DMEA Form 9

UNITED STATES
DEPARTMENT OF THE INTERIOR
Defense Minerals Exploration Administration

OFFICIAL DOCKET FILE E-1002 DMEA NO. 4381

Application (Denied
(Withdrawn
(After disposition, delete items not applicable)

Contract (Terminated - not Certified
(Cancelled
(Terminated - Certified
(Royalty Agreement

This is the official contract file containing all official records of the project. The records contained in the files are checked and are arranged in this order:

Left Side

Interim Royalty Audits
Reports of Royalty Review
Certification of Discovery
✓ Certificate of Audit (Final)
Interim Audit(s)
✓ Report of Review
Termination Notice or Agreement
Decision Notice
✓ Assignment of Contract
✓ Contract Amendments (latest on top)
✓ Contract with all exhibits and annexes
Owner's Consent to Lien
Subordination Agreement
✓ Leases and assignments of leases
✓ Application and attachments
(3) ✓ Envelope for maps

Right Side

✓ Project summary
✓ Work completed analysis
All other material is filed in chronological order with correspondence including the following reports as checked:

✓ Final Field Team Report (Tab)
✓ Operator's Final Report
(2R) ✓ Interim Reports
(2R) ✓ Operator's monthly reports and all attachments (latest on top)
✓ On-site Exam Report(s) (Tab)
(4) Settlement Sheets

When the volume of records is expected to warrant additional folders, or when convenience of reference warrants separate folders for certain records, they should be set up in this order:

Left Side

Folder No. 2: (In chron. order) Interim Summary Reports by W. O. Engineers

Right Side

✓ Operator's Semi-Annual Report for Certified Project, Field Team Interim Reports, Operator's Monthly Report with transmittal, narrative, maps, and Field Team review.

Folder No. 3: Maps (Use pocket folder or envelope. Fold maps with title block out and show reference to related document or correspondence.)

Folder No. 4: Settlement Sheets

Folder No. 5: Drill Logs

DEFENSE MINERALS EXPLORATION ADMINISTRATION
CONTRACT ADMINISTRATION AND AUDIT DIVISION

REPORT OF REVIEW

I have reviewed the Monthly Reports of:

Benjamin H. Putnam, Assignor
512 Third Street
Marietta, Ohio
and
National Lead Company, Assignee
111 Broadway
New York 6, New York

pertaining to Exploration Project Contract No. Idm-E1002, DMFA No. 4381, including Amendments Nos. 1, 2, and 3, for September 1956 to September 1957, inclusive, covering a zinc project on the Indian Creek Prospect, Grainger County, Tennessee.

My review included an examination of the Monthly Reports (Forms MF-104) and supporting documents, comparison of the claimed costs with the contract and pertinent schedules, verification of work performed by reference to Field Team reports and correspondence, and a determination of the reasonableness and propriety of the costs.

This review was made in lieu of a final audit of the Operator's accounts and records for the reasons given in the attached schedule.

The findings of this review are stated in the following summary and the attached schedule:

Total cost billed by Operator		$40,095.00
Exceptions:		
Prior to this review	$-0-	
Herewith	1.00	1.00
Accepted cost claimed by Operator		40,094.00
Acceptable costs not claimed, to offset exceptions		1.00
Total accepted cost		40,095.00
Acceptable cost not claimed	$34.00	
Less: Offset above	1.00	33.00
Total acceptable cost, if claimed		$40,128.00

The contract calls for a 50 percent contribution of the allowable costs by the Government. Therefore, if the project is otherwise accepted as having met the terms of the contract, payments as follows are valid and proper:

On cost claimed		$20,047.50
On additional cost, if claimed		16.50
Total payable, if claimed		$20,064.00
Payable on audited claim		$20,047.50
Paid to date		19,398.92
Balance due assignee		$ 648.58
Additional payable, if claimed:		
To assignor	$14.25	
To assignee	2.25	$ 16.50

E. D. Talbert

May 6, 1958

E. D. Talbert, Auditor

Benjamin H. Putnam, Assignor
and
Idm-E1002 National Lead Company, Assignee DMFA-4381

Reasons for Report of Review in lieu of a final audit:

(a) the Monthly Reports were supported by documentary proof of that portion ($36,876.00) of the acceptable costs covering work performed at unit rates under independent contract;
(b) the balance ($3,252.00) of the acceptable costs was under a contract provision for payment by the Government at fixed unit costs for work performed; and
(c) the administrative cost to the Government of an audit would be excessive in relation to the estimated amount of possible further disallowances.

Exceptions by this review:

Assay by Union Assay Office of a sample from hole LH-1, not drilled under this contract, included in November 1956 MF-104 claim of assignor ..... $ 1.00

Acceptable cost not claimed by assignor:

Assays by Union Assay Office of 59 acceptable samples, claimed by assignor on November 1956, January 1957, and March 1957 MF-104s at $1.00/sample, whereas contract provides a fixed unit cost of $1.50/sample "regardless of costs incurred by the Operator" $29.50

Acceptable cost not claimed by assignee:

Assays by Bruce Williams Laboratories of 18 acceptable samples claimed by assignee on September 1957 MF-104 at $1.25/sample, whereas contract provides a fixed unit cost of $1.50/sample "regardless of cost incurred by the Operator" 4.50

Total acceptable cost not claimed $34.00

Government Copy

OFFICIAL FILE COPY
DMEA
RECEIVED JUL 22 1957

DATE	INITIALS	CODE

EXPLORATION PROJECT CONTRACT

NATIONAL LEAD CO., Assignee
Docket No. 4381

AMENDMENT No.3

It is agreed this 5th day of July 1957, between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, and National Lead Company, that Exploration Project Contract Idm-E1002 (Docket No. DMEA-4381), dated August 31, 1956 and amended January 24 and May 13, 1957, is further amended, effective August 31, 1956 as follows:

In Annex I of the contract, there is hereby added the following parcel of land:

Name of Property Owner	County	Approximate Acreage
Lou Coffey (life estate)	Grainger	8

Legal description of this parcel is contained in an agreement, signed by Lou Coffey and six heirs, certified by D. S. Beeler, Henley R. Clement and Chas. V. Fisher, Notaries Public, and recorded on July 2, 1957 in Miscellaneous Deeds Book 19, page 233 in the Register's Office, Grainger County, Tennessee. A copy of this agreement is contained in the official docket file of DMEA pertaining to this contract. The tract is shown, without designation of owner-ship, on the map entitled "Map of Indian Creek Prospect," attached to the original contract.

This amendment shall not be construed to increase the estimated total cost of the project, the aggregate total amount which the Government may be required to contribute, nor the amount of any item designated as "maximum."

Executed in quintuplicate the day and year first above written.

THE UNITED STATES OF AMERICA

By Robert A. Lawrence
Executive Officer, DMEA
Field Team, Region V

NATIONAL LEAD COMPANY, (Assignee)

BY [signature]

Title VICE PRESIDENT

Z

Government's copy

ASSIGNMENT OF CONTRACT

WHEREAS, the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, hereinafter called the "Government," and Benjamin H. Putnam of 170 E. Pearson Street, Chicago 11, Illinois, hereinafter called the "Assignor," entered into Exploration Project Contract Idm-E1002 (Docket No. DMEA-4381), dated August 31, 1956, hereinafter called the "Contract"; and

WHEREAS, National Lead Company, a New Jersey corporation, whose address is 111 Broadway, New York 6, N. Y., hereinafter called the "Assignee", has acquired the Assignor's interest in the land which is the subject of the Contract and the Assignee desires to complete the work under the Contract;

NOW THEREFORE, effective April 1, 1957, the Assignor, subject to acceptance by the Assignee and the consent of the Government, in consideration of the sum of One Dollar ($1.00) and other good and valuable consideration received from the Assignee does hereby assign, transfer, and convey to the Assignee all of its right, title, and interest in the Contract: Provided, That the Government shall make payment to the Assignor on all claims and vouchers for the Government's contribution to the costs of work performed under the Contract prior to said effective date, and upon payment thereof the Government shall be and is hereby released by the Assignor from all claims under the Contract.

The Assignor consents to all future amendments (including a termination agreement) and assignments of the Contract and waives notice thereof.

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DATE	INITIALS	CODE

Dated this 15th day of April, 1957.

Benjamin H. Putnam [Seal]
Benjamin H. Putnam (Assignor)

ASSIGNEE'S ACCEPTANCE

The Assignee hereby accepts the above Assignment and agrees to be bound by the terms, provisions, and conditions of the Contract. The Assignee expressly assumes and agrees to pay to the Government any

Rubin
Kemper
Appr. Sol. Off.
Chambers
Grianel
Selfridge
Johnson

royalty that may have accrued and remain unpaid on the effective date of the assignment and that may accrue thereafter under the provisions of the Contract.

Dated this 17th day of April, 1957.

NATIONAL LEAD COMPANY (Assignee)

By [signature]

Title VICE PRESIDENT

I, [signature], certify that I am the assistant secretary of the corporation named herein; that H. T. WARSHOW who signed this instrument on behalf of the corporation, was then a Vice President of said corporation; that said instrument 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.

[signature] /Corporate Seal/

GOVERNMENT'S CONSENT

The Government, this 3rd day of May, 1957, hereby consents to the above Assignment without releasing the Assignor from any of the terms, provisions, and conditions of the Contract, and any amendment (including a termination agreement) and assignment thereof.

THE UNITED STATES OF AMERICA

By [signature]
Administrator, Defense Minerals
Exploration Administration

Docket Copy

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DMEA
RECEIVED MAY 27 1957

DATE	INITIALS	CODE

EXPLORATION PROJECT
CONTRACT
NATIONAL LEAD COMPANY, Assignee

Docket No. DMEA-4381-Zinc.

AMENDMENT No.2

It is agreed this 13th day of May 1957, between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, and National Lead Company, that Exploration Project Contract Idm-E1002 (Docket No. DMEA-4381), dated August 31, 1956, and amended January 24, 1957, be further amended as follows:

ARTICLE 3 is amended to provide for completion of the work on or before November 1, 1957, instead of June 1, 1957 as originally stated in the contract.

This amendment shall not be construed to increase the estimated total cost of the project, the aggregate total amount which the Government may be required to contribute, nor the amount of any item designated as "maximum."

Executed in sextuplicate the day and year first above written.

NATIONAL LEAD COMPANY

By [signature]

Title VICE PRESIDENT

THE UNITED STATES OF AMERICA

By [signature]
Executive Officer, DMEA
Field Team, Region V

2

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OFFICIAL FILE COPY
DMEA
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DATE	INITIALS	CODE

EXPLORATION PROJECT CONTRACT

BENJAMIN H. PUTNAM
Docket No.DMEA-4381

AMENDMENT No.1

It is agreed this 24th day of January 1957, between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, and Benjamin H. Putnam, that Exploration Project Contract No. Idm-E1002 (Docket No. DMEA-4381) dated August 31, 1956, is amended, effective January 2, 1957 as follows:

In Annex I of the contract, there is hereby added the following parcel of land, shown on map entitled "Sketch Map of L. F. Mallicoat Farm, Grainter Co.,Tenn." attached hereto and made a part hereof, which parcel is further identified as follows:

Name of Property Owner	Approximate acreage
L. F. Mallicoat and Ida Mallicoat	150

******

This amendment shall not be construed to increase the estimated total cost of the project, the aggregate total amount which the Government may be required to contribute, or the fixed unit cost of any item of work.

Executed in sextuplicate the day and year first above written.

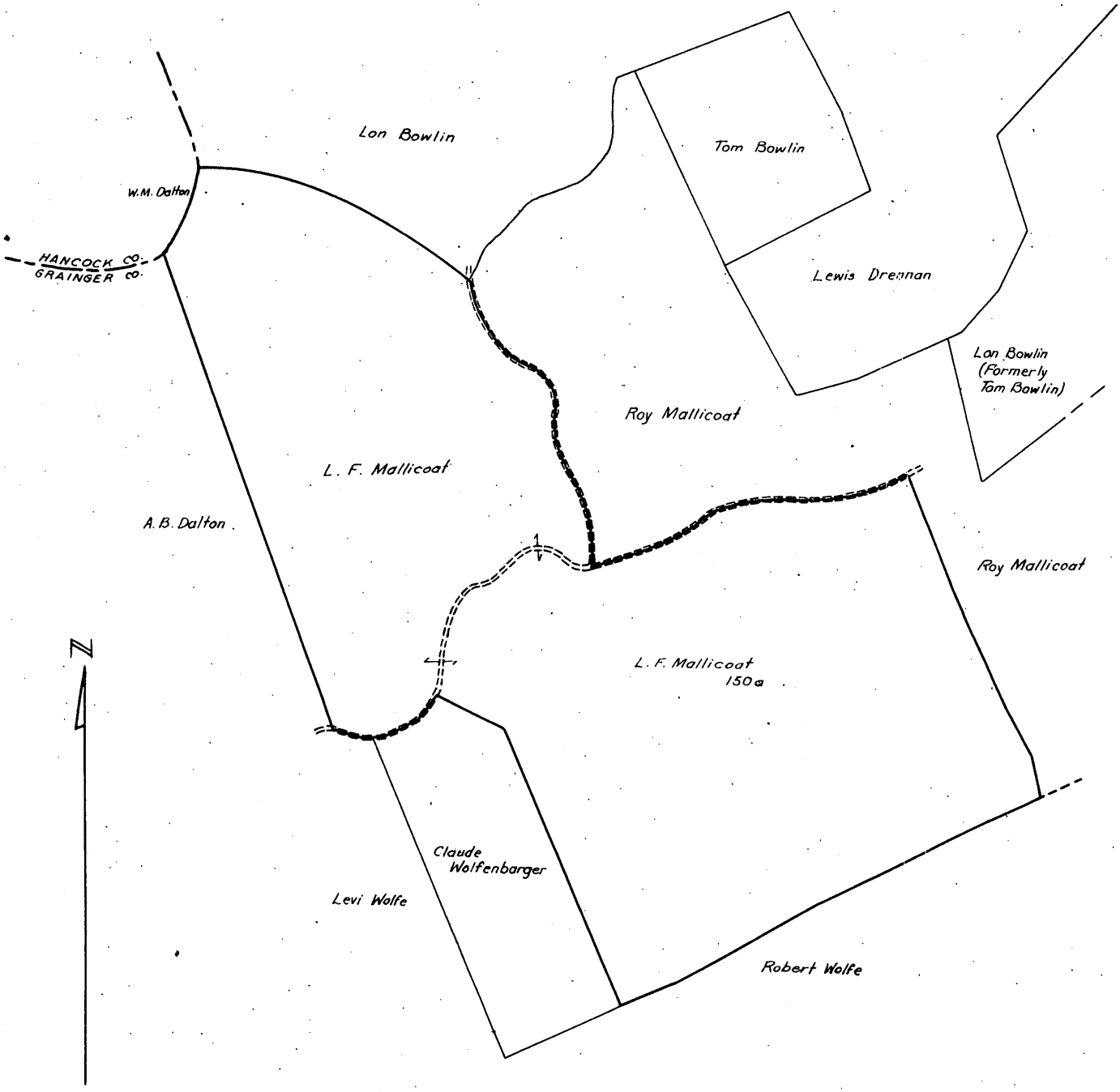
BENJAMIN H. PUTNAM

By Benjamin H. Putnam

UNITED STATES OF AMERICA

By Robert A. Laurence
Executive Officer,
Defense Minerals Exploration
Administration, Region V

z



Scale: 1 inch = 660 feet

SKETCH MAP OF L. F. MALLICOAT FARM, GRAINGER CO., TENN.

U.S.D.A. - Soil Conservation Service - Aerial Photograph

AGREEMENT

This Agreement, made and entered into this 16 th day of March, 1956, by and between

L. F. Mallicoat and Ida Mallicoat his wife of Route 1, Thorn Hill Tennessee.

hereinafter referred to as Parties of the First Part, and B. H. PUTNAM, Chicago, Illinois, hereinafter referred to as Party of the Second Part.

Witnesseth:

First: That First Parties, for and in consideration of the sum of thirty seven 50/100 Dollars ($ 37.50) cash to them in hand paid by Second Party, the receipt of which is hereby acknowledged, do hereby grant unto Second Party, the exclusive right, at any time within three years from the date hereof, to purchase for the sum of One hundred fifty Dollars ($150.00) per acre, all of the minerals (including metallic and non-metallic ores, rock and substances, oil and gas), mineral interests, mineral rights and mining rights in and to the following described lands:

Situated in the 4 th Civil District of Grainger County, State of Tennessee, containing 150 acres, more or less, and bounded generally as follows:

On the North by the lands of W. N. Dalton and Lon Bowlin

On the East by the lands of Roy Mallicoat

On the South by the lands of Robert Wolf

On the West by the lands of A. B. Dalton and Claud Wolfenbarger

Second: During the term of this option or any extensions thereof, Second Party shall have the exclusive right to prospect and drill for minerals (as hereinbefore defined) contained in the lands herein optioned, with churn drills, diamond drills and/or other prospecting methods, provided the same be done in such a manner as to do the least damage to the surface of said lands commensurate with good prospecting practices. Second Party shall be liable for all actual damages done to growing crops and fences, as the result of said drilling.

Third: If this option is not exercised, Second Party agrees to fill up, or plug in a suitable manner, all drill holes, unless First Parties designate one or more of such holes to be left open for use as water wells, or other purpose of First Parties, in which event First Parties shall pay for the casing.

Fourth: In order to exercise said option Second Party shall give notice in writing to First Parties, either by delivering the same to them personally, or, by registered mail to their usual place of residence. Within thirty days after receiving such notice First Parties shall execute and deliver a general warranty deed to the Second Party, or any person designated by Second Party, said deed to convey all of the minerals (as hereinabove defined,) mineral interest, mineral rights and mining rights in and to said lands, free of all liens and encumbrances.

Upon receipt of said deed Second Party shall make payment to First Parties of a sum equivalent to One Hundred fifty ($ 150.00 per acre, (the acreage to be ascertained by instrumental survey made at the expense of Second Party) for the minerals (as hereinabove defined), mineral interests, mineral rights and mining rights in and to said lands.

Fifth: Second Party agrees to exercise such option within Three months from this date, or pay to First Parties Thirty seven and $0/100 Dollars ($ 37.50) each Three Months thereafter until said option is exercised or this agreement terminated.

Sixth: All machinery, equipment, tools, etc., taken upon said lands shall be deemed to be the property of Second Party, and in the event this option is not exercised, Second Party shall have the right during the term hereof, or any extensions thereof, and for a reasonable time thereafter, to remove all such machinery, tools, etc., from said lands.

Seventh: If this option is exercised, the Second Party shall have the free right to enter, at anytime and from time to time, upon the surface of said lands for the purpose of drilling and prospecting for, and mining and removing all of said minerals (as hereinabove defined) contained in said lands. Second Party shall also have the right to transport minerals (as hereinabove defined) from other lands of Second Party or third persons, over, under and across said lands, and to bring said minerals to the surface thereof and remove the same therefrom. It is agreed, however, that Second Party shall be liable to First Parties for actual damages that may occur to the surface of said lands or the improvements thereon, as the result of such drilling, prospecting and mining operations, or in the moving of minerals and materials across said surface.

Eighth: Payment of all moneys due under this option may be made, by cash or check, to L. F. Mallicoat at the above address.

made payable to _____ order and mailed _____ at _____ P. O.

Ninth: This agreement shall be binding upon and inure to the benefit of the parties hereto, their heirs, executors, administrators, successors and assigns, it being expressly understood that the second party shall have the right to assign this option to any person or corporation it sees fit.

In Witness Whereof the First Parties have hereunto set their hands on the day and year first above written.

Witnesses:

Chas. V. Fisher
Earl B. Jones

L. F. Mallicoat
L F. Mallicoat

Ida Mallicoat
Ida Mallicoat

State of Tennessee,

County of Grainger,

Personally appeared before me, Chas. V. Fisher, a Notary Public in and for Said County and State

the within named L. F. Mallicoat and Ida Mallicoat his wife

the bargainors, with whom I am personally acquainted, and who acknowledged that They executed the within instrument for the purposes therein contained.

Witness my hand and official seal at Grainger County, Tennessee, this 16th day of March, 1956

My Commission Expires 10/ 10/ 57

Chas. V. Fisher
Notary Public

State of Tennessee,

County of_____,

Personally appeared before me, _____, a Notary Public in and for Said County and State

the within named_____

the bargainor____, with whom I am personally acquainted, and who acknowledged that_____executed the within instrument for the purposes therein contained.

Witness my hand and official seal at_____, Tennessee, this____day of____, 19____.

My Commission Expires _____

Notary Public

State of Tennessee,

County of_____,

Personally appeared before me, _____, a Notary Public in and for Said County and State

the within named_____

the bargainor____, with whom I am personally acquainted, and who acknowledged that_____executed the within instrument for the purposes therein contained.

Witness my hand and official seal at_____, Tennessee, this____day of____, 19____.

My Commission Expires _____

Notary Public

No. 2265

OPTION CONTRACT

TO

STATE OF TENNESSEE,

Grainger COUNTY.

Register's Office

Received for record the 3rd day of May, A. D. 1956

at 9:10 o'clock A.M. Noted in Note Book F, page 34 and recorded in Book Miscellaneous, Vol. 18, page 453

Fee paid, $2.75

Witness my hand,

Alva Brady, Register.

State Tax $

Clerk's Fee $

Total $

AGREEMENT

This Agreement, made and entered into this 16 th day of March, 1956, by and between

L. F. Mallicoat and Ida Mallicoat his wife of Route 1, Thorn Hill Tennessee.

hereinafter referred to as Parties of the First Part, and B. H. PUTNAM, Chicago, Illinois, hereinafter referred to as Party of the Second Part.

Witnesseth:

First: That First Parties, for and in consideration of the sum of thirty seven 50/100 Dollars ($ 37.50) cash to them in hand paid by Second Party, the receipt of which is hereby acknowledged, do hereby grant unto Second Party, the exclusive right, at any time within three years from the date hereof, to purchase for the sum of One hundred fifty Dollars ($150.00) per acre, all of the minerals (including metallic and non-metallic ores, rock and substances, oil and gas), mineral interests, mineral rights and mining rights in and to the following described lands:

Situated in the 4 th Civil District of Grainger County, State of Tennessee, containing 150 acres, more or less, and bounded generally as follows:

On the North by the lands of W. N. Dalton and Lon Bowlin

On the East by the lands of Roy Mallicoat

On the South by the lands of Robert Wolf

On the West by the lands of A. B. Dalton and Claud Wolfenbarger

Second: During the term of this option or any extensions thereof, Second Party shall have the exclusive right to prospect and drill for minerals (as hereinbefore defined) contained in the lands herein optioned, with churn drills, diamond drills and/or other prospecting methods, provided the same be done in such a manner as to do the least damage to the surface of said lands commensurate with good prospecting practices. Second Party shall be liable for all actual damages done to growing crops and fences, as the result of said drilling.

Third: If this option is not exercised, Second Party agrees to fill up, or plug in a suitable manner, all drill holes, unless First Parties designate one or more of such holes to be left open for use as water wells, or other purpose of First Parties, in which event First Parties shall pay for the casing.

Fourth: In order to exercise said option Second Party shall give notice in writing to First Parties, either by delivering the same to them personally, or, by registered mail to their usual place of residence. Within thirty days after receiving such notice First Parties shall execute and deliver a general warranty deed to the Second Party, or any person designated by Second Party, said deed to convey all of the minerals (as hereinabove defined,) mineral interest, mineral rights and mining rights in and to said lands, free of all liens and encumbrances.

Upon receipt of said deed Second Party shall make payment to First Parties of a sum equivalent to One Hundred fifty ($ 150.00 per acre, (the acreage to be ascertained by instrumental survey made at the expense of Second Party) for the minerals (as hereinabove defined), mineral interests, mineral rights and mining rights in and to said lands.

Fifth: Second Party agrees to exercise such option within Three months from this date, or pay to First Parties Thirty seven and 50/100 Dollars ($ 37.50) each Three Months thereafter until said option is exercised or this agreement terminated.

Sixth: All machinery, equipment, tools, etc., taken upon said lands shall be deemed to be the property of Second Party, and in the event this option is not exercised, Second Party shall have the right during the term hereof, or any extensions thereof, and for a reasonable time thereafter, to remove all such machinery, tools, etc., from said lands.

Seventh: If this option is exercised, the Second Party shall have the free right to enter, at anytime and from time to time, upon the surface of said lands for the purpose of drilling and prospecting for, and mining and removing all of said minerals (as hereinabove defined) contained in said lands. Second Party shall also have the right to transport minerals (as hereinabove defined) from other lands of Second Party or third persons, over, under and across said lands, and to bring said minerals to the surface thereof and remove the same therefrom. It is agreed, however, that Second Party shall be liable to First Parties for actual damages that may occur to the surface of said lands or the improvements thereon, as the result of such drilling, prospecting and mining operations, or in the moving of minerals and materials across said surface.

Eighth: Payment of all moneys due under this option may be made, by cash or check, to L. F. Mallicoat at the above address.

made payable to _____ order and mailed _____ at _____ P. O.

Ninth: This agreement shall be binding upon and inure to the benefit of the parties hereto, their heirs, executors, administrators, successors and assigns, it being expressly understood that the second party shall have the right to assign this option to any person or corporation it sees fit.

In Witness Whereof the First Parties have hereunto set their hands on the day and year first above written.

Witnesses:

Chas. V. Fisher
Earl B. Jones

L. F. Mallicoat
L. F. Mallicoat

Ida Mallicoat
Ida Mallicoat

State of Tennessee,

County of Grainger,

Personally appeared before me, Chas. V. Fisher, a Notary Public in and for Said County and State

the within named L. F. Mallicoat and Ida Mallicoat his wife

the bargainors, with whom I am personally acquainted, and who acknowledged that They executed the within instrument for the purposes therein contained.

Witness my hand and official seal at Grainger County, Tennessee, this 16 th day of March, 19 56.

My Commission Expires 10/ 10/ 57

Chas. V. Fisher
Notary Public

State of Tennessee,

County of,

Personally appeared before me, , a Notary Public in and for Said County and State

the within named

the bargainor, with whom I am personally acquainted, and who acknowledged that executed the within instrument for the purposes therein contained.

Witness my hand and official seal at, Tennessee, this day of, 19.

My Commission Expires

Notary Public

State of Tennessee,

County of,

Personally appeared before me, , a Notary Public in and for Said County and State

the within named

the bargainor, with whom I am personally acquainted, and who acknowledged that executed the within instrument for the purposes therein contained.

Witness my hand and official seal at, Tennessee, this day of, 19.

My Commission Expires

Notary Public

No. 1265

OPTION CONTRACT

TO

STATE OF TENNESSEE,

Grainger COUNTY.

Register's Office

Received for record the 2nd day of May, A. D. 1956 at 9:10 o'clock A.M. and recorded in Note Book F, page 34 of Miscellaneous, Vol. 18, page 453

Fee paid, $2.75

Witness my hand,

Chas. Brady, Register.

State Tax $

Clerk's Fee $

Total $

Docket Copy

RECEIVED
SEP 24 1956

MF-200
(Revised June 1954)

Docket No. DMEA 4381

Commodity Zinc

Contract No. Idm-E 1002

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

EXPLORATION PROJECT CONTRACT[1]

It is agreed this AUG 3 1 1956 day of ....., 195..., between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, hereinafter called the "Government," and [2] Benjamin F. Putnam,

whose mailing address is 170 E. Pearson St.
Chicago 11, Illinois,
hereinafter called the "Operator," as follows:

ARTICLE 1. *This contract* is entered into under the authority of the Defense Production Act of 1950, as amended. It consists of this form (MF-200), the attached Exhibit "A," Annex I, and map

The Operator shall not transfer or assign this contract or any right thereunder without the written consent of the Government.

ARTICLE 2. *Operator's property rights.*—(a) The land which is the subject of this contract (hereinafter called "the land") is in the State of Tennessee, County of Grainger, and is described in Annex I.[3]

(b) The Operator represents and undertakes that:

(1) The Operator is the [4] Optionee of [5] ..... in the land, in possession and entitled to possession for all of the purposes of this contract, under and by virtue of a [6] ....., [7] ....recorded in Book ....., page ....., official records of said County; and

(2) The Operator's right, title, or interest (whether as owner, lessee, or otherwise) is subject only to the following claims, liens, or encumbrances: None

(c) The Subordination Agreement of the holder of any claim, lien, or encumbrance listed above, and (if the Operator does not hold the legal title) the Consent to Lien of any holder of the legal title

[1] If sufficient space is not provided in any blank, use an extra sheet of paper and refer to it in the blank.
[2] Insert name, and if an organization, its nature (corporation and place of incorporation, partnership with names of partners, etc.).
[3] State on a separate sheet marked "Annex I" the legal description or enough to identify the property, particularly excluding any areas from which the production is not to be subject to the Government's percentage royalty.
[4] Insert "owner," "lessee," "contract purchaser," "locator," etc.
[5] Insert "the entire interest," "the mineral rights," "an undivided one-third," etc.
[6] Insert "deed," "lease," "contract," "location notice," "patent," etc.
[7] If not recorded, so indicate by inserting "un."

of the land (lessor, seller, optionor, etc.), are attached, as follows: Performance Bond in lieu of Consent to Lien

(d) The Operator shall preserve and maintain his right, title, and interest in the land and his right to the possession thereof for the purposes of this contract, and shall devote the land and all existing improvements, facilities, buildings, installations, and appurtenances to the purposes of this contract. Until the lapse of the time within which the Government may make a certification of discovery or development without any such certification having been made, and after any such certification has been made, the Operator shall neither transfer, convey, nor surrender the land nor any right, title, or interest therein, nor permit nor suffer any claim, lien, or encumbrance thereon, without expressly referring to and providing in the instrument of conveyance, lien, or encumbrance for the preservation of the Government's right to a percentage royalty on production and lien for the payment thereof. If the Government makes no certification of discovery or development within the time limited in Article 8, it shall thereafter have no claim against the land or any production therefrom except for any production referred to in Article 8(b)(1).

ARTICLE 3. *The exploration project.*—The project is a search for indicated or undeveloped deposits of Zinc. The work to be performed is described in Exhibit "A." The Operator on or before November 1, 1956 shall commence the work, and on or before June 1, 1957 (unless the Operator's obligation to prosecute the work is terminated—see Article 10) shall ~~either~~ have completed the work ~~which has been incurred and allowable costs (see Article 6) not in excess of the estimated total allowable costs set forth in Exhibit "A"~~ See Article 13.

ARTICLE 4. *Performance of the work.*—(a) *Operator's responsibility.*—The work shall be performed with reasonable diligence, efficiently, expertly, in a workmanlike manner, in accordance with good mining standards and State regulations for health and safety and for liability insurance covering employment; and with suitable and adequate equipment, facilities, materials, supplies, and labor, to bring it to completion within the time fixed.

(b) *Independent contracts.*—To the extent that the allowable costs are estimated in Exhibit "A" with express reference to performance by independent contractors on a unit-price basis (such as per foot of drilling, per foot of drifting, per hour of bulldozer operations), the work may be so performed; but if the reference in Exhibit "A" to any such independent contract requires the Government's approval thereof, payments under such contract will not be allowable costs unless the Government gives its written approval of the contract. Any such independent contract shall refer to some specific and identifiable part of the work, and shall be subject to all of the pertinent terms and conditions of this exploration contract; but the Government shall not be considered a party thereto, and its rights under this contract, including the right to terminate its contributions, shall not be affected thereby. Regardless of the provisions of any such independent contract and regardless of the Government's approval thereof, the Government will participate in payments to the independent contractor only on account of work performed in accordance with the provisions of this exploration project contract, and only to the extent that the Government deems the unit prices for the work under the independent contract to be reasonable.

(c) *Government may inspect.*—The Operator shall consult with and inform the Government on all phases of the work as it progresses. The Government may enter at all reasonable times to inspect the work under the contract, and also after a certification of discovery or development to inspect production operations and underground workings. The operator shall provide the Government with all reasonable means of access for such inspections.

ARTICLE 5. *Contribution by the Government.*—The estimated total allowable cost of the project, set forth in Exhibit "A," is the sum of $ 40,530.00 The Government shall contribute 50 percent of the allowable costs as they are incurred in a total sum not in excess of $ 20,265.00 : *Provided,* That until the Operator has rendered to the Government his final report, and any final 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 10 percent of the estimated total cost of the work or not in excess of the amount of the Government's contribution to the cost of property which is or may become subject to disposal as provided in Article 9(c), whichever is greater. The Government will make its contribution on the basis of the monthly vouchers referred to in Article 7(b), but all payments by the Government are provisional only, subject to audit, until the account between the Operator and the Government is finally audited and settled. "Costs incurred" mean costs that have been paid or have become due and payable, or that in the opinion of the Government have become an obligation. The Government may make payments directly to independent contractors and suppliers for the account of the Operator rather than to the Operator.

ARTICLE 6. *Estimated costs.*—(a) *Categories of costs.*—The allowable costs of the work to which the Government shall contribute are limited to those that are direct, reasonable, necessary, and that are estimated in Exhibit "A" by categories as specified in this article. If any category or subcategory is omitted from the estimate of costs, or if the word "none" is annexed to the listing thereof, costs under such category or subcategory are not allowable. Any excess over any estimate which is indicated as the maximum of any category, subcategory, or item, either as to requirement or related cost, and any excess over the estimated total allowable cost of the work, shall not be allowable. Any excess over the estimate of any category, subcategory, or item, either as to requirement or related cost, not indicated as a maximum shall be allowable within the limit of the estimated total allowable cost of the work. To the extent that excesses over maximums other than the estimated total allowable cost of the work may be necessary for the performance of the work, the Operator shall incur such excesses for his own account without contribution by the Government; [redacted] See Article 13.

To the extent specified in this article or in Exhibit "A" the following categories, subcategories, and elements thereof are maximums; but if not so specified either here or in Exhibit "A" they are not maximums, and may be exceeded within the limit of the estimated total allowable cost of the work:

CATEGORY (1)—INDEPENDENT CONTRACTS.—Work to be performed under independent contracts (see Article 4(b)). The estimated total amount of this category and the estimated cost of each unit of work for performance under an independent contract are maximums.

CATEGORY (2)—PERSONAL SERVICES.

Subcategory (a)—Supervision.—All elements of this subcategory (number of supervisors, periods of employment, rates of pay, and total) are maximums.

Subcategory (b)—Technical services.—All elements of this subcategory (number of technicians, periods of employment, rates of pay, and total) are maximums.

Subcategory (c)—Labor.

CATEGORY (3)—OPERATING MATERIALS AND SUPPLIES.—Includes such items as drill bits and steel, explosives, fuel, pipe, power, small tools costing less than $50 each, timber, track.

CATEGORY (4)—OPERATING EQUIPMENT.

Subcategory (a)—Rental.—The number of each object to be rented [6 mine cars, 1 truck], the rate of rental [$100 per month, $5 per hour], and the total of this subcategory are maximums.

Subcategory (b)—Purchases.—The estimated total of this subcategory is a maximum.

Subcategory (c)—Depreciation.—All elements of this subcategory (time periods, rate of depreciation, and subcategory total) are maximums.

CATEGORY (5)—INITIAL REHABILITATION AND REPAIRS.—Estimates under this category include all requirements and related costs, such as labor, materials and supplies, and supervision at a rate not higher than provided for in Category (2), and shall not be duplicated under any other category. The estimated total of this category is a maximum.

Subcategory (a)—Initial rehabilitation and repairs of existing buildings, fixtures, and installations (exclusive of mine workings).—The estimated total of this subcategory is a maximum.

Subcategory (b)—Initial rehabilitation and repairs of operating equipment.—The estimated total of this subcategory is a maximum.

CATEGORY (6)—NEW BUILDINGS, FIXTURES, AND INSTALLATIONS (EXCLUSIVE OF MINE WORKINGS).—Estimates under this category include all requirements and related costs, such as labor, materials and supplies, and supervision at a rate not higher than provided for in Category (2), and shall not be duplicated under any other category. The estimated total of this category is a maximum.

CATEGORY (7)—MISCELLANEOUS.—Repairs and maintenance (other than initial) of operating equipment, analytical work, prints and other reproductions, accounting, Operator's share of payroll taxes, liability insurance covering employment, travel, communications, and any other items of requirement or cost that do not fall within any of the first 6 categories.

THE ESTIMATED TOTAL ALLOWABLE COST of the work is a maximum.

(b) *Nonallowable costs.*—The following costs are not allowable for contribution by the Government:

(1) *Costs of the land,* such as rental, depreciation, depletion, or other cost of acquiring, owning, or holding possession;

(2) *Indirect costs,* such as general overhead, corporate management, interest, taxes (other than payroll and sales taxes), insurance (other than liability insurance covering employment), damages to persons, damages to property (other than necessary repairs or replacements of equipment or other property used in the work);

(3) *Previous work* performed or costs incurred before the date of this contract; and

(4) *Deferred payments.*—Any costs incurred by the Operator under any rental-purchase agreement, installment-purchase agreement, or any agreement for the purchase of goods under the provisions of which payment of the full purchase price is deferred more than 90 days from the delivery of the goods; unless the purchase agreement is approved by the Government in writing.

(c) *Reductions in costs.*—The Operator shall account for and give the Government credit for any incidental benefits, credits, or money received in the ordinary course of business in prosecuting the work (as by salvage or sale of materials or equipment, furnishing of room or board, furnishing of power or services to third persons, rebates or discounts on purchases, etc.), in the same ratio in which the Government contributes to costs; and such amounts shall be treated as a reduction in costs incurred so that they are available for use within the limit of the original estimated total cost. This provision does not apply to receipts from production which are subject to the Government's percentage royalty under the provisions of Article 9. **See Article 13.**

ARTICLE 7. *Reports, accounts, audits.*—(a) *Operator's records.*—The Operator shall keep suitable records and accounts of the work performed and of any production in which the Government may have an interest; and shall preserve those with respect to work performed for at least three years after final payment by the Government, and those with respect to production for at least three years after any obligation to pay royalties to the Government has terminated. The Government may inspect and audit said records and accounts at any time, either by itself or by a certified public accountant. If the Government elects to audit said records and accounts relating to the exploration work by certified public accountant, it may do so as a cost of the work to which the Operator shall contribute. The Comptroller General of the United States or his representative, until the expiration of said three-year periods, shall have access to and the right to examine any pertinent books, documents, papers, and records of the Operator. All of the Operator's vouchers and records and accounts relating thereto and the Government's payments thereof remain subject to adjustment until final audit by the Government. If work under this contract is carried on in conjunction with any other operations, or if labor, supervision, services, materials, supplies, equipment, facilities, or other requirements for carrying on the work are also used in connection with other operations, the costs shall be segregated and accounted for on a basis and by methods and accounts that are satisfactory to and approved by the Government.

(b) *Progress reports and vouchers.*—The Operator shall provide the Government with five copies of monthly progress reports in three sections as follows: (1) Operator's Monthly Report and Voucher showing detailed costs incurred during the reporting period; (2) Operator's Unit Cost and Progress Report showing the various types of work performed during the reporting period and costs incurred for each type of work; and (3) a Narrative Report of the work performed during the reporting period including adequate engineering-geological maps or sketches, drill hole logs and locations, and assay reports on samples taken concurrently with advance in mineralized ground. (Forms for reporting under (1) and (2) above will be provided by the Government.)

(c) *Final report.*—Upon completion of the work or termination of the Government's obligation to contribute to costs, the Operator shall furnish the Government with five copies of a final report (in addition to the final progress report and voucher). This final report shall include a geological and engineering evaluation of the results of the work performed under the contract with an estimate of the ore reserves resulting from such work, complete assay data, adequate geological and engineering maps or sketches, and a summary of the work performed and related costs incurred.

(d) *Report of sales.*—The Operator shall provide the Government with suitable accounting and documentary evidence covering all production to which the Government's percentage royalty relates, such as copies of smelter or concentrator settlement sheets, and certified accounts of production and sale or other disposition of production.

(e) *Compliance with requirements.*—If in the opinion of the Government any of the Operator's reports, records, or accounts are insufficient or incomplete, or if the Operator fails to make them, the Government may procure the making or completion of such with suitable attachments as an expense of the work to which the Operator shall contribute. The Government may withhold approval and payment of any vouchers relating to insufficient or incomplete reports, records, or accounts.

ARTICLE 8. *Repayment by Operator.*—(a) *Certification.*—If the Government considers that a discovery or development from which production may be made has resulted from the work, the Government, at any time not later than six months after a sufficient final report and final account (see Article 7) 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.

(b) *Royalty on production.*—The Operator, as principal if the Operator is the producer, or as surety if the Operator is not the producer, shall pay to the Government a royalty on all minerals mined or produced from the land, 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, or until the total net amount contributed by the Government without interest is fully repaid, whichever occurs first; or (2) if the Government makes a certification of discovery or development, within a period of ~~ten~~ 15 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.

(c) *Basis for computation.*—The Government's royalty shall be a percentage of the gross proceeds (including any bonuses, premiums, allowances, or other benefits) from the production sold, in the form sold (ore, concentrates, metal, or equivalent), at the point of delivery (the f. o. b. point); *except,* that charges of *the buyer* arising in the regular course of business, and shown as deductions on the buyer's settlement sheets, on account of the cost of treatment processes performed by *the buyer,* sampling and assaying to determine the value of the production sold, and freight paid by *the buyer* to a carrier (not the Operator), shall be allowed as deductions in arriving at the "gross proceeds" as that term is used herein. Any costs of treatment processes, sampling or assaying, or transportation, performed or paid by the Operator or by anyone other than the buyer, are not deductible in arriving at the "gross proceeds" as that term is here used. The term "treatment processes," as here used, means those processes (such as milling, concentrating, smelting, refining, or equivalent) applied to the crude ore or other production after it is extracted from the ground, to put it into a commercially marketable form; excluding fabricating or manufacturing. See Article 13.

(d) *Unsold production.*—If any production (ore, concentrates, metal, or equivalent), after the lapse of six months from the date the ore was extracted from the ground, remains neither sold nor used by the Operator in integrated manufacturing or fabricating operations (for instance, if it is stockpiled), the Government, at its option, as long as it so remains, may require the computation and payment of its royalty on the value of such production in the form (ore, concentrates, metal, or equivalent) it is in when the Government elects to require computation and payment. If any production is used by the Operator in integrated manufacturing or fabricating operations before the Government makes its election, the Government's royalty on such production shall be computed on the value therof in the form in which and at the time when it is so used. "Value" as here used means what is or would be gross income from mining operations for percentage depletion purposes in Federal income tax determination, or the market value, whichever is greater.

(e) *Percentages of royalty.*—The percentages of the Government's royalty shall be as follows:

One and one-half (1½) percent of amounts ("gross proceeds" or "value") not in excess of eight dollars ($8.00) per ton of production in the form in which sold, held, or used, plus one-half (½)

percent for each additional full fifty cents ($0.50) by which such amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) percent of such amounts.

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

(f) *Time for computation and payment.*—The Government's royalty shall be computed and paid currently upon each lot sold, held, or used in integrated operations, as the case may be, as above provided in this article.

(g) *Lien for payment.*—To secure the payment of its percentage royalty, there is hereby granted to the Government a lien upon the land or the Operator's interest in the land and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(h) *Notice to purchasers.*—The Operator shall give notice of the Government's claim for royalty to any purchaser of the production, and shall authorize and direct such purchaser to pay the royalty directly to the Government and to furnish the Government with copies of the settlement sheets. If the records of any production and sales or other disposition of production, whether the production is by the Operator or by others, are not made available to the Government, the amount of the royalty may be estimated by the Administrator, Defense Minerals Exploration Administration, or his successor, and his estimate thereof shall be final and binding upon the Operator.

(i) *No obligation to produce.*—Nothing in this contract is to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any production operations.

(j) *Government not obligated to buy.*—Nothing in this contract shall be construed as imposing any obligation on the Government to purchase any minerals mined or produced from the land.

ARTICLE 9. *Interests in purchased property.*—(a) *Title and ownership.*—All costs under this contract shall be incurred by the Operator in the Operator's own name and for the Operator's own account; but any property acquired to the cost of which the Government contributes shall belong to the Operator and the Government jointly in proportion to their respective contributions, although title thereto shall be taken in the name of the Operator.

(b) *Preservation of property.*—Until the final disposal of any property in which the Government has an interest the Operator shall preserve and protect same for the best interest of the Government, any reasonable and necessary costs thereof to be treated as an allowable cost of the project. After the completion of the work or termination of the Government's obligation to contribute, or when such property is not in use for or needed for the work, the Operator shall neither use it without the written consent of the Government nor without paying a reasonable rental to be fixed by the Government for its interest.

(c) *Disposal of property.*—Upon the completion of the work or termination of the Government's obligation to contribute to costs, or when the property is no longer needed for the work, the Operator shall promptly dispose of salable or salvageable property in which the Government has an interest for the joint account of the Government and the Operator, either by return to the vendor, by sale to others, or purchase by the Operator or the Government at a price at least as high as could be obtained from others, unless the Government in writing waives its interest in any such property. Without advance approval of the sales price by the Government the Operator shall not sell at any price any item of property the cost of which was more than $500, and shall not sell at less than 25 percent of the purchase price any item of property which cost $500 or less. The Government, in lieu of approving the sales price for any such item, may itself purchase the item at the best price which the Operator is able to obtain or himself cares to give. Property remaining upon any termination of the work shall be considered in groups or categories (such as drill steel, or explosives, or pipe, or rails), and if the original cost of the remaining unexpended portion of any such group or category is less than $50, the Government waives its interest therein. If necessary to accomplish the disposal of any item the Operator shall dismantle and sever it from the land, the cost thereof to be treated as a cost of the project.

(d) *Default of the Operator re disposal.*—If within 90 days after the completion of the work or termination of the Government's obligation to contribute to costs, or after the property is no longer needed for the work, or after such further time as the Government may in writing allow, the Operator has failed to sell or otherwise liquidate or dispose of any property in which the Government has an interest, the Government, at any time prior to final settlement under the contract, may pursue one of the following two courses: (1) the Government, by written notice to the Operator, may place upon such property what in its opinion is a fair valuation thereof, not in excess of the cost less 1.66 percent per month from the

date such property was purchased under this contract to the termination of said 90-day period; and such property shall thereupon be considered and accounted for as having been purchased by the Operator at the valuation so fixed by the Government; or (2) the Government may enter and take possession of such property wherever it may be found, and remove and dispose of it for the joint account of the parties.

ARTICLE 10. *Termination of the Government's obligations.*—(a) If in the opinion of the Government operations at any time have failed to achieve anticipated results that indicate the probability of making a worthwhile discovery, and in the opinion of the Government further operations are not justified, the Government may give the Operator written notice thereof, and thereupon: (1) the Government shall be free of all obligation to contribute to costs not then incurred other than such as may be allowable under the provisions of the contract as necessary and incidental to winding up, reporting, and accounting; and (2) the Operator shall be free of all obligation to prosecute the work other than such as may be necessary and incidental to winding up, reporting, and accounting.

(b) If in the opinion of the Government the Operator is in any manner in default under the terms of the contract, the Government may give the Operator written notice of such default with a specification of reasonable time within which the default must be cured; and if the Operator fails to cure such default as required, thereupon: (1) the Government shall be relieved of all obligation to contribute to costs not incurred when the notice was given, other than such as may be allowable by the provisions of the contract as necessary and incidental to winding up, reporting, and accounting; and (2) the Operator shall be free of all obligation to prosecute the work other than such as may be necessary and incidental to winding up, reporting, and accounting. The remedy provided for the Government in this paragraph "(b)" is in addition to any other remedy provided in this contract, and in addition to any other remedy the law may provide for breach of contract.

(c) The giving of any notice by the Government under the provisions of this Article 10 shall not affect the Government's rights as provided for in the contract with respect to a percentage royalty, and such rights shall be fully preserved.

ARTICLE 11. *Notices to be given by the Government* may be delivered to the Operator, or may be sent by registered mail addressed to the Operator at his mailing address stated in this contract. If mailed, notices are deemed to have been delivered five days after the date of mailing.

ARTICLE 12. *Officials not to benefit.*—No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this contract or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE 13. *Changes and added provisions.*—

(a) In Article 3, the words following the reference to Article 10 are deleted, and the following words are substituted: "shall have completed the work."

(b) Categories (2) through (7) of Article 6(a) are deleted.

(c) In addition to the costs of work estimated in Exhibit "A" by categories of actual costs, the costs of work requirements specified in Exhibit "A" as "Fixed Unit Costs" are allowable costs of the project. The Government will contribute to the fixed unit costs as work units are performed. A "Fixed Unit Cost" is an agreed price for each unit of work to be performed regardless of costs incurred by the Operator. Costs set forth in Exhibit "A" include all allowable costs of the work to be performed under the contract.

(d) In Article 6(a), that part of the last sentence in the first paragraph commencing after the semicolon, is deleted.

(e) In Article 6(c), the reference to Article 9 is changed to Article 8.

(f) In Article 8(b): The word "minerals" includes limestone and dolomite products produced in processing ore.

EXPLORATION PROJECT CONTRACT
BENJAMIN H. PUTNAM
DOCKET NO. DMEA-4381

RECEIVED
SEP 24 1956

ANNEX I

The land referred to in Article 2 comprises a total of 378 acres, more or less, and consists of six parcels of land with respect to which the Operator, by agreements with the fee owners, has the exclusive right to prospect and drill for minerals and exclusive option to purchase the mineral rights.

The parcels are identified as follows:

Claude Wolfenbarger	18 acres
John and Ida Wolfenbarger	50 acres
Sterling Seesaree	35 acres
A. B. and Pearley (Pearlie) Dalton	50 acres
Henry L. and Martha Wolfe, et al.	82 acres
(Leffew Heirs) Clem Cope, et al.	143 acres

The legal descriptions of the parcels are contained in separate certificates of title covering each parcel, certified by D. S. Beeler, attorney, Rutledge, Tennessee. Copies of each certificate are contained in the official docket file of the Defense Minerals Exploration Administration, and the descriptions therein are incorporated herein by reference.

Copies of the following agreements under which the Operator holds the land are contained in the official docket file of DMEA pertaining to this Contract and are recorded in the Register's Office, Grainger County, Tennessee:

Claude Wolfenbarger - dated January 21, 1956, recorded in Miscellaneous Book, Volume 18, page 351.

John and Ida Wolfenbarger - dated January 17, 1956, recorded in Miscellaneous Book, Volume 18, page 358.

Sterling Seesaree - dated January 18, 1956, recorded in Miscellaneous Book, Volume 18, page 354.

A. B. and Pearley Dalton - dated January 27, 1956, recorded in Miscellaneous Book, Volume 18, page 353.

Henry L. Wolfe and Martha Wolfe, et al. (heirs of S. F. Wolfe) - dated February 29, 1956, recorded in Miscellaneous Deeds Book, Volume 18, page 443, also page 445.

Cleo and Wallace Cope, et al. - dated January 18, 1956, recorded in Miscellaneous Book, Volume 18, page 342.

All of the above-cited land parcels are shown on the attached map entitled "Map of Indian Creek Prospect."

SPECIAL AGREEMENT CONCERNING LAND

1. In the event the Operator at any time during the period expiring ten years from the date of this Contract acquires any interest, title or equity, in any lands contiguous to the premises described in this Contract, it is agreed that such contiguous lands shall thereupon become subject to the provisions of this Contract and the parties hereto shall promptly execute amendments to this Contract listing such contiguous lands as lands included in this Contract.

2. It is further agreed that the Operator may, at any time before the expiration of sixty days following the conclusion or termination of exploration work performed pursuant to the terms of this Contract, request the Government to delete from this Contract such lands described in the Option contracts listed in this Annex I, or in any amendments thereto, as have no known value for mineral production. The Government will promptly prepare amendments removing the specified lands from the Contract, which amendments shall provide that the Operator:

(a) certifies the lands have no known value for mineral production;

(b) has, prior to the execution of the respective amendment, surrendered or otherwise disposed of all of its interest, title, and equity in such lands, and any minerals produced therefrom, including any option, lease or permit thereto, without any consideration whatsoever, including future compensation, for such surrender or disposition, other than relief from the cost of maintaining such interest;

(c) agrees that no benefit from such lands or any production of minerals therefrom will accrue to the Operator or to any of its subsidiaries, directly or indirectly, during the period expiring ten years from the date of this Contract;

(d) agrees that if the Operator or any of its subsidiaries acquires any interest, title, or equity in such lands or any minerals produced therefrom, or derives any benefit therefrom, before the expiration of ten years from the date of this Contract, the lands with respect to which such interest, title or equity is acquired, and any

minerals produced therefrom shall be deemed subject to this Contract and any certification from the date that the Operator or its subsidiaries acquired such interest, title,or equity, or any benefit therefrom, until the expiration of ten years from the date of this Contract, or until the total net amount contributed by the Government without interest is fully repaid, whichever occurs first.

EXPLORATION PROJECT CONTRACT
BENJAMIN N. PUTNAM
DOCKET NO. DMEA-4381

EXHIBIT "A"

Description of the Work

The purpose of the project is to explore for ores of zinc by diamond drilling, plus such overburden drilling as may be necessary. The holes to be drilled are roughly indicated on the attached map entitled "Map of Indian Creek Prospect." The locations, inclinations, and depths of all holes shall be subject to prior Government approval. The hole locations shown on the map may be changed by the Operator in the light of results obtained as the work progresses, if such change is approved in advance by the Government.

It is estimated that twenty-three diamond drill holes, the depths of which will vary from approximately 400 feet to approximately 600 feet, will be required to accomplish the purpose of the project. All holes shall be drilled to the bottom of the Kingsport limestone, the underlying member of the Kingsport formation, unless the Government approves modification of such exploratory method. The total footage drilled shall not exceed 12,000 feet.

All drill core shall be properly logged and made available to the Government for examination. All significantly mineralized units of core shall be properly sampled and assayed for zinc; no sample shall be taken representing more than five feet of core length. Such assays, together with proper logs of drill holes, shall be reported to the Government, together with plan maps and sections showing the progress of the work. Diamond drilling shall be done with AX size, or larger, coring bits.

The project work shall be supervised at all times, by a competent engineer or geologist.

Estimated Cost of the Project

Actual Costs

Category (1) Independent Contracts

Overburden drilling and diamond drilling,
12,000 feet @ $3.00/ft. $36,000.00

Reaming - 600 feet	@ $2.00/ft.	$ 1,200.00	$37,200.00

The above rates cover all charges for reaming, cementing, water supply, casing, change of location, and all other charges which may be incurred by the diamond drill contractor. Casing left in holes at Option of the Operator shall not be a charge under the contract.

Categories (2) through (7) None -

Fixed Unit Costs (See Artice 13)

Incidental allowance 1/ for each foot of drilling completed, 12,000 feet	@ $0.26/ft.	$ 3,120.00	
140 Samples of drill core to be assayed	@ $1.50/sample	$210.00	3,330.00
Estimated Total Cost of the Project			$40,530.00
Government's Participation @ 50%			$20,265.00

1/ Includes all costs of the project whatsoever that are not included under Category (1) Independent Contracts and the fixed unit costs for assaying, and is in lieu of Categories (2) through (7) of Article 6(a) of the Contract.

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 1031 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

RECEIVED
JUL 13 1956

July 13, 1956

Memorandum

To: Operating Committee, DMEA - Washington

From: DMEA Field Team, Region V - Knoxville, Tennessee

Subject: Application from B. H. Putnam, Indian Creek Project, Grainger County, Tennessee (zinc)

Enclosed are three copies of the subject application. We are keeping the fourth copy for our use.

Part of this area is described under the name "L. L. Mallicoat Prospect" in Tennessee Division of Geology Bulletin 31, and in an unpublished report (1944) in the U. S. Geological Survey files.

The 8 holes shown near the east edge of plate 2 were drilled by New Jersey Zinc Company. We have no information concerning their results.

Robert A. Laurence

Robert A. Laurence
Executive Officer, DMEA
Region V

V. J. Lynch

V. J. Lynch, Member
Bureau of Mines

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

RECEIVED JUL 16 1956

Not to be filled in by applicant

Docket No. 4381
Metal or Mineral ~~3~~ Zinc
Date Received 7-16-56
Estimated Cost 40,663.79
Participation (Government %)

INSTRUCTIONS

JUL 16 1956

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:

Benjamin H. Putnam, Operator (Joint Venture, Illinois)
170 E. Pearson St.
Chicago 11, Illinois

(*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. Not applicable.

(*d*) If a partnership, add to the above statement the names and addresses of all partners. Not applicable.

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 Refer to accompanying Section 3(a).

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(*b*) State any mine name by which the property is known. Not applicable.

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise Agreement with option to purchase mineral rights.

(*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. Refer to accompanying Section 3(d).

(*e*) If you own the land, describe any liens or encumbrances on it Not applicable.

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. Not applicable.

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. Refer to Geologic Report.

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades. Not applicable.

(*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. Refer to accompanying Geologic Report.

(*d*) State the facts with respect to the accessibility of the project: Access roads, distances to shipping, supply and residence points. Refer to attached Section 4(d).

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

Refer to attached Section 4(e).

16—66551-1

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

(*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. Refer to accompanying Geologic Report.

(*c*) The work will start within 60 days and be completed within 9 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. Refer to attached Section 5(d).

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: Section 6.

(*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.). Refer to attached Section 6(a).

(*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. Refer to attached Section 6(b).

(*c*) *Operating materials and supplies.*—Furnish an itemized list, including items of equipment costing less than $50 each, and power, water and fuel. Refer to attached Section 6(c)

(*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. Not applicable.

(*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. Not applicable.

(*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. Not applicable.

(*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. Refer to attached Section 6(g).

(*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. Not applicable.

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)? Yes.

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

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

Explain in detail on acompanying paper.

CERTIFICATION

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

Dated July 12, 1956

Benjamin H. Putnam, Operator
(Applicant)

By B H Putnam

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

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SECTION 4 (d)

Ready access to this prospect may be had by traveling a black-top road which leads northeast from Thorn Hill, Grainger County, Tennessee (on U.S. 25 E) for a distance of five (5) miles to the Indian Creek road. The black-top road which leads from Thorn Hill to the northeast joins Tennessee State Highway 66 about eleven (11) miles northeast of the prospect.

The nearest rail shipping point is Washburn Station on the Southern Railway, sixteen (16) miles southwest of the prospect. Supply and residence points are at Knoxville about fifty (50) miles to the southwest and at Morristown, some twenty (20) miles to the south.

MARIETTA, OHIO
BOX 913
S. H. BOTNAM, OPERATOR

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SECTION 4 (e)

Manpower is in good supply in the area. Materials, supplies and equipment are readily available within a radius of fifty (50) miles. Water for drilling purposes is not plentiful but is adequate.

The nearest power supply is the Tate Springs Sub-Station which is 4.7 miles south of the center of the prospect.

J. H. PUTNAM, OPERATOR
BOX 64
MARIETTA, OHIO

SECTION 5 (d)

The applicant is the owner and operator of oil and gas properties in Ohio, West Virginia, Illinois, Michigan, Alabama and Oklahoma; high-calcium limestone deposits in Alabama; high-silica sand deposits in Indiana; mineral leases and mineral options on private lands in North Carolina and Tennessee and prospecting permits for radioactive materials on lands acquired by the Federal Government in North Carolina and Tennessee. The applicant has been engaged in such operations for the past thirty-five (35) years.

The applicant discovered and developed the Putnam Gas Field located in Ohio and West Virginia with the aid of associates. The applicant as operator of these properties drilled three (3) tests with an average depth of six thousand (6000) feet to the Clinton sandstone, sixty-six (66) wells with an average depth of four thousand one hundred (4,100) feet to the Oriskany sandstone, and seventy-one (71) wells with an average depth of one thousand nine hundred (1,900) feet to the Berea sandstone. The total amount of drilling is about 425,000 feet. The development of these properties was commenced in 1950 and is at the present time substantially complete.

The applicant owns in fee-simple, a large high-silica sand deposit in Harrison County, Indiana. This property is adjacent to the Ohio River and a large pilot plant is now being assembled to finally test and clean the sand for use in the glass industry.

The applicant is now core-drilling a high-calcium limestone property which he owns in Madison County, Alabama. This property lies beside the navigable Tennessee River and the N C & St L Railway. Large quantities of carbide-quality limestone are at present indicated on this strategically located property.

E. H. PUTNAM, OPERATOR
BOX 647
MARIETTA, OHIO

The applicant has under lease the oil and gas rights of three thousand five hundred (3,500) acres of land in Mobile County, Alabama, which appears at this time to have a considerable value. The property is very near the recent major oil discovery at Citronelle.

The applicant holds mineral options and mineral leases on twenty (20) zinc prospects in East Tennessee and is in the process of evaluating them. In the Indian Creek area in Grainger County, Tennessee, which is the prospect under consideration in this application, the applicant has drilled a total of three thousand two hundred forty-three (3,243) feet in five core holes.

The personnel who have been involved in the exploratory activities on the Indian Creek Prospect are as follows:

H. B. Burwell — Geologist — formerly Oklahoma District Geologist for Shell Oil Co. — formerly State Geologist of Tennessee — actively associated with the applicant for six (6) years.

R. C. Wilmot — Geologist and Mining Engineer — large experience in zinc and mercury in California and the Pacific Northwest and uranium on the Colorado Plateau.

William T. Hill — formerly Mining Geologist with American Zinc Co. in East Tennessee— geologist with the Tennessee Division of Geology in East Tennessee.

Fredrick T. Fischer — Geologist — formerly with U. S. Geological Survey — associated with the applicant for six (6) years.

John W. Spears — Geologist — associated with applicant for five (5) years.

Donald G. Christy — Mining Engineer — formerly associated with Reserve Mining Co., of Minnesota.

Robert V. Benjamin — Attorney — Head of Land and Legal Departments.

It is proposed that this project be under the direct supervision of William T. Hill and that the detailed work which is directly related to the project be done by John W. Spears and Donald G. Christy.

WYSELLY OHIO
BOX 613
B. H. MOLMAN RESERVOIR

SECTION 6

The estimated costs for the various parts of Section 6 are listed and tabulated below:

Costs for Section 6(a)	$ 37,200.00
" " " 6(b)	2,368.79
" " " 6(e)	720.00
" " " 6(g)	375.00
Total estimated costs	$ 40,663.79

WYBRIELLY C...
BOX ...
B... ...

SECTION 6(a)

Attached are three (3) bids for core drilling in the Indian Creek Area:

E. J. Longyear Company

Joy Manufacturing Company

Putnam Drilling Company

The total amount of drilling recommended in the exploratory program of the Geologic Report is 12,000 feet.

12,000 feet of AX core hole @ $ 3.00 per foot	$ 36,000,00
600 feet of reaming AX hole @ $ 2.00 per foot	1,200.00
Total estimated drilling costs	$ 37,200.00

R. H. BOLMAN OPERATOR
BOX 68
MARIETTA, OHIO

Longyear

E. J. LONGYEAR COMPANY
General Offices, Foshay Tower
Minneapolis 2, Minnesota, U. S. A.
TELEPHONE: FEDERAL 2-2447 • CABLE LONGCO

July 2, 1956

Mr. B. H. Putnam
170 East Pearson
Chicago, Illinois

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Diamond Drilling - Thorne Hill and
Indian Creek Areas - Grainger County
Tennessee

Dear Mr. Putnam:

1. Pursuant to our conversation of today, we are pleased to present below our proposal for your contemplated exploratory drilling program which is to be carried out in the above-described area.

2. We understand that the work as now planned will consist of a series of AX-size vertical holes ranging up to a maximum depth of 1,000 feet, with a minimum aggregate footage of 10,000 feet; and that the formation to be drilled will consist of Knox dolomite and other formations typical of these areas. We further understand that the water required for the drilling operations is available within a maximum distance of 7,000 feet of any proposed drill hole.

3. For this work we propose to furnish two complete Longyear diamond core drill units, together with the necessary accessory equipment required to accomplish the work as planned. We further propose to supply all service equipment required for moving the equipment from one location to another, and other services and facilities needed in connection with supplying water for our drilling purposes. We also propose to operate the drills on a two shift basis providing sufficient experienced drillers are available.

4. We will carry public liability insurance covering personal injury and property damage, and Workmen's Compensation insurance, and also, all-risk insurance on the drilling equipment protecting against loss by theft, fire, flood, land-slides and other similar hazards.

We will also assume and pay any and all Old Age Benefit, Unemployment and Social Security taxes and contributions imposed by federal or state authorities.

Certificates showing the coverage referred to will be furnished upon request.

5. Based upon the conditions as outlined above, we are pleased to quote as follows:

a) Overburden Drilling -

0 - 100 feet in depth, measured from the collar of the hole.....$3.00 per foot

cc: Mr. B. H. Putnam - Maryville, Tenn.

b) Diamond Core Drilling

Top of Ledge to 1000 feet in depth, measured from the collar of the hole -

AX-size, recovering core approximately 1-3/16" in diameter.....$3.35 per foot

BX-size, recovering core approximately 1-5/8" in diameter.....$3.75 per foot

c) Reaming and casing operations - Top of Ledge to 1,000 feet in depth - Ream AX hole to receive AX casing.....$1.75 per foot

d) Drill hole inclination tests.....$6.75 per hour

e) Delays for your convenience or for which you are responsible.....$6.75 per hour

f) Casing left in drill holes at your request:

AX-size.....$1.54 per foot
BX-size.....$1.96 per foot

6. The above-quoted drilling rates are based on wage rates currently being paid in the Southeast District. If for any reason it becomes necessary to adjust the wages being paid our workmen because of demands of labor union or otherwise, it is agreed and understood that the Longyear Company reserves the right to request a proportionate increase in drilling rates to cover the resulting increased operating expense.

8. Invoices covering the work performed will be submitted as soon as possible after the first of each month, and will become due the twentieth day of the month following the date of invoice.

9. Drill cores will be turned over to your representative in core boxes furnished by you at each drill hole location.

10. We are pleased to have the opportunity to consider this work. Should our proposal be found acceptable, we are prepared to commence the drilling operations within a maximum of thirty days after receipt of official notice to proceed.

Very truly yours,

E. J. LONGYEAR COMPANY

M. J. Gleason

M. J. Gleason, Manager
Contract Drilling Division

MJG:bal

ACCEPTED:

B. H. PUTNAM

_____

Date: _____

cc: Mr. B. H. Putnam - Maryville, Tenn.

JOY MANUFACTURING COMPANY
900 WOODLAND AVENUE
MICHIGAN CITY, INDIANA
TELEPHONE 7-7231

EXECUTIVE OFFICES
HENRY W OLIVER BUILDING
PITTSBURGH 22, PA.

June 21, 1956

AIR MAIL

B. H. Putnam, Operator
P.O. Box 550
Maryville, Tenn.

Attention: Mr. Wm. Hill

Gentlemen:

In compliance with your request, we wish to set forth below prices and conditions covering proposed core drilling for the exploration of zinc deposits in Granger and Hancock Counties, Tennessee.

Indian Creek - Copper Ridge Area

Minimum Footage - 5,000 ft.

	AX Core
From surface to a depth of 700 ft.	@ $3.00 per ft.
Reaming AX Holes for AX Casing	2.00 " "
Cementing Holes	7.50 per hr.

Thornhill Area

Minimum Footage - 10,000 ft.

	AX Core
From surface to a depth of 700 ft.	@ $3.00 per ft.
Reaming AX Holes for AX Casing	2.00 " "
Cementing Holes	7.50 per hr.

We will furnish for this proposed drilling two Joy #12-B gasoline driven core drills complete with operating equipment, and will conduct the drilling operations on the basis of two 8-hour shifts per day per drill and six days per week.

We will furnish the necessary labor, material and water with the exception of core boxes.

We can start the work within two weeks after acceptance and notice to proceed with the drilling.

Thanking you for giving us an opportunity of quoting on your requirements, we are,

Yours very truly,

JOY MANUFACTURING COMPANY

W. J. Pilarski, Mgr.
Contract Drill Division

WJP/et

PUTNAM DRILLING COMPANY

DRILLING CONTRACTORS
MARIETTA, OHIO

June 25, 1956

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Mr. B. H. Putnam
P. O. Box 550
Maryville, Tennessee

Dear Mr. Putnam:

COPY

In answer to your recent request for a bid on prices and governing conditions for your proposed core-drilling programs for zinc deposits in the Indian Creek area, Grainger County, Tennessee, we are pleased to submit the following:

We propose to furnish complete Longyear diamond-core drilling units, the equipment and casing which is necessary for their proper operation. Also, we will furnish all water, the pumping equipment necessary for the operation of these drills, and trucks for their transportion. These units will be operated on a two-8 hour shift, 5 day per week basis.

We will carry proper Public Liability Insurance, Workmen's Compensation, and will pay Old Age Benefits, Unemployment and Social Security taxes and others required by the U.S. Government or the State of Tennessee.

We will leave AX casing in the hole at your request and you will be charged $1.50 per foot.

Cores will be delivered to your agent in core boxes furnished by you at the location of the drilling rig.

Monthly statements will be presented on the 1st of each month and will be payable by the 10th of the following month.

Subject to the above conditions, we agree to quote as follows:

Minimum footage	Rate
AX size from surface to a depth of 750 ft.	$ 3.00
Reaming AX hole to receive AX casing	2.00
Cementing holes, per sack	15.00

We agree to start work ten (10) days after your acceptance of this bid and our proper notification.

Very truly yours,

PUTNAM DRILLING COMPANY

William H. Putnam

William H. Putnam

WHP:jo

SECTION 6(b)

We propose to use the following personnel in the course of the project:

Donald G. Christy, engineer

To survey proposed drilling locations. To resurvey drilled locations.

The estimated time required for his services for the complete project is 10 days. Salary $ 183.40, workman's compensation $ 1.54, employer's liability insurance 8.72 and other payroll taxes $ 10.79. Total - $ 195.45

Two helpers to aid the Engineer for 10 days. Wages $ 160.00, workman's compensation $ 1.34, employer's liability insurance $ .62 and other payroll taxes $ 8.00. Total - $ 169.96

Transportation for the above men to and from work for 10 days - $ 40.00

Total engineering costs - $ 406.41

John W. Spears, geologist

His duties will be to log core, split core and serve as field supervisor for the operator. It is estimated that one-half (½) of his time will be required for the duration of the project. It is also estimated that at the rate of 60 feet per day (2 shifts) per drilling rig and by using 2 rigs that the 12,000 feet of hole can be drilled in 100 working days. At 5 working days per week this will require 20 weeks or approximately 5 months. In accordance with this estimate charges for Mr. Spear's services will be as follows:

Salary $ 250.00 (½)time, workman's compensation $ 2.10, employer's liability insurance $ .98, other payroll taxes $ 13.25. Total per month is $ 266.33. Five (5) months at $ 266.33 - $ 1,331.65

Transportation for 100 days at $ 2.00 per day - 200.00

Total for Mr. Spears - $ 1,531.65

SECTION 6(b) Continued

William T. Hill, geologist

Mr. Hill will be directly in charge of the project for the operator and it is estimated that he will spend one (1) day per week on this project. Thus a total of 20 days time should be charged to the project.

For 20 days time: Salary $ 330.40, workman's compensation $ 2.82, employer's liability insurance $ 1.30, other payroll taxes $ 16.21.

Total -	$ 350.73
Transportation for 20 days @ $ 4.00 per day -	80.00
Total for geological charges -	$ 1,962.38
Total estimated costs for Section 6(b) -	$ 2,368.79

S. H. PUTNAM, OPERATOR
BOX 981
ZANESVILLE, OHIO

SECTION 6(c)

It is estimated that we will need 150 core boxes:

150 core boxes @ $ 4.80	$ 720.00

This includes one (1) box per hole for mineralized core and 130 boxes for 4,000 feet of core saved for stratigraphic purposes.

B. H. PITTMAN, OPERATOR
BOX 243
MARIETTA, OHIO

SECTION 6(g)

It is estimated that we will need about 75 zinc analyses:

75 analyses @ $ 5.00	$ 375.00

Workman's compensation, employer's liability insurance and payroll taxes figures will be found in Section 6(b).

D. H. BUTTMAN, OPERATOR
BOX 911
MARIETTA, OHIO

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GEOLOGIC REPORT ON THE INDIAN CREEK ZINC PROSPECT, GRAINGER COUNTY, TENNESSEE INCLUDING THE RESULTS OF A GEOCHEMICAL SURVEY AND A PROPOSED EXPLORATION PROGRAM

by

William T. Hill and others

Geologists for

B. H. Putnam, Operator

Maryville, Tennessee

July, 1956

SUMMARY

The Indian Creek zinc prospect is located in the Copper Ridge zinc district five and one half (5-1/2) miles northeast of Thorn Hill, Grainger County, Tennessee. Investigations were begun to determine if commercial deposits of zinc were present. The examination consisted of detailed geologic mapping and prospecting, followed by a geochemical survey.

Approximately five hundred (500) soil samples were taken and analyzed for zinc. Plotting and contouring of the zinc values revealed the presence of two large soil anomalies.

Five holes were drilled on 300-foot centers along the general strike. In all five (5) holes, several zones of mineralization were encountered ranging in depth from near the collar of the holes to below the Mascot-Kingsport contact. The thickness and grade of mineralization increase toward the two anomalies.

Twelve thousand (12,000) feet of additional drilling is recommended in order to determine if commercial mineralization is present.

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Plate 1. Map of Indian Creek Prospect Showing Properties Controlled by Agreement with Option to Purchase Mineral Rights.
2. Map of Indian Creek Prospect Showing Geology and Outline of Geochemical Anomalies.
3. Geochemical Map of Indian Creek Prospect Showing Percentage of Zinc in Soil and Location of Proposed Diamond Drill Holes.
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Figure 1. Map of Copper Ridge Zinc District---------- 1A

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INTRODUCTION

The Copper Ridge zinc district extends for 35 miles along Copper Ridge (Figure I). The ridge rises near the junction of Roane, Loudon, Anderson, and Knox counties and continues northeastward in a relatively straight line into Virginia. Throughout its length in Tennessee the ridge maintains an average elevation of about 1600 feet. It is broken through transversely by numerous stream-cuts. The ridge is a structural unit made up of a sequence of Cambrian formations which include the Rome shale, the Rutledge limestone, the Rogersville shale, the Maryville limestone, the Nolichucky shale, and the Cambro-Ordovician Knox dolomite, all striking northeast and dipping at variable angles to the southeast. The Knox dolomite forms the crest of the southeast slope of the ridge and continues to the southeast into the valley where it is overlain by the Chickamauga limestone.

The Knox group in this region has been divided into five formations, named in descending order: Mascot, Kingsport, Longview, Chepultepec, and Copper Ridge.

The portion of the ridge in which zinc mineralization has been found extends from Washburn Station in Grainger County to the Tennessee-Virginia line. Sphalerite occurs in beds ranging from the Chepultepec dolomite to the middle part of the Mascot dolomite, although the greater portion of the mineralization occurs in the basal limestone section of the Kingsport formation, the overlying Kingsport dolomite and the basal Mascot dolomite. The geology and mineralization is similar to that in the Mascot-Jefferson City zinc district to the southwest.

The Indian Creek prospect lies 5-1/2 miles northeast of Thorn Hill, Grainger County, Tennessee. The Indian Creek properties are located on the southwest limb of a syncline whose axis lies 2 miles to the northeast. The properties

JUL 1 0 1956

lie 6 miles southwest of the Flat Gap mine owned and operated by the New Jersey Zinc Company and 3-1/2 miles northeast of the Idol prospect (Figure I). The tract consists of 1572 acres that lies both northeast and southwest of Indian Creek (Plate I).

GEOLOGY

The Indian Creek properties are underlain by the Ordovician Knox dolomite and Chickamauga limestone. The Knox underlying the properties can be divided into the Longview dolomite, Kingsport formation and the Mascot dolomite.

Longview dolomite

The Longview dolomite is the lowermost unit mapped and studied. It consists of a 200 foot thick section of light-to medium-gray fine-grained dolomite interbedded with brownish fine-grained limestones that have in part been recrystallized to medium-to coarse-grained siliceous dolomite (locally termed "recrystalline). The limestones are more abundant in the upper part of the formation.

The Longview outcrops along Indian Creek and the adjacent slopes and along Scearce Creek. Away from these two exposures outcrops are lacking and the presence of the formation is indicated only by its residual products. Owing to the siliceous nature of the formation, the soil overlying the bedrock consists mainly of large white chert blocks and nodules that vary in size from a fraction of an inch to several feet in diameter. This cherty soil can be mapped as a unit.

Kingsport formation

<u>Kingsport limestone:</u> The Longview is overlain by the Kingsport formation which, for convenience was subdivided into a lower 115 foot thick limestone member and an upper dolomite member.

Along the southwest side of the Indian Creek road the Kingsport limestone consists essentially of fine-grained limestone with a few beds of recrystalline. On the southwest slope above the road several beds of recrystalline are present that appear to be equivalent to some of the limestone beds in the road. On the northeast side of the creek, more of the limestone beds appear to have been dolomitized.

At Scearce Creek, the greater portion of the basal Kingsport consists of limestone with a few thin beds of recrystalline. Both the limestone and recrystalline have been slightly fractured and sealed with white gangue dolomite and small amounts of pyrite.

One outcrop of siliceous recrystalline occurs on the Starling Scearce tract. Like the underlying Longview, exposures of the basal Kingsport limestone are rare. The soil differs somewhat from Longview soil in that it is not as cherty. Due to the presence of the cherty Longview on the uphill side, a great deal of the Kingsport residuum has been thinly covered by Longview chert, masking the true physical character of the limestone soil.

At various localities in the Copper Ridge District, zinc mineralization occurs in the basal Kingsport limestone. Many of the deposits are almost confined to this horizon. Nowhere at Indian Creek was sphalerite found in the limestone section but recrystallization and silicification of individual beds is common, a phenomenon usually associated with mineralization of the Kingsport limestone.

On the A. B. Dalton farm, an anomaly that has a strike length of 700 feet and a dip length of 400 feet is present over the projected outcrop of the Kingsport limestone. Within the anomaly the zinc content of the soil varies from .07% to .30 ¼%. Contouring revealed the presence of three "highs" separated by progressively lower values. The significance of this anomaly is that apparently mineralization is present in the limestone member of the Kingsport formation.

The contact between the Kingsport limestone and the Longview dolomite is an arbitrary one and is placed at different stratigraphic horizons by different observers. For convenience, the contact between a siliceous bed of recrystalline overlain by a light gray dolomite bed was selected as the top of the Longview dolomite. This zone is probably equivalent to the "U" bed zone of the Mascot-Jefferson City District.

Kingsport dolomite: The Kingsport limestone is overlain by a section of light-to medium-gray fine-grained dolomite that varies in thickness from 155 feet to 200 feet. Results obtained from drilling reveal that the dolomite section decreases in thickness to the northeast (Plate 4).

The top of the Kingsport dolomite is marked by a 3 to 6 inch heavy sandy dolomite that is in part sealed with white chert ("chert-matrix" sandstone). The chert-matrix is exposed in place only at Indian Creek. Elsewhere the presence of the horizon is indicated by small blocks and slabs of sandstone in the residuum. These were traced out along strike both northeast and southwest of Indian Creek to determine the Mascot-Kingsport contact.

Throughout the Copper Ridge district, the Kingsport dolomite is locally brecciated, the breccia varying in thickness from a few inches to 100 or more feet. The breccias are usually sealed with a gangue consisting of white dolomite and locally sphalerite and pyrite. The breccias normally occur within a given bed or series of beds which may extend along strike for hundreds of feet.

On the southwest side of Indian Creek, 200 feet southeast of the limestone-dolomite contact, a foot or so of brecciated dolomite is present. Further to the southeast, near the top of the Kingsport dolomite, approximately 100 feet of sporadically brecciated dolomite occurs. Only pyrite mineralization was found.

The only other indication of brecciation on the southwestern side of Indian Creek is a large unmineralized float boulder 800 feet west of the creek near the top of the Longview formation.

On the northeastern side of the creek, between the Indian Creek fault and the Dalton fault, brecciation appears to be limited to the upper part of the Kingsport dolomite. A small prospect pit 25 feet long and 6 feet deep, occurs on the east side of the creek. Slightly brecciated dolomite waste sealed with white dolomite gangue and traces of sphalerite was found on a dump adjacent to the pit. On the face of the pit, a few small rosettes of sphalerite occur in a weakly brecciated dolomite. Fifty feet up the slope and along strike of the dolomite bed in the pit is a small excavation in brecciated and mineralized dolomite. The mineralized bed appears to be only a foot or so thick but the percentage of sphalerite in the rock is considerably higher than the lower pit.

Some specimens were estimated to contain 3 to 4% zinc. The extent of this exposure along strike could not be determined without further excavation.

Three hundred feet to the northeast are several massive outcrops of well brecciated dolomite that stratigraphically occur just above and below the chert-matrix sandstone. The brecciation of the dolomite is much more intense than that previously discussed and this brecciated zone is approximately 20 to 25 feet thick. Only pyrite mineralization was found in these exposures.

At Scearce Creek, sporadic brecciation occurs from above the chert-matrix sandstone to the top of the Kingsport limestone. The intensity of brecciation varies from bed to bed, being extremely intense in some beds and very weak in others.

Although a majority of the breccias are sealed with white gangue dolomite and pyrite, several outcrops of breccia sealed with chert and green shale occur 150 feet north of the chert-matrix sandstone on both sides of the creek. Another outcrop of siliceous breccia occurs 200 feet further north. The exact relationship of these breccias to zinc mineralization is not fully understood but they are very commonly associated with the sphalerite ore bodies that occur in the Kingsport formation.

The only sphalerite mineralization found at Scearce Creek was in a large piece of brecciated dolomite float near the creek on the northeast slope 100 feet downhill from the chert-matrix contact. Mineralization is limited to a few scattered badly oxidized patches of zinc carbonate.

Mascot dolomite

The Mascot dolomite is mostly well-bedded light-gray fine-grained dolomite, commonly slightly coarser and darker below the middle of the formation than above. Chert is not as abundant as it is in the Longview dolomite and as a result, the Mascot residuum consists essentially of a red clay with some chert.

Outcrops of the Mascot dolomite are common and occur throughout the strike length of the property. The best exposures occur along Scearce Creek and on the trail northwest of the creek. Brecciation is limited to the lower part of the formation.

Continuous exposures of the upper part of the formation are present in the creek beds on the northeastern portion of the properties. Approximately 600 feet west of the Hancock-Grainger County line and 750 feet north of Indian Creek three brecciated and mineralized outcrops occur, one in the creek 300 feet below the house and the other two 150 feet to the northeast of the creek exposure.

The exposures are well brecciated and have an estimated zinc content of 2.50%. Previous drilling by New Jersey Zinc Company around these exposures apparently did not appreciably extend the ore.

Chickamauga limestone

The base of the Chickamauga limestone lies unconformably on the Mascot dolomite. Locally, the unconformable relationships are not marked and the limestones appear to be conformable with the underlying dolomites.

In this area, the Chickamauga consists of interbedded lense-like beds of fine-grained, gray limestone, coarse-grained gray-to pink fossiliferous limestone and shaly nodular limestone. No systematic attempt was made to study the relationships of the different beds to each other.

Structure

The average strike of the rocks in the vicinity of Indian Creek is N 69° E and the dip is 35° south. Locally, the strike varies from N 55° E to N 70° E and the dip varies from 25° to 48° to the south.

The slight changes in strike and dip suggest that the overall structure may be a series of slightly folded northward trending anticlines and synclines. Such structures may account for some of the brecciation of the dolomites.

At Indian Creek, a large northwest-trending tear fault (Indian Creek fault) displaces the formations horizontally approximately 200 feet. For a distance of several hundred feet from the trace of the fault, the rocks have been sheared and brecciated.

A small tear fault (Dalton fault) leaves the trace of the Indian Creek fault near the intersection of Indian Creek road and the secondary road that parallels the ridge. The fault crosses Scearce Creek approximately 120 feet above the confluence of Indian and Scearce Creeks, then parallels the Indian Creek fault for 1400 feet before it dies out. Three hundred feet above the creek on the northeast slope the beds adjacent to the Dalton fault strike to the northwest and dip almost vertically.

GEOCHEMICAL WORK

Sampling and Analytical Methods Used

Following the geologic mapping and prospect examination, two lines were surveyed along the trace of the outcrop, one along the top of the Kingsport lime-

stone and the other along the bottom of the Mascot formation. Samples were then taken at 100 foot intervals (stations) along these lines. In order to insure better coverage, additional samples were taken 100 feet from each station at right angles to the surveyed line.

Individual samples were taken by driving a 1-1/4" cold-rolled steel rod into the ground for several feet, removing the rod, and picking up the sample with a beveled pipe of lesser diameter. Extreme care was taken to select samples relatively free of chert and organic materials, consequently the depth of sampling had to be varied from 2 to 4 feet.

The samples were then analyzed for zinc. The method used is similar to the one described by Lakin, Stevens, and Almond (1949), except a standard soil sample (previously determined to have a zinc content of .03%) was analyzed with each seven samples as a control.

Results Obtained

Plotting of the zinc content of the samples on the map revealed the presence of a series of positive soil anomalies along the Mascot-Kingsport contact starting at Scearce Creek and continuing along strike to the northeast for a distance of 3,000 feet. A few small anomalies were found along the top of the Kingsport limestone.

On the basis of these anomalies, drilling operations were begun to explore the possibilities of commercial mineralization.

After the completion of hole JW#2, it was decided that the trend and pattern of the anomalies was not entirely understood and additional samples were taken both north and south of the original sampling pattern until the entire anomalous areas were outlined (Plate 2 & 3). As a result of this work, the previously found anomalies were enlarged and localized into two large anomalies, one on the Leffew Heirs (Cleo Cope, et al) and John Wolfenbarger tracts, and the other

on the A. B. Dalton tract. Anomalous areas of lesser intensity occur between the two large anomalies.

The total strike length of the Leffew-Wolfenbarger anomaly is 700 feet and the dip length is 1,000 feet. Zinc values range from .07% to .30 +%. Contouring revealed three closely spaced "highs" of .30 +% values, separated by anomalous areas of lower values. The occurrence of the three highs probably indicates three or more zones of mineralization.

The anomaly on the A. B. Dalton tract has a maximum strike length of 1,000 feet and a dip length of 1,400 feet. This entire anomalous area is divided into a north anomaly that occurs over the projected outcrop of the Kingsport limestone (previously discussed under Geology, Kingsport limestone) and a southern anomaly over the Kingsport-Mascot dolomites. Contouring revealed a series of randomly distributed highs separated by anomalous areas of lower values.

A fact not revealed prior to the additional sampling was that the anomalies appear to trend almost due north. This probably is related to the trend of the mineralized bodies.

EXPLORATORY CORE DRILLING PROGRAM

Completed drilling

In order to explore the possibility of commercial mineralization, three vertical AX core holes (LH#1, JW#1 and JW#2) were drilled along strike on 300-foot centers. Two vertical AX core holes (JW#3 and SC#1) were drilled 460 feet apart on a line trending N66°E. Hole JW#3 is located S47°E 400 feet from hole JW#2. (See Plates 2 & 3 for locations) All of the holes collared in overburden, contacted bedrock from 28 to 45 feet and were bottomed in or below the Kingsport limestone. Total footage drilled was 3,213 feet -- the holes varying in depth from 560 to 750 feet. All of the core was logged in detail on strip logs which are available for examination.

The mineralized portions of the cores were split and sampled. The sampled portions were analyzed for zinc by The Nichols Laboratory, Analytical and Industrial Chemists in Knoxville, Tennessee.

Results of LH#1, JW#1 and JW#2: Diamond drill holes LH#1, JW#1 and JW#2 were drilled along a line trending N75°E on 300-foot centers. The line is approximately 350 feet south of the chert-matrix soil-sample line. Generalized records of the holes are presented on Charts #1, #2 and #3.

Plate 4 shows the mineralized zones and key stratigraphic horizons. A thin mineralized zone occurs in a brecciated medium-to dark-gray dolomite approximately 35 feet below the chert-matrix sandstone. The mineralized zone is thin and weak in JW#1 and JW#2 but increases in thickness and grade from JW#2 to LH#1. Two additional mineralized zones occur in LH#1 that are not present in JW#1 and JW#2. Because of poor core recovery in the lower mineralized zone of LH#1, three feet of core in the mineralized zone was lost. The addition of this core to the portion sampled probably would have increased the thickness and possibly the grade of the mineralization.

The increase in the amount and grade of mineralization to the southwest may indicate the existence of commercial mineralization in the vicinity of LH#1 and to the southwest. The presence of a large and strong soil anomaly supports this concept.

Results of JW#3 and SC#1: Owing to the occurrence of traces of sphalerite near the top of JW#1 and JW#2, holes JW#3 and SC#1 were drilled. Generalized records of the holes are presented on Charts 4 and 5.

In JW#3 a nine and one half (9-1/2) foot thick zone of mineralization was encountered 80 feet above the top of the "M" sand zone. (See Plate 4 for stratigraphic horizons) The commercial potential of this lead has not been explored. Traces of sphalerite were also found 8 feet and 140 feet above the chert-matrix sand.

LH #1 collared in the Mascot dolomite and was drilled to a depth of 750 feet.

Depth	Fm. Name	General Rock Type	Stratigraphic Horizons	Mineralization
0'- 31'		Overburden		
31'-195'	Mascot	Dolomite and chert	Chert-matrix type ss. @ 155' (Upper chert-matrix ss.) Chert-matrix @ 195'	35' - 39', 4' @ .2% Zn 179' -183½', 4½' @ .5% Zn
195'-346'	Kingsport	Dolomite and chert	Top of limestone member @ 346'	228'-235', 7' @ 1.48% Zn Heavy FeS from 340'-405'
346'-556'	Kingsport	Recrystalline, dolomite and chert	Base of the Kingsport @ 556'	
556'-614'	Longview	Predominantly recrystalline with some dolomite and chert		
614'-750'	Longview	Dolomite and chert	Hole bottomed @ 750'	

Chart 1

JW #1 collared in the Mascot dolomite and was drilled to a depth of 575 feet.

Depth	Fm. Name	General Rock Type	Stratigraphic Horizons	Mineralization
0'- 45'		Overburden		
45'-180'	Mascot	Dolomite and chert	Upper chert-matrix @ 118' Chert-matrix @ 180'	Trace ZnS @ 57' 218'-220½, 2½' @ .5% Zn
180'-337'	Kingsport	Dolomite and chert	Top of limestone @ 337'	
337'-490'	Kingsport	Recrystalline, limestone, dolomite and chert	Base of the Kingsport @ 490'	
490'-558'	Longview	Predominantly recrystalline with some dolomite and chert		
558'-575'	Longview	Dolomite and chert	Hole bottomed @ 575'	

Chart 2

JW #2 collared in the Mascot dolomite and was drilled to a depth of 560 feet.

Depth	Fm. Name	General Rock Type	Stratigraphic Horizons	Mineralization
0'- 41½'		Overburden		
41½'-208'	Mascot	Dolomite and chert	Upper chert-matrix ss. @ 162' Chert-matrix @ 208'	ZnS shine @ 43'
208'-350'	Kingsport	Dolomite and chert	Top of limestone member @ 350'	241½'-244', 2½' @ .51% Zn Trace ZnS @ 245½'
350'-508'	Kingsport	Recrystalline, limestone, dolomite and chert	Base of the Kingsport @ 508'	
508'-560'	Longview	Recrystalline, dolomite and chert	Hole bottomed at 560'	

Chart 3

JW #3 collared in the Mascot dolomite and was drilled to a depth of 678 feet.

Depth	Fm. Name	General Rock Type	Stratigraphic Horizons	Mineralization
0'- 28'	Mascot	Overburden		
28'-438'	Mascot	Dolomite and chert	Chert-matrix type ss. @ 170', 182', 190' Upper chert-matrix ss. @ 378' Chert-matrix @ 438'	65'-71', 6' @ 1.21% 71'-74½', 3½' @ .51% Trace ZnS @ 271'
438'-570'	Kingsport	Dolomite and chert	Top of limestone member @ 570'	Trace ZnS @ 431', 434'
570'-678'	Kingsport	Recrystalline, dolomite and chert	Hole bottomed @ 678'	

Chart 4

SC #1 collared in the Mascot dolomite and was drilled to a depth of 650 feet.

Depth	Fm. Name	General Rock Type	Stratigraphic Horizons	Mineralization
0'- 29'		Overburden		
29'-388'	Mascot	Dolomite and chert	Chert-matrix type ss. @ 131', 134', 140' Upper chert-matrix ss. @ 317' Chert-matrix @ 388'	Trace ZnS @ 171' 316'-316½', ½' @ .72% Zn 320'-326', 6' @ 1.38% Zn 329'-331', 2' @ .36% Zn 333'-336', 3' @ .36% Zn 340'-341', 1' @ .62% Zn Trace ZnS @ 343', 346', 350'-350½', ½' @ .21% Zn
388'-496'	Kingsport	Dolomite and chert	Top of limestone member	
496'-650'	Kingsport	Recrystalline, limestone, dolomite and chert	Hole bottomed @ 650'	

Chart 5

In SC#1 a 34-1/2 foot zone of mineralization occurs between the upper chert-matrix sand and the chert-matrix sand. The mineralization occurs in a medium-to well-brecciated dolomite. The thickest zone of continuous mineralization is 6 feet at 1.38% Zn.

The increase in the thickness and grade of mineralization to the northeast may indicate the presence of commercial mineralization in the vicinity of SC#1 and to the northeast.

Proposed drilling

In order to determine if commercial mineralization exists on the Indian Creek properties, an additional 12,000 feet of core-drilling is proposed. The tentative locations of twenty (20) holes are located on Plates 2 & 3.

Holes 1, 2, 3, 4 and 5 should be drilled on 200-foot centers in order to explore for commercial mineralization in the Kingsport limestone. These holes will collar in the Kingsport dolomite and be bottomed at the base of the Kingsport limestone. The holes will be approximately 400 feet deep (2,000 feet total).

Holes 6, 7, 8, 9, 10, 11, 12, 13 and 14 should be drilled in order to explore the mineralization previously found in SC#1 in the Kingsport dolomite near the chert-matrix sand and to evaluate the validity of the large anomaly on the A. B. Dalton tract. Six of the holes will average approximately 505 feet deep and three will average 610 feet (4,860 feet total).

Holes 15, 16, 17, 18, 19 and 20 should be drilled on 200-foot centers to evaluate the significance of the anomaly in the vicinity and to the southwest of LH#1 and to evaluate the strong showings in LH#1. The proposed depth of 15 and 16 is 450 feet, and 17, 18, 19 and 20 is 560 feet (3,140 feet total).

The numbering system of the proposed drill holes does not indicate the order in which they will be drilled.

In the event commercial mineralization is found during the course of drilling the proposed holes, an additional 2,000 feet of drilling will be necessary to further explore the mineralized area. Owing to the fact that the location of the additional drilling will be entirely dependent on the results of the previous drilling, the location of these holes are not shown on the map. It is thought that this footage should be expended along the rake of the ore body.

Rights of the operator

The locations, number and bottoming depths of the holes are only tentatively proposed. It must be understood that the drilling pattern may be altered, determined by the results of the previously drilled holes.

The holes will not be bottomed by a predetermined depth but on the basis of stratigraphy and mineralization.

The project may be abandoned during the progress of the exploration program if it becomes mutually agreeable to both the operator and the government that the results of the core drilling are not satisfactory and that the chances of finding commercial mineralization are poor.

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Section 3 (a)

The land included in this application totals 378 acres, more or less, and comprise the following seven properties, all of which are located in the 4th Civil District of Grainger County, Tennessee:

Name	Acres
Claude Wolfenbarger	18
John & Ida Wolfenbarger	50
Starling Scearce	35
A. B. & Pearley Dalton	50
Henry L. & Martha Wolfe, et al.	82
(Leffew Heirs) Cleo Cope, et al.	143
	378 Acres

The legal description of these properties are contained in the deeds of conveyance, copies of which are attached hereto. A map showing the location of the above properties, and others, marked plate 1 is included in the geological report which is a part of this application. The land lines as shown on this map were surveyed in accordance with accepted surveying methods.

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JUL 16 1956

THIS INDENTURE, Made this 2nd day of February, A. D. 1955, between John Wolfenbarger and Wife, Ida Wolfenbarger, of Thorn Hill, Grainger County, Tennessee, parties of the first part and Claude Wolfenbarger of same address, County and State, party of the second part,

Witnesseth, That the said parties of the first part, for and in Consideration of the sum of Eleven Hundred and Seventy-Five Dollars ($1175.00) Two Hundred and Fifty Dollars ($250.00) of which is to them in hand paid, the receipt of which is hereby acknowledged and for the remainder, second party executes and delivers his promissory note for Two Hundred and Fifty Dollars ($250.00) dated February 2nd, 1955 due February 2nd, 1956, have granted, bargained, sold and conveyed, and do hereby grant, bargain, sell and convey unto the said party of the second part, the following described tract of land in the 4th, Civil District of Grainger County, Tennessee, being the same land conveyed to John Wolfenbarger, one of the first parties herein, March 4, 1935 by deed of L. F. Mallicoat and wife, recorded in Book of Deeds Vol. 81, at page 127, in the Register's Office of Grainger County, Tennessee, and described in said deed as follows:

"Beginning on a black oak on the Copper Ridge road and Mallicoat line; thence running Southwestwardly with the meanders of said road to a small wild cherry tree and hickory sprout on the side of said road; thence running Southward to a walnut stump; thence Southwardly to a hickory stump; thence Southward to a Cedar in Robert Wolfe's line; thence Eastwardly with said Wolfe line to to Mallicoat's line to the beginning corner, containing 18 acres, more or less, with the hereditaments and appurtenances thereto appertaining, hereby releasing all claim to homestead and dower therein. To have and to hold the said premises to the said party of the second part, his heirs and assigns forever.

And the said parties of the first part, for themselves and for their heirs, executors and administrators, do hereby covenant with the said party of the second part, his heirs and assigns, that they are lawfully seized in fee simple of the premises above conveyed,

and have full power, authority and right to convey the same, that said premises are free from all incumbrances and that they will forever warrant and defend the said premises and the title thereto against the lawful claims of all persons whomsoever.

In Witness Whereof, the said parties of the first part hereunto subscribe their names.

Oliver Dalton
Rosa Dalton

John Wolfenbarger his mark
Ida Wolfenbarger her mark

STATE OF TENNESSEE,

County of Grainger.

Personally appeared before me, Willis T. Dalton, a Notary Public in and for said county, the within named bargainors, John Wolfenbarger and Wife, Ida Wolfenbarger, with whom I am personally acquainted, and who acknowledged that they executed the within deed of conveyance for the purposes therein contained and expressed.

Witness my hand and notarial seal at Office in Grainger County, Tennessee, this 21 day of Feb, A. D. 1955.

My Commission expires Apr 24 1955.

Willis T. Dalton
Notary Public.

COMPARED

Warranty Deed
J. W. Stephenson et al
To
John Wolfenbarger
State, .43
clerks fee 1.15
Total 1.58
Paid

STATE TAX .....

.....

.....$1.....

I certify that the consideration tax on the within deed has been paid. Witness my hand this 9 day Oct 1911

J. M. Swab Clerk.

REGISTER'S OFFICE
State of Tennessee,
Grainger County.

Received for record the 9th day of Oct 1911 at 10 o'clock A. M. Noted in Note Book B, page 296 and recorded in Book of Deeds vol. 40 page 176.

Witness my hand

W. L. Shaw, Register.

Registers fee $1.25 Paid

Tract #1

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This Indenture made this The 10th day of January A.D. 1905 by and between J.W. Stephenson and wife Bettie Stephenson of Scott County and State of Virginia and A.H. Stephenson and wife Fannie Stephenson of Grainger County Tennessee of the first part and John Wolfenbarger of Grainger Co. Tenn of the second part witnesseth that the said parties of the first part for and in consideration of the sum of One Hundred and Forty-four Dollars cash in hand paid the receipt of which is hereby acknowledged and for the further sum of Two Hundred and Eighty-one dollars evidenced by two notes bearing even date with this deed payable to J.W. & A.H. Stephenson with interest at 6% from date and for the payment of which a lien is herein expressly retained on the premises herein conveyed, have bargained, sold, granted and conveyed unto the party of the second part a certain boundary or tract of land situate in Grainger County, Tenn. on the south side of Copper Ridge and North of the County road on the Haynes farm Beginning ~~on~~ at the road near a hollow and running with a line fence between Stephenson & Wolfenbarger to the north side of a field Thence on the same degree

[illegible] a marked [illegible] to the [illegible]
[illegible] Ridge thence in a [illegible] [illegible]
[illegible] the top of Copper Ridge to Ben Scrat[illegible]
[illegible] thence in a southerly direction with a
[illegible] line established by Benjamin Sc[illegible]
[illegible] Stephenson the co[illegible]
[illegible] road in an easterly direction [illegible]
containing fifty acres more or less This [illegible]
sold by the boundary not by the acre-
And the parties of the first part covenant
with the party of the second part that they
will forever warrant and defend the said premises
and the title thereto against the lawful claims
of all persons whomsoever- In witness whereof
the parties of the first part have hereunto
set their hands and seals-

J. W. Stephenson [L.S.]
Bettie Stephenson [L.S.]
A. L. G. Stephenson [L.S.]
Fannie Stephenson [L.S.]

State of Tennessee, County of Grainger--ss.

PERSONALLY appeared before me, TANDY MYERS, Notary Public of said County, the within named bargainors, A. L. G. Stephenson + Wife Fannie Stephenson

with whom I am personally acquainted and who acknowledged that they executed the within instrument for the purpose therein contained. And Fannie Stephenson wife of the said A. L. G. Stephenson having appeared before me privately and apart from her husband the said A. L. G. Stephenson and acknowledged the execution of the said Deed to have been done by her freely, voluntarily and understandingly, without compulsion or constraint from her said husband and for the purposes therein expressed.

Witness my hand at office in Dale on this the 16 day of March A. D. 190 7

Tandy Myers Notary Public

GAUT-DIXON CO., KNOXVILLE, TENN.

State of Tennessee, Virginia, County of Grainger--ss.

PERSONALLY appeared before me, ~~TANDY MYERS, Notary Public~~ H. P. Head J. W. Stephenson ~~and wife Bettie Stephenson~~ named bargainors,

with whom I am personally acquainted and who acknowledged that they executed the within instrument for the purpose therein contained. And Bettie Stephenson wife of the said J. W. Stephenson having appeared before me privately and apart from her husband the said J. W. Stephenson and acknowledged the execution of the said Deed to have been done by her freely, voluntarily and understandingly, without compulsion or constraint from her said husband and for the purposes therein expressed.

Witness my hand

A. D. 190

H. P. Head N. P. Notary Public

GAUT-DIXON CO., KNOXVILLE, TENN.

WARRANTY DEED

HENRY SCEARCE & WIFE

—TO—

STARLING SCEARCE

REGISTER'S OFFICE,
State of Tennessee,
County of Grainger. } ss.

Received for record the 15th day of January A. D. Nineteen Hundred and 46 at 10:00 o'clock A. M.

Noted in Note Book E. Page 58 and

Recorded in Book of Deeds

Vol. 74 Page 435.

Witness my hand.

Fee Paid #1.40

J. F. Brady Register

State Tax, ... $ 3.30

County Tax, ...

Clerk's Fee, ...15

~~CERTIFY that the Consideration Tax on the within deed has been paid.~~ $ 3.45

Witness my hand this 2 day of Aug. 1946

H. O. Daniel Clerk

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JUL 10 1956

Nov 1944

WARRANTY DEED— Tenn. Office Supply, Knoxville, Tenn.

THIS INDENTURE, made this 9th day of November A. D. 19 44 between Henry Scearce & wife, Ella Scearce,

of Thorn Hill, Grainger County, in the State of Tennessee of the first part, and Starling Scearce,

of said county and State, of the second part.

WITNESSETH, That the said parties of the first part, for and in consideration of the sum of Two Thousand Two Hundred ($2,200.00) & No/100 ----------

None of which is

to them in hand paid by the said party of the second part, ~~the receipt of which is hereby~~ acknowledged, said consideration being payable as follows:

1 Note dated Nov. 9, 1944 for $200.00 due Jan. 1, 1945

1 Note dated Nov. 9, 1944 for $1,000.00 due Jan. 1, 1946

1 Note dated Nov. 9, 1944 for $1,000.00 due Jan. 1, 1947,

and to secure the payment of said note a specific lien is hereby retained on the property here conveyed.

have granted, bargained, sold, conveyed, and do hereby grant, bargain, sell and convey unto the said party of the second part, the following described premises, to-wit, situate in District No. 4 of Grainger County, Tennessee. Bounded and described as follows:

FIRST TRACT:

Being tract No. 3 described in County Court Clerk's Deed dated February 18, 1932, to Henry Scearce & wife,

Beginning on a walnut on the County Road near a hollow, thence with a conditional line between Joseph CaZort and said Scearce to the top of Copper Ridge to a small oak; thence with the top of said Ridge in a Westerly direction to a small hickory; thence in a Southerly direction down said ridge with a conditional line between Stephenson and Scearce to a small oak on the north of the County Road; thence with the County Road to the beginning, and being by estimation about 25 acres.

SECOND TRACT:

Being tract No. 4 described in said County Court Clerk's deed above referred to.

Beginning at a black gum, running westwardly 22½ poles to a stone on J. E. Collin's line; thence with said line northwardly 41½ poles to top of Copper Ridge; thence with top of Ridge 21 poles to a hickory; thence southwardly 40 poles to the beginning, containing 4 acres and 152 Sq. Rods, more or less.

THIRD TRACT:

Beginning on a walnut in a hollow, being the same point as that of the beginning point of first above described tract, running in an easterly direction with road to an ash in Lee Dalton's line; thence with Dalton's line to a stone something like 15 rods east of the residence of Henry Scearce; thence continuing in a northerly direction to a black-oak on top of spur; thence continuing a northerly course to a small hickory in H. E. Collin's line; thence with top of ridge a westerly course to a black-oak in Henry Scearce line, or line of first above described tract; thence with line of said above first described tract

to the beginning corner, containing by estimation 10 acres more or less.

But there is excepted from the first above described tract a Cemetery known as the Scearce Cemetery which is now under fence, also a right-of-way to and from said cemetery with right to use vehicles or otherwise.

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with the hereditaments and appurtenances thereto appertaining, hereby releasing all claims to Homestead and Dower therein. TO HAVE AND TO HOLD the said premises to the said party of the second part, his heirs and assigns forever.

And the said parties of the first part for themselves and for their Heirs, Executors and Administrators do hereby covenant with the said party of the second part his heirs and assigns that they are lawfully seized in fee simple of the premises above conveyed and have full power, authority and right to convey the same, that said premises are free from all incumbrances

and that they will forever warrant and defend the said premises and the title thereto against the lawful claims of all persons whomsoever.

IN WITNESS WHEREOF, The said parties of the first part have hereunto set their hands and seals the day and year first above written.

Signed, sealed and delivered in presence of

Henry Scearce (L. S.)
Ella Scearce (L. S.)
(L. S.)
(L. S.)

5

STATE OF TENNESSEE,
County of Grainger } ss.

Personally appeared before me, Arnold Roach, a Notary Public of said County and State, the within named bargainor Henry Scearce & wife, Ella Scearce,

with whom I am personally acquainted, and who acknowledged that they executed the within instrument for the purposes therein contained.

Witness my hand and official seal at office this 9th day of November A. D. 1944

My Commission Expires July 15, 1948 Arnold Roach Notary Public.

STATE OF TENNESSEE,
County of _____ } ss.

Personally appeared before me, _____, a Notary Public of said County and State, the within named bargainors _____

with whom I am personally acquainted, and who acknowledged that they executed the within instrument for the purposes therein contained. And _____, wife of the said _____

having appeared before me privately and apart from her said husband, the said _____ acknowledged the execution of said Deed to have been done by her freely, voluntarily, and understandingly, without compulsion or constraint from her husband, and for the purposes therein expressed.

Witness my hand and official seal at office, this _____ day of _____ A. D. 19____

My Commission Expires _____ _____ Notary Public.

X-252

WARRANTY DEED

LEE DALTON, ET UX

—TO—

A. B. DALTON, ET UX

Thorn Hill.

REGISTER'S OFFICE,
State of Tennessee, } ss.
County of Grainger

Received for record the 2nd day of June A. D. Nineteen Hundred and 56 at 9:10 o'clock A. M.
Noted in Note Book F Page 35 and
Recorded in Book of Deeds Warranty
Vol. 85 Page 400.

Witness my hand.

Fee Paid $2.00

Alice Brady Register

State Tax, ... $ 4.50

County Tax, ...

Clerk's Fee, ... .50

Total ..... $ 5.00

CERTIFY THAT THE CONSIDERATION
TAX ON THE WITHIN DEED HAS BEEN
PAID. WITNESS MY HAND
THIS 2nd DAY OF June 1956
CLERK
C. L. Roach

RECEIVED
JUL 10 1956

WARRANTY DEED—Form 14.

THIS INDENTURE, made this 1st. day of October

A. D. 19 54 between LEE DALTON and his wife, GRACE DALTON,

of Thorn Hill, Grainger County in the State of Tennessee, parties

of the first part, and A. B. DALTON and his wife, PEARLIE DALTON,

of the same State and county, parties of the second part.

WITNESSETH, that the said parties of the first part, for and in consideration of the sum of THREE THOUSAND ($3,000.00) DOLLARS; One THousand ($1,000.00) of which is

to them in hand paid by the said parties of the second part, the receipt of which is hereby acknowledged, and for the remainder payment of Two Thousand ($2,000.00) Dollars, parties of the second part execute their four (4) notes of even date, each in the sum of Five Hundred ($500.00) Dollars, due on or before January, 1, 1956; 1957; 1958 and 1959. Said notes are to bear interest at 6% per annum from date, and failure to pay as many as two of said notes, when due, renders the other notes due and payable at option of holder thereof, and to secure the payment of said note a specific lien is hereby retained on the property here conveyed, have granted, bargained, sold, conveyed, and do hereby grant, bargain, sell and convey unto the said parties of the second part, the following described premises, to wit, situate in District No. Four (4) of Grainger County, Tennessee lying and being on the south side of Copper Ridge, and being more fully bounded and described as follows:

BEGINNING at an ash at the road; thence in a northerly direction to a rock; thence in almost the same direction to a locust; thence almost same directionbearing a little westwardly to a water oak; thence running a little more northwardly up the ridge to a small hickory in George Shockley's line on top of the ridge at the County Line; thence running in a northwestward (easterly) direction with the top of the ridge to a black-oak in L. F. Mallicoat's line; ~~xxxxxxxxxxxxxx~~ thence in a southerly direction with L. F. Mallicoat's line to the ridge road; and westward with, and along with said Copper Ridge, formerly called County road back to the BEGINNING, the ash, containing about 50 acres, more or less.

RECEIVED
JUL 1 0 1956

For further and more complete description and for Title, reference is here made to the following Deeds of Record in the Register's Office in and for said County and State, in Deed Book Warranty Vol. 71, Page 52, ~~Book~~, ~~Vol~~, ~~Page~~, ~~Book~~, ~~Vol~~, ~~Page~~;

with the hereditaments and appurtenances thereto appertaining, hereby releasing all claims to Homestead and Dower therein. TO HAVE AND TO HOLD the said premises to the said part ies of the second part, their heirs and assigns forever.

And the said part ies of the first part for themselves and for their Heirs, Executors and Administrators do hereby covenant with the said part of the second part their heirs and assigns that they are lawfully seized in fee simple of the premises above conveyed and have full power, authority and right to convey the same, that said premises are free from all incumbrances

and that they will forever warrant and defend the said premises and the title thereto against the lawful claims of all persons whomsoever.

IN WITNESS WHEREOF, The said part ies of the first part have hereunto set their hands and seals the day and year first above written.

Signed, sealed and delivered in the presence of

Lee Dalton (L. S.)
Grace Dalton (L. S.)
(L. S.)
(L. S.)

STATE OF TENNESSEE,
County of GRAINGER } ss.

Personally appeared before me, W. I. Daniel, a Notary Public of said County and State, the within named bargainors, Lee Dalton and his wife, Grace Dalton,

with whom I am personally acquainted, and who acknowledged that they executed the within instrument for the purposes therein contained.

Witness my hand and official seal at office this 1st day of October A. D. 19 54

My Commission Expires April 16, 1958. W. I. Daniel Notary Public.

STATE OF TENNESSEE,
County of _____ } ss.

Personally appeared before me, _____, a Notary Public of said County and State, the within named bargainors _____

with whom I am personally acquainted, and who acknowledged that they executed the within instrument for the purposes therein contained. And _____, wife of the said _____

having appeared before me privately and apart from her said husband, the said _____ _____ acknowledged the execution of said Deed to have been done by her freely, voluntarily, and understandingly, without compulsion or constraint from her husband, and for the purposes therein expressed.

Witness my hand and official seal at office this _____ day of _____ A. D. 19____

My Commission Expires _____ _____ Notary Public.

WARRANTY DEED

David Dattas

TO

S. F. Walker

REGISTER'S OFFICE,
STATE OF TENNESSEE, } ss.
Grainger County

Received for Record the 26 day
of Nov. A. D., 1917
at 4:30 o'clock, P. M.
Noted in Note Book C, Page 49 and
Recorded in Book of Deeds Vol. 47
Page 284 et seq.

Witness my hand.

Fee paid $1.25

D. L. Shawn
Register.

State Tax, - - - - - - -	$4.00
County Tax, - - - - -	
Clerks Fee, - - - - -	15
Total, - - - - - -	$4.15

I certify that the consideration tax on the within deed has been paid. Witness my hand this 26 day of Nov 1917

S M Groves

WARRANTY DEED Form 172 BEAN WARTERS & CO KNOXVILLE

THIS INDENTURE, made this 13 day of Nov A. D. 1917 between David Dalton and Wife Mallie Dalton

of Grainger County in the State of Tennessee, of the first part, and S. F. Wolfe

of Hancock County of the second part.

WITNESSETH, That the said parties of the first part, for and in consideration of the sum of ~~$1,200.00~~ Four Thousand Dollars ~~$2,000.00~~ Two Thousand Dollars to us in hand paid by the said party of the second part, the receipt of which is hereby acknowledged. And the Further Sum of Two Thousand Dollars to be paid as follows One Note for Seven Hundred and Fifty Dollars due Dec the 15th 1918 Second Note Seven Hundred and Fifty Dollars Due Dec 15th 1919 Third Note Five Hundred Dollars Due Dec 15th 1920

and to secure the payment of said note as pecific lien is hereby retained on the property hereby conveyed, has granted, bargained, sold and conveyed, and do hereby grant, bargain, sell and convey unto the said party of the second part, the following described premises, to-wit, situated in District No. 4th Civil District of Grainger County Tenn and Bounded as follows

Beginning on a stone in the Valley Road thence Southwardly with Ben Scarce line thence the same direction to a stone in Dock Wolfe line thence Eastwardly with Dock Wolfe line to Robert Wolfe line thence with Robert Wolfe line to a stone near Bill Wolfe line the Northwardly a Strait line a conditional line made by S. F. Wolfe and John Edwards to a stone at the Valley Road near Winfield Scarce thence Westerardly with the Valley Road to the Beginning Containing 100 acres more or less

with the hereditaments and appurtenances thereto appertaining, hereby releasing all claims to Homestead and Dower therein. To HAVE AND TO HOLD the said premises to the said parties of the second part his heirs and assigns forever.

And the said parties of the first part, for themselves and for their Heirs, Executors and Administrators, do hereby covenant with the said parties of the second part, his heirs and assigns, that they are lawfully seized in fee simple of the premises above conveyed and have full power, authority and right to convey the same, that said premises are free from all encumbrances

and that they will forever warrant and defend the said premises and the title thereto against the lawful claims of all persons whomsoever.

IN WITNESS WHEREOF, The said parties of the first part have hereunto set their hand and seal the day and year first above written.

Signed, sealed and delivered in presence of

F. E. Collins
John Edwards

David Dalton (L. S.)
Mollie Dalton (L. S.)
(L. S.)
(L. S.)

STATE OF TENNESSEE,
.....County. } ss.

Personally appeared before me,.....Notary Public of said County and State, the within named bargainor .....
with whom I am personally acquainted, and who acknowledged that.....he.....executed the within instrument for the purposes therein contained.

Witness my hand and official seal at office this.....day of.....A. D., 19.....

.....Notary Public.

STATE OF TENNESSEE.
Grainger County. } ss.

Personally appeared before me Tandy Injers Notary Public of said County and State, the within named bargainors David Dalton and Wife Mallie Dalton
with whom I am personally acquainted, and who acknowledged that he executed the within instrument for the purposes therein contained. And Mallie Dalton, wife of the said David Dalton having appeared before me privately and apart from her husband, said David Dalton acknowledged the execution of the said Deed to have been done by her freely, voluntarily and understandingly, without compulsion or constraint from her said husband, and for the purpose therein expressed.

Witness my hand and official seal, at office, this 13 day of Nov A. D., 19 17

Tandy Injers Notary Public.

STATE OF TENNESSEE,
.....County. } ss.

Personally appeared before me,.....Notary Public of .....County aforesaid,.....and .....subscribing witnesses to the within Deed, who being first sworn, deposed and said that they are acquainted with.....
..... the bargainor.....and that.....he..... acknowledged the same in their presence to be .....act and deed upon the day it bears date.

Witness my hand and official seal, at office, this.....day of.....A. D., 19.....

.....Notary Public.

STATE OF TENNESSEE,
.....County. } ss.

To.....Esquire:

You are hereby authorized and empowered to take the examination of.....
.....privately and apart from her husband, relative to the free execution of within Deed, and the same, so taken, to certify under your hand and seal.

Witness.....Clerk of the County Court of.....County, at office, the.....day of.....19.....

.....Clerk.

STATE OF TENNESSEE,
.....County. } ss.

.....wife of.....
having personally appeared before me, and having, by virtue of the authority in me vested, been examined privately and apart from her said husband, and she having acknowledged the due execution of the within Deed, by her freely, voluntarily and understandingly, without compulsion or constraint by her said husband, and for the purposes therein expressed, the same is, therefore, certified.

Witness my hand and seal, this.....day of.....19.....

.....[Seal]

J. P. for.....County

X-245

11

State of Tennessee
County of Rhea

Before me M S Holloway a Notary Public duly appointed, commissioned and qualified in and for the County and State aforesaid, personally appeared J E Collins - Rhoda Collins and Lucy Collins the within named bargainors, with whom I am personally acquainted, and who acknowedged that they executed the within instrument for the purposes therein contained.

And Lucy Collins wife of the said J E Collins having appeared before me, privately and apart from her husband, the said Lucy Collins acknowledged the execution of the said Deed to have been done by her freely, voluntarily and understandingly, without compulsion or constraint from her said husband, and for the purposes therein expressed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and Notarial Seal at office in Spring City Tennessee on this the 12th day of July 1919

M S Holloway
Notary Public.

STATE TAX $ 3.15
COUNTY TAX $
CLERK'S FEES $ 3.30

I certify that the consideration tax on the within deed has been paid. Witness my hand this 4 day of Aug 1919
J M Grove Clerk

RECEIVED
JUL 1 0 1953

Warranty Deed.

J. E. COLLINS & RHODA COLLINS

—TO—

JOHN LEEFE

Filed for Registration Aug. 4th 1919 at 10:25 A M
Fee, $ 1.25
Tax, $
J. J. Brady Register.

State of Tennessee
County of Grainger

The above Deed and certificate were filed August 4th 1919, at 10:25 A. M., entered in Note Book No. C, Page 79, and recorded in Book Volume 49 Page 535

WITNESS my hand at office in Rutledge, Tenn.

J. J. Brady, Register.

X-245

11

7/12/19 GC 7/12/19 GC 7/12/19 GC

LIEN DEED—Wife

In Consideration of THREE THOUSAND ONE HUNDRED AND FIFTY ($3150.00) Dollars paid and to be paid, as follows: SIX HUNDRED AND FIFTY ($650.00) Dollars cash in hand, the receipt of which is hereby acknowledged, and the four promissory notes of the grantee herein of even date herewith as follows: one note for One Thousand dollars to be due December 25th 1919, and three notes for Five Hundred dollars each to be due July 12th 1920-1921 and 1922 respectively, all said notes bearing interest from date and containing clauses for Atty Fees and costs of collaection,

the payment of which is secured by a **VENDOR'S LIEN** which is hereby retained on the Real Estate hereinafter described. We J. E. Collins and Rhoda Collins of Rhea County Tenn, do hereby sell, transfer and convey unto John Leffew of Grainger County Tennessee the following described Real Estate

in the 4th District of Grainge County, Tennessee: on the waters of Indian Creek on Copper Ridge, BEGINNING on a large whiteoak on North bank of Indian Creek, running thence with a marked conditional line established by Stephens and Myerses to the top of Copper Ridge; then with top of Ridge eastwardly to Stephensons and John Wolfenbargers corner; then down said Ridge southwardly with Stephensons & Wolfenbargers line to the County Road; then westwardly with County Road to ford of Indian Creek at S.W. corner of Joseph Cozarts garden; then with Indian Creek as it meanders to the beginning, containing One Hundred Acres, more or less, but a gate roadway through this farm Slatton farm south-east to the public Road is expressly reserved, the same to be kept for roadway for the people living back of this farm. This is same real estate conveyed by A.L.G. Stephenson and wife to J.E. Collins Dec 1st 1905 which deed is of record in BOOKMN 36 pages 333-4 & 5 in the Registers office for Grainger County at Rutledge Tennessee. TO HAVE AND TO HOLD the same to the said John Leffew and his heirs and assigns forever in fee simple. We covenant that we are lawfully seized and possessed of said Real Estate, have full power and lawful authority to sell and convey the same, that the title is clear, free and unincumbered,

and we will forever warrant and defend the same against all lawful claims.

And Lucy Collins wife of the said J. E. Collins for value received joins in the above Deed and convey to the said John Leffew all right and claim I now or may hereafter have to dower or homestead in or to the above described premises.

It is agreed between the parties herein named that the Vendee shall pay the taxes for the year 19/9.

Witness our hands this 12th day of July 1919.

J. E. Collins
Rhoda Collins
Lucy Collins

X-245

State of Tennessee

County of Rhea

Before me M S Holloway a Notary Public duly appointed, commissioned and qualified in and for the County and State aforesaid, personally appeared W N Slaton and Nellie Slaton the within named bargainor s, with whom I am personally acquainted, and who acknowedged that they executed the within instrument for the purposes therein contained

And Nellie Slaton wife of the said W N Slaton having appeared before me, privately and apart from her husband, the said Nellie Slaton acknowledged the execution of the said Deed to have been done by her freely, voluntarily and understandingly, without compulsion or constraint from her said husband, and for the purposes therein expressed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and Notarial Seal at office in Spring City Tennessee on this the 8th day of July 1920

M S Holloway
Notary Public

NNS 7/8/20 NNS 7/8/20 NNS 7/8/20 NNS 7/8/20

NNS 7/8/20 NNS 7/8/20 NNS 7/8/20

RECEIVED
JUL 10 1953

Warranty Deed.

W. N. SLATON AND WIFE

TO

JOHN LEFFEW

STATE TAX $1.10

COUNTY TAX $

TRANSFER TAX $1.25

I certify that the consideration tax on the within deed has been paid. Witness my hand this 4 day of Nov 1920

J. M. Gouge, Clerk.

Filed for Registration November 4th 1920 at 11:00 A.M.

Fee, $1.25

Tax, $

J. J. Brady, Register.

State of ~~State~~ Tennessee

County of Grainger

The above Deed and certificate were filed Nov. 4th 1920, at 11:00 A M., entered in Note Book No. C, Page 103, and recorded in Book Warranty Volume 51 Page 143

WITNESS my hand at office in Rutledge, Tenn.

J. J. Brady, Register.

X-245 12

CASH DEED.—With Wife.

For Sale by Pennebaker-Turley, 622 Market St. Chattanooga. Each, 5c; 1 Doz. 50c; 100 $1.75

In Consideration of ELEVEN HUNDRED..... Dollars to us in hand paid the receipt of which is hereby acknowledged, we, W.N.Slaton and Nellie Slaton his Wife do hereby sell, transfer and convey unto John Leffew of Granger County Tennessee the following Real Estate in in Fourth District of Granger County, Tennessee:

FIRST TRACT: BEGINNING on a stake at Emanuel Collins line, then westerly with a conditional line between R.N.Myears and John Scearse to Sherman Holts line; thence northwardly with said Holts line to Holts corner; thence eastwardl with F.Shockleys line to a stake on top of Copper Ridge; thence southwardly with the conditional line between Emanuel Collins and R.N.Myears to the beginning containing 33 acres more or less, and being the same real estate conveyed to W.N.Slaton by Henry Collins on Sept 22nd 1915 deed for same being of record in Book of Deeds Vol 46 page 499 in the Registers office for Granger County at Rutledge Tennessee.

SECOND TRACT: BEGINNING on a rock corner to Sherman Holt, running thence northwardly with Holts line to a corner of this first described tract; thence eastwardly with the line of this first tract 25 poles and 5½ feet to a stake; thence southwardly to M.L.Carr's line to a stake; thence westwardly 25 poles and 5½ feet to the beginning containing 10 acres more or less, being the same real estate conveyed to W.N.Slaton by J.W.Scearse and Wife Nov 26th 1915, deed for which is of record in Book of Deeds Vol 44 page 516 in the Registers office for Granger County at Rutledge Tennessee.

TO HAVE AND TO HOLD the same to the said John Leffew and his heirs and assigns forever in fee simple. We covenant that we are lawfully seized and possessed of said Real Estate, have full power and lawful authority to sell and convey the same, that the title is clear, free and unincumbered,

and we will forever warrant and defend the same against all lawful claims.

And Nellie Slaton wife of the said W.N. Slaton for value received joins in the above Deed and convey to the said John Leffew all right and claim I now or may hereafter have to dower or homestead in or to the above described premises.

It is agreed between the parties herein named that the VENDEE shall pay the taxes for the year 1920.

Witness, our hands this Eighth day of July 1920

W. N. Slaton

Nellie Slaton

Section 3 (d)

Attached hereto are copies of the two instruments under which applicant controls the property. They are as follows:

(1.) Agreement with property owner
(2.) Operating agreement

Certificates of title prepared by D. S. Beeler, Attorney at Law of Rutledge, Tennessee, on each of the properties included in this application are also attached hereto.

X-257

AGREEMENT

This Agreement, made and entered into this 21 day of January, 1956, by and between

Claude Wolfenbarger (single)

hereinafter referred to as Parties of the First Part, and B. H. PUTNAM, Chicago, Illinois, hereinafter referred to as Party of the Second Part.

Witnesseth:

First: That First Parties, for and in consideration of the sum of Twenty and no/100 Dollars ($ 20.00) cash to them in hand paid by Second Party, the receipt of which is hereby acknowledged, do hereby grant unto Second Party, the exclusive right, at any time within Three years (3) from the date hereof, to purchase for the sum of One hundred Fifty Dollars ($ 150.00) per acre, all of the minerals (including metallic and non-metallic ores, rock and substances, oil and gas), mineral interests, mineral rights and mining rights in and to the following described lands:

Situated in the 4 th Civil District of Grainger County, State of Tennessee, containing 20 acres, more or less, and bounded generally as follows:

On the North by the lands of L.F. Mallicoat

On the East by the lands of L. F. Mallicoat

On the South by the lands of Robert Wolf

On the West by the lands of Levy Wolf

Second: During the term of this option or any extensions thereof, Second Party shall have the exclusive right to prospect and drill for minerals (as hereinbefore defined) contained in the lands herein optioned, with churn drills, diamond drills and/or other prospecting methods, provided the same be done in such a manner as to do the least damage to the surface of said lands commensurate with good prospecting practices. Second Party shall be liable for all actual damages done to growing crops and fences, as the result of said drilling.

Third: If this option is not exercised, Second Party agrees to fill up, or plug in a suitable manner, all drill holes, unless First Parties designate one or more of such holes to be left open for use as water wells, or other purpose of First Parties, in which event First Parties shall pay for the casing.

Fourth: In order to exercise said option Second Party shall give notice in writing to First Parties, either by delivering the same to them personally, or, by registered mail to their usual place of residence. Within thirty days after receiving such notice First Parties shall execute and deliver a general warranty deed to the Second Party, or any person designated by Second Party, said deed to convey all of the minerals (as hereinabove defined,) mineral interest, mineral rights and mining rights in and to said lands, free of all liens and encumbrances.

Upon receipt of said deed Second Party shall make payment to First Parties of a sum equivalent to One Hundred fifty ($ 150.00) per acre, (the acreage to be ascertained by instrumental survey made at the expense of Second Party) for the minerals (as hereinabove defined), mineral interests, mineral rights and mining rights in and to said lands.

Fifth: Second Party agrees to exercise such option within One Year from this date, or pay to First Parties Twenty and no/100 Dollars ($ 20.00) each year thereafter until said option is exercised or this agreement terminated.

Sixth: All machinery, equipment, tools, etc., taken upon said lands shall be deemed to be the property of Second Party, and in the event this option is not exercised, Second Party shall have the right during the term hereof, or any extensions thereof, and for a reasonable time thereafter, to remove all such machinery, tools, etc., from said lands.

Seventh: If this option is exercised, the Second Party shall have the free right to enter, at anytime and from time to time, upon the surface of said lands for the purpose of drilling and prospecting for, and mining and removing all of said minerals (as hereinabove defined) contained in said lands. Second Party shall also have the right to transport minerals (as hereinabove defined) from other lands of Second Party or third persons, over, under and across said lands, and to bring said minerals to the surface thereof and remove the same therefrom. It is agreed, however, that Second Party shall be liable to First Parties for actual damages that may occur to the surface of said lands or the improvements thereon, as the result of such drilling, prospecting and mining operations, or in the moving of minerals and materials across said surface.

Eighth: Payment of all moneys due under this option may be made, by cash or check, to Claude Wolfenbarger made payable to his order and mailed to him at Route 1, Thorn Hill, Tennessee

Ninth: This agreement shall be binding upon and inure to the benefit of the parties hereto, their heirs, executors, administrators, successors and assigns, it being expressly understood that the second party shall have the right to assign this option to any person or corporation it sees fit.

In Witness Whereof the First Parties have hereunto set their hands on the day and year first above written.

Witnesses:

Chas. V. Fisher

Earl B. Jones

Claude Wolfenbarger

Claude Wolfenbarger

State of Tennessee,

County of Grainger,

Personally appeared before me, Chas. V. Fisher, a Notary Public in and for Said County and State

the within named Claude Wolfenbarger (single)

the bargainor, with whom I am personally acquainted, and who acknowledged that he executed the within instrument for the purposes therein contained.

Witness my hand and official seal at Grainger County, Tennessee, this 20 th day of January 19 56.

My Commission Expires 10/ 10/ 57

Chas. V. Fisher

Notary Public

State of Tennessee,

County of,

Personally appeared before me, , a Notary Public in and for Said County and State

the within named

the bargainor, with whom I am personally acquainted, and who acknowledged that executed the within instrument for the purposes therein contained.

Witness my hand and official seal at, Tennessee, this day of, 19.

My Commission Expires

Notary Public

State of Tennessee,

County of,

Personally appeared before me, , a Notary Public in and for Said County and State

the within named

the bargainor, with whom I am personally acquainted, and who acknowledged that executed the within instrument for the purposes therein contained.

Witness my hand and official seal at, Tennessee, this day of, 19.

My Commission Expires

Notary Public

No. 4-257

OPTION CONTRACT

TO

STATE OF TENNESSEE

Grainger COUNTY.

Register's Office

Received for record the 2nd day of March, A. D. 1956, at 10:05 o'clock A.M. Noted in Note Book F, page 28, and recorded in Book Misc. 18, of, Vol, page 351

Fee paid, $ 2.75

Witness my hand, Alec Inman, Register.

State Tax $

Clerk's Fee $

Total $

Z-253

AGREEMENT

This Agreement, made and entered into this 17th day of January, 1952, by and between

John Wolfenbarger and Ida Wolfenbarger his wife

hereinafter referred to as Parties of the First Part, and B. H. Putnam, Chicago, Illinois, hereinafter referred to as Party of the Second Part.

Witnesseth:

First: That First Parties, for and in consideration of the sum of seventeen and 50/100 Dollars ($17.50) cash to them in hand paid by Second Party, the receipt of which is hereby acknowledged, do hereby grant unto Second Party, the exclusive right, at any time within 3 years from the date hereof, to purchase for the sum of One Hundred fifty Dollars ($150.00) per acre, all of the minerals (including metallic and non-metallic ores, rock and substances, oil and gas), mineral interests, mineral rights and mining rights in and to the following described lands:

Situated in the 4 th Civil District of Grainger County, State of Tennessee, containing 70 acres, more or less, and bounded generally as follows:

On the North by the lands of Starling Scearce

On the East by the lands of Stearling Scearce

On the South by the lands of ~~John Loffew~~ LEVA WOLFF

On the West by the lands of ~~Leva Wolf~~ JOHN LEFFEW

Second: During the term of this option or any extensions thereof, Second Party shall have the exclusive right to prospect and drill for minerals (as hereinbefore defined) contained in the lands herein optioned, with churn drills, diamond drills and/or other prospecting methods, provided the same be done in such a manner as to do the least damage to the surface of said lands commensurate with good prospecting practices. Second Party shall be liable for all actual damages done to growing crops and fences, as the result of said drilling.

Third: If this option is not exercised, Second Party agrees to fill up, or plug in a suitable manner, all drill holes, unless First Parties designate one or more of such holes to be left open for use as water wells, or other purpose of First Parties, in which event First Parties shall pay for the casing.

Fourth: In order to exercise said option Second Party shall give notice in writing to First Parties, either by delivering the same to them personally, or, by registered mail to their usual place of residence. Within thirty days after receiving such notice First Parties shall execute and deliver a general warranty deed to the Second Party, or any person designated by Second Party, said deed to convey all of the minerals (as hereinabove defined), mineral interest, mineral rights and mining rights in and to said lands, free of all liens and encumbrances.

Upon receipt of said deed Second Party shall make payment to First Parties of a sum equivalent to One hundred fifty ($150.00) per acre, (the acreage to be ascertained by instrumental survey made at the expense of Second Party) for the minerals (as hereinabove defined), mineral interests, mineral rights and mining rights in and to said lands.

Fifth: Second Party agrees to exercise such option within three months from this date, or pay to First Parties seventeen & 50/100 Dollars ($ 17.50) each 3 months thereafter until said option is exercised or this agreement terminated.

Sixth: All machinery, equipment, tools, etc., taken upon said lands shall be deemed to be the property of Second Party, and in the event this option is not exercised, Second Party shall have the right during the term hereof, or any extensions thereof, and for a reasonable time thereafter, to remove all such machinery, tools, etc., from said lands.

Seventh: If this option is exercised, the Second Party shall have the free right to enter, at anytime and from time to time, upon the surface of said lands for the purpose of drilling and prospecting for, and mining and removing all of said minerals (as hereinabove defined) contained in said lands. Second Party shall also have the right to transport minerals (as hereinabove defined) from other lands of Second Party or third persons over, under and across said lands, and to bring said minerals to the surface thereof and remove the same therefrom. It is agreed, however, that Second Party shall be liable to First Parties for actual damages that may occur to the surface of said lands or the improvements thereon, as the result of such drilling, prospecting and mining operations, or in the moving of minerals and materials across said surface.

Eighth: Payment of all moneys due under this option may be made, by cash or check, to John Wolfenbarger

made payable to his order and mailed to him at Route 1, Thorn Hill Tennessee.

Ninth: This agreement shall be binding upon and inure to the benefit of the parties hereto, their heirs, executors, administrators, successors and assigns, it being expressly understood that the second party shall have the right to assign this option to any person or corporation it sees fit.

In Witness Whereof the First Parties have hereunto set their hands on the day and year first above written.

Witnesses:

Earl B. Jones

Chas. V. Fisher

John Wolfenbarger

John Wolfenbarger

Ida Wolfenbarger

Ida Wolfenbarger

Z-255

State of Tennessee,

County of Grainger,

Personally appeared before me, Chas. V. Fisher, a Notary Public in and for Said County and State

the within named John Wolfenbarger and Ida Wolfenbarger his wife

the bargainor S, with whom I am personally acquainted, and who acknowledged that they executed the within instrument for the purposes therein contained.

Witness my hand and official seal at Grainger County, Tennessee, this 17 th day of January 1956.

My Commission Expires 10/10/ 57

Chas. V. Fisher
Notary Public

State of Tennessee,

County of _____,

Personally appeared before me, _____, a Notary Public in and for Said County and State

the within named _____

the bargainor _____, with whom I am personally acquainted, and who acknowledged that _____ executed the within instrument for the purposes therein contained.

Witness my hand and official seal at _____, Tennessee, this _____ day of _____, 19____.

My Commission Expires _____

Notary Public

State of Tennessee,

County of _____,

RECEIVED
JUL 16 1956

Personally appeared before me, _____, a Notary Public in and for Said County and State

the within named _____

the bargainor _____, with whom I am personally acquainted, and who acknowledged that _____ executed the within instrument for the purposes therein contained.

Witness my hand and official seal at _____, Tennessee, this _____ day of _____, 19____.

My Commission Expires _____

Notary Public

No. Z-255

OPTION CONTRACT

TO

STATE OF TENNESSEE
Grainger COUNTY.
Register's Office.

Received for record the 2nd day of March, A. D. 19 56, at 10:00 o'clock A. M. Noted in Note Book F, page 28, and recorded in Book M-13, Vol. 18, of page 358 75

Fee paid, $ 2

Witness my hand, Lee Gray, Register.

State Tax $

Clerk's Fee $

Total $

K-253

AGREEMENT

This Agreement, made and entered into this 18 th day of January, 19 56, by and between

Starling Scearce (single)

hereinafter referred to as Parties of the First Part, and B. H. PUTNAM, Chicago, Illinois, hereinafter referred to as Party of the Second Part.

Witnesseth:

First: That First Parties, for and in consideration of the sum of eight and 75/100 Dollars ($ 8.75) cash to them in hand paid by Second Party, the receipt of which is hereby acknowledged, do hereby grant unto Second Party, the exclusive right, at any time within three years (3) from the date hereof, to purchase for the sum of ~~one hundred fifty~~ Dollars ($ 150.00) per acre, all of the minerals (including metallic and non-metallic ores, rock and substances, oil and gas), mineral interests, mineral rights and mining rights in and to the following described lands:

Situated in the 4 th Civil District of Grainger County, State of Tennessee, containing 35 acres, more or less, and bounded generally as follows:

On the North by the lands of William Dalton

On the East by the lands of A. B. Dalton

On the South by the lands of John Wolfenbager

On the West by the lands of Levie Wolf

Second: During the term of this option or any extensions thereof, Second Party shall have the exclusive right to prospect and drill for minerals (as hereinbefore defined) contained in the lands herein optioned, with churn drills, diamond drills and/or other prospecting methods, provided the same be done in such a manner as to do the least damage to the surface of said lands commensurate with good prospecting practices. Second Party shall be liable for all actual damages done to growing crops and fences, as the result of said drilling.

Third: If this option is not exercised, Second Party agrees to fill up, or plug in a suitable manner, all drill holes, unless First Parties designate one or more of such holes to be left open for use as water wells, or other purpose of First Parties, in which event First Parties shall pay for the casing.

Fourth: In order to exercise said option Second Party shall give notice in writing to First Parties, either by delivering the same to them personally, or, by registered mail to their usual place of residence. Within thirty days after receiving such notice First Parties shall execute and deliver a general warranty deed to the Second Party, or any person designated by Second Party, said deed to convey all of the minerals (as hereinabove defined,) mineral interest, mineral rights and mining rights in and to said lands, free of all liens and encumbrances.

Upon receipt of said deed Second Party shall make payment to First Parties of a sum equivalent to One hundred fifty ($ 150.00 per acre, (the acreage to be ascertained by instrumental survey made at the expense of Second Party) for the minerals (as hereinabove defined), mineral interests, mineral rights and mining rights in and to said lands.

Fifth: Second Party agrees to exercise such option within three months from this date, or pay to First Parties eight and 75/100 Dollars ($ 8.75) each three months thereafter until said option is exercised or this agreement terminated.

Sixth: All machinery, equipment, tools, etc., taken upon said lands shall be deemed to be the property of Second Party, and in the event this option is not exercised, Second Party shall have the right during the term hereof, or any extensions thereof, and for a reasonable time thereafter, to remove all such machinery, tools, etc., from said lands.

Seventh: If this option is exercised, the Second Party shall have the free right to enter, at anytime and from time to time, upon the surface of said lands for the purpose of drilling and prospecting for, and mining and removing all of said minerals (as hereinabove defined) contained in said lands. Second Party shall also have the right to transport minerals (as hereinabove defined) from other lands of Second Party or third persons, over, under and across said lands, and to bring said minerals to the surface thereof and remove the same therefrom. It is agreed, however, that Second Party shall be liable to First Parties for actual damages that may occur to the surface of said lands or the improvements thereon, as the result of such drilling, prospecting and mining operations, or in the moving of minerals and materials across said surface.

Eighth: Payment of all moneys due under this option may be made, by cash or check, to Starling Scearce

made payable to his order and mailed to him at Route 1, Thorn Hill, Tennessee

Ninth: This agreement shall be binding upon and inure to the benefit of the parties hereto, their heirs, executors, administrators, successors and assigns, it being expressly understood that the second party shall have the right to assign this option to any person or corporation it sees fit.

In Witness Whereof the First Parties have hereunto set their hands on the day and year first above written.

Witnesses:

Chas. V. Fisher

Earl B. Jones

Starling Scearce

Starling Scearce

Z-254

State of Tennessee,

County of Grainger,

Personally appeared before me, Chas. V. Fisher, a Notary Public in and for Said County and State

the within named Starling Scearce

the bargainor, with whom I am personally acquainted, and who acknowledged that he executed the within instrument for the purposes therein contained.

Witness my hand and official seal at Grainger County, Tennessee, this 18 th day of January 19 56.

My Commission Expires 10/ 10/ 57

Chas. V. Fisher
Notary Public

State of Tennessee,

County of,

Personally appeared before me, , a Notary Public in and for Said County and State

the within named

the bargainor, with whom I am personally acquainted, and who acknowledged that executed the within instrument for the purposes therein contained.

Witness my hand and official seal at, Tennessee, this day of, 19.

My Commission Expires

Notary Public

State of Tennessee,

County of,

Personally appeared before me, , a Notary Public in and for Said County and State

the within named

the bargainor, with whom I am personally acquainted, and who acknowledged that executed the within instrument for the purposes therein contained.

Witness my hand and official seal at, Tennessee, this day of, 19.

My Commission Expires

Notary Public

No. Z-253

OPTION CONTRACT

TO

STATE OF TENNESSEE

Grainger COUNTY.

Register's Office

Received for record the 2nd day of March, A. D. 19 56, at 10:07 o'clock A. M. Noted in Note Book F, page 18, and recorded in Book M.S., Vol. 18, of page 354

Fee paid, $ 2.75

Witness my hand, Ellen Grady, Register.

State Tax $

Clerk's Fee $

Total $

X-252

AGREEMENT

This Agreement, made and entered into this 27 th day of January, 19 56, by and between

A. B Dalton and Pearley Dalton his wife

hereinafter referred to as Parties of the First Part, and B. H. PUTNAM, Chicago, Illinois, hereinafter referred to as Party of the Second Part.

Witnesseth:

First: That First Parties, for and in consideration of the sum of Fifty and no/100 Dollars ($ 50.00) cash to them in hand paid by Second Party, the receipt of which is hereby acknowledged, do hereby grant unto Second Party, the exclusive right, at any time within Three years from the date hereof, to purchase for the sum of One hundred fifty Dollars ($150.00) per acre, all of the minerals (including metallic and non-metallic ores, rock and substances, oil and gas), mineral interests, mineral rights and mining rights in and to the following described lands:

Situated in the 4th Civil District of Grainger County, State of Tennessee, containing 50 acres, more or less, and bounded generally as follows:

On the North by the lands of William Dalton et-al

On the East by the lands of L. F. Mallicoat

On the South by the lands of Leva Wolf

On the West by the lands of Stearling Scearce

Second: During the term of this option or any extensions thereof, Second Party shall have the exclusive right to prospect and drill for minerals (as hereinbefore defined) contained in the lands herein optioned, with churn drills, diamond drills and/or other prospecting methods, provided the same be done in such a manner as to do the least damage to the surface of said lands commensurate with good prospecting practices. Second Party shall be liable for all actual damages done to growing crops and fences, as the result of said drilling.

Third: If this option is not exercised, Second Party agrees to fill up, or plug in a suitable manner, all drill holes, unless First Parties designate one or more of such holes to be left open for use as water wells, or other purpose of First Parties, in which event First Parties shall pay for the casing.

Fourth: In order to exercise said option Second Party shall give notice in writing to First Parties, either by delivering the same to them personally, or, by registered mail to their usual place of residence. Within thirty days after receiving such notice First Parties shall execute and deliver a general warranty deed to the Second Party, or any person designated by Second Party, said deed to convey all of the minerals (as hereinabove defined,) mineral interest, mineral rights and mining rights in and to said lands, free of all liens and encumbrances.

Upon receipt of said deed Second Party shall make payment to First Parties of a sum equivalent to One Hundred fifty ($ 150.00) per acre, (the acreage to be ascertained by instrumental survey made at the expense of Second Party) for the minerals (as hereinabove defined), mineral interests, mineral rights and mining rights in and to said lands.

Fifth: Second Party agrees to exercise such option within One Year from this date, or pay to First Parties Fifty and no/100 Dollars ($ 50.00) each Year thereafter until said option is exercised or this agreement terminated.

Sixth: All machinery, equipment, tools, etc., taken upon said lands shall be deemed to be the property of Second Party, and in the event this option is not exercised, Second Party shall have the right during the term hereof, or any extensions thereof, and for a reasonable time thereafter, to remove all such machinery, tools, etc., from said lands.

Seventh: If this option is exercised, the Second Party shall have the free right to enter, at anytime and from time to time, upon the surface of said lands for the purpose of drilling and prospecting for, and mining and removing all of said minerals (as hereinabove defined) contained in said lands. Second Party shall also have the right to transport minerals (as hereinabove defined) from other lands of Second Party or third persons, over, under and across said lands, and to bring said minerals to the surface thereof and remove the same therefrom. It is agreed, however, that Second Party shall be liable to First Parties for actual damages that may occur to the surface of said lands or the improvements thereon, as the result of such drilling, prospecting and mining operations, or in the moving of minerals and materials across said surface.

Eighth: Payment of all moneys due under this option may be made, by cash or check, to A. B. Dalton

made payable to his order and mailed to him at Rear 19 Farm ave. Franklin Ohio

Ninth: This agreement shall be binding upon and inure to the benefit of the parties hereto, their heirs, executors, administrators, successors and assigns, it being expressly understood that the second party shall have the right to assign this option to any person or corporation it sees fit.

In Witness Whereof the First Parties have hereunto set their hands on the day and year first above written.

Witnesses:

G W Lahey

Earl B Jones

A B Dalton

A. B. Dalton

Pearley Dalton

Pearley Dalton

K-252

State of Tennessee, Ohio

County of Warrenn,

Personally appeared before me, G. S. Le Roy, a Notary Public in and for Said County and State

the within named A. B. Dalton and Pearley Dalton his wife

the bargainor s, with whom I am personally acquainted, and who acknowledged that they executed the within instrument for the purposes therein contained.

Witness my hand and official seal at Franklin, Ohio, this 27 th day of January 1956

My Commission Expires Notary Public, Warren County, Ohio
My Commission Expires Sept. 18, 1957

Gordon S. LeRoy, Notary Public

State of Tennessee,

County of,

Personally appeared before me, , a Notary Public in and for Said County and State

the within named

the bargainor, with whom I am personally acquainted, and who acknowledged that executed the within instrument for the purposes therein contained.

Witness my hand and official seal at, Tennessee, this day of, 19.

My Commission Expires

Notary Public

State of Tennessee,

County of,

Personally appeared before me, , a Notary Public in and for Said County and State

the within named

the bargainor, with whom I am personally acquainted, and who acknowledged that executed the within instrument for the purposes therein contained.

Witness my hand and official seal at, Tennessee, this day of, 19.

My Commission Expires

Notary Public

No. K-252

OPTION CONTRACT

TO

STATE OF TENNESSEE

Grainger COUNTY.

Register's Office

Received for record the 2nd day of March, A. D. 19 56, at 10:06 o'clock A M. Noted in Note Book F, page 28, and recorded in Book M.S., Vol. 18, of page 353

Fee paid, $ 2.75

Witness my hand, Alice Brady, Register.

State Tax $

Clerk's Fee $

Total $

Part I

E-267

AGREEMENT

THIS AGREEMENT, made and entered into this 29th day of February, 1956, by and between Henry L. Wolfe and Martha Wolfe, his wife of Route 1, Franklin, Ohio, James H. Wolfe and Susie Wolfe, his wife of Route 1, Franklin, Ohio, Robert Wolfe and Joan Wolfe, his wife of (c/o Anna Snider Foster) Box 50, Loveland, Ohio, Ida Mae Wolfe Rogers of 657 Maryland Avenue, Dayton, Ohio, May Dalton and Dana Dalton, her husband of 311 East Market Street, Sandusky, Ohio.

hereinafter referred to as Parties of the First Part, and B. H. PUTNAM, Chicago, Illinois, hereinafter referred to as Party of the Second Part.

Witnesseth:

First: That First Parties, for and in consideration of the sum of Twenty and 50/100 Dollars ($ 20.50) cash to them in hand paid by Second Party, the receipt of which is hereby acknowledged, do hereby grant unto Second Party, the exclusive right, at any time within Four Years from the date hereof, to purchase for the sum of Three Hundred Dollars ($ 300.00) per acre, all of the minerals (including metallic and non-metallic ores, rock and substances, oil and gas), mineral interests, mineral rights and mining rights in and to the following described lands:

Situated in the 4th Civil District of Grainger County, State of Tennessee, containing 82 acres, more or less, and bounded generally as follows:

On the North by the lands of John Wolfenbarger, Starling Scearce, A. B. Dalton

On the East by the lands of Claude Wolfenbarger

On the South by the lands of Robert Wolf

On the West by the lands of Lou Coffee

This agreement is Part I of an agreement dated the 29th day of February, 1956, and has been executed by certain of the heirs of S. F. Wolfe. All of the heirs of S. F. Wolfe have either executed Part I or Part II of said agreement.

Second: During the term of this option or any extensions thereof, Second Party shall have the exclusive right to prospect and drill for minerals (as hereinbefore defined) contained in the lands herein optioned, with churn drills, diamond drills and/or other prospecting methods, provided the same be done in such a manner as to do the least damage to the surface of said lands commensurate with good prospecting practices. Second Party shall be liable for all actual damages done to growing crops and fences, as the result of said drilling.

Third: If this option is not exercised, Second Party agrees to fill up, or plug in a suitable manner, all drill holes, unless First Parties designate one or more of such holes to be left open for use as water wells, or other purpose of First Parties, in which event First Parties shall pay for the casing.

Fourth: In order to exercise said option Second Party shall give notice in writing to First Parties, either by delivering the same to them personally, or, by registered mail to their usual place of residence. Within thirty days after receiving such notice First Parties shall execute and deliver a general warranty deed to the Second Party, or any person designated by Second Party, said deed to convey all of the minerals (as hereinabove defined,) mineral interest, mineral rights and mining rights in and to said lands, free of all liens and encumbrances.

Upon receipt of said deed Second Party shall make payment to First Parties of a sum equivalent to Three Hundred ($ 300.00 per acre, (the acreage to be ascertained by instrumental survey made at the expense of Second Party) for the minerals (as hereinabove defined), mineral interests, mineral rights and mining rights in and to said lands.

Fifth: Second Party agrees to exercise such option within Three Months from this date, or pay to First Parties Twenty and 50/100 Dollars ($ 20.50) each Three Months thereafter until said option is exercised or this agreement terminated.

Sixth: All machinery, equipment, tools, etc., taken upon said lands shall be deemed to be the property of Second Party, and in the event this option is not exercised, Second Party shall have the right during the term hereof, or any extensions thereof, and for a reasonable time thereafter, to remove all such machinery, tools, etc., from said lands.

Seventh: If this option is exercised, the Second Party shall have the free right to enter, at anytime and from time to time, upon the surface of said lands for the purpose of drilling and prospecting for, and mining and removing all of said minerals (as hereinabove defined) contained in said lands. Second Party shall also have the right to transport minerals (as hereinabove defined) from other lands of Second Party or third persons, over, under and across said lands, and to bring said minerals to the surface thereof and remove the same therefrom. It is agreed, however, that Second Party shall be liable to First Parties for actual damages that may occur to the surface of said lands or the improvements thereon, as the result of such drilling, prospecting and mining operations, or in the moving of minerals and materials across said surface.

Eighth: Payment of all moneys due under this option may be made, by cash or check, to The above heirs

made payable to _____ order and mailed _____ at _____ P. O.

Ninth: This agreement shall be binding upon and inure to the benefit of the parties hereto, their heirs, executors, administrators, successors and assigns, it being expressly understood that the second party shall have the right to assign this option to any person or corporation it sees fit.

In Witness Whereof the First Parties have hereunto set their hands on the day and year first above written.

Witnesses:

Earl B. Jones — May Dalton — Henry L. Wolfe
Gordon S. Pekay — Dana Dalton — Martha Wolfe
Earl B. Jones — James H. Wolfe
Gordon S. Pekay — Susie Wolfe
Earl B. Jones — Joan Wolfe
David Voie — Robert Wolfe
Earl B. Jones — Ida Mae Wolfe Rogers
Howard L. Pfeiffer

X-267

State of ~~XXXXXX~~ Ohio
County of Warren,

Personally appeared before me, Gordon S. Le Roy, a Notary Public in and for Said County and State

the within named ~~Henery L. Wolfe and Martha Wolfe, James Harvy Wolfe and Sussie Wolfe~~

the bargainor~~s~~, with whom I am personally acquainted, and who acknowledged that they executed the within instrument for the purposes therein contained.

Witness my hand and official seal at Franklin, Ohio, ~~Tennessee~~, this 29 day of February 56.

GORDON S. LeROY
Notary Public, Warren County, Ohio
My Commission Expires Sept. 18, 1957

My Commission Expires

Gordon S. LeRoy
Notary Public

State of ~~Tennessee~~ Ohio,
County of HAMILTON,

Personally appeared before me, William Dowdell, a Notary Public in and for Said County and State

the within named Robert Wolfe and Joan Wolfe, his wife

the bargainor~~s~~, with whom I am personally acquainted, and who acknowledged that they executed the within instrument for the purposes therein contained.

Witness my hand and official seal at Hamilton County, Ohio ~~Tennessee~~, this 1 day of May, 19 56

My Commission Expires

WILLIAM DOWDELL
Notary Public, Hamilton County, Ohio
My Commission Expires March 12, 1958

Wm Dowdell
Notary Public

State of ~~Tennessee~~ Ohio,
County of Erie,

Personally appeared before me, David E. Lee, a Notary Public in and for Said County and State

the within named Dana H. Mary Dalton

the bargainor, with whom I am personally acquainted, and who acknowledged that they executed the within instrument for the purposes therein contained.

Witness my hand and official seal at Sandusky, Ohio ~~Tennessee~~, this 20 day of May, 19 56

My Commission Expires May 3-1956

David E. Lee
Notary Public

State of ~~Tennessee~~ OHIO,
County of MONTGOMERY,

Personally appeared before me, Howard L. Pfeffer, a Notary Public in and for Said County and State

the within named Ida May Wolfe Rogers

the bargainor, with whom I am personally acquainted, and who acknowledged that she executed the within instrument for the purposes therein contained.

Witness my hand and official seal at Dayton, Dayton Ohio ~~Tennessee~~, this 21 day of March, 19 56.

My Commission Expires 1/12/57

Howard L. Pfeffer
Notary Public

10 | STATE | Rec | at 9 | 1 | of 11 | page | State | Clerk

No.

OPTION CONTRACT

TO

STATE OF TENNESSEE

Grainger COUNTY.

Register's Office

Received for record the 3rd day of May, A. D. 1956, at 9:10 o'clock A. M. Noted in Note Book F, page 33, and recorded in Book of Misc. Deeds, Vol. 18, page 443

Fee paid, $ 3.75

Witness my hand,

Alice Brady, Register.

State Tax $

Clerk's Fee $

Total $

Part II

AGREEMENT

THIS AGREEMENT, made and entered into this 29th day of February, 1956, by and between Coy Kay Wolfe and Della Wolfe, his wife of Sneedville, Tennessee, Harold Wolfe, single, of Route 1, Thorn hill, Tennessee, Leva Wolfe, a widow of Route 1, Thorn Hill, Tennessee, Raymond Dale Wolfe, single, of Route 1, Thorn Hill, Tennessee, Roy William Wolfe and Lucille Wolfe, his wife, of Route 1, Sardinia, Ohio.

hereinafter referred to as Parties of the First Part, and B. H. PUTNAM, Chicago, Illinois, hereinafter referred to as Party of the Second Part.

Witnesseth:

First: That First Parties, for and in consideration of the sum of Twenty and 50/100 Dollars ($ 20.50) cash to them in hand paid by Second Party, the receipt of which is hereby acknowledged, do hereby grant unto Second Party, the exclusive right, at any time within four years (4(from the date hereof, to purchase for the sum of - three hundred Dollars ($ 300.00) per acre, all of the minerals (including metallic and non-metallic ores, rock and substances, oil and gas), mineral interests, mineral rights and mining rights in and to the following described lands:

Situated in the 4 th Civil District of Grainger County, State of Tennessee, containing 82 acres, more or less, and bounded generally as follows:

On the North by the lands of John Wolfenbarger, Starling Scearce, A. B. Dalton

On the East by the lands of Claude Wolfenbarger

On the South by the lands of Robert Wolf

On the West by the lands of Lou Coffee

This agreement is Part II of an agreement dated the 29th day of February, 1956, and has been executed by certain of the heirs of S. F. Wolfe. All of the heirs of S. F. Wolfe have either executed Part I or Part II of said agreement.

Second: During the term of this option or any extensions thereof, Second Party shall have the exclusive right to prospect and drill for minerals (as hereinbefore defined) contained in the lands herein optioned, with churn drills, diamond drills and/or other prospecting methods, provided the same be done in such a manner as to do the least damage to the surface of said lands commensurate with good prospecting practices. Second Party shall be liable for all actual damages done to growing crops and fences, as the result of said drilling.

Third: If this option is not exercised, Second Party agrees to fill up, or plug in a suitable manner, all drill holes, unless First Parties designate one or more of such holes to be left open for use as water wells, or other purpose of First Parties, in which event First Parties shall pay for the casing.

Fourth: In order to exercise said option Second Party shall give notice in writing to First Parties, either by delivering the same to them personally, or, by registered mail to their usual place of residence. Within thirty days after receiving such notice First Parties shall execute and deliver a general warranty deed to the Second Party, or any person designated by Second Party, said deed to convey all of the minerals (as hereinabove defined,) mineral interest, mineral rights and mining rights in and to said lands, free of all liens and encumbrances.

Upon receipt of said deed Second Party shall make payment to First Parties of a sum equivalent to Three Hundred ($ 300.00) per acre, (the acreage to be ascertained by instrumental survey made at the expense of Second Party) for the minerals (as hereinabove defined), mineral interests, mineral rights and mining rights in and to said lands.

Fifth: Second Party agrees to exercise such option within three months from this date, or pay to First Parties Twenty and 50/100 Dollars ($ 20.50) each Three months thereafter until said option is exercised or this agreement terminated.

Sixth: All machinery, equipment, tools, etc., taken upon said lands shall be deemed to be the property of Second Party, and in the event this option is not exercised, Second Party shall have the right during the term hereof, or any extensions thereof, and for a reasonable time thereafter, to remove all such machinery, tools, etc., from said lands.

Seventh: If this option is exercised, the Second Party shall have the free right to enter, at anytime and from time to time, upon the surface of said lands for the purpose of drilling and prospecting for, and mining and removing all of said minerals (as hereinabove defined) contained in said lands. Second Party shall also have the right to transport minerals (as hereinabove defined) from other lands of Second Party or third persons, over, under and across said lands, and to bring said minerals to the surface thereof and remove the same therefrom. It is agreed, however, that Second Party shall be liable to First Parties for actual damages that may occur to the surface of said lands or the improvements thereon, as the result of such drilling, prospecting and mining operations, or in the moving of minerals and materials across said surface.

Eighth: Payment of all moneys due under this option may be made, by cash or check, to Each of the above heirs.

made payable to order and mailed at P. O.

Ninth: This agreement shall be binding upon and inure to the benefit of the parties hereto, their heirs, executors, administrators, successors and assigns, it being expressly understood that the second party shall have the right to assign this option to any person or corporation it sees fit.

In Witness Whereof the First Parties have hereunto set their hands on the day and year first above written.

Witnesses:

Claude Wolfenbarger
Chas. V. Fisher
Earl B. Jones
Chas. V. Fisher
Earl B. Jones
Earl B. Jones
Nellie E. Drake

Coy Wolfe
Della Wolfe
Harold Wolfe
Leva Wolfe her +
Raymond Dale Wolfe mark
Roy William Wolfe
Lucille Wolfe

X 267

State of Tennessee,
County of Hancock,

Personally appeared before me, Chas. V. Fisher, a Notary Public in and for Said County and State the within named Coy Kay Wolfe and Della Wolfe his wife the bargainor s, with whom I am personally acquainted, and who acknowledged that they executed the within instrument for the purposes therein contained.

Witness my hand and official seal at Hancock County, Tennessee, this 7 day of Mar, 1956.

My Commission Expires 10/ 10/ 57

Chas. V. Fisher
Notary Public

State of Tennessee,
County of Hamblen,

Personally appeared before me, Chas. V. Fisher, a Notary Public in and for Said County and State the within named Harold Wolfe (single) the bargainor, with whom I am personally acquainted, and who acknowledged that he executed the within instrument for the purposes therein contained.

Witness my hand and official seal at Hamblen County, Tennessee, this 7 th day of March, 1956.

My Commission Expires 10/10/57

Chas. V. Fisher
Notary Public

State of Tennessee,
County of Granger,

Personally appeared before me, Chas V. Fisher, a Notary Public in and for Said County and State the within named Leva Wolfe (widow) and Raymond Dale Wolfe (single) the bargainor s, with whom I am personally acquainted, and who acknowledged that they executed the within instrument for the purposes therein contained.

Witness my hand and official seal at Grainger County, Tennessee, this 7 th day of March, 1956.

My Commission Expires 10/ 10/ 57

Chas. V. Fisher
Notary Public

State of ~~Tennessee~~ OHIO,
County of Brown,

Personally appeared before me, Nellie L. Druhot, a Notary Public in and for Said County and State the within named Roy William Wolfe and Lucille Wolfe his wife the bargainor s, with whom I am personally acquainted, and who acknowledged that they executed the within instrument for the purposes therein contained.

Witness my hand and official seal at Sardinia, ~~Tennessee~~ OHIO, this 21 day of March, 1956.

My Commission Expires Nov. 20, 1958

Nellie L. Druhot
Notary Public

NELLIE L. DRUHOT
NOTARY PUBLIC
BROWN COUNTY, OHIO
MY COMMISSION EXPIRES

OPTI

STATI

G

Received fo Mar
at 9:10 F. pa
of Mar. '44
page 44

Fee paid,
Witness n Al

State Tax
Clerk's Fee
Total

No.....

OPTION CONTRACT

.....

.....

TO

.....

.....

STATE OF TENNESSEE

Grainger COUNTY.

Register's Office

Received for record the 3rd day of May, A. D. 1956, at 9:10 o'clock A.M. Noted in Note Book F, page 33, and recorded in Book of Mis. Deeds, Vol. 18, page 445.

Fee paid, $4.00

Witness my hand,

Alice Brady, Register.

State Tax ..... $.....

Clerk's Fee ..... $.....

Total ..... $.....

K-245

AGREEMENT

This Agreement, made and entered into this 18 th day of January, 19 56, by and between Cleo Cope and Wallace Cope her husband of Bean Station, Tenessee Darcie Johnson and Walter Johnson her husband of 301 North River st. Franklin, Ohio . Bonnie Leffew (single) of 964 Dammert Ave. Lemay 23 St. Louis, Mo.

hereinafter referred to as Parties of the First Part, and B. H. PUTNAM, Chicago, Illinois, hereinafter referred to as Party of the Second Part.

Witnesseth:

First: That First Parties, for and in consideration of the sum of Forty and no/100 Dollars ($ 40.00) cash to them in hand paid by Second Party, the receipt of which is hereby acknowledged, do hereby grant unto Second Party, the exclusive right, at any time within Three years (3) from the date hereof, to purchase for the sum of One hundred fifty Dollars ($ 150.00) per acre, all of the minerals (including metallic and non-metallic ores, rock and substances, oil and gas), mineral interests, mineral rights and mining rights in and to the following described lands:

Situated in the 4 th Civil District of Grainger County, State of Tennessee, containing 160 acres, more or less, and bounded generally as follows:

On the North by the lands of Willis Mills

On the East by the lands of W. N. Dalyon, Starling Scearce, John Wolfenbarger

On the South by the lands of Calvin Berry

On the West by the lands of Greemlee Lamb, Lisie Scearce

Second: During the term of this option or any extensions thereof, Second Party shall have the exclusive right to prospect and drill for minerals (as hereinbefore defined) contained in the lands herein mentioned, with churn drills, diamond drills and/or other prospecting methods, provided the same be done in such a manner as to do the least damage to the surface of said lands commensurate with good prospecting practices. Second Party shall be liable for all actual damages done to growing crops and fences, as the result of said drilling.

Third: If this option is not exercised, Second Party agrees to fill up, or plug in a suitable manner, all drill holes, unless First Parties designate one or more of such holes to be left open for use as water wells, or other purpose of First Parties, in which event First Parties shall pay for the casing.

Fourth: In order to exercise said option Second Party shall give notice in writing to First Parties, either by delivering the same to them personally, or, by registered mail to their usual place of residence. Within thirty days after receiving such notice First Parties shall execute and deliver a general warranty deed to the Second Party, or any person designated by Second Party, said deed to convey all of the minerals (as hereinabove defined,) mineral interest, mineral rights and mining rights in and to said lands, free of all liens and encumbrances.

Upon receipt of said deed Second Party shall make payment to First Parties of a sum equivalent to One hundred fifty ($ 150.00) per acre, (the acreage to be ascertained by instrumental survey made at the expense of Second Party) for the minerals (as hereinabove defined), mineral interests, mineral rights and mining rights in and to said lands.

Fifth: Second Party agrees to exercise such option within Three Months from this date, or pay to First Parties Forty and no/100 Dollars ($ 40.00) each Three Months thereafter until said option is exercised or this agreement terminated.

Sixth: All machinery, equipment, tools, etc., taken upon said lands shall be deemed to be the property of Second Party, and in the event this option is not exercised, Second Party shall have the right during the term hereof, or any extensions thereof, and for a reasonable time thereafter, to remove all such machinery, tools, etc., from said lands.

Seventh: If this option is exercised, the Second Party shall have the free right to enter, at anytime and from time to time, upon the surface of said lands for the purpose of drilling and prospecting for, and mining and removing all of said minerals (as hereinabove defined) contained in said lands. Second Party shall also have the right to transport minerals (as hereinabove defined) from other lands of Second Party or third persons, over, under and across said lands, and to bring said minerals to the surface thereof and remove the same therefrom. It is agreed, however, that Second Party shall be liable to First Parties for actual damages that may occur to the surface of said lands or the improvements thereon, as the result of such drilling, prospecting and mining operations, or in the moving of minerals and materials across said surface.

Eighth: Payment of all moneys due under this option may be made, by cash or check, to Wallas Cope acting agent for the above heirs made payable to his order and mailed to him at Been Station, Tennessee P. O.

Ninth: This agreement shall be binding upon and inure to the benefit of the parties hereto, their heirs, executors, administrators, successors and assigns, it being expressly understood that the second party shall have the right to assign this option to any person or corporation it sees fit.

In Witness Whereof the First Parties have hereunto set their hands on the day and year first above written.

Witnesses:

Chas V. Fisher
Earl B. Jones
Geo. Lee Cary
Earl B. Jones

Cleo Cope
Wallace Cope
Darcie Johnson
Walter Johnson
Bonnie Stephen

K-245

State of Tennessee,

County of Grainger,

Personally appeared before me, Chas. V. Fisher, a Notary Public in and for Said County and State

the within named Cleo Cope and Wallas Cope her husband

the bargainor s, with whom I am personally acquainted, and who acknowledged that they executed the within instrument for the purposes therein contained.

Witness my hand and official seal at Grainger County, Tennessee, this 18 th day of January 19 56.

My Commission Expires 10/ 10/ 58

Chas V. Fisher
Notary Public

State of ~~Tennessee~~ Missouri,

County of St Louis,

Personally appeared before me, A R McKenney, a Notary Public in and for Said County and State

the within named Bonnie Liffers

the bargainor, with whom I am personally acquainted, and who acknowledged that she executed the within instrument for the purposes therein contained.

Witness my hand and official seal at Saint Louis County, Missouri, ~~Tennessee~~, this 21st day of May, 1956

My Commission Expires 3/28/59

A R McKenney
Notary Public

State of ~~Tennessee~~ Ohio

County of Warren

Personally appeared before me, Gordon S. LeRoy, a Notary Public in and for Said County and State

the within named Garcie Johnson and Walter Johnson

the bargainor s, with whom I am personally acquainted, and who acknowledged that they executed the within instrument for the purposes therein contained.

Witness my hand and official seal at Franklin, Ohio, ~~Tennessee~~, this 27 day of June, 1956

My Commission Expires GORDON S. LeROY
Notary Public, Warren County, Ohio
My Commission Expires Sept. 13, 1957

Gordon S. LeRoy
Notary Public

No. K-245

OPTION CONTRACT

TO

STATE OF TENNESSEE
Grainger COUNTY.

Register's Office

Received for record the 2nd day of March, A. D. 19 56, at 10:00 o'clock A.M. Noted in Note Book F, page 28, and recorded in Book of Misc, Vol. 18, page 342.

Fee paid, $ 3.00

Witness my hand, Alice Brady, Register.

State Tax $

Clerk's Fee $

Total $

X-251

ATTORNEY'S CERTIFICATE OF TITLE

TO B. H. PUTNAM, MARIETTA, OHIO, AND CLAUDE WOLFENBARGER

The undersigned has personally examined the title to the premises described below from the public records of the County wherein such land lies, and other records pertinent to the title under examination dating from September 28th, 1911. down to June 8th, 1956, at 10:50 A. M. which date will be deemed to be the date of this certificate.

From the examination of the evidence aforesaid, it is the opinion of the undersigned that the absolute fee simple title to the premises described below is, as of said date, vested in Claude Wolfenbarger, subject to the option agreement made to the New Jersey Zinc Exploration Co., recorded in Lease book No. 16 page 377 and executed by John Wolfenbarger while he owned the tract described below, also subject to the option agreement made to B. H. Putnam by Claude Wolfenbarger, recorded in Vol. 18 at page 351 of the Register's office of Grainger County, Tennessee.

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JUL 16 1956

DESCRIPTION

Situated in the Fourth Civil District of Grainger County, Tennessee and bounded and described as follows:

Beginning on a black oak on Copper Ridge Road and Mallicoat line; thence running southwestwardly with the meanders of said road to a small wild cherry tree and hickory sprouts on the side of said road; thence running southward to a walnut stump; thence southwardly to a hickory stump; thence southward to cedar, in Robert Wolf's line; thence eastwardly with said Wolfe line to Mallicoat's line to the beginning corner. Containing 18 acres more or less.

There are no encumbrances on said land, the State and County taxes have been paid for 1955, and all prior years.

However said tract of land is subject to option of mineral rights to The New Jersey Zinc Exploration Co., as shown by lease option recorded in Lease Book 16 at page 377, as set out above.

The undersigned hereby certifies that from the examination of the records of Grainger County, Tennessee, that in his opinion that the above Claude Wolfenbarger has a good and marketable title to the above described tract of land, however subject to the mineral options as set out above.

Witness my signature at office this June 8th, 1956.

(S) D. S. Beeler
D. S. Beeler, Rutledge, Tennessee

NOTE: The aforementioned agreement with the New Jersey Exploration Co. was surrendered and terminated June 15, 1954 by a letter bearing such date and mailed to John Wolfenbarger, who was the owner of the subject premises at the date of execution and termination of said agreement.

Robert V. Benjamin
Robert V. Benjamin
Attorney for B. H. Putnam.

X-255

ATTORNEY'S CERTIFICATE OF TITLE

TO B. H. PUTNAM, MARIETTA, OHIO; AND JOHN WOLFENBARGER

The undersigned has personally examined the title to the premises described below, from the public records of the County wherein such lands lie, and other records pertinent to the title under examination dating from January 10th, 1905, down to April 25th, 1956, at 2:30 O'clock P. M., which date will be deemed to be the date of this certificate.

From the examination of the evidence afresaid, it is the opinion of the undersigned that the absolute fee simple title to the premises described below is, as of said date vested in John Wolfenbarger and wife Ida Wolfenbarger, subject to the option agreement of the New Jersey Zinc Exploration Co., recorded in book of Leases and options Vol. No. 16 page 311 of the Register's Office of Grainger County, Tennessee, and the option agreement of B. H. Putnam, dated January 17th, 1956.

DESCRIPTION

Situated in the 4th Civil District of Grainger County, Tennessee and bounded and described as follows;

Situated in Grainger County, Tennessee, on the south side of Copper Ridge and north of the County Road on the Hayes Farm;

BEGINNING at the road near a hollow and running with a line fence between Stephens and Wolfenbarger to the north side of a field; thence on the same degree with a marked conditional line to the top of Copper Ridge; thence in a southeasterly direction with the top of Copper Ridge to Ben Scearce's hickory corner; thence in a southerly direction with a conditional line established by Benjamine Scearce and A. L. G. Stephens to the County Road; thence with the County Road in an easterly direction to the beginning corner. Containing 50 acres more or less.

There are no encumbrances against said tract of land except as set out above, the State and County taxes have been paid for 1955, and all prior taxes.

The undersigned hereby certifies that from the examination of the records of Grainger County, Tennessee, that in his opinion that John

Wolfenbarger and wife Ida Wolfenbarger have a good and marketable title to the above described tract of land subject to the above set out options on the mineral rights.

Witness my signature this April 25th, 1956.

(S) D. S. Beeler
D. S. Beeler, Rutledge, Tenn.,

NOTE: The aforementioned agreement with the New Jersey Zinc Exploration Co. was surrendered and terminated June 15, 1954 by a letter bearing such date and mailed to John Wolfenbarger.

Robert V. Benjamin
Robert V. Benjamin
Attorney for B.H. Putnam

X-253

ATTORNEY'S CERTIFICATE OF TITLE

TO B. H. PUTNAM, MARIETTA, OHIO AND STERLING SCEARCE

The undersigned has personally examined the title to the premises described below from the public records of the County wherein such lands lie, and other records pertinent to the title under examination dating from October 9th, 1911 down to May 15th at 2:30 P. M. 1956, which date will be deemed to be the date of this certificate.

From the examination of the evidence aforesaid, it is the opinion of the undersigned that the absolute fee simple title to the premises described below is, as said date, vested in Sterling Scearce, subject to the option agreement of B. H. Putnam recorded in Miscellaneous Book Vol. 18 page 354 of the Register's Office of Grainger County, Tennessee.

DESCRIPTION

Situated in the Fourth Civil District of Grainger County, Tennessee, and bounded and described as follows:

1. Being Tract No. 3 described in County Court Clerk's deed dated February 18th, 1932, to Henry Scearce and wife.

BEGINNING on a walnut on the County Road near a hollow; thence with conditional line between Joseph Cozort and said Scearce to the top of Copper Ridge to a small oak; thence with the top of said ridge in a westerly direction to a small hickory; thence in a southerly direction down said ridge with a conditional line between Stephenson and Scearce to a small oak on the north of the County Road; thence with the County Road to the beginning and being by estimation about 25 acres.

2. Being tract No. 4 described in said County Court Clerk's deed above referred to.

BEGINNING at a black gum; thence running westwardly 22 1/2 poles to a stone on J. E. Collins' line; thence with said line northwardly 41 1/2 poles to the top of Copper Ridge; thence with the top of the ridge 21 poles to a hickory; thence southwardly 40 poles to the beginning. Containing 4 acres and 152 sq. rods more or less.

3. BEGINNING on a walnut in the hollow being the same point as that of the beginning point of the first tract above described; running an eastwardly direction with road to an ash in Lee Dalton's line; thence with Dalton's line to a stone something like 15 rods east of the residence of

Henry Scearce; thence continuing in a northerly direction to a black oak on top of spur; thence continuing a northerly course to a small hickory in H. E. Collin's line; thence with top of ridge a westerly course to a black oak in Henry Scearce's line or line of first above described tract; thence with line of said above first described tract to the beginning corner. Containing by estimation 10 acres more or less.

But there is excepted from the first above described tract a cemetary, known as the Scearce cemetary which is now under fence, and also a right-of-way to and from said cemetary with right to use vehicles or otherwise.

There are no encumbrances on said tracts of land the State and County Taxes having been paid for 1955 and all prior years.

The undersigned hereby certifies that from the examination of the records of Grainger County, Tennessee, that in his opinion that the above, Sterling Scearce has a good and marketable title to the above described tracts of land.

Witness my signature at office this May 15th, 1956.

(S) D. S. Beeler
D. S. Beeler, Rutledge, Tennessee

X-252

ATTORNEY'S CERTIFICATE OF TITLE

TO B. H. PUTNAM, MARIETTA, OHIO AND A. B. DALTON AND WIFE

The undersigned has personally examined the title to the premises described below from the public records of the County wherein such land lies, and other records pertinent to the title under examination dating from January 5th, 1906 down to June 7th, 1956, at 10:20 A. M., which date will be deemed to be the date of this certificate.

From the examination of the evidence aforesaid, it is the opinion of the undersigned that the absolute fee simple title to the premises described' below is, of said date, vested in A. B. Dalton and wife Pearlie Dalton, subject to an option given to The New Jersey Zinc Exploration Corp., September 14th, 1951, and to expire September 14th, 1956, given by Lee Dalton, which covers this tract of land, and recorded in Book of lease No. 16 page 376.

This tract of land is also subject to an option given to B. H. Putnam for all mineral rights, recorded in Book 18 at page 353, by A. B. Dalton and wife, in the Register's office at Rutledge, Tennessee.

DESCRIPTION

Situated in the Fourth Civil District of Grainger County, Tennessee and bounded and described as follows:

> BEGINNING at an ash at the road; thence in a northerly direction to a rock; thence in almost the same direction to a locust; thence almost the same direction, being a little westwardly to a water oak; thence running a little more northerly up the ridge to a small hickory in George Shockley's line on top of the ridge at the County Line; thence running in a north west ward direction with the top of the ridge to a black oak in L. F. Mallicoat's line; thence in a southerly direction with L. F. Mallicoat's line to the ridge road, and westward with and along with said Copper Ridge, formerly called County Road back to the beginning, the ash.
> Containing about 50 acres more or less.

There are no encumbrances on said land, the State and County taxes have been paid for 1955, and all prior years, however said tract of land is subject to the mineral rights as set out above.

The undersigned hereby certifies that from the examination of the records of Grainger County, Tennessee, that in his opinion that the above A. B. Dalton and wife Pearl Dalton have a good and marketable title to the above described tract of land, however subject to the mineral options as set out above.

Witness my signature at office this June 7th, 1956.

(S) D. S. Beeler
D. S. Beeler, Rutledge, Tennessee

NOTE: The aforementioned agreement with the New Jersey Zinc Exploration Co. was surrendered and terminated in July, 1954, by a letter to Lee Dalton, who was the owner of the subject premises at the date of execution and termination of said agreement.

Robert V. Benjamin
Robert V. Benjamin
Attorney for B.H. Putnam

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JUL 16 1956

X-267

ATTORNEY'S CERTIFICATE OF TITLE

TO B. H. PUTNAM, MARIETTA, OHIO AND HEIRS AT LAW OF S. F. WOLFE

The undersigned has personally examined the title to the premises described below from the public records of the County wherein the land lies, and other records pertinent to the title under examination dating from September 28th, 1911, down to June 8th, 1956, at 3:30 P. M. which date will be deemed to be the date of this certificate.

From the examination of the evidence aforesaid, it is the opinion of the undersigned that the absolute fee simple title to the premises described below is, as of said date vested in Mrs. S. F. Wolfe as widow of S. F. Wolfe, deceased, and all the children of the said S. F. Wolfe, deceased and his heirs at law, subject to the mineral option of B. H. Putnam.

DESCRIPTION

Situated in the Fourth Civil District of Grainger County, Tennessee, and bounded and described as follows:

> BEGINNING on a stone in the Valley Road; thence southwardly with Ben Scearce's line; thence the same direction to a stone in Dock Wolfe's line; thence eastward with Dock Wolfe's line to Robert Wolfe's line; thence northwardly a straight line, a conditional line made by S. F. Wolfe and John Edwards to a stone at the Valley Road, near Windfield Scearce's; thence westwardly with the Valley Road to the beginning.
> Containing 100 acres more or less.

From the above described tract of land is an 18 acre tract sold by S. F. Wolfe during his lifetime which leaves only 82 acres in the above described tract.

There are no encumbrances on said tract of land except State and County taxes for the years 1954 and 1955, all prior years have been paid.

The undersigned hereby certifies that from the examination of the records of Grainger County, Tennessee, that in his opinion that above

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Mrs. S. F. Wolfe, widow and the heirs at law of S. F. Wolfe, deceased have a good and marketable title to the above described tract of land, however subject to the mineral option as set out above.

Witness my signature this June 8th, 1956.

(S) D. S. Beeler

D. S. Beeler, Rutledge, Tennessee

X- 245

ATTORNEY'S CERTIFICATE OF TITLE

TO B. H. PUTNAM, MARIETTA, OHIO; AND THE HEIRS OF JOHN LEFFEW

The undersigned has personally examined the title to the premises described below from the public records of the County wherein such lands lie, and other records pertinent to the title under examination dating from July 12th, 1919, down to April 5th, 1956, at 3:00 O'clock P. M. which date will be deemed to be the date of this certificate.

From an examination of the evidence aforesaid, it is the opinion of the undersigned that the absolute fee simple title to the premises described below is, as of said date, vested in the heirs at law of John Leffew, Deceased, subject to the option agreement of B. H. Putnam recorded in Book 18 at page 342 .

DESCRIPTION

Situated in the Fourth Civil District of Grainger County, Tennessee, and bounded and described as follows;

1. BEGINNING on a large white oak on the north bank of Indian Creek; running thence with a marked conditional line established by Stephens and Myers, to the top of Copper Ridge; then with the top of the Ridge eastwardly to Stephens and John Wolfenbarger's corner; then down the said ridge southwardly with Stephens and Wolfenbarger's line to the County Road; then westwardly with the County Road to ford of Indian Creek at south west corner of Joseph Cozorts garden; then with Indian Creek as it meanders to the beginning. Containing 100 acres more or less. Deed being recorded in deed book Vol. 49 at page 535. This tract of land was purchased from J. E. Collins, et al.

   A gate roadway through this farm from the Slaton farm south east to the public road is expressly reserved, the same to be kept for a roadway for the people living back of this farm.

2. W. N. Slaton and wife conveyed to John Leffew two tracts of land on July 8th, 1920, consisting of 33 acres and 10 acres being bounded and described as follows;

   FIRST TRACT:

   Situated in the Fourth Civil District of Grainger County, Tennessee, and bounded and described as follows:

BEGINNING on a stake Emanual Collin's line; then westwardly with a conditional line between R. N. Myers and John Scearce to Sherman Holt's line; thence northwardly with said Holt's line to Holt's corner; thence eastwardly with E. Shockley's line to a stake on top of Copper Ridge; thence southwardly with the conditional line between Emanual Collins and R. N. Myers to the beginning. Containing 33 acres more or less.

SECOND TRACT:

BEGINNING on a rock, corner to Sherman Holt running thence northwardly with Holt's line to a corner of this first described tract; thence eastwardly with the line of this first tract 25 poles and 5 1/2 feet to a stake; thence southwardly to M. L. Collin's line to a stake; thence westwardly 25 poles and 5 1/2 feet to a beginning. Containing 10 acres more or less.

There are no encumbrances on said tracts of land, the State and County Taxes for 1955, having been paid and all prior taxes.

I further find that there is an option on said tracts of land from the heirs of John Leffew, Deceased to B. H. Putnam which has been noted but not of record yet, covering all mineral rights.

The heirs at law of John Leffew are Cleo Cope, Bean Station, Tennessee, Dorcie Johnson, of Franklin, Ohio, Bonnie Leffew also of Franklin, Ohio and Lemay Leffew of St. Louis, Missouri and that the title is now vested in them.

The undersigned hereby certifies that from the examination of the records of Grainger County, Tennessee, that in his opinion that the above heirs at law of John Leffew have a good and marketable title to the above described tracts of land.

Witness my signature this April 5th, 1956.

(S) D. S. Beeler, Atty.
D. S. Beeler, Rutledge, Tenn.

NOTE: It has been established and confirmed that Lemay Leffew is not one of the heirs of John Leffew and therefore has no interest in this property.

Robert V. Benjamin
Robert V. Benjamin
Attorney for B. H. Putnam.

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JUL 16 1956

MME Form 7
(10-58)

OFFICIAL FILE COPY

Date	Surname	Code
11/25	Murphy	500
	[illegible]	500
		120
		~~[illegible]~~
		~~220~~
11/30	R Cole	225

PROJECT SUMMARY REPORT

By: F. M. Murphy November 25, 1959

1. Docket No. DMEA-4381 (Zinc)
Contract No. Idm-E1002

Operator: Original - Benjamin H. Putnam
Assignee - National Lead Company
111 Broadway
New York 6, New York

Operator's Property Rights: Option to purchase the following parcels of land in the Copper Ridge zinc district, Grainger County, Tennessee:

Owner	Acres
Claude Wolfenbarger	18
John and Ida Wolfenbarger	50
Starling Scearce	35
A. B. and Pearly (Pearlie) Dalton	50
Henry L. and Martha Wolfe, et al.	82
(Leffew Heirs) Cleo Cope, et al.	143
L. F. and Ida Mallicoat	150
Lou Coffee, et al.	8

The contract contains a special agreement concerning the land and mineral production therefrom.

2. Contract dated August 31, 1956

Amendments -

No. 1, dated January 24, 1957, adds the Mallicoat land to project area.

No. 2, dated May 13, 1957, extends completion date from June 1 to November 1, 1957.

No. 3, dated July 5, 1957, adds the Lou Coffee, et al., land to project area.

Drilling under the contract started on September 21, 1956, and was completed on September 9, 1957.

43683

Summary of Costs (unit costs)

Item	Authorized Units	Authorized Cost	Completed Units	Completed Cost
Core and plug drilling @ $3.00/ft	12,000	$36,000.00	12,000	$36,000.00
Reaming @ $2.00/ft.	600	1,200.00	438	876.00
Assays @ $1.50/sample	140	210.00	89	99.00*
Incidental allowance @ $0.26/ft. of drill hole	12,000	3,120.00	12,000	3,120.00
Totals		$40,530.00		$40,095.00

* Actual cost of $1.11 per sample claimed by Operator instead of unit cost authorized.

3. Audit Report of Review, dated May 6, 1958:

Total cost billed by Operator	$40,095.00
Total acceptable cost, if claimed	40,128.00*
Government Participation @ 50%	20,047.50

* Extra assay costs not claimed - released September 1958.

4. Certification not recommended. Closing letter mailed to Operator November 5, 1958.

5. Final Reports:

Operator's received April 28, 1958. The report meets the requirements of Article 7(c) of the contract, therefore, it is considered acceptable.

Field Team's Final Report and Summary received November 16, 1959:

The Field Team and examiners recommend that the project should not be certified.

Excerpts from Joint Final Engineering and Geologic Report by H. Wedow, Jr., USGS and L. E. Shirley, USBM:

Rocks underlying the project area in descending order are the Mascot formation of dolomite and chert, the Kingsport with dolomite and underlying dolomite limestone, and the Longview dolomite, all referred to as the Knox dolomite. In the district, the commercial zinc deposits are found chiefly in the Kingsport formation.

Structurally, the strata of the project area are part of a homocline that locally is the northwest limb of a large overturned syncline.

Of the 26 holes drilled under the contract, only three were devoid of any trace of zinc. However, no hole encountered a minable thickness of commercial-grade zinc ore in the Mascot, Kingsport, and Longview formations penetrated by the drilling. Because of the mineralization discovered, there is a strong possibility that a mineralized body or shoot of commercial grade may occur in the areas not yet adequately explored.

Based on interpretations of trend directions in the ratio and zinc intensity values of the material penetrated by the drill holes, Mr. Wedow recommends the following areas as being favorable:

> Between Holes JW-3 and LW-3 also midway between Holes LH-4 and JW-4. Drilling in these two respective areas will test for ore shoots raking east at a low angle to the strike and south at a high angle to the strike. Further drilling should also include the country down dip from Hole LW-3.

The Field Team noted that it would look favorably on an application for additional drilling.

Based on electrical resistivities, the Operator's geologists recommend the areas of traverses N and R, to the east of the examiners areas, as the most favorable.

Comments Division of Minerals

The drilling operations were based on the results of a geochemical survey. Later, a geophysical survey using the electrical resistivity method was made in the area. The Field Team note that Mr. Wedow's analysis is essentially an untried method in Region V to determine favorable ground.

Above faulted and folded rock strata soil anomalies do not necessarily directly overlie zones of mineralization at the present bedrock surface. Since electrical resistivity lows would be recorded over brecciated or fractured zones that would be favorable hosts for mineralization, it appears that this should be the best method for the determination of favorable targets for drilling in the project area. Therefore, if additional drilling is approved in the subject area at some later date, the writer believes the areas recommended by the Operator's geologists should be explored first.

F.M. Murphy

F.M. Murphy

FMMurphy/kb-11/25/1959

cc: Director's reading file
Docket
Mr. Murphy

cc: Chron.

MME Form 17
Mar. 59

OFFICE OF MINERALS EXPLORATION

WORK COMPLETED ANALYSIS

___ Certified **No.** After final audit or review report is received, prepare in duplicate. File original in official docket. Send copy to Code 210.

Operator: NATIONAL LEAD COMPANY-ASSIGNEE (Benjamin Putnam)
Actual Cost: X

State: TENNESSEE
Agreed Unit Cost: *X

Final Report of Audit
Commodity: ZINC
Docket No.: DMEA- 4,381

Final Report of Review: 5/6/58.
Contract No.: Idm-E1,002

Type of Work (Use these categories only)	Authorized by Contract and Amendments		Completed and Paid for		Net cost after sale of Gov't. Property
	Units	Cost 1/	Units	Cost 1/	
Drifting & Crosscutting					
Raising					
Shafts					
~~XXXXXXX~~ Reaming	600' @ $2.00/ft.	$ 1,200.00	438'	$ 876.00	$ 876.00
Drilling (Specify) Diamond and Overburden (~~E~~X)	12,000' @ $3.00/ft.	36,000.00	12,000'	36,000.00	36,000.00
Incidental allowance for each foot of ~~XXXXXXXXXXXXXXXXXXXX~~ drilling completed * 12,000' @ $0.26/ft.		3,120.00	12,000'	3,120.00	3,120.00
Underground Excavation					
Roads and Trails					
Operating Equipment Purchased					
Surface Rehabilitation & Repairs					
Underground Rehabilitation					
New Building, Improvements, etc.					
Other (Specify) 140 samples assayed @ ~~$1.50~~ $1.11 each *		210.00	89	99.00 ~~132.00~~ 3/	99.00 ~~132.00~~
Totals		$ 40,530.00		~~$ 40,128.00~~ $ 40,095.00 2/	~~$ 40,128.00~~ $ 40,095.00

1/ Round off to dollars.
2/ Net cost total must agree with final report of audit or review.
3/ Only actual cost of $1.11/sample claimed by operator. JAM

Prepared by W. P. Klugescheid Date 10/29/59.

52616

Actual Costs

Category (1) Independant Contracts.

Overburden Drilling + Diamond Drilling
12,000 feet @ $3.00/ft. (AX) $36,000.00

Reaming 600' @ $2.00/ft 1,200.00

Categories (2-7) none

Fixed Unit Costs.

Incidental allowance for each foot of drilling completed
12,000 feet @ $0.26/ft. 3,120.00

140 Samples to be assayed @ $1.50 each. 210.00

Total Cost $40,530.00

	1956	1957		
Spent	~~Oct, Nov, Dec~~	~~Jan, Feb, March, April, May, June, July, Aug~~		
Drilling @ 3.00	~~7,550'~~	~~7,643'~~	~~8,421'~~	
		~~4,221'~~	~~5,730'~~	
		~~1,498'~~	~~3,276~~	
	~~10,284'~~	~~17,609'~~	12,000'	

~~22,939.00~~
~~22,650.00~~
~~22,819.00~~
~~22,190.00~~
~~12,687.00~~
~~9,678.00~~
~~5,394.00~~
~~25,263.00~~
~~30,852.00~~
~~34,827.00 Cmb~~
36,000.00

Reaming @ 2.00	~~122~~	~~305'~~	~~384'~~	438'

~~768.00~~ 876.00
~~610.00~~
~~244.00~~

	~~11,609'~~	~~10,284'~~	~~7,643'~~	~~8,421'~~	
	12,000'				
	~~5,730'~~	~~4,273'~~	~~7550~~	~~4,221'~~	
Hauling @ 0.26		~~1,498'~~	~~3,276~~		

~~2,189.46~~ ~~2,649.84~~
~~1,987.18~~ ~~1,389.80~~ ~~3018.34~~
~~1,064.18~~ ~~1099.54~~
~~1,163.00~~ ~~836.46~~ 3,120.00
~~1,890.98~~ ~~467.48~~

Sampling @ 1.50	~~15~~	~~44.89~~	99.00	~~25.50~~

~~76.50~~ ~~22.50~~
~~16.50~~

~~28,404.96~~
~~31,478.34~~
~~38,197.84 Cmb~~
40,095.00

~~6,121.98~~
~~7,149.26~~
~~14,577.04~~
~~19,473.30~~
~~24,503.48~~
~~25,565.50~~
~~25,868.68~~

MME Form 7
(10-58)

Docket 4381

Docket 5026

OFFICIAL FILE COPY

Date	Surname	Code
		100
6/14	Murphy	500
		500
	Selfridge	120
		110
		220

JUN 1 4 1961

Mr. Benjamin N. Putnam
170 East Pearson Street
Chicago 11, Illinois

Re: DMEA-5026 (Zinc)
Benjamin N. Putnam
Luttrell Prospect
Union County, Tennessee
Contract Idm-K1215
and
DMEA-4422 (Zinc)
Benjamin N. Putnam, Assignee
Thorn Hill Area
Grainger County, Tennessee
Contract Idm-K1022

Dear Mr. Putnam:

The following information is furnished in reply to your June 9 letter, in confirmation of a telephone conversation with Mr. Selfridge, inquiring as to the necessity for continuance of the surety bonds under the referenced contracts.

By the terms of Amendment No. 2 to contract Idm-K1215, all minerals produced from the land under this contract are subject to a percentage royalty until the Government's $2,747.33 contribution is repaid or June 30, 1974, whichever occurs first. Therefore, the surety bond under this contract remains in full force until the fulfillment of one of these conditions. This information was furnished the American Surety Company of New York in a letter dated May 12, 1960, a copy of which was sent to you.

In regard to contract Idm-K1022, my letter to you under date of November 7, 1960, stated that the Government retains no claim or lien against the property under this contract or any production therefrom. The letter, a copy of which was sent to the American Surety Company of New York, further stated that we were closing our books and records on the project. Accordingly, the obligation under the surety bond is void.

43683

Our records show that you are the Assignee-Operator under the following described contract:

DMEA-4380 (Zinc)
Benjamin H. Putnam, Assignee
Puncheon Camp Creek Prospect
Grainger County, Tennessee
Contract Idm-K1088

A certification of discovery or development covering the land under the contract was issued on January 3, 1961. A letter of the same date, transmitting the certification, stated that all minerals produced until May 20, 1980, are subject to the Government's percentage royalty until $77,173.05 is repaid. A copy of this letter was sent to the National Lead Company, which remains as surety under the contract in accordance with the provisions of the Government's April 14, 1958, consent to its assignment of the contract to you. No surety bond is involved in this contract.

Incidentally, due to the recent payment to you of an additional $5.62, the amount repayable by royalty under contract Idm-K1088 is now $77,178.67.

Our records also indicate that you provided a surety bond for the following described contract:

DMEA-4381 (Zinc)
National Lead Company, Assignee
Indian Creek Area
Grainger County, Tennessee
Contract Idm-K1002

The Government's May 3, 1957, consent to your assignment of this contract did not release this surety. However, by letter dated November 5, 1958, you were furnished a copy of a letter of the same date to the National Lead Company, wherein it was stated that the Government retains no lien or claim against the property and we were closing our books and records on the project. Therefore, the obligation under the surety bond is void.

I believe the foregoing answers all the questions presented both in your letter and in the telephone conversation with Mr. Selfridge. If, however,

additional information is desired, please do not hesitate in making inquiry.

Sincerely yours,

Director

EDTalbert/hb (6/13/61)
Copy to: Dockets DMEA-4381, DMEA-4422,
DMEA-4580, and DMEA-5026
Director's Reading File
CA&A Division
Acting Field Officer, Region IV (2)

BENJAMIN H. PUTNAM
170 EAST PEARSON STREET
CHICAGO 11, ILLINOIS

OFFICIAL FILE COPY
RECEIVED

Mr. George C. Selfridge
U.S. Department of Interior
Office of Minerals Exploration
Washington 25, D. C.

Dear Mr. Selfridge:

Confirming our telephone conversation of this morning concerning the following Lease Bonds as carried with American Surety Company, namely:

Policy No	Amount	Date
10-580-434	$ 2,747.33	6/20/61 to 6/20/62 Contract IDM E 215 Zinc
10-560-719	14,822.48	10/18/60 to 10/18/61 Contract IDM-E 102[illegible]

Is it necessary for us to continue to have these bonds in force and on what date should they be cancelled. Also does this apply to any other bonds which may be in force and when should they be cancelled?

Would appreciate your forwarding any correspondence to me at the above address.

Sincerely yours,

B. H. PUTNAM

BHP:jd

June 9, 1961

Dmea-4381

June 9, 1961

Memorandum To Files:

Re: DMEA-4580 (Zinc)
Benjamin H. Putnam, Assignee
Puncheon Camp Creek Prospect
Grainger County, Tennessee
Contract Idm-E1088

Mr. Putnam telephoned on June 9 to ask the writer how long surety bonds had to be carried. He explained that none of his engineers were available to take care of such matters. He mentioned that he had bonds Nos. 10-580-434 and 10-560-719 on which he was paying a premium of $27.47 and $148.22, respectively. He also mentioned the Puncheon Camp Creek Prospect contract and asked if the bond would have to be continued if he bought the property outright. The writer replied that the matter would have to be taken up with the Solicitor's office before a reply could be made. He said that there was no hurry as the property would not be bought before next year. He was also wondering if a bond would have to be carried if the property were bought under lease and option making periodic purchase payments; thus, the title would be left in the owner's name who would pay the mineral taxes. The writer promised to submit his questions to the Legal Division for a decision and then let him know.

On investigation in readying a reply to his letter of the same date, it was learned that the Puncheon Camp Creek Prospect contract did not involve a surety bond.

George C. Selfridge

George C. Selfridge
Chief, Division of Field Operations

GCSelfridge/hb (6/12/61)
Copy to: Director's Reading File
Dockets DMEA-4381, DMEA-4422,
DMEA-4580, and DMEA-5026
CA&A Division
G. C. Selfridge

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION
ROOM 11 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

November 13, 1959

OFFICIAL FILE COPY
O. M. E.
RECEIVED NOV 16 1959

DATE	INITIALS	CODE
11-16	gad	220
11-16	243	130
11/17	JEJ	110
11-20	243	130
11-20	gad	220
11/20	JEJ	110
11/23	[illegible]	800
		500

Memorandum

To: Operating Committee, OME - Washington

From: OME Field Team, Region V - Knoxville, Tennessee

Subject: DMEA-4381, Idm-E1002-zinc. National Lead Co., New York, N. Y. Assignee. Indian Creek area, Grainger County, Tennessee.
Field Team, Final Report.

Enclosed are the original and two copies of the Field Team final report on the Indian Creek project.

Although no commercial ore was discovered, we agree with the Examiners' conclusion that additional exploration in this area is warranted. Extensive exploration in the Copper Ridge district, both DMEA and non-DMEA, has shown that the ore shoots are not simple geometrical forms and that the shape, extent and bearing of one is not necessarily like those of others. Mr. Wedow's analysis of the drill-hole data, as presented in the maps with this report, is essentially an untried method in this region and may provide some useful guides to the controlling features of the ore shoots.

Certification is not recommended, but we would look favorably on an application for additional drilling.

Robert A. Laurence
Robert A. Laurence
Executive Officer, OME
Region V

Reviewed by
OME OPERATING COMMITTEE
11-20-59
(date)

V. J. Lynch
V. J. Lynch, Member
Bureau of Mines

FIELD TEAM
FINAL
REPORT

OFFICIAL FILE COPY
O. M. E.
RECEIVED NOV 16 1959

DATE	INITIALS	CODE
11-20	2+B	130
		220

UNITED STATES
DEPARTMENT OF THE INTERIOR

OFFICE OF MINERALS EXPLORATION

FINAL REPORT

OME FIELD TEAM, REGION V

DMEA-4381, Idm-E1002-Zinc
Grainger County, Tenn.
National Lead Company, Assignee

By

Helmuth Wedow, Jr., Geologist
U. S. Geological Survey

and

Lawrence E. Shirley, Mining Engineer
U. S. Bureau of Mines

Reviewed by
OME OPERATING COMMITTEE
11-20-59
(date)

OFFICE OF MINERALS EXPLORATION

FINAL REPORT

DMEA-4381, Idm-E1002 (zinc)

Operator: National Lead Company, New York, N.Y. - Assignee

Location: Indian Creek area, Grainger County, Tennessee

SUMMARY

A total of 26 core holes was drilled in the Indian Creek area, Grainger County, Tennessee in a search for zinc ore bodies related to anomalous amounts of zinc in the soil. The footage of the 26 holes totalled 15,543 feet, of which 12,000 feet were drilled under the DMEA contract. The total acceptable cost of the 12,000 feet of drilling and related services amounted to $40,128.00 of which only $40,095.00 was claimed and the cost to the Government, therefore, was $20,047.50 (at 50 percent participation).

Of the 26 holes drilled only 3 holes were completely barren of zinc minerals. On the other hand none of the holes contained zinc in amounts of commercial grade and thickness. Preliminary studies of internal stratigraphic variations in the Kingsport formation suggest that solution, collapse, and founder features are closely related to the occurrence of mineralized shoots and that the potential of the Indian Creek area has by no means been adequately tested by the drilling done relative to DMEA contract. However, as no ore was discovered as a result of the contract drilling, certification cannot be recommended.

INTRODUCTION

The Indian Creek area lies in the Copper Ridge zinc district of East Tennessee approximately five and one-half miles northeast of Thorn Hill in Grainger County. It is about 5 to 6 miles southwest of the Flat Gap mine operated by the New Jersey Zinc Company. (See fig.1.)

The purpose of the project was to explore by diamond drilling from the surface for zinc ore bodies related to surface areas showing anomalous amounts of zinc in the soil ore related to the traces of zinc mineralization encountered in previous

diamond drilling. (See figs.2 and 3.)

The property included in the original contract area totalled approximately 378 acres in seven tracts. To this total were added the L. F. Mallicoat farm with 150 acres (by Amendment No.1) and the Lou Coffey tract with 8 acres (by Amendment No.3). Thus, the total of 536 acres were included in the contract at the time of completion. (See fig.2.)

The contract with the Government, dated August 31, 1956, called for 12,000 feet of diamond drilling. Operations were to begin by November 1, 1956 and to be completed by June 1, 1957. Effective April 1, 1957 the contract was assigned by B. H. Putnam, the original Operator, to the National Lead Company. On May 13, 1957 Amendment no.2 extended the completion date to November 1, 1957. Actual drilling began September 21, 1956; was recessed temporarily in March 1957 just prior to the assignment of the contract to National Lead. Drilling was resumed on June 1, 1957 by National Lead and completed September 9, 1957.

WORK PERFORMED

Prior to the drilling done under the DMEA contract B. H. Putnam, Operator, completed four holes in the western part of the contract area. Under the contract with the Government, Putnam drilled 14 additional holes and deepened one of the pre-DMEA holes. After assignment of the contract, the National Lead Company finished one hole started under Putnam and completed five holes. The last hole drilled in the project area was started under the contract and completed by National Lead at its own expense.

This drilling is summarized as follows:

	Number of holes	Footage	Remarks
Drilled prior to DMEA contract by B. H. Putnam	5	3,213	
Drilled under DMEA contract by Putnam and National Lead Company	21	12,000	Also includes 71-foot deepening of Hole SC-1
Drilled after DMEA contract by National Lead Co.	-	330	Completion of Hole LW-3
TOTAL	26	15,543	

The locations of all holes drilled are shown on figures 2-5. Figure 2 also shows which Operator did the drilling and whether it was before, during, or after the DMEA contract.

ASSAYS

The DMEA contract authorized 140 assays, but only 89 assays were actually made. Core samples assayed ranged in length from 1/2 foot to 3 feet; most were 2 feet in length. The zinc content of these samples as determined by the assayer varied from a trace to a high of 7.38 percent---the latter value being from a 2-foot sample at a depth of 222½-224½ feet in Hole LH-3. The practice of the Operator in using a diamond saw for core-splitting is to be highly recommended. This method of splitting permits a much evener halving of the core and lessens the human error that is present in selection of material sometimes crushed in standard core-splitting techniques.

GEOLOGY

The Indian Creek area is in the well known Copper Ridge zinc district (fig.1). The bedrock of the district consists of the Upper Cambrian and Lower Ordovician sequence of carbonate rocks known as the Knox dolomite, and the basal beds of the Middle Ordovician Chickamauga limestone. In this district the commercial zinc deposits are found chiefly in the Kingsport formation, although local ooncentrations are known in both the underlying Longview and Chepultepec formations as well as in the overlying Mascot dolomite. These formations comprise the Lower Ordovician portion of the Knox dolomite group. The approximate stratigraphic thicknesses and the relative penetration thicknesses of significant sedimentary units cored in the drilling at Indian Creek are tabulated below:

Stratigraphic unit	Approximate average stratigraphic thickness (feet)	Penetration thickness (feet)
Chickamauga limestone	Not Cored	
Mascot dolomite	600 (only 560 cored)	760 (only 710 cored)
Kingsport formation	230	249-322, average 284
Upper member	150	166-209, average 186
Lower member (R & S beds)	80	73-130, average 98
Longview dolomite	8-228	10-278

Note: Thicknesses of Mascot dolomite included surface measurements as no holes collared in overlying formation; thicknesses of Longview dolomite are variable because holes were drilled in some cases only barely into the Longview and in other cases deeper to test for possible mineralization in the Longview.

Structually, the strata of the project area are a part of a homocline that locally is the northwest limb of a large overturned syncline in a thrust shingle. This shingle is bounded below by the Copper Creek fault and above by the Saltville fault. Within the project area the average attitude of the sediments is about N.70°E., 35°SE. The only prominent faulting in the area is the Indian Creek fault, the surface trace of which lies a few hundred feet west of the western property line. This fault is essentially vertical, trends N65°W., and has a horizontal displacement of approximately 200 feet. Minor tear faults or cross-shear zones have also been mapped on the surface, or have been interpreted from drilling. (See Operator's Final Report).

Because the chief commercial zinc mineralization in the Copper Ridge District is found in the Kingsport formation, considerable time has been spent in an effort to determine whether the drilling data relating to the penetration thickness of this formation or its major units can be used statistically in postulating possible structural controls for the ore bodies. Consequently, the penetration thickness of the Kingsport formation was calculated for each hole (table 2) and then plotted and contoured (isochored) with results as shown in figure 3. Similar calculations (table 2) were also made for the upper and lower members of the formation. Further analysis of the penetration thicknesses shows that the lower or "limestone" member of the Kingsport exhibits a greater variation in thickness than the upper member or the formation as a whole (see tabulation on next page).

Table-2.--Penetration thicknesses, and penetration thickness ratios of the upper and lower members of the Kingsport formation, and zinc intensity values for diamond-drill holes in the Indian Creek area, Grainger County, Tennessee. (DMEA-4381, Idm-E1002, Zinc)

(Note: The following abbreviations are used in the tabulation headings below: Oma--Mascot dolomite; Ok--Kingsport formation; Olv--Longview dolomite; Oku and Okl--upper and lower members, respectively, of the Kingsport formation, where the dividing marker is the top of R-bed or "TR". Explanation of the method of computing the zinc intensity values is given on figure 5 and in the test. Also, thicknesses enclosed, i.e., (), are measured from projections in the Operator's geologic sections; and in zinc intensity values, the number -1 indicates less than 1.)

	Penetration thickness			Ratio	Zinc intensity					
C-1 Hole no.	Oku	Okl	Ok	Oku/Okl	Oma	Oku	Okl	Ok	Olv	Total
C-1	170	94	264	1.81	0	0	0	0	-1	-1
D-1	170	124	294	1.37	-1	1	1	2	9	11
-2	(182)	106	(288)	1.72	0	0	-1	-1	0	-1
-3	(182)	99	(281)	1.84	0	2	4	6	0	6
-4	(169)	111	(280)	1.52	0	0	31	31	3	34
-5	191	113	304	1.69	0	21	10	31	2	33
-6	204	118	322	1.72	0	2	9	11	0	11
-7	190	122	312	1.56	0	1	3	4	0	4
-8	(195)	89	(284)	2.19	0	-1	15	15	-1	16
LH-1	(180)	(96)	(276)	1.88	1	12	0	12	0	13
-2	(186)	102	(288)	1.82	0	0	0	0	0	0
-3	195	83	278	2.35	41	-1	0	-1	0	42
-4	203	82	285	2.48	10	0	0	0	1	11
-5	209	85	294	2.46	-1	0	0	0	0	-1
-6	176	73	249	2.41	-1	0	0	0	0	-1
M-1	--	130	?	?	?	0	0	0	0	0
-2	(185)	104	(289)	1.78	0	0	2	2	0	2
Sc-1	185	107	292	1.73	-1	12	0	12	0	12
-2	181	90	271	2.01	0	0	6	6	-1	6
IW-1	166	116	282	1.43	0	0	0	0	0	0
-2	194	99	293	1.96	2	1	14	15	0	17
-3	191	94	285	2.03	3	0	18	18	0	21
JW-1	206	81	287	2.54	-1	1	0	1	0	2
-2	189	100	289	1.89	-1	1	0	1	0	2
-3	186	82	268	2.27	9	0	-1	-1	-0	9
-4	171	85	256	2.01	1	0	0	0	0	1

	Range in penetration thickness (ft)	Average penetration thickness (ft)	Difference between maximum and minimum thickness (ft)	Percent variation from average
Upper member	166-209	186	43	89-112
Lower member	73-130	98	67	74-133
Total	249-322	284	73	88-113

The range in total penetration thickness of the Kingsport formation is probably due chiefly to any or all of the following: (1) change in dip, (2) repetition or removal of beds by minor faulting, and (3) variation in original stratigraphic thickness. However, the greater variation in the thickness of the lower member is probably also due to thinning and collapse as a result of local dolomitization or removal of the limestone by solution. Such areas of thinning and collapse would also be loci for the formation of fracture breccias resulting from the foundering of stratigraphically higher beds. Thus, in areas where the lower member has thinned, all or part of the upper member would be thickened correspondingly as a result of the foundering. In an attempt to express this variable thickness relationship numerically, the ratios of the penetration thicknesses of the upper to the lower member were computed (table 2) and then plotted and contoured on figure 4. An alternate interpretation is shown on figure 6. If

it can be assumed that some, if not all of the minor faulting encountered in drilling may be related to the fracturing accompanying collapse or foundering, then the trends shown by the contouring of these ratios may have some structural significance unrelated to structures formed by the late Paleozoic compressional stresses. Such trends may well be related to fracturing accompanying uplift and gentle folding that may have occurred as early as Early Ordovician time, possibly most of it in the interval represented by the unconformity between the Knox dolomite and the Chickamauga limestone. The relationship of these trends to the occurrence of the zinc mineralization will be discussed below.

MINERALIZATION

Zinc occurs in all of the formations penetrated by the drilling, namely the Mascot, Kingsport, and Longview dolomites. Of the 26 holes drilled in the contract area only three were completely devoid of any trace of zinc. On the other hand, no hole encountered a minable thickness of commercial-grade zinc ore. Because of the large amount of low or sub-ore grade mineralization discovered, there is a strong possibility that a mineralized body or shoot of commercial grade may occur in the areas not yet adequately explored. In order to determine whether hole-to-hole variations in the zinc values showed any significant trend, the thickness and grade of each mineralized run of core were recast to an intensity value by calculating feet-percent (thickness x percent) units of zinc. Arbitrary low values were used for each reported "shine" or "trace". Cumulative intensity values for various stratigraphic units as well as the total for each hole were

then computed (table 2). The total intensity values are contoured on figure 5 with an alternate interpretation shown on figure 6.

Scanning of Figures 4, 5, and 6 shows that similar interpretations of trend directions in the ratio and zinc intensity values indicate a general parallelism of axial highs. This is particularly true in the alternate interpretations given in figure 6 and suggests that in the Indian Creek area an intermediate ratio value may be more favorable for the concentration of zinc. Preliminary studies of other areas explored in the Copper Ridge district indicate a similar relationship between the thickness ratio and the zinc intensity values although the data are yet far from conclusive. This greater favorability of an intermediate ratio value in the Copper Ridge district contrasts markedly with the direct relationship of high ratio and high zinc intensity as observed in the studies made to date in the Mascot-Jefferson City district.

It is the writers' opinion that the Indian Creek area may well contain mineralized shoots of commercial grade and thickness and that further drilling in the area is well warranted. Such drilling as is done should begin with the exploration of the ground between Holes JW-3 and LW-3 and also midway between Holes LH-4 and JW-4. Drilling in these two respective areas will test for ore shoots raking east at a low angle to the strike and south at a high angle to the strike. Further tests should also include the country down dip from Hole LW-3.

EXPENDITURES

The total cost of the work completed under contract amounted to $40,128.00. Government participation at 50 per cent totalled $20,064.00. The contract authorized a total of 12,000 feet of diamond core drilling at $3.00 per foot, 600 feet of reaming at $2.00 per foot, an incidental allowance covering 12,000 feet of drilling at $0.26 per foot, and 140 sample assays at $1.50 each. The Operator used all of the above authorizations with the exception of 162 feet of reaming and 51 assays. Assays used were vouchered to the Government at the rate of $1.11 each, instead of $1.50 as authorized, leaving an unclaimed balance of $33.00 due the Operator.

A report of review dated May 6, 1958 and signed by E. D. Talbert, DMEA Auditor, disclosed the following facts:

Total amount authorized by contract.....	$40,530.00
Acceptable cost.....	40,128.00
Cost claimed by Operator.....	40,095.00
Government's contribution	20,047.50
Government's share unexpended.....	217.50
Value of production.....	none

Cost data for drilling, reaming, and incidental costs for individual holes is included in table 1. Also included is total cost per hole, average cost per foot per hole, coordinates, collar elevations, total hole depth and depth of overburden. Actual totals, "paid by contract" totals, and averages, where applicable are shown.

CONCLUSIONS

A total of 15,543 feet of diamond drilling in 26 holes was completed in the Indian Creek area. Of this total 12,000 feet were drilled under the DMEA contract. Although most of the holes encountered zinc none showed a deposit of commercial grade and thickness. As experience in other areas of the Copper Ridge district has shown, the amount of drilling completed in the Indian Creek area is insufficient to make an adequate test of an area of this size. Although the Examiners believe that the area has sufficient potential to warrant additional drilling, the project cannot be recommended for certification on the basis of the amount of zinc discovered thus far.

November 13, 1959

Helmuth Wedow, Jr., Geologist
U. S. Geological Survey

L. E. Shirley, Mining Engineer
U. S. Bureau of Mines

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UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION
ROOM 11 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

OFFICIAL FILE COPY
O. M. E.
RECEIVED SEP 11 1959

DATE	INITIALS	CODE
9-11	gad	rro
		rro
9-14	Murphy	500

September 9, 1959

Memorandum

To: Operating Committee, OME, Washington 25, D. C.

From: Field Team, OME, Region V, Knoxville 2, Tennessee

Subject: Docket No. DMEA-4381, Contract No. Idm-E1002 (Zinc)
National Lead Company, assignee
Indian Creek area, Grainger County, Tennessee

Reference is made to your memorandum of September 4:

The Operator's final engineering and geologic report was sent to you on April 25, 1958. Field Team report will be completed for transmittal on or about October 15, 1959.

Robert A. Laurence
Robert A. Laurence
Executive Officer

V. J. Lynch
V. J. Lynch
Member, Bureau of Mines

rm 7

OFFICIAL FILE COPY

Date	Surname	Code
9/3	Murphy	500
	[illegible]	500
		130
	Selvage	100
9-4	gold	220
		500

SEP 4 1959

Memorandum

To: Executive Officer, OME Field Team, Region V

From: ACTING Chairman, Operating Committee, OME

Subject: Docket No. UMRA-4381 (Zinc)
National Lead Company
Indian Creek Area
Grainger County, Tennessee
Contract No. Idm-E1002

Will you kindly advise this office the approximate date we may expect to receive the final engineering and geologic report and the Field Team's final summary covering the above-referenced project.

/s/ W. R. Griswold

APPROVED:

Frank D. Lamb

Member, Bureau of Mines

Harold Kirkemo

Member, Geological Survey

FMMurphy/gla 9-3-59

cc to: Director's Reading File
Operating Committee
Mr. Bishop, USBM
Mr. Kirkemo, USGS
Docket
Chron

8623

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
11-3	Maxwell	500
11-3	Chambers	800
11/4	Selfridge	~~120~~
		~~130~~
		~~130~~
		~~110~~
11/5	C	225
		500

NOV 5 1958

Mr. H. T. Warshow
Vice President
National Lead Company
111 Broadway
New York 6, New York

Re: Docket No. DMEA-4381 (Zinc)
National Lead Company
Indian Creek Area
Grainger County, Tennessee
Contract No. Idm-E1002

Dear Mr. Warshow:

Reference is made to your completed exploration contract with the Government.

We sincerely regret that the work performed did not result in a certification of discovery or development under the provisions of the contract. In the absence of such certification, the Government retains no claim or lien against the property subject to the contract or any future production therefrom. We, therefore, are closing our books and records on this project. Your attention, however, is called to the provisions of the contract which require the operator to keep and preserve certain records for the period indicated.

We appreciate your interest and participation in the Defense Minerals Exploration Administration exploration program which has now been succeeded by the Office of Minerals Exploration program.

Sincerely yours,

Frank E. Johnson

Acting Director

WRGriswold/er 11-3-58
Copy to: Docket
Dir. Read. File
Op. Committee
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Mr. B. H. Putnam, Assignor
Region V(2)
Mr. Jay Chambers
Chron.

DMEA Form 7
(12-56)

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Date	Surname	Code
11-3	Franzel	500
11-3	Chambers	800
11/4	Selfridge	130
		~~130~~
		~~130~~
		~~110~~
		~~HB~~
		225
		500

NOV 5 1958

Mr. Benjamin H. Putnam
170 East Pearson Street
Chicago 11, Illinois

Re: Docket No. DMEA-4381 (Zinc)
National Lead Company
Indian Creek Area
Grainger County, Tennessee
Contract No. Idm-K1002

Dear Mr. Putnam:

Enclosed is a copy of a self-explanatory letter of today to the Operator under the above-cited contract.

This correspondence relates to the Assignment of Contract signed by you on April 15, 1957, under the Defense Minerals Exploration Administration program which has now been succeeded by the Office of Minerals Exploration program.

Sincerely yours,

Frank E. Johnson

Acting Director

Enclosure
WRGriswold/er 11-3-58
Copy to: Docket
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Op. Committee
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Region V (2)
Mr. Chambers
Chron.

8

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Date	Surname	Code
10-18	Griswold	500
10-17	Selfridge	130
	Long	140
	Langer	~~140~~
	App'd. Sec. OCS	~~220~~
10-17	Chambers	800
10/21	Johnson	~~800~~
10/24	C	~~220~~ 220
		500
10-17	Yopes	130
10-17	Nelson	130

Mr. F. C. Bateman
Bond Department
American Surety Company
of New York
724 Huntington Bank Building
17 South High Street
Columbus 15, Ohio

OCT 23 1958

Re: Docket No. DMEA-4381 (Lead)
National Lead Company, Assignee
Indian Creek Project
Grainger County, Tennessee
Contract No. Idm-E1002

Dear Mr. Bateman:

We have your letter of October 7, 1958, relative to the cited exploration project.

The Government received the Operator's final report on April 25, 1958, and the results of the program were negative. However, the contract provides that the Government may certify the project at any time not later than six months after the receipt of the final report.

There is little likelihood that a certification will be issued and it will be proper for you to cancel the outstanding bond after October 25, 1958.

Sincerely yours,

FRANK E. JOHNSON

ACTING Director

WRGriswold/er 10/13/58
Revised RWLong/hm 10/21/56
cc: Docket
Dir. reading file
Director
Operating Comm.
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Reg. V (2)
chron.
Mr. Long
Mr. Griswold

8623

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Date	Surname	Code
10-13	Harwood	500
10/17	[illegible]	130
		~~110~~
		~~100~~
		~~250~~
		~~300~~
10-17	Chambers	800
		500

10/17 Yopes 130
10/17 Nelson 130

Mr. F. C. Bateman
Bond Department
American Surety Company
of New York
724 Huntington Bank Building
17 South High Street
Columbus 15, Ohio

Re: Docket No. DMEA-4381 (Lead)
National Lead Company, Assignee
of Benjamin H. Putnam
Indian Creek Project
Grainger County, Tennessee
Contract No. Idm-H1002

Dear Mr. Bateman:

We have your letter of October 7, 1958, relative to the cited exploration project.

It (would) may be proper (for you) to cancel your outstanding bond after October 25, 1958.

Sincerely yours,

Director

WRGriswold/er 10-13-58
Copy to: Docket
Dir. Read.File
Director
Op. Committee
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Region V (2)
Chron.

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Date	Surname	Code

October 13, 1958

Memorandum for the Docket

From: W. R. Griswold, Chief
Division of Base Metals

Subject: Docket No. DMEA-4381, National Lead Company, Assignee, Indian Creek Project, Grainger County, Tennessee, Contract No. Idm-E1002, Lead.

The cited project consisted of 12,000 feet of diamond drilling, in twenty six (26) holes. Results were negative, no holes showed ore mineralization although some showed indications. More work might be warranted if an application was made, as the area is by no means fully disproved.

We have no final Field Team report as yet, though it has been promised for January 1959.

The Operator's final report was received April 25, 1958, hence, the Government's right to certify expires October 25, 1958.

There are no grounds for any certification.

W. R. Griswold

WRG/er
Copy to: Docket
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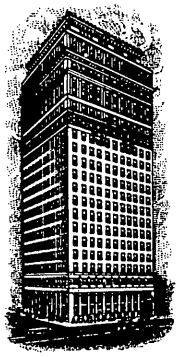
Chron.

862

W. E. McKELL
Chairman of the Board and President



American Surety Company
of New York

COLUMBUS BRANCH OFFICE
724 HUNTINGTON BANK BUILDING – 17 SOUTH HIGH STREET
COLUMBUS 15, OHIO – TEL. CAPITAL 4-1165

M. L. JENKS, JR.
Manager

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O. M. E.
RECEIVED OCT 9 1958

	INITIALS	CODE
10/9	C	220
10/13	WRG	500

October 7, 1958

Mr. W. R. Griswold, Director
Division of Base Metals
Defense Minerals Exploration Admr.
Department of the Interior
Washington 25, D. C.

Re: Docket No. DMEA-4381 (Lead)
National Lead Company, Assignee
of Benjamin H. Putnam
Indian Creek Project
Grainger County, Tennessee
Contract No. Idm-E1002
Our Bond No. 10-560-607

Dear Mr. Griswold:

This office has been advised that the National Lead Company has filed a final report on the above project and that the report has been approved by your office. We were also informed that no ore was discovered during this exploration work. Would you please confirm this for us and advise us if it would be proper to cancel this outstanding bond.

Thank you for your assistance in this matter.

Very truly yours,

F. C. Bateman
Bond Department

FCB:ph

DMA Form 7
(12-56)

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Date	Surname	Code
5/9	Talbert	800
5/9	C	220
5/9	Curtis	500

MAY 9 1958

Mr. Robert A. Laurence
Executive Officer
DMEA Field Team, Region V
Room 13, Post Office Building
Knoxville 2, Tennessee

Re: Docket No. DMFA-4381 (Zinc)
National Lead Company
Indian Creek Area
Grainger County, Tennessee
Contract No. Idm-E1002

Dear Mr. Laurence:

Enclosed are the original and four copies of the Report of Review requested by your April 25 memorandum. If you concur with the facts stated therein, the original and one copy should be forwarded to the regional finance officer, one copy each should be sent to the assignor and the assignee, and one copy should be retained in your files.

If for any reason you do not concur please return the original and all copies with your comments to this Division. In this connection it is to be noted that the Operator claimed, and your memorandum verified, the acceptable performance of 89 assays. The review, however, has disclosed that one assay covered a sample from hole LH-1, which was not drilled under this contract.

It is noted that your memorandum confirms 12,322 feet of diamond drilling, whereas the logs and contractor's invoice indicate an aggregate of 12,330 feet. This small discrepancy, however, does not affect the findings of the review since only the contract maximum of 12,000 feet is allowable.

The final (September 1957) MF-104 and attachments, together with the drilling invoices applicable to prior vouchers, which were forwarded by the regional finance officer's memorandum dated May 5, 1958, are being returned with a copy of this letter.

EDTalbert/ama
May 9, 1958

Sincerely yours,

(Signed) J. L. Chambers

Copy to: Docket
Admr. Reading File
Helen R. Miller
Mr. Chambers

Jay L. Chambers, Director
Contract Administration
and Audit Division

Enclosures

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Date	Surname	Code
5/2	Talbert	800
5/5	C	220
5/6	Kelly	500

MAY 2 1958

Mr. Robert A. Laurence
Executive Officer
DMEA Field Team, Region V
Room 13, Post Office Building
Knoxville 2, Tennessee

Re: Docket No. DMEA-4381 (Zinc)
National Lead Company
Indian Creek Area
Grainger County, Tennessee
Contract No. Idm-E1002

Dear Mr. Laurence:

An Operating Committee's copy of your April 25 memorandum requesting a Report of Review on the referenced project has come to the attention of this Division. The original memorandum has not been received.

An audit review of this project will be made promptly upon receipt from you of the original of the Operator's final (September 1957) MF-104 with attachments. The submission of invoices applicable to prior vouchers is not necessary in this instance, inasmuch as copies of the invoices are attached to the Washington copies of the vouchers.

Sincerely yours,

(Signed) J. L. Chambers

Jay L. Chambers, Director
Contract Administration
and Audit Division

EDTalbert/ama
May 2, 1958

Copy to: Docket
Admr. Reading File
Helen R. Miller
Mr. Chambers
Mr. Talbert

8623

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 13 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

April 25, 1958

DMEA
RECEIVED APR 28 1958
4/28 C 226
4/28 WPS 522

Memorandum

To: Jay L. Chambers, Director Contract Administration and Audit Division - DMEA

From: Executive Officer, DMEA - Region V - Knoxville

Subject: Completion- DMEA-4381, Idm-21002-zinc. National Lead Company, Indian Creek Area, Grainger County, Tennessee

Work on the subject contract has been completed. The following units of work have been acceptably performed as verified by our Field Examiners:

1. A total of 12,322 feet of diamond drilling completed (322 ft at Operator's expense).
2. Reaming of holes amount to 438 feet.
3. Eighty-nine samples were assayed.

An adequate final engineering and geological report has been received. A report of review is requested.

Robert A. Laurence

sm.
cc
Opr. Com-2
Finance
Allen

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 13 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

April 25, 1958

ORIGINAL FILE COPY
DMEA
RECEIVED 28 1958
DATE CODE
4/28 C 220
4/29 EW 800
4/29 500

Memorandum

To: Operating Committee, DMEA - Washington

From: Acting Executive Officer, DMEA - Region V

Subject: Final Engineering and Geological Report - DMEA-4381, Idm-E1002. Indian Creek Area, Grainger County, Tennessee National Lead Company.

Enclosed are 3 copies of the Operator's final Engineering and Geological Report on the subject contract received in this office today.

V. J. Lynch

V. J. Lynch

DMEA

1

Docket No. DMEA 4381
Contract No. Idm-E 1002

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DMEA
RECEIVED 28 1958

NATIONAL LEAD COMPANY

Final Report on the INDIAN CREEK PROJECT, Grainger County, Tennessee

By:

W.T. Hill and Others
Geologists for National Lead Company

Approved By:

Thorn Hill, Tennessee

January, 1958

RECEIVED
APR 24 1958
U. S. Geological Survey
Geologic Division
Knoxville, Tenn.

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Plate 1. Map of Indian Creek showing Geology, Geochemistry, Geophysical Survey Lines, Diamond Drill Holes, Soil Auger Holes, and Property Lines.
2. Cross Section A-A'.
3. Cross Section A'-A''.
4. Cross Section B-B''.
5. Cross Section C-C' and D-D'.
6. Cross Section C'-C''.
7. Cross Section E-E'.
8. Type Section of Mascot, Kingsport, and upper part of Longview formations.

ANNEX

Summary of the Drill Hole Logs

Control
Coffey, L., Logs (C)
Dalton, A.B., Logs (D)
Leffew Heirs Logs (LH)
Mallicoat, L.F., Logs (M)
Scearce, S., Logs (Sc)
Wolfe, L., Logs (LW)
Wolfenbarger, J., Logs (JW)

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DATE	INITIALS	CODE

Geologic Report

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SUMMARY

The Indian Creek zinc prospect is located in the Copper Ridge zinc district five and one-half ($5\frac{1}{2}$) miles northeast of Thorn Hill, Grainger County, Tennessee. Investigations were begun in January, 1956, to determine if commercial deposits of zinc were present.

During the period from March 1956 to August 1957, 26 holes were drilled for a total of 15,543 feet, 12,000 of which were drilled with DMEA aid. Five holes were drilled by B.H. Putnam, Operator, fifteen by B.H. Putnam and DMEA, and six by National Lead Company and DMEA. Drilling to date has failed to discover the presence of commercial deposits of zinc mineralization.

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DMEA
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WORK PERFORMED

Investigations were begun by B.H. Putnam, Operator, in the Indian Creek area in January, 1956, to determine if commercial deposits of zinc were present. The examination consisted of geologic mapping and prospecting, followed by a geochemical survey for zinc. Plotting on the map of the zinc content of the samples revealed the presence of a series of positive soil anomalies along the Mascot-Kingsport contact starting at Scearce Creek and continuing along strike to the northeast for a distance of 3,000 feet.

On the basis of these anomalies, drilling operations were begun on March 29, 1956, to explore the possibilities of commercial mineralization.

After the completion of holes LH-1, JW-1, and JW-2, it was decided that the trend and pattern of the anomalies was not sufficiently understood and additional samples were taken both north and south of the original sampling pattern until the entire anomalous areas were outlined. As a result of this work, the previously-found anomalies were enlarged and localized into two large anomalies, one on the Leffew Heirs and John Wolfenbarger tracts, and the other on the A.B. Dalton tract. Anomalous areas of lesser intensity occur between the two large anomalies. Zinc values in the anomalous areas range from .05% to .30+% with background values ranging from .02% to .05%.

During the additional geochemical work, two more holes were drilled, JW-3 and Sc-1. The drilling revealed that zinc mineralization occurred in the area and that the soil anomalies indicated the presence of zinc mineralization in the underlying formations. The total footage drilled for the five holes was 3213 feet. The results of this drilling can be found in the Annex.

In July, 1956, an application for government aid was filed with the Region 5 office of the Defense Minerals Exploration Administration (DMEA).

On August 31st, an agreement was reached, and a contract signed, between the DMEA and Benjamin H. Putnam, Operator, to explore the commercial possibilities of zinc mineralization in the Indian Creek area. In this contract, the government agreed to contribute 50% of the costs requested for exploration or up to $20,265.00 of $40,530.00. The $40,530.00 was the total of the estimated costs of $36,000.00 for 12,000 feet of drilling at $3.00 per foot; $1200,00. for 600 feet of reaming at $2.00 per foot; $210.00 for 140 assays and $3120.00 for incidentals at $0.26 per foot of drilling.

Drilling was resumed on the project, under the DMEA contract, on September 17, 1956. Due to the occurrence of the strong geochemical anomaly and the presence of zinc mineralization in LH-1, it was decided to drill on the Leffew Heirs farm. Five holes (LH-2, LH-3, LH-4, and LH-5) were drilled in and below the anomaly. All of the mineralization found occurred in the Mascot formation.

Because of the lack of Kingsport mineralization, the drill was moved east to the Starling Scearce, A.B. Dalton, and L.F. Mallicoat farms. One hole (Sc-2) was drilled on the Starling Scearce farm, 8 on the A.B. Dalton farm, and 2 on the L.F. Mallicoat farm. Drilling in this area revealed the presence of relatively thick zones of low grade zinc mineralization scattered throughout the lower part of the Kingsport formation. The total footage drilled by B.H. Putnam under the DMEA contract was 7550 feet.

In March, 1956, an agreement between National Lead Company and B.H. Putnam, Operator, was reached whereby National Lead would assume the responsibility of the DMEA contract and complete the exploration program.

It was decided by National Lead Company that a few weeks recess of the drilling was needed in order to review the previous work done and to further study the geology of the area. Consequently, a request was made to the Region 5 office in Knoxville for an informal recess of the drilling program. The request was granted by the government. During this recess period, hole

D-8 was completed by drilling an additional 93 feet.

A program of detailed geologic mapping was begun in order to determine if favorable geologic structures existed. This mapping program was carried on throughout and after the recess period.

A geophysical survey using the electrical resistivity method was made of the area. The purpose of the survey was to see if favorable structures could be located by geophysical methods.

In order to study a soil anomaly in detail, a series of soil auger holes were drilled in and around the small anomaly on the A.B. Dalton farm (see geologic map). Some of the results of this work can be seen in sections B-B'', (Plate 4), and C'-C'', (Plate 6).

Upon completion of this work, core drilling was resumed on June 1st. To explore the possibility of the existence of a strike ore body south of the holes previously drilled on the Leffew Heirs farm, four holes were drilled on two-hundred-foot centers along a north-south "fence". The results of this drilling can be seen in section E-E', (Plate 7).

After completing the four holes, the drill was moved east and two holes were drilled on two-hundred-foot centers, south of D-1. The results of this drilling can be seen in section B-B'', (Plate 4).

The total footage for the six holes was 4687 feet, 330 feet over the alloted 12,000 feet of the contract. Upon completion of the last hole, the drilling program was terminated. A total of 15,543 feet has been drilled in the area.

STRATIGRAPHY

The Indian Creek properties are underlain by the Knox dolomite and Chickamauga limestone of Ordovician Age. The Knox underlying the properties can be divided into the Longview, the Kingsport, and the Mascot formations. Since the drilling was confined to the Mascot, Kingsport, and the upper part of the Longview, only those formations will be discussed. A "type section"

was made of the formations drilled, (see Plate 8). The section is a compilation of the detailed logging and correlation of the 26 holes drilled.

Mascot Formation

At Indian Creek, the Mascot formation is approximately 610 feet thick. The top of the formation is unconformably overlain by the Chickamauga limestone, and the base is marked by a thin sandstone sealed with chert known as the Chert-Matrix (CM) sand.

The Mascot formation is mostly well-bedded light-, medium-, and dark-gray dolomite, occasionally interbedded with thin beds of semi-recrystalline (medium grained) and recrystalline (coarse grained) dolomites. Locally it is brecciated and mineralized.

The accompanying type-section includes a description of the bed or "units" and their designation i.e. M-1, M-2, etc. The units are beds or groups of beds that can be readily recognized from hole to hole and can be used in correlation. Since the top of the Mascot formation is an unconformable surface, it varies in total thickness from place to place. A given unit may be present below the unconformity in one locality and be eroded away in another. In recognition of this fact, the beds are numbered upward from the base of the formation.

Kingsport Formation

The underlying Kingsport formation is approximately 240 feet thick and is divided into three units. The upper unit ("Q" bed) is 135± feet thick and consists mostly of well-bedded dolomites. The middle unit ("R") is 50± feet thick and consists of fine-grained dolomite interbedded with either limestone or recrystalline. The lower unit ("S") is 55± feet thick and consists mainly of interbedded limestone or recrystalline with a few beds of fine-grained dolomite. The base of the Kingsport formation is the contact between the S and "T" beds (Kingsport-Longview contact).

Brecciation occurs throughout the formation at various intervals but is more prominent in the lower part of Q bed and throughout R and S beds. Mineralization appears to occur more frequently at the base of Q, throughout R, and in the top of S bed.

Longview Formation

The Kingsport formation is underlain by the Longview formation which consists essentially of recrystalline, interbedded with fine-grained dolomites and chert beds. The formation is commonly brecciated and occasionally mineralized. The top of the formation is marked by a 6½ foot thick dolomite ("T" bed) underlain by 4 feet of recrystalline ("U" bed).

AN EVALUATION OF THE DRILLING RESULTS

A total of 26 holes have been drilled in the Indian Creek areas. Drilling to date has failed to discover the presence of commercial deposits of zinc. The following is a summary and interpretation of the drilling results.

Mascot and Upper Kingsport Mineralization

Mineralization occurs at various stratigraphic horizons throughout the Mascot and upper part of the Kingsport formations and drilling to date suggests that it is more abundant in the western and central portions of the DMEA project area. In the western portion (Leffew Heirs farm) the greatest concentration of sphalerite and pyrite mineralization and brecciation appear to be in the vicinity of holes LH-1, LH-3, and LH-4.

In hole LH-1, the Mascot formation is brecciated over various intervals and has one four-foot-thick zone of weak ZnS mineralization from 136 to 140 feet above the CM sand. Two zones of mineralization occur in the upper part of Kingsport formation (see section E-E', Plate 7); one 7 foot thick zone contains 1.48% Zn. The lower part of the Kingsport is well brecciated and heavily mineralized with pyrite.

In LH-3, 83 feet of scattered zinc mineralization occurs from 77 to 160 feet above the CM sand, 12 feet of which assayed 2.16% Zn. (see Section A-A', Plate 2). Strong brecciation occurs throughout the hole with scattered FeS mineralization in the Kingsport formation.

In LH-4, 54 feet of scattered low-grade mineralization occurs in the Mascot formation, from 186 to 240 feet above the CM sand. ZnS also occurs at 308 and 90 feet above the CM sand, and in the Longview formation at 50 feet below T bed. Brecciation is sporadic in the Mascot, but thick zones of breccia and FeS mineralization are present in the Kingsport.

A fence of holes (Section E-E') was drilled in a north-south direction southeast of the LH-5, LH-4, and LH-3 line of holes. The drilling shows an increase in the amount of zinc mineralization in the vicinity of LH-1. Detailed logging revealed an increase in the amount of brecciation from LW-1 to LH-1 and a decrease from LH-1 to LH-2 indicating that the area of most intense brecciation probably is between LH-6 and LH-1 and in the vicinity of hole LH-3. This "breccia body" may be an extension of the breccia that occurs in the exposures along Scearce Creek.

Four holes were drilled on the John Wolfenbarger farm. JW-1 and JW-2 were drilled on 300 foot centers approximately along strike from LH-1. JW-3 was drilled 400 feet southeast of JW-2, and JW-4 was drilled on the above-mentioned north-south "fence". In JW-1 and JW-2, a thin zone of ZnS mineralization is present in the Kingsport formation 85± feet below the CM sand. In JW-3, a 9½ foot-thick zone of ZnS mineralization occurs from 275 to 284½ feet above the CM sand, 6 feet of which assayed 1.21% ZnS. Traces of ZnS occur 50± feet below the CM sand in the Kingsport formation.

On the Starling Scearce farm, two holes were drilled. Sc-1 has a 34½-foot zone of zinc mineralization from 3 to 37½ feet below the CM sand. The thickest zone of continuous mineralization is 6 feet, assaying 1.38% Zn.

The possibility of commercial mineralization in the Mascot and the upper part of the Kingsport formations in this area still exists. The "breccia body" encountered in holes LH-1, LH-3, and LH-4 may possibly rake in an east to a southeast direction and lie either north or south of JW-3.

Middle and Lower Kingsport Mineralization

The first appreciable amount of mineralization in the lower part of the Kingsport formation was found in Sc-2 on the Scearce farm. In order to further explore this occurrence, eight holes were drilled on the adjacent A.B. Dalton farm, two on the L.F. Mallicoat farm, and two on the Henry L. Wolfe farm. Drilling in this area revealed the presence of relatively thick zones of low-grade mineralization in the lower part of the Kingsport formation in the vicinity of D-4, D-8, and D-5 (see Sections A'-A'', Plate 3). Due to the widely-spaced drilling along strike (300-foot centers) east and west of D-4, the extent of the mineralization in that direction is not fully known. A similar situation exists east and west of D-8. Two holes (D-6 and D-7) were drilled, east and west of D-5 on 150-foot centers, the results of which showed less intense mineralization along strike from D-5.

A study of cross-sections C-C' and D-D' (Plate 5) suggests a northeast-southwest trending body. Similar trending bodies have been observed in the district occurring as "prongs" of a strike orebody.

Sections C'-C'' (Plate 6) and B-B'' (Plate 4) show the relationship of the mineralization to the soil anomaly and the distribution of the mineralization along the drill fence. Holes D-3, D-7, and D-1 were drilled on 300-foot centers whereas LW-2 and LW-3 were drilled on 200-foot centers. Examination of section B-B'' reveals that there is an increase in thickness of mineralization from D-3 to LW-3 although there is no appreciable change in the grade of mineralization. The area south of LW-3 is unexplored.

STRUCTURAL INTERPRETATION

The structural interpretations shown on the cross-sections are the product of correlation of the detailed logging of the stratigraphy and structure in the core. It is realized that in some cases where good control is lacking, other interpretations of the data could be justifiably made. In these cases the "pattern" as interpreted from areas where structural features were more certain was followed.

Control

Excellent control of the different stratigraphic horizons is obtained in the Mascot and upper Kingsport formations. Most of the different beds within these formations are readily recognized and logged. The cross-sections show only the CM sand and the top of bed K-3 but many other recognizable horizons were also used to correlate from hole to hole.

Due to the large amount of brecciation of the dolomites, and the solution and dolomitization of the limestone beds below the top of R bed, beds R, S, and T are in some cases more difficult to trace from hole to hole. In the Indian Creek area this is especially true and as a result, correlation is occasionally quite difficult and questionable. The locations of the tops of R, S, and T bed horizons shown on the section are questionable in some holes and consequently are shown by dashed lines.

Bed L-3 in the Longview formation is a prominent horizon marker and is present in all holes drilled deep enough to intersect it. Correlation from hole to hole using this marker is shown by a continuous line.

Interpretation

Seven cross-sections (6 plates) were made of the drilling results, three of these are strike sections and four are dip, or approximately dip, sections. Section A-A' is a strike section and includes diamond drill holes LH-5, LH-4, LH-3, JW-3, Sc-1, Sc-2, and D-1. The faults shown were inter-

sected by one or more diamond drill holes and may in part explain some of the irregularities of the horizon markers. Due to the lack of control in some portions of the area, the projections of the trace of some of the faults is theoretical. Strong evidence of northwest-trending faults on the Dalton farm suggests that faulting in other areas of less control may be of a similar nature and, consequently, it is so interpreted.

Section B-B'' is a dip section and includes diamond drill holes LW-3, LW-2, D-1, D-7, and D-3 and soil auger holes A-27, A-26, A-25, A-18, A-3, A-1, A-2, and A-4. The northeast-dipping fault between D-7 and D-3 can be traced to the northwest and to the southeast of the section with the entire north block displaced upward (Sections D-D', A-A'', and C-C'). The fault zone intersected in hole D-7 dips to the southwest with the north block displaced downward indicating a graben between D-7 and D-3. The graben does not appear to extend through section A'-A''.

Two northwest-dipping fault zones are shown in holes D-1 and LW-2. On the surface the traces of the faults appear north of LW-2. The fault in D-1 may be the same fault that occurs between Sc-1 and Sc-2 and has been interpreted as such. The fault in LW-2 may be a parallel fault.

Section A'-A'' includes holes D-1, D-5, D-8, and D-4. A fault has been interpreted to occur between D-8 and D-4 in order to explain the structure between D-3 and D-4. The other faults have been previously discussed.

Section C'-C'' includes diamond drill holes M-2 and D-4 and soil auger holes A-3, A-1, A-2, and A-5. The fault shown between M-2 and D-4 is present in sections A'-A'' and D-D'.

Sections C-C' and D-D' are strike sections. Section D-D' includes holes D-2, D-3, D-4, and M-1. Section C-C' includes holes D-7, D-5, D-6, and M-2. The faults shown have been previously discussed. In section C-C', the interpretation of the faulting has been simplified as much as possible.

The structure between D-5, D-6, and M-2 is shown as a syncline with a northwest-dipping fault on the east end. Similar structures exist in other parts of the area and as previously mentioned may in places be the correct interpretation rather than faulting. Theoretically, warping of the beds adjacent to a prominent fault would be expected. This may account for some of the intense brecciation that occurs in D-5 and D-6.

Section E-E' includes holes LW-1, C-1, JW-4, LH-6, LH-1, and LH-2. The dip of the beds determined by drilling is remarkably constant, varying locally only a few degrees. A fault zone cut in JW-4 thickens the section five feet. The fault probably strikes to the northwest and may be the same fault that occurs in hole LH-5.

AN EVALUATION OF THE GEOCHEMICAL SURVEY

The drilling has shown that the geochemical anomalies indicate the presence of zinc mineralization in the parent rock. The anomalous areas in the near-surface samples reflect the up-dip extension of favorable zones in the bedrock but do not necessarily overlie zones of mineralization at the present bedrock surface.

A soil augering program was initiated to study a soil anomaly in depth. A series of holes were augered in and around a small anomaly on the A.B. Dalton farm, (See Sections C'-C'' and B-B''). The result of that work indicates that there is a considerable amount of up-dip "drape" of the anomaly; i.e., an anomaly that is present on the Longview formation may be a reflection of a favorable zone in the Kingsport formation.

On the Leffew Heirs farm, the anomaly overlies the projected outcrop of the Mascot and Kingsport formations and is absent over the Longview formation. Drilling to date in this area has found only Mascot and upper Kingsport mineralization.

On the Dalton farm, two anomalies are present, one overlying the Long-

view formation and one over the Kingsport and the lower part of the Mascot formations. Drilling in this area has proven the presence of both Kingsport and Mascot mineralization.

From the above data it can be concluded:

1. The presence of a soil anomaly indicates the past or present existence of mineralization in the bedrock.

2. The anomaly is "draped" over the projected outcrop of horizons or formations that are stratigraphically lower than the favorable horizons, i.e. and anomaly over the Longview formation may be a reflection of Kingsport mineralization.

3. An anomaly does not necessarily directly overlie zones of mineralization at the present bedrock surface.

GEOPHYSICAL SURVEY

An electrical resistivity survey was made of the project area. Certain assumptions, based largely upon theoretical considerations, were made at the outset. These were:

1. Lowest resistivity would occur in areas of (1) pyrite mineralization, (2) brecciation, and (3) fracturing and faulting, the two latter because of the tendency of ground water to concentrate in brecciated and broken ground.

2. Higher resistivities would occur in strata that consisted essentially of dolomite.

3. Highest resistivities would occur in strata that consisted essentially of limestone.

4. It might be expected that any large area of ground properly prepared for mineralization by brecciation or fracturing, would show up as resistivity lows. This would represent properly prepared ground for mineralizing solutions to deposit zinc but not necessarily commercial ore.

Eleven electrical resistivity profiles were made in the area. The traverses were spaced at 600 foot intervals along the base line and were made at right angles to it (dip sections). Readings were taken at 100 foot intervals along the traverse at depths ranging from 150 feet to 900 feet. The electrical data were plotted as iso-resistivity sections for each traverse.

Most of the drilling had been completed before geophysical measurements were made and was concentrated in two areas; (1) around traverses R and N; and (2) around traverses A and B. None of the drilled, and therefore known, areas tested are considered to be strongly enough mineralized to have given this method of prospecting a conclusive test.

On traverse AB, resistivities are extremely erratic and high as compared to results on the other traverses. The traverse is located near the complex faulting associated with the Indian Creek fault. The electrical results indicate that the faulted area extends from 450 feet south to 500 feet north of the base line.

Traverses A and B are in an area of high electrical resistivities which, from the original assumptions, would not reflect areas in which zinc mineralization would occur.

Traverses F, J, N, and R are located in an area of somewhat lower resistivities although their results are not too encouraging.

On the basis of the electrical results no further drilling is recommended. However, the areas of traverses N and R are recommended as the most favorable should further drilling be contemplated.

COSTS OF THE DMEA PROJECT

A Summary of the Costs Incurred During

The Exploration Project Contract

		AUTHORIZED BY CONTRACT			INCURRED BY OPERATOR			GOVERNMENT PARTICIPATION
OPERATION	UNIT	UNITS	UNIT COSTS	COSTS	UNITS	UNIT COSTS	COSTS	@ 50%
Drilling	Foot	12,000	3.00	36,000.00	12,000	3.00	36,000.00	18,000.00
Reaming	Foot	600	2.00	1,200.00	438	2.00	876.00	438.00
Assays	Each	140	1.50	210.00	89	1.11	99.00	49.50
Incidental Allowance	Foot	12,000	.26	3,120.00	12,000	.26	3,120.00	1,560.00
Totals				40,530.00			40,095.00	20,047.~~00~~ 50

Fungy

Conclusions

On the basis of favorable geochemical and geological studies, twenty-six core holes were drilled for a total of 15,543 feet. Although zinc mineralization was found to occur throughout the area, drilling to date has failed to discover the presence of commercial deposits of zinc.

ANNEX

SUMMARY OF THE DRILL HOLE LOGS

Control

Two permanent bench marks, NL-I-1 and NL-I-2, have been placed on the Leffew Heirs and John Wolfenbarger farms respectively (see geologic map).

The bench marks were located by closed traverse from BM-SN-159 located at the intersection of the Indian Creek and Clinch valley roads, (for description see Bulletin TVA-MS-162-C, Tate Springs, Tennessee, Quadrangle 162, May 1947).

A rectangular grid system using coordinate lines runing north-south, and east-west, was established. The coordinates assigned to BM-SN-159 are: N-50,000; E-50,000. The coordinates and elevations of NL-I-1 and NL-I-2 are:

NL-I-1	El	1528.97
	N	52,597.55
	E	49,561.41
NL-I-2	El	1498.08
	N	52,691.30
	E	50,661.35

The location of NL-I-2 from NL-I-1 is true N 85.08 E, 1103.93 feet.

SUMMARY OF DD HOLE C-1

INDIAN CREEK PROJECT

Drilled under the supervision of NATIONAL LEAD COMPANY & DMEA

Hole No: C-1

Farm: Lou Coffey

Loc: N 51,709.71
E 49,850.15

Elev: 1272.55

Drilled By: Joy Mfg. Co.

Logged By: J. Spears

Collared: 6/18/57

Bottomed: 7/1/57

Depth: 863'

Reaming: None

Casing: 2' BX; 20' AX

Cement: 2 Sacks

Water Table: -----

RESULTS

TOP OF:		ZINC MINERALIZATION	FeS MINERALIZATION
Kingsport (CMss)	564'	Trace @ 836; 843.	
"R" bed	734'		
"S" bed	786'		
Longview ("T" bed)	827½'		

SUMMARY OF DD HOLE D-1

INDIAN CREEK PROJECT

Drilled under the supervision of B.H. PUTNAM, OPERATOR & DMEA

Hole No: D-1

Farm: A.B. Dalton

Loc: N 53,061.80
E 51,684.57

Elev: 1466.99

Drilled By: Putnam Drilling Co.

Logged By: J. Spears

Collared: 12/1/56

Bottomed: 12/13/56

Depth: 601

Reaming: 80'

Casing: 17 BX; 130 AX

Cement: 10 Sacks

Water Table: ?

RESULTS

TOP OF:

Kingsport (CMss) 211½

"R" bed 382

"S" bed 469½

Longview ("T" bed) 506

ZINC MINERALIZATION

Shine @ 101; 241½-242, ½' @ 1% Est; 251; 259; 423; 428; 429; 435; 489-496, 7' @ 1.24%; 499½

FeS MINERALIZATION

Shines @ 247; 251; 259; 261; 265; 272; 285; 299-301; 313-314, 1' @ 1% Est; 316; 319; 337; 339; 353; 354; 385; 392; 428; 521; 524; 552.

SUMMARY OF DD HOLE D-2

INDIAN CREEK PROJECT

Drilled under the supervision of B.H. PUTNAM, OPERATOR, & DMEA

Hole No: D-2

Farm: A.B. Dalton

Loc: N 53,445.48
E 51,226.89

Elev: 1575.34

Drilled By: Putnam Drilling Co.

Logged By: J. Spears

Collared: 12/17/56

Bottomed: 12/22/56

Depth: 402

Reaming: None

Casing: 83' BX; 102' AX

Cement: None

Water Table: ?

RESULTS

TOP OF:		ZINC MINERALIZATION	FeS MINERALIZATION
Kingsport (CMss)		Shines @ 281; 293	Shines @ 119½; 121; 123; 128-130, 2' @ 5% Est; 276; 278-279; 282-282½; 295; 315; 315½.
"R" bed	187		
"S" bed	249		
Longview ("T" bed)	293		

SUMMARY OF DD HOLE D-3

INDIAN CREEK PROJECT

Drilled under the supervision of B.H. PUTNAM, OPERATOR & DMEA

Hole No: D-3

Farm: A.B. Dalton

Loc: N 53,549.31
E 51,508.43

Elev: 1546.42

Drilled By: Putnam Drilling Co.

Logged By: J. Spears

Collared: 12/28/56

Bottomed: 1/2/57

Depth: 386

Reaming: None

Casing: 20 BX; 48 AX

Cement: None

Water Table: ?

RESULTS

TOP OF:

Kingsport (CMss) _____

"R" bed 132

"S" bed 187

Longview ("T" bed) 231

ZINC MINERALIZATION

Shine @ 102; 110-111, 1' @ 1% Est; 119; 123; 125-126, 1' @ .1%; 149; 204-208, 4' @ .85%; 209; 211.

FeS MINERALIZATION

43-46½, 3½' @ 1% Est; 54; 105; 108; 109½; 113; 119; 172; 204½; 207; 209½; 211; 242-244, 2' @ 7% Est; 248; 251; 275-276, 1' @ 2% Est; 280-281, 1' @ 1%; 286-287, 1' @ 2% Est; 291; 292; 298; 299; 314-315, 1' @ 2% Est; 370-371, 1' @ 5%; 372-373, 1' @ 1%.

SUMMARY OF DD HOLE D-4

INDIAN CREEK PROJECT

Drilled under the supervision of B.H. PUTNAM, OPERATOR, & DMEA

Hole No: D-4

Farm: A.B. Dalton

Loc: N 53,651.21
E 51,790.74

Elev: 1572.35

Drilled By: Putnam Drilling Co.

Logged By: J. Spears

Collared: 1/3/57

Bottomed: 1/10/57

Depth: 356'

Reaming: None

Casing: 115' BX; 135' AX

Cement: 4 Sacks

Water Table: ?

RESULTS

TOP OF:		ZINC MINERALIZATION	FeS MINERALIZATION
Kingsport (CMss)		133½-156, 22½' @ .97% 158; 158½; 160-167½, 7½' @ 1.05%; 198-200½, 2½' @ .4%; 331-333, 2' @ 1.7%.	Shines @ 169; 171; 178; 183; 245-249, 4' @ 2%; 271; 339; 340½; 343; 346.
"R" bed	133		
"S" bed	193		
Longview ("T" bed)	244		

SUMMARY OF DD HOLE D-5

INDIAN CREEK PROJECT

Drilled under the supervision of B.H. PUTNAM, OPERATOR, DMEA

Hole No: D-5

Farm: A.B. Dalton

Loc: N 53,354.04
E 51,738.16

Elev: 1510.03

Drilled By: Putnam Drilling Co.

Logged By: J. Spears

Collared: 1/11/57

Bottomed: 1/19/57

Depth: 475'

Reaming: None

Casing: 56' BX; 81' AX

Cement: 5 sacks

Water Table:

RESULTS

TOP OF:

Kingsport (CMss) 86½'

"R" bed 277'

"S" bed 345'

Longview ("T" bed) 390

Zinc Mineralization

243-256½, 13½' @ .92%; 259-274½, 15½' @ .38%; Shines @ 283; 284; 285-290½, 5½' @ .30%; shines @ 297; 305; 308; 325½; 328-338½, 10½' @ .27%; 342; 369; 372-378, 6' @ .56%; 390½-396, 5½' @ .22%; 397; 416-417, 1' @ .5% Est.

FeS Mineralization

59; 77; 84; 86; 101; 103; 107; 112; 113; 119; 122; 124; 126; 130; 139½; 141; 142; 143; 146-151, 5' @ 5% Est; 161; 163; 165; 167; 169; 172; 173; 177; 178; 180-181½, 1½' @ 1% Est; 183-184, 1' @ 1% Est; 185; 188; 191; 192; 194; 199-202; 203; 204; 207; 208; 209; 212; 214; 216; 228; 229½; 234; 235; 237; 241; 245; 247; 249; 254; 255; 256; 274-277, 3' @ 1.% Est; 284-290½, 6½' @ 1% Est; 290½; 332-333, 1' @ 1½% Est; 338-339, 1' @ 1% Est; 374; 403; 417; 455

SUMMARY OF DD HOLE D-6

INDIAN CREEK PROJECT

Drilled under the supervision of B.H. PUTNAM, OPERATOR, & DMEA

Hole No: D-6

Farm: A.B. Dalton

Loc: N 53,406.93
E 51,878.57

Elev: 1505.01

Drilled By: Putnam Drilling Co.

Logged By: J. Spears

Collared: 2/5/57

Bottomed: 2/13/57

Depth: 497'

Reaming: None

Casing: 54' BX; 81' AX

Cement: None

Water Table: ?

RESULTS

TOP OF:

Kingsport (CMss)	78'
"R" bed	281½'
"S" bed	335'
Longview ("T" bed)	400'

ZINC MINERALIZATION

Shines @ 215; 217; 242-243, 1' @ 1.14 %; 254-259, 5' @ ¼% Est; 286-289½, 3½' @ .52%; 292; 303; 329½-333½, 4' @ .4%; 335; 337-342½, 5½' @ .95%.

FeS MINERALIZATION

94; 103; 122; 132; 143; 173; 181; 183; 192; 197-198, 1' @ 2% Est; 205; 209-210, 1' @ ½% Est; 216; 219; 221; 236-237, 1' @ 1% Est; 242-243, 1' @ 3% Est; 244; 254; 256; 258; 259½; 273; 274; 291; 329; 332; 334; 334½; 337.

SUMMARY OF DD HOLE D-7

INDIAN CREEK PROJECT

Drilled under the supervision of B.H. PUTNAM, OPERATOR & DMEA

Hole No: D-7

Farm: A.B. Dalton

Loc: N 53,310.32
E 51,594.87

Elev: 1497.03

Drilled By: Putnam Drilling Co.

Logged By: J. Spears

Collared: 2/19/57

Bottomed: 2/27/57

Depth: 475

Reaming: None

Casing: 44 BX; 76 AX

Cement: None

Water Table: ?

RESULTS

TOP OF:

Kingsport (CMss) 66½

"R" bed 256

"S" bed 339

Longview ("T" bed) 378

ZINC MINERALIZATION

240½-242½, 2' @ ¼% Est; 245-246, 1' @ ½% Est. 312; 320; 321; 364½-365½, 1' @ 1% Est; 374-375, 1' @ 1% Est.

FeS MINERALIZATION

Shines @ 207; 219; 222; 225; 232; 234-242, 8' @ ½% Est; 246-249, 3' @ ½% Est; 286; 288; 291; 294; 296; 313-318, 5' @ ½% Est; 333; 344; 348; 348½; 433; 444.

SUMMARY OF DD HOLE D-8

INDIAN CREEK PROJECT

Drilled under the supervision of NATIONAL LEAD COMPANY & DMEA

Hole No: D-8

Farm: A.B. Dalton

Loc: N 53,503.38
E 51,767.54

Elev: 1542.45

Drilled By: Putnam Drilling Co.

Logged By: J. Spears

Collared: 3/1/57

Bottomed: 5/7/57

Depth: 370

Reaming: 37' from 69' to 106

Casing: 52" BX; 106' AX

Cement: None

Water Table: ?

RESULTS

TOP OF:		ZINC MINERALIZATION	FeS MINERALIZATION
Kingsport (CMss)		186-188, 2' @ ¼% Est; 223-229, 6' @ .19%; 235½-237½, 2' @ ½% Est; 257-266½, 9½' @ 1.17%; 269-271, 2' @ 1.36%; 313-314, 1' @ ½% Est.	Shines @ 77; 80; 81; 82; 84; 86-87, 1' @ 2% Est; 177; 178; 185; 187; 205; 223-224; 226; 228; 231; 237-242, 5' @ ½% Est; 252; 281; 283; 285; 287; 292; 293; 294; 301; 362.
"R" bed	214		
"S" bed	268		
Longview ("T" bed)	303		

SUMMARY OF DD HOLE LH-1

INDIAN CREEK PROJECT

Drilled under the supervision of B.H. PUTNAM, OPERATOR

Hole No: LH-1

Farm: Leffew Heirs

Loc: N 52,579.87
E 49,533.38

Elev: 1525.80

Drilled By: Putnam Drilling Co.

Logged By: W. Hill

Collared: 3/29/56

Bottomed: 4/21/56

Depth: 721

Reaming: None

Casing: 32' BX; 95' AX

Cement: Yes

Water Table: ?

RESULTS

TOP OF:

Kingsport (CMss) 184

"R" bed 405

"S" bed 458

Longview ("T" bed) 472

ZINC MINERALIZATION

45-49, 5' @ .17%; 214-218½, 4½' @ .5%; 272-279; 7' @ 1.48%.

FeS MINERALIZATION

Shines @ 224, 226, 238; 252-254, 2' @ 1.00% Est; 257-259, 2' @ 3.00% Est; Shines @ 299; 305; 322; 331; 340½-341; 342-343; 345-345½; 347-350; 351-352; 354-354½; 355-356; 357-358; 360; 361-361½; 362; 363; 364-373, 9' @ 3.00% Est; 375-383, 8' @ 1.00% Est; 390-393, 3' @ 1.00% Est; 402-404, 2' @ 3.00% Est; 409-415, 6' @ 4.00% Est; 432-439, 7' @ .50% Est; Shines @ 459, 525, 566, 585, 629, 635, 637, 699.

SUMMARY OF DD HOLE LH-2

INDIAN CREEK PROJECT

Drilled under the supervision of B.H. PUTNAM, OPERATOR, & DMEA

Hole No: LH-2

Farm: Leffew Heirs

Loc: N 52,845.94
E 49,542.75

Elev: 1570.74

Drilled By: Putnam Drilling Co.

Logged By: J. Spears

Collared: 9/20/56

Bottomed: 9/28/56

Depth: 363

Reaming: None

Casing: 80' BX; 115' AX

Cement: None

Water Table: ---

RESULTS

TOP OF:

Kingsport (CMss) ---

"R" bed 248

"S" bed 314½

Longview ("T" bed) 350

ZINC MINERALIZATION

FeS MINERALIZATION

Shines @ 95, 96, 100, 101, 104-105, 106, 113, 120, 125, 134-135, 139-140, 144-145, 149½, 150-151, 155, 156, 159, 162, 165, 275, 317, 319½, 341, 361.

SUMMARY OF DD HOLE LH-3

INDIAN CREEK PROJECT

Drilled under the supervision of B.H. PUTNAM, OPERATOR, & DMEA

Hole No: LH-3

Farm: Leffew Heirs

Loc: N 52,246.83
E 49,434.76

Elev: 1429.38

Drilled By: Putnam Drilling Co.

Logged By: J. Spears

Collared: 9/29/56

Bottomed: 10/17/56

Depth: 725

Reaming: To 154'

Casing: 16' BX; 30' AX

Cement: None

Water Table: --

RESULTS

TOP OF:

Kingsport (CMss) 315

"R" bed 510½

"S" bed 570

Longview ("T" bed) 593

ZINC MINERALIZATION

ZnS shines @ 156; 160; 162½; 164 3/4; 176-180, 4' @ .25% Est; 184-187, 3' @ .25% Est; 189½-194½, 5' @ .50% Est; Shines @ 196½, 198, 199, 199½, 200½; 202-213, 11' @ .79%; 218-226, 8' @ 2.76%; 229-230, 1' @ 2.30%; shines @ 233, 235; 236-238, 2' @ .60%; shines @ 239, 318, 393.

FeS MINERALIZATION

Shines @ 279, 305, 308, 308½, 309, 313, 315-318, 320, 321, 324, 327-330, 3' @ 5.00% Est; 331-337, 6' @ 2.50% Est; Shines 339-342, 346-347; 350-361, 11' @ .50% Est; 365, 374, 375; 381; 382; 385-390, 5' @ 2.00% Est; 393, 405-411, 415.

SUMMARY OF DD HOIE LH-4

INDIAN CREEK PROJECT

Drilled under the supervision of B.H. PUTNAM, OPERATOR, & DMEA

Hole No: LH-4

Farm: Leffew Heirs

Loc: N 52,144.60
E 49,155.43

Elev: 1466.78

Drilled By: Putnam Drilling Co.

Logged By: J. Spears

Collared: 10/19/56

Bottomed: 10/30/56

Depth: 710

Reaming: None

Casing: 11' BX; 58' AX

Cement: None

Water Table: ?

RESULTS

TOP OF:

Kingsport (CMss)	343½
"R" bed	547
"S" bed	592
Longview ("T" bed)	629

ZINC MINERALIZATION

34-35½, 1½' @ 1.1%; Shine @ 113; 118½-119½, 1' @ 1.10%; 127-128, 1' @ .90%; Shines @ 132, 133, 136; 139-142, 3' @ 1.5%; Shines @ 144, 145, 146, 147, 149½, 160½, 161½, 163; 254-255, 1' @ 1.9%; 680½-681, ½' @ 2.% Est.

FeS MINERALIZATION

Shines @ 351, 352, 356, 362, 365, 366, 371, 373, 376, 379, 382, 383, 384, 385½, 389, 391, 395, 396-397, 398, 400-405, 5' @ 2% Est; 408; 415; 417-425, 8' @ 3.0% Est; 435-437, 2' @ 2.0% Est; 438-439, 1' @ 2.0% Est; 441; 445; 446-449, 3' @ 2.0% Est; 450-453, 3' @ 2.0% Est; 458; 459; 460-462, 2' @ 2% Est; 464; 464-467, 3' @ 2.% Est; 468-482, 14' @ 1% Est; 482-483, 1' @ 2% Est; 484-486, 2' @ 2% Est; 490-497, 7' @ 4% Est; 508-514, 6' @ 1% Est; 516-522, 6' @ 2% Est; 524-527, 3' @ 2% Est; 531; 539-541, 2' @ 2% Est; 546; 555; 563; 564-570½, 6½' @ 1% Est; 572; 573; 588.

SUMMARY OF DD HOLE LH-5

INDIAN CREEK PROJECT

Drilled under the supervision of B.H. PUTNAM, OPERATOR & DMEA

Hole No: LH-5

Farm: Leffew Heirs

Loc: N 52,045.82
E 48,899.12

Elev: 1446.97

Drilled By: Putnam Drilling Co.

Logged By: J. Spears

Collared: 10/31/56

Bottomed: 11/15/56

Depth: 721

Reaming: To 197

Casing: 14' BX; 197' AX

Cement: None

Water Table: ?

RESULTS

TOP OF:

Kingsport (CMss) 350

"R" bed 559

"S" bed 599

Longview ("T" bed) 640

ZINC MINERALIZATION

Shine @ 56'

FeS MINERALIZATION

Shines @ 61; 215; 224-225; 394; 396; 400½; 402-404, 2' @ 1% Est; 411; 415; 432; 449; 452; 453; 454; 455; 471; 474; 477; 485; 489; 490½; 492-493, 1' @ 2% Est; 499-500½, 1½' @ 2% Est; 502; 504; 506-508, 2' @ 2%; 517-518½, 1½' @ 2% Est; 520-526½, 6½' @ 3% Est; 536; 539; 542; 544-550, 6' @ 1% Est; 555½-557, 1½' @ 1% Est; 559-560, 1' @ 1% Est; 620-621, 1' @ 2% Est; 626-627, 1' @ 1%.

SUMMARY OF DD HOLE LH-6

INDIAN CREEK PROJECT

Drilled under the supervision of NATIONAL LEAD COMPANY & DMEA

Hole No: LH-6

Farm: Leffew Heirs

Loc: N 52,090.96
E 49,714.40

Elev: 1390.48

Drilled By: Joy Mfg. Co.

Logged By: J. Spears

Collared: 7/25/57

Bottomed: 8/6/57

Depth: 676

Reaming: None

Casing: 38 BX; 20' AX

Cement: None

Water Table: ?

RESULTS

TOP OF:

Kingsport (CMss) 401½

"R" bed 578

"S" bed 616

Longview ("T" bed) 651

ZINC MINERALIZATION

Shines @ 316½; 317½

FeS MINERALIZATION

FeS shines @ 574; 575; 587; 588; 589; 603; 603½

SUMMARY OF DD HOLE M-1

INDIAN CREEK PROJECT

Drilled under the supervision of B.H. PUTNAM, OPERATOR, & DMEA

Hole No: M-1

Farm: L.L. Mallicoat

Loc: N 53,756.00
E 52,070.00

Elev: 1562.00

Drilled By: Putnam Drilling Co.

Logged By: J. Spears

Collared: 1/22/57

Bottomed: 1/25/57

Depth: 284

Reaming: None

Casing: 49' BX; 59' AX

Cement: None

Water Table: -----

RESULTS

TOP OF:	ZINC MINERALIZATION	FeS MINERALIZATION
Kingsport (CMss) ---		
"R" bed 111		
"S" bed 172		
Longview ("T" bed) 241		

SUMMARY OF DD HOLE M-2

INDIAN CREEK PROJECT

Drilled under the supervision of B.H. PUTNAM, OPERATOR, & DMEA

Hole No: M-2

Farm: L.L. Mallicoat

Loc: N 53,459.06
E 52,017.49

Elev: 1501.53

Drilled By: Putnam Drilling Co.

Logged By: J. Spears

Collared: 1/25/57

Bottomed: 2/4/57

Depth: 500'

Reaming: None

Casing: 86' BX; 97' AX

Cement: None

Water Table: ----

RESULTS

TOP OF:

Kingsport (CMss) --

9 "R" bed 256

"S" bed 313

Longview ("T" bed) 360½'

ZINC MINERALIZATION

325-335, 10' @ .23%

FeS MINERALIZATION

100½; 105; 105½; 121; 125; 127; 128; 139-144; 5' @ 1% Est; 145; 158; 171; 172; 173; 174; 176; 179; 182; 205.

SUMMARY OF DD HOLE Sc-1

INDIAN CREEK PROJECT

Drilled under the supervision of B.H. PUTNAM, OPERATOR (bottom by Putnam & DMEA)

Hole No: Sc-1

Farm: Starling Scearce

Loc: N 52,701.14
E 50,811.66

Elev: 1497.73

Drilled By: Putnam Drilling Co.

Logged By: J. Spears & W. Hill

Collared: 1. 5/25/56
2. 2/14/57

Bottomed: 1. 6/19/56
2. 2/15/57

Depth: 721'

Reaming: None

Casing: 29' BX; 90' AX

Cement: None

Water Table: *--

RESULTS

TOP OF:		ZINC MINERALIZATION	FeS MINERALIZATION
Kingsport (CMss)	315	Shine @ 170½; 316-16½, 6" @ .72%; 320-326, 6' @ 1.38%; 329-331, 2' @ .36%; 333-336, 3' @ .36%; 340-341, 1' @ .62% 343; 347; 349-349½, 6" @ .21%	326; 348; 349; 352-357, 5' @ ½% Est; 371; 384; 386; 387; 388; 89; 391; 392; 402-406; 408-410; 416; 423; 428; 462; 463; 465; 467; 468; 505½; 508; 510.
"R" bed	500		
"S" bed	?		
Longview ("T" bed)	?		

SUMMARY OF DD HOLE Sc-2

INDIAN CREEK PROJECT

Drilled under the supervision of B.H. PUTNAM, OPERATOR, & DMEA

Hole No: Sc-2

Farm: Starling Scarce

Loc: N 52,857.97
E 51,121.32

Elev: 1494.11

Drilled By: Putnam Drilling Co.

Logged By: J. Spears

Collared: 11/17/56

Bottomed: 11/30/56

Depth: 709'

Reaming: None

Casing: 42' BX; 51' AX

Cement: None

Water Table: ?

RESULTS

TOP OF:

Kingsport (CMss)	283
"R" bed	464
"S" bed	523
Longview ("T" bed)	554

ZINC MINERALIZATION

492-492½, ½' @ ½%; 403; 404; 407½; 408; 500-01½, 1½' @ 1%; 505, 506½, 676

FeS MINERALIZATION

268; 275-276½, 1½' @ 3% Est; 277; 278-284, 6' @ 2% Est; 286; 297; 298; 299; 301; 308; 313; 315; 318; 320½; 327; 330; 332; 336; 339½; 341-346; 348-351, 3' @ 1% Est; 352-353, 1' @ 10% Est; 354; 355; 357; 359½; 360-361, 1' @ 2% Est; 364-368; 369-371, 2' @ 1% Est; 374; 376; 381; 411; 414; 416; 425½; 429½; 435; 439-440, 1' @ 2%; 444-445, 1' @ 2%; 451½-452½, 1' @ 1%; 456-459½, 3½' @ 1½% Est; 460½; 461½-463, 1½' @ 4%; 464-466, 2' @ 3%; 473-474, 1' @ 1%; 482; 486-487½, 1½' @ 1%; 506½-510, 3½' @ 2%; 514½-515½, 1' @ 3%; 561-562½, 1½' @ 1%; 566; 621; 623; 659; 661; 664; 668; 669-670, 1' @ 1%; 672-673½, 1½' @ 1%.

SUMMARY OF DD HOLE LW-1

INDIAN CREEK PROJECT

Drilled under the supervision of NATIONAL LEAD COMPANY & DMEA

Hole No: LW-1

Farm: Levi Wolfe

Loc: N 51,520.67
E 49,951.82

Elev: 1273.67

Drilled By: Joy Mfg. Co.

Logged By: J. Spears

Collared: 7/5/57

Bottomed: 7/22/57

Depth: 1000'

Reaming: None

Casing: BX 3'; AX 20'

Cement: None

Water Table; -----

RESULTS

TOP OF:		ZINC MINERALIZATION	FeS MINERALIZATION
Kingsport (CMss)	708½		
"R" bed	874½		
"S"bed	940		
Longview ("T" bed)	990		

SUMMARY OF DD HOLE LW-2

INDIAN CREEK PROJECT

Drilled under the supervision of NATIONAL LEAD COMPANY & DMEA

Hole No: LW-2

Farm: Levi Wolfe

Loc: N 52,873.92
E 51,752.97

Elev: 1429.84

Drilled By: Joy Mfg. Co.

Logged By: J. Spears

Collared: 8/9/57

Bottomed: 8/23/57

Depth: 649

Reaming: None

Casing: 7' BX; 19' AX

Cement: None

Water Table: ---

RESULTS

TOP OF:

Kingsport (CMss) 322

"R" bed 516

"S" bed 580

Longview ("T" bed) 615

ZINC MINERALIZATION

199; 201; 213-214, 1' @ 1% Est; 261; 511½; 512; 514; 515; 522; 524; 525; 527; 528; 528-532, 4' @ 3/4% Est; 545; 546; 547; 549; 551; 554½; 556-559½, 3½' @ 2% Est; 565; 568; 571; 577; 581; 583; 584.

FeS MINERALIZATION

352; 353; 354; 362; 365; 369; 393-394; 401; 407; 408; 417-421; 427; 430; 431; 439; 443; 483; 486; 508; 512; 515; 529; 531; 545; 556; 557; 568; 585; 587-591, 4' @ 4% Est; 592

SUMMARY OF DD HOLE LW-3

INDIAN CREEK PROJECT

Drilled under the supervision of NATIONAL LEAD COMPANY & DMEA

Hole No: LW-3

Farm: Levi Wolfe

Loc: N 52,684.08
E 51,822.10

Elev: 1372.87

Drilled By: Joy Mfg. Co.

Logged By: J. Spears, W. Hill

Collared: 8/26/57

Bottomed: 9/9/57

Depth: 721

Reaming: None

Casing: 6' BX; 20' AX

Cement: None

Water Table: ----

RESULTS

TOP OF:		ZINC MINERALIZATION	FeS MINERALIZATION
Kingsport (CMss)	405	279-282, 3' @ 1% Est; 348-348½, ½' @ ¼% Est.	
"R" bed	596		
"S" bed	647½		
Longview ("T" bed)	690		

SUMMARY OF DD HOLE JW-1

INDIAN CREEK PROJECT

Drilled under the supervision of B.H. PUTNAM, OPERATOR

Hole No: JW-1

Farm: John Wolfenbarger

Loc: N 52,673.00
E 49,816.00

Elev: 1483.00

Drilled By: Putnam Drilling Co.

Logged By: W. Hill

Collared: 4/21/56

Bottomed: 5/4/56

Depth: 575

Reaming: None

Casing: 45' BX; 108' AX

Cement: None

Water Table: ?

RESULTS

TOP OF:

Kingsport (CMss) 132

"R" bed 338

"S" bed 383

Longview ("T" bed) 419

ZINC MINERALIZATION

Trace @ 56; 220-222½, 2½' @ .50% Est.

FeS MINERALIZATION

Shines @ 175; 184; 203; 210; 212; 218; 236; 239½; 258; 270½; 278-279, 1' @ 5% Est; 284; 325; 332; 339; 345; 350-351; 367; 376; 379½; 383; 387; 421½; 486; 521.

SUMMARY OF DD HOLE JW-2

INDIAN CREEK PROJECT

Drilled under the supervision of B.H. PUTNAM, OPERATOR

Hole No: JW-2

Farm: John Wolfenbarger

Loc: N 52,770.71
E 50,131.21

Elev: 1533.33

Drilled By: Putnam Drilling Co.

Logged By: W. Hill

Collared: 5/5/56

Bottomed: 5/14/56

Depth: 560

Casing: 43 BX; 113 AX

Reaming: None

Cement: None

Water Table: ?

RESULTS

TOP OF:

Kingsport (CMss)	159½
"R" bed	349
"S" bed	410
Longview ("T" bed)	449

ZINC MINERALIZATION

Shine @ 43; 241½-44, 2½' @ .51%

FeS MINERALIZATION

Shines @ 162; 194; 232-236, 4' @ 3% Est. 238½-244, 5½' @ 3.5% Est; 259; 261; 264-265, 1' @ 2%; 288; 295-305, 10' @ .½% Est; 316½; 335; 354; 364-66, 2' @ ½% Est.

SUMMARY OF DD HOLE JW-3

INDIAN CREEK PROJECT

Drilled under the supervision of B.H. PUTNAM, OPERATOR

Hole No: JW-3

Farm: John Wolfenbarger

Loc: N 52,489.75
E 50,406.27

Elev: 1486.25

Drilled By: Putnam Drilling Co.

Logged By: J. Spears & W. Hill

Collared: 5/16/56

Bottomed: 5/24/56

Depth 678

Reaming: None

Casing: No Record Of

Cement: None

Water Table: ?

RESULTS

TOP OF:

Kingsport (CMss) 357

"R" bed 543

"S" bed 594

Longview ("T" bed) 625

ZINC MINERALIZATION

65-71, 6' @ 1.21%; 71-74½, 3½' @ .51%; shine @ 78, 271, 406, 409

FeS MINERALIZATION

Shines @ 323; 368; 390-91; 397; 398-400; 401-404; 406-410; 414½; 415½; 425; 431; 439-444, 5' @ 3.75% Est; 461; 469; 554-555, 1' @ 1½% Est; 582-583; 587; 591-94; 645-655; 672.

SUMMARY OF DD HOLE JW-4

INDIAN CREEK PROJECT

Drilled under the supervision of NATIONAL LEAD COMPANY & DMEA

Hole No: JW-4

Farm: John Wolfenbarger

Loc: N 51,904.09
E 49,786.13

Elev: 1321.48

Drilled By: Joy Mfg. Co.

Logged By: J. Spears

Collared: 6/1/57

Bottomed: 6/14/57

Depth: 778

Rea ming: None

Casing: 3 BX; 20 AX

Cement: 2 Sacks

Water Table: ?

RESULTS

TOP OF:

Kingsport (CMss) 471

"R" bed 642

"S" bed 687

Longview ("T" bed) 727

ZINC MINERALIZATION

386-387, 1' @ 1% Est.

FeS MINERALIZATION

Shines @ 141½; 145; 147; 158; 161; 168; 174; 235; 352-354; 682; 684; 685-686, 1' @ 2% Est; 690-692; 702; 704; 708; 761; 762; 765-766, 1' @ 1% Est; 771-772, 1' @ 5% Est.

OFFICIAL FILE COPY
DMEA
RECEIVED APR 4 1958
DATE | INITIAL | CODE
4/4 | C | 320
4/4 | [illegible] | 500

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 13 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

April 2, 1958

Memorandum

To: Operating Committee, DMEA - Washington

From: DMEA Field Team, Region V - Knoxville, Tennessee

Subject: DMEA-4381, Idm-E1002(zinc) National Lead Company, New York, N.Y., Assignee
Indian Creek, area, Grainger County, Tennessee

Enclosed is a copy of the assignment of options in Hancock County, Tennessee from National Lead Company to B. H. Putnam, Operator, which includes some tracts near the Indian Creek project, which may be included in an application for additional work by Putnam. All the options in the contract area are included in a similar assignment for Grainger County, submitted with our memorandum on DMEA-4580.

All work authorized by the subject contract has been completed, and we have again asked National Lead Company to submit a final report.

Robert A. Laurence

Robert A. Laurence, Executive Officer
DMEA Field TEam, REgion V

V. J. Lynch

V. J. Lynch, Member
Bureau of Mines

OFFICIAL FILE COPY
DMEA
RECEIVED APR 4 1958

DATE	INITIALS	CODE

A S S I G N M E N T

THIS ASSIGNMENT made and entered into this 12th day of March, 1958, by and between NATIONAL LEAD COMPANY, a corporation organized and existing under and by virtue of the laws of the State of New Jersey, with offices for the transaction of business located at 111 Broadway, New York 6, New York, hereinafter referred to as party of the first part, and B. H. PUTNAM, OPERATOR, hereinafter referred to as party of the second part,

W I T N E S S E T H:

THAT WHEREAS, party of the first part is the owner of the following described mineral option agreements covering certain lands in Hancock County, Tennessee, to-wit:

No.	Date	Grantor	Acres	Misc. Records Book	Page
X-248	Jan 17, 1956	W. N. & Margaret Dalton	40	6	342
X-261	Jan. 14, 1956	Robert Wolf, single	300	18	391
X-339	Sept. 6, 1956	Roy & Mollie Mallicoat	87	6	392
X-341	Sept. 6, 1956	Dewey & Ida Johnson	50	6	400
X-343	Sept. 7, 1956	Tom & Laura Boulin	40	6	406
X-362	Sept. 7, 1957	Walter & Myrtle Vaughn	50	7	334
X-366	Sept. 4, 1957	Kirt & Bonnie Livesay	82	6	514
X-367	Sept 20, 1957	Bud & Pearl Livesay	15	6	520
X-368	Sept 20, 1957	Houston & Martha Livesay	50	6	517
X-383	June 6, 1957	John Barnett	130	7	30
X-394	Sept 20, 1957	F. C. & Bobbie Livesay	30	6	333
X-395	Sept. 4, 1957	Tom & Edna Livesay	55	6	530
X-396	Sept. 6, 1957	Hugh & Ruby Livesay	60	6	527

and,

WHEREAS, the tracts of lands covered by said mineral option agreements are more specifically described therein, reference being hereby made to said mineral option agreements for a more complete description of all the boundaries, terms, stipulation, covenants and agreements therein contained.

NOW, THEREFORE, in consideration of the sum of One Dollar ($1.00) cash in hand paid this day and other good and valuable considerations, receipt of all of which is hereby acknowledged, party of the first part does hereby sell, assign, transfer and set over unto party of the second part, the above described mineral option agreements; and for the same consideration, party of the first part covenants with party of the second part, his successors and assigns, that

all rentals due under said mineral option agreements have been paid and all conditions necessary to keep the same in full force have been duly performed.

IN WITNESS WHEREOF, party of the first part has hereunto caused its name to be affixed as of the day and year first above written.

NATIONAL LEAD COMPANY

By _____
Vice President

Attest:

_____
Secretary

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

On this the 20th day of [illegible], 1958, before me [illegible], the undersigned officer, personally appeared [illegible], who acknowledged himself to be a Vice President of NATIONAL LEAD COMPANY, a corporation, and that he as such Vice President, being authorized so to do, executed the foregoing instrument for the purposes therein contained, by signing the name of the corporation by himself as a Vice President.

In witness whereof, I hereunto set my hand and official seal.

_____
Notary Public

My commission expires:

[illegible]
NOTARY PUBLIC, STATE OF NEW YORK
[illegible] County
Term Expires March 30, 1960

dmEA
4381-
Uranium
Feed

Official Copy

~~EXTRA COPY~~
DMEA
RECEIVED MAR 17 1958

DATE	[illegible]	CODE
3/17	C	220
3/18	LWRB.	502

March 14, 1958

Mr. B. H. Putnam
170 East Pearson Street
Chicago 11, Illinois

Dear Mr. Putnam:

Although I have not yet been notified by National Lead Company of their decision to withdraw from Copper Ridge, I am assuming that they will ask for an assignment of the two uncompleted Copper Ridge contracts to you. In order to process these requests, when received, we will also need a statement from you that you are willing to accept assignment of the contracts. Preferably, there should be a letter for Punkhorn Camp and another for Thorn Hill.

As for Indian Creek, which has been completed, your proposed request for new work there could be treated more easily as a new application, which can be submitted at any time after the final report on the work already done is received by us.

We are pleased with the results of hole GD-2 at Punkhorn Camp and hope to see more of the same when drilling is resumed.

With best regards, I am

Sincerely yours,

Robert A. Laurence
Executive Officer
DMEA Field Team, Region V

RAL/mg
cc - Operating Committee (2)
Mr. V. J. Lynch
Mr. W. T. Hill
Files

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOMS [illegible] BLDG.
KNOXVILLE 2, TENN.

February [illegible]

34

DMEA-4381.

[illegible]

[illegible] Operating Committee, DMEA, Washington, D. C.

[illegible] Field Team, DMEA, Region V, Knoxville, Tennessee

Subject: Docket No. DMEA-4381, Contract No. Idm-E1022 (Zinc)
National Lead Company, assignee.
Thorn Hill area, Grainger County, Tennessee

We have been advised, orally, by Mr. B. H. Putnam that National Lead Company advised him on February 20 that they [illegible] stopping all work on Copper Ridge, and are returning the [illegible] properties to him, in accordance with their agreement of [illegible] word of this has come to us from National Lead.

Mr. Putnam wants to continue this project, as well as the [illegible] on Copper Ridge (DMEA-[illegible]) but obviously the [illegible] drilling cannot be resumed by March 1, as provided [illegible] Amendment No. [illegible].

We will advise you further on this when we hear from [illegible] We expect confer with Mr. Putnam and his staff [illegible]

Robert M. Lawrence
Executive Officer

[illegible] Member

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 18 POST OFFICE BLDG.
WASHINGTON 25, D. C.
KNOXVILLE 2, TENN.

DMEA
RECEIVED FEB 17 1958
DATE
2/18 C 220
2/9 500

February 13, 1958

Memorandum

To: Operating Committee, DMEA, Washington, D. C.

From: Executive Officer, DMEA Field Team, Region V

Subject: Docket No. DMEA-4381, Contract No. Idm-E1002 (Zinc)
National Lead Company, Assignee
Indian Creek Project, Grainger County, Tennessee

Reference is made to your letter of February 11.

The Operator's final report on this project has not been received. It is our understanding that it is being delayed, pending a decision by the Operator's consulting geologist, C. D. Hulin, as to whether an amendment requesting additional funds for drilling will be submitted.

In the meantime, three tracts which Mr. Hulin was especially interested in were optioned by New Jersey Zinc Company as part of their Cedar Springs project.

We will forward the Operator's final report as soon as we receive it.

Robert A. Laurence

Robert A. Laurence

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
2/10	Griswold	500
2/10	GCS	130
"	Johnson	110
"	Cutlendorf	100
		HB
2/11	C	220
		500

500

FEB 11 1958

Mr. Robert A. Laurence
Executive Officer
DMEA Field Team, Region V
Room 13, Post Office Bldg.
Knoxville 2, Tennessee

Re: Docket No. DMEA-4381 (Zinc)
National Lead Company, Assignee
Indian Creek Project
Grainger County, Tennessee
Contract No. Idm-E1002

Dear Mr. Laurence:

We have no information on the cited project since the Interim Report of Wedow and Shirley, dated September 17, 1957.

This report stated that the Operator's Final Report was in preparation, but it has never reached us. Will you kindly bring us up to date.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (GCS)
WRGriswold/er 2/10/58
Copy to: Docket
Admr R File
Op. Committee
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Chron.

APPROVED:

Frank D. Lamb (FDL)
Member, Bureau of Mines

Thor H. Kiilsgaard (THK)
Member, Geological Survey

8623

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 13 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

OFFICIAL
DMEA
RECEIVED JAN 6 1958

DATE	INITIALS	CODE
1/6	[illegible]	220
1/6	[illegible]	S-00

January 3, 1958

Memorandum

To: Operating Committee, DMEA, Washington, D. C.

From: Field Team, DMEA, Region V, Knoxville, Tennessee

Subject: Docket No. DMEA-4381, Contract Idm-E1002 (Zinc)
National Lead Company, New York, N. Y.
Indian Creek Area, Grainger County, Tennessee
Docket No DMEA-4422, Contract No. Idm-E1022 (Zinc)
National Lead Company, New York, N. Y.
Thorn Hill area, Grainger County, Tennessee

Enclosed are the original and two copies of receipts for the bond premium renewal on the two subject contracts.

Amendments 1 and 2 to the Thorn Hill contract have been forwarded to the Operator for signature.

Robert A. Laurence
Robert A. Laurence
Executive Officer

V. J. Lynch
V. J. Lynch, Member
U. S. Bureau of Mines

Enclosures 6

Original Copy of Invoice No. 4367

STATEMENT

O'Neill Insurance Agency
CORNER EUCLID AND VINE, NORWOOD
PHONE 1234
MARIETTA, OHIO

DATE December 31, 1957

TO B. H. Putnam, Sr.
512 Third Street
Marietta, Ohio

DATE OF INSURANCE		KIND OF INSURANCE	AMOUNT	PREMIUM
8/31/57/58	American Surety Company Policy # 10-560-607 B. H. Putnam-To-U.S.A., Contract Bond for Defent Minerals Exploration Contract (Zinc) Bond--(Indian Creek Project)	Bond	$20,265.	$202.65

RECEIVED JAN 6 D.E.A.

O'NEILL INSURANCE AGENCY
EUCLID AND VINE - P. O. BOX 34
NORWOOD, MARIETTA, OHIO Phone 1234
FR3-4351

Paid by check in full 12/27/57
By: M Wright

Original Copy of Invoice No. 4367

ASSURED LEDGER-LINE RECORD

ITEM	DEBIT	CREDIT	BALANCE
12/27/57	CR	202.65	—

Co. Acct. Current Sub-Producers Account

Date December 31, 1957

To

B. H. Putnam, Sr.
512 Third Street
Marietta, Ohio

EXPIRATION	POLICY NUMBER	COMPANY	PROPERTY COVERED	KIND OF INSURANCE	AMOUNT	RATE	PREMIUM DUE
8/31/57/58	American Surety Company Policy # 10-560-607						
			B. H. Putnam Sr. U.S.A., Contract Bond for Defent Minerals Exploration Contract (Zinc) Bond--(Indian Creek Project)	Bond	$20,265.		$202.65

Paid by CR. 12/27/57
By: McWright

Remarks

Order Given by

Mortgagee

Sub-Producer

O'NEILL
INSURANCE AGENCY
EUCLID AND VIN... 34
WORWOOD, MARIETTA, OHIO PHONE 1234
FR3-4351

FORM 88A

RECORD OF INSTALLMENT PAYMENTS

DATE 19.....	ITEM	FOLIO	CHARGES		CREDITS		BALANCE	

Customer's Installment Ledger

When Assured makes installment payments, credit remittances as received in space provided on this page showing balance at all times; otherwise mark item paid in full. Remove sheet from binder and file in Assured's Line Record file when account is paid in full.

Form 88A
The Rough Notes Co., Inc.
Indianapolis, Ind.
Ptd. in U.S.A.

ITEM	DEBIT		CREDIT		BALANCE	
12/27/57	ck		202	65	—	

Co. Acct. Current Sub-Producers Account

Original copy of Invoice No. 4367

ASSURED LEDGER-LINE RECORD

Date December 31, 1957

To

B. H. Putnam, Sr.
512 Third Street
Marietta, Ohio

EXPIRATION	POLICY NUMBER	COMPANY	PROPERTY COVERED	KIND OF INSURANCE	AMOUNT	[redacted]	PREMIUM DUE
8/31/57/58		American Surety Company	Policy # 10-569-687 B. H. Putnam-Co-U.S.A., Contract Bond for Defent Minerals Exploration Contract (Zinc) Bond--(Indian Creek Project)	Bond	$20,265.		$202.65

Remarks

Order Given by By Mulwright

Mortgagee

Sub-Producer

Ck by ck. 12/27/57

RECEIVED JAN 6 1958 D.M.E.A.

O'NEIL INSURANCE AGENCY
EUCLID AND VIN[illegible] BOX 34
NORWOOD, MARIETTA, OHIO Phone 1234
FR3-4351

FORM B8A

RECORD OF INSTALLMENT PAYMENTS

DATE 19.....	ITEM	FOLIO	CHARGES		CREDITS		BALANCE	

Customer's Installment Ledger

When Assured makes installment payments, credit remittances as received in space provided on this page showing balance at all times; otherwise mark item paid in full. Remove sheet from binder and file in Assured's Line Record file when account is paid in full.

Form B8A
The Rough Notes Co., Inc.
Indianapolis, Ind.
Ptd. in U.S.A.

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 13 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

GENERAL FILE COPY
DMEA
RECEIVED SEP 18 1957

DATE	INITIALS	CODE
9/18	C	220
9/18	[illegible]	800
9/18	copy	500

September 16, 1957

Mr. Benjamin H. Putnam
P. O. Box 647
Marietta, Ohio

Re: Docket No. DMEA-4381 (Zinc)
Nat'l Lead Co., Assignee
Indian Creek Project
Grainger County, Tennessee
Contract No. Idm-E1002

Dear Mr. Putnam:

Some time ago, Mr. Burwell asked me if renewal of your performance bond for the Indian Creek (and also Thorn Hill) project is required. I referred this to our Washington office, and today received a reply stating, in part:

> "We are advised that, as the requirement of the bond is a necessary incident of the contract, the Government can not waive this security without some benefit to the Government for so doing. Therefore, as there is no such benefit, the premium for the bond should be paid.
>
> "As to the question who should pay the premium, the requirement of the bond is an obligation of both the assignor and the assignee, and they will have to resolve this question between themselves."

I regret the long delay in obtaining this answer, but the matter required legal clearance.

Sincerely yours,

Robert A. Laurence
Executive Officer
DMEA Field Team, Region V

RAL/mg
cc - Operating Committee (2)
Mr. V. J. Lynch
Mr. G. Bryan
File

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM [illegible]
KNOXVILLE 2, TENN.

9/18	C	220
9/18	VRY	502

September 16, 1957

Memorandum

To: Operating Committee, DMEA, Washington, D. C.

From: Executive Officer, DMEA Field Team, Region V

Subject: Docket No. DMEA-4381, Contract No. Idm-E1002 (Zinc)
National Lead Co., Assignee of Benjamin H. Putnam
Indian Creek project, Grainger County, Tennessee
Reference: Your letter of September 13, 1957

I have notified both Mr. Putnam and the local field representative of National Lead Company of the requirement for renewal of the performance bond, as explained in your letter.

I am sure that this will not be received favorably by the Company. Neither American Zinc Company nor New Jersey Zinc Company, holding entirely similar contracts in this district, is required to put up a performance bond. Nor is one required of National Lead on its Puncheon Camp Creek contract (DMEA-4580, Idm-E1088) in this same county, Consent to Lien being specifically waived in the contract.

You will probably recall that Tungsten Mining Corporation (DMEA-4216, Idm-E1032) objected strenuously to the bond requirement in their contract, and that the requirement was waived after the Company provided a guarantee in lieu of the Consent to Lien.

Robert A. Laurence

Robert A. Laurence

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
9/13	Kluggerhead	500
9/13	[illegible]	800
9/13	[illegible]	130
"	Johnson	110
		~~100~~
9/13	[illegible]	225
		500

500

SEP 13 1957

Mr. Robert A. Laurence
Executive Officer
DMEA Field Team, Region V
Room 13, Post Office Bldg.
Knoxville 2, Tennessee

Re: Docket No. DMEA-4381 (Zinc)
National Lead Company, Assignee
of Benjamin H. Putnam
Indian Creek Project
Grainger County, Tennessee
Contract No. Idm-E1002

Dear Mr. Laurence:

This is with reference to your letter of August 2, 1957, regarding the performance bond pertaining to the cited contract. We regret the delay in replying to your letter, but the matter required legal clearance.

We are advised that, as the requirement of the bond is a necessary incident of the contract, the Government can not waive this security without some benefit to the Government for so doing. Therefore, as there is no such benefit, the premium for the bond should be paid.

As to the question who should pay the premium, the requirement of the bond is an obligation of both the assignor and the assignee, and they will have to resolve this question between themselves.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (GCS)

WRGriswold/er 9/13/57

Copy to: Docket
Admr R File
Op. Committee
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Chron.

APPROVED:

Frank D. Lamb (GCS)
Member, Bureau of Mines

Thor H. Kiilsgaard (GCS)
Member, Geological Survey

8623

WFK

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 250 FED. BLDG.
KNOXVILLE 2, TENN.

WASHINGTON 25, D.C.

OFFICIAL FILE COPY
DMEA
RECEIVED JUL 22 1957

DATE	INITIALS	CODE
7/22	C	220
8/20	2B	130
		500

July 18, 1957

Memorandum

To: Operating Committee, DMEA - Washington

From: Acting Executive Officer, DMEA - Region V

Subject: Amendment No.3. National Lead Co., Assignee
Indian Creek Project, Grainger County, Tenn. (zinc)

Transmitted are three signed copies of the subject amendment, signed by the vice president of the company.

The usual distribution of the other copies has been made by this office.

V. J. Lynch

V. J. Lynch

z

Div reik Cy.

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF THE SOLICITOR
WASHINGTON 25, D. C.

SEP - 3 1957

Memorandum

To: Administrator, DMEA
Attention: Mr. W. R. Griswold

From: Associate Solicitor, Division of Mineral Resources

Subject: Docket No. DMEA-4381, National Lead Company (Assignee of Benjamin H. Putnam), Contract No. Idm-E1002 (lead)

Mr. Griswold's memorandum dated August 13, 1957, asked whether the surety bond submitted to the Government in lieu of a Consent to Lien in connection with the subject contract need be renewed, now that the contract has been assigned by B. H. Putnam to National Lead Company from which a surety bond would not have been required.

National Lead Company accepted the assignment of contract subject to all obligations of the contract, including the bond. The Government's consent to the assignment was given without releasing the assignor from any of the terms of the contract which, again, include the bond. In these circumstances, we are doubtful that the security of the bond may be released by the Government without some legal consideration for it.

We suggest, therefore, that the matter as to whether a contract modification may be made to delete the bond, should be submitted to the Comptroller General. However, before such a submittal is made, the precise agreement between Putnam and the surety company as to the premiums should be determined, in order that these facts may be available to the Comptroller General in making his decision.

Robert P. Dwyer

.EA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code

500

August 13, 1957

Memorandum

To: Associate Solicitor, Division of Mineral Resources

From: Director, Division of Base Metals

Subject: Legal Opinion on Docket No. DMEA-4381, National Lead Company, (Assignee of Benjamin H. Putnam), Indian Creek Project, Grainger County, Tennessee, Contract No. Idm-E1002, Lead.

We refer you to the August 2 memorandum from Mr. Laurence. Our impression is that Mr. Putnam can allow this bond to lapse, since we did not require a bond or an Owners Consent to Lien from the National Lead Company on their own contract in this area. Neither have we required them from American Zinc, Lead and Smelting Company nor from the New Jersey Zinc Company.

May we have your opinion?

W. R. Griswold

W. R. Griswold

WRG/er
Copy to: Docket
Chron.

8623

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 13 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

OFFICIAL FILE COPY
DMEA
RECEIVED AUG 5 1957

DATE	INITIALS	CODE
8/5	P.K.	220
8/5	upy	500

August 2, 1957

Memorandum

To: Operating Committee, DMEA, Washington, ~~D. C.~~

From: Executive Officer, DMEA Field Team, Region V

Subject: DMEA-4381, Idm-E1002 (Zinc)
National Lead Company, assignee
Indian Creek project, Grainger County, Tennessee

The anniversary date of Mr. Putnam's performance bond is August 31, 1957. Now that the contract has been assigned to National Lead Company, Mr. Putnam has inquired whether a renewal of this bond is required and if so, whether it should not be done by National Lead Company instead of him.

It appears to me that this bond would be no longer required, now that National Lead has taken over the contract. Please advise me, so that I can notify Mr. Putnam.

Robert A. Laurence

Robert A. Laurence

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 13 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

WASHINGTON

July 8, 1957

OFFICIAL FILE COPY
DMEA
RECEIVED JUL 10 1957

DATE	INITIALS	CODE
7-10		220
7-10		500

Memorandum

To: Operating Committee, DMEA - Washington

From: DMEA Field Team, Region V - Knoxville, Tenn.

Subject: DMEA-4381, Udm-E1002(zinc) National Lead Co., Assignee
Indian Creek Area, Grainger County, Tennessee

Enclosed is a copy of a letter from the Operator, accompanied by a copy of an option agreement, requesting addition of the Lou Coffey tract to the contract, in accordance with the "Special Agreement." This Option was delayed because it had not previously been possible to get the signature of one of the heirs.

The amendment has been prepared and sent to the Operator for signature, and will be forwarded to you when the executed copies are received.

Robert A. Laurence

Robert A. Laurence
Executive Officer, DMEA
Region V

V. J. Lynch

V. J. Lynch, member
Bureau of Mines

NATIONAL LEAD COMPANY
MINING DEPARTMENT
111 BROADWAY
NEW YORK 6, N. Y.

OFFICIAL FILE COPY
DMEA
RECEIVED JUL 10 1957
DATE | INITIALS | CODE

July 3, 1957

Mr. Robert A. Laurence
Executive Officer
Field Team, Region V
Room 13, Post Office Bldg.
Knoxville 2, Tennessee

COPY

Dear Mr. Laurence:-

When the original application was made by B. H. Putnam for DMEA aid on the Indian Creek Project (Docket No. DMEA 4381) an eight acre tract, belonging to Lou Coffeg, with a life estate and then to pass to her heirs, was omitted because it had not been possible to obtain the signature of one of the heirs, Lewis Coffeg.

Recent geological studies we have made indicate a favorable structure in the area of this tract and three diamond drill holes were proposed to test this structure. One of the holes falls on the Coffee tract and a request is hereby made to include it in the present program.

We have obtained the signature of the previously missing heir, Lewis Coffeg, and enclose herewith a photostatic copy of the option agreement. You will note that this instrument was recorded at Rutledge, County Seat of Grainger County, on July 2, 1957.

The Coffeg tract was shown blank on the map accompanying the original application, a copy of which you have. It is an irregular eight acres bounded as follows: on the north by Cleo Cope, et al (Leffew Heirs) and John and Ida Wolfenbarger; on the east by Henry L. and Martha Wolfe, et al; on the South by Calvin Berry and Robert Wolfe; and on the West by Cleo Cope, et al and Calvin Berry.

Yours very truly,

G. G. Bryan

RECEIVED
JUL 5 - 1957

AGREEMENT

This Agreement, made and entered into this 18 th day of January, 19 56, by and between Lou Coffey (widow), Dexter Coffey, Bessie Clifford and Cecil Clifford, Louis Coffey, Mammie Drinnon and Clifford Drinnon, Della Maude Harville and Daugherty Harville,

hereinafter referred to as Parties of the First Part, and B. H. PUTNAM, Chicago, Illinois, hereinafter referred to as Party of the Second Part.

Witnesseth:

First: That First Parties, for and in consideration of the sum of Eight and no/100 Dollars ($ 8.00) cash to them in hand paid by Second Party, the receipt of which is hereby acknowledged, do hereby grant unto Second Party, the exclusive right, at any time within Three (3) years from the date hereof, to purchase for the sum of One hundred fifty Dollars ($ 150.00) per acre, all of the minerals (including metallic and non-metallic ores, rock and substances, oil and gas), mineral interests, mineral rights and mining rights in and to the following described lands:

Situated in the 4 th Civil District of Grainger County, State of Tennessee, containing 8 acres, more or less, and bounded generally as follows:

On the North by the lands of County road and John Leffew heirs

On the East by the lands of Levie Wolfe

On the South by the lands of Calvin Berry

On the West by the lands of John Leffew

Second: During the term of this option or any extensions thereof, Second Party shall have the exclusive right to prospect and drill for minerals (as hereinbefore defined) contained in the lands herein optioned, with churn drills, diamond drills and/or other prospecting methods, provided the same be done in such a manner as to do the least damage to the surface of said lands commensurate with good prospecting practices. Second Party shall be liable for all actual damages done to growing crops and fences, as the result of said drilling.

Third: If this option is not exercised, Second Party agrees to fill up, or plug in a suitable manner, all drill holes, unless First Parties designate one or more of such holes to be left open for use as water wells, or other purpose of First Parties, in which event First Parties shall pay for the casing.

Fourth: In order to exercise said option Second Party shall give notice in writing to First Parties, either by delivering the same to them personally, or, by registered mail to their usual place of residence. Within thirty days after receiving such notice First Parties shall execute and deliver a general warranty deed to the Second Party, or any person designated by Second Party, said deed to convey all of the minerals (as hereinabove defined,) mineral interest, mineral rights and mining rights in and to said lands, free of all liens and encumbrances.

Upon receipt of said deed Second Party shall make payment to First Parties of a sum equivalent to One hundred fifty ($ 150.00 per acre, (the acreage to be ascertained by instrumental survey made at the expense of Second Party) for the minerals (as hereinabove defined), mineral interests, mineral rights and mining rights in and to said lands.

Fifth: Second Party agrees to exercise such option within One (1) year from this date, or pay to First Parties Eight and no/100 Dollars ($ 8.00) each Year thereafter until said option is exercised or this agreement terminated.

Sixth: All machinery, equipment, tools, etc., taken upon said lands shall be deemed to be the property of Second Party, and in the event this option is not exercised, Second Party shall have the right during the term hereof, or any extensions thereof, and for a reasonable time thereafter, to remove all such machinery, tools, etc., from said lands.

Seventh: If this option is exercised, the Second Party shall have the free right to enter, at anytime and from time to time, upon the surface of said lands for the purpose of drilling and prospecting for, and mining and removing all of said minerals (as hereinabove defined) contained in said lands. Second Party shall also have the right to transport minerals (as hereinabove defined) from other lands of Second Party or third persons, over, under and across said lands, and to bring said minerals to the surface thereof and remove the same therefrom. It is agreed, however, that Second Party shall be liable to First Parties for actual damages that may occur to the surface of said lands or the improvements thereon, as the result of such drilling, prospecting and mining operations, or in the moving of minerals and materials across said surface.

Eighth: Payment of all moneys due under this option may be made, by cash or check, to Lou Coffey made payable to her order and mailed to her at Thorn Hill route 1, Tennessee

Ninth: This agreement shall be binding upon and inure to the benefit of the parties hereto, their heirs, executors, administrators, successors and assigns, it being expressly understood that the second party shall have the right to assign this option to any person or corporation it sees fit.

In Witness Whereof the First Parties have hereunto set their hands on the day and year first above written.

Witnesses:

OFFICIAL FILE COPY
OMEA
RECEIVED JUL 10 1957
DATE | INITIALS | CODE

Lou Coffey
Dexter Coffey
Bessie Clifford
Mamie Drinnon
Clifford Drinnon
Della Maude Harville
Louis Coffey

State of Tennessee,

County of Grainger,

Personally appeared before me, D. S. Beeler, a Notary Public in and for Said County and State

the within named Lou Coffee, Bessie Clifford, Della Maude Harville

the bargainor s, with whom I am personally acquainted, and who acknowledged that they executed the within instrument for the purposes therein contained.

Witness my hand and official seal at Rutledge, Tennessee, this 29 day of June, 19 57.

My Commission Expires 4/ 16/ 1958

D S Beeler
Notary Public

State of Tennessee,

County of Grainger,

Personally appeared before me, Henley R. Clement, a Notary Public in and for Said County and State

the within named Dexter Coffey and Lewis Coffey

the bargainor s, with whom I am personally acquainted, and who acknowledged that they executed the within instrument for the purposes therein contained.

Witness my hand and official seal at Thorn Hill, Tennessee, this 1 st day of July, 19 57.

My Commission Expires July 13, 1959

Henley R. Clement
Notary Public

State of Tennessee,

County of Hancock,

Personally appeared before me, Chas. V. Fisher, a Notary Public in and for Said County and State

the within named Mamie Drinnon

the bargainor, with whom I am personally acquainted, and who acknowledged that she executed the within instrument for the purposes therein contained.

Witness my hand and official seal at Hancock County, Tennessee, this 29 th day of June, 19 5 6

My Commission Expires 2-10-57

Chas. V. Fisher
Notary Public

No.

OPTION CONTRACT

TO

STATE OF TENNESSEE

Grainger COUNTY.

Register's Office

Received for record the 2nd day of July, A. D. 19 57

at 1 o'clock P. M. Noted in Note Book F, page 72, and recorded in Book Misc. Vol. 19, page 233

Fee paid, $ 3.25

Witness my hand Alice Brady Register.

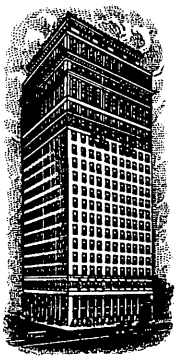
State Tax $

Clerk's Fee $

Total $

A. F. LAFRENTZ
Chairman of the Board

W. E. McKELL
President



American Surety Company
of New York

COLUMBUS BRANCH OFFICE
724 HUNTINGTON BANK BUILDING – 17 SOUTH HIGH STREET
COLUMBUS 15, OHIO – TEL. CAPITAL 4-1165

M. L. JENKS, JR.
Manager

OFFICIAL FILE COPY
DMEA
RECEIVED JUL 1 1957

DATE	INITIALS	CODE
7/1	C	220
7/2	WRG	500

June 27, 1957

W. R. Griswold, Director
Division of Base Metals
Defense Minerals Exploration Admr.
Department of the Interior
Washington 25, D. C.

Re: Docket No. DMEA-4381 (Lead)
National Lead Company, Assignee
of Benjamin H. Putnam
Indian Creek Project
Grainger County, Tennessee
Contract No. Idm-E1002

Dear Mr. Griswold:

Thank you for your letter of June 20, 1957. We are still not certain whether the terms of the contract which called for the completion of the exploration work by June 1, 1957 has been fulfilled. When information on this point is available and data on whether any mining has been undertaken and payment of any royalties made would you advise accordingly.

Very truly yours,

F. C. Bateman

F. C. Bateman
Bond Department

FCB:vb

cc: Home Office

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
6/18	Griswold	220
6/19	Putin	440
"	Dunyon	
6/20	Johnson	448
20	Bateman	00
6/20	C	225
		574

JUN 20 1957

Mr. F. C. Bateman
Bond Department
American Surety Company
of New York
724 Huntington Bank Building
17 South High Street
Columbus 15, Ohio

Re: Docket No. DMEA-4381 (Lead)
National Lead Company, Assignee
of Benjamin H. Putnam
Indian Creek Project
Grainger County, Tennessee
Contract No. Idm-E1002

Dear Mr. Bateman:

We have your inquiry of June 14 regarding the cited exploration project.

By a formal "Assignment of Contract" Benjamin H. Putnam transferred the Contract to the National Lead Company, who accepts the terms, provisions, and conditions of the Contract. The Government on May 3, 1957, accepted the above assignment, without releasing the Assignor (Putnam) from any of the terms, provisions, and conditions of the Contract.

It is our understanding that the National Lead Company is now proceeding with the work remaining under the contract stipulations.

Sincerely yours,

W. R. Griswold

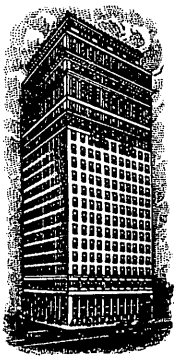
W. R. Griswold, Director
Division of Base Metals

WRGriswold/er 6/18/57
Copy to: Docket
Admr R File
Op. Committee
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Region V (2)
Chron.

8623

A. F. LAFRENTZ
Chairman of the Board

W. E. McKELL
President



American Surety Company
of New York

COLUMBUS BRANCH OFFICE
724 HUNTINGTON BANK BUILDING – 17 SOUTH HIGH STREET
COLUMBUS 15, OHIO – TEL. CAPITAL 4-1165

M. L. JENKS, JR.
Manager

OFFICIAL FILE COPY
DMEA
RECEIVED JUN 17 1957

DATE	INITIALS	CODE
6/17	JWS	225
6/18	WKS	500

June 14, 1957

W. R. Griswold, Chief
Base Metals Division
Defense Minerals Exploration Admr.
Department of the Interior
Washington 25, D. C.

In Re: Docket No. DMEA-4381
Benjamin H. Putnam
Indian Creek Project
Grainger County, Tennessee
Our No. 10-560-607

Dear Mr. Griswold:

Under this contract Mr. Putnam was to complete certain exploration work by June 1, 1957. Would you advise us if this portion of the contract has been fulfilled.

Please also tell us if the contractor has filed his final report and whether it shows any discovery or deposit. If a decision has been reached concerning the mining of ore from the project please advise us whether any mining has been undertaken and if any royalties have been paid thereby reducing our liability under the bond. Thank you for your assistance.

Very truly yours,

F. C. Bateman
Bond Department

FCB:vb

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 13 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

OFFICIAL FILE COPY.
DMEA
RECEIVED MAY 27 1957

DATE	INITIALS	CODE
5/27	C	220
	esk	130
5/27	WRB	500

May 24, 1957

Memorandum

To: Operating Committee, DMEA, Washington, D. C.

approved WRB

From: Executive Officer, DMEA Field Team, Region V

Subject: Amendment No. 2, Docket No. DMEA-4381 - Zinc
National Lead Company, Assignee
Indian Creek Project, Grainger County, Tennessee

Transmitted are the original and two signed copies of the subject amendment.

The usual distribution of the other copies has been made by this office.

Robert A. Laurence
Robert A. Laurence

Enclosures 3

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
5/7	Miami	5 00
5/8	Selfridge	00
"	Johnson	1 00
"	Chittenden	2 25
		5 00

Lamb
Kiilsgaard

MAY - 9 1957

Mr. John S. Holland
National Lead Company
Mining Department
111 Broadway
New York 6, New York

Re: Docket No. DMEA-4381 (Zinc)
National Lead Company, Assignee
Of Benjamin H. Putnam
Indian Creek Project
Grainger County, Tennessee
Contract No. Idm-E1002

Dear Mr. Holland:

With reference to the cited project, we are enclosing the "Assignee's Copy" of the Assignment of Contract which has been executed by the Government. This is for your files.

Sincerely yours,

C. O. Mittendorf (for)

Administrator

Enclosure - WRGriswold/er 5/7/57
Copy to: Docket
Admr R File
Op. Committee
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Region V (2)
Chron.

8623

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
5/7	Trimmel	500
5/8	Selfridge	120
5/8	Johnson	110
"	Butterworth	100

225
500.

500

MAY - 9 1957

Mr. Robert A. Laurence
Executive Officer
DMEA Field Team, Region V
Room 13, Post Office Bldg.
Knoxville 2, Tennessee

Re: Docket No. DMEA-4381 (Zinc)
National Lead Company, Assignee
of Benjamin H. Putnam
Indian Creek Project
Grainger County, Tennessee
Contract No. Idx-E1002

Dear Mr. Laurence:

With reference to the cited project, we are enclosing the Finance Office, Field Team, and Operator's (Assignor) copies of the Assignment of Contract, which have been signed by the Administrator for the Government. Kindly forward the Operator's Copy (Assignor) to Mr. Benjamin H. Putnam.

An extra copy is also enclosed for the use of the Field Team.

Sincerely yours,

George C. Selfridge (by esf)

Chairman, Operating Committee

WRGriswold/er 5/7/57

Enclosures

Copy to: Docket
Adm R File
Op. Committee
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Mr. Jay Chambers, DMEA
Chron.

APPROVED:

Frank D. Lamb (by esf)

Member, Bureau of Mines

Thor H. Kiilsgaard (by esf)

Member, Geological Survey

8623

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF THE SOLICITOR
WASHINGTON 25, D. C.

MAY 1 1957

Memorandum

To: The Administrator, BMRA
Attention: Chief, Base Metals Division

From: Associate Solicitor, Division of Mineral Resources

Subject: Docket No. BMRA-4361, Contract Idm-21001, Benjamin H. Putnam
Docket No. BMRA-4422, Contract Idm-21022, Benjamin H. Putnam
(Minn)

Mr. Griswold's memorandum dated April 30, 1957, requested us to review an assignment of lease, Benjamin H. Putnam to National Lead Company, and advise whether the Administrator may execute the Government's Consent to the assignment of contract forms previously drafted.

We have reviewed the assignment of lease document and find it in proper order.

Robert F. Dwyer

HCRubin/emd

Copy to: Solicitor's Docket (2)
BMRA Docket (2)
W. R. Griswold (2)
R. F. Dwyer
H. C. Rubin
chron.

orm 7
56)

500

OFFICIAL FILE COPY

Date	Surname	Code

April 30, 1957

Memorandum

To: Associate Solicitor, Division of Mineral Resources

From: Chief, Base Metals Division

Subject: Approval of Assignment Contract No. Idm-E1002, Docket No. DMEA-4381, Benjamin H. Putnam, Indian Creek Project, Grainger County, Tennessee (Zinc).

Will you kindly advise if the Administrator may now execute the Government's Consent to the attached assignments of contract.

Your memorandum of April 3 cited the necessity of our having copies of land transfer; you will note such copies have since been received.

W. R. Griswold

W. R. Griswold

WRG/er
Copy to: Docket
Chron.

8623

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM POST OFFICE BLDG.
KNOXVILLE 2, TENN.

OFFICIAL FILE COPY
DMEA
RECEIVED APR 24 1957

DATE	INITIALS	CODE
4/24	C	220
4/24	MRY	500
	Klug	

April 22, 1957

Memorandum

To: Operating Committee, DMEA - Washington, D. C.

From: Executive Officer, Region V, DMEA - Knoxville, Tennessee

Subject: Assignment Contract No. Idm-E1002, Docket No. DMEA-4381, B. H. Putnam, Indian Creek Project, Grainger County, Tenn.

Transmitted are six copies of subject assignment for approval by the Government.

Robert A. Laurence

Robert A. Laurence

NATIONAL LEAD COMPANY
MINING DEPARTMENT
111 BROADWAY
NEW YORK 6, N.Y.

OFFICIAL FILE COPY
DMEA
RECEIVED APR 8 1957

DATE	INITIALS	CODE
2/20	C	220
1/4/10	WRG	500

APRIL 4, 1957

MR. W. R. GRISWOLD
DEFENSE MINERALS EXPLORATION ADM.
U.S. DEPARTMENT OF THE INTERIOR
WASHINGTON 25, D. C.

DEAR MR. GRISWOLD: RE: IDM-E1022 & E1002

IN CONFIRMATION OF OUR TELEPHONE DISCUSSIONS OF THIS DATE I ENCLOSE SIX COPIES OF AN ASSIGNMENT BETWEEN B. H. PUTNAM, OPERATOR, AND NATIONAL LEAD COMPANY, RELATIVE TO CERTAIN MINERAL RIGHTS IN GRAINGER COUNTY, TENN.

I TRUST THIS WILL MEET WITH YOUR REQUIREMENTS.

YOURS VERY TRULY,

John S. Holland

JOHN S. HOLLAND

JSH:MS
ENC.

EXTRA COPY
DMEA
RECEIVED APR 8 1957

DATE	INITIALS	CODE

A S S I G N M E N T

THIS ASSIGNMENT made and entered into this 1st day of February, 1957, by and between B. H. PUTNAM, OPERATOR, hereinafter referred to as party of the first part, and NATIONAL LEAD COMPANY, hereinafter referred to as party of the second part,

W I T N E S S E T H:

THAT WHEREAS, party of the first part is the owner of the following described mineral option agreements covering certain lands in Grainger County, Tennessee, to-wit:

No.	Date	Grantor	Acres	Misc. Records Book	Page
X-245	Jan. 18, 1956	Cleo & Wallace Cope, et al	160	18	342
X-246	Jan. 24, 1956	Thomas & Reba Kincaid	100	18	344
X-247	Jan. 23, 1956	Belle Kincaid, et al	125	18	346
X-249	Jan. 17, 1956	Dorsie & Thomas Scearce	35	18	347
X-250	Jan. 18, 1956	Eliza Antrican, et al	15	18	349
X-251	Jan. 21, 1956	Claude Wolfenbarger	20	18	351
X-252	Jan. 27, 1956	A. B. & Pearley Dalton	50	18	353
X-253	Jan. 18, 1956	Starling Scearce	35	18	354
X-254	Jan. 18, 1956	Lou Coffey, widow	8	18	356
X-255	Jan. 17, 1956	John Wolfenbarger	70	18	358
X-256	Jan. 20, 1956	Herbert & Dollie Dalton	122	18	359
X-257	Jan. 20, 1956	Calvin & Pearl Berry	128	18	361
X-258	Jan. 20, 1956	Cass & Inez Myers	50	18	387
X-259	Jan. 16, 1956	Lester & Artha Scearce	100	18	388
X-260	Jan. 14, 1956	J. C. Myers, widower	67	18	390
X-262	Jan. 23, 1956	Lizzie Scearce, et al	140	18	393
X-263	Jan. 23, 1956	Ora C. Wilkinson	300	18	448
X-264	Apr. 7, 1956	W. N. & Dorsia Jackson	600	18	451
X-265	Mar. 16, 1956	L. F. & Ida Mallicoat	150	18	453
X-266	Apr. 7, 1956	Herbert & Mertie Nicely	175	18	454
X-267	Feb. 29, 1956	Henry L. Wolfe, et al	82	18	443
X-271	Jan. 6, 1956	Please & Jessie Dalton	115	18	492
X-273	Apr. 26, 1956	John & Mary Nicely	20	18	496
X-274	May 10, 1956	D. R. Coffman, widower	50	18	497
X-275	Apr. 26, 1956	John & Mary Nicely	6	18	499
X-276	May 7, 1956	Austin & Docie Johnson	62	18	501
X-277	May 9, 1956	A. M. Wolfenbarger	42	18	502
X-278	May 7, 1956	Fryor & Gracie Acuff	20	18	504
X-279	May 7, 1956	Elvin & Bessie Jackson	105	18	506
X-280	May 7, 1956	S. S. & Sallie Breeding	51	18	507
X-281	May 7, 1956	J. C. & Imogene McGinnis	88	18	509
X-282	May 8, 1956	T. A. & Gertrude Green	88	18	511
X-283	May 8, 1956	G. H. Atkins, widower	80	18	512
X-284	May 8, 1956	Osie Acuff, widow	18	18	519
X-285	May 8, 1956	Ollie & Owen Acuff	30	18	520
X-286	May 8, 1956	Geo. & Bessie Jackson	50	18	522
X-287	May 7, 1956	Elmer & French Breeding	15	18	524
X-288	May 17, 1956	Dave & Mary Jackson	100	18	525
X-289	May 15, 1956	H. B. & Gynce Winstead	51	18	527
X-290	June 16, 1956	Osie Acuff, widow	18	18	591
X-291	June 18, 1956	Clay & Dixie Winstead	160	18	592

No.	Date	Grantor	Acres	Misc. Records Book	Page
X-293	June 15, 1956	D. D. & Leona Coffey	315	18	579
X-294	June 15, 1956	Alva & Alta Coffey	50	18	581
X-295	June 15, 1956	Parlin & Frances Harrell	70	18	582
X-296	June 15, 1956	J. W. & Lizzie McGinnis	50	18	584
X-297	June 15, 1956	A. B. & Mae Harrell	50	18	586
X-298	June 15, 1956	Alva & Alta Coffey	50	18	587
X-299	June 14, 1956	Roscoe & Beulah Taylor	40	18	577
X-310	May 16, 1956	W. B. & Sarah Dalton	125	18	553
X-313	May 18, 1956	Arthur & Reva Wolfenbarger	54	18	555
X-314	May 19, 1956	A. C. & Lonese Lakins	20	18	557
X-315	May 19, 1956	Tilman & Rose Ritter	20	18	558
X-317	May 23, 1956	Enoch & Lennie Ritter	42	18	560
X-318	May 25, 1956	John & Grace Phipps	160	18	569
X-319	May 25, 1956	C. E. Standifer, widower	15	18	571
X-320	May 25, 1956	Damaris Oakes, et al	70	18	594
X-321	May 25, 1956	Rosa Bullen, widow	60	18	572
X-322	May 26, 1956	Grace & W. L. Monroe	35	18	574
X-323	May 26, 1956	J. L. & Dossie Qualls	40	18	576
X-324	June 15, 1956	C. W. & Lizzie Coffey	107	18	589
X-325	July 26, 1956	Blake Collins, single	40	19	12
X-326	July 26, 1956	John & Mae Ogan	155	19	14
X-327	July 26, 1956	M. F. & Zelphia Collins	50	19	15
X-328	July 27, 1956	John & Mae Ogan	100	19	17
X-329	July 27, 1956	Delmas & Clara Dalton	60	19	19
X-330	July 27, 1956	Grover & Arlene Coffey	35	19	20
X-331	July 31, 1956	Jess Johnson	168	19	22
X-332	July 31, 1956	S. B. & Mary Winstead	80	19	24
X-344	July 30, 1956	Henry & Delia Bullen	89	19	45
X-351	Nov. 2, 1956	Viva & W. H. Stapleton	218.20	19	46
X-352	Feb. 14, 1957	Wm. & Haner Johnson	55	19	

and,

WHEREAS, the tracts of lands covered by said mineral option agreements are more specifically described therein, reference being hereby made to said mineral option agreements for a more complete description of all the boundaries, terms, stipulations, covenants and agreements therein contained.

NOW, THEREFORE, in consideration of the sum of One Dollar ($1.00) cash in hand paid this day and other good and valuable considerations, receipt of all of which is hereby acknowledged, party of the first part does hereby sell, assign, transfer and set over unto party of the second part, the above described mineral option agreements; and for the same consideration, party of the first part covenants with party of the second part, its successors and assigns, that all rentals due under said mineral option agreements have been paid and all conditions necessary to keep the same in full force have been duly performed.

IN WITNESS WHEREOF, party of the first part has hereunto caused his name to be affixed as of the day and year first above written.

B. H. Putnam, Operator

STATE OF OHIO)
)
COUNTY OF WASHINGTON)

I, Robert V. Benjamin, a Notary Public in and for the State and County aforesaid, do hereby certify that the foregoing instrument was produced before me in my office in said State and County and was acknowledged by B. H. Putnam, Operator, to be his free and voluntary act and deed for the uses and purposes therein set forth.

Given under my hand and seal this 1st day of February, 1957.

Robert V. Benjamin, Notary Public

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
4/5	Griswold	500
4-5	Chambers	800
4/8	Selfridge	130
"	Johnson	110
"	Mittenbergs	100
4/9	C	220

500

4/9

APR 9 - 1957

Mr. Robert A. Laurence
Executive Officer
DMEA Field Team, Region V
Room 13, Post Office Bldg.
Knoxville 2, Tennessee

Re: Docket No. DMEA-4381 (Zinc)
Benjamin H. Putnam
Indian Creek Project
Grainger County, Tennessee
Contract No. Idm-E1002

Dear Mr. Laurence:

Referring to your March 22 memorandum covering the cited project, we are enclosing the original and five copies of an Assignment of Contract, which will be signed by the Government after execution by the Assignor and Assignee.

If it meets with your approval please forward all copies to Mr. Putnam, with instructions that he should sign and return all copies to you. Thereafter, you should forward all copies to Mr. Gloyd M. Wiles, Manager, Mining Department, National Lead Company, 111 Broadway, New York 6, New York. Instruct him that his company should also execute all copies and forward to us. We will then fill in the "Government's Consent" and make distribution.

In the event that you do not approve of any of the Assignment of Contract provisions, you should, of course, return all copies directly to us with your recommendations.

Two extra copies are enclosed for Field Team use.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (GCS)

Enclosures

APPROVED:

Frank D. Lamb (GCS)
Member, Bureau of Mines

Thor H. Kiilsgaard (GCS)
Member, Geological Survey

WRGriswold/er 4/5/57
Copy to: Docket
Admr & File
Op. Committee
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Chron.

8623

APR 5 - 1957

Mr. John Holland
Mining Department
National Lead Company
111 Broadway
New York 6, New York

Dear Mr. Holland:

Referring to our phone conversation of April 4, 1957, regarding copies of land option transfers from Benjamin H. Putnam to your Company, copies of the unrecorded transfers will be sufficient for our present purpose. However, after the recordings have been made please advise us accordingly, giving us place of recording, book and page numbers, etc.

Sincerely yours,

W. R. Griswold

W. R. Griswold, Chief
Base Metals Division

WRGriswold/er 4/5/57
Copy to: Docket
Admr R File
Base Metals
Region V (2)
Chron.

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF THE SOLICITOR
WASHINGTON 25, D. C.

APR 3 1957

Memorandum

To: The Administrator, DMEA
Attention: Chief, Base Metals Division

From: Associate Solicitor, Division of Mineral Resources

Subject: Docket No. DMEA-4381, Benjamin H. Putnam, Contract Idm-E1002 (Zinc)

As requested in Mr. Griswold's memorandum dated March 29, 1957, we have prepared the attached assignment-of-contract form. The consent to the assignment should not be executed for the Government until we are furnished with proper copies of the land transfer to the Assignee.

Robert P. Dwyer

Attachments

OFFICIAL FILE COPY

Date	Surname	Code

500

March 29, 1957

Memorandum

To: Associate Solicitor, Division of Mineral Resources

From: Chief, Base Metals Division

Subject: Preparation of Assignment of Contract and Acceptance of Assignment for Docket No. IMEA-4381, Benjamin H. Putnam, Indian Creek Project, Grainger County, Tennessee, Contract No. Idm-E1002 (Zinc).

Will you kindly prepare the proper "Assignment of Contract" and "Acceptance of Assignment" which will effect the transfer of the cited contract from Benjamin H. Putnam to the National Lead Company, 111 Broadway, New York 6, New York, as per requests in the docket from both parties.

W. R. Griswold

WRG/er
Copy to: Docket
Chron

8623

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 313 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

EXTRA COPY
DMEA
RECEIVED MAR 25 1957

DATE	INITIALS	CODE
3/25	C	220
3/25	WRH	500

March 22, 1957

Memorandum

To: Operating Committee, DMEA - Washington

From: DMEA Field Team, Region V - Knoxville, Tennessee

Subject: Benjamin H. Putnam properties in Tennessee (zinc)
DMEA-4381, Idm-E1002, Indian Creek area
~~DMEA-4422~~, Idm-E1022 Thorn Hill area
DMEA-4580, Punbheen Camp area

Reference is made to our memorandum of March 21,1957.

Enclosed are letters from B. H. Putnam and National Lead Company, requesting an assignment of the subject contracts to National Lead Company.

We suggest that any correspondence concerning further documentary evidence of the transfer of leases should be handled directly between the Washington office and Mr. Wildner, of National Lead Company to save time.

Robert A. Laurence
Executive Officer, DMEA
Region V

Wm. A. Beck, for V. J. Lynch
Member, Bureau of Min es

RAL/zm
cc
Opr. Com.-2

Lynch

EXTRA COPY DMEA RECEIVED MAR 25 1957		
DATE	INITIALS	CODE

March 22, 1957

Mr. Benjamin H. Putnam
170 East Pearson Street
Chicago 11, Illinois

Dear Mr. Putnam:

We have forwarded your letter of March 15 and Mr. Wildner's of March 19, requesting assignment of your DMEA exploration project contracts to National Lead Company, to our Washington office for appropriate action. I do not anticipate any delays in approval of the necessary assignment and acceptance papers.

Mr. Benjamin came in yesterday to tell me that he had obtained a one year extension of the Stapleton lease in the Puncheon Camp area. This was welcome news.

It was a pleasure to meet you last week, and I hope you'll drop in again whenever you are in Knoxville.

Sincerely yours,

Robert A. Laurence
Executive Officer
DMEA Field Team, Region V

RAL/mg
cc - Operating Committee (3)
Lynch
File

EXTRA COPY
D M E A
RECEIVED MAR 25 1957

DATE	INITIALS	CODE

March 22, 1957

Mr. H. C. Wildner
Vice President
National Lead Company
111 Broadway
New York 6, New York

Dear Mr. Wildner:

Your request for assignment of the E. H. Putnam exploration contracts has been forwarded to our Washington office for appropriate action. If they approve the request, they will prepare the assignment and acceptance papers for signature by you and Mr. Putnam. It is probable that they will require a copy of your agreement with Mr. Putnam which transfers the options to your Company.

It was a pleasure to meet with Mr. Wiles and Mr. Bryant on their recent visit, and we will be pleased to meet any other representatives or consultants of the Company at any time.

Very truly yours,

Robert A. Laurence
Executive Officer
DMEA Field Team, Region V

RAL/mg
cc - Operating Committee (3)
Lynch
Files

NATIONAL LEAD COMPANY
111 Broadway
New York 6, N. Y.

March 19, 1957

Mr. Robert Laurence
DMEA Field Office
Post Office Building
Knoxville, Tennessee

Dear Mr. Laurence:

As you know from the discussion with our representatives, we wish to accept transfer of mineral option agreements from Benjamin H. Putnam in connection with his Indian Creek and Thorn Hill D.M.E.A. exploration contracts, as well as that included in the Puncheon Camp D.M.E.A. application, now pending.

We have made an arrangment with Mr. Putnam to Carry on the exploration programs previously outlined by him, and will appreciate your allowing us to accept the transfers as stipulated above.

Yours very truly,

/s/
H. C. Wildner
Vice President

C
O
P
Y

Benjamin H. Putnam
170 East Pearson Street
Chicago 11, Illinois

Mr. Robert Laurence
D.M.E.A. Field Office
Post Office Building
Knoxville, Tennessee

Dear Mr. Laurence:

This is to advise you that with your permission we are proposing to transfer our mineral option agreements included in our Indian Creek and Thorn Hill D.M.E.A. Exploration Project Contracts and those mineral option agreements included in our Puncheon Camp D.M.E.A. Application to the National Lead Company.

We would very much appreciate your cooperation in effecting this transfer.

Very truly yours,

/s/
B. H. Putnam

BHP/ms

March 15, 1957

C
O
P
Y

HWLzm cc
Wedow
Lynch

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 98 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

EXTRA COPY
DMEA
RECEIVED MAR 25 1957

DATE	INITIALS	CODE

March 21, 1957

Memorandum

To: Operating Committee, DMEA - Washington, D. C.

From: Field Team, Region V, Knoxville, Tennessee

Subject: Thorn Hill area (DMEA-4422, Idm-E1022), Indian Creek area (DMEA4381, Idm-E1002), and Puncheon Camp area (DMEA-4580), Grainger County, Tennessee; B. H. Putnam, Operator

Herewith are interim reports on the subject contracts.

On March 14-15, 1957 the Field Team was informed verbally by both B. H. Putnam and National Lead Company that an agreement between the two organizations was pending which would give National Lead an option on the B. H. Putnam operations in the Copper Ridge zinc district of East Tennessee. If this option goes into effect it will date from February 1, 1957, and will permit National Lead to take over the exploration activities now being conducted by B. H. Putnam. Putnam will retain an interest in the operations and his staff will remain on duty.

In order to permit National Lead an opportunity to review the problems involved in the DMEA exploration contracts without further direct work such as drilling, the Field Team has agreed to a brief informal recess of several weeks. Meanwhile, National Lead has placed several geologists in the field and has employed several consultants in geochemistry and geophysics to review the work already done and make such suggested changes in the exploration techniques as may be desirable and are acceptable to the Government. The Field Team will continue to inspect the current projects periodically during the recess.

On receipt of documents from B.H. Putnam and National Lead, indicating a formal assignment of Putnam's holding in the Copper Ridge district to National Lead, probably within the next several days, the Field Team will forward its recommendations on this proposal to the Operating Committee.

Wm. A. Beck, for V. J. Lynch
Member, Bureau of Mines

Robert A. Laurence
Executive Officer, DMEA
Region V

See Wedow's Interim Rept. 5/20/57 - filed in Rept. folder

220

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

February 11, 1957

Memorandum

To: Catherine Curtin, Statistics and Control Division

From: Hazel Berry, Operating Committee (Ayes)

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 and the Contract Administration and Audit Division. No clearance by Legal appears necessary.

Benjamin H. Putnam, DMEA-4381, Idm-E1002, Amendment No. 1.

Attachment-1

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D.C.
ROOM 1, POST OFFICE BLDG.
KNOXVILLE 2, TENNESSEE

January 30, 1957

OFFICIAL FILE COPY
DMEA
RECEIVED FEB 1 1957

DATE	INITIALS	CODE
2-1	C	220
		130
		225

Memorandum

To: Operating Committee, DMEA - Washington

From: Acting Executive Officer, DMEA - Region V

Subject: Amendment No. 1 to Contract Idm-E1002, DMEA-4381 Benjamin H. Putnam, Operator, Grainger County, Tenn. (Zinc) Indian Creek Project.

Transmitted are three signed copies of the subject amendment, 3 copies of a letter from Mr. William T. Hill, General Supt., 3 copies of the option agreement for the Mallicoat farm. The usual distribution of the other copies has been made by this office.

V. J. Lynch

C O P Y

EXTRA COPY
D M E A
RECEIVED FEB 1 1957

DATE	INITIALS	CODE

B. H. PUTNAM OPERATOR
Maryville, Tennessee

January 16, 1957

Mr. Robert A. Laurence
Executive Officer
Field Team, Region V
Toom 13, Post Office Bldg.
Knoxville 2, Tennessee

Dear Mr. Laurence:

Our drilling program on the Indian Creek project (Docket No. DMEA-4381) has revealed the presence of zinc mineralization on the northeast portion of the properties on which application for DMEA aid was made. The drilling shows that the mineralization increases in intensity and grade from southwest to northeast with the best holes occuring adjacent to the northeast property line. In order to determine the extent and commercial possibilities of this area, we will have to drill some holes on the adjacent L. F. Mallicoat farm. I would like to sequest that this farm be added to the present program. I have included with this request copies of the option agreement and a map showing the Mallicoat farm.

Sincerely,

s/ William T. Hill

General Superintendent

copied by ZM

cc: 3 to Opr. Com.
Laurence
Lynch

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D.C.
KNOXVILLE 2, TENN.

RECEIVED
SEP 24 1956

September 20, 1956

Memorandum

To: Operating Committee, DMEA - Washington

From: DMEA Field Team, Region V - Knoxville, Tenn.

Subject: Signed contract - Idm-E1002, DMEA-4381 (Zinc)
B. H. Putnam, Applicant - Indian Creek Pros.
Grainger County, Tennessee

Transmitted are three signed copies of the subject contract. The usual distribution of the other copies has been made.

Robert A. Laurence
Robert A. Laurence
EXECUTIVE OFFICER
DMEA REGION V

Wm. A. Beck
Wm. A. Beck, for V. J. Lynch
Member, DMEA Field Team
Bureau of Mines

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.
ROOM 13 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

RECEIVED
SEP 14 1956

September 12, 1956

Registered Mail
Air Mail

Memorandum

To: Operating Committee, DMEA, Washington, D. C.

From: Executive Officer, DMEA Field Team, Region V

Subject: Docket No. DMEA-4381 (Zinc)
B. H. Putnam, Chicago, Illinois
Indian Creek Area, Grainger County, Tennessee

Enclosed is Performance Bond, in the amount of $20,265.00, received from the Applicant. Copies of the contract have been given to the Applicant's field geologist, for execution.

Robert A. Laurence

RAL/mg
Enclosure
cc
Oper. Comm. (2)
V. J. Lynch
File

File Copy

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

2 1956

Mr. M. L. Jenks, Jr., Manager
American Surety Company
of New York
Columbus Branch Office
724-730 Huntington Bank Building
17 South High Street
Columbus 15, Ohio

Re: Docket No. DMEA-4381 (Zinc)
Benjamin H. Putnam
Indian Creek Project
Grainger County, Tennessee

Dear Mr. Jenks:

In reply to your letter of September 5, we are enclosing a copy of DMEA Order No. 1, Amended, with Amendments Nos. 2 and 3, and also a copy of the contract form pertaining to the cited application.

It is correct that a performance bond is required in the amount of fifty per cent of the estimated cost of the work under the contract.

Sincerely yours,

W. R. Griswold

W. R. Griswold, Chief,
Base Metals Division

Enclosures
WRG/er 9/11/56
Copy to: Docket
Admr R File
Op. Committee
Base Metals
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Region V,(II)
Chron.

R.C.L.

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION 500
WASHINGTON 25, D. C.

September 6, 1956

Memorandum for the Files

From: Chief, Base Metals Division

Subject: Docket No. DMEA-4381 (Zinc)
Benjamin H. Putnam
Indian Creek Project
Grainger County, Tennessee

and

Docket No. DMEA-4422 (Zinc)
Benjamin H. Putnam
Thorn Hill Area
Grainger County, Tennessee

On September 5, Mr. Laurence phoned to inquire concerning Docket No. DMEA-4381. He stated that company representatives were concerned about the contract provision regarding contiguous lands being incorporated into the contract, if acquired by the Operator. It appears that the Operator already holds such lands. We advised Mr. Laurence that, if the Operator had held such lands prior to contract date, they would not be affected. 1/

We also advised Mr. Laurence of the deficiency in the Ora C. Wilkinson, et al agreement, under DMEA-4422. He stated the matter would be investiaged (see letter in docket).

W R Griswold
W. R. Griswold

WRG/er
Copy to: Docket (2)
~~Adm R File~~
Base Metals (2)
Chron.

1/ This statement was subsequently checked with Mr. Dwyer, Associate Solicitor, Division of Mineral Resources, who advised it was correct.

Griswold

A. F. LAFRENTZ
Chairman of the Board

W. E. McKELL
President

American Surety Company
of New York

COLUMBUS BRANCH OFFICE - 724-730 HUNTINGTON BANK BUILDING
17 SOUTH HIGH STREET - TELEPHONE CAPITAL 4-1165

RECEIVED
SEP - 7 1956

Columbus 15, Ohio

September 5, 1956

W. R. Griswold, Chief
Base Metals Division
Defense Minerals Exploration Admr.
Department of the Interior
Washington 25, D. C.

IN RE: Docket No. DMEA-4381
Benjamin H. Putnam
Indian Creek Project
Grainger County, Tennessee

Dear Mr. Griswold:

We have received a request to arrange for Performance Bond in connection with a contract for the exploration and production of scarce minerals to be negotiated with your office.

In order that we may understand the situation, may we please have a copy of DMEA Order #1 Amended. We would appreciate it if you could also furnish us with a copy of the contract form you use. We understand that the terms of the contract may differ according to the circumstances; however, if you have a basic form you follow, it would help us to understand the obligations ~~of the~~ assumed under the bond, and would help us in reaching a decision about the case.

We are told that the standard form #25 performance bond will be required in an amount of 50% of the estimated cost of the work ~~in~~ under the contract. If we are in error, will you please correct us.

Very truly yours,

M. L. Jenks, Jr.
Manager

MLJ:lm

File Copy
Surname
Griswold
Talpitt
Selfridge
Jefferson

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

500

AUG 31 1956

Mr. Robert A. Laurence
Executive Officer
DMEA Field Team, Region V
Room 13, Post Office Bldg.
Knoxville 2, Tennessee

Re: Docket No. DMEA-4381 (Zinc)
Benjamin H. Putnam
Indian Creek Project
Grainger County, Tennessee

Dear Mr. Laurence:

With reference to your memorandum of August 6, we are enclosing the original and five copies of a contract for the cited project, signed by the Government. The complete contract consists of Form MF-200, Annex I, Exhibit A and one map. Two extra copies of such material (excluding form MF-200) are enclosed for use of the Field Team.

Please note that a Performance Bond is required, covering the amount of the Government's participation, prior to presenting the contract for signature by the Operator. When such requirement has been met, and if the contract meets with your approval, please present it for signature and distribute the copies in the usual manner. In the event that you should not approve any of the contract provisions, and any proposed change should lie beyond the range of your delegated authority, please return all copies to us, with your recommendations.

Sincerely yours,

George C. Selfridge
Chairman, Operating Committee (GCS)

Enclosures

WRGriswold/er 8/28/56
Copy to: Docket
Admr R File
Op. Committee
Base Metals
Mr. Bishop, USBM
Mr. Ailsgaard, USGS
Chron.

APPROVED:

Frank D. Lamb (GCS)
Member, Bureau of Mines

W. P. Williams (GCS)
Member, Geological Survey

P. S. Please note that repayment period has been extended to 15 years.

P.C.S.

File Copy

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION 500
WASHINGTON 25, D. C.

August 20, 1956

Memorandum

To: Associate Solicitor, Division of Mineral Resources

From: Chief, Base Metals Division

Subject: Preparation of Contract for Docket No. DMEA-4381 (Zinc), Benjamin H. Putnam, Indian Creek Project, Grainger County, Tennessee

Will you kindly prepare a long form contract along the lines of the attached draft.

Maps will be sent you shortly.

W. R. Griswold

W. R. Griswold

WRG/er

Copy to: Docket
Base Metals
Chron.

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

RECEIVED
AUG 13 1956

August 13, 1956

Re: DMEA 4381
Zinc, $40,663.000
Benjamin H. Putnam,
Operator
Thorn Hill-Indian Creek
Area
Grainger County, Tenn.

To: W. R. Griswold, DMEA

From: O. M. Bishop, Branch of Base Metals

Subject: Review of field examination report, dated August 2, 1956, received August 8, 1956.

The field team, accompanied by a geologist of the applicant, examined the 378-acre property, reviewed the geologic setting, the geochemical anomalies, and the 5 holes based on them. On the basis of their examination the field team recommends approval of a contract with certain changes in which the applicant concurs. I agree with the field team in their views and recommend that a contract be prepared authorizing 12,000 feet of drilling, in a one stage program.

With regard to the period for royalty payment I regard a 10-year period as entirely too short. The extensive reserves in the Tennessee-Virginia area suggest that it may be many years before an ore-body developed by a non-producing mining company would come into production, and there is much liklihood that the property might be transferred to one of the operating companies which has a 30-year repayment clause in its DMEA contracts. I recommend a similar repayment period for this contract.

Very truly yours,

O. M. Bishop

O. M. Bishop
Commodity Specialist
Branch of Base Metals

IN REPLY REFER TO:

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

RECEIVED
AUG 13 1956

Approved

August 10, 1956

Re: DMEA 4381 (Zinc)
Benjamin H. Putnam
Thorne Hill and Indian Creek areas
Grainger County, Tennessee
App'ts. est. - $40,663.79
Rec'd. est. $40,513.79

Memorandum

To: W. R. Griswold, Defense Minerals Exploration Administration

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

Subject: Review of Field Team report.

The applicant requested assistance in the exploratory drilling of a tract of land near property being drilled by New Jersey Zinc Co.

Parts of the large tract have been drilled by the applicant and the New Jersey Zinc Co. with little success.

The examiners consider the unprospected parts of the property may contain ore bodies and deserve drilling. The program recommended consists of 12,000 feet of drilling.

I concur with the recommendation.

N. E. Nelson

N. E. Nelson

Indian Creek Prospect

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 5 SHIRK BLDG. POST OFFICE BLDG.
KNOXVILLE 2, TENN.

RECEIVED
AUG - 8 1956
Greenwood
Docket

August 6, 1956

Memorandum

To: Operating Committee, DMEA - Washington

From: DMEA Field Team, Region V - Knoxville, Tenn.

Subject: Field Examination Report - DMEA-4381, Indian Creek Prospect, (zinc)

Transmitted are four copies of the subject examination report, also attached are three copies of surface map which has been revised to show the new location of the proposed holes.

The Field Team recommends approval of a contract on the application.

Robert A. Laurence
Robert A. Laurence
Executive Officer, DMEA
Region V

V. J. Lynch
V. J. Lynch, Member
Bureau of Mines

Reviewed by
DMEA OPERATING COMMITTEE
8-10-56
(date)

ON-SITE Report

UNITED STATES
DEPARTMENT OF THE INTERIOR

RECEIVED
AUG - 8 1956

DEFENSE MINERALS EXPLORATION ADMINISTRATION

FIELD EXAMINATION REPORT

REGION V

On

DMEA-4381, INDIAN CREEK PROSPECT
Grainger County, Tennessee

By

A. R. Laurence and Dewey H. Amos, Geologists
U. S. Geological Survey

and

V. J. Lynch, Mining Engineer
U. S. Bureau of Mines

Released by
DMEA OPERATING COMMITTEE
8-10-56
(date)

August 2, 1956

RECEIVED
AUG 3 1956

FIELD EXAMINATION REPORT

On
DMEA-4381 (Zinc)
INDIAN CREEK PROSPECT

Applicant: Benjamin H. Putnam, 170 E. Pearson, St., Chicago, Ill.

Location: Copper Ridge District, 5 1/2 miles NE of Thorn Hill, Grainger County, Tennessee

Preliminary exploration drilling and the discovery of geochemical anomalies indicate the possibility of the existance of one or more ore bodies in this area. Approval of this application is strongly recommended. Location of some of initial drill holes should be changed.

The area of proposed exploration is in the Copper Ridge district where recent exploratory work has revealed several ore bodies. The Flat Gap Mine, now under development by the New Jersey Zinc Company, is six miles northeast of the Prospect in the same structural unit. The New Jersey Zinc's Cedar Springs Prospect (formerly known as the Tandy Dalton Prospect of Tenn. Div. Geol. Bull.31,p.90 and U.S.B.M., R.I. 4497) is about 2 1/2 miles along strike to the southwest, and that Company's option in the Cedar Springs area begin at the southwest limit of B. H. Putnam's Indian Creek area options. New Jersey Zinc is now exercising most of its Cedar Springs options.

Field Examination of the area was made August 2, 1956, and required about two hours. Mr. William T. Hill, one of the Applicant's geologists, accompanied the examiners.

The geology of the area is adequately described in the application and a short description of the prospect along Indian Creek is given in Bulletin 31 of the Tennessee Division of Geology under the name of L.L. Mallicoat

Prospect. Little is known about the shape, size and attitude of the bodies of mineralization in this district. There is a suggestion from work done by ~~in~~ other operators that the long axis of the bodies are more nearly parallel to the direction of strike rather than to the dip. The trending of the geochemical anomalies roughly parallel to the dip direcrion may be a result of topographic effect on soil creep and other mass wastage phenomena or the occreence of two or more mineralized zones at different stratigraphic horizons. The latter is suggested by the results of drill Hole LH-1.

It is the opinion of the examiners that a more adequate coverage of the area with a minimum number of drill holes would result if the lines of initial holes were diagonal to the direction of strike. The Applicant is in full agreement with this change in hole locations as shown on the enclosed copies of the property map. Location of later holes would depend upon results of the initial ones.

The contract should be flexible as to hole locations to permit alteration of the drilling pattern determined by results of the previously drilled holes. All ~~xxxxxx~~ holes should be drilled to the bottom of the Kingsport formation, unless results obtained from the earlier holes suggest a modification of this.

Results of drilling by The New Jersey Zinc Company on the L. F. Mallocoat Property at the northeast end of the area are not available. T he landowner has told Mr. Hill that non-commecial mineralization was encountered in most of the holes, and that the holes apparently were bottomed above the "big limestone zone" which is considered the main ore zone at Flat Gap and the

other prospects to the northeast.

The applicant has had considerable experience in the mineral industry and employs competent personnel as is evidenced by the application. He appears to be financially responsible.

The proposed area of work is accessible to drilling equipment. Water can be obtained from Indian Creek.

Proposed costs are reasonable and in line with similar work in the district with the exception of the cost for zinc analyses. This should be reduced from $5.00 per assay to $1.50. It should be noted, unlike New Jersey Zinc Company and American Zinc Co., this applicant does not have his own laboratory facilities, and sends samples to a commerical firm for assays. If mineralization is encountered in most of the proposed holes 75 analyses will not be adequate - 150 should be sufficient. All individual samples for [redacted] assay should be restricted to a maximum core length of 5 feet but taken so as to show significant "units" of mineralization. The applicant's practice is to split all sampled core and save half of the core.

Estimated Costs are as follows:

(a)	Contract drilling (12,000 ft)	$37,200.00
(b)	Geologists salary	1,580.40
(c)	Surveying, drafting, etc.	343.40
(d)	Core boxes, supplies, etc.	720.00
(e)	Transportatiom	320.00
(f)	Assays (150 @ $1.50)	225.00
(g)	Workman's Compansation	16.20
(h)	Insurance and payroll tax	108.79
		$40,513.79

Rounded, these estimates give the following unit costs:

		Unit
Contract drilling	$37,200	$3.10 per ft.
Technical Services, etc.	3,100	0.258 per ft.
Assaying	225	1.50 per sample

These are entirely reasonable as compared with costs on our currently active contracts in the same district. The applicants failed to include anything for secretarial and accounting costs, to which they would be entitled; assuming the total cost for these items to be $360, this would add three cents to the unit cost for "all other services", making a total unit cost of 28.8 cents for this item.

The 30-year period for royalty repayments included in the several New Jersey Zinc Company contracts would probably not be applicable in this case. This applicants owns no zinc ore mines or proven reserves in the district or elsewhere in Tennessee at the present time. The usual 10-year period is probably preferable for this contract.

R. A. Laurence and Dewey H. Amos, Geologists
U. S. Geological Survey

V. J. lynch, Mining Engineer
U. S. Bureau of Mines

File Copy
Surname

500

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

AUG - 2 1956

Mr. Benjamin H. Putnam
Box 647
Marietta, Ohio

Re: Docket No. DMEA-4381 (Zinc)
Benjamin H. Putnam
Indian Creek Project
Grainger County, Tennessee

Attention: Mr. Benjamin

Dear Mr. Putnam:

With regard to my phone conversation with Mr. Benjamin on August 1, referring to the cited application, I was in error in stating we did not have an official form of "Performance Bond".

I am enclosing two copies of the form for your information. Regarding your procuring the bond, you realize, of course, that it would be premature for you to make any such final arrangements at present. We can give no assurance at this time that a contract will be made covering your application. Furthermore, if such a contract should be approved, the contract amount would probably vary somewhat from the costs estimated in your application.

Sincerely yours,

W. R. Griswold

W. R. GRISWOLD, Chief
Base Metals Division

Enclosures

WRGriswold/bjl (8/1/56)

Copy to: Docket
Admr. R. File
Base Metals
Mr. Bishop
Mr. Kiilsgaard
Region V (2)
Chron.

R.C.S.

500

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

August 1, 1956

Phone Memorandum for the Files

From: Chief, Base Metals Division

Subject: Docket No. DMEA-4381, Benjamin H. Putnam, Indian Creek Project, Grainger County, Tennessee

On July 31 and August 1, phone conversations were had with Mr. Benjamin at Marietta, Ohio, relative to the cited application. He was mainly concerned as to the Performance Bond required. Two copies are being sent to him.

W. R. GRISWOLD

WRGriswold/bjl (8/1/56)

Copy to: Docket
Base Metals
Chron.

UNITED STATES 500
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

RECEIVED
JUL 27 1956

July 27, 1956

Memorandum for the Files

From: W. R. Griswold, Chief, Base Metals Division

Subject: Docket No. DMEA-4381 (Zinc), Benjamin H. Putnam, Indian Creek Project, Grainger County, Tennessee

On July 23, the undersigned phoned Mr. Laurence advising that the Applicant would be required to provide a performance bond, since Owner's Consents to Lien were not obtainable.

W. R. Griswold

WRGriswold/bjl

Copy to: Docket
Base Metals
Chron.

File Copy
Surname
Griswold
Nelson
Joyce
Selfridge
Johnson

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION 500
WASHINGTON 25, D. C.

JUL 2 6 1956

Mr. Benjamin H. Putnam
170 East Pearson Street
Chicago 11, Illinois

Re: Docket No. DMEA-4381 (Zinc)
Benjamin H. Putnam
Indian Creek Project
Grainger County, Tennessee

Dear Mr. Putnam:

Your application for Government assistance to explore the cited property has been reviewed by the Base Metals Division of the Defense Minerals Exploration Administration and has been referred to:

Mr. Robert A. Laurence
Executive Officer
DMEA Field Team, Region V
Room 13, Post Office Bldg.
Knoxville 2, Tennessee

If the Field Team requires additional information concerning your application, they will contact you at an early date.

Sincerely yours,

C. O. Mittendorf

Administrator

WRGriswold/er 7/24/56
Copy to: Docket
Admr R File
Op. Committee
Base Metals
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Region V (2)
Chron.

RGB.

File Copy
Surname

Griswold
Selfridge
P. F. Yopes
N. E. Nelson

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

500

JUL 26 1956

Mr. Robert A. Laurence
Executive Officer
DMEA Field Team, Region V
Room 13, Post Office Bldg.
Knoxville 2, Tennessee

Re: Docket No. DMEA-4381 (Zinc)
Benjamin H. Putnam
Indian Creek Project
Grainger County, Tennessee

Dear Mr. Laurence:

The cited application for exploration assistance is being referred to your office for consideration, a field examination of the property if warranted, and recommendations.

Copies of memoranda dated July 17 and 18, by Abbott Ramick, Bureau of Mines, and N. E. Nelson, Geological Survey, respectively, relating to the project are enclosed for your information.

Sincerely yours,

George C. Selfridge
(by esf)

Chairman, Operating Committee

Enclosures

WRGriswold/er 7/24/56
Copy to: Docket
Admr R File
Op. Committee
Base Metals
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Chron.

APPROVED:
P. F. Yopes (by esf)
Member, Bureau of Mines

N. E. Nelson (by esf)
Member, Geological Survey

P.C.L.

IN REPLY REFER TO:

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

RECEIVED
JUL 20 1956

July 18, 1956

Re: DMEA 4381
Benj. H.Putnam, Operator
Thorn Hill and Indian Creek areas
Grainger Co., Tennessee
$40,663.79 - Zinc

Memorandum

To: W. R. Griswold, Defense Minerals Exploration Administration

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

Subject: Review of application.

The applicant requests assistance in exploring by drilling a tract of land, perhaps in the midst of the New Jersey Zinc holdings on Copper Ridge, Grainger County, Tennessee. With the maps at hand I cannot place the tract exactly, but it would seem to be near, perhaps includes, the so-called Cedar Springs property of the New Jersey Zinc Co. The New Jersey Zinc Company did drilling on a part of the referenced tract. (Application page 6).

The applicant has done a large amount of geochemical prospecting and mapped several anomalous areas. The results of the work are not presented in the same manner or in the units used by New Jersey Zinc so direct comparison is not easy.

The applicant has drilled 5 holes one of which, LH-1, falls within a high geochem anomaly. Three zones of mineralization were intersected in the Mascot dolomite, as:

43-48'	4' @ 0.2% Zn
205-209½'	4½' @ 0.5% Zn
273-280'	7' @ 1.48% Zn

One intersection was obtained in each of 4 other holes including:

Hole	
JW-3	6' @ 1.21%
SC-1	6' @ 1.38%

The 5 holes prospect a section 1,300 feet nearly parallel to the strike of the beds.

If, as appears possible, the drilling by New Jersey Zinc Co., 9 holes, was not too encouraging, the proposed drilling does not promise too well, but four or five holes may be warranted.

Referral of the application to the Field Team for appropriate action is recommended.

N. E. Nelson

N. E. Nelson

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

RECEIVED
JUL 17 1956

July 17, 1956

Memorandum

To: W. R. Griswold, Defense Minerals Exploration Administration

From: Abbott Renick, Branch of Base Metals

Subject: Review of application DMEA 4381 (Zinc), Benjamin H. Putnam, The Indian Creek Zinc Prospect, 4th Civil District of Grainger County, Tennessee

In a workman like application, the applicant proposes to explore for zinc by drilling 12,000 feet at an estimated cost of $40,663.79.

In the writer's judgement, the property needs to be evaluated by a field examination. Accordingly, I recommend that the application should be referred to the field team for examination and report.

Abbott Renick Jr

Abbott Renick

Copy to Division of Minerals
R.W. Geehan
T.H. Kiilsgaard, Rm. 5224
O.M. Bishop
A. Renick
F I L E S

July 16, 1956

Mr. Benjamin H. Putnam
170 E. Pearson St.
Chicago 11, Illinois

Subject: DMEA-4381
Re: Exploration Assistance
Indian Creek Project

Dear Mr. Putnam

The receipt of your application dated July 12, 1956 for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA-4381 and referred to the Base Metals Division.

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

Sincerely yours,

Robert E. Adams, Chief
Operations Control and
Statistics Division

July 16, 1956

Memorandum

To: Executive Officer, DMEA Field Team, Region V

From: Chief, Operation's Control and Statistics Division

Subject: Assignment of Docket Number

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

DMEA
- 4381 Benjamin H. Putnam
Indian Creek Project

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

Maps - Operator's
Final Report -
January 1958 -
National Lead Co.

DEFENSE MINERALS
EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

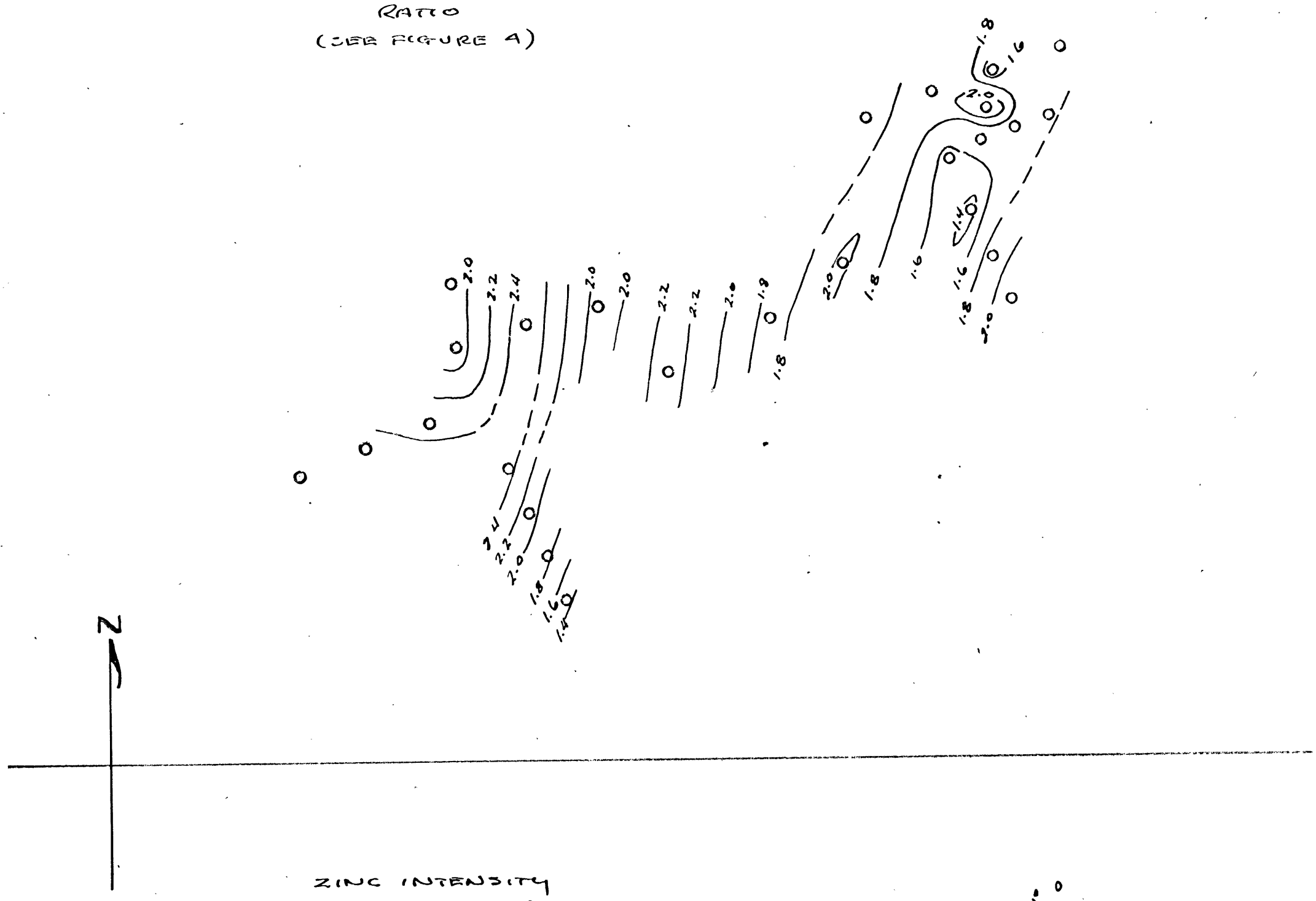
OFFICIAL BUSINESS

EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

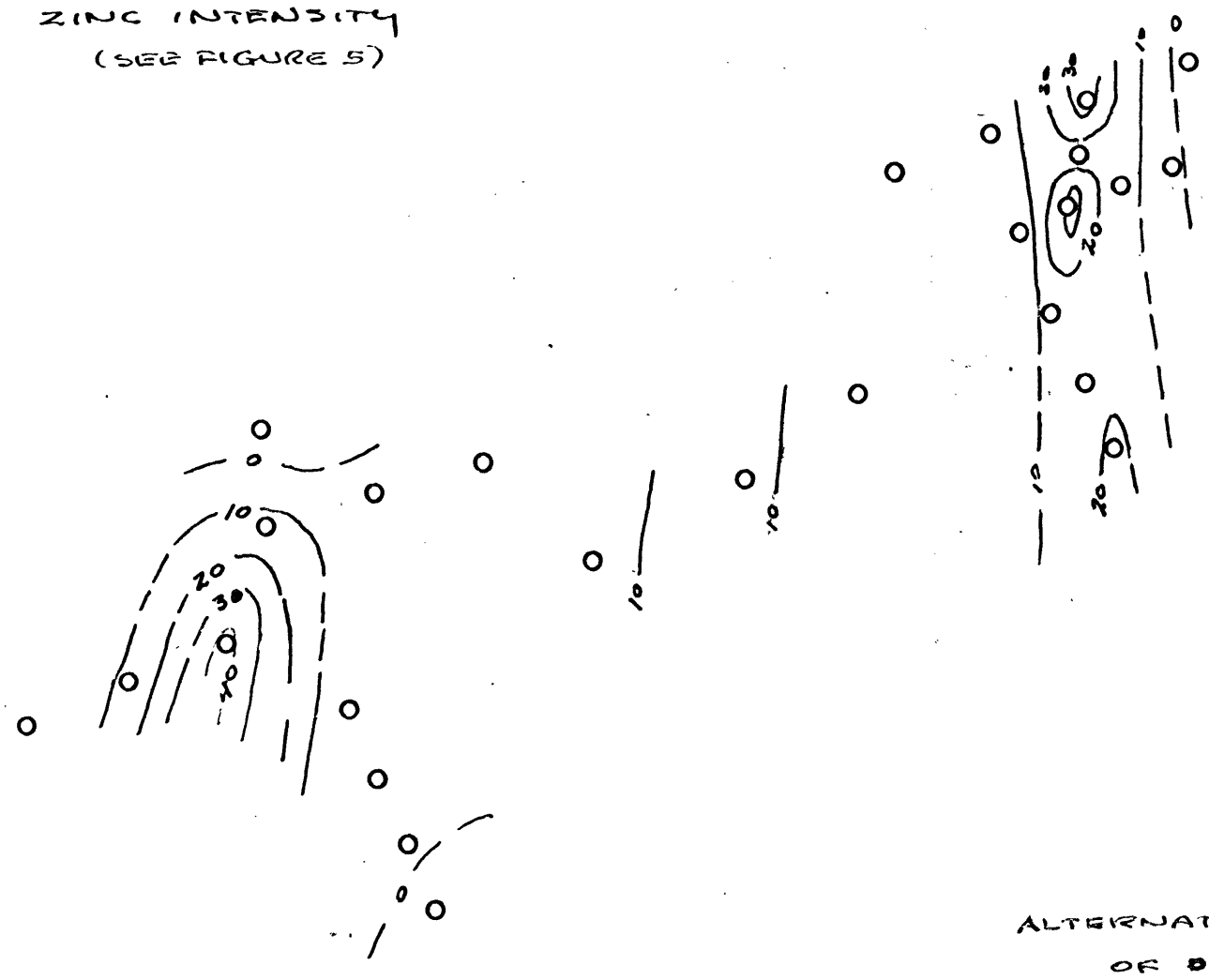
OFFICIAL BUSINESS

Cost data and maps submitted with final Field Team report

KINGSPORT PENETRATION THICKNESS RATIO
(SEE FIGURE 4)



ZINC INTENSITY
(SEE FIGURE 5)



ALTERNATE INTERPRETATIONS
OF DATA PRESENTED
IN FIGURES 4 AND 5

—//—

INDIAN CREEK AREA
GRAINGER COUNTY
TENNESSEE

—//—

SCALE 1" = 500'

EXPLANATION
(CONTINUED)

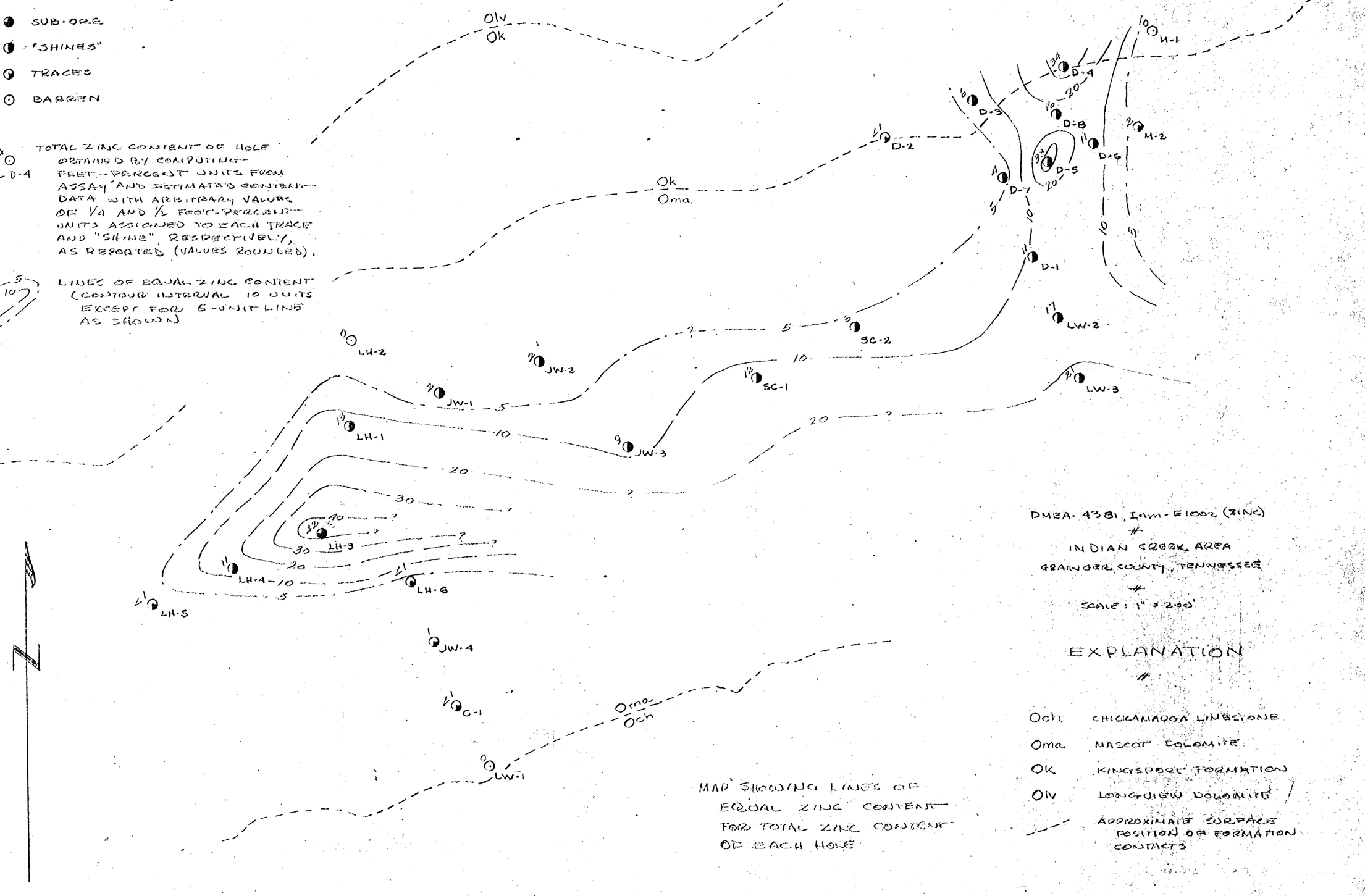
DIAMOND-DRILL HOLES SHOWING

- ORE (>10 FEET WITH 2.25 PERCENT ZINC)
- SUB-ORE
- "SHINES"
- TRACES
- BARREN

HOLE NUMBER — 34 D-4

TOTAL ZINC CONTENT OF HOLE OBTAINED BY COMPUTING FEET-PERCENT UNITS FROM ASSAY AND ESTIMATED CONTENT DATA WITH ARBITRARY VALUES OF 1/4 AND 1/2 FOOT-PERCENT UNITS ASSIGNED TO EACH TRACE AND "SHINE", RESPECTIVELY, AS REPORTED (VALUES ROUNDED).

LINES OF EQUAL ZINC CONTENT (CONTOUR INTERVAL 10 UNITS EXCEPT FOR 5-UNIT LINE AS SHOWN)



MAP SHOWING LINES OF EQUAL ZINC CONTENT FOR TOTAL ZINC CONTENT OF EACH HOLE

DMEA-4381, Iam-E1002 (ZINC)

#

INDIAN CREEK AREA

GRAINGER COUNTY, TENNESSEE

#

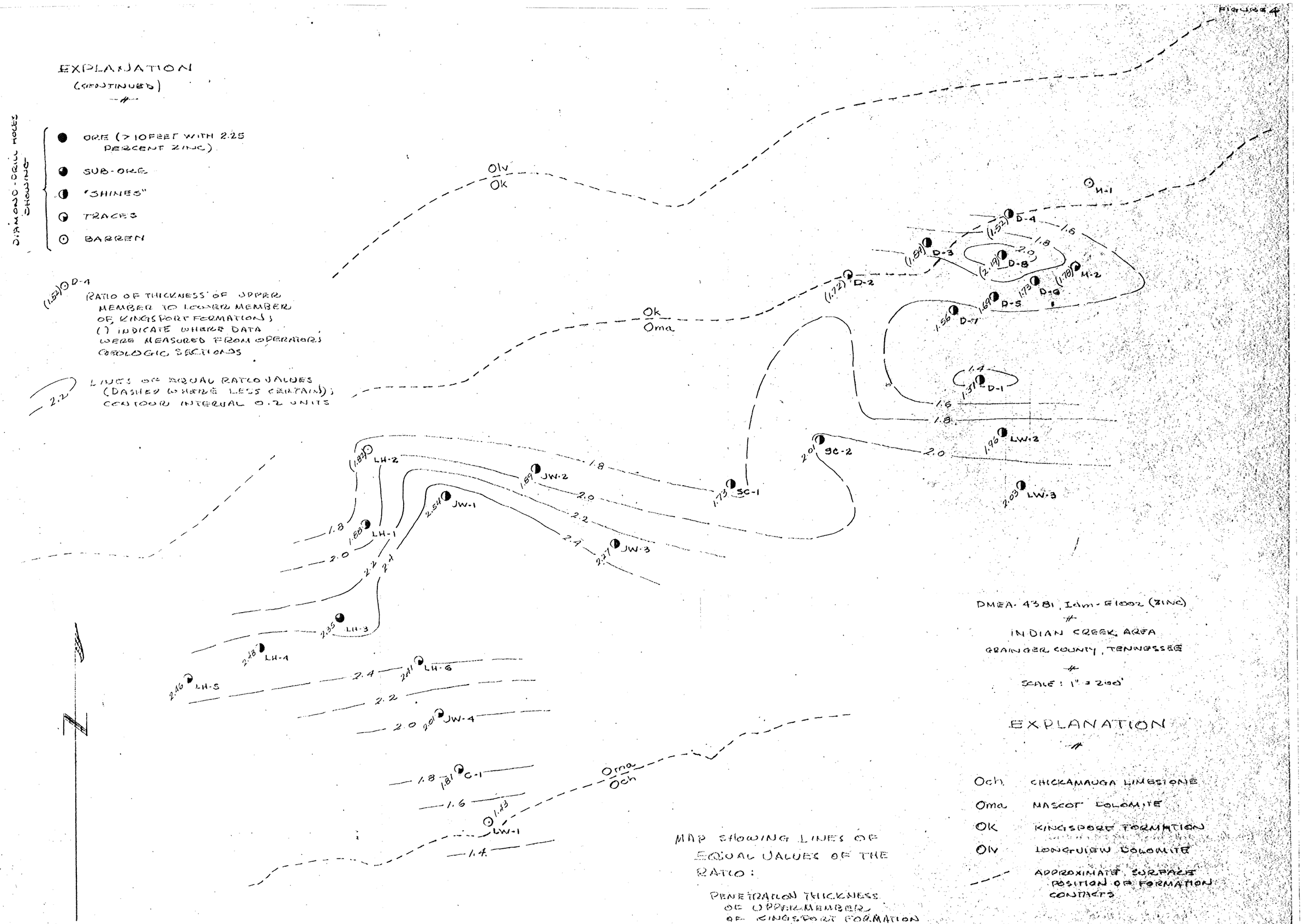
SCALE: 1" = 200'

EXPLANATION

#

Och	CHICKAMAUGA LIMESTONE
Oma	MASCOT DOLOMITE
Ok	KINGSPORT FORMATION
Olv	LONGVIEW DOLOMITE
---/---	APPROXIMATE SURFACE POSITION OF FORMATION CONTACTS

HW 6/59



MAP SHOWING LINES OF EQUAL VALUES OF THE RATIO:

$$\frac{\text{PENETRATION THICKNESS OF UPPER MEMBER OF KINGSPORT FORMATION}}{\text{PENETRATION THICKNESS OF LOWER MEMBER (R.E.S BEDS) OF KINGSPORT FM.}}$$

DMEA-4381, Idm-E1002 (ZINC)

INDIAN CREEK AREA

GRAINGER COUNTY, TENNESSEE

SCALE: 1" = 200'

EXPLANATION

Och	CHICKAMAUGA LIMESTONE
Oma	MASCOT DOLOMITE
Ok	KINGSPORT FORMATION
Olv	LONGVIEW DOLOMITE
- - -	APPROXIMATE SURFACE POSITION OF FORMATION CONTACTS

HW 6/59

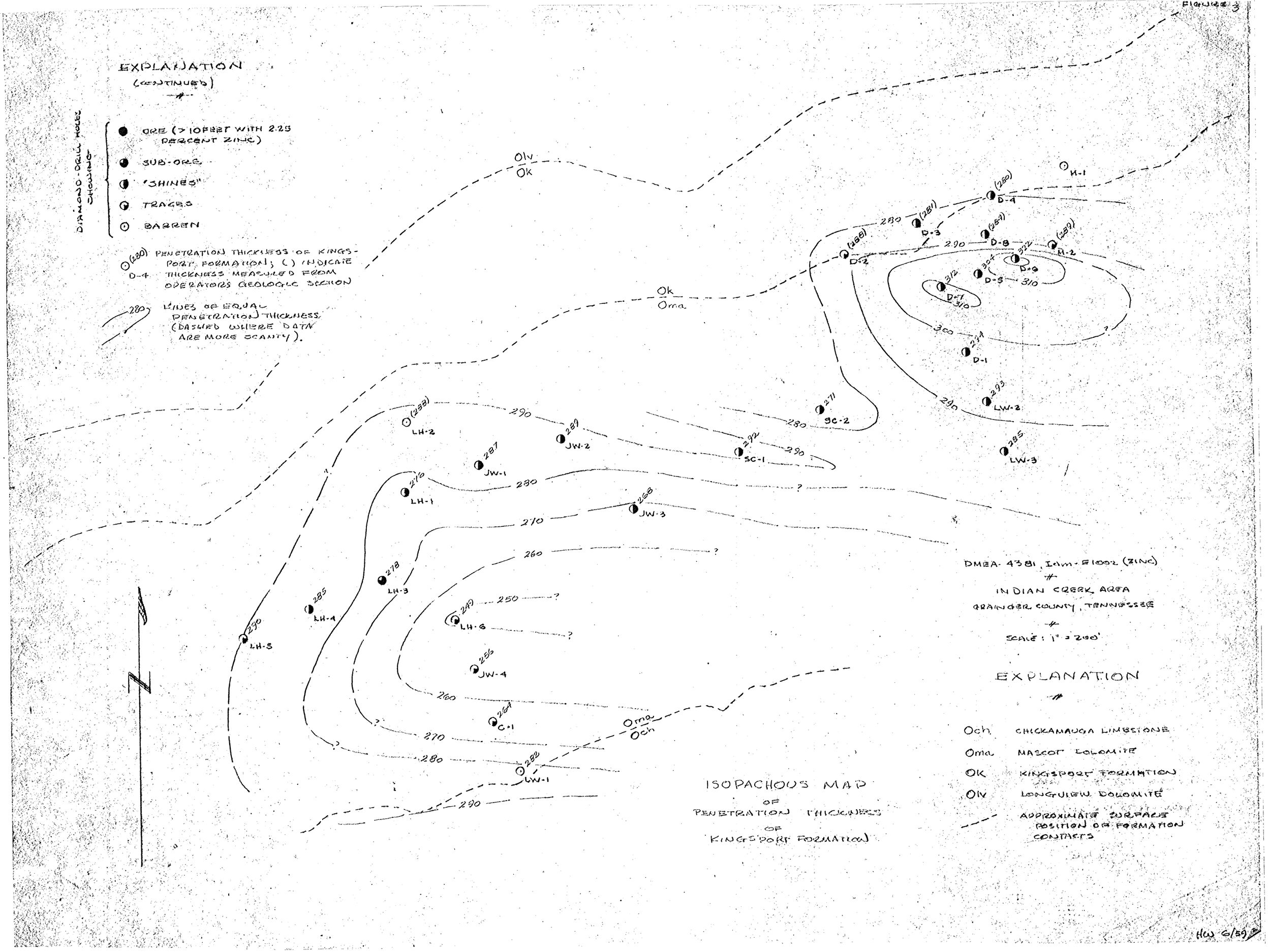

EXPLANATION
(CONTINUED)
DIAMOND-DRILL HOLES SHOWING
ORE (>10 FEET WITH 2.25 PERCENT ZINC)
SUB-ORE
"SHINES"
TRACES
BARREN
(280) D-4 PENETRATION THICKNESS OF KINGSPORT FORMATION; ( ) INDICATE THICKNESS MEASURED FROM OPERATOR'S GEOLOGIC SECTION
280 LINES OF EQUAL PENETRATION THICKNESS (DASHED WHERE DATA ARE MORE SCANTY).
Olv
Ok
Ok
Oma
Oma
Och
H-1
D-4
D-3
D-8
H-2
D-2
D-9
D-5
D-7
D-1
LW-2
SC-2
SC-1
LW-3
LH-2
JW-2
JW-1
LH-1
JW-3
LH-3
LH-4
LH-5
LH-6
JW-4
C-1
LW-1
DMEA-4381, Inm-E1002 (ZINC)
INDIAN CREEK AREA
GRAINGER COUNTY, TENNESSEE
SCALE: 1" = 200'
EXPLANATION
Och CHICKAMAUGA LIMESTONE
Oma MASCOT DOLOMITE
Ok KINGSPORT FORMATION
Olv LONGVIEW DOLOMITE
APPROXIMATE SURFACE POSITION OF FORMATION CONTACTS
ISOPACHOUS MAP OF PENETRATION THICKNESS OF KINGSPORT FORMATION
HW 6/59

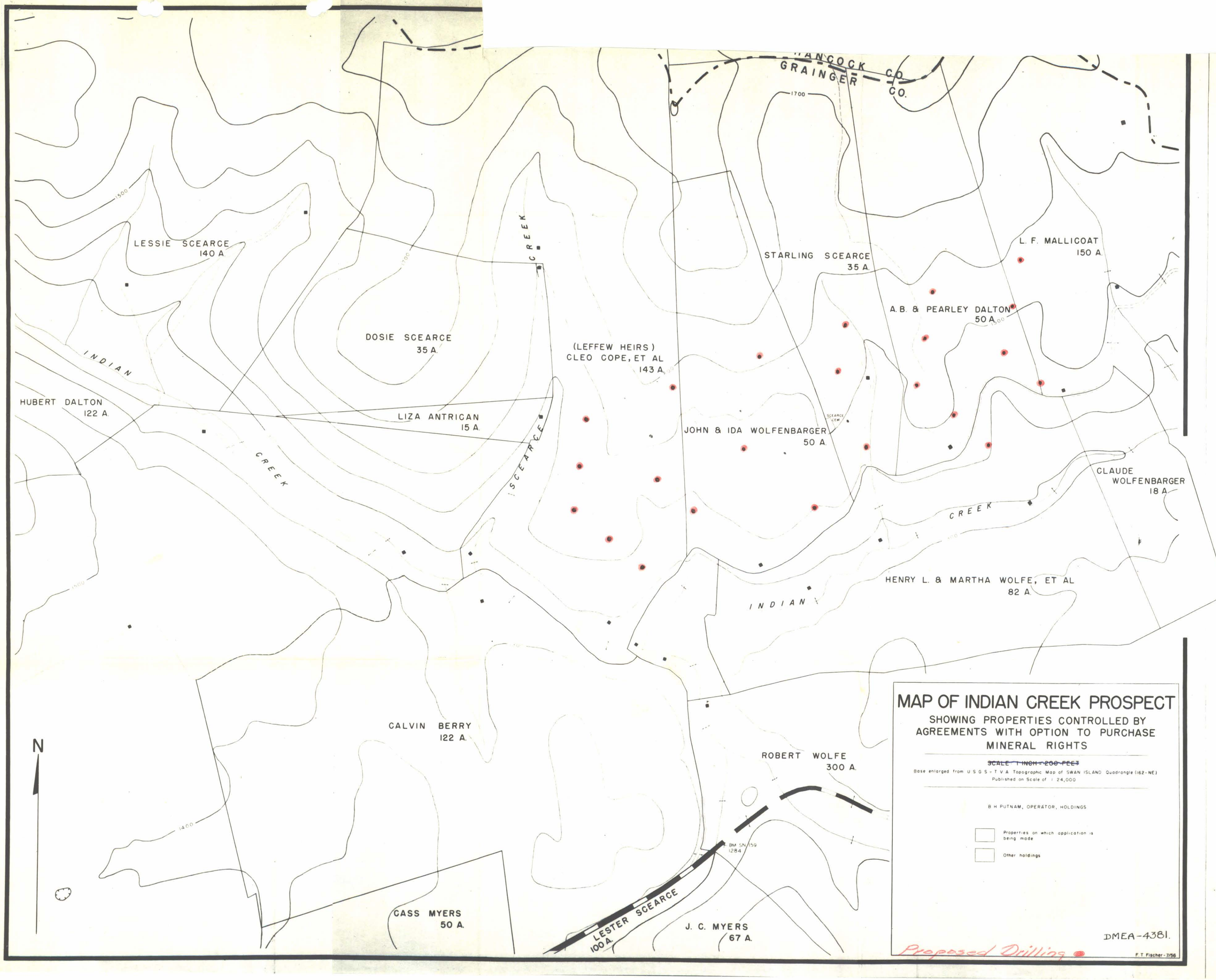
TABLE 1. ENGINEERING AND COST DATA FOR DMEA-4381 Idm-E 1002
LIDIAN CREEK AREA, GRAINGER COUNTY, TENN.

HOLE NO.	COORDINATES	COLLAR ELEVATION	TOTAL HOLE DEPTH	DEPTH OF OVERBURDEN	DRILLING COSTS/HOLE @ $30.00/FT.	REAMING @ $2.00 FT.	REAMING COST/FT COST/HOLE	INCIDENTAL COST @ $0.26/FT	TOTAL COST PER HOLE	AVERAGE COST PER FT/HOLE
LH-2	N52,845.94 E49,542.75	1570.74	363	80	$1089.00	—	—	$94.38	$1183.38	$3.26
LH-3	N52,246.83 E49,434.76	1429.38	725	16	2175.00	122	$244.00	188.50	2607.50	3.60
LH-4	N52,144.50 E49,434.76	1466.78	710	4	2130.00	—	—	184.60	2314.60	3.26
LH-5	N52,045.82 E48,899.12	1446.97	721	14	2163.00	183	366.00	187.46	2716.46	3.77
LH-6	N52,090.96 E49,714.40	1390.48	676	3	2028.00	—	—	175.76	2203.76	3.26
D-1	N53,061.80 E51,684.57	1466.99	601	17	1803.00	79	158.00	156.26	2117.26	3.52
D-2	N53,445.48 E51,226.89	1515.34	402	88	1206.00	—	—	104.52	1310.52	3.26
D-3	N53,549.31 E51,508.43	1546.22	386	20	1158.00	—	—	100.36	1258.36	3.26
D-4	N53,651.21 E51,790.74	1572.35	356	115	1068.00	—	—	92.56	1160.56	3.26
D-5	N53,354.04 E51,138.16	1510.03	475	56	1425.00	—	—	123.50	1548.50	3.26
D-6	N53,406.93 E51,138.16	1505.01	497	55	1491.00	—	—	129.22	1620.22	3.26
D-7	N53,310.32 E51,594.87	1497.03	475	43	1425.00	—	—	123.50	1548.50	3.26
D-8	N53,503.38 E51,761.54	1542.45	370	52	1110.00	54	108.00	96.20	1314.20	3.55
* SC-1	N52,701.14 E50,811.66	1477.93	71	—	213.00	—	—	18.46	231.46	3.26
SC-2	N52,851.97 E51,121.32	1494.11	707	42	2121.00	—	—	183.82	2304.82	3.26
M-1	N53,136.00 E52,070.00	1562.00	284	49	852.00	—	—	73.84	925.84	3.26
M-2	N53,459.06 E52,017.49	1501.53	500	86	1500.00	—	—	130.00	1630.00	3.26
C-1	N51,709.71 E49,850.15	1272.55	863	2	2589.00	—	—	224.38	2813.38	3.26
JW-4	N51,904.09 E49,786.13	1321.48	778	3	2334.00	—	—	202.28	2536.28	3.26
LW-1	N51,520.67 E49,951.82	1273.67	1000	2	3000.00	—	—	260.00	3260.00	3.26
LW-2	N52,873.92 E51,752.97	1424.84	649	5	1947.00	—	—	168.74	2115.74	3.26
‡ LW-3	N52,684.08 E51,822.10	1372.87	721	7	2163.00	—	—	187.46	2350.46	3.26
TOTALS (ACTUAL)	—		12,330	759	$36,990.00	438	$876.00	$3205.80	$41,071.80	—
TOTALS (PAID)	—		12,000	—	36,000.00	438	876.00	3120.00	39,996.00 +	—
AVERAGES PER HOLE	—		545.5	36.1	1636.36	—	219.00	141.81	1818.00	3.32

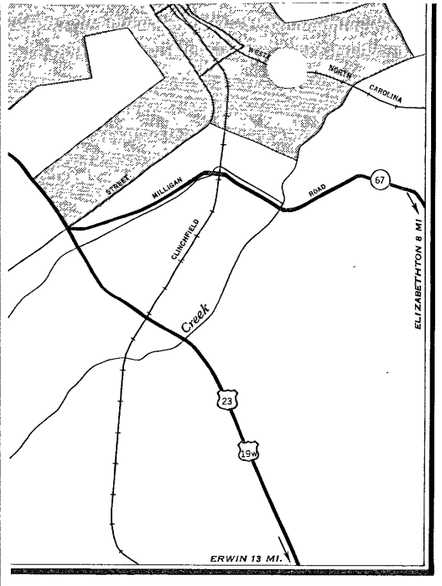
* HOLE SC-1 Was deepened 71 Feet ONLY.

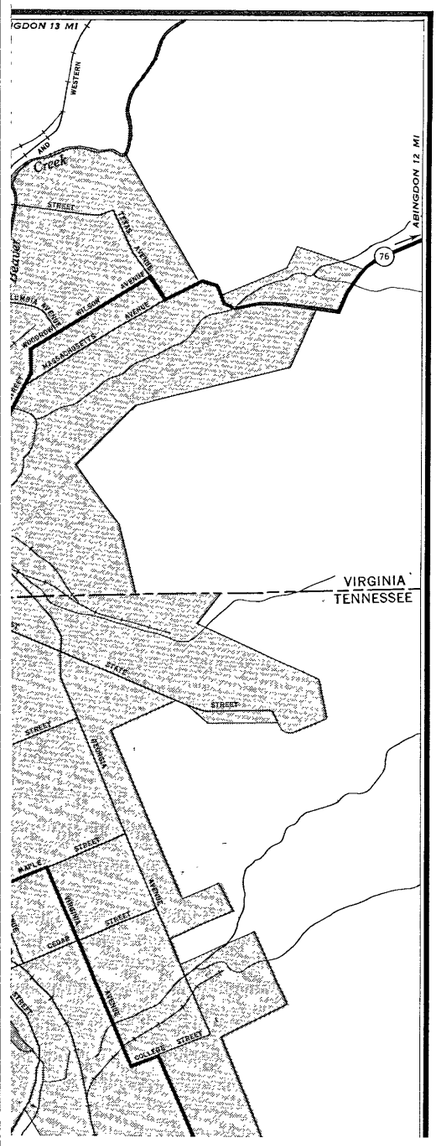
‡ Only 371 feet of this hole was allowed for payment.

+ DOES NOT INCLUDE TOTAL COST OF ASSAYS. $99.00


HANCOCK CO.
GRAINGER CO.
1700
1500
1300
1400
LESSIE SCEARCE
140 A.
DOSIE SCEARCE
35 A.
INDIAN
CREEK
HUBERT DALTON
122 A.
LIZA ANTRICAN
15 A.
SCEARCE
CREEK
(LEFFEW HEIRS)
CLEO COPE, ET AL
143 A.
STARLING SCEARCE
35 A.
L. F. MALLICOAT
150 A.
A.B. & PEARLEY DALTON
50 A.
JOHN & IDA WOLFENBARGER
50 A.
SCEARCE CEM.
CLAUDE
WOLFENBARGER
18 A.
CREEK
HENRY L. & MARTHA WOLFE, ET AL
82 A.
INDIAN
CALVIN BERRY
122 A.
ROBERT WOLFE
300 A.
BM SN 159
1284
LESTER SCEARCE
100 A.
CASS MYERS
50 A.
J. C. MYERS
67 A.
N
MAP OF INDIAN CREEK PROSPECT
SHOWING PROPERTIES CONTROLLED BY
AGREEMENTS WITH OPTION TO PURCHASE
MINERAL RIGHTS
~~SCALE 1 INCH = 200 FEET~~
Base enlarged from U.S.G.S.-T.V.A. Topographic Map of SWAN ISLAND Quadrangle (162-NE)
Published on Scale of 1:24,000
B.H. PUTNAM, OPERATOR, HOLDINGS
Properties on which application is being made
Other holdings
DMEA-4381.
Proposed Drilling
F.T. Fischer - 7/56

MAP OF PART OF EAST TENNESSEE SHOWING INDIAN CREEK PROSPECT AND COPPER RIDGE ZINC DISTRICT
Scale: 1 inch = 4 miles (approx.)
INDIAN CREEK PROSPECT
Zinc Occurrence
Zinc Mine
Middlesboro
Morristown
Jefferson City
Rogersville
New Tazewell
Fountain City
KNOXVILLE
Cherokee Dam
Cherokee Reservoir
Douglas Reservoir
Norris Reservoir
Powell River
Clinch River
Holston River
CUMBERLAND MOUNTAINS
POWELL MOUNTAINS
NEWMAN RIDGE
CLINCH MOUNTAINS
COPPER RIDGE
BAYS MOUNTAINS





RECEIVED
JUL 16 1956

B. H. PUTNAM, OPERATOR
BOX 647
MARIETTA, OHIO

DMEA.

TYPE SECTION

STATE: TENNESSEE

COUNTY: GRAINGER

AREA: INDIAN CREEK

DATA: 16 CORE HOLES

FORMATIONS: MASCOT (part)

Corrected to True Thickness From: 35°

J.W.S. 12-57

ZnS FeS

372 — M-33; 4½' lt. gr. dol, banded; thin ss at base; 13' med. gr. dol, banded for 4' w/ thin ss, then mott; chert nod at base; bott. 2½' lt. gr. dol, sand at base

351 — M-32 top 16½' lt. med. gr. dol., top foot sandy chert, edgewise congl., banded or mott.; 1' dk. gr. dol; 4' med. gr. mott. dol.; bott 2' lt. med. gr. dol. banded w/ sand at base

328 — M-31; 8' med. gr. dol. mott, thin sand in middle; 2' lt. med. gr. dol, sandy, mott., TBS at base Bott. 3½' med. gr. dol., thin sand & TBS at base

315 — M-30; 2' dk. gr. dol., mott & eyelets; 3½' med. gr. dol., sand near top; 1½' dk. gr. dol., chert nod. at base; Bott. 2½' med. gr. dol., sand at base

305 — M-29; 2' lt. med. gr. dol, banded; 1' dk. gr. shaly dol.; 2½' med. gr. dol, sand at base

M-28; 3' med. gr. mott. dol., TGS at base; 4' lt. med gr. dol. Thin ss & TGS at base; Bott. 3' lt. med. gr. banded dol, TBS at base

289 — M-27 dk. gr. dol, banded

282 — M-26 4' med. gr. dol., mott & eyelets, thin ss at base; 7' lt. med. gr. dol, banded; ss & TGS at base; 1½' lt. med. gr. mott. dol.; bott. foot silic. re-xl.

269 — M-25; 2½' lt. med. gr. dol, banded, chert nod at base; 1½' med gr. banded dol, chert nod at base; bott 3½' re-xl to semi re-xl, well mott.

262 — M-24 lt. med. gr. dol, banded bott 6½'; few eyelets at 2'. thin ss at 4'; TGS at base

253 — M-23 2' med. gr. mott. dol, TGS at base; 3' lt. med. gr. dol.; 1' semi re-xl. vuggy at top, chert nod at base; 2½' med. gr. mott. dol; 3' dk. gr. mott. silic. dol. 7½' med. gr. dol., few eyelets; thin sandy re-xl. at base

234 — M-22; 1½' chert & sec. chert; 1½' mott. re-xl 5' lt. gr. dol., few ss grains in middle; 1' silic. re-xl; 5' lt. gr. dol, top foot mott, rest banded; sand 1' from base; TGS at base bott. 3' med. gr. dol, chert nod. at base

217 — M-21 [redacted] 6½' med. dk. gr. dol, well mott.; chert nod. at base

211 — M-20; med. gr. dol. sand & shale, chert nod at base

209 — M-19; 6½' lt. gr. dol mott. & eyelets; 2' lt. med. gr. dol. mott., vugs; sand at base; 4½' lt. gr. mott. dol.; bott 2' med. gr. dol, banded, thin ss & chert nod at base

194 — M-18; 2' mott. re-xl. to semi re-xl, TBS at base; bott. 9' med. gr. dol. 3½' banded; 5½' mott. w/ eyelets thin ss at base

183 — M-17; 2' lt. mott. silic. semi re-xl.; 6' dk. gr. dol, mott., eyelets; 2' med. gr. dol., banded, bott. 5' lt. gr. dol., scatt ss grains, cm ss at base

172 — M-16; 6" lt. gr. dol, sandy; 6" silic re-xl.; 3' lt. med. gr. dol., 2' med gr. dol, mott. heavy ss at base; 4' lt. med. gr. dol. scatt sands top & bott. foot & cm ss at base

162 — M-15; 6" silica & re-xl; 4½' med. gr. dol; 1½' lt. med. gr. dol. w/ scatt ss & cm ss in middle & chert nod. bott; bott. 2½' silic re-xl. w/ oolitic nod at base

153 — M-14; 6" silic re-xl; 4½' lt. med. gr. dol, mott; 2' dk. gr. dol., mott., eyelets; bott. 6" sandy silic re-xl.

146 — M-13 3' lt. gr. dol, mott, eyelets; 10' dk. gr. dol, mott, silic eyelets w/ chert nod. at base; 3½' med. gr. dol, banded, normally fault in this zone; 4' dk. gr. dol, mott to banded. w/ thin sand congl. at base; 3' lt. med. gr. dol, mott to banded w/ sand at base

122 — M-12; 8' med. gr. dol, mott. & silic eyelets; bott. foot lt. med. gr. dol. w/ sand at base

113 — M-11; 6" silic. re-xl; 3' lt. med. gr. dol, mott; 5' med. dk. gr. dol., mott. & eyelets w/ chert nod at base; 1 foot lt. med. gr. dol. w/ sand at base; 1 foot semi re-xl. w/ chert nod at top; 1½' v. silic. re-xl; bott. 2½' lt. gr. dol., few eyelets, scatt sands bott foot & chert nod. at base

98 — M-10; 2' lt. gr. dol, then chert nod. 4' med. gr. banded dol.; 1' silic. re-xl. 3' lt. gr. dol., mott, few vugs; bott. foot med. gr. dol., sandy w/ edgewise congl.

82 — M-9; lt. gr. dol, mott. sandy green shale at 7'; bott. 4' lt. med gr. mott. & vuggy; thin ss at base

71 — M-8; thin bed. silic. re-xl. at top; then lt. gr. banded dol for 7'; then 5' med. gr. dol., well mott. w/ eyelets; bott foot med. dk gr w/ eyelets; TGS at base

57½ — M-7; lt. gr. dol., heavy ss & TGS at 3'; the mott to 6½' w/ thin ss; bott. 2½' lt. semi re-xl, silic at top, then mott. & vuggy; at base thin sandy congl.

49 — M-6; lt. med gr dol. Top 11 lt, lt mott. top 6'; 11-11½' dk gr well mott.; bott 1½' lt gr., eyelets, scatt. ss grs bott. 6", then heavy ss & oolite at base

36 — M-5; lt. to lt. med. gr. dol mott; few eyelets center; bott. 2' dk. gr., v. mott., few ss grains at base

26½ — M-4; lt. med gr dol, banded; bott. foot med. gr. & mott. One foot from top heavy ss & oolite; poss. oolite at base

18 — M-3; lt. gr. dol, banded

12 — M-2; med. dk. to dk. gr. dol., mott, chert nod at base

2 — M-1; med.-lt. med. gr. banded dol. CM ss at base

0 — Top Kingsport Fm.

TYPE SECTION

STATE: TENNESSEE

COUNTY: GRAINGER

AREA: INDIAN CREEK

DATA: 26 CORE HOLES

FORMATIONS: KINGSPORT, pt. Longview

Corrected to True Thickness From: 35°

J.W.S 12-57

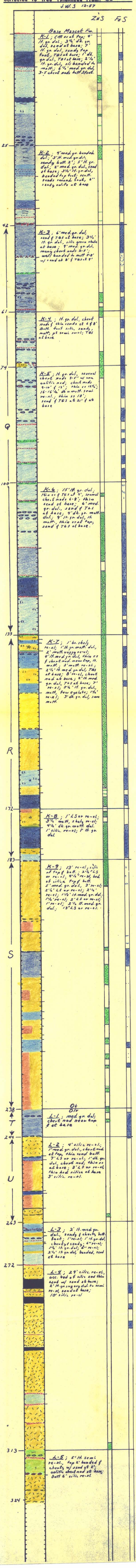
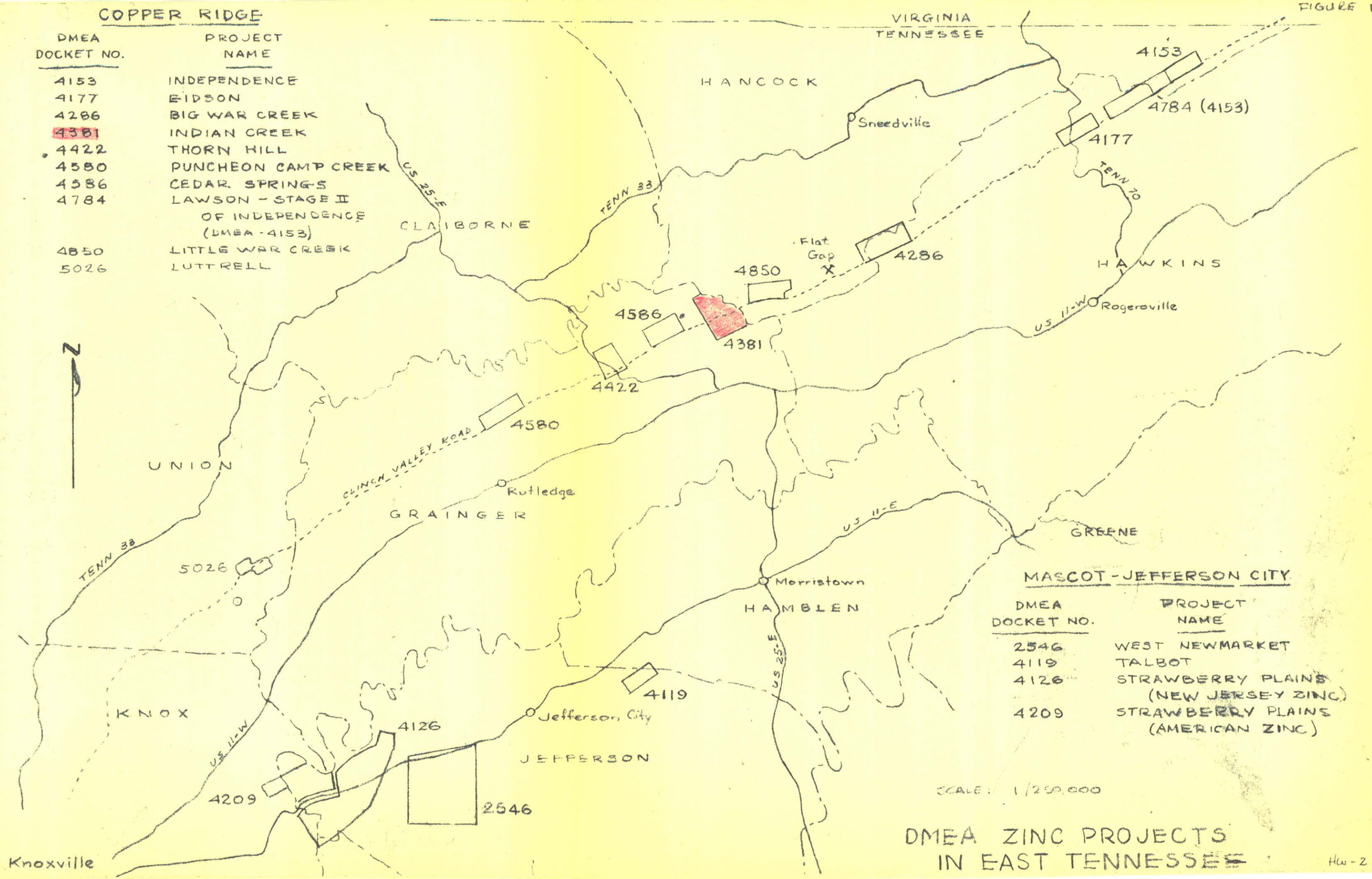


FIGURE 1

COPPER RIDGE

DMEA DOCKET NO.	PROJECT NAME
4153	INDEPENDENCE
4177	EIDSON
4286	BIG WAR CREEK
4381	INDIAN CREEK
4422	THORN HILL
4580	PUNCHEON CAMP CREEK
4586	CEDAR SPRINGS
4784	LAWSON - STAGE II OF INDEPENDENCE (DMEA - 4153)
4850	LITTLE WAR CREEK
5026	LUTTRELL



MASCOT-JEFFERSON CITY

DMEA DOCKET NO.	PROJECT NAME
2546	WEST NEWMARKET
4119	TALBOT
4126	STRAWBERRY PLAINS (NEW JERSEY ZINC)
4209	STRAWBERRY PLAINS (AMERICAN ZINC)

SCALE: 1/250,000

DMEA ZINC PROJECTS IN EAST TENNESSEE

Hw - 2/57

DMEA-4381, Idm-E1002 (ZINC)

INDIAN CREEK AREA

GRAINGER COUNTY, TENNESSEE

OPERATORS

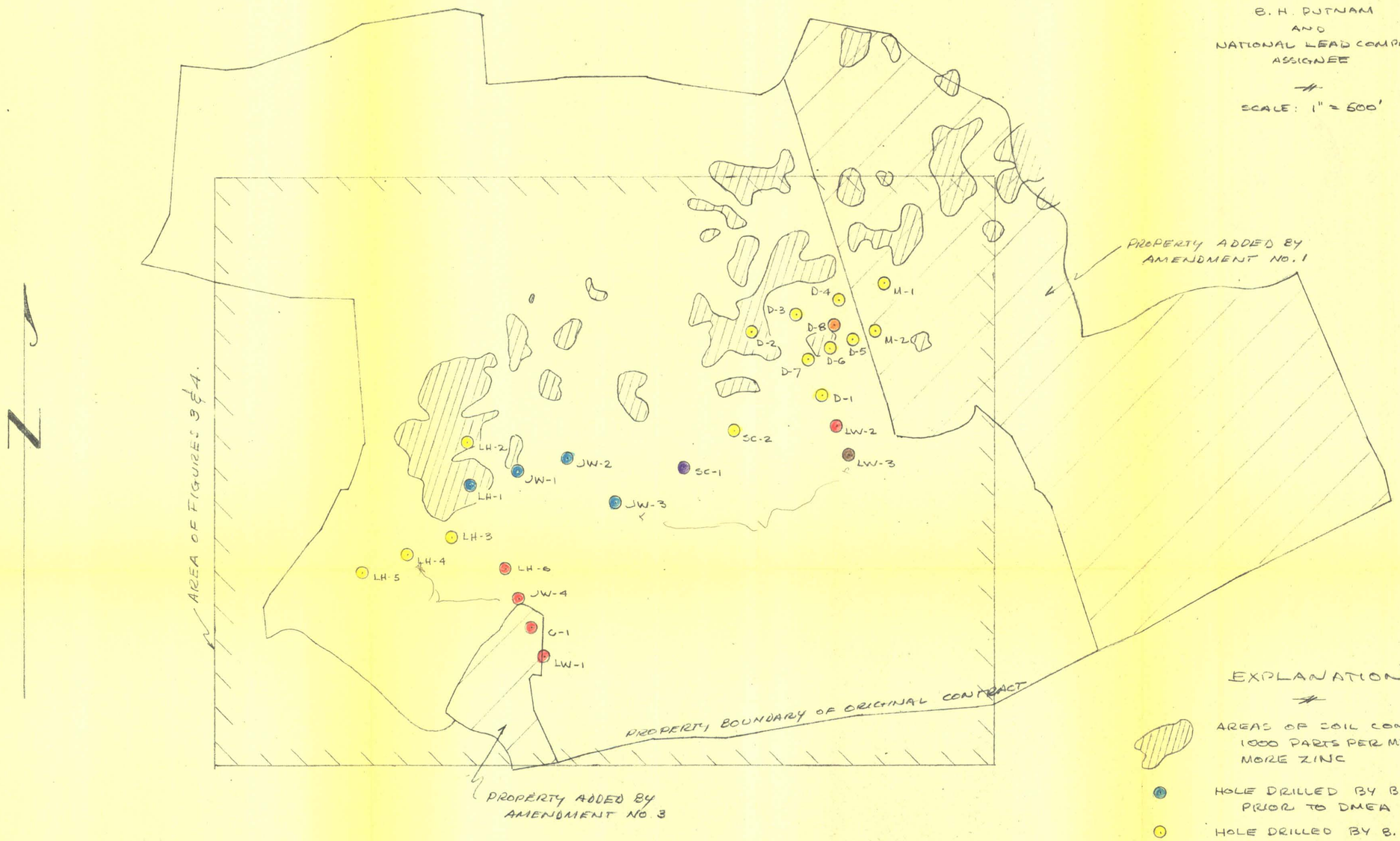
B. H. PUTNAM

AND

NATIONAL LEAD COMPANY

ASSIGNEE

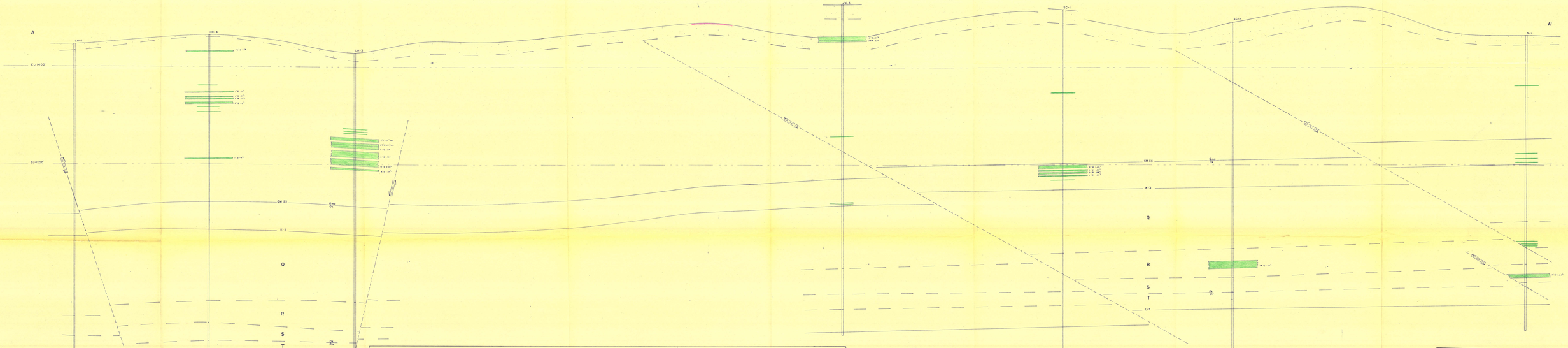
SCALE: 1" = 500'

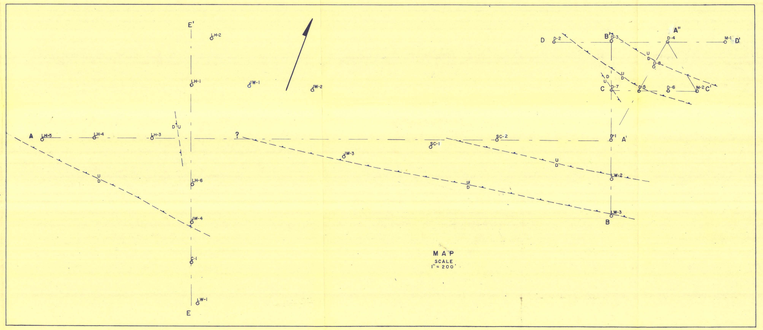


EXPLANATION

- AREAS OF SOIL CONTAINING 1000 PARTS PER MILLION OR MORE ZINC
- HOLE DRILLED BY B. H. PUTNAM PRIOR TO DMEA CONTRACT
- HOLE DRILLED BY B. H. PUTNAM UNDER DMEA CONTRACT
- HOLE DRILLED BY B. H. PUTNAM PRIOR TO DMEA CONTRACT BUT DEEPENED UNDER DMEA CONTRACT
- HOLE DRILLED BY B. H. PUTNAM AND NATIONAL LEAD CO. UNDER DMEA CONTRACT
- HOLE DRILLED BY NATIONAL LEAD CO. UNDER DMEA CONTRACT
- HOLE NOT COMPLETE AT END OF CONTRACT; COMPLETED BY NATIONAL LEAD CO. AT OWN EXPENSE

N
HANCOCK CO.
GRAINGER CO.
Indian Creek
DOSIE SCEARCE
35 A
GROVER DALTON
15 A
STARLING SCEARCE
35 A
A B & PEARLEY DALTON
50 A
L F MALLICOAT
150 A
LEFFEW HEIRS
143 A
JOHN & IDA WOLFENBARGER
50 A
CLAUDE WOLFENBARGER
15 A
CALVIN BERRY
122 A
LOU COFFEY
8 A
HENRY L & MARTHA WOLFE, et al
82 A
BM SN 159
1286
BM SN 158
1338
MAP OF
INDIAN CREEK PROJECT
Scale: 1 inch = 200 feet
Geology by: National Lead Company Geologists
Survey Control: Base map from T.V.A.-N.R.C.D. tape map
Drill holes, etc. by transit and chain
Drafting: F.T. Fleeher
Addenda:
Property of: National Lead Company and D.W.E.A.





NATIONAL LEAD COMPANY

PROJECT INDIAN CREEK

SECTION A-A'

Horizontal Scale: 1 inch = 50 feet

Vertical Scale: 1 inch = 50 feet

LEGEND

- Overburden
- Omc — Mascot formation
- Ok — Kingsport formation
- Olv — Longview formation
- Stratigraphic horizon
- Fault
- Zinc mineralization
- ___ mineralization
- Soil anomaly (.05-.80 % Zn)
- Soil anomaly (>.80 % Zn)

Geology by: J. A. Macdonald

Drafting by: J. A. Macdonald

NATIONAL LEAD COMPANY

PROJECT INDIAN CREEK

SECTION A' - A"

Horizontal Scale: 1 inch = 50 feet

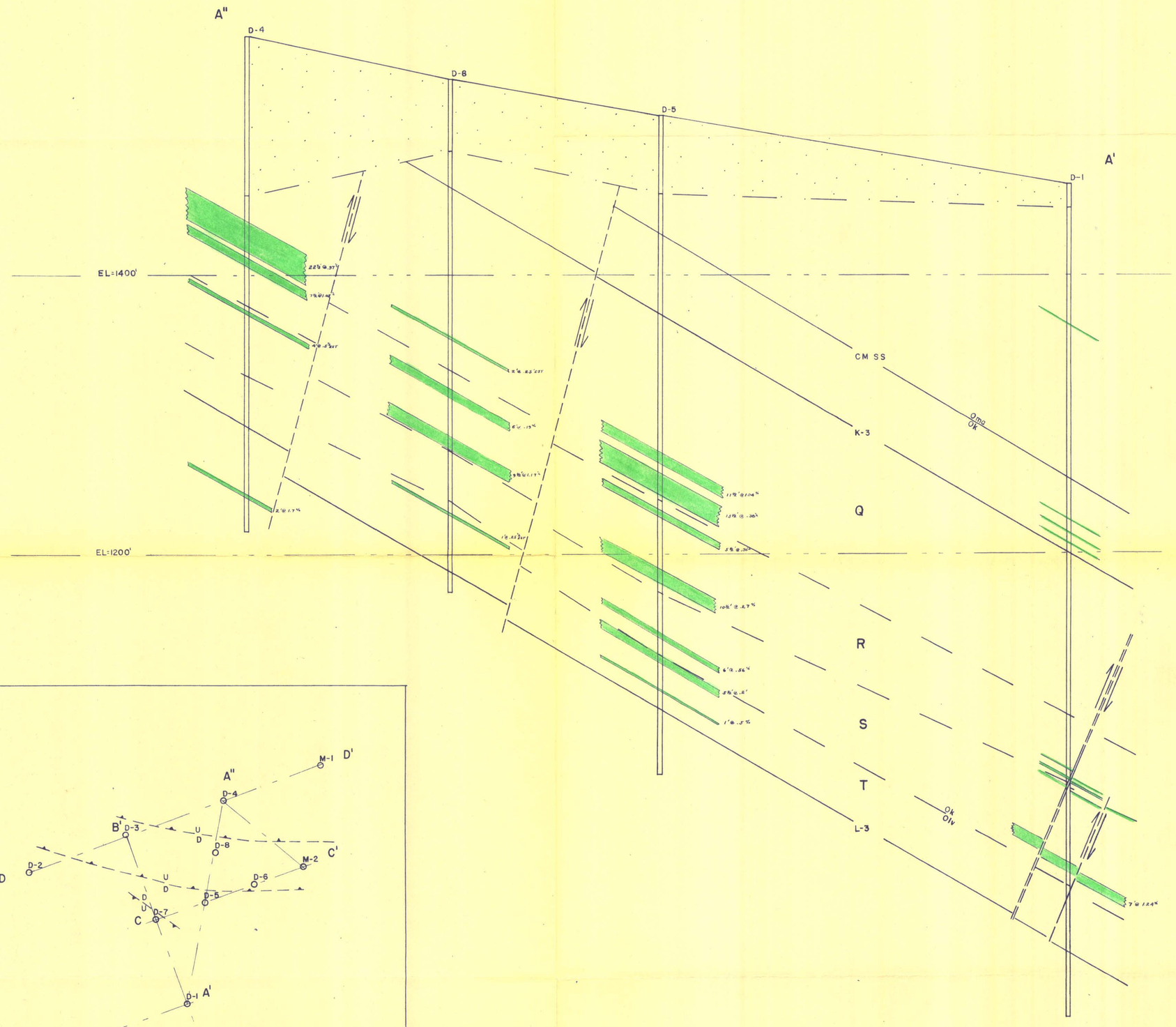
Vertical Scale: 1 inch = 50 feet

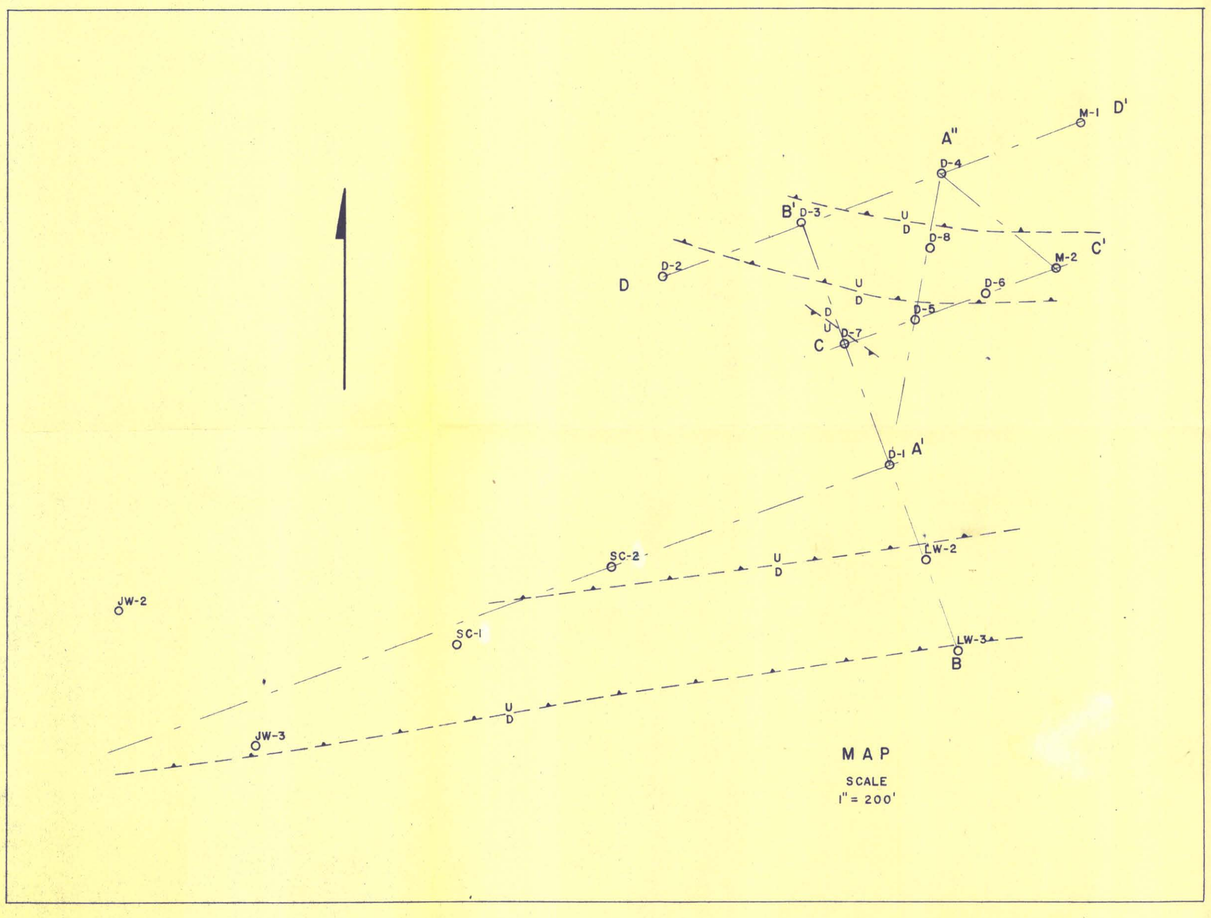
LEGEND

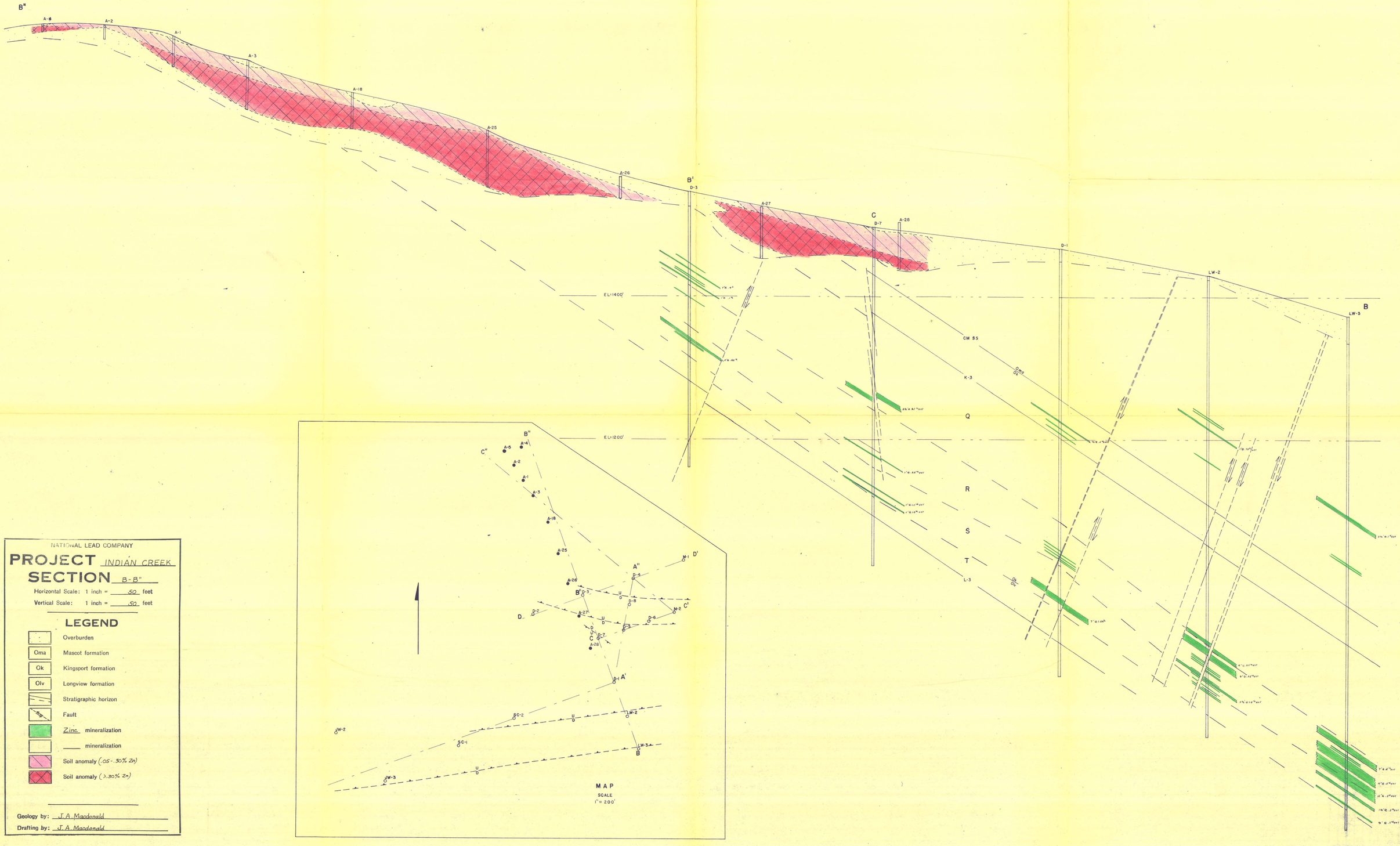
- Overburden
- Oma — Mascot formation
- Ok — Kingsport formation
- Olv — Longview formation
- Stratigraphic horizon
- Fault
- Zinc mineralization
- ____ mineralization
- Soil anomaly (.05 - .30 % Zn)
- Soil anomaly (> .30 % Zn)

Geology by: J. A. Macdonald

Drafting by: J. A. Macdonald







NATIONAL LEAD COMPANY

PROJECT INDIAN CREEK

SECTION B-B"

Horizontal Scale: 1 inch = 50 feet

Vertical Scale: 1 inch = 50 feet

LEGEND

- Overburden
- Oma — Mascot formation
- Ok — Kingsport formation
- Olv — Longview formation
- Stratigraphic horizon
- Fault
- Zinc mineralization
- ____ mineralization
- Soil anomaly (.05-.30% Zn)
- Soil anomaly (>.30% Zn)

Geology by: J. A. Macdonald

Drafting by: J. A. Macdonald

NATIONAL LEAD COMPANY

PROJECT INDIAN CREEK

SECTION C-C' & D-D'

Horizontal Scale: 1 inch = 50 feet

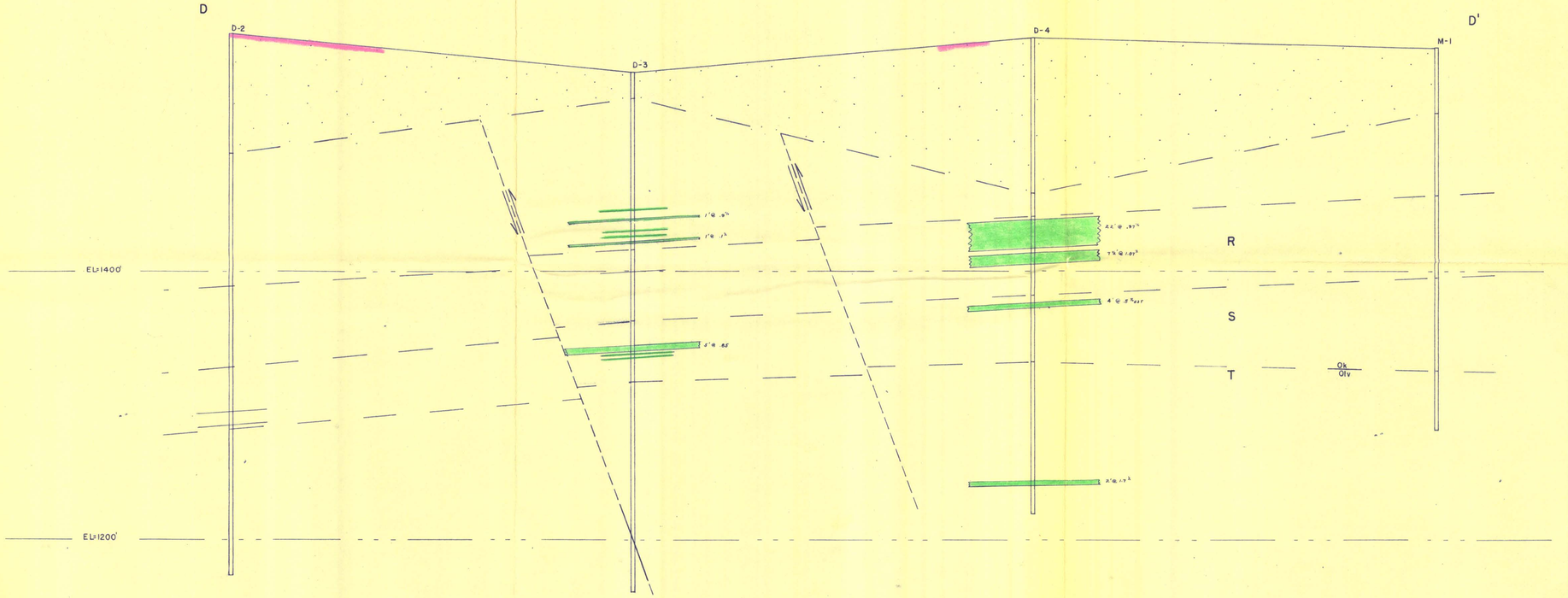
Vertical Scale: 1 inch = 50 feet

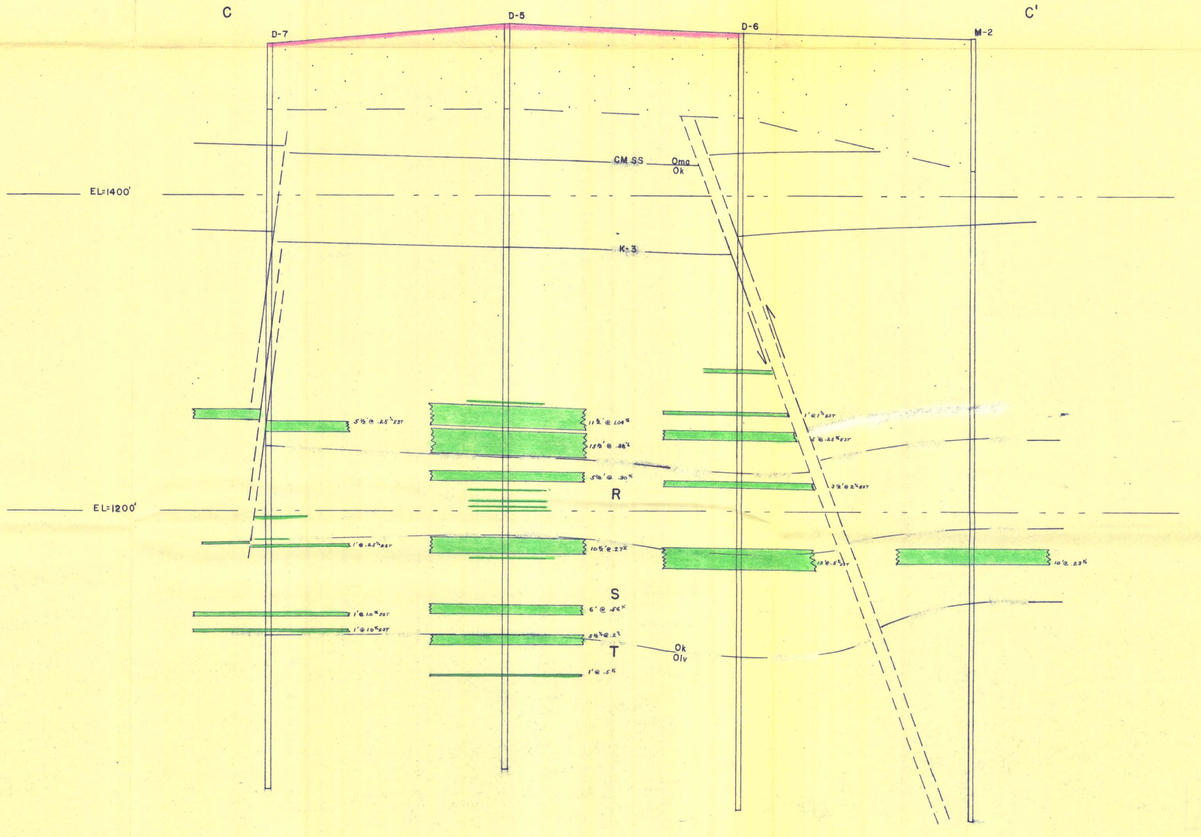
LEGEND

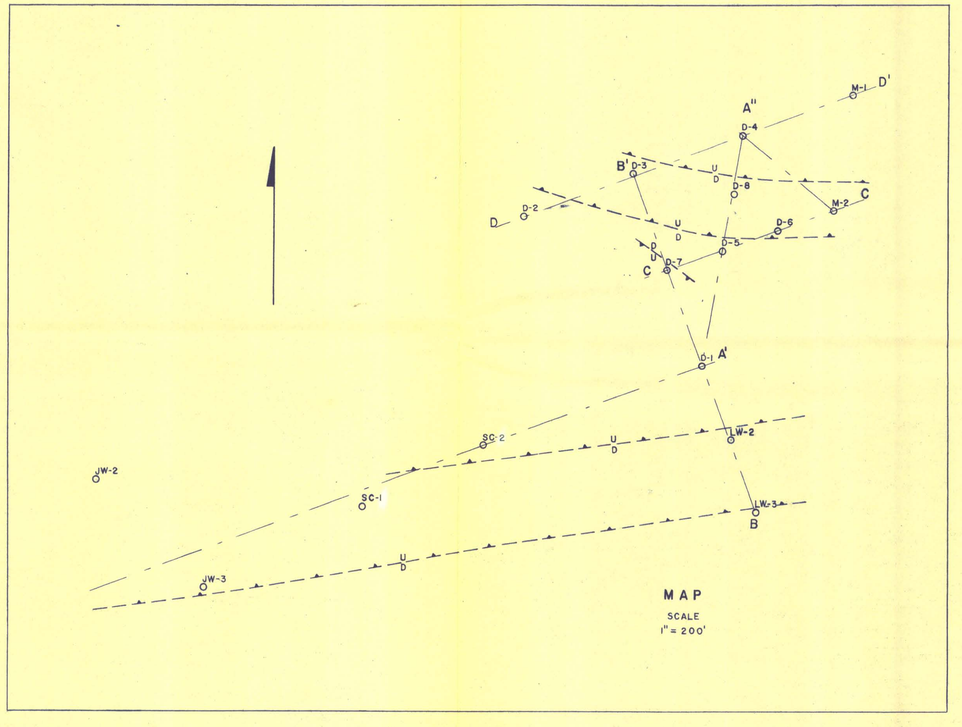
- Overburden
- Oma — Mascot formation
- Ok — Kingsport formation
- Olv — Longview formation
- Stratigraphic horizon
- Fault
- Zinc mineralization
- ____ mineralization
- Soil anomaly
- Soil anomaly

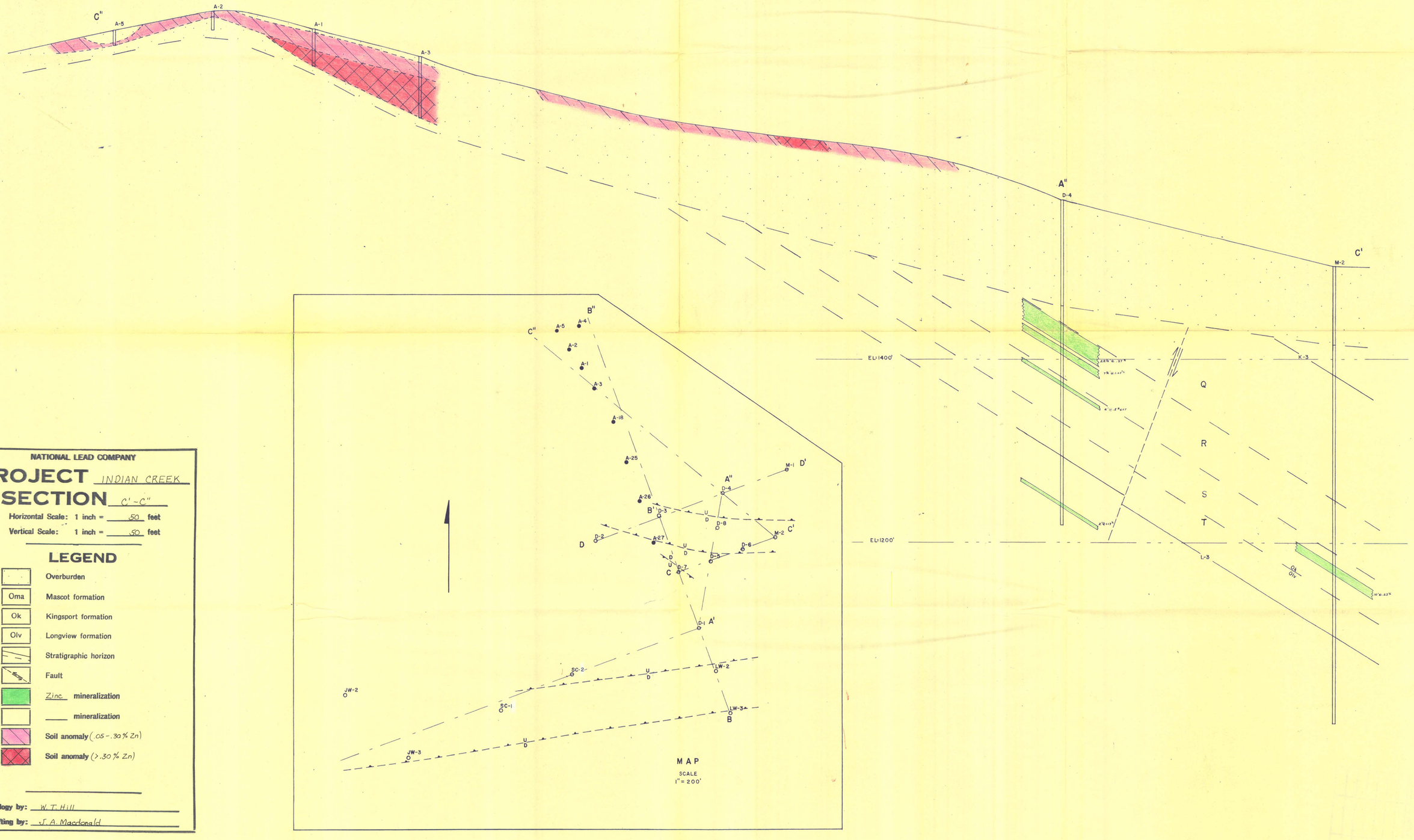
Geology by: W. T. Hill

Drafting by: J. A. MacDonald









NATIONAL LEAD COMPANY

PROJECT INDIAN CREEK

SECTION C'-C''

Horizontal Scale: 1 inch = 50 feet

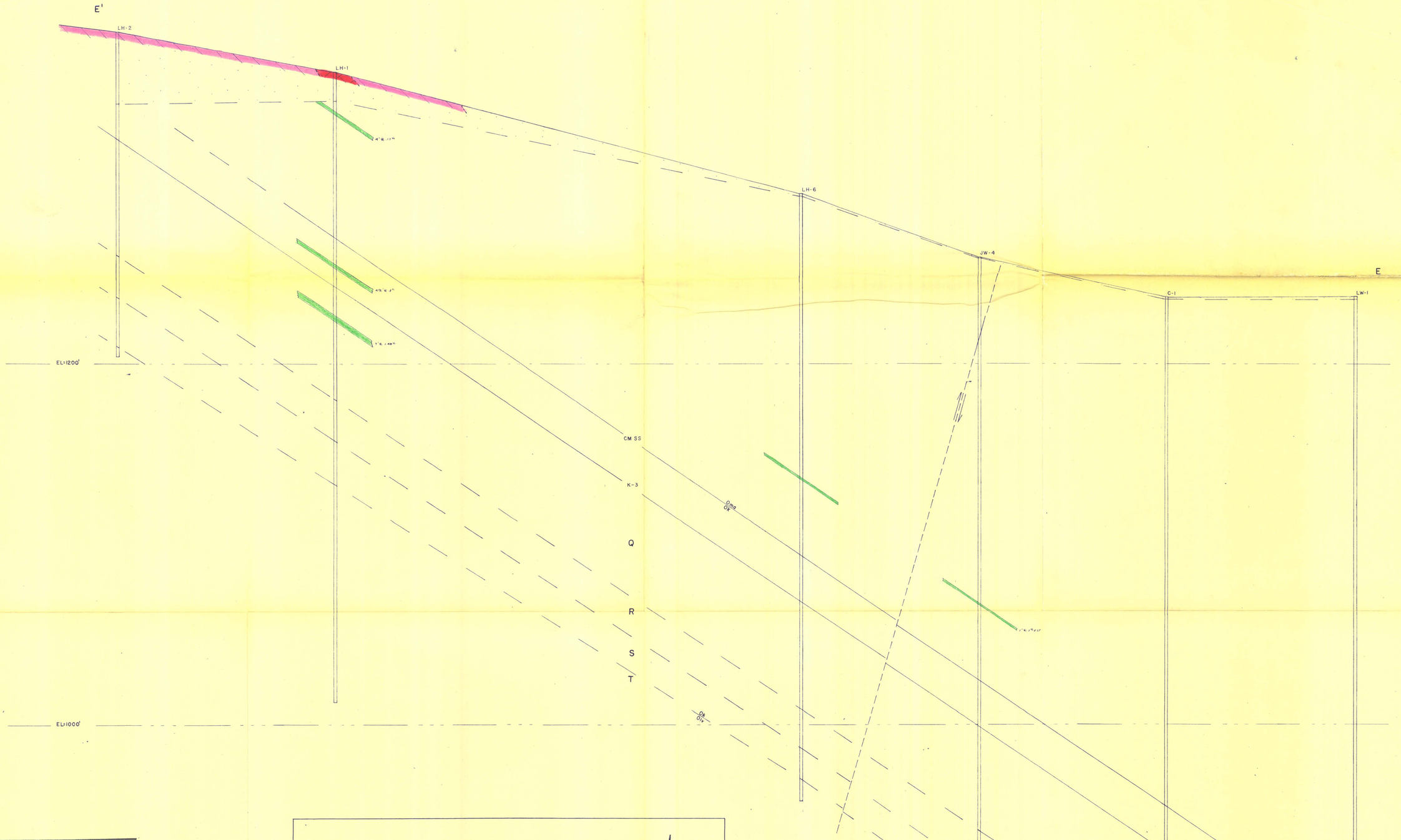
Vertical Scale: 1 inch = 50 feet

LEGEND

- Overburden
- Oma — Mascot formation
- Ok — Kingsport formation
- Olv — Longview formation
- Stratigraphic horizon
- Fault
- Zinc mineralization
- ____ mineralization
- Soil anomaly (.05-.30% Zn)
- Soil anomaly (>.30% Zn)

Geology by: W. T. Hill

Drafting by: J. A. Macdonald



NATIONAL LEAD COMPANY

PROJECT INDIAN CREEK

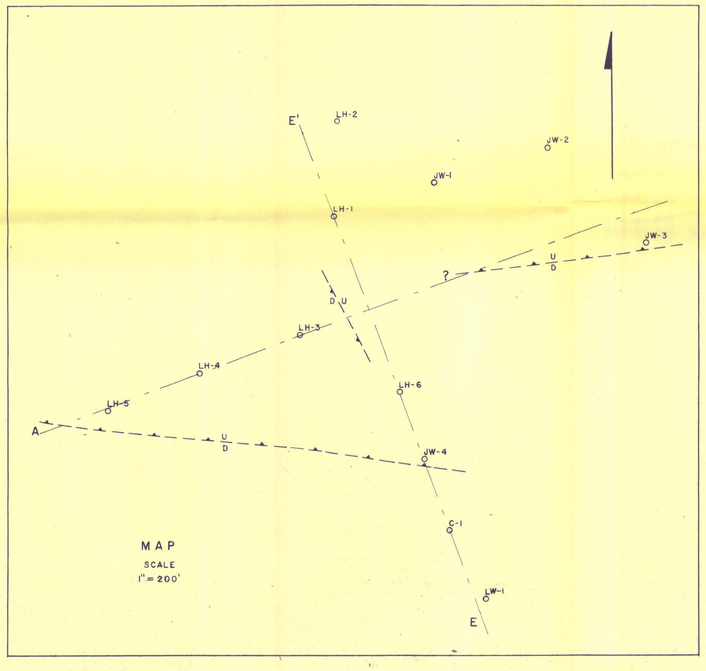
SECTION E-E'

Horizontal Scale: 1 inch = 50 feet

Vertical Scale: 1 inch = 50 feet

LEGEND

- Overburden
- Oma — Mascot formation
- Ok — Kingsport formation
- Olv — Longview formation
- Stratigraphic horizon
- Fault
- Zinc mineralization
- ____ mineralization
- Soil anomaly (.05 - .30% Zn)
- Soil anomaly (>.30% Zn)

Geology by: J. W. Spears

Drafting by: J. A. Macdonald