DMA Form 1

DEFENSE MINERALS ADMINISTRATION
Control Slip

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DMEA ~~DMA~~ Docket No. 2663

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Copies to USBM, USGS, and Region VII.

To:	Code 400, Rm. 3538	Date	8-19-52
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400

2663 January 14, 1955

MEMORANDUM

To: Administrator, DMEA

From: Iron and Ferro-Alloys Division

Subject: Docket No. DMEA 2663 - Tungsten (Denied)
Nash Mining Co., Inc.
Furniss Mine
Cabarrus County, North Carolina

Mr. Paul M. Tyler (5005 Edgemore Lane, Bethesda, Md., Oliver 4-5697) visited us today to inquire about applying for a tungsten exploration project at the subject property. He has both the Furniss Mine and the adjoining Phoenix Mine under option.

Mr. Tyler was given the usual application forms and information about our program. It was suggested that he discuss his plans with Mr. Geehan and with Mr. Lemon, who considered the subject application which, of course, applied to the Furniss Mine only.

W. S. Martin, Chief
Iron and Ferro-Alloys Division

2663

cc: Docket
Code 400
Adm. Read. File
Mr. R. W. Geehan, USBM
Mr. D. M. Lemmon, USGS
Mr. T. Kiilsgaard, USGS

WSMartin/ls
1-14-55

Mr. McKay (from Cabarrus County, N.C.?)
Come in Feb 13, 1953 - Says he has
an option on this - Told him why we
denied Nash's application.
He says he is a friend of the Pres. of Atlas
Steel Corp. who will send a geologist from
California to look at the Phoenix & Furniss Mines
We can expect to hear from McKay after he
gets an engineers report.

WSM

SEP 25 1952

Mr. Archie L. Nash, Jr.
Nash Mining Company, Inc.
613 South Main Street
Kannapolis, North Carolina

Re: Docket No. DMA 2663 - Tungsten
Nash Mining Company
Furnace Mine
Cabarrus County, North Carolina

Dear Mr. Nash:

Your request for exploration assistance and other data concerning the Furnace mine available to us in Washington have been carefully reviewed.

This information, although noting the occurrence of a small amount of tungsten mineralization on your property, indicates to us that the probability of disclosing mineable ore reserves by your proposed program 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,

(signed) FRANK E. JOHNSON

ACTING Administrator

FAPutledge:lm
9/22/52

cc: Admn. Reading File
Docket
R. W. Geehan, DMRM
D. M. Larson, DMGS
Field Term Reg. VII
Operating Committee
G. C. Selfridge
F. A. Putledge

Administrator, DMEA Sept. 22, 1952

Iron and Ferro-Alloy Division, DMEA

Denial of application for exploration assistance in the amount of $43,476.79
Nash Mining Company
Furniss Mine
Cabarrus County, North Carolina
Docket No. DMEA 2663 - Tungsten

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

1. The Furniss Mine produced approximately 1,000 tons of gold ore prior to 1907. Scheelite was discovered on the dumps of the workings on the Furniss vein by A. L. Nash, Sr. in about 1946 and the information given to the U. S. Bureau of Mines.

   The Bureau of Mines, in two projects at the deposit in 1948 and 1949-50, drilled 12 holes totaling 1,786.6 feet, examined and sampled the underground workings, excavated by bulldozer and hand 3,155 linear feet of trenches, and collected numerous samples for assay. The best scheelite showing was found in the underground exposures of the Furniss mine.

2. The Bureau of Mines project indicated the mineralized lenses in the Furniss vein are generally short. However, in the northeast drift on the 170-foot level, the vein is continuous for almost 100 feet and averages 8 inches in width, but the scheelite values along the vein are spotty.

3. Of the six drill holes intersecting the Furniss vein, only two showed tungsten. Hole 4 revealed 1.2 feet of 0.26 percent WO_3 and Hole 7, 4.1 feet of 0.03 percent WO_3.

4. There is little geologic probability of finding any significant deposit of tungsten ore at the Furniss mine.

5. The Commodity Division of the Bureau of Mines states: "This work would be a wildcat venture, as little is known regarding the geologic factors that localized the ore shoots. It does not seem probable that significant amounts of tungsten ore will be located by the work proposed".

6. Mr. M. H. Kline, Bureau of Mines, has stated that no appreciable amount of commercial ore, taking both the gold and tungsten values into consideration, may be expected to be developed at the Furniss mine as a result of the proposed work.

7. The Commodity Division of the U. S. Geological Survey considers this a borderline case with the weight of the evidence in favor of denial. We concur with that denial.

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

FARutledge'lm
9/22/52

cc: Admn. Reading File
Docket
G. C. Selfridge
F. A. Rutledge

IN REPLY REFER TO:

C-MD-CF

(400)

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

September 18, 1952

Memorandum

To: George C. Selfridge, DMEA

From: D. M. Lemmon, USGS

Subject: Exploration application $43,476.79 DMEA 2663 - Tungsten
Nash Mining Co.
913 S. Main Street
Kannapolis, N. C.

Property: Furnise mine
Cabarrus County, N. C.

Proposal: It is proposed to pump out and rehabilitate the Furnise shaft and to drift 650 feet on the 170-foot level.

Sources of Information: The known surface exposures of scheelite were examined in May 1948 by Lemmon for the Geological Survey (copy of memo attached hereewith). The Nash-Moore Mines, Inc. subsequently re-opened and unwatered the Furnise shaft.

The U. S. Bureau of Mines investigated the area August 11 - September 26, 1948 and November 7, 1949 - April 10, 1950. Work consisted of sampling the accessible workings of the Furnise mine, diamond drilling 12 holes for a total of 1,786 feet, and excavating 2,884 feet of bulldozer trenches plus 271 feet of hand trenches. Six of the holes were drilled at the Furnise vein, 2 at the Nash vein, and 4 at the Cooper vein. The only tungsten minerals cored were in hole 4 (1.2 feet, 0.26 percent WO_3) and hole 7 (4.1 feet, 0.03 percent WO_3) in the Furnise vein. Results of this work are described in Bureau of Mines RI 4724, September 1950, by Jack O. Jones and Alexander L. Payton.

Comment: In the Furnise mine on the 100-level southwest of the shaft, samples by the Bureau of Mines showed 41 feet length of vein 1 foot wide averaging 2.1 percent of WO_3. On the 170-level, no scheelite was found southwest of the shaft, but a length of 15 feet of vein contained scheelite northeast of the shaft. No other concentrations

of scheelite were found by surface work or drilling on the property. However, material from the dump of the Furr shaft (on the Furniss vein 432 feet southwest from the Furniss shaft) contained bunches of scheelite, and a selected sample assayed 7.7 percent of WO_3 (p. 14, R.I. 4724).

The gold in the veins investigated is very erratically distributed. Gold assays were not made of many of the samples taken.

The evidence from past investigations shows that the best scheelite ore is in the Furniss mine, that some ore is present in the Furr shaft although the dump is not as encouraging as the Furniss dump, and that scheelite ore might be found in the vicinity of D.D.H. 4 located 350 feet northeast from the Furniss shaft. If the ore on the 100 and 170 levels of the Furniss mine is part of the same ore shoot raking 40° northeast, with a length of 41 feet, a width of 1 foot, and a grade of 2 percent, then the total scheelite ore before steping would be about 500 tons containing 1,000 units to the 170-level. If similar ore shoots are found at the Furr shaft and at the D.D.H. 4, the total ore to the 170-level would be only 1,500 tons or 3,000 units. Unless additional ore shoots occur in this distance of 780 feet, a successful mining operation is impossible and the cost of the proposed exploration can not be justified.

In comparison with the quoted figures from the U.S.B.M. work (R.I. 4724), the application cites greater lengths of ore in veins, a discrepancy that suggests measurements were made on maps of unknown scale.

Conclusion: The chance of discovering workable deposits is slim because of the narrowness of the vein and wide separation of scheelite bodies. The distribution of scheelite in surface pits is indicative of the distribution in the vein 170 feet deeper, and more frequent occurrence of scheelite bodies is not likely at depth. The cost of the proposed exploration is high compared to the value of the objectives. Therefore denial of the application seems in order. However, my convictions are not too firm and I would not oppose a less costly program to delineate the ore shoot at the Furniss mine, perhaps involving 100 to 200 feet of drift northeast on the 170-level and a 50-foot raise from the center of any ore discovered. The proposal to drift 400 feet south is not attractive because the 3 drill holes in this block were negative.

DM Lemmon

DMLemmon:gt

SEP 12 1952

Mr. Alexander L. Peyton
Mining Engineer
U. S. Bureau of Mines
180 Cox Avenue
Asheville, North Carolina

Nash Dist. Co
Area 2663

Dear Mr. Peyton:

Reference is made to Bureau of Mines Report of Investigations 4724, "Investigation of Furnace Tungsten Deposits, Cabarrus County, North Carolina", of which you are co-author.

It will be appreciated if you can advise us whether, in the tables of analyses of samples, the abbreviation "N.D." used on numerous occasions means that the samples were "Not Determined" and if so, in the case of tungsten, were the samples checked with a ultraviolet lamp?

Sincerely yours,

-S-

W. S. Martin, Acting Chief
Iron and Ferro-Alloy Division

FARutledge'lm
9/11/52

cc: Admn. Reading File
Mails and Files Br.
W. S. Martin
F. A. Rutledge

400

Mr. Archie L. Nash, Jr.
Nash Mining Company, Inc.
913 South Main Street
Kannapolis, North Carolina

FEB 1 8 1953

Re: Docket No. DMA 2663 - Tungsten
Nash Mining Company, Inc.
Furniss Mine
Cabarrus County, North Carolina

Dear Mr. Nash:

In accordance with your earlier request we are returning the following items which were attached to your application for exploration assistance under the referenced docket.

1 copy "Report on Furniss Mine, Cabarrus County, North Carolina" by James L. Moore, Jr., 15 pp., November 15, 1948.

2 copies U. S. Bureau of Mines Report of Investigations 4724: "Investigation of Furniss Tungsten Deposits, Cabarrus County, N. C." by Jack O. Jones and Alexander L. Peyton 14 pp., September 1950.

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

Sincerely yours,

R. S. Martin, Acting Chief
Iron and Ferro-Alloy Division

cc: Docket
Field Team, Region 7
Code 400
Admin. Read. File
R. W. Keehan, USBM
D. M. Lemmon, USGS
Enclosures

FARutledge/hhb
2/17/53

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

January 14, 1955

MEMORANDUM

To: Administrator, DMEA

From: Iron and Ferro-Alloys Division

Subject: Docket No. DMEA 2663 - Tungsten (Denied)
Nash Mining Co., Inc.
Furniss Mine
Cabarrus County, North Carolina

Mr. Paul M. Tyler (5005 Edgemore Lane, Bethesda, Md., Oliver 4-5697) visited us today to inquire about applying for a tungsten exploration project at the subject property. He has both the Furniss Mine and the adjoining Phoenix Mine under option.

Mr. Tyler was given the usual application forms and information about our program. It was suggested that he discuss his plans with Mr. Geehan and with Mr. Lemon, who considered the subject application which, of course, applied to the Furniss Mine only.

W S Martin
W. S. Martin, Chief
Iron and Ferro-Alloys Division

400

Docket
Martin
Com

Cor
1-17

January 14, 1955

MEMORANDUM

To: Administrator, DMEA

From: Iron and Ferro-Alloys Division

Subject: Docket No. DMEA 2663 - Tungsten (Denied)
Nash Mining Co., Inc.
Furniss Mine
Cabarrus County, North Carolina

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W. S. Martin, Chief
Iron and Ferro-Alloys Division

cc: Docket
Code 400
Adm. Read. File
Mr. R. W. Geehan, USBM
Mr. D. M. Lemmon, USGS
Mr. T. Kiilsgaard, USGS

WSMartin/ls
1-14-55

Concord, N.C.

Mr. Paul M. Tyler
Russell and Company Inc.
1741 Desales St.
Washington 6, D.C.

Dear Mr. Tyler,

This letter will serve as written permission for you to have access to the application for a DMEA Loan that we, trading as the Nash Mining Company, submitted to the government in 1952.

Re: Docket No. DMEA 2663-Tungsten
Nash Mining Co.
Furniss Mine
Cabarrus County, North Carolina

8/19/52

Sincerely yours,

A.L. Nash

A.L. Nash
Rt. #3 Concord, N.C.

F C Wilson

One copy of letter written on

2/25/55

[illegible] on loan Shall

Tyler was in today & wanted [illegible] back it then a [illegible] Lenda 2663.

3/23/55

(~~[illegible]~~)

FILE COPY
SURNAME:

Rutledge
Martin

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

BLO.

Mr. Archie L. Nash, Jr.
Nash Mining Company, Inc.
913 South Main Street
Kannapolis, North Carolina

FEB 1 8 1953

Re: Docket No. DMEA 2663 - Tungsten
Nash Mining Company, Inc.
Furniss Mine
Cabarrus County, North Carolina

J.C. 2/18/53

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Sincerely yours,

W. S. Martin, Acting Chief
Iron and Ferro-Alloy Division

cc: Docket
Field Team, Region 7
Code 400
Admn. Read. File
R. W. Geehan, USBM
D. M. Lemmon, USGS
Enclosures

FARutledge/hhb
2/17/53

FILE COPY
SURNAME:

Rutledge
Selfridge
Hunter
Yukon
Johnson
Krabel
Ellis
Fitzsimmons

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

SEP 25 1952

Mr. Archie L. Nash, Jr.
Nash Mining Company, Inc.
913 South Main Street
Kannapolis, North Carolina

Re: Docket No. DMEA 2663 - Tungsten
Nash Mining Company
Furniss Mine
Cabarrus County, North Carolina

Dear Mr. Nash:

Your request for exploration assistance and other data concerning the Furniss mine available to us in Washington have been carefully reviewed.

This information, although noting the occurrence of a small amount of tungsten mineralization on your property, indicates to us that the probability of disclosing mineable ore reserves by your proposed program 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,

9-25-52

(signed) FRANK E. JOHNSON (fw)

ACTING Administrator

FARutledge:lm
9/22/52

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

STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO : Administrator, DMEA

DATE: Sept. 22, 1952

FROM : Iron and Ferro-Alloy Division, DMEA

SUBJECT: Denial of application for exploration assistance in the amount of $43,476.79
Nash Mining Company
Furniss Mine
Cabarrus County, North Carolina
Docket No. DMEA 2663 - Tungsten

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

1. The Furniss Mine produced approximately 1,000 tons of gold ore prior to 1907. Scheelite was discovered on the dumps of the workings on the Furniss vein by A. L. Nash, Sr. in about 1946 and the information given to the U. S. Bureau of Mines.

   The Bureau of Mines, in two projects at the deposit in 1948 and 1949-50, drilled 12 holes totaling 1,786.6 feet, examined and sampled the underground workings, excavated by bulldozer and hand 3,155 linear feet of trenches, and collected numerous samples for assay. The best scheelite showing was found in the underground exposures of the Furniss mine.

2. The Bureau of Mines project indicated the mineralized lenses in the Furniss vein are generally short. However, in the northeast drift on the 170-foot level, the vein is continuous for almost 100 feet and averages 8 inches in width, but the scheelite values along the vein are spotty.

3. Of the six drill holes intersecting the Furniss vein, only two showed tungsten. Hole 4 revealed 1.2 feet of 0.26 percent WO_3 and Hole 7, 4.1 feet of 0.03 percent WO_3.

4. There is little geologic probability of finding any significant deposit of tungsten ore at the Furniss mine.

5. The Commodity Division of the Bureau of Mines states: "This work would be a <u>wildcat</u> venture, as little is known regarding the geologic factors that localized the ore shoots. It does not seem probable that significant amounts of tungsten ore will be located by the work proposed".

6. Mr. M. H. Kline, Bureau of Mines, has stated that no appreciable amount of commercial ore, taking both the gold and tungsten values into consideration, may be expected to be developed at the Furniss mine as a result of the proposed work.

7. The Commodity Division of the U. S. Geological Survey considers this a borderline case with the weight of the evidence in favor of denial. We concur with that denial.

G. C. Selfridge by WSM

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

FILE COPY
SURNAME

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

Administrator, DMEA

Sept. 22, 1952

Rutledge
Selfridge
Guhan
by Martin

Iron and Ferro-Alloy Division, DMEA

Denial of application for exploration assistance in the amount of $43,476.79
Nash Mining Company
Furniss Mine
Cabarrus County, North Carolina
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G. C. Selfridge, Chief
Iron and Ferro-Alloy Division

FARutledge'lm
9/22/52

cc: Admn. Reading File
Docket
G. C. Selfridge
F. A. Rutledge

IN REPLY REFER TO:

G-MD-CF

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

September 18, 1952

Memorandum

To: George C. Selfridge, DMEA

From: D. M. Lemmon, USGS

Subject: Exploration application $43,476.79 DMEA 2663 - Tungsten
Nash Mining Co.
913 S. Main Street
Kannapolis, N. C.

Property: Furniss mine
Cabarrus County, N. C.

Proposal: It is proposed to pump out and rehabilitate the Furniss shaft and to drift 650 feet on the 170-foot level.

Sources of Information: The known surface exposures of scheelite were examined in May 1948 by Lemmon for the Geological Survey (copy of memo attached herewith). The Nash-Moore Mines, Inc. subsequently re-opened and unwatered the Furniss shaft.

The U. S. Bureau of Mines investigated the area August 11 - September 26, 1948 and November 7, 1949 - April 10, 1950. Work consisted of sampling the accessible workings of the Furniss mine, diamond drilling 12 holes for a total of 1,786 feet, and excavating 2,884 feet of bulldozer trenches plus 271 feet of hand trenches. Six of the holes were drilled at the Furniss vein, 2 at the Nash vein, and 4 at the Copper vein. The only tungsten minerals cored were in hole 4 (1.2 feet, 0.26 percent WO_3) and hole 7 (4.1 feet, 0.03 percent WO_3) in the Furniss vein. Results of this work are described in Bureau of Mines RI 4724, September 1950, by Jack O. Jones and Alexander L. Peyton.

Comment: In the Furniss mine on the 100-level southwest of the shaft, samples by the Bureau of Mines showed 41 feet length of vein 1 foot wide averaging 2.1 percent of WO_3. On the 170-level, no scheelite was found southwest of the shaft, but a length of 15 feet of vein contained scheelite northeast of the shaft. No other concentrations

Copy retained 400

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The gold in the veins investigated is very erratically distributed. Gold assays were not made of many of the samples taken.

The evidence from past investigations shows that the best scheelite ore is in the Furniss mine, that some ore is present in the Furr shaft although the dump is not as encouraging as the Furniss dump, and that scheelite ore might be found in the vicinity of D.D.H. 4 located 350 feet northeast from the Furniss shaft. If the ore on the 100 and 170 levels of the Furniss mine is part of the same ore shoot raking 40° northeast, with a length of 41 feet, a width of 1 foot, and a grade of 2 percent, then the total scheelite ore before stoping would be about 500 tons containing 1,000 units to the 170-level. If similar ore shoots are found at the Furr shaft and at the D.D.H. 4, the total ore to the 170-level would be only 1,500 tons or 3,000 units. Unless additional ore shoots occur in this distance of 780 feet, a successful mining operation is impossible and the cost of the proposed exploration can not be justified.

In comparison with the quoted figures from the U.S.B.M. work (R.I. 4724), the application cites greater lengths of ore in veins, a discrepancy that suggests measurements were made on maps of unknown scale.

Conclusion: The chance of discovering workable deposits is slim because of the narrowness of the vein and wide separation of scheelite bodies. The distribution of scheelite in surface pits is indicative of the distribution in the vein 170 feet deeper, and more frequent occurrence of scheelite bodies is not likely at depth. The cost of the proposed exploration is high compared to the value of the objectives. Therefore denial of the application seems in order. However, my convictions are not too firm and I would not oppose a less costly program to delineate the ore shoot at the Furniss mine, perhaps involving 100 to 200 feet of drift northeast on the 170-level and a 50-foot raise from the center of any ore discovered. The proposal to drift 400 feet south is not attractive because the 3 drill holes in this block were negative.

D.M. Lemmon

Scheelite at the Phoenix gold mine and vicinity
Cabarrus County, North Carolina

by
Dwight M. Lemmon
May 11, 1948

The Phoenix gold mine is 6 miles southeast of the Concord post office, Cabarrus County, North Carolina. It is reached from the post office by following North Carolina state route 151 southeasterly 4 miles, then east at Faggarts cross roads on a graded dirt road for 3 miles to an unimproved dirt road that branches southward. The Phoenix mine is 0.7 mile southwest on this road.

On May 5, accompanied by James I. Moore, Jr., mining engineer who holds an option on the property, I examined the dumps of the old Phoenix mine and the nearby Furness shaft, and also inspected vein exposures in prospect pits dug by A. L. Nash and sons, who own the property. After dark, we examined the various exposures in ultra-violet light.

Norman D. Raman of the Geological Survey examined dumps of the Phoenix mine in 1943, but did not see the other scheelite occurrences. In 1946, the U. S. Bureau of Mines drilled 4 short diamond drill holes at the Cline mine, a gold-copper-tungsten prospect located 6 miles northeast of the Phoenix mine. 1/

In the vicinity of the Phoenix mine, 3 or more narrow quartz veins occur in schistose country rock probably derived from volcanic tuffs and flows. The main Phoenix vein can be traced for more than a quarter mile by prospect pits and dumps, although the vein is exposed only in one pit. Coarse crystals of scheelite are present in quartz on the dump from the main Phoenix shaft, and scheelite is also found in old mill tailings. The dump contains many thousand tons of country rock, without scheelite, and a few tons of quartz with scheelite, which may represent the reject from sorted gold ore. The mill tailings amount to only a few hundred tons that assay 0.05 to 0.15 percent of WO_3.

About a quarter mile northeast from the Phoenix shaft, a dump near the caved Furness shaft contains quartz with coarse gobs of scheelite, up to 2 inches in size. The content of WO_3 in 25 to 50 tons of material is probably more than 1.0 percent. Nothing is known about the source of this ore except that it must have come from the Furness shaft.

1/ Hickman, Robert C., Cline copper and tungsten mine, Cabarrus County, North Carolina: U. S. Bureau of Mines, R. I. 4203, 5 p., February 1948.

A vein 6 to 12 inches wide is exposed in a series of pits 300 to 400 feet east of the Phoenix vein. A trace of scheelite is present in some of the exposures.

The quartz veins contain gold, pyrite, scheelite, barite, and siderite. The maximum width is about 3 feet, and the average width considerably less. The soil cover is deep, as much as 10 feet, and there are few exposures of veins. The position of the main Phoenix vein is marked by a series of pits, shafts, and trenches. In old operations of 100 years or more ago, much of the vein near the Furness shaft was stripped, and the oxidized ore was mined to depths of 10 to 20 feet. The Furness shaft was sunk into the sulfide zone to an unknown depth, possibly several hundred feet, and some drifting was done. If any ore was stoped, it was treated in the Phoenix mill.

From old reports, Pardee in 1934 summarized what is known about the Phoenix mine:

"The Phoenix mine, in Cabarrus County, N.C., 6 miles southeast of Concord, was developed to a depth of 140 feet before 1856. It includes three or more veins, of which the main (Phoenix) vein, according to a report by M. C. Lake, strikes N. 57° E. and dips 80° NW. The veins are formed along a shear zone in rocks of the granite belt. During the 80's the mine was operated by Adolph Thies, who succeeded in recovering gold from the sulphides with a modified chlorination process that he perfected and later used at the Haile mine, in South Carolina. The last period of operation was from 1900 to 1906. In the summer of 1934 the buildings were down and the shafts choked by caving. From available information a total production of $400,000 in gold is estimated.

"The workings described include two shafts, each 600 feet deep, with drifts at different levels that explore the main (Phoenix) vein for a distance of 700 feet. In the lower workings the vein ranges from a fraction of an inch to 4 feet in width and averages 15 inches for distances of 300 to 500 feet on different levels. Locally it splits into two branches, and in places stringers leave it to follow cleavage planes or fractures in the country rock, a dark greenish-gray diorite that has been more or less altered to an epidote-chlorite schist.

"An ore body 300 feet long has been largely stoped out above the 425-foot level. Other large stopes have been made above the 200-foot level, and several small ones elsewhere down to the 520-foot level. The ore minerals are gold-bearing pyrite and chalcopyrite, free gold, and very small amounts of galena. The gangue consists of quartz, barite, and carbonates (calcite, ankerite, and siderite). The sulphides compose from 3 to 60 percent of the mass and tend to be arranged in bands near the walls. the shoot above the 425-foot level worked by Thies yielded 0.50 ounce of gold to the ton by amalgamation, 0.375 ounce to the ton remaining in the sulphides, 90 to 95 percent of which was recovered by chlorination. In

addition the ore averaged from 1 to 3 percent of copper. The reported assay value of a considerable body of ore said to remain between the 600-foot and 350-foot levels ranges from $6.20 to $19.76 a ton and averages $13.25 (gold figured at $20.67 an ounce). In a winze (the deepest working) sunk 40 feet below the 600-foot level the vein becomes narrower." 2/

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In discussing developed ore reserves, Pardee states: "In the Phoenix mine a considerable body of ore between the 350-foot and 600-foot levels is reported to average 0.66 ounce of gold to the ton. ...As the workings were not accessible the figures for the different mines could not be verified by direct examination. They are sufficiently supported by production records and other evidence, however, to be regarded as at least plausible." 4/

A longitudinal projection of the Phoenix mine showing workings to the 425-foot level and a description was published in 1896 by Nitze and Hanna. 5/

Conclusion. Coarsely-crystalline scheelite occurs in the Phoenix vein, which may contain one or more small tungsten ore shoots. The best scheelite mineralization is probably in or adjoining the same ore shoots worked for gold. The presence of considerable barite is a complicating factor in concentration by gravity methods.

The best evidence of a scheelite ore shoot is found on the dump of the Furness shaft, which is caved and cratered at the collar. Whether commercial ore is present in the vein or not can be determined only by re-opening the workings and by stripping the surface. The second best exposure of scheelite is on the Phoenix dump. The workings are deep and

2/ Pardee, J. T., Preliminary report on gold deposits in North Carolina and South Carolina: U. S. Geol. Survey, Memorandum for the press, P.W. 29021, 43 pp., 1935 (pp. 20-21).
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4/ Op. cit., p. 16.
5/ Nitze, Henry B. C., and Hanna, George B., Gold deposits of North Carolina: North Carolina Geological Survey, Bull. No. 3, pp. 121-122, 1896.

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the expense of opening them greater than could be justified by the present scheelite showings.

The chance is slight that enough scheelite ore will be found in the district to be of national significance. Therefore I recommend that any exploration be done by the owners rather than by the Geological Survey. In any large-scale exploratory program, the major emphasis would probably be on gold rather than scheelite.

 Don L.

Scheelite at the Phoenix gold mine and vicinity
Cabarrus County, North Carolina

by
Dwight M. Lemmon
May 11, 1948

The Phoenix gold mine is 6 miles southeast of the Concord post office, Cabarrus County, North Carolina. It is reached from the post office by following North Carolina state route 151 southeasterly 4 miles, then east at Faggarts cross roads on a graded dirt road for 3 miles to an unimproved dirt road that branches southward. The Phoenix mine is 0.7 mile southwest on this road.

On May 5, accompanied by James I. Moore, Jr., mining engineer who holds an option on the property, I examined the dumps of the old Phoenix mine and the nearby Furness shaft, and also inspected vein exposures in prospect pits dug by A. L. Nash and sons, who own the property. After dark, we examined the various exposures in ultra-violet light.

Norman D. Raman of the Geological Survey examined dumps of the Phoenix mine in 1943, but did not see the other scheelite occurrences. In 1946, the U. S. Bureau of Mines drilled 4 short diamond drill holes at the Cline mine, a gold-copper-tungsten prospect located 6 miles northeast of the Phoenix mine. 1/

In the vicinity of the Phoenix mine, 3 or more narrow quartz veins occur in schistose country rock probably derived from volcanic tuffs and flows. The main Phoenix vein can be traced for more than a quarter mile by prospect pits and dumps, although the vein is exposed only in one pit. Coarse crystals of scheelite are present in quartz on the dump from the main Phoenix shaft, and scheelite is also found in old mill tailings. The dump contains many thousand tons of country rock, without scheelite, and a few tons of quartz with scheelite, which may represent the reject from sorted gold ore. The mill tailings amount to only a few hundred tons that assay 0.05 to 0.15 percent of WO_3.

About a quarter mile northeast from the Phoenix shaft, a dump near the caved Furness shaft contains quartz with coarse gobs of scheelite, up to 2 inches in size. The content of WO_3 in 25 to 50 tons of material is probably more than 1.0 percent. Nothing is known about the source of this ore except that it must have come from the Furness shaft.

1/ Hickman, Robert C., Cline copper and tungsten mine, Cabarrus County, North Carolina: U. S. Bureau of Mines, R. I. 4203, 5 p., February 1948.

A vein 6 to 12 inches wide is exposed in a series of pits 300 to 400 feet east of the Phoenix vein. A trace of scheelite is present in some of the exposures.

The quartz veins contain gold, pyrite, scheelite, barite, and siderite. The maximum width is about 3 feet, and the average width considerably less. The soil cover is deep, as much as 10 feet, and there are few exposures of veins. The position of the main Phoenix vein is marked by a series of pits, shafts, and trenches. In old operations of 100 years or more ago, much of the vein near the Furness shaft was stripped, and the oxidized ore was mined to depths of 10 to 20 feet. The Furness shaft was sunk into the sulfide zone to an unknown depth, possibly several hundred feet, and some drifting was done. If any ore was stoped, it was treated in the Phoenix mill.

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DMC.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

111 Patton Ave., Asheville, N. C.

Region VII, Southeastern

September 15, 1952

Subject: Furniss Tungsten
Cabarrus County, N. C.

Dmea - 2663
Tech Mining Co.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
SEP 16 1952

Mr. W. S. Martin
Acting Chief
Iron and Ferro-Alloy Division
DMEA
Washington, D. C.

Dear Mr. Martin:

In the analysis tables the abbreviation "N. D." means "None Detected".

The samples were checked with light. If additional information is needed, please advise.

Sincerely yours,

A. L. Peyton

A. L. Peyton
Mining Engineer
U. S. Bureau of Mines
Region VII

FOR VICTORY
BUY UNITED STATES WAR BONDS AND STAMPS

MF-500

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

REFERENCE SLIP

DATE 9-18-52

REFERRED TO:

1. Code 400
2.
3.
4.

FOR:

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

REMARKS: ----------

Check (X) before the items needing attention.

R. E. ADAMS

Initials of sender.

GPO 16—63815-1

FILE COPY 400
SURNAME:

Rutledge
Martin

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

SEP 12 1952

Mr. Alexander L. Peyton
Mining Engineer
U. S. Bureau of Mines
180 Cox Avenue
Asheville, North Carolina

Dear Mr. Peyton:

Reference is made to Bureau of Mines Report of Investigations 4724, "Investigation of Furnace Tungsten Deposits, Cabarrus County, North Carolina", of which you are co-author.

It will be appreciated if you can advise us whether, in the tables of analyses of samples, the abbreviation "N.D." used on numerous occasions means that the samples were "Not Determined" and if so, in the case of tungsten, were the samples checked with a ultraviolet lamp?

Sincerely yours,

Signed S.H. 9-12-52

W. S. Martin, Acting Chief
Iron and Ferro-Alloy Division

FARutledge:lm
9/11/52

cc: Admn. Reading File
Mails and Files Br.
W. S. Martin
F. A. Rutledge

DEPARTMENT OF THE INTERIOR
RECEIVED
AUG 27 1952

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

August 26, 1952

Memorandum

To: George Selfridge, DMEA

From: Robert W. Geehan, Bureau of Mines

Subject: Nash Mining Company, DMEA 2663 -T
Furniss Mine, Cabarrus County, North Carolina
Tungsten

Proposal; To rehabilitate, unwater, drift southwest 400 feet, and drift northeast 250 feet. Total estimated cost $43,476.79.

General: See attached RI 4724.

This work would be a "wildcat" venture, as little is known regarding the geological factors that localized the ore shoots. It does not seem probable that significant amounts of tungsten ore will be located by the work proposed.

The costs listed appear to be higher than average for similar work; however, rehabilitation of this type is difficult to estimate. The need for alignment of the shaft, mentioned on page 3, may run the costs up.

Recommendation: Mr. M. H. Kline, phone 3512, room 1345, supervised the Bureau work at this deposit and was able to inspect the mine workings while they were pumped out. It seems probable that the information he has, together with that in RI 4724, will enable this proposal to be rejected or modified without referral to the Field Team.

Kline
HAR.

Robert W. Geehan

1 copy only needed in 400

Enclosures (2)

Mr. Archie L. Nash, Jr.
Nash Mining Co., Inc.
913 S. Main Street
Kannapolis, North Carolina

Subject: DMEA-2663
Re: Exploration Assistance
Furniss Mine
August 19, 1952

My dear Mr. Nash:

The receipt of your application dated August 9, 1952, for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA-2663 and referred to the Iron and Ferro-Alloys Division.

Kindly refer to DMEA-2663 in any future correspondence relating to your application.

Sincerely yours,

SIGNED

Wingfield Chamberlain
Acting Chief, Operation's
Control and Statistics Division

25451

August 17, 1952

Defense Minerals Exploration Administration,
Department of the Interior,
Washington 25, D. C.

Gentlemen:

In line with instructions given us by Mr. George Selfridge, Chief, Federal Alloy Division, Defense Mineral Exploration Administration, we are submitting application for DMEA aid directly to you.

We trust that all papers are in order. However, if there should be any part of the application needing further clarification please notify us.

Very truly yours,

Archie L. Nash Jr.

Archie L. Nash, Jr.
Sec. & Treas.
Nash Mining Co., Inc.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
AUG 19 1952

DMEA 2663

APPLICATION FOR AID IN AN

EXPLORATION PROJECT

DMEA ORDER 1

NASH MINING CO., INC.

913 S. MAIN ST.

KANNAPOLIS, NORTH CAROLINA

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
AUG 19 1952

MF-103
(Revised April 1952)
Nash

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

Form Approved.
Budget Bureau No. 42-R1035.2.

APPLICATION FOR AID IN AN EXPLORATION PROJECT, PURSUANT TO DMEA ORDER 1, UNDER THE DEFENSE PRODUCTION ACT OF 1950, AS AMENDED

Not to be filled in by applicant

Docket No. DMEA-2663
Metal or Mineral
Date Received 8-19-52
Estimated Cost
Participation (Government %)

INSTRUCTIONS

1. *Name of applicant.*—(*a*) State here your full legal name, in the form in which you will wish to contract, and your mailing address: Nash Mining Co., Inc., 913 S. Main St., Kannapolis, N.C.
A. L. Nash, Sr. President, 913 S. Main St. Kannapolis, N.C.
R. L. Nash, Vice President, 316 Heilig Ave., Salisbury, N.C.
A. L. Nash, Jr., Secy-Treas., 913 S. Main St. Kannapolis, N.C.

(*b*) If other than an individual, add to your name above whether a corporation, partnership, etc., and the name of the State in which incorporated or otherwise organized.

(*c*) If a corporation, add to above statement, titles, names and addresses of officers.

(*d*) If a partnership, add to the above statement the names and addresses of all partners.

2. *General.*—Read DMEA Order 1, "Government Aid in Defense Exploration Projects," before completing this application. Submit this application and all accompanying papers in quadruplicate (four copies), with your name and address on each sheet of the application and on all accompanying papers. Where sufficient space is not provided on the form for all required information, state it on an accompanying paper, with a reference in each case to the instruction to which it refers by number. Comply with all applicable instructions; or, if not applicable, so state. File the application with Defense Minerals Exploration Administration, Department of the Interior, Washington 25, D. C., or with the nearest field executive officer thereof.

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract See accompanying papers.

(*b*) State any mine name by which the property is known. Furniss Mine

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise lessee

(*d*) If you are not the owner, submit with this application a copy of the lease, contract, or other document under which you control the property.

(*e*) If you own the land, describe any liens or encumbrances on it

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice.

4. *Physical description.*—(*a*) Describe in detail any mining or exploration operations which have been or now are being conducted upon the land, including existing mine workings and production facilities. State your interest, if any, in such operations. Also describe accessibility of mine workings for examination purposes.

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades.

(*c*) Describe the geologic features of the property, including mineralization, type of deposit (vein, bedded, etc.), and your reasons for wishing to explore. Illustrate with maps or sketches. Send with your application (but not necessarily as a part of it) any geologic or engineering report, assay maps, or other technologic information you may have, indicating on each whether you require its return to you.

(*d*) State the facts with respect to the accessibility of the project: Access roads, distances to shipping, supply and residence points.

(*e*) State the availability of manpower, materials, supplies, equipment, water, and power.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
16—66551-1
RECEIVED
AUG 19 1952

5. *The exploration project.*—(*a*) State the mineral or minerals for which you wish to explore Tungsten

(*b*) Describe fully the proposed work, including a map or sketch of the property showing a plan (and cross sections if needed) of any present mine workings, and the location of the proposed exploration work as related to such features as contacts, veins, ore-bearing beds, etc.

(*c*) The work will start within 7 days and be completed within 9½ months from the date of an exploration project contract.

(*d*) State the operating experience and background of the applicant with relation to the ability to carry out such exploration project, and also that of the person or persons who will supervise the operations.

6. *Estimate of costs.*—Furnish a detailed estimate of the costs of the proposed work (you will have to use a separate sheet), under the following headings. Add the totals under all headings to give the estimated total cost of the project:

(*a*) *Independent contracts.*—(Note.—If the applicant does not intend to let any of the work to contractors, write "none" after this item. To the extent that the work is to be contracted, do not repeat the cost of the contract-work in subsequent items.) State the cost of any proposed independent contracts for the performance of all or any part of the work, expressed in terms of units of work (such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, per cubic yard of material moved, etc.).

(*b*) *Labor, supervision, consultants.*—Include an itemized schedule of numbers, classes and rates of wages, salaries or fees for necessary labor, supervision and engineering and geological consultants.

(*c*) *Operating materials and supplies.*—Furnish an itemized list, including items of equipment costing less than $50 each, and power, water and fuel.

(*d*) *Operating equipment.*—Furnish an itemized list of any operating equipment to be rented, purchased, or which is owned and will be furnished by the Operator, with the estimated rental, purchase price, or suggested use-allowance based on present value, as the case may be.

(*e*) *Rehabilitation and repairs.*—Furnish a detailed list showing the cost of any necessary initial rehabilitation or repairs of existing buildings, installations, fixtures, and movable operating equipment, now owned by the Operator and which will be devoted to the exploration project.

(*f*) *New buildings, improvements, installations.*—Furnish a detailed list showing the cost of any necessary buildings, fixed improvements, or installations to be purchased, installed or constructed for the benefit of the exploration project.

(*g*) *Miscellaneous.*—Furnish a detailed list showing the cost of repairs to and maintenance of operating equipment (not including initial rehabilitation or repairs of the Operator's equipment), analytical work, accounting, workmen's compensation and employers' liability insurance, and payroll taxes.

(*h*) *Contingencies.*—Give an estimate of any necessary allowances for contingencies not included in the costs stated above.

NOTE.—No items of general overhead, corporate management, interest, taxes (other than payroll and sales taxes), or any other indirect costs, or work performed or costs incurred before the date of the contract, should be included in the estimate of costs.

7. (*a*) Are you prepared to furnish your share of the cost of the proposed project in accordance with the regulations on Government participation (Sec. 7, DMEA No. 1)?

(*b*) How do you propose to furnish your share of the costs?

[x] Money [ ] Use of equipment owned by you [ ] Other

Explain in detail on acompanying paper.

CERTIFICATION

The undersigned, whether as an individual, corporate officer, partner, or otherwise, both in his own behalf and acting for the applicant, certifies that the information set forth in this form and accompanying papers is correct and complete, to the best of his knowledge and belief.

Dated August 9, 1952, 195__

Nash Mining Co., Inc.
(Applicant)

By Archie L. Nash Jr.

Geo. A. Lucas

Nash Mining Co. Inc.

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—66551-1

Nash

3. Applicant's property rights

(a) Legal description of land.

Beginning at an iron stake on the South side of the Cold Springs county Road, about 3.3 miles from State Highway 151, and running South 11 degrees West approximately 2025 feet to a creek called Plum Run Branch; thence Westerly along Plum Run Branch about 1600 feet to a large Poplar tree, 20 feet North of the creek bank; thence North 11 degrees West approximately 1550 feet to an iron stake; thence North 60 degrees East approximately 1750 feet to an iron stake on the South side of Cold Springs County Road; thence North 83 degrees East 334 feet to an iron stake; thence South 70 degrees East 650 feet to point of BEGINNING, comprising approximately 90 acres. This tract of land is a portion of Tracts 6 and 5 of the Plat Showing the Wm. P. Furness Lands in Township No. 9 of Cabarrus County, North Carolina, by Walter L. Furr, Civil Engineer, Concord, N.C., dated July, 1928, said plat being filed in the records of Cabarrus County, North Carolina.

Nash

4. PHYSICAL DESCRIPTION

a - General

To date, no published reports on the operation of the Furniss Mine have been found. However, mention of the operation of this mine is found in the reports of the Miami Mining Company which at the time, owned the Furniss Mine along with the Phoenix Mine.

"Old timers" in this area state that the present Furniss Mine tract was originally worked prior to the War Between the States. Most of the production in these sporadic operations came from near the surface in shallow shafts, open cuts and pits. The principal metal sought was free gold, and interesection of the sulfide zone usually made necessary the beginning of a new shaft or pit.

The Furniss shaft is the principal working on the Furniss Mine property. This shaft is vertical and was sunk by the Miami Mining Company to a depth of 170 feet.

About 1946 the presence of scheelite in the dumps and ore piles of the Furniss vein was discovered by A. L. Nash, Sr. Subsequent examinations uncovered striking crystals of scheelite on both dumps and ore piles. These findings were of sufficient interest to warrant further examination, so a company known as Nash-Moore Mines, Inc. was formed for the purpose of unwatering and sampling the old Furniss shaft. A resume of this examination and its findings are given herewith.

The shaft was choked down to water level - about 35 feet below the surface. This was re-timbered and below this depth the old timbers were found to be in excellent shape, with unwatering only being necessary to permit examination of the old workings.

At 100 feet the shaft cut through the steeply dipping vein and here considerable work had been done. Drifting and stoping in both directions was accomplished. The stope was not accessible northeast of the shaft, but to the southwest the vein was exposed for a distance of sixty feet along the bottom and end of the stope. Scheelite was found from one end of the exposure of the vein to the other, a part of which contained crystals measuring over 3 inches across.

On the 170-foot level, 250 feet of drifting had been done on the vein, most of which, however, showed only narrow widths. In the

Nash

northeast drift the vein widened out to 32 inches in a lens about 25 feet in length. Here large crystals of scheelite were again encountered. Examination with the Ultra Violet lamp showed small crystals of scheelite disseminated throughout the vein exposure. No stoping had been done at this level.

Sampling of the vein was made on both the 100-foot and 170-foot levels with channel cuts being taken at two and one-half foot intervals on the 170-foot level where the widths were 27 inches to 32 inches wide. The average assayed value of these samples was one-half of one percent WO_3.

On the basis of the above described evidence, the U.S. Bureau of Mines drilled eight widely scattered short holes designed to cut the vein at 50 to 100-foot depths. From the standpoint of tungsten values, this drilling was a disappointment. Mr. J.I. Moore, an engineer who played an important part in the development of the tungsten mine at Tungsten, N.C. has this to say concerning the possibilities in drilling the type deposit found in the Furniss Mine.

"In only two holes were any tungsten values found, although in all holes but one, the vein structure was cut, showing strength and continunity. From an examination of the vein both underground and on the surface, it is quite evident that a drill could easily fail to get tungsten values, since the scheelite crystals are distinct and separate, readily permitting a drill to pass through the vein at a barren spot with large crystals inches away. Further more, drilling so few holes over such a wide area raises a question as to how much value should be given to the drilling results, other than the acquisition of geological knowledge of the structure."1/

Location of holes and a record of the results can be found in Bureau of Mines Report of Investigation 4734: Investigation of Furniss Tungsten Deposits, Cabarrus County, N.C. This report is included with this application.

Another working, known as the Furr shaft is 450 feet southwest of the Furniss Mine and a part of the Furniss tract. As in the case of the Furniss, no records are available concerning this development, however very interesting scheelite crystals can be found on the old dumps and ore pile. This shaft is reported to be 75 feet deep.

The Furniss shaft and workings are now under water. When the shaft was re-opened for examination in 1948, inaccessibility of the

1/ Moore, J.I., Report on Furniss Mine, Cabarrus County, N.C. 1948.

Nash

old timbers made it impossible for the new sets to be aligned properly with the shaft. Consequently the shaft was missed by some 14 inches on the north side and by some 6 inches on the west side. Future operations will necessitate the proper alignment of the shaft by re-timbering from water level up to the surface.

b - Production

There are no records from which to guage past production. However it has been estimated that probably some 5000 tons of ore have been produced by past operations of all types. There are no developed ore reserves.

1000 tons U.S.B.M. RI

c - Geology

The Furniss Mine lies within an ancient metamorphosed series, the origin of which is open to controversy. The country-rock has been varously described by investigators. Some maintain it is a part of the Carolina Slate belt; others that it is an intrusive diorite that has partly altered to an epidote-chlorite schist. In the drilling program conducted by the Bureau of Mines, the core was found to be consistantly of the same related material and was logged under the general term "greenstone".

The Furniss vein is a fissure vein that has been traced for about 2500 feet across the property. The strike is about N60°E and the dip is about 80°NW. The vein width varies from a few inches up to three feet or more and is characterized by short shoots or lens of ore that pitch rather steeply.

The principal gangue mineral of this vein is quartz with varying amounts of barite-ankerite, and siderite noted. Disseminated in, and replacing these minerals, the scheelite is found, often occurring in masses 3 or more inches across. Free gold is also present as is the sulfide of iron and copper.

As stated previously, the scheelite occurs both as relatively large masses and as disseminated crystals or streaks throughout the entire length of the vein as exposed on the 170-foot level. It was noticed also that the scheelite occurred in larger concentrations in the non-sulfide sections of the vein.

It is the belief of the applicants for this loan that definite possibilities for the development of a small tungsten mine exist on this property. It is certainly true that the drilling program was a disappointment, especially in view of the persistent showing of scheelite in the Furniss shaft. However when the nature of the vein

Not persistent according to assays.

Nash

is considered, with the ore lens short in linear distance and pitching steeply, as disclosed in the Furniss shaft, plus the fact that these lens are high in WO_3 content, it certainly makes for a prospect worthy of more reliable methods of exploration.

d - Accessibility

The Furniss Mine is in the central part of Cabarrus County, North Carolina, about seven miles southeast of Concord and about six miles southwest of Mt. Pleasant. From Concord it is reached by driving south on state highway 151 about 3.5 miles to Faggarts Corner and then left on the Phoenix Mine road, a distance of 3.3 miles. Both of these roads are the tar and gravel paved type. The mine lies approximately 1/3 mile off the main road and is reached by a clay road which can be put in good shape by a small amount of bulldozing.

Concord is the nearest principal city with a population of about 20,000. It lies on the main line of the Southern Railway System.

e - Availability of manpower, materials etc.

Sufficient labor with proper know-how is available to carry out the planned operation. All necessary materials, supplies and equipment can be secured within the area from the various dealers in mining and industrial equipment.

Electric power is available from the Rural Electrification Administration. Their single phase line is now within 1/3 mile of the mine. Arrangements have already been made to secure power from this source.

Ample water supplies are available for year round operations. The Plum Run Branch, about 2000 feet from the Furniss shaft is the nearest source of water for any contemplated milling activities.

5. The exploration project.

(b) Proposed work - This exploration project has been divided into three phases - rehabilitation, unwatering shaft and drift work on the 170-foot level.

(1) Rehabilitation.

a- Cleaning of debris from mine area and minor grading of clay road leading to the mine.
b- Construction of one (1) frame building 12'x12'x10' to serve as hoist house and tool room.
c- Construction of an 8'x8' x8' concrete block house to be used as a store house for dynamite.
d- Minor repairs to the 12' x12' x 12' frame building now standing on the property.
e- Erection of head frame 30' x 4' x 4' (oak).
f- Re-timbering of top 35 feet of shaft and collar and proper alignment of shaft.
g- General repairs to other shaft timbers, hoisting compartment and ladder-way.
h- Repairing dams on 100-foot level and setting up pumping stations on 100-foot level and 170-foot level.
i- Mucking out sump at bottom of shaft and clearing of cross-cut leading into 170-foot level.
j- Installation of water discharge, water-feed and air pipes.
k- Placing track for haulage-way on 170-foot level and from shaft to dumps.
l- Wiring buildings, shaft and drifts for electric power.
m- Installation of pumps, hoist, cage, compressor and other equipment.

(2) Unwatering shaft.

a- Pumping to be accomplished using 2-5 hp single phase centrifugal electric pumps, 100gpm @ 100-foot head on 24 hour basis for approximately two weeks. An air operated - piston type pump will be on stand-by in the event of electric power failure.

(3) Drift work.

a- Proposed plans call for a continuation of the drifting on the vein at the 170-foot level. The drift will

be 5 feet wide and 7 feet high and extend in a southwesterly direction along the strike of the vein for an additional 400 feet and in a northeasterly direction along the strike of the vein for a distance of 250 feet.

We feel that continuation of development of the Furniss mine, where former operators ceased, is justified. In the northeast drift, where we sampled a lens having a length of 25-30 feet, we suspect that the former operators left the main vein and followed for 10 feet a branch stringer, and that the main vein continues in the foot-wall. The reasons for this assumption are two-fold: The end of the lens to the northeast is definitely on the foot-wall and a "boot-leg" on the foot-wall side shows the vein behind the drift wall just ahead of the end of the lens. Furthermore, the lens on the 100-foot level is over 100 feet in length, where ore was extracted by former operators, and it is not likely that the lens has shortened to a mere 25 feet in this depth of 70 feet. In addition to solving this enigma, continuation of the drift northeast is justified in order to get under promising ground where recent and old work indicates the presence of the scheelite bearing vein.

assay map, RI, fig 4 shows length of 51 feet but sample lengths add to only 40 ft.

15 ft on fig 4 RI 4724

30 feet on fig 3, R.I. 4724

The southwest drift is justified by the fact that drill hole No. 7 cut the vein at 75 feet ahead of the present face of the drift and disclosed a vein width of two feet, containing scheelite; and 280 feet ahead there is the Furr shaft, in which it is known that high grade gold values exist, and evidence on the dump clearly indicates a strong occurrence of scheelite. A total of 400 feet of drifting would explore the area around the Furr shaft.

4.1 ft 0.03% WO3, 0.29 oz Au

selected dump sample assayed 7.7% WO3, 0.18 oz Au 0.38 oz Ag (RI 4724, p 24)

(c) See application.

(d) Operating experience.

The supervisor of this project has been active in mining for the past twenty years. He has operated numerous small mines and has been actively engaged in prospecting and developing new properties. His assistant is a graduate of Texas School of Mines with a degree in Geology and has considerable experience in the prospecting and working of small mines.

Who?

6. Estimate of costs.

(a) Independent contracts. - None.

(b) Labor, supervision, consultants.

Supervisor (1)		450.00	450.00	
Driller & Asst. Sup. (1)		350.00	350.00	
Driller Helper (1)	@ 1.75 per hr.	240.00	240.00	
Hoistman (1)	@ 1.25 per hr.	200.00	200.00	
Muckers (2)	@ 1.25 per hr.	200.00	400.00	
Deckman (1)	@ 1.00 per hr.	160.00	160.00	
			1,800.00	@ 9½ mos. 17,100.00

(c) Operating materials and supplies.

Air hose - type 19-8-5 ply - 1" - 100' @ 1.35 / ft	135.00	
Air hose - type 19-8-4 ply - ½" - 100' @ .71 / ft	71.00	
Boss couplings - 1" (6) @ 2.59 ea.	15.54	
Boss couplings - ½" (4) @ 1.94 ea.	7.76	
Pipe-water feet - ½" 900' @ .0803 / ft	72.27	
Pipe-air - 2" 600' @ .3169 / ft	190.14	
Drilling steel - all sizes	267.40	
Drilling bits - Tungsten carbide @ 15.95 ea.	1800.00	
Suction hose - 15' section @ 28.45 ea. (2)	56.90	
Footvalve - galvanised @ 5.60 ea.	11.20	
Track - 1250' - 1½" angle-iron	151.87	
Lubricator - L012 - (1)	31.25	
Lubricators - Hoist	50.00	
Pipe fittings (all sizes)	25.00	
Nails, screws, washers, bolts, & nuts	25.00	
Electric power	500.00	
Petroleum products - fuel oil, gasoline, oil & greases	2000.00	
Explosives - powder, caps, & wiring	2200.00	
Lumber & cross-ties for haulage-way	100.00	
Pipe threader 2"	20.25	
Pipe threader 2½" - 4"	85.00	
Bookkeeping equipment and supplies	50.00	
Hand tools - shovels, picks, rods & hammers	75.00	
	7,950.58	7,950.58

(d) Operating equipment - - Rentals per month.

Air compressor 500 cu ft / min.	579.00
Pumps - water - 1½ RVN 5 motor pump 230/1/60 @ 50.00 ea.	100.00
Drifter - Gardner-Denver - D89B	73.50

Estimate of costs.

(d) operating equipment - - rentals per mo. (cont.)

Stand-by pump- water - dual piston (air operated)	25.00		
Portable pump - centrifugal 3000 gal/hr	5.00		
Hoist, cable, and sheave wheel	100.00		
Winch, cable & fittings (5 ton)	15.00		
Ore cars (3) @ 10.00 ea.	30.00		
Truck - 3/4 ton Chev.	100.00		
Electric drill & bits	5.00		
Carpenter tools, blacksmith forge, anvil, chain fall	5.00		
	1,037.50	@ 9½ mos.	9,856.25

(e) Rehabilitation and repairs.

Clearing debris from area and bull-dozing	200.00		
Lumber for repairing old timbers, ladder-way and hoisting compartment	100.00		
Weather-sheeting (tar-paper) for 12'x12'x12' building	26.80		
Lumber etc. for repairing dams on 100-foot level	25.00		
Labor for two weeks is allowed for rehabilat-ion and repairs, using the regular labor force. Mucking out the sump at the bottom of the shaft and the cross-cut leading from the shaft to the 170-foot level will con-sume most of this time.			
	351.80		351.80

(f) New buildings, improvements, and installations.

Lumber for hoist house - 12'x12'x10'	120.00		
Lumber for dynamite house - 8'x8'x8'	50.00		
Timber for building head-frame - 4'x4'x30'	100.00		
Timber for re-timbering top 35' of shaft	500.00		
Concrete blocks and cement for dynamite house	100.00		
Nails, screws, washers, bolts & nuts	75.00		
Roofing paper (tar-paper) for hoist house	26.80		
Pipe-water discharge 2" - 500' @ .3169/ft	158.45		
Pipe-air 2" - 500' @ .3169/ft	158.45		

Estimate of costs.

(f) New buildings, improvements & installations (cont)

Pipe - water feed - ½" - 500' @ .0803/ft	40.15	
Pipe fittings (all sizes)	50.00	
Electrical installation for shaft and surface fixtures	500.00	
Electric signal system	25.00	
Cage	75.00	
Track for haulage-way - 1250' - 1½" angle-iron	151.87	
Lumber and cross-ties for haulage-way	100.00	
Regular labor force will be used for erection of new buildings, improvements, and installations for one (1) month.		
	2,230.72	2,230.72

(g) Miscellaneous.

Assaying (W, Au, Cu) ?	325.00	
Insurance, Soc. Security etc. @ 10% wages	1,710.00	
	2,035.00	2,035.00
		30,524.35

(h) Contingencies.

Add 10% to cover unforseen costs.		3,952.44
	Total	43,476.79

7. Operators share of cost.

(a) See application.

(b) The operators share of the costs of this project will be met by cash payments.

STATE OF NORTH CAROLINA)
COUNTY OF ROWAN)

A F F I D A V I T

Affiant, being duly sworn, deposes and says:

That he is a citizen and resident of Rowan County, North Carolina, and has been a practicing Attorney in the City of Salisbury, North Carolina, for more than twenty years.

That he knows of his own knowledge that A. L. NASH, A. L. NASH, SR. and ARCHIE L. NASH, SR., is one and the same person.

Affiant further states that in his ownership of properties in Cabarrus County, North Carolina, described in Lease and Option to Purchase, dated August 9, 1952, that said properties are owned by him as "A. L. NASH," whereas, as President of the Corporation known as Nash Mining Company, Inc., and in all other corporate connections, he uses the name of "ARCHIE L. NASH, SR."

This 16th day of August, 1952.

W. T. Shuford
W. T. Shuford

Subscribed and sworn to
before me this the 16th
day of August, 1952.

Mary E. Hacketts
Notary Public

My Commission expires February 19, 1953

Nash Mining Co
113 S. Main St
Kannapolis, N.C.

STATE OF NORTH CAROLINA

COUNTY OF CABARRUS

THIS LEASE AND OPTION TO PURCHASE, Made and entered into this the 9th day of August, 1952, by and between A. L. NASH AND WIFE, MARY L. NASH, of Cabarrus County, North Carolina, and ROBIE L. NASH AND WIFE, ETHEL AREY NASH of Rowan County, North Carolina, parties of the first part, hereinafter referred to as Lessors, and NASH MINING COMPANY, INC., a corporation created, organized and existing under the laws of the State of North Carolina, with its principal office at Kannapolis in said State, party of the second part, hereinafter called Lessee;

WITNESSETH, That for and in consideration of the sum of One Dollar now paid by Lessee to Lessors, the receipt of which is hereby acknowledged, Lessors do grant and give to Lessee, its successors and assigns, the right to explore, develop, mine and otherwise operate the tract of land described below, now solely owned by Lessors, both above and below ground, and to lease said land and mineral rights in said land upon the terms and conditions hereinafter set forth:

BEGINNING at an iron stake on the South side of the Cold Springs County Road, about 3.3 miles from State Highway 151, and running South 11 degrees West approximately 2025 feet to a creek called Plum Run Branch; thence Westerly along Plum Run Branch about 1600 feet to a large Poplar tree, 20 feet North of the creek bank; thence North 11 degrees West approximately 1550 feet to an iron stake; thence North 60 degrees East approximately 1750 feet to an iron stake on the South side of Cold Springs County Road; thence North 83 degrees East 334 feet to an iron stake; thence South 70 degrees East 650 feet to point of BEGINNING, comprising approximately 90 acres. This tract of land is a portion of Tracts 6 and 5 of the Plat Showing The Wm. P. Furness Lands in Township No. 9 of Cabarrus County, North Carolina, by Walter L. Furr, Civil Engineer, Concord, N. C. dated July, 1928 said plat being filed in the records of Cabarrus County, North Carolina.

I

The term of this lease shall be for a period of ten (10) years from and after the date hereof, together with an

Nash

option to renew the same upon the same terms and conditions as set forth herein for an additional period of ten (10) years.

II

The rental due and payable hereunder shall be the sum of One Hundred ($100.00) Dollars per year, payable annually in advance, together with a royalty of ten per cent (10%) of net smelter, mint or other returns from the sale of all minerals and metals produced from the above described property, without interest.

III

That for and in consideration of the premises, Lessors hereby give and grant unto Lessee the right and option to purchase the above described land outright in fee simple at any time during the term of this lease, or any renewal or extension thereof, for the sum of Fifty Thousand ($50,000.00) Dollars.

IV

Lessee, its successors or assigns, agents or employees, shall have the following rights:

(a) Of ingress, egress and regress upon and in said land by foot, vehicle or otherwise

(b) To use and improve such roads as are now existent, or make such new roads as may be required.

(c) To cut and use such timber as may be necessary in the operation of the property, except that timber which has been sold by Lessors.

(d) To dig, blast and excavate for minerals, including trenching by hand or machine, re-open any shafts or pits, or any other work necessary to the mining and milling operations.

(e) To dump upon said land such ore, rock, sand, clay or other materials excavated in the process of the work.

(f) To erect buildings and install machinery and other

Nash

equipment with the right of removal within sixty (60) days after the termination of this lease.

(g) To dam, divert and use water from Plum Run Branch, which flows along the southern boundary of the land described above.

(h) To do such other work and acts as may be necessary in the conduct of the mining operations herein contemplated.

(i) To protect Lessors against any damage that may arise from the acts of Lessee in the conduct of the mining operations herein contemplated.

Lessee agrees:

(a) To conduct and carry on mining and milling operations in and on said land in good faith.

(b) To pay Lessors, their heirs or assigns, or duly accredited agent, or deposit to their account in a bank of their choosing, a royalty of ten (10) per cent of the net smelter, mint or other returns from the sale of all metals and minerals mined, processed and sold from said lands, such payments to be made on or before the 20th day of each calendar month for all metals and minerals sold and settled for during the preceding calendar month.

(c) To permit Lessors free access to all parts of the above described property, both above and below ground.

(d) To furnish Lessors, upon request, production records and settlement sheets of metals and minerals sold, it being understood further that monthly payments of royalty will be accompanied by a statement of metals and minerals sold.

V

Lessors hereby reserve to themselves, their heirs, executors, administrators and assigns, a right of way over and upon the above described premises for the purpose of ingress.

Nash

egress and regress to and from the adjacent property owned by Lessors, and for the construction of water lines and roadways thereon.

VI

Lessee shall have the right to assign this lease without the consent of Lessors, provided, however, Lessee shall continue to remain bound for the performance of the terms and conditions hereof on its part to be performed.

VII

In the event this lease and option to purchase shall be terminated for any cause whatsoever, Lessee agrees to execute full and complete cancellation notice and to forever release its rights hereunder.

VIII

Lessors specifically agree to subordinate their right to rentals and royalties due hereunder so long as such subordination may be required by any lending institution or agency providing funds for the purpose of enabling Lessee to explore and develop said property.

IN TESTIMONY WHEREOF, the said parties to this Lease and Option to Purchase have hereunto set their respective hands and seals, in the manner and form provided by law, the day and year first above written, in agreement with the conditions contained herein.

A. L. NASH (SEAL)

MARY L. NASH (SEAL)

ROBIE L. NASH (SEAL)

ETHEL AREY NASH (SEAL)

LESSORS

(CORPORATE SEAL)

NASH MINING COMPANY, INC., LESSEE

BY ARCHIE L. NASH, SR.

PRESIDENT

ATTEST:

ARCHIE L. NASH, JR.

SECRETARY

Nash

STATE OF NORTH CAROLINA

COUNTY OF ROWAN

Personally appeared before me, a Notary Public in and for the County aforesaid, A. L. NASH AND WIFE, MARY L. NASH, and ROBIE L. NASH AND WIFE, ETHEL AREY NASH, who acknowledged the execution by them of the foregoing instrument for the purposes expressed therein.

WITNESS my hand and Notarial seal this 9th day of August, 1952.

Mary E. Hackett
Notary Public

My Commission expires:
Feb. 19, 1953

(NOTARIAL SEAL)

STATE OF NORTH CAROLINA

COUNTY OF ROWAN

This 9th day of August, 1952, personally came before me, a Notary Public in and for the County aforesaid, ARCHIE L. NASH, JR., who, being by me duly sworn, says that he knows the common seal of NASH MINING COMPANY, INC. and is acquainted with ARCHIE L. NASH, SR., who is the President of said Corporation, and that he, the said Archie L. Nash, Jr., is the Secretary of said Corporation and saw the President sign the instrument and saw the said common seal of said Corporation affixed to said instrument by said President, and that he, the said Archie L. Nash, Jr., Secretary as aforesaid, signed his name in attestation of the execution of said instrument in the presence of said President of said Corporation.

WITNESS my hand and Notarial seal, date above written.

Mary E. Hackett
Notary Public

My Commission expires:
Feb. 19, 1953

(NOTARIAL SEAL)

STATE OF NORTH CAROLINA
COUNTY OF CABARRUS

The foregoing certificates of _____, a Notary Public of Rowan County, North Carolina, are adjudged to be in due form and according to law. Therefore let the said instrument, with the certificates, be registered.

This ____ day of _____ 1952.

CLERK OF THE SUPERIOR COURT OF
CABARRUS COUNTY, NORTH CAROLINA

Nash Mining Co
9[illegible]5 Main St
Kannapolis, N.C

STATE OF NORTH CAROLINA

COUNTY OF CABARRUS

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WITNESSETH, That for and in consideration of the sum of One Dollar now paid by Lessee to Lessors, the receipt of which is hereby acknowledged, Lessors do grant and give to Lessee, its successors and assigns, the right to explore, develop, mine and otherwise operate the tract of land described below, now solely owned by Lessors, both above and below ground, and to lease said land and mineral rights in said land upon the terms and conditions hereinafter set forth:

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I

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Nas 6

option to renew the same upon the same terms and conditions as set forth herein for an additional period of ten (10) years.

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III

That for and in consideration of the premises, Lessors hereby give and grant unto Lessee the right and option to purchase the above described land outright in fee simple at any time during the term of this lease, or any renewal or extension thereof, for the sum of Fifty Thousand ($50,000.00) Dollars.

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(a) Of ingress, egress and regress upon and in said land by foot, vehicle or otherwise

(b) To use and improve such roads as are now existent, or make such new roads as may be required.

(c) To cut and use such timber as may be necessary in the operation of the property, except that timber which has been sold by Lessors.

(d) To dig, blast and excavate for minerals, including trenching by hand or machine, re-open any shafts or pits, or any other work necessary to the mining and milling operations.

(e) To dump upon said land such ore, rock, sand, clay or other materials excavated in the process of the work.

(f) To erect buildings and install machinery and other

equipment with the right of removal within sixty (60) days after the termination of this lease.

(g) To dam, divert and use water from Plum Run Branch, which flows along the southern boundary of the land described above.

(h) To do such other work and acts as may be necessary in the conduct of the mining operations herein contemplated.

(i) To protect Lessors against any damage that may arise from the acts of Lessee in the conduct of the mining operations herein contemplated.

Lessee agrees:

(a) To conduct and carry on mining and milling operations in and on said land in good faith.

(b) To pay Lessors, their heirs or assigns, or duly accredited agent, or deposit to their account in a bank of their choosing, a royalty of ten (10) per cent of the net smelter, mint or other returns from the sale of all metals and minerals mined, processed and sold from said lands, such payments to be made on or before the 20th day of each calendar month for all metals and minerals sold and settled for during the preceding calendar month.

(c) To permit Lessors free access to all parts of the above described property, both above and below ground.

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VII

In the event this lease and option to purchase shall be terminated for any cause whatsoever, Lessee agrees to execute full and complete cancellation notice and to forever release its rights hereunder.

VIII

Lessors specifically agree to subordinate their right to rentals and royalties due hereunder so long as such subordination may be required by any lending institution or agency providing funds for the purpose of enabling Lessee to explore and develop said property.

IN TESTIMONY WHEREOF, the said parties to this Lease and Option to Purchase have hereunto set their respective hands and seals, in the manner and form provided by law, the day and year first above written, in agreement with the conditions contained herein.

A. L. NASH (SEAL)

MARY L. NASH (SEAL)

ROBIE L. NASH (SEAL)

ETHEL AREY NASH (SEAL)

LESSORS

NASH MINING COMPANY, INC., LESSEE

BY ARCHIE L. NASH, SR.

PRESIDENT

(CORPORATE SEAL)

ATTEST:

ARCHIE L. NASH, JR.

SECRETARY

STATE OF NORTH CAROLINA

COUNTY OF ROWAN

Personally appeared before me, a Notary Public in and for the County aforesaid, A. L. NASH AND WIFE, MARY L. NASH, and ROBIE L. NASH AND WIFE, ETHEL AREY NASH, who acknowledged the execution by them of the foregoing instrument for the purposes expressed therein.

WITNESS my hand and Notarial seal this 9th day of August, 1952.

Mary E. Hackett
Notary Public

My Commission expires:
Feb. 19, 1953

(NOTARIAL SEAL)

STATE OF NORTH CAROLINA

COUNTY OF ROWAN

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WITNESS my hand and Notarial seal, date above written.

Mary E. Hackett
Notary Public

My Commission expires:
Feb. 19, 1953

(NOTARIAL SEAL)

STATE OF NORTH CAROLINA
COUNTY OF CABARRUS

The foregoing certificates of _____, a Notary Public of Rowan County, North Carolina, are adjudged to be in due form and according to law. Therefore let the said instrument, with the certificates, be registered.

This ____ day of _____ 1952.

CLERK OF THE SUPERIOR COURT OF
CABARRUS COUNTY, NORTH CAROLINA

APPLICATION FOR AID IN AN

EXPLORATION PROJECT

DMEA ORDER 1

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
AUG 19 1952

NASH MINING CO., INC.

913 S. MAIN ST.

KANNAPOLIS, NORTH CAROLINA

MF-103
(Revised April 1952)

Nash

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

Form Approved.
Budget Bureau No. 42-R1035.2.

APPLICATION FOR AID IN AN EXPLORATION PROJECT, PURSUANT TO DMEA ORDER 1, UNDER THE DEFENSE PRODUCTION ACT OF 1950, AS AMENDED

Not to be filled in by applicant

Docket No. DMEA-2663
Metal or Mineral
Date Received 8-19-52
Estimated Cost
Participation (Government %)

INSTRUCTIONS

1. *Name of applicant.*—(*a*) State here your full legal name, in the form in which you will wish to contract, and your mailing address: Nash Mining Co., Inc. 913 S. Main St., Kannapolis, N.C.
A. L. Nash, Sr., President, 913 S. Main St. Kannapolis, N.C.
R. L. Nash, Vice President, 316 Heilig Ave., Salisbury, N.C.
A. L. Nash, Jr., Secy-Treas., 913 S. Main St., Kannapolis, N.C.

(*b*) If other than an individual, add to your name above whether a corporation, partnership, etc., and the name of the State in which incorporated or otherwise organized.

(*c*) If a corporation, add to above statement, titles, names and addresses of officers.

(*d*) If a partnership, add to the above statement the names and addresses of all partners.

2. *General.*—Read DMEA Order 1, "Government Aid in Defense Exploration Projects," before completing this application. Submit this application and all accompanying papers in quadruplicate (four copies), with your name and address on each sheet of the application and on all accompanying papers. Where sufficient space is not provided on the form for all required information, state it on an accompanying paper, with a reference in each case to the instruction to which it refers by number. Comply with all applicable instructions; or, if not applicable, so state. File the application with Defense Minerals Exploration Administration, Department of the Interior, Washington 25, D. C., or with the nearest field executive officer thereof.

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract See accompanying papers.

(*b*) State any mine name by which the property is known. Furniss Mine

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise lessee

(*d*) If you are not the owner, submit with this application a copy of the lease, contract, or other document under which you control the property.

(*e*) If you own the land, describe any liens or encumbrances on it

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice.

4. *Physical description.*—(*a*) Describe in detail any mining or exploration operations which have been or now are being conducted upon the land, including existing mine workings and production facilities. State your interest, if any, in such operations. Also describe accessibility of mine workings for examination purposes.

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades.

(*c*) Describe the geologic features of the property, including mineralization, type of deposit (vein, bedded, etc.), and your reasons for wishing to explore. Illustrate with maps or sketches. Send with your application (but not necessarily as a part of it) any geologic or engineering report, assay maps, or other technologic information you may have, indicating on each whether you require its return to you.

(*d*) State the facts with respect to the accessibility of the project: Access roads, distances to shipping, supply and residence points.

(*e*) State the availability of manpower, materials, supplies, equipment, water, and power.

Department of the Interior
Defense Minerals Administration
16—66551-1
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5. *The exploration project.*—(a) State the mineral or minerals for which you [illegible] to explore Tungsten

(b) Describe fully the proposed work, including a map or sketch of the property showing a plan (and cross sections if needed) of any present mine workings, and the location of the proposed exploration work as related to such features as contacts, veins, ore-bearing beds, etc.

(c) The work will start within 7 days and be completed within 9½ months from the date of an exploration project contract.

(d) State the operating experience and background of the applicant with relation to the ability to carry out such exploration project, and also that of the person or persons who will supervise the operations.

6. *Estimate of costs.*—Furnish a detailed estimate of the costs of the proposed work (you will have to use a separate sheet), under the following headings. Add the totals under all headings to give the estimated total cost of the project:

(a) *Independent contracts.*—(Note.—If the applicant does not intend to let any of the work to contractors, write "none" after this item. To the extent that the work is to be contracted, do not repeat the cost of the contract-work in subsequent items.) State the cost of any proposed independent contracts for the performance of all or any part of the work, expressed in terms of units of work (such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, per cubic yard of material moved, etc.).

(b) *Labor, supervision, consultants.*—Include an itemized schedule of numbers, classes and rates of wages, salaries or fees for necessary labor, supervision and engineering and geological consultants.

(c) *Operating materials and supplies.*—Furnish an itemized list, including items of equipment costing less than $50 each, and power, water and fuel.

(d) *Operating equipment.*—Furnish an itemized list of any operating equipment to be rented, purchased, or which is owned and will be furnished by the Operator, with the estimated rental, purchase price, or suggested use-allowance based on present value, as the case may be.

(e) *Rehabilitation and repairs.*—Furnish a detailed list showing the cost of any necessary initial rehabilitation or repairs of existing buildings, installations, fixtures, and movable operating equipment, now owned by the Operator and which will be devoted to the exploration project.

(f) *New buildings, improvements, installations.*—Furnish a detailed list showing the cost of any necessary buildings, fixed improvements, or installations to be purchased, installed or constructed for the benefit of the exploration project.

(g) *Miscellaneous.*—Furnish a detailed list showing the cost of repairs to and maintenance of operating equipment (not including initial rehabilitation or repairs of the Operator's equipment), analytical work, accounting, workmen's compensation and employers' liability insurance, and payroll taxes.

(h) *Contingencies.*—Give an estimate of any necessary allowances for contingencies not included in the costs stated above.

NOTE.—No items of general overhead, corporate management, interest, taxes (other than payroll and sales taxes), or any other indirect costs, or work performed or costs incurred before the date of the contract, should be included in the estimate of costs.

7. (a) Are you prepared to furnish your share of the cost of the proposed project in accordance with the regulations on Government participation (Sec. 7, DMEA No. 1)?

(b) How do you propose to furnish your share of the costs?

[x] Money [ ] Use of equipment owned by you [ ] Other

Explain in detail on acompanying paper.

CERTIFICATION

The undersigned, whether as an individual, corporate officer, partner, or otherwise, both in his own behalf and acting for the applicant, certifies that the information set forth in this form and accompanying papers is correct and complete, to the best of his knowledge and belief.

Dated August 9, 1952, 195--

Nash Mining Co., Inc.
(Applicant)

By Archie L. Nash, Jr.
Sec. & Treas.
Nash Mining Co. Inc.

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—66551-1

Nash

3. Applicant's property rights

(a) Legal description of land.

Beginning at an iron stake on the South side of the Cold Springs county Road, about 3.3 miles from State Highway 151, and running South 11 degrees West approximately 2025 feet to a creek called Plum Run Branch; thence Westerly along Plum Run Branch about 1600 feet to a large Poplar tree, 20 feet North of the creek bank; thence North 11 degrees West approximately 1550 feet to an iron stake; thence North 60 degrees East approximately 1750 feet to an iron stake on the South side of Cold Springs County Road; thence North 83 degrees East 334 feet to an iron stake; thence South 70 degrees East 650 feet to point of BEGINNING, comprising approximately 90 acres. This tract of land is a portion of Tracts 6 and 5 of the Plat Showing the Wm. P. Furness Lands in Township No. 9 of Cabarrus County, North Carolina, by Walter L. Furr, Civil Engineer, Concord, N.C., dated July, 1928, said plat being filed in the records of Cabarrus County, North Carolina.

Nash

4. PHYSICAL DESCRIPTION

a - General

To date, no published reports on the operation of the Furniss Mine have been found. However, mention of the operation of this mine is found in the reports of the Miami Mining Company which at the time, owned the Furniss Mine along with the Phoenix Mine.

"Old timers" in this area state that the present Furniss Mine tract was originally worked prior to the War Between the States. Most of the production in these sporadic operations came from near the surface in shallow shafts, open cuts and pits. The principal metal sought was free gold, and interesection of the sulfide zone usually made necessary the beginning of a new shaft or pit.

The Furniss shaft is the principal working on the Furniss Mine property. This shaft is vertical and was sunk by the Miami Mining Company to a depth of 170 feet.

About 1946 the presence of scheelite in the dumps and ore piles of the Furniss vein was discovered by A. L. Nash, Sr. Subsequent examinations uncovered striking crystals of scheelite on both dumps and ore piles. These findings were of sufficient interest to warrant further examination, so a company known as Nash-Moore Mines, Inc. was formed for the purpose of unwatering and sampling the old Furniss shaft. A resume of this examination and its findings are given herewith.

The shaft was choked down to water level - about 35 feet below the surface. This was re-timbered and below this depth the old timbers were found to be in excellent shape, with unwatering only being necessary to permit examination of the old workings.

At 100 feet the shaft cut through the steeply dipping vein and here considerable work had been done. Drifting and stoping in both directions was accomplished. The stope was not accessible northeast of the shaft, but to the southwest the vein was exposed for a distance of sixty feet along the bottom and end of the stope. Scheelite was found from one end of the exposure of the vein to the other, a part of which contained crystals measuring over 3 inches across.

On the 170-foot level, 250 feet of drifting had been done on the vein, most of which, however, showed only narrow widths. In the

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northeast drift the vein widened out to 32 inches in a lens about 25 feet in length. Here large crystals of scheelite were again encountered. Examination with the Ultra Violet lamp showed small crystals of scheelite disseminated throughout the vein exposure. No stoping had been done at this level.

Sampling of the vein was made on both the 100-foot and 170-foot levels with channel cuts being taken at two and one-half foot intervals on the 170-foot level where the widths were 27 inches to 32 inches wide. The average assayed value of these samples was one-half of one percent WO_3.

On the basis of the above described evidence, the U.S. Bureau of Mines drilled eight widely scattered short holes designed to cut the vein at 50 to 100-foot depths. From the standpoint of tungsten values, this drilling was a disappointment. Mr. J.I. Moore, an engineer who played an important part in the development of the tungsten mine at Tungsten, N.C. has this to say concerning the possibilities in drilling the type deposit found in the Furniss Mine.

"In only two holes were any tungsten values found, although in all holes but one, the vein structure was cut, showing strength and continunity. From an examination of the vein both underground and on the surface, it is quite evident that a drill could easily fail to get tungsten values, since the scheelite crystals are distinct and separate, readily permitting a drill to pass through the vein at a barren spot with large crystals inches away. Further more, drilling so few holes over such a wide area raises a question as to how much value should be given to the drilling results, other than the acquisition of geological knowledge of the structure."1/

Location of holes and a record of the results can be found in Bureau of Mines Report of Investigation 4734: Investigation of Furniss Tungsten Deposits, Cabarrus County, N.C. This report is included with this application.

Another working, known as the Furr shaft is 450 feet southwest of the Furniss Mine and a part of the Furniss tract. As in the case of the Furniss, no records are available concerning this development, however very interesting scheelite crystals can be found on the old dumps and ore pile. This shaft is reported to be 75 feet deep.

The Furniss shaft and workings are now under water. When the shaft was reopened for examination in 1948, inaccessibility of the

1/ Moore, J.I., Report on Furniss Mine, Cabarrus County, N.C. 1948.

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old timbers made it impossible for the new sets to be aligned properly with the shaft. Consequently the shaft was missed by some 14 inches on the north side and by some 6 inches on the west side. Future operations will necessitate the proper alignment of the shaft by re-timbering from water level up to the surface.

b - Production

There are no records from which to guage past production. However it has been estimated that probably some 5000 tons of ore have been produced by past operations of all types. There are no developed ore reserves.

c - Geology

The Furniss Mine lies within an ancient metamorphosed series, the origin of which is open to controversy. The country-rock has been variously described by investigators. Some maintain it is a part of the Carolina Slate belt; others that it is an intrusive diorite that has partly altered to an epidote-chlorite schist. In the drilling program conducted by the Bureau of Mines, the core was found to be consistantly of the same related material and was logged under the general term "greenstone".

The Furniss vein is a fissure vein that has been traced for about 2500 feet across the property. The strike is about N60°E and the dip is about 80°NW. The vein width varies from a few inches up to three feet or more and is characterized by short shoots or lens of ore that pitch rather steeply.

The principal gangue mineral of this vein is quartz with varying amounts of barite-ankerite, and siderite noted. Disseminated in, and replacing these minerals, the scheelite is found, often occurring in masses 3 or more inches across. Free gold is also present as is the sulfide of iron and copper.

As stated previously, the scheelite occurs both as relatively large masses and as disseminated crystals or streaks throughout the entire length of the vein as exposed on the 170-foot level. It was noticed also that the scheelite occurred in larger concentrations in the non-sulfide sections of the vein.

It is the belief of the applicants for this loan that definite possiblities for the development of a small tungsten mine exist on this property. It is certainly true that the drilling program was a disappointment, especially in view of the persistent showing of scheelite in the Furniss shaft. However when the nature of the vein

Nash

is considered, with the ore lens short in linear distance and pitching steeply, as disclosed in the Furniss shaft, plus the fact that these lens are high in WO_3 content, it certainly makes for a prospect worthy of more reliable methods of exploration.

d - Accessibility

The Furniss Mine is in the central part of Cabarrus County, North Carolina, about seven miles southeast of Concord and about six miles southwest of Mt. Pleasant. From Concord it is reached by driving south on state highway 151 about 3.5 miles to Faggarts Corner and then left on the Phoenix Mine road, a distance of 3.3 miles. Both of these roads are the tar and gravel paved type. The mine lies approximately 1/3 mile off the main road and is reached by a clay road which can be put in good shape by a small amount of bulldozing.

Concord is the nearest principal city with a population of about 20,000. It lies on the main line of the Southern Railway System.

e - Availability of manpower, materials etc.

Sufficient labor with proper know-how is available to carry out the planned operation. All necessary materials, supplies and equipment can be secured within the area from the various dealers in mining and industrial equipment.

Electric power is available from the Rural Electrification Administration. Their single phase line is now within 1/3 mile of the mine. Arrangements have already been made to secure power from this source.

Ample water supplies are available for year round operations. The Plum Run Branch, about 2000 feet from the Furniss shaft is the nearest source of water for any contemplated milling activities.

5. The exploration project.

(b) Proposed work - This exploration project has been divided into three phases - rehabilitation, unwatering shaft and drift work on the 170-foot level.

(1) Rehabilitation.

a- Cleaning of debris from mine area and minor grading of clay road leading to the mine.
b- Construction of one (1) frame building 12'x12'x10' to serve as hoist house and tool room.
c- Construction of an 8'x8'x8' concrete block house to be used as a store house for dynamite.
d- Minor repairs to the 12'x12'x12' frame building now standing on the property.
e- Erection of head frame 30'x4'x4' (oak).
f- Re-timbering of top 35 feet of shaft and collar and proper alignment of shaft.
g- General repairs to other shaft timbers, hoisting compartment and ladder-way.
h- Repairing dams on 100-foot level and setting up pumping stations on 100-foot level and 170-foot level.
i- Mucking out sump at bottom of shaft and clearing of cross-cut leading into 170-foot level.
j- Installation of water discharge, water-feed and air pipes.
k- Placing track for haulage-way on 170-foot level and from shaft to dumps.
l- Wiring buildings, shaft and drifts for electric power.
m- Installation of pumps, hoist, cage, compressor and other equipment.

(2) Unwatering shaft.

a- Pumping to be accomplished using 2-5 hp single phase centrifugal electric pumps, 100gpm @ 100-foot head on 24 hour basis for approximately two weeks. An air operated - piston type pump will be on stand-by in the event of electric power failure.

why not use one pump 200-foot head

(3) Drift work.

a- Proposed plans call for a continuation of the drifting on the vein at the 170-foot level. The drift will

be 5 feet wide and 7 feet high and extend in a southwesterly direction along the strike of the vein for an additional 400 feet and in a northeasterly direction along the strike of the vein for a distance of 250 feet.

We feel that continuation of development of the Furniss mine, where former operators ceased, is justified. In the northeast drift, where we sampled a lens having a length of 25-30 feet, we suspect that the former operators left the main vein and followed for 10 feet a branch stringer, and that the main vein continues in the foot-wall. The reasons for this assumption are two-fold: The end of the lens to the northeast is definitely on the foot-wall and a "boot-leg" on the foot-wall side shows the vein behind the drift wall just ahead of the end of the lens. Furthermore, the lens on the 100-foot level is over 100 feet in length, where ore was extracted by former operators, and it is not likely that the lens has shortened to a mere 25 feet in this depth of 70 feet. In addition to solving this enigma, continuation of the drift northeast is justified in order to get under promising ground where recent and old work indicates the presence of the scheelite bearing vein.

The southwest drift is justified by the fact that drill hole No. 7 cut the vein at 75 feet ahead of the present face of the drift and disclosed a vein width of two feet, containing scheelite; and 280 feet ahead there is the Furr shaft, in which it is known that high grade gold values exist, and evidence on the dump clearly indicates a strong occurrence of scheelite. A total of 400 feet of drifting would explore the area around the Furr shaft.

(c) See application.

(d) Operating experience.

The supervisor of this project has been active in mining for the past twenty years. He has operated numerous small mines and has been actively engaged in prospecting and developing new properties. His assistant is a graduate of Texas School of Mines with a degree in Geology and has considerable experience in the prospecting and working of small mines.

6. Estimate of costs.

(a) Independent contracts. - None.

(b) Labor, supervision, consultants.

Supervisor (1)		450.00	450.00	
Driller & Asst. Sup. (1)	50	350.00	350.00	
Driller Helper (1)	@ 1.75 per hr.	240.00	240.00	
Hoistman (1)	@ 1.25 per hr.	200.00	200.00	
Muckers (2)	@ 1.25 per hr.	200.00	400.00	
Deckman (1)	@ 1.00 per hr.	160.00	160.00	
			1,800.00	@ 9½ mos. 17,100.00

(c) Operating materials and supplies.

Air hose - type 19-8-5 ply - 1" - 100' @ 1.35 / ft	135.00	
Air hose - type 19-8-4 ply - ½" - 100' @ .71 / ft	71.00	
Boss couplings - 1" (6) @ 2.59 ea.	15.54	
Boss couplings - ½" (4) @ 1.94 ea.	7.76	
Pipe -water feet - ½" 900' @ .0803 / ft	72.27	
Pipe - air - 2" 600' @ .3169 /ft	190.14	
Drilling steel - all sizes	267.40	
Drilling bits - Tungsten carbide @ 15.95 ea.	1800.00	
Suction hose - 15' section @ 28.45 ea. (2)	56.90	
Footvalve - galvanized @ 5.60 ea.	11.20	
Track - 1250 ' - 1½" angle-iron	151.87	
Lubricator - L012- (1)	31.25	
Lubricators - Hoist	50.00	
Pipe fittings (all sizes)	25.00	
Nails, screws, washers, bolts, & nuts	25.00	
Electric power	500.00	
Petroleum products - fuel oil, gasoline, oil & greases	2000.00	
Explosives - powder, caps, & wiring	2200.00	
Lumber & cross-ties for haulage-way	100.00	
Pipe threader 2"	20.25	
Pipe threader 2½" - 4"	85.00	
Bookkeeping equipment and supplies	50.00	
Hand tools - shovels, picks, rods & hammers	75.00	
	7,950.58	7,950.58

(d) Operating equipment - - rentals per month.

Air compressor 500 cu ft/ min.	579.00
Pumps - water - 1½ RVN 5 motor pump 230/1/60 @ 50.00 ea.	100.00
Drifter - Grander-Denver - D89B	73.50

Estimate of costs.

(d) operating equipment - - rentals per mo. (cont.)

Stand-by pump- water - dual piston (air operated)	25.00		
Portable pump - centrifugal 3000 gal/hr	5.00		
Hoist, cable, and sheave wheel	100.00		
Winch, cable & fittings (5 ton)	15.00		
Ore cars (3) @ 10.00 ea.	30.00		
Truck - 3/4 ton Chev.	100.00		
Electric drill & bits	5.00		
Carpenter tools, blacksmith forge, anvil, chain fall	5.00		
	1,037.50	@ 9½ mos.	9,856.25

(e) Rehabilitation and repairs.

Clearing debris from area and bull-dozing	200.00		
Lumber for repairing old timbers, ladder-way and hoisting compartment	100.00		
Weather-sheeting (tar-paper) for 12'x12'x12' building	26.80		
Lumber etc. for repairing dams on 100-foot level	25.00		
Labor for two weeks is allowed for rehabilat-ion and repairs, using the regular labor force. Mucking out the sump at the bottom of the shaft and the cross-cut leading from the shaft to the 170-foot level will con-sume most of this time.			
	351.80		351.80

(f) New buildings, improvements, and installations.

Lumber for hoist house - 12'x12'x10'	120.00		
Lumber for dynamite house - 8'x8'x8'	50.00		
Timber for building head-frame - 4'x4'x30'	100.00		
Timber for re-timbering top 35' of shaft	500.00		
Concrete blocks and cement for dynamite house	100.00		
Nails, screws, washers, bolts & nuts	75.00		
Roofing paper (tar-paper) for hoist house	26.80		
Pipe-water discharge 2" - 500' @ .3169/ft	158.45		
Pipe-air 2" - 500' @ .3169/ft	158.45		

Estimate of costs.

(f) New buildings, improvements & installations (cont.)

Pipe-water feed - ½" - 500' @.0803/ft	40.15	
Pipe fittings (all sizes)	50.00	
Electrical installation for shaft and surface fixtures	500.00	
Electric signal system	25.00	
Cage	75.00	
Track for haulage-way - 1250' - 1½" angle-iron	151.87	
Lumber and cross-ties for haulage-way	100.00	
Regular labor force will be used for erection of new buildings, improvements, and installtions for one (1) month.		
	2,230.72	2,230.72

(g) Miscellaneous.

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Assaying (W, Au, Cu)	325.00	
Insurance, Soc. Security etc. @ 10% wages	1,710.00	
	2,035.00	2,035.00
		39,524.35

(h) Contingencies.

Add 10% to cover unforseen costs.		3,952.44
	Total	43,476.79

7. Operators share of cost.

(a) See application.

(b) The operators share of the costs of this project will be met by cash payments.

STATE OF NORTH CAROLINA)
COUNTY OF ROWAN)

A F F I D A V I T

Affiant, being duly sworn, deposes and says:

That he is a citizen and resident of Rowan County, North Carolina, and has been a practicing Attorney in the City of Salisbury, North Carolina, for more than twenty years.

That he knows of his own knowledge that A. L. NASH, A. L. NASH, SR. and ARCHIE L. NASH, SR., is one and the same person.

Affiant further states that in his ownership of properties in Cabarrus County, North Carolina, described in Lease and Option to Purchase, dated August 9, 1952, that said properties are owned by him as "A. L. NASH," whereas, as President of the Corporation known as Nash Mining Company, Inc., and in all other corporate connections, he uses the name of "ARCHIE L. NASH, SR."

This 16th day of August, 1952.

W. T. Shuford
W. T. Shuford

Subscribed and sworn to
before me this the 16th
day of August, 1952.

Mary E. Hackett
Notary Public

My Commission expires February 19, 1953

Nash Mining Co
11[illegible] Main St
Kannapolis, N.C.

STATE OF NORTH CAROLINA

COUNTY OF CABARRUS

THIS LEASE AND OPTION TO PURCHASE, Made and entered into this the 9th day of August, 1952, by and between A. L. NASH AND WIFE, MARY L. NASH, of Cabarrus County, North Carolina, and ROBIE L. NASH AND WIFE, ETHEL AREY NASH of Rowan County, North Carolina, parties of the first part, hereinafter referred to as Lessors, and NASH MINING COMPANY, INC., a corporation created, organized and existing under the laws of the State of North Carolina, with its principal office at Kannapolis in said State, party of the second part, hereinafter called Lessee;

WITNESSETH, That for and in consideration of the sum of One Dollar now paid by Lessee to Lessors, the receipt of which is hereby acknowledged, Lessors do grant and give to Lessee, its successors and assigns, the right to explore, develop, mine and otherwise operate the tract of land described below, now solely owned by Lessors, both above and below ground, and to lease said land and mineral rights in said land upon the terms and conditions hereinafter set forth:

BEGINNING at an iron stake on the South side of the Cold Springs County Road, about 3.3 miles from State Highway 151, and running South 11 degrees West approximately 2025 feet to a creek called Plum Run Branch; thence Westerly along Plum Run Branch about 1600 feet to a large Poplar tree, 20 feet North of the creek bank; thence North 11 degrees West approximately 1550 feet to an iron stake; thence North 60 degrees East approximately 1750 feet to an iron stake on the South side of Cold Springs County Road; thence North 83 degrees East 334 feet to an iron stake; thence South 70 degrees East 650 feet to point of BEGINNING, comprising approximately 90 acres. This tract of land is a portion of Tracts 6 and 5 of the Plat Showing The Wm. P. Furness Lands in Township No. 9 of Cabarrus County, North Carolina, by Walter L. Furr, Civil Engineer, Concord, N. C., dated July, 1928 said plat being filed in the records of Cabarrus County, North Carolina.

I

The term of this lease shall be for a period of ten (10) years from and after the date hereof, together with an

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option to renew the same upon the same terms and conditions as set forth herein for an additional period of ten (10) years.

II

The rental due and payable hereunder shall be the sum of One Hundred ($100.00) Dollars per year, payable annually in advance, together with a royalty of ten per cent (10%) of net smelter, mint or other returns from the sale of all minerals and metals produced from the above described property, without interest.

III

That for and in consideration of the premises, Lessors hereby give and grant unto Lessee the right and option to purchase the above described land outright in fee simple at any time during the term of this lease, or any renewal or extension thereof, for the sum of Fifty Thousand ($50,000.00) Dollars.

IV

Lessee, its successors or assigns, agents or employees, shall have the following rights:

(a) Of ingress, egress and regress upon and in said land by foot, vehicle or otherwise.

(b) To use and improve such roads as are now existent, or make such new roads as may be required.

(c) To cut and use such timber as may be necessary in the operation of the property, except that timber which has been sold by Lessors.

(d) To dig, blast and excavate for minerals, including trenching by hand or machine, re-open any shafts or pits, or any other work necessary to the mining and milling operations.

(e) To dump upon said land such ore, rock, sand, clay or other materials excavated in the process of the work.

(f) To erect buildings and install machinery and other

equipment with the right of removal within sixty (60) days after the termination of this lease.

(g) To dam, divert and use water from Plum Run Branch, which flows along the southern boundary of the land described above.

(h) To do such other work and acts as may be necessary in the conduct of the mining operations herein contemplated.

(i) To protect Lessors against any damage that may arise from the acts of Lessee in the conduct of the mining operations herein contemplated.

Lessee agrees:

(a) To conduct and carry on mining and milling operations in and on said land in good faith.

(b) To pay Lessors, their heirs or assigns, or duly accredited agent, or deposit to their account in a bank of their choosing, a royalty of ten (10) per cent of the net smelter, mint or other returns from the sale of all metals and minerals mined, processed and sold from said lands, such payments to be made on or before the 20th day of each calendar month for all metals and minerals sold and settled for during the preceding calendar month.

(c) To permit Lessors free access to all parts of the above described property, both above and below ground.

(d) To furnish Lessors, upon request, production records and settlement sheets of metals and minerals sold, it being understood further that monthly payments of royalty will be accompanied by a statement of metals and minerals sold.

V

Lessors hereby reserve to themselves, their heirs, executors, administrators and assigns, a right of way over and upon the above described premises for the purpose of ingress,

egress and regress to and from the adjacent property owned by Lessors, and for the construction of water lines and roadways thereon.

VI

Lessee shall have the right to assign this lease without the consent of Lessors, provided, however, Lessee shall continue to remain bound for the performance of the terms and conditions hereof on its part to be performed.

VII

In the event this lease and option to purchase shall be terminated for any cause whatsoever, Lessee agrees to execute full and complete cancellation notice and to forever release its rights hereunder.

VIII

Lessors specifically agree to subordinate their right to rentals and royalties due hereunder so long as such subordination may be required by any lending institution or agency providing funds for the purpose of enabling Lessee to explore and develop said property.

IN TESTIMONY WHEREOF, the said parties to this Lease and Option to Purchase have hereunto set their respective hands and seals, in the manner and form provided by law, the day and year first above written, in agreement with the conditions contained herein.

A. L. NASH (SEAL)

MARY L. NASH (SEAL)

ROBIE L. NASH (SEAL)

ETHEL AREY NASH (SEAL)

LESSORS

(CORPORATE SEAL)

NASH MINING COMPANY, INC., LESSEE

BY ARCHIE L. NASH, SR.
PRESIDENT

ATTEST:

ARCHIE L. NASH, JR.
SECRETARY

STATE OF NORTH CAROLINA

COUNTY OF ROWAN

Personally appeared before me, a Notary Public in and for the County aforesaid, A. L. NASH AND WIFE, MARY L. NASH, and ROBIE L. NASH AND WIFE, ETHEL AREY NASH, who acknowledged the execution by them of the foregoing instrument for the purposes expressed therein.

WITNESS my hand and Notarial seal this 9th day of August, 1952.

Mary E. Hackett
Notary Public

My Commission expires:
Feb. 19, 1953

(NOTARIAL SEAL)

STATE OF NORTH CAROLINA

COUNTY OF ROWAN

This 9th day of August, 1952, personally came before me, a Notary Public in and for the County aforesaid, ARCHIE L. NASH, JR., who, being by me duly sworn, says that he knows the common seal of NASH MINING COMPANY, INC. and is acquainted with ARCHIE L. NASH, SR., who is the President of said Corporation, and that he, the said Archie L. Nash, Jr., is the Secretary of said Corporation and saw the President sign the instrument and saw the said common seal of said Corporation affixed to said instrument by said President, and that he, the said Archie L. Nash, Jr., Secretary as aforesaid, signed his name in attestation of the execution of said instrument in the presence of said President of said Corporation.

WITNESS my hand and Notarial seal, date above written.

Mary E. Hackett
Notary Public

My Commission expires:
Feb. 19, 1953

(NOTARIAL SEAL)

STATE OF NORTH CAROLINA
COUNTY OF CABARRUS

The foregoing certificates of _____, a Notary Public of Rowan County, North Carolina, are adjudged to be in due form and according to law. Therefore let the said instrument, with the certificates, be registered.

This ____ day of _____ 1952.

CLERK OF THE SUPERIOR COURT OF
CABARRUS COUNTY, NORTH CAROLINA

Nash Mining Co
913 S. Main St
Kannapolis N.C.

MF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of North Carolina, County of Cabarrus, described as follows:1/

See annex

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ Nash Mining Co., Inc.

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 9 th day of August, 195 2.

A L Nash [Seal] Mary L. Nash [Seal]

Rubie L Nash [Seal] Ethel Arey Nash [Seal]

_____ [Seal]

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4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

ANNEX TO OWNER'S CONSENT TO LIEN

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DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
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913 S Main St.
Kannapolis N.C.

MF-203

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Dated this 9 th day of August, 195 2.

A. C. Nash [Seal] Mary L. Nash [Seal]

Rachel L. Nash [Seal] Ethel Avery Nash [Seal]

_____ [Seal]

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Dated this 9th day of August, 195 2.

A. L. Nash [Seal] Mary L. Nash [Seal]

Parker L. Nash [Seal] & Phil Amy Nash [Seal]

_____ [Seal]

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Ethel Amy Nash [Seal]

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ANNEX TO OWNER'S CONSENT TO LIEN

BEGINNING at an iron stake on the South side of the Cold Springs County Road, about 3.3 miles from State Highway 151, and running South 11 degrees West approximately 2025 feet to a creek called Plum Run Branch; thence Westerly along Plum Run Branch about 1600 feet to a large Poplar tree, 20 feet North of the creek bank; thence North 11 degrees West approximately 1550 feet to an iron stake; thence North 60 degrees East approximately 1750 feet to an iron stake on the South side of Cold Springs County Road; thence North 83 degrees East 334 feet to an iron stake; thence South 70 degrees East 650 feet to point of BEGINNING, comprising approximately 90 acres. This tract of land is a portion of Tracts 6 and 5 of the Plat Showing The Wm. P. Furness Lands in Township No. 9 of Cabarrus County, North Carolina, by Walter L. Furr, Civil Engineer, Concord, N.C., dated July, 1928, said plat being filed in the records of Cabarrus County, North Carolina.

Nash Mining Co
913 S Main St
Kannapolis N.C.

IF-203

OWNER'S CONSENT TO LIEN

WHEREAS, the undersigned, as owner, co-owner, lessor, or seller has an interest in certain property in the State of North Carolina, County of Cabarrus, described as follows:1/

See Annex

which is the subject of a proposed exploration project contract, hereinafter called the "contract", between the United States of America, hereinafter called the "Government", and

2/ Nash Mining Co., Inc.

hereinafter called the "Operator"; and

WHEREAS, under certain provisions of said contract which are set forth on the reverse side hereof, the Government is entitled to a percentage royalty on production and to certain other rights and equities which do or may conflict with or be adverse to the interest of the undersigned in said property;

NOW THEREFORE, the undersigned, in consideration of said contract and as an inducement to the Government to enter into same, undertakes and agrees as follows:

1. The Government's equity in and right to dismantle, sever, take possession of, and remove and dispose of facilities, buildings, fixtures, equipment, or other items as provided in the contract, or any amendment thereof, shall prevail over and be prior and superior to any conflicting or adverse rights of the undersigned, and the Government is authorized to enter upon the land for such purposes.

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof which does not increase the maximum amount of the Government's claim here stated or alter the provisions for repayment, there is hereby granted to the Government a lien upon the land herein described and upon any production of minerals therefrom, until the royalty claim is fully paid in the amount of the Government's contribution, not in excess of 4/$ _____, or ten years have elapsed from the date of the contract.

3. The undersigned shall commit no act nor assert any claim that may contravene or conflict with the lien, claim, or rights of the Government under the provisions of said contract. This agreement shall be binding upon the heirs, executors, administrators, successors, and assigns of the undersigned.

Dated this 9th day of August, 195 2.

A. L. Nash [Seal] Mary L. Nash [Seal]

[Seal] Ethel Arey Nash [Seal]

Katie L. Nash [Seal]

1/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated _____, and recorded in book _____ page _____ official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

2/ Insert the name of the Operator as it will appear in the exploration project contract.

3/ Mining or production from the land is not required, and in the absence of production there is no obligation to repay the Government.

4/ Insert the maximum amount of the Government's contribution.

RELEVANT CONTRACT PROVISIONS

Repayment by Operator. (a) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows:

(1) One and one-half (1½) per cent of any such net amounts not in excess of eight dollars ($8.00) per ton.

(2) One and one-half (1½) per cent of any such net amounts, plus one-half (½) per cent such net amounts for each additional full fifty cents ($0.50) by which such net amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) per cent of such net amounts.

(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) per cent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) per cent.)

(b) As here used, "net smelter returns", "net concentrator returns", and "other net amounts realized from the sale or other disposition", mean gross revenue from sales; or if not sold, the market value, the market value of the material after it is mined in the form in which and the place where it is held. In the case of integrated operations in which the material is not disposed of as such, these terms mean what is or would be gross income from mining operations for percentage depletion purposes in income tax determination.

(c) To secure the payment of its percentage royalty, the Government shall have and is hereby granted a lien upon the land described in Article 2 and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(d) This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

Title to and disposition of property. All facilities, buildings, fixtures, equipment, or other items costing more than $50.00 each, paid for or purchased with funds contributed jointly by the Operator and the Government, although title may be taken in the name of the Operator, shall belong to the Operator and the Government jointly, in proportion to their respective contributions, and upon the completion of the work or the termination of the contract shall be disposed of promptly by the Operator for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator at a price at least as high as could otherwise be obtained, as may appear to be for the best interest of the Government, unless the Government, in writing, waives its interest in any such item. If necessary to accomplish such disposition, the Operator shall dismantle, sever from the land, and remove any such item, the cost thereof to be for the joint account of the parties in proportion to their respective interests. If the Operator, within 90 days after the receipt of written notice from the Government, fails, neglects, or refuses to dispose of such property, the Government may itself enter upon the land, take possession of, and remove and dispose of any such property as above provided.

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Dated this 9th day of August, 1952.

A. L. Nash [Seal] Mary L Nash [Seal]

Rachel L Nash [Seal] Ethel Amy Nash [Seal]

_____ [Seal]

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

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