400

APR 2 1956

Cold Spring Tungsten, Inc.
1036 First National Bank Building
Denver 2, Colorado

Re: Docket No.-4037, Tungsten
Lily Mine
Boulder County, Colorado

Gentlemen:

Your application for aid for an exploration project and other data available to us in Washington concerning the above-referenced property have been reviewed.

Projects approved by the Defense Minerals Exploration Administration must, in its judgment, show definite promise of yielding materials of acceptable grade in quantities that will significantly improve the mineral supply position for the National Defense Program.

Careful study of our information, although noting tungsten mineralization in the Lily mine property, indicates to us that the probability of disclosing minable tungsten ore reserves is not sufficiently promising to justify Government participation. Under these circumstances, we regret to advise you that your application is denied.

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

Sincerely yours,

C. G. Mittelsdorf

Administrator

cc: Docket
Code 400
Oper. Comm.
Adm. Read. File
T. Kiilsgaard, USGS
R. W. Holliday, USBM
FT, Region 3

SPHolt/ls 3/30/56

March 30, 1956

MEMORANDUM

To: Administrator, DMEA

From: Iron and Ferro-Alloys Division, DMEA

Subject: Denial of request for exploration assistance in the amount of $7,563.00
Docket No. DMEA-4037, Tungsten
Cold Spring Tungsten, Inc.
Lily Mine
Boulder County, Colorado

Denial of the subject application is recommended by this Division based on the following information:

(1) The applicant, Cold Spring Tungsten, Inc., 1036 First National Bank Building, Denver 2, Colorado, requested exploration assistance in the amount of $7,563.00 for diamond drilling in the Lily mine.

(2) The applicant is the owner of the following patented lode mining claims, situated in the NW. ¼, sec. 7, T. 1 S., R. 72 W., 6th Principal Meridian, Grand Island Mining District, Boulder County, Colorado, in Sherwood Gulch, at the west end of the Boulder tungsten district:

Claim Name	U. S. Survey No.
Eliza	19171
Lily	19171
Hidden Fortune	19171
Pinto	19171
Luck Bill	19952
Gale	18340
Slide	18340
Cypress	18340
Ash Can	18340

Property rights stipulated in the application comprise approximately 25 acres, and include all the workings of the Lily mine and part of the workings of the Gale mine.

(3) The proposed program is to drill two horizontal drill holes, each approximately 600 feet long, total approximately 1,200 feet, from the bottom level of the Gale mine to explore the eastward extensions and downward projections of the Rake-off and Lily veins in the vicinity of the Lily tunnel.

(4) In the area of the Lily mine tungsten mineralization occurs in a system of northeasterly striking fracture veins containing ferberite, ($FeWO_4$), in aplite, gneissic aplite, and schist.

(5) The Field Team concludes that, although the Rake-off vein, the primary target of the proposed drilling project, was highly productive in the Rake-off mine west of the Operator's property, the easterly extension of that vein on to the applicant's property weakened and was barren of tungsten mineralization; that the secondary targets of the program, the Lily and other intermediate veins, were encountered in the Rake-off mine and Lily tunnel, where they were not especially persistent and contained only small and irregularly spaced ore shoots; and that all available evidence indicates that the veins comprising the primary and secondary objectives of the proposed project would not contain appreciable amounts of tungsten ore. They therefore concluded that the proposed project would not result in a significant discovery and recommended denial of the application.

The Commodity Division of the Geological Survey and the Bureau of Mines concur in this recommendation.

W. S. Martin

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

cc: Docket
Code 400
Oper. Comm.
Adm. Read. File

SPHolt/ls 3/30/56

400

IN REPLY REFER TO:

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

RECEIVED
MAR 19 1956

March 16, 1956

Re: DMEA 4037
Cold Spring Tungsten Co.
Lily Mine
Boulder Co., Colorado
$7,563.00 - Tungsten

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

From: N. E. Nelson, U. S. Geological Survey

Subject: Review of Field Team report.

The applicant requested assistance in exploring by underground drilling projected easterly and downward extensions of veins which to the west and above were tungsten bearing.

The proposed work consists of two 600-foot holes and the estimated cost is $7,563.00.

The examiners conclude, "there is no evidence that the veins comprising either the primary or secondary targets of the applicant's proposed exploration program will contain significant quantities of tungsten mineralization in the project area. Available evidence does, in fact, point to a contrary conclusion."

Denial of the application is recommended by the examiners and the Field Team. I concur with the recommendation.

N. E. Nelson

N. E. Nelson

NENelson:iml
G-3/16/56

cc: Director's reading, 4212
Branch reading, 4212
DMEA (3)
Docket file
W. F. Dietrich, 3061

400

Copy retained 400

March 15, 1956

Memorandum

To: Chief, Iron and Ferroalloy Division - DMEA
Through: Chief, Branch of Ferrous Metals & Ferroalloys

From: Commodity Specialist - Tungsten

Subject: Report of Field Team Examination
Docket No. DMEA 4037
Lily Mine, Boulder County, Colorado
Cold Spring Tungsten, Incorporated
1036 First National Bank Building
Denver 2, Colorado
$7,563.00-Tungsten

It was proposed to drill two horizontal holes totaling 1200 feet at a cost of $7,563.00.

Conclusion of the field team that geologic evidence does not indicate liklihood of a significant discovery is well substantiated. Pages 10 to 12 of the report state that diamond drilling could be expected to give inconclusive results and that additional work, even in the event of favorable indications would probably be excessively costly.

It is recommended that the application be denied.

R. W. Holliday

402

DEC 21 1955

dmea 4037

TELETYPE

Mr. W. M. Traver, Executive Officer
DMEA Field Team, Region III
224 New Custom House
Denver 2, Colorado

To consider urtel December 16, Docket DMEA 1447, Cold Spring Tungsten, Inc., we need confirmation Operator willing to calculate royalty payments in accordance with contract Idm-154 terms. Refer ourlet December 6.

Reurlet December 16, not knowing Operator's final report had been received, we complained December 15 to Operator's president, Boris Pregel. Please express regrets to Ridland.

George E. Griffith

Chairman, Operating Committee

cc: Docket
Code 400
Adm. Read. File
Oper. Comm.
T. Killingaard, USGS
R. W. Holliday, USBM
FT, Reg. 3 - confirmation

ADMcMahon/ls
12/20/55

DMEA 402
Date Rec'd

DEC 21 1955

BUREAU OF MINES
Denver, Colorado

December 20, 1955

Memorandum

To: W. M. Traver, Executive Officer, DMEA Field Team, Reg. III

From: Acting Superintendent, Denver Experiment Station, Reg. III

Subject: Docket DMEA 4037 (Tungsten), Cold Spring Tungsten, Inc., Lily mine, Boulder County, Colorado

The above brochure was received in this office on December 20, 1955.

An examination will be made and report prepared by an engineer from the Denver office.

JOHN F. SHAW

John F. Shaw

cc: 2 w/orig.
E. H. Marshman
J. F. Shaw
Sec. Op. Comm. (2)

400

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

RECEIVED
DEC 22 1955

224 New Customhouse
Denver 2, Colorado

December 19, 1955

Memorandum

To: J. F. Shaw (with brochure)
E. N. Harshman

From: Acting Executive Officer, DMEA Field Team, Region III

Subject: Docket DMEA 4037 (Tungsten), Cold Spring Tungsten, Inc., Lily Mine, Boulder County, Colorado

Enclosed is the subject application in the amount of $7,563.00. Also enclosed is a copy of the letter from the Chairman of the Operating Committee dated December 13, 1955 and attached memoranda of review of the application by the Tungsten Commodity Committee.

A field examination and suitable report are required.

E. N. Harshman

E. N. Harshman

Enclosures
HMC:ab
cc: Docket
Sec. Op. Comm. (2)
Chron.

RECEIVED
NOV 18 1955

November 16, 1955

Memorandum

To: Chief, Iron & Ferroalloys Division-DMEA
Through: Acting Chief, Branch of Ferrous Metals & Ferroalloys

From: Commodity Specialist-Tungsten

Subject: Docket No. DMEA 4037
Cold Spring Tungsten, Inc.
Rake-Off-Lily Mines
Boulder County, Colorado
$7,563.00 - Tungsten

It is recommended that a field referral be made.

R. W. Holliday

RWHolliday/tra

Copy to: Ferrous Metals
Mr. Geehan
Mr. Holliday
Files

400

DEC 13 1955

4037

Mr. W. M. Traver, Executive Officer
DMEA Field Team, Region III
224 New Custom House
Denver 2, Colorado

Re: Docket No. DMEA-4037, Tungsten
Cold Spring Tungsten, Inc.
Lily Mine
Boulder County, Colorado

Docket No. DMEA-4038, Tungsten
Clyde Mine

Docket No. DMEA-4072, Tungsten
Cold Spring & Forest Home Claims

also

Docket No. DMEA-1447, Tungsten
Contract No. Idm-E54
Cold Spring Claim, et al.

Dear Mr. Traver:

Reference is made to the captioned applications for exploration assistance. Reference is also made to Sec. 6.(e) of DMEA Order-1, Amended, which section provides that among the criteria to be considered and weighed in passing upon applications for exploration projects shall be the operating experience and background of the applicant.

By letter of July 7, 1954, the Executive Officer, DMEA Field Team, Region IV (now designated Region III), requested from Cold Spring Tungsten, Inc., the final engineering and geologic report for the subject contract (Idm-E54, Docket DMEA-1447). The Field Team on September 14, 1954, again requested the same report, and it was then our understanding that it would be available about December 1, 1954. Therefore, unless and until the applicant demonstrates its ability to comply with the existing contract by providing an acceptable final report, we cannot enter into further contracts with the same operator. Please advise Mr. Ridland accordingly.

As it is possible, however, that the necessary report will soon be available, we are referring the above-mentioned three applications to the Field Team, Region III, for review. Therefore, you can schedule or, if desirable, make field examinations for the respective properties while we are waiting for completion of all requirements for termination of the former contract.

Enclosed for your information are copies of memoranda, as listed below, relating to the captioned applications, prepared by the commodity specialists of the Bureau of Mines and Geological Survey:

Docket No.	Date of Memorandum	From	Agency
4037	11-1-55	N. E. Nelson	Geol. Survey
	11-16-55	R. W. Holliday	Bur. Mines
4038	11-3-55	N. E. Nelson	Geol. Survey
	11-16-55	R. W. Holliday	Bur. Mines
4072	11-30-55	N. E. Nelson	Geol. Survey
	11-29-55	R. W. Holliday	Bur. Mines

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee

Enclosures

APPROVED:

/s/ Robert W. Geehan

Member, Bureau of Mines

Thor H. Kiilsgaard

Member, Geological Survey

Copy to: Docket DMEA 4037
Docket DMEA 4038
Docket DMEA 4072
Code 400 (3)
Code 400-Reading File
Operating Committee
Admin. Reading File
Thor Kiilsgaard, USGS
R. W. Holliday, USBM
Field Team, Region 3

TLChapman/WSMartin/ls
12/7/55

400

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

RECEIVED
MAR 12 1956

March 7, 1956

224 New Customhouse
Denver 2, Colorado

WSM

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Field Team, Region III

Subject: Joint Report of Examination, Docket DMEA 4037 (Tungsten), Cold Spring Tungsten, Inc., Lily Mine, Boulder County, Colorado

Enclosed are the original and three copies of the joint engineering and geologic report on the subject docket.

The field examiners found no evidence to indicate that the veins comprising either the primary or secondary objectives of the proposed project would contain appreciable tungsten ore. They concluded that the proposed project would not result in a significant discovery, and they recommend that the application be denied. We concur in this recommendation.

DMEA Field Team, Region III

W. M. Traver

By W. M. Traver
Executive Officer

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE

(date)

RECEIVED

DMEA
Date Rec'd. MAR 12 1956

TRANSMITTED

MAR 7 1956

MAR 2 1956

BUREAU OF MINES
Denver, Colorado

REGION III

Building 20
Denver Federal Center
Denver 2, Colorado
March 2, 1956

Memorandum

To: Executive Officer, DMEA Field Team, Region III

From: E. N. Harshman
John F. Shaw

Subject: Joint Engineering and Geologic Report Docket DMEA 4037 (Tungsten)
Cold Spring Tungsten, Inc., Lily mine, Boulder County, Colo.

Enclosed are the original and 7 copies of the joint engineering and geologic report by R. W. Osterstock, geologist, and R. L. Bolmer, mining engineer.

Cold Spring Tungsten applied for exploration assistance to explore the easterly extensions and downward projections of the Rake-off, Lily and other veins in the vicinity of the Lily tunnel, by two horizontal core drill holes, totaling 1200 feet.

The proposed program is estimated to cost $7,563.00. The property was inspected January 31, 1956 by R. W. Osterstock, geologist and R. L. Bolmer, mining engineer. The examining team concluded that there was little possibility of discovering a significant amount of Tungsten by the proposed exploration.

It is recommended that the application by denied.

E. N. Harshman

E. N. Harshman
Member Field Team

John F. Shaw

John F. Shaw
Supervising Mining Engineer

JFS/mr
cc 7
ENHarshman
DMEA 4037
Chron

Reviewed by
DMEA OPERATING COMMITTEE

(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

TRANSMITTED

MAR 7 1956

DEFENSE MINERALS EXPLORATION ADMINISTRATION

JOINT REPORT OF EXAMINATION BY EXAMINING TEAM
REGION III

RECEIVED
MAR 12 1956

DMEA 4037
LILY MINE
GOLD SPRING TUNGSTEN, INC.
BOULDER COUNTY, COLORADO

Tungsten

Joint Engineering and Geologic Report

By

R. W. Osterstock
Geological Survey

R. L. Delmar
Bureau of Mines

March 1, 1956

Reviewed by
Orig. U.S. Bureau of Mines
(date)

DMEA 4037 LILY MINE

COLD SPRING TUNGSTEN, INC.
BOULDER COUNTY, COLORADO

RECEIVED
MAR 12 1956

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Joint engineering and geologic report — Page

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Ownership and Extent 4
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ILLUSTRATIONS

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DMEA 4037
COLD SPRING TUNGSTEN, INC
LILY MINE
BOULDER COUNTY, COLORADO

RECEIVED
MAR 12 1956

INTRODUCTION AND SUMMARY

Cold Spring Tungsten, Inc., 1036 First National Bank Building, Denver, 2, Colorado, applied for aid in a project of exploration for tungsten at the Lily mine, Boulder County, Colorado. The application was made pursuant to DMEA Order 1, under the Defense Production Act of 1950, as amended. It was submitted to the Defense Minerals Exploration Administration on October 24, 1955, and assigned Docket No. DMEA 4037.

In its application, the company proposed to core drill two horizontal holes, aggregating 1,200 feet, northerly from the bottom level of the Gale mine so as to intersect the possible easterly extensions and downward projections of the Rake-off, Lily, and other veins in the vicinity of the Lily tunnel. The proposed drilling program was estimated to cost a total of $7,563.00.

The application was reviewed by the commodity groups in Washington, D. C. and, on December 13, 1955, was referred to the DMEA Field Team, Region III for a field examination and report on the property. The property was inspected January 31, 1956 by an examining team from the Geological Survey and Bureau of Mines. The inspection was made with D. H. Jardine, a representative of the company. The proposed project also was discussed with Elmer Ketzer, a former owner of the property and present superintendent of company operations in the district. This report is based on the field examination of the property and on data either furnished by the company or obtained from other sources. It is prepared for the purpose of aiding the Field Team and others concerned in evaluating the applicant's request for exploration assistance.

The Rake-off vein, the primary target of the proposed drilling project, was highly productive in the Rake-off mine west of the applicant's property; however, the easterly extension of this structure onto the applicant's property weakened

and was barren of all tungsten mineralization. One of the proposed drill holes would intersect the vein only 60 feet below its exposure in the breast of the Lily tunnel where it is barren and occurs within unfavorable host rock. The secondary target of the drilling program, the Lily and other intermediate veins, were encountered in the workings of the Rake-off mine and Lily tunnel where they were not especially persistent and contained only small and irregularly spaced ore shoots.

There was no evidence to indicate that the veins comprising either the primary or secondary objectives of the proposed project would contain appreciable tungsten ore; in fact, all available evidence indicated that they would not. It was concluded that the proposed project would not result in a significant discovery and the company's request for financial assistance in such a project, therefore, was recommended for denial.

LOCATION, TOPOGRAPHIC AND PHYSICAL FEATURES

The property is located in the NW¼ sec. 7, T. 1 S., R. 72 W., 6th P.M. Boulder County, Colorado. The Clyde and Gale mines and the Lily and Prospect tunnels, which presently are owned by the applicant; the Rake-off mine, owned by Vanadium Corporation of America; and several other formerly productive properties all lie in close proximity within Sherwood Gulch at the western end of the Boulder County tungsten district (fig. 1). All of the mines are adjacent to State Highway 160 which passes through the gulch.

Nederland, Colorado, a community of about 300 population and the center of activity in the district, is approximately 2 miles south of the mine area. It is the site of the company's custom tungsten mill. Boulder, Colorado, a town of some 25,000 population and the nearest supply center, is 18 miles east of Nederland. Denver, Colorado, the financial and commerical center of the region, is some 35 miles southeast of the district.

The tungsten district lies on the lower eastern flank of the Colorado Front Range. It is a gently rising, dissected upland that extends from the foothills

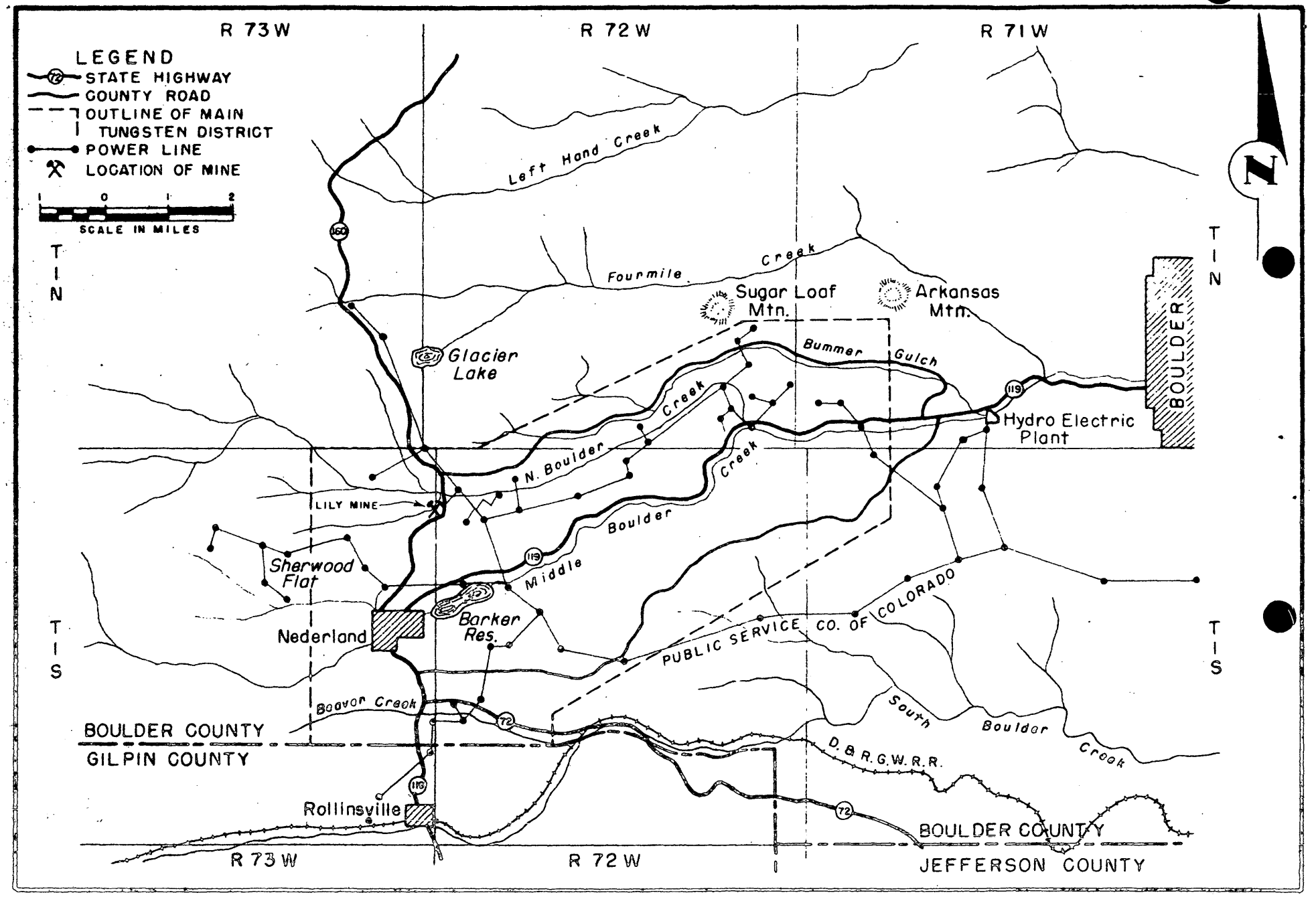

FIGURE 1 - INDEX MAP OF BOULDER COUNTY TUNGSTEN DISTRICT, COLO., SHOWING LOCATION OF LILY MINE.
(COLD SPRING TUNGSTEN, INC. DMEA 4037)

RECEIVED
MAR 1 2 1956

near Boulder to the steeper glaciated slopes of the Continental Divide west of Nederland. The area is characterized by rounded mountain tops and flat ridges separated by broad valleys and steep canyons. The general level of the upland surface ranges in altitude from 8,500 feet in the western part of the district to about 7500 feet in the eastern part. Mountain tops within the area rise 300 to 400 feet above this level. In the western part of the district, broad valleys lie 200 to 300 feet below the general level of the upland surface. Farther east, these valleys deepen rapidly and become steep-sided canyons.

The altitudes within the immediate mine area range from 8,223 feet at the portal of the Lily tunnel to 8,270 feet at the collar of the Gale shaft and the portal of the Clyde (3rd level) tunnel. The climate at such elevations, although somewhat severe during the late winter and early spring months, generally permits year around mining operations. The highway through Sherwood Gulch and the other main roads within the district are maintained and generally are kept open all year. The access roads to the individual mines usually are not maintained and are apt to be blocked by snow during the winter months.

There is little timber suitable for mining purposes on the property. Most mine timber is purchased from local sawmills. A small amount of water flows through Sherwood Gulch the year around. Most of the underground workings in the vicinity, however, do make sufficient water for all mining needs. The Gale and Clyde mines are connected to the power transmission network of the Public Service Company of Colorado. The Lily and Rake-off mines have been idle for many years and are no longer connected to this system. Experienced mining labor generally can be obtained in or around the district. Although some housing is available in Nederland and other camps throughout the area, most mine personnel live in Boulder and drive to and from work.

OWNERSHIP AND EXTENT

The property rights included with the company's application for exploration assistance comprise the following patented lode mining claims:

Name	U. S. Survey No.
Eliza	19171
Lily	19171
Hidden Fortune	19171
Pinto	19171
Luck Bill	19952
Gale	18340
Slide	18340
Cypress	18340
Ash Pan	18340

The above 9 claims are owned by Cold Spring Tungsten, Inc., the applicant for exploration assistance at the property. The extent and relative locations of these claims are shown on figure 2. The property rights stipulated in the application comprise approximately 85 acres and include all the workings of the Lily mine and part of the workings in the Gale mine. All of the NW¼ of section 7 has been taken up by mining claims, most of which are presently owned by the applicant company. The western boundary of the company's collective holdings coincide with the west line of section 7. None of the ground in the adjoining township west of this line, which includes the workings of the Rake-off mine, is owned by the company.

The Slide, Luck Bill, and Gale claims, which have been included with the property rights stipulated in the company's current application, already are subject to lien by the Government under the provisions of Exploration Project Contract Idm-8748 (Williams and Williams, DMEA 3483).

HISTORY AND PRODUCTION

Tungsten was discovered near Nederland in 1899 and was first mined in 1900. The largest yearly output from the district (2,707 short tons of 60% WO_3) was in 1917 when the price reached a high of $105.00 per unit. Beginning with the year 1918, production rapidly declined. There was little or no ore mined during 1921-22, in 1932, and again in 1949. Since 1950, the output has gradually risen

(see summary below) being stimulated by the higher prices guaranteed through the Government's domestic purchase program and the exploration assistance available to the small mines. The total production from the district through 1954 is estimated at approximately 1½ million short ton units of tungsten trioxide. In 1954 (the latest year for which figures are available), 358 tons of concentrates containing 16,489 short ton units of tungsten trioxide valued at $953,353.00 were shipped from the district.

Production from District (1949-54)

Year	s.t.u. WO_3	Year	s.t.u. WO_3
1949	96	1952	6683
1950	539	1953	18,143
1951	3258	1954	16,489

The Clyde, Gale, and Lily mines were opened in the early nineteen hundreds and the greater part of their production was made prior to 1918. The Wolf Tongue Mining Co., a subsidiary of the Firth-Sterling Steel and Carbide Corp., owned and operated the three properties during their most productive life. The Clyde mine, one of the larger producers in the district, was operated more or less continuously from 1907 to 1929. All of the Wolf Tongue properties were purchased by Hetzer Mines, Inc. in 1950. The Clyde and Gale mines were reopened in 1952 and since have been worked intermittently and on a small scale by Hetzer Mines or its lessees. Certain exploratory work was performed at the Gale mine in 1954-55. The work was carried out with Government assistance under Exploration Project Contract Idm-8748 (Williams and Williams, DMEA 3483). The project did not result in a significant discovery and the mine presently is idle.

The Rake-off mine was first opened during the same period as were the other nearby mines in Sherwood Gulch. It was operated by the Primos Chemical Co. until 1915. The main ore shoot on the Rake-off vein was mined by lessees of this company during the period 1915-18. The mine was unwatered and reopened in 1939 by the Vanadium Corporation of America. Considerable crosscutting and core drilling was performed without appreciable results and all work at the property was stopped

in 1940.

The total recorded production from the various claims or mines in the Clyde-Gale-Lily group is summarized as follows:

Name	s.t.u. WO_3
Clyde	34,068.2
Gale	7,742.6
Lily	3,807.5
Red Pine	142.7
Red Spruce	65.2
Lone Jack	33.1
Rake-off	20-25,000 (estimated)

Although there is evidence that a small amount of ore may have been mined from a few of the other claims in the group, they have no recorded production.

The applicant company, Cold Spring Tungsten, Inc., gained control of all the former Wolf Tongue holdings in the district, including the mill at Nederland, in September 1954 through the purchase of all of the outstanding stock in Hetzer Mines, Inc. This company since has continued to mill its own production from the Cold Spring mine and any custom ore it is able to buy from its lessees or other operators in the district. The ore from the Cold Spring mine, which was discovered as a result of an earlier DMEA project and heretofore has supplied from 60 to 80 percent of the feed to the Nederland mill, is essentially depleted. Consequently, the company has turned its attention to other formerly productive mines on its properties in an attempt to boost its dwindling mine production and thereby meet the minimum requirements of its mill.

GEOLOGY

The Boulder Tungsten district is on the east flank of the Colorado Front Range and on the northeast end of the Front Range mineral belt. The district is underlain by Precambrian rocks, including coarse-grained gneissic granite (quartz monzonite) of the Boulder Creek batholith and older schists and gneisses of the Idaho Springs formation. Pegmatite and gneissic aplite, probably related to the Boulder Creek granite, occur in dikes and irregular masses. The Precambrian rocks

are intruded by dikes of various rock types, all believed to be Tertiary in age.

The most conspicuous structural feature in the district is a series of persistent northwesterly striking brecciated shear zones or "breccia reefs." They are probably Paleocene in age and pre-date the northeasterly to easterly trending fractures that contain the ferberite-bearing veins.

The northeasterly striking Rake-off - Lily system of veins, with which this application is concerned, lies in the Sherwood Gulch area near the western end of the Boulder Tungsten district. Rocks in the mine area are principally aplite and gneissic aplite which occur as a "thumb" lying between the Boulder Creek batholith on the east and Idaho Springs schist on the west. A northeasterly trending dike of hornblende monzonite porphyry, encountered on the 200-foot level of the Rake-off mine, apparently lacks persistence as it was not cut in the Lily tunnel.

The gneissic aplite underlying the proposed project area weathers to a buff or reddish brown but is grayish white or pinkish on fresh surfaces. The gneissic structure is essentially primary and reflects the outline of the major Boulder Creek granite with which it is genetically related. The aplite is composed predominantly of quartz, microcline, oligoclase, and about 5 percent biotite.

The primary target of the applicant's proposed exploration program is the eastward extension of the Rake-off vein; secondary targets are the easterly striking echelon fractures cut in the Lily tunnel. (fig. 2). The easternmost intersection of the Rake-off vein is barren in the face of the Lily tunnel where schist forms the north or hanging wall. This structure has been exposed over a strike length of about 370 feet and over a vertical range of about 200 feet. The vein strikes about N. 80° E. and dips 65-75° N. Workings exposing this structure are no longer accessible but it is reported[1/] that the vein, where best

1/ Levering, T. S. and Tweto, O.; Geology and Ore Deposits of the Boulder County Tungsten District, Colorado; Geological Survey Professional Paper 245; (p. 117)

mineralized, contained [illegible] to 12 inches of ore that assay[illegible] 12 percent WO_3. The best ore on the structure was found between aplite walls although some ore was mined where only one wall was of aplite; where both walls are schist the vein was barren. Vein material from the mineralized portions of the Rake-off consisted of sheared and altered wall rock and grayish horn quartz, the latter brecciated and sealed in successive stages by later horn quartz and lesser amounts of fine- to relatively coarse-grained ferberite. The most productive portion of the vein was found between the first and second levels of the Rake-off mine where a more northeasterly striking vein branched away from the main strand. The bottom or 3rd level of the Rake-off mine exposed the main structure to a point 160 feet northeast of the shaft; at this level the vein was essentially barren.

The subordinate northeasterly and easterly trending structures encountered in the Lily tunnel constitute the secondary target of the applicant's proposed exploration program. Lovering and Tweto[2] describe these structures as "nonpersistent echelon fractures." The mineralized veins strike northeast; however, a few non-mineralized fractures are noted at diverse angles to this general trend. The most productive veins in the Lily mine were cut at distances of 130 and 185 feet from the portal, both veins strike northeast. The first dips 50-70° NW and the second is nearly vertical. A sublevel, estimated to be 30 feet lower than the tunnel, explored the first vein for a distance of about 50 feet to the southwest and 30 feet to the northeast. The limited extent of the workings indicates that even though the vein remains reasonably persistent, ore mineralization along the structure is highly erratic. The second, nearly vertical, productive structure has been explored on the tunnel level for a distance of about 100 feet, mostly to the southwest. Stoping operations above the level apparently accounted for a small amount of very rich ore. A vertical shaft from the tunnel level is reported to have explored this structure to a depth of 150 feet. The extent of the workings

2/ op. cit. (p. 117)

from the shaft is unknown, but it is presumed that the existence of ore bodies at depth, if such were present, would be reflected in the available production data from the mine.

Between the two productive veins a third northeasterly striking structure has been drifted on for a distance of about 90 feet. Stoping operations southwest of the tunnel have broken through to the surface. It is believed that this structure contained only very thin ferberite-bearing stringers which were mined out in the course of exploration. Several other minor northeasterly striking structures have been explored by drifting from the Lily tunnel, but it is believed that none of these contained commercial amounts of ore mineralization.

ORE RESERVES

The accessible workings in the Rake-off - Lily mine area reveal no remaining commercial mineralization. The highly erratic size, shape, and distribution of mined out ore bodies discourages projection as well as an estimate of frequency of occurrence of unknown ore bodies. Therefore, it may be stated that there are no ore reserves of any classification on the subject property.

PRESENT STATUS OF THE PROPERTY

The Rake-off mine has been idle since 1940. Its surface plant has been dismantled and its underground workings are flooded and presumably caved. The Lily tunnel has not been in operation for at least 30 years. It is in poor repair and accessible with difficulty for about 185 feet in by the portal beyond which point it is caved tightly. The workings below the tunnel level are under water.

The Gale mine was open and accessible until recently when its lessees ceased operations and allowed the lower 182-foot level to flood. The surface plant, including buildings, headframe, and electric hoist, is intact and the shaft is in operating condition. The mine yet contains an electrical pump and pump column. The older, upper levels of the Clyde mine and the original inclined shaft, by which they were developed from the surface, are no longer accessible. The 3rd or Clyde

tunnel level, however, is open and in good repair. The workings below this level are accessible by a double compartment winze which is provided with an electrical hoist and a ladderway. The workings below the tunnel level are kept pumped out by the operators of the nearby Hessler mine who use the water in their milling operations.

The underground exploration and development in each of the above mines is indicated on figure 2 of this report and also on various figures and plates accompanying Professional Paper 245.

PROJECT PROPOSALS WITH COSTS

The applicant proposes to core drill two, 600-foot horizontal holes northerly from the lower level of the Gale mine in order to test the Rabe-off - Lily system of veins below and somewhat east of their exposures in the Lily tunnel. The locations of the proposed holes are shown on figure 2.

Although considerable core drilling has been performed in many of the larger mines within the district, the results from this type of exploration generally have been unreliable and inconclusive. Most of the ore shoots in the district are small, irregular bodies occurring erratically along veins that generally are not persistent for any appreciable distance in either strike or dip. In some instances, the shoots occur along obvious changes in the strike or dip of the structure; in other cases, there is no apparent reason for their localization. Many of the veins are entirely barren of ferberite; and, even along those structures which have been productive, the barren sections usually comprise a far greater area than do the ore shoots themselves.

In the past, core drill holes have intersected ore grade material on a vein which subsequent development work has revealed as only a small pod or kidney of ferberite in an otherwise barren structure. Conversely, holes have been drilled within a few feet of, or even through, a sizable ore shoot and the recovered core, while it did contain quartz and other vein material, did not show any evidence of tungsten mineralization.

The wall rock immediately adjacent to the principal veins in the district is more highly altered and therefore softer than the surrounding country rock. The fissure filling itself usually is brecciated and vuggy and may contain appreciable gouge. When ferberite is present, it is commonly soft and friable. Core recovery through these critical sections often is poor; in many cases, none of the vein material is recovered.

A large number of closely-spaced holes conceivably might prove valuable in determining the extensions of an ore shoot for moderate distances beyond its known exposures. The drilling of a few, widely-spaced holes, however, is not a technically feasible method of exploring for new, unknown ore bodies in the district. The targets for such holes are too small and too erratically spaced and the data derived from them too often are unreliable and inconclusive. Any hole that did cut mineralized vein material would necessarily have to be followed up by cross-cutting and possibly drifting and raising to the intersection before the indicated results could be properly evaluated. In this particular case, the amount of follow up work would be excessive and probably could not be justified even on the basis of favorable indications in both of the holes proposed by the applicant.

A pertinent example of the type of results that can be expected from drilling in this district is the work performed by the applicant company in the Cold Spring mine under Exploration Project Contract Idm-E34. The company drilled a total of 38 holes aggregating 12,004 feet. Very little conclusive information was derived from this work and, excluding those sections that were subsequently opened by drifting and crosscutting, it is yet doubtful whether or not the drilled areas are potential sources of ore.

The applicant estimates that the proposed drilling project would cost a total of $7,563.00, or an overall unit cost of approximately $6.30 per foot of hole. The actual drilling would be contracted at a rate of $5.00 per foot. Neither the contract price nor the overall unit cost appears too far out of line for the amount of underground drilling proposed. It is doubtful, however, that full time technical supervision, which is included in the cost estimate at a rate

of $500.00 per month, or a total of $750.00, would be needed.

CONCLUSIONS

The main strand of the Rake-off vein system constitutes the primary target of the applicant's proposed exploration program. Although this structure has been explored over a strike length of about 360 feet and a vertical range of 250 feet, it has contained only one commercially exploitable mineralized zone. Proposed DDH No. 1 would intersect the Rake-off vein approximately 60 feet below its exposure at the face in the Lily tunnel, DDH No. 2 would intersect the structure about 300 feet further northeast along strike at about the same elevation.

The easternmost exposures of the Rake-off vein in the Rake-off and Lily mines have been essentially barren of ore mineralization. No localizing features such as the mineralized more northerly striking hanging wall branch vein are known to project into the project area. The Rake-off vein where exposed immediately above the project area in the face of the Lily tunnel is barren and has the further disadvantage of a schist hanging wall, a notably poor host throughout the district.

The secondary target is comprised of the more southerly set of northeast trending veins encountered in the early Rake-off workings and in the Lily tunnel. These structures are apparently not sufficiently persistent to warrant lengthy projections and have contained only small, irregularly distributed ore bodies. As with the main strand of the Rake-off, none of these structures show signs of continuing tungsten mineralization to the northeast, and all have been traced to the bottom of known mineralized zones.

There is no evidence to indicate that the veins comprising either the primary or secondary targets of the applicant's proposed exploration program will contain significant quantities of tungsten mineralization in the project area. Available evidence does, in fact, point to a contrary conclusion.

RECOMMENDATIONS

It is recommended that the company's application for exploration assistance at the Lily mine be denied.

400

Docket
Holt
Martin
Stehon
Helgoy
Selfridge
Johnson

APR 2 1956

Cold Spring Tungsten, Inc.
1036 First National Bank Building
Denver 2, Colorado

Re: Docket No.-4037, Tungsten
Lily Mine
Boulder County, Colorado

Gentlemen:

Your application for aid for an exploration project and other data available to us in Washington concerning the above-referenced property have been reviewed.

Projects approved by the Defense Minerals Exploration Administration must, in its judgment, show definite promise of yielding materials of acceptable grade in quantities that will significantly improve the mineral supply position for the National Defense Program.

Careful study of our information, although noting tungsten mineralization in the Lily mine property, indicates to us that the probability of disclosing minable tungsten ore reserves is not sufficiently promising to justify Government participation. Under these circumstances, we regret to advise you that your application is denied.

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

Sincerely yours,

[illegible] Mitchell

Administrator

cc: Docket
Code 400
Oper. Comm.
Adm. Read. File
T. Kiilsgaard, USGS
R. W. Holliday, USBM
FT, Region 3

SPHolt/ls 3/30/56

P.G.S.

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

March 30, 1956

MEMORANDUM

To: Administrator, DMEA

From: Iron and Ferro-Alloys Division, DMEA

Subject: Denial of request for exploration assistance in the amount of $7,563.00
Docket No. DMEA-4037, Tungsten
Cold Spring Tungsten, Inc.
Lily Mine
Boulder County, Colorado

Denial of the subject application is recommended by this Division based on the following information:

(1) The applicant, Cold Spring Tungsten, Inc., 1036 First National Bank Building, Denver 2, Colorado, requested exploration assistance in the amount of $7,563.00 for diamond drilling in the Lily mine.

(2) The applicant is the owner of the following patented lode mining claims, situated in the NW. $\frac{1}{4}$, sec. 7, T. 1 S., R. 72 W., 6th Principal Meridian, Grand Island Mining District, Boulder County, Colorado, in Sherwood Gulch, at the west end of the Boulder tungsten district:

Claim Name	U. S. Survey No.
Eliza	19171
Lily	19171
Hidden Fortune	19171
Pinto	19171
Luck Bill	19952
Gale	18340
Slide	18340
Cypress	18340
Ash Can	18340

Property rights stipulated in the application comprise approximately 25 acres, and include all the workings of the Lily mine and part of the workings of the Gale mine.

(3) The proposed program is to drill two horizontal drill holes, each approximately 600 feet long, total approximately 1,200 feet, from the bottom level of the Gale mine to explore the eastward extensions and downward projections of the Rake-off and Lily veins in the vicinity of the Lily tunnel.

(4) In the area of the Lily mine tungsten mineralization occurs in a system of northeasterly striking fracture veins containing ferberite, ($FeWO_4$), in aplite, gneissic aplite, and schist.

(5) The Field Team concludes that, although the Rake-off vein, the primary target of the proposed drilling project, was highly productive in the Rake-off mine west of the Operator's property, the easterly extension of that vein on to the applicant's property weakened and was barren of tungsten mineralization; that the secondary targets of the program, the Lily and other intermediate veins, were encountered in the Rake-off mine and Lily tunnel, where they were not especially persistent and contained only small and irregularly spaced ore shoots; and that all available evidence indicates that the veins comprising the primary and secondary objectives of the proposed project would not contain appreciable amounts of tungsten ore. They therefore concluded that the proposed project would not result in a significant discovery and recommended denial of the application.

The Commodity Division of the Geological Survey and the Bureau of Mines concur in this recommendation.

W S Martin

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

Docket
Holt
Martin

March 30, 1956

MEMORANDUM

To: Administrator, DMEA

From: Iron and Ferro-Alloys Division, DMEA

Subject: Denial of request for exploration assistance in the amount of $7,563.00
Docket No. DMEA-4037, Tungsten
Cold Spring Tungsten, Inc.
Lily Mine
Boulder County, Colorado

Denial of the subject application is recommended by this Division based on the following information:

(1) The applicant, Cold Spring Tungsten, Inc., 1036 First National Bank Building, Denver 2, Colorado, requested exploration assistance in the amount of $7,563.00 for diamond drilling in the Lily mine.

(2) The applicant is the owner of the following patented lode mining claims, situated in the NW. ¼, sec. 7, T. 1 S., R. 72 W., 6th Principal Meridian, Grand Island Mining District, Boulder County, Colorado, in Sherwood Gulch, at the west end of the Boulder tungsten district:

Claim Name	U. S. Survey No.
Eliza	19171
Lily	19171
Hidden Fortune	19171
Pinto	19171
Luck Bill	19952
Gale	18340
Slide	18340
Cypress	18340
Ash Can	18340

Property rights stipulated in the application comprise approximately 25 acres, and include all the workings of the Lily mine and part of the workings of the Gale mine.

(3) The proposed program is to drill two horizontal drill holes, each approximately 600 feet long, total approximately 1,200 feet, from the bottom level of the Gale mine to explore the eastward extensions and downward projections of the Rake-off and Lily veins in the vicinity of the Lily tunnel.

(4) In the area of the Lily mine tungsten mineralization occurs in a system of northeasterly striking fracture veins containing ferberite, ($FeWO_4$), in aplite, gneissic aplite, and schist.

(5) The Field Team concludes that, although the Rake-off vein, the primary target of the proposed drilling project, was highly productive in the Rake-off mine west of the Operator's property, the easterly extension of that vein on to the applicant's property weakened and was barren of tungsten mineralization; that the secondary targets of the program, the Lily and other intermediate veins, were encountered in the Rake-off mine and Lily tunnel, where they were not especially persistent and contained only small and irregularly spaced ore shoots; and that all available evidence indicates that the veins comprising the primary and secondary objectives of the proposed project would not contain appreciable amounts of tungsten ore. They therefore concluded that the proposed project would not result in a significant discovery and recommended denial of the application.

The Commodity Division of the Geological Survey and the Bureau of Mines concur in this recommendation.

W. S. Martin

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

cc: Docket
Code 400
Oper. Scrm.
Adm. Read. File

SPHolt/ls 3/30/56

Docket

IN REPLY REFER TO:

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

RECEIVED
MAR 19 1956

March 16, 1956

Re: DMEA 4037
Cold Spring Tungsten Co.
Lily Mine
Boulder Co., Colorado
$7,563.00 - Tungsten

W34

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

From: N. E. Nelson, U. S. Geological Survey

Subject: Review of Field Team report.

Copy retained 400

The applicant requested assistance in exploring by underground drilling projected easterly and downward extensions of veins which to the west and above were tungsten bearing.

The proposed work consists of two 600-foot holes and the estimated cost is $7,563.00.

The examiners conclude, "there is no evidence that the veins comprising either the primary or secondary targets of the applicant's proposed exploration program will contain significant quantities of tungsten mineralization in the project area. Available evidence does, in fact, point to a contrary conclusion."

Denial of the application is recommended by the examiners and the Field Team. I concur with the recommendation.

N. E. Nelson

N. E. Nelson

Docket

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

March 15, 1956

Copy retained 400

Copy retained 400

WSG

Memorandum

To: Chief, Iron and Ferroalloy Division - DMEA
Through: Chief, Branch of Ferrous Metals & Ferroalloys

From: Commodity Specialist - Tungsten

Subject: Report of Field Team Examination
Docket No. DMEA 4037
Lily Mine, Boulder County, Colorado
Cold Spring Tungsten, Incorporated
1036 First National Bank Building
Denver 2, Colorado
$7,563.00-Tungsten

It was proposed to drill two horizontal holes totaling 1200 feet at a cost of $7,563.00.

Conclusion of the field team that geologic evidence does not indicate liklihood of a significant discovery is well substantiated. Pages 10 to 12 of the report state that diamond drilling could be expected to give inconclusive results and that additional work, even in the event of favorable indications would probably be excessively costly.

It is recommended that the application be denied.

R W Holliday

R. W. Holliday

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Docket

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

RECEIVED
MAR 12 1956

March 7, 1956

224 New Customhouse
Denver 2, Colorado

WSM

Memorandum

To: Secretary to the Operating Committee, DMEA

From: Field Team, Region III

Subject: Joint Report of Examination, Docket DMEA 4037 (Tungsten), Cold Spring Tungsten, Inc., Lily Mine, Boulder County, Colorado

Enclosed are the original and three copies of the joint engineering and geologic report on the subject docket.

The field examiners found no evidence to indicate that the veins comprising either the primary or secondary objectives of the proposed project would contain appreciable tungsten ore. They concluded that the proposed project would not result in a significant discovery, and they recommend that the application be denied. We concur in this recommendation.

DMEA Field Team, Region III

By W. M. Traver
Executive Officer

Enclosures

Reviewed by
DMEA OPERATING COMMITTEE
3-16-56
(date)

RECEIVED TRANSMITTED

DMEA
Date Rec'd.
MAR 2 1956

MAR 12 1956

MAR 7 1956

REGION III

BUREAU OF MINES
Denver, Colorado

Building 20
Denver Federal Center
Denver 2, Colorado
March 2, 1956

Memorandum

To: Executive Officer, DMEA Field Team, Region III

From: E. N. Harshman
John F. Shaw

Subject: Joint Engineering and Geologic Report Docket DMEA 4037 (Tungsten)
Cold Spring Tungsten, Inc., Lily mine, Boulder County, Colo.

Enclosed are the original and 7 copies of the joint engineering and geologic report by R. W. Osterstock, geologist, and R. L. Bolmer, mining engineer.

Cold Spring Tungsten applied for exploration assistance to explore the easterly extensions and downward projections of the Rake-off, Lily and other veins in the vicinity of the Lily tunnel, by two horizontal core drill holes, totaling 1200 feet.

The proposed program is estimated to cost $7,563.00. The property was inspected January 31, 1956 by R. W. Osterstock, geologist and R. L. Bolmer, mining engineer. The examining team concluded that there was little possibility of discovering a significant amount of Tungsten by the proposed exploration.

It is recommended that the application by denied.

E. N. Harshman
E. N. Harshman
Member Field Team

John F. Shaw
John F. Shaw
Supervising Mining Engineer

JFS/mw
cc 7
ENHarshman
DMEA 4037
Chron

Reviewed by
DMEA OPERATING COMMITTEE
3-16-56
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

JOINT REPORT OF EXAMINATION BY EXAMINING TEAM
REGION III

TRANSMITTED
MAR 7 1956

RECEIVED
MAR 12 1956

DMEA 4037
LILY MINE
COLD SPRING TUNGSTEN, INC.
BOULDER COUNTY, COLORADO

Tungsten

Joint Engineering and Geologic Report

By

R. W. Osterstock
Geological Survey

R. L. Bolmer
Bureau of Mines

March 1, 1956

Reviewed by
DMEA OPERATING COMMITTEE
3-16-56
(date)

DMEA 4037 LILY MINE

COLD SPRING TUNGSTEN, INC.
BOULDER COUNTY, COLORADO

RECEIVED
MAR 12 1956

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Joint engineering and geologic report — Page

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Ore Reserves 9
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Project Proposals with Costs 10
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DMEA 4037
COLD SPRING TUNGSTEN, INC
LILY MINE
BOULDER COUNTY, COLORADO

RECEIVED
MAR 12 1956

INTRODUCTION AND SUMMARY

Cold Spring Tungsten, Inc., 1036 First National Bank Building, Denver, 2, Colorado, applied for aid in a project of exploration for tungsten at the Lily mine, Boulder County, Colorado. The application was made pursuant to DMEA Order 1, under the Defense Production Act of 1950, as amended. It was submitted to the Defense Minerals Exploration Administration on October 24, 1955, and assigned Docket No. DMEA 4037.

In its application, the company proposed to core drill two horizontal holes, aggregating 1,200 feet, northerly from the bottom level of the Gale mine so as to intersect the possible easterly extensions and downward projections of the Rake-off, Lily, and other veins in the vicinity of the Lily tunnel. The proposed drilling program was estimated to cost a total of $7,563.00.

The application was reviewed by the commodity groups in Washington, D. C. and, on December 13, 1955, was referred to the DMEA Field Team, Region III for a field examination and report on the property. The property was inspected January 31, 1956 by an examining team from the Geological Survey and Bureau of Mines. The inspection was made with D. H. Jardine, a representative of the company. The proposed project also was discussed with Elmer Hetzer, a former owner of the property and present superintendent of company operations in the district. This report is based on the field examination of the property and on data either furnished by the company or obtained from other sources. It is prepared for the purpose of aiding the Field Team and others concerned in evaluating the applicant's request for exploration assistance.

The Rake-off vein, the primary target of the proposed drilling project, was highly productive in the Rake-off mine west of the applicant's property; however, the easterly extension of this structure onto the applicant's property weakened

and was barren of all tungsten mineralization. One of the proposed drill holes would intersect the vein only 60 feet below its exposure in the breast of the Lily tunnel where it is barren and occurs within unfavorable host rock. The secondary target of the drilling program, the Lily and other intermediate veins, were encountered in the workings of the Rake-off mine and Lily tunnel where they were not especially persistent and contained only small and irregularly spaced ore shoots.

There was no evidence to indicate that the veins comprising either the primary or secondary objectives of the proposed project would contain appreciable tungsten ore; in fact, all available evidence indicated that they would not. It was concluded that the proposed project would not result in a significant discovery and the company's request for financial assistance in such a project, therefore, was recommended for denial.

LOCATION, TOPOGRAPHIC AND PHYSICAL FEATURES

The property is located in the NW¼ sec. 7, T. 1 S., R. 72 W., 6th P.M. Boulder County, Colorado. The Clyde and Gale mines and the Lily and Prospect tunnels, which presently are owned by the applicant; the Rake-off mine, owned by Vanadium Corporation of America; and several other formerly productive properties all lie in close proximity within Sherwood Gulch at the western end of the Boulder County tungsten district (fig. 1). All of the mines are adjacent to State Highway 160 which passes through the gulch.

Nederland, Colorado, a community of about 300 population and the center of activity in the district, is approximately 2 miles south of the mine area. It is the site of the company's custom tungsten mill. Boulder, Colorado, a town of some 25,000 population and the nearest supply center, is 18 miles east of Nederland. Denver, Colorado, the financial and commerical center of the region, is some 35 miles southeast of the district.

The tungsten district lies on the lower eastern flank of the Colorado Front Range. It is a gently rising, dissected upland that extends from the foothills

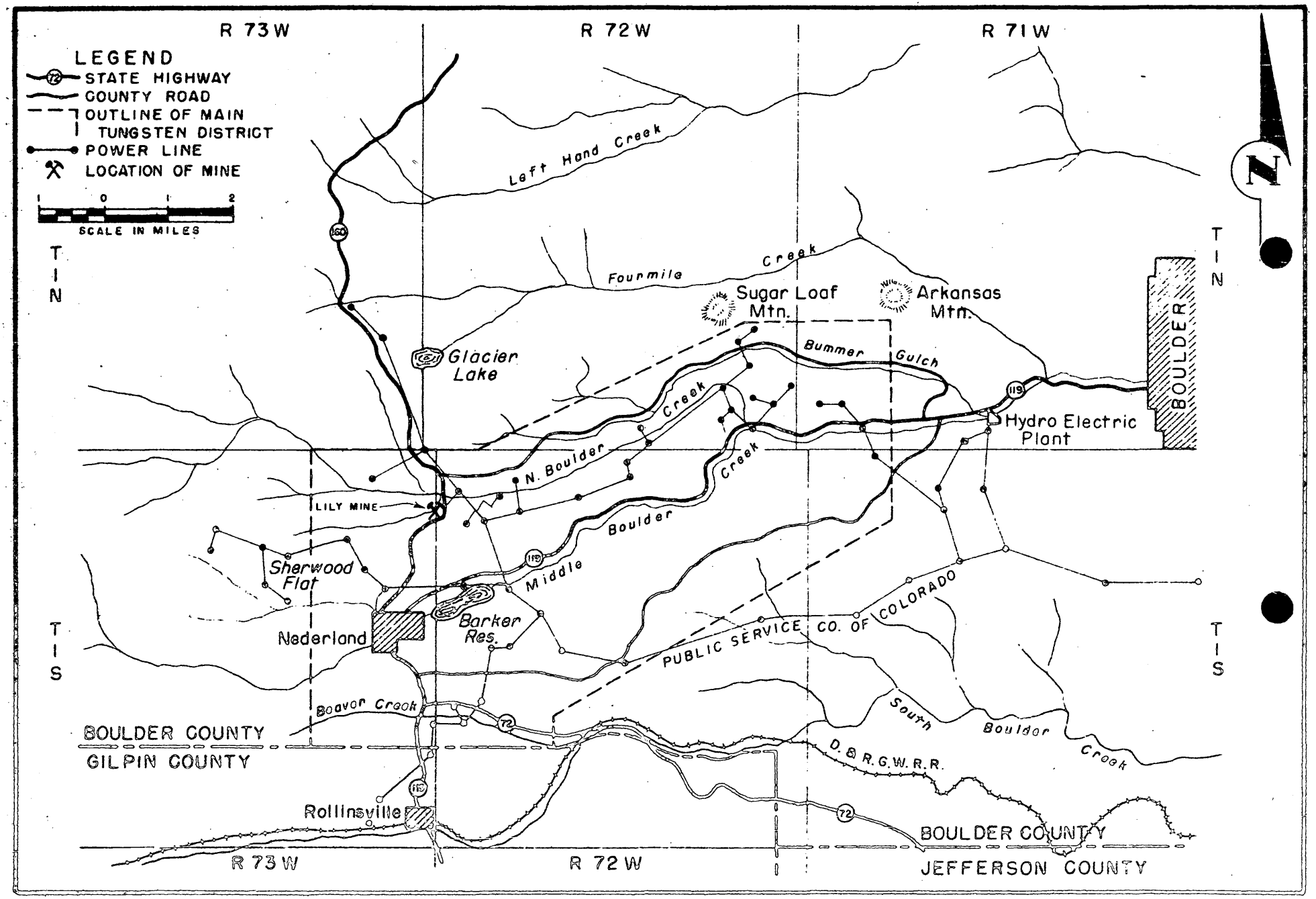

FIGURE 1 - INDEX MAP OF BOULDER COUNTY TUNGSTEN DISTRICT, COLO., SHOWING LOCATION OF LILY MINE.
(COLD SPRING TUNGSTEN, INC. DMEA 4037)

near Boulder to the steeper glaciated slopes of the Continental Divide west of Nederland. The area is characterized by rounded mountain tops and flat ridges separated by broad valleys and steep canyons. The general level of the upland surface ranges in altitude from 8,500 feet in the western part of the district to about 7500 feet in the eastern part. Mountain tops within the area rise 300 to 400 feet above this level. In the western part of the district, broad valleys lie 200 to 300 feet below the general level of the upland surface. Farther east, these valleys deepen rapidly and become steep-sided canyons.

The altitudes within the immediate mine area range from 8,203 feet at the portal of the Lily tunnel to 8,270 feet at the collar of the Gale shaft and the portal of the Clyde (3rd level) tunnel. The climate at such elevations, although somewhat severe during the late winter and early spring months, generally permits year around mining operations. The highway through Sherwood Gulch and the other main roads within the district are maintained and generally are kept open all year. The access roads to the individual mines usually are not maintained and are apt to be blocked by snow during the winter months.

There is little timber suitable for mining purposes on the property. Most mine timber is purchased from local sawmills. A small amount of water flows through Sherwood Gulch the year around. Most of the underground workings in the vicinity, however, do make sufficient water for all mining needs. The Gale and Clyde mines are connected to the power transmission network of the Public Service Company of Colorado. The Lily and Rake-off mines have been idle for many years and are no longer connected to this system. Experienced mining labor generally can be obtained in or around the district. Although some housing is available in Nederland and other camps throughout the area, most mine personnel live in Boulder and drive to and from work.

OWNERSHIP AND EXTENT

The property rights included with the company's application for exploration assistance comprise the following patented lode mining claims:

Name	U. S. Survey No.
Eliza	19171
Lily	19171
Hidden Fortune	19171
Pinto	19171
Luck Bill	19952
Gale	18340
Slide	18340
Cypress	18340
Ash Pan	18340

The above 9 claims are owned by Cold Spring Tungsten, Inc., the applicant for exploration assistance at the property. The extent and relative locations of these claims are shown on figure 2. The property rights stipulated in the application comprise approximately 25 acres and include all the workings of the Lily mine and part of the workings in the Gale mine. All of the NW$\frac{1}{4}$ of section 7 has been taken up by mining claims, most of which are presently owned by the applicant company. The western boundary of the company's collective holdings coincide with the west line of section 7. None of the ground in the adjoining township west of this line, which includes the workings of the Rake-off mine, is owned by the company.

The Slide, Luck Bill, and Gale claims, which have been included with the property rights stipulated in the company's current application, already are subject to lien by the Government under the provisions of Exploration Project Contract Idm-E748 (Williams and Williams, DMEA 3483).

HISTORY AND PRODUCTION

Tungsten was discovered near Nederland in 1899 and was first mined in 1900. The largest yearly output from the district (2,707 short tons of 60% WO_3) was in 1917 when the price reached a high of $105.00 per unit. Beginning with the year 1918, production rapidly declined. There was little or no ore mined during 1921-22, in 1932, and again in 1949. Since 1950, the output has gradually risen

(see summary below) being stimulated by the higher price guaranteed through the Government's domestic purchase program and the exploration assistance available to the small mines. The total production from the district through 1954 is estimated at approximately 1½ million short ton units of tungsten trioxide. In 1954 (the latest year for which figures are available), 358 tons of concentrates containing 16,489 short ton units of tungsten trioxide valued at $953,353.00 were shipped from the district.

Production from District (1949-54)

Year	s.t.u. WO_3	Year	s.t.u. WO_3
1949	96	1952	6683
1950	539	1953	19,143
1951	3258	1954	16,489

The Clyde, Gale, and Lily mines were opened in the early ninteen hundreds and the greater part of their production was made prior to 1918. The Wolf Tongue Mining Co., a subsidiary of the Firth-Sterling Steel and Carbide Corp., owned and operated the three properties during their most productive life. The Clyde mine, one of the larger producers in the district, was operated more or less continuously from 1907 to 1929. All of the Wolf Tongue properties were purchased by Hetzer Mines, Inc. in 1950. The Clyde and Gale mines were reopened in 1952 and since have been worked intermittently and on a small scale by Hetzer Mines or its lessees. Certain exploratory work was performed at the Gale mine in 1954-55. The work was carried out with Government assistance under Exploration Project Contract Idm-E748 (Williams and Williams, DMEA 3483). The project did not result in a significant discovery and the mine presently is idle.

The Rake-off mine was first opened during the same period as were the other nearby mines in Sherwood Gulch. It was operated by the Primos Chemical Co. until 1915. The main ore shoot on the Rake-off vein was mined by lessees of this company during the period 1915-18. The mine was unwatered and reopened in 1939 by the Vanadium Corporation of America. Considerable crosscutting and core drilling was performed without appreciable results and all work at the property was stopped

in 1940.

The total recorded production from the various claims or mines in the Clyde-Gale-Lily group is summarized as follows:

Name	s.t.u. WO_3
Clyde	34,068.2
Gale	7,742.6
Lily	3,807.5
Red Pine	142.7
Red Spruce	65.2
Lone Jack	33.1
Rake-off	20-25,000 (estimated)

Although there is evidence that a small amount of ore may have been mined from a few of the other claims in the group, they have no recorded production.

The applicant company, Cold Spring Tungsten, Inc., gained control of all the former Wolf Tongue holdings in the district, including the mill at Nederland, in September 1954 through the purchase of all of the outstanding stock in Hetzer Mines, Inc. This company since has continued to mill its own production from the Cold Spring mine and any custom ore it is able to buy from its lessees or other operators in the district. The ore from the Cold Spring mine, which was discovered as a result of an earlier DMEA project and heretofore has supplied from 60 to 80 percent of the feed to the Nederland mill, is essentially depleted. Consequently, the company has turned its attention to other formerly productive mines on its properties in an attempt to boost its dwindling mine production and thereby meet the minimum requirements of its mill.

GEOLOGY

The Boulder Tungsten district is on the east flank of the Colorado Front Range and on the northeast end of the Front Range mineral belt. The district is underlain by Precambrian rocks, including coarse-grained gneissic granite (quartz monzonite) of the Boulder Creek batholith and older schists and gneisses of the Idaho Springs formation. Pegmatite and gneissic aplite, probably related to the Boulder Creek granite, occur in dikes and irregular masses. The Precambrian rocks

are intruded by dikes of various rock types, all believed to be Tertiary in age.

The most conspicuous structural feature in the district is a series of persistent northwesterly striking brecciated shear zones or "breccia reefs." They are probably Paleocene in age and pre-date the northeasterly to easterly trending fractures that contain the ferberite-bearing veins.

The northeasterly striking Rake-off - Lily system of veins, with which this application is concerned, lies in the Sherwood Gulch area near the western end of the Boulder Tungsten district. Rocks in the mine area are principally aplite and gneissic aplite which occur as a "thumb" lying between the Boulder Creek batholith on the east and Idaho Springs schist on the west. A northeasterly trending dike of hornblende monzonite porphyry, encountered on the 200-foot level of the Rake-off mine, apparently lacks persistence as it was not cut in the Lily tunnel.

The gneissic aplite underlying the proposed project area weathers to a buff or reddish brown but is grayish white or pinkish on fresh surfaces. The gneissic structure is essentially primary and reflects the outline of the major Boulder Creek granite with which it is genetically related. The aplite is composed predominantly of quartz, microcline, oligoclase, and about 5 percent biotite.

The primary target of the applicant's proposed exploration program is the eastward extension of the Rake-off vein; secondary targets are the easterly striking echelon fractures cut in the Lily tunnel. (fig. 2). The easternmost intersection of the Rake-off vein is barren in the face of the Lily tunnel where schist forms the north or hanging wall. This structure has been exposed over a strike length of about 370 feet and over a vertical range of about 280 feet. The vein strikes about N. 80° E. and dips 65-75° N. Workings exposing this structure are no longer accessible but it is reported[1/] that the vein, where best

1/ Lovering, T. S. and Tweto, O.; Geology and Ore Deposits of the Boulder County Tungsten District, Colorado; Geological Survey Professional Paper 245; (p. 117)

mineralized, contained up to 12 inches of ore that assayed 12 percent WO_3. The best ore on the structure was found between aplite walls although some ore was mined where only one wall was of aplite; where both walls are schist the vein was barren. Vein material from the mineralized portions of the Rake-off consisted of sheared and altered wall rock and grayish horn quartz, the latter brecciated and sealed in successive stages by later horn quartz and lesser amounts of fine- to relatively coarse-grained ferberite. The most productive portion of the vein was found between the first and second levels of the Rake-off mine where a more northeasterly striking vein branched away from the main strand. The bottom or 3rd level of the Rake-off mine exposed the main structure to a point 160 feet northeast of the shaft; at this level the vein was essentially barren.

The subordinate northeasterly and easterly trending structures encountered in the Lily tunnel constitute the secondary target of the applicant's proposed exploration program. Lovering and Tweto 2/ describe these structures as "nonpersistent echelon fractures." The mineralized veins strike northeast; however, a few non-mineralized fractures are noted at diverse angles to this general trend. The most productive veins in the Lily mine were cut at distances of 130 and 185 feet from the portal, both veins strike northeast. The first dips 50-70° NW and the second is nearly vertical. A sublevel, estimated to be 30 feet lower than the tunnel, explored the first vein for a distance of about 50 feet to the southwest and 30 feet to the northeast. The limited extent of the workings indicates that even though the vein remains reasonably persistent, ore mineralization along the structure is highly erratic. The second, nearly vertical, productive structure has been explored on the tunnel level for a distance of about 100 feet, mostly to the southwest. Stoping operations above the level apparently accounted for a small amount of very rich ore. A vertical shaft from the tunnel level is reported to have explored this structure to a depth of 150 feet. The extent of the workings

2/ op. cit. (p. 117)

from the shaft is unknown, but it is presumed that the existence of ore bodies at depth, if such were present, would be reflected in the available production data from the mine.

Between the two productive veins a third northeasterly striking structure has been drifted on for a distance of about 90 feet. Stoping operations southwest of the tunnel have broken through to the surface. It is believed that this structure contained only very thin ferberite-bearing stringers which were mined out in the course of exploration. Several other minor northeasterly striking structures have been explored by drifting from the Lily tunnel, but it is believed that none of these contained commercial amounts of ore mineralization.

ORE RESERVES

The accessible workings in the Rake-off - Lily mine area reveal no remaining commercial mineralization. The highly erratic size, shape, and distribution of mined out ore bodies discourages projection as well as an estimate of frequency of occurrence of unknown ore bodies. Therefore, it may be stated that there are no ore reserves of any classification on the subject property.

PRESENT STATUS OF THE PROPERTY

The Rake-off mine has been idle since 1940. Its surface plant has been dismantled and its underground workings are flooded and presumably caved. The Lily tunnel has not been in operation for at least 30 years. It is in poor repair and accessible with difficulty for about 185 feet in by the portal beyond which point it is caved tightly. The workings below the tunnel level are under water.

The Gale mine was open and accessible until recently when its lessees ceased operations and allowed the lower 182-foot level to flood. The surface plant, including buildings, headframe, and electric hoist, is intact and the shaft is in operating condition. The mine yet contains an electrical pump and pump column. The older, upper levels of the Clyde mine and the original inclined shaft, by which they were developed from the surface, are no longer accessible. The 3rd or Clyde

tunnel level, howe[illegible], is open and in good repair. [illegible]e workings below this level are accessible by a double compartment winze which is provided with an electrical hoist and a ladderway. The workings below the tunnel level are kept pumped out by the operators of the nearby Hoosier mine who use the water in their milling operations.

The underground exploration and development in each of the above mines is indicated on figure 2 of this report and also on various figures and plates accompanying Professional Paper 245.

PROJECT PROPOSALS WITH COSTS

The applicant proposes to core drill two, 600-foot horizontal holes northerly from the lower level of the Gale mine in order to test the Rake-off - Lily system of veins below and somewhat east of their exposures in the Lily tunnel. The locations of the proposed holes are shown on figure 2.

Although considerable core drilling has been performed in many of the larger mines within the district, the results from this type of exploration generally have been unreliable and inconclusive. Most of the ore shoots in the district are small, irregular bodies occurring erratically along veins that generally are not persistent for any appreciable distance in either strike or dip. In some instances, the shoots occur along obvious changes in the strike or dip of the structure; in other cases, there is no apparent reason for their localization. Many of the veins are entirely barren of ferberite; and, even along those structures which have been productive, the barren sections usually comprise a far greater area than do the ore shoots themselves.

In the past, core drill holes have intersected ore grade material on a vein which subsequent development work has revealed as only a small pod or kidney of ferberite in an otherwise barren structure. Conversely, holes have been drilled within a few feet of, or even through, a sizable ore shoot and the recovered core, while it did contain quartz and other vein material, did not show any evidence of tungsten mineralization.

The wall rock immediately adjacent to the principal veins in the district is more highly altered and therefore softer than the surrounding county rock. The fissure filling itself usually is brecciated and vuggy and may contain appreciable gouge. When ferberite is present, it is commonly soft and friable. Core recovery through these critical sections often is poor; in many cases, none of the vein material is recovered.

A large number of closely-spaced holes conceivably might prove valuable in determining the extensions of an ore shoot for moderate distances beyond its known exposures. The drilling of a few, widely-spaced holes, however, is not a technically feasible method of exploring for new, unknown ore bodies in the district. The targets for such holes are too small and too erratically spaced and the data derived from them too often are unreliable and inconclusive. Any hole that did cut mineralized vein material would necessarily have to be followed up by cross-cutting and possibly drifting and raising to the intersection before the indicated results could be properly evaluated. In this particular case, the amount of follow up work would be excessive and probably could not be justified even on the basis of favorable indications in both of the holes proposed by the applicant.

A pertinent example of the type of results that can be expected from drilling in this district is the work performed by the applicant company in the Cold Spring mine under Exploration Project Contract Idm-E54. The company drilled a total of 38 holes aggregating 12,004 feet. Very little conclusive information was derived from this work and, excluding those sections that were subsequently opened by drifting and crosscutting, it is yet doubtful whether or not the drilled areas are potential sources of ore.

The applicant estimates that the proposed drilling project would cost a total of $7,563.00, or an overall unit cost of approximately $6.30 per foot of hole. The actual drilling would be contracted at a rate of $5.00 per foot. Neither the contract price nor the overall unit cost appears too far out of line for the amount of underground drilling proposed. It is doubtful, however, that full time technical supervision, which is included in the cost estimate at a rate

of $500.00 per month, or a total of $750.00, would be needed.

CONCLUSIONS

The main strand of the Rake-off vein system constitutes the primary target of the applicant's proposed exploration program. Although this structure has been explored over a strike length of about 360 feet and a vertical range of 280 feet, it has contained only one commercially exploitable mineralized zone. Proposed DDH No. 1 would intersect the Rake-off vein approximately 60 feet below its exposure at the face in the Lily tunnel, DDH No. 2 would intersect the structure about 300 feet further northeast along strike at about the same elevation.

The easternmost exposures of the Rake-off vein in the Rake-off and Lily mines have been essentially barren of ore mineralization. No localizing features such as the mineralized more northerly striking hanging wall branch vein are known to project into the project area. The Rake-off vein where exposed immediately above the project area in the face of the Lily tunnel is barren and has the further disadvantage of a schist hanging wall, a notably poor host throughout the district.

The secondary target is comprised of the more southerly set of northeast trending veins encountered in the early Rake-off workings and in the Lily tunnel. These structures are apparently not sufficiently persistent to warrant lengthy projections and have contained only small, irregularly distributed ore bodies. As with the main strand of the Rake-off, none of these structures show signs of continuing tungsten mineralization to the northeast, and all have been traced to the bottom of known mineralized zones.

There is no evidence to indicate that the veins comprising either the primary or secondary targets of the applicant's proposed exploration program will contain significant quantities of tungsten mineralization in the project area. Available evidence does, in fact, point to a contrary conclusion.

RECOMMENDATIONS

It is recommended that the company's application for exploration assistance at the Lily mine be denied.

Docket

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

RECEIVED
DEC 22 1955

224 New Customhouse
Denver 2, Colorado

December 19, 1955

WJM

Memorandum

To: J. F. Shaw (with brochure)
E. N. Harshman

From: Acting Executive Officer, DMEA Field Team, Region III

Subject: Docket DMEA 4037 (Tungsten), Cold Spring Tungsten, Inc., Lily Mine, Boulder County, Colorado

Enclosed is the subject application in the amount of $7,563.00. Also enclosed is a copy of the letter from the Chairman of the Operating Committee dated December 13, 1955 and attached memoranda of review of the application by the Tungsten Commodity Committee.

A field examination and suitable report are required.

E. N. Harshman

E. N. Harshman

Enclosures
HMC:ab
cc: Docket
Sec. Op. Comm. (2)
Chron.

Docket

DMEA
Date Rec'd.

DEC 21 1955

BUREAU OF MINES
Denver, Colorado

December 20, 1955

W/M

Memorandum

To: W. M. Traver, Executive Officer, DMEA Field Team, Reg. III

From: Acting Superintendent, Denver Experiment Station, Reg. III

Subject: Docket DMEA 4037 (Tungsten), Cold Spring Tungsten, Inc., Lily mine, Boulder County, Colorado

The above brochure was received in this office on December 20, 1955.

An examination will be made and report prepared by an engineer from the Denver office.

JOHN F. SHAW

John F. Shaw

cc: 2 w/orig.
E. N. Harshman
J. F. Shaw
Sec. Cp. Comm. (2)

400

DOCKET
DMEA 4037

Chapman
Martin
Putin
Lawyer
Selfridge
Fisher
Chambers
Johnson
Methendorf

DEC 13 1955

Mr. W. M. Traver, Executive Officer
DMEA Field Team, Region III
224 New Custom House
Denver 2, Colorado

Re: Docket No. DMEA-4037, Tungsten
Cold Spring Tungsten, Inc.
Lily Mine
Boulder County, Colorado

Docket No. DMEA-4038, Tungsten
Clyde Mine

Docket No. DMEA-4072, Tungsten
Cold Spring & Forest Home Claims

also

Docket No. DMEA-1447, Tungsten
Contract No. Idm-E54
Cold Spring Claim, et al.

Dear Mr. Traver:

Reference is made to the captioned applications for exploration assistance. Reference is also made to Sec. 6.(e) of DMEA Order-1, Amended, which section provides that among the criteria to be considered and weighed in passing upon applications for exploration projects shall be the operating experience and background of the applicant.

By letter of July 7, 1954, the Executive Officer, DMEA Field Team, Region IV (now designated Region III), requested from Cold Spring Tungsten, Inc., the final engineering and geologic report for the subject contract (Idm-E54, Docket DMEA-1447). The Field Team on September 14, 1954, again requested the same report, and it was then our understanding that it would be available about December 1, 1954. Therefore, unless and until the applicant demonstrates its ability to comply with the existing contract by providing an acceptable final report, we cannot enter into further contracts with the same operator. Please advise Mr. Ridland accordingly.

As it is possible, however, that the necessary report will soon be available, we are referring the above-mentioned three applications to the Field Team, Region III, for review. Therefore, you can schedule or, if desirable, make field examinations for the respective properties while we are waiting for completion of all requirements for termination of the former contract.

Enclosed for your information are copies of memoranda, as listed below, relating to the captioned applications, prepared by the commodity specialists of the Bureau of Mines and Geological Survey:

Docket No.	Date of Memorandum	From	Agency
4037	11-1-55	N. E. Nelson	Geol. Survey
	11-16-55	R. W. Holliday	Bur. Mines
4038	11-3-55	N. E. Nelson	Geol. Survey
	11-16-55	R. W. Holliday	Bur. Mines
4072	11-30-55	N. E. Nelson	Geol. Survey
	11-29-55	R. W. Holliday	Bur. Mines

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (2/6)

Enclosures

APPROVED:

/s/ Robert W. Geehan (2/6)

Member, Bureau of Mines

Thor H. Kiilsgaard (2/6)

Member, Geological Survey

Copy to: Docket DMEA 4037
Docket DMEA 4038
Docket DMEA 4072
Code 400 (3)
Code 400-Reading File
Operating Committee
Admin. Reading File
Thor Kiilsgaard, USGS
R. W. Holliday, USBM
Field Team, Region 3

TLChapman/WSMartin/ls
12/7/55

FEJ says the new one that replaces 1447 and these two should be covered by a letter to Ridland (which should clear through Legal) saying we wont even consider his new applications - efficiency of the operator, etc - till he gets in his final report, royalty is properly computed, etc
11/23/55

Re 1447 - Trying to get Per's Final Report

June 54	New work denied
6/28/54	Ask FT to ask him
7/13/54	FT asked him
9/21/54	" " " again
11/2/54	We follow up
11/9/54	PS say from Rec 1
3/3/55	We follow up
6/17/55	" "
7/22	from Aug 1

IN REPLY REFER TO:

Docket

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

November 1, 1955

Re: DMEA 4037
Cold Spring Tungsten, Inc.
Rake-off - Lily
Boulder County, Colorado
$7,563.00 - Tungsten

WSM

Memorandum

To: W. S. Martin, Defense Minerals Exploration Administration

From: N. E. Nelson, U. S. Geological Survey

Subject: Review of application.

The applicant requests assistance in diamond drilling to find a possible downward and eastward extension of the Rake-off vein from the Gale (Clyde) mine. The holes would crosscut 600 feet of ground, much of it below the bed of Sherwood Creek, of which little is known except for the information obtained from drilling in the Rake-off mine.

Professional Paper 245 of the Geological Survey, Geology and Ore Deposits of the Boulder Co. Tungsten District (1953) contains much information on the area to be explored. Of the Rake-off vein where cut in the Lily tunnel it is said "The Rake-off vein is barren where it is cut by the Lily tunnel. Schist forms the north wall and altered coarse-grained aplite the south. The aplite is strongly altered close to the vein." And of the Rake-off vein " . . . most of the ore was found on the two veins west of the intersection and east of the schist area. The best ore was found between aplite walls, but excellent ore was found where only one wall was aplite. Where both walls were schist, the vein was barren."

The plan and section of the Gale mine on Plate 12 of the Professional Paper do not show the level shown on the map of the application as the level from which the drilling will be done. Presumedly it is at such a level that horizontal holes from it will remain in bedrock under Sherwood Creek.

The information on the eastward extension of the Rake-off vein is not as favorable as might be liked. The Lily veins produced rich ore but were short and probably did not extend east of the

Copy retained 408

tunnel, the area to be prospected by the diamond drill holes. Except for the largest ore shoots the tungsten ore bodies do not make good targets for diamond drilling. However the application deserves consideration and referral to the Field Team is recommended.

O. K.

N. E. Nelson

N. E. Nelson

Docket

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

RECEIVED
NOV 18 1955

November 16, 1955

Memorandum

To: Chief, Iron & Ferroalloys Division-DMEA
Through: Acting Chief, Branch of Ferrous Metals & Ferroalloys

From: Commodity Specialist-Tungsten

Subject: Docket No. DMEA 4037
Cold Spring Tungsten, Inc.
Rake-Off-Lily Mines
Boulder County, Colorado
$7,563.00 - Tungsten

It is recommended that a field referral be made.

R. W. Holliday

Copy To: Ferrous Metals
Mr. Geehan
Mr. Holliday
Files

Copy initialed .100

October 28, 1955

Memorandum

To: Executive Officer, DMEA Field Team, Region III

From: Chief, Operation's Control and Statistics Division

Subject: Assignment of Docket Number

There is listed below the assigned docket number to an application recently received from Region III.

DMEA- 4037 Cold Springs Tungsten, Inc. (Lily Mine)

Robert E. Adams
Chief, Operation's Control
and Statistics Division

Subject: DMEA-4037
Re: Lily Mine

Cold Springs Tungsten, Inc.,
1036 First National Bank Bldg.,
Denver 2, Colorado.

October 28, 1955

Gentlemen:

The receipt of your application dated October 18, 1955 for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA-4037 and referred to the Iron & Ferro Alloys Division.

Kindly identify all future correspondence relating to your application by this docket number.

Sincerely yours,

Robert E. Adams, Chief
Operations Control and
Statistics Division

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

RECEIVED
OCT 27 1955

4037

224 New Customhouse
Denver 2, Colorado

October 24, 1955

Memorandum

To: Secretary to the Operating Committee

From: Executive Officer, DMEA Field Team, Region III

Subject: Applications for DMEA aid (Tungsten) Cold Spring Tungsten, Inc. Boulder County, Colorado

Enclosed are the following:

1. Three copies of the application for exploration aid on the Clyde mine in the amount of $128,180.00.

2. Three copies of the application for exploration aid on the Lilly mine in the amount of $7,563.00.

When these applications are docketed, will you please distinguish between the number given the Clyde mine and that given the Lilly mine.

Enclosures

W. M. Traver

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

RECEIVED
OCT 27 1955

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. 4037
Metal or Mineral Tungsten
Date Received 10-27-55
Estimated Cost 7,563.00
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: Cold Spring Tungsten, Inc.
1036 First National Bank Building
Denver 2, Colorado

(*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 Please see additional sheets attached

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

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

(*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 None

(*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.

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

(*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 30 days and be completed within 24 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 October 16th, 1955

Cold Spring Tungsten, Inc.
(Applicant)

By Sidney S. Bell

Sidney S. Bell, Geological Engineer.

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

RECEIVED
OCT 27 1955

COLD SPRING TUNGSTEN, INC.
1036 First National Bank Building
Denver 2, Colorado

APPLICATION FOR AID IN AN EXPLORATION PROJECT

PURSUANT TO DMEA ORDER 1

1. (a) Applicant: Cold Spring Tungsten Inc.,
1036 First National Bank Building,
Denver 2, Colorado.

(b) Corporation - Incorporated in the State of Colorado.

(c) Officers: President - Boris Pregel, 630 Fifth Avenue, New York 20, New York.
Vice-President - Alexander Pregel, 630 Fifth Avenue, New York 20, New York.
Secretary - Paul J. Newlon, 575 Madison Avenue, New York 22, New York.
Treasurer - William Rosenblatt, 80 Broad Street, New York, New York.

3. (a) The legal description of the property is as follows:

Name of Claim	U. S. Survey Lot No.
Lily	19171
Hidden Fortune	19171
Pinto	19171
Luck Bill	19952
Gale	18340
Slide	18340
Cypress	18340
Ash Pan	18340
Eliza	19171

These claims are located in the Grand Island Mining District of Boulder County, State of Colorado.

(b) The property is known as the Lily Mine.

(c) Interest in the land: Owner.

GOLD SPRING TUNGSTEN, INC.
1036 First National Bank Building
Denver 2, Colorado

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4. Physical Description:

(a) Lily tunnel, extending 320 feet north and intersecting several veins - notably the Rake-off vein.

At 130 feet from the adit, there is a drift extending 65 feet west and extending 35 feet east of the tunnel.

At 150 feet from the adit, there is a drift extending 60 feet west of the tunnel.

At 185 feet from the adit, there is a drift extending 50 feet west of the tunnel and a shaft 150 foot deep on the east side of the tunnel.

At 200 feet from the adit, there is a drift extending 20 feet west of the tunnel.

At 320 feet (on the Rake-off vein) there is a drift extending 35 feet west and a drift extending 30 feet east of the tunnel.

The above mentioned shaft has unknown workings extending from it - though reported to be of a very limited extent.

The drifts have various small stopes extending above them.

The mine workings are easily accessible for examination purposes.

(b) Past Production - Unknown.

Current Production - Nil.

Ore Reserves - Nil.

(c) The general area regarded as most favorable to prospecting, is close to the major breccia reefs. Commercially valuable ore bodies are known to lie between them, and others will be found around them in the future. Within the batholith of Boulder Granite-ore bodies, especially the smaller shoots, are likely to expand between walls of pegmatite and aplite while contracting where granite forms both walls. The tungsten ore is almost entirely a fissure filling and occur in irregular shoots in the veins - most of which are vertical or steeply dipping. The ore occurs in distinct shoots separated by barren stretches where the vein contains only horn quartz or gouge, or is simply a narrow shear zone.

The Rake-off vein is at the northern end of a thumb of relatively coarse-grained aplite that extends southward for more than a mile between the Boulder Creek batholith to the east and the extensive schist area to the west.

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4. (c) Continued:

Although no records of production on the Rake-off vein are available, this vein was one of the best tungsten producers (rated third), and surpassed only by the Conger and Cold Spring Mines. The veining in the area consists of "en echelon" intrusions, and strike in a Westerly direction. The commercial workings occur at vein intersections, the ore consisting of brecciated granite, cemented by horn quartz-bearing, moderately coarse-grained ferberite. On the surface, the Rake-off vein has contained ore east of the Rake-off shaft (see maps), and up to the western side line of the Lily property. Since the strike of the Rake-off vein is Easterly, it can be projected onto the Lily property.

It is the intention of the company to drill two horizontal diamond drill holes from the bottom level of the Gale Mine to cut this eastward extension of the Rake-off vein. Ogden Tweto of the USGS, in personal conversation with Elmer Hetzer, well-known operator of the district, recommended that the eastern extension of the Rake-off vein be tested.

Good ore float has been found in Sherwood Gulch between the Gale and Rake-off shafts. These specimens are a good indication that a mineralized zone exists below the property at this point, and, in addition to testing the Eastward extension of the Rake-off vein, the drilling program will cut this Lily vein. Further, when the Lily tunnel was opened, good ore was cut at 100 feet, striking to the East.

(d) Access Roads: A good gravel road leads to the property.

Shipping: A custom mill at Nederland, Colorado, two and one-half (2½) miles South.

Supply: Boulder, Colorado, seventeen (17) miles from Nederland, Colorado, or Denver, Colorado, which is forty (40) miles from Nederland, Colorado.

Residence: Living quarters are available at Nederland, Colorado.

(e) Manpower is immediately available in the mining community of Nederland. Supplies and equipment can be obtained at Boulder and Denver. Water and power are available at the site.

5. (a) Tungsten in the form of ferberite.

(b) The exploration will consist of diamond drilling two holes from the bottom level of the Gale Mine to test the downward Easterly extension of the Lily and Rake-off veins (see accompanying map), and it is expected that the drilling will cut similar "en echelon" veining between them.

5. (c) Thirty (30) days - two (2) months.

(d) The drilling work will be done by experienced diamond drill contractors of the Nederland area, who are familiar with the problems encountered in drilling for tungsten. The exploration project will be supervised by Dr. G. C. Ridland, Consulting Geologist of Denver, Colorado, who is known to the D. M. E. A. as Manager of Cold Spring Mines at Nederland, Colorado (DMEA Docket 1447X; Contract Idm - E54).

6. Estimate of Costs:

(a) Independent Contracts: The applicant considers that diamond drilling can be contracted at $5.00 per foot, plus power, supervision, and indirect costs.

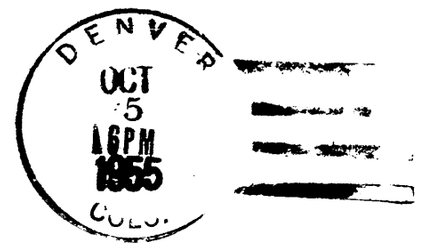
	1,200 feet @ $5.00 per foot	$6,000.00
(b)	Geology - engineering and supervision @ $500.00 per month	$750.00
	Hoistman - 100 hours @ $1.80 per hour	$180.00
(c)	Power - 10,000 K.W.H. @ .033 mills per K.W.H.	$330.00
(d)	Nil.	
(e)	Nil.	
(f)	Nil.	
(g)	Miscellaneous: Analytical work	$50.00
	Accounting	$50.00
	Workmen's Compensation and Employer's Liability Insurance Payroll taxes	$103.00
(h)	Contingencies:	$100.00
	TOTAL	$7,563.00

7. (a) Yes.

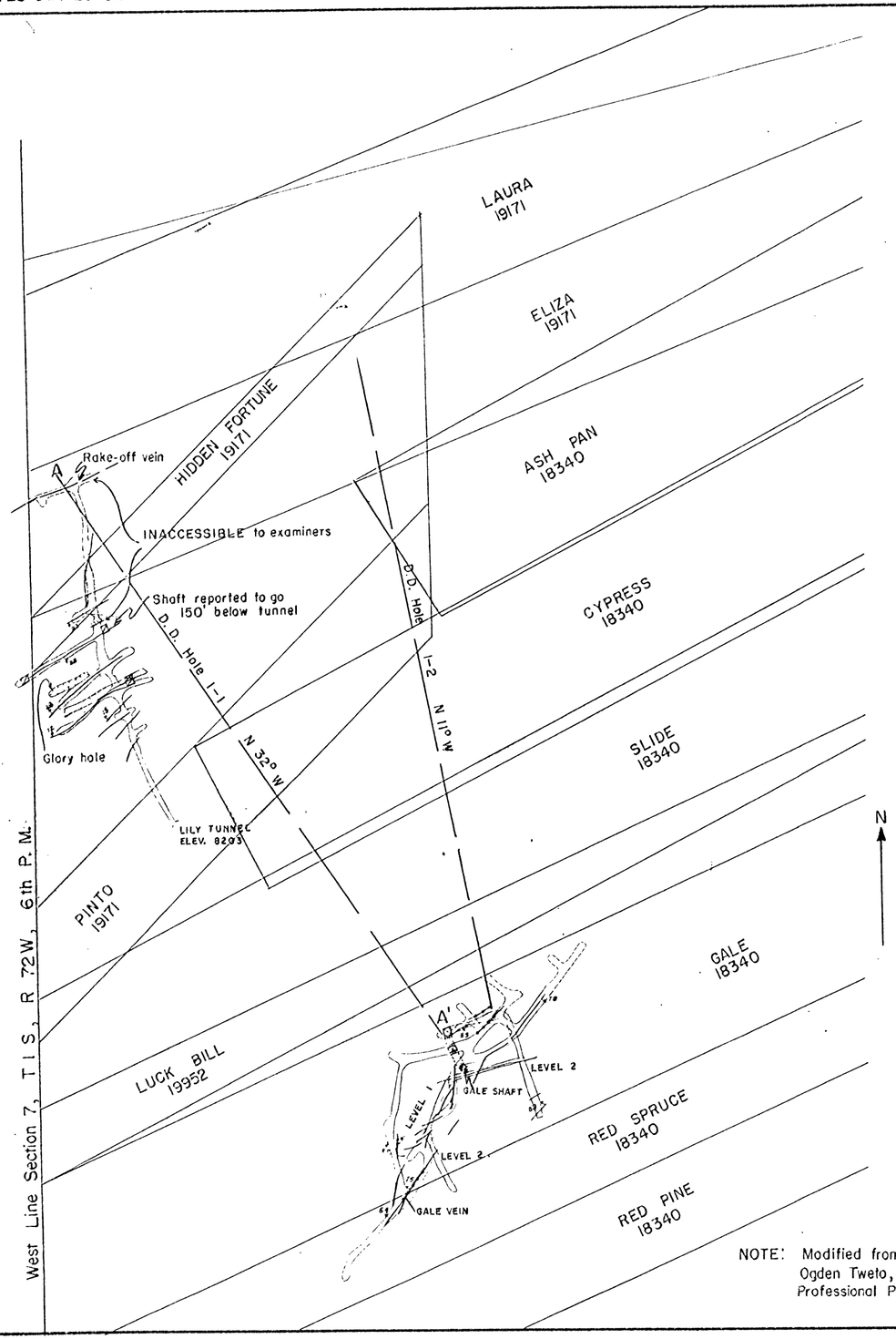
(b) With money.

NOTE: Costs are based on a reasonable arrangement with the present operators of the Gale Mine.

OFFICIAL BUSINESS
224 NEW CUSTOMHOUSE
DENVER 2, COLORADO



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



NOTE: Modified from map by Ogden Tweto, U.S.G.S. Professional Paper 245.

EXPLANATION

Pegmatite

Fine-grained granite

Vein, showing dip (Dots show ore)

Contact, showing dip (Dashed where approximately located)

Top of shaft

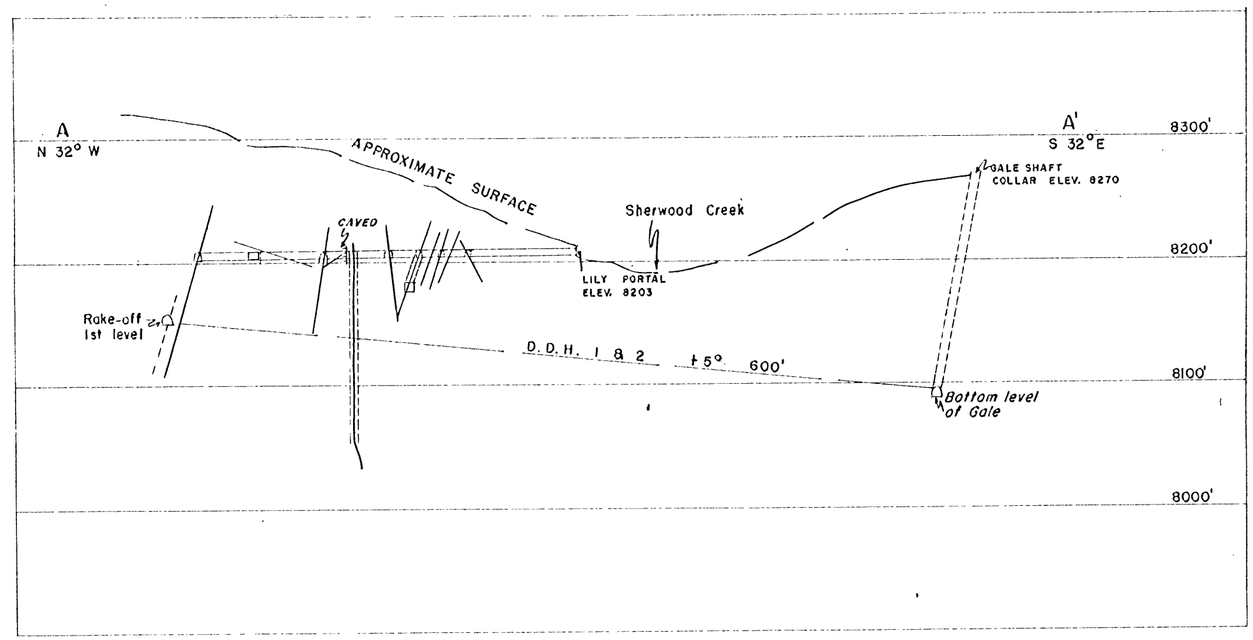
Shaft going above and below level

Bottom of shaft

Foot of raise or winze

Head of raise or winze

Inaccessible workings



SECTION SHOWING PROPOSED D.D.H. NO. 1 BETWEEN GALE AND LILY MINES.

0 100 Feet

FIGURE 2. - GEOLOGIC PLANS AND SECTIONS OF THE GALE AND LILY MINES