Hoffland
10-26-54

No. 2

AMENDMENT OF CONTRACT: No. Idm-E654

Contract Docket No. DMEA 3182, dated January 4, 1954, between the United States of America and Lloyd P. Mock is hereby amended as follows, effective as of the date of the contract:

> Referring to "Article 3. Exploration project" of Exploration Project Contract Form MF-200(A) (February 1952), following the words "and shall bring the project to completion within a period of", delete "seven (7) months" and in lieu thereof substitute "nine (9) months"

This amendment shall not be construed to increase the estimated total cost of the project, the amount of the Government's contribution, or any item of allowable cost which is expressly designated "allowable maximum".

Dated SEP 15 1954

UNITED STATES OF AMERICA

Lloyd P Mock
Lloyd P. Mock

By W H King
W.H. King, Executive Officer
DMEA Field Team, Region IV

September 3, 1954

Mr. W. H. King, Executive Officer
DMEA Field Team Region IV
224 New Customshouse
Denver 2, Colorado

Re: Docket 3182 (Tungste
Idm - E654

Dear Mr. King:

Our contract was effective January 4, 1954, at which time we requested an extension of from 60 to 120 days' time in which to begin work. As we originally had five months to do the work plus 60 days' time in which to start, the extension cut our working time to three months.

This letter is to request an extension of the final date of 60 days or until October 4, 1954.

Sincerely yours,

Lloyd P. Mock

Lloyd P. Mock
Nederland, Colorado

No. 2

AMENDMENT OF CONTRACT: No. Idm-E654

Contract Docket No. DMEA 3182, dated January 4, 1954, between the United States of America and Lloyd P. Mock is hereby amended as follows, effective as of the date of the contract:

> Referring to "Article 3. Exploration project" of Exploration Project Contract Form MF-200(A) (February 1952), following the words "and shall bring the project to completion within a period of", delete "seven (7) months" and in lieu thereof substitute "nine (9) months"

This amendment shall not be construed to increase the estimated total cost of the project, the amount of the Government's contribution, or any item of allowable cost which is expressly designated "allowable maximum".

Dated SEP 15 1954

UNITED STATES OF AMERICA

Lloyd P. Mock
Lloyd P. Mock

By W.H. King
W.H. King, Executive Officer
DMEA Field Team, Region IV

mailed dir/cafiel

September 3, 1954

Mr. W. H. King, Executive Officer
DMEA Field Team Region IV
224 New Customshouse
Denver 2, Colorado

RE: Docket 3182 (Tungsten)
Idm - E654

Dear Mr. King:

Our contract was effective January 4, 1954, at which time we requested an extension of from 60 to 120 days' time in which to begin work. As we originally had five months to do the work plus 60 days' time in which to start, the extension cut our working time to three months.

This letter is to request an extension of the final date of 60 days or until October 4, 1954.

Sincerely yours,

Lloyd P Mock

Lloyd P. Mock
Nederland, Colorado

No. 1

AMENDMENT OF CONTRACT: No. Idm-E654

Contract Docket No. DMEA 3182, dated January 4, 1954, between the United States of America and Lloyd P. Mock is hereby amended as follows, effective as of the date of said contract:

> Referring to "Article 3. Exploration Project" of Exploration Project Contract Form MF-2[illegible](A) (February 1952) following the words "The Operator, within" delete "sixty (60)" and in lieu thereof substitute "one hundred twenty (120)."

This amendment shall not be construed to increase the estimated total cost of the project, the amount of the Government's contribution, or any item of allowable cost which is expressly designated "allowable maximum."

Dated: FEB 2 1954

UNITED STATES OF AMERICA

Lloyd P. Mock
Lloyd P. Mock

By W H King
W. H. King, Executive Officer
DMEA Field Team, Region IV

MF-200 (A)
(February 1952)

DOCKET NO. DMEA 3182

COMMODITY Tungsten

Idm-E654

Defense Minerals Administration
RECEIVED
JAN 14 1954

Bulin 2/9/54

UNITED STATES OF AMERICA
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

EXPLORATION PROJECT CONTRACT[1]
(Short Form)

IT IS AGREED this 4th day of January, 1954, between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, hereinafter called the "Government," and[2] Lloyd P. Lock
1140 St. Paul Street
Denver 6
Colorado

hereinafter called the "Operator," as follows: and as set forth in Annex I attached hereto and made a part hereof

ARTICLE 1. *Authority for contract.*—This agreement is entered into under the authority of the Defense Production Act of 1950, as amended, pursuant to DMEA Order 1 entitled "Government Aid in Defense Exploration Projects."

ARTICLE 2. *Operator's property rights.*—With respect to that certain land situated in the State of Colorado County of Boulder, described as follows:[3] 40 acres of patented land located in the NW¼, NW¼, Sec. 13, T. 1 S., R. 73 W. of the 6th principal meridian,

the Operator represents and undertakes:[4]

~~(a) That the Operator is the owner in possession and entitled to possession, and the property is subject only to the following claims, liens, or encumbrances as to each of which the subordination agreement of the holder is attached~~

(b) That the Operator is a lessee, in possession and entitled to possession, and the Owner's Consent to Lien is attached.

The Operator shall devote the land and all existing improvements, facilities, buildings, installations, and appurtenances to the purposes of the exploration project without any allowance for the use, rental value, depreciation, depletion, or other cost of acquiring, owning, or holding possession thereof.

ARTICLE 3. *Exploration project.*—The Operator, within sixty (60) days from the date of this contract shall commence work on a project of exploration for[5] Tungsten

in or upon the described land; and shall bring the project to completion within a period of seven (7) months from the date of this contract. The work to be performed is more fully described in Exhibit "A" attached hereto, which, with any maps or drawings thereto attached, are made a part of this contract. The Government will contribute to the cost of this work as hereafter provided. The work shall be performed by the Operator or by independent contractor or contractors efficiently, expertly, in a workmanlike manner, in accordance with good mining standards and State regulations for health and safety and for workmen's compensation and employers' liability insurance, with suitable and adequate equipment, materials, and labor, to bring the project to completion within the time fixed. The Government shall have the right to enter and observe and inspect the work at all reasonable times, and the Operator shall provide the Government with all available means for doing so. The Government may consult with and advise the Operator on all phases of the work.

ARTICLE 4. *Costs of the project.*—The agreed, estimated costs of performing the work, expressed in terms of units of work to be performed (per foot of drifting, per foot of drilling, per cubic yard of material to be moved, etc.) are set forth in Exhibit "A," attached hereto. The Government will pay seventy-five (75) percent of these agreed, estimated costs, as they accrue, for units of work actually performed that conform with the description or specifications for the work set forth in this contract, in an aggregate total amount not in excess of $6,676.50, which is 75 percent of $8,902.00, the agreed, estimated total cost of the project in which the Government will participate: *Provided,* That until the Operator's final report and final accounting have been rendered to the Government and any final check or auditing required by the Government has been made, and a final settlement of the contract has been made, the Government may withhold from the last voucher or vouchers such sums as it sees fit not in excess of ten (10) percent of the maximum total which the Government might have been called upon to pay under the terms of the contract. The Government may, as it sees fit, make payments direct to the Operator's independent contractors, if any, for the account of the Operator, rather than to the Operator.

ARTICLE 5. *Reports, accounts, audits.*—(*a*) *Progress reports.* The Operator shall provide the Government with monthly reports of units of work performed under the contract, in quintuplicate (five copies), upon forms provided by the Government. These progress reports shall be certified by the Operator, and shall constitute both the Operator's invoice of units of work performed on the project during the period covered by the report and his voucher for repayment by the Government, unless the Government requires the use of a standard voucher form with invoice attached. Progress reports shall include surface and/or underground engineering-geological maps or sketches showing the progress of the exploration, with assay-reports on samples taken concurrently with the advance in mineralized ground.

[1] If sufficient space is not provided in any blank, use an extra sheet of paper and refer to it in the blank.
[2] State name, address, and nature of organization if any.
[3] Give legal description or enough to identify the property, particularly excluding any land or interest therein to which the Government's lien is not to attach or the production from which is not to be subject to the Government's percentage royalty.
[4] Strike out the provision not applicable.
[5] Name of mineral or minerals.

(*b*) *Final report.*—Upon completion of the exploration work or termination of the contract the Operator shall provide the Government with an adequate geological and engineering report, in quintuplicate (five copies), including an estimate of ore reserves resulting from the exploration work.

(*c*) *Compliance with requirements.*—If, in the opinion of the Government, any of the Operator's reports are insufficient or incomplete, the Government may procure the making or completion of such reports and attachments as an expense of the exploration work; and the Government may withhold approval and payment of any vouchers depending upon insufficient or incomplete reports.

(*d*) *Accounts and audits.*—The Operator shall keep suitable records and accounts of the units of work performed, which the Government may inspect and audit at any time. The Government may at any time require a check of the work performed and an audit of the Operator's records and accounts, by a certified public accountant or otherwise, the cost thereof to be treated as a cost of the project. The Operator shall keep and preserve said records and accounts for at least 3 years after the completion of the project or the termination of this contract. Upon the completion of the project or termination of the contract the Operator shall render a final account and statement of work performed to accompany his final report.

ARTICLE 6. *Repayment by Operator.*—(*a*) If, at any time, the Government considers that a discovery or a development from which production may be made has resulted from the exploration work, the Government, at any time not later than 6 months after the Operator has rendered the required final report and final account, may so certify in writing to the Operator. The certification shall describe broadly or indicate the nature of the discovery or development. In the event of such certification, any minerals mined or produced from the land described in Article 2 within 10 years from the date of this contract, including any mined or produced before the certification, shall be subject to a percentage royalty which the Operator or his successor in interest shall pay to the Government, upon the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, until the total amount contributed by the Government, without interest, is fully repaid, or said 10 years have elapsed, whichever occurs first, as follows: **See Annex I, substituted for that part of 6(a) preceding the colon.**

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

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

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

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

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

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

ARTICLE 7. *Assignment, transfer, or loss of Operator's interest.*—Without the written consent of the Government, the Operator shall not assign or otherwise transfer or hypothecate this contract or any rights thereunder. The Operator shall not make any voluntary nor permit any involuntary transfer or conveyance of the Operator's rights in the land described in Article 2, without making suitable provision for the preservation of the Government's right to a percentage royalty on production and lien for the payment thereof; *Provided*, that mere failure by the Operator to maintain the Operator's rights in the land, without any consideration running to the Operator other than relief from the cost of maintaining such rights (as by surrender of a leasehold, failure to perform assessment work, or failure to exercise an option), coupled with complete abandonment by the Operator of all interest in or operations on the land for a period of 10 years from the date of this contract, shall not constitute such a transfer or conveyance. Should the Operator make or permit any transfer or conveyance in violation of this provision, the Operator shall be and remain liable for payment to the Government of the same amounts, at the same times, as would have been paid under the terms of the percentage royalty on production. If for any reason the net smelter returns, net concentrator returns, or other net amounts realized from the sale or other disposition of such production are not available as a means of measuring the amount of the Operator's liability, the amount thereof shall be estimated as well as may be, and in the event of dispute as to such estimates, the determination thereof by the Administrator of Defense Minerals Exploration Administration or by his successor shall be final and binding upon the Operator.

ARTICLE 8. *Termination and completion.*—The Government may, at any time, by written notice to the Operator, terminate this contract: (*a*) If the Operator fails to provide his share of the money necessary to prosecute operations pursuant to the terms of the contract; (*b*) if the Operator, in the opinion of the Government, fails to prosecute operations pursuant to the terms of the contract; or (*c*) if, in the opinion of the Government, operations up to the time of the notice have not indicated the probability of making any worth while discovery and in the opinion of the Government further operations are not justified.

ARTICLE 9. *Changes and added provisions* _____

Executed in sextuplicate the day and year first above written.

Lloyd P Mock
(Operator)

By _____

THE UNITED STATES OF AMERICA

By W H King
Executive Officer, DMEA
Field Team, Region IV

I, _____, certify that I am the _____ secretary of the corporation named as Operator herein; that _____, who signed this contract on behalf of the Operator, was then _____ of said corporation; that said contract was duly signed for and in behalf of said corporation by authority of its governing body, and is within the scope of its corporate powers.

_____ [CORPORATE SEAL]

U. S. GOVERNMENT PRINTING OFFICE 16—66329-1

ANNEX I

The following provisions are in lieu of all of paragraph (a) of Article 6 which precedes the colon:

If the Government considers that a discovery or development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after a sufficient, complete, final report and final account referred to in the contract has been rendered, may so certify in writing to the Operator. Such certification shall describe broadly or indicate the nature of the discovery or development. The Operator, or his successor in interest, shall pay to the Government a royalty on all minerals mined or produced from the land described in Article 2, as follows: (1) Regardless of any certification of discovery or development, from the date of the contract until the lapse of the time within which the Government may make such certification of discovery or development, or until the total net amount contributed by the Government, without interest, is fully repaid, whichever occurs first, unless the Government waives its right to a royalty; or (2) if the Government makes a certification of discovery or development, for a period of ten years from the date of the contract, or until the total net amount contributed by the Government, without interest, is fully repaid, whichever occurs first. Said royalty shall be a percentage of the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production (including any bonuses), in whatever form disposed of, including ore, concentrates, or metal, as follows:

EXHIBIT A

Description of the Work

The work will be divided into two stages, Stage 1 and Stage 2. Stage 2 must have the prior written approval of the Field Team before the work in Stage 2 is started.

Stage 1 consists of constructing a shaft collar, headframe, and hoist house at the Mock shaft. The Mock shaft will be sunk an additional 67 feet to the 100 foot level or to the bottom of the ferberite mineralization, whichever occurs first.

Stage 2 consists of 80 feet of drifting on the 100 foot level, or from the bottom of the ferberite mineralization if approved by the Field Team.

The location of the Mock shaft is shown on Figure 2 which is attached and made a part of Exhibit A.

DMEA 3182

Estimated Costs of the Project

Stage 1

1/ Construct shaft collar	$100.00	
1/ Construct headframe	250.00	
1/ Construct hoist house	500.00	
Sink the Mock shaft an additional 67 feet or to the bottom of the ferberite mineralization, whichever occurs first, at $76.00 per foot -	5,092.00	
Total Stage 1 -		$5,942.00
Government Participation, Stage 1, at 75% -		$4,456.50

Stage 2

Drive 80 feet of drift in accordance with written approval of the Field Team at $37.00 per foot -	$2,960.00	
Total Stage 2 -		$2,960.00
Government Participation, Stage 2, at 75% -		$2,220.00

Total Stage 1 and Stage 2 -	$8,902.00
Government Participation, Stage 1 and Stage 2, at 75% -	$6,676.50

1/ The entire work constitutes the unit of work.

MF-203
(Revised July 1, 1953)

OWNER'S CONSENT TO LIEN

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

Northwest quarter of the Northwest quarter, Section 13, Township 1 South, Range 73 West.

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

2/ Lloyd P. Mock

hereinafter called the "Operator"; and

WHEREAS, under the provisions of said contract the Government is entitled to a percentage royalty on production (as set forth on the reverse side hereof) and to other rights and equities which do or may conflict with or be adverse to the rights of the undersigned:

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

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

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof, there is hereby granted to the Government a lien upon the land above referred to and upon any production of minerals therefrom, until said royalty is fully paid or ten years have elapsed from the date of the contract, whichever occurs first.

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

4. Changes and added provisions

Dated this 18th day of September, 1953.

[Signature] [Seal]

[Seal]

[Seal]

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

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

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

RELEVANT CONTRACT PROVISIONS

Repayment by Operator.--a. Certification.--If at any time the Government considers that a discovery or development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the final report and final account, may so certify in writing to the Operator. Such certification shall describe broadly or indicate the nature of the discovery or development.

b. Percentage royalty.--The Operator, or his successor in interest, shall pay to the Government a royalty on all minerals mined or produced from the land described in Article 2,--(1) regardless of any certification of discovery or development, from the date of the contract until the lapse of the time within which the Government may make such certification of discovery or development, or until the total net amount contributed by the Government, without interest, is fully repaid, whichever occurs first, unless the Government waives its right to a royalty; or (2) if the Government makes a certification of discovery or development, for a period of ten years (or other period fixed by the contract) from the date of the contract, or until the total net amount contributed by the Government, without interest, is fully repaid, whichever occurs first. Said royalty shall be a percentage of the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, as follows:

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

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

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

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

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

e. Notice to Purchasers.--The Operator shall notify any purchaser of the production of the Government's royalty interest, and shall authorize and direct the purchaser to pay the royalty directly to the Government and to furnish the Government with copies of the settlement sheets; but failure or refusal by the purchaser to comply shall not relieve the Operator of liability to pay any royalty falling due.

f. No Obligation to Produce.--This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
224 New Customhouse
Denver 2, Colorado

February 14, 1958

ORIGINAL FILE COPY
DMEA
RECEIVED FEB 19 1958

DATE	INITIALS	CODE
2/19	C	220
19	COM	100
"	FEG	110
2/24	EEF	800
		225

Memorandum

To: Chairman, Operating Committee, DMEA

From: Executive Officer, DMEA Field Team, Region III

Subject: Semiannual Report of Certified Project for the period July 1, 1957 to December 31, 1957 Docket DMEA-3182 (Tungsten) Contract Idm-E654, Lloyd P. Mock (Mock Shaft - Big Six mine) Boulder County, Colo.

Enclosed are the original and three copies of the subject report prepared in conformance with instructions contained in memorandum of January 6, 1956 from this office, Memorandum 29, and Special Notice in Minutes of Operating Committee Meeting No. 692.

W H King
W. H. King

Enclosures

MHM:jy

cc: Semiannual Report File E654
Harshman
DMEA,DFC (2)
Chron.

DMEA
DEPARTMENT OF THE INTERIOR
FEB 6 - 1958
REGION III
DENVER, COLORADO

DMEA, REGION III

STATEMENT IN LIEU OF SEMIANNUAL REPORT

Reporting Period July 1, 1957 to December 31, 1957
Docket and Contract Number Docket No. 3182 - Contract Idm-E654
Operator Lloyd P. Mock

The project has been inactive during the reporting period [X]

Pertinent data relative to the subject contract has remained unchanged since the last report [ ]

Remarks:

Mr. Mock states that the project has been inactive since the fall of 1954.

A small amount of surface prospecting has been done with no ore shipped.

Signed Carl Belser
Carl Belser

Date 1/29/58

IN REPLY REFER TO:

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

November 1, 1956

Re: DMEA 3182
Lloyd Mock
Mock Shaft, Big 6 Mine
Boulder County, Colorado
$8,902.00 - Tungsten

Memorandum

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

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

Subject: Review of Field Team Final Report.

The contract approved the expenditure of $8,902.00 on shaft sinking and drifting. The sum approved was spent on the following principal work:

Shaft sinking	67 feet
Drifting	80 feet

In the course of the sinking and drifting, 2-1/2 units of WO_3 were recovered and sold. The average grade of the material excavated is estimated to be 0.06%.

Because of the almost negative results of the work, the examiners and Field Team recommend that no certificate of discovery be issued.

I concur with the recommendation.

N. E. Nelson

N. E. Nelson

400

DOCKET
SURNAME

Chapman
Martin
Chandler
Newcomb
Holliday
Selfridge

MAR 8 - 1955

Mr. Lloyd P. Mack
1440 St. Paul Street
Denver 6, Colorado

Re: Docket No. DMEA 3182 - Tungsten
Big Six Mine, Mack Shaft
Boulder County, Colorado
Contract No. [illegible]

Dear Mr. Mack:

This is with reference to the subject Exploration Contract between you and the Government.

It is not our intention to make a certification of discovery or development which would create a lien against the subject property. We are, therefore, closing our books and records with respect to this project. Your attention is called, however, to the provisions of the Contract which require the Operator to keep and preserve certain records for the period indicated.

We regret that the exploration work performed did not result in a certification of discovery or development. Your participation in the exploration program, however, is sincerely appreciated.

Sincerely yours,

C. O. Mittendorf
By ESF

Administrator

TLChapman:foc
3-3-55
cc to: Docket
Code 400
Adm. Reading File
Mr. Selfridge
FT. REG. III
Mr. Holliday, USBM
Mr. Kiilsgaard, USGS

R.C.S.

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

March 3, 1955

MEMORANDUM

To: Administrator, DMEA

From: Iron and Ferro-Alloys Division, DMEA

Subject: General summary of contract and results obtained
Docket No. DMEA 3182 - Tungsten
Lloyd P. Mock
Big Six Mine, Mock Shaft
Boulder County, Colorado
Contract No. Idm-E654

Operator: Lloyd P. Mock
1440 St. Paul Street
Denver 6, Colorado

Property Rights: Property is under lease to Mr. Lloyd P. Mock from the owner Mr. Richard H. Tatlow, 10 East 40th Street, New York, N. Y.

Location: The Big Six mine is located in the Grand Island Mining District, Sec. 13, T. 1 S., R. 73 W. Boulder County, Colorado.

Geology: The basic rocks of the area are pre-Cambrian gneiss and schist, with later intrusions of pegmatite and aplite. Fissure veins occur within a shear zone and are composed mainly of quartz in pods, vugs and veinlets of ferberite occur.

Application and Contract: The Applicant asked for an exploration project which covered repair of shaft collar, erecting headframe and shaft-house, 67 feet of shaft sinking, 80 feet of drifting and 80 feet of cross-cutting at a cost of $10,030.40. As recommended by the Field Team the contract was written on a unit cost basis, for repair of shaft collar, erection of headframe and shaft-house, at a cost of $850.00; 67 feet of shaft sinking at $76.00 per foot and 80 feet of drifting at $37.00 per foot, with a total cost of $8,902.00

of which the Government share at 75 percent was $6,676.50. The original drifting was set for the 100 foot level, but due to the breaking up of the vein was changed to the 88 and 51 foot levels. All work was completed according to the contract in an efficient manner and all the alloted money was expended.

An application for an amendment for further work was denied.

History: The property was first opened up in 1900 and has produced approximately 1,750 units of WO_3. Most of the work was carried out by leasers during various periods. The present Operator started work in 1949. During the time of the project he saved 1,467 pounds of ore which assayed 3.40 percent WO_3 and returned $61.82, on which $3.09 royalty was paid.

Conclusions: As no minable ore was developed or discovered by the project, no certification of discovery or development is being issued.

W S Martin

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

DOCKET
SURNAME
Chapman
Martin
Holliday
Newcomb

March 3, 1955

MEMORANDUM

To: Administrator, DMEA

From: Iron and Ferro-Alloys Division, DMEA

Subject: General summary of contract and results obtained
Docket No. DMEA 3182 - Tungsten
Lloyd P. Mack
Big Six Mine, Mack Shaft
Boulder County, Colorado
Contract No. [illegible]

Operator: Lloyd P. Mack
1440 St. Paul Street
Denver 6, Colorado

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Location: The Big Six mine is located in the Grand Island Mining District, Sec. 13, T. 1 S., R. 73 W. Boulder County, Colorado.

Geology: The basic rocks of the area are pre-Cambrian gneiss and schist, with later intrusions of pegmatites and aplite. Fissure veins occur within a shear zone and are composed mainly of quartz in pods, veys and veinlets of ferberite occur.

Application and Contract: The Applicant asked for an exploration project which covered repair of shaft collar, erecting headframe and shaft-house, 67 feet of shaft sinking, 80 feet of drifting and 80 feet of cross-cutting at a cost of $10,030.40. As recommended by the Field Team the contract was written on a unit cost basis, for repair of shaft collar, erection of headframe and shaft-house, at a cost of $850.00, 67 feet of shaft sinking at $76.00 per foot and 80 feet of drifting at $37.00 per foot, with a total cost of $8,902.00

of which the Government share at 75 percent was $6,676.50. The original drifting was set for the 100 foot level, but due to the breaking up of the vein was changed to the 88 and 51 foot levels. All work was completed according to the contract in an efficient manner and all the alloted money was expended.

An application for an amendment for further work was denied.

History: The property was first opened up in 1900 and has produced approximately 1,750 units of WO_3. Most of the work was carried out by lessees during various periods. The present Operator started work in 1949. During the time of the project he saved 1,467 pounds of ore which assayed 3.40 percent WO_3 and returned $61.82, on which $3.09 royalty was paid.

Conclusions: As no minable ore was developed or discovered by the project, no certification of discovery or development is being issued.

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

TLChapman:fec
3-3-55
cc to: Docket
Code 400
Adm. Reading File
Mr. Selfridge

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

RECEIVED

224 New Customhouse
Denver 2, Colorado

February 4, 1955

Memorandum

To: Secretary to the Operating Committee, DMEA

From: DMEA Field Team, Region III

Subject: Docket DMEA 3182 (Tungsten), Contract Idm-E654, Lloyd P. Mock, Mock Shaft, Big 6 Mine, Boulder County, Colorado

Enclosed are the following final reports pertaining to work completed under the subject contract:

1. Original and one copy of the operator's final report.

2. Original and three copies of the final geologic report by the U.S. Geological Survey.

3. Original and three copies of the final engineering report by the U.S. Bureau of Mines.

Final payment to the operator was processed by this office December 16, 1954, in conformance with the final Report of Review by the Contract Administration and Audit Division dated December 15, 1954.

The exploration work consisted of shaft collar construction, construction of head frame, construction of hoist house, 67 feet of winze sinking and 80 feet of drifting at a total accepted cost of $8902.00 in which the Government participated to the extent of 75% or an amount of $6676.50.

The exploration work did not result in a discovery or development of tungsten ore, therefore certification of the project as a discovery or development under the terms of the contract is not recommended.

W. M. Traver

W. M. Traver

E. N. Harshman

E. N. Harshman

Enclosures

Resources Branch

Date Rec'd
NOV 1 - 1954
BUREAU OF MINES
Denver, Colorado

DEPARTMENT OF THE INTERIOR
Land and Minerals Administration
FEB 10 1955

DIST. ENGR. WMT
EXAMINATION
DIST. CLERK
PERSONNEL
FILES E64

Mining Division
Date Rec'd.
NOV 5 - 1954
BUREAU OF MINES
Denver, Colorado

FINAL REPORT

November 3, 1954

Docket 3182
Idm E654

Work was begun on the shaft house April 10. This work and the construction and erection of a head frame, and timbering of shaft was completed May 1.

On May 1 we started sinking the shaft. During the first fifteen or twenty feet the ore widened to approximately eighteen inches. From this point on down to the 100-foot level it steadily tapered to one half inch of horny, low grade ore. At the 100-foot level the vein appeared to be stronger on the south or downhill side. In the 100-feet of sinking we never had a true hanging wall. What we thought was the hanging wall seemed to duck away so fast that we could not keep with it and maintain a reasonable pitch to the shaft.

With the approval of the DMEA field team a drift was started at the 100-foot level in a southerly direction. Although facings of high grade ore were encountered throughout the 53 feet of drifting, the strata varied markedly throughout with intrusions of schist from the foot wall coming in and going out. At 53 feet, upon recommendation of the field team, we stopped work and went back in the shaft to the 50-foot level to drive in the opposite direction. In the 27 feet allowed at this depth the ore varied from feeders of hairling to 1/2 inch widths.

During the entire project there was no concentration of ore of commercial value.

Respectfully,

Lloyd P. Mock

Lloyd P. Mock
1440 St. Paul
Denver 6, Colorado

COPY

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

224 New Customhouse
Denver 2, Colorado

February 4, 1955

Memorandum

To: Secretary to the Operating Committee, DMEA

From: DMEA Field Team, Region III

Subject: Docket DMEA 3182 (Tungsten), Contract Idm-E654, Lloyd P. Mock, Mock Shaft, Big 6 Mine, Boulder County, Colorado

Enclosed are the following final reports pertaining to work completed under the subject contract:

1. Original and one copy of the operator's final report.

2. Original and three copies of the final geologic report by the U.S. Geological Survey.

3. Original and three copies of the final engineering report by the U.S. Bureau of Mines.

Final payment to the operator was processed by this office December 16, 1954, in conformance with the final Report of Review by the Contract Administration and Audit Division dated December 15, 1954.

The exploration work consisted of shaft collar construction, construction of head frame, construction of hoist house, 67 feet of winze sinking and 80 feet of drifting at a total accepted cost of $8902.00 in which the Government participated to the extent of 75% or an amount of $6676.50.

The exploration work did not result in a discovery or development of tungsten ore, therefore certification of the project as a discovery or development under the terms of the contract is not recommended.

/s/ W. M. TRAVER
W. M. Traver

/s/ E. N. HARSHMAN
E. N. Harshman

Reviewed by
DMEA OPERATING COMMITTEE
2-14-55
(date)

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

DMEA

FEB 3 1955

Region III

Building 20, Room 137
Denver Federal Center
Denver 2, Colorado
February 2, 1955

DEPARTMENT OF THE INTERIOR
Bureau of Mines Administrative
RECEIVED
FEB 10 1955

Memorandum

To: Executive Officer, DMEA Field Team, Region III

From: John F. Shaw

Subject: DMEA 3182, Contract Idm-E654 (Tungsten), Lloyd P. Mock, Mock Shaft, Big Six Mine, Boulder County, Colorado - Final Engineering Report

Enclosed are the original and eight copies of a final engineering report by R. L. Bolmer, mining engineer, on Contract Idm-E654.

The exploration project on the Big Six Mine has been completed efficiently and in accordance with the terms of the contract. The work did not result in a discovery of any tungsten and it is recommended that no Certification of Discovery be made by the Government.

John F. Shaw

John F. Shaw

Enclosures

JFS/cm

cc 8
E654
Chron

Reviewed by
DMEA OPERATING COMMITTEE
2-14-55
(date)

DMEA
FEB 3 1955

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION III

FEB 10 1955

FINAL ENGINEERING REPORT

DMEA 3182, Exploration Project Contract Idm-E654

Mock Shaft, Big Six Mine

Lloyd P. Mock

Boulder County, Colorado

Tungsten

R. L. Bolmer, Mining Engineer

January 24, 1955

Reviewed by
DMEA OPERATING COMMITTEE
2-14-55
(Seto)

DMEA 3182
Contract Idm-E654

MOCK SHAFT, BIG SIX MINE
LLOYD P. MOCK
BOULDER COUNTY, COLORADO

FEB 10 1973

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Work completed under the contract..... 7
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Production from property during contract period..... 11
Efficiency of operation..... 11
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Conclusions..... 12
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DMEA 3182
Contract Idm-E654

MOCK SHAFT, BIG SIX MINE
LLOYD P. MOCK
BOULDER COUNTY, COLORADO

FEB 10 1953

FINAL ENGINEERING REPORT

By

R. L. Bolmer

SUMMARY AND INTRODUCTION

A tungsten exploration project authorized at the Big Six mining property in Boulder County, Colorado, under Exploration Project Contract Idm-E654 was completed September 16, 1954. Project work did not result in the discovery of significant tungsten reserves and a certification of discovery under the contract, therefore, was not recommended. Further exploration of the property with Government assistance was considered unwarranted.

Application for Government assistance in an exploration project at the Big Six property (Docket No. DMEA 3182) was submitted to the DMEA Field Team, Region III (formerly Region IV) in September 1953. The applicant and lessee of the property, Lloyd P. Mock, 1440 St. Paul Street, Denver, Colorado, proposed deeper exploration of a tungsten bearing vein then exposed along the surface and in a shallow shaft. Specifically, he proposed to sink the shaft 67 feet to a new 100-foot level and, at the new depth, to drift 80 feet on the vein in both directions from the shaft and to crosscut a total of 80 feet from the ends of the drifts. His estimate of the total cost of such work was $10,050.40.

The property was inspected in October 1953 by an examining team from the Bureau of Mines and the Geological Survey. The examining team concluded that the ore potential of the deposit was not too great but some exploration with depth might develop moderate reserves of tungsten. It recommended a modified program, which eliminated the proposed crosscutting and divided the project into two stages. The modified program, if carried to completion, was estimated to cost a total of $8,902.00.

The recommended modified project subsequently was approved by the DMEA Field Team, Region III (formerly Region IV) and a short-form exploration project contract between the United States of America and the applicant was prepared. Due to the reluctance of the property owner to sign a subordination agreement, the contract was not signed until January 4, 1954. The total contract amount was $8,902.00 of which the Government agreed to pay 75 percent of certain agreed costs as they accrued for units of work actually performed according to the description or specifications as set forth in the contract. Project work was to commence within 60 days and was to be completed within a period of 7 months from the date of the contract. The contract later was amended to extend the starting date to 120 days and the completion time to 9 months.

Stage 1 of the contract provided for the construction of a shaft collar, headframe, and hoist house at unit prices of $100.00, $250.00, and $500.00, respectively. It also provided for sinking the Mock shaft 67 feet to the 100-foot level, or to the bottom of mineralization, whichever occurred first. Sinking was to be performed at the agreed

unit price of $76.00 per foot. Stage 2 consisted of 80 feet of drifting on the 100-foot level, or from the bottom of mineralization, if approved by the Field Team. Drifting was to be performed at a unit cost of $37.00 per foot.

Project work commenced April 10, 1954, with the construction of the authorized surface facilities. Shaft sinking was started the following month. The authorized 67 feet of sinking had been completed by August. While the vein exposed in the shaft remained strong and, for the most part, mineralized, the mineralization in no section approached commercial grade. The structure itself weakened in the final few feet of the shaft. The operator was permitted to commence drifting southwesterly on the vein at a depth of 88 feet in the shaft. The vein weakened and was mostly barren in this direction. The drift was stopped 53 feet from the shaft upon the recommendation of the inspecting engineer. The operator requested and was permitted to expend the remaining 27 feet of drift northeasterly on the vein at a depth of 51 feet in the shaft. The mineralization of the vein in this section also did not approach commercial concentrations.

The authorized project work was completed September 16, 1954 and the operator, thereupon, requested authority under the contract to perform some 270 feet of additional drifting and crosscutting at a unit price of $37.00 per foot. Specifically, he requested permission to crosscut 50 feet into the hanging wall of the shaft and to drift 100 feet on any veins encountered. He also wished to extend the two level drifts an additional 70 feet northeasterly and 50 feet southwesterly. An examining team reinspected the property October 18, 1954. The

results of the earlier project work had been unpromising and the operator's request for additional exploration, therefore, was considered unwarranted and was denied.

All of the units of work authorized for the project were completed by the operator in the manner specified by the contract. Costs of the completed work were reported monthly by, and reimbursed to the operator as they accrued. Costs totaling $8,902.00 - equivalent to the completed and authorized units of work at their respective agreed unit prices - were reported by the operator and accepted by the Executive Officer, DMEA Field Team, Region III (formerly Region IV). The operator was reimbursed for 75 percent of the accepted costs, or for a total of $6,676.50. An amount of $100.00, withheld from reimbursement to the operator pending receipt of his Final Project Report and release of the Final Report of Review by the Contract Administration and Audit Division, was paid December 17, 1954.

The operator carefully sorted and cobbed all the recoverable tungsten mineral from the vein material excavated during project sinking operations. He recovered 1,467 net dry pounds of ferberite ore averaging 3.40 percent tungsten trioxide, which he marketed for a net value of $61.82. The Government was paid a royalty of 5 percent, or $3.09, on this production.

LOCATION AND OWNERSHIP

The Big Six mining property - 40 acres, more or less, including the Big Six mine, the Mock shaft, and some other shallow workings - is located in the Grand Island Mining District in the NW1/4NW1/4 sec. 13, T. 1 S., R. 73 W., sixth principal meridian, Boulder County, Colorado, (fig. 1). The altitude of the collar of the Mock Shaft is about

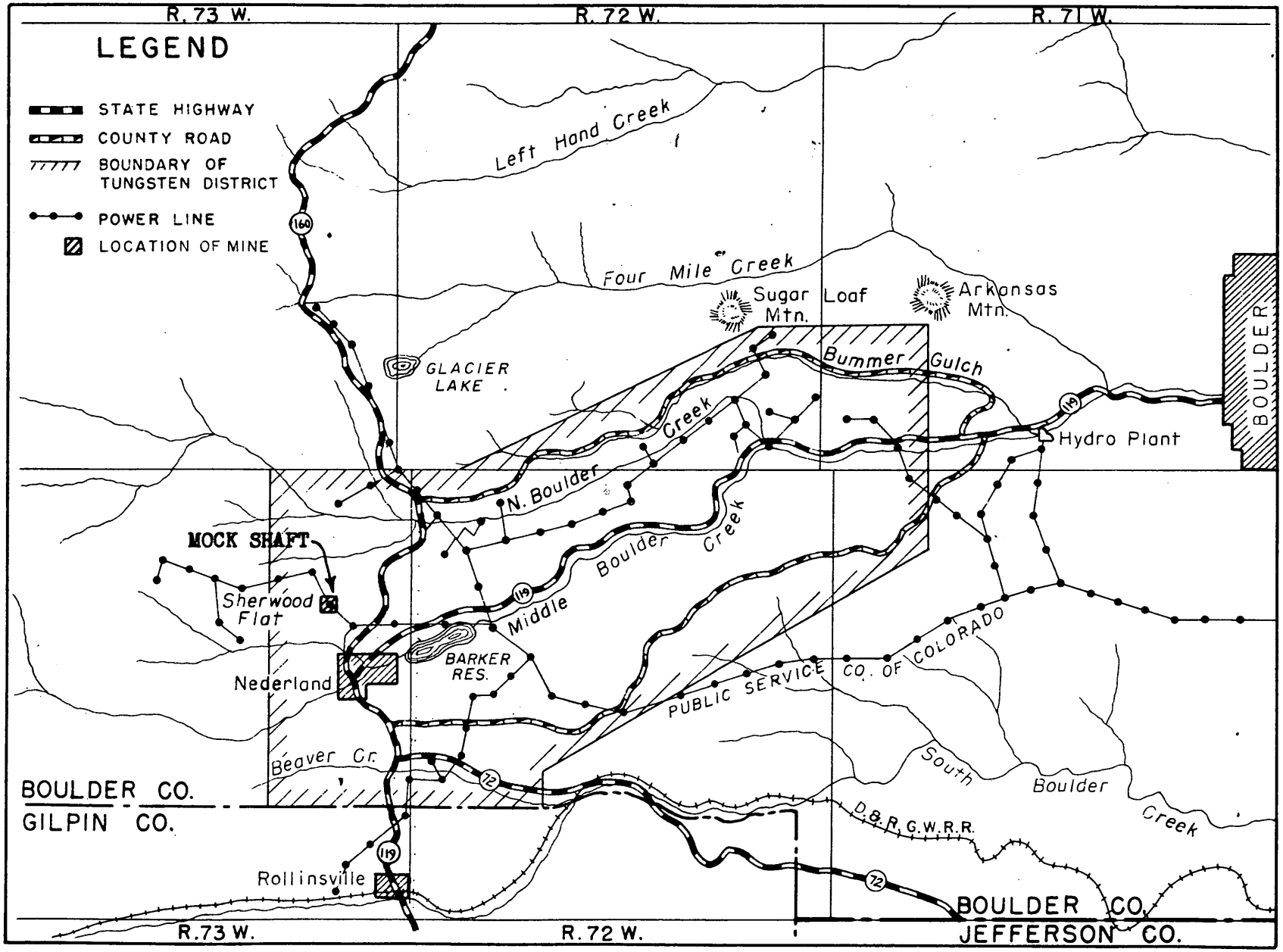


FIGURE 1 - LOCATION MAP, MOCK SHAFT, BIG SIX MINE, BOULDER COUNTY, COLO. (DMEA 3182, Contract Idm - E654)

FEB 10 1966

8,535 feet. An access road, 0.6 mile long, connects the property with State Highway 160 about 1/2 mile north of the town of Nederland, from whence paved roads lead south 4 miles to Rollinsville, the nearest railhead, and east 18 miles to Boulder, the nearest supply center.

The property is owned by Richard H. Tatlow III, 10 East 40th Street, New York City, New York, who leased it to Lloyd P. Mock, the operator under the exploration project contract, on August 25, 1949, for a 3-year period. The lease carries a 3-year extension option making it effective until August 25, 1955. It provides for a royalty payment of 25 percent on the value of any minerals produced from the property. An owner's consent to lien was signed by Tatlow.

HISTORY AND PRODUCTION

Ferberite was first produced in Boulder County in 1900. The Conger mine, about 1/2 mile northwest of the Big Six shaft, was one of the earliest operations and the largest producer (500,000 s.t.u. WO_3). The Big Six deposit was discovered in the early 1900's and the shaft was sunk to a depth of 170 feet. It has been worked by many different lessees at intervals since its discovery. Complete records are not available but its total production is believed to be about 1,750 s.t.u. WO_3. Shipments during World War II amounted to 75.48 tons containing 1.19 percent WO_3. A production of about 150 s.t.u. is reported since that period.

The operator began prospecting on the tract in 1949. In 1952, he commenced work on the old Mock shaft some 350 feet south of the Big Six mine. The shaft was cleaned out and sunk from 35 feet to its present depth of 50 feet. About 50 feet farther south, the Mock Shaft

was sunk on the same vein to a depth of 33 feet. During the two years preceding the exploration project, the operator shipped 3.3 tons of sorted and up-graded ore averaging 5.36 percent WO_3 from the two shafts.

DESCRIPTION OF THE DEPOSIT

The rocks in the area are pre-Cambrian metamorphics which have been intruded by later pegmatite and aplite. A fissure vein, that occupies a shear zone in the metamorphics, outcrops in the vicinity of the Mock shaft. This zone strikes N. 20° E., dips 60° to 70° to the southwest, and is between 2 and 4 feet in width. It can be traced on the surface for a distance of about 100 feet in either direction from the shaft.

The old Mock shaft, which reportedly was sunk to a depth of 50 feet on the structure, is tightly lagged to its water level. The structure in the first 30 feet of the new shaft also is obscured by lagging. The zone exposed immediately below the lagging is 30 inches in width. It dips about 66° between an irregular foot wall of schist and a hanging wall, which is poorly exposed but probably is aplite. Tungsten mineralization in the form of ferberite ($FeWO_4$) is confined to an 8-inch streak of fine-grained, brecciated quartz along the hanging wall. The mineral is somewhat impure and occurs disseminated within the quartz either as narrow, discontinuous lenses and pods or as a breccia filling. Samples of the mineralized streak at this depth assayed up to 3 percent tungsten trioxide.

Shaft sinking during the project exposed the zone for an additional 67 feet or to a depth of approximately 100 feet below the surface.

Its character did not change appreciably within the first 50 feet of this distance. The footwall of the zone remained in schist and continued irregular and poorly defined. The quartz streak along its hanging wall ranged between 8 and 12 inches and continued to carry minor lenses, blebs, and patches of ferberite, none of which, however, were wide or continuous enough for commercial extraction. The zone began to flatten and weaken at a depth of about 85 feet. At a depth of 91 feet the structure dipped only 52° and had all but pinched out on the northeast side of the shaft. At 98 feet it had flattened to 46° and was considerably weaker on the southwest side of the shaft.

The structure was explored for 53 feet southwest of the shaft along the 88-foot level. It flattened and weakened rapidly in this direction. Most of its mineralization disappeared within a few feet of the shaft, and the zone was entirely barren of tungsten in the southwest end of the level.

A short level driven northeasterly on the zone at a depth of 51 feet, also proved disappointing. While the zone continued well defined in this direction, its mineral content remained scattered and disseminated and never approached commercial concentrations.

WORK COMPLETED UNDER THE CONTRACT

Project work commenced April 10, 1954, with the preparation of the surface site for the headframe and hoist house. Some rock excavation was necessary before the site could be leveled with a bulldozer. The collar and the first 29 feet of the shaft was retimbered and cribbed tightly and then backfilled. Skids for a hoisting bucket were provided in the shaft and manway ladders were installed.

A 22-foot, 4-post headframe, complete with sheave wheel, dumping sheet, and chute, was constructed over the shaft collar. Mine track was extended from the shaft collar to the waste dump. A 22-foot by 15-foot frame hoist house was erected some 25 feet east of the shaft. Concrete foundations were poured inside the building for a single-drum, geared hoist. The gasoline engine drive for the hoist was installed outside the building. A 105 c.f.m. portable air compressor, which the operator rented with an option to purchase, was installed on the surface.

The existing depth of the Mock shaft measured 31.5 feet below the newly constructed shaft collar. Project sinking operations started at this depth May 1, 1954, and the authorized 67 feet of sinking to a depth of 98.5 feet below the new collar had been completed by August 1954. No unusual conditions were encountered. The shaft made some water and, therefore, was advanced by benching. Water was removed with an air-powered sump pump. The shaft was sunk on the dip of the shear zone. The hanging wall of this structure was stronger and more regular, and the shaft rounds broke cleanly to it. Rounds were drilled so as to provide an 8-foot by 4-foot cross section inside the shaft timbers. Round native timber was employed for the most part.

The zone weakened in the lower 10 feet of the shaft and the operator was permitted by the Field Team to drift southwesterly on the structure at a depth of approximately 85 feet below the collar. The drift was started at the 88-foot level and was advanced 53 feet along the structure during August. The zone weakened and became barren of tungsten southwesterly along the level and the heading was stopped upon the recommendation of the inspecting engineer.

The most favorable exposure of the zone along the northeast side of the shaft occurred between a depth of 50 and 60 feet. The operator requested and was granted permission to expend the remaining 27 feet of the authorized drifting at this location. Drifting started at the 51-foot level and was completed September 16, 1954. While the zone along this level remained strong and well defined, its mineralization did not improve. The operator continued the northeast drift at his own expense but stopped it at a distance of about 40 feet from the shaft when the zone began to split up and weaken. The underground exploration completed under the contract is indicated on figure 2.

The labor force for the project included the operator, who supervised the operation and performed most of the necessary surface work, and either 1 or 2 underground employees. The underground employees were hired either at a daily rate or on a contract footage basis. Occasionally, the operator's son worked at the project. Operations were carried out on a single shift per day, six days per week.

EXPENDITURES

The total estimated cost of the project was $8,920.00, of which the Government agreed to pay 75 percent of certain agreed costs as they accrued for units of work actually completed according to the description or specifications as set forth in the contract. All of the units of work authorized for the project were completed by the operator in the manner specified in the contract. Project costs were reported monthly by the operator as they accrued and 75 percent of

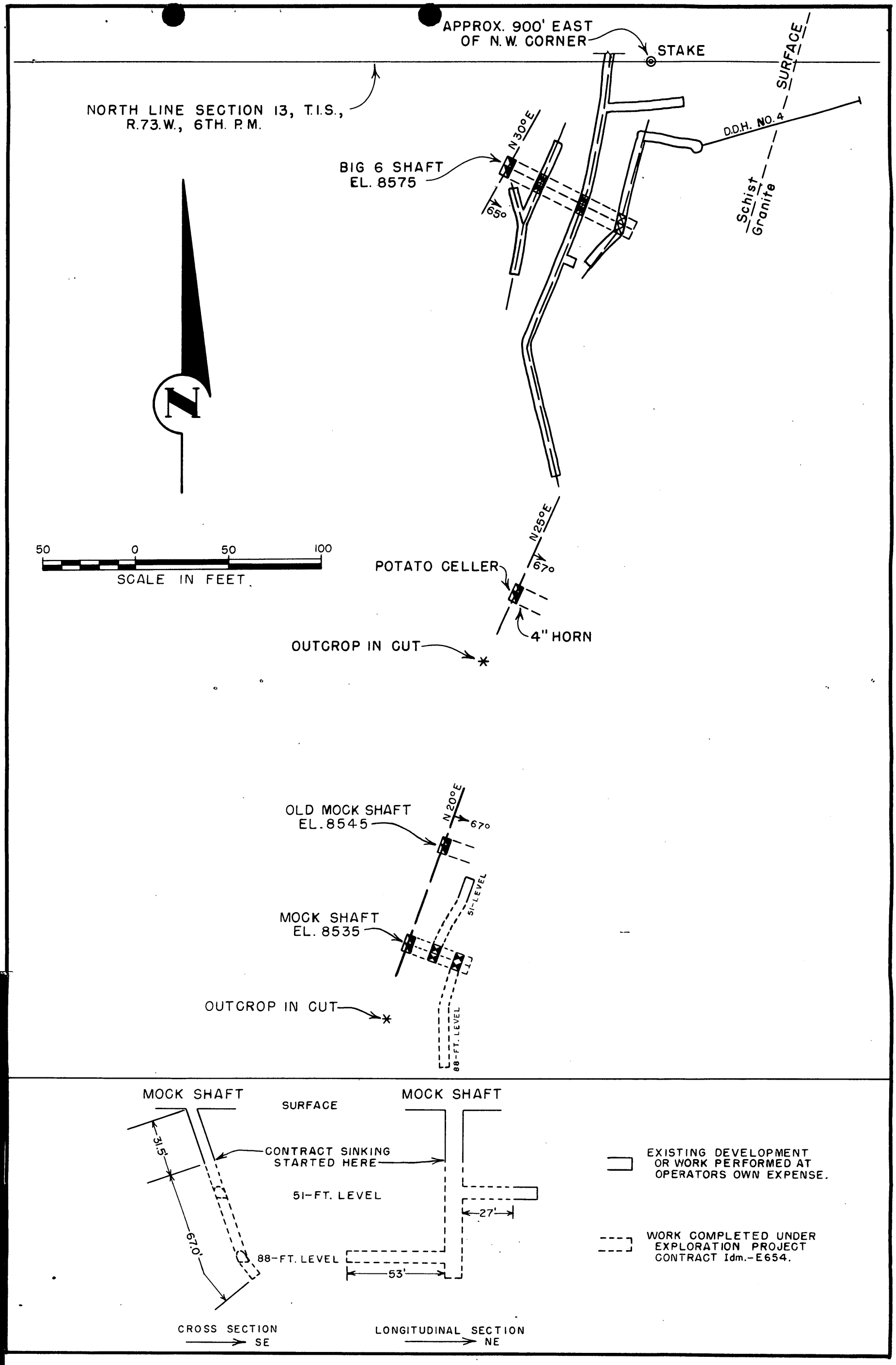


FIGURE 2. PLAN AND SECTIONS, MOCK SHAFT, BOULDER COUNTY, COLO. (DMEA 3182, CONTRACT Idm-E654)

RECEIVED
FEB 10 1953

the accrued amount was reimbursed to the operator upon verification of the work by the inspecting engineer and its acceptance by the Executive Officer, DMEA Field Team, Region III (formerly Region IV). Project costs totaling $8,902.00 - equivalent to the completed and authorized units of work at the agreed unit prices - were reported by the operator and accepted by the Executive Officer. The operator received reimbursement for 75 percent of the accepted amount, or a total of $6,676.50. An amount of $100.00, which was withheld from the final reimbursement to the operator pending receipt of his Final Project Report and the release of the Final Report of Review by the Contract Administration and Audit Division, was paid December 17, 1954.

The authorized work performed during the project and the agreed costs at which reimbursement was claimed and accepted is summarized below:

Description	Units completed	Unit cost	Accepted amount
Stage 1:			
Construct shaft collar	job	$100.00	$ 100.00
Construct headframe	job	250.00	250.00
Construct hoist house	job	500.00	500.00
Shaft sinking	67 feet	76.00	5,092.00
Stage 2:			
Drifting	80 feet	37.00	2,960.00
Total reported and accepted costs of project			$8,902.00
Government participation - 75 percent			$6,676.50

PRODUCTION FROM PROPERTY DURING CONTRACT PERIOD

The operator carefully sorted and cobbed most of the recoverable tungsten mineral from the coarser vein material excavated during the first 50 feet or so of project sinking operations. The ferberite ore thus recovered was shipped to a local custom mill August 10, 1954. The settlement received on this shipment is detailed below. The Government was paid a royalty of 5 percent, or $3.09, on the net value of the ore.

Net dry weight:	1,467 lbs.	Gross value:	$76.82
Assay:	3.40 percent WO_3	Deductions:	15.00 (sampling)
Metal content:	49.88 lbs. WO_3	Net Value:	$61.82

The fine-sized material excavated from the shaft was below the minimum acceptable mill grade and was not amenable to upgrading by hand methods. The coarse material, from which the operator's shipment derived, usually contains about 50 percent of the total mineral content. If it is assumed that the mineral in the zone was confined within a minimum mining width of 30 inches, then it can be calculated that the section of vein excavated in the shaft is equivalent to a volume of approximately 1,000 cubic feet or a weight of about 170,000 pounds. The computed average grade of this section of the vein, therefore, is only 0.06 percent WO_3 and definitely noncommercial.

EFFICIENCY OF OPERATION

Project operations were carried out efficiently and according to generally accepted mining procedure in the district. The sinking progress during the project was somewhat slower than usually experienced

for similar operations in the district. The operator found it difficult to attract and retain experienced underground labor.

EQUIPMENT

The short form exploration contract for this project was prepared on form MF-200A(Feb. 1952). Under this form of contract, the estimated agreed unit costs reflect a reduction for the estimated salvage value of all facilities, improvements, equipment, and materials that may remain unexpended at the completion of the project.

CONCLUSIONS

It is concluded that the exploration project at the Big Six property was carried out and completed efficiently and in the manner specified in the contract. The costs reported by the operator were those agreed to in the contract. Government participation in the reported costs of the project, to the extent provided in the contract, therefore, is justified and in order.

Project work did not result in the discovery of any tungsten ore reserves from which production is economically feasible. It appears that the operator will abandon all his efforts at the property. Further exploration of the deposit with Government assistance is not considered warranted.

RECOMMENDATIONS

Inasmuch, as project work did not result in the discovery of significant ore reserves and it appears that the operator will not continue operations at the property, it is recommended that no Certification of Discovery be made by the Government.

RLB/cm

IN REPLY REFER TO:
Mining Division
Date Rec'd.
DEC 3 - 1954
BUREAU OF MINES
Denver, Colorado

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Defense Minerals Exploration Administration
Denver Federal Center
Denver 2, Colorado

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
FEB 10 1955

November 29, 1954

Memorandum

To: DMEA Field Team, Region IV

From: A. H. Koschmann

Subject: DMEA Docket 3182, Lloyd P. Mock, Big 6 Mine, Boulder County, Colorado

Enclosed are 9 copies of a final geologic report on the above subject property by D. R. MacLaren, U. S. Geological Survey.

A strong shear zone in granite, aplite, and schist was prospected by a 100 foot shaft (67 feet sunk with Government assistance), and 94 feet of drifting on 2 levels (80 feet driven with Government assistance). Although the ground was well prepared for deposition of ore, ferberite was found only in thin coatings on fracture surfaces and in small lenses and stringers in the sheared granite and aplite.

It is concluded that the property does not warrant additional exploration either now or in the future and that a certification of discovery should not be issued.

The conclusions are sound and it appears that a certification of discovery should not be issued.

E. M. Hauchman
for A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Enclosures (9)

Reviewed by
DMEA OPERATING COMMITTEE
2-14-55
(Date)

MOCK SHAFT, BIG SIX MINE

BOULDER COUNTY, COLORADO

DMEA DOCKET 3182

Final Geologic Report

2-14-55

By D. R. MacLaren
U. S. Geological Survey

MOCK SHAFT, BIG SIX MINE
BOULDER COUNTY, COLORADO

RECEIVED
FEB 10 1955

INTRODUCTION

Contract Idm-E654 between Lloyd P. Mock and the Defense Minerals Exploration Administration was signed January 4, 1954. The operator was to explore for tungsten in the Mock shaft, Big Six mine, in sec. 13, T. 1 S., R. 73 W., Boulder County, Colorado. The contract, set up in two stages, provides for surface installations and deepening the Mock shaft 67 feet under Stage I and drifting 80 feet from the shaft under Stage II at a total cost not to exceed $8,902.00 of which the Government's share is $6,676.50 or 75%. Work was to start within 60 days and be completed within 7 months. However, Amendment No. 1 dated February 2, 1954, extended the starting date to within 120 days, and Amendment No. 2 dated September 15, 1954, extended the date of completion to within 9 months. Work was started April 10, 1954, and was completed about September 15, 1954. It is concluded that no ore was discovered and it is recommended that no more Government funds be spent on this project.

GEOLOGY

Gneiss and schist of the Idaho Springs formation of pre-Cambrian age are intruded by pegmatite and aplite dikes and Boulder Creek granite. These rocks are cut by fissures most of which strike northeasterly and dip steeply to the east. Ferberite occurs along many of the fissures as coatings, veins, and vug fillings, often in sufficient amounts to form ore bodies.

The Mock shaft (figure 1) was sunk to a depth of 100 feet to explore a strong shear zone, 3 to 6 feet wide, that strikes N. 22° E. and dips 60° to 70° E. For most of its depth the shaft shows that the shear zone has a

footwall of schist and a hangingwall of aplite and granite. Ferberite and horn quartz occur as lenticular masses and discontinuous stringers dispersed throughout the shear zone. The total thickness of ferberite and horn quartz rarely exceeds 8 to 10 inches. The vein material as taken from the shaft and drifts is not ore grade although after hand sorting it may contain as much as 5% WO_3. About 85 feet below the collar of the shaft the dip of the shear zone flattens to about 45°. Below this point both walls are in schist and there is little or no ferberite.

A level was driven 53 feet southwest from the shaft at a depht of 88 feet below the shaft collar. It follows a shear zone, up to 2 feet wide, that contains quartz stringers, up to 4 inches thick, in a clay gouge. At the shaft the shear zone strikes S. 27° W. and dips 50° SE but to the southwest the strike gradually swings until, at the breast, it is S.8° W. and the dip flattens to 45° E. No ferberite was found on the 88-foot level, and as the shear zone became narrower and flatter to the southwest, the operator was advised to drive the remaining 27 feet northeast from the shaft at a depth of 52 feet below the shaft collar.

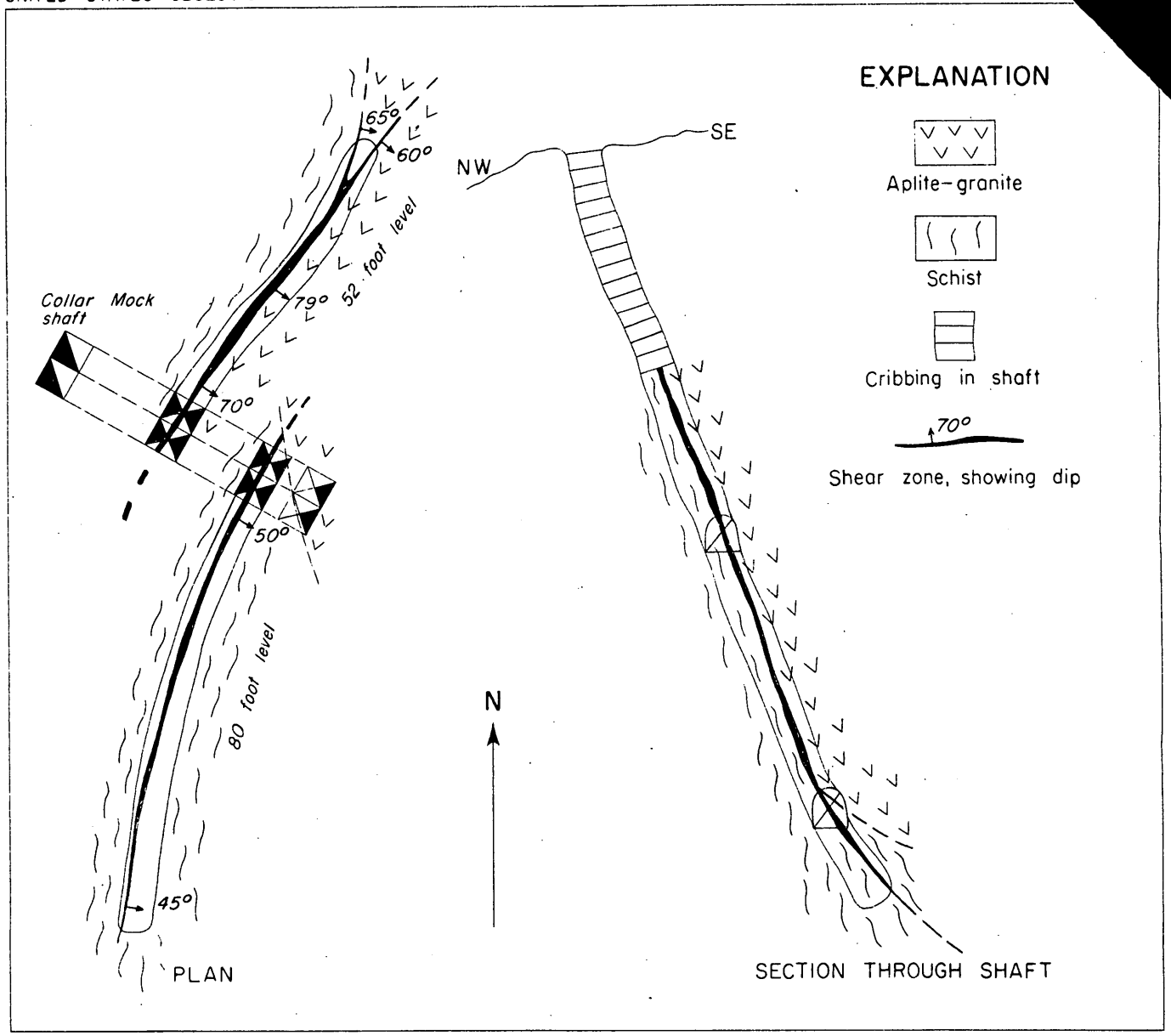
The 52-foot level follows a shear zone, up to 2 feet wide, that contains quartz stringers and two small streaks of horn quartz and ferberite up to 8 inches long. The footwall is sharply defined with schist making up the wall rock. The hangingwall is more difficult to trace as the wall rock on that side is coarsely shattered aplite and granite. Two small ferberite-lined vugs, three to six inches long, and two streaks of horn quartz, four to eight inches long, are in the aplite as much as four feet from the footwall. Although the footwall is not frozen and the hangingwall is shattered and open as is the shear zone proper, no other ferberite was found on the portion of this level driven under the contract.

Upon completion of drifting allowed under the contract, the operator extended the 52-foot level an additional 14 feet at his own expense. About 27 feet from the shaft the footwall of the shear zone swings to the north and at the breast strikes N. 25° E. and dips 65° SE, and a shear, 10 to 14 inches wide, splits to the east striking N. 40° E. and dipping 60° SE. Considerable brecciated, felsitic, dike-like material is exposed in the final 10 feet of the drift, particularly in the hangingwall of the main shear zone. The rock between the main shear zone and the split is broken by many closely spaced fractures, a few of which contain paper thin coatings of ferberite. Veinlets of ferberite, as much as 1/8 inch thick, are in the split and branch from it into the hangingwall. However, the proportion of ferberite to the brecciated wall rock is insignificant and under no circumstances or conditions can the material be considered ore.

CONDITIONS AND RECOMMENDATIONS

It is concluded that the coarsely shattered aplite and granite in the wall rock and the open nature of the shear zone should be most receptive to the deposition of ferberite, and that the few small sparce occurrences of ferberite indicate that the depositing solutions carried little tungsten.

No discovery of ore was made, and the results of 100 feet of shaft sinking, 67 feet under the contract, and 94 feet of drifting, 80 feet under the contract, are disappointing and discouraging. Therefore it is recommended that no further Government funds be expended on this project.



By D. R. MacLaren, October 1954

FIGURE 1. PLAN AND SECTION SHOWING WORKINGS AND GEOLOGY, MOCK SHAFT, BIG SIX MINE, BOULDER COUNTY, COLORADO

20 10 0 40 Feet

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

224 New-Customhouse
Denver 2, Colorado

January 14, 1955

Memorandum

To: Chairman, Operating Committee, DMEA

From: Executive Officer, DMEA Field Team, Region IV

Subject: Docket DMEA 3182 (Tungsten), Contract Idm-E654, Lloyd P. Mock, Mock Shaft, Big Six mine, Boulder County, Colorado

Reference is made to your letter of January 10, 1955 relative to the operator's final report.

The operator's final report was received in this office November 5, 1954. We have deferred forwarding the report to the Washington office pending receipt of field reports.

W H King

W. H. King

DOCKET
SURNAME

400 Rutledge
Martin
Selfridge
K Johnson
Mittendorf

JAN 1 0 1955

Mr. W. H. King, Executive Officer
DMEA Field Team, Region IV
224 New Customhouse
Denver 2, Colorado

Re: Docket No. DMEA 3182 - Tungsten
Lloyd P. Meek
Mock Shaft, Big Six mine
Boulder County, Colorado
Contract No. Idm-E654

Dear Mr. King:

Reference is made to the subject docket and your letter of October 26, 1954, advising the operator of his obligation under Article 5 (b) of the contract to furnish a final report.

If the above-referenced report has not been received, the operator should again be advised that a final report is required.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (JHB)

APPROVED:

J. H. Hedges (JHB)
Member, Bureau of Mines

Thor H. Kiilsgaard (JHB)
Member, Geological Survey

FARutledge:foc
1-6-55
cc to: Docket
Code 400
Adm. Reading File
Operating Comm.
FT. REG. IV
R. W. Geehan, USBM
T. H. Kiilsgaard, USGS

R.C.F.

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

DEC 23 1954

Mr. Donald T. Finch
DMEA Auditor
224 New Customhouse
Denver 2, Colorado

Re: Idm-654, DMEA-3182
Lloyd P. Mock
and
Idm-E661, DMEA-3179
Thomas J. & Dorothy A. Mahoney

Dear Mr. Finch:

Receipt is acknowledged of the copies of your Reports of Review covering the above-cited contracts.

The Reports are acceptable and normal distribution may be effected.

Sincerely yours,

(Signed) J. L. Chambers

Jay L. Chambers, Chief
Contract Administration
and Audit Division

AMAlley/ama
December 22, 1954

Copy to: Docket - DMEA-3179
Admr. Reading File
Mr. Chambers

R.A.L.

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

224 New Customhouse
Denver 2, Colorado

November 22, 1954

Memorandum

To: Chairman, Operating Committee

From: Executive Officer, DMEA Field Team, Region lV

Subject: Docket No. DMEA 3182, Contract Idm-E654 (Tungsten)
Lloyd P. Mock, Big 6 Mine, Boulder County, Colorado

Reference is made to your memorandum dated October 26, 1954, regarding the amount allowed for construction of a headframe and hoist house under Contract Idm-E654.

We are enclosing 4 copies of a memorandum by Carl Belser which contains an estimate of the amount expended by the Operator in construction of the headframe and hoist house.

John F. Shaw
For W. H. King

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Date Rec'd.
NOV 18 1954
BUREAU OF MINES
Denver, Colorado

Region IV

Building 20, Room 137
Denver Federal Center
Denver 14, Colorado
November 17, 1954

DEPARTMENT OF THE INTERIOR
Bureau Mines Administration
RECEIVED
NOV 26 1954

Memorandum

To: Executive Officer, DMEA Field Team, Region IV

From: Chief, Mineral Resources Branch, Mining Divison, Region IV

Subject: DMEA 3182, Contract Idm-E654 (Tungsten) Lloyd P. Mock (Mock shaft) Boulder County, Colorado

Enclosed are the original and eight copies of a memorandum by Carl Belser estimating the amount expended by the operator in construction of the headframe and hoist house on the subject project. This estimate was prepared in compliance with your memorandum of October 28, 1954.

W. M. Traver

W. M. Traver

enclosures

cc 8
E654
DMEA Chron.

WMT/pah

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

DEPARTMENT OF THE INTERIOR
Bureau of Mines Administration
Received
NOV 26 1954

Region IV

Building 20, Room 137
Denver Federal Center
Denver 14, Colorado
November 10, 1954

Memorandum

To: Chief, Mineral Resources Branch, Mining Division, Region IV

From: Carl Belser

Subject: DMEA 3182, Contract Idm-E654 (Tungsten) Lloyd P. Mock (Mock shaft) Boulder County, Colorado - Cost of construction of headframe and hoist house at Mock shaft

The hoist house is a frame, 15- by 24-foot, hip-roofed building covered with rolled roofing and asbestos base siding. The leveling of the site gave more trouble than was anticipated and the building was larger than needed. A hand-mixed concrete base was poured for the hoist. Materials and costs for the hoist house follow:

Lumber (2,500 board feet at $90.00/M (delivered)	$225.00
Windows (four 24-inch by 24-inch)	27.40
Nails, hinges, etc.	15.00
Roofing and siding (11 rolls)	30.25
Sand, cement (hoist base)	25.00
Total supplies	$322.65
Bulldozing site (1-1/2 days)	150.00
Labor (16 shifts at $14.40)	230.40
Total cost	$702.05

The contract allowed $500.00 for the building. Salvage value of building (boards and windows) would be as follows:

Total lumber in building (2,500 board feet of which two-thirds is salvable) 1,675 feet at $40.00/M	$67.00
Four windows at $4.000	16.00
	$83.00
Less: Cost one man 5 days to tear down and pull nails at $14.40	$72.00
Truck to possible market	10.00
	$82.00
Net salvage value	$1.00

There is at present no known use for the shaft house in the near vicinity and any attempt to salvage the lumber would only pay for the labor and trucking charges.

The headframe is made of four round posts. It is 22 feet high and has a span of 10 feet by 11 feet at the bottom. Some bolts and lumber were used in the construction but the main cost was labor. The sheave and dumping apron belonged to Mock. The contract allowed $250.00 for the headframe which is about what it cost to build it. The headframe would not be worth salvaging other than for the sheave and dumping apron which belong to the contractor.

for R. L. Bolmer
Carl Belser
Mining Engineer

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
NOV 1 - 1954

224 New Customhouse
Denver 2, Colorado

OCT 28 1954

Memorandum

To: Chairman, Operating Committee, DMEA

From: Executive Officer, DMEA Field Team, Region IV

Subject: Docket DMEA 3182 (Tungsten), Contract Idm-E654, Lloyd P. Mock, Boulder County, Colorado

In conjunction with and supplementing data forwarded by our memorandum of September 30, 1954 we are enclosing three copies of a letter dated October 26, 1954 to the operator from the DMEA Field Team, Region IV, denying additional Government assistance to further explore the subject property. Also enclosed are three sets of data relative to the matter.

W. H. King

W. H. King

Enclosures

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

224 New Customhouse
Denver 2, Colorado

Department of the Interior
Defense Minerals Exploration
RECEIVED
NOV 1 - 1954

October 26, 1954

Mr. Lloyd P. Mock
1440 St. Paul
Denver, Colorado

Re: Docket DMEA 3182 (Tungsten)
Contract Idm-E654

Dear Mr. Mock:

Reference is made to your letter of October 11, 1954 wherein you request that further consideration be given your request for additional Government assistance in exploration work on your property in the light of recent developments.

An investigation of the results of work at your expense, subsequent to our decision that further Government assistance would not be forthcoming, strengthens our decision of September 28, 1954 that Government participation in the costs of additional exploration work on your property is not warranted.

We are desirous of closing the account at an early date, therefore we will appreciate receiving your final report in compliance with Article 5(b) of Contract Idm-E654.

Very truly yours,

W. H. King

W. H. King

E. N. Hauskman
for A. H. Koschmann

DMEA Field Team, Region IV

JWT:jp
cc Subject
Chron
Koschmann
Traver
Chairman, Op. Comm. (3)
Townsend

October 11, 1954

Mr. W. H. King, Executive Officer
DMEA Field Team Region IV
224 New Customshouse
Denver 2, Colorado

Dear Mr. King:

Since the Field Team's examination of the north drift on the 50-foot level for the purpose of an extension of government assistance, we have continued this drift 14 feet further, with the following results:

I believe we have passed through the junction of this vein with the vein which outcrops in the bulldozer cut northeast of the shaft, and encountered a dike. The foot wall vein continues quite strongly at a width of from six to ten inches. The hanging wall vein has widened with numerous feeders extending at various angles into the dike.

With this unexpected improvement in mind, I believe it would be of mutual interest to have the DMEA field team reexamine this heading to see if additional assistance in exploration might now be granted.

I will very much appreciate your further consideration.

Sincerely yours,

Lloyd P. Mock

L. P. Mock

L. P. Mock
1440 St. Paul
Denver, Colorado

October 25, 1954

Memorandum

To: A. H. Kaschmann E.M.H. for A.H.K.

From: E. N. Harshman

Subject: DMEA Docket 3182 (tungsten), Contract Ida-6854, Lloyd P. Mack, Boulder County, Colorado

In a letter of October 13, 1954, the Executive Officer, DMEA Field Team, Region IV, requested that the Lloyd P. Mack property be re-examined to determine the significance of the recent developments reported by Mr. Mack in his letter of October 11, 1954.

The property was examined on October 18, 1954, in company with Mr. Mack, operator under the above subject contract.

Following the examination by geologist MacLaren and his memorandum report of September 20, 1954, recommending denial of the operator's request for additional funds, the operator completed a 14-foot extension of the northeast drift on the 50-foot level. About 12 feet from the present face, 2 feet beyond the face at the time of MacLaren's examination, the footwall of the main shear zone swings 5° to 10° to the north and a 10" to 14" wide shear splits easterly from the main shear zone. The split strikes N. 40° E. and dips 60° southeast in contrast to a strike of N. 25° E. and a dip of 65° southeast for the main shear zone. Considerable brecciated, felsitic, dike material is exposed in the last 10 feet of the drift, particularly in the hangingwall of the main shear zone.

The rock between the split and the main shear zone is broken by many closely spaced fractures some of which contain paper thin coatings of ferberite. Veinlets of ferberite as much as 1/8 inch wide occur in the split and branch from it into the hangingwall. The proportion of

ferberite to brecciated wall rock is insignificant and under no circumstance can the material be considered ore grade.

The absence of significant amounts of ferberite near the intersection of the main shear zone and the hangingwall split tends to confirm McLaren's conclusion that physically favorable ground in the vicinity of the mine workings is not apt to contain appreciable amounts of ore. It is therefore concluded that further exploration under contract Ida-5654 will not lead to the discovery of significant amounts of tungsten ore and it is recommended that no further government assistance be approved.

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

October 27, 1954

Memorandum

To: Miss Curtin, Statistics and Control Division, DMEA

From: Hazel Berry, Operating Committee, DMEA
Ry 257

Subject: Amendment to Contract

Attached is the following docket copy of an amendment to a contract which has been reviewed and approved by the commodity division, Contract Administration and Audit Division, and the Legal Division.

Lloyd P. Mock, DMEA-3182, Idm-E654, Amendment No. 2.
The official docket is also attached.

Attachment 1

DOCKET
Surname:
Rutledge
Talbert
Martin
Selfridge
Johnson
Matthews

OCT 26 1954

Mr. W. H. King, Executive Officer
DMEA Field Team, Region IV
224 New Customhouse Building
Denver 2, Colorado

Re: Docket No. DMEA 3182 - Tungsten
Lloyd P. Mock
Mock Shaft, Big Six Mine
Boulder County, Colorado
Contract No. Idm-E654

Dear Mr. King:

This will acknowledge receipt of your letter of October 18, 1954, concerning the subject contract, with attachments, including memorandum of September 23 to Mr. W. M. Traver from Mr. R. L. Bolmer.

The last paragraph of Mr. Bolmer's report reads as follows:

> "Under this contract, the operator constructed a headframe and a hoist house in which the Government participated to the extent of $187.50 and $375.00, respectively. Neither structure has any appreciable salvage value and is of value only if left in its present location and if operations are continued in the Mock shaft. Short-form contracts, those prepared on form MF-200(A), contain no provisions for the salvage of such facilities and it is assumed, therefore, that the operator will not be required to sell or otherwise liquidate this property for the joint account of himself and the Government."

The subject contract and the two amendments thereto were prepared in your office. Presumably in assigning unit prices to the headframe and hoist house for such a short form contract you deducted the estimated salvage value of such installations from their estimated cost and set up the difference as the unit price which would, of course, be charged in its entirety to the contract. If this was not

R.C.S.

the case, this matter is being brought to your attention in order that the estimated salvage value of installations may be deducted in arriving at the unit costs for installations in future contracts.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (2HB)

Approved:

J. H. Hedges

Member, Bureau of Mines (2HB)

Thor H. Kiilsgaard

Member, Geological Survey (2HB)

cc: DOCKET
FT, REGION IV
CODE 400
ADMIN. READ. FILE
OPER. COMMITTEE
R. W. GEEHAN, USBM
THOR KIILSGAARD, USGS

WSMartin & FARutledge/ls
10-25-54

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

OCT 4 1954

224 New Customhouse
Denver 2, Colorado

September 30, 1954

Memorandum

To: Chairman, Operating Committee, DMEA

From: Executive Officer, DMEA Field Team, Region IV

Subject: Docket No. DMEA 3182 (Tungsten), Contract Idm-E654, Lloyd P. Mock, Big Six Mine, Boulder County, Colorado.

Reference is made to your letter of September 27, 1954, relative to completion date of work under the subject contract, and wherein you advise that if the work was not completed by August 4, 1954, an appropriate amendment should be considered to extend the completion period.

Amendment No. 2 has been executed to extend the period for completion of the project work and the Washington office copies were forwarded by our memorandum of September 15, 1954.

The operator has requested Government participation in additional exploration work under the contract which has been denied within the authority delegated to this office, and your copy of the DMEA Field Team denial will be forwarded on signature by the members concerned.

W H King

W. H. King

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

RECEIVED
OCT - 4 1954

224 New Customhouse
Denver 2, Colorado

SEP 30 1954

Memorandum

To: Chairman, Operating Committee, DMEA

From: Executive Officer, DMEA Field Team, Region IV

Subject: Docket DMEA 3182 (Tungsten), Contract Idm-E654, Lloyd P. Mock, Boulder County, Colorado

Enclosed for your records are three copies of DMEA Field Team, Region IV, denial of the operator's request for additional Government assistance to further explore the subject property. Also enclosed are three sets of data relevant to the matter.

W. H. King

W. H. King

Enclosures

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
OCT 4 1954

224 New Customhouse
Denver 2, Colorado

September 28, 1954

Mr. Lloyd P. Mock
Nederland, Colorado

Re: Docket DMEA 3182 (Tungsten)
Contract Idm-E654

Dear Mr. Mock:

Reference is made to your letter of September 9, 1954 wherein you request Government assistance in additional exploration work aggregating 270 feet of drifting at the price of $37.00 per foot.

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.

After a careful review of the results of the work performed to date under Contract Idm-E654 and other data presently available to this office, further participation by the Government in exploring for tungsten on your property does not appear to be warranted, therefore your application for additional exploration assistance is denied.

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

Very truly yours,

W. H. KING WHK
W. H. King

A. H. KOSCHMAN AHK
A. H. Koschmann

DMEA Field Team, Region IV

JWT: jp
cc Subject
Chron
Chairman, Op. Comm. (3)
AHKoschmann
WMTraver
JWTownsend

September 27, 1954

Memorandum

To: Mr. A. N. Koschmann E.M.H. for A.H.K.

From: D. R. MacLaren

Subject: DMEA Docket 3182 (tungsten), Contract idm-E654, Lloyd P. Mock, Boulder County, Colorado

Lloyd P. Mock, operator, has completed exploration authorized by contract idm-E654, and has requested supplementary funds amounting to $9,990 (Government's share 75% or $7,492.50) to do additional drifting amounting to 220 feet and crosscutting amounting to 50 feet.

I visited the property September 16, 1954, accompanied by R. L. Bolmer of the U. S. Bureau of Mines and the operator. We made a thorough examination of the work completed under stage II of the contract. On the 88-foot level a drift has been driven southwest from the shaft for 53 feet. It follows a shear zone up to a foot wide, that contains quartz stringers, 2 to 4 inches wide, in a clay gouge. At the shaft the shear zone, between walls of schist, dips 61° southeast. Southwest of the shaft, the quartz dies out while the clay-filled shear narrows and tends to disperse along the foliation of the schist. At the breast of the drift the shear zone is not more than a few inches wide and contains no quartz, while the dip flattens to 45° southeast. The operator's statement that "patches of highgrade have been encountered throughout this work and seem to be getting stronger" appears to be incorrect as no ferberite was found by the examiners throughout the 88-foot level.

On the 52-foot level a drift has been driven 25 feet northeast from the shaft. The drift follows a shear zone, up to 2 feet wide, that contains quartz stringers and two small streaks of horn quartz and ferberite about six inches long. The footwall is sharply defined, with

schist making up the wall rock. The hangingwall is more difficult to trace as the wall rock on that side is a coarsely shattered aplitic granite. Two small ferberite lined vugs, three to six inches long and two streaks of horn quartz, four to eight inches long are in the aplite, as much as four feet from the footwall shear. Although the shear zone is not frozen, and the hangingwall is well broken and open, no other ferberite was found on this level.

It is concluded that the coarsely shattered aplitic granite in the shear zone should be very receptive to ore deposition, and that the few and small occurrences of ferberite indicate that the depositing solutions carried little tungsten. The results of 100 feet of winzing, 67 feet under the contract, and 80 feet of drifting are discouraging and further exploration with Government aid is not warranted. Therefore, it is recommended that the request for additional funds be denied.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Region IV

Building 20, Room 137
Denver Federal Center
Denver 2, Colorado
September 20, 1954

Memorandum

To: Executive Officer, DMEA Field Team, Region IV

From: Chief, Mineral Resources Branch, Mining Division, Region IV

Subject: DMEA 3182, Contract Idm-E654 (Tungsten), Lloyd F. Mock (Mock shaft), Boulder County, Colo.

Transmitted herewith are the original and eight copies of a memorandum by R. L. Bolmer, covering request by the operator of the subject contract for funds and authority for additional exploration work.

I concur with Bolmer's recommendation that the request by denied.

W. M. Traver

enclosure

WMT/kp

ce/8
E654
Chron

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Region IV

Building 20, Room 137
Denver Federal Center
Denver 2, Colorado
September 17, 1954

Memorandum

To: Chief, Mineral Resources Branch, Mining Division, Region IV

From: R. L. Belmer

Subject: DMEA 3182, Contract Idm-2654 (Tungsten), Lloyd F. Mock (Mock shaft), Boulder County, Colo.--Request for Government assistance in additional exploration work

The operator has requested Government assistance in certain additional exploration work under the subject contract. Specifically, he requests an additional 270 feet of drifting at the presently authorized unit price of $37.00 per foot. The locations of and the reasons for the requested work are outlined in the operator's letter to the DMEA Field Team, Region IV, dated September 9, 1954. The property was examined September 16, 1954, with D. R. MacLaren of the Geological Survey and in the company of the operator.

On the date of examination, the exploration presently authorized under the subject contract--deepening the Mock shaft by 67 feet and drifting a total of 80 feet northeasterly and southwesterly on the vein--had been completed. The conditions encountered by most of this work have been discussed previously in the inspecting engineer's monthly reports.

Under the contract, the shaft was sunk 67 feet on the vein to a depth of 98.5 feet below the collar. The vein exposed by sinking,

while it remained a strong enough structure, contained only spotty and erratic ferberite mineralization, none of which would approach commercial concentrations. Near the bottom of the shaft, the structure itself began to flatten and generally became weaker.

At the 88-foot level, a drift was driven 53 feet southwesterly on the structure. Less tungsten mineralization was encountered in this drift, than had been in the shaft. Near the end of the drift, the structure narrowed and flattened considerably.

The most promising exposure on the northeast side of the shaft occurred at a depth of 30 feet and the operator was permitted to expend the remaining 27 feet of drift at this location. The structure exposed to the northeast was about 3 feet in width and also contained scattered and discontinuous seams of ferberite. The seams of mineral, individually, were very thin and were disseminated both within the structure itself and for short distances into its hanging wall. While the mineralization exposed along the northeast drift was stronger than had been encountered elsewhere, under no circumstances could it be considered of commercial grade.

The results accomplished by the work presently authorized and completed under the contract are not considered promising and certainly are not justification for all or any part of the additional exploration requested by the operator.

L. W. Everett, for
R. L. Bolmer
Mining Engineer

RLB/kp

cc / 8
M654
Chron

September 9, 1954

Mr. W. H. King, Executive Officer
DMEA Field Team Region IV
224 New Customshouse
Denver 2, Colorado

Dear Mr. King:

In view of the showing of tungsten that we have found, both on the surface in the entire area, and in the exploration done under contract Idm - E654, I feel that further exploration and development would be justified. I would like an extension to our present contract to undertake the following projects:

1. Drift through the hanging wall for a distance of 50 feet in an effort to locate any parallel veins. If such is found, would like to continue 50 feet each way on the vein. Due to the fact that the ore on which we started down seems to have ducked into the hanging wall, and that five foot test holes which we have made at various depths have never run out of vein material, believe we may cut this ore with this drift. This would be at the 88-foot level.

2. Considering the showing of ore in our 27 feet of drifting at the 52-foot level in a northerly direction, would like to continue this drift for another 70 feet, making a total of 97 feet in this direction.

3. In our 53 feet of drifting at the 88-foot level in a southerly direction, the vein has intermittently straightened and rolled. Patches of high-grade have been encountered throughout this work and they seem to be getting stronger. I would like to continue this drift for an additional 50 feet making 103 feet in all.

The three projects total 270 feet more of drifting and the price of $37 per foot, our present contract price for drifting, is satisfactory. Would appreciate an early decision on this in order to get the work done, if allowed, before the bad weather sets in. If more forms of "Owner's Consent to Lien" are necessary, please send me the blanks and I will have them signed.

Sincerely yours,

Lloyd P. Mock
Nederland, Colorado

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

224 New Customhouse
Denver 2, Colorado

September 28, 1954

Mr. Lloyd F. Mock
Nederland, Colorado

Re: Docket DMEA 3182 (Tungsten)
Contract Idm-E054

Dear Mr. Mock:

Reference is made to your letter of September 9, 1954 wherein you request Government assistance in additional exploration work aggregating 270 feet of drifting at the price of $37.00 per foot.

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.

After a careful review of the results of the work performed to date under Contract Idm-E054 and other data presently available to this office, further participation by the Government in exploring for tungsten on your property does not appear to be warranted, therefore your application for additional exploration assistance is denied.

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

Very truly yours,

W. H. KING WHK
W. H. King

A. H. KOSCHMAN AHK
A. H. Koschmann

DMEA Field Team, Region IV

JWT:jp
cc Subject
Chron
Chairman, Op. Comm. (3)
AHKoschmann
WMTraver
JWTownsend

September 27, 1954

Memorandum

To: Mr. A. H. Koschmann E.M.H. for AHK

From: B. R. MacLaren

Subject: DMEA Docket 3182 (tungsten); Contract idm-5654, Lloyd P. Mock, Boulder County, Colorado

Lloyd P. Mock, operator, has completed exploration authorized by contract idm-5654, and has requested supplementary funds amounting to $9,990 (Government's share 75% or $7,492.50) to do additional drifting amounting to 220 feet and crosscutting amounting to 50 feet.

I visited the property September 16, 1954, accompanied by R. L. Bolmer of the U. S. Bureau of Mines and the operator. We made a thorough examination of the work completed under stage II of the contract. On the 88-foot level a drift has been driven southwest from the shaft for 53 feet. It follows a shear zone up to a foot wide, that contains quartz stringers, 2 to 4 inches wide, in a clay gouge. At the shaft the shear zone, between walls of schist, dips 61° southeast. Southwest of the shaft, the quartz dies out while the clay-filled shear narrows and tends to disperse along the foliation of the schist. At the breast of the drift the shear zone is not more than a few inches wide and contains no quartz, while the dip flattens to 45° southeast. The operator's statement that "patches of highgrade have been encountered throughout this work and seem to be getting stronger" appears to be incorrect as no ferberite was found by the examiners throughout the 88-foot level.

On the 32-foot level a drift has been driven 25 feet northeast from the shaft. The drift follows a shear zone, up to 2 feet wide, that contains quartz stringers and two small streaks of horn quartz and ferberite about six inches long. The footwall is sharply defined, with

schist making up the wall rock. The hangingwall is more difficult to trace as the wall rock on that side is a coarsely shattered aplitic granite. Two small ferberite lined vugs, three to six inches long and two streaks of horn quartz, four to eight inches long are in the aplite, as much as four feet from the footwall shear. Although the shear zone is not frozen, and the hangingwall is well broken and open, no other ferberite was found on this level.

It is concluded that the coarsely shattered aplitic granite in the shear zone should be very receptive to ore deposition, and that the few and small occurrences of ferberite indicate that the depositing solutions carried little tungsten. The results of 100 feet of winzing, 67 feet under the contract, and 80 feet of drifting are discouraging and further exploration with Government aid is not warranted. Therefore, it is recommended that the request for additional funds be denied.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Region IV

Building 20, Room 137
Denver Federal Center
Denver 2, Colorado
September 20, 1954

Memorandum

To: Executive Officer, DMEA Field Team, Region IV

From: Chief, Mineral Resources Branch, Mining Division, Region IV

Subject: DMEA 3182, Contract Idm-8654 (Tungsten), Lloyd P. Meek (Meek shaft), Boulder County, Colo.

Transmitted herewith are the original and eight copies of a memorandum by R. L. Bolmer, covering request by the operator of the subject contract for funds and authority for additional exploration work.

I concur with Bolmer's recommendation that the request by denied.

W. M. Traver

enclosure

WMT/kp

cc/8
8654
Chron

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Region IV

Building 20, Room 137
Denver Federal Center
Denver 2, Colorado
September 17, 1954

Memorandum

To: Chief, Mineral Resources Branch, Mining Division, Region IV

From: R. L. Bolner

Subject: DMEA 3182, Contract Idm-854 (Tungsten), Lloyd F. Mock (Mock shaft), Boulder County, Colo.--Request for Government assistance in additional exploration work

The operator has requested Government assistance in certain additional exploration work under the subject contract. Specifically, he requests an additional 270 feet of drifting at the presently authorized unit price of $37.00 per foot. The locations of and the reasons for the requested work are outlined in the operator's letter to the DMEA Field Team, Region IV, dated September 9, 1954. The property was examined September 16, 1954, with D. R. Maclaren of the Geological Survey and in the company of the operator.

On the date of examination, the exploration presently authorized under the subject contract--deepening the Mock shaft by 67 feet and drifting a total of 80 feet northeasterly and southwesterly on the vein--had been completed. The conditions encountered by most of this work have been discussed previously in the inspecting engineer's monthly reports.

Under the contract, the shaft was sunk 67 feet on the vein to a depth of 98.5 feet below the collar. The vein exposed by sinking,

while it remained a strong enough structure, contained only spotty and erratic ferberite mineralization, some of which would approach commercial concentrations. Near the bottom of the shaft, the structure itself began to flatten and generally became weaker.

At the 88-foot level, a drift was driven 53 feet southwesterly on the structure. Less tungsten mineralization was encountered in this drift, than had been in the shaft. Near the end of the drift, the structure narrowed and flattened considerably.

The most promising exposure on the northeast side of the shaft occurred at a depth of 50 feet and the operator was permitted to expend the remaining 27 feet of drift at this location. The structure exposed to the northeast was about 3 feet in width and also contained scattered and discontinuous seams of ferberite. The seams of mineral, individually, were very thin and were disseminated both within the structure itself and for short distances into its hanging wall. While the mineralization exposed along the northeast drift was stronger than had been encountered elsewhere, under no circumstances could it be considered of commercial grade.

The results accomplished by the work presently authorized and completed under the contract are not considered promising and certainly are not justification for all or any part of the additional exploration requested by the operator.

I. D. Everett, for
R. L. Belmer
Mining Engineer

RLB/kp

cc 8
E654
Chron

September 9, 1954

Mr. W. H. King, Executive Officer
DMEA Field Team Region IV
224 New Customshouse
Denver 2, Colorado

Dear Mr. King:

In view of the showing of tungsten that we have found, both on the surface in the entire area, and in the exploration done under contract Idm - E654, I feel that further exploration and development would be justified. I would like an extension to our present contract to undertake the following projects:

1. Drift through the hanging wall for a distance of 50 feet in an effort to locate any parallel veins. If such is found, would like to continue 50 feet each way on the vein. Due to the fact that the ore on which we started down seems to have ducked into the hanging wall, and that five foot test holes which we have made at various depths have never run out of vein material, believe we may cut this ore with this drift. This would be at the 88-foot level.

2. Considering the showing of ore in our 27 feet of drifting at the 52-foot level in a northerly direction, would like to continue this drift for another 70 feet, making a total of 97 feet in this direction.

3. In our 53 feet of drifting at the 88-foot level in a southerly direction, the vein has intermittently straightened and rolled. Patches of high-grade have been encountered throughout this work and they seem to be getting stronger. I would like to continue this drift for an additional 50 feet making 103 feet in all.

The three projects total 270 feet more of drifting and the price of $37 per foot, our present contract price for drifting, is satisfactory. Would appreciate an early decision on this in order to get the work done, if allowed, before the bad weather sets in. If more forms of "Owner's Consent to Lien" are necessary, please send me the blanks and I will have them signed.

Sincerely yours,

Lloyd P. Mock
Nederland, Colorado

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

224 New Customhouse
Denver 2, Colorado

SEP 15 1954

Memorandum

To: Chairman, Operating Committee, DMEA

From: Executive Officer, DMEA Field Team, Region IV

Subject: Docket DMEA 3182 (Tungsten), Contract Idm-E654, Lloyd P. Mock, Boulder County, Colorado

Enclosed are the original and two copies of Amendment No. 2 to Contract Idm-E654 which has been executed to authorize an extension of the period for completion of the project work from 7 months to 9 months. Also enclosed are three copies of the operator's letter requesting the extension of the completion period.

Copies of the amendment have been given to the operator, the Fiscal Officer, Region IV, and a copy has been retained for our files.

W. H. King

W. H. King

Enclosures

RECEIVED

OCT 21 1954

GENERAL COUNSEL
DEFENSE MINERALS
ADMINISTRATION

400

DOCKET
SURNAME

Rutledge
Selfridge
GEJenson

SEP 27 1954

Mr. W. H. King, Executive Officer
DMEA Field Team, Region IV
224 New Customhouse Building
Denver 2, Colorado

Re: Docket No. DMEA 3182 - Tungsten
Lloyd P. Mock
Big Six mine
Boulder County, Colorado
Contract No. Idm-E654

Dear Mr. King:

Completion date of the subject contract was August 4, 1954. If additional time is required to complete the authorized program, an appropriate amendment should be considered.

Sincerely yours,

George C. Selfridge (by EST)
Chairman, Operating Committee

APPROVED:

J. H. Hedges

Member, Bureau of Mines

Thor H. Kiilsgaard

Member, Geological Survey

FARutledge:foc 9-27-54
cc to: Docket
Code 400
Adm. Reading File
Operating Comm.
FT. REG. IV
R. W. Geehan, USBM
Thor H. Kiilsgaard, USGS

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

224 New Customhouse
Denver 2, Colorado

SEP 15 1954

Memorandum

To: Chairman, Operating Committee, DMEA

From: Executive Officer, DMEA Field Team, Region IV

Subject: Docket DMEA 3182 (Tungsten), Contract Idm-E654, Lloyd P. Mock, Boulder County, Colorado

Enclosed are the original and two copies of Amendment No. 2 to Contract Idm-E654 which has been executed to authorize an extension of the period for completion of the project work from 7 months to 9 months. Also enclosed are three copies of the operator's letter requesting the extension of the completion period.

Copies of the amendment have been given to the operator, the Fiscal Officer, Region IV, and a copy has been retained for our files.

W H King
W. H. King

Enclosures

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

224 New Customhouse
Denver 2, Colorado

September 14, 1954

Memorandum

To: Chairman, Operating Committee, DMEA

From: Executive Officer, DMEA Field Team, Region IV

Subject: Docket DMEA 3182 (Tungsten), Contract Idm-E654, Lloyd P. Mock, Boulder County, Colorado

Enclosed are three copies of work authorization by the DMEA Field Team, Region IV, dated September 10, 1954, and three copies of supporting data, for the performance of certain work under Contract Idm-E654.

John F. Shaw
For W. H. King

Enclosures

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

224 New Customhouse
Denver 2, Colorado

September 10, 1954

Mr. Lloyd F. Monk
1440 St. Paul Street
Denver 6, Colorado

Re: Docket DMEA 3182 (Tungsten)
Contract 28m-2654

Dear Mr. Monk:

Reference is made to our letter of August 19, 1954 wherein you were authorized to perform drifting south on the vein from a point approximately 85 feet below the collar of the shaft, to the extent conditions encountered indicate, but not to exceed a total of 80 feet.

Inasmuch as conditions encountered in the drifting indicate that the performance of the entire 80 feet in that direction is not warranted we hereby confirm our verbal approval of September 3, 1954 for you to perform the unexpended balance of the 80 feet in drifting north on the vein in, or at the bottom of, the mineralization, which is about 50 to 60 feet below the collar of the shaft.

Nothing in this work authorization shall be construed to increase the estimated total cost of the project, the amount of the Government's contribution, or any item of allowable cost which is expressly designated "allowable maximum".

Very truly yours,

W. H. King

W. H. King

JWT:jp
cc Subject
Amendment File
Chron
Chairman, Oper. Comm. (5)
TAChristensen
AHeenehmann
MMFrever
JWTownsend

E. N. Hawkmann
for A. H. Heenehmann

DMEA Field Team, Region IV

September 3, 1954

Mr. W. H. King, Executive Officer
DMEA Field Team Region IV
224 New Customshouse
Denver 2, Colorado

Re: Docket 3182
Idm - E654

Dear Mr. King:

Due to the poor showing of ore at the 88-foot level in drift, I request permission to expend the remaining 27 feet at from 50 to 60 feet in the opposite or northerly direction, this being on the best showing of ore.

Sincerely yours,

Lloyd P. Mock

Lloyd P. Mock
Nederland, Colorado

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

224 New Customhouse
Denver 2, Colorado

August 23, 1954

Memorandum

To: Chairman, Operating Committee, DMEA

From: Executive Officer, DMEA Field Team, Region IV

Subject: Docket DMEA 3182 (Tungsten), Contract Idm-E654, Lloyd P. Mock, Boulder County, Colorado

Enclosed for your records are three copies of work authorization of the DMEA Field Team, Region IV, dated August 19, 1954, and three sets of data relative to authorization of Stage II work under the contract.

W. H. King

W. H. King

Enclosures

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

224 New Customhouse
Denver 2, Colorado

August 19, 1954

Mr. Lloyd P. Mock
1440 St. Paul Street
Denver 6, Colorado

Re: Docket DMEA 3182 (Tungsten)
Contract Idm-E654

Dear Mr. Mock:

Consistent with the stipulations contained in Exhibit "A" attached to Exploration Project Contract Form MF-200(A), Contract Idm-E654, and confirming DMEA Field Team, Region IV, verbal authorization of August 9, 1954, you are authorized to commence exploration work under Stage II of said Exhibit "A" of the contract as follows:

Expend the 80 feet of drifting described under said Stage II of the contract by drifting south on the vein from a point approximately 85 feet below the cellar of the shaft to the extent conditions encountered in the drifting indicate as being desirable.

The balance of the authorized drifting not expended as above is to be performed on the vein to the north of the shaft.

The extent of drifting in either direction within the total allowable footage is subject to mutual agreement between yourself and the Government.

Nothing in this work authority shall be construed to increase the estimated total cost of the project, the amount of the Government's contribution, or any item of allowable cost which is expressly designated "allowable maximum".

Very truly yours,

W H King
W. H. King

E. N. Hawkinson
for A. N. Koschmann

DMEA Field Team, Region IV

JWT:jp
cc Contract
Amendment
Chron
TAChristensen
WMTraver
AHKoschmann
Chairman, Oper. Comm. (3)
JWTownsend

COPY

Re: Docket 3182
Contract Idn E654

August 9, 1954

Mr. W.H. King, Executive Officer
DMEA Field Team, Region IV
224 New Customhouse
Denver 2, Colorado

Dear Mr. King:

Have completed stage I of Contract (67 feet of sinking) and as per terms of contract, request written permission of field team to begin stage II (80 feet of drifting).

Thank you for your splendid cooperation.

Sincerely yours,

/s/ Lloyd P. Mock

Copy to: W. M. Traver

Nederland, Colorado.

August 18, 1954

Memorandum

To: A. H. Koschmann E.H.H. for A.H.K.

From: E. H. Harshman

Subject: DMEA Docket 3182 (tungsten), Contract Idm-6654, Lloyd P. Hoch, Big Six Mine, Boulder County, Colorado

The Big Six Mine was examined on August 3, 1954, in company with D. R. MacLaren, U. S. Geological Survey. At that time work under stage I of contract Idm-6654 was about finished, the bottom of the shaft being 95 feet below the collar.

The shaft followed a steeply dipping strong shear zone 3 to 6 feet wide, with schist on the footwall and granitic rocks on the hanging-wall. Ferberite and horn quartz occur in silicified wall rock as lenticular masses and discontinuous stringers dispersed throughout the shear zone. The total thickness of horn quartz and ferberite at any one horizon in the vein rarely exceeds 8 to 10 inches, and the vein material as taken from the shaft is not ore grade. Hand sorted material may contain as much as 3% WO_3. At about 85 feet below the collar of the shaft the "vein" flattens from a dip of 65° - 70° southeast to a dip of about 45° southeast. There is little or no ferberite in the vein material below the point of change in dip.

Work under stage II of the contract consists of 80 feet of drifting from the bottom of the shaft (100-foot level) or from the bottom of the ferberite mineralization. Field team approval is required before this work is started.

Although it now appears unlikely that significant amounts of ferberite ore will be discovered by exploration under the contract, it is recommended that drifting at a point 85 to 90 feet below the shaft

collar be authorized by the Field Team as stipulated under stage II.

South of the shaft the shear zone may cut rocks slightly more favorable to ore deposition than those to the north of the shaft. It thus appears advisable to expend most of the 80 feet allowed under the contract in drifting to the south.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Region IV

Building 20, Room 137
Denver Federal Center
Denver 14, Colorado
August 15, 1954

Memorandum

To: Executive Officer, DMEA Field Team, Region IV

From: Chief, Mineral Resources Branch, Mining Division, Region IV

Subject: DMEA 3182, Contract Idm-E654 (Tungsten) Lloyd F. Mock (Mock shaft), Boulder County, Colo.--Recommendation for authorization to start Stage 2

It is recommended, after inspection of the shaft sinking work completed in the Mock shaft, that the Region IV Field Team authorize the contractor, in writing, to start drifting ~~westward~~ to the south from the Mock shaft at a depth of between 85 and 90 feet below the collar, in accordance with Stage 2 of the contract. Drifting north from the shaft is also recommended, after the drift is completed far enough south so operations can be carried on economically, working the 2 headings concurrently. It should be stressed that advance of the south drift is of most importance.

W. M. Traver

W. M. Traver

WMT/ici

cc: 7
E654
Chron.

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

224 New Customhouse
Denver 2, Colorado

February 2, 1954

Memorandum

To: C. O. Mittendorf, Administrator, DMEA

From: Executive Officer, DMEA Field Team, Region IV

Subject: Docket DMEA 3182 (Tungsten), Contract Idm-E654, Lloyd P. Mock, Boulder County, Colorado

Enclosed are the original and two copies of Amendment No. 1 to Contract Idm-E654 which has been executed to extend the starting date of work under the contract from 60 to 120 days. Also enclosed are three copies of the operator's letter requesting the extension of starting date.

Copies of this amendment have been given to the operator, the Fiscal Officer, Region IV, and a copy has been retained for our files.

W. H. King

Enclosures

RECEIVED
MAR 18 1954
GENERAL COUNSEL
DEFENSE MINERALS
ADMINISTRATION

January 14, 1954

Mr. W. H. King
Executive Officer
DMEA Region IV
324 New Customhouse
Denver 2, Colorado

RE: DMEA 3182 (Tungsten) Mock shaft (Big Six Mine) Lloyd P. Mock, Boulder County, Colo.

Dear Mr. King:

Thanks for the signed copy of the contract which I received January 12. I would like to request that the period of 90 days following the effective date (in which I must start work) be extended to 120 days. I make this request due to the fact that there is a great deal of surface work to be done to start, and certainly the weather conditions in Nederland before April 1 would make this surface work very difficult.

Thanks for your consideration.

Sincerely yours,

L P Mock

L. P. Mock

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JAN 14 1954

224 New Customhouse
Denver 2, Colorado

January 6, 1954

REGISTERED

Memorandum

To: C.O. Mittendorf, Administrator, DMEA

From: Executive Officer, DMEA Field Team, Region IV

Subject: Docket DMEA 3182 (Tungsten), Contract Idm-E654, Lloyd P. Mock, Boulder County, Colorado

Enclosed are the original and two copies of Contract Idm-E654. Copies of this contract have been given to the operator, the Fiscal Officer, Region IV, and a copy has been retained for our files.

W. H. King

W. H. King

Enclosures

RECEIVED
FEB 9 - 1954
GENERAL COUNSEL
DEFENSE MINERALS
ADMINISTRATION

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

224 New Customhouse
Denver 2, Colorado

January 7, 1954.

Memorandum

To: Administrator, Defense Minerals Exploration Administration
Attention: 200

From: Field Team, Region IV

Subject: Report of Examination - DMEA Docket 3182 (Tungsten), Lloyd P. Mock, Mock Shaft, Big Six Mine, Boulder County, Colorado.

Enclosed are four copies of the report of examination on the subject docket.

The contract has been signed and is in effect.

for John F. Shaw
W. H. King

A. H. Koschmann
A. H. Koschmann

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

November 13, 1953.

Memorandum

To: Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Report of Examination - DMEA Docket 3182 (Tungsten), Lloyd P. Mock, Mock Shaft, Big Six Mine, Boulder County, Colorado.

Enclosed are eight copies of the engineering report of examination on the subject property.

The applicant proposed to sink the Mock shaft 65 feet, drift 80 feet and crosscut 40 feet at an estimated cost of $10,030.40.

The examiners recommend this work except for the crosscutting.

We concur with the examiners and recommend the sinking and drifting to be done in two stages at an estimated cost of $8,092.00, Government participation $6,676.50.

W. H. King

W. H. King

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Region IV

Building 20, Room 137
Denver Federal Center
Denver 14, Colorado
November 3, 1953

Memorandum

To: Executive Officer, Field Team, Region IV

From: Chief, Mineral Resources Branch, Mining Division, Region IV

Subject: DMEA 3182 (Tungsten), Mock shaft, Big Six mine, Lloyd F. Mock, Boulder County, Colorado

Enclosed are the original and eight copies of the "Summary, Conclusions, and Recommendations," by E. N. Harshman, Geological Survey, and Carl Belser, Bureau of Mines, and of Belser's engineering report on the above docket.

The applicant requested $10,050.40 to sink the Mock shaft an estimated 65 feet to the 100-foot level, drift 40 feet both directions on the vein on the 100-foot level, and drive crosscuts 20 feet into the hanging wall and footwall at the end of each drift.

Belser concludes that because of the improvement shown by the vein with additional depth in the shaft, a limited amount of exploration is merited. He recommends surface preparatory work comprising shaft collar, hoist house, and headframe construction at a cost of $850.00; sinking the Mock shaft an additional 67 feet to the 100-foot level at $76.00 a foot, $5,092.00; and drifting 40 feet both ways from the shaft on the vein on the 100-foot level, a total of 80 feet of drifting at $37.00 a foot, $2,960.00; or a total of $8,902.00. It is suggested a contract be drawn up on the short form MP-200(A) and set up in two stages. Stage 1 to include surface preparation and sinking the Mock shaft to the 100-foot level, or to the limit of worthwhile ferberite mineralization, and stage 2 to include drifting on the 100-foot level, or a level to be established at the lower limit of mineralization in the shaft. The latter stage requires prior approval of Region IV Defense Minerals Exploration Administration representatives. All crosscutting requested by the applicant is eliminated.

I concur with Belser's conclusions and recommendations.

The incomplete application furnished us October 2, 1953, for use in preparing the engineering report is also enclosed.

W. M. Traver

W. M. Traver

enclosure

WMT/le

cc 8 DMEA 3182
DMEA Chron.

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.
Denver Federal Center
Denver 2, Colorado

November 6, 1953

To: DMEA Field Team, Region IV

From: A. H. Koschmann

Subject: DMEA Docket 3192, (Tungsten), Big 6 Property, Boulder County, Colorado

Attached are 8 copies of the geologic report by E. N. Harshman on the subject property.

Limited exploration by the applicant has exposed a 4-foot silicified fault zone containing horn quartz and ferberite in a 6-inch streak on the hangingwall. Samples of the ore assayed 3.8 and 4.3% WO_3. The vein has a schist footwall and a granite or pegmatite hangingwall.

About 3 tons of hand-sorted ore have been shipped. This ore averaged about 5% WO_3.

The applicant proposes to sink the shaft an additional 67 feet to a total depth of 100 feet, to drift 80 feet on the vein, and to crosscut a total distance of 80 feet into the vein walls.

Mr. Harshman recommends a somewhat reduced program in two stages, prosecution of the second stage to depend on the outcome of the first stage. The reduced program consists of the shaft sinking requested by the applicant and 80 feet of drifting.

I concur in this recommendation.

E. N. Harshman
for A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Enclosures (8)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMEA 3182, Mock Shaft, Big Six Mine

Lloyd P. Mock

Boulder County, Colo.

Tungsten

E. N. Harshman, Geologist
Geological Survey

Carl Balser, Mining Engineer
Bureau of Mines

November 5, 1953

DMEA 3182

MOCK SHAFT, BIG SIX MINE
LLOYD P. MOCK
BOULDER COUNTY, COLO.

Summary, Conclusions, and Recommendations

By E. N. Harshman
Geologist
Geological Survey

Carl Baker
Mining Engineer
Bureau of Mines

DMEA 3182
MOCK SHAFT, BIG SIX MINE
LLOYD P. MOCK
BOULDER COUNTY, COLO.

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

By E. N. Harshman and Carl Belser

Lloyd P. Mock, 1440 St. Paul Street, Denver, Colo., applied for a Defense Minerals Exploration Administration loan of $10,050.40 to explore for tungsten by an estimated 65 feet of shaft sinking, 80 feet of drifting, and 80 feet of crosscutting.

A field examination was made on October 6 and 20, 1953, by an examining team from the Geological Survey and the Bureau of Mines accompanied by Lloyd P. Mock.

The exposed country rocks are pre-Cambrian schists, gneisses, and granites cut by aplite and pegmatite dikes. The vein in the Mock shaft has a strike of N. 20° E. and a dip of 60-70° to the southeast. The Old Mock shaft, now flooded and inaccessible, was sunk on this vein to a depth of 50 feet. The vein can be traced on surface for a distance of 90 feet to the south and it may extend northward as much as 250 feet. It is 30 inches wide in the bottom of the Mock shaft and has a quartz streak containing ferberite stringers near the hanging wall. The gouge consists mainly of quartz, clay, and altered country rock. The footwall is schist while the hanging wall contains considerable pegmatite.

Lloyd P. Mock cleaned out the Old Mock 35-foot shaft in 1952 and sank it to a total depth of 50 feet. He then cleared the surface wash from the vein with a bulldozer and started a second shaft 57 feet

south of the 50-foot shaft. This latter shaft is now 33 feet deep. The vein at the bottom of the shaft is 30 inches wide and has improved with depth. The ore occurs in an 8- to 9-inch quartz streak against the hanging wall. Production from this work has been 3.3 tons ore containing 5.36 percent WO_3. This ore was evidently carefully sorted.

The applicant requests Government assistance to sink the shaft to the 100-foot level, drift 40 feet each way on the vein from the bottom of the shaft, and to do 80 feet of crosscutting at the ends of the drifts.

This program was modified by eliminating the crosscutting and dividing the work into two stages. The project is estimated, if carried to completion, to cost $8,902.00--Government participation 75 percent, or $6,676.50. An exploration loan for this amount is recommended for approval. A short form unit-cost contract is suggested.

BIG 6 MINE

BOULDER COUNTY, COLORADO

DMEA DOCKET 3182

Geologic Report

By E. N. Harshman
U. S. Geoiggical Survey

BIG 6 MINE
BOULDER COUNTY, COLORADO

INTRODUCTION

Lloyd P. Mack, 1440 St. Paul Street, Denver 6, Colorado, has applied to the Defense Minerals Exploration Administration, DMEA Docket 3182, for assistance to explore for tungsten ore on the Big 6 mining property, Grand Island Mining District, Boulder County, Colorado. The property, described as the NW¼ of the NW¼ of sec. 13, T. 1 S., R. 73 W., containing 40 acres, is held under lease from Richard H. Tatlow III.

The applicant proposes to extend the present 33-foot shaft to a total depth of 100 feet, to drift 80 feet on the vein, and to crosscut a total distance of 80 feet to explore for parallel veins.

The property was examined on October 20, 1953, in company with R. L. Bolmer, U. S. Bureau of Mines.

Limited exploration at greater depths appears justified and is recommended in two stages, prosecution of stage 2 exploration to depend entirely on the results of exploration in stage 1.

GEOLOGY

The tungsten ore deposits in the Big 6 mine area occur along fissure veins in pre-Cambrian gneiss, schist, and accompanying pegmatite and aplite dikes. Most of the veins have a northeast strike and a steep easterly dip. In general, the ore shoots are small and the grade is moderate to low.

The applicant has prospected an area south of the Big 6 mine by two shallow shafts and several bulldozer cuts (figure 2 of engineering report). The northern shaft, now flooded, is reported to have exposed

a 2 to 4-foot wide fault zone striking about N. 20° E. and dipping steeply east. Some ferberite, in isolated masses, is reported in the silicified footwall part of the fault zone. An examination of the dump indicates that the vein walls are schist and aplite.

The southern or Mock shaft has been sunk for 33 feet on a fault zone 4 to 4½ feet wide, striking N. 22° E. and dipping 60° to 70° E. As exposed in the uncribbed 4-foot bottom section of the shaft, the fault zone is 4½ feet wide with the hangingwall thirty inches composed of silicified vein material. Ferberite occurs in a silicious band 8 to 9 inches wide located on the hangingwall of the vein. Considerable horn quartz is associated with the ferberite. The footwall 2 feet of the fault zone is composed of somewhat silicified and altered country rock.

The footwall country rock is biotite schist and the hangingwall rock is either pegmatite or granite.

With increasing depth there has been some improvement in the strength of the vein and in the ferberite content of the vein material. One sample of the ferberite bearing part of the vein, cut across 7 inches in the bottom of the shaft, assayed 3.8% WO_3. A second sample cut across 8 inches assayed 4.3% WO_3.

Shipments of hand-sorted ore are reported by the applicant as follows:

1. 2872 pounds - 6.20% WO_3
2. 3192 pounds - 4.50% WO_3.

CONCLUSIONS AND RECOMMENDATIONS

Although the ore potential of the vein exposed in the Mock

shaft is not great, exploration at greater depths may develop modest reserves of tungsten ore. In contrast to the Big 6 mine which was in schist, one wall of the vein in the Mock shaft is pegmatite or granite. The presence of the more competent wall rock favors deposition of minable ore bodies.

Exploration is recommended as follows:

Stage 1 - Install the necessary surface facilities (described in the engineering report) and sink the Mock shaft to a depth of 100 feet.

Stage 2 - Drift 80 feet on the vein from the bottom of the shaft, the direction of the drift to depend on geologic data obtained in sinking the shaft.

If exploration in stage 1 indicates that significant o e is no present on the vein, the contr ct should be terminated before the shaft reaches the proposed depth of 100 feet. Stage 2 exploration should be prosecuted if stage 1 exploration indicates the presence of significant ore but only with prior approval of rep esentatives of the Defense Minerals Exploration Administration.

The U. S. Bureau of Mines estimates the cost of the two stage exploration program to be $8,902 (Government participation $6,676.50).

It is recommended that the application for exploration assistance (DMEA Docket 3182) be approved in the amount of $8,902 for exploration as outlined above.

UNITED STATES
DEPARTMENT OF THE INTERIOR
DOUGLAS McKAY, SECRETARY

DEFENSE MINERALS EXPLORATION ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMEA 3182, Meek Shaft, Big Six Mine

Lloyd P. Meek

Boulder County, Colo.

Tungsten

Carl Balser, Mining Engineer
Bureau of Mines

October 20, 1953

DMEA 3182
MOCK SHAFT, BIG SIX MINE
LLOYD P. MOCK
BOULDER COUNTY, COLO.

Engineering Report

By Carl Balser
Mining Engineer
Bureau of Mines

DMEA 3182
MOCK SHAFT, BIG SIX MINE
LLOYD P. MOCK
BOULDER COUNTY, COLO.

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DMEA 3182
MOCK SHAFT, BIG SIX MINE
LLOYD P. MOCK
BOULDER COUNTY, COLO.

ENGINEERING REPORT

By

Carl Balser

INTRODUCTION

Lloyd P. Mock, 1440 St. Paul Street, Denver 6, Colo., on September 28, 1953, submitted an application to the Defense Minerals Exploration Administration for aid in an exploration project on a north-south vein near the Big Six mine located northwest of Nederland, Boulder County, Colorado. The application, DMEA 3182, requested aid in sinking 67 feet of shaft, drifting 80 feet, and driving 80 feet of crosscuts at an estimated cost of $10,050.40 of which the Government's participation (75 percent for tungsten) would be $7,537.80. This proposed project is designed to explore at greater depth a tungsten-bearing deposit which has been opened on surface and in the shaft.

A field examination of the Mock shaft was made by the Bureau of Mines on October 6, 1953, and by the Geological Survey on October 20, 1953.

ACKNOWLEDGMENTS

The applicant, Lloyd P. Mock, accompanied the examining team during the examination.

E. N. Harshman, geologist, was assigned to make the examination as the Geological Survey member of the examining team.

LOCATION, TOPOGRAPHY, AND PHYSICAL FEATURES

The Big Six mine and Mock shaft are located in the Grand Island Mining district in the NW1/4NW1/4 sec. 13, T. 1 S., R. 73 W., sixth principal meridian, Boulder County, Colo. (fig. 1).

The Mock shaft, 33 feet deep, is located about 400 feet south of the Big Six mine workings and they apparently are not on the same vein. The altitude at the collar of the Mock shaft is about 8,535 feet.

An access road, 0.6 mile long, connects the property with State Highway 160 about 1/2 mile north of the town of Nederland, from whence paved roads lead south 4 miles to Rollinsville, the nearest railhead, and east 18 miles to Boulder, the nearest supply center. Growths of pine and spruce timber occur on the property and native timber and lumber can be purchased at Nederland. Water for mine purposes can be obtained from the Mock and Big Six shafts. The Big Six shaft is reported to make 30 gallons of water a minute. Water for domestic purposes is hauled from Nederland.

The nearest custom mill is located at Nederland. Miners can be employed and housed in Nederland. Service lines of the Public Service Company of Colorado pass over the property and formerly were connected with the Big Six mine.

Annual rainfall is about 18 inches. Although the winters are somewhat severe, State Highway No. 160 is kept open and interruptions to year-around operation would be few.

HISTORY AND PRODUCTION

Ferberite was first produced in Boulder County in 1900. The Conger mine, 2,600 feet northeast of the Big Six mine, was

one of the first mines operated and also has the largest recorded production. The Big Six ore deposit was discovered in the early 1900's and the shaft was sunk to a depth of 170 feet (fig. 2).

Lloyd P. Mock first began prospecting on the 40-acre tract in 1949 under a verbal lease. In 1952 he commenced work on the Old Mock shaft, 350 feet south of the Big Six mine. The shaft was cleaned out and sunk from 35 feet to its present depth of 50 feet. About 50 feet farther south the Mock shaft was sunk on the same vein to a depth of 33 feet. Thirteen bulldozer cuts have been made by the applicant during the past 2 years.

Complete production records from the Big Six mine are not available. Shipments made during World War II amounted to 75.48 tons containing 1.19 percent WO_3 (89.91 units).

During the past 2 years 3.3 tons of ore containing 5.36 percent WO_3 (16.1 units) have been produced from the two shafts on the vein worked by the applicant.

OWNERSHIP AND EXTENT

The property consists of 40 acres, more or less, of patented land located in the NW1/4NW1/4 sec. 13, T. 1 S., R. 73 W., of the sixth principal meridian. The land is owned by Richard N. Tatlow, III, New York City, New York, and was leased by the owner to Lloyd P. Mock on August 25, 1949, for a 3-year period. The lease carried a 3-year extension option making the lease active until August 25, 1955. The applicant states that the property is free of all liens or encumbrances. An owner's consent to lien was signed by R. N. Tatlow, III, on September 18, 1953.

DESCRIPTION OF DEPOSITS

The ore occurs as ferberite in northeasterly striking veins which dip to the southeast. The gangue material is mostly quartz, clay, and altered country rock. The country rock is typical Idaho Springs formation. The wall rock of the veins which have been opened are predominantly schist but in places are composed of gneiss, pegmatite, or aplite. Ore deposits are lenticular and generally occur near vein intersections or near aplite or pegmatite dikes.

In the Mock shaft (fig. 2) the vein strikes N. 20° E. and has a dip of 67° to the southeast. The vein, at the bottom of the shaft, is 30 inches wide with the ferberite confined to an 8-inch quartz streak on the hanging wall. The footwall is schist and the hanging wall appears to be pegmatite. The shaft is cribbed and part of the vein is hidden from view, but indications are that both the vein and the ore streak improve with depth.

MINEABLE ORE RESERVES

There are no known mineable ore reserves on the property. Two samples of the 8-inch ore streak in the bottom of the Mock shaft assayed 3.80 and 4.30 percent WO_3 respectively. From the results of the present development it is inferred that the ore will continue to improve with depth.

PRESENT STATUS

Exploration and Development

All workings, with the exception of two outlying caved shafts and the surface trenching, are shown on figure 2. The Big Six ore deposit is developed by a 170-foot shaft and 350 feet of drifts and crosscuts. In the area with which this application is concerned the Mock shaft, 33 feet deep, and 56 feet farther up the hill on the same vein, the Old Mock 50-foot shaft, are located.

Mining and Milling Equipment and Other Facilities

A fair access road connects the property with State Highway No. 160. A three-room frame house and a storage shed are included in the leased area. Mining equipment consists of the following:

1	Vulcan Model O gasoline-driven hoist
1	Montgomery Ward small gasoline-driven hoist
1	Gardner-Denver S-45 jackhammer-type drill
1	Gardner-Denver drifter-type drill
1	Thor sponge-type air-driven pump
1	600-pound mine bucket
50	feet 12-pound track
1	12-cubic-foot mine car
1	Column and arm for drifter-type drill
	Miscellaneous small tools

There is no milling equipment on the property. The custom mill of Metzer Mines Inc. is located at Nederland.

PROJECT PROPOSALS, WITH COSTS

The applicant proposes to sink the shaft (67 feet) to the 100-foot level, to drift 40 feet on the vein each direction from the shaft on the 100-foot level, and to drive 80 feet of crosscuts into the hanging wall and footwall from the end of the drifts, at a total

cost of $10,050.40. Government participation for tungsten is 75 percent, or $7,537.80.

The project was modified by eliminating the crosscutting.

Estimated Cost

Shaft (67 feet - 3 months or 13 weeks time required)

Independent Contracts			
None			
Labor and Supervision			
Labor			
132 shifts at $14.00		$1,848.00	
Supervision			
(Includes hoistman-topman)			
3 months at $425.00		1,275.00	
Total labor and supervision			$3,123.00
Operating Materials and Supplies			
Timber			
7 ladders, 36 stulls, 6 wall-plates, skids, 4 platforms, etc.		385.00	
Explosives, caps, fuse		375.00	
Pipe and fittings		58.00	
2 sets of drill bits		84.00	
Oil and grease		60.00	
Gasoline, 660 gallons		158.40	
Total supplies			1,120.40
Operating Equipment			
Rental			
Compressor, 3 months at $150.00		450.00	
Owned by applicant	Value		
Hoist, Vulcan 8	1,200.00		
Blower	150.00		
Jackhammer, G-D,S-45	250.00		
Pump, Thor, Sponge-type	250.00		
Hose, pipe, column,etc.	350.00		
Bucket, car, rail,etc.	350.00		
Drifter, G-D	375.00		
Misc. small tools	100.00		
	3,025.00		
Rental, 60 month depreciation basis, 3 months at $50.00 per month		150.00	
Total operating equipment			600.00

Miscellaneous			
Repairs to equipment	$ 100.00		
Payroll taxes $1.50/$100.00	47.52		
Liability insurance $2.95/$100.00	93.46		
Accounting $15.00/month	45.00		
Total miscellaneous		$ 285.98	
Total Shaft Sinking			$5,129.38
Cost per foot			76.55

Drift (80 feet - 40 working days)

Independent Contracts			
None			
Labor and Supervision			
Labor			
80 shifts at $14.00	1,120.00		
Supervision			
(Includes hoistman-topman)			
2 months at $425.00	850.00		
Total labor and supervision		1,970.00	
Operating Materials and Supplies			
Explosives, caps, fuse	300.00		
Drill bits	42.00		
400 gallons gas	96.00		
Oil and grease	40.00		
Total supplies		478.00	
Operating Equipment			
Rental			
Compressor, 2 months at $150.00	300.00		
Owned by applicant, value same as for Shaft Sinking 3,025.00			
Rental, 60 month depreciation basis, 2 months at $50.00 per month	100.00		
Total operating equipment		400.00	
Initial Rehabilitation and Repairs			
None			
New Buildings, Improvements, etc.			
None			
Miscellaneous			
Repairs to equipment	50.00		
Payroll taxes $1.50/$100.00	30.00		
Liability insurance $2.95/$100.00	59.00		
Bookkeeping $15.00/month, 2 months	30.00		
Total miscellaneous		169.00	
Total			$3,017.00
Cost per foot drifting			37.71

Initial Rehabilitation and Repairs		
None		
New Buildings, Improvements, etc.		
Construct shaft collar	$100.00	
Construct headframe	250.00	
Construct hoist house	500.00	
Total new buildings, improvements, etc.		$850.00

Because the work is exploratory and will be done during the "dry" season, no allowance is made for a shaft sump. Allowing $76.00 per foot for sinking the Mook shaft 67 feet, $37.00 per foot for 80 feet of drifting, and a total of $850.00 for construction of a shaft collar, head frame and hoist house, the estimated cost of the project is $8,902.00.

Recapitulation of Project Costs

Construct shaft collar	$ 100.00 1/
Construct headframe	250.00 1/
Construct hoist house	500.00 1/
Sink the Mook shaft 67 feet at $76.00 per foot	5,092.80 1/
Driving 80 feet of drift on the 100-foot level of the Mook shaft at $37.00 per foot	2,960.00 1/
Total	$8,902.00

The shaft will require 3 months to sink and the drift will require 2 months to drive, a total of 5 months for completion of the project.

Government participation in tungsten exploration projects is 75 percent, or, in this case, $6,676.50.

1/ The entire work under each item constitutes a unit of work.

CONCLUSIONS

The vein in the Mock shaft is fairly strong and is apparently stronger near the present bottom of the shaft than near the surface. The area is favorable and the vein merits some exploration at greater depth.

RECOMMENDATIONS

A two-stage program is recommended. Stage 1 consists, after surface preparations, of sinking the Mock shaft an additional 67 feet to the 100-foot level but may be terminated by the Defense Minerals Exploration Administration if the ferberite mineralization does not continue downward.

Stage 2 consists of 80 feet of drifting on the 100-foot level or from the bottom of the ore, wherever it occurs in the sinking operation. Stage 2 is to be executed only with prior approval of Region IV DMEA representatives.

The estimated cost is $850.00 for surface preparatory work, $5,092.00 for sinking 67 feet (stage 1), and $2,960.00 for driving 80 feet of drift (stage 2), - a total of $8,902.00. The Government's participation will be 75 percent, or $6,676.50.

A contract on short form MF-200(A) is suggested, providing contribution by the Government on a basis of the estimated costs on units of work performed.

Mr. C. O. Mittendorf
1-4-54
4:12 PM. JB

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
JAN 5 1954

E 654

235 BUREAU MINES 1-4-54 2-11 PM

C O MITTENDORF

PKEXXX PLEASE ASSIGN A NUMBER TO CONTRACT COVERING DOCKET DMEA NO. 3182, LLOYD P. MOCK, 1440 ST. PAUL STREET, DENVER 6, COLORADO. COMMODITY TUNGSTEN. PROPERTY IN BOULDER , COLORADO. CONTRACT DATED JANUARY 4,1954. AMOUNT OF CONTRACT $8,902.00. GOVERNMNENT,S PARTICIPATION $6676.50.

W H KING

7540

Denver, Colo.

JAN 5 8 20 AM '51

BUREAU OF MINES
MAIL ROOM
WASHINGTON, D. C.

1-1027
(April 1946)

UNITED STATES
DEPARTMENT OF THE INTERIOR

AGENCY DMEA REG IV

TELETYPE

Originator:
Ext.: Room:

Appro.:
Date: 1/4/54
Time:
No.:
To: C. O. MITTENDORF DMEA WASH

Subject:

PLEASE ASSIGN A NUMBER TO CONTRACT COVERING DOCKET DMEA NO. 3182, LLOYD P. MOCK, 1440 ST. PAUL STREET, DENVER 6, COLORADO. COMMODITY TUNGSTEN. PROPERTY IN BOULDER COUNTY, COLORADO. CONTRACT DATED JANUARY 4, 1954. AMOUNT OF CONTRACT $8,902.00. GOVERNMENT'S PARTICIPATION $6676.50.

W H King
W. H. KING

JTE

Authorized:
CONFIRMATION

Sign original message and transmit to Room ..... in duplicate

U. S. GOVERNMENT PRINTING OFFICE 16—50915-1

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

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
NOV 16 1953

224 New Customhouse
Denver 2, Colorado

November 13, 1953.

Memorandum

To: Administrator, Defense Minerals Exploration Administration
Attention: 200

From: Field Team, Region IV

Subject: Report of Examination - DMEA Docket 3182 (Tungsten), Lloyd P. Mock, Mock Shaft, Big Six Mine, Boulder County, Colorado.

The application for Government assistance in exploration work estimated to cost $8,902.00 has been approved by us and a contract is being prepared.

Government participation will be 75 per cent, or $6,676.50.

Four copies of the Report of Examination will be forwarded when the contract is executed. Two copies of Form 3b are attached.

W. H. King
W. H. King

E. N. Harshman
E. N. Harshman
For A. H. Koschmann

Enclosures

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

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W. H. King
W. H. King

E. N. Harshman
E. N. Harshman
For A. H. Koschmann

Enclosures

[redacted]

DMCA 3182

Phoned
Art Sherman EPS-GSA
151-4567

to tell him, in answer to his inquiry, that this is a Region IV case

WSM
11/4/53

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

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

Not to be filled in by applicant

Docket No. DMEA- 3182
Metal or Mineral
Date Received 10-5-52
Estimated Cost
Participation (Government %)

INSTRUCTIONS

1. *Name of applicant.*—(*a*) State here your full legal name, in the form in which you will wish to contract, and your mailing address: Lloyd P. Mock
1440 St. Paul St.
Denver 6, 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 Northwest quarter of the northwest quarter, Section 13, Twp. 1 South, Range 72 West.

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

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

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

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

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

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

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

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

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

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

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

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

(*c*) The work will start within May 1 - 1954 days and be completed within 5 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 [x] Use of equipment owned by you [x] 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 Sept. 28, 1953

Lloyd P Mock
(Applicant)

By

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

4. Phys. Desc

4. Physical description:

(a) Big Six tungsten mine: 170 ft. shaft, 350 ft. of drifts, 3 stopes - 50 x 50, 30 x 40 and 50 x 30. Under water and in need of considerable repair. Not interested in this mine at present.

Bulldozing: 13 cuts covering most of 40 acres.

Other shafts: In the south center area of 40 acres, there are two shafts, both caved in and full of water. There is no known production from either; however, there is a showing of WO^3 on both dumps. Not interested in these.

Present development: 250 feet south of the Big Six shaft, there is a vein running north and south upon which there has been some exploration in the past. I have cleaned out an old shaft that was caved in to a depth of 35 feet, and dropped it another fifteen feet. A showing of stringers of WO^3 was encountered in this work - some of a fair size - but not consistent. A horned quartz vein 8 to 9 inches wide has started to go black on the downhill side of shaft. When this occurred, I bulldozed both above and below shaft to see if surface showings were stronger below shaft. Approximately 25 feet below the shaft we started down with a new shaft on 1/2 inch vein, which at 10 feet assayed 16.8% WO^3. At 25 feet the vein widened to five inches and assayed 12.72% WO^3. It has averaged five inches down to the present depth of 33 feet and goes out both sides of shaft. We are now timbering this shaft. There is about 6 feet of water, but on two days' notice, can have it dry for examination.

(b) Big Six: Complete records are unavailable. Recent shipments were:

61,410#	- 1.40%	
48,290	- 1.06	
28,310	- 1.03	
11,800	- .50	
1,158	- 6.50	Dump

Present development:

2,872#	- 6.20%
3,192	- 4.50

(c) There is a contact of schist and granite as indicated on accompanying map showing surface geology of Big Six mine area. On this map, the vein I am interested in is shown as being about 50 ft. northwest, or out in the schist bed. However, in sinking on vein I have not encountered any schist past the foot wall. My reason for wishing to explore this spot is that from all indications we are on the contact and there is a good deposit of ore in this immediate area.

4. (cont'd)

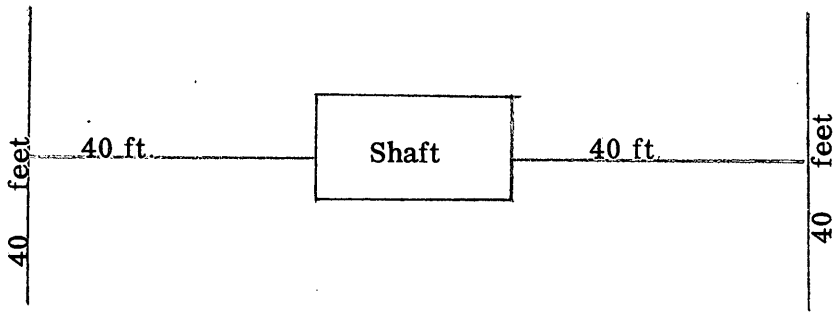
(d) There are good roads to the property from Nederland, a distance of one mile. 18 miles from Boulder, a supply and shipping point. 50 miles from Denver.

(e) There are experienced tungsten miners available in Nederland. Materials, supplies and equipment are readily available in Boulder. There is a power line to the Big Six mine. Water for mine use is on hand at the rate of 30 gals. Per minute.

5.
Exp.
Proj.

5. <u>The exploration project</u>

(b) The proposed plan calls for 65 feet of sinking on the vein, which will put it to the 100-ft. depth; and 40 ft. of drift out each side of shaft on the vein at 100 ft; 20 ft. through hanging wall, and 20 ft. through footwall on each end of drifts as shown: (see map referred to in 4.(c).)



(d) Five years mining experience; nine years in a supervisory capacity on D. & R.G.W. RR. Intend to work on and supervise the operation.

6. Est. of Costs

6. Estimate of costs:

(a) None.

(b)	Two Miners at $375.00 per month each	$ 3,750.00	
	Supervisor and hoist engineer at $425.00	2,125.00	
	(Salaries are figured on a five-month basis		
			$ 5,875.00
(c)	Pipe - 3" five 20-ft. lengths	$ 48.00	
	Fittings	10.00	
	Gasoline - 10 gals. per day for 125 dys	375.00	
	Oil and grease	100.00	
	Three sets bits	125.00	
	Powder, caps, fuse, carbide	675.00	
	Timber:		
	Ladders (7) $ 35.00		
	Stulls (12) 35.00		
	Wall Plates (6) 25.00		
	Platforms (4) 50.00		
	Skids and backing 100.00		
	Misc. Braces 100.00	345.00	
			$ 1,678.00
(d)	Compressor rental - 5 mos. at $150 Per mo	$ 750.00	
	Equipment presently owned and to be used:		
	Hoist $1,200.00		
	Blower 150.00		
	Jack Hammer 250.00		
	Pump 250.00		
	Hose - pipe 350.00		
	Bucket, car, chiv wheel, rail, dump sheet 350.00		
	Drifter 375.00		
	Misc. small tools 100.00		
	$3,025.00		
	Suggested rental	$ 300.00	
			1,050.00
	Forward		$ 8,603.00

6. (cont'd)

	Forwarded		$ 8,603.00
(e)	None		
(f)	None		
(g)	Workmen's compensation		
	Compensation rate $2.81 per hundred per mo - $33.72 per mo - five months	$ 168.60	
	Occupational - $.45 per hundred per mo $5.40 per mo - five months	27.00	
	Initial deposit	100.00	
	Social security - 1 1/2%	88.13	
	Miscellaneous repairs	150.00	
			$ 533.73
(h)	Contingencies - 10%		913.67
	Total		$10,050.40

7. Costs

7. <u>My share of cost:</u>

(a) Yes.

(b) My services, equipment and money as needed.

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MF-203
(Revised July 1, 1953)

OWNER'S CONSENT TO LIEN

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

Northwest quarter of the Northwest quarter, Section 13, Township 1 South, Range 73 West.

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

2/ Lloyd P. Mock

hereinafter called the "Operator"; and

WHEREAS, under the provisions of said contract the Government is entitled to a percentage royalty on production (as set forth on the reverse side hereof) and to other rights and equities which do or may conflict with or be adverse to the rights of the undersigned:

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

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

2. To secure the payment to the Government of the percentage royalty on production3/ provided for under the terms of said exploration project contract, or any amendment thereof, there is hereby granted to the Government a lien upon the land above referred to and upon any production of minerals therefrom, until said royalty is fully paid or ten years have elapsed from the date of the contract, whichever occurs first.

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

4. Changes and added provisions

RELEVANT CONTRACT PROVISIONS

Repayment by Operator.--a. Certification.--If at any time the Government considers that a discovery or development from which production may be made has resulted from the exploration work, the Government, at any time not later than six months after the Operator has rendered the final report and final account, may so certify in writing to the Operator. Such certification shall describe broadly or indicate the nature of the discovery or development.

b. Percentage royalty.--The Operator, or his successor in interest, shall pay to the Government a royalty on all minerals mined or produced from the land described in Article 2,--(1) regardless of any certification of discovery or development, from the date of the contract until the lapse of the time within which the Government may make such certification of discovery or development, or until the total net amount contributed by the Government, without interest, is fully repaid, whichever occurs first, unless the Government waives its right to a royalty; or (2) if the Government makes a certification of discovery or development, for a period of ten years (or other period fixed by the contract) from the date of the contract, or until the total net amount contributed by the Government, without interest, is fully repaid, whichever occurs first. Said royalty shall be a percentage of the net smelter returns, the net concentrator returns, or other net amounts realized from the sale or other disposition of any such production, in whatever form disposed of, including ore, concentrates, or metal, as follows:

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

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

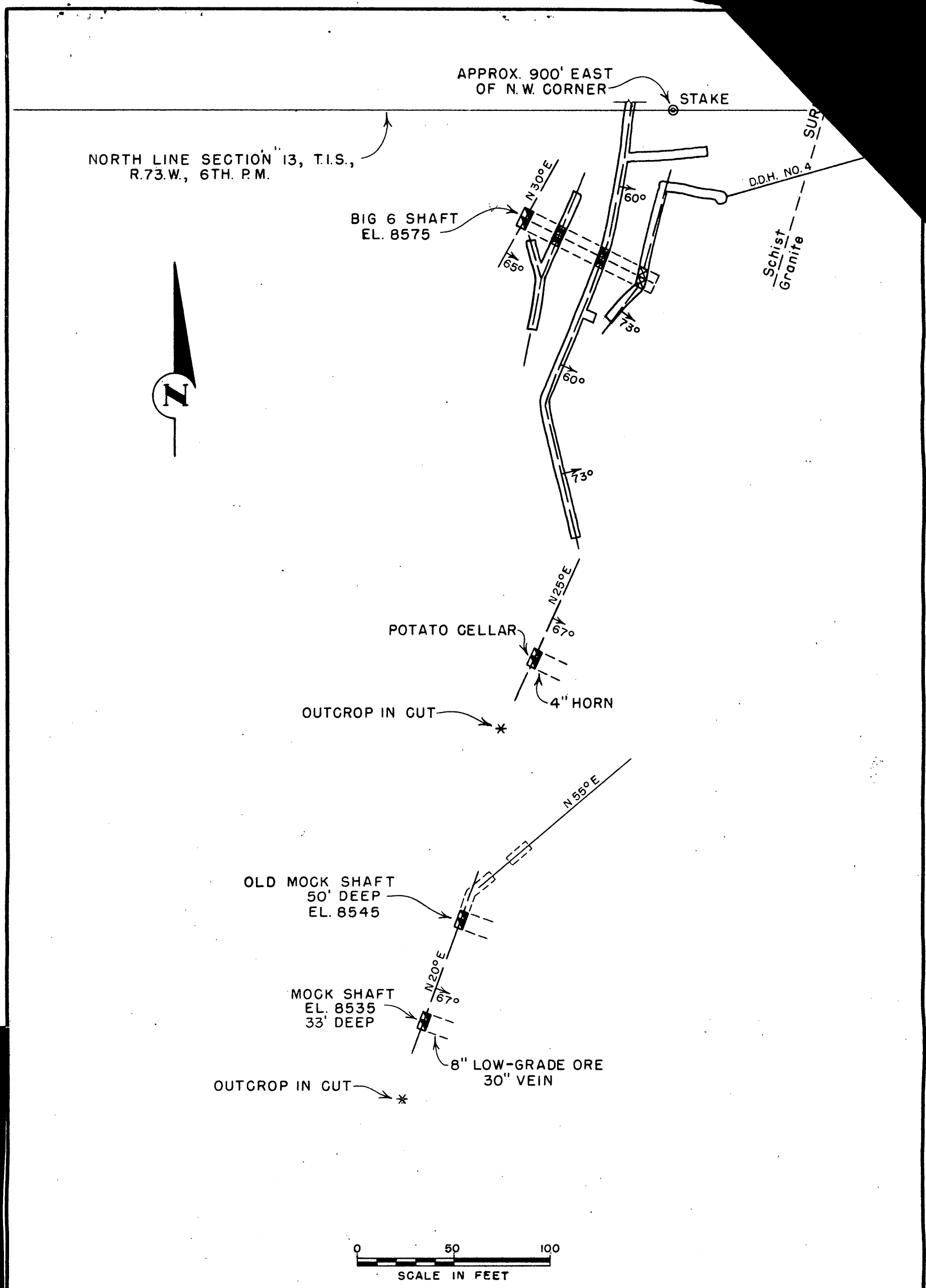
(For instance: the percentage royalty on a net amount of five dollars ($5.00) per ton, would be one and one-half (1½) percent; on a net amount of ten dollars ($10.00) per ton, three and one-half (3½) percent.)

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

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

e. Notice to Purchasers.--The Operator shall notify any purchaser of the production of the Government's royalty interest, and shall authorize and direct the purchaser to pay the royalty directly to the Government and to furnish the Government with copies of the settlement sheets; but failure or refusal by the purchaser to comply shall not relieve the Operator of liability to pay any royalty falling due.

f. No Obligation to Produce.--This article is not to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any mining or production operations.



MINERAL RESOURCES BRANCH - MINING DIVISION
REGION IV
BUREAU OF MINES

FIGURE 2 - PLAN MAP, SHOWING MOCK SHAFT, BIG SIX MINE, LLOYD P. MOCK, BOULDER COUNTY, COLO. (DMEA 3182)

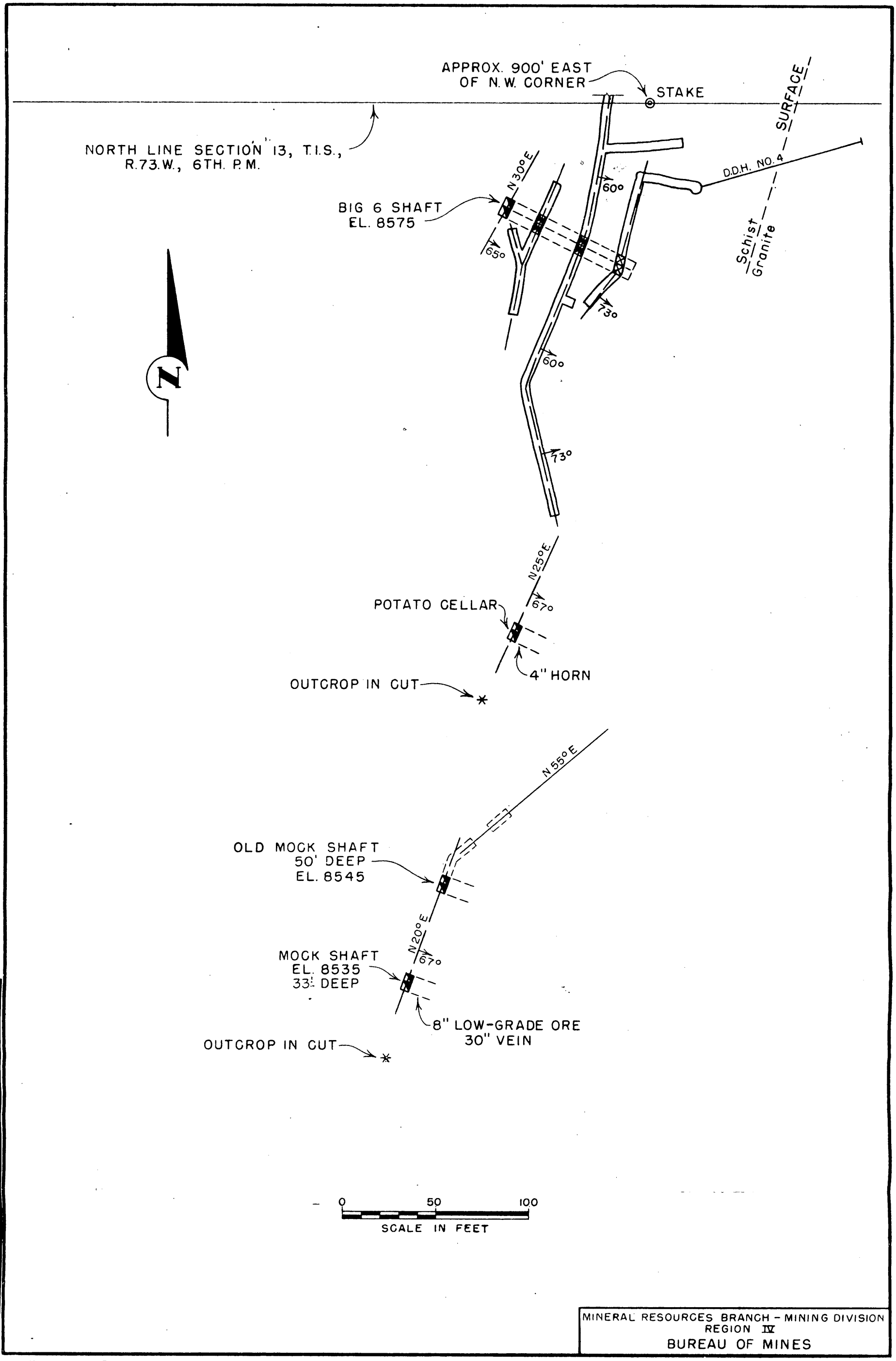


FIGURE 2 - PLAN MAP, SHOWING MOCK SHAFT, BIG SIX MINE, LLOYD P. MOCK, BOULDER COUNTY, COLO. (DMEA 3182)

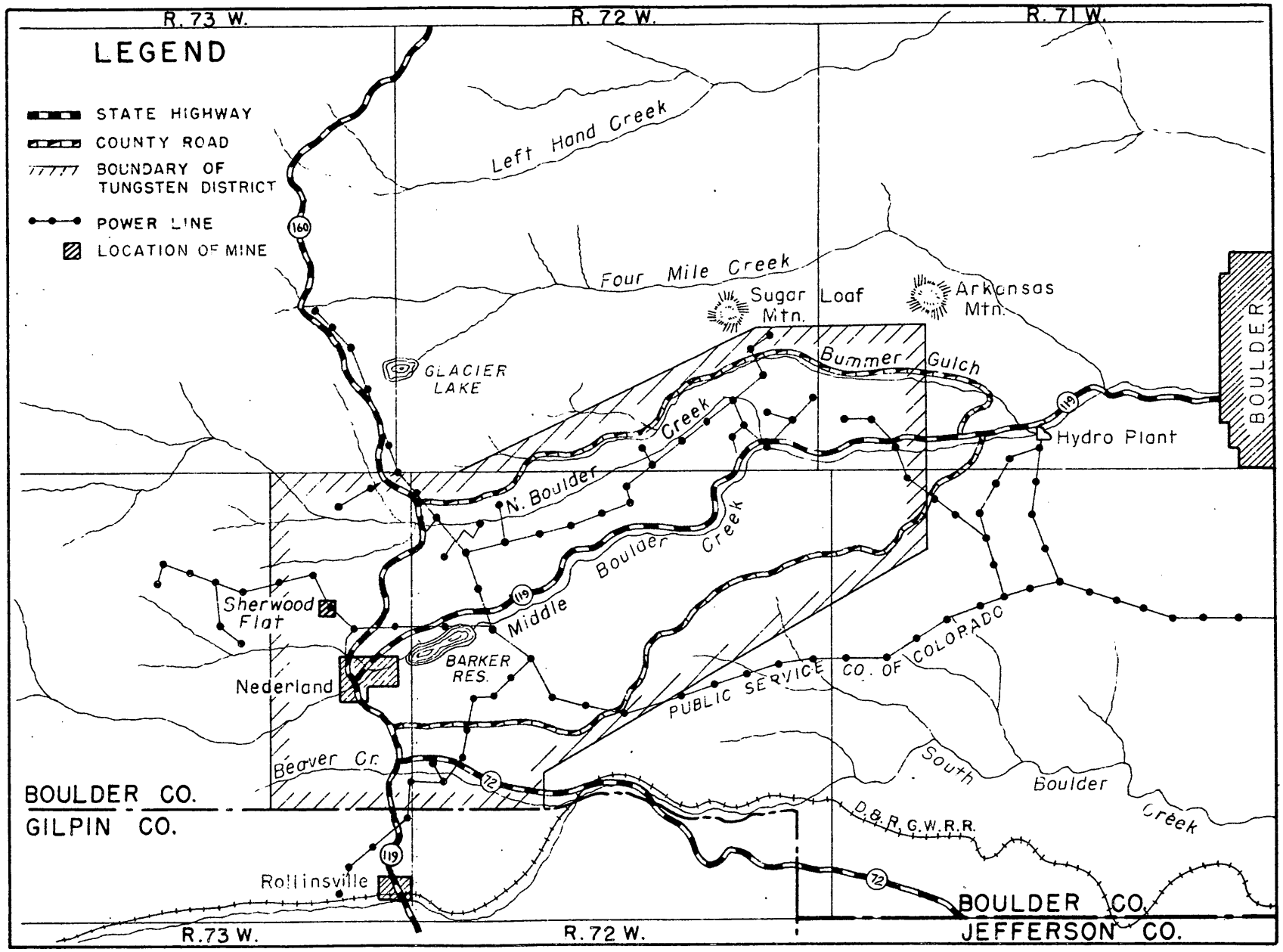


FIGURE 1. - LOCATION MAP, MOCK SHAFT, BIG SIX MINE, LLOYD P. MOCK, BOULDER COUNTY, COLO. (DMEA 3182)

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