appeared Walter J. Keeth, executor for the estate of James Keeth, deceased, _____, to me known to be the identical person who executed the within and foregoing instrument, and acknowledged to me that he executed the same as his free and voluntary act and deed for the uses and purposes therein set forth.

SEAL

/s/ Roy A. Redfield
Notary Public.

My commission expires Mar. 17, 19 52.

ACCEPTANCE BY ASSIGNEE

The assignee in the above and foregoing assignment, made subject to the approval of the Secretary of the Interior, hereby accepts such assignment and agrees to fulfill all the obligations, conditions, and stipulations in said described indenture of lease, when assigned, and the rules and regulations of the Secretary of the Interior applicable thereto, and to furnish proper bond guaranteeing a faithful compliance with said lease and this agreement.

IN WITNESS WHEREOF, the said assignee has hereunto set their hand and seal this 14th day of January, 19 51

Cornelia Consolidated Mines, Inc.,
By: /s/ Julius A. Franz, President
By: /s/ E. I. Fisher, Secretary.

CONSENT OF SURETY

The _____, of _____, surety for _____ on the bond accompanying the lease above described, hereby consents to the assignment and transfer of said lease as above made and agrees that said bond shall remain in force and effect covering obligations of assignee.

Dated at _____ this _____ day of _____, 19____

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
WASHINGTON 25, D. C.
APPROVED: JUL 10 1951
(Sgd.) E. J. Utz
Assistant Commissioner of Indian Affairs.

UNITED STATES
DEPARTMENT OF THE INTERIOR,

Washington, D. C., _____

APPROVED:

_____
Commissioner of Indian Affairs.

16—11683-2 U. S. GOVERNMENT PRINTING OFFICE

5-154m
(August 1939)

Lease No. 73

C O P Y

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF INDIAN AFFAIRS

Contract I-20-Ind-3762

BOND

(To cover obligations of assignees and drillers)

Know All Men by These Presents, that The Germania Consolidated Mines, Inc., a corporation, in the State of Washington, of 416 Empire State Building of Spokane 8, Washington, as principal, and UNITED STATES FIDELITY AND GUARANTY COMPANY of Baltimore, Maryland, as surety, are held and firmly bound unto the United States of America in the sum of *****ONE THOUSAND******($1000.00) ************************dollars, lawful money of the United States, for the payment of which well and truly to be made, we bind ourselves and each of us, our heirs, successors, executors, or administrators, jointly and severally, firmly by these presents.

Sealed with our seals and dated this 8 day of November, 1950

The condition of this obligation is such that whereas James Keeth, as lessee. entered into a Mining (Lode) certain indenture of lease, dated March 23, 1942, with F. A. Gross, Superintendent of the Colville and Spokane Indian Reservation, lessor, for the lease of a tract of land described as follows: The SW¼ SE¼, Section 23, Twp., 29N., R. 37E., W.M., containing 40.00 acres, more or less.

and located in the Spokane Indian Reservation, in the State of Washington.

for (Lode) mining purposes for the period of (10) Ten years from the date of approval thereof and as much longer thereafter as the lease shall be continued in force in the manner provided for therein.

WHEREAS, thereafter the Estate of James Keeth, deceased, by Walter J. Keeth, Executor

assigned All right, title, and interest in and to the above-described lease to the above-bounden Germania Consolidated Mines, Inc., a corporation, in the State of Washington, and located in Spokane 8, Washington.

and subject to all the conditions and provisions in said lease contained.

16—11684

Now, if the above-bounden principal herein shall faithfully carry out and observe all the obligations assumed in said indenture and assignment of lease, and shall observe all the laws of the United States, and regulations made, or which shall be made thereunder, for the government of trade and intercourse with Indian tribes, and all the rules and regulations that have been, or may be, lawfully prescribed by the Secretary of the Interior, relative to mining leases on the said reservation, then this obligation shall be null and void; otherwise to remain in full force and effect.

Provided, That in event supervision over all the leased tract to which this bond applies is relinquished by the Secretary of the Interior and lessee shall have made all payments then due under the lease and shall have fully performed all obligations on his part to be performed up to the time of relinquishment of supervision, this bond shall be of no further force and effect.

The rate of premium charged on this bond is $ 1% ; the total premium paid is $ 10.00

Signed and sealed in the presence of—

Witnesses *

/s/ H. G. Loop

P. O., Spokane 8, Washington

P. O., ____

Germania Consolidated Mines, Inc.,

as to /s/ Julius A. Franz , President [SEAL]

As to /s/ E. J. Fisher , Secretary.

P. O., ____

P. O., ____

UNITED STATES FIDELITY AND GUARANTY COMPANY.

as to s/s M. Freeland [SEAL]

Attorney in Fact.

P. O., ____

P. O., ____

P. O., ____

as to ____ [SEAL]

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
WASHINGTON 25, D. C.

P. O., ____

P. O., ____

APPROVED: JUL 18 1951

as to (Sgd.) E. J. Utz [SEAL]

Acting Commissioner of Indian Affairs

P. O., ____

* Two witnesses to all signatures.

DEPARTMENT OF THE INTERIOR,

Washington, D. C., ____

APPROVED:

____

Assistant Secretary.

16—11684 U. S. GOVERNMENT PRINTING OFFICE

METALLURGICAL REPORT

February 11, 1952

Memorandum

To: H. Gordon Poole, Chief, Nonferrous Metals Branch

From: P. H. Floyd, Acting Head, Mineral Dressing Section

Subject: Report of upgrading tests on the tungsten gravity rougher concentrate of the Germania Mines, Inc. - Hunters, Washington (Heads 210).

This low-grade tungsten concentrate was a jig and table product of the Germania Consolidated Mines, Inc. milling operation, and it was submitted by that company through Mr. J. D. Bardill of the Mining Division, U.S.B.M., Region II. Mr. Bardill requested that appropriate tests be performed to produce tungsten and molybdenum concentrates of a commercial grade. This laboratory was successful in producing a tungsten concentrate of 63.2 percent tungstic oxide with 96.7 percent recovery and a minimum of deleterious elements to meet current market specifications. No molybdenum concentrate of economic consequence was produced. The processes used for this upgrading work were: screening, magnetic roasting and separation, sulfide flotation, hydraulic classification and tabling.

The sub-grade concentrate, as received, was properly sampled and submitted to routine analysis and examination.

Chemical Analysis

Oz Per ton		Assay Percent				
Au	Ag	WO_3	S	Mo	Pb	Cu
0.005*	1.6	16.9	30.1	0.49	0.05	0.15

*Less than

Spectrographic Analysis

More than 10 percent:	Fe
5 to 10 percent:	None
1 to 5 percent:	Al, Ca, Si, W
0.1 to 1 percent:	Bi, Cu, Pb, Mn, Mo, Na
0.01 to 0.1 percent:	As, Be, Mg, Co, Ti, Cb, Zr, Ba
0.001 to 0.01 percent:	Ag, Ni

The petrographic examination revealed this low-grade concentrate to consist predominantly of pyrite intimately associated with a small amount of chalcopyrite. The predominant tungsten mineral was ferberite associated with a minor amount of scheelite; the scheelite was present as minute veinlets in the ferberite. Molybdenite was present in small quantities and bismuthinite and

galena were detected in trace amounts. The gangue minerals observed were: quartz, feldspar, and magnetite. The tungsten minerals, even though locked with each other, were liberated almost completely from the gangue in all size ranges. The pyrite was completely liberated.

A screen analysis was performed on the head sample to determine the size distribution.

Screen Analysis	Weight Percent
Plus 14 mesh	13.5
14/20 mesh	10.0
20/28 mesh	10.4
28/35 mesh	11.3
35/48 mesh	13.7
Minus 48 mesh	41.1

Am examination of the products of this screen analysis revealed the tungsten values as well as the sulfide and gangue minerals to be evenly spread throughout the entire range of sizes.

Discussion of the Beneficiation Problem

The upgrading of this low-grade ferberite-scheelite product called for the removal of sulfide minerals, magnetic minerals, and siliceous minerals. It was suggested that the pyrite, the most abundant gangue mineral, be removed by sulfide flotation. However, such a procedure would require fine grinding of the pulp and consequently complicate the removal of the other gangue minerals, i.e., the siliceous gangue and the magnetite. It is imperative that the low-grade concentrate, to be upgraded, be kept as coarse grained as possible because it is only possible to make good siliceous gangue removal by gravity concentration and to make good magnetite removal by magnetic separation. It may be further observed that under the best of sulfide flotation conditions it would be extremely difficult to remove the pyrite to an adequate degree; the market specifications of tungsten products demand a maximum sulfur content of 0.5 percent.

Preliminary observation that the minerals were almost completely liberated pointed to the fact that no grinding was required for grain liberation. The pyrite could very effectively be removed by a magnetic roast and separation along with the contained magnetite. Such a procedure would allow the subsequent separation of a clean molybdenite product by sulfide flotation of the molybdenite from the magnetic separation non-magnetic product. Further, molybdenite would float at grain sizes as coarse as 35-mesh; consequently very little size reduction would be necessary for molybdenite sulfide flotation step. The siliceous gangue could be subsequently removed from the final ferberite-scheelite product by table concentration.

Test Work

A test sample of the low-grade ferberite-scheelite concentrate was screened on a 48-mesh screen. The undersize was carefully hydraulically sized to check the possibility of siliceous gangue and pyrite removal by tabling prior to drying, and magnetic roasting magnetic separation. The individual classifier products were passed over the laboratory shaking table and the following observations were made:

1. The siliceous gangue minerals could be removed in a tungsten free tailing to the extent of 17 percent of the original bulk weight.

2. The pyrite would not separate to any appreciable degree as a tungsten free tailing.

3. The coarse classifier fractions would not respond to the table separation as well as the finer table fraction responded.

4. It was impossible to cut a finished tungsten concentrate from the table of any bulk that was below the maximum sulfur content allowable in finished marketable concentrates.

5. The table tailing product produced contained considerable molybdenite and consequently complicated the recovery of molybdenum because further treatment of this product would be necessary.

Because of the negligible advantage to be gained by a preliminary gravity upgrading step, this first step was abandoned. The advantage that could have been gained should have been relegated to the original roughing concentration stage. Therefore, the removal of the largest bulk of gangue mineral (the pyrite), without size reduction and sulfide flotation, by magnetic roast and separation was the logical alternative.

A second test sample of the ferberite-scheelite rougher concentrate was taken and subjected to a magnetizing roast. This roast was conducted in a muffle furnace at 700°C; the draft was reduced to a minimum to prevent over-oxidation of the pyrite. The roasted material was screened into three products for magnetic separation on the laboratory cross-belt separator: plus 20-mesh, minus 20-mesh, plus 48-mesh, and minus 48-mesh. Approximately 85 percent of the total pyrite was removed in this operation along with all the magnetite. A second magnetizing roast and separation was necessary to remove the pyrite sufficiently in the tungsten products. The magnetic tailing removed contained 59.9 percent of the weight bulk, 0.71 percent tungstic oxide and 0.27 percent ~~tungstic oxide and~~ molybdenum. A finished ferberite concentrate containing 38.6 percent of the total tungsten value was also produced

as a high intensity magnetic product in this operation. A non-magnetic middling was produced that contained 30.0 percent of the original bulk with the balance of the tungsten values, the molybdenite, and the siliceous gangue minerals. There was no difficulty experienced with this preliminary magnetic separation upgrading procedure; a study of the roasting problem could probably evolve a one-stage magnetizing roast procedure.

The residual non-magnetic tungsten-molybdenum product assayed 35.0 percent tungstic oxide and 1.48 percent molybdenum. The molybdenite was found to float readily to grain size as coarse as 35-mesh; therefore the non-magnetic product was stage ground in a ball mill through a 35-mesh screen. The resulting pulp was subjected to sulfide flotation for the removal of the molybdenite. A collector combination of sodium silicate, fuel oil, reagent 404, and amyl xanthate readily removed this mineral; however, an appreciable portion of the slimed tungsten values were floated in the rougher concentrate. This rougher concentrate was subjected to a cleaning stage that involved drying and a flash roast at 700°C prior to repulping for the cleaner flotation. This cleaning procedure gave an excellent elimination of the tungsten values from the final molybdenite concentrate with good molybdenum recovery in that concentrate.

The residual pulp from the molybdenum cleaning operation contained ferberite locked with scheelite, and the siliceous gangue minerals. The pyrite and molybdenite had been removed very effectively in the previous steps with a minimum of grain size reduction, and thus this product was in a condition where gravity upgrading would separate the tungsten minerals from the siliceous gangue minerals. The material was removed from the flotation cell, dewatered, and subjected to hydraulic classification. The classifier fractions were passed separately over the laboratory shaking table. The products resulting from this step were a ferberite-scheelite concentrate of marketable grade, a table slime, a table middling, and a table tailing.

A study of the assays of the various middling products revealed that the molybdenum flotation middlings and the circuit slimes could be added to the final concentrates with several percent increased tungsten recovery and no ill effect on the market specifications of the final tungsten product, providing their combined sulfur content of approximately eight percent was reduced to approximately two percent. These two minor products were subjected to a sulfur roast at 700°C for one hour. A subsequent assay for sulfur demonstrated it to be reduced to below the specified maximum sulfur allowable.

Complete metallurgical data for this test is presented in Table 1 and Table 2, and a procedure flowsheet is presented in Figure 1.

Summary and Conclusions:

An examination of the product suggested a preliminary upgrading step by hydraulic classification and tabling. However, efforts in this direction proved that only a small gain could be made, and consequently it was not incorporated into the major test procedure. Further observations eliminated the possibility of sulfide flotation procedures for the removal of pyrite because of difficulties arising after the required grinding in the satisfactory removal of the siliceous gangue and magnetite.

A combination procedure of screening, magnetic roasting, and magnetic separation, flotation, grinding, hydraulic classification, and tabling was adopted. The procedure gave little difficulty, and any disadvantage arising from the apparent complexities could be eliminated by the observation that the rougher concentrate entering the upgrading stage would be of a high enough grade that it would represent a small percent of the mill head bulk, and of sufficient value to warrant specialized complex upgrading if adequate recovery with market grade products could be produced.

The results obtained were satisfactory from the standpoint of the production of a tungsten product that contained 63.2 percent tungstic oxide with a 96.7 percent recovery. This product meets current market specifications in all respects. The results obtained in the molybdenum beneficiation are of doubtful economic interest. The concentrate produced assayed 33.8 percent molybdenum with a 50.9 percent recovery. It must be observed, however, that the molybdenum content of the tungsten rougher concentrate submitted for beneficiation was only 0.49 percent. With this low content of molybdenum in the head sample and since molybdenum was of a secondary consideration to the much more valuable tungsten content, little better results could be expected and no additional work towards this molybdenum recovery was warranted.

The test results represents the sample submitted for beneficiation only and represents the ore in question only to the extent that the sample represents that ore. This project is considered complete and further work is not anticipated.

Test Engineer:
P. H. Floyd

(Signed) P. H. Floyd

P. H. Floyd

cc:
Floyd (2) m/f
Volin (2) r/f
Bardill (1) d/f
Germania Consolidated Mines, Inc.
401 Empire State Bldg.
Spokane 1, Washington

U. S. BUREAU OF MINES
Albany, Oregon
Mineral Dressing Section
Metallurgical Data

December 10, 1951

TABLE I

Test No. 2806
Test Engineer: P. H. Floyd
Head No. & Ore: Head 210. Germania Consolidated Mines, Inc., Tungsten Concentrate
Treatment: Combined: Screening, hydraulic classification, magnetic roast and separation, sulfide flotation, and tabling.

Product	Weight Grams	Assay WO_3	Mo	S	Cu	Bi	Pb	Distribution WO_3	Percent Mo	Albany Assay No.
WO_3 Conc. #1	142.6	67.8	0.23	0.05	0.02	0.08	0.10*	38.6	3.7	29173
WO_3 Conc. #2	44.6	67.5	0.33	0.02	0.02	0.08	0.10*	12.0	1.7	29174
WO_3 Conc. #3	154.2	64.4	0.24	0.55	0.02	0.2	0.10*	39.6	4.1	29175
Mo Conc.	13.4	0.4	33.8	30.0	0.72	6.5	2.40	0.0	50.9	29176
Mo Midd.	25.4	31.4	2.6	7.4	0.95	9.3	0.10*	3.2	7.4	29177
Magnetic Rej.	845.6	0.71	0.27	35.2	0.01*			2.4	25.6	29178
Table Midd.	114.4	1.80	0.35	0.62				0.8	4.5	29179
Table Tailing	43.4	0.08	0.35	0.20				0.0	1.7	29180
Circuit Slimes	28.4	30.4	0.12	8.1	0.12	0.2	0.10*	3.4	0.4	29181
Calculated Sulfur Roasted	136.3			100.0						(Calc.)
Calculated Total Head**	1484.3	16.9	0.60					100.0	100.0	(Calc.)

* Less than

**Calculated from WO_3 balance after extra care was taken to check complete WO_3 assay reports.

U. S. BUREAU OF MINES
Albany, Oregon
Mineral Dressing Section
Metallurgical Data

TABLE II

February 1, 1952

Test No. 2843
Test Engineer: P. H. Floyd
Head No. & Ore: Head 210 - Germania Consolidated Mines, Inc., Tungsten Concentrate
Roasting of Mo middling and circuit slimes to reduce sulfur and thus to add these products to final tungsten product.

Product	Weight Grams	Assay WO_3	Mo	S	Cu	Bi	Pb	Distribution WO_3	Percent Mo	Albany Assay No.
Combined Mo Midd. Plus Circuit Slimes:										
	53.8	30.9	1.29	7.77	0.51	4.49	0.10*			(Calc.)
Combined Mo Midd. Plus Circuit Slime Roasted 700°C for 1 hour:										
	42.8	38.8	1.62	0.23	0.64	5.64	0.10*			(Calc.)
WO_3 Conc. #1, #2, and #3 plus roasted Mo Midd. Plus Circuit Slime to Make Final Ferberite Product:										
Final Ferb. Prod.	384.2	63.2	0.40	0.27	0.09	0.75	0.10*	96.7	17.3	(Calc.)

*Less than

Weight Percent of Test Products:

Final Ferberite Prod.	25.9
Mo Concentrate	0.9
Magnetic Rejects	57.0
Table Middling	7.7
Table Tailing	2.9
	94.4*

* Note the magnetizing roast and middling roast removed 32.0 percent of the sulfur and therefore accounts for the balance of the percent weight distribution.

Figure 1 - Test Flowsheet

Low-grade Ferberite-scheelite Concentrate

Magnetizing Roast

Screens (14 and 48 mesh)

Magnetic Separator (Each screen product separate)

Magnetic Rejects (Low intensity)

High Intensity Product and Non-Magnetic Product

Magnetizing Roast

Magnetic Separator

Combined Magnetic Reject

Non-magnetic Product

Ferberite Concentrate #1

35 Mesh Screen

O.S. U.S.

Grind

Molybdenite Rougher Flotation

Rougher Concentrate Dried and Roasted

Hydraulic Classifier

Repulped and Cleaner Flotation

Tabling of Individual Classifier Products

Mo Concentrate

No Middling

Ferberite-Scheelite Concentrate #2 and #3

Table Tailing

Circuit Slimes

Table Middling

Contract No. 28. 4
J 20 Ind

MINING LEASE OF UNALLOTTED LANDS ON SPOKANE INDIAN RESERVATION.

THIS LEASE, made and entered into in quadruplicate this 5th day of August, 1929, by and between the Secretary of the Interior, party of the first part, hereinafter called the Lessor, by reason of the authority vested in him in Section 24 of the Indian Appropriation Act for the fiscal year ending June 30, 1917 (Pub. No. 80), and William D. Scott of Chamber of Commerce Bldg., Spokane, Wash., State of Washington, party of the second part, hereinafter called the Lessee

WITNESSETH:

1. The Lessor, for and in consideration of the royalties, covenants, stipulations, and conditions hereinafter contained, and hereby agreed to be paid, observed and performed by the Lessee, doth hereby demise, grant, lease and let unto the Lessor for the term of twenty-five years (with privilege of renewal provided conditions and circumstances warrant) from the date of signing hereof by the Secretary of the Interior, for the purpose of mining, all the deposits of Minerals in or under the following described lands, to-wit:

> SW/4 of NE/4 & NW/4 of SE/4, Section 26, Twp. 29 N., Range 37 E., WM. NE/4 of SE/4 & Lot 5, Section 23, TWP 29 N., Range 37 E., WM.

containing 160 acres more or less, the same being within said reservation, with the exclusive right to prospect for, mine and extract the minerals above named and no others, and to occupy and use so much only of the surface of said land as may reasonably be necessary to carry on the work of prospecting for, mining, extracting, storing, and removing such minerals; also the right to obtain from wells or other sources on said land by means of pipe lines or otherwise a sufficient supply of water to carry on said operations, and the right to pass over and cross said reservation for the purpose of said work.

2. The lessee hereby agrees to pay or cause to be paid to the Superintendent or other office of the United States having jurisdiction over the leased premises, hereinafter called the office in charge, for the use and benefit of the Indians of said reservation, annually in advance, a royalty of 50 cents per acre for the first year beginning with the date of execution of lease, and $1 per acre for the second and each succeeding year, all rent paid in any year to be credited on the royalty for that year if production begins therein; and the following royalties:

(a) For substances other than gold, silver, copper, lead, zinc, tungsten, coal, asphaltum, and allied substances 10 per cent of the value at the nearest shipping point of all ores, metals, or minerals marketed, payable quarterly.

(b) For gold, silver, copper, lead, zinc, and tungsten 10 per cent, payable quarterly, to be computed on the gross values of the ores as shown by reduction returns, after deduction freight and treatment charges. Duplicate reduction returns shall be filed by the Lessee with the Superintendent or other officer in charge of the reservation from which the ores are taken within twenty days after the reduction of the ores, and the royalty shall be paid to the Superintendent or other officer in charge within ten days after the end of the quarter within which such returns are made.

(c) For coal 10 cents per ton of 2,000 pounds, mine run, or coal as taken from the mine, including what is commonly called slack, payable quarterly.

(d) For asphaltum and allied substances 10 cents per ton of 2,000 pounds for crude material, or 60 cents per ton for refined products, payable quarterly.

(e) On all precious or semiprecious stones the value of which is determined by carat weight, 25 per cent of the market value as shown by the lessee's records in the manner aforesaid.

The above mentioned rates of royalty shall be subject to readjustment at the end of each five years at such equitable rates, conforming to the prevailing commercial practice, as conditions at the time shall justify.

There shall be expended annually in development work on each lease a sum of not less than $5 per acre.

The royalties on all products mined under this lease shall be based on sworn quarterly reports and shall be paid within twenty days after the close of each quarter.

3. The Lessee shall immediately upon notification of the signing of this lease by the Secretary of the Interior proceed to develop and work said mineral deposits, and during the entire term of this lease he shall prosecute such mining operations on said lands to the fullest practicable extent, the state of the market being considered; and his neglect or refusal to conduct actual mining operations for a period of six months at any one time (unless exempted by the Secretary of the Interior) shall operate as a forfeiture of all of his rights, under this lease, without any action or declaration of forfeiture by the Department of the Interior. Within twenty days after the close of each quarter he shall file with the officer in charge a quarterly report, verified by oath, showing the character and value of the development work performed and the gross output of his mining operations hereunder during the quarter; and within twenty days after the close of each calendar year he shall file with the officer in charge of the reservation a sworn annual report, induplicate, showing the character and value of the development work performed in that year.

4. The Lessee shall at all times conduct operations in a workmanlike manner, protect all mines and deposits, and not commit nor suffer an waste upon the reservation; and if it be necessary to use any wood, stone, coal, or other material thereon, he shall first obtain written permission from the officer in charge and shall pay to him for the Indians the current prices for all such material taken. He shall take good care of the land herein described, and not permit any nuisance to be maintained nor any intoxicating liquor to be sold or given awaythereon for use as a beverage; he shall not use or permit the use ofsaid lands and premises for any other purpose than as herein authorized, and at the expiration of this lease or a renewal thereof he shall return the same to the owners in as good condition as received, excepting for the ordinary wear and tear and unavoidable accidents in their proper use.

5. The Lessee shall keep an accurate account of said operations, showing the whole amount of mineral mined or extracted and all mineral shipped, smelted, used or disposed of; and the officer in charge and other proper representatives of the Department shall have the right at all times during the existence of this lease, and for six months thereafter, to make such reasonable examination of the papers and books ofaccount of the said Lessee, and of the mines, as may be necessary to obtain all information desired; and there is hereby created alien on all implements, tools, movable machiner, and other personal chattels belonging to the Lessee used in the said mining operations, and upon all minerals obtained from the land herein leased, as secrity for the quarterly payment of said royalty.

6. The Lessee in selecting employees shall give preference so far as possible to Indians of the reservation who may be able and willing to perform the kind of labor required; and he shall not retain in his employ any person objectionable to the officer in charge or the Indians. With each quarterly report he shall furnish the names and addresses of his employees.

7. The Lessee shall not interfere with any personal or property rights or any legitimate industry or occupation of the Indians without first obtaining consent in writing and paying proper compensation, approved by the officer in charge; nor obstruct any road or trail now in use, without permission of the officer in charge, and the right to cross the lands leased by the usual methods and in a manner not inconsistent with the mining operations herein provided for, is reserved to the Indians; and all rights to make and accept allotments within the boundaries of this lease of any lands deemed suitable for agriculture are hereby reserved.

8. The Lessee shall not, without the consent of the Secretary of the Interior, assign or sublet any part of the lands leased, He may, however, surrender the lease for concellation with the consent of the Secretary, but the Lessee or assignee should surrender his copy of thelease to the officer in charge, and all royalties and other obligations due and accrued to date of completion of application for cancellation, in addition to a cancellation fee of one dollar, must be paid and discharged before such application will be considered, provided that if the lease has been recorded the Lessee or assignee shall execute a release, record the same in proper recording office, and file the release with the officer in charge.

An application for cancellation will be considered as completed on the date such application is filed in the office of the officer in charge, provided the foregoing requirements have been fully observed; and in event of extinguishment of the Indian title to said lands, this lease and all rights hereunder shall terminate without action or declaration by the Department; and on any such termination, or on expiration of the lease, the Lessee shall have sixty days in which to remove his buildings, machinery and other property, in the absence of violation of the conditions of this lease.

9. In the event of failure or neglect of the Lessee to perform any obligations under this lease, the Secretary of the Interior may, without prejudice to any other remedy, treat the same as sufficient cause for the termination thereof by him, unless within thirty days after notice the Lessee shall correct such failure and make good any loss caused thereby; and if thereafter such failure or neglect be repeated, the Secretary may at any time within thirty days declare this lease forfeited and terminated. Thereupon the Lessee shall vacate the premises within thirty days of notice of such termination, and on his failure so to do the Secretary shall have the right to enter and take possession thereof, using such force as may be necessary to remove the Lessee therefrom; and any property of the Lessee or his successors on said premises may be removed by him or his representatives only with the consent of the Secretary within such reasonable time as may be fixed by the Secretary, not exceeding sixty days from such termination, and any of said property remaining thereon after the time so fixed for its removal shall become the property of the Indians, and may be treated as such by the officer in charge.

10. This lease is made and accepted subject to existing law and any laws hereafter enacted as to the said reservation, also to the regulations relative to such leases heretofore or hereafter prescribed by the Secretary of the Interior; and in no event shall the United States or the Secretary be liable in damages or otherwise under the provisions hereof.

The obligations and agreements hereinbefore expressed shall estend to and be binding upon the successors in interest of the parties hereto.

11. Before this lease shall be in effect the Lessee shall furnish a satisfactory bond with two or more personal sureties or with an acceptable company authorized to act as sole surety.

12. No prospector, locator, or mine owner shall keep stock of any kind on the lands leased except by permit of such rates as may from time to time be established.

Signed and sealed this _____ day of _____ 19
(Stamped) Sep. 14 1929

WITNESSES:

A.H. STILES

D. T. FOX

JOHN H. EDWARDS (SEAL)
Assistant Secretary of the Interior

WILLIAM D. SCOTT (SEAL)
Lessee

Contract 1-20[illegible]nd. No. 284

5--154 e
(Must be executed in quadruplicates.)

ASSIGNMENT OF MINING LEASE #65

Whereas the Secretary of the Interior has heretofore approved Tungsten mining lease dated Aug. 5, 1929, entered into by and between William D. Scott, Chamber of Commerce Bldg., Spokane, Wash., lessee and Secretary of the Interior, lessor, covering the following described land in the Spokane Reservation, State of Washington;

SW/4 of NE/4 & NW/4 of SE/4, Sec. 26, Twp 29 N., Range 37, EWM. NE/4 of SE/4 & Lot 5, Sec. 23, Twp 29N., Range 37, EWM,

Now, therefore and in consideration of one dollar and other considerations ( ) dollars, the receipt of which is hereby acknowledged, the said William D. Scott, the lessee in the above-described lease, hereby bargains, sells, transfers, assigns, and conveys his right, title and interest of the lessee in and to said lease, subject to the approval of the Secretary of the Interior to Fred N. Norton.

In witness whereof the said lessee has hereunto set his hand and seal this 15th day of April 1935.

(Signed) William D. Scott

KNOWLEDGMENT OF INDIVIDUAL

STATE OF WASHINGTON)
) ss:
County of Spokane)

Be it remembered that on this day came before me, the undersigned Notary Public within and for the State and County aforesaid, duly commissioned and acting as such, WILLIAM D. SCOTT, to me personally well know, and stated that _____ executed the foregoing and annexed instrument of the consideration and purposes therein mentioned and set forth; and I do hereby so certify.

Witness my hand and seal on this 15th day of April, 1935.

FRED L. PRESCOTT
Notary Public
Spokane, Wash.

My commission expires
see seal

######
#SEAL#
######

Acceptance by Assignee.

The assignee in the above and foregoing assignment, made subject to the approval of the Secretary of the Interior, hereby accepts such assignment and agrees to fulfill all the obligations, conditions and stipulations in said described indenture of lease, when assigned, and the rules and regulations of the Secretary of the Interior, so far as applicable thereto, and to furnish proper bond guaranteeing a faithful compliance with said lease and this agreement.

In Witness Whereof the said assignee has hereunto set his hand and seal this 15th day of April, 1935.

DEPARTMENT OF THE INTERIOR

WASHINGTON, D. C. Dec. 18, 1936.

Approved: OSCAR L. CHAPMAN
Assistant Secretary of the Interior

(STAMP)

COPY

ASSIGNMENT OF MINING LEASE

- - - -

WHEREAS, the Secretary of the Interior has heretofore approved Tungsten mining lease, dated August 5, 1929, entered into by and between William D. Scott, lessee, and the Officer in Charge of the Colville Tribe of Indians, lessor, and assignment of said lease dated April 15, 1935, to Fred N. Norton, covering the following described land in the Colville Reservation, State of Washington

SW/4 of NE/4 and NW/4 of SE/4 Sec. 26, Twp. 29, N, Range 37, EWM NE/4 of SE/4 and Lot 5, Sec. 23, Twp. 29, N. Range 37, EWM

NOW, THEREFORE, for and in consideration of Seven Hundred Fifty and no/100 ($750.00) dollars, the receipt of which is hereby acknowledged, Earl T. Norton and Perry N. Norton, executors of the estate of Fred N. Norton, deceased, the lessee in the above-described lease, hereby bargains, sells, transfers, assigns, and conveys all right, title, and interest of the lessee in and to said lease, subject to the approval of the Secretary of the Interior to Germania Consolidated Mines, Inc., a Washington corporation.

IN WITNESS WHEREOF the said lessee has hereunto set their hand and seal this 2nd day of April, 1946.

ESTATE OF FRED N. NORTON, Deceased

By (Signed) Earl T. Norton

(Signed) Perry W. Norton
Executors

- - - - - - - - -

STATE OF WASHINGTON, COUNTY OF SPOKANE, ss:

Be it remembered that on this day came before me, the undersigned Notary Public within and for the State and County aforesaid, duly commissioned and acting as such, EARL T. NORTON, and PERRY W. NORTON, to me

personally well known, and stated that they executed the foregoing and annexed instrument for the consideration and purposes therein mentioned and set forth; and I do hereby so certify.

Witness my hand and seal on this 2nd day of April, 1946.

(SEAL)

(Signed) J. L. Thomas
NOTARY PUBLIC in and for the State of Washington, residing at Spokane

My commission expires June 17, 1948.

- - - - - - -

ACCEPTANCE BY ASSIGNEE

The assignee in the above and foregoing assignment, made subject to the approval of the Secretary of the Interior, hereby accepts such assignment and agrees to fulfill all the obligations, conditions, and stipulations in said described indenture of lease, when assigned, and the rules and regulations of the Secretary of the Interior, so far as applicable thereto, and to furnish proper bond guaranteeing a faithful compliance with said lease and this agreement.

IN WITNESS WHEREOF the said assignee has caused this acceptance to be signed by its duly authorized officers and the corporate seal to be affixed this 2nd day of April, 1946.

GERMANIA CONSOLIDATED MINES, INC.

(SEAL)

(Signed) Julius A. Franz
President

(Signed) Ray B. Greene
Secretary

This is an application for a Production loan - See Lokes Report - he says it isn't so hot (1945)

EXPLORATION

Subject: DMEA-2447
Re: Exploration Loan
Keeth and Norton Mines
March 25, 1952

Mr. Julius A. Franz
Germania Consolidated Mines, Inc.
Suite 401
Empire State Building
Spokane 1, Washington

My dear Mr. Franz:

This will acknowledge receipt of your application dated March 15, 1952 for a loan under the Defense Production Act of 1950.

Your application was assigned Docket Number DMEA-2447 and referred to the Iron and Ferro-Alloys Division.

Kindly refer to DMEA-2447 in any future correspondence relating to your application.

Sincerely yours,

ROBERT E. ADAMS

Robert E. Adams
Acting Administrative Officer

7862

DMEA-2447

OFFICE OF THE ADMINISTRATOR

UNITED STATES
DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS ADMINISTRATION

WASHINGTON 25, D. C.

So. 157 Howard Street
Spokane 4, Washington

March 19, 1952

Mr. Frank E. Johnson
Chairman, Operating Committee
Defense Minerals Exploration Administration
Department of Interior
Washington 25, D. C.

Dear Mr. Johnson:

Enclosed are three copies of an application by the Germania Consolidated Mines, Inc., Spokane, Washington and a copy of a report by Arthur Lakes.

One copy of the application is being retained for the use of this office.

Sincerely yours,

Elton A. Youngberg

Elton A. Youngberg
For: A. E. Weissenborn
Executive Officer, DMEA
Field Team, Region II

Enclosure
cc: USBM, Spokane

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
MAR 24 1952

DMEA-2447

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

[illegible] Lyf Kennedy Avenue
Spokane 4, Washington

March 21, 1952

Mr. Frank [illegible] Johnson
Chairman, Operating Committee
Defense Minerals Exploration Administration
Department of Interior
Washington 25, D. C.

Dear Mr. Johnson:

Enclosed are three copies of an application by the Kettle Consolidated Mines, Inc., Spokane, Washington and a copy of a report by Arthur Lakes.

One copy of the application is being retained for the use of this office.

Sincerely yours,

Milton A. Roberson,
for: A. [illegible] Weissenborn
Executive Officer, DMEA
Field Agent, Region II

Enclosure
cc: DMEA, Spokane

Form MF-103
(Revised June 1951)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Budget Bureau No. 42-R1035.1.

MF-103 Should Be Filed With General Technical Data Form MF-100

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

Not To Be Filled in by Applicant

Docket No. DMEA-2447
Metal or Mineral
Date Received 3-24-52
Amount $
Participation (Government %)

MAR 24 1952

GERMANIA CONSOLIDATED MINES, INC.
SUITE 401
EMPIRE STATE BUILDING
SPOKANE 1, WASHINGTON

Name and address of applicant

Date March 15, 1952

If you have already filed MF-100, give date filed March 15, 1952 type of assistance requested Loan,
M.S.-
DMA Docket Number (if available) Serial No. 0745

INSTRUCTIONS

Read Mineral Order 5, Regulations Governing Government Aid in Defense Projects, before completing this application. Submit four copies each, of the signed application form, General Technical Data Form MF-100, and answers to questions as specified, to Defense Minerals Administration, Department of the Interior, Washington 25, D. C., or to the nearest field executive office thereof, with your name and address on each sheet of the application and all accompanying papers. If you have previously filed MF-100, it is not necessary to file it again. However, you should indicate in space provided above the type of assistance previously applied for (loans, procurement contracts, etc.) and DMA Docket Number, if available. *When a question is inapplicable it should be so stated in the form.* Additional sheets should be attached in answering any questions or in supplying additional information. IF YOU CANNOT ANSWER A QUESTION, SO STATE.

1. (*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*) If you are not the owner of the property, submit a copy of the lease, purchase option, or other agreements under which you are authorized to operate the property with each copy of your application.

   (*c*) Give the legal description of the exact parcel, plot, or area upon which the exploration is to be conducted.

   NOTE: (1) 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 (*c*) 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.

   (2) If applicant is not the owner of the property or if there are any liens or encumbrances against the property, copy of agreements of claimants, lienors, encumbrances, and lessors subordinating their interests in the property to the interest of the Government under the Exploration Project Contract will be required for attachment to the Contract.

2. (*a*) What metals or minerals do you expect to find?

   (*b*) Furnish statement of the geologic features of your property, giving type of ore deposit and reasons for expecting to find commercial ore bodies. Illustrate with maps or sketches. If you have a geologic or engineering report, or assay maps showing width and grade, please send them with application, stating whether or not you wish to have them returned.

The information requested in questions 3, 4, 5, 6, 7, 8, and 9 below should be answered specifically and in detail, as this information will be attached to and incorporated as part of the Exploration Project Contract, if such contract is entered into with you by the Government.

ANSWER EACH QUESTION ON SEPARATE SHEETS OF PAPER AND SUBMIT A COPY OF EACH ANSWER FOR EACH COPY OF YOUR APPLICATION.

3. (*a*) Describe fully the proposed work and give the total cost of the project.

   (*b*) State the time required to start the project and to complete it.

4. Submit a map or sketch of the property involved showing a plan (and cross section, if needed) of the present mine workings and the *location of the proposed exploration work* as related to geologic features, such as contacts, veins, ore-bearing beds, etc.

5. Furnish an itemized list 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.

6. Furnish a detailed list of additional facilities, buildings, and fixtures to be purchased, installed, or erected by you, with the estimated cost of each item.

7. Furnish a detailed list of operating equipment, separated into items to be—

   (*a*) Rented

   (*b*) Purchased

   (*c*) Furnished by you

   with the rental, purchase price, or depreciation of each item, as the case may be, to be charged as a cost of the project.

8. Furnish an itemized schedule of labor, by numbers and classes (miners, muckers, etc.) and of supervisors by numbers and positions, with the maximum wages or salaries to be paid to each.

9. Furnish a detailed list with estimated cost of each item for materials, supplies, engineering, assaying, accounting, power, water, utilities, and any other items not provided for above.

10. (*a*) How much are you prepared to invest in the proposed project?

    (*b*) Is this amount sufficient to pay your part of the cost of the project, in accordance with the regulations on Government participation (Sec. 9 of MO–5)?

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

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.

GERMANIA CONSOLIDATED MINES, INC.
(Name of company)

By Julius A. Franz
(Signature of authorized official)

March 18, 1952
(Date)

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—64067-2

Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane 1, Washington

M. F. 103, Sec. 1

(a) The company holds leases from the Department of the Interior (Colville Indian Agency) on the SW$\frac{1}{4}$ NE$\frac{1}{4}$ and NW$\frac{1}{4}$ SE$\frac{1}{4}$, Sec. 26, Twp. 29N, R. 37E, WM and NE$\frac{1}{4}$ SE$\frac{1}{4}$ and Lot 5, Sec. 23, Twp. 29N, R. 37E, WM (Lease No. 65) formerly known as the Norton Property; also SW$\frac{1}{4}$ SE$\frac{1}{4}$ of Sec. 23, Twp. 29N, R. 37E, WM (Lease No. 73) formerly known as the Keeth Property; and has applied for a lease on the SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 23 and the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 26, Twp. 29N, R. 37E, WM and the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 26, Twp. 29N, R. 37E, WM. It also owns by warranty deed Lots 1, 2, 3 and 4, Sec. 23, Twp. 29N, R. 37E, WM, outside the Reservation, comprising in all approximately 480 acres.

(b) Copies of assignment of Leases submitted with Form M. F. 100.

(c) SW$\frac{1}{4}$ SE$\frac{1}{4}$, Sec. 23 and NW$\frac{1}{4}$ NE$\frac{1}{4}$, Sec. 26, Twp. 29N, R. 37E,WM.

(1) This area is included in answer to Sec. 1 (a)

(2) Leases of Indian lands require payment of 10% royalty of net proceeds of smelter returns.

No mortgages or liens.

M. F. 103, Sec. 2

(a) It is expected that Wolframite, Scheelite and Molybdenite will be found.

(b) See Arthur Lakes' Report dated Oct. 8, 1945.

Refer to map by W. H. Simons, dated February 1, 1952.

The proposed exploration and development is to prepare the mine for increased production and to block out ore of a sufficient determined value to warrant enlarging and

M. F. 103, Sec. 2 (Cont)

modernizing milling facilities for more efficient production.

The plan of development is outlined on the map by W. H. Simons, which accompanies this application and is divided as follows:

MIDDLE VEIN

Drive N.E. a distance of about 180 ft.

Put up a double compartment raise to the surface at the end of proposed new drift.

From this raise drive two intermediate drifts, blocking out the ore under surface exposures as shown at the edge of old stopes.

Break down the back and prepare for stoping the ground that is not already prepared on both sides of the main No. 3 crosscut between the present #2 chute, north, and the present end of tunnel, south. Put in two more raises to the No. 2 level, a distance of 95 feet each.

EAST VEIN

Put up a two-compartment raise at the end of the main No. 3 crosscut, approximately 190 feet. Put up present raise to the surface, a distance of approximately 170 feet. Drive an intermediate between these raises, a distance of approximately 230 ft. and southerly to the fault, an approximate distance of 90 feet. Put up a raise to the surface in the center of this block. All on vein formation.

Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane 1, Washington

M. F. 103, Sec. 2 (Cont)

SURFACE

Stripping on the surface should be done Southwest of the cut below the Norton shaft on the middle and East veins and on the East vein between present surface cuts A and H.

SUMMARY

The foregoing program totals 180 feet of main drifting; 780 feet of intermediate drifts, 825 feet of double compartment raises, 190 feet of single compartment raises and breaking down, the back and preparing for stoping 500 feet of tunnel; stripping as outlined.

Preparation for mining?

In doing this work arrangements should be made to keep the mill feed separate during the various operations, using the present milling facilities as a sampler, carefully recording the width, length and height of the total mined and the width of the vein. Arrangements should be made to calculate the amount sorted out and regular samples taken of the feed following the rolls, the tailings and the concentrates.

This is the only method that will give definite data on the ore reserves, as sampling in the mine is impossible due to the irregularity of the ore occurrence in the vein.

Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane 1, Washington

M. F. 103, Sec. 3

(a) Proposed work is fully described in M. F. 103, Sec. 2 (above) See accompanying map by W. H. Simons, dated Feb. 1, 1952.

COST OF PROPOSED DEVELOPMENT

Main drifting	180 ft. at $32	$ 5,760.00
Intermediate drifts	780 ft. at $28	21,840.00
Double compartment raises	825 ft. at $40	33,000.00
Single compartment raises	190 ft. at $30	5,700.00
Preparing tunnel for stoping	500 ft. at $25	12,500.00
Stripping		2,000.00
		$80,800.00
Mucking machine		3,500.00
5 - 1½ T. dump cars		1,000.00
10 T. 16# rail, fish plates & bolts		1,400.00
2,000 ft. 2" air line		1,000.00
		$87,700.00
New elevator in mill		1,000.00
		$88,700.00
Machinery repairs		1,000.00
		$89,700.00

The balance of the materials needed is covered in the prices per foot.

(b) This project can be started as soon as funds are available and can be completed within one year, the limiting factor being the present capacity of the mill.

Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane 1, Washington

M. F. 103, Sec. 4

See accompanying maps by W. H. Simons, dated Feb. 1, 1952, and report by Arthur Lakes, dated Oct. 8, 1945.

Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane 1, Washington

M. F. 103, Sec. 5

See M. F. 100, Sec. 17

See M. F. 300, Sec. 3

All existing facilities, buildings and installations are sufficient for this program excepting those shown in the estimate. New elevator in the mill is imperative. A vibrating screen and picking belt are desirable but not necessary and have not been included in this estimate.

Germania Consolidated Mines, Inc,
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M. F. 103, Sec. 6

No additional facilities, building installations or fixtures are contemplated except as outlined above.

Germania Consolidated Mines, Inc.
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M. F. 103, Sec. 7

(a) None.

(b) Mucking machine, rail, pipe, vent pipe and fan, 5 - 1½ ton ore cars; stoper steel.

See estimate M. F. 103, Sec. 3(a).

(c) See M. F. 100, Sec. 17.

A fair rental on these installations and equipment should be charged against this project, this to be agreed upon by officers of company and DMA before operations are started.

		Rental
Buildings at cost		$ 3,750.00
Hercules Power Unit at cost		4,273.32
Atlas Rock Drill with pneumatic pusher, grinder, raising feed, steel, etc.	at cost	1,271.17
E.V.A. Single Drum Hoist	at cost	642.00
Other Machinery & Equip.	at cost	12,500.00
Mill & Equipment	at cost	4,175.00
Camp Equipment	at cost	1,000.00

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M. F. 103, Sec. 8

The crew necessary to carry out this project should consist of

1 supervisor	$300 per mo.
1 dump man	$12 per day
3 mill men	$350 per mo.
2 trammers	$12 per day
4 miners	$12.50 per day

This is the going wage at this time.

Germania Consolidated Mines, Inc.
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M. F. 103, Sec. 9

Due to the amount of assaying necessary to determine the values in this ore body and of the mill feed, it is believed that $3,000 should be included for engineering and assaying. Accounting costs will approximate $1,000.

Germania Consolidated Mines, Inc.
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M. F. 103, Sec. 10

(a) The Germania Consolidated Mines is prepared to invest approximately $10,000.00 in this project.

(b) This amount is not sufficient to pay its part of the cost of the project, in accordance with the regulations on Government participation, but it is believed that sale of WO_3 from present opened stopes will enable us to furnish funds to meet regulations as outlined in Sec. 9 of MO-5 of Defense Production Act of 1950.

Form MF-100
(May 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. DMEA-2447

Date received 3-24-52

MAR 24 1952
RECEIVED
Department of the Interior
Defense Minerals Administration

GERMANIA CONSOLIDATED MINES, INC.
SUITE 401,
EMPIRE STATE BUILDING
SPOKANE 1, WASHINGTON.

Name and address of applicant

Date March 5, 1952

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) priorities or allocation of mining equipment, and maintenance, repair and operating supplies, and (5) 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 _____

   If not in production or operation, estimated date when production will begin _____
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)
Julius A. Franz	President	None	Unknown	130,000	None	None	
Henry J. Franz	V.president	None	"	59000	None	None	
E. I. Fisher	Sec-Treas	~~None~~ 600.00	"	6000	None	None	
B. O. Myron, Director		None	"	30000	None	None	
David Salo	St'kholder	None	"	65000	None	None	
H. G. Loop	Director	None	"	5000	None	None	
Frank & Rose Nealey	"	None	"	55000	None	None	
G. G. Schneller	"	None	"	55000	None	None	
Walter D. Krehbiel	"	None	"	50000	None	None	
	Total	600 00	x x x x x	455000		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	$16195 00	$ 1¢	1 619 500	None
Preferred stock	$	$	$		

*Indicate period covered.

10. 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.)	Wolframite				
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.

Germania Consolidated Mines, Inc.
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Spokane 1, Washington

GENERAL TECHNICAL DATA.

M. F. 100, Sec. 1 Materials Produced.

(a) The main product recovered is wolframite with small amounts of sheelite occurring generally as a skim on the wolframite crystals.

(b) Appreciable amounts of molybdenite are recovered but are not taken into consideration in the calculations herein.

M. F. 100, Sec. 2.

1. The mine is at the present time known as the Germania Consolidated Mines, and is a consolidation of the Keeth Mine and the Norton Mine, as well as undeveloped property.

The mine on the Keeth property is developed by two adits known as # 1 and #3 and by an extension of the adit from the Norton, known as Adit #2. The Norton property is developed by a 200-foot shaft as well as the adit. A short tunnel about 70 feet long has been driven on the east vein from the surface some 700 feet southeast of the shaft.

The present mill is of the gravity type comprised of a 12 x 24 jaw crusher, 1 set of 10" x 24" rolls, one bull jig, one medium jig, one Denver jig and a concentrating table. This is in fair condition with the exception of the elevator from the rolls to the bull jig. This should be replaced entirely by an elevator of double the capacity.

The present mill can handle about 40 tons per day. With the addition of a shaking screen and picking belt in place of the present grizzly, sorting costs could be lowered and capacity increased somewhat, as well as a better product sent to

the crusher. Since three quarters of the rock mineral in the drifts is waste, this sorting is important in the plan under consideration.

(a) Linear feet of shafts is 220 feet and consists of a shaft on the vein in the Norton property.

(b) Linear feet of cross cuts amount to 935 feet, 150 feet of which is on the No. 2 tunnel level and the valance on the No. 3 tunnel.

(c) Tunnels and adits amount to 1250 feet. (See accompanying map.)

(d) Other openings in the mine are (1) intermediate 260 feet long (2) 200-foot level in the shaft 150 feet long, (3) 475 feet of raises. (See map)

All openings now are inaccessible except the No. 3 tunnel level and a portion of the intermediate.

The shaft is now full of water and must be unwatered. Once unwatered, no pumping problem should be experienced as the mine makes very little water.

M. F. 100, Sec. 3.

(a) The camp is 63 miles north of Davenport, Washington, Which is a shipping point. Product is shipped from Spokane, Washington, 40 miles from Davenport, by rail. Shipping by Auto Freight would permit shipment from Davenport and this arrangement is now under consideration by tungsten purchaser. The highway is paved or gravelled within six miles of the mine. This six miles is an unsurfaced mountain road and very much in need of some line changes and surfacing.

Germania Consolidated Mines, Inc.
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The climate is moderate and the property would be accessible the year around with the improvement of this mountain road.

(b) None

(c) The workings under consideration are in the SW$\frac{1}{4}$ of SE$\frac{1}{4}$ of Sec. 23 and the NW$\frac{1}{4}$ of the NE$\frac{1}{4}$ of Sec. 26, Twp. 29 N., R37E, W.M.

(d) Stevens County, Washington.

M. F. 100, Sec. 4.

(a) The property is now being operated on a limited scale by the Germania Consolidated Mines, Inc., a corporation organized under the laws of the State of Washington.

(b) The company holds leases from the Department of the Interior (Colville Indian Agency) on the SW$\frac{1}{4}$ of NE$\frac{1}{4}$ and NW$\frac{1}{4}$ of SE$\frac{1}{4}$, Sec. 26, Twp. 29 N, R37 E, WM and NE$\frac{1}{4}$ of SE$\frac{1}{4}$ and Lot 5, Sec. 23, Twp. 29 N, R37E, W. M. (Lease No. 65) known as the Norton property; also SW$\frac{1}{4}$ of SE$\frac{1}{4}$ of Sec. 23, Twp. 29 N, R 37 E, W. M. (Lease No. 73) known as the Keeth property; and has applied for lease on the SE$\frac{1}{4}$SE$\frac{1}{4}$ Sec. 23 and the Ne$\frac{1}{4}$NE$\frac{1}{4}$ Sec. 26, Twp. 29 N., R37E., WM, and the NW$\frac{1}{4}$NE$\frac{1}{4}$ Sec. 26, Twp. 29N., R 37 E., W.M. It also owns by warranty deed Lots 1-2-3-4- Sec. 23, TwP. 29 N., R 37 E. WM. outside the Reservation.

M. F. 100, Sec. 5.

The property has been in production intermittently since 1934. Now in limited production. (See Arthur Lakes report and map by W. H. Simons.

Germania Consolidated Mines, Inc.
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M. F. 100, Sec. 6.

(a) President and vice president are prominent grain, seed and cattle raisers of southwastern Washington who have been identified with this mine since it was taken over by Germania Consolidated Mines., Inc., and have mining interests in Montana and Idaho. Vice president has overall supervision of the operations.

One director has been prominently identified with the mining business for thirty years and is familiar with the operation of mines and methods of ore production as well as purchasing supplies, etc.

Another director is office manager and is thoroly familiar with mine laws, state and Government requirements and accounting procedure.

(b) Employee in charge of operations worked in the mine for approximately eight years under former ownership, worked for present owners before and after World War II and has a thorough knowledge of the property, its potential ore veins and ore conditions in tunnels and crosscuts now inaccessible, but in his opinion, worthy of exploration.

M. F. 100, Sec. 7

(a) Quote from Arthur Lakes' Report pages 2 and 3

"Mr. Jas. Keeth acquired his 40 acre tract and opened the middle vein by what are now the No. 1 and No. 3 adit tunnels. Mr. Norton acquired the 40 acre tract south of the Keeth property and opened it up with what is now known as the No. 2 adit and by a 200-foot shaft with sub-levels at the No. 2 level and the 200 foot level. Later the Norton property

was acquired by the Industrial Tungsten Co. and more recently, the Keeth, Northn and other properties were consolidated into the present holdings of the Germania Consolidated Mines, Inc., and the SW drift driven on the "Middle" vein at No. 3 tunnel level.

Keeth installed a small, effective mill at portal of No. 3 tunnel and made some attractive wolframite concentrates. The Industrial Company built a mill at Hoot Owl Creek about three quarters of a mile southwest of their mine workings and hauled ore to it. (Map B) This latter mill was abandoned and dismantled but the Keeth mill is now in good working condition.

Stope maps show that most production was made from "Middle" vein on the Keeth property, a considerable proportion by leasers. The Norton property produced from two stopes down to 200-shaft level on "West" vein. (Map C) The "East" vein which has greatest surficial length was not mined but some cuts at north and south extremities provided good ore, according to Mr. Smith who stated that these cuts showed as good ore as cut exposures on "Middle" and "West" veins.

Production from the combined properties is reputed more than $100,000. Partial records at hand show that leasers in 1934-1935-36 produced $34,033.85 worth of ore, no tons stated, when prices were $13 to $15.50 per unit of 20 pounds. I am informed that they made a profit after mining, milling and royalties and market changes. In 1942 Mr. Keeth produced 15.71 tons of concentrates varying from 64.63% to 72.18

wolframite content, for which he received $24,232.10 after freight, treatment and marketing changes. He sold also $4,000 worth, no tonnage given, to Metals Reserve during this period. It is presumed in this report that Mr. Keeth received War price of about $30 per unit of 20-pounds, or $1.50 per pound of contained WO_3."

When price of tungsten went down after World War II, while cost of labor and supplies continued high, the property could not be operated at a profit.

M. F. 100, Sec. 7

(b) Adjoining property to the N. E. is the Tungsten Mining and Milling Company, formerly known as the Germania Mines. Again quoting from Mr. Lakes' report: "The Germania Mines, adjoining this property to the Northeast, was first developed by Germans prior to World War I. When hostilities between United States and Germany were imminent, the main tunnel portal was caved in and the mill burned to the ground by German employees. Later the mine was acquired by a former engineer and eventually was sold to the General Electric Company who explored underground surface stripped earth containing residual ore and float. The underground work apparently did not achieve expected results and the mine was abandoned by General Electric Company in 1938, just before price increase originated by World War II. Since then, except for small sporadic leasing, the property has been idle, mill dismantled and now has every appearance of complete abandonment though it is said that some ore possibilities remain underground. This property was the most developed and held prime interest of this district."

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Since the date of Mr. Lakes' report, this property has been opened by Tungsten Mining and Milling Company, who will work over dump estimated at 300,000 tons and will do further exploration and development work. It is believed that all data on this operation is in the files of DMA office.

(c) See report by Arthur Lakes, Oct. 8, 1942 and maps by W. H. Simons dated February 1, 1952.

M. F. 100, Sec. 8.

Completed on Form MF-100

M. F. 100, Sec. 9

Completed on Form MF-100

M. F. 100, Sec. 10

1. No production in 1948, 1949 and 1950. No average monthly production can be furnished at this time as shipments have been intermittent.
2. None in 1948, 1949 and 1950. Price of tungsten did not warrant processing. See above relating to monthly processing.
3. Product sold in 1951 was wolframite concentrates, shipments having been made intermittently since June, 1951. During this period 9,882 lbs of concentrates have been shipped, company's net proceeds being $16,617.98, no proceeds having yet been received from last shipment. Only jig concentrates have been shipped, table concentrates having been stockpiled for further processing. Average WO_3 content is from 69% to 73%.

M. F. 100, Sec. 11

The purpose of the development outlined herein is to prepare the mine for a production of 150 tons per day and to block

not Exploration

M. F. 100, Sec. 11 (Cont)

out ore reserves of a sufficient determined value to warrant enlarging and modernizing present mill, or possibly to erect a new milling plant. It is proposed to increase the monthly rate of production to not less than five tons monthly.

M. F. 100, Sec. 12.

(a) Two narrow quartz filled veins from a few inches to three feet in width have been formed roughly parallel about 100 feet apart in a shear zone some 200 feet wide. The general direction of the shear zone is N 20° East with a dip of 70° ton80° to the southeast.

This shear zone and veins have been traced from Hoot Owl Creek to the Old Germania Mine, a distance of over two miles. The host rock is an adidic granite, a portion of that granodiorite batholith, which extends from south of the Spokane River into British Columbia.

The wolframite occurs as irregular distributed nodules within the quartz. Stoping experience seems to indicate, however, that within the mineralized zone a certain consistency in the relation between the mineral and the quartz can be depended upon.

For a more detailed description of the deposit see Report by Arthur Lakes, dated October 8, 1945.

(b) (1) See map and sections by Wm. H. Simons dated Feb. 1, 1952. No assay maps are available as the irregular distribution of the mineral in the vein makes it impossible to determine values by underground sampling.

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M. F. 100, Sec. 12 (cont)

(b) (2) Due to the fact that the veins will average only about 1 foot in width, to compute the tonnage to be milled it is necessary to multiply the minimum stoping width of three feet by the area to get the cubical contents. The figure of three feet is used because the method used is shrinkage stoping which requires no timber in the stopes, and only sufficient clearance for the men to work is necessary.

The present developed ore reserves, using this method of calculation, amounts to about 15,000 tons.

Under the new development program an additional 33,500 tons will be blocked out, making a total of 48,500 tons available.

It is extremely difficult to arrive at a value of these ore reserves, as no records have been kept in the past of mill heads, tails or of the amount of ore sorted out by hand. Mr. Lakes' assumption of a 1.6% wolframite withing the vein, (see his report page 12) is probably as good as can be arrived at as it was based upon the experiences of the men who operated these properties for a number of years. For lack of more definite information, that figure is being used.

$\frac{1.60}{3} = .53$

With no hand sorting, as contemplated in a new or modernized mill, this would give an average content 0.53% wolframite in the mill feed. Using an 80% recovery value and a $2.50 per pound value for the wolframite, this gives us a recoverable of $21.20, Mining costs will be about $7.00, milling

$3.00 and development $3.00 giving a total cost of $13.00, indicating a profit of about $8.20 per ton mined.

This gives us a net profit on the present developed ore of $123,000 and $274,700 on the ore to be blocked out by the proposed development, or a total of $397,700 out of which to pay for the proposed development and new or modernized mill and surface facilities.

It is realized that the above is predicated upon data that is little more than a guess as to the Wolframite content of the ore and the assumption that the price of WO_3 will remain somewhere near its present level.

M. F. 100, Sec. 13

See M. F. 100, Sec. 3

M. F. 100, Sec. 14

Water is taken from Hoot Owl Creek, a distance of 1200 feet from the present workings and is pumped against a head of 190 feet and is ample for milling and domestic purposes.

M. F. 100, Sec. 15

Present power is by deisel engines but electric power can be brought in at a cost of about $7,000.

M. F. 100, Sec. 16.

1 supervisor, 4 miners, 2 trammers, 2 mill men, 1 surface man, 1 shopman.

M. F. 100, Sec. 17.

Buildings: 1 5-room boarding house, 1½ story, equipped; 1 bunk house, equipped; 1 2-room bunk house, equipped; 1 trailer house; 1 compressor house and machine shop; 1 iron lined mill building; 1 shed for bulldozer; 3 frame

Germania Consolidated Mines, Inc.
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M. F. 100, Sec. 17 (cont)

garages, 1 frame woodshed; 1 corrugated roof oil shed; 1 log lined cellar for food storage; 1 powder house; 1 pump house.

Equipment.

1 Hercules DRXC Standard Power Unit, with electric starting system, oil bath air cleaner and clutch power take-off - new April, 1951

1 Atlas Rock Drill; 1 raising feed, 1 pneumatic pusher, 1 rotary ~~grid~~ grinder, complete - new November 1951

1 Gardner-Denver leyner completely reconditioned November, 1951
1 CP stoper
1 GD No. 99 stoper
1 CP No. 5 leyner (defective)
1 7½ x 7½ Worthington compressor
1 Gas engine for pumping system
1 Int. Harvester Gas engine
1 Fairbanks Morse Gas engine
1 2' x 5' air receiver (underground)
1 30" X 4' air receiver
1 wood saw new (Homelite) new December, 1951
3 ore cars
1 Galion Hoist,
1 tugger hoist
1 IR Model EVA hoist - new September, 1951
Complete small equipment, such as vises, wrenches, drill presses, blowers, welding outfit, thread cutters, grinder,

1 tractor with dozer
1 International 1½ ton truck
1 Dodge ½ ton truck

1 12-24 in crusher
1 10x 24 set rolls
1 electric generator for lights
1 centrifugal pump
1 sand pump
4 jigs
Water tanks for mill and domestic water supply

1 Berkeley pump for water supply - new 1951

Germania Consolidated Mines, Inc.
401 Empire State Building
Spokane, Washington

M. F. 100 Sec. 18

Leases of Indian lands from the Department of the Interior are subject to royalties as indicated in copies of leases attached. No subordination of these royalties has been requested inasmuch as royalties are payable to the Department of the Interior, with which this application is being filed, and it was believed doubtful that one agency of the Interior Department would subordinate to another. If subordination agreements are mandatory, an effort will be made to obtain them, but it is hoped this requirement may be adjusted by the agencies concerned.

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

(1) Submit assay plan and/or sections showing location and size 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)					
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.

GERMANIA CONSOLIDATED MINES, INC.
(Name of company)

By Julius A. Frans
(Signature of authorized official)

March 18, 1952
(Date)

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

Mining Lease No. 73

COPY

Form 5-157 b
(April 1940)

CONTRACT No. I -20- IND. 3762
Being a nenewal of Mining
Lease No. 6, Cont. I-20-ind.781.

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF INDIAN AFFAIRS

MINING LEASE—TRIBAL INDIAN LANDS

(FOR MINERALS OTHER THAN OIL AND GAS)

Spokane Tribe, State of Washington

THIS INDENTURE OF LEASE, made and entered into in quintuplicate this 23rd day of March, 1942, by and between

F. A. GROSS, SUPT., COLVILLE INDIAN AGENCY

of NESPELEM, State of WASHINGTON

for and on behalf of the SPOKANE Tribe of Indians, designated herein as lessor, and JAMES KEETH E. 1827 SPRAGUE AVENUE SPOKANE

of , State of WASHINGTON

herein designated as lessee:

WITNESSETH

1. That the lessor , for and in consideration of $1, receipt whereof is hereby acknowledged, and of the royalties, covenants, stipulations, and conditions hereinafter contained and hereby agreed to be paid and observed by the lessee, doth hereby demise, grant, and lease unto the said lessee, the following-described tract of land lying and being within the SPOKANE Reservation, County of STEVENS and State of WASHINGTON, to wit: The SW/4 of the SE/4 of

of section 23, township 29N., range 37E.,W.M., meridian, and containing 40 acres, more or less, for the full term of 10 years from the date of approval hereof, for the sole purpose of prospecting for and mining minerals, as follows: GOLD, SILVER, COPPER LEAD AND TUNGSTEN.

This lease provides for a preference right to be accorded the lessee for the renewal of the lease at the expiration of the 10 year period subject to reasonable terms to be set by the Department of the Interior and the Tribal Business Council at that time.

the lessee to occupy so much only of the surface of said land as may be reasonably necessary to carry on the work of prospecting for, mining, milling, storing, and removing such minerals.

2. The term "Superintendent" as used herein shall refer to the superintendent or other official in charge of the Indian Agency having jurisdiction over the lands leased.

3. In consideration of the foregoing, the lessee hereby agrees:

(*a*) ROYALTY.—To pay, or cause to be paid, to the Superintendent, for the use and benefit of the lessor, or to the Treasurer of said Tribe where the tribe is organized under the act of June 18, 1934 (48 Stat. 984), as royalties, the sums of money as follows, to-wit:* OF NOT LESS THAN TEN PER CENT ON A MONTHLY BASIS, TO BE COMPUTED ON THE VALUE OF THE BULLION AS SHOWN BY MINT RETURNS AFTER DEDUCTING FORWARDING CHARGES TO POINT OF SALE, AND TO BE COMPUTED ON THE VALUE OF ORES AND CONCENTRATES AS SHOWN BY REDUCTION RETURNS AFTER DEDUCTING FREIGHT CHARGES TO THE POINT OF SALE. DUPLICATE RETURNS SHALL BE FILED BY THE LESSEE WITH THE SUPERINTENDENT WITHIN 10 DAYS AFTER THE END OF THE MONTH. PROVIDED, HOWEVER, THAT THE LESSEE SHALL PAY MONTHLY A ROYALTY OF NOT LESS THAN TEN PER CENT OF THE VALUE OF THE ORES AND CONCENTRATES SOLD AT THE MINE, F.O.B. THE MINE.

All royalties accruing for any month shall be due and payable on or before the 25th day of the month succeeding.

(*b*) ANNUAL RENTAL.—To pay, or cause to be paid, to the Superintendent for the use and benefit of the lessor, or to the Treasurer of said Tribe where the tribe is organized under the act of June 18, 1934 (48 Stat. 984), in advance beginning with the date of approval of the lease, as annual rental, the following: 25 cents per acre for the first calendar year or fraction thereof, 50 cents per acre per annum for the second and third years, and $1 per acre per annum in advance for each and every calendar year thereafter during the continuance of the lease; it being understood and agreed that said sum so paid shall be a credit on the royalties accruing during the year for which the payment of annual rental is made, and that said annual rental when paid shall not be refunded to the lessee because of any subsequent surrender or cancelation hereof.

(*c*) DILIGENCE, PREVENTION OF WASTE.—To exercise diligence in the conduct of prospecting and mining operations; to carry on development and operations in a workmanlike manner and to the fullest possible extent; to commit no waste on the said land and to suffer none to be committed upon the portion in his occupancy or use; to comply with all the requirements of the laws of the State in which the land is located; to take appropriate steps for the preservation of the property and the health and safety of workmen; promptly to surrender and return the premises upon the termination of this lease to whomsoever shall be lawfully entitled thereto, in as good condition as received, excepting for the ordinary wear and tear and unavoidable accidents in their proper use; not to remove therefrom any buildings or permanent improvements erected thereon during the said term by the said lessee, but said buildings and improvements shall remain a part of said land and become the property of lessor, excepting the office fixtures and records, personal property, tools, pumping and drilling outfits, boilers, engines, and mining machinery, which shall remain the property of the lessee and may be removed at any time prior to 60 days after the termination of the lease by forfeiture or otherwise, provided the payments agreed upon by this lease have been made and the lease terms and regulations applicable thereto have been fully complied with, but not otherwise; not to permit any nuisance to be maintained on the premises under lessee's control, nor allow any intoxicating liquors to be sold or given away for any purpose on such premises; and not to use such premises for any other purposes than those authorized in this lease.

(*d*) DEVELOPMENT.—The land described herein shall not be held by the lessee for speculative purposes, but in good faith for mining the minerals specified; and the failure by the lessee in the diligent development and continued operation of the mine or mines, except when operations may be interrupted by strikes, the elements, or casualties not attributable to the lessee, shall be held as a want of compliance with the purposes of this lease and shall render it subject to cancelation: *Provided*, That whenever the Secretary of the Interior shall consider the marketing facilities inadequate or the economic conditions unsatisfactory, he may authorize the suspension of operations for such time as he may deem advisable, but such action will not release the lessee from the payment of the advance annual rental.

(*e*) MONTHLY STATEMENTS.—To keep an accurate account of all mining operations, showing the sales, prices, dates, purchasers, and the whole amount of minerals mined, the amount removed, and the gross receipts derived therefrom, and to furnish the Superintendent or the Treasurer of said Tribe if payments are made to him, sworn

* Here insert the royalties agreed upon in accordance with applicable regulations.

monthly reports thereon not later than the 25th of the succeeding month; and all sums due as royalty and advance rental shall be a lien on all implements, tools, movable machinery, and all other personal chattels used in operation upon said property, and upon all of the unsold minerals obtained from the land herein leased, as security for payment of said sums. An audit of the lessee's accounts and books shall be made annually or at such times as may be directed by the Superintendent by certified public accountants approved by the Secretary of the Interior and at the expense of the lessee. The lessee shall furnish free of cost a copy of such audits to the Secretary of the Interior through the Superintendent within 30 days after the completion of each auditing.

(*f*) REGULATIONS.—To abide by and conform to any and all regulations of the Secretary of the Interior now or hereafter in force relative to such leases: *Provided,* That no regulations hereafter approved shall effect a change in rate of royalty, the annual rental herein specified, or the term of this lease, without the written consent of the parties to this lease.

(*g*) ASSIGNMENT OF LEASE.—Not to assign this lease or any interest therein by an operating agreement or otherwise nor to sublet any portion of the leased premises, except with the approval of the Secretary of the Interior. If this lease is divided by the assignment of an entire interest in any part of it, each part shall be considered a separate lease under all the terms and conditions of the original lease.

(*h*) BOND.—To furnish such bond as may be required by the regulations of the Secretary of the Interior conditioned upon compliance with the terms of this lease.

4. MILLING.—All ores or minerals mined on said land shall be cleaned and prepared for market thereon, and no ore or crushed material shall be removed therefrom to be cleaned or prepared for market without the written consent of the Secretary of the Interior.

5. INSPECTION.—The leased premises and producing operations, improvements, machinery, and fixtures thereon and connected therewith and all books and accounts of the lessee shall be open at all times for inspection by agents of the lessor or any duly authorized representative of the Secretary of the Interior.

6. DISPOSITION OF SURFACE.—The lessor expressly reserves the right to lease, sell, or otherwise dispose of the surface of the lands embraced within this lease under existing law or laws hereafter enacted, such disposition to be subject at all times to the right of the lessee herein to the use of so much of said surface as is necessary in the extraction and removal of the minerals from the land herein described in accordance with this lease.

7. SURRENDER AND TERMINATION.—The lessee shall have the right at any time during the term hereof to surrender and terminate this lease or any part thereof upon the payment of all rentals, royalties, and other obligations due and payable to the lessor, and the further sum of $1, upon a showing satisfactory to the Secretary of the Interior that full provision has been made for the conservation and protection of the property, the lease to continue in full force and effect as to the lands not so surrendered. If this lease has been recorded lessee shall file a recorded release with his application to the Superintendent for termination of this lease.

8. CANCELATION AND FORFEITURE.—When, in the opinion of the Secretary of the Interior, there has been a violation of any of the terms and conditions of this lease before restrictions are removed, the Secretary of the Interior shall have the right at any time after 30 days' notice to the lessee, specifying the terms and conditions violated, and after a hearing, if the lessee shall so request within 30 days of receipt of notice, to declare this lease null and void, and the lessor shall then be entitled and authorized to take immediate possession of the land.

9. HEIRS AND SUCCESSORS IN INTEREST.—It is further covenanted and agreed that each obligation hereunder shall extend to and be binding upon, and every benefit hereof shall inure to, the heirs, executors, administrators, successors of, or assigns of the respective parties hereto.

10. GOVERNMENT EMPLOYEES CANNOT ACQUIRE LEASE.—No lease, assignment thereof, or interest therein will be approved to any employee or employees of the United States Government whether connected with the Indian Service or otherwise, and no employee of the Interior Department shall be permitted to acquire any interest in such leases by ownership of stock in corporations having leases or in any other manner.

IN WITNESS WHEREOF, the said parties have hereunto subscribed their names and affixed their seals on the day and year first above mentioned.

Two witnesses to execution by lessor:

/s/ F. F. LeClaire

P. O. Nespelem, Washington

/s/ Mary Tonasket

P. O. Nespelem, Washington

/s/ F. A. Fross [SEAL]
F. A. Gross, Superintendent,
Colville Indian Agency.

[SEAL]

Two witnesses to execution by lessee:

/s/ Norma G. Dolfe

P. O. 405 So. Maple, Spokane, Wash.

/s/ W. S. Eakin

P. O. 128 W. 26th Spokane, Wn.

/s/ James Keeth [SEAL]
James Keeth

Attest:

ACKNOWLEDGMENT OF LESSOR

STATE OF WASHINGTON
COUNTY OF OKANOGAN } ss:

Before me, a notary public, on this 27th day of March, 19 42 personally appeared F. A. GROSS, SUPERINTENDENT, to me known to be the identical person, who executed the within and foregoing lease, and acknowledged to me that HE executed the same in HIS official capacity as SUPT. OF THE COLVILLE INDIAN AGENCY as HIS free and voluntary act and deed for the uses and purposes therein set forth.

(SEAL)

My commission expires Jan. 22, 1943

/s/ Melvin L. Robertson
Melvin L. Robertson *Notary Public.*
Nespelem, Washington.

UNITED STATES DEPARTMENT OF THE INTERIOR

Washington, D. C., APR - 4 1942, 19

The within lease is hereby approved.

(Sgd.) OSCAR L. CHAPMAN
Assistant Secretary of the Interior.

Filed for record this day of , 19

at o'clock m.

By

Rental received, $

U. S. GOVERNMENT PRINTING OFFICE : 1947 O - 746054

5-154 b
(August 1939)

t of Mining Lease No. 73,
Cont.I-20-ind. No. 3762.

C O P Y

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF INDIAN AFFAIRS

BOND

TO ACCOMPANY MINING LEASES

Know All Men by These Presents, That JAMES KEETH
E. 1827 Sprague Avenue,
of Spokane, Washington, as principal, and FIDELITY AND DEPOSIT COMPANY
OF MARYLAND, a corporation of the State of Maryland, with its principal office in
Baltimore, Maryland
of BALTIMORE, MARYLAND, as surety, are held and firmly bound unto the
United States of America in the sum of *****ONE THOUSAND*****($1,000.00)********** dollars,
lawful money of the United States of America, for the payment of which well and truly to be made, we bind ourselves, and each of us, our and each of our heirs, executors, administrators, successors, or assigns, jointly and severally, firmly by these presents.

Sealed with our seals and dated this 23rd day of March, 1942

The condition of this obligation is such that whereas the above-bounden JAMES KEETH, as principal, entered into a certain indenture of lease, dated Mar. 23, 1942.
with F. A. GROSS, SUPERINTENDENT OF THE COLVILLE AND SPOKANE INDIAN RESERVATIONS

for the lease of a tract of land described as follows: The SW/4 of the SE/4 of Sec. 23, Twp. 29N., R. 37 E.W.M., containing 40 acres, more or less.

and located in the Spokane Reservation in the State of Washington
for (LODE) TRIBAL mining purposes for the period of TEN (10) years from the date of approval thereof, and as much longer thereafter as the lease shall be continued in force in the manner provided for therein.

Now, if the above-bounden principal herein shall faithfully carry out and observe all the obligations assumed in said indenture of lease, and shall observe all the laws of the United States, and regulations made, or which shall be made thereunder, for the government of trade and intercourse with Indian Tribes, and all the rules and regulations that have been, or may be, lawfully prescribed by the Secretary of the Interior relative to mining leases on the said Reservation, then this obligation shall be null and void; otherwise to remain in full force and effect.

Provided, That in event supervision over all the leased tract to which this bond applies is relinquished by the Secretary of the Interior and lessee shall have made all payments then due under the lease and shall have fully performed all obligations on his part to be performed up to the time of relinquishment of supervision, this bond shall be of no further force and effect.

The rate of premium charged on this bond is $10.00 per M; the total premium paid is $10.00

16—11481

[OVER]

Signed and sealed in the presence of—

WITNESSES:

/s/ Norma G. Dilfe

P. O. 405 So. Maple, Spokane, Wash.

/s/ W. S. Eakin

P. O. 128 W 26th Spokane, Wash.

as to /s/ James Keeth [SEAL]
James Keeth, Principal

/s/ Julia Guiltnan

P. O. West 1- 4th Ave. Spokane, Wash.

/s/ Lola Larsen

P. O. E. 303 Gordon, Spokane, Wash.

FIDELITY AND DEPOSIT COMPANY OF MARYLAND

as to /s/ M. Deal [SEAL]
By M. Deal, Atty. in fact.

/s/ Olive I. Magnus

P. O. W.2208 Pacific Ave. Spokane, Wash.

/s/ Norma G. Dilfe

P. O. 405 So. Maple, Spokane, Wash.

Attest:

as to /s/ W. S. McCrea [SEAL]
W. S. McCrea, General Agent.

P. O.

P. O.

as to [SEAL]

(Two witnesses to each signature)

DEPARTMENT OF THE INTERIOR,

APPROVED:

Washington, D. C., APR - 4 1942

(Sgd.) OSCAR L. CHAPMAN

Assistant Secretary of the Interior.

U. S. GOVERNMENT PRINTING OFFICE 16—11481

5-154e
(May 1949)

Lease No. 73

COPY

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

CONTRACT No.
I-20-Ind-3762

ASSIGNMENT OF MINING LEASE

WHEREAS, the Secretary of the Interior has heretofore approved Mining (Lode) mining lease, dated March 23, 1942, entered into by and between F. A. Gross, Superintendent, the Officer in Charge of the Colville and Spokane Indian Reservations, lessor, and James Keeth, lessee, covering the following-described lands in the Spokane Indian Reservation (Insert name of Reservation, Pueblo, Nation, etc., as needed) in the State of Washington.

The SW4 SE4, Section 23, Twp., 29N., R. 37E.,W.M., containing 40 acres, more or less.

NOW, THEREFORE, for and in consideration of assumption of rent due and to become due under lease dollars ($120.00), the receipt of which is hereby acknowledged, the said Walter J. Keeth, executor of the estate of James Keeth, deceased. the owner of the above-described lease, hereby bargains, sells, transfers, assigns, and conveys All right, title, and interest in and to said lease, subject to the approval of the Secretary of the Interior, to Germania Consolidate Mines, Inc., a corporation, of in the State of Washington

Said assignment to be effective from date of approval hereby by the Secretary of the Interior.

IN WITNESS WHEREOF, the said assignor has hereunto set his hand and seal, this 28 day of oct., 1950

Estate of James Keeth, deceased.
By: /s/ Walter J. Keeth, Executor

16—11683-2

[OVER]

ACKNOWLEDGMENT OF CORPORATION

STATE OF _____ } ss:
COUNTY OF _____

Before me, a notary public, in and for said county and State on this _____ day of _____, 19____ personally appeared _____ to me known to be the identical person who subscribed the name of the maker thereof to the foregoing instrument as its _____ and acknowledged to me that he executed the same as his free and voluntary act and deed, and as the free and voluntary act and deed of such corporation, for the uses and purposes therein set forth.

_____
Notary Public.

My commission expires _____, 19____

ACKNOWLEDGMENT OF INDIVIDUAL

STATE OF Washington } ss:
COUNTY OF Spokane

Before me, a notary public, in and for said county and State, on this _____ day of _____, 19____ personally appeared Walter J. Keeth, executor for the estate of James Keeth, deceased, _____, to me known to be the identical person who executed the within and foregoing instrument, and acknowledged to me that he executed the same as his free and voluntary act and deed for the uses and purposes therein set forth.

SEAL

/s/ Roy A. Redfield
Notary Public.

My commission expires Mar. 17, 1952.

ACCEPTANCE BY ASSIGNEE

The assignee in the above and foregoing assignment, made subject to the approval of the Secretary of the Interior, hereby accepts such assignment and agrees to fulfill all the obligations, conditions, and stipulations in said described indenture of lease, when assigned, and the rules and regulations of the Secretary of the Interior applicable thereto, and to furnish proper bond guaranteeing a faithful compliance with said lease and this agreement.

IN WITNESS WHEREOF, the said assignee has hereunto set their hand and seal this 14th day of January, 1951

Germania Consolidated Mines, Inc.,
By: /s/ Julius A. Franz, President
By: /s/ E. I. Fisher, Secretary.

CONSENT OF SURETY

The _____, of _____, surety for _____ on the bond accompanying the lease above described, hereby consents to the assignment and transfer of said lease as above made and agrees that said bond shall remain in force and effect covering obligations of assignee.

Dated at _____ this _____ day of _____, 19____

UNITED STATES
DEPARTMENT OF THE INTERIOR,

Washington, D. C., _____

APPROVED:

_____
Commissioner of Indian Affairs.

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
WASHINGTON 25, D. C.
APPROVED: JUL 18 1951
(Sgd.) E. J. Utz
Assistant Commissioner of Indian Affairs.

16—11683-2 U. S. GOVERNMENT PRINTING OFFICE

5-154m
(August 1939)

Lease No. 73

C O P Y

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF INDIAN AFFAIRS

Contract I-20-Ind-3762

BOND

(To cover obligations of assignees and drillers)

Know All Men by These Presents, that The Germania Consolidated Mines, Inc., a corporation, in the State of Washington, of 416 Empire State Building of Spokane 8, Washington, as principal, and UNITED STATES FIDELITY AND GUARANTY COMPANY of Baltimore, Maryland, as surety, are held and firmly bound unto the United States of America in the sum of *****ONE THOUSAND******($1000.00) ********** dollars, lawful money of the United States, for the payment of which well and truly to be made, we bind ourselves and each of us, our heirs, successors, executors, or administrators, jointly and severally, firmly by these presents.

Sealed with our seals and dated this 8 day of November, 1950

The condition of this obligation is such that whereas James Keeth, as lessee, entered into a Mining (Lode) certain indenture of lease, dated March 23, 1942, with F. A. Gross, Superintendent of the Colville and Spokane Indian Reservations, lessor, for the lease of a tract of land described as follows: The SW4 SE4, Section 23, Twp., 29N., R. 37E., W.M., containing 40.00 acres, more or less.

and located in the Spokane Indian Reservation, in the State of Washington, for (Lode) mining purposes for the period of (10) Ten years from the date of approval thereof and as much longer thereafter as the lease shall be continued in force in the manner provided for therein.

WHEREAS, thereafter the Estate of James Keeth, deceased, by Walter J. Keeth, Executor,

assigned All right, title, and interest in and to the above-described lease to the above-bounden Germania Consolidated Mines, Inc., a corporation, in the State of Washington, and located in Spokane 8, Washington.

and subject to all the conditions and provisions in said lease contained.

16—11684

Now, if the above-bounden principal herein shall faithfully carry out and observe all the obligations assumed in said indenture and assignment of lease, and shall observe all the laws of the United States, and regulations made, or which shall be made thereunder, for the government of trade and intercourse with Indian tribes, and all the rules and regulations that have been, or may be, lawfully prescribed by the Secretary of the Interior, relative to mining leases on the said reservation, then this obligation shall be null and void; otherwise to remain in full force and effect.

Provided, That in event supervision over all the leased tract to which this bond applies is relinquished by the Secretary of the Interior and lessee shall have made all payments then due under the lease and shall have fully performed all obligations on his part to be performed up to the time of relinquishment of supervision, this bond shall be of no further force and effect.

The rate of premium charged on this bond is $ 1% ; the total premium paid is $ 10.00

Signed and sealed in the presence of—

Witnesses *

/s/ H. G. Loop

P. O., Spokane 8, Washington

P. O.,

P. O.,

P. O.,

P. O.,

P. O.,

P. O.,

P. O.,

P. O.,

Germania Co nsolidated Mines, Inc.,

as to /s/ Julius A. Franz , President [SEAL]

As to /s/ E. J. Fisher , Secretary.

UNITED STATES FIDELITY AND GUARANTY COMPANY.

as to s/s M. Freeland [SEAL]

Attorney in Fact.

as to [SEAL]

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
WASHINGTON 25, D. C.

APPROVED: JUL 18 1951

as to (Sgd.) E. J. Utz [SEAL]

Acting Commissioner of Indian Affairs

* Two witnesses to all signatures.

DEPARTMENT OF THE INTERIOR,

Washington, D. C.,

APPROVED:

Assistant Secretary.

16—11684 U. S. GOVERNMENT PRINTING OFFICE

Contract No. 28. 4
J 20 Ind

MINING LEASE OF UNALLOTTED LANDS ON SPOKANE INDIAN RESERVATION.

THIS LEASE, made and entered into in quadriplicate this 5th day of August, 1929, by and between the Secretary of the Interior, party of the first part, hereinafter called the Lessor, by reason of the authority vested in him in Section 24 of the Indian Appropriation Act for the fiscal year ending June 30, 1917 (Pub. No. 80), and William D. Scott of Chamber of Commerce Bldg., Spokane, Wash., State of Washington, party of the second part, hereinafter called the Lessee

WITNESSETH:

1. The Lessor, for and in consideration of the royalties, covenants, stipulations, and conditions hereinafter contained, and hereby agreed to be paid, observed and performed by the Lessee, doth hereby demise, grant, lease and let unto the Lessor for the term of twenty-five years (with privilege of renewal provided conditions and circumstances warrant) from the date of signing hereof by the Secretary of the Interior, for the purpose of mining, all the deposits of Minerals in or under the following described lands, to-wit:

SW/4 of NE/4 & NW/4 of SE/4, Section 26, Twp. 29 N., Range 37 E., WM. NE/4 of SE/4 & Lot 5, Section 23, TWP 29 N., Range 37 E., WM.

containing 160 acres more or less, the same being within said reservation, with the exclusive right to prospect for, mine and extract the minerals above named and no others, and to occupy and use so much only of the surface of said land as may reasonably be necessary to carry on the work of prospecting for, mining, extracting, storing, and removing such minerals; also the right to obtain from wells or other sources on said land by means of pipe lines or otherwise a sufficient supply of water to carry on said operations, and the right to pass over and cross said reservation for the purpose of said work.

2. The lessee hereby agrees to pay or cause to be paid to the Superintendent or other office of the United States having jurisdiction over the leased premises, hereinafter called the office in charge, for the use and benefit of the Indians of said reservation, annually in advance, a royalty of 50 cents per acre for the first year beginning with the date of execution of lease, and $1 per acre for the second and each succeeding year, all rent paid in any year to be credited on the royalty for that year if production begins therein; and the following royalties:

(a) For substances other than gold, silver, copper, lead, zinc, tungsten, coal, asphaltum, and allied substances 10 per cent of the value at the nearest shipping point of all ores, metals, or minerals marketed, payable quarterly.

(b) For gold, silver, copper, lead, zinc, and tungsten 10 per cent, payable quarterly, to be computed on the gross values of the ores as shown by reduction returns, after deduction freight and treatment charges. Duplicate reduction returns shall be filed by the Lessee with the Superintendent or other officer in charge of the reservation from which the ores are taken within twenty days after the reduction of the ores, and the royalty shall be paid to the Superintendent or other officer in charge within ten days after the end of the quarter within which such returns are made.

(c) For coal 10 cents per ton of 2,000 pounds, mine run, or coal as taken from the mine, including what is commonly called slack, payable quarterly.

(d) For asphaltum and allied substances 10 cents per ton of 2,000 pounds for crude material, or 60 cents per ton for refined products, payable quarterly.

(e) On all precious or semiprecious stones the value of which is determined by carat weight, 25 per cent of the market value as shown by the lessee's records in the manner aforesaid.

The above mentioned rates of royalty shall be subject to readjustment at the end of each five years at such equitable rates, conforming to the prevailing commercial practice, as conditions at the time shall justify.

There shall be expended annually in development work on each lease a sum of not less than $5 per acre.

The royalties on all products mined under this lease shall be based on sworn quarterly reports and shall be paid within twenty days after the close of each quarter.

3. The Lessee shall immediately upon notification of the signing of this lease by the Secretary of the Interior proceed to develop and work said mineral deposits, and during the entire term of this lease he shall prosecute such mining operations on said lands to the fullest practicable extent, the state of the market being considered; and his neglect or refusal to conduct actual mining operations for a period of six months at any one time (unless exempted by the Secretary of the Interior) shall operate as a forfeiture of all of his rights, under this lease, without any action or declaration of forfeiture by the Department of the Interior. Within twenty days after the close of each quarter he shall file with the officer in charge a quarterly report, verified by oath, showing the character and value of the development work performed and the gross output of his mining operations hereunder during the quarter; and within twenty days after the close of each calendar year he shall file with the officer in charge of the reservation a sworn annual report, induplicate, showing the character and value of the development work performed in that year.

4. The Lessee shall at all times conduct operations in a workmanlike manner, protect all mines and deposits, and not commit nor suffer an waste upon the reservation; and if it be necessary to use any wood, stone, coal, or other material thereon, he shall first obtain written permission from the officer in charge and shall pay to him for the Indians the current prices for all such material taken. He shall take good care of the land herein described, and not permit any nuisance to be maintained nor any intoxicating liquor to be sold or given away thereon for use as a beverage; he shall not use or permit the use ofsaid lands and premises for any other purpose than as herein authorized, and at the expiration of this lease or a renewal thereof he shall return the same to the owners in as good condition as received, excepting for the ordinary wear and tear and unavoidable accidents in their proper use.

5. The Lessee shall keep an accurate account of said operations, showing the whole amount of mineral mined or extracted and all mineral shipped, smelted, used or disposed of; and the officer in charge and other proper representatives of the Department shall have the right at all times during the existence of this lease, and for six months thereafter, to make such reasonable examination of the papers and books of account of the said Lessee, and of the mines, as may be necessary to obtain all information desired; and there is hereby created alien on all implements, tools, movable machiner, and other personal chattels belonging to the Lessee used in the said mining operations, and upon all minerals obtained from the land herein leased, as secrity for the quarterly payment of said royalty.

6. The Lessee in selecting employees shall give preference so far as possible to Indians of the reservation who may be able and willing to perform the kind of labor required; and he shall not retain in his employ any person objectionable to the officer in charge or the Indians. With each quarterly report he shall furnish the names and addresses of his employees.

7. The Lessee shall not interfere with any personal or property rights or any legitimate industry or occupation of the Indians without first obtaining consent in writing and paying proper compensation, approved by the officer in charge; nor obstruct any road or trail now in use, without permission of the officer in charge, and the right to cross the lands leased by the usual methods and in a manner not inconsistent with the mining operations herein provided for, is reserved to the Indians; and all rights to make and accept allotments within the boundaries of this lease of any lands deemed suitable for agriculture are hereby reserved.

8. The Lessee shall not, without the consent of the Secretary of the Interior, assign or sublet any part of the lands leased, He may, however, surrender the lease for concellation with the consent of the Secretary, but the Lessee or assignee should surrender his copy of thelease to the officer in charge, and all royalties and other obligations due and accrued to date of completion of application for cancellation, in addition to a cancellation fee of one dollar, must be paid and discharged before such application will be considered, provided that if the lease has been recorded the Lessee or assignee shall execute a release, record the same in proper recording office, and file the release with the officer in charge.

An application for cancellation will be considered as completed on the date such application is filed in the office of the officer in charge, provided the foregoing requirements have been fully observed; and in event of extinguishment of the Indian title to said lands, this lease and all rights hereunder shall terminate without action or declaration by the Department; and on any such termination, or on expiration of the lease, the Lessee shall have sixty days in which to remove his buildings, machinery and other property, in the absence of violation of the conditions of this lease.

9. In the event of failure or neglect of the Lessee to perform any obligations under this lease, the Secretary of the Interior may, without prejudice to any other remedy, treat the same as sufficient cause for the termination thereof by him, unless within thirty days after notice the Lessee shall correct such failure and make good any loss caused thereby; and if thereafter such failure or neglect be repeated, the Secretary may at any time within thirty days declare this lease forfeited and terminated. Thereupon the Lessee shall vacate the premises within thirty days of notice of such termination, and on his failure so to do the Secretary shall have the right to enter and take possession thereof, using such force as may be necessary to remove the Lessee therefrom; and any property of the Lessee or his successors on said premises may be removed by him or his representatives only with the consent of the Secretary within such reasonable time as may be fixed by the Secretary, not exceeding sixty days from such termination, and any of said property remaining thereon after the time so fixed for its removal shall become the property of the Indians, and may be treated as such by the officer in charge.

10. This lease is made and accepted subject to existing law and any laws hereafter enacted as to the said reservation, also to the regulations relative to such leases heretofore or hereafter prescribed by the Secretary of the Interior; and in no event shall the United States or the Secretary be liable in damages or otherwise under the provisions hereof.

The obligations and agreements hereinbefore expressed shall estend to and be binding upon the successors in interest of the parties hereto.

11. Before this lease shall be in effect the Lessee shall furnish a satisfactory bond with two or more personal sureties or with an acceptable company authorized to act as sole surety.

12. No prospector, locator, or mine owner shall keep stock of any kind on the lands leased except by permit of such rates as may from time to time be established.

Signed and sealed this _____ day of _____ 19
(Stamped) Sep. 14 1929

WITNESSES:

A.H. STILES

D. T. FOX

JOHN H. EDWARDS (SEAL)
Assistant Secretary of the Interior

WILLIAM D. SCOTT (SEAL)
Lessee

Contract 1[illegible]-Ind. No. 284

5--154 e
(Must be executed in quadruplicates."

ASSIGNMENT OF MINING LEASE #65

Whereas the Secretary of the Interior has heretofore approved Tungsten mining lease dated Aug. 5, 1929, entered into by and between William D. Scott, Chamber of Commerce Bldg., Spokane, Wash., lessee and Secretary of the Interior, lessor, covering the following described land in the Spokane Reservation, State of Washington;

SW/4 of NE/4 & NW/4 of SE/4, Sec. 26, Twp 29 N., Range 37, EWM. NE/4 of SE/4 & Lot 5, Sec. 23, Twp 29N., Range 37, EWM,

Now, therefore and in consideration of one dollar and other considerations ( ) dollars, the receipt of which is hereby acknowledged, the said William D. Scott, the lessee in the above-described lease, hereby bargains, sells, transfers, assigns, and conveys his right, title and interest of the lessee in and to said lease, subject to the approval of the Secretary of the Interior to Fred N. Norton.

In witness whereof the said lessee has hereunto set his hand and seal this 15th day of April 1935.

(Signed) William D. Scott

ACKNOWLEDGMENT OF INDIVIDUAL

STATE OF WASHINGTON)
) ss:
County of Spokane)

Be it remembered that on this day came before me, the undersigned Notary Public within and for the State and County aforesaid, duly commissioned and acting as such, WILLIAM D. SCOTT, to me personally well know, and stated that _____ executed the foregoing and annexed instrument of the consideration and purposes therein mentioned and set forth; and I do hereby so certify.

Witness my hand and seal on this 15th day of April, 1935.

FRED L. PRESCOTT
Notary Public
Spokane, Wash.

My commission expires
see seal

#####
#SEAL#
#####

Acceptance by Assignee.

The assignee in the above and foregoing assignment, made subject to the approval of the Secretary of the Interior, hereby accepts such assignment and agrees to fulfill all the obligations, conditions and stipulations in said described indenture of lease, when assigned, and the rules and regulations of the Secretary of the Interior, so far as applicable thereto, and to furnish proper bond guaranteeing a faithful compliance with said lease and this agreement.

In Witness Whereof the said assignee has hereunto set his hand and seal this 15th day of April, 1935.

DEPARTMENT OF THE INTERIOR

WASHINGTON, D. C. Dec. 18, 1936.

Approved: OSCAR L. CHAPMAN
Assistant Secretary of the Interior

(STAMP)

COPY

ASSIGNMENT OF MINING LEASE

- - - -

WHEREAS, the Secretary of the Interior has heretofore approved Tungsten mining lease, dated August 5, 1929, entered into by and between William D. Scott, lessee, and the Officer in Charge of the Colville Tribe of Indians, lessor, and assignment of said lease dated April 15, 1935, to Fred N. Norton, covering the following described land in the Colville Reservation, State of Washington

SW/4 of NE/4 and NW/4 of SE/4 Sec. 26, Twp. 29, N, Range 37, EWM NE/4 of SE/4 and Lot 5, Sec. 23, Twp. 29, N. Range 37, EWM

NOW, THEREFORE, for and in consideration of Seven Hundred Fifty and no/100 ($750.00) dollars, the receipt of which is hereby acknowledged, Earl T. Norton and Perry N. Norton, executors of the estate of Fred N. Norton, deceased, the lessee in the above-described lease, hereby bargains, sells, transfers, assigns, and conveys all right, title, and interest of the lessee in and to said lease, subject to the approval of the Secretary of the Interior to Germania Consolidated Mines, Inc., a Washington corporation.

IN WITNESS WHEREOF the said lessee has hereunto set their hand and seal this 2nd day of April, 1946.

ESTATE OF FRED N. NORTON, Deceased

By (Signed) Earl T. Norton

(Signed) Perry W. Norton
Executors

- - - - - - - - -

STATE OF WASHINGTON, COUNTY OF SPOKANE, ss:

Be it remembered that on this day came before me, the undersigned Notary Public within and for the State and County aforesaid, duly commissioned and acting as such, EARL T. NORTON, and PERRY W. NORTON, to me

personally well known, and stated that they executed the foregoing and annexed instrument for the consideration and purposes therein mentioned and set forth; and I do hereby so certify.

Witness my hand and seal on this 2nd day of April, 1946.

(SEAL)

(Signed) J. L. Thomas
NOTARY PUBLIC in and for the State of Washington, residing at Spokane

My commission expires June 17, 1948.

- - - - - - -

ACCEPTANCE BY ASSIGNEE

The assignee in the above and foregoing assignment, made subject to the approval of the Secretary of the Interior, hereby accepts such assignment and agrees to fulfill all the obligations, conditions, and stipulations in said described indenture of lease, when assigned, and the rules and regulations of the Secretary of the Interior, so far as applicable thereto, and to furnish proper bond guaranteeing a faithful compliance with said lease and this agreement.

IN WITNESS WHEREOF the said assignee has caused this acceptance to be signed by its duly authorized officers and the corporate seal to be affixed this 2nd day of April, 1946.

GERMANIA CONSOLIDATED MINES, INC.

(SEAL)

(Signed) Julius A. Franz
President

(Signed) Ray B. Greene
Secretary

METALLURGICAL REPORT

February 11, 1952

Memorandum

To: H. Gordon Poole, Chief, Nonferrous Metals Branch

From: P. H. Floyd, Acting Head, Mineral Dressing Section

Subject: Report of upgrading tests on the tungsten gravity rougher concentrate of the Germania Mines, Inc. - Hunters, Washington (Heads 210).

This low-grade tungsten concentrate was a jig and table product of the Germania Consolidated Mines, Inc. milling operation, and it was submitted by that company through Mr. J. D. Bardill of the Mining Division, U.S.B.M., Region II. Mr. Bardill requested that appropriate tests be performed to produce tungsten and molybdenum concentrates of a commercial grade. This laboratory was successful in producing a tungsten concentrate of 63.2 percent tungstic oxide with 96.7 percent recovery and a minimum of deleterious elements to meet current market specifications. No molybdenum concentrate of economic consequence was produced. The processes used for this upgrading work were: screening, magnetic roasting and separation, sulfide flotation, hydraulic classification and tabling.

The sub-grade concentrate, as received, was properly sampled and submitted to routine analysis and examination.

Chemical Analysis

Oz Per ton		Assay Percent				
Au	Ag	WO_3	S	Mo	Pb	Cu
0.005*	1.6	16.9	30.1	0.49	0.05	0.15

*Less than

Spectrographic Analysis

More than 10 percent:	Fe
5 to 10 percent:	None
1 to 5 percent:	Al, Ca, Si, W
0.1 to 1 percent:	Bi, Cu, Pb, Mn, Mo, Na
0.01 to 0.1 percent:	As, Be, Mg, Co, Ti, Cb, Zr, Ba
0.001 to 0.01 percent:	Ag, Ni

The petrographic examination revealed this low-grade concentrate to consist predominantly of pyrite intimately associated with a small amount of chalcopyrite. The predominant tungsten mineral was ferberite associated with a minor amount of scheelite; the scheelite was present as minute veinlets in the ferberite. Molybdenite was present in small quantities and bismuthinite and

galena were detected in trace amounts. The gangue minerals observed were: quartz, feldspar, and magnetite. The tungsten minerals, even though locked with each other, were liberated almost completely from the gangue in all size ranges. The pyrite was completely liberated.

A screen analysis was performed on the head sample to determine the size distribution.

Screen Analysis	Weight Percent
Plus 14 mesh	13.5
14/20 mesh	10.0
20/28 mesh	10.4
28/35 mesh	11.3
35/48 mesh	13.7
Minus 48 mesh	41.1

Am examination of the products of this screen analysis revealed the tungsten values as well as the sulfide and gangue minerals to be evenly spread throughout the entire range of sizes.

Discussion of the Beneficiation Problem

The upgrading of this low-grade ferberite-scheelite product called for the removal of sulfide minerals, magnetic minerals, and siliceous minerals. It was suggested that the pyrite, the most abundant gangue mineral, be removed by sulfide flotation. However, such a procedure would require fine grinding of the pulp and consequently complicate the removal of the other gangue minerals, i.e., the siliceous gangue and the magnetite. It is imperative that the low-grade concentrate, to be upgraded, be kept as coarse grained as possible because it is only possible to make good siliceous gangue removal by gravity concentration and to make good magnetite removal by magnetic separation. It may be further observed that under the best of sulfide flotation conditions it would be extremely difficult to remove the pyrite to an adequate degree; the market specifications of tungsten products demand a maximum sulfur content of 0.5 percent.

Preliminary observation that the minerals were almost completely liberated pointed to the fact that no grinding was required for grain liberation. The pyrite could very effectively be removed by a magnetic roast and separation along with the contained magnetite. Such a procedure would allow the subsequent separation of a clean molybdenite product by sulfide flotation of the molybdenite from the magnetic separation non-magnetic product. Further, molybdenite would float at grain sizes as coarse as 35-mesh; consequently very little size reduction would be necessary for molybdenite sulfide flotation step. The siliceous gangue could be subsequently removed from the final ferberite-scheelite product by table concentration.

Test Work

A test sample of the low-grade ferberite-scheelite concentrate was screened on a 48-mesh screen. The undersize was carefully hydraulically sized to check the possibility of siliceous gangue and pyrite removal by tabling prior to drying, and magnetic roasting magnetic separation. The individual classifier products were passed over the laboratory shaking table and the following observations were made:

1. The siliceous gangue minerals could be removed in a tungsten free tailing to the extent of 17 percent of the original bulk weight.

2. The pyrite would not separate to any appreciable degree as a tungsten free tailing.

3. The coarse classifier fractions would not respond to the table separation as well as the finer table fraction responded.

4. It was impossible to cut a finished tungsten concentrate from the table of any bulk that was below the maximum sulfur content allowable in finished marketable concentrates.

5. The table tailing product produced contained considerable molybdenite and consequently complicated the recovery of molybdenum because further treatment of this product would be necessary.

Because of the negligible advantage to be gained by a preliminary gravity upgrading step, this first step was abandoned. The advantage that could have been gained should have been relegated to the original roughing concentration stage. Therefore, the removal of the largest bulk of gangue mineral (the pyrite), without size reduction and sulfide flotation, by magnetic roast and separation was the logical alternative.

A second test sample of the ferberite-scheelite rougher concentrate was taken and subjected to a magnetizing roast. This roast was conducted in a muffle furnace at 700°C; the draft was reduced to a minimum to prevent over-oxidation of the pyrite. The roasted material was screened into three products for magnetic separation on the laboratory cross-belt separator: plus 20-mesh, minus 20-mesh, plus 48-mesh, and minus 48-mesh. Approximately 85 percent of the total pyrite was removed in this operation along with all the magnetite. A second magnetizing roast and separation was necessary to remove the pyrite sufficiently in the tungsten products. The magnetic tailing removed contained 59.9 percent of the weight bulk, 0.71 percent tungstic oxide and 0.27 percent ~~tungstic oxide and~~ molybdenum. A finished ferberite concentrate containing 38.6 percent of the total tungsten value was also produced

as a high intensity magnetic product in this operation. A non-magnetic middling was produced that contained 30.0 percent of the original bulk with the balance of the tungsten values, the molybdenite, and the siliceous gangue minerals. There was no difficulty experienced with this preliminary magnetic separation upgrading procedure; a study of the roasting problem could probably evolve a one-stage magnetizing roast procedure.

The residual non-magnetic tungsten-molybdenum product assayed 35.0 percent tungstic oxide and 1.48 percent molybdenum. The molybdenite was found to float readily to grain size as coarse as 35-mesh; therefore the non-magnetic product was stage ground in a ball mill through a 35-mesh screen. The resulting pulp was subjected to sulfide flotation for the removal of the molybdenite. A collector combination of sodium silicate, fuel oil, reagent 404, and amyl xanthate readily removed this mineral; however, an appreciable portion of the slimed tungsten values were floated in the rougher concentrate. This rougher concentrate was subjected to a cleaning stage that involved drying and a flash roast at 700°C prior to repulping for the cleaner flotation. This cleaning procedure gave an excellent elimination of the tungsten values from the final molybdenite concentrate with good molybdenum recovery in that concentrate.

The residual pulp from the molybdenum cleaning operation contained ferberite locked with scheelite, and the siliceous gangue minerals. The pyrite and molybdenite had been removed very effectively in the previous steps with a minimum of grain size reduction, and thus this product was in a condition where gravity upgrading would separate the tungsten minerals from the siliceous gangue minerals. The material was removed from the flotation cell, dewatered, and subjected to hydraulic classification. The classifier fractions were passed separately over the laboratory shaking table. The products resulting from this step were a ferberite-scheelite concentrate of marketable grade, a table slime, a table middling, and a table tailing.

A study of the assays of the various middling products revealed that the molybdenum flotation middlings and the circuit slimes could be added to the final concentrates with several percent increased tungsten recovery and no ill effect on the market specifications of the final tungsten product, providing their combined sulfur content of approximately eight percent was reduced to approximately two percent. These two minor products were subjected to a sulfur roast at 700°C for one hour. A subsequent assay for sulfur demonstrated it to be reduced to below the specified maximum sulfur allowable.

Complete metallurgical data for this test is presented in Table 1 and Table 2, and a procedure flowsheet is presented in Figure 1.

Summary and Conclusions:

An examination of the product suggested a preliminary upgrading step by hydraulic classification and tabling. However, efforts in this direction proved that only a small gain could be made, and consequently it was not incorporated into the major test procedure. Further observations eliminated the possibility of sulfide flotation procedures for the removal of pyrite because of difficulties arising after the required grinding in the satisfactory removal of the siliceous gangue and magnetite.

A combination procedure of screening, magnetic roasting, and magnetic separation, flotation, grinding, hydraulic classification, and tabling was adopted. The procedure gave little difficulty, and any disadvantage arising from the apparent complexities could be eliminated by the observation that the rougher concentrate entering the upgrading stage would be of a high enough grade that it would represent a small percent of the mill head bulk, and of sufficient value to warrant specialized complex upgrading if adequate recovery with market grade products could be produced.

The results obtained were satisfactory from the standpoint of the production of a tungsten product that contained 63.2 percent tungstic oxide with a 96.7 percent recovery. This product meets current market specifications in all respects. The results obtained in the molybdenum beneficiation are of doubtful economic interest. The concentrate produced assayed 33.8 percent molybdenum with a 50.9 percent recovery. It must be observed, however, that the molybdenum content of the tungsten rougher concentrate submitted for beneficiation was only 0.49 percent. With this low content of molybdenum in the head sample and since molybdenum was of a secondary consideration to the much more valuable tungsten content, little better results could be expected and no additional work towards this molybdenum recovery was warranted.

The test results represents the sample submitted for beneficiation only and represents the ore in question only to the extent that the sample represents that ore. This project is considered complete and further work is not anticipated.

Test Engineer:
P. H. Floyd

(Signed) P. H. Floyd

P. H. Floyd

cc:
Floyd (2) m/f
Volin (2) r/f
Bardill (1) d/f
Germania Consolidated Mines, Inc.
401 Empire State Bldg.
Spokane 1, Washington

U. S. BUREAU OF MINES
Albany, Oregon
Mineral Dressing Section
Metallurgical Data

December 10, 1951

TABLE I

Test No. 2806
Test Engineer: P. H. Floyd
Head No. & Ore: Head 210. Germania Consolidated Mines, Inc., Tungsten Concentrate
Treatment: Combined: Screening, hydraulic classification, magnetic roast and separation, sulfide flotation, and tabling.

Product	Weight Grams	Assay WO_3	Mo	S	Cu	Bi	Pb	Distribution WO_3	Percent Mo	Albany Assay No.
WO_3 Conc. #1	142.6	67.8	0.23	0.05	0.02	0.08	0.10*	38.6	3.7	29173
WO_3 Conc. #2	44.6	67.5	0.33	0.02	0.02	0.08	0.10*	12.0	1.7	29174
WO_3 Conc. #3	154.2	64.4	0.24	0.55	0.02	0.2	0.10*	39.6	4.1	29175
Mo Conc.	13.4	0.4	33.8	30.0	0.72	6.5	2.40	0.0	50.9	29176
Mo Midd.	25.4	31.4	2.6	7.4	0.95	9.3	0.10*	3.2	7.4	29177
Magnetic Rej.	845.6	0.71	0.27	35.2	0.01*			2.4	25.6	29178
Table Midd.	114.4	1.80	0.35	0.62				0.8	4.5	29179
Table Tailing	43.4	0.08	0.35	0.20				0.0	1.7	29180
Circuit Slimes	28.4	30.4	0.12	8.1	0.12	0.2	0.10*	3.4	0.4	29181
Calculated Sulfur Roasted	136.3			100.0						(Calc.)
Calculated Total Head**	1484.3	16.9	0.60					100.0	100.0	(Calc.)

* Less than

**Calculated from WO_3 balance after extra care was taken to check complete WO_3 assay reports.

U. S. BUREAU OF MINES
Albany, Oregon
Mineral Dressing Section
Metallurgical Data

TABLE II

February 1, 1952

Test No. 2843
Test Engineer: P. H. Floyd
Head No. & Ore: Head 210 - Germania Consolidated Mines, Inc., Tungsten Concentrate
Roasting of Mo middling and circuit slimes to reduce sulfur and thus to add these products to final tungsten product.

Product	Weight Grams	Assay WO_3	Mo	S	Cu	Bi	Pb	Distribution WO_3	Percent Mo	Albany Assay No.
Combined Mo Midd. Plus Circuit Slimes:										
	53.8	30.9	1.29	7.77	0.51	4.49	0.10*			(Calc.)
Combined Mo Midd. Plus Circuit Slime Roasted 700°C for 1 hour:										
	42.8	38.8	1.62	0.23	0.64	5.64	0.10*			(Calc.)
WO_3 Conc. #1, #2, and #3 plus roasted Mo Midd. Plus Circuit Slime to Make Final Ferberite Product:										
Final Ferb. Prod.	384.2	63.2	0.40	0.27	0.09	0.75	0.10*	96.7	17.3	(Calc.)

*Less than

Weight Percent of Test Products:

Final Ferberite Prod.	25.9
Mo Concentrate	0.9
Magnetic Rejects	57.0
Table Middling	7.7
Table Tailing	2.9
	94.4*

* Note the magnetizing roast and middling roast removed 32.0 percent of the sulfur and therefore accounts for the balance of the percent weight distribution.

Figure 1 - Test Flowsheet

Low-grade Ferberite-scheelite Concentrate

Magnetizing Roast

Screens (14 and 48 mesh)

Magnetic Separator (Each screen product separate)

Magnetic Rejects (Low intensity)

High Intensity Product and Non-Magnetic Product

Magnetizing Roast

Magnetic Separator

Combined Magnetic Reject

Non-magnetic Product

Ferberite Concentrate #1

35 Mesh Screen

O.S. U.S.

Grind

Molybdenite Rougher Flotation

Rougher Concentrate Dried and Roasted

Hydraulic Classifier

Repulped and Cleaner Flotation

Tabling of Individual Classifier Products

Mo Concentrate

No Middling

Ferberite-Scheelite Concentrate #2 and #3

Table Tailing

Circuit Slimes

Table Middling

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R E P O R T

ON THE

GERMANIA CONS. MINES INC.

P R O P E R T Y

STEVENS COUNTY, WASHINGTON

Arthur Lakes

October 8, 1945

INTRODUCTION

SUMMARY, CONCLUSIONS, RECOMMENDATION Pages a - d

PROPERTY 1
LOCATION & ACCESS 1
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MAP "A" PLAN SHOWING LOCALITY OF GERMANIA CONS. M. INC. PROPERTY AND ACCESS THERETO

MAP "B" PLAN & LONGITUDINAL SECTION GERMANIA CONS. M. INC. PROPERTY, Scale: 1000-ft. to 1-inch

MAP "C" PLAN OF GERMANIA CONS. MINES INC. TUNGSTEN MINE
LONGITUDINAL SECTIONS "A" AND "B"
CROSS SECTIONS "C" AND "D"
Scale: 100-ft. to 1-in. (Accompanying Report).

I N T R O D U C T I O N

The following report is based upon two trips to the property and a brief inspection of adjoining Germania Mines' Main Adit Tunnel. I visited the property September 25-27 and again October 2-3, 1945. This examination was followed by office and other investigation to date.

The various workings are caved and unexaminable, except for Main Adit Tunnel No. 3 and Intermediate Drift 60-feet above No. 3. These workings were surveyed and tied into company maps.

The survey of Middle, West, and East veins was also tied into company maps and the whole area mapped in detail.

The accompanying maps show my geological findings, the stoped areas by observation and by description by Mr. Smith who ably assisted me and has a wide and intelligent comprehension of the entire property as he has performed a considerable part of the development work and stoped most of the ore from both Keith and Norton workings.

I believe that this examination was as thorough as conditions permitted and that the conclusions and recommendation are sound.

(Signed) Arthur Lakes

REPORT
ON THE
GERMANIA CONS. MINES INC
PROPERTY

Stevens County, Washington

SUMMARY Germania Consolidated Mines Inc. has 400-acres leased from the Indian Department and the State of Washington, and opened by the Keith and Norton Mines.

The leases are subject to: annual rental of $400 and a 10% net ore Royalty to the Indian Department and State; The Keith property is subject to an additional 5% net ore Royalty and Norton property to 10% net ore Royalty.

The property is traversed NE for about 1-mile by a 200-foot wide vein lode containing two-possibly three-known veins which have been traced an overall length of 1600-feet deep and West vein 200-feet long by 200-feet deep. East vein traced about 1350-feet at surface has not been developed underground except for two crosscuts and about 100-feet of drift at the Main No. 3 Adit Tunnel level.

The ore horizon whilst traced considerable lateral distance is limited to about 500-feet vertical depth, this depth decreased at places where erosion has planed down old surface extensions. The ore horizon has a low angled rake to the SW from the Germania Mines, adjoining this property at the NE, through this property and for about 1-mile SW of this property, making an ore zone about 3-miles long.

The property is equipped with 40-ton mill which has made concentrate containing from 65% to 72% wolframite which is well within required marketing limits. The grade of ore heads and tailings was not recorded, the only records kept being concentrate sales. For this reason the mill head values and the mill's saving efficiency is not established but various factors indicate that it will exceed 80% of the contained tungsten mineral.

The ore-vein averages about 1-foot width and it, therefore, requires 2-feet additional waste rock broken down to maintain 3-foot minimum stope width. Of the total mined (represented by the 3-foot width) ½ is sorted out before going into the mill, thus mill heads represent 1/3 waste and 2/3 ore by weight.

The tungsten ore minerals occur very irregularly and erratically in the quartz-ore vein so that hand sampling of vein exposures is worthless to arrive at average metal content. As noted, past records have included only concentrate sales and no records of actual ore value are available. From rough estimates by Messrs. Keith

and Smith, the indicated quartz-tungsten ore value is about 1.6% wolframite, which reduced 20% by estimated mill losses returns an indicated 1.3% wolframite ore value from which profit possibilities are calculated. On basis of proportionate waste included in the mined ore the stoped value would be 0.43% wolframite and after sorting out ½ waste the mill heads would be 0.86% wolframite.

Indicated mine production was probably 4600-tons of ore from Keith Mine and 850-tons from Norton Shaft workings. Production from these mines is reputed to exceed $100,000 of which is recorded: $34,033.85 by leasers during 1934-36; $30,232.10 by Keith in 1942; and $2,900 by present company in 1944-45.

On basis of ore showings remaining at various mines' faces and surface compared to the square feet of stoped areas, the indicated future ore possibilities by further development are indicated to be:

	Tons to be mined	Tons after sorting	Approx. tons of ore
Keith Mine & Extensions	13,626	6,812	4,600
Norton Mine "	13,400	6,700	4,450
Total	26,026	13,512	9,050

It will cost an estimated $22,350 in tunnels, upraises, and shaft to open this tonnage up and an additional $15,000 plant improvement to improve mining and milling efficiency.

East vein which has been ignored underground has best showings of any observed at Main No. 3 Tunnel Level and the few surface cuts driven upon it are said to have produced similar size and ore grade as was produced from cuts on Miccle and West veins. As this vein has not been explored underground and thus has no productive history the only estimate of approximate tonnage potentialities that can be made is illustrative but if the East vein widths and ore grade open up underground equal to estimated widths and ore grade of Middle and West veins, this East vein might provide, from surface down to about elevation of Main No. 3 Tunnel Level, about 13,900 tons.

On basis of $20 per unit ($1.00) for wolframite at New York and on basis of present wage scale and supply costs, present mill capacity of 660-tons of ore per month would return net operating profit of:

	Per ton ore	Per 660 tons per month	Per 12-months
Middle vein in Keith Mine	$8.25	$5,400	$64,800
West vein in Norton Shaft	5.90	3,900	46,800

	Per ton ore	Per 660 tons per month	Per 12-months
Combined Middle & West Veins	$7.10	$4,706	$56,472

The 9050-tons of indicated ore in Middle and West veins would be exhausted in 12½-months on basis of 660-tons per month production. Thus the total expectancy of net operating profit from these veins would be $63,500 from which would be deducted $22,350 development costs, and $15,000 plant improvement requirements; reducing the total net operating profit expectancy to $26,130 which is equal to about $2,000 per month before deducting taxes, insurance and overhead.

On proviso that development of East vein opened up similar ore widths and ore grade to estimates of Middle and West veins, an additional 21-months production at 660-tons per month would be provided at:

	Per ton ton	Per 660 tons per month	Per 12-months
East vein	$7.10	$4,706	$56,472

The 21-months production would give total expectancy of net operating profit amounting to $98,506 from which would be deducted $23,500 development costs reducing total net operating expectancy to $75,000 which is equal to about $3,600 per month before deducting taxes, insurance and overhead.

As before stated the outlined East vein potentialities must be considered as illustrative until considerably more work has been performed underground on it.

Tungsten market is wholly dependent upon somewhat limited and fluctuating demand. During the War many new deposits, some important, were discovered and United States and Canada supply potentialities have greatly increased over their unimportant pre-War status. Pre-War prices ranged from a low of $9 per unit (45¢ per pound) through $13, $15, to around $22-$24 just prior to 1930 when Germany was purchasing nearly 90% of world supply. During the early War urgency the price went to $30 ($1.50 per pound) but in 1942 had receded to $26 and today is $20 ($1.00). In possibility that present prices may reflect re-tooling demands by United States Industry: it may be that future prices will be somewhat lower but in any event there is great uncertainty re future tungsten market.

CONCLUSIONS The chief deficiencies of this venture are: (1) the undertain tungsten market and (2) the limited size and low grade ore deposits.

Indicated operating profits, based upon present prices, may be lowered at any time in the future and would disappear when, and if, the tungsten price reached $14 (70¢ per pound) as this figures about the cost of mining, milling, royalties, and marketing the product.

This puts the property in particularly disadvantageous competitive position regards larger operations in United States and Canada whose costs range from 35¢ to 45¢ per pound of metal.

It will require capital expenditure of about $22,500 to develop and prepare for stoping an estimated $63,500 worth of ore (at $20 per unit price) in Middle and West veins, and an added $15,000 for plant additions to effect this development and get estimated mill recoveries. This leaves only about $26,000 net operating profit which will exhaust indicated ore in these two veins within 13½ months.

Whilst East vein apparently has best future ore potentialities it will require $23,500 to prove whether or not these potentialities exist. Under conditions of present limited exploration this expenditure must be looked on as a gamble. If the work proves successful, a further $75,000 operating profit and an added 21-months mine life would result provided tungsten price remains at $20 per unit.

It will take from 8-months to 1-year to perform the various developments. During this period only partial, possibly non-profitable, milling could be conducted in view of restricted tonnage output during development stages. During this time lapse, which will be one of capital expenditure, the most important factor is uncertainty of tungsten market and what prices might be when the mine and mill is in position to maintain continuous production. If the market drops below $20 per unit the above estimated profit margin will drop accordingly. Obviously the reverse would obtain if the market should rise but, in view of the existing larger and cheaper operations elsewhere in United States and Canada (at present lying dormant) I personally cannot get optimistic for higher tungsten prices.

The indicated $61,000 capital required to accomplish development and plant improvement necessary for later winning a possible $100,000 operating profit, coupled with the undertainties of market and the other imponderables that enter this picture, make this a highly speculative venture, attended by above normal risk.

RECOMMENDATIONS Whilst I cannot definitely condemn the property by its showings and productive potentialities I cannot recommend it with assurance that it will promise reasonable return on investment. I consider it highly speculative with chances for loss that must be considered by anyone investing in this property.

If it is decided to continue operations in near future I advise that work be mostly confined to development of East vein's possibilities at No. 3 Main Level and above. Success here might change the picture so far as ore potentialities are concerned though I do not anticipate much addition to the preliminary estimate. Aside from installation of deisel engine on present compressor none of the plant improvements would be necessary during this East vein work.

Details of the above Summary and Conclusions are attached.

PROPERTY (Map "B") Germania Consolidated Mines Inc. property is consolidation of adjoining Keith the Norton Mines with additional undeveloped property, now comprising ten 40-acre tracts in parts of Sections 23 and 26; Tp. 29 N. R. 37 E. at southwest part of Stevens County, Washington. Six tracts are in Spokane Indian Reservation, the north four outside the Reserve.

LOCATION & ACCESS (Maps "A" & "B") The property is on east side of Hoot Owl Creek, a confluent of Sandy Creek which flows into Spokane River. The workings and tracts occupy gentle west slope of northerly trending ridge dividing Hoot Owl from Sandy Creek.

The camp is 65-miles by highway via Reardon and Wellpinit, Washington, or 100-miles via Davenport and Hunters, Wash. The highway is paved or graveled to the last 6-miles which is undurfaced mountain road extending from secondary highway to camp. The camp is 63-miles from railway at Davenport, Washington.

Aside for the 6-miles of mountain road the camp is accessible the year round, but the mountain road is in bad condition and difficult travel during 2-months of Spring breakup.

CLIMATE & FACILITIES The climate is generally moderate, with from 2-ft. to 5-ft. snow depth in winter and short stretches of sub-zero weather in January & February. Aside from the aforementioned road difficulties and some winter water shortage, nothing should interfere with organized underground work.

The nearest Postoffice is at Hunters, Wash., 24-miles from camp. The camp has no phone but about 6-miles of line would connect with phone line to Wellpinit.

As there is no commercial electricity available, the power supply is now by gasoline and deisel engines, requiring fuel haul in barrels by the company as oil supply trucks cannot negotiate the mountain road. The present gas driven compressor should be rehabilitated by installing deisel engine.

TITLES & OWNERSHIP It is outside province of this report to investigate titles but I am reliably informed that the Company's ownerships of the leases are in good standing, subject to conditions of lease agreements.

The six tracts on Indian Reservation are leased on annual rental from Indian Department who also receive royalty on all ore or concentrates sold therefrom. These leases control the veins and ore deposits only within their respective boundaries and there are no extra-lateral rights on dip extensions outside boundary lines similar to the rights of United States mineral claims. The leases cover all ore possibilities in immediate vicinity of the Mines, except that the NW part of SE$\frac{1}{4}$ or SE $\frac{1}{4}$ Section 23, east of Keith tract (Map "B") will contain vein, and ore possibilities therein, if work is projected 700-feet NE of present NE end of Keith workings.

HISTORICAL The Germania Mines, adjoining this property to the NE, were first developed by Germans prior to World War I. When hostilities between United States and Germany were imminent, the Main Tunnel portal was caved in and the Mill burned to the ground by German employees. Later the mine was acquired by former Engineer and eventually was sold to General Electric Company who explored underground, surface stripped earth containing residual ore and float. The underground work apparently did not achieve expected results and the mine was abandoned by General Electric Co. in 1938, just before price increase originated by World War II. Since then, except for small sporadic leasing, the property has been idle, mill dismantled and now has every appearance of complete abandonment though it is said that some ore possibilities remain underground. This property was the most developed and held prime interest of this district.

Exploration and development of the properties now included in Germania Consolidated were delayed as the Indian Reservation was not thrown open for mineral exploration until later.

Mr. Jas. Keith acquired his 40-acre tract and opened the "Middle" vein by No. 1 and No. 3 adit tunnels and stoped considerable ore as shown on Longitudinal Section of "Map C." Mr. Norton acquired the 40-acre tract south of Keith trace and opened "West" vein by shaft and sublevels and No. 2 Adit Tunnel was driven within his property confines. Later the Norton property was acquired by Industrial M. Co. and more recently the Keith, Norton, and other properties were consolidated into present holdings of Germania Cons. M. Inc. and the SW drift driven on "Middle" vein at No. 3 Tunnel level.

Keith installed a small, effective mill at portal of No. 3 Tunnel and made some attractive wolframite concentrates. The industrial Co. built a mill at Hoot Owl Creek about 3/4-mile southwest of their mine workings and hauled ore to it (Map "B"). This latter mill was abandoned and dismantled but the Keith mill is now in good working condition.

Stope maps show that most production was made from "Middle" vein on Keith property, a considerable proportion by leasers. The Norton property produced from two stopes down to 200-shaft level on "West" vein. (Map "C"). The "East" vein, which has greatest surficial length was not mined but some cuts at north and south extremities provided good ore according to Mr. Smith who stated that these cuts showed as good ore as cut exposures on "Middle" and "West" veins.

Production from the combined properties is reputed more than $100,000. Partial records at hand show that leasers in 1934-35-36 produced $34,033.85 worth of ore, no tons stated, when prices were $13 to $15.50 per unit of 20-pounds. I am informed that they made a profit after mining, milling, royalties, and market charges. In 1942 Mr. Keith produced 15.71-tons of concentrates varying from 64.63% to 72.18% wolframite content for which he received $24,232.10 after freight, treatment and marketing charges. He also sold $4,000 worth, no tonnage given, to Metals Reserve during this period. It is presumed

in this report that Mr. Keith received War price of about $30 per unit of 20-pounds or $1.50 per pound of contained WO_3.

Prior to World War II ore was sold as low as $9 per unit, mostly from $14 to $22 per unit.

LABOR CONDITIONS The properties' isolated situation and the lack of recreational facilities for Sunday layoffs, etc. will require special inducement to labor and it is my opinion that local wages will be about 50¢ per day higher than the going $8 per day rate for the County. Pre-War labor was $5 to $5.50 per day for seven days per week. Present law requires 1½ time for 6th day of work and double time for the 7th. On this basis 5-days would cost $42.50, the 6th day add $12.75, and the 7th day $17; making a total of $72.25 per week of 7-days, against pre-War $38.50 per week, which almost doubles labor cost. With this differential it is obvious that unless metal prices considerably exceed pre-War averages the higher wage costs will prohibit profit unless more systematic mining can be provided on increased per diem tonnage, and labor saving devices and methods installed.

TOPOGRAPHY The property covers about 1-mile length along the "vein-lode" which comprises two (possibly three) veins shown on Plan, Map "B". This vein lode traverses NE along gently sloping west side of northerly ridge dividing Hoot Owl from Sandy Creek.

Elevations range from 1400-feet above sealevel at Hunters in Columbia Valley, to 3100-feet at Camp, 3150-feet at No. 3 Main Adit Tunnel, 3288-feet at Shaft collar, and thence to 3700-feet at the dividing ridge and about 3450-feet at Germania Mines' Main Adit, driven SW from Sandy Creek slope. Intervening elevations are shown on Map "C". The mountain road has some steep grades that can be lessened by relocation. As the country is extensively covered by earth and overburden, bulldoze work can be cheaply utilized in road work. The company has its own bulldozer. The higher ridge elevations show numerous outcrops and generally less than 2-feet of overburden resulting in easy surface trenching along the various veins.

GEOLOGY The veins are quartz filled, varying from 2-inches to 24-inches width, unaccompanied by gouge but not frozen to enclosing granitic walls. The quartz contains irregular bunches, blobs, stringers and individual crystals of wolframite, sometimes solid for 4 to 8-inches. Occasionally molybdenite, scheelite, and generally iron sulphides accompany the wolframite. Black tourmaline and small green flourite occur in association with considerable segregations of hornblende and mica occurring at lower ore horizons which may indicate lower end of ore occurrence, at present unprovable due to caved condition of much of mine workings. The quartz is bluish, hard and vitreous with little shearing within the vein itself.

Two (possibly three) veins form in a shearage zone 200-feet wide and conform with the vein lode's general N 20° to N 25° East course and 70° to 80° dip to the SE. The veins and vein lode extend NE up from Hoot Owl Creek to, and through, the adjoining Germania

Mines' workings a lateral distance of about 9000-feet. Additional small prospect developments at Mead property are reported about 1-mile SW of Germania Cons. showings, making the overall tungsten showings nearly 3-miles long.

In this connection it is interesting and significant that the N 25° E. strike takes directly into Emerald tungsten mine in southern British Columbia 85-miles from Germania Cons. property (Map "A"). Emerald discovery in 1942 is now believed to be the largest high grade scheelite (tungsten) mine in America. In this N 25° E course are also prospect tungsten showings at Addy, Wash. The widespread interest originating from Emerald discovery led to intensive search for extensions by some of Canada's largest and most experienced mining companies but no commercial tungsten showings were disclosed to the North, East, or West of Emerald. This indicates a defined "tungsten belt" extending nearly 90-miles long whose northerly limits are Emerald and southerly limits near Germania Cons. M. Inc. property. Emerald, whilst having small, unimportant wolframite in its granitic rocks, developed its important ore bodies in limestone rimming East side of the granitic intrusion and its ores are scheelite, whilst Germania Mines and Germania Cons. ore are wolframite within the granitic rocks. Emerald's experience suggests some consideration for prospecting limestone rims of the granite in vicinity of Germania properties, but overburden and cost of the work is beyond small financial resources.

The enclosing "Host" rocks of Germania veins are granite in part of an extensive grano-diorite mass or "batholith" that invaded and intruded the older slates, quartzites, and limestones of the area. This batholith extends over 100-miles northerly into the great "Nelson batholith" of south-interior British Columbia "though obscurely outcropped at places." Its southerly extension for many miles passes through Little Falls on Spokane River.

This igneous invasion into the older sedimentary rocks formed a "metallic province" containing many important mines of silver, lead, zinc, copper and gold bordering its side such as Rossland (copper-gold), the extensive Slocan silver camp and Reeves-McDonald lead-zinc and Sheep Creek gold camp of southern British Columbia, Metalline district, Pend Oreille mines lead-zinc, Old Dominion (silver) Electric Point lead, Chewelah Copper, in United States. The immediate rim or enclosure within the granite gives the tungsten deposits.

The host rock of the ores at Germania Mines and Germania Cons. properties is acidic granite, fine grained and hard and blocky but weathers softer in vicinity of vein surfaces. Little alteration from the quartz veins into the granite is noticeable, indicating constriction of ore solutions with and in the quartz veins and stringers.

Pegmatite, a coarse aggregate with large crystals of minerals making granite, was observed in SW end of Germania Mines' Main Crosscut Adit, and a dike of pegmatite is reported west of Germania Cons. property, trending generally N-S. The pegmatite does not appear to be host rock of ore veins, but being formed by crystallization and

by separation of magma, in association with abnormally large admixture of dissolved gases, is to be considered the "mineralizer" here and at other properties containing tungsten, molybdenite, and associated minerals.

The accompaniment of veins and ores by high temperature minerals led to erroneous assumption that the ores, being deep seated, would extend to considerable depths below present outcrops. My observations, and experience at Germania Mines, does not bear this out but rather suggests that the wolframite bearing horizon is less than 500-feet below present surfaces and has a low angle plunge or "rake" to the SW as indicated on Longitudinal Section, Map "B". Thus, whilst lateral extension of the ore horizon may be considerable, its vertical extension is limited to less than 500-feet between its upper and lower limits. This will be reduced in places by the amount of erosion that has planed off upward vein and ore extensions above present existing surface, as is indicated by residual ore bearing "placer" deposits of gravel and earth on down wide of the vein outcrops at both Germania Mines and Germania Cons. properties, where residual ore and float was bulldozed and milled.

Thus, due to the gentle downward rake of ore horizon to the SW, the SW extensions of ore shoots will be progressively deeper, and the NE extensions progressively higher. The top horizon will play out along a horizontal drift extending SW to be reopened by winze into lower zone, and then drifted SW until the end of drift again reaches top of ore limit and contrawise the bottom of ore horizon will play out at extensions of NE drifts, to be reopened in upper ore horizon by raise, then again drifted NE until ore bottom is reached. In development, this will cause a series of steps, the drifts being the treads and the winzes and/or raises the lifts. Thus in drifting in ore in either direction, the cessation of ore and vein at one drift horizon does not necessarily mean lateral cessation of vein and/or ore, but rather that the top of ore horizon has plunged down below drift level going SW, or has risen above drift level going NE, exposing the bottom of ore horizon in that direction.

<u>FAULTING</u> The lateral and vertical extension of ore veins has not been materially disturbed by faulting. Evidences of pre-mineral faulting are expressed by a fault zone angling across the vein near Station 303 in No. 3 Main Adit Tunnel. This caused the vein and ore to occur in many irregular lense-like and restricted bunches but does not offset vein course up or down.

A post-mineral fault is indicated at Stations 315-16 angling across East vein, possibly offsetting the NE extension of vein about 20-feet westerly and 70-feet vertically as indicated on Plan and Cross Section "C" of Map "C". The effect at the drift is to "string out" the vein between stations 315 and 316. Whilst indicated, this fault condition is not conclusively proven as the 314-315 crosscut did not penetrate far enough East to intersect the NE ex-

tension of vein cut at 316, if the latter was undisturbed and the vein extending NE from 315 is a branch vein. I am inclined to the fault theory.

The ore occurrences along "Middle vein" are said by Mr. Smith to be lesser to SW of the shear fault zone 303 than NE of it but it appears to me that ore concentration zones are more related to minor joints in the granite (slips formed by cooling of granite) whereby a pre-mineral slight offset damed up ore solutions on one side or the other of the joint as illustrated at Station 324. Mr. Smith's description that the ore ended at S" limits of "Middle" vein against a steep, abrupt wall, tends to bear this out and in any future development these conditions should be recognized and worked out.

VEINS The "vein-lode" comprising to the NE, the "Middle" and "East" veins, and to the SW the "West" and "East" veins is about 200-feet wide, the veins spaced: "Middle" to "East" veins about 100-feet apart, "West" to "East" veins about 150-feet apart as shown on Plan and Sections Map "C".

For convenience three veins are illustrated: (1) "West" vein (colored yellow on Map "C"), (2) "Middle" vein (colored red on map), (3) "East" vein (colored purple on map).

The East vein has been traced an overall length of 1350-feet at surface by a series of cuts at its NE and SW extremities with a gap of about 700-feet of unexplored surface opposite productive mined zone of West vein, and also opposite the productive mines SW ½ of Middle vein zone. Despite its superior length and that commercial wolframite is reported to have been gotten from various cuts in amount equivalent to that taken from similar cuts on Middle and West veins, this vein has been ignored underground. It has been encountered only by two crosscuts driven easterly at No. 3 Main Adit Tunnel from stations 324 and 303-315 from which latter drift has been run SW 85-feet along fault 315-16, thence the vein drifted SW 50-feet from Station 315 where it shows most consistent and stronger than any showings viewed by me in No. 3 Tunnel on the Middle vein. At Station 325 a 50-foot upraise has been driven, starting in 4-inch vein which widens to 8-inches at raise top where better ore content is noted.

The Middle vein has been traced 800-feet length on surface by almost continuous surface cuts or stoped up to surface as shown on Plan and Longitudinal Section "A", Map "C". It has been opened by four levels as follows:

No. 1 Adit level 300-feet long, from 10 to 90-feet below surface (Section "A", Map "C") stoped up to surface about 100-feet long in its SW section and almost entirely stoped out below its full length.

No. 2 Adit level 300-feet long in this vein, from 30 to 90-feet below surface which has been entirely stoped out.

The SW continuity of Middle vein is said by Mr. Smith to play out near Station 208.

Intermediate Level run NE off from raise 320 connection No. 3 main Adit level to No. 2 level, at point 60-feet above No. 3 level. This level drifts 260-feet along the NE extension of the vein and for 190-feet is completely stoped out to No. 1 Level 100-feet above. Thence for 30-feet a stope has been started, 20-feet heighth above the level, and thence is 40-feet of drift in thin vein. This indicates that the ore horizon has raised above this level and future exploration will be by either raise or by stope sloping NE upwards from the small stope along the better ore to surface.

No. 3 Main Adit Level. drifted NE 220-feet from crosscut intersection at Station 303, and SW therefrom for 360-feet to Station 312, where the vein is nearly pinched out and is left by angling drift 30-feet long turned away from the vein towards intersection with West vein at Shaft. The ore showings generally along this 580-feet of drift along Middle vein are bunchy and it is problematical if they could be mined profitably though NE of Raise 320 the showings appear more regular and should enter good ore mined in upward extension by the Intermediate level. The SW showings are distinctly inferior though a 30-foot Raise between stations 310-11 shows vein width improvement and reported better ore contents at top.

The West vein has been traced about 400-feet at surface by almost continuous surface cuts or stopes up to surface from "50-level" (Plan and Longitudinal Section "A", Map "C"). It has been opened by the following:

Shaft for 220-feet dip depth, from which two levels were run.

50-level, conforming in elevation with and being SW part of No. 2 Adit level, 240-feet long from which a stope was mined 20 to 40-feet high to surface.

200-level at 200-foot point in the Shaft, driven NE 40-feet and SW 150-feet, from the latter stoped about 100 feet long by 75-feet high. Smith reports strong vein in SW end of this drift with upwards of 8-inches solid wolframite and likewise a strong vein at SW end of 50-level with upwards of 5-inches solid wolframite.

The NE end of West vein apparently pinched out near Station 206 at No. 2 Adit Tunnel level.

The fact that Middle and East veins are traced opposite each other, but Middle and West veins are not, though West and East veins are traced opposite each other, and that Middle vein pinches out in its SW extension opposite West vein's pinch out in its NE extension suggests that instead of three veins there were originally two which are now designated East and Middle vein and that West vein is probably faulted SW extension of Middle vein rather than being a separate vein echeloning SW of Middle vein. This could be accomplished by a fault which is at present obscure by reason of caved ground and surface overburden. This fault could offset East vein, a condition which is obscure by lengthy unprospected gap along this vein.

If West vein is faulted SW extension of Middle vein it was offset horizontally only 20-feet westerly from Middle vein's original course. Whether the faulting took place, or there are three veins, has no economic importance as the NE section of West vein does not go far enough to oppose Middle vein, and vice versa, Middle vein's SW extension ceases before opposing West vein and thereby there would be no additional ore possibilities in the respective showings in either case.

MINING METHOD The steep vein dip and competent enclosing rock permits "shrinkage stoping" whereby 1/3 of ore and rock broken in advancing stopes is drawn off to the mill, leaving 2/3 remaining in the stope until the whole area is mined, when the 2/3 is drawn to the mill. This is the cheapest mining method, permitting least timber and handling.

Available data indicates 1-foot average width of quartz-ore vein widths. The wolframite occurs irregularly within the quartz but stope sections indicate that, despite this irregularity of metal occurrence, there is considerable horizontal and vertical regularity of mineable ore.

Minimum stoping width must be 3-feet, or three times average ore width. Thus approximately twice the mass of waste is mined, by necessity, to the amount of ore contained therein. After broken material is drawn from the stope it is hand sorted before going to the mill and about half the whole mass (comprising larger pieces of waste rock) is discarded to reduce grinding and also to increase metallic grade of material going into the mill. Thus waste is reduced 2/3 to 1/3 the mass and thereby the material put through the mill will average 2/3 actual metallic content of the quartz-ore vein providing it.

As SW drifts, starting at bottom of ore horizon, reach the top of ore horizon, winzes would be sunk down to, and through, the bottom of ore limits and new SW drift run at the new elevation through the ore mass to the top horizon, and repeated as long as ore values maintain profit. The reverse will be the case re NE drifts, starting from top ore horizon, progressing through the ore mass to bottom ore horizon, thence an upraise to, and through, top ore horizon where new NE drift would be run through to bottom ore horizon and repeating as long as ore values maintain profit. An alternative process would be

to run stopes sloping up the rake of the bottom ore horizon and expanding upwards to the top. On account of the flat angle rake of ore shoots this method would require "slushing" by use of drag scraper to bring the ore down to loading chutes as the angle would be too flat for the ore to move by gravity.

The NE drift-upraise method will be cheapest by upraising and gravity handling, whilst the SW drift-winze method will require sinking and hoisting the ore. Fortunately the ore possibilities remaining in Middle vein are all to the NE whereby the cheaper mining method can be used. In development and exploitation of the virgin East vein, work should start as far SW as possible in order to utilize the drift-raise method. West vein will have to be attached from the shaft in any event and will require hoisting.

MINING FACILITIES The camp is equipped with bunk and boardinghouse for 10 or 12-men.

The mine is equipped with:

- 1-320-cu. ft. per min. Worthington air cooled compressor run by a 90-H.P. gas engine
- 1-120-cu ft. per min. Sullivan Portable gas driven compressor.
- 2-stoper drills, 2-drifter drills, air hoses, steel and detachable bits.
- 1-1½-ton mine car, 1-1-ton mine car, 1-timber truck.
- Track and 2-inch compressed air pipe. Short of rails and pipe.
- Blacksmith shop and fair supply of general tools.

The equipment is sufficient to carry exploration and mining up to 60-tons per diem which would supply 30-tons per diem to the mill. Additional tonnage would be acquired by addition of auxiliary Diesel driven 240-cu. ft. per min. compressor, additional cars, drills, etc.

The Worthington compressor should be installed with Diesel engine instead of gas engine.

MILL The mill has estimated capacity of about 40-tons per diem. It is a straight gravity jig mill suitable for this type of ore.

It comprises:

- 12-in. by 24-in. Union Iron Works crusher,
- Set of 10 x 24 rolls,
- Bull jig with 1/8 by ½-in. punched screen,
- 2nd. medium jig with 8-mesh screen.
- A concentrating table had been installed but there was insufficient feed for it to maintain efficiency.

The capacity and efficiency of the mill can be increased by installation of a Denver jig.

Water for domestic, mining, and milling purposes is pumped at 2500-gallons per hour up 190-foot lift from Hoot Owl Creek to tanks at No. 3 Main Tunnel elevation. Additional supply can be gotten by ½-mile flume to a spring up Hoot Owl Creek, giving year round water supply.

COSTS As Mr. Smith has had extensive experience leasing and contracting drifts, crosscuts, and raises in these mines, his estimate of possible work performance is taken as reliable basis for the following cost calculations:

Drifting & Crosscutting Two men will advance 4 to 5-feet per day and tram half their own muck within reasonable distances to the dump, receiving tram assistance from outside man.

Labor per day. On basis of 6-days per week the average wage per man per day will be $9.20 per day.

Two men will cost	$18.40
Powder, supplies, & other per day	18.40
Total per day	$36.80

Cost per foot at 4-feet per day $9.20
" " " 5-feet per day $7,35

The cost of drifting and crosscutting would be within $10 per foot

Raising The cost of raising would be from $10 to $15 per foot according to distance, timbering, etc.

Sinking Winze sinking would be from $25 to $40 per foot, according to distance, timbering, hoisting, etc. Little or no water to contend with.

Shaft sinking would be from $45 to $60 per foot.

Stoping Mr. Smith states that by using 2-men he broke two 5-foot lifts per week (6-days) over 100-feet stope length.

100 x 10 x 3 equals 3,000-cu. ft. which, at 13-cu. ft. per ton gives 230-tons of broken material, representing about 80-tons of ore per week or 320-tons per month.

Labor for 2-men per week	$115.50	or $1.45 per ton of ore
Supplies, powder, etc.	115.50	1.45
Total	$231.00	$2.90 per ton of ore

Stoping would cost about $3.00 per ton of ore, tramming 230-tons about 15¢ per ton, sorting equivalent to 240-tons of mill-feed per week (present mill capacity) equal 480-tons broken material at ½-shift per day 58¢ per ton equal to $1.16 per ton mill feed

which is equivalent of $1.75 per ton of ore.

Recapitulation	Breaking in stopes	$3.00 per ton of ore
	Handling & tramming	1.00 per ton of ore
	Sorting	1.75 per ton of ore
	Total mining costs	$5.75 per ton of ore

Milling The present mill has about 1000-tons of mill feed capacity per month. Of this 2/3 is ore as it emerges from sorting belt. About 660-tons of ore would thus be put through the mill in continuous operation for 24-days per month.

Mill costs would amount to about:	Labor	$800 per month
	Power, supplies, and other	800 " "
		$1600 per month

The mill costs would be about $2.45 to $2.60 per ton of ore

Recapitulation	Mining, tramming, sorting	$5.75 per ton
	Milling	2.50 " "
	Development per ton	2.00 " "
	Total per ton	$9.75 " "

Due to shaft operations Mining, handling and tramming in the Norton Mine will cost about $1.50 more or $11.25 total per ton.

VALUES Lacking accurate figures regards the tonnage of material mined compared with tonnage milled to make the individual tonnage of reported concentrates it is difficult to arrive at an estimate of possible average values. The overall tonnage mined can be approximated from stope areas by taking an average 3-feet stope width. The overall tonnage to mill can be calculated by reducing the above tonnage ½ due to sorting out waste rock. These approximations are fairly accurate but the value of wolframite content of the various tonnages cannot be worked back from the wolframite contents of concentrate without data concerning mill tailings losses and data re full tonnage and values of concentrates shipped which is not available. For this reason the estimate of ore values before concentration must be calculated from various sources of information, mostly based upon rough estimates as the irregular occurrence of wolframite in the quartz makes hand sampling wholly inadequate to arrive at estimate of head assay.

Mill efficiency is believed to be better than the old Germania Mines mill which is used to arrive at an estimate of ore value by working back the losses to gross values at Germania and taking same proportion to figure approximate head values at this property.

Mr. Keith estimates that the ore grade into mill was near 1% contained wolframite from Keith Mine. Mr. Smith, however, believes that the grade was about 3/4 of 1%. On basis of Mr. Keith's estimate the ore in place would average around 1½% wolframite (on basis of

2/3 vein in mill feed after preliminary sorting) and on basis of Mr. Smith's estimate would average about 1.1%. These estimates are based on concentrate returns and take into account no mill losses which are unknown. The ore in the vein would, therefore, be as much higher in wolframite as the amount of metal lost in mill tailings.

In a Reconnaiscance Report on Norton Tungsten Prospect by Alexander Leggat, E.M., Butte, Montana, June 27, 1931, based on information then available from Germania Mines production and from Bulletin No. 550, United States Geological Survey by Howland Bancroft, in 1914 it is stated, "It is said to have 10,000 to 12,000 tons of 3% to 4% ore blocked out and ready to mine after a little cleaning out of old (Germania Mines) tunnels and workings." ---- "It (Germania Mines) is said to average better than 3% WO_3----- the jig tailings from the old mill amount to 10,000 tons or so and are said to average 3/4% WO_3."

Assuming a 3% ore average at Germania Mines, and allowing 25% dilution by breakage of country rock into mill feed we get an approximate 2.4% wolframite mill head and if losses were 3/4% the mill efficiency was about 73%.

If Keith mill losses were 25% the indicated ore values would thereby be about 1.9% wolframite by Keith's estimate or about 1.4% by Smith's estimate.

It will be understood that neither Mr. Keith nor Mr. Smith assume responsibility for these estimates which are given me as rough estimates based upon data described above. Both say that the grade might vary but both believe that their figures are possibly a little higher than actualities. A few check samples of mill tailings might be made to get more authentic data but hand sampling of any vein showings would be useless.

In calculation of returns I am taking an average of 1.4% and 1.9% as the possible vein averages over 1-foot width in the mine, which would be about 1.6% wolframite.

ECONOMICS Obviously mining is conducted for profit and costs of mining, development, milling, freight and marketing a product must exceed prices paid for the product to achieve profit.

Market prices for tungsten products are wholly dependent upon somewhat limited demand and supply that since the War has potentially increased by discovery of additional tungsten deposits brought about by War urgency. Tungsten concentrated to 65% or better has to be sold to dealers who, in turn, supply varying demand and there is no universal market in the sense that lead, zinc, copper and other metals are dealt in. Pre-War prices varied from $9 per unit of 20-lbs, $13, $15, and shortly before 1938 around $20 to $24. It is noticeable that the years immediately preceding the War the greater supply went to Germany. During War urgency the price went to about $30 per unit ($1.50) but in 1942 the price was about $26 per unit and at present is quoted in New York about $20

per unit ($1.00 per pound). Freight costs to New York are $3.25 per 100# of concentrates.

Price rise during year immediately after Pearl Harbor originated from (1) sudden and urgent War needs but particularly (2) by interruption of ocean shipping from China, the main supplies.

Higher prices, the strong demand, and public use of Ultraviolet lamps which were highly effective in disclosing presence of scheelite (though ineffective re wolframite) inaugurated intensive prospecting which resulted in discovery of numerous, some important, deposits in United States and Canada. However when exploitation assured adequate tungsten supply the market demand eased and by late 1943 many of the larger properties were unable to sell their product.

Amongst the most important new discoveries was Emerald Mine disclosed in the summer of 1942 and thereafter extensively developed to an estimated $8,000,000 worth of Scheelite, was equipped with 250-ton mill, and went into production in the fall of 1943 on about $250,000 per month basis only to find the Canadian market glutted. As this important Canadian mine can mine, mill, and market its product for an estimated 33¢ per pound of contained scheelite, it forms a serious menace in assessing future market and could dominate the United States demand for considerable period of time if reciprocity should be established between United States and Canada and present preferential tariff removed thereby. China, with its cheap labor and high grade product will have definite effect on futures when her production is resumed. As tungsten production is comparatively small industrially in the United States it hardly will be expected to exert much political influence if Administration forces consider tariff removal. These factors have serious influence on future prices and indicate lower rather than higher prices than now prevail.

The present New York quotation of $20 per unit might be reflection of demand by Industry for re-tooling and may later go lower due to lessening demand. On the other hand, uses of tungsten steel may be expected to expand over pre-War requirements and demand for electric light filiments should continue. New uses or applications of Tungsten may take up additional supply. The price reduction in later War years was partly due to inauguration of substitutes demanded by desperate urgency in earlier period and, when tungsten again came into good supply, the plant expenditures for utilization of the substitutes were too high to salvage in order to change over to tungsten. Peacetime Industry will not have this necessity to use substitutes which will possibly be another (indeterminable) factor in increasing post-War demand.

The future tungsten price is, therefore, hard to anticipate and may be anybody's guess. In view of the above uncertainties and imponderables I think calculation on basis of $20 on the high side with chance for lower prices but my calculations have to start somewhere and any price over $20 per unit will be "velvet".

RETURNS The many imponderables listed earlier in this report make the following estimate subject to uncertainties of actual ore values. The following is calculated upon presumption that the estimates of Keith and Smith are reasonably correct and are dependant upon that presumption.

By addition of a Denver Jig to the mill, its saving efficiency and the mills saving capacity should be improved. Whilst we are handicapped for lack of figures or definite data of present mill efficiency it is possible that around 80% or better of contained wolframite might be saved into concentrates running 65% or better in wolframite.

On basis of possible 1.6% wolframite content over average 1-foot width of quartz-tungsten ore, and estimating 80% mill recovery into 65% concentrate the following is calculated:

Ore value 1.6% x 80% equals 1.3% wolframite saved.
To make 65% concentrate from 1.3% ore requires 50-tons of actual ore for 1-ton of concentrate.
Mill feed (after sorting) contains 1/3 waste which will require 75-tons of mill feed to make 1-ton of 65% concentrate.
On basis of mill capacity of 40-tons per diem, will make abpit 3.2-tons of 65% concentrate per week.
Necessity of having to break 3-foot stope width to mine 1-ton of ore makes mined material about 0.53% wolframite content.

Calculation of returns at $20 per unit ($1.00 per pound)

1-ton of concentrates: 50-tons of ore: 75-tons mill feed

	Keith	Norton
65% equals 1300-lbs. at $1.00 per lb.	$1300.00	$1300.00
Haul to railway & Freight to market	70.00	70.00
	1230.00	1230.00
Tramming & milling 50-tons ore	180.00	180.00
	1050.00	1050.00
Marketing at 14¢ per lb.	182.00	182.00
	$868.00	$868.00
10% Royalty to Indian Dept.	86.80	86.80
	781.20	781.20
5% Royalty to Keith	43.40	
10% Royalty to Norton		86.80
Gross value per ton conct.	$737.80	$694.40
50-tons ore to 1-ton concentrate,		
Value per ton ore	$14.75	$13.90
Mining, sorting & other	6.50	8.00
Net operating per ton	$ 8,25	$ 5.90

Mining equal amounts from Keith and Norton mines would return an indicated operating profit of $7.10 per ton of actual ore. At 660-tons per month the Keith Mine would return about $5400 net operating profit per month, Norton Mine about $3900 and combined about $4700 operating profit per month. From this will be deducted taxes, overhead, insurance, etc. to arrive at net profit. At $14 per unit the ore would show no profit possibilities.

ORE POSSIBILITIES Tonnage possibilities from ground considered ore bearing is determined by application of produced tonnage from present stopes to unexploited areas considered to have productive possibilities.

Stope Production estimates

Keith Mine The stoped area was about 52,000-square feet which at 3-feet stope width equals 156,000-cubic feet which at 13-cubic feet per ton would approximate 12,000 tons of material mined of which half was sorted before milling leaving 6000-tons into the mill of which 2/3 is estimated quartz-tungsten ore which approximates 4000-tons.

Norton Mine The stoped area was about 11,000 square feet which at 3-feet stope width equals 33,000-cubic feet which at 13-cubic feet per ton would approximate 2,550-tons of material mined of which half was sorted before milling leaving 1,275-tons into the mill of which 2/3 is estimated quartz-tungsten ore which approximates 850-tons.

Ore possibilities adjacent to workings of Keith Mine

On account of the irregular occurrence of quartz-tungsten ore on the Main No. 3 Tunnel level I consider that part of upward extension should be excluded from ore estimate. The fact that good ore is described at the floors of No. 2 Tunnel Level and Intermediate Level gives basis for figuring the following ore possibilities between No. 3 Tunnel Level and these levels. An upraise driven between Stations 310 and 311 shows improved width of vein partially bearing out expectancy that the sections adjacent to No. 2 and intermediate level will be productive of mineable ore.

(1) Area below No. 2 Tunnel Level	50 x 280	14,000-sq. ft.
" Intermediate Level	30 x 220	6,600
		20,600-sq. ft.

20,600-sq. ft. x 3 equals 61,800 cu. ft. divided by 13 equals 4,753-tons mined material which reduced $\frac{1}{2}$ by sorting equaled 2,376-tons for milling of which 2/3 is actual ore which approximates 1,584-tons, say 1,600-tons

(2) Above & NE Intermediate Level to elevation No. 1 level:

$\frac{170 \times 100}{2}$	equals	8,500-sq. ft.
Above No. 1 Level 170 x 60		10,200-sq. ft.
NE ahead of No. 1 Level to surface $\frac{250 \times 150}{2}$		19,750-sq. ft.
		38,450-sq. ft.

38,450-sq. ft. x 3 equals 115,350-cu. ft. divided by 13 equals 8,873-tons mined, which reduced ½ by sorting before milling is 4,436-tons to mill of which 2/3, 2,960 (say 3,000-tons) is ore.

Total ore possibilities on Middle vein adjacent to, and by extending present Keith workings NE:

	Tons mined	Tons after sorting	Approx tons ore
(1)	4,753	2,376	1,600
(2)	8,873	4,436	3,000
	13,626	6,812	4,600

Ore Possibilities adjacent to Norton (Shaft) Mine

The possibilities are based upon description of underwater workings and conditions by Mr. Smith, who mined the stoped areas, plus surface indications of ore length.

(3) Area above 50-level	300 x 30	9,000-sq. ft.
Area between 50-level and 200-level	300 x 150	45,000-sq. ft.
Area below 200 level	300 x 50	15,000-sq. ft.
		69,000-sq. ft.
Less square feet stoped out		11,000
		58,000-sq. ft.

58,000-sq. ft. x 3 equals 174,000-cu. ft. divided by 13 equals 13,400-tons mine material, which reduced ½ by sorting before milling equals 6,700-tonsto mill of which 2/3 is estimated to be ore equal to 4,466 (say 4,450-tons) is ore.

	Approximate ore tonnage	Net operating Profit at $20
Keith Mine & extensions	4,600	$37,950.00
Norton Mine & extensions	4,450	26,255.00
	9,050	$64,205.00

East vein has not been explored underground, hence, having no productive history, cannot estimate approximate ore tonnage possibilities. Strictly for illustrative purposes, if East vein widths and ore grades equal estimated widths and ore grades of Middle and West veins, this East vein might produce, from surface to elevation of No. 3 Main tunnel Level an approximate amount equivalent to total production of Middle and West veins:

Mined from Middle & West veins	4,850-tons of ore
Estimated ore possibilities	9,050-tons of ore
Illustrative East vein ore possibilities	13,900-tons of ore.

As most of this vein is in Norton ground it will be subjected to 10% net royalty, but costs will be reduced below Norton costs as the above illustrative ore tonnage will be gravity mined above No. 3 level. On basis of combined indicated net operating profit of $7.10 per ton the above ore would return about $98,500 net operating profit after full development and exploitation.

I wish to state that these figures are illustrative only, as there has been insufficient work on East vein to indicate reasonably sound basis for making an estimate of possibilities, and therefore are not to be used in your calculations of future profit possibilities of this property.

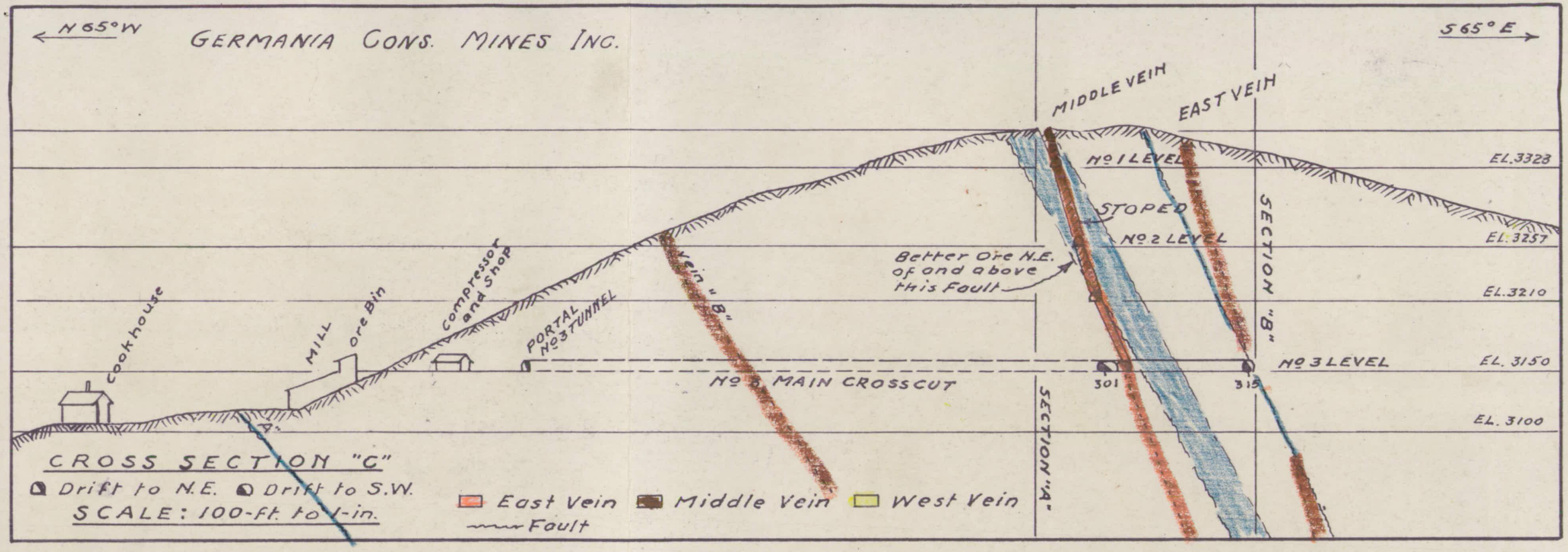
WORK REQUIREMENTS

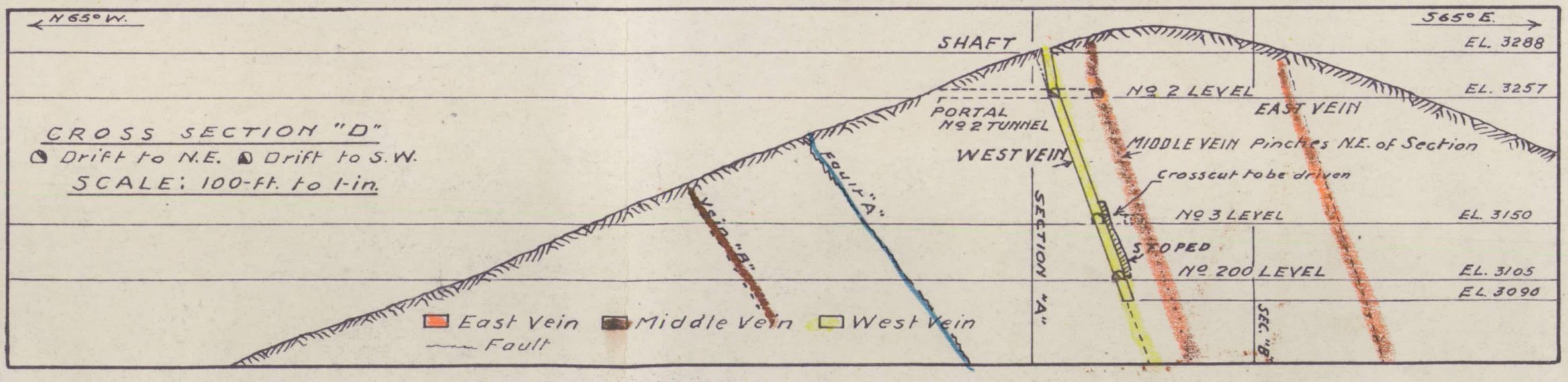
Middle Vein	Above Intermediate Level 110-ft. raising	$1,350
	No. 1 Level 250-ft. drift extension NE	2,500
	No. 1 Level (3-raises) 350-ft. raising	4,500
	Above No. 3 Main Level, 500-feet sublevel	5,000
	(2 raises) 100-feet raising	1,500
	Total cost $14,850 (Say $15,000) To get approximately $37,950 worth of ore.	
West Vein	60-feet of Shaft sinking	$2,500
	94-feet connection No. 3 SW to Shaft	1,000
	100-feet drift at 200-Level	1,000
	300-feet sub-level below the 200 level	3,000
	Total cost $7,500 to get approximately $26,255 worth of ore.	
East vein	800-feet drift at No. 3 Main Level	$8,000
	700-feet drift at No. 2 Level	7,000
	4-raises No. 3 to No. 2 400-feet	5,000
	3-raises No. 2 to surface 300-feet	3,500
	Total 23,500 to get $98,500 ???? worth of ore.	

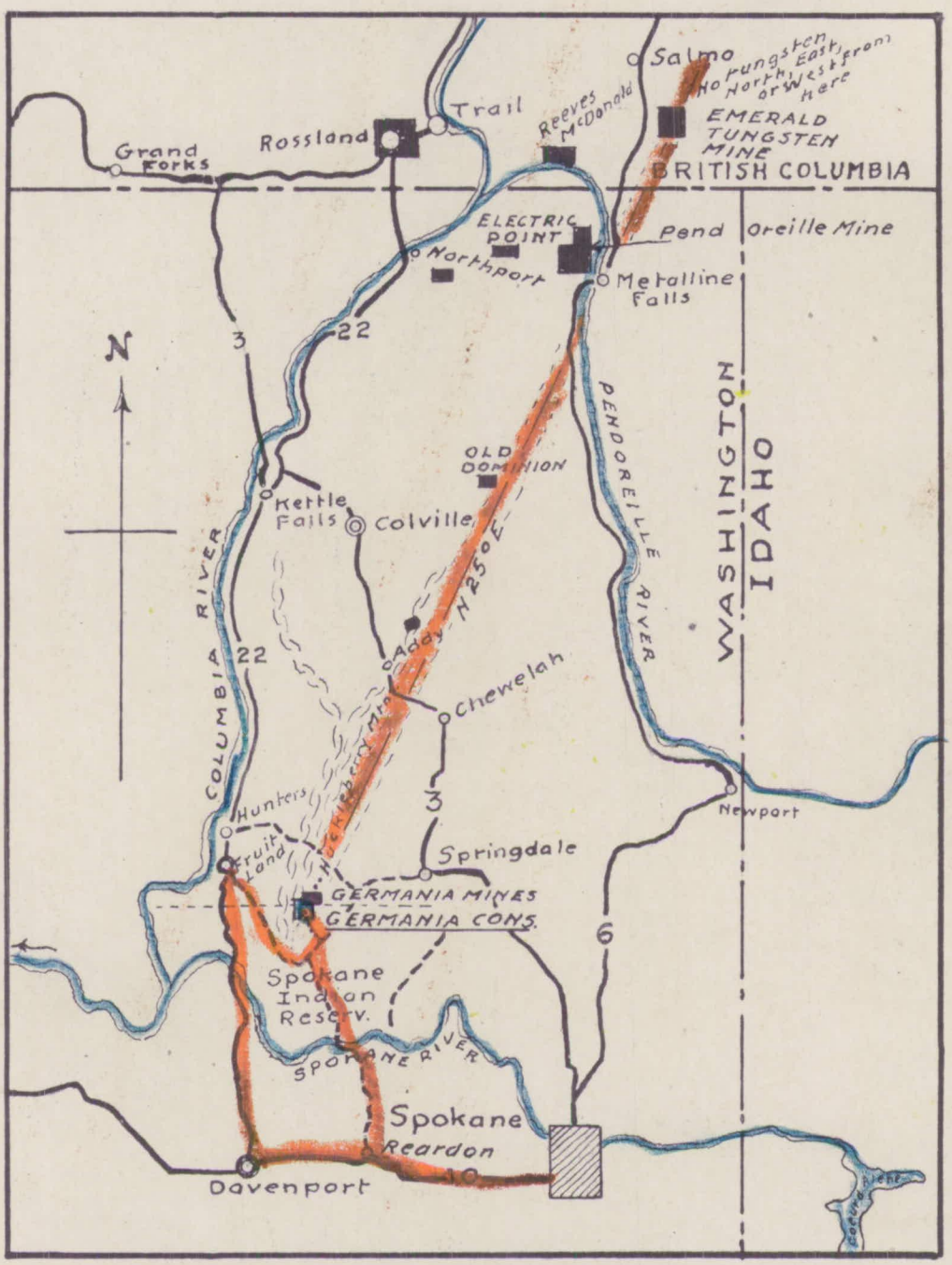
IMPROVEMENT REQUIREMENTS To change the compressor engine to Diesel, install additional 240-cu. ft. per min. Diesel auxiliary compressor, add Denver Jig to mill, purchase rails, pipe, etc. will cost about $15,000 more or less according to the total amounts of rails, pipe, etc. and according to whether new equipment is bought or good second hand.

Spokane, Washington.
October 8, 1945.

(Signed) Arthur Lakes
Mining Engineer & Geologist


N 65° W
GERMANIA CONS. MINES INC.
S 65° E
MIDDLE VEIN
EAST VEIN
Nº 1 LEVEL
EL. 3328
STOPED
Nº 2 LEVEL
EL. 3257
Better Ore N.E. of and above this Fault
EL. 3210
Cookhouse
MILL
ore Bin
compressor and Shop
PORTAL Nº 3 TUNNEL
Vein "B"
Nº 3 MAIN CROSSCUT
301
315
Nº 3 LEVEL
EL. 3150
SECTION "B"
SECTION "A"
EL. 3100
"A"
CROSS SECTION "C"
Drift to N.E. Drift to S.W.
SCALE: 100-ft. to 1-in.
East Vein
Middle Vein
West Vein
Fault

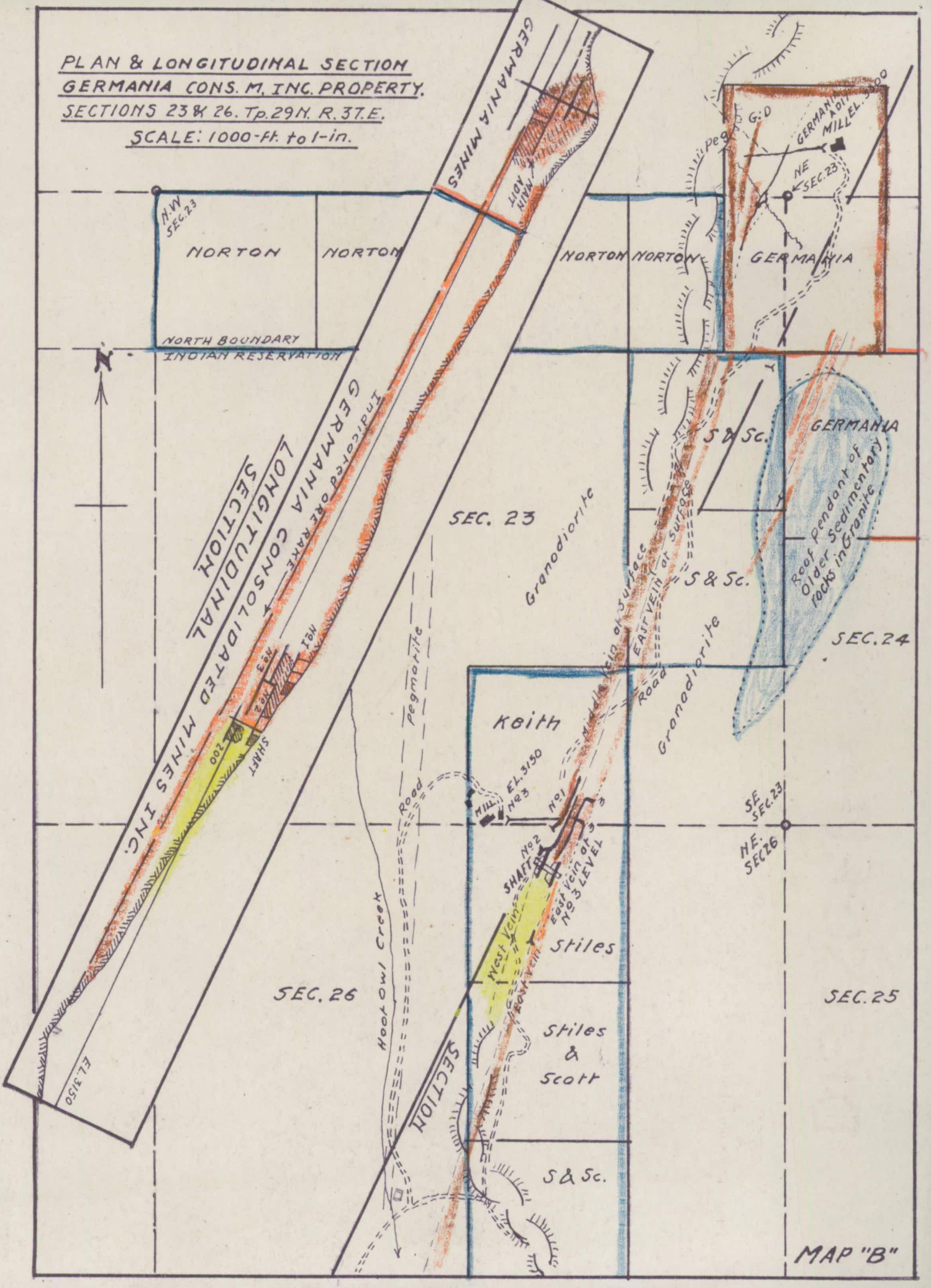

N 65° W.
S 65° E.
SHAFT
EL. 3288
Nº 2 LEVEL
EL. 3257
EAST VEIN
PORTAL Nº 2 TUNNEL
WEST VEIN
MIDDLE VEIN Pinches N.E. of Section
Crosscut to be driven
CROSS SECTION "D"
Drift to N.E. Drift to S.W.
SCALE: 100-ft. to 1-in.
Fault "A"
Vein "B"
SECTION "A"
Nº 3 LEVEL
EL. 3150
STOPED
Nº 200 LEVEL
EL. 3105
EL. 3090
SEC. "B"
East Vein
Middle Vein
West Vein
Fault

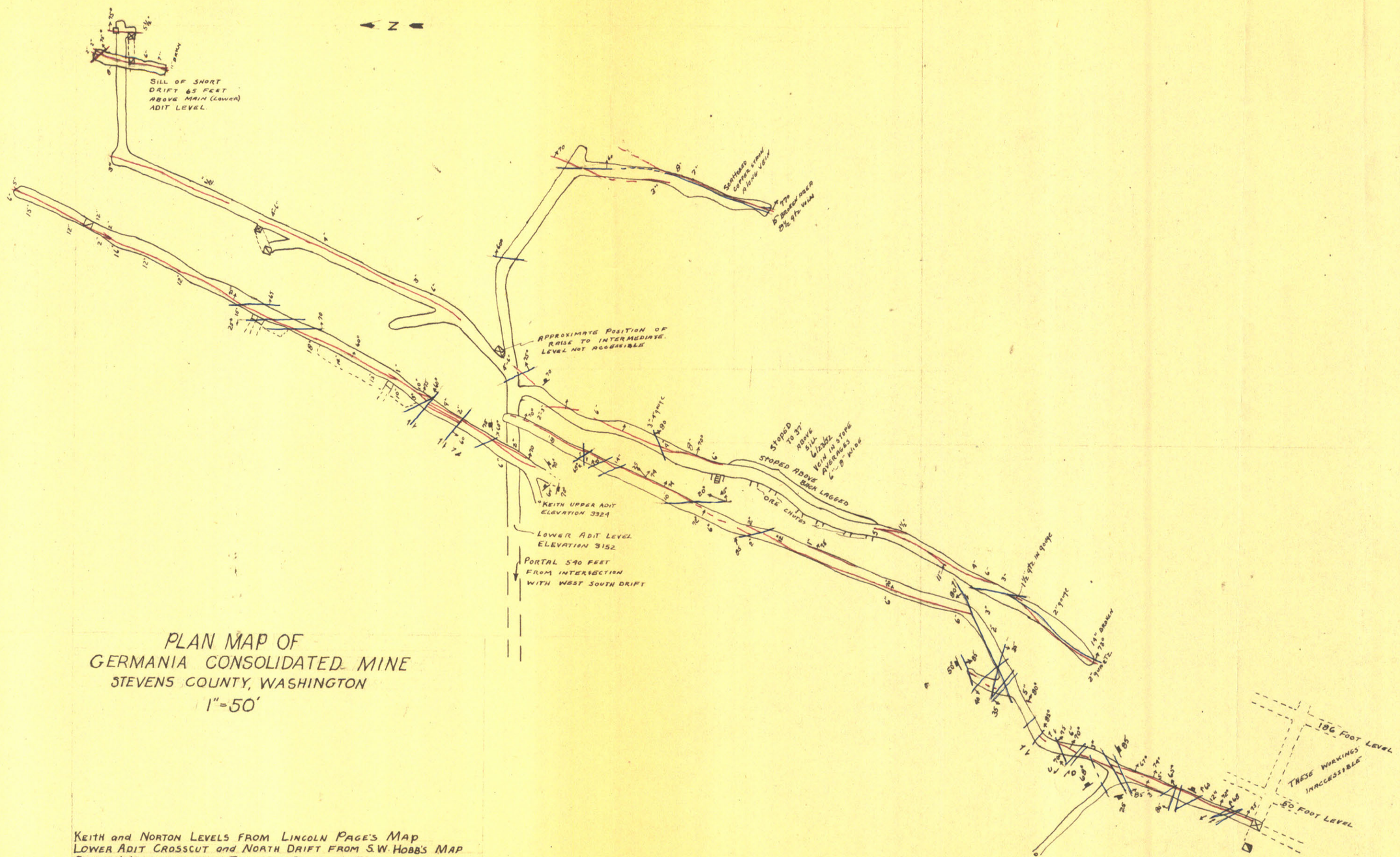


PLAN SHOWING LOCALITY OF GERMANIA CONS. M. INC.
PROPERTY AND ACCESS THERETO

——— Paved Highway - - - - Gravelled Highway.
····· Mountain Road.
Indicated Tungsten Belt.

MAP "A"


PLAN & LONGITUDINAL SECTION
GERMANIA CONS. M. INC. PROPERTY.
SECTIONS 23 & 26. Tp. 29 N. R. 37 E.
SCALE: 1000-ft. to 1-in.
GERMANIA MINES
MAIN ADIT
N.W. SEC. 23
NORTON
NORTON
NORTON
NORTON
GERMANIA
NORTH BOUNDARY
INDIAN RESERVATION
N
GERMANIA CONSOLIDATED MINES INC.
LONGITUDINAL SECTION
Indicated ore rake
No 1
No 2
No 3
SHAFT
200
EL. 3150
SEC. 23
Granodiorite
Pegmatite
Road
Hootowl Creek
SEC. 26
Keith
Stiles
Stiles & Scott
S & Sc.
S & Sc.
S & Sc.
GERMANIA
Roof pendant of older sedimentary rocks in Granite
SEC. 24
SEC. 25
Middle vein at surface
EAST VEIN at surface
Road
Granodiorite
EL. 3150
MILL
No 3
No 1
SHAFT No 2
East vein at 3 No 3 LEVEL
West vein
Iron vein
SECTION
SE SEC. 23
NE. SEC 26
NE SEC. 23
GERMANIA ADIT
MILL EL. 3500
G.D
Peg
MAP "B"

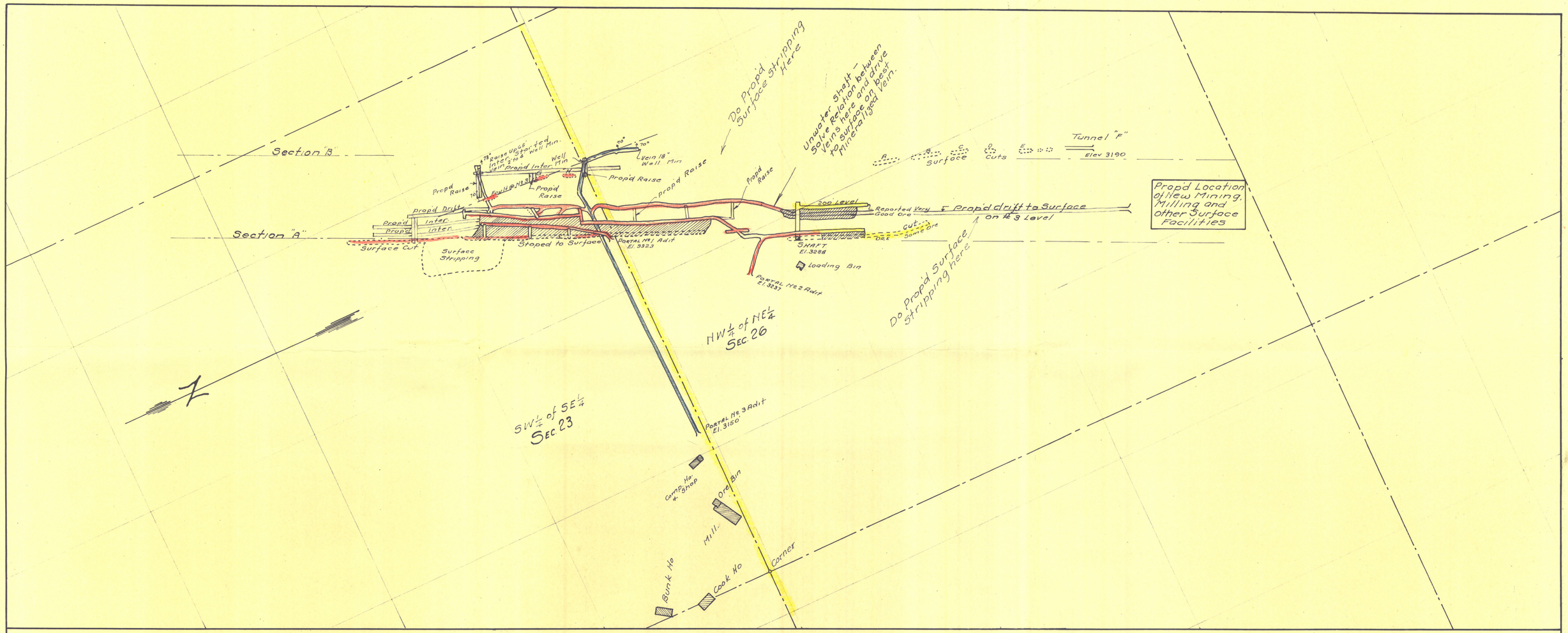


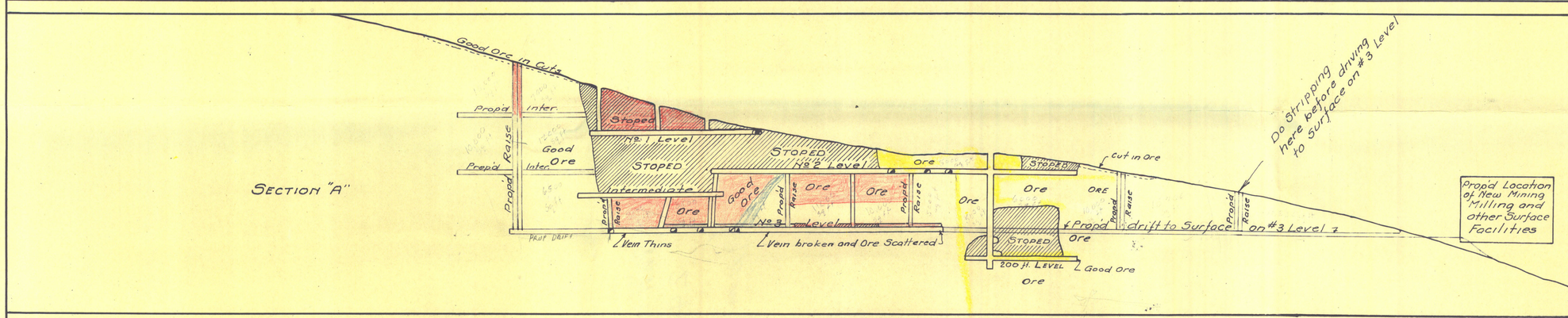
PLAN MAP OF GERMANIA CONSOLIDATED MINE

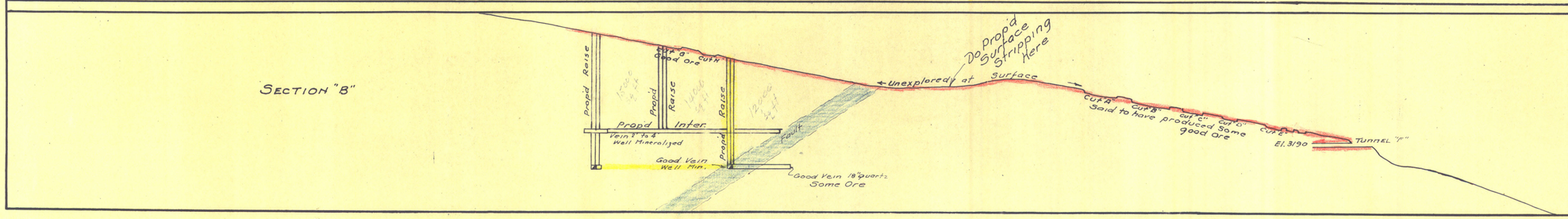
STEVENS COUNTY, WASHINGTON

1" = 50'

KEITH and NORTON LEVELS FROM LINCOLN PAGE'S MAP
LOWER ADIT CROSSCUT and NORTH DRIFT FROM S.W. HOBB'S MAP
OTHER WORKINGS FROM TAPE and COMPASS SURVEY BY
W.P. PUFFETT, USGS 6/23/52







Note
Surface and inaccessible workings and Ore occurances taken from Report by Arthur Lakes dated Oct. 8, 1945

MAP AND SECTIONS SHOWING PROPOSED UNDERGROUND DEVELOPMENT FOR THE PURPOSE OF BLOCKING OUT ORE RESERVES FOR NEW MILLING PLANT

GERMANIA CONS. MINES INC.

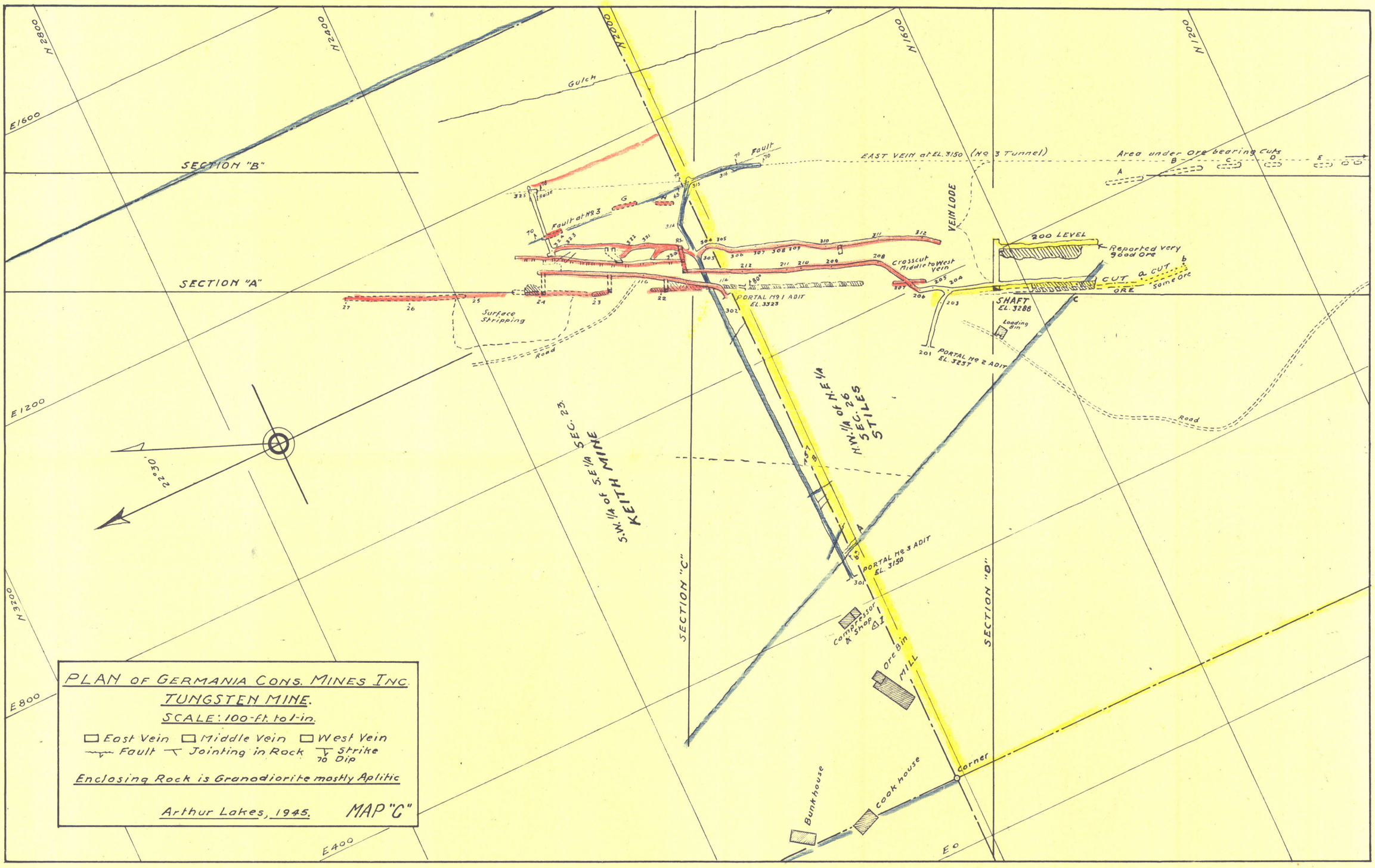
TUNGSTEN MINE

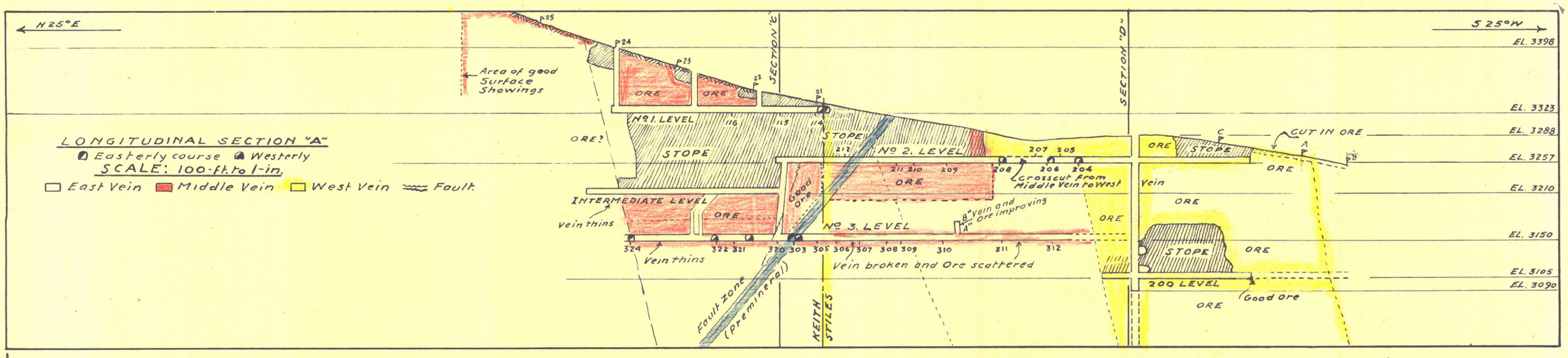
STEVENS CO. WASH.

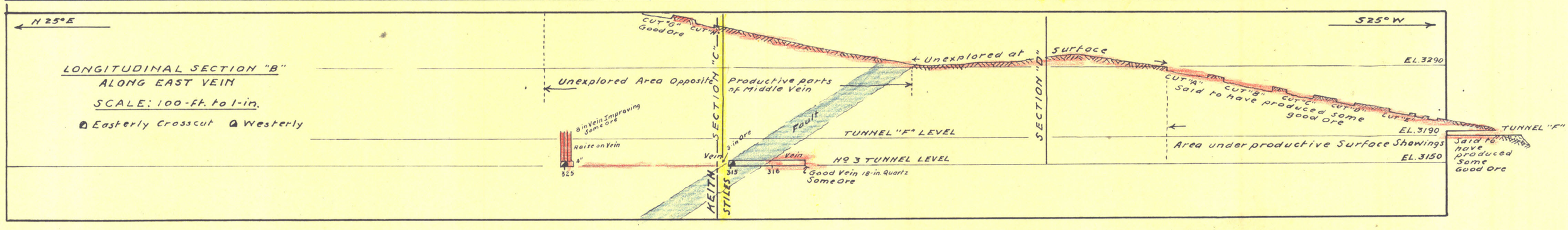
Scales Hor 1" = 100' Vert 1" = 100'

Feb. 1, '52

Wm Holmes


PLAN OF GERMANIA CONS. MINES INC.
TUNGSTEN MINE.
SCALE: 100-ft. to 1-in.
East Vein
Middle Vein
West Vein
Fault
Jointing in Rock
Strike
70 Dip
Enclosing Rock is Granodiorite mostly Aplitic
Arthur Lakes, 1945.
MAP "C"
SECTION "B"
SECTION "A"
SECTION "C"
SECTION "D"
Gulch
Fault
EAST VEIN at EL. 3150 (No 3 Tunnel)
Area under Ore bearing Cuts
VEIN LODE
200 LEVEL
Reported very good Ore
CUT a CUT b
Some Ore
ORE
SHAFT
EL. 3288
Loading Bin
Crosscut Middle to West Vein
Fault at No 3
Raise
PORTAL No 1 ADIT
EL. 3323
PORTAL No 2 ADIT
EL. 3237
PORTAL No 3 ADIT
EL. 3150
Surface Stripping
Road
Compressor & Shop
Ore Bin
MILL
Bunk house
Cook house
Corner
S.W. 1/4 of S.E. 1/4 SEC. 23
KEITH MINE
N.W. 1/4 of N.E. 1/4 SEC. 26
STILES
N2800
N2400
N2000
N1600
N1200
N800
N400
E1600
E1200
E800
E400
E0
22°30'


LONGITUDINAL SECTION "A"
Easterly course
Westerly
SCALE: 100-ft. to 1-in.
East Vein
Middle Vein
West Vein
Fault
N 25° E
S 25° W
Area of good Surface Showings
No 1. LEVEL
STOPE
ORE?
INTERMEDIATE LEVEL
Vein thins
No 2. LEVEL
Crosscut from Middle Vein to West
No 3. LEVEL
Vein broken and Ore scattered
Fault Zone (Pre mineral)
KEITH
STILES
SECTION "C"
SECTION "D"
CUT IN ORE
200 LEVEL
Good ore
EL. 3398
EL. 3323
EL. 3288
EL. 3257
EL. 3210
EL. 3150
EL. 3105
EL. 3090


LONGITUDINAL SECTION "B"
ALONG EAST VEIN
SCALE: 100-ft. to 1-in.
Easterly Crosscut
Westerly
N 25° E
S 25° W
Unexplored Area Opposite
Productive parts of Middle Vein
Unexplored at Surface
Raise on Vein
Fault
TUNNEL "F" LEVEL
No 3 TUNNEL LEVEL
Good Vein 18-in. Quartz Some Ore
Area under productive Surface Showings
Said to have produced some Good Ore
TUNNEL "F"
SECTION "C"
SECTION "D"
KEITH
STILES
EL. 3290
EL. 3190
EL. 3150