DMEA Form 9
Rev. 6/57

UNITED STATES
DEPARTMENT OF THE INTERIOR
Defense Minerals Exploration Administration

OFFICIAL DOCKET FILE — Idm-E NO. 960 — DMEA NO. 4178

Application
- [ ] Denied
- [ ] Withdrawn

Contract
- [x] Terminated - Not Certified
- [ ] Terminated - Certified
- [ ] Cancelled
- [ ] Royalty Agreement

The records contained in this file are marked (x) and arranged in this order:

Folder No. 1:

Left Side

- [ ] Royalty Audits
- [ ] Certification of Discovery
- [x] Closing Letter
- [x] Cost Audits
- [x] Termination Notice or Agreement 8-22-57
- [ ] Recision Notice
- [ ] Assignment of Contract
- [x] Contract Amendments
- [x] Contract with all exhibits and annexes
- [x] Owner's Consent to Lien and Subordination Agreement
- [x] Application and attachments

Right Side

- [ ] Project summary (final)
- [ ] Work Completed analysis (final)

All other material filed in chronological order including the following reports if checked:

- [ ] Field Team Semi-Annual Report for Certified Project
- [ ] Final Field Team Report (Tab)
- [x] Operator's Final Report (Tab)
- [ ] Interim Field Team Reports
- [ ] Operator's monthly reports and all attachments
- [x] On-site Exam Report (Tab)
- [ ] Settlement Sheets
- [ ] Drill Logs

Additional Folders:

Left Side

Folders No. 2 : Reports
- [ ] Analysis of Semi-Annual Inspection Reports
- [ ] Project Summary (Interim) by DMEA Engineers

Right Side

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

Folders No. 3 : Maps (Use pocket folder or envelope)

Folders No. _____ : Settlement Sheets

Folders No. _____ : Drill Logs

Folders No. _____ : Royalty material

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DMEA Form 7
(12-56)

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Date	Surnam	
7/15	Klugescheid	
	Miriam	500
7-16	Chambers	800
	Martin	130
		130
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7/16	Johnson	110
"	Hulbert	100
7/18	J.G.	22

5

JUL 17 1958

Mr. S. S. Goodwin
Vice President
The New Jersey Zinc Company
160 Front Street
New York 38, New York

Re: Docket No. DMEA-4178 (Zinc)
The New Jersey Zinc Company
Beaver Creek Area
Smyth County, Virginia
Contract No. Idm-E960

Dear Mr. Goodwin:

Reference is made to your terminated 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 records for the period indicated.

Your interest in the Defense Minerals Exploration Administration exploration program and participation therein are fully appreciated.

Sincerely yours,

C. O. Mittendorf (for)

Administrator

WPKlugescheid/er
Copy to: Docket
Admr R File
Op. Committee
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Region V (2)
Mr. Chambers, DMEA
Chron.

Klugr
Betty

DEFENSE MINERALS EXPLORATION ADMINISTRATION
CONTRACT ADMINISTRATION AND AUDIT DIVISION

REPORT OF REVIEW

I have reviewed the Monthly Reports of:

The New Jersey Zinc Company
Austinville, Virginia
and
160 Front Street
New York 38, New York

pertaining to Exploration Project Contract No. Idm-E960, DMEA No. 4178, including Amendment No. 1, for the months of August 1956 to August 1957, inclusive, covering a project for the exploration of zinc on property, known as the Beaver Creek Area located in Smyth County, Virginia.

My review included an examination of the Monthly Reports (Forms MF-104) and supporting documents attached thereto, comparison of the costs claimed 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 following reasons:

(a) The Monthly Reports were supported by documentary proof of that portion ($25,112.25) of the costs which covered work performed at unit rates under independent contract;
(b) the balance ($5,503.10) of the costs incurred were under a contract provision for payment by the Government on the basis of fixed unit costs of work actually performed; and
(c) the administrative cost to the Government of an audit would be excessive in relation to the estimated amount of possible disallowances thereunder.

The review disclosed the following facts in regard to the amount paid or to be paid the Operator:

Total cost as billed by Operator		$30,615.35
Exceptions:		
Prior to this review	$ -0-	
Herewith	-0-	-0-
Total Accepted Cost		$30,615.35

The contract calls for a 50 percent participation of exploration expenses by the United States Government. Therefore, payment to the Operator by the Government in the amount of Fifteen thousand three hundred seven and 67/100 Dollars is valid and proper, provided that the Regional Executive Officer, the Administrator, or other competent official has accepted or will accept the project as having otherwise met the terms of the contract.

Amount payable to Operator	$15,307.67
Amount reimbursed	14,382.34
Balance due Operator	$ 925.33

E. D. Talbert

December 9, 1957

E. D. Talbert, Auditor

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Klugscheid
Thompson
Selfridge
Johnson

TERMINATION AGREEMENT

It is agreed this 4th day of September, 1957, between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration hereinafter called the "Government," and the New Jersey Zinc Company, hereinafter called the "Operator," parties to that certain Exploration Project Contract No. Idm-E960 (Docket No. DMEA-4178), dated May 31, 1956, as amended, hereinafter called the "Contract," that:

1. Effective August 22, 1957, the Contract and all obligations of the parties thereunder, except as otherwise herein expressly provided, shall be and are hereby terminated.

2. The Government shall contribute only to the agreed actual and unit costs of work performed prior to August 22, 1957.

3. The Operator shall promptly perform all winding-up and settlement actions provided for in the Contract, including the rendering of the final report and final account.

4. All rights of the Government provided for in the Contract with respect to certification of discovery or development, percentage royalty and liens for its payment, records, audits, and recovery of any overpayment, are preserved.

5. The Operator hereby releases and agrees to save the Government harmless from all claims or demands under or arising out of said Contract, except as otherwise provided in this termination agreement.

IN WITNESS WHEREOF, these parties have executed this agreement as of the day and year first above written.

THE UNITED STATES OF AMERICA

By C F Mittendorf
Administrator, Defense Minerals Exploration Administration

NEW JERSEY ZINC COMPANY

Approved
Legal Form

By [illegible]

Title Vice President

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OCT 30 1957
D.M.E.A.

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Government's copy

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EXPLORATION PROJECT CONTRACT
THE NEW JERSEY ZINC COMPANY
DOCKET NO. DMEA-4178

AMENDMENT NO. 1

It is agreed this 21st day of August, 1957, between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, hereinafter called the "Government," and The New Jersey Zinc Company, hereinafter called the "Operator," that Exploration Project Contract Idm-E960 (Docket No. DMEA-4178), dated May 31, 1956, hereinafter called the "Contract," is amended as follows:

1. The following tracts of land, all being described on pages 4 and 5 of Annex I of the Contract, are deleted from the land referred to in Article 2 and Annex I of the Contract:

Name of Property Owner	
R. Glenn McAllister and Mary L. McAllister	Tracts I and II
W. C. McAllister and Mary K. McAllister and others	Tracts I, II, and III
R. J. McAllister and India McAllister	One Tract
J. Otis Bise (sometimes Bice) and Mamie J. Bise	Tracts I, II, III, and IV
William T. Bise (sometimes Bice) and Gladys Bise	One Tract

2. The Operator:

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

(b) Has, prior to the execution of this amendment, surrendered or otherwise disposed of all 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;

Robert Lemyer
Appd. for Gen.
Hugeschein
Johnson
Selfridge

(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 or affiliates, directly or indirectly, during the period expiring thirty years from the date of this Contract;

(d) Agrees that if the Operator or any of its subsidiaries or affiliates acquires any interest, title, or equity in such lands or any minerals produced therefrom, or derives any benefit therefrom, before the expiration of thirty 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 or affiliates acquired such interest, title, or equity, or any benefit therefrom, until the expiration of thirty 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.

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 amount of any item designated as "maximum."

Executed in quintuplicate the day and year first above written.

THE UNITED STATES OF AMERICA

By Frank P. Johnson
ACTING Administrator, Defense Minerals
Exploration Administration

THE NEW JERSEY ZINC COMPANY

By J Boorlem

Title VICE PRESIDENT

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DATE	INITIALS	CODE

Conformed copy
28th 2/12/57

This EXTENSION AGREEMENT made and entered into this 14th day of February, 1957, by and between D. R. KESTNER and PEARL KESTNER, his wife, parties of the first part, and THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation authorized to do business in Virginia, party of the second part;

--W I T N E S S E T H--

THAT WHEREAS, by a certain contract and agreement dated April 9, 1954, the short form of which is recorded in the Clerk's Office of ~~Wythe~~ Smyth County, Virginia, in Deed Book 128, page 90, the terms of which are incorporated herein by reference and made a part hereof as fully as if set forth herein, the parties of the first part granted to the party of the second part certain rights, privileges and options in and to a certain tract or parcel of land containing 118.57 acres, more or less, lying on Beaver Creek in the Rich Valley District of Smyth County, Virginia, conveyed to D. R. Kestner by G. E. Callihan by deed dated October 23, 1947, and recorded in the Clerk's Office of Smyth County in Deed Book 99 at page 152, which tract is shown by a plat recorded in the Clerk's Office of Smyth County in Plat Book 4 at page 64.

WHEREAS, said contracts and agreements dated April 9, 1954, expire by their terms on April 9, 1957, and the parties hereto have mutually agreed to extend said contracts and agreements.

NOW, THEREFORE, in consideration of the sum of One Dollar ($1.00), cash in hand paid by the party of the second part

to the parties of the first part, and other good and valuable consideration, the receipt whereof is hereby acknowledged, the parties of the first part hereby extend said contracts and agreements dated the 9th day of April, 1954, and all rights thereunder, for a further period of two years expiring on the 9th day of April, 1959.

The terms of this Extension Agreement are fully set forth in an agreement of even date herewith, which is here referred to and made a part hereof as if fully set forth herein; otherwise than specified therein, all the provisions of the said contracts and agreements dated April 9, 1954, shall be in full force and effect during said extended period. This Extention Agreement, and each and every provision thereof, shall be binding upon and inure to the benefit of the parties hereto and their heirs, executors, administrators, successors and assigns.

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

D. R. Kestner (signed) (SEAL)

Pearl Kestner (signed) (SEAL)

STATE OF VIRGINIA, AT LARGE:

I, D. KEITH LUPTON, a Notary Public in and for the State of Virginia, at large, do certify that D. R. Kestner and Pearl Kestner, his wife, whose names are signed to the foregoing agreement bearing date on the 14th day of February, 1957, personally appeared before me in my State aforesaid and acknowledged the same.

My commission expires_____.

Given under my hand ~~and~~ this 14th day of February, 1957.

_____
Notary Public

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MF-200
(Revised June 1954)

Docket No. DMEA 4178

Commodity Zinc

Contract No. Idm-E 960

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

EXPLORATION PROJECT CONTRACT[1]

It is agreed this MAY 31 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] THE NEW JERSEY ZINC COMPANY, a New Jersey corporation, whose mailing address is 160 Front Street, New York 38, New York, 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 one 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 Virginia, County of Smyth, and is described in Annex I.[3]

(b) The Operator represents and undertakes that:

(1) The Operator is the [4] optionee (see Annex I) 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: Consents to Lien waived.

(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 August 1, 1956 shall commence the work, and on or before November 1, 1957. (unless the Operator's obligation to prosecute the work is terminated—see Article 10) shall either have completed the work or shall have incurred allowable costs (see Article 6) in a sum not less than the estimated total allowable cost set forth in Exhibit "A."

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 $44,800.00 The Government shall contribute 50 percent of the allowable costs as they are incurred in a total sum not in excess of $22,400.00: *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; but except for any such necessary excesses in categories, subcategories, or items thereunder the Operator is not obligated to incur more than his agreed percentage of the estimated, total allowable cost of the work. 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; (2) if the Government makes a certification of discovery or development, within a period of ten years from the date of the contract, or until the total net amount contributed by the Government without interest is fully repaid, whichever occurs first. See Article 13.

(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) Categories (2) through (7) of Article 6(a) are deleted. (b) To the extent that costs are set forth in Exhibit "A" as "Fixed Unit Costs" they are in lieu of the actual costs that otherwise would be allowable costs of the project under Article 6 of the contract. The Government will contribute to the fixed unit costs as they accrue, on the basis of units of work actually performed. The fixed unit costs include all costs of the work necessary to complete the project. (c) That part of the last sentence in the first paragraph of Article 6(a) commencing after the semicolon, is deleted. (d) In Article 6(c), the reference to Article 9 is changed to Article 8. (e) In Article 8(b): (1) the word "minerals" includes limestone and dolomite products produced in processing ore; and (2) the words "ten years" are changed to "thirty years." (f) The following clause is added to Article 8(c): Provided, however, That so long as the Operator operates smelting facilities as an integrated part of its business, the settlement made by the Operator's smelter to its mine or mill on the ore or concentrates subject to the Government's royalty shall be, for the purpose of calculating the royalty payable to the Government under this contract, on the same settlement basis that the said smelter makes to its independent suppliers under the schedule most favorable to any independent supplier, or should gross income from mining operations for percentage depletion purposes in Federal income tax determination show a greater value for ore or concentrate sales than that value which would result from applying the smelter schedule most favorable to an independent supplier, the greater value will be used as the basis for calculating royalty payable to the Government.

Indritz
Dwyer
Klugescheid
Crowell
Chambers
Johnson
Martin

Executed in sextuplicate the day and year first above written.

THE UNITED STATES OF AMERICA

By C. W. Mitkendorf

Administrator, Defense Minerals Exploration Administration

THE NEW JERSEY ZINC COMPANY
(Operator)

By S. S. Goodwin

VICE PRESIDENT

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

Walter R. Anyan

[CORPORATE SEAL]

U. S. GOVERNMENT PRINTING OFFICE 16—70617-1

EXPLORATION PROJECT CONTRACT
THE NEW JERSEY ZINC COMPANY
DOCKET NO. DMMA-4178

RECEIVED
JUN 12 1958

ANNEX I

The land referred to in Article 2 of the contract consists of various privately owned tracts of land which are held by the Operator pursuant to option contracts, which permit it to engage in mineral exploration with option to purchase all mineral and mining rights upon such tracts. Each land areas are shown outlined in blue on the map (Fig. 1) entitled "The New Jersey Zinc Company, Marion, Virginia, Beaver Creek Area, ...DMMA-4178," which is attached hereto and made a part of this contract.

The various land parcels are identified as follows:

All references to Deed and Will Books concern those books which are on file in the Clerk's Office of Smyth County, Virginia.

G. W. Tyler and M. R. Tyler and others.

Expiration date of option contract (including renewals) with The New Jersey Zinc Company--February 24, 1959.

Land. Approximately 68.7 acres described in deed by Carter Tyler, Trustee, to Mary S. Tyler, dated February 1, 1937, and recorded in Deed Book 73, page 236.

D. R. Kastner and Pearl Kastner.

Expiration date of Option contract (including renewals) with The New Jersey Zinc Company--April 9, 1957.

Land. Approximately 118.57 acres, being the same land conveyed to E. F. Kastner by G. E. Gallihan by deed dated October 23, 1947 and recorded in Deed Book 79, page 152.

James F. Worley and Josephine G. Worley and others.

Expiration date of Option contract (including renewals) with The New Jersey Zinc Company--May 9, 1959.

Land. Approximately 10 acres, consisting of two parcels, namely, approximately 8½ acres, known as Lot No. One of partition of estate of E. F. Worley as shown on Plat Book One, page 86, and decree

recorded in Deed Book 66, page 55; and approximately 1½ acres which were devised to James F. Worley by will of Z. F. Worley dated September 6, 1917 and recorded in Will Book 9, page 219; less, however, approximately ½ acre, conveyed by James F. Worley and wife to James C. Worley by deed dated March 15, 1949 and recorded in Deed Book 105, page 20.

Josephine Olinger Worley and James F. Worley and others.

Expiration date of Option contract (including renewals) with The New Jersey Zinc Company--April 24, 1957.

Land. Tract I--Approximately 50 acres allotted to the above-mentioned owners by decree entered in Circuit Court of Smyth County on March , 1954 and recorded in Deed Book 127, page 1.

Tract II--Approximately 26 acres, being the same property conveyed by J. N. Troutman and wife to W. V. Olinger by deed dated January 28, 1941 and recorded in Deed Book 82, page 87.

Tract III--Approximately 18 acres, being the same property conveyed to W. V. Olinger by J. N. Troutman and Susie Olinger Troutman by deed dated January 28, 1941 and recorded in Deed Book 82, page 87.

W. T. Worley and Virgie Lee Worley.

Expiration date of Option contract (including renewals) with The New Jersey Zinc Company--May 3, 1959.

Land. Tract I--Approximately 20.5 acres known as Lot No. 5 of Z. F. Worley estate assigned to W. T. Worley by commissioners appointed to partition the Z. F. Worley estate and by decree of the Circuit Court of Smyth County and recorded in Deed Book 66, page 55.

Tract II--Approximately 2 acres of Lot. No. 2 of the Z. F. Worley estate, being the same tract of land conveyed to W. T. Worley by Trigg Parker and wife by deed dated April 10, 1948 and recorded in Deed Book 108, page 188.

Tract III--A small parcel of land conveyed to W. T. Worley by J. F. Worley and wife by deed dated January 26, 1952 and recorded in Deed Book 114, page 222.

There is to be excepted and deducted from the foregoing three tracts of land, a small parcel of land conveyed to S. E. Frye and wife by deed dated April 29 1946 and recorded in Deed Book 93, page 235.

James F. Worley and Josephine O. Worley and others.

Expiration date of Option contract (including renewals) with The New Jersey Zinc Company--May 8, 1959.

Three tracts totaling approximately 27 acres.

Land. Tract I--Approximately 16 acres known as Lot. No. 1 in the partition of the E. F. Worley estate, being also the same tract conveyed to James G. Worley by James F. Worley and wife by deed dated January 4, 1954 and recorded in Deed Book 186, page 132, wherein the said James F. Worley reserved a life estate.

Tract II--Approximately 11 acres being also the same tract conveyed to J. G. Worley by J. F. Worley and wife by deed dated January 4, 1954 and recorded in Deed Book 186, page 132, wherein the said J. F. Worley reserved a life estate.

Tract III--Approximately ½ acre conveyed to J. G. Worley by J. F. Worley and wife by deed dated March 15, 1949 and recorded in Deed Book 105, page 180.

There is to be excepted and deducted from the foregoing tracts a small parcel of land conveyed by J. F. Worley and wife to W. T. Worley by deed dated January 26, 1952 and recorded in Deed Book 114, page 202.

Birdie B. Keene and Harper Keene (sometimes King or Keen).

Expiration date of Option contract (including renewals) with The New Jersey Zinc Company--May 11, 1959.

Land. That certain tract of land containing approximately 11½ acres conveyed to Birdie B. King by Lennie May Blevins and husband by deed dated February 28, 1949 and recorded in Deed Book 103, page 590.

There is to be excepted and deducted from the above tract, a tract of approximately 2 acres conveyed by Lennie May Blevins and husband to L. B. Osburne by deed dated June 2, 1939 and recorded in Deed Book 78, page 420.

George R. Bise (sometimes Bice) widower and Ocie W. Lawrence, unmarried.

Expiration date of Option contract (including renewals) with The New Jersey Zinc Company--May 19, 1959.

Two tracts of land totaling approximately 60 acres.

Tract I--Approximately 37 acres conveyed to George R. Bise by R. B. Dedord and wife by deed dated January 31, 1936 and recorded in Deed Book 72, page 214.

Tract II--Containing 23 acres more or less conveyed to George R. Bize and Ocie W. Lawrence by Jessie H. Smith and others by deed dated January 10, 1938 and recorded in Deed Book 75, page 51. This tract is only partially shown on Figure 1 as the latter is too short.

R. Glenn McAllister and Mary L. McAllister.

Expiration date of Option contract (including renewals) with The New Jersey Zinc Company--August 16, 1959.

Tract I--Containing 97.7 acres more or less conveyed to R. G. McAllister by deed dated December 20, 1926 and recorded in Deed Book 60, page 104.

There is to be excepted and deducted from the above tract of land a tract of 5 acres conveyed by R. G. McAllister and wife to W. C. McAllister by deed dated February 21, 1938 and recorded in Deed Book 76, page 483.

Tract II--Containing 14 acres more or less conveyed to R. G. McAllister by C. J. McAllister and wife by deed dated February 21, 1938 and recorded in Deed Book 75, page 453.

W. C. McAllister and Mary K. McAllister and others.

Expiration date of Option contract (including renewals) with The New Jersey Zinc Company--August 17, 1959.

Land. Tract I--Approximately 85½ acres acquired by W. C. McAllister under the will of A. K. McAllister probated October 12, 1934 and recorded in Will Book 12, page 64 and by deed from J. N. McAllister and wife dated March 13, 1936 and recorded in Deed Book 71, page 539.

Tract II--Consisting of 5 acres and being the same property as conveyed to W. C. McAllister by R. G. McAllister and wife by deed dated February 21, 1938 and recorded in Deed Book 76, page 483.

Tract III--Containing 20 acres more or less and being the same property which was devised by A. K. McAllister by his will probated October 12, 1934 and recorded in Will Book 12, page 64, to Annie C. McAllister, his widow, (now Annie C. Jones), for life, with remainder to W. C. McAllister.

R. J. McAllister and India McAllister.

Expiration date of Option contract (including renewals) with The New Jersey Zinc Company--August 18, 1959.

Tract of land containing 114 acres conveyed to H. J. MacAllister by the partition deed of the J. S. MacAllister estate dated December 20, 1928 and recorded in Deed Book 60, page 104. The owners of the land do not own the mineral on the entire tract but only on 38 acres thereof. Reference is made to a deed from the Mathieson Alkali Works to J. S. MacAllister and others, dated September 26, 1917 and recorded in Deed Book 43, page 257 for a description of that portion of the tract on which the mineral and mineral rights are reserved by the Mathieson Alkali Works.

J. Otis Rice (sometimes Rice) and Mamie J. Rice.

Expiration date of Option contract (including renewals) with The New Jersey Zinc Company--August 20, 1959.

Land. Tract I--Containing 10 acres more or less conveyed to J. Otis Rice and Mamie Rice by J. B. Keesling and wife by deed dated May 6, 1925 and recorded in Deed Book 531, page 267.

Tract II--Approximately one-half acre conveyed to J. Otis Rice by John T. and Margaret Breedlove by deed dated March 19, 1928 and recorded in Deed Book 58, page 500.

Tract III--Containing 9 acres more or less conveyed to J. Otis Rice et ux by Cordia James and others by deed dated September 21, 1949 and recorded in Deed Book 107, page 135.

Tract IV--Being that certain tract described as Tract II in the aforesaid deed to J. Otis Rice et ux from Cordia James and others, and containing 9.43 acres.

William T. Rice (sometimes Rice) and Gladys Rice.

Expiration date of Option contract (including renewals) with The New Jersey Zinc Company--August 27, 1959.

Land. A tract containing 14 acres more or less conveyed to William T. Rice by John T. Breedlove and wife by deed dated September 4, 1946 and recorded in Deed Book 94, page 557.

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 thirty 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 thirty 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 thirty 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
THE NEW JERSEY ZINC COMPANY
DOCKET NO. DMSA-4178

RECEIVED
JUN 12 1956

EXHIBIT "A"

Description of the Work

The purpose of the project is to explore for ores of zinc by diamond drilling (plus necessary overburden drilling). The holes to be initially drilled pursuant to the contract are roughly indicated on the attached (Fig. 1) map referred to in Annex I.

The objective of the work is to investigate the ore potential of the Knox dolomite, or more exactly, the Copper Ridge dolomite which underlies the area, and which outcrops on the slopes of Beaver Creek valley. Drill holes are expected to vary from 200 feet to nearly 1,000 feet in depth locally, with an average between 500 and 600 feet. Approximately 24 holes will be required. Not more than 15,000 feet of drilling shall be performed, provided, however, that the Operator may, upon the written approval of the Government, perform more than 15,000 feet of drilling so long as the total cost of all drilling work allowable under the contract is not exceeded.

The project is not intended to accomplish the outlining of individual ore bodies. The proposed work consists of north-south fences of diamond drill holes designed to intercept pencil-shaped ore bodies pitching into the bedding from the outcrops. The drill holes shall not be located on closer spacing than 200 feet in each fence nor shall the fences be closer together than 600 feet, except with prior approval of the Government.

All diamond drilling, including the location and depths of holes, will be subject to prior Government approval.

All drill holes shall be logged geologically and all drill core will be made available to the Government for examination. All significantly mineralized core will be properly sampled and assayed for zinc. Such assays, together with proper geological logs of drill holes, will be reported to the Government, together with proper plan maps and sections showing the progress of the work. Diamond drilling will be done with AX size or larger coring bits.

The project work shall be supervised at all times by competent engineers or geologists.

Estimated Cost of the Project

Actual Costs

Category (1) Independent Contracts

Overburden drilling and diamond drilling to 250-foot depth, approximately 6,000 feet @ $2.20/ft.	$13,200.00	
Diamond drilling 250-foot to 500-foot depth, approximately 4,500 feet @ $2.45/ft.	11,025.00	
Diamond drilling 500-foot to 750-foot depth, approximately 3,000 feet @ $2.70/ft.	8,100.00	
Diamond drilling 750-foot to 1,000-foot depth, approximately 1,500 feet @ $2.95	4,425.00	
The above rates cover charges for reaming, cementing, water supply, casing, changing of location, and all other charges which may be incurred by the diamond drill contractor. 1/		$36,750.00

Categories (2) through (7)

None

Fixed Unit Costs (see Article 13)

Incidental allowance for each foot of drilling completed, 15,000 feet @ $0.53	$ 7,950.00	
100 samples of drill core to be assayed @ $1.00 per sample	100.00	8,050.00
Estimated Total Cost of the Project		$44,800.00
Government Participation @ 50%		$22,400.00

1/ Neither the cost nor value of casing left in drill holes at option of the Operator will be accepted as a charge under the contract.

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

RECEIVED
FEB 14 1956

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

Not to be filled in by applicant

Docket No. DMEA-4178
Metal or Mineral Zinc
Date Received 2-14-56
Estimated Cost $55,689.00
Participation (Government %)

INSTRUCTIONS

1. *Name of applicant.*—(*a*) State here your full legal name, in the form in which you will wish to contract, and your mailing address: The New Jersey Zinc Company
160 Front Street
New York 38, New York

(*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. A New Jersey Corporation

(*c*) If a corporation, add to above statement, titles, names and addresses of officers. See sheet No. 1 attached

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

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

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

See sheet No. 2 attached

(*b*) State any mine name by which the property is known. None

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

See sheet No. 2 attached

(*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. See Exhibit "A" and Sheet No. 2

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

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

4. *Physical description.*—(*a*) Describe in detail any mining or exploration operations which have been or now are being conducted upon the land, including existing mine workings and production facilities. State your interest, if any, in such operations. Also describe accessibility of mine workings for examination purposes. See sheet No. 3 attached

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades. See sheet No. 3.

(*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. See sheet No. 3 attached.

(*d*) State the facts with respect to the accessibility of the project: Access roads, distances to shipping, supply and residence points. See sheet No. 3 attached.

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

See sheet No. 3 attached.

16—66551-1

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N. Y.

5. *The exploration project.*—(*a*) State the mineral or minerals for which you wish to explore This exploration seeks to discover zinc ore bodies.

(*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. See sheet No. 4 attached.

(*c*) The work will start within ..... days and be completed within ..... 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. See sheet No. 4 attached

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

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

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

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

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

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

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

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

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

NOTE.—No items of general overhead, corporate management, interest, taxes (other than payroll and sales taxes), or any other indirect costs, or work performed or costs incurred before the date of the contract, should be included in the estimate of costs. See sheet No. 5 attached.

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 13 February, 1956

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N. Y
(Applicant)

By [signature]

Vice President and
Manager of Mines

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

Sheet No. 1

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1 (c) of instructions

Names, Titles, and addresses of Officers.

Mr. R. L. McCann, President	160 Front St., New York
Mr. C. Howard George, Executive Vice President	ditto
Mr. S. S. Goodwin, Vice President	ditto
Mr. Walter R. Anyan, Secretary	ditto
Mr. E. E. Schwegler, Comptroller	ditto
Mr. Samuel Riker, Treasurer	ditto
Mr. R. G. Kenly, Vice President	ditto
Mr. F. H. Baxter, Vice President	ditto
Mr. L. F. Johnson, Vice President	ditto
Mr. P. M. Ginder, Vice President	ditto
Mr. R. A. Oberfell, Assistant Secretary	ditto
Mr. W. L. Brookfield, Assistant Secretary	ditto
Mr. W. W. Gamwell, Assistant Treasurer	ditto

THE NEW JERSEY [illegible]
160 FRONT ST., NEW YORK N. Y.

Sheet No. 2

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No. 3 of Instructions - Applicant's Property Rights

(a) The land under consideration consists of a group of properties as outlined on the accompanying map, Figure 1. The area outlined in blue is controlled by the option contracts summarized below. We are still negotiating for the property outlined in brown. The legal description of each tract is included in the contract and agreement under which the property is controlled by this Company. Copies of each of these contracts are attached to this application (Exhibit A.) A summary listing of the properties and pertinent data follows:

Name of Property Owner	Acreage	Expiration Date of Option
G. W. Tyler, et al	62.7	2/24/59 (1 yr ext to 5)
D. R. Kestner	118.57	4/9/57 (3 yrs)
Josephine O. Worley, et al	94	4/24/59 (1 yr ext to 5)
W. T. Worley, et ux	22.5	5/3/59 " "
J. F. Worley, et al	27	5/8/59 " "
J. F. Worley, et al	10	5/9/59 " "
Birdie B. King, et vir	11.5	5/11/59 " "
George R. Bise, et al	60.0	5/19/59 " "
R. G. McAllister, et ux	112.0	8/16/59 " "
W. C. McAllister, et al	70.0	8/17/59 " "
R. J. McAllister, et ux	38	8/18/59 " "
J. Otis Bise, et ux	28.50	8/20/59 " "
W. T. Bise, et ux	14	8/27/59 " "

(c) The New Jersey Zinc Company holds options for the purchase of all mineral and mining rights on each of these properties and has limited surface purchase privileges. This Company holds the exclusive right to prospect and explore for minerals on the properties.

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N. Y.

Sheet No. 3

No. 4 of Instructions - Physical Description

(a) This property has no history of mining and is composed of farming and grazing lands.

As far as we know the first exploration activity was our campaign of geochemical prospecting in which the Beekmantown dolomite of the area was systematically soil sampled. This work led to the discovery of two anomalies which in turn led to the discovery of the zinc mineralization.

(b) There has been no production.

(c) The Beaver Creek area in which the anomalies and outcrops were found lies in the Appalachian Shingle Block between the Pulaski and Saltville faults. This block contains nearly all of the formations present in the region including all the formations from the upper Cambrian to the Mississippian. In the area the Mississippian has yielded salt and gypsum and the Ordovician has yielded chemical limestone but there has been no metalliferous production.

The Beaver Creek prospect lies in the Knox dolomite, a thick formation of Cambro-Ordovician age or more exactly in the Copper Ridge dolomite about 150 feet below the base of the Chepultepec limestone. The mineralized bed outcrops on the slopes of Beaver Creek valley and can be traced intermittently for 3000 feet. A second mineralized area was found on the Roy McAllister farm a mile and two-thirds southwest of Beaver Creek.

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N. Y.

Sheet #3 Cont'd. No. 4 of Instructions - Physical Description

The mineralization is bedded and follows the same stratigraphic horizon through the area. The exposed mineralization varies from two to ten feet in thickness. The mineralized bed is composed of saccharoidal dolomite with occasional masses and stringers of coarse white dolomite. A slight amount of brecciation of the bed can be seen.
Sphalerite occurs disseminated in the bed and at one point as a mass of high grade calamine, five feet in diameter.
It is believed that these showings justify a test and a method of testing them by drilling is outlined below.

(d) The prospect is four miles northeast of Saltville and can be reached by paved state highway 610 to Beaver Creek and graveled county road 633 which follows the valley of Beaver Creek. Saltville would be used for shipping but supply and residence headquarters would be Austinville.

(e) Manpower, materials, supplies, equipment, water and power will be readily available.

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N. Y.

No. 5 of Instructions - The Exploration Project

(b) The proposed work consists of north-south fences of diamond drill holes designed to intercept pencil-shaped orebodies pitching in the bedding from the outcrops. These tentative holes can be seen on Figure 1.

It is believed that any orebodies present will pitch northeast from the outcrops at a very acute angle to strike. Because of this belief the northeast side of the anomalies will be tested first.

If ore is found it will not be drilled out in detail but enough drilling will be done to determine whether it is of commercial size and grade. Holes are expected to vary from 200 to 500 feet in depth at the beginning.

(d) The New Jersey Zinc Company has had wide experience in large scale exploration programs in the Austinville district, as well as many other mining districts in the U.S. This project will be under the supervision of W. L. Albers, Superintendent, and W. Horatio Brown, Chief Geologist, who have been active in the Austinville district for 29 and 15 years respectively.

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N. Y.

Sheet No. 5

No. 6 of Instructions - Estimated Costs

Category 1 - Independent Contracts Diamond Drilling	15,000 @ 3.09	$46,350

See Exhibit "B"

Contract with E. J. Longyear Co. for drilling the Chatham Hill area which we believe we can use.

$2.85	Av. Depth
.10	Water
.10	Service
.04	Casing
$3.09	

Category 2

a. Supervision		
Geologist - half time 12 mos.		3,000
Asst. Geologist - Surveyor half time 12 mos.		2,500
b. Technical Services		
Draftsman 1/3 time		1,300
c. Operating materials and supplies		
Core boxes, etc.		400
d. Operating equipment		
Cars 15,000 mi. @ 8¢		1,200
e. Rehabilitation and Repairs - None		
f. New buildings, improvements - None		
g. Miscellaneous		
Chemical assays	100 @ $1.50	150
Accounting and Secretarial charges	$30 x 12 mos.	360
Workmen's Comp. Insurance	1% x 7160	71
Insurance & Payroll Taxes	5% x 7160	358
Total estimated cost of project		$55,689

55,689
150
15,000 | 55,539 | 3.7026

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK

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"EXHIBIT A"

Option Contracts

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N. Y.

THIS AGREEMENT made and entered into on this 24th day of February 1954, by and between George W. Tyler and Hazel R. Tyler, his wife, Sara Tyler Darby, widow, Jane C. Tyler, single, Elizabeth Tyler Copenhaver and J. Kelly Copenhaver, her husband, hereinafter called the Owners, parties of the first part, and THE NEW JERSEY ZINC COMPANY, a New Jersey corporation, authorized to do business in the State of Virginia, party of the second part, hereinafter called the Company:

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners grant unto the Company for a period of one year from the date hereof, with the privilege of extension for further periods not to extend beyond February 24, 1959, upon payment of sums of money agreed upon, the exclusive option to purchase all minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind in, under or on the following described premises situated in the Rich Valley Magestrial District of Smyth County, Virginia:

And being the same property conveyed to Mary S. Tyler by Carter Tyler, Trustee, by deed dated February 1, 1937, and recorded in Deed Book 73 at page 236, containing 62.7 acres, and described in the said deed as follows, to-wit:

"Beginning near scale-house lot with a stake in the Valley Road 24 links from a walnut marked on the south side as a pointer and on the north side as a fore and aft marked tree; thence with said road north 65° 15' E. 17.32 rods to a stake, N. 52° E. 19.75 rods to a stake, N. 25° E. 6.80 rods to a stake N. 35° 30' W. 11.80 rods to a stake N. 47° W. 13.60 rods, N. 29° 30' W. 12 rods to a stake in the turn of same S. 45° 15' E. 10 rods to a stake, S 65° 30' E. 22 rods to a stake S 65° E. 16 rods to a stake at the intersection of the Beaver Creek road, thence following the

THE NEW JERSEY ZINC COMPANY
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Beaver Creek road in a northerly direction N. 40° W. 6 rods N. 60° W. 18 rodes N. 50° 30' W. 6 rods N. 31° W. 38 rods N. 45° 30' W. 21 rods, N. 48° 30' W. 69 rods N. 40° W. 25.72 rods, N. 56° 30' W. 10.36 rods to a stake on the southwest side of Beaver Creek about three rods from the same, a corner of the Page land, and with a line of same, S. 9° W. 133 rods to a stake, formerly dogwood and southwood pointers, in said Page line, at a corner to dower and with dower line N. 57° E. 44.20 rods to a stake 3 links from blackoak pointer on ridge N. 82° 13' E. 30.40 rods to a ~~wi~~ walnut on last point of ridge, thence ~~X~~ S. 28° 30' E. 72 rods to the beginning.

And being also the same property devised to the parties of the first part by Mary S. Tyler Jennings by will dated _____ day of _____, 19_____.

THE NEW JERSEY ZINC COMPANY
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together with the right to prospect for, mine, mill, store and remove the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of an Agreement of even date herewith entered into between the parties hereto. The Owners also grant to the Company during said periods the right to prospect for, explore and examine all said minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind in, under or on all of said premises, including the right to enter thereupon, to use available water and to remove samples, in accordance with the terms of the last mentioned Agreement. The terms of this option Agreement are fully set out in the Agreement of even date herewith, which is here referred to and made a part hereof as if fully set out at length.

The term "parties of the first part" as herein used shall be construed to mean, "the parties of the first part, their heirs, assigns and successors in title howsoever such succession may be accomplished" and the term "party of the second part" shall be construed to mean "party of the second part, its assignees, designees and successors in title howsoever such succession may be accomplished."

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

George W. Tyler (signed) (Seal)

Hazel P. Tyler (signed) (SEAL)

Jane C. Tyler (signed) (Seal)

Lora T. Hosking (signed) (SEAL)

Elizabeth Tyler Rosenlaw (signed) (SEAL)

Kelley Copeshaw (signed) (SEAL)

(SEAL)

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N. Y.

VIRGINIA

City of Alexandria
~~STATE-AT-LARGE~~, To wit:

I, Susie A. Davis, a Notary Public in and for the City of Alexandria, do certify that George W. Tyler and Hazel R. Tyler whose names are signed to the foregoing Agreement bearing date on the 24th day of February, 1954, personally appeared before me in my state aforesaid and acknowledged the same.

My commission expires 11/26 1956.

Given under my hand this 14th day of April, 1954.

Susie A. Davis (Signed)
Notary Public

MARYLAND

CITY OF BALTIMORE, To-wit:

I, Lawrence D. Reinier, a Notary Public in and for the City of Baltimore, State of Maryland, do certify that Jane S. Tyler, single, whose name is signed to the foregoing Agreement bearing date on the 24th day of February, 1954, personally appeared before me in my city aforesaid and acknowledged the same.

My commission expires May 2, 1955.

Given under my hand and official seal this 2nd day of March, 1954.

Lawrence D. Reinier (Signed)
Notary Public

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N. Y.

STATE OF Florida

COUNTY OF Pinellas, To-wit:

I, Christine Meyer, a Notary Public in and for the County of Pinellas, State of Florida, do certify that Iona T. Kerby, whose names ~~are~~ is signed to the foregoing Agreement bearing date on the 24th day of February, 1954 personally appeared before me in my County aforesaid and acknowledged the same.

My commission expires December 29, 1957.

Given under my hand ~~and official seal~~ this 8th day of March, 1954.

Christine Meyer (signed)
Notary Public

STATE OF Virginia

~~COUNTY~~ City OF Richmond, To-wit:

I, Allen E. Johnson, a Notary Public in and for the ~~County~~ City of Richmond, State of Virginia, do certify that Charles Tyler Copenhaver & J. Kelley Copenhaver, whose names are signed to the foregoing Agreement bearing date on the 24 day of February, 1954, personally appeared before me in my County aforesaid and acknowledged the same.

My commission expires 5-19-56.

Given under my hand ~~and official seal~~ this 12 day of March, 1954.

Allen E. Johnson (signed)
Notary Public

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N. Y.

THIS AGREEMENT made and entered into on this 9th day of April, 1954, by and between D. R. Kestner and Pearl Kestner, his wife,

hereinafter called the Owners, parties of the first part, and THE NEW JERSEY ZINC COMPANY, a New Jersey corporation, authorized to do business in the State of Virginia, party of the second part, hereinafter called the Company:

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners grant unto the Company for a period of three years from the date hereof, ~~with the privilege of extension for further periods not to extend beyond 19---, upon payment of sums of money agreed upon~~, the exclusive option to purchase all minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind in, under or on the following described premises situated in the Rich Valley Magisterial District of Smyth County, Virginia:

DRK
DKL

Being the same property conveyed to D. R. Kestner by G. E. Callihan by deed dated October 23, 1947, and recorded in the Clerk's Office of Smyth County in Deed Book 99 at page 152, wherein the said property is described as follows:

"A tract of land containing 118.57 acres, more or less, lying on Beaver Creek in Rich Valley District, Smyth County, Virginia, being the same land which was conveyed to G. E. Callihan by R. T. Asbury and wife by deed dated October 30, 1944, and recorded in the Clerk's Office of Smyth County in Deed Book 89, page 278, being a part of the land which was conveyed to R. T. Asbury and Emma Asbury by deeds from Annie M. Smith dated March 13, 1940, and recorded in Deed Book 80 page 437, and from B. L. Dickenson, Special Commissioner, dated March 16, 1940, recorded in

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N.Y.

VIRGINIA:

STATE AT LARGE, To-wit;

I, D. Keith Lupton, a Notary Public in and for the Commonwealth of Virginia, at large, do certify that ~~D. R. Keithan and Pearle Keithan, his wife~~

whose names are signed to the foregoing Agreement bearing date on the 7th day of April, 1954, personally appeared before me in my state aforesaid and acknowledged the same, together with the initialed interlineation on page 1.

My commission expires July 1 1957.

Given under my hand this 7th day of April, 1954.

D. Keith Lupton (seal)
Notary Public

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N. Y.

THIS AGREEMENT made and entered into on this 9th day of May, 1954, by and between James F. Worley and Josephine O. Worley, his wife, and Fred H. Worley and Pauline B. Worley, his wife, hereinafter called the Owners, parties of the first part, and THE NEW JERSEY ZINC COMPANY, a New Jersey corporation, authorized to do business in the State of Virginia, party of the second part, hereinafter called the Company:

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners grant unto the Company for a period of one year from the date hereof, with the privilege of extension for further periods not to extend beyond May 9th, 1959, upon payment of sums of money agreed upon, the exclusive option to purchase all minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind in, under or on the following described premises situated in the Rich Valley Magisterial District of Smyth County, Virginia:

That tract or parcel of land totalling approximately ten acres known as the James F. Worley Home Place and being composed of two parcels, the first approximately 8½ acres and known as Lot No. One of the partition of the Z. F. Worley estate as will appear from a plat recorded in the Clerk's Office of Smyth County in Plat Book One, page 86 which was assigned to James F. Worley by Commissioners appointed to partition the Z. F. Worley estate as will appear from the Commissioners report and the decree of the Circuit Court of Smyth County confirming said report dated September 8, 1932, and recorded in the Clerk's Office of Smyth County in Deed Book 66, page 55. The other parcel containing approximately 1½ acres which was devised to

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N. Y.

James F. Worley by the will of F. F. Worley dated September 4, 1917 and recorded in the Clerk's Office of Smyth County in Will Book 9 at page 219. The whole tract being bounded on the West by the lands of Trigg Parker, on the North by the lands of J. L. Davidson, and on the East and South by the lands of F. M. Worley and being the same property conveyed by James F. Worley and wife to Fred H. Worley by deed dated January 4, 1954 and recorded in the Clerk's Office of Smyth County in Deed Book 176 at page 131, wherein the said James F. Worley reserved a life estate.

There is to be excepted and deducted from the foregoing tract a parcel of land containing approximately one half acre conveyed by James F. Worley and wife to James C. Worley by deed dated March 15, 1949 and recorded in the Clerk's Office of Smyth County in Deed Book 165 at page 20. Reference is hereby made to the foregoing deed for an exact description of the tract to be deducted.

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N. Y.

together with the right to prospect for, mine, mill, store and remove the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of an Agreement of even date herewith entered into between the parties hereto. The Owners also grant to the Company during said periods the right to prospect for, explore and examine all said minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind in, under or on all of said premises, including the right to enter thereupon, to use available water and to remove samples, in accordance with the terms of the last mentioned Agreement. The terms of this option Agreement are fully set out in the Agreement of even date herewith, which is here referred to and made a part hereof as if fully set out at length.

The term "parties of the first part" as herein used shall be construed to mean, "the parties of the first part, their heirs, assigns and successors in title howsoever such succession may be accomplished" and the term "party of the second part" shall be construed to mean "party of the second part, its assignees, designees and successors in title howsoever such succession may be accomplished."

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

Jas T. Worley (signed) (Seal)

Josephine O. Worley (signed) (Seal)

Fred H. Worley (signed) (Seal)

Pauline B. Worley (signed) (Seal)

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N. Y.

together with the right to prospect for, mine, mill, store and remove the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of an Agreement of even date herewith entered into between the parties hereto. The Owners also grant to the Company during said periods the right to prospect for, explore and examine all said minerals, mineral substances, metals, ores, ore-bearing materials and rock of every kind in, under or on all of said premises, including the right to enter thereupon, to use available water and to remove samples, in accordance with the terms of the last mentioned Agreement. The terms of this option Agreement are fully set out in the Agreement of even date herewith, which is here referred to and made a part hereof as if fully set out at length.

The term "parties of the first part" as herein used shall be construed to mean, "the parties of the first part, their heirs, assigns and successors in title howsoever such succession may be accomplished" and the term "party of the second part" shall be construed to mean "party of the second part, its assignees, designees and successors in title howsoever such succession may be accomplished."

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

D. R. Kistler (signed) (Seal)

Rene D. Kistler (signed) (Seal)

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK

VIRGINIA

STATE AT LARGE, To-wit;

I, D. Keith Lupton, a Notary Public in and for the Commonwealth of Virginia, at large, do certify that James F. Worley and Josephine O. Worley

whose names are signed to the foregoing Agreement bearing date on the 1st day of May, 1954, personally appeared before me in my state aforesaid and acknowledged the same.

My commission expires 19 .

Given under my hand this 1st day of May, 1954.

D. Keith Lupton (signed)
Notary Public

VIRGINIA:

STATE AT LARGE, To-wit:

I, D. Keith Lupton, a Notary Public in and for the Commonwealth of Virginia, at large, do certify that Fred H. Worley and Pauline B. Worley, his wife, whose names are signed to the foregoing Agreement bearing date on the 9th day of May, 1954, personally appeared before me in my State aforesaid and acknowledged the same.

My commission expires .

Given under my hand this 9th day of May, 1954.

D. Keith Lupton (signed)
Notary Public

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK, N. Y.

Confirmed 4/21/54 (Not recorded — judge instructed to keep from recorded).

This AGREEMENT made and entered into this 24th day of April, 1954, by and between Josephine Olinger Worley and James F. Worley, her husband, Shirley Olinger Kessee and Thomas Kessee, her husband, Louise Olinger Deane (sometimes known as Eva Olinger Deane) widow, Warren V. Olinger and Mildred Olinger, his wife, Charles S. Olinger and ~~Linnette~~ Lynette Olinger, his wife, ~~Charles~~ Clarence E. Olinger (sometimes known as Eugene Olinger) and Mildred D. Olinger, his wife, and Stuart B. Campbell, Jr., Special Commissioner, under decree of the Circuit Court of Smyth County entered the _____ day of _____, 1954, to execute this contract on behalf of Shirley Olinger Kessee and Kenneth Mason Olinger, parties of the first part, hereinafter called the "Owners", and THE NEW JERSEY ZINC COMPANY, a Corporation qualified to do business in Virginia, party of the second part, hereinafter called the "Company."

W I T N E S S E T H

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners grant unto the Company for a period of 1 years from the date hereof, with the privilege of extension for further periods not to extend beyond April 24th, 1957, upon payment of sums of money agreed upon, the exclusive option to purchase all minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind in, under or on the following described premises situated in the Rich Valley Magisterial District of Smyth County, Virginia:

TRACT NO. 1: Being that certain tract or parcel of

THE NEW JERSEY ZINC CO
160 FRONT ST., NEW YORK N.

land known as the W. V. Olinger home place consisting of 50 acres, more or less, and which was conveyed to T. E. Worley by Isaac Spratt and Mary Spratt, his wife, by deed dated 14 December, 1880 and recorded in the Clerk's Office of Smyth County in Deed Book 13, page 290, wherein said tract is described as follows:

"Beginning at a spotted white oak on the west side of a ridge and running N 14° W 44 4/5 poles to a chesnut; thence S 57¼° W 7 3/5 poles to an apple tree; thence N 66 3/4° W 76 poles to a chesnut in a line of said Spratt and David Humphrey on the top of a high ridge; thence S 45½ W 18 poles to a large double chesnut corner to said Spratt and Humphrey on the top of said ridge, thence with a line of the same S 49° W 76 poles to a maple sprout with sourwood and chesnut pointers on the north side of a ridge; thence crossing said ridge and a deep hollow S 27½° E 95 poles to a chesnut on a ridge in a line between said Spratt and W. T. Worley; thence N 40° E 31 poles to a white oak and chesnut on said ridge; thence N 71½ E 50 2/5 poles to three sourwood sprouts; thence N 32° E 17 2/5 poles to a white oak; thence N 58¼° E 43 poles to the beginning."

However there has been conveyed off of this tract 28 acres one rood and 21½ poles by T. E. Worley and wife to W. T. Worley by deed dated 13 August 1883 and recorded in the Clerk's Office of Smyth County in Deed Book 15, page 154, wherein the said tract is described as follows:

"Beginning at two sourwoods and dogwood corner to Thomas E. Worley in a line of David Humphrey as established and this day marked by me and agreed to by David Humphrey, J. W. Justice, Thomas E. Worley and William T. Worley, parties interested in said line and running S 46½ W 51 poles to a stake; thence S 27½°

THE NEW JERSEY ... COMPANY
160 FRONT ST., NEW YORK N

a walnut N 38° 09' E 255 feet to a set stone corner to Laura Gillispie and with same N 49 3/4 W 800 feet to a point in the farm road on top of a hill, corner to the Osborne heirs, and with same N 86° 12' W 590 feet to a set stone answering to 2 chesnuts S 11 E 188 feet to a set stone on top of the ridge, S 41 W 466 feet to the beginning."

Being also the same property conveyed by Bessie Olinger Hodge to J. H. Troutman by deed dated 11 March, 1937 and recorded in Deed Book 71 at page 493 and being also the sam e property conveyed by J. H. Troutman and wife to W. V. Olinger by deed dated 28 January, 1941 and recorded in Deed Book 82 at page 87, being also the same property allotted to the parties of the first part by partition of the W. V. Olinger estate as set out above. Reference is hereby made to the foregoing deeds for a further description of the said tract number 2.

TRACT NO. 3: Consisting of 18 acres allotted to Susie Olinger Troutman in the partition of the William Olinger estate by deed dated 18 November, 1935 and recorded in Deed Book 71 at page 490, wherein the said tract is described as follows:

"Beginning at a set stone in the Gillispie line, a corner to Bessie Hodge, and with same and others S 55¼ W 1459 feet to a post on the east side of a road; S 13½ E 413 feet to a set stone, maple called for, S 77½ W 204 feet to a white oak; S 12.05' E 394 feet to a chesnut oak stump; S 61 W 222 feet crossing the road and branches to a white oak, corner to W. V. Olinger's other land, S 30 E 63 feet to a black oak, N 62 E 450 feet recrossing said branch and road to a chesnut oak;

THE NEW JERSEY ZINC COMPANY
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together with the right to prospect for, mine, mill, store and remove the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of an Agreement of even date herewith entered into between the parties hereto. The Owners also grant to the Company during said periods the right to prospect for, explore and examine all said minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind in, under or on all of said premises, including the right to enter thereupon, to use available water and to remove samples, in accordance with the terms of the last mentioned Agreement. The terms of this option Agreement are fully set out in the Agreement of even date herewith, which is here referred to and made a part hereof as if fully set out at length.

The term "parties of the first part" as herein used shall be construed to mean, "the parties of the first part, their heirs, assigns and successors in title howsoever such succession may be accomplished" and the term "party of the second part" shall be construed to mean "party of the second part, its assignees, designees and successors in title howsoever such succession may be accomplished."

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

Josephine Clinger Worley (signed) (Seal)

James F. Worley (signed) (Seal)

_____ (SEAL)

Thomas Reese (signed) (SEAL)

Louise Clinger Reese (signed) (SEAL)

Warren V. Clinger (signed) (SEAL)

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N. Y.

Mildred Olinger (signed) (SEAL)

Charles S. Olinger (signed) (SEAL)

Lynette Olinger (signed) (SEAL)

Clarence E. Olinger (signed) (SEAL)

Mildred D. Olinger (SEAL)

(SEAL)

VIRGINIA:

STATE AT LARGE, To-wit:

I, D. Keith Lupton, a Notary Public in and for the Commonwealth of Virginia, at large, do certify that Josephine Olinger Worley and James F. Worley, her husband, Thomas Kesse, husband of Shirley Olinger Kesse ~~Shirley Olinger Kesses and Thomas Kesses, her husband~~, Louise Olinger Doane (sometimes known as Eva Olinger Doane) widow, Warren V. Olinger and Mildred Olinger, his wife, Charles S. Olinger and Lynette ~~Linnette~~ Olinger, his wife, Clarence ~~Charles~~ E. Olinger (sometimes known as Eugene Olinger) and Mildred D. Olinger, his wife, ~~and Stuart B. Campbell, Jr., Special Commissioner,~~ whose names are signed to the foregoing Agreement bearing date on the 24th day of April, 1954, personally appeared before me in my state aforesaid and acknowledged the same.

My commission expires _____.

Given under my hand this 24th day of April, 1954.

D. Keith Lupton (signed)
Notary Public

THE NEW JERSEY ZINC COMPA
160 FRONT ST., NEW YORK N

RECEIVED
FEB 14 1956

THIS AGREEMENT made and entered into on this 3 day of May, 1954, by and between W. T. Worley and Virgie Lee Worley, his wife,

hereinafter called the Owners, parties of the first part, and THE NEW JERSEY ZINC COMPANY, a New Jersey corporation, authorized to do business in the State of Virginia, party of the second part, hereinafter called the Company:

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners grant unto the Company for a period of one year from the date hereof, with the privilege of extension for further periods not to extend beyond May 3, 1959, upon payment of sums of money agreed upon, the exclusive option to purchase all minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind in, under or on the following described premises situated in the Rich Valley Magisterial District of Smyth County, Virginia:

Being those certain three parcels or tracts of land totalling approximately 22 acres and being bounded and described as follows to-wit:

TRACT NUMBER ONE: Being that tract of land containing 20.5 acres bounded on the West by the lands of D. R. Kestner; on the North by the lands of J. F. Worley; on the East by the lands of F. M. Worley; and on the South by other lands of W. T. Worley and known as Lot No. 5 in the partition of the Z. F. Worley estate as shown by a plat made by B. B. Roberts, Surveyor, recorded in the Clerk's Office of Smyth County in Plat Book One at page 86. This tract having been assigned to W. T. Worley, one of the parties of the first part, by commissioners appointed to partition the Z. F. Worley estate as will be seen by the said commissioner's report and the Decree of the Circuit Court of Smyth County confirming the same dated 8 September 1932 and recorded in the Clerk's Office of Smyth County in Deed Book 66 at page 55. Reference is hereby made to the said plat

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THE NEW JERSEY ZINC COMPANY
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and Decree for a further description of the said Tract Number One.

TRACT NUMBER TWO: Being that tract of land containing 2 acres coming off the north end of Lot No. 2 of the Z. F. Worley estate assigned to Valley Gillispie and others by a Decree of the Circuit Court of Smyth County dated 8 September 1932 and recorded in the Clerk's Office of Smyth County in Deed Book 66 at page 55 and being also the same tract of land conveyed to W. T. Worley, one of the parties of the first part by Trigg Parker et ux by deed dated 10 April 1948 and recorded in the Clerk's Office of Smyth County in Deed Book 108 at page 188 wherein the said tract is described as follows:

" Beginning at the northwest corner of the 10.5 acre tract and a corner to W. T. Worley and Dave Kestner; thence in a southward direction with the line of Dave Kestner 279 feet more or less, to a point in the Kestner line and a division line between the land here conveyed to the second parties and the land hereinafter conveyed to the first parties at a wire fence; thence in an eastward direction with the said wire fence 135 feet, more or less, to a corner; thence in a northward direction with said fence 15 feet, more or less; thence with said fence in an eastward direction 240 feet, more or less, to a point in the F. M. Worley line; thence with said Worley's line in a northward direction267 feet to the line of W. T. Worley; thence in a westward direction with the line of W. T. Worley 291 feet, more or less, to the place of beginning."

TRACT NUMBER THREE: Being that small parcel of land conveyed to W. T. Worley, one of the parties of the first part, by J. F. Worleyet ux by deed dated 26 January 1952 and recorded in the Clerk's Office of Smyth County in Deed Book 114 at page 202. Beginning at a set stone on the line between J. F. Worley and W. T. Worley about thirty feet north of a big oak, thence leaving the said set stone in ~~northward~~ a westward direction a new line about 80 feet to a stake, thence in a southward direction to Kestner's line 23 feet, thence with Kestner's line in an eastward direction 69 feet, thence in a northward direction a new line 41 feet to the beginning.

There is to be excepted and deducted from the foregoing three tracts of land the following small parcel conveyed by the parties of the first part to S. E. Frye et ux by deed dated and recorded in the Clerk's Office of Smyth County in Deed Book 93 at page 235 wherein the said tract is described as follows:

" Beginning at a point in the middle of a private road in the line of Lot No. 4 assigned to H. G. Worley by the above mentioned decree and now owned by F. M. worley, said point being 250 feet northeast of the corner of Lot No.2 and Lot No. 3A; thence for a division line between the property herein conveyed and the balance of the land of the parties of the first part, in a westerly direction 192 feet to a stake; thence in a northerly direction 220 feet to a stake; thence in an easterly direction 185 feet to a point in the middle od said private road in the line of F. M. Worley; thence with said F. M. Worley and the middle of said road in a southerly direction 250 feet to the Beginning".

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160 FRONT ST., NEW YORK N

together with the right to prospect for, mine, mill, store and remove the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of an Agreement of even date herewith entered into between the parties hereto. The Owners also grant to the Company during said periods the right to prospect for, explore and examine all said minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind in, under or on all of said premises, including the right to enter thereupon, to use available water and to remove samples, in accordance with the terms of the last mentioned Agreement. The terms of this option Agreement are fully set out in the Agreement of even date herewith, which is here referred to and made a part hereof as if fully set out at length.

The term "parties of the first part" as herein used shall be construed to mean, "the parties of the first part, their heirs, assigns and successors in title howsoever such succession may be accomplished" and the term "party of the second part" shall be construed to mean "party of the second part, its assignees, designees and successors in title howsoever such succession may be accomplished."

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

W. T. Worley (Seal)

Virgie Lee Worley (Seal)

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N.

RECEIVED
FEB 14 1956

VIRGINIA
STATE AT LARGE, To-wit:

I, D. Keith Lupton, a Notary Public in and for the Commonwealth of Virginia, at large, do certify that W. T. Worley and Virgie Lee Worley, his wife, whose names are signed to the foregoing Agreement bearing date on the 3 day of May, 1954, personally appeared before me in my state aforesaid and acknowledged the same.

My commission expires Notary Public for State of Va. at large. My commission expires July 1st, 1957

Given under my hand this 3 day of May, 1954.

D. Keith Lupton (Signed)
Notary Public

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N. Y.

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FEB 14 1956

E 92 poles to a chesnut on a ridge W. T. Worley's corner, thence N 40° E with Spratt's land 31 poles to a white oak and chestnut oak on said ridge, thence N 71½° E 21 poles to two chesnuts Thomas E. Worley's corner, thence leaving Spratt's land and with Thos. E. Worley N 27½° W 97 poles to the beginning". The said 50 acre tract being the same property conveyed by T. E. Worley and wife to Jerry Smith, et al, by deed dated 9 August, 1905, and recorded in the Clerk's Office of Smyth County in Deed Book 33, page 291 and being also the same property conveyed by Jerry Smith, et al to William Olinger by deed dated 11 March, 1909 and recorded in the Clerk's Office of Smyth County in Deed Book 34, page 563, and being also the same property conveyed by William Olinger to W. V. Olinger by deed dated 11 March, 1914 and recorded in Deed Book 41, page 485 and being also the same property allotted to the parties of the first part by decree entered in the Circuit Court of Smyth County on the _____day of March, 1954, and recorded in Deed Book 127 at page 1. Reference to all of the foregoing deeds is hereby made for a further description of the said tract number 1.

TRACT NO. 2: Being that certain tract or parcel of land containing 26 acres allotted to Bessie Hodge in the partition of the William Olinger estate by deed dated 18 November, 1935 and recorded in Deed Book 71, page 490, wherein the said tract is described as follows:

"Beginning at a locust on top of a hill a corner to Doane's land and with same S 53¼ E 740 feet to a white oak S 1/2 E 300 feet to a post; S 34 3/4 E 213 feet to a post in Susie O. Troutman's line, and with same N 55¼ E 832 feet to a set stone in Gillispies line and with same N 21½ W 243 feet to

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160 FRONT ST., NEW YORK

thence N 34 E 1244 feet to a white oak stump, corner to the Buchanan lands, N 56½ E 181 feet to a stake, N 55½ E 322 feet to a set stone corner to Gillispie and with same N 21½ W 332 feet to beginning."

And being also the same property conveyed to W. V. Olinger by J. H. Troutman and Susie Olinger Troutman, his wife, by deed dated 28 January, 1941 and recorded in Deed Book 82, page 87 and being also the same property allotted to the parties of the first part in the partition of the W. V. Olinger estate as set out above. Reference is hereby made to the foregoing deeds for a further description of the said tract number 3.

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THIS AGREEMENT made and entered into on this 8th day of May, 1954, by and between James F. Worley and Josephine O. Worley, his wife, James G. Worley and Ruth B. Worley, his wife, hereinafter called the Owners, parties of the first part, and THE NEW JERSEY ZINC COMPANY, a New Jersey corporation, authorized to do business in the State of Virginia, party of the second part, hereinafter called the Company:

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners grant unto the Company for a period of one year, from the date hereof, with the privilege of extension for further periods not to extend beyond 8th May, 1959, upon payment of sums of money agreed upon, the exclusive option to purchase all minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind in, under or on the following described premises situated in the Rich Valley Magisterial District of Smyth County, Virginia:

Being those certain three parcels or tracts of land totaling approximately 27 acres and being bounded and described as follows to-wit:

TRACT NUMBER ONE: Being that certain tract of land containing 16 acres, bounded on the north by other lands of James F. Worley, bounded on the east by lands of F. M. Worley and bounded on the south and west by lands of W. T. Worley and known as Lot No. 1 in the partition of the Z. F. Worley estate as shown by a plat by B. B. Roberts, Surveyor, recorded in the Clerk's Office of Smyth County, in Plat Book 1 at page 86. This tract having been assigned to J. F. Worley, one of the parties of the first part, by Commissioners appointed to partition the Z. F. Worley estate, as will be seen by the Commissioner's report and the Decree of the Circuit Court of Smyth County, confirming the same, dated 8 September, 1932, and recorded

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THE NEW JERSEY ZINC COMPA
160 FRONT ST., NEW YORK

in the Clerk's Office of Smyth County in Deed Book 66 at page 55. Being also the same tract conveyed to James G. Worley, one of the parties of the first part, by James F. Worley and wife by deed dated 4 January, 1954, and recorded in the Clerk's Office of Smyth in Deed Book 126 at page 132, wherein the said J. F. Worley reserved a life estate. Reference is hereby made to the foregoing plat, decree and deed for a further description of the said tract number one.

TRACT NUMBER TWO: Being that certain tract of land containing 11 acres conveyed to J. F. Worley, one of the parties of the first part, by Thomas E. George, Executor of the estate of James K. Young, deceased, by deed dated 30 March, 1925, and recorded in the Clerk's Office of Smyth County in Deed Book 53 at page 254, wherein the said tract is described as follows:

"Beginning at a set stone in line of the Pearson tract number 5 and a corner of number 3, and with line of the Pearson tract S 44 E 9.5 poles to a set stone in a hollow west of a spring, supposed to be in the Isaac Spratt line, now Don Smith, and running with the same N 50 E 30 poles to a point in the wire fence in the Worley line, thence keeping with the fence N 42½ E 65 poles to a stake, corner to the Justice and Humphrey estates; thence N 32½ E 65.5 poles to two sourwoods and a dogwood, corner to Worley's and Olinger's and No. 2; thence S 59 W 132 poles to a set stone in a hollow; S 26 W 35 poles to the point of beginning."

Being also the same tract conveyed to J. C. Worley, one of the parties of the first part, by J. F. Worley and wife, by deed dated 4 January, 1954, and recorded in the Clerk's Office of Smyth County in Deed Book 126 at page 132, wherein the said J. F. Worley reserved a life estate.

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160 FRONT ST., NEW YORK

TRACT NUMBER THREE: Being that certain tract of land containing ½ acre conveyed to J. G. Worley, one of the parties of the first part, by J. F. Worley and wife, by deed dated 15 March, 1949, and recorded in the Clerk's Office of Smyth County in Deed Book 105 at page 120, wherein the said tract is described as follows:

Beginning at a post located on the corner of the Trigg Parker land in a line of the Nora N. Worley line; thence north of Worley line 386 feet with the line of the Trigg Parker land to a point in the center line of J. F. Worley's private farm road, said point is northwardly and opposite the gate post; thence southeastwardly 100 feet with the center line of said road to a point in said center line (a new corner); thence southwardly 305 feet leaving said road and on a new division line through the J. F. Worley land to a point in the Nora N. Worley line (a new corner); thence westwardly 100 feet to the beginning. Being the southwestern corner and a part of the land devised to J. F. Worley by the Will of Z. F. Worley dated September 6, 1917, and recorded in the Clerk's Office of Smyth County in Will Book 9 at page 219.

There is to be excepted and deducted from the foregoing tracts of land the following small parcel of land conveyed by J. F. Worley and wife, to W. T. Worley by deed dated 26 January, 1952, and recorded in the Clerk's Office of Smyth County in Deed Book 114 at page 202, and described as follows:

Beginning at a set stone on the line between J. F. Worley and W. T. Worley about 30 feet north of a big oak, thence leaving the said set stone in a westwardly direction about 80 feet to a stake; thence in a southwardly direction to Kestner's line 23 feet, thence with Kestner's line in an eastwardly direction 69 feet, thence in a northwardly direction, a new line 41 feet to a beginning.

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together with the right to prospect for, mine, mill, store and remove the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of an Agreement of even date herewith entered into between the parties hereto. The Owners also grant to the Company during said periods the right to prospect for, explore and examine all said minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind in, under or on all of said premises, including the right to enter thereupon, to use available water and to remove samples, in accordance with the terms of the last mentioned Agreement. The terms of this option Agreement are fully set out in the Agreement of even date herewith, which is here referred to and made a part hereof as if fully set out at length.

The term "parties of the first part" as herein used shall be construed to mean, "the parties of the first part, their heirs, assigns and successors in title howsoever such succession may be accomplished" and the term "party of the second part" shall be construed to mean "party of the second part, its assignees, designees and successors in title howsoever such succession may be accomplished."

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

Jas F. Worley (signed) (Seal)

Josephine O. Worley (signed) (Seal)

James F. Worley (signed) (Seal)

Paul B. Worley (signed) (Seal)

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK

VIRGINIA

STATE AT LARGE, To-wit:

I, D. Keith Lupton, a Notary Public in and for the Commonwealth of Virginia, at large, do certify that James F. Worley and Josephine O. Worley, his wife, James G. Worley and Ruth B. Worley, his wife,

whose names are signed to the foregoing Agreement bearing date on the 8th day of May, 1954, personally appeared before me in my state aforesaid and acknowledged the same.

My commission expires

Notary Public for State of Va. at large. My commission expires July 1st, 1957.

Given under my hand this 8th day of May, 1954.

D. Keith Lupton (Signed)
Notary Public

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N.Y.

THIS AGREEMENT made and entered into on this 11th day of May, 1954, by and between Birdie B. Keene and Jasper Keene, her husband, (sometimes known as Birdie B. King and Jasper King, and also sometimes known as Birdie B. Keen and Jasper Keen) hereinafter called the Owners, parties of the first part, and THE NEW JERSEY ZINC COMPANY, a New Jersey corporation, authorized to do business in the State of Virginia, party of the second part, hereinafter called the Company:

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners grant unto the Company for a period of one year from the date hereof, with the privilege of extension for further periods not to extend beyond May 11th, 1959, upon payment of sums of money agreed upon, the exclusive option to purchase all minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind in, under or on the following described premises situated in the Rich Valley Magisterial District of Smyth County, Virginia:

That certain tract of land containing 11½ acres, more or less, conveyed to the female party of the first part in the name of Birdie B. King by Lonnie May Blevins and husband by deed dated February 28, 1949, and recorded in the Clerk's Office of Smyth County in Deed Book 103, page 590, wherein said tract is described as follows:

"BEGINNING at a point in the center of the Beaver Creek Road and running with said road N 40½ W 5.7 poles to a point; thence N 31 W 38 poles to a point; thence W 45½ W 21 poles to a point; thence N 48½ W 60 poles crossing Beaver Creek to a set stone in the edge of said road opposite the cold spring and spring branch, corner to Will Harris; thence with the Harris line and up said branch and crossing

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160 FRONT ST., NEW YORK

through said spring N 46½ E 9 poles to a set stone on the Smith line; thence with the Smith line S 55 E 118 poles to a stake in the old Smith line; thence S 35½ W passing through a black oak and large sycamore and crossing Beaver Creek 36 poles to the point of beginning."

There is to be excepted and deducted from the above tract, a tract of approximately 2 acres conveyed by Lonnie May Blevins and husband to L. D. Osburne by deed dated June 2, 1939, and recorded in the Clerk's Office of Smyth County in Deed Book 78, page 420.

"BEGINNING, at a point in the center of the Beaver Creek Road, thence leaving said road in an Eastern direction 13 poles to a black oak tree, on Don Smith's line, thence running with the said Don Smith line in a Southern direction 29 poles to a white oak tree corner to Bill Harris, thence with the said Bill Harris line in a Southern direction 11 poles to the center of the Beaver Creek Road opposite a cold spring; thence running with said road in a Southeast direction 30 poles to the beginning."

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together with the right to prospect for, mine, mill, store and remove the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of an Agreement of even date herewith entered into between the parties hereto. The Owners also grant to the Company during said periods the right to prospect for, explore and examine all said minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind in, under or on all of said premises, including the right to enter thereupon, to use available water and to remove samples, in accordance with the terms of the last mentioned Agreement. The terms of this option Agreement are fully set out in the Agreement of even date herewith, which is here referred to and made a part hereof as if fully set out at length.

The term "parties of the first part" as herein used shall be construed to mean, "the parties of the first part, their heirs, assigns and successors in title howsoever such succession may be accomplished" and the term "party of the second part" shall be construed to mean "party of the second part, its assignees, designees and successors in title howsoever such succession may be accomplished."

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

Witness to mark
Maxie Breedlove

Jasper his x mark Keene (signed) (Seal)

Pauline B. Keene (signed) (Seal)

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N.Y.

VIRGINIA

STATE AT LARGE, To-wit:

I, D. Keith Lupton, a Notary Public in and for the Commonwealth of Virginia, at large, do certify that Birdie B. Keene and Jasper Keene, her husband, (sometimes known as Birdie B. King and Jasper King and also sometime known as Birdie B. Keen and Jasper Keen) whose names are signed to the foregoing Agreement bearing date on the 11th day of May, 1954, personally appeared before me in my state aforesaid and acknowledged the same.

My commission expires Notary Public for State of Va. at large. My commission expires July 1st, 1957

Given under my hand this 11th day of May, 1954.

D. Keith Lupton (Signed)
Notary Public

THE NEW JERSEY ZINC C
160 FRONT ST., NEW YORK

Conformed Copy
8/21/52

THIS AGREEMENT made and entered into on this 19th day of May 1954, by and between George R. Bise (sometimes known as George R. Rice), widower, and Ocie W. Lawrence, unmarried

hereinafter called the Owners, parties of the first part, and THE NEW JERSEY ZINC COMPANY, a New Jersey corporation, authorized to do business in the State of Virginia, party of the second part, hereinafter called the Company:

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners grant unto the Company for a period of one years from the date hereof, with the privilege of extension for further periods not to extend beyond May 19, 1959, upon payment of sums of money agreed upon, the exclusive option to purchase all minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind in, under or on the following described premises situated in the Rich Valley Magisterial District of Smyth County, Virginia:

Those certain two tracts of land totaling approximately 60 acres, more or less.

TRACT NUMBER ONE: Being that certain tract of land containing 37 acres, more or less, conveyed to George R. Bise, one of the parties of the first part, by R. B. DeBord and wife by deed dated January 31, 1936, and recorded in the Clerk's Office of Smyth County in Deed Book 72, page 514 and bounded and described as follows to-wit:

"Beginning at a stake in Rich Valley road where the Olinger right of way intersects, and running with said right of way N 54° 30' W 400 feet to a stake in same; N 43 W 500 feet to a stake in same; N 32° 45' W 300 feet to a stake in same; N 43° 30' W 400 feet to a stake in same near a well; thence 60° 15' W 289 feet to a post, corner

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160 FRONT ST. NEW YORK, N.Y.

to the land sold Will Bise, and with same S 35 W 66 feet to a stake; thence N 89 W 333 feet to red oak bush, corner to said Bise, thence S 55° 45' W 380 feet to a stake in the T. W. Buchanan line; S 20° 30' E 1,265 feet to a stake in a wire fence, corner to lot No. 7, thence N 51° 30' E 742 feet to a stake on a hill; thence with division line of No. 5 and 6 on Gollehon plat, S 31° 15' E 1,015 feet to a stake in Rich Valley road and with same N 45 E 460 feet to a stake, thence N 28° 30' E 234 feet to beginning."

TRACT NUMBER TWO: Being that certain tract of land containing 23 acres, more or less, conveyed to the parties of the first part, by Jessie H. Smith et als, by deed dated January 10, 1938 and recorded in the Clerk's Office of Smyth County in Deed Book 75, page 51, and bounded and described as follows to-wit:

BEGINNING at a corner in the bend of the Rich Valley road, a corner of the tract laid off to Marion Patrick, and with said road N 71½ W 425 feet to where the farm road or Olinger road intersects said Rich Valley road, and with said Olinger road N 54½ W 400 feet, N 43 W 500 feet, N 32 3/4 W 300 feet, N 34° 30' W 12 feet to the Bise land and with same leaving said road N 51½ E 1,052 feet to a stake, set stone and pointer on a north ridge, corner to the tract laid off to Marion Patrick and with same S 15 E 1,710 feet to beginning.

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK

THIS AGREEMENT made and entered into on this 16th day of August, 1954, by and between R. Glenn McAllister and Mary L. McAllister, his wife,

hereinafter called the Owners, parties of the first part, and THE NEW JERSEY ZINC COMPANY, a New Jersey corporation, authorized to do business in the State of Virginia, party of the second part, hereinafter called the Company:

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners grant unto the Company for a period of one year from the date hereof, with the privilege of extension for further periods not to extend beyond August 16 1959, upon payment of sums of money agreed upon, the exclusive option to purchase all minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind in, under or on the following described premises situated in the Rich Valley Magisterial District of Smyth County, Virginia:

The following two tracts or parcels of land bounded and described as follows, to-wit:

TRACT NO. 1 being that certain tract of land containing 97.7 acres more or less, bounded and described as follows, to-wit:

BEGINNING at a set stone in a spring branch in a line of the Mathieson Chemical Corporation land a corner to R. J. McAllister, and for division line N 10° 50' W 25 feet to a poplar; N 16° W 333 feet to a post on east side of public road, N 34° 15' E 436 feet to a post on west side of said road; N 46° W 875 feet to a set stone; N 69° 45' W 625 feet to small locust; N 27° 45' W 660 feet to a small locust in Burgess' line; thence leaving said R. J. McAllister N 76° 25' E 880 feet to a small black oak; N 89° 30' E 1905 feet crossing the road and branch to a post; S 32° 15' E 290 feet to a post; N 57° 35' E 180 feet passing thru cemetery to a set stone in line of L. N. McAllister and a corner to A. K. McAllister; and with the latter S 16° 45' E 365 feet to a set stone; thence along North side of farm road S 51° 45' W 315 feet to a stake in middle of farm road; S 26° 45' E 590 feet to a post; S 28° E 184 feet to a post, corner of said Mathieson Chemical Corporation and with the same S 79° 10' W 2027 feet to beginning."

97.40
5/92.70
1/10.70

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N.Y.

There is to be excepted and deducted from the above described tract of land a tract of five acres conveyed by R. G. McAllister and wife to W. C. McAllister by deed dated February 21, 1938, and recorded in the Clerk's Office of Smyth County in Deed Book 76, page 423, wherein the said tract is described as follows:

"Beginning at a point in Possum Hollow Road, and with same N 20° 27' E 390 feet crossing a bridge; N 58° 30' E 158 feet to a point in the North line of the McAllister survey, and with same leaving the road due East 337 feet to an ash, thence for a new line S 24° 35' W 665 feet to a stone on a hillside, N 65° W 360.5 feet crossing a branch to beginning.

The said tract No. 1 being the same tract conveyed to R. G. McAllister by deed dated December 20, 1928, and recorded in the Clerk's Office of Smyth County in Deed Book 60 at page 104, a reference to which is hereby made for a further description of the premises hereby conveyed.

TRACT NO. 2 being that certain tract of 14 acres conveyed to R. G. McAllister by C. J. McAllister and wife by deed dated February 21, 1938, recorded in the Clerk's Office of Smyth County in Deed Book 75 at page 453, wherein the said 14 acre tract is described as follows:

"Beginning at a post in the Northeast corner of the cemetery and runneth S 16° 45' E 365 feet to a set stone; S 80° E 281 feet crossing gully to a post; N 46° 30' E 792 feet to a post; N 63° E 364 feet to a point in the farm road; leaving same N 24° W 410 feet to a post in the back line; and with same S 73° W 102 feet to a post; thence S 57° 35' W 1220 feet to the beginning." A reference is hereby made to the foregoing deed for a further description of the premises hereby conveyed.

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together with the right to prospect for, mine, mill, store and remove the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of an Agreement of even date herewith entered into between the parties hereto. The Owners also grant to the Company during said periods the right to prospect for, explore and examine all said minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind in, under or on all of said premises, including the right to enter thereupon, to use available water and to remove samples, in accordance with the terms of the last mentioned Agreement. The terms of this option Agreement are fully set out in the Agreement of even date herewith, which is here referred to and made a part hereof as if fully set out at length.

The term "parties of the first part" as herein used shall be construed to mean, "the parties of the first part, their heirs, assigns and successors in title howsoever such succession may be accomplished" and the term "party of the second part" shall be construed to mean "party of the second part, its assignees, designees and successors in title howsoever such succession may be accomplished."

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

R. Glenn McAllister (signed) (Seal)

Mary L. McAllister (signed) (Seal)

THE NEW JERSEY ZINC COMP
160 FRONT ST., NEW YORK

together with the right to prospect for, mine, mill, store and remove the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of an Agreement of even date herewith entered into between the parties hereto. The Owners also grant to the Company during said periods the right to prospect for, explore and examine all said minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind in, under or on all of said premises, including the right to enter thereupon, to use available water and to remove samples, in accordance with the terms of the last mentioned Agreement. The terms of this Option Agreement are fully set out in the Agreement of even date herewith, which is here referred to and made a part hereof as if fully set out at length.

The term "parties of the first part" as herein used shall be construed to mean, "the parties of the first part, their heirs, assigns and successors in title howsoever such succession may be accomplished" and the term "party of the second part" shall be construed to mean "party of the second part, its assignees, designees and successors in title howsoever such succession may be accomplished."

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

George R. Bice (signed) (Seal)

Eric W. Lawrence (signed) (Seal)

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N.Y.

VIRGINIA

STATE AT LARGE, To-wit;

I, D. Keith Lupton, a Notary Public in and for the Commonwealth of Virginia, at large, do certify that George R. Bise, widower, and Ocie W. Lawrence, unmarried,

whose names are signed to the foregoing Agreement bearing date on the 19th day of May, 1954, personally appeared before me in my state aforesaid and acknowledged the same.

My commission expires 19 .

Given under my hand this 19th day of May, 1954.

D. Keith Lupton (signed)
Notary Public

THE NEW JERSEY ZINC COMPA
160 FRONT ST., NEW YORK

THIS AGREEMENT made and entered into on this 16th day of August, 1954, by and between R. Glenn McAllister and Mary L. McAllister, his wife,

hereinafter called the Owners, parties of the first part, and THE NEW JERSEY ZINC COMPANY, a New Jersey corporation, authorized to do business in the State of Virginia, party of the second part, hereinafter called the Company:

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners grant unto the Company for a period of one year from the date hereof, with the privilege of extension for further periods not to extend beyond August 16 1959, upon payment of sums of money agreed upon, the exclusive option to purchase all minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind in, under or on the following described premises situated in the Rich Valley Magisterial District of Smyth County, Virginia:

The following two tracts or parcels of land bounded and described as follows, to-wit:

TRACT NO. 1 being that certain tract of land containing 97.7 acres more or less, bounded and described as follows, to-wit:

BEGINNING at a set stone in a spring branch in a line of the Mathieson Chemical Corporation land a corner to R. J. McAllister, and for division line N 10° 50' W 25 feet to a poplar; N 16° W 333 feet to a post on east side of public road, N 34° 15' E 436 feet to a post on west side of said road; N 46° W 875 feet to a set stone; N 69° 45' W 625 feet to small locust; N 27° 45' W 660 feet to a small locust in Burgess' line; thence leaving said R. J. McAllister N 76° 25' E 880 feet to a small black oak; N 89° 30' E 1905 feet crossing the road and branch to a post; S 32° 15' E 290 feet to a post; N 57° 35' E 180 feet passing thru cemetery to a set stone in line of L. N. McAllister and a corner to A. K. McAllister; and with the latter S 16° 45' E 365 feet to a set stone; thence along North side of farm road S 51° 45' W 315 feet to a stake in middle of farm road; S 26° 45' E 590 feet to a post; S 28° E 184 feet to a post, corner of said Mathieson Chemical Corporation and with the same S 79° 10' W 2027 feet to beginning."

97.70
5/92.70
1x
10.70

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N.Y.

VIRGINIA

STATE AT LARGE, To-wit;

I, KEITH LUPTON, a Notary Public in and for the Commonwealth of Virginia, at large, do certify that R. Glenn McAllister and Mary L. McAllister, his wife

whose names are signed to the foregoing Agreement bearing date on the 16th day of ~~July~~ August, 1954, personally appeared before me in my state aforesaid and acknowledged the same.

My commission expires [illegible] 19[illegible]

Given under my hand this 16th day of ~~July~~ August, 1954.

Keith Lupton (signed)
Notary Public

THE NEW JERSEY ZINC COMPAN
160 FRONT ST., NEW YORK

THIS AGREEMENT made and entered into on this 17th day of August, 19 , by and between W. C. McAllister and Mary K. McAllister, his wife, and Annie C. Jones and J. B. Jones, her husband, hereinafter called the Owners, parties of the first part, and THE NEW JERSEY ZINC COMPANY, a New Jersey corporation, authorized to do business in the State of Virginia, party of the second part, hereinafter called the Company:

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners grant unto the Company for a period of one year from the date hereof, with the privilege of extension for further periods not to extend beyond August 17, 1959, upon payment of sums of money agreed upon, the exclusive option to purchase all minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind in, under or on the following described premises consisting of three tracts situated in the Rich Valley Magisterial District of Smyth County, Virginia:

TRACT NO. 1

Being a certain tract containing approximately 45½ acres bounded on the North by the lands of R. Glenn McAllister and C. R. Jones, bounded on the East by the lands of W. T. Bise, J. Albert Harris, and Charles Breedlove, on the South by the lands of Annie C. Jones and on the West by the lands of R. Glenn McAllister. This land was acquired by W. C. McAllister, one of the parties of the first part, by the will of A. K. McAllister probated October 12, 1934, and recorded in the Clerk's Office of Smyth County in Will Book 12, Page 64 and by deed from J. N. McAllister, et ux, dated March 13, 1936, and recorded in the Clerk's Office of Smyth County in Deed Book 71, Page 539.

45.50
2.05

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK

TRACT NO. 2:

Beginning at a point in Possum Hollow road, and with same N. 20° 27' E. 390 feet crossing a bridge; N. 58° 30' E 158 feet to a point in the North line of the McAllister survey, and with same leaving the road due east 337 feet to an ash, thence for a new line S. 24° 35' W. 665 feet to a stone on a hill side, N. 65 W. 360.5 feet crossing a branch to beginning, consisting of 5 acres, more or less, And being the same property as was conveyed to W. C. McAllister by R. G. McAllister, et ux, by deed dated February 21, 1938, and recorded in the Clerk's Office of Smyth County in Deed Book 76, Page 423.

TRACT NO. 3:

Bounded on the North by Tract No. 1, bounded on the East and South by J. Otis Bice and bounded on the West by R. G. McAllister; consisting of 20 acres, more or less and being the same property which was devised by A. K. McAllister by his will probated October 12, 1934, and recorded in the Clerk's Office of Smyth County in Will Book 12, Page 64, to Annie C. McAllister, his widow for life, being the same person as his remarried widow, Annie C. Jones, with remainder to W. C. McAllister at her death.

Reference is here made to the Deed Books and Will Books above mentioned for a more complete description of the three tracts of land.

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N. Y.

together with the right to prospect for, mine, mill, store and remove the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of an Agreement of even date herewith entered into between the parties hereto. The Owners also grant to the Company during said periods the right to prospect for, explore and examine all said minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind in, under or on all of said premises, including the right to enter thereupon, to use available water and to remove samples, in accordance with the terms of the last mentioned Agreement. The terms of this option Agreement are fully set out in the Agreement of even date herewith, which is here referred to and made a part hereof as if fully set out at length.

The term "parties of the first part" as herein used shall be construed to mean, "the parties of the first part, their heirs, assigns and successors in title howsoever such succession may be accomplished" and the term "party of the second part" shall be construed to mean "party of the second part, its assignees, designees and successors in title howsoever such succession may be accomplished."

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

W. C. McAlister (signed) (Seal)

Mary R. McAlister (signed) (Seal)

Annie C. Jones (signed) (SEAL)

J. B. Jones (signed) (SEAL)

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N. Y.

RECEIVED
FEB 14 1956

VIRGINIA

STATE AT LARGE, To-wit:

I, D. Keith Lupton, a Notary Public in and for the Commonwealth of Virginia, at large, do certify that W. C. McAllister and Mary K. McAllister, his wife, ~~and Annie C. Jones and J. B. Jones, her husband~~, whose names are signed to the foregoing Agreement bearing date on the 17th day of August, 1954, personally appeared before me in my state aforesaid and acknowledged the same.

My commission expires

Notary Public for State of Va. at large. My commission expires July 1st, 1957

Given under my hand this 17th day of August, 1954.

D. Keith Lupton (Signed)
Notary Public

VIRGINIA

STATE AT LARGE, To-wit:

I, D. Keith Lupton, a Notary Public in and for the Commonwealth of Virginia, at large, do certify that Annie C. Jones and J. B. Jones, her husband, whose names are signed to the foregoing Agreement bearing date on the 17th day of August, 1954, personally appeared before me in my state aforesaid and acknowledged the same.

My commission expires

Notary Public for State of Va. at large. My commission expires July 1st, 1957

Given under my hand this 18th day of August, 1954.

D. Keith Lupton (Signed)
Notary Public

THE NEW JERSEY ZINC COMPANY

Conformed Copy
8/20/54

THIS AGREEMENT made and entered into on this 18th day of August 1954, by and between R. J. McAllister and India McAllister, his wife,

hereinafter called the Owners, parties of the first part, and THE NEW JERSEY ZINC COMPANY, a New Jersey corporation, authorized to do business in the State of Virginia, party of the second part, hereinafter called the Company:

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners grant unto the Company for a period of one year, from the date hereof, with the privilege of extension for further periods not to extend beyond August 18th 1954, upon payment of sums of money agreed upon, the exclusive option to purchase all minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind in, under or on the following described premises situated in the Kirk Valley Magisterial District of Smyth County, Virginia:

That certain tract of land containing 114 acres which was conveyed to R. J. McAllister by the partition deed of the J. S. McAllister estate dated December 20, 1928 and recorded in the Clerk's Office of Smyth County in Deed Book 60, page 104, bounded and described as follows, to-wit:

BEGINNING at a set stone in a spring branch in a line of Mathieson Alkali Company land, a corner to R. G. McAllister and for division line between same N 10° 50' W 25 feet to a poplar, N 16 W 333 feet to a post on east side of road, N 34° 15' E 436 feet to post on west side of said road, and leaving same N 46 W 875 feet to set stone, N 69° 45' W 625 feet to small locust N 27° 45' W 660 feet to small locust in Burges line and leaving R. G. McAllister S 76° 25' W 92 feet to post; N 16 W 33 feet to stake; S 33 W 485 feet

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N. Y.

to stake, S 66 E 172 feet to post in hollow by large pile of rock; S 3 E 456 feet to a mulberry, S 13 W 125 feet to post, S 1° 30' W 132 feet to post; S 45° 30' W 181.5 feet; S 33° 30' W 265 feet to stake in line of Sam McAllister and with same S 17 E 115 feet, S 87° 30' W 1070 feet to corner of Mathieson Alkali Company's land, and with same S 31° 10' E 2318.3 feet to point in road, and with same N 72° 25' E 169 feet, N 49° 20' E 262 feet; N 31° 38' E 379 feet; N 42° 21' E 315 feet, N 13° 36' E 463 feet, N 11° 04' E 260 feet; thence N 79° 10' E 747 feet to beginning.

The parties of the first part do not own the mineral on the entire tract above described but do own the mineral on a portion of that tract estimated to contain 38 acres, more or less. Reference is hereby made to a deed from the Mathieson Alkali Works to J. S. McAllister, et al, dated September 28, 1917 and recorded in the Clerk's Office of Smyth County in Deed Book 43, page 257, for a description of that portion of the above described tract on which the mineral and mineral rights was reserved by the Mathieson Alkali Works. Reference is also made to a plat recorded in the Clerk's Office of Smyth County in Plat Book 1 at page 24.

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N.Y.

together with the right to prospect for, mine, mill, store and remove the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of an Agreement of even date herewith entered into between the parties hereto. The Owners also grant to the Company during said periods the right to prospect for, explore and examine all said minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind in, under or on all of said premises, including the right to enter thereupon, to use available water and to remove samples, in accordance with the terms of the last mentioned Agreement. The terms of this option Agreement are fully set out in the Agreement of even date herewith, which is here referred to and made a part hereof as if fully set out at length.

The term "parties of the first part" as herein used shall be construed to mean, "the parties of the first part, their heirs, assigns and successors in title howsoever such succession may be accomplished" and the term "party of the second part" shall be construed to mean "party of the second part, its assignees, designees and successors in title howsoever such succession may be accomplished."

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

R J McAllister (signed) (Seal)

Julia McAllister (signed) (Seal)

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N.Y.

RECEIVED
FEB 14 1956

VIRGINIA

STATE AT LARGE, To-wit;

I, D. Keith Lupton, a Notary Public in and for the Commonwealth of Virginia, at large, do certify that H. J. McAllister and Julia McAllister, his wife,

whose names are signed to the foregoing Agreement bearing date on the 18th day of August, 1954, personally appeared before me in my state aforesaid and acknowledged the same.

My commission expires July 1, 1957.

Given under my hand this 18th day of August, 1954.

D. Keith Lupton (signed)
Notary Public

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK

THIS AGREEMENT made and entered into on this 20th day of August, 1954, by and between J. Otis Bise (sometimes known as Bice) and Mamie J. Bise, his wife, hereinafter called the Owners, parties of the first part, and THE NEW JERSEY ZINC COMPANY, a New Jersey corporation, authorized to do business in the State of Virginia, party of the second part, hereinafter called the Company:

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners grant unto the Company for a period of one year from the date hereof, with the privilege of extension for further periods not to extend beyond August 20, 1959, upon payment of sums of money agreed upon, the exclusive option to purchase all minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind in, under or on the following described premises situated in the Rich Valley Magisterial District of Smyth County, Virginia:

Those certain four tracts of land bounded and described as follows, to-wit:

TRACT NO. 1. Being that certain tract containing ten (10) acres more or less, conveyed to the parties of the first part by J. B. Keesling and wife, by deed dated May 6, 1925, and recorded in the Clerk's Office of Smyth County in Deed Book 531, page 267, wherein the said tract is described as follows:

"BEGINNING at a post on a hill in line of A. K. McAllister, and a corner to the Mathieson Alkali Co. land and with same N 66½° E. 58.4 poles to a set stone in a hollow at the branch; thence leaving said line, and with the meanders of the branch so as to give water on both sides of the branch N 29 W 20 poles to a set stone by said branch; thence N 20 W 4.6 poles to a set stone, corner to the 5 acre tract sold Chas. Breedlove, and with same S 78½ W 48.5 poles to a set stone on the hill in said McAllister's line and with same S 8 E 36 poles to the Beginning."

THE NEW JERSEY ZINC
160 FRONT ST., NEW YORK

TRACT NO. II. Being that certain tract containing approximately one-half acre, conveyed to Otis Bice by John T. and Margaret Breedlove, by deed dated March 19, 1928, and recorded in the Clerk's Office of Smyth County in Deed Book 58, at page 500, wherein said tract is described as follows:

"Bounded on the West by Otis Bice, on the South by W. M. Griffiths, on the East by a certain road leading from the Rich Valley road to the Beaver Creek Road, which said road is a division line between the land herein conveyed and the land retained by said John T. Breedlove, and on the North by the Mathieson Alkali Works."

TRACT NO. III. Being that certain tract containing nine acres eight poles more or less, conveyed to the parties of the first part by Cordia Jones and others by deed dated September 21, 1949, and recorded in the Clerk's Office of Smyth County in Deed Book 107, page 135, wherein the said tract is described as follows:

"BEGINNING at a spring corner to John S. and Keith McAllister thence with their line N 15° W 3 poles to a stone by the spring branch corner to same; thence leaving their line and for division lines S 58° W 37 poles to a stone by the fence on the hill corner to same; thence S 29½° E 11 poles to a planted stone in the Mathieson Alkali Works line, and with said line N 78½° E 62.25 poles to a stone and pointers in said line corner to said John S. and Keith McAllister; thence leaving the M. A. W. line and with said McAllister's lines N 11° W 31 poles to a stone and pointers corner to same; thence S 78½° W 12.60 poles to a poplar corner to same; thence S 43-3/4° W 18.36 poles to the spring, the beginning, containing 9 acres 8 poles."

TRACT NO. IV. Being that certain tract described as Tract No. II in the deed to the parties of the first part from Cordia Jones and others, wherein the said tract is described as follows:

"BEGINNING at a planted stone on the south side of the top of the hill corner to lands of C. F. Carter and the Mathieson Alkali Works, thence with a line of the latter S 78-3/4° W 38.58 poles to a planted stone; thence N 10-3/4° W 31 poles to the west post of the gate on the north side of the hill corner to Jones own land and said McAllister; thence for division lines N 51½° E 16.80 poles to a stake or stone corner to said McAllister; thence N 71½° E 27.40 poles to a stake or stone in said Carters line near a white oak, thence S 8½° E 41 poles to Beginning, containing 9.43 acres."

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N.Y.

together with the right to prospect for, mine, mill, store and remove the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of an Agreement of even date herewith entered into between the parties hereto. The Owners also grant to the Company during said periods the right to prospect for, explore and examine all said minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind in, under or on all of said premises, including the right to enter thereupon, to use available water and to remove samples, in accordance with the terms of the last mentioned Agreement. The terms of this option Agreement are fully set out in the Agreement of even date herewith, which is here referred to and made a part hereof as if fully set out at length.

The term "parties of the first part" as herein used shall be construed to mean, "the parties of the first part, their heirs, assigns and successors in title howsoever such succession may be accomplished" and the term "party of the second part" shall be construed to mean "party of the second part, its assignees, designees and successors in title howsoever such succession may be accomplished."

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

J. Otis Bice (signed) (Seal)

Mamie J. Bice (signed) (Seal)

THE NEW JERSEY ZINC COMPANY
100 FRONT ST., NEW YORK N. Y.

together with the right to prospect for, mine, mill, store and remove the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of an Agreement of even date herewith entered into between the parties hereto. The Owners also grant to the Company during said periods the right to prospect for, explore and examine all said minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind in, under or on all of said premises, including the right to enter thereupon, to use available water and to remove samples, in accordance with the terms of the last mentioned Agreement. The terms of this option Agreement are fully set out in the Agreement of even date herewith, which is here referred to and made a part hereof as if fully set out at length.

The term "parties of the first part" as herein used shall be construed to mean, "the parties of the first part, their heirs, assigns and successors in title howsoever such succession may be accomplished" and the term "party of the second part" shall be construed to mean "party of the second part, its assignees, designees and successors in title howsoever such succession may be accomplished."

IN WITNESS THEREOF the parties of the first part have hereunto set their hands and seals the day and year first above written.

William T. Bice (signed) (Seal)

Gladys H. Bice (signed) (Seal)

NEW JERSEY INK COMPANY
167 FRONT ST., NEW YORK N.Y.

VIRGINIA

STATE AT LARGE, To-wit;

I, [illegible], a Notary Public in and for the Commonwealth of Virginia, at large, do certify that William T. Hips and Gladys U. Hips, his wife,

whose names are signed to the foregoing Agreement bearing date on the 27th day of August, 1954, personally appeared before me in my state aforesaid and acknowledged the same.

My commission expires [illegible] 19 .

Given under my hand this 27th day of August, 1954.

[illegible] (signed)
Notary Public

THE NEW JERSEY ZINC COMPANY
100 FRONT ST., NEW YORK N.

VIRGINIA

STATE AT LARGE, To-wit:

I, D. Keith Lupton, a Notary Public in and for the Commonwealth of Virginia, at large, do certify that J. Otis Bise and Mamie J. Bise, his wife,

whose names are signed to the foregoing Agreement bearing date on the 20th day of August, 1954, personally appeared before me in my state aforesaid and acknowledged the same.

My commission expires July 1, 1957.

Given under my hand this 20th day of August, 1954.

D. Keith Lupton (Signed)
Notary Public

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N. Y.

THIS AGREEMENT made and entered into on this 27th day of August, 1954, by and between William T. Bise (sometimes known as Bice) and Gladys H. Bise, his wife, hereinafter called the Owners, parties of the first part, and the NEW JERSEY ZINC COMPANY, a New Jersey corporation, authorized to do business in the State of Virginia, party of the second part, hereinafter called the Company:

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners grant unto the Company for a period of one year from the date hereof, with the privilege of extension for further periods not to extend beyond August 27, 1959, upon payment of sums of money agreed upon, the exclusive option to purchase all minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind in, under or on the following described premises situated in the Rich Valley Magisterial District of Smyth County, Virginia:

All of that certain tract or parcel of land containing 14 acres, more or less, conveyed to William T. Bise by John T. Breedlove and wife by deed dated September 4, 1946, and recorded in the Clerk's Office of Smyth County in Deed Book 94 at page 557, wherein the said tract is bounded and described as follows, to-wit:

"Beginning at a stake in the center of a 20 foot roadway corner to M. W. Gates' three acre tract and the Albert Keen ten acre tract N. 11½° W 1105 feet to a stake in the Puckett line, corner to Albert Keen, thence S. 78-3/4° W. 550 feet to a stone, corner to Puckett and McAllister, thence S 13½° E. 292 feet to a stake, thence S. 24¼° E. 137 feet to a stake, thence S 10° E. 297 feet to a stake; thence S. 12¼° E. 210 feet to a stake; thence S 20° E. 304 feet to a stake, corner to W. M. Griffey; thence N. 65° 35' E. 312 feet to corner of W. M. Griffey and M. W. Gates; thence N. 59¼° E. 188 feet to the beginning."

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK 11

EXHIBIT "B"

We have no contract with Longyear for the Beaver Creek Area but are quite sure they will be willing to apply the Chatham Hill contract, which is now in effect for an area a few miles northeast of the Beaver Creek drilling.

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N. Y

AGREEMENT

CORE DRILLING

THIS AGREEMENT made and entered into this 18th day of April, 1955, by and between THE NEW JERSEY ZINC COMPANY, a New Jersey corporation, hereinafter called the Company, and E. J. LONGYEAR COMPANY, a Delaware corporation, hereinafter called the Contractor,

WITNESSETH

WHEREAS the Company is about to undertake a surface drilling program in the vicinity of Chatham Hill, Smyth County, Virginia, which program it is contemplated will involve a minimum of approximately 10,000 feet of drilling of a series of AX vertical or incline holes ranging from 200 to 500 feet each but not more than a maximum depth of approximately 1,000 feet each, and

WHEREAS the Contractor represents that it is ready, able and willing to do such drilling,

NOW, THEREFORE, in consideration of the premises and of the mutual agreements hereinafter set forth, the parties hereto agree as follows:

1. The Contractor in consideration of payments to be made as hereinafter provided agrees to sink or drill with diamond drills in the vicinity of Chatham Hill, Smyth County, Virginia, vertical and/or incline holes between 45° to 90°, at locations and to depths specified by the Company. The Contractor agrees to start said drilling on or about May 16, 1955. In the event drilling to depths greater than the depths for which rates are established in Paragraph 7 hereof is required, such drilling shall be performed only upon such conditions and at such rates as may be agreed upon between the parties hereto in a written instrument supplemental to this agreement.

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N. Y.

2. The Contractor will initially furnish and use in performing the work herein, one gasoline-driven diamond core drill rig of suitable capacity for the depth of holes contemplated. The Contractor will furnish the necessary skilled men to operate such drill on a one-shift basis or, if requested by the Company, on a two-shift basis. Contractor will also furnish and use all necessary accessory equipment required to perform the work.

3. The Contractor will also furnish water and all facilities and personnel required for water supply and moving the drill and accessory equipment.

4. The Company shall have the right to have a representative at the drill rigs at all times. The Company will furnish the necessary core and sludge containers and portable field core and sludge storage sheds and the Contractor will save and store therein such of the core and sludge samples as the Company desires, it being understood that Contractor will only be expected to save sludge samples when there is return water. If the Company elects to provide a permanent core and sludge storage shed in the area, the Contractor will, upon request of the Company, after the completion of each hole or when the field core and sludge storage shed is full, transfer such samples in Contractor's truck to, and store such samples in, said permanent core and sludge storage shed and the Company agrees to pay therefor at the rate of $3.25 per hour for the time consumed.

5. The Contractor will not itself, and will not permit any of its employees to, give any core or sludge samples or any information whatever regarding the records and results of this drilling to any person, firm or corporation other than to such person, firm or corporation as the Company may designate by written order, nor will the Contractor or its employees make any use of said information except in connection with the performance

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N. Y.

of the work hereunder. The Contractor acknowledges that a confidential relationship is hereby created by and between the parties hereto, and that such relationship as to the matter contained in this Paragraph 5 shall survive the termination of this Agreement.

6. The Contractor agrees to use every reasonable effort to complete each hole to the maximum depth desired by the Company. In the event any hole is not completed to the depth desired, the Company shall be the sole judge as to whether such hole is of value to it and whether the Contractor is entitled to all or any part of the quoted rates for drilling done in said hole. It is understood that the Company is under no obligation to pay for uncompleted holes.

7. It is contemplated that AX core will be recovered but if authorized by a Company representative, BX or EX core may be accepted, and the Company agrees to pay the Contractor for the drilling of each such hole completed to the satisfaction of the Company's representative, in accordance with the following schedule:

<u>Overburden Drilling</u>

0 - 100 feet in depth measured from the collar of the hole..... $2.85 per foot

<u>Diamond Core Drilling</u>

0 - 1,000 feet in depth measured from the collar of the hole

EX size recovering core approximately 7/8" in diameter..... $2.75 per foot

AX size recovering core approximately 1-1/8" in diameter..... $2.85 per foot

BX size recovering core approximately 1-5/8" in diameter..... $3.15 per foot

1,000 - 1,500 feet in depth

EX size ..... $3.00 per foot

AX size ..... $3.10 per foot

Casing left in drill holes at Company's request -

AX size ..... $1.31 per foot

BX size ..... $1.70 per foot

EX size ..... $2.30 per foot

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK, N. Y.

8. In addition to the footage rates set forth in Paragraph 7 above it is agreed that for drill hole locations in excess of 2,500 feet from source of water supply, the following additional charges will be made:

a) Water supply charge for each drill hole which is in excess of 2,500 feet but not more than 5,000 feet from any adequate source of water supply..... $0.05 per foot drilled

b) Water supply charge for drill holes which are in excess of 5,000 feet but not more than 7,500 feet from an adequate source of water supply... $0.10 per foot drilled

c) Water supply charge for drill holes which are in excess of 7,500 feet but not more than 10,000 feet from an adequate source of water supply... $0.20 per foot drilled

It is further agreed and understood that the sources of water supply to be considered for the purposes of computing the distance allowance are those which are presently available or which are made available at the Company's expense, and do not include wells which may be drilled at the contractor's expense.

9. It is understood and agreed that the prices specified in Paragraphs 4, 7, 8, 11 and 12 hereof include the cost of all equipment, materials, supplies, water, pipe installation, labor and all other items furnished by Contractor pursuant to the terms hereof, together with the cost of moving, storing, hauling, mobilizing and demobilizing all such items, and the cost of all necessary reaming, casing and cementing operations.

10. In the performance of the work covered by this agreement the Contractor will endeavor to recover the maximum amount of core when drilling in the mineralized zone and to that end will, when requested by the Company, use Castset bortz bits or other equivalent mechanically set bortz bits when drilling the mineralized zone.

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N. Y

11. The Contractor agrees to take Mass Compass readings at any point in any drill hole upon request of the Company, and the Company agrees to reimburse the Contractor for the time required to properly conduct such surveys at the rate of $5.00 per hour. The Contractor shall furnish the necessary Mass Compass.

12. Except as otherwise provided for herein, any delays in drilling for the Company's convenience or for which the Company is responsible, shall be paid by the Company to the Contractor at the rate of $5.00 per hour.

13. The Contractor will confer with the Company's representative before moving equipment to any drill hole location to the end that the Company's agreement with the owners or lessees of the premises upon which drilling is to be done or over which equipment is to be moved will be observed. The Contractor will exercise due care in moving equipment to and from and in operating at each such drill hole location so as not to cause any unnecessary damage to the surface of the said premises or to the crops, fences, buildings, livestock or other property thereon.

To the extent practicable, the Contractor will, at its own expense, restore each drill hole location to its original condition, cleaning up and removing all debris.

14. Payments shall be made to the Contractor by the Company for the work specified herein on completion of each hole and acceptance thereof by the Company's authorized representative.

15. The Company may at any time direct that the drilling contemplated hereunder be discontinued by Contractor. If the Company directs that the drilling be discontinued before the approximated footage of 10,000 feet has been drilled, a mutually satisfactory settlement shall be made with Contractor to reimburse it for those unrecovered costs which would have been recovered if the said approximated footage of 10,000 feet had been drilled.

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N. Y.

RECEIVED
FEB 14 '55

16. At all times during the continuance of this contract the Contractor agrees to carry with a reliable insurance company or companies satisfactory to the Company, Workmen's Compensation and Occupational Disease Insurance to protect its employees and comprehensive liability insurance (including automotive liability insurance) in an amount satisfactory to the Company, and shall furnish to the Company suitable evidence that such insurance has been procured and is being maintained during the time this contract is in effect. The Contractor also agrees to comply with all laws, rules and regulations, whether Federal, State or otherwise, which apply to or in any manner affect the operations or activities of the Contractor or its employees hereunder, or the work hereunder.

17. The Contractor will at all times indemnify, save and keep harmless the Company, its successors and assigns, of, from and against any and all loss, damages, costs, charges, expenses or claims for same which it, the Company, its successors or assigns, may suffer or sustain or be in anywise subjected to, either on account of injuries or loss occasioned to it, the said Company, its successors or assigns, its or their property or employees, or property in its or their possession or control, or on account of injuries to person or property sustained by other persons or corporations, including without limitation the Contractor and its employees, arising out of or resulting from or in any manner caused by or connected with the operations or activities of the Contractor or its employees hereunder. Anything herein to the contrary notwithstanding, however, the Contractor shall not be liable for, and the Company will indemnify and save it harmless from, any liability for damage to the surface of the premises upon which drilling is done or over which equipment is moved and any property thereon insofar as said damage could not be avoided by the exercise of due care by the Contractor.

THE NEW JERSEY ZINC COMPANY
BROADWAY ST., N.Y.

18. The Company is not to be held nor is it responsible for loss or damage to the Contractor's equipment, it being understood that the Contractor during the time this Contract is in effect will carry all-risk insurance on its drill rig or rigs and accessory equipment protecting against loss by theft, fire, explosion, flood, windstorm, landslides and other similar hazards.

19. The Contractor agrees that it will not, while this agreement is in force, do any drilling, either for itself or others, on properties adjoining those in which the Company has an interest in the aforesaid Smyth County, Virginia, except by written permission of the Company.

20. It is expressly agreed that there are no promises, agreements, or undertakings outside of this contract. This contract may be altered only by the written consent of both of the parties hereto.

IN WITNESS WHEREOF the parties hereto have caused this agreement to be executed as of the day herein first above written.

THE NEW JERSEY ZINC COMPANY

Witness:

R. P. Gregert

A. E. Turner
Assistant Manager of Purchasing

S. J. LOVEYEAR COMPANY

Witness:

/s/ P.W.Donovan

/s/ M.J.Gleason

THE NEW JERSEY ZINC COMPANY
RED FRONT ST., NEW YORK

PROJECT SUMMARY REPORT

By: J. W. Alt February 17, 1959

1. Docket No. DMEA-4178 (Zinc)
Contract No. Idm-E960
Property: Beaver Creek Area
Symthe County, Virginia

Operator: The New Jersey Zinc Company
160 Front Street
New York 38, New York

Operator's Property Rigths: Optionee
G. W. Tyler & H. R. Tyler and others; D. R. Kestner & Pearl Kestner; James F. Worley & Josephine O. Worley & others; Josephine Olinger Worley & James F. Worley & ohters; W. T. Worley & Virgie Lee Worley; James F. Worley & Josephine O. Worley & others; Birdie B. Keene & Jasper Keene; George R. Bise & Ocie W. Lawrence; R. Glenn McAllister & Mary L. McAllister; W. C. McAllister & Mary K. McAllister & others; R. J. McAllister & India McAllister; J.Otis Bise & Mamie J. Bise; William T. Bise & Gladys Bise.

2. Contract dated May 31, 1956. To complete November 1, 1957.

Work Authorized

The purpose of the project is to explore for ores of zinc by diamond drilling (plus necessary overburden drilling).

The objective of the work is to investigate the ore potential of the Knox dolomite, or more exactly, the Copper Ridge dolomite which underlies the area, and which outcrops on the slopes of Bear Creek valley.

Drill holes are expected to vary from 200 feet to nearly 1,000 feet in depth, with an average between 500 and 600 feet. Approximately 24 holes will be required. Not more than 15,000 feet of drilling shall be performed.

Work Completed

16 AX-size holes - total drilling 10,370 feet average cost per foot, $2.422	$25,112.25
7 Assays @ $1.00/each	7.00
Incidental allowance 10,370 feet @ $0.53/ft.	5,496.10
Total Cost	$30,615.35

Work on the project was started on July 13, 1956, By mutual agreement the contract was terminated effective August 22, 1957. Termination Agreement dated September 4, 1957.

3. Audit - Report of Review dated December 9, 1957.

Accepted cost as billed by Operator	$30,615.35
Government's participation @ 50%	$15,307.67

Operator's final report dated November 14, 1957
Field Team's final report dated January 21, 1959.

4. Certification of Discovery or Development

None issued as no discovery of ore.

5. Comments

The drilling consisted of 16 AX-size vertical holes spaced at 200-foot intervals in three north-south exploration fences. Holes depths ranged from 418 to 859 feet, averaging 648 feet. Core recovery was generally excellent, averaging 90 per cent of the drilling below overburden. Sphalerite was observed in the core of all but two of the holes, although mostly only as scattered traces. The best runs of mineralized rock were 5, 9 and 10 feet containing 8.13, 1.8 and 2.9 per cent zinc respectively. These runs occurred in three adjacent holes in one fence and were at the same stratigraphic zone about 50 to 60 feet below the top of the Copper Ridge dolomite which here strikes about N. 65° E. and dips about 25° SE. "Reserves" of mineralized rock indicated by the three holes mentioned may be as much as 50,000 tons containing about 2.7 per cent zinc with an additional tons inferred.

The drilling authorized under the contract was not carried to completion, because it was believed unlikely that the drilling of the remaining footage would enhance the ore potential of the area sufficiently to warrant certification. Such mineralized rock as was encounted, although it constitutes a "reserve" of sub-ore grade material, cannot be classifeid as an ore discovery. Additional exploration in this area with Government assistance is not warranted.

J. W. Alt

J. W. Alt

JWAlt/er
CC: Docket
Dir Read File
Chron.

DMEA Form 17
Feb. 58

DEFENSE MINERALS EXPLORATION ADMINISTRATION

WORK COMPLETED ANALYSIS

After final audit or review report is received, prepare original only and file in official docket

Operator: THE NEW JERSEY ZINC COMPANY		Actual Cost	X
State: VIRGINIA (Smythe County)		Agreed Unit Cost *	X
Final Report of Audit		Commodity: ZINC	Docket No. DMEA-4178
Final Report of Review	X		Contract No. Idm-E960

Operation	Authorized by Contract and Amendments		Completed		Net cost after sale of Government Property
	Units	Cost	Units	Cost	
Drifting & Crosscutting					
Overburden & Diamond drilling to 250' Dep. ~~Raising~~	6,000' @$2.20	$13,200.00	4,000'	$ 8,800.00	
Diamond drilling ~~Shafts~~ 250' to 500' Dep.	4,500' @ $2.45	11,025.00	3,888'	9,525.60	$ 25,112.25
Diamond drilling ~~Winzes~~ 500' to 750' Dep.	3,000' @ $ 2.70	8,100.00	2,141'	5,780.70	
Drilling Diamond (Specify) 750' to 1,000'	1,500' @ $ 2.95	4,425.00	341' 10,370'	1,005.95	
Incidental allowance per foot drilling completed ~~Surface Excavation~~ 15,000' @ $0.53		7,950.00 *	10,370'	5,496.10	5,496.10
Underground Excavation					
Roads and Trails					
Operating Equipment Purchased					
Surface Rehabilitation & Repairs					
Underground Rehabilitation					
New Building, Improvements, etc.					
Other (Specify) 100 samples @ $1.00		100.00 *	7	7.00	7.00 *
Totals		$ 44,800.00		$30,615.35	$ 30,615.35

* Net cost total must agree with final report of audit or review.

Prepared by W. P. Klugescheid/er Date 4/1/58

31398

Estimated Cost of the Project

Actual Costs

Category (1) Independent Contracts

Overburden drilling and diamond drilling to 250-foot depth, approximately 6,000 feet @ $2.20/ft.	$13,200.00	
Diamond drilling, 250-foot to 500-foot depth, approximately 4,500 feet, @ $2.45/ft.	11,025.00	
Diamond drilling, 500-foot to 750-foot depth, approximately 3,000 feet, @ $2.70/ft.	8,100.00	
Diamond drilling, 750-foot to 1,000-foot depth, approximately 1,500 feet, @ $2.95/ft.	4,425.00	$36,750.00

Fixed Unit Costs

Incidental allowance for each foot of drilling completed, 15,000 feet @ $0.53/ft.	$ 7,950.00	
100 samples of drill core to be assayed, @ $1.00/sample	100.00	8,050.00
Estimated Total Cost of the Project		$44,800.00
Government's participation, 50%		$22,400.00

Amendments

No. 1 Agreed August 21, 1957.

Deletes tracts of land referred to in Article 2 and Annex I of the Contract.

☒ Audited 12/9/57. WORK ANALYSIS SHEET - DMEA PROJECT ☒ Actual Cost

☐ Certified Not recommended. Analysis as of 12/27/57 * ☒ Agreed Unit Costs

Incl. Voucher for Audit Aug 1957

Name **THE NEW JERSEY ZINC COMPANY (Beaver Creek Area)** Docket No. 4,178

State **VIRGINIA (Smythe County)** Commodity **ZINC** Idm-E No. 960

OPERATION	AUTHORIZED Units	AUTHORIZED Cost	COMPLETED Units	COMPLETED Cost	NET COST
Drifting & Crosscutting					
~~Mining~~ Overburden & Diamond Drilling to 250' Dep.	6,000' @ $2.20	$13,200.00	4,000'	8,800.00	
~~Shaft~~ Diamond Drilling 250' to 500' depth	@ $2.45 4,500'	11,025.00	3,888'	9,525.60	$25,112.25
~~Winze~~ Diamond Drilling 500' to 750' depth	3,000' @ $2.70	8,100.00	2,141'	5,780.70	
Drilling (Specify) Diamond 750' to 1,000'	1,500' @ $2.95	4,425.00	341' / 10,370'	1,005.95	
Incidental allowance per foot drilling ~~Surface Excavation~~ completed 15,000' * @ $0.53		7,950.00	10,370'	5,496.10	5,496.10
Underground Excavation					
Roads and Trails					
Operating Equipment Purchased					
Surface Rehabilitation & Repairs					
Underground Rehabilitation					
New Building, Improvements, etc.					
Other (Specify) 100 samples @ $1.00 *		100.00	7	7.00	7.00
Totals		$44,800.00		$30,615.35	$30,615.35

Checks Audit R.A.R.

Amendment No. 1.--Deletes some land.
Termination Agreement dated September 4, 1957.
Operator's Final Report received November 26, 1957.
Terminal letter dated--July 17, 1958.

Prepared by W.P. Klugescheid

71626

to 250' (actual cost) DD.

6000' @ $2.20 — 13,200.00

250' to 500'

4,500' @ 2.45 — 11,025.00

500' to 750'

3,000' @ 2.70 — 8,100.00

750' to 1000'

1,500' @ 2.95 — 4,425.00

Fixed Unit Costs

15,000' drilling incidental allowance per foot @ $0.53 — 7,950.00

100 Samples assayed @ $1.00 — 100.00

$ 44,800.00

Spent.

July, August 1956 ~~Sept.~~ ~~Oct.~~, Dec. Jan. 1957 April ~~May~~ June

3,500' 3,750' 4,000'
3,250' 2,750' 3000'
1000 1,750'
750' 2,250'

0-250 @ 2.20 — 750' 2,250'

3,658' 3,888'
3,388' 3,138' 2,888'
2,638' 1000' 1,750'

250-500 @ 2.45 — 750' 2,250'

2,141' 2,010' 1,878' 1653' 1,457' 828' 1,334'

500-750 @ 2.70 — 573' 1,445'

123'
750-1000 @ 2.95 — 73' 1,341'

8,250.00 7,400.00
8,800.00 7,150.00
4,450.00 2,200.00
385.00 1,650.00
8,300.00
1,688.10 7,975.60 6,463.10
9,525.60 7,287.50 2,245.00
9,913.105,512.50 1,837.50

6,000.00
6,050.00

4,463.10
5,424.00 5,184.60 3,933.90
3,601.80 2,222.10
5,780.70 3,901.50 1,541.10

1,005.95 362.85
215.35

Incidentals allowance

2,146 @ $0.53 9,127' 9,991'
2,946' 5,175' 6,286' 7,174' 10,370'
7,686' 8,382'

4,442.46 4,837.31 5,161.67
4,073.58 5,800.22
3,331.58 1,561.38
2,742.75 1,737.38
5,496.10

Samples @ 1.00 — $ 97

7.00 6.00
5.00

24,755.61
26,974.46
28,764.72
30,615.35

6,387.33
8,496.33
15,491.00
18,104.53
21,225.57
22,615.03

SUMMARY OF DRILLING ON PROJECT DMEA-4178--N. J. ZINC.

Hole.	Property	Total Depth	Remarks
BC-1	Kestner	688'	93'-95' Est. 1% Zn.
BC-2	"	823'	55'-56' & 82'-84' Minor Mineral.
BC-3	"	635'	Barren Hole--some traces
BC-4	"	800'	Barren Hole--some traces
BC-5	"	859'	435'-440' 8.13% Zn.
BC-6	"	859'	445'-454' Est. 1.8% Zn.
BC-7	McAllister	511'	315'---4" Est. 3% Zn.
BC-8	"	523'	312'-313' Est. 2% Zn.
BC-9	"	588'	291'-294' Est. 1% Zn.
BC-10	"	470'	Barren Hole
BC-11	"	418'	Barren Hole
BC-12	Kestner	512'	477'-487' -- 2.9% Zn.
BC-13	"	696'	Barren Hole--some shines.
BC-14	"	745'	Barren Hole
BC-15	"	612'	539'-540' Shines
BC-16	"	631'	581'-583' Est. 2% Zn.

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

OFFICIAL FILE COPY
O. M. E.
RECEIVED FEB 6 1959

DATE	INITIALS	CODE
2-6	C	220
2-7	Klg	~~300~~

February 6, 1959

Re: DMEA 4178; Contract Idm E-960
The New Jersey Zinc Co.
Beaver Creek Area
Smyth County, Virginia

Memorandum

To: W. R. Griswold, Office of Mineral Exploration

From: Commodity Specialist, Branch of Base Metals

Subject: Review of Field Team final report, dated January 21, 1959.

On the basis of sphalerite showings in Knox dolomite outcrops and two strong geochemical soil anomalies DMEA joined the New Jersey Zinc Company in diamond drill exploration to test the area at depth.

The contract provided for a maximum of 15,000 feet of AX drilling, and some 24 hole-sites were contemplated. After the completion of 16 vertical holes, ranging from 418 to 859 feet in depth, and totaling about 10,370 feet it was concluded that there was little possibility of a worthwhile deposit in terms of either size or grade, and that the 50,000 tons of mineralized rock indicated by drilling was too low in grade to constitute a discovery. The contract was terminated and the field team recommended that no certificate of discovery be made.

The drill logs, records of mineralization and assays amply support these conclusions and I concur in them.

O. M. Bishop

O. M. Bishop

OMBishop/vam

Copy to: Division of Minerals
Mr. Kiilsgaard
Mr. Lamb
Mr. Bishop
F I L E S

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION
ROOM 2-B POST OFFICE BLDG.
KNOXVILLE 2, TENN.

OFFICIAL FILE COPY
O. M. E.
RECEIVED JAN 23 1959

DATE	INITIALS	CODE
1/23	C	220
1/23	[illegible]	130
1/27	[illegible]	130
1/27	C	220
1/30	Key	500

January 21, 1959

Memorandum

To: Operating Committee, OME, Washington, D. C.

From: Field Team, OME, Region V, Knoxville, Tennessee

Subject: Docket No. DMEA-4178, Contract No. Idm-E960 (Zinc)
The New Jersey Zinc Company, New York, New York
Beaver Creek area, Smyth County, Virginia

Enclosed are the original and two copies of the Field Team final report on the subject exploration project.

Only a small amount of mineralized rock, not quite ore-grade for even a larger body, was discovered. Certification is not recommended.

Robert A. Laurence
Robert A. Laurence
Executive Officer

V. J. Lynch
V. J. Lynch
Member, Bureau of Mines

Enclosures 3

Reviewed by
OME OPERATING COMMITTEE
1-27-59
(date)

UNITED STATES

DEPARTMENT OF THE INTERIOR

OFFICE OF MINERALS EXPLORATION

Region V

OFFICIAL FILE COPY
O. M. E.
RECEIVED JAN 23 1959

DATE	INITIALS	CODE
1/27	JB	
		130
		220

FILE TM
FINAL
REPORT

FINAL REPORT

DMEA-4178, Idm-E960 (Zinc) BEAVER CREEK AREA
Smyth County, Virginia

Helmuth Wedow, Jr., Geologist
U. S. Geological Survey

L. E. Shirley, Mining Engineer
U. S. Bureau of Mines

Reviewed by
OME OPERATING COMMITTEE
1-27-59
(date)

January 21, 1959

FINAL REPORT

DMEA-4178, Idm-E960, BEAVER CREEK AREA, Smyth County, Virginia

Operator: The New Jersey Zinc Company, 160 Front Street, New York 38, N. Y.

SUMMARY AND RECOMMENDATIONS

Exploration with DMEA assistance was conducted in the Beaver Creek area, Smyth County, Virginia from July 1956 through July 1957. The work was entirely diamond drilling from the surface. The purpose of the drilling was to search for zinc-bearing ore shoots related to surface showings of zinc minerals in the upper part of the Copper Ridge dolomite and associated anomalous amounts of zinc in the overlying soil. The project was terminated by mutual agreement on the completion of 10,370 feet, or about 69 percent, of the total 15,000 feet of drilling authorized by the contract. The total cost of the work actually completed amounted to $30,615.35, of which the cost to the Government was $15,307.67 at 50 percent participation.

The drilling consisted of 16 AX-size vertical holes spaced at 200-foot intervals in three north-south exploration fences. Hole depths ranged from 418 to 859 feet, averaging 648 feet. Core recovery was generally excellent, averaging 90 percent of the drilling below overburden. Sphalerite was observed in the core of all but two of the holes, although mostly only as scattered traces. The best runs of mineralized rock were 5, 9, and 10 feet containing 8.13, 1.8, and 2.9 percent zinc respectively. These runs occurred in three adjacent holes in one fence and were at the same stratigraphic zone about 50 to 60 feet below the top of the Copper Ridge dolomite which here strikes about N. 65° E. and dips about 25° SE. "Reserves" of mineralized rock indicated by the three holes mentioned may be as much as 50,000 tons containing about 2.7 percent zinc with an additional 50,000 tons inferred.

The drilling authorized under the contract was not carried to completion, because it was believed unlikely that the drilling of the remaining footage would enhance the ore potential of the area sufficiently to warrant certification. Such mineralized rock as was encountered, although it constitutes a "reserve" of sub-ore grade material, cannot be classed as an ore discovery. Consequently, it was recommended that the contract be terminated as unsuccessful and not be certified.

INTRODUCTION

From July 1956 through July 1957 the New Jersey Zinc Company conducted a subsurface exploration program with DMEA assistance in the Beaver Creek area, Smyth County, Virginia. This area is about 5 to 7 miles east of Saltville and 10 to 12 miles west-northwest of Marion, the County Seat. It is also about 43 miles west of Austinville, where the Operator has been mining lead and zinc for many years. (See fig. 1.)

Access to the project area from U. S. Highway 11 is gained by the Saltville Road north from Chilhowie about 5 miles to the Rich Valley Road, and thence about 2 miles northeast to the prospects, which are found on the southeast flank of Chestnut Ridge---one on Possum Hollow and another in the water gap of Beaver Creek (fig. 2). The nearest railhead lies about 3 miles northwest of the area at the North Holston Station on a branch of the Norfolk and Western Railway.

The exploration program consisted solely of diamond drilling to search for possible zinc ores related to two prominent geochemical soil anomalies in the vicinity of outcrops of Knox dolomite containing scattered traces of sphalerite and, locally, significant amounts of secondary zinc minerals. The mineralized zone at Beaver Creek is stratigraphically far below the well-known Kingsport ore of the East Tennessee zinc district. It was anticipated, however, that possible ore bodies at Beaver Creek would have habits similar to the East Tennessee occurrences, chiefly those in the similar, more steeply dipping rocks of Copper Ridge, where the Kingsport ore bodies were thought to be mainly pencil-like shoots plunging in the bedding at relatively low

angles to the regional strike of bedrock. The contract between the Operator and the Government authorized a maximum of 15,000 feet of AX-size diamond drilling in approximately 24 holes. These holes were expected to range from 200 to nearly 1,000 feet in depth, averaging between 500 and 600 feet in depth. The maximum gross cost of the project, including assays and an incidental allowance (for geological, engineering, accounting, etc. services, core boxes, etc.) was not to exceed $44,800, of which the Government would share 50 percent or $22,400.00.

The maximum area controlled (by option agreements) by the Operator during the life of the contract amounted to about 660 acres (fig. 2). Of this total some 262½ acres at the southwest end of the project area (fig. 2) were deleted from the contract by Amendment No. 1 on August 21, 1957.

There is no known production of zinc ore from the Beaver Creek area.

The Operator made his application for DMEA assistance to explore the Beaver Creek area on February 10, 1956. The contract was signed on May 31, 1956 and actual drilling was initiated on July 13, 1956. On January 11, 1957 the Operator recessed drilling with the completion of 11 holes and requested termination. Drilling data were reviewed subsequently with the Operator and it was agreed that several additional holes were warranted; drilling was resumed on April 15, 1957. By July 30, 1957 five additional holes had been completed and the Operator again requested termination. Because the drilling completed to the date of the second termination request had not resulted in a

significant discovery of zinc ore, and because it was unlikely that the completion of the remaining amount of drilling authorized by the contract would result in such a discovery, the Field Team recommended termination on August 2, 1957. The contract was terminated, effective August 22, 1957, by mutual agreement between the Operator and the Government. As the exploration at Beaver Creek did not result in a discovery, it was recommended that no certificate of discovery be issued. The Operator was so informed by letter on July 17, 1958.

WORK ACCOMPLISHED

The exploration in the Beaver Creek area consisted of diamond drilling of 16 AX-size holes with a total of 10,370 feet, or 69 percent of the 15,000 feet authorized. The holes were all vertical and were spaced at intervals of approximately 200 feet on three north-south, essentially dip, fences as shown on figure 2. The holes ranged in depth from 418 to 859 feet and averaged 648 feet. Depth of overburden ranged from 1 to 96 feet, averaging 39 feet. Core recovery in the drilling below overburden was excellent, ranging from 73 to 98 percent per hole for a total average core recovery of 90 percent. Much of the average 10 percent core loss was due to the occurrence of cavities and grinding of related rotten rock in the topmost 200 feet of bedrock. The engineering data on the holes drilled at Beaver Creek are summarized in Table 1.

Although numerous trace and shine occurrences of sphalerite were noted in the core recovered (see fig. 3) and the contract permitted as many as 100 assays, few core runs were sufficiently mineralized to warrant assaying. Consequently only seven samples were analyzed for zinc. These analyses follow:

Hole No.	Depths (feet)	Core length (feet)	Zinc (percent)	
BC-5	435-439	4 (4)*	4.0	8.13
	439-440	1 (1)	24.65	
BC-6	445-454	9 (3)	1.8	
BC-12	477-481	4 (4)	6.03	2.9
	481-483	2 (2)	0.22	
	483-487	4 (4)	1.12	
BC-15	438-440	2 (1½)	3.64	

*Figures in ( ) show actual amount of core assayed.

EXPENDITURES

The Report of Review of the Beaver Creek contract, issued by DMEA on December 9, 1957, shows the following cost summary:

Independent contracts (drilling)	$ 25,112.25
Fixed unit costs	5,503.10
Total costs billed by Operator	$ 30,615.35
Exceptions	0.00
Total accepted costs	$ 30,615.35

Thus, 68.3 percent of the total of $44,800 authorized for the project was expended. The total cost to the Government at 50 percent participation amounts to $15,307.67. Average costs per foot and per hole are summarized as follows:

	Total cost	Average cost per foot	Average cost per hole
Drilling	$ 25,112.25	$ 2.422	$ 1,569.53
Assays	7.00	--	0.44
Incidentals	5,496.10	0.530	343.51
Total	$ 30,615.35	$ 2.952	$ 1,913.47

Note: The average cost per foot is based on 10,370 feet of drilling and the average cost per hole is based on 16 holes. The cost of assays per foot is not included as it amounts to only $ 0.00068.

GEOLOGY

The geology of the Beaver Creek area is typical of Appalachian stratigraphy and structure in southwestern Virginia (Butts, 1940). The area lies within the overthrust fault block bounded above and to the southeast by the Pulaski fault and below and to the northwest by the Saltville fault. This fault block contains sedimentary formations ranging in age from Cambrian to Mississippian.

Within the Beaver Creek area the stratigraphic units are the Copper Ridge dolomite, the Chepultepec limestone, the Longview dolomite, and post-Longview beds--probably the equivalent of the Kingsport and Mascot formations of Tennessee--all of the Cambro-Ordovician Knox group. Overlying the Knox are Middle Ordovician limestones--equivalent for the most part to the Chickamauga limestone group of Tennessee. The drilling in the Beaver Creek area was confined to a stratigraphic thickness of about 1,300 feet, ranging from the Copper Ridge dolomite below through the Chepultepec limestone into the Longview dolomite. Some post-Longview beds may have been cut, but their recognition in the drill core was not attempted. (See figs. 2 and 3.)

The local structural setting of the Beaver Creek area is a relatively simple homocline in which the attitude of the strata averages about N. 65° E., 25° SE. A cross or tear fault (or shear zone) of relatively small displacement offsets the strata of the area in the water gap of Beaver Creek (fig. 2). The strike of the fault appears to be about N. 45° W. with the dip probably to the northeast at an unknown angle. The Operator's geologists report another fault, penetrated only in

Holes BC-12 and BC-16, slightly displacing the beds of the Chepultepec formation. Numerous other faults or mylonite zones are recorded in the Operator's drill logs, but do not appear to be interrelated. In all likelihood, all or most of these minor faults represent shearing roughly parallel to the more prominent cross fault in the valley of Beaver Creek.

MINERALIZATION

The surface occurrences of zinc minerals in the Beaver Creek area are confined to two localities: (1) several occurrences of sphalerite in outcrops of slightly brecciated dolomite about 250-300 feet vertically below the top of the Copper Ridge dolomite in the valley of Beaver Creek; and (2) two occurrences of sphalerite and calamine in outcrops of weathered breccia about 50-60 feet vertically below the top of the Copper Ridge dolomite in Possum Hollow on the Ray McAllister property at the southwest end of the project area. (See fig. 2.) Both localities of bedrock zinc occurrences are accompanied by anomalous amounts (over 900 parts per million) heavy metals, chiefly zinc, in the soil (fig. 2). The zone about250-300 feet below the top of the Copper Ridge dolomite is at about the same stratigraphic position as the ore-grade zinc mineralization found about 10 miles northeast along strike at Chatham Hill in a road-side outcrop. The Chatham Hill occurrence, however, proved to have little lateral extent when drilled out by the Operator several years ago.

In the course of diamond drilling at Beaver Creek both the "50-foot" zone and the "250-foot" zone were tested in the first eleven holes drilled; the remaining five holes tested only the "50-foot" zone. Except for weak, but near-ore grade, mineralization encountered in three holes, the occurrence of the zinc discovered consists chiefly of traces or thin beds of very weakly mineralized ground at various stratigraphic levels. The intermittent character of most of the sphalerite occurrences is shown by the data posted on figure 3.

Calculations by the examiners on the "reserve" of mineralized rock encountered in Holes BC-5, -6, and -12 (fig. 2) agree closely with those of the Operator. It is believed that the drilling indicates a minimum of approximately 50,000 tons of rock containing 2.7 percent zinc. The overall grade of this block is probably a fraction low as only 3 feet were recovered and assayed from the 9-foot run from Hole BC-6. As the 3 feet of core recovered showed considerable evidence of grinding, it is thought that the core loss may have involved soft oxidized ore such as was present in some amount in the basal 1 foot (24.65 percent zinc) of the 5-foot run from Hole BC-5. In addition, it is reasonable to infer another 50,000 tons of mineralized ground beyond the limits of the indicated block. Further inference is not possible as little or nothing is known of the plunge direction of the "ore" shoot, except negatively from the results of the fence of holes drilled east of the "ore" namely Holes BC-13, -14, and -15 (figs. 2 and 3).

CONCLUSION

The drilling in the Beaver Creek area did not discover zinc ore of the grade and tonnage necessary to warrant development. Although the total drilling authorized under the contract was not completed, it appeared that the drilling of the remaining footage was unlikely to enhance the potential of the area. Consequently, the project was terminated as unsuccessful. Certification of the project was not recommended.

REFERENCE CITED

Butts, Charles, 1940, Geology of the Appalachian Valley in Virginia: Virginia Geol. Survey, Bull 52.

Helmuth Wedow, Geologist
U. S. Geological Survey

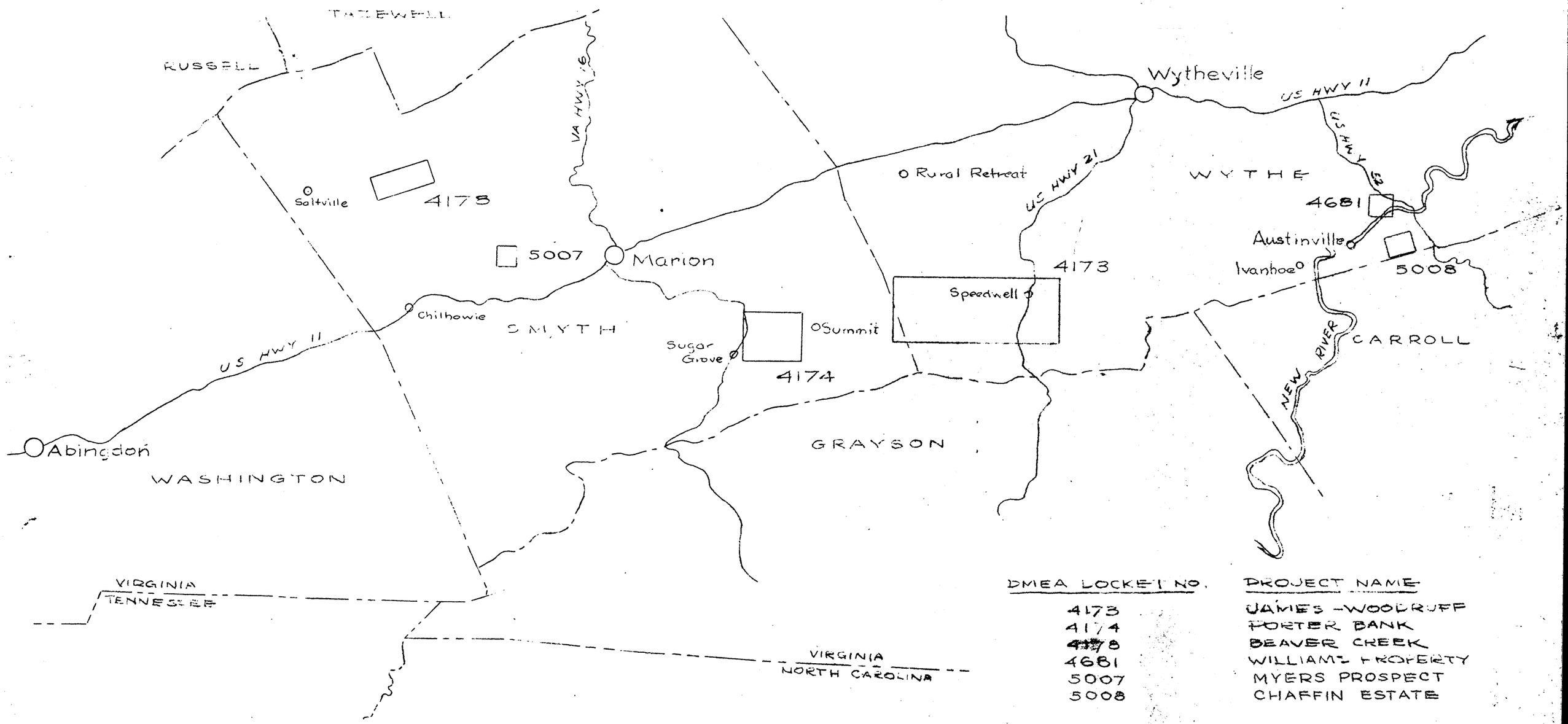
L. E. Shirley, Mining Engineer
U. S. Bureau of Mines

TABLE 1.-- ENGINEERING DATA ON DIAMOND DRILL-HOLES, BEAVER CREEK AREA, SMYTH COUNTY VIRGINIA (DMEA-4178, Iron-E 980, Zinc)

		KESTNER PROPERTY													McALLISTER PROPERTY							GRAND	
DIAMOND DRILL HOLE NO.		BC-1	BC-2	BC-3	BC-4	BC-5	BC-6	BC-12	BC-13	BC-14	BC-15	BC-16	TOTAL	AVERAGE	BC-7	BC-8	BC-9	BC-10	BC-11	TOTAL	AVERAGE	TOTAL	AVERAGE
COLLAR COORDINATES (BASED ON VIRGINIA MILITARY GRID)	NORTH	218,529	218,322	218,110	217,920	217,718	217,518	217,318	217,700	217,500	217,900	217,100	---	---	215,140	215,325	215,515	215,715	215,913	-	-	---	-
	EAST	1,072,616	1,072,608	1,072,583	1,072,580	1,072,572	1,072,565	1,072,560	1,073,170	1,073,165	1,072,162	1,072,680	-	-	1,064,131	1,064,135	1,064,140	1,064,140	1,064,152	-	-	-	-
COLLAR ELEVATION		2,188	2,271	2,248	2,292	2,271	2,210	2,263	2,440	2,298	2,428	2,267	-	-	2,139	2,216	2,286	2,315	2,253	-	-	-	-
TOTAL DEPTH		638	823	635	800	853	853	512	606	745	612	631	7,860	715	511	513	586	410	418	2,510	502	10,370	648
DEPTH OF OVERBURDEN		9	23	47	42	1	84	22	96	96	53	44	517	47	7	6	2	62	28	105	21	622	39
AMOUNT OF ROCK DRILLED		629	800	588	758	852	775	490	600	649	559	587	7,343	668	504	517	586	408	390	2,405	481	9,748	609
CORE RECOVERY	FOOTAGE	643	743	467	722	765	741	465	540	582	506	474	6,659	605	485	483	503	343	286	2,114	423	8,773	548
	PERCENT	95	93	79	95	92	96	95	90	90	91	82	91	91	98	94	86	84	73	88	88	90	90

DMEA ZINC PROJECTS IN SOUTHWEST VIRGINIA

SCALE 1/250,000



DMEA LOCKET NO.	PROJECT NAME
4173	JAMES-WOODRUFF
4174	PORTER BANK
4178	BEAVER CREEK
4681	WILLIAMS PROPERTY
5007	MYERS PROSPECT
5008	CHAFFIN ESTATE

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1/6/58 WPKly 500

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

January 2, 1958

Re: DMEA 4178; Zinc
New Jersey Zinc Co.
Beaver Creek Area
Smyth County, Virginia
Contract Idm-E960

Memorandum

To: W. R. Griswold, DMEA

From: O. M. Bishop, USBM

Subject: Final report of project by R. C. Gilbert, New Jersey Zinc Company, dated November 14 and received in Washington November 26, 1957.

Sixteen drill holes have been completed under reference contract, four of which intersected significant zinc values. All mineralized zones in drill holes and in outcrop are confined to a single stratigraphic interval. New Jersey Zinc Company concludes, "the possibility of a commercial Appalachian type ore body has been denied by drilling," and recommends the project be terminated.

Undoubtedly, New Jersey has had a great deal of experience in the area, and is best qualified to judge the results of drilling; however, there are several dissenting comments we would like to make:

> The drilling pattern was laid out on the assumption that an ore body including the mineralized outcrops along Beaver Creek would have a large component of length in the direction of strike of the strata and would extend eastward from the outcrop. Probably before drilling there was adequate justification for the assumption. The "fence" of holes, however, discourages further drilling on the original assumption, but does not preclude the existence of an ore zone at the same stratigraphic interval in the area west of holes 5, 6, 12 and 16. Though it is not recognized in the text, the two outcrops along Beaver Creek appear on the included map to be on, or adjacent to, the transverse fault that occupies the creek bottom. It is also noted that in general the holes

closer to the inferred fault are mineralized. If the fault plane itself is not mineralized it still suggests that the preferred elongation of a structurally controlled ore zone may be in the dip direction. The wide spacing between holes minimizes New Jersey's conclusion that the mineralized zone lacks possible zones of economic thickness and concentration. Proof of a favorable horizon is accomplished. It seems to us the intersection of this horizon with structural features should be an excellent prospecting gamble.

It is our opinion that several additional holes are needed to test the zone of intersection of the favored horizon with the fault plane. Additional drilling should also be considered in the area west of holes 5 and 6 and east of the road that follows Beaver Creek.

O. M. Bishop

O. M. Bishop

cc: Division of Minerals
Mr. Kiilsgaard
Mr. Lamb
Mr. Callaway
Mr. Bishop
F I L E S

MEA Form 7
12-56)

OFFICIAL FILE COPY

Date	Surname	Code
12/10	Klugescheid	500
	[illegible]	500
12/11	GCS	1301
"	[illegible]	110
"	[illegible]	100
		~~HB~~
12/12	[illegible]	220
		500

500

DEC 11 1957

Mr. Robert A. Laurence
Executive Officer
DMEA Field Team, Region V
Room 13, Post Office Bldg.
Knoxville 2, Tennessee

Re: Docket No. DMEA-4178 (Zinc)
The New Jersey Zinc Company
Beaver Creek Area
Smyth County, Virginia
Contract No. Idm-8960

Dear Mr. Laurence:

Enclosed are the Field Team and Finance Office copies of a Termination Agreement for the cited contract, signed by the Operator and the Government.

We are also enclosing an unsigned copy, and two extra copies of the Termination Agreement for the use of the Field Team.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (GCS)

Enclosures

WPKlugescheid/er 12/10/57

Copy to: Docket
Admr R File
Op. Committee
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Chron.

APPROVED:

Frank D. Lamb (GCS)
Member, Bureau of Mines

N. E. Nelson (GCS)
Member, Geological Survey

8623

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
12/9	Talbert	800
12/9	gb	220
12/9	Kelly	500

Mr. Robert A. Laurence
Executive Officer
DMEA Field Team, Region V
Room 13, Post Office Building
Knoxville 2, Tennessee

DEC 9 1957

Re: Docket No. DMEA-4178 (Zinc)
The New Jersey Zinc Company
Beaver Creek Area
Smyth County, Virginia
Contract No. Idm-E960

Dear Mr. Laurence:

As requested by your memorandum of November 21, 1957, a Report of Review in lieu of a final audit of the referenced project has been prepared. The original and three copies of the report are enclosed.

If you concur with the facts stated in this Report of Review, the original and one copy should be released to the regional finance officer, one copy should be forwarded to the Operator, and one copy should be retained in your files. If for any reason you do not concur, please return the original and three copies to this Division with your comments.

The original of the final MF-104 (August 1957) and the copies of 15 invoices applicable to prior vouchers, as submitted for review by Mrs. Miller's memorandum of December 5, 1957, are being returned to her with a copy of this letter.

Sincerely yours,

(Signed) J. L. Chambers

Jay L. Chambers, Director
Contract Administration
and Audit Division

Enclosure

EDTalbert/wb
December 9, 1957

Copy to: Docket
Admr. Reading File
Helen R. Miller
Mr. Chambers

8623

ÆA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
12/5	Klugescheid	500
	[illegible]	500
12/6	Johnson	110
6	Mittendorf	100
"	[illegible]	220
12/9	[illegible]	500

DEC 6 1957

Mr. Lindley G. Miller
Legal Department
The New Jersey Zinc Company
160 Front Street
New York 38, New York

Re: Docket No. DM A-4178 (Zinc)
The New Jersey Zinc Company
Beaver Creek Area
Smyth County, Virginia
Contract No. Idm-E960

Dear Mr. Miller:

We refer to your letter of November 29, 1957, in which you requested a conference concerning the problems discussed in your letter of July 10.

We will be pleased to hold said conference, as per your plans, on Wednesday, December 11, at 10:15 A. M. in my office Room No. 4459, Department of the Interior Building.

Sincerely yours,

C. O. Mittendorf

Administrator

WPKlugescheid/er 11/5/57
Copy to: Docket
Admr R File
Op. Committee
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Region V (2)
Chron.

8623

THE NEW JERSEY ZINC COMPANY
(ESTABLISHED 1848)
CABLE ADDRESS
"JERSEZINC"
160 FRONT STREET
NEW YORK 38, N.Y.

OFFICIAL FILE COPY
DMEA
RECEIVED DEC 2 1957

DATE	INITIALS	CODE
12/2	[illegible]	220
12/2	[illegible]	500

November 29, 1957

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

ATTENTION: MR. C. O. MITTENDORF,
ADMINISTRATOR

Re: Docket No. DMEA-4178 (Zinc)
The New Jersey Zinc Company
Beaver Creek Area
Smyth County, Virginia
Contract No. Idm-E960

Dear Mr. Mittendorf:

We are in receipt of your letter of November 25, 1957 in which you returned the original and four copies of the proposed termination agreement for the above contract. We have re-examined our position in this matter; and, in view of the fact that it is highly unlikely that there will be a certification of a discovery because of the disappointing results of the drilling and because we can appreciate your desire to permanently close the docket thereon, we are agreeable to executing the termination agreement. Pursuant to your request, I return herewith all copies, except the Operator's copy, duly executed by Mr. Goodwin.

I appreciate your prompt attention to the matter of a conference concerning the problems discussed in my letter of July 10 and trust that it will be convenient to have the same at 10:15 A.M. Wednesday, December 11. Mr. A. D. Hoagland, assistant to our superintendent for Tennessee, plans to join

OK [illegible]
OK [illegible]
— [illegible]
OK [illegible]

EA Form 7
.56)

OFFICIAL FILE COPY

Date	Surname	Code
11/20	Klugescheid	500
	Grimes	500
11/22	Martin	130
11/22	Lamb	130
11/22	Johnson	110
"	Hutchinson	100
11/25	C	220
11/22	Williams	500 (130)

NOV 25 1957

Mr. Lindley G. Miller
Legal Department
The New Jersey Zinc Company
160 Front Street
New York 38, New York

Re: Docket No. DMEA-4178 (Zinc)
The New Jersey Zinc Company
Beaver Creek Area
Smyth County, Virginia
Contract No. Idm-E960

Dear Mr. Miller:

We refer to your letter to Mr. Klugescheid, dated October 24, 1957, in which you mentioned that you had returned all the copies of a proposed termination agreement to Mr. Robert A. Laurence, and which he has since forwarded to us.

The paragraph 4 used in the termination agreement for Docket No. DMEA-4119, Talbot Area, Jefferson and Hamblen Counties, Tennessee, was particularly applicable to that case. Here we have a considerable area which had been drilled but the drill holes were widely spaced and, although the results were disappointing, it cannot be said that the discovery of smaller but significant ore bodies is not a possibility.

The project represented by Docket No. DMEA-4178, Beaver Creek Area, Smyth County, Virginia, is very different. In this case the two most promising areas were drilled and the drill holes were quite close together. The results were disappointing and the probability of finding ore bodies is rather remote.

If the paragraph 4 which you prefer were used in this case, it would mean that the cited docket would remain in our active file indefinitely as your company might wish to reexplore the property at some future time.

8623

Since little possibility exists that the project will be certified, we prefer to permanently close the docket at the end of the six-month period mentioned in Article 8 of the contract. We are, therefore, returning the original and four copies of the proposed termination agreement for execution by an authorized representative of your company. Kindly return all the copies, except the Operator's copy to this office.

Regarding the conference which you mentioned in the last paragraph of your letter, we will be pleased to arrange one at your convenience.

Sincerely yours,

C. O. Mittendorf (for)

Administrator

Enclosures

WPKlugescheid/er 11/20/57
Copy to: Docket (2) - 4119
Admr R File
Op. Committee
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Region V (2)
Chron.

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D.C.
KNOXVILLE 2, TENN.

November 21, 1957

RECEIVED NOV 26 1957
CODE
11/26 C 220
11/26 800
11/26 500

Memorandum

To: Operating Committee, DMEA - Washington

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

Subject: Final Operator's Report - DMEA-4178, Idm-E960-zinc. The New Jersey Zinc Co., Beaver Creek Area, Smyth County, Virginia

Submitted are 3 copies of the Operator's Final Engineering and Geological Report.

Certification of this contract probably will not be recommended.

Robert A. Laurence

Robert A. Laurence
Executive Officer, DMEA
Region V

V. J. Lynch

V. J. Lynch, Member
Bureau of Mines

BERTHA MINERAL DIVISION

THE NEW JERSEY ZINC COMPANY

AUSTINVILLE, VA.

EXTRA COPY
DMEA
RECEIVED NOV 2 1957

DATE	INITIALS	CODE

November 15, 1957

Regional Executive Officer
Defense Minerals Exploration Administration
Room 13, Post Office Building
Knoxville 2, Tennessee

Subject: Beaver Creek Area, Smyth County, Virginia
Docket #DMEA 4178, Contract #960

Dear Sir:

Enclosed is Mr. R. C. Gilbert's final report on the Beaver Creek Project. It includes both an account of the results of the drilling and a summary of the costs, the latter on your standard forms.

We trust that this is satisfactory and completes the job.

Very truly yours,

W. L. Albers
Superintendent

WHoratioBrown/mjf
In quintuplicate

RECEIVED
NOV 20 1957
U. S. Geological Survey
Geologic Division
Knoxville, Tenn.

OPERATOR'S
FINAL REPORT

EXTRA COPY
D.M.E.A
RECEIVED NOV 1957
DATE | NAMES | CODE

DIAMOND DRILLING

BEAVER CREEK AREA

SMYTH COUNTY, VIRGINIA

DMEA 4178, IDM-E960 (Zinc)

By

R. C. Gilbert

November 14, 1957

THE NEW JERSEY ZINC COMPANY
Austinville, Virginia

me at such conference. Would you please advise me at your earliest convenience whether this will be convenient and to what office we should proceed. With kind regards, I remain

Very sincerely yours,

Lindley G. Miller

LGMiller/rm

Legal Department

EXTRA COPY
DMEA
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DATE | INITIALS | CODE

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6.	Plan Map: Kestner Property 1"=100' 7GB-4222	" "
7.	Section I, Area I 1"=100' 7GB-4223	" "
8.	Section II, Area I 1"=100' 7GB-4312	" "
9.	Section III, Area I 1"=100' 7GB-4313	" "
10.	Plan Map: McAllister Property 1"=100' 7GB-4285	" "
11.	Section I, Area II 1"=100' 7GB-4286	" "
12.	Generalized Columnar Section 1"=100' 7GB-4316	" "

SUMMARY

Diamond drilling in the Beaver Creek Area encountered a small low grade zone of mineralization on the Kestner Property, but little more than traces were encountered on the McAllister Property. The possibility of a commercial Appalachian type ore body has been denied by the drilling.

It is therefore recommended that the Beaver Creek Project be terminated and classified as non-productive.

INTRODUCTION

Location

The Beaver Creek Area, which is made up of two prospects that were investigated during the recent exploration, lies about five miles northeast of Saltville in Smyth County, Virginia. One prospect lies along the bank of Beaver Creek and the other is about two miles southwest in the valley of Possum Hollow (see index maps, pages 2 and 3).

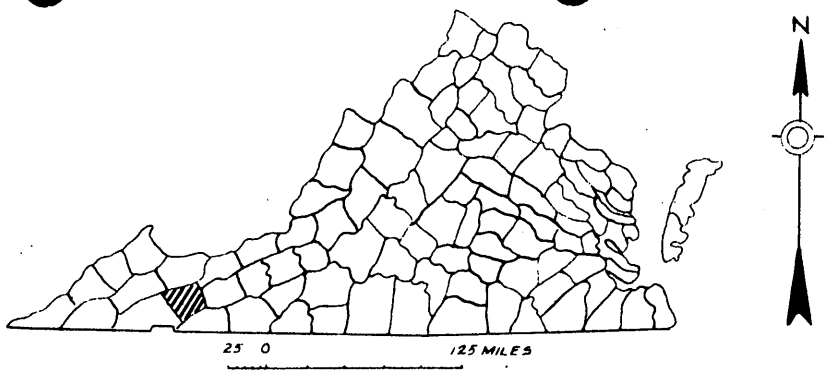
Topography

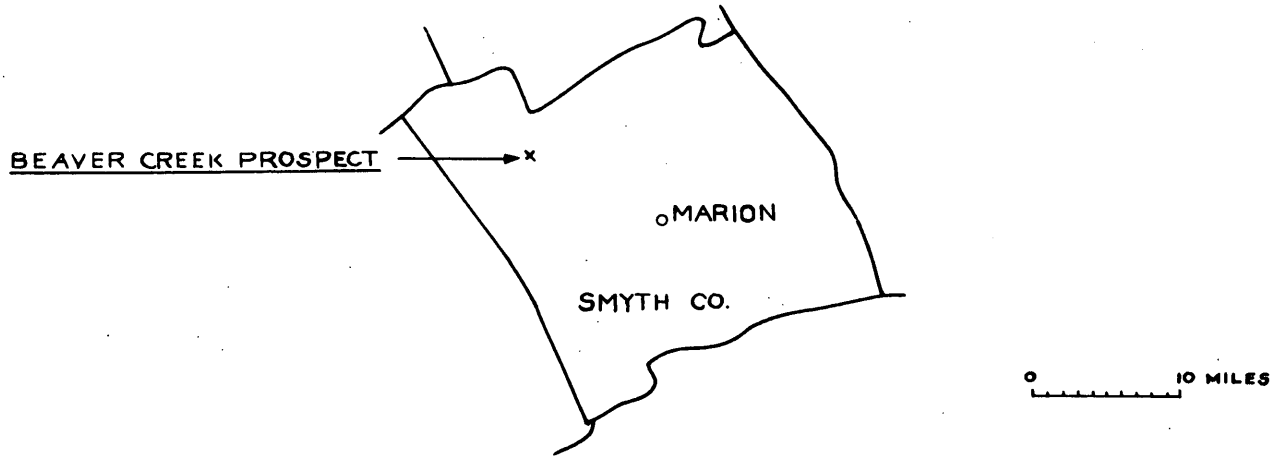
The topography of the Beaver Creek Area is rolling to rugged. Elevations range from about 1800 feet to about 2500 feet. This area is shown on the Abingdon (1:125,000) topographic sheet and the Maccrady (1:24,000) planimetric sheet.

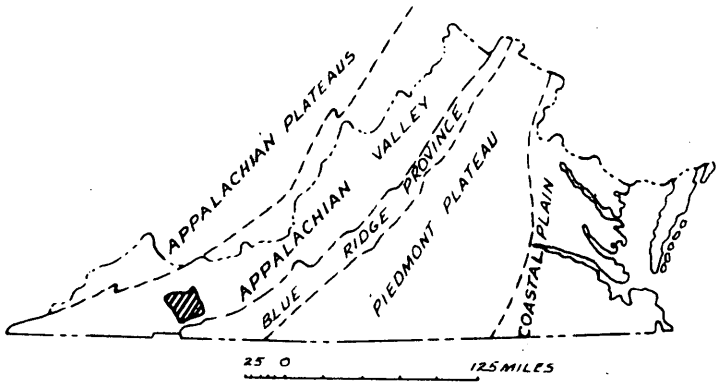
The area is drained by tributaries of the North Fork of the Holston River. Rich Valley, of which the Beaver Creek Area is a part, is marked by numerous sink holes indicating extensive underground drainage.

Scope of the Project

The diamond drilling was designed to test for ore at each of the two mineralized localities. At the Beaver Creek locality (Kestner Property) a fence of holes was designed to test for an eastward pitching ore body from the mineralized outcrop which was marked by a

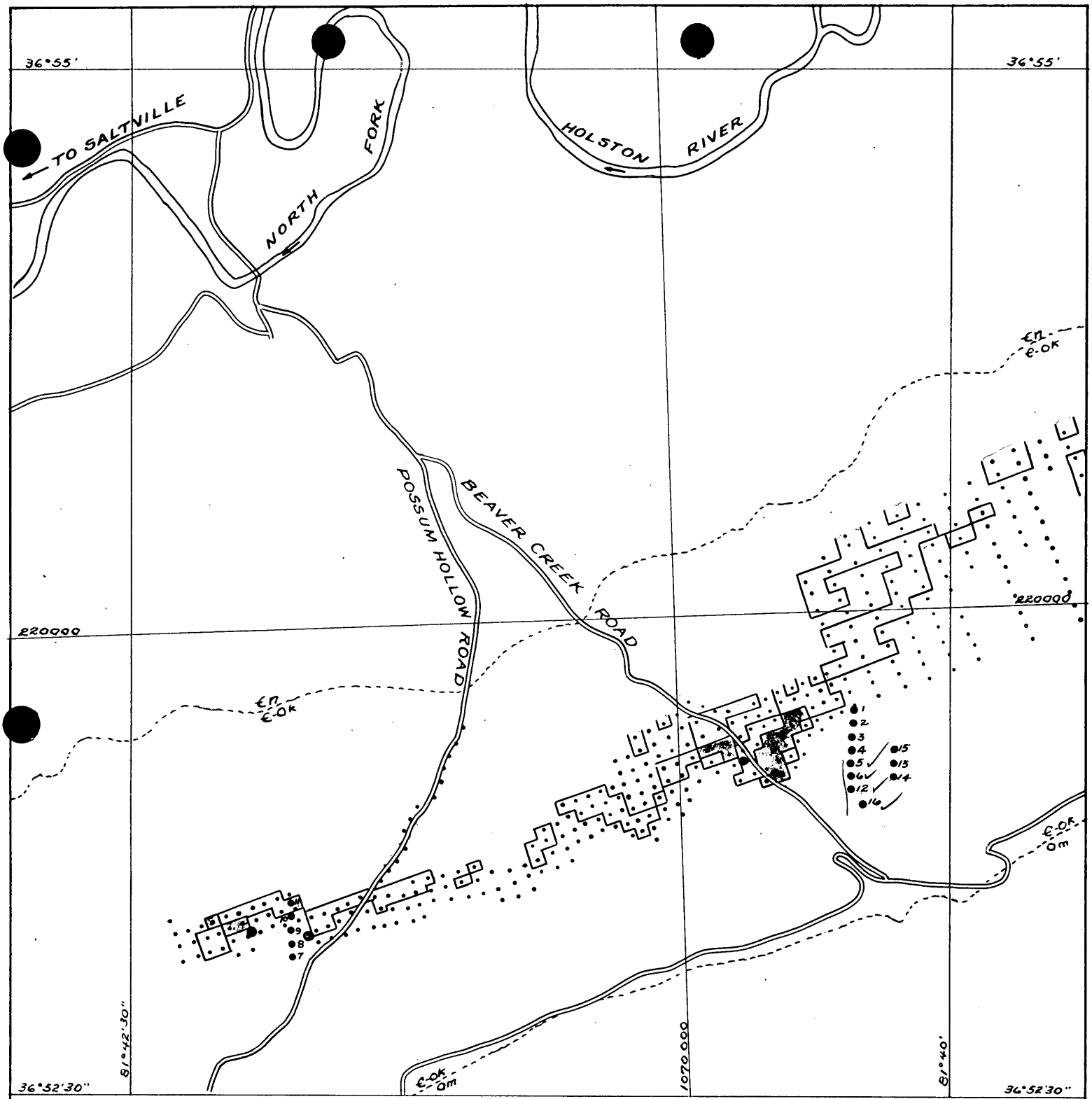






POSTED TO DATE	THE NEW JERSEY ZINC COMPANY	DISTRICT SMYTH COUNTY, VA.
DRAWN DATE OCT. 57 TRACED E.E.F. SCALE	GEOGRAPHIC AND PHYSIOGRAPHIC INDEX BEAVER CREEK AREA	FILE NO. 7GB-4314

X 3407 C IM 3-53



LEGEND

GEOCHEMISTRY

- • SOIL SAMPLE BACKGROUND VALUE
- [.6] " " 300 - 999 ppm
- [.14] " " 1000+ ppm

GEOLOGY

- Om MOSHEIM FORMATION
- €-Ok KNOX GROUP
- €n NOLICHUCKY FORMATION
- ■ MINERALIZED OUTCROP
- ● DIAMOND DRILL HOLE LOCATION

COORDINATES: VA. MILITARY GRID SYSTEM

POSTED TO DATE	THE NEW JERSEY ZINC COMPANY	DISTRICT SMYTH COUNTY, VA.
DRAWN R.C.G. DATE 10-17-57 TRACED E.E.F. SCALE 1"=2000'	INDEX MAP BEAVER CREEK AREA	FILE NO. 7GB-4311

X 5407 C 1M 3-53

pronounced geochemical anomaly. Diamond drilling near the Possum Hollow locality (Ray McAllister Property) was designed to test for evidence of an ore body between two outcrops of oxidized zinc mineralization. The outcrops on the McAllister property are also marked by a discrete geochemical anomaly. (See AX-SWVA-98, in pocket).

Personnel

The original Company work in the Beaver Creek Area was done by Mr. P. A. Riddell. Through his efforts the significance of the anomalies was determined as well as the locations of the various mineralized outcrops. The writer directed the diamond drilling in the area. The entire program was supervised by Mr. W. Horatio Brown.

The members of the DMEA field team, noted below, were always helpful with the problems that arose during the drilling.

The diamond drilling was contracted to Sprague and Henwood, Inc. of Scranton, Pennsylvania.

DMEA Assistance

The New Jersey Zinc Company applied for Government assistance in drilling the Beaver Creek Project through the Defense Minerals Exploration Administration. This application, dated February 13, 1956, was assigned Docket Number DMEA-4178 and referred to the Base Metals Division. This application was approved on May 31, 1956, and was assigned Contract Number IDM-E 960.

This contract, for a total of $44,800.00, of which the government participation was 50%, was the "fixed unit costs" type in which the costs are divided into three categories: drilling costs, sampling and analysis, and incidental allowances based on footage drilled. The costs incurred have been submitted with the monthly reports and the totals are shown on pages 6 and 7.

The Beaver Creek Project was inspected by the various members of the Region U Field Team, supervised by Mr. R. A. Laurence. Mr. W. R. Griswold of the Washington office and Mr. V. J. Lynch of the Knoxville office inspected the program before the contract was signed. While the drilling was in progress the project was inspected by Messrs. Laurence, Lynch, Dewey Amos, W. A. Beck and Helmuth Wedow, Jr., all members of the Region U Field Team.

Previous Work

The most recent work covering the Beaver Creek area is Charles Butts' "Geology of the Appalachian Valley" (Bull. 52, Va. Geol. Survey, 1940). His stratigraphic nomenclature and thicknesses will be followed in this report.

As far as known, there are no other published geologic reports that cover the Beaver Creek Area.

Form MF-104 (Rev.)
(April 1952)

Budget Bureau No. 42-R1036.5

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

RECEIVED NOV 26 '77

OPERATOR'S MONTHLY REPORT AND VOUCHER

Month of ....., 195.... Docket No. DMEA 4178 Contract No. 960
Operator's Name The New Jersey Zinc Company Minerals Zinc
Address Austinville, Va.
Contract Amount, $ 44,800.00 Government Participation: 50% Amount, $ 22,400.00

ITEMS OF COSTS	FOR OPERATOR'S USE			FOR GOVERNMENT USE ONLY		
	Monthly Total	Totals Previously Reported	Totals To Date	Approved Monthly Total	Approved Totals Previously Reported	Approved Totals To Date
(1) Independent Short Form Contracts:						
Drilling			25,112.25			
Bulldozing						
Crosscutting						
Drifting						
(2) Labor and Supervision:						
Labor						
Supervision						
Technical Services						
(3) Operating Mat'ls. and Supplies:						
Timber						
Explosives						
Pipe						
Track						
(4) Operating Equipment:						
Rental						
Purchase						
Depreciation						
(5) Initial Rehabilitation and Repairs						
(6) New Bldgs., Improvements, etc.						
(7) Miscellaneous:						
Repairs to Equipment						
Sampling and Analysis			7.00			
Payroll Taxes						
Liability Insurance						
(8) Contingencies (specify): Incidental Allowances @ $0.53/ft			5,946.10			
TOTALS			30,615.35			

I certify that the above bill is correct and just and that payment therefor has not been received.

Date ..... *Payee Bertha Mineral Division The New Jersey Zinc Company

Per ..... Title Superintendent

*When a voucher is signed or receipted in the name of a company or corporation, the name of the person writing the company or corporate name, as well as the capacity in which he signs, must appear. For example: "John Company, per John Smith, Secretary," or "Treasurer," as the case may be.

NOTE.—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.

(Instructions on reverse)

Pursuant to authority vested in me, I certify that this account is correct and proper for payment in the amount of:

$.....

Signature .....
(Authorized Certifying Officer)

Date ..... Vou. No. .....
(See other side)

(For Government use only)

CERTIFICATION BY GOVERNMENT REPRESENTATIVE:

I certify that to the best of my knowledge and belief the contractor submitting this voucher is operating a Defense Minerals Exploration Administration project under Contract No. ..... in accordance with the terms of the contract.

Signature ..... Title ..... Date .....

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature ..... Title ..... Date .....

MONTHLY REPORT OF OPERATOR

The Operator (Contractor) of an exploration project is required to make a monthly report to the Government through the Regional Executive Officer. This report consists of three parts as follows:

(a) *Form MF-104—Operator's Monthly Report and Voucher.*—This form details expenditures and constitutes a voucher for reimbursing the Operator for the Government's share of costs;

(b) *Form MF-104A—Operator's Unit Cost and Progress Report.*—This is a statistical report of expenditures which shows costs for the various types of operation; and

(c) *Narrative.*—A concise narrative description of progress made, results accomplished, and any unusual difficulties encountered must be furnished as an attachment to this Report and Voucher. Wherever possible, the narrative is to be illustrated with maps or sketches showing formations penetrated and location and assays of samples taken as well as advances in workings. In the case of diamond drilling or churn drilling, the location and inclination of holes is to be shown on a map; logs and assays also are to be submitted.

The Monthly Report of Operator should be prepared in an original and four copies all of which must be sent to the Executive Officer of the Region not later than the 15th of the month following.

Preparation of Form MF-104—Operator's Monthly Report and Voucher.—All the applicable spaces in Form MF-104 should be filled in by the Operator, and the Operator or his agent should sign the certification in the lower left corner of the form.

The items of costs are arranged in the order they appear in Article 6 (a) of Form MF-200 (Revised February 1952), however, this form is readily adaptable for use in reporting activities under other contract forms.

Under Item (1) delete words "Short Form" if the contract is a sub-contract under Form MF-200; and delete word "Independent" if the contract reported is on Form MF-200 (A). Also, report work paid for on a unit basis under contract Form MF-200 as though it were performed under an independent contract.

Under Item (2) include labor, supervision and technical services incurred for the exploratory operations. Do not include labor, supervision and technical services used for work performed under items (5) and (6).

Under Item (3) include the costs of material and supplies used in the project other than that used under items (5) and (6).

Under Item (4) appear the three types of operating equipment expenditures, that is, rental, purchase and depreciation. The expenditures made for renting equipment belonging to a third party will be reported under "Rental". The amount paid or duly obligated for payment for the purchase of equipment will be reported under "Purchase". The amount of expenditures due the Operator to reimburse him for depreciation of equipment owned will be reported under "Depreciation".

Item (5) comprises costs of labor, supervision, technical services, materials, etc., which are used in the initial rehabilitation and repair of existing buildings, installations, fixtures, and equipment. These costs, therefore, should not be reported under items (2) and (3).

Item (6) includes the labor, supervision, technical services, materials, etc., used in the installation or construction of new buildings, fixed improvements, etc., necessary for the project. These costs, therefore, should not be reported under items (2) and (3).

Item (7) covers miscellaneous types of expenditure such as payroll taxes, liability insurance, workmen's compensation insurance, repairs to equipment and sampling and analysis. Only that part of payroll taxes, liability insurance and workmen's compensation which are paid by the operator should be reported under item (7). The share paid by the employee as a payroll deduction is to be included under item (2) as labor costs.

Item (8) includes any unforeseen costs not included in the other seven categories.

The original of Form MF-104 when submitted for reimbursable expenses incurred under contract Form MF-200 must be supported by original documentation or by certified copies of purchase orders, payrolls or transcripts of payrolls, unless such documentation has been waived by the Regional Executive Officer. This certification may be stated thus, "Certified True Copy (or Transcript)", followed by appropriate signature. If the Executive Officer of the Region determines that a contract under Form MF-200 should have an "on-site" audit, that is, a Government auditor should make an audit of the Operator's books and records of account, the Operator need not support his monthly voucher with original or certified documents except in cases of equipment purchases whose individual costs exceed $50.00. In these cases the original or a certified copy of the purchase order or invoice should be attached to the Monthly Voucher. N. B.—Only the *original* of Form MF-104 is required to be documented. The four copies of Form MF-104 are not to be thus supported.

Form MF-104 submitted for reimbursement under fixed price contracts on Form MF-200 (A), however, are not required to be supported by documentation of any kind. The Operator will submit his claim under item (1) of Form MF-104 by deleting as stated above the word "Independent" and by showing the number of feet or other units immediately after the appropriate descriptive word, such as, drilling, bulldozing, crosscutting, drifting, etc., and giving the "Monthly Total" amount due. "Totals Previously Reported", and "Totals to Date" columns should also be filled in.

GPO 872893

Form MF-104A
(April 1952)

Budget Bureau No. 42-R1151.2

RECEIVED
NOV 26 1957
D.M.E.A.

UNITED STATES
DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS EXPLORATION ADMINISTRATION

OPERATOR'S UNIT COST AND PROGRESS REPORT

Month of ..... 195..... Docket No. DMEA 4178 Contract No. 960

Operator's Name The New Jersey Zinc Company Minerals Zinc

Address .....

OPERATION	UNIT	COSTS THIS MONTH	UNITS THIS MONTH	COSTS TO DATE	UNITS TO DATE	UNIT COSTS TO DATE	AUTHORIZED BY CONTRACT	
							Units	Unit Costs
Drifting								
Crosscutting								
Raising								
Shafts								
Winzes								
Drilling: Core	Ft			25,112.25	10,370	2.422	15000	2.45
Churn								
Auger								
Stripping								
Trenching								
~~Exploration~~ Sample Assay	Sample			7.00	7	1.00	100	1.00
Roads and Trails								
Incidental Allowances @ $0.53/ft	Ft			5,496.10	10,370	0.53	15000	0.53
TOTAL DISTRIBUTED COSTS				30,615.35				TOTAL COSTS AUTHORIZED BY CONTRACT
Operating Equipment Purchased								
Initial Rehabilitation and Repairs								
New Buildings, Improvements, etc.								
TOTAL COSTS				30,615.35				$44,800.00

The undersigned company, and the official executing this certification on its behalf, hereby certify that the information contained in this report is correct and complete to the best of their knowledge and belief.

Date ..... Operator Bertha Mineral Division The New Jersey Zinc Co.

Per ..... Title Superintendent

REMARKS: Final account, total costs.

NOTE.—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.

(Instructions on reverse)

(For Government use only)

INSTRUCTIONS

Preparation of Form MF-104A—Operator's Unit Cost and Progress Report.—Applicable places on Form 104A should be filled in by the Operator. The purpose of this form is twofold as follows: (1) to furnish the supervising engineers and other administrators with statistical information necessary to better determine the progress of the project; and (2) to furnish more permanent information on mining costs for future use. The more important phases of operation on which permanent information is desired have been outlined in the form. There are blank lines, however, for those unusual phases which may need to be reported for a particular project. It will be necessary for the Operator to distribute his costs among the applicable phases reported with the exception of three items the costs of which are not to be distributed by the Operator. These three items are: "Operating Equipment Purchased", "Initial Rehabilitation and Repairs", and "New Buildings, Improvements, etc." The reason for not distributing these items on a monthly basis is doubtless clear to the Operator, since such distribution might well overstate the cost for any one month or period short of the entire contract period.

Form MF-104A has been designed to tie in with Form MF-104 for both monthly and cumulative costs. The "Total Costs" on Form MF-104A for each month should equal the monthly "Total Costs" as reported on Form MF-104. This is also true of the "Total Costs To Date".

In preparing Form MF-104A, it will be necessary frequently to distribute certain costs over a number of items. For instance, supervisory and engineering costs may have to be distributed over several phases, such as, drifting, crosscutting, raising, etc., provided that these items were reported active for the month. Such distributions should be made on the basis of time spent on the various phases, on man days of labor charged to such phases, or on some other equitable basis. "Operating Equipment", "Initial Rehabilitation and Repairs", and "New Buildings Improvements, etc.", will be distributed to the several phases of the project by the Washington Office of DMEA at the close of the project if determined necessary. The last two columns headed "Authorized by Contract" will be filled in by the Operator if such information is found in the contract. This information is usually a part of Exhibit "A" of the contract. A space for remarks has been provided for the use of the Operator to call attention to any unusual circumstances causing excessive or disproportionate unit costs.

GPO 872894

GEOCHEMISTRY

The Beaver Creek Area was prospected geochemically as a part of a regional program during 1952-53. Two of the anomalous areas discovered during this program are the two localities at Beaver Creek. In each case the anomalous soil zinc led to the discovery of mineralized outcrops.

This area was first covered by a reconnaissance sampling grid in which the sample lines are located along convenient roadways that cross the "grain" of the country (AX-SWVA-98, in pocket). Samples were collected at intervals of about 200 feet along the lines, and the samples were taken at a depth of about two feet. In anomalous areas, a detail grid of about 500' x 200' was used.

The anomaly on and near the Kestner Property has a much greater strike extent than dip extent. This is also true of the anomaly on the McAllister Property. The anomalous values range from 300 parts per million (ppm) to more than 5000 ppm. The ppm include zinc, lead, and copper and are expressed as zinc equivalent.

DIAMOND DRILLING PROGRAM

The geochemical anomalies at the mineralized localities did not show any halo around the outcrops, but instead were confined to a narrow zone that marked the outcrop of the mineralized bed along the strike.

From this geochemical pattern and previous experience nearby it was thought that any ore body associated with the mineralized outcrop and the geochemical anomaly would have a dominant strike component. The diamond drilling was planned to encounter such ore bodies.

On the Kestner Property, a fence of six vertical holes was so planned that any sizable strike ore body whose outcrop was the mineralization along Beaver Creek would be encountered by the drill holes. These six holes were located to the east of Beaver Creek and were oriented in a north south line.

On the McAllister Property the planned fence of five vertical holes, oriented north-south, was located between the two mineralized outcrops.

About ten miles northeast of Beaver Creek, at Chatham Hill, a mineralized outcrop was known to occur slightly lower stratigraphically than the Beaver Creek outcrops. Thus, with two known mineralized zones in the upper part of the Copper Ridge formation, it was felt that both zones should be tested, especially in the early stages of the exploration program. This involved drilling additional footage in each of the first 11 holes. Since this lower horizon was found to be barren, the later holes were stopped short of the Chatham Hill zone.

GEOLOGY

Stratigraphy

The diamond drilling in the Beaver Creek Area

was confined to the Knox Group of formations. A composite section (see 7GB-4316, in pocket) shows that about 1330 feet of stratigraphy was drilled in three formations.

Copper Ridge Formation

The Copper Ridge Formation, which is uppermost Cambrian in age, is composed mainly of medium to dark gray dolomites that are generally fine grained. The Copper Ridge conformably overlies the Nolichucky Formation and is overlain conformably by the Chepultepec. The drilling at Beaver Creek penetrated about 780 feet of the formation, which Butts says is about 1350 feet thick at a locality near Beaver Creek.

The upper part of the Copper Ridge is characterized by numerous beds of dolomite that contain abundant sand grains. There are also thin beds of well indurated sandstone. It has been observed that the sandstone beds in this arenaceous zone are lenticular in nature and can only be used as markers very locally. They can be used for regional correlation only to mark the upper part of this formation.

Below the arenaceous zone of the Copper Ridge the formation is limy, containing beds of oolitic limestone up to 20 feet thick. About 10 miles from Beaver Creek at Chatham Hill these limestones are locally dolomitized and contain sulphide zinc and iron minerals.

Below the limy zone of the formation the dolomite is somewhat darker in color than the upper part, and contains thicker, if not more numerous shale partings. This is rather monotonous sequence, broken only by a thin bed of oolitic chert and a thin bed of shaly dolomite. This zone extends to at least 400 feet below the limy zone, and probably more, but the deepest penetration by drilling at Beaver Creek was still in this member.

Chepultepec Formation

The Chepultepec Formation in the Beaver Creek Area is composed of medium to blue-gray fine grained limestone that contains abundant wavy thin shale partings. There are one or two thin beds of medium gray, fine grained dolomite within the formation, but these dolomites do not contain the wavy shale partings and they sometimes contain sand grains. The Chepultepec is about 60 feet thick at Beaver Creek, and near Saltville Butts reports a thickness of 36 feet. The top of the formation is locally dolomitized, and where the upper part of the formation is dolomite the contact with the overlying Longview is obscure. This may account for the discrepancy in reported thicknesses.

The Chepultepec, which is basal Ordovician in this area, overlies the Copper Ridge and is overlain conformably by the Longview Formation.

Longview Formation

The youngest formation encountered in the Beaver Creek drilling was the Longview Formation of lower Ordovician age. The Longview is composed of light to medium, locally dark gray, fine grained dolomites that contain shale partings and locally contain sand grains. About 150 feet above the base of the Longview the formation contains medium gray fine grained limestones with thick shale partings.

The total thickness of the Longview in this area is not well known. Butts does not separate the Longview from the Beekmantown group, and gives the thickness for this group as 1329 feet. He records the presence of Lecanospira 590 feet above the base of the Beekmantown group, and this horizon may be the top of the Longview. Sections measured by Company personnel indicate the Longview is about 600 feet thick. Thus, the drilling at Beaver Creek did not encounter the entire formation, and the collar of BC-14, which collared higher than any other hole, was about 100 feet below the top of the formation, and about 500 feet of the formation was penetrated.

The Longview is overlain, apparently conformably, be beds of Kingsport age, and conformably overlies the Chepultepec.

Structure

The Beaver Creek Area is located in the hanging wall of the Saltville thrust fault. The formations in the hanging wall of this fault dip to the southeast about 25 degrees and the strike is about N65E. The apparent dip seen on the sections is about 20 degrees, but the sections are not oriented normal to the strike.

A cross fault whose exact orientation is not known occurs in the valley of Beaver Creek. This fault apparently strikes about N40-45W but the dip is obscure. This fault was not penetrated in any of the drill holes. It can best be seen on 7GB AX-SWVA-98 (in pocket), where its horizontal displacement is shown by the mineralized outcrops.

Another fault of unknown orientation was first seen in hole number BC-12, and was later seen in BC-16. This fault repeats part of the section near the Chepultepec Formation. It was not evident in any of the other holes, and may be of local significance only. (See 7GB-4313, in pocket).

The ground in the mineralized zone was shattered, but this breaking was weak and if any faulting is present, its effect is evidently confined to the mineralized zone.

Mineralization

The zinc mineralization in the Beaver Creek Area, as determined by diamond drilling, is a small low grade

deposit confined to a thin zone that parallels the bedding. This zone, about 50 feet below the top of the Copper Ridge Formation, is 10 feet or less in thickness - this measurement being vertical rather than true thickness. There are some other spots of mineralization, but they are not regular in occurrence, nor do they have sufficient thickness to be considered of interest.

The mineralization that crops out along Beaver Creek and the mineralized outcrops in Possum Hollow are at the same stratigraphic horizon. However, the mineralization at Possum Hollow, as determined by diamond drilling on the McAllister Property, was too thin and low grade to be of interest. (See Section I, Area II, in pocket). The only mineralization of consequence was encountered by drilling on the Kestner Property near Beaver Creek. (See Sections I, II, and III, Area I, in pocket).

On the Kestner Property, holes BC-5, BC-6 and BC-12 encountered the significant zone of mineralization. The zone of mineralized ground encountered varied from 5 to 10 feet thick with the grade of mineralization ranging from 1.81% Zn to 8.13% Zn. The ground with significant grade and thickness is outlined on 7GB-4222 (plan), in pocket and Section I, Area I (in pocket). In outlining

this block it was not considered wise to project the mineralization more than 25 feet up or down dip from the significantly mineralized holes, and the strike extensions were limited to 50 feet in either direction. Within these limits of projection a block of ground 450 feet by 100 feet was delineated.

To calculate the volume of rock involved, a thickness of 10 feet was considered a minimum for mining; consequently the entire zone was calculated on the basis of a 10 foot thickness. Where the thickness was increased, a corresponding reduction in grade was necessary to account for the dead rock included. A tonnage factor of 10 was used.

The significantly mineralized ground at Beaver Creek is thereby calculated as a block of 45,000 tons at 4.35' dip fa containing 1197 tons of zinc for an average grade of 2.7% Zn. The details of the calculation are given in the following table. The size and grade of this mineralized block make it uneconomical to mine this ground, as well as the reduction of the calculated tonnages by mine and mill recovery and the remoteness of the area to transportation facilities.

4/4/68 of 8

Hole No.	Thickness	Length	Width	Tons[1]	Grade	Metal Tons
BC-5	5 (10)#	125	100	12,500	8.1 (4.1)*	508
BC-6	9 (10)#	200	100	20,000	1.8 (1.6)*	326
BC-12	10	125	100	12,500	2.9	363
		Total		45,000	2.7	1,197

1. Tonnage factor: 10

10 Feet considered as minimum mining thickness.

* Grade adjusted to minimum mining thickness.

Table 1. Table showing details of calculation of mineralized ground at Beaver Creek.

CONCLUSIONS

Diamond drilling in the Beaver Creek Area of Smyth County, Virginia delimited a small low grade block of mineralized ground on the Kestner Property. The drilling on the McAllister Property encountered little more than traces of sulfide mineralization.

The mineralized ground encountered is too small and too low grade to be considered commercial. From the results of the drilling, it is reasonable to assume that a commercial ore body does not exist, and the mineralization encountered is confined to a thin zone in the upper part of the Copper Ridge Formation.

The anomalous soil zinc was apparently derived from the outcrops of the mineralized zone along Beaver Creek.

Since the area has been tested as planned and the mineralization encountered is non-commercial, it is recommended that the Beaver Creek project be terminated and classified as non-productive.

Ray C. Gilbert Jr.

RCGilbert/mjf

DIAMOND DRILL LOG - BC-1

Location: 218,529 N 1,072,616 E
(Based on Virginia Military Grid)

Elevation: 2188 Inclination: Vertical

Object: To test for an assumed ore shoot pitching east from a geochemical anomaly and a mineralized outcrop.

Results:

From	To	Dist.	Recov	Description
0	9	9		Residual clay.
9	47	38	26	Fine grained light to medium gray dolomite, abundant sand grains, locally abundant wavy partings.
47	60	13	12	Fine grained light gray dolomite, local abundant sand grains and quartzite.
60	93	33	33	Fine grained light to medium gray dolomite, partings, local diagenetic breccia.
X 93	95	2	2	Weak disseminated zinc mineralization, partially oxidized. Estimated less than 1%.
95	141	46	42	Light to medium gray fine grained dolomite, local abundant partings, locally oolitic, and local diagenetic breccia.
141	146	5	5	Quartzite
146	199	53	53	Medium gray fine grained dolomite, partings, locally oolitic.
199	217	18	18	Oolitic medium gray limestone.
217	260	43	42	Medium gray fine grained dolomite, abundant partings, local diagenetic breccia, locally limy.
260	276	16	15	Medium gray fine grained limestone, abundant partings.
276	345	69	69	Medium gray fine grained dolomite abundant partings, locally oolitic, local diagenetic breccia.

DDH-BC-1 - Cont.

From	To	Dist.	Recov	Description
345	346	1	1	Silicified oolites in chert.
346	392	46	40	Medium gray fine grained dolomite, abundant partings, local diagenetic breccia, locally limy.
392	404	12	4	Fault zone with strong mylonite.
404	438	34	34	Medium gray fine grained dolomite, abundant partings.
438	440	2	2	Fault zone
440	515	75	75	Medium gray fine grained dolomite, partings, locally oolitic, local diagenetic breccia.
515	520	5	5	Light gray fine grained dolomite rare partings.
520	569	49	49	Medium gray fine grained dolomite abundant partings, local sand grains (547-549), local diagenetic breccia.
569	579	10	10	Straticulate bedded dolomite.
579	581	2	1	Fault zone
581	688	107	105	Light to medium gray fine grained dolomite, partings, locally oolitic, local diagenetic breccia, local straticulate bedding.
	688		Bottom	

DIAMOND DRILL LOG - BC-2

Location: (Based on Virginia Military Grid)

218,322 N 1,072,608 E Elev. 2271
Inclination: Vertical

Object: To test for an assumed ore shoot pitching east from a geochemical anomaly and a mineralized outcrop.

Results:

From	To	Dist.	Recov.	Description
0	23	23		Residual clay
23	35	12	12	Medium gray fine grained dolomite, local limestone, local abundant partings, sand grains. Apparently Chepultepec Formation.
35	55	20	20	Light to medium gray fine grained dolomite, partings. Copper Ridge Formation.
55	56	1	1	Weakly mineralized ground, traces sphalerite.
56	82	26	16	Light to medium gray fine grained dolomite local abundant partings, local sandgrains (74-82).
82	84	2	2	Weakly mineralized ground, traces sphalerite, partially oxidized.
84	136	52	48	Light gray fine grained dolomite, partings and local sand grains (109-120).
136	173	37	36	Light gray fine grained dolomite, rare thin partings, abundant sand grains.
173	212	39	38	Light to medium gray fine grained dolomite, partings, local sandgrains (189-205).
212	214	2	2	Quartzite
214	298	84	78	Light to medium gray fine grained dolomite, partings, local diagenetic breccia, local sand grains (277-286, 289-293).
298	301	3	3	Quartzite

From	To	Dist.	Recov.	Description
301	354	53	51	Light to medium gray fine grained dolomite, partings, locally oolitic, local limestone.
354	374	20	20	Medium gray limestone, few oolites and rare stylolites.
374	412	38	30	Interbedded dolomite with shale partings, local sand grains (393-412) and limestone.
412	424	12	8	Medium gray fine grained limestone, abundant partings.
424	495	71	71	Medium gray fine grained dolomite abundant partings, local diagenetic breccia.
495	497	2	2	Silicified oolites.
497	658	161	151	Medium gray fine grained dolomite, locally abundant partings and local diagenetic breccia.
658	664	6	6	Light gray fine grained dolomite, rare thin partings.
664	780	116	115	Light to medium gray fine grained dolomite, local diagenetic breccia, local abundant partings.
780	790	10	10	Light gray fine saccharoidal dolomite, abundant wavy partings.
790	823	33	23	Light to medium gray fine grained dolomite, local diagenetic breccia, local partings.
	823	Bottom		

DIAMOND DRILL LOG - BC-3

Location: (Based on Virginia Military Grid)

218,110 N 1,072,583 E

Elevation: 2348 Incl. Vertical

Object: To test for an assumed ore shoot pitching east from a geochemical anomaly and a mineralized outcrop.

Results:

From	To	Dist.	Recov.	Description
0	47	47		Residual clay
47	137	90	25	Light to medium gray fine grained dolomite, local diagenetic breccia, partings, apparently Longview Formation.
137	183	46	38	Interbedded medium gray fine grained limestone, wavy partings, and medium gray fine grained dolomite, partings Chepultepec Formation.
183	296	113	101	Light to medium gray fine grained dolomite, local diagenetic breccia, partings, Copper Ridge Formation.
296	344	48	45	Light to medium gray fine grained dolomite, local abundant sand grains, partings, diagenetic breccia. Rare trace sphalerite.
344	346	2	2	Quartzite
346	435	89	89	Light to medium gray fine to saccharoidal dolomite, local abundant partings, locally oolitic very rare trace sphalerite.
435	444	9	9	Interbedded dolomite and quartzite.
444	493	49	36	Light to medium gray fine to saccharoidal dolomite, partings, local diagenetic breccia.
493	511	18	7	Medium gray oolitic limestone, local dolomite.

From	To	Dist.	Recov.	Description
511	531	20	16	Light to medium gray dolomite, fine grained, locally oolitic, partings, local diagenetic breccia.
531	535	4	4	Quartzite
535	551	16	14	Medium gray fine grained dolomite, partings, local diagenetic breccia, locally limy.
551	566	15	14	Light to medium gray fine grained locally oolitic limestone, partings.
566	635	69	67	Light to medium gray fine grained dolomite, local diagenetic breccia, partings.
	635		Bottom	

DIAMOND DRILL LOG - BC-4

Location: 217,920 N 1,072,580 E
(Based on Virginia Military Grid)
Elevation: 2392 Inclination: Vertical

Object: To test ground east of mineralization that crops out along Beaver Creek and is marked by a geochemical anomaly.

Results:

From	To	Dist.	Recov.	Description
0	42	42	0	Residual clay
42	61	19	19	Light gray fine grained dolomite, partings, local diagenetic breccia; probably Longview formation.
61	66	5	5	Light medium gray fine grained limestone, abundant wavy partings.
66	257	191	188	Light to medium gray fine to saccharoidal dolomite, local partings, local diagenetic preccia. 171-172 trace ZnS.
257	320	63	63	Interbedded medium gray fine grained limestone, wavy partings, and medium gray fine grained dolomite, local sand grains, Chepultepec formation.
320	365	45	41	Light to medium gray fine grained dolomite, local diagenetic breccia local partings, Copper Ridge formation 346 trace ZnS.
365	456	91	73	Light to medium gray fine grained dolomite, local sand grains, local abundant partings. 391 trace ZnS.
456	459	3	3	Quartzite
459	477	18	13	Light gray fine grained dolomite, few partings.
477	497	20	18	Light to medium gray fine grained dolomite, local abundant sand grains, few partings.
497	499	2	2	Quartzite

DDH-BC-4 - Results - Cont.

From	To	Dist.	Recov.	Description
499	584	85	83	Medium gray fine to fine Saccharoidal dolomite, local diagenetic breccia, local partings.
584	592	8	8	Light to medium gray fine grained dolomite, local abundant sandgrains.
592	597	5	5	Quartzite
597	604	7	7	Medium gray fine grained dolomite abundant sandgrains.
604	642	38	37	Light to medium gray fine to fine saccharoidal dolomite, local wavy partings.
642	684	42	42	Interbedded medium gray oolitic limestone and fine grained medium gray dolomite, few partings.
684	698	14	14	Interbedded light gray fine grained dolomite, abundant sandgrains and quartzite.
698	798	100	100	Interbedded medium gray fine grained dolomite, local abundant sandgrains, local diagenetic breccia, local abundant partings.
798	800	2	1	Silicified oolites in chert.
	800			Bottom

Diamond Drill Log - BC-5

Location: 217,718 N 1,072,572 E
(Based on Virginia Military Grid)

Elevation: 2371 Incl: Vertical

Object: To test ground east of mineralization that crops out along Beaver Creek and is marked by a geochemical anomaly.

Results

From	To	Dist	Recov	Description
0	1	1		Residual Clay
1	89	88	84	Light to medium gray fine grained dolomite, local diagenetic breccia, local partings local sandgrains. Longview Formation.
89	106	17	15	Light medium gray fine grained limestone, abundant wavy partings.
106	117	11	11	Light gray fine grained dolomite, local diagenetic breccia, local partings.
117	131	14	14	Light to medium gray fine grained limestone, abundant wavy partings.
131	320	189	186	Light to medium gray fine grained dolomite local partings, local diagenetic breccia.
320	378	58	58	Light to medium gray fine grained limestone, local abundant wavy partings interbedded with dolomite, local sand grains. Chepultepec formation.
378	435	57	55	Light gray fine grained dolomite, local abundant sandgrains, local partings, local diagenetic breccia. Copper Ridge formation.
435	440	5	5	8.13% Zn
440	578	78	67	Light to medium, local dark gray fine to saccharoidal dolomite, local sand grains, local partings local diagenetic breccia.
578	696	118	107	Light to medium gray fine grained dolomite, abundant sand grains, local quartzite, locally oolitic, local diagenetic breccia, local partings.

BC-5 - Cont.

From	To	Dist	Recov	Description
696	739	43	43	Medium gray fine grained limestone, locally oolitic, locally dolomitic, abundant partings, local diagenetic breccia.
739	759	20	20	Medium gray fine grained dolomite, local sandgrains, local partings, fault zone 746-753.
759	780	21	21	Medium gray fine grained oolitic limestone, local thick partings.
780	850	70	70	Light gray fine grained dolomite local partings, local diagenetic breccia.
850	852	2	2	Silicified oolites in chert.
852	859	7	7	Medium gray fine grained dolomite, few thick partings.
	859			Bottom

Diamond Drill Log - BC-6

Location: 217,518 N 1,072,569 E
(Based on Virginia Military Grid)
Elevation: 2310 Inclination: Vertical

Object: To test ground east of mineralization that crops out along Beaver Creek and is marked by a geochemical anomaly.

Results

From	To	Dist	Recov	Description
0	84	84	0	Overburden
84	152	68	62	Interbedded medium gray fine grained limestone with wavy partings and light to medium gray fine grained dolomite, local diagenetic breccia, partings. Presumably Longview formation.
152	330	178	177	Light to medium gray fine grained dolomite, partings, local diagenetic breccia, local chert, 189-19. fault zone. Trace ZnS @ 262.
330	394	64	64	Interbedded medium gray fine grained limestone with wavy partings and light to medium gray fine grained dolomite with partings, local diagenetic breccia, rare chert, presumable Chepultepec formation.
394	445	51	47	Light to medium gray fine grained dolomite, local abundant sand grains, few partings, Copper Ridge formation.
445	454	9	3	1.8% Zn
454	519	65	64	Light to medium gray fine grained dolomite, local partings, locally oolitic local sandgrains.
519	661	142	135	Light to medium gray fine grained dolomite, local abundant sand grains, local quartzite beds fault zone 577-583.
661	663	2	2	Weak mineralization, estimated 0.5% Zn.
663	694	31	29	Light to medium gray fine grained dolomite, few sand grains, locally oolitic, local diagenetic breccia.

BC-6 - Cont.

From	To	Dist	Recov	Description
694	787	93	93	Interbedded medium gray oolitic limestone and light to medium gray fine grained dolomite, partings local diagenetic breccia.
787	854	67	66	Medium gray fine dolomite, locally limy, locally oolitic local diagenetic breccia, partings.
854	856	2	2	Silicified oolites in chert.
856	859	3	3	Medium gray fine grained dolomite, partings.
	859			Bottom

Diamond Drill Log - BC-7

Location: 215,140 N 1,064,131 E
(Based on Virginia Military Grid)

Elevation: 2139 Incl. Vertical

Object: To test for down dip extent of mineralization that crops out and is marked by a geochemical anomaly.

Results

From	To	Dist	Recov	Description
0	7	7		Overburden
7	21	14	13	Light to dark gray fine grained dolomite, abundant wavy partings, local sandgrains, Chepultepec formation.
21	23	2	2	Medium gray fine grained limestone, wavy partings.
23	193	170	169	Light to medium gray fine grained dolomite, local partings, local sand grains, Copper Ridge formation.
193	197	4	4	Quartzite
197	212	15	15	Light medium gray fine grained dolomite, local diagenetic breccia, partings.
212	214	2	2	Quartzite
214	312	98	96	Light to light medium gray fine grained dolomite, local diagenetic breccia, local sandgrains, partings. Trace ZnS 216-217.
312	314	2	2	Quartzite
314	343	29	24	Light to medium gray fine grained dolomite, local sandgrains, partings, local diagenetic breccia. Four inches ZnS at 315 Est. 3%.
343	387	44	44	Interbedded light to medium gray fine grained limestone, locally oolitic and light to medium gray fine grained dolomite, diagenetic breccia, partings.

BC-7 - Cont.

From	To	Dist	Recov	Description
387	389	2	2	Quartzite
389	399	10	10	Medium gray fine grained dolomite, abundant partings.
399	402	3	3	Medium gray fine grained limestone abundant oolites.
402	464	62	62	Light medium gray fine grained dolomite local sand grains, local diagenetic breccia, partings.
464	511	47	47	Medium gray fine grained dolomite, local diagenetic breccia, partings.
	511			Bottom

Diamond Drill Log, Hole No. BC-8

Location: 215,325 N 1,064,135 E
(Based on Virginia Military Grid)
Elevation: 2216 Inclination: Vertical

Object: To test ground down dip from a mineralized outcrop that is marked by a geochemical anomaly.

Results:

From	To	Dist	Recov	Description
0	6	6		Overburden
6	11	5	5	Medium gray fine grained dolomite, wavy partings Chepultepec formation.
11	15	4	4	Medium gray fine grained limestone, wavy thick partings.
15	18	3	3	Light medium gray fine grained dolomite, abundant sand grains, few parts.
18	21	3	3	Medium gray fine grained limestone, abundant wavy partings.
21	165	144	121	Light to medium gray fine, local saccharoidal, dolomite, local diagenetic breccia, local partings local vugs, Copper Ridge Formation.
165	191	26	25	Light to medium gray fine grained dolomite, local abundant sand grains, few partings.
191	194	3	3	Quartzite
194	264	70	69	Medium gray fine grained dolomite, local diagenetic breccia, local partings.
264	268	4	4	Light gray fine grained dolomite, abundant sand grains.
268	299	31	31	Light to dark gray fine grained dolomite, local diagenetic, local thick partings.
299	310	11	11	Light to medium gray fine grained dolomite, local abundant sand grains, local diagenetic breccia, few partings.
310	343	33	30	Medium to dark gray fine grained local saccharoidal dolomite, local diagenetic breccia, few partings 312-313 1' est. 2% Zn.

From	To	Dist	Recov	Description
343	360	17	17	Medium gray fine grained limestone, abundant oolites, local thick partings, local sand grains.
360	364	4	4	Light gray fine grained dolomite, abundant bleached diagenetic breccia.
364	389	25	25	Medium gray fine grained dolomite, abundant oolites, rare thin partings.
389	402	13	13	Interbedded medium gray fine grained limestone and dolomite, few partings, local oolites.
402	514	112	112	Light to medium gray fine grained dolomite, local thin sandgrain bed, local diagenetic breccia, few partings.
514	521	7	6	Interbedded medium gray fine grained dolomite and limestone.
521	522	1	1	Silicified oolites in chert. Trace fluorite.
522	523	1	1	Fault zone
	523			Bottom

Diamond Drill Log - BC-9

Location: 215,515 N 1,064,140 E
(Based on Virginia Military Grid)
Elevation: 2286 Inclination: Vertical

Object: To test ground down dip from mineralization that crops out and is marked by a geochemical anomaly.

Results:

From	To	Dist	Recov	Description
0	2	2		Overburden
2	21	19	6	Medium gray fine grained limestone, few wavy partings, locally dolomitic, Chepultepec formation.
21	186	165	121	Light to medium gray fine grained dolomite, local partings, diagenetic breccia, rare sand grains, Copper Ridge formation
186	188	2	2	Quartzite
188	190	2	2	Medium gray fine grained dolomite, few partings.
190	191	1	1	Quartzite
191	291	100	93	Light medium to medium gray fine grained dolomite, local abundant sandgrains, local partings, local diagenetic breccia.
291	294	3	3	Estimated 1% ZnS, disseminated.
294	326	32	24	Light to medium gray fine grained dolomite, few partings, local diagenetic breccia.
326	327	1	1	Fault zone.
327	340	13	13	Medium gray oolitic limestone, few styolites.
340	344	4	4	Light gray fine grained dolomite, abundant diagenetic breccia, generally bleached.
344	365	21	21	Medium gray fine grained limestone, locally oolitic, local diagenetic breccia.
365	367	2	2	Quartzite

From	To	Dist	Recov	Description
367	384	17	14	Interbedded medium gray fine grained limestone, local diagenetic breccia, and medium gray fine grained dolomite local partings.
384	392	8	4	Light gray fine grained dolomite, abundant sand grains, local quartzite.
392	488	96	94	Medium gray fine grained dolomite, local partings, local diagenetic breccia.
488	499	11	11	Medium gray fine grained limestone, local thick partings, local diagenetic breccia.
499	501	2	2	Silicified oolites in chert.
501	525	24	22	Light to medium gray fine grained dolomite, few partings.
525	531	6	6	Medium gray fine grained limestone, few thick wavy partings.
531	588	57	57	Light to medium gray fine grained dolomite, local abundant partings, local diagenetic breccia.
	588			Bottom

Diamond Drill Log - BC-10

Location: 215,719 N 1,064,140 E
(Based on Virginia Military Grid)
Elevation: 2315 Incl: Vertical

Object: To test down dip extent of mineralization that crops out and is marked by a geochemical anomaly.

Results:

From	To	Dist	Recov	Description
0	62	62	0	Overburden
62	65	3	3	Light medium gray fine grained dolomite, few partings, local bleaching. Copper Ridge Formation.
65	66	1	1	Quartzite
66	113	47	31	Light to medium gray fine grained dolomite, local partings, local diagenetic breccia.
113	118	5	5	Quartzite
118	239	121	95	Light to medium gray fine grained dolomite, local abundant sand grains, local partings, local diagenetic breccia.
239	242	3	3	Quartzite
242	284	42	33	Light to medium gray fine to fine saccharoidal dolomite local partings, local diagenetic breccia.
284	290	6	6	Medium gray fine grained limestone, abundant thick wavy partings.
290	294	4	4	Light gray fine grained dolomite, abundant bleached diagenetic breccia.
294	319	25	24	Medium gray oolitic limestone.
319	327	8	8	Medium gray fine grained dolomite, local thin straight partings.
327	333	6	6	Medium gray fine grained locally oolitic limestone, few partings.

DDL - BC-10 (CONT.)

From	To	Dist	Recov	Description
333	449	116	106	Light to medium gray fine grained dolomite, local abundant partings, local diagenetic breccia, locally bleached.
449	455	6	5	Medium gray fine grained limestone, abundant thick wavy partings.
455	459	4	2	Silicified oolites in chert matrix.
459	470	11	11	Medium to dark gray fine grained dolomite partings.
	470	Bottom		

Diamond Drill Log - BC-11

Location: 215,913 N 1,064,152 E
(Based on Virginia Military Grid)
Elevation: 2353 (?) Inclination: Vertical

Object: To test ground down dip from mineralized outcrop and a geochemical anomaly.

Results:

From	To	Dist	Recov	Description
0	28	28	0	Overburden
28	94	66	58	Light to light medium gray fine grained dolomite, local sand grains, local partings, local thin quartzite, Copper Ridge Formation.
94	220	126	70	Light to medium gray fine grained dolomite, local abundant sandgrains, local thin quartzite, local diagenetic breccia, few partings.
220	243	23	17	Interbedded oolitic limestone and medium gray fine grained dolomite with sand grains.
243	248	5	5	Light gray fine grained dolomite, abundant bleached diagenetic breccia.
248	270	22	13	Medium gray oolitic limestone.
270	287	17	7	Light medium gray fine grained dolomite, few partings.
287	289	2	1	Quartzite
289	328	39	38	Light to medium gray fine grained dolomite, local diagenetic breccia, local abundant partings, locally limy.
328	338	10	10	Medium gray fine grained limestone, abundant thick partings.
338	396	58	45	Light to medium local dark gray fine grained dolomite, local thick partings, local diagenetic breccia.
396	407	11	11	Medium gray fine grained limestone, abundant thick wavy partings.
407	410	3	3	Silicified oolites in chert, diagenetic breccia.
410	418	8	8	Medium gray fine grained dolomite, local partings, local limestone.
	418	Bottom		

Diamond Drill Log - BC-12

Location: (Based on Virginia Rectangular Grid System)

217,318 N 1,072,560 E

Inclination: Vertical Elevation: 2269

Object: To test for down dip extent of mineralization encountered in BC-6

Results:

From	To	Dist.	Recov.	Description
0	22	22	0	Overburden
22	148	126	121	Light to medium gray fine grained dolomite, local sand grains, few partings, local diagenetic breccia, Longview Formation.
148	187	39	37	Interbedded medium gray fine grained limestone and medium gray fine grained dolomite, local partings.
187	327	140	136	Light to medium gray fine grained dolomite, local thin chert, few scattered sand grains, local partings.
327	328	1	1	Fault zone
328	361	33	25	Medium gray fine to finely saccharoidal dolomite, local abundant partings.
361	398	37	35	Interbedded medium gray fine grained limestone, abundant partings and dark gray fine grained dolomite. Chepultepec Formation.
398	418	20	20	Dark gray fine grained dolomite, local abundant thin straight partings.
418	424	6	6	Medium gray fine grained limestone, local thin partings.
424	466	42	41	Light to dark gray fine grained dolomite, local thin straight partings, locally finely saccharoidal, Copper Ridge Formation.
466	467	1	1	Dark gray finely saccharoidal dolomite, traces Zn.
467	477	10	10	Light gray fine grained dolomite, local thick partings.

DDL - BC-12 (Cont)

From	To	Dist.	Recov	Description
477	481	4	4	Medium gray finely saccharoidal to saccharoidal dolomite, few vugs. Disseminated Zn (Assay: 6.03% Zn)
481	483	2	2	Medium gray finely saccharoidal to saccharoidal dolomite. Disseminated pyrite, local zinc (Assay: 0.22% Zn).
483	487	4	4	Medium gray finely saccharoidal dolomite, disseminated Zn (Assay: 1.12% Zn)
487	512	25	22	Light to dark gray fine grained dolomite, locally finely saccharoidal, few partings.
	512			Bottom

Diamond Drill Log - BC-13

Location: (Based on Virginia Military grid system)

217,700 N 1,073,170 E

Inclination: Vertical Elevation: 2440

Object: To test for BC-5 mineralization to the east.

Results:

From	To	Dist.	Recov	Description
0	96	96	0	Overburden
96	160	64	45	Light gray finely saccharoidal to saccharoidal dolomite local sand grains, local chert, Longview (?) Formation.
160	295	135	124	Light to dark gray fine grained locally finely saccharoidal dolomite, local diagenetic breccia, local partings.
295	312	17	16	Medium gray fine grained limestone, local thick partings.
312	328	16	16	Light to light medium gray fine grained dolomite, local bleaching, local partings.
328	340	12	11	Medium gray fine grained limestone, local abundant thick partings.
340	527	187	175	Light to dark gray fine graimed dolomite, locally finely saccharoidal, local diagenetic breccia, local chert, local partings.
527	553	26	24	Medium gray fine grained limestone, local thick wavy partings, Chepultepec Formation.
553	580	27	26	Light to dark gray fine grained dolomite, local sandgrains, few partings, local banding.
580	587	7	7	Medium gray fine grained limestone, few thick partings.
587	605	18	16	Medium to dark gray fine grained dolomite, local straight partings Copper Ridge Formation

DDL - BC-13 - (Cont)

From	To	Dist.	Recov	Description
605	607	2	2	Medium gray saccharoidal dolomite, diagenetic breccia.
607	656	49	46	Light to medium gray fine local finely saccharoidal dolomite, local partings, local vugs.
656	660	4	4	Light to light medium gray saccharoidal dolomite, rare parting, trace of sphalerite at 657.
660	679	19	13	Light to dark gray fine grained dolomite, local thin straight partings.
679	683	4	3	Light to light medium gray saccharoidal dolomite, massive, trace of sphalerite at 681.
683	696	13	12	Light to dark gray fine grained dolomite, local shattering, local thin quartzite.
	696			Bottom

Diamond Drill Log - BC-14

Location (Based on Virginia Rectangular Grid System)

217,500 N 1,073,165 E

Inclination: Vertical Elevation: 2398

Object: To test for an eastern extension of BC-5 mineralization.

Results:

From	To	Dist	Recov	Description
0	96	96	0	Overburden
96	330	234	213	Light to light medium gray local dark gray fine grained dolomite, local chert, local diagenetic breccia, few partings, Longview formation. Bleb ZnS @ 204.
330	346	16	14	Medium gray fine grained limestone abundant wavy partings, few sand grains Longview Formation. Few tiny blebs ZnS in limestone @ 330.
346	359	13	12	Light to medium gray fine grained dolomite, local abundant thin straight partings.
359	371	12	11	Interbedded medium gray fine grained limestone and dolomite, wavy partings, local diagenetic breccia.
371	396	25	25	Medium gray fine to finely saccharoidal dolomite, local wavy partings, local thin straight partings.
396	437	41	41	Dark gray fine grained limestone, locally bleached, local wavy partings.
437	534	97	83	Light to medium gray local dark gray fine grained dolomite, local chert, local diagenetic breccia, partings.
534	563	29	26	Interbedded medium gray fine grained limestone and dark gray fine grained dolomite, local diagenetic breccia, wavy partings, Chepultepec Formation, bleb ZnS @ 546.

DDL - BC-14 (Cont.)

From	To	Dist	Recov	Description
563	571	8	8	Light medium gray fine grained limestone abundant wavy partings, local dolomite.
571	609	38	31	Light to medium gray fine grained dolomite local thin straight partings, local sand grains.
609	623	14	12	Medium gray fine grained limestone, few partings, local dolomite, rare thin bed of chert.
623	626	3	3	Light medium gray fine grained dolomite, abundant wavy partings. Copper Ridge Formation.
626	627	1	1	Light medium gray fine grained dolomite, abundant wavy partings, disseminated fine grained ZnS, estimated less than 0.1% Zn.
627	684	57	52	Light to medium gray fine grained dolomite, local diagenetic breccia few partings, local shattering, local sand grains, local bleaching.
684	745	61	50	Light to dark gray fine grained dolomite, few partings local diagenetic breccia, local sandgrains and quartzite.
	745			Bottom

Diamond Drill Log - BC-15

Location: (Based on Virginia Rectangular Grid System)

217,900 N 1,073,162 E

Inclination: Vertical Elevation: 2428

Object: To test for strike extension of BC-5 mineralization.

Results:

From	To	Dist	Recov	Description
0	53	53	0	Overburden
53	82	29	27	Light to dark gray fine grained dolomite, few partings, local diagenetic breccia, local sandgrains, Longview formation.
82	191	109	96	Light to medium gray fine to finely saccharoidal dolomite, local diagenetic breccia, local partings.
191	207	16	16	Medium gray fine grained limestone, local thick partings few thin partings, Longview Formation.
207	220	13	12	Light to medium gray fine grained dolomite, few thick partings.
220	232	12	12	Medium gray fine grained limestone, abundant thick partings, local dolomite.
232	393	161	151	Light to dark gray fine grained locally finely saccharoidal dolomite, local diagenetic breccia, local partings, local chert.
393	419	26	25	Medium gray fine grained limestone, abundant partings, local diagenetic breccia, locally dolomitic, Chepultepec Formation.
419	449	30	30	Medium gray fine grained limestone, local wavy partings, locally shaly.
449	470	21	21	Medium gray fine grained dolomite, abundant thin straight partings, locally limy.
470	477	7	7	Medium gray fine grained limestone abundant wavy partings, locally dolomitic.

DDL - BC-15 - Cont.

From	To	Dist	Recov	Description
477	529	52	47	Light to medium gray fine grained dolomite, local abundant wavy partings, rare chert, Copper Ridge Formation.
529	538	9	8	Light medium gray saccharoidal dolomite locally slightly oxidized.
538	540	2	1½	Medium gray fine to finely saccharoidal dolomite, rare parting, 3.64% Zn, 1.56% Fe, Nil Pb.
540	561	21	15	Light to medium gray fine to finely saccharoidal dolomite, local partings, local thin quartzite-sand grain.
561	562	1	1	Light gray finely saccharoidal to saccharoidal dolomite, few blebs sphalerite.
562	587	25	19	Light gray fine to finely saccharoidal dolomite, few partings, local quartzite.
587	590	3	1	Fault zone
590	612	22	17	Light medium gray fine to finely saccharoidal dolomite, wavy partings, local quartzite.
	612			Bottom

Diamond Drill Log - BC-16

Location: (Based on Virginia Grid System)

217,100 N 1,072,680 E

Inclination: Vertical Elevation: 2267

Object: To test for down dip extent of BC-5 mineralization.

Results:

From	To	Dist	Recov	Description
0	44	44	0	Overburden
44	113	69	50	Light medium gray fine grained dolomite, local sand grains, rare chert, local abundant diagenetic breccia, Longview Formation.
113	150	37	36	Medium to dark gray fine grained dolomite, few partings, local sand-grains, locally bleached.
150	216	66	58	Medium and dark gray fine grained dolomite, few partings, locally faintly mottled.
216	249	33	32	Light medium gray fine grained dolomite, thin wavy partings, local sand-grains.
249	263	14	13	Medium gray fine grained limestone, abundant thick partings, Longview Formation.
263	280	17	15	Light gray fine grained dolomite, local thick partings.
280	290	10	9	Medium gray fine grained limestone and dolomite, few thick partings.
290	370	80	73	Light to dark gray fine grained dolomite, local limestone, local thin wavy partings, local bleached diagenetic breccia.
370	383	13	9	Fault zone
383	443	60	36	Light to medium gray fine to finely saccharoidal dolomite, few wavy partings.

From	To	Dist	Recov	Description
443	527	84	73	Medium gray fine grained limestone, abundant partings, local sand grains, local dolomite, Chepultepec Formation.
527	560	33	29	Light to medium gray fine grained dolomite, few thin partings, Copper Ridge Formation.
560	565	5	1	Fault Zone
565	581	16	8	Light to medium gray fine to finely saccharoidal dolomite, rare parting.
581	583	2	2	Medium gray finely saccharoidal dolomite, fractured, ZnS (est. 2-3% Zn) in fractures.
583	631	48	35	Light to medium gray fine grained dolomite, local sand grains, local thin quartzite.
	631			Bottom

Hold extra cy of contract until we receive copies from field.

Copy for file of Bruce Roberts

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

Re: Docket No DMEA-4178 (Uran)
Contract No. I dm-12960
See page 2

NOV 15 1957

New Jersey Zinc Company
623 Rood Avenue
Grand Junction, Colorado

Re: Docket No. DMEA-4178 (Uranium)
Contract No. Idm-12960
Sec. 34, T. 14 N., R. 16 W.
McKinley County, New Mexico

Gentlemen:

Mr. Marshman, Acting Executive Officer, DMEA Field Team, Region III, with a letter, dated October 29, 1957, returned to this office all the copies of a proposed Termination Agreement relating to the above-referenced contract, together with copies of your letter, dated October 24, 1957, in which it is requested that the provision under item 4 of the agreement be changed.

As noted in your letter, we have used the provision you suggest in other termination agreements. However, the conditions under the subject project are quite different. Therefore, in this case we prefer to terminate the subject contract under the provisions expressed in the agreement forwarded to you for execution.

In the other cases we believed that additional exploratory work performed adjacent to or on the properties in question might indicate that significant ore deposits could occur on these properties. Under the subject contract, the DMEA drilling and the subsequent drilling of 13 holes by your company indicate to us that there is little possibility that a significant deposit of uranium ore might occur in the project area. However, to protect the Government's interest, we must adhere to the provision in Article 8(a) of the contract, wherein the Government may issue a certification at any time not later than six months after a sufficient final report has been submitted.

If the change in item 4 of the Termination Agreement, as suggested by your company, were granted, the subject docket would necessarily remain in our active file for an indefinite period, because at some future time your company might decide to re-explore the property. However, since little possibility exists that the project will be certified, we prefer to permanently close the docket at the end of the six months' period mentioned above.

In view of the above reasons for our decision, we are returning the original and four copies of the proposed Termination Agreement for execution by an authorized representative of your company. Kindly return all the copies, except the Operator's copy, to this office.

Your request relating to the Termination Agreement for Contract No. Iam-2960 (Docket No. DMEA-4178 - zinc) is being considered and we will advise you of our decision shortly.

With respect to the conference mentioned in your letter of October 24, we will be pleased to arrange one at your convenience.

Sincerely yours,

C. O. Mittendorf

Administrator

FMMurphy/lam (11-8-57) 11-13-57
cc to: Admr.'s Reading File
Mr. Killagaard, 5224
Mr. Murphy
Base Metals Division for Docket DMEA4178-zinc)
Region III FT (2)

M 500

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

REFERENCE SLIP

DATE 11/13/57

REFERRED TO:

1. Assoc. Sol., Div. Min. Resources
2. W. R. Griswold--Rm. 4442
3.
4.

DMEA-4178

FOR

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

DMEA 4178
INTERIOR DEPT.
NOV 13 1957
SOLICITOR

REMARKS: Review of ltr from Operator re proposed Termination Agreement

Adpr's. See ltr. with docket 4590 on same subject

Check (X) before the items needing attention.

W. R. Griswold

HCA 11/14/57

Initials of sender.

GPO 16—63815-1

bjm

Form 7
(2-56)

OFFICIAL FILE COPY

Date	Surname	Code
11/13	Klagenhard	500

500

Novmeber 13, 1957

Memorandum

To: Associate Solicitor, Division of Mineral Resources

From: Director, Division of Base Metals

Subject: Review of letter of Mr. Lindley L. Miller of the Legal Department of The New Jersey Zinc Company concerning a proposed Termination Agreement, Docket No. DMEA-4178, Beaver Creek Area, Smyth County, Smyth County, Virginia, Contract No. Idm-E960, Zinc, (two copies attached).

Docket No. DMEA-4119, Talbot Area, Jefferson and Hamblen Counties, Tennessee, Contract No. Idm-E969 (Zinc), contained a special paragraph No. 4 as the area involved in the contract was large, (3,430 acres) and the drill holes were widely spaced so that it was difficult to say that all the ground had been disproved. There were not sufficient grounds for certification nor for a pseudo-certification. The project was not completed and some of the holes showed mineralization but not of sufficient grade or thickness to be called ore.

In Docket No. DMEA-4178 the total acreage was approximately 660. More than two-thirds of the authorized 15,000 linear feet of drilling were completed with rather disappointing results. Of the 16 holes drilled, 14 showed non-commercial mineralization. The Field Team does not intend to recommend certification as there is not sufficient grounds therefor. The holes were drilled at approximately 200 foot intervals so they can hardly be said to be widely spaced. It is possible, however, that small ore bodies may exist in areas not drilled although the possibility is rather remote.

Under these circumstances we did not request the same type of Termination Agreement as in the case of DMEA-4119.

We have discussed the matter with Mr. Johnson and he says that in this case, with so many mineralized holes, we could make use of the clause which The New Jersey Zinc Company seems to prefer. The reasoning behind the desire for the special clause is a bit obscure.

Will you kindly give us your opinion as to which clause No. 4 you would prefer to use in this case. In cases where there is no mineralization found it seems as though the inclusion of this clause would be a bit far-fetched, although it would not make much difference to us except that it would keep a case open which would ordinarily be closed and out of the way.

Will you kindly also give us your opinion of their arguments in favor of the special paragraph No. 4.

W. R. Griswold

W. R. Griswold

Enclosure

WPKlugescheid/er
Copy to: Docket
Chron.

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 18 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

WASHINGTON 25, D.C.

OFFICIAL FILE COPY
DMEA
RECEIVED OCT 30 1957

DATE		CODE
10/30	C	220
10/31	Klugy	560

October 28, 1957

Memorandum

To: Operating Committee, DMEA - Washington

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

Subject: DMEA-4178, Idm-E960-zinc. The New Jersey Zinc Co. Beaver Creek Area, Smyth County, Virginia Termination Agreement.

There are attached the original and six copies of the subject termination agreement returned unsigned by The New Jersey Zinc Company. Also attached is a copy of their letter to Mr. Klugescheid which is self explanatory.

V. J. Lynch, Acting Executive Officer
DMEA Field Team, Region V

Helmuth Wedow, Jr., Geologist
Geological Survey

THE NEW JERSEY ZINC COMPANY
(ESTABLISHED 1848)
CABLE ADDRESS "JERSEZINC"
100 FRONT STREET
NEW YORK 38, N.Y.

HORSE HEAD PRODUCTS ®

OFFICIAL FILE COPY
DMEA
RECEIVED OCT 28 1957

DATE	INITIALS	CODE
10/28	C	220
10/28	klg	500

October 24, 1957

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

ATTENTION: MR. KLUGESCHEID

Re: (1) Docket No. DMEA-4178 - Zinc; Contract No. IDM-E960, Smyth County, Virginia
(2) Docket No. DMEA-4590 - Uranium; Contract No. IDM-E1087; McKinley County, New Mexico

Dear Mr. Klugescheid:

In accordance with our telephone conversation of last week, I am returning all copies of the proposed termination agreements for the above project contracts to Mr. Robert A. Laurence at Knoxville, Tennessee with respect to the first contract and to Mr. J. W. Townsend at Denver, Colorado with respect to the second for proposed revision in accordance herewith.

As I pointed out to you, we prefer to use similar language to that set forth in Paragraph 4 of our termination agreement of April 19, 1957 for exploration project Contract IDM-E936 (Docket No. DMEA-4119) Talbot Area, Tennessee in lieu of proposed Paragraph 4 of the termination agreements for the above contracts. The paragraph we have in mind reads as follows:

> "Should the Operator or any affiliate or subsidiary hold or reacquire an interest in any of the land described in Annex I of the Contract or any production of minerals therefrom, the Operator shall pay royalty to the Government as set forth in Article 8 of the Contract, as amended by provisions (d) and (e) of Article 13, on any production made from the date such interest

is acquired, to the extent of the interest held, the same as though certification of discovery or development had been made by the Government."

It seems to us that the termination agreements as presently written merely permit us to terminate work on the projects in question. In every other respect, the provisions of the contracts continue in full force including that whereby you may certify to a discovery or development. In the case of the uranium contract, we have already terminated, with the approval of your field team, our interest in the properties subject thereto and, if read literally, under the provisions of Paragraph 2 of the Special Agreement Concerning Land in Contract No. IDM-E960 (which provision is not contained in the uranium contract), we could have had deleted from the Contract all the lands subject thereto in which case the Contract would have been, to all intents and purposes, emasculated. As a practical matter, there are often business reasons why we may not wish to dispose of our interests in properties within the sixty-day period of termination of work even though drilling activities thereon are to be concluded. In this regard, please refer to paragraph (f) page 6 of my letter of July 10, 1957 to Mr. Griswold. It is our understanding that our exploration people and your respective field teams have agreed that no discovery from which production may be made has resulted from the exploration work on either contract; and, therefore, the contracts should be completely terminated. This is acknowledged in the termination agreement above referred to in the case of the Tennessee project, and we feel that the wording employed in Paragraph 4 thereof is eminently fair.

We trust that you will agree to this revision and shall look forward to receiving, at your early convenience, termination agreements in accordance with the above.

We are quite anxious to have a conference with your people on the several matters discussed in my letter of July 10, above referred to, and would appreciate your speaking to Mr. Griswold concerning the same so that he may consider setting up such a conference shortly. I have to be in Washington one day next week so that that would be a convenient time. Perhaps, you can telephone me Monday or Tuesday.

Respectfully submitted,

Lindley G. Miller

LGMiller/rm

Legal Department

cc: Mr. R. A. Laurence, Executive Officer
DMEA Field Team, Region V
Room 13, P. O. Building
Knoxville 2, Tennessee

Mr. J. W. Townsend, Alternate Acting Executive Officer
DMEA Field Team, Region III
224 New Customhouse
Denver 2, Colorado

October 16, 1957

Memorandum for the Files

From: W. P. Klugescheid, Division of Base Metals

Subject: Phone Conversation on Docket Nos. DMEA-4119, DMEA-4174, and DMEA-4178, The New Jersey Zinc Company, Virginia Area, concerning Termination Agreements and Special Agreement Concerning Land, Zinc.

On this date, I called Mr. Lindley G. Miller, of the Legal Deaprtment of The New Jersey Zinc Company.

Mr. Miller made it clear that The New Jersey Zinc Company prefers paragrah 4 of the Termination Agreement for DMEA-4119, to the ones which have been sent out for DMEA-4174 and DMEA-4178. This clause is to the advantage of the Government, and Mr. Miller stated that his company considered the conditions of this paragraph as just and right. Mr. Miller said that they would return the Termination Agreements for DMEA-4178 and also DMEA-4590 (which belongs to the Rare Metals Division).

Mr. Miller was informed that I could not promise the use of paragraph from DMEA-4119 in all cases as this would be at the discretion of the Legal Division and the Administrator.

In the Special Agreement Concerning Land, Mr. Miller considers that part (c) of paragraph 2 is superfluous. He was a little in doubt as to the complete meaning of paragraph 2(d). He does however interprete this as meaning that any land deleted and then taken up again in future years would be subject to any certification which may have been made on <u>any part</u> of the land included in the contract.

The New Jersey Zinc Company knows that land may be deleted from the time that the contract is signed until 60 days after the work is completed or terminated, and then it cannot be dropped until six months after the Operator's final report has been received by the Government. If land is dropped during this period it is at the risk and responsibility of the Operator as it is in default of the contract.

Mr. Griswold is of the opinion that all the contracts where there is a large land area involved should contain the paragraph 4 as in DMEA-4119.

Mr. Miller still hopes that the Legal Division will review the recommendations which he wrote to Mr. Griswold and which he discussed with Mr. Griswold. I informed him that due to press of other work this has not been possible to date.

W. P. Klugescheid

W. P. Klugescheid

WPK/er
Copy to: Docket (3)
Admr R File
Chron.

THE NEW JERSEY ZINC COMPANY
(ESTABLISHED 1848)
CABLE ADDRESS
"JERSEZINC"
160 FRONT STREET
NEW YORK 38, N.Y.

HORSE HEAD PRODUCTS ®

October 4, 1957

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

ATTENTION: MR. KLUGESCHEID

Re: Docket No. DMEA - 4178-Zinc
The New Jersey Zinc Company,
Beaver Creek Area,
Smyth County, Virginia;
Contract No. Idm.-E960

Dear Mr. Klugescheid:

About two weeks ago, I telephoned you concerning Paragraph 4 of a proposed agreement for termination of this exploration project contract. As you will recall, we preferred to use the language set forth in the same numbered paragraph of our termination agreement dated April 19, 1957 for exploration project contract Idm.-E936, Docket No. DMEA - 4119, Talbot Area, Tennessee. We would appreciate if you would call us on this matter at your early convenience as we believe the same should be finalized shortly.

Very truly yours,

Lindley G. Miller

Legal Department

LGMiller/rm

OFFICIAL FILE COPY
DMEA
RECEIVED OCT 7 1957

DATE	INITIALS	CODE
10/6	C	220
		500

September 20, 1957

Memorandum for the Files

From: W. P. Klugescheid, Division of Base Metals

Subject: Phone conversation on Docket Nos. DMEA-4119, 4174, 4178, and 4675, The New Jersey Zinc Company, Lead-Zinc-Copper.

On this date, Mr. Lindley G. Miller, of the legal department called me on the phone from New York City, to inform me that the proposed contract for DMEA-4675, was being returned to us unsigned and with an accompanying letter stating their objections thereto.

Mr. Miller also wished to know why clause 4, in the Mutual Termination Agreement of DMEA-4119 was different from DMEA-4174 and DMEA-4178. I informed him that I would look them up and would advise him. He also wished to know how it is possible to delete land after a termination agreement has been signed. They have already deleted land prior to termination so there should be no great difficulty about this. (4178 is a case in point.)

W. P. Klugescheid

W. P. Klugescheid

WPK/er
Copy to: Dockets (4)
Admr R File
Chron.

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 13 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

WASHINGTON 25, D. C.

OFFICIAL FILE COPY
DMEA
RECEIVED SEP 5 1957

DATE	INITIALS	CODE
9/5	C	220
9/5	Clay	500

September 3, 1957

Memorandum

To: Operating Committee, DMEA - Washington

From: Executive Officer, DMEA - Region V - Knoxville

Subject: Amendment No. 1 - DMEA-4178, Idm-E960(zinc)
The New Jersey Zinc Co.

Attached are two signed copies of the subject amendment. The usual distribution of the other copies has been made.

Robert A. Laurence
Robert A. Laurence

Amendment

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
9/3	Klugescheid	500
	Milwood	500
9-3	Chambers	300
9/4	Jones	110
"	Mutterdy	100
9/5	G	225
		500
9/4	GS	130

500

Mr. Robert A. Laurence
Executive Officer
DMEA Field Team, Region V
Room 13, Post Office Bldg.
Knoxville 2, Tennessee

SEP 5 1957

Re: Docket No. DMEA-4178 (Zinc)
The New Jersey Zinc Company
Beaver Creek Area
Smyth County, Virginia
Contract No. Idm-E960

Dear Mr. Laurence:

In accordance with your memorandum, dated August 2, 1957, and the request of the Operator, dated July 30, 1957, we are enclosing the original and four copies of a proposed Mutual Termination Agreement (one page) for the cited contract, signed by the Administrator.

If the agreement meets with your approval, kindly present it to the Operator for signature and, when completed, distribute the copies in the usual manner. In the event that the agreement is not satisfactory and cannot be amended within your delegated authority, return all copies with your recommendation concerning any modification. We are also enclosing two extra copies for the use of the Field Team. You will note that the effective date is August 22, 1957, the day following the effective date of Amendment No. 1.

We quite agree that further work is unwarranted, and that the results obtained from the exploration do not warrant certification of discovery.

Sincerely yours,

George C. Selfridge
Chairman, Operating Committee

Enclosures
APPROVED:

A. D. McMahon
Member, Bureau of Mines

Thor H. Kiilsgaard
Member, Geological Survey

WPKlugescheid/er 9/3/57
Copy to: Docket
Admr R File
Op. Committee
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Chron.

8623

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code

September 5, 1957
~~December 10, 1957~~

Memorandum for the Files

From: W. P. Klugescheid, Division of Base Metals

Subject: Justification for Termination Agreement for Docket No. DMEA-4178, The New Jersey Zinc Company, Beaver Creek Area, Smyth County, Virginia, Contract No. Idm-E960, Zinc.

The Operator requested the termination by mutual agreement.

More than two thirds of the authorized 15,000 feet of drilling has been completed. Fourteen of the sixteen drill holes showed non-commercial zinc mineralization and the other two were blank. The probability of discovering commercial grade ore with the remaining footage is considered to be remote by the Field Team. No certification will be recommended.

W. P. Klugescheid

W. P. Klugescheid

WPK/er
Copy to: Docket
Chron.

8623

OFFICIAL FILE COPY

Date	Surname	Code
8/23	Klugescheid	500

500

August 23, 1957

Memorandum

To: Associate Solicitor, Division of Mineral Resources

From: Director, Division of Base Metals

Subject: Preparation of Mutual Termination Agreement for the New Jersey Zinc Company, Bever Creek Area, Docket No. DMEA-4178, Smyth County, Virginia, Contract No. Idm-E960, Zinc.

Will you please prepare a Mutual Termination Agreement for the cited project. The effective date will be ~~July 27,~~ August 22, 1957.

W. R. Griswold

WPKlugescheid/er
Copy to: Docket
Chron.

8623

Form 7

OFFICIAL FILE COPY

Date	Surname	Code
8/21	Klugescheid	500
8/21	Friamel	500
8-21	Chambers	800
8/21	RCL	130
"	Johnson	110
		100
8/22	C	220
		500

AUG 21 1957

Mr. Robert A. Laurence
Executive Officer
BMSA Field Team, Region V
Room 13, Post Office Bldg.
Knoxville 2, Tennessee

Re: Docket No. BMSA-4175 (Zinc)
The New Jersey Zinc Company
Beaver Creek Area
Smyth County, Virginia
Contract No. Icm-1960

Dear Mr. Laurence:

We are enclosing the original and four copies of proposed Amendment No. 1 (two pages) to the above contract, signed by the Administrator for the Government. We are also enclosing two extra copies for the use of the Field Team.

The amendment was drawn up in accordance with the request of the Operator, dated July 12, 1957, with which you concurred in your letter of July 24, 1957.

If the amendment meets with your approval, kindly present it to the Operator for approval and signature and, when completed, distribute the copies in the usual manner. In the event that the amendment is not satisfactory and cannot be amended within your delegated authority, return all copies with your recommendations concerning any modifications.

Sincerely yours,
George C. Selfridge
Chairman, Operating Committee (WPK)

Enclosures

WPKlugescheid/bjm (8/21/57)

APPROVED:

P. F. Yopes (WPK)
Member, Bureau of Mines

W. P. Williams (WPK)
Member, Geological Survey

Copy to: Docket
Admr. R. File
Op. Committee
Mr. Bishop
Mr. Kiilsgaard
Chron.

8623

TUESDAY

SEPTEMBER 1957						
S	M	T	W	T	F	S
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8	9	10	11	12	13	14
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15

OCT. 1957

NOVEMBER 1957						
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APPOINTMENTS

7 A. M. .....

8 A. M. .....

9 A. M. .....

10 A. M. .....

11 A. M. .....

12 Noon .....

1 P. M. .....

2 P. M. .....

3 P. M. .....

4 P. M. .....

5 P. M. .....

6 P. M. .....

OCTOBER						1957
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13	14	15	16	17	18	19
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27	28	29	30	31		

MONDAY

14

OCTOBER

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 250 FED. BLDG.
KNOXVILLE 2, TENN.

OFFICIAL FILE COPY
DMEA
RECEIVED AUG 5 1957

DATE	INITIALS	CODE
8/5	P.K.	220
~~8/5~~	~~Kley~~	~~500~~

August 2, 1957

Memorandum

To: Operating Committee, DMEA - Washington

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

Subject: DMEA-4178, Idm-E960(zinc) The New Jersey Zinc Co. New York, N.Y. Beaver Creek Area, Smythe County, Va.

Reference is made to the interim reports of July 26 and June 14.

Enclosed are the original and two copies of the Operator's letter requesting termination by mutual agreement.

More than two thirds of the authorized 15,000 feet of drilling has been completed. Apparently this is a locality where there's lots of "smoke" and no "fire," as evidenced by the fact that 14 of the 16 drill holes showed non-commercial zinc mineralization (some closely approaching ore grade) and the other two were blank. The probability of discovering commercial grade ore with the remaining 4990 feet of authorized drilling seems remote. Therefore, we recommend termination by mutual agreement, effective July 27, 1957. Certification will not be recommended.

V. B. Lynch
V. B. Lynch, Member
Bureau of Mines

Robert A. Laurence
Robert A. Laurence
Executive Officer, DMEA
Region V

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.
ROOM POST OFFICE BLDG.
KNOXVILLE 2, TENN.

August 2, 1957

OFFICIAL FILE COPY
DMEA
RECEIVED AUG 5 1957

DATE	INITIALS	CODE
8/5	P.K.	220
8/5	[illegible]	800
8/6	[illegible]	~~500~~
	[illegible]	

Mr. W. L. Albers, Supt.
The New Jersey Zinc Co.
Austinville, Virginia

Re: DMEA-4178 (zinc)
Beaver Creek Area
Smyth County, Va.
Contract No. Idm-2960

Dear Mr. Albers:

Your letter of July 30, requesting termination of the Beaver Creek Project, has been forwarded to our Washington office for appropriate action, as the Field Team does not have the authority to terminate a contract. We will advise you promptly when a decision is reached.

In the meanwhile, we agree with you that work should be recessed.

Sincerely yours,

Robert A. Laurence
Executive Officer, DMEA
Region V

RAL/sm
cc
Opr. Com.-2
Lynch
Files
Wedow

BERTHA MINERAL DIVISION

THE NEW JERSEY ZINC COMPANY

AUSTINVILLE, VA.

HORSE HEAD PRODUCTS ®

July 30, 1957

OFFICIAL FILE COPY
DMEA
RECEIVED AUG 5 1957

DATE	INITIALS	CODE

Regional Executive Officer
Defense Minerals Exploration Administration
Room 13, Post Office Building
Knoxville 2, Tennessee

Subject: Beaver Creek, Smyth County, Va.
Docket #4178, Contract #960

Dear Sir:

We have completed the last of the proposed holes on the Kestner property in the Beaver Creek Area. This hole encountered a discouraging decrease in the thickness of the mineralized zone.

We would like your concurrence to a recess of this project pending consideration of termination.

Very truly yours,

W. L. Albers,
Superintendent

R.C.G.
RCGilbert/mjf
In quintuplicate

RECEIVED
AUG 1 - 1957

DMEA Form 7
(12-56)

500

OFFICIAL FILE COPY

Date	Surname	Code
7/30	Klugescheid	500

July 30, 1957

Memorandum

To: Associate Solicitor, Division of Mineral Resources

From: Director, Division of Base Metals

Subject: Preparation of Amend. No. 1 for Docket No. DMEA-4178, The New Jersey Zinc Company, Beaver Creek Area, Smyth County, Virginia, Contract No. Idm-3960 (Zinc)

Will you kindly prepare Amendment No. 1 to the cited contract which deletes the lands listed in the Operator's letter of July 12, 1957.

The amendment should state that the lands have no known value for mineral production, also that the Operator is surrendering its options on the lands in question.

W. R. Griswold

W. R. Griswold

WPKlugescheid/bjm

Copy to: Docket
Admr. R. File
Chron.

8623

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROWAN HOTEL OFFICE BLDG.
KNOXVILLE 2, TENN.

July 24, 1957

OFFICIAL FILE COPY
DMEA
RECEIVED JUL 26 1957

DATE	INITIALS	CODE
7/26	[illegible]	220
		~~930~~
7/26	[illegible]	500

Memorandum

To: Operating Committee, DMEA - Washington

From: DMEA Field Team, Region V - Knoxville, Tenn.

Subject: Request for Amendment, DMEA-4178(zinc)
The New Jersey Zinc Co., New York, N.Y.
Beaver Creek Area, Smythe County, Virginia
Contract No. Idm-E960.

Enclosed are the original and two copies of a letter from the Operator, requesting deletion of five tracts from the subject contract, in accordance with the "Special Agreement Concerning Land."

The Operator's request is entirely reasonable, and we recommend that you prepare an amendment authorizing the withdrawal of these tracts.

Robert A. Laurence
Robert A. Laurence,
Executive Officer, DMEA-Region V

V. J. Lynch
V. J. Lynch, Member
Bureau of Mines

BERTHA MINERAL DIVISION

THE NEW JERSEY ZINC COMPANY

AUSTINVILLE, VA.

HORSE HEAD PRODUCTS ®

OFFICIAL FILE COPY
DMEA
RECEIVED JUL 26 1957

DATE	INITIALS	CODE

RECEIVED
JUL 15 1957
Knoxville, Tenn.

July 12, 1957

Regional Executive Officer
Defense Minerals Exploration Administration
Room 13
Post Office Building
Knoxville 2, Tennessee

Subject: Options on Property - Beaver Creek Area, Smyth County, Va. DMEA 4178, Contract 960

Gentlemen:

The Beaver Creek area which we are drilling with DMEA assistance is divided into several separate tracts. To date drilling has been done on two of these tracts with very discouraging results. As a matter of fact if the current hole, BC-16, does not encounter ore we plan to ask yourconcurrence in abandoning the entire project. However, at the moment we are only concerned with the westernmost tract.

The westernmost tract is composed of the following: R. G. McAllister, W. C. McAllister, R. J. McAllister, J. Otis Bise and William T. Bise. We have drilled this area and found hardly a trace of mineralization. On this basis we are convinced that this tract has such a low mineral potential that we are justified in requesting that you delete this acreage from the contract.

The reason for bringing this up at this time is that the rental payments on these five properties comes due between August 16 and 27. It will be impossible to wind up the entire project by this time, therefore this is sent ahead.

If there is any further information you need please advise us.

Yours very truly,

W. L. Albers,
Superintendent

WHoratioBrown/mjf
In quintuplicate

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 13 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

OFFICIAL FILE COPY
DMEA
RECEIVED JUL 26 1957

DATE	INITIALS	CODE
7/26	S.K.	220
7/26	[illegible]	800
7/26	[illegible]	580

July 24, 1957

Mr. W. L. Albers, Supt.
Bertha Minerals Division
The New Jersey Zinc Co.
Austinville, Virginia

Re: DMEA-4178(zinc)
The New Jersey Zinc Co.
Beaver Creek Area
Smyth County, Virginia
Contract Idm-E960

Dear Mr. Albers:

Yout request for deletion of the five tracts in the western part of the Beaver Creek Area has been forwarded to our Washington office, as this office does not have the authority to prepare amendments withdrawing land from a contract area. However, in accordance with the "Special Agreement Concerning Land," the amendment will be prepared and forwarded to you promptly. There is no reason for you to renew the options on these tracts.

Sincerely yours,

Robert A. Laurence,
Executive Officer, DMEA
Region V

RAL/zm
cc
Lynch
Files
Opr. Com.-2

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 13 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

OFFICIAL FILE COPY
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RECEIVED MAY 1 1957

DATE	INITIALS	CODE
5/1	C	220
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April 29, 1957

Memorandum

To: Operating Committee, DMEA, Washington, D. C.

From: Executive Officer, DMEA Field Team, Region V

Subject: DMEA-4178, Idm-E960 (Zinc)
The New Jersey Zinc Company, New York, N. Y.
Beaver Creek area, Smyth County, Virginia

Enclosed are four copies of a new option agreement between the Operator and D. R. Kestner, extending the option agreement until April 9, 1959.

Robert A. Laurence

Robert A. Laurence

Enclosures 4

X 1086 150M

COPY

ORIGINAL FILE COPY
DMEA
RECEIVED MAY 1
DATE CODE

Austinville, Va.
April 25, 1957

Regional Executive Officer
Defense Minerals Exploration Administration
Room 13
Post Office Building
Knoxville 2, Tennessee

Subject: D. R. Kestner Option Extension
Beaver Creek Area, Smyth County, Va.
Docket #DMEA 4178, Contract 960

Gentlemen:

In our letter of February 12 we stated that we had obtained an extension of the D. R. Kestner option to permit further drilling. However, we did not enclose a copy of this option extension agreement.

Enclosed is the agreement that extends the original option for two years, the termination date now being April 9, 1959.

Very truly yours,

W. L. Albers/gm

W. L. Albers,
Superintendent

R.C.G.
RCGilbert/mjf
In quintuplicate

RECEIVED
APR 29 1957

BERTHA MINERAL DIVISION

THE NEW JERSEY ZINC COMPANY

AUSTINVILLE, VA.

February 12, 1957

OFFICIAL FILE COPY
DMEA
RECEIVED FEB 25 1957

DATE	INITIALS	CODE
2/25	C	220
		800
		225

Mr. R. A. Laurence
Defense Minerals Exploration Administration
Room 13, Post Office Building
Knoxville 2, Tennessee

Attention: Mr. Helmuth Wedow, Jr.

Re: DMEA 4178, Idm-E960 (Zinc) Beaver Creek Area,
Smyth County, Virginia

Dear Mr. Laurence.

Since our field and office conference with Mr. Wedow, our conversation with you and his letter of February 6, we have discussed the problem of additional drilling on the Kestner property at length. The conclusion of our staff here is that some additional drilling is warranted.

To this end we have gotten Mr. Kestner to agree to an extension of the option. Since the option is to be extended we will not have to rush and will let convenience in handling the drills govern the starting date.

We will drill an additional hole 200 feet south of BC-6 if it is possible to get the drill to the site and then tentatively plan to drill two additional holes on a fence 600 feet further east. We can discuss the exact location of these holes at the time of your next visit.

If, after drilling these three holes, the project does not appear more promising than at present we will recommend abandoning the project.

Very truly yours,

W. L. Albers,
Superintendent

WHoratioBrown/mjf

RECEIVED
FEB 13 1957

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

ROOM 1450 PACKARD
WASHINGTON 25, D.C.

RECEIVED FEB 11 1951

DATE	INITIALS	CODE
2-16	[illegible]	240
		245

At the same stratigraphic horizon in Hole BC-6 a 9-foot run of mineralization was reported to contain 1.8 percent zinc, but with a core recovery of only 3 feet and also considerable evidence of grinding in the fragmentary material recovered. The oxidation in the high-grade zone in Hole BC-5 and considerable core loss at the same mineralized horizon in Hole BC-6 strongly suggest that a possible high-grade ore zone also occurs in Hole BC-6. Thus, if Hole BC-6 is considered to contain ore - - - two of the six holes on this project (discounting the drilling on the McAllister property two miles to the west) are in ore.

We realize that the New Jersey Zinc Company's option on the Kestner property expires on April 9, 1957, and that it may not be possible to negotiate even a limited extension of the option. However, we are of the opinion that sufficient time yet remains to drill several additional holes, providing, of course, that the drilling is reactivated as soon as possible. If you agree to continue the drilling on the Beaver Creek project and the drill rig formerly on the project is not immediately available for use, I am sure the Field Team will seriously consider the possibility of a brief temporary recess of either the Porter Bank or James-Woodruff projects, or both, in order that a drill or drills will be available to expedite the completion of the Beaver Creek work within the time limit set by the option's expiration date.

As to the location of the drill hole sites, it is our opinion that at least one additional hole should be drilled on the original fence, 200 feet south of Hole BC-6 and the remaining holes on another fence parallel to and at least 500 feet east of the original fence. The precise location of the holes on the second fence, however, might best be left to further discussion at your convenience.

Sincerely yours,

Helmuth Wedow, Jr.
Geologist
U. S. Geological Survey

HW/mg
cc - Operating Committee (3)
Mr. V. J. Lynch
Mr. R. A. Laurence

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 1, POST OFFICE BLDG.
KNOXVILLE 2, TENNESSEE

December 21, 1956

Mr. W. L. Albers, Superintendent
The New Jersey Zinc Company
Austinville, Virginia

Re: DMEA-4178, Idm-E960-Zinc
The New Jersey Zinc Company
Beaver Creek Area
Smyth County, Virginia

Dear Mr. Albers:

This will acknowledge your letter of December 17, suggesting termination of the subject contract unless the results of the next two drill holes are more encouraging.

We will be glad to discuss the matter with you on our next visit to the Virginia projects, probably on January 11, 1957.

Very truly yours,

V. J. Lynch, Acting Executive Officer
DMEA Field Team, Region V

VJL/zm
cc;
Lynch
Opr. Com.-2
Files

1086 150M

COPY

Austinville, Va.
December 17, 1956

Mr. Robert Laurence
Defense Minerals Exploration Administration
Room 13
Post Office Building
Knoxville 2, Tennessee

Subject: DMEA 4178, Contract #960
Beaver Creek, Virginia

Dear Mr. Laurence:

We have now completed two holes of the proposed five in a fence on the McAllister property in the Beaver Creek area. A third hole is nearing completion, and as in the first two, the results are essentially negative. It is our considered opinion that, unless more encouraging results are found in the last two holes, this project be discontinued with the completion of the proposed fence of five holes. The last of these holes should be completed about January 15, 1957.

Very truly yours,

W. L. Albers/gm

W. L. Albers,
Superintendent

R.C.G. copies
RCGilbert/mjf
In quintuplicate

RECEIVED
DEC 19 1956

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D.C.
ROOM 13 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

Octo

Mr. R. L. Albers, Superintendent
The New Jersey Zinc Company
Austinville, Virginia

Re: DMEA-4178, Idm-5960
Beaver Creek Area
Smyth County, Virginia

Dear Mr. Albers:

As a result of our field conference with Mr. Brown and Mr. Gilbert last Friday, and further discussion with Mr. Griswold of our Washington staff, we are in agreement with your proposal to drill a fence of holes on the Ray McAllister property. It is understood that these will explore the exposed mineralized zone as well as the lower one which is not exposed here, but contains strong mineralization at other nearby localities.

We also agree that, if ore is not found in hole BC-6, drilling on the D. R. Kestner property should be dicontinued.

Sincerely yours,

Robert A. Laurence
Executive Officer
DMEA Field Team, Region V

RAL/mg
cc
Oper. Comm. (2)
Lynch
File

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 1 ASH POST OFFICE BLDG.
KNOXVILLE 2, TENN.

RECEIVED
OCT - 4 1956

October 3, 1956

Mr. W. L. Albers, Supt.
Bertha Mineral Division
The New Jersey Zinc Company
Austinville, Virginia

Re: DMEA-4178, Idm-E960 (zinc)
Beaver Creek Area
Smyth County, Virginia

Dear Mr. Albers:

We are in agreement with your suggestion to abandon the second fence of holes on the D. R. Kestner property, if results of the first fence do not improve considerably in the fifth and sixth holes. What is the possibility of a southerly plunge of an oreshoot, which could be checked with holes on the G. W. Tyler property, west of the road?

We are agreeable to drilling some holes on the Ray McAllister property, but it would be a much more attractive proposition if you had the mineral rights to the adjoining land on the west and south. Also, I do not understand the reason for the two northern most holes on your proposed fence on the McAllister tract, as these would collar stratigraphically below the outcrop of the mineralized zone. Is there evidence of other mineralization at lower horizons ?

Unless something unexpected turns up in the meantime, I will probably accompany Mr. Beck on the next visit to the project, on Friday October 12, at which time definite plans may be made

Sincerely yours,

Robert A. Laurence
Executive Officer, DMEA
Field Team, Region V

RAL/sm
cc:
Lynch
Opr. Com.
Files

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 1025 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

RECEIVED
JUL 16 1956

July 13, 1956

Memorandum

To: Operating Committee, DMEA - Washington

From: Executive Officer, DMEA - Region V - Knoxville, Tennessee

Subject: DMEA-4178, Idm-E960 (zinc) The New Jersey Zinc Co.
Beaver Creek Area, Smyth County, Virginia

We have just been notified by the Operator that a drill rig is on the site, and the first hole will be begun today.

Robert A. Laurence

Robert A. Laurence

File Copy
Surname
Klugescheid
Simmons
Martin
Kjosmoe
Mittendorf

500

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

JUN 18 1956

Mr. Robert A. Laurence
Executive Officer
DMEA Field Team, Region V
Room 13, Post Office Bldg.
Knoxville 2, Tennessee

Re: Docket No. DMEA-4178 (Zinc)
The New Jersey Zinc Company
Beaver Creek Area
Smyth County, Virginia
Contract No. 14m-5960

Dear Mr. Laurence:

We are enclosing the Finance Office and Field Team copies of the cited contract. The complete contract consists of Form MF-200, Annex I, Exhibit "A", and one map. Two extra copies of Annex I, Exhibit "A", and the map are also enclosed for Field use.

Sincerely yours,

W. S. Martin
ACTING Chairman, Operating Committee

Enclosures

WPKlugescheid/bjl (6/14/56

APPROVED:

/s/ Robert W. Geehan
Member, Bureau of Mines

Thor H. Kiilsgaard
Member, Geological Survey

Copy to: Docket
Admr. R. File
Op. Committee
Base Metals
Mr. Bishop
Mr. Kiilsgaard
Chron.

RCK.

THE NEW JERSEY ZINC COMPANY
(ESTABLISHED 1848)
100 FRONT STREET
NEW YORK 38, N.Y.

OFFICE OF THE
VICE PRESIDENT

HORSE HEAD PRODUCTS ®

RECEIVED
JUN 12 1956

June 7, 1956

Mr. C. O. Mittendorf
Administrator
Defense Minerals Exploration Administration
United States Department of the Interior
Washington 25, D. C.

RE: DOCKET #DMEA-4178 (ZINC)
THE NEW JERSEY ZINC COMPANY
BEAVER CREEK AREA
SMYTH COUNTY, VIRGINIA

Dear Sir:

Returned herewith are the original and four copies of Contract #IDM-E960, duly signed in accordance with your letter dated May 31, 1956.

Please note that on Annex I, page 2, Tract III, we have inserted the date of the deed as requested in the postscript of your letter dated May 31st.

Very truly yours,

S. S. Goodwin
Vice President

WTP/alb
encs.

File Copy
Surname
Klugescheid
Lunsford
Chambers
Kiilsgaard
Geehan
Martin
Hyman

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

MAY 31 1956

Mr. S. S. Goodwin, Vice-President
and Manager of Mines
The New Jersey Zinc Company
160 Front Street
New York 38, New York

Re: Docket No. DMEA-4178 (Zinc)
The New Jersey Zinc Company
Beaver Creek Area
Smyth County, Virginia

Dear Mr. Goodwin:

As requested in your application of February 10, 1956, we are enclosing the originial and five copies of a contract, signed by the Government, for the cited exploration project. The complete contract includes the contract form, Annex I, Exhibit "A", and a map.

If the contract meets with your approval, please sign all copies, retaining the "Operator's Copy" for your files, and transmit the others to this office.

In the event that any of the contract provisions do not meet with your approval, please return all copies to us with your comments.

The diamond drilling costs are based on the bid submitted by Sprague & Henwood, Inc.

Sincerely yours,

G. O. Mittendorf

Administrator

P.S. Annex I, page 2, W. T. Worley and Virgie Lee Worley, Tract III, will you please have the date of the deed of the excepted and deducted land inserted. If no date available please mark "undated".

Enclosures

WPKlugescheid/er 5/26/56
Copy to: Docket
Admr R File
Op. Committee
Base Metals

Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Region V (2)
Chron.

File Copy
Surname

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

May 9, 1956

Memorandum

To: Associate Solicitor, Division of Mineral Resources

From: Chief, Base Metals Division

Subject: Preparation of Contract for The New Jersey Zinc Company, Beaver Creek Area, Smyth County, Virginia, Docket No. DMEA-4178 (Zinc)

Will you please prepare a contract for the cited application. The draft of the contract, Exhibit "A", and Annex I are attached to this memorandum. Consents to lien have been waived.

The necessary copies of the maps to accompany the copies of the contract will be delivered to your office in a few days.

The form of this contract is more or less the same as DMEA-4126, Contract No. Idm-E937, New Jersey Zinc Company.

Walter P. Klugescheid
Walter P. Klugescheid
For: W. R. Griswold

WPK/er

Copy to: Docket
Base Metals
Chron.

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

April 30, 1956

Ref: DMEA-4178; Zinc, $55,689
New Jersey Zinc Company
Beaver Creek Area
Smythe County, Virginia

Memorandum

To: W. R. Griswold, DMEA

From: O. M. Bishop, Branch of Base Metals

Subject: Review of Field Team Report dated March 29, 1956, and received April 2, 1956

The applicant Company asks DMEA participation in exploration of the Knox dolomite formation between the Pulaski and Saltville faults in the Beaver Creek Area, Smythe County, Virginia. The Knox formation outcrops on the slopes of Beaver Creek Valley, and zinc mineralization can be traced intermittently along these slopes for 3,000 feet, while a second mineralized area is known 1-2/3 miles to the southwest. Although the mineralization at the outcrop is not commercial the applicant believes the structure warrants some 15,000 feet of diamond drilling to determine the gross potentialities of the area. If successful, closer-spaced drilling will follow the initial drilling.

The field team in reviewing the proposal states that the geochemical anomalies, geologic structures and outcrops of sphalerite recently discovered make the exploration an attractive "long-shot."

The expected and outlined costs seem reasonable. I believe the potential for an important new discovery together with the applicant's known abilities as a miner fully warrant concurrence with the field team in recommending approval of the application.

O. M. Bishop

O. M. Bishop
Branch of Base Metals

Copy to: Division of Minerals
Branch of Base Metals (2)
Mr. Kiilsgaard, Room 5222
Mr. Geehan, Room 3608
Files

RECEIVED
MAY 1 - 1956

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

WASHINGTON 25, D. C.
KNOXVILLE 21, TENN.

OFFICIAL FILE COPY

RECEIVED FEB 11 1957

DATE	INITIALS	CODE
2-12	C	220
		800
		225

February 6, 1957

Mr. W. L. Albers, Superintendent
Bertha Mineral Division
The New Jersey Zinc Company
Austinville, Virginia

Attention: Dr. W. H. Brown

Re: DMEA-4178, Idm-E960 (Zinc)
Beaver Creek Area
Smyth County, Virginia

Dear Mr. Albers:

After my conferences in Austinville with Dr. Brown, Mr. Gilbert, and Mr. Knudson last week, Mr. Laurence, Mr. Lynch, and I have discussed the question of the Beaver Creek project at considerable length. Upon reviewing all of the information available to us in Knoxville as well as that gained in my trip to Austinville, we feel that the results of the drilling on the D. R. Kestner property show an excellent potential for a significant ore shoot. We would, therefore, not like to see exploration in this immediate area abandoned without additional drilling to test more adequately the "open end" of the mineralization revealed in Holes BC-5 and BC-6.

If, on the other hand, the New Jersey Zinc Company does not agree and is of the opinion that further exploration can accomplish little or nothing, and thus wishes to terminate the contract without additional drilling, then the Field Team would appreciate receiving your letter to this effect as soon as possible. Such a letter should be sent in advance of a final report on the drilling done to date, and will be referred with the Field Team's recommendations to the DMEA Operating Committee in Washington for final action.

Although it may be questionable to term the 5 feet of 8 percent zinc in Hole BC-5 as "ore", particularly in what may well be a new district, the fact is that the basal 1 foot of this run contains about 24 percent zinc and is at least partially oxidized.

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

RECEIVED
APR 30 1956
Docket

April 27, 1956

Memorandum for the Files

From: W. P. Klugescheid, Base Metals Division

Subject: Phone conversation on Docket No. DMEA-4178, New Jersey Zinc Company, Beaver Creek Area, Smythe County, Virginia, Zinc.

On April 25th, the undersigned phoned Mr. Callahan of New Jersey Zinc Company in the New York Office, in the absence of Mr. Canada.

I asked Mr. Callahan if he could speed the arrival of three bids on diamond drilling for the above cited project.

Mr. Callahan promised to expedite the bids to this office.

W. P. Klugescheid
W. P. Klugescheid

WPK/er

Copy to: Docket
Base Metals
Chron.

BERTHA MINERAL DIVISION
THE NEW JERSEY ZINC COMPANY
AUSTINVILLE, VA.

RECEIVED
APR 27 1956

HORSE HEAD PRODUCTS ®

Austinville, Va.
April 25, 1956

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

Attention: Mr. W. R. Griswold

Gentlemen:

In accordance with your suggestions telephoned to our New York office, we are forwarding to you herewith bids from three diamond drilling contractors for our proposed DMEA projects:

James-Woodruff Area-Virginia-DMEA-4173
Porter Ore Bank-Virginia-DMEA-4174
Beaver Creek Area-Virginia-DMEA-4178

Bids are enclosed from E. J. Longyear Company, Joy Manufacturing Company, and Sprague & Henwood, Inc.

Although practically all of the holes are expected to be less than 1,000 feet, with an average near 500 feet, we have used 1,000 feet as a basis for comparison of the bids. You will note that Sprague & Henwood have bid the same on all three jobs. The other two concerns bid the same on the first two areas and much higher on Beaver Creek.

It seems on this basis that Joy is too high on all of its bids, and that Sprague & Henwood are much lower than Longyear on Beaver Creek and slightly lower than Longyear on the other two projects.

We therefore propose to award the contracts for the three projects to Sprague & Henwood and will so advise them if you concur.

We would appreciate it if you will advise us if there are any further steps we need to take to complete this application.

Very truly yours,

W. L. Albers/gm

W. L. Albers
Superintendent

10/13

WHoratioBrown:rjl
Encl.
In Quadruplicate

cc: Mr. Robert A. Laurence, Knoxville, Tenn.
Mr. W. H. Callahan, N. Y.
Mr. S. S. Goodwin, N. Y.
Mr. A. E. Turner, N. Y.
Geol File

MANUFACTURERS OF
DIAMOND DRILLS
DRILLING EQUIPMENT
DIAMOND BITS

BRANCH OFFICES
NEW YORK PITTSBURGH
PHILADELPHIA
GRAND JUNCTION, COLO

EXECUTIVE OFFICES & PLANT
221 W. OLIVE STREET
SCRANTON, PA.

SPRAGUE & HENWOOD, INC.

SINCE 1883

CONTRACTORS FOR
DIAMOND DRILLING
SHOT DRILLING · SOIL SAMPLING · PRESSURE GROUTING
WATER WELLS & CHURN DRILLING

MAIL ADDRESS P. O. BOX 446
SCRANTON 2, PA.
DIAMOND, 4-8507

RECEIVED
APR 27 1956

April 3, 1956

The New Jersey Zinc Company
160 Front Street
New York 38, New York

Attn: Mr. A. E. Turner
Assistant Manager of Purchasing

Re: Diamond Drilling -- Virginia
1-AX-524

Gentlemen:

On the basis of Mr. Turner's letters of March 23rd and March 29th, and on the basis of the site examination by our Mr. Fletcher, we are pleased to submit the following quotation for a minimum of 10,000 linear feet of AX drilling on the Porter Bank and James-Woodruff projects in Wythe and Smyth Counties, Virginia, and a minimum of 5,000 linear feet of AX drilling on the Beaver Creek project in Smyth County, Virginia. Our proposal is based on drilling vertical holes, with a maximum distance from water of 10,000 feet.

QUOTATION

ITEM #1 For drilling AX holes:

DEPTH	PRICE PER FT.	
0' to 250'	$ 2.20 per ft.	2,325
250' to 500'	$ 2.45 per ft.	
500' to 750'	$ 2.70 per ft.	2,825
750' to 1000'	$ 2.95 per ft.	
1000' to 1250'	$ 3.20 per ft.	3,325
1250' to 1500'	$ 3.45 per ft.	
1500' to 1750'	$ 3.70 per ft.	3.90
1750' to 2000'	$ 4.20 per ft.	
2000' to 2250'	$ 5.00 per ft.	5.50
2250' to 2500'	$ 6.00 per ft.	

ITEM #2 For acid testing the angle of the hole - EIGHT DOLLARS ($8.00) per hour.

Sprague & Henwood, Inc. will transport all cores free-of-charge to Marion, Virginia, in core boxes supplied by the New Jersey Zinc Company.

If awarded this work we are prepared to start within one week after receipt of written notice to proceed.

SPRAGUE & HENWOOD, INC.

TO:
The New Jersey Zinc Company
160 Front Street
New York 38, New York

April 3, 1956

Several days will be required to assemble the necessary equipment and ship it to the job site. Therefore, any advance notice you could give us concerning the award of this contract will be very greatly appreciated.

Thank you for inviting us to submit our proposal and we hope our prices will meet with your approval.

Very truly yours,

SPRAGUE & HENWOOD, INC.

Robert M. Gorges

Robert M. Gorges
Contract Department

RMG/lsp

MANUFACTURERS OF
DIAMOND DRILLS
DRILLING EQUIPMENT
DIAMOND BITS

BRANCH OFFICES
NEW YORK PITTSBURGH
PHILADELPHIA
GRAND JUNCTION, COLO

EXECUTIVE OFFICES & PLANT
221 W OLIVE STREET
SCRANTON, PA

SINCE 1883

SPRAGUE & HENWOOD, INC.

CONTRACTORS FOR
DIAMOND DRILLING
SHOT DRILLING · SOIL SAMPLING PRESSURE GROUTING
WATER WELLS & CHURN DRILLING

MAIL ADDRESS · P.O BOX 446
SCRANTON 2, PA.
DIAMOND 4-8507

April 19, 1956

The New Jersey Zinc Company
160 Front Street,
New York 38, New York

RE:- Diamond Drilling -
Virginia - 1-AX-524

Attention:- Mr. A. E. Turner,
Assistant Manager of Purchasing

Gentlemen:-

As per our telephone conversation, we are pleased to include in our quotation to you of April 3rd the following:-

ITEM NO. 3 - Casing left in holes by your request

AX casing - $ 1.54 per lin.ft.
BX casing - $ 1.96 per lin.ft.

ITEM NO. 4 - For use of 3-ton truck and driver - hauling cores, if requested - $ 4.00 per hour.

ITEM NO. 5 - Additional charge for furnishing and laying pipe line and pumping water, if necessary, to holes located over 10,000 feet from a suitable water supply.

From 10,000 feet to 12,500 feet - 15¢ per lin.ft. in addition to the above per foot prices quoted.

From 12,500 lin.ft. to 15,000 lin.ft. -15¢ per lin.ft. additional.

The prices quoted in our letter of April 3rd are for furnishing AX cores. Should any cementing be required in the hole due to cave formation, etc., we will cement the holes at our expense.

We trust you will find the above acceptable.

Thanking you, we are

Very truly yours,

SPRAGUE & HENWOOD, INC.,

Wm. J. Schank,
Vice President

WJS:GF
In Triplicate

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

EXECUTIVE OFFICES
HENRY W. OLIVER BUILDING
PITTSBURGH 22, PA.

April 2, 1956

New Jersey Zinc Company
150 Front St.
New York 38, N. Y.

Attention: Mr. A. E. Turner
Asst. Mgr. of Purchasing

Subject: Diamond Drilling
Virginia - 12524

Gentlemen:

In compliance with your request, we wish to set forth below prices and conditions covering a minimum of 10,000 feet of core drilling as follows:

Porter Ore Bank - Smyth County, Va.
James Woodruff - Wythe & Smyth Counties, Va.

		BX	AX	EX
From surface to 500. ft.	@	$3.10 ft.	$2.75 ft.	$2.50 ft.
From 500. to 1000. ft.	@	3.35 "	3.00 "	2.75 "
From 1000. to 1500. ft.	@	3.60 "	3.25 "	3.00 "
From 1500. to 2000. ft.	@	3.85 "	3.50 "	3.25 "

BX Casing left in holes at your request	@ $1.96 ft.
AX Casing left in holes at your request	@ $1.54 "
EX Casing left in holes at your request	@ $1.47 "
Surveying holes with your Pro-Part Instrument	@ $7.50 per hr.
Capping Drill Holes, etc.	@ $4.50 per hr.

We will pump water for drilling purposes, which we understand from your local representative will be not over 6,000 feet from the drill holes.

If it is your desire to save cores of the drilling, then it will be necessary that you furnish the proper containers for same.

We will furnish for this proposed drilling one of our gasoline driven core drills complete with operating equipment, and will conduct the drilling operations on the basis of two 8-hour shifts per day and not less than six days per week.

We can start this work immediately upon receipt of instructions to proceed with the drilling.

Yours truly,

JOY MANUFACTURING COMPANY

W. J. Pilarski, Mgr.
Contract Drill Division

WJP/cc

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

EXECUTIVE OFFICES
HENRY W. OLIVER BUILDING
PITTSBURGH 22, PA.

April 2, 1955

AM/MH

New Jersey Zinc Company
160 Front Street
New York 38, N. Y.

Attention: Mr. A. E. Turner
Asst. Mgr. of Purchasing

Subject: Diamond Drilling
Virginia - BX-52h

Gentlemen:

In compliance with your request, we wish to set forth below prices and conditions covering a minimum of 10,000 feet of core drilling in connection with the Beaver Creek, Smyth County, Virginia project.

	BX	AX	EX
From surface to 500. ft.	@ $3.35 ft.	$3.00 ft.	$2.75 ft.
From 500. to 1000. ft.	@ 3.60 "	3.25 "	3.00 "
From 1000. to 1500. ft.	@ 3.35 "	3.59 "	3.25 "

Surveying holes with your Tro-Cari Instrument	@ $7.50 per hr.
Capping Drill Holes, etc.	@ $4.50 per hr.
BX Casing left in drill holes at your request	@ $1.96 ft.
AX Casing left in drill holes at your request	@ $1.54 ft.
EX Casing left in drill holes at your request	@ $1.17 ft.

We will pump water for drilling purposes, which we understand from your local representative will be not over 2500 ft. from the drill holes.

If it is your desire to core some of the drilling, then it will be necessary that you furnish the proper containers for core.

We will furnish for this proposed drilling one of our gasoline driven core drills complete with operating equipment, and will conduct the drilling operations on the basis of two 8-hour shifts per day and not less than six days per week.

We can start this work immediately upon receipt of instructions to proceed with the drilling.

Yours truly,

JOY MANUFACTURING COMPANY

N. J. Pilarski

N. J. Pilarski, Mgr.
Contract Drill Division

WP/ct

E. J. LONGYEAR COMPANY

DIAMOND DRILL MANUFACTURERS
CORE DRILLING CONTRACTORS
MINING ENGINEERING AND
GEOLOGICAL CONSULTANTS

GENERAL OFFICE
FOSHAY TOWER
MINNEAPOLIS 2, MINNESOTA
TELEPHONE: MAIN 2447
CABLE: LONGEAR

RECEIVED
APR 27 1956

April 11, 1956

The New Jersey Zinc Company
160 Front Street
New York 38, New York

Attention: Mr. A. E. Turner
Assistant Manager of Purchasing

Gentlemen:

Diamond Drilling - 1-X-524
Beaver Creek Area - Smyth County, Va.

1. In response to your letter of March 12th, we are pleased to submit below our proposal for your contemplated exploratory drilling program which is to be carried out in the Beaver Creek Area, in Smyth County, Virginia.

2. We understand that the work as now planned will consist of a series of vertical holes to a maximum depth of 1500 feet, with a minimum aggregate footage of 5,000 feet; and that the rock to be drilled is Knox and the Maynardville dolomites. We also understand that the work is to be carried out in an area located between Chatham Hill and Saltville, Virginia.

3. For this work we propose to furnish one U.G. skid-mounted, diamond core drill, together with the necessary accessory tools required to accomplish the work as now planned. We also propose to supply all service equipment required for moving the rig from one location to another, and other services and facilities needed in connection with supplying water for drilling purposes. We further propose to operate the drill on a single or double shift basis, depending upon the availability of competent drill operators.

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 to 100 feet in depth, measured from
the collar of the hole .....$3.25 per foot

b) Diamond Core Drilling

Top of Ledge to 1,000 feet in depth, measured from the collar of the hole -

EX-size, recovering core approximately 7/8" in diameter.....$3.15 per foot

AX-size, recovering core approximately 1-3/16" in diameter..$3.25 per foot

BX-size, recovering core approximately 1-5/8" in diameter...$3.55 per foot

NX-size, recovering core approximately 2-1/8" in diameter...$4.00 per foot

1,000 to 1500 feet in depth, measured from the collar of the hole -

EX-size.....$3.40 per foot

AX-size.....$3.50 per foot

c) Drill hole surveying with Maas Compass..$5.00 per hour

d) Delays for your convenience or for which you are responsible.....$5.00 per hour

e) Hauling drill core from drill hole location to core storage sheds.....$3.25 per hour

f) Casing left in drill holes at your request -

EX-size.....$1.47 per foot
AX-size.....$1.54 per foot
BX-size.....$1.96 per foot
NX-size.....$2.66 per foot

g) Cleaning up of drill hole locations will be carried out at the sole expense of the Longyear Company.

h) Reaming and casing, when required, will be carried out at the sole expense of the Longyear Company.

6. In addition to the above-quoted footage rates, it is agreed that for drill hole locations in excess of 2500 feet from source of water supply, the following allowances will be made:

a) Water supply allowance for each drill hole which is in excess of 2500 feet, but not more than 5,000 feet from an adequate source of water supply - $0.05 per foot drilled.

b) Water supply allowance for drill holes which are in excess of 5,000 feet, but not more than 7500 feet from an adequate source of water supply - $0.10 per foot drilled.

e) Water supply allowance for drill holes which are in excess of 7500 feet, but not more than 10,000 feet from an adequate source of water supply - $0.20 per foot drilled.

7. It is further agreed and understood that the sources of the water supply to be considered for the purpose of computing the distance allowance are those which are presently available, or which are made available at the Company's expense, and do not include wells which may be drilled at the Contractor's expense.

8. Drill cores are to be placed in receptacles furnished by you at each drill hole location and transported to the point of permanent storage as provided for herein.

9. Invoices covering work performed will be prepared in accordance with your instructions.

10. We very much appreciate being afforded the opportunity to consider this work. Should our proposal be found acceptable, we are prepared to furnish the equipment from our Max Meadows warehouse and commence the drilling operations promptly after receipt of offial notice to proceed.

Very truly yours,

E. J. LONGYEAR COMPANY

M. J. Gleason, Manager
Contract Drilling Division

JCCB:bal

ACCEPTED:

THE NEW JERSEY ZINC COMPANY

By: _____

Date: _____

C
O
P
Y

THE NEW JERSEY ZINC COMPANY
160 Front Street
New York 38, N. Y.

April 27, 1956

Mr. M. R. Grimsld
United States Dept. of the Interior
Defense Minerals Exploration Administration
Washington 25, D. C.

DMEA APPLICATIONS
THE NEW JERSEY ZINC COMPANY

Re: Docket DMEA - 4153 Tenn.
" " - 4177 Tenn.
" " - 4178 Virginia
" " - 4179 "
" " - 4174 "

Dear Sir:

In our DMEA contracts, No. 4119, Talbott Area, Tenn., and No. 4126, Strawberry Plains Area, Tenn. paragraph 4 states "All mineralized core will be properly sampled and assayed for zinc and iron".

We do not normally make a practice of assaying for iron, and suggest, therefore, that the requirements for iron assays be deleted from the above listed Docket Applications pending. This matter was discussed with Mr. Robt. A. Lawrence, and he indicated that the Government does not care whether iron is determined or not. Also we do not want to be obligated to assay all core, but only that core which is significantly mineralized.

Wednesday, 11 April, we mailed in to Mr. Hitzemann the completed DMEA 4119 and 4126 contracts.

Very truly yours,

signed/ John R. Canada
for Manager of Exploration

JRC/ell

IN REPLY REFER TO:

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

April 6, 1956

Re: DMEA 4178
New Jersey Zinc Co.
Beaver Creek Area
Smythe Co., Virginia
$55,689.00 - Zinc

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 exploring by diamond drilling dipping beds which geochemical prospecting suggests may be zinc bearing.

The area chosen for prospecting is similar in some respects to two other areas that are the subject of applications DMEA 4173 and 4174. The Beaver Creek area has been selected as the trial area.

The Field Team considers the work a "long shot" proposal but recommends approval of the application.

I concur with the recommendation.

N. E. Nelson

N. E. Nelson

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.
ROOM POST OFFICE BLDG.
KNOXVILLE 2, TENN.

March 29, 1956

[redacted]

ON-SITE Report

Memorandum

To: Operating Committee, DMEA - Washington

From: DMEA Field Team, Region V - Knoxville, Tennessee
Subject: DMEA-4178 (Zinc) The New Jersey, New York, N.Y.
Beaver Creek Area, Smyth County, Virginia

This memorandum is in lieu of the usual field examination report. We are familiar with the geology of the proposed area, and do not think an actual field examination would add any pertinent information. We have discussed the application with the Company's Virginia field office. We recommend approval of the application. We also expect to redommend approval of DMEA-4173 and 4174 which were submitted with this application.

We have requested the Applicant to obtain two additional drilling bids, and they have referred the request to the Company's New York office. However, it is our opinion that the estimated costs are reasonable and comparable to those of similar projects being done by private operators. The history of this Company's exploration in the southwest Virginia area and their drilling contract with E. J. Longyear Company is similar to that outlined in a letter from Mr. Johnson Crawford in connection with two of their Tennessee applications (DMEA-4153 and 4177), which we recently forwarded to you.

This proposal offers an opportunity to discover zinc ore in a previously unproductive area. It is a "long shot" but the combination of geochemical anomalies, geologic structure, and previously undetected outcrops of sphalerite make it an attractive risk. By way of supporting evidence, we understand (via the grape vine) that Tennessee Coal and Iron Division of U. S. Steel Corporation, which has maintained a geological party in Smyth County for the past three years, has made some discoveries of zinc ore in this same outcrop belt of Knox dolomite.

It is our opinion that the proposed costs are reasonable. However, they differ somewhat in detail from the estimated costs on the same Applicant's Tennessee proposals. We suggest that, when a decision is reached on the cost of supporting services for the Tennessee projects, the same unit cost be applied to this contract.

Reviewed by
DMEA OPERATING COMMITTEE
4-6-56
(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
~~XXXXXXXXXXXXXXXXXX~~
Room 13, Post Office Bldg.
Knoxville 2, Tenn.

C O P Y

March 16, 1956

Memorandum

To: Mr. C. O. Mittendorf, Administrator, DMEA - Washington

From: D.M.E.A. Field Team, Region V - Knoxville, Tennessee

Subject: Time for Repayment on Tennessee and Virginia Zinc Contracts.

As you know, we now have, in various stages of processing, 8 applications, from two different companies for drilling in Tennessee and Virginia for replacement-type zinc sulfide ore bodies. Total cost of these proposals is $1,611,677.00. In addition, we anticipate receipt of two more applications, for areas in Tennessee. A map being mailed under separate cover shows the locations of all these proposals, as well as mines now in operation and mills in operation or under construction, and of the current project, DMEA-2546.

Although we haven't any ore reserve figures to prove it, it is our opinion that none of the ore in any of these exploration areas is likely to be mined within the next ten years. The contract now in force with American Zinc Company of Tennessee (Idm-E676) contains a clause providing 30 years for repayment. It is our understanding that this term was based on the Operator's statement that they have now at least 30 years' reserves at their present milling capacity.

We recommended 30 years for the first two New Jersey Zinc projects because they are in the same general area as the West New Market project of American Zinc and one almost adjoins it. We do not know what New Jersey Zinc's reserves at Jefferson City are, but they are obviously quite substantial. American Zinc's new application is in this same area and should be treated the same as the others.

The second pair of New Jersey Zinc applications (DMEA-4153 and 4177) are in an outlying district. Although that Company is now developing a mine and building a mill at Flat Gap, in Hancock County, Tennessee the distance of these new applications from Flat Gap and the absence of railroads makes it seem quite probable that no ore discovered at Independence

or Edison is likely to be developed until enough is discovered to justify a separate mill in that area.

In Virginia, New Jersey Zinc's Beaver Creek application (DMEA-4178) is in an entirely new area. It is only four miles from a railroad, but is 100 miles by rail from the Company's Austinville mill. The other two Virginia areas (DMEA-4173 and 4174) proposed by this Company are 6 and 10 miles respectively from the railroad, and 18 and 25 miles from Austinville by road and 65 and 80 miles by rail.

It is our opinion that all these Tennessee applications, and probably the Virginia ones (if approved) as well, should be subject to a longer period of repayment than 10 years. We have no way of knowing what a correct period should be, in order to be consistent with contracts in other regions. Sales of crushed and ground limestone as by-products of zinc ore milling should also be subject to royalty repayment.

Robert A. Laurence
Executive Officer, DMEA
Field Team, Region V

V. J. Lynch, Member
Bureau of Mines

RAL/mm
cc:
Opr. Com.-2
Griswold
Kiilsgaard
Lynch
Files

File Copy
Surname
Klugescheid.
Selfridge
Miswald
Peterson

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

500

Mr. Robert A. Lawrence
Executive Officer
DMEA Field Team, Region V
Room 13, Post Office Bldg.
Knoxville 2, Tennessee

FEB 27 1956

Re: Docket No. DMEA-4178 (Zinc)
The New Jersey Zinc Company
Beaver Creek Area
Smyth County, Virginia

Dear Mr. Lawrence:

The cited application for exploration assistance is being referred to your office for consideration, a field examination of the property if warranted, and recommendations.

If the project is favorably considered by the Field Team, the Applicant should submit bids by three diamond drill contractors. The costs which the Applicant has submitted to date for this project are higher than those given for the remaining two projects in the same general area.

In examining the option contracts, it appears that the one pertaining to the D. R. Kestner property is for three years and is apparently not renewable. It might be well to make sure that the expiration date of April 9, 1957, will not cause any complications. We assume that the remainder of the option contracts have been renewed. The Kestner property is the one upon which the initial drilling is to be done.

This project is to have precedence over DMEA-4173 and DMEA-4174, as requested by the Applicant.

Copies of memorandums dated February 17 and 21, 1956, by N. E. Nelson, Geological Survey and J. W. Pennington, Bureau of Mines, respectively, relating to the project are enclosed for your information.

Sincerely yours,

George C. Selfridge
Chairman, Operating Committee (J.L.S.)

Enclosures

WPKlugescheid/er 2/24/56
Copy to: Docket
Admr R File
Op. Committee
Base Metals
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Chron.

APPROVED:

/s/ Robert W. Geehan (J.L.S.)
Member, Bureau of Mines

Thor H. Kiilsgaard (J.L.S.)
Member, Geological Survey

RCL

File Copy
Surname
Klugescheid
Kiilsgaard
Geehan
Selfridge
Hiswolf
Fjelmann

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

FEB 27 1956

Mr. S. S. Goodwin, Vice President
The New Jersey Zinc Company
160 Front Street
New York 38, New York

Re: Docket No. DMEA-4178 (Zinc)
The New Jersey Zinc Company
Beaver Creek Area
Smyth County, Virginia

Dear Mr. Goodwin:

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 Building
Knoxville 2, Tennessee

If the Field Team requires additional information concerning your application, they will contact you at an early date.

Sincerely yours,

O. Mittendorf

Administrator

WPKlugescheid/er 2/24/56
Copy to: Docket
Admr R File
Op. Committee
Base Metals
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Region V (2)
Chron.

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

RECEIVED
FEB 21 1956

February 21, 1956

Memorandum

To: W. R. Griswold, Defense Minerals Exploration Administration

From: J. W. Pennington, Branch of Base Metals

Subject: Review of application, Docket No. DMEA 4178 (zinc) The New Jersey Zinc Company, Beaver Creek Area, Smyth County, Virginia, $55,689.00

It is proposed to explore the Beaver Creek area by 15,000 feet of drilling at an estimated cost of $55,689.00. Holes will range from 200 to 500 feet in depth.

Geochemical prospecting of the area helped detect two anomalies and the subsequent discovery of zinc mineralization.

According to the data submitted with the application, further exploration of the area appears warranted. Also, the proposed exploration program seems to be sound.

To check the information supplied with the application and evaluate the drilling program, referral of the application to the Field Team is recommended.

J. W. Pennington

Copy to: Division of Minerals
Branch of Base Metals (2)
Thor Kiilsgaard, U.S.G.S.
R. W. Geehan
F i l e s

C
O
P
Y

February 20, 1956

Mr. John B. Canada
The New Jersey Zinc Company
160 Front Street
New York 38, New York

Re: Docket Numbers 4177, 4178, 4174 and 4173

Dear Mr. Canada:

This will acknowledge your letter dated February 16, 1956, in which you request that we identify the DMEA docket numbers of the four applications recently filed with this agency.

There are listed below the DMEA docket numbers for the four applications:

4177 - Eidson Area - Sector I, Copper Ridge Belt, Tennessee for $125,000.
4178 - Beaver Creek Area, Virginia for $55,689.
4174 - Porter Ore Bank Area, Virginia for $52,039.
4173 - James-Woodruff Area, Virginia for $51,889.

Sincerely yours,

Robert E. Adams, Chief
Operations Control and
Statistics Division

REAdams:mm - 2/20/56
Copy to: Mr. Griswold
Mail & Files
Adm. R. File
Chron.

C
O
P
Y

THE NEW JERSEY ZINC COMPANY
160 Front Street
New York 38, N.Y.

February 16, 1956

Mr. Robert E. Adams, Chief
Operations Control and Statistics Division
United States Department of the Interior
Defense Minerals Exploration Administration
Washington 25, D. C.

D.M.E.A. APPLICATIONS
THE NEW JERSEY ZINC COMPANY

Dear Sir:

We received two notifications from your department dated February 15 for D.M.E.A. projects Nos. 7177 and 4178. These refer to two of our applications dated February 13.

On February 13, we sent you four DMEA applications as follows:

1. Eidson Area- Sector I, Copper Ridge Belt, Tennessee for $125,000.
2. Beaver Creek Area, Virginia for $55,680.
3. Porter Ore Bank Area, Virginia for $52,039.
4. James-Woodruff Area, Virginia for $51,889.

Undoubtedly your D.M.E.A. Docket Nos. 4177 and 4178 refer to two of the four foregoing applications, but inasmuch as there is no further identification than the docket numbers, we are unable to determine to which of our applications your D.M.E.A. docket numbers refer.

Will you please further identify as to which of our applications these two docket numbers refer.

Very truly yours,

signed/ John B. Canada

JBC:ahg

John B. Canada
For Manager of Exploration

IN REPLY REFER TO:

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

RECEIVED
FEB 17 1956

February 17, 1956

Re: DMEA 4178
New Jersey Zinc Co.
Beaver Creek area
Smythe Co., Virginia
$55,689.00 - Zinc

Memorandum

To: W. R. Griswold, Defense Minerals Exploration Administration

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

Subject: Review of application.

In this application, as in Nos. 4173 and 4174, the applicant requests the Government to participate in a drilling project designed to explore down dip and down pitch beds believed to be zinc-bearing.

Systematic geochemical prospecting has shown certain large soil covered areas to contain anomalous amounts of 'soil' zinc and as in this case occasional outcrops of 'oxide' zinc material have been spotted. The inferred ore bodies are expected to be of the "pencil" type and to show pitching rather than normal down dip tendencies. The alignment of the initial holes considers this inferred ore making habit.

The proposed work consists of:--

Diamond drilling, 15,000 feet at $3.09	$46,350.00
Supervision and drafting	6,800.00
Mileage	1,200.00
Miscellaneous, operating materials, etc.	1,339.00
Total	$55,689.00

In this case zinc material outcrops and support is given the inferences based on zinc-bearing soil. This area has been chosen by the applicant as a test plot for obtaining criteria by which the soundness of the other projects in Smythe and Wythe Counties may be judged, and this project thus becomes Stage I of a 3-part program. The zinc count (ppm) in the soil in this instance is less than that obtained on the other projects, but a zinc-bearing bed outcrops within the property, and to that extent a target is furnished.

Referral of the application to the Field Team is recommended.

N. E. Nelson

N. E. Nelson

February 15, 1956
Subject: DMEA-4178
Re: Exploration Assistance

New Jersey Zinc Company
160 Front Street
New York 38, New York

Gentlemen:

The receipt of your application dated February 13, 1956, for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA-4178 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

THE NEW JERSEY ZINC COMPANY
(ESTABLISHED 1848)

HORSE HEAD PRODUCTS ®

OFFICE OF THE
VICE PRESIDENT

160 FRONT STREET

NEW YORK 38, N.Y.

February 10, 1956

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

RECEIVED
FEB 14 1956

BEAVER CREEK AREA
SMYTH COUNTY, VIRGINIA
D.M.E.A. EXPLORATION PROJECT
THE NEW JERSEY ZINC COMPANY

Gentlemen:

Enclosed herewith you will find a D.M.E.A. application in quadriplicate, pursuant to D.M.E.A. Order I, under the Defense Production Act of 1950, as amended, for an exploration project in Virginia. This is one of three projects for which we are applying. It is our desire to drill these three projects in the following sequence: (1) Beaver Creek Area, Smyth County, Virginia, (2) Porter Ore Bank, Smyth County, Virginia and (3) James-Woodruff Area, Wythe and Smyth Counties, Virginia.

Because of the desire to drill them in sequence we have refrained from filling in (5c) in the application. We believe we can start the first project within two weeks after the application is granted. It is believed that it will take six months to drill each property if a negative answer is obtained, but will take a year to drill each if ore is discovered.

Our attention has been attracted to these areas by the results of a soil sampling campaign.

If any further information is desired we would be glad to furnish it.

Very truly yours,

S. S. Goodwin
Vice President
and
Manager of Mines

SSG:ahg

BERTHA MINERAL DIVISION

THE NEW JERSEY ZINC COMPANY

AUSTINVILLE, VA.

February 12, 1957

EXTRA COPY
DMEA
RECEIVED FEB 21 1957

DATE	INITIALS	CODE
2/25	WPK	500

Mr. R. A. Laurence
Defense Minerals Exploration Administration
Room 13, Post Office Building
Knoxville 2, Tennessee

Attention: Mr. Helmuth Wedow, Jr.

Re: DMEA 4178, Idm-E960 (Zinc) Beaver Creek Area
Smyth County, Virginia

Dear Mr. Laurence.

Since our field and office conference with Mr. Wedow, our conversation with you and his letter of February 6, we have discussed the problem of additional drilling on the Kestner property at length. The conclusion of our staff here is that some additional drilling is warranted.

To this end we have gotten Mr. Kestner to agree to an extension of the option. Since the option is to be extended we will not have to rush and will let convenience in handling the drills govern the starting date.

We will drill an additional hole 200 feet south of BC-6 if it is possible to get the drill to the site and then tentatively plan to drill two additional holes on a fence 600 feet further east. We can discuss the exact location of these holes at the time of your next visit.

If, after drilling these three holes, the project does not appear more promising than at present we will recommend abandoning the project.

Very truly yours,

W. L. Albers,
Superintendent

WHoratioBrown/mjf

RECEIVED
FEB 13 1957

Progress on this project is estimated at 1250 feet per month, which is considerably less than the anticipated rate for the Tennessee projects. Because less is known about the geology and ore controls in this area, it seems advisable to use fewer drill rigs on this job.

assuming 12 months as drilling period?

We recommend that further negotiations with the Applicant concerning approved unit costs, length of repayment period, etc., be conducted directly between the Washington office and the Company's New York office.

It is our understanding that all drilling on the D. R. Kestner property (and probably most of the project area) will be completed before April 9, 1957.

Robert A. Laurence

Robert A. Laurence
Executive Officer, DMEA
Region V

V. J. Lynch

V. J. Lynch, Member
Bureau of Mines

THE NEW JERSEY ZINC COMPANY
(ESTABLISHED 1848)
CABLE ADDRESS
"JERSEZINC"
160 FRONT STREET
NEW YORK 38, N.Y.

October 24, 1957

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

ATTENTION: MR. KLUGESCHEID

Re: (1) Docket No. DMEA-4178 - Zinc; Contract No. IDM-2960, Smyth County, Virginia
(2) Docket No. DMEA-4390 - Uranium; Contract No. IDM-21087; McKinley County, New Mexico

Dear Mr. Klugescheid:

In accordance with our telephone conversation of last week, I am returning all copies of the proposed termination agreements for the above project contracts to Mr. Robert A. Laurenzo at Knoxville, Tennessee with respect to the first contract and to Mr. J. W. Townsend at Denver, Colorado with respect to the second for proposed revision in accordance herewith.

As I pointed out to you, we prefer to use similar language to that set forth in Paragraph 4 of our termination agreement of April 19, 1957 for exploration project Contract IDM-2935 (Docket No. DMEA-4119) Talbot Area, Tennessee in lieu of proposed Paragraph 4 of the termination agreements for the above contracts. The paragraph we have in mind reads as follows:

"Should the Operator or any affiliate or subsidiary hold or reacquire an interest in any of the land described in Annex I of the Contract or any production of minerals therefrom, the Operator shall pay royalty to the Government as set forth in Article 8 of the Contract, as amended by provisions (d) and (e) of Article 13, on any production made from the date such interest

is required, to the extent of the interest held, the same as though certificates of discovery or development had been made by the Government.

It seems to us that the termination agreements as finally written merely permit us to terminate work on the [illegible] in question. In every other respect, the provisions of the contracts continue in full force including, [illegible] you may certify to a discovery or development, [illegible] of the uranium contract, we have already terminated [illegible] in the approval of your field team, our interest in [illegible] subject thereto and, if read literally, under the [illegible] of paragraph 2 of the Initial Agreement Contract No. [illegible] which provision is [illegible] in the uranium contract), we could have had selected [illegible] all the lands subject thereto in which such interest would have been, to all intents and purposes, [illegible]. As a practical matter, there are often business [illegible] we may not wish to dispose of our interests in [illegible] within the sixty-day period of termination of work [illegible] drilling activities thereon are to be completed. [illegible] regard, please refer to paragraph (g) page 6 of my letter of July 16, 1957 to Mr. Griswold. It is our understanding that our exploration people and your respective field [illegible] have agreed that no discovery from which production [illegible] has resulted from the exploration work on either contract and, therefore, the contracts should be completely [illegible]. This is acknowledged in the termination agreements [illegible] referred to in the case of the Kilbourne project, [illegible] the working explored in paragraph 4 thereof [illegible].

We trust that you will agree to this revision [illegible] in advance, at your early convenience, [illegible] in accordance with the above.

We are quite anxious to have a conference with your [illegible] on the general matters discussed in my letter of July [illegible] referred to, and would appreciate your speaking to [illegible] concerning the same so that in my consideration [illegible] a conference shortly. I have to be in Washington [illegible] next week so that that would be a convenient time. [illegible], you can telephone me Monday or Tuesday.

Respectfully submitted,

Signed/ Lindley G. Miller

[illegible]

THE NEW JERSEY ZINC COMPANY
(ESTABLISHED 1848)

CABLE ADDRESS
"JERSEZINC"

160 FRONT STREET

NEW YORK 38, N.Y.

10/24

October 24, 1957

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

ATTENTION: MR. KLUGESCHEID

Re: (1) Docket No. DMEA-4178 - Zinc; Contract No. IDM-E960, Smyth County, Virginia
(2) Docket No. DMEA-4590 - Uranium; Contract No. IDM-E1087; McKinley County, New Mexico

Dear Mr. Klugescheid:

In accordance with our telephone conversation of last week, I am returning all copies of the proposed termination agreements for the above project contracts to Mr. Robert A. Lawrence at Knoxville, Tennessee with respect to the first contract and to Mr. J. W. Townsend at Denver, Colorado with respect to the second for proposed revision in accordance herewith.

As I pointed out to you, we prefer to use similar language to that set forth in Paragraph 4 of our termination agreement of April 19, 1957 for exploration project Contract IDM-E936 (Docket No. DMEA-4119) Talbot Area, Tennessee in lieu of proposed Paragraph 4 of the termination agreements for the above contracts. The paragraph we have in mind reads as follows:

"Should the Operator or any affiliate or subsidiary hold or reacquire an interest in any of the land described in Annex I of the Contract or any production of minerals therefrom, the Operator shall pay royalty to the Government as set forth in Article 8 of the Contract, as amended by provisions (d) and (e) of Article 13, on any production made from the date such interest

is acquired, to the extent of the interest held, the same as though certification of discovery or development had been made by the Government."

It seems to us that the termination agreements as presently written merely permit us to terminate work on the projects in question. In every other respect, the provisions of the contracts continue in full force including that whereby you may certify to a discovery or development. In the case of the uranium contract, we have already terminated, with the approval of your field team, our interest in the properties subject thereto and, if read literally, under the provisions of Paragraph 2 of the Special Agreement Concerning Land in Contract No. IDM-E960 (which provision is not contained in the uranium contract), we could have had deleted from the Contract all the lands subject thereto in which case the Contract would have been, to all intents and purposes, terminated. As a practical matter, there are often business reasons why we may not wish to dispose of our interests in properties within the sixty-day period of termination of work even though drilling activities thereon are to be concluded. In this regard, please refer to paragraph (f) page 6 of my letter of July 10, 1957 to Mr. Griswold. It is our understanding that our exploration people and your respective field teams have agreed that no discovery from which production may be made has resulted from the exploration work on either company; and, therefore, the contracts should be completely terminated. This is acknowledged in the termination agreement above referred to in the case of the Tennessee project, and we feel that the wording employed in Paragraph 4 thereof is eminently fair.

We trust that you will agree to this revision and shall look forward to receiving, at your early convenience, termination agreements in accordance with the above.

We are quite anxious to have a conference with your people on the several matters discussed in my letter of July 10 above referred to, and would appreciate your speaking to Mr. Griswold concerning the same so that he may consider setting up such a conference shortly. I have to be in Washington the day next week so that that would be a convenient time. Perhaps, you can telephone me Monday or Tuesday.

Respectfully submitted,

Signed/ Lindley G. Milner

Legal Department

Attachment/mm

THE NEW JERSEY ZINC COMPANY
(ESTABLISHED 1848)
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160 FRONT STREET
NEW YORK 38, N.Y.

October 24, 1957

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

ATTENTION: MR. KLUGESCHEID

Re: (1) Docket No. DMEA-4178 - Zinc; Contract No. IDM-E960, Smyth County, Virginia
(2) Docket No. DMEA-4590 - Uranium; Contract No. IDM-E1087; McKinley County, New Mexico

Dear Mr. Klugescheid:

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It seems to us that the termination agreements as presently written merely permit us to terminate work on the projects in question. In every other respect, the provisions of the contracts continue in full force including that whereby you may certify to a discovery or development. In the case of the uranium contract, we have already terminated, with the approval of your field team, our interest in the properties subject thereto and, if read literally, under the provisions of Paragraph 2 of the Special Agreement Concerning Land in Contract No. IDM-E-50 (which provision is not contained in the uranium contract), we could have had deleted from the Contract all the lands subject thereto in which case the Contract would have been, to all intents and purposes, emasculated. As a practical matter, there are often business reasons why we may not wish to dispose of our interests in properties within the sixty-day period of termination of work even though drilling activities thereon are to be concluded. In this regard, please refer to paragraph (f) page 6 of my letter of July 10, 1957 to Mr. Griswold. It is our understanding that our exploration people and your respective field teams have agreed that no discovery from which production may be made has resulted from the exploration work on either contract; and, therefore, the contracts should be completely terminated. This is acknowledged in the termination agreement above referred to in the case of the Tennessee project, and we feel that the wording employed in Paragraph 4 thereof is eminently fair.

We trust that you will agree to this revision and shall look forward to receiving, at your early convenience, termination agreements in accordance with the above.

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Respectfully submitted,

Signed by Lindley G. Miller

LGMiller/rm

Legal Department

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NEW YORK 38, N.Y.

October 24, 1957

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

ATTENTION: MR. KLUGESCHEID

Re: (1) Docket No. DMEA-4178 - Zinc; Contract No. IDM-E960, Smyth County, Virginia
(2) Docket No. DMEA-4590 - Uranium; Contract No. IDM-E1087; McKinley County, New Mexico

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LGMiller/wm

Legal Department

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Defense Minerals Exploration Administration
Washington 25, D. C.

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Respectfully submitted,

Signed/ Lindley G. Miller

LGMiller/mm

Legal Department

THE NEW JERSEY ZINC COMPANY
(ESTABLISHED 1848)

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160 FRONT STREET

NEW YORK 38, N.Y.

October 24, 1957

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

ATTENTION: MR. KLUGESCHEID

Re: (1) Docket No. DMEA-4178 - Zinc; Contract No. IDM-E960, Smyth County, Virginia
(2) Docket No. DMEA-4590 - Uranium; Contract No. IDM-E1087; McKinley County, New Mexico

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THE NEW JERSEY ZINC COMPANY
(ESTABLISHED 1848)

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100 PARK STREET
NEW YORK 38, N.Y.

October 24, 1957

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

ATTENTION: MR. KLUGESCHEID

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"Should the Operator or any affiliate or subsidiary hold or reacquire an interest in any of the land described in Annex I of the Contract or any production of minerals therefrom, the Operator shall pay royalty to the Government as set forth in Article 3 of the Contract, as amended by provisions (d) and (e) of Article 13, on any production made from the date such interest

is acquired, to the extent of the interest held, the same as though certification of discovery or development had been made by the Government."

It seems to us that the termination agreements as presently written merely permit us to terminate work on the projects in question. In every other respect, the provisions of the contracts continue in full force including that whereby you may certify to a discovery or development. In the case of the uranium contract, we have already terminated, with the approval of your field team, our interest in the properties subject thereto and, if read literally, under the provisions of Paragraph 2 of the Special Agreement Concerning Land in Contract No. IDM-E960 (which provision is not contained in the uranium contract), we could have had deleted from the Contract all the lands subject thereto in which case the Contract would have been, to all intents and purposes, emasculated. As a practical matter, there are often business reasons why we may not wish to dispose of our interests in properties within the sixty-day period of termination of work even though drilling activities thereon are to be concluded. In this regard, please refer to paragraph (f) page 6 of my letter of July 10, 1957 to Mr. Griswold. It is our understanding that our exploration people and your respective field teams have agreed that no discovery from which production may be made has resulted from the exploration work on either contract; and, therefore, the contracts should be completely terminated. This is acknowledged in the termination agreement above referred to in the case of the Tennessee project, and we feel that the wording employed in Paragraph 4 thereof is eminently fair.

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Respectfully submitted,

Signed/ Lindley G. Miller

LGMiller/rm

Legal Department

OFFICIAL FILE COPY
DMEA
RECEIVED 10/30/1957
DATE | INITIALS | CODE

THE NEW JERSEY ZINC COMPANY

(ESTABLISHED 1848)

CABLE ADDRESS
"JERSEZINC"

100 FRONT STREET

NEW YORK 38, N.Y.

RECEIVED
OCT 28 1957
U. S. Geological Survey
Geologic Division
Knoxville, Tenn.

October 24, 1957

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

ATTENTION: MR. KLUGESCHEID

Re: (1) Docket No. DMEA-4178 - Zinc; Contract No. IDM-E960, Smyth County, Virginia
(2) Docket No. DMEA-4590 - Uranium; Contract No. IDM-E1087; McKinley County, New Mexico

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We trust that you will agree to this revision and shall look forward to receiving, at your early convenience, termination agreements in accordance with the above.

We are quite anxious to have a conference with your people on the several matters discussed in my letter of July 10, above referred to, and would appreciate your speaking to Mr. Griswold concerning the same so that he may consider setting up such a conference shortly. I have to be in Washington one day next week so that that would be a convenient time. Perhaps, you can telephone me Monday or Tuesday.

Respectfully submitted,

LINDLEY G. MILLER

LGMiller/rm

Legal Department

X 1085 150M

COPY

cc: Mr. R. A. Laurence, Executive Officer
DMEA Field Team, Region V
Room 13, P. O. Building
Knoxville 2, Tennessee

Mr. J. W. Townsend, Alternate Acting Executive Officer
DMEA Field Team, Region III
224 New Customhouse
Denver 2, Colorado

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Signed/ Lindley G. Miller

LGMillier/ms

Legal Department

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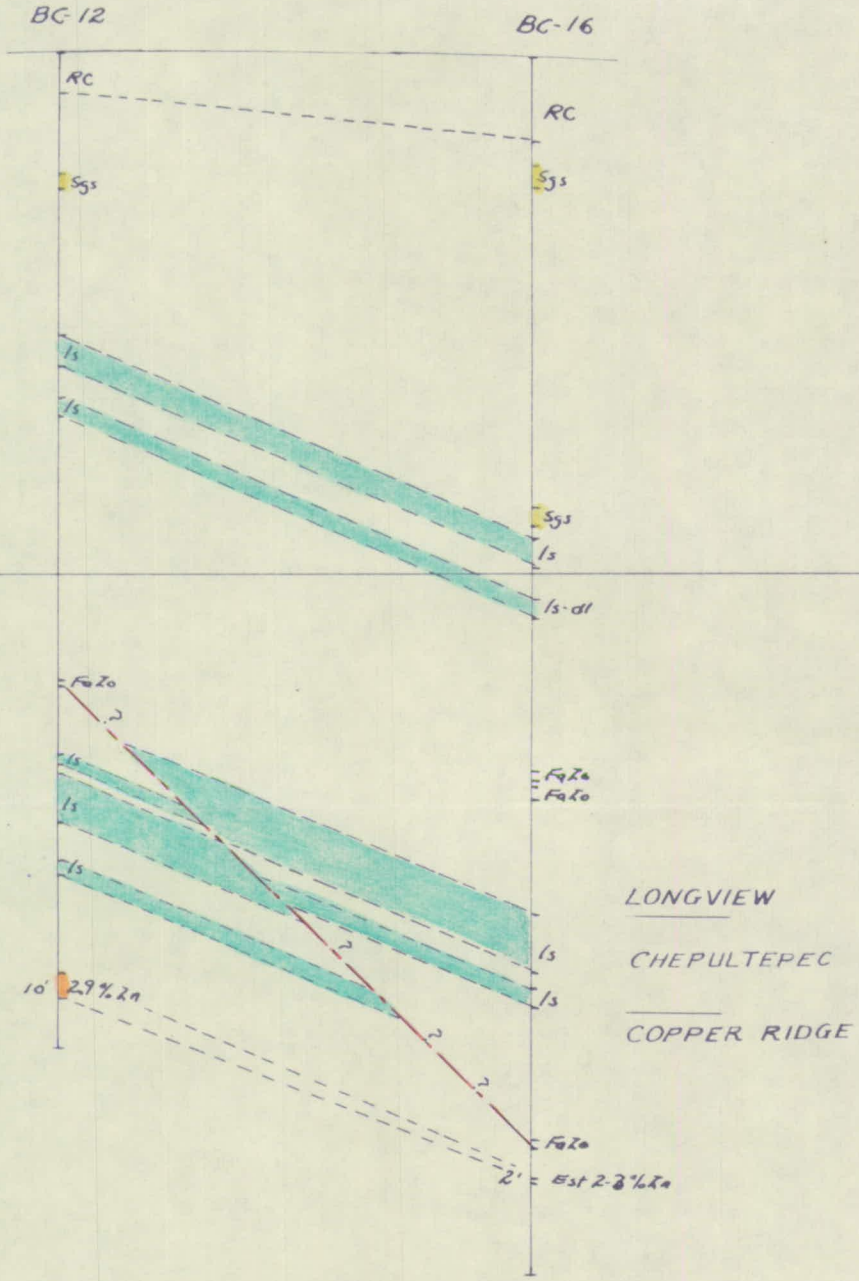
Respectfully submitted,

Signed/ Lindley G. Miller

LGMiller/mm

Legal Department



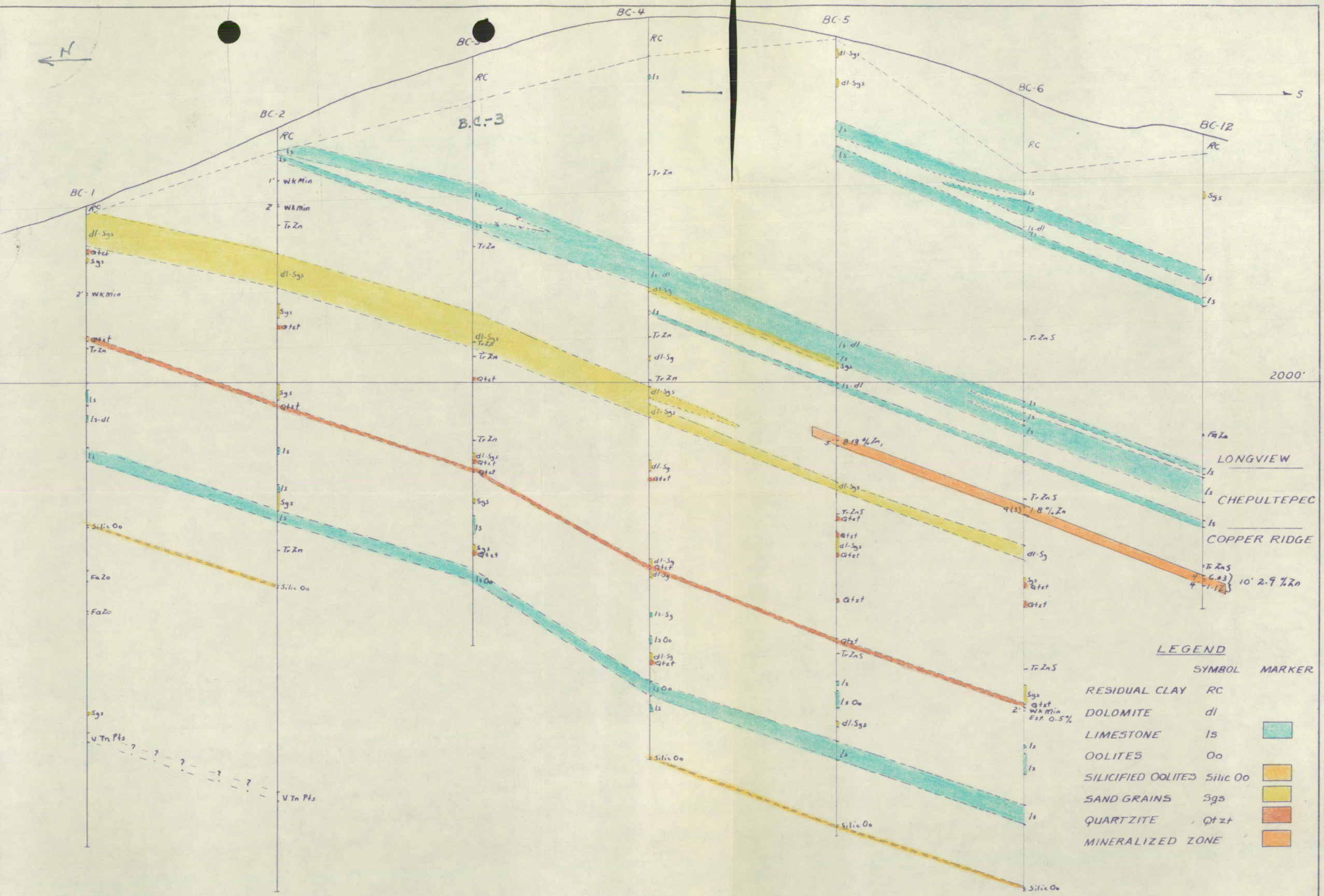
N.J. Zinc Co.

LEGEND

	SYMBOL	MARKER
RESIDUAL CLAY	Rc	
DOLOMITE	dl	
LIMESTONE	ls	
OOLITES	Oo	
SILICIFIED OOLITES	Silic Oo	
SAND GRAINS	Sgs	
QUARTZITE	Qtzt	

DRAWN R.C.G.	DATE 8-6-57	GEOLOGIC SECTION III BEAVER CREEK AREA I	DISTRICT SMYTH Co., VA.
TRACED	SCALE 1"=100'		FILE NO. 7GB-4313

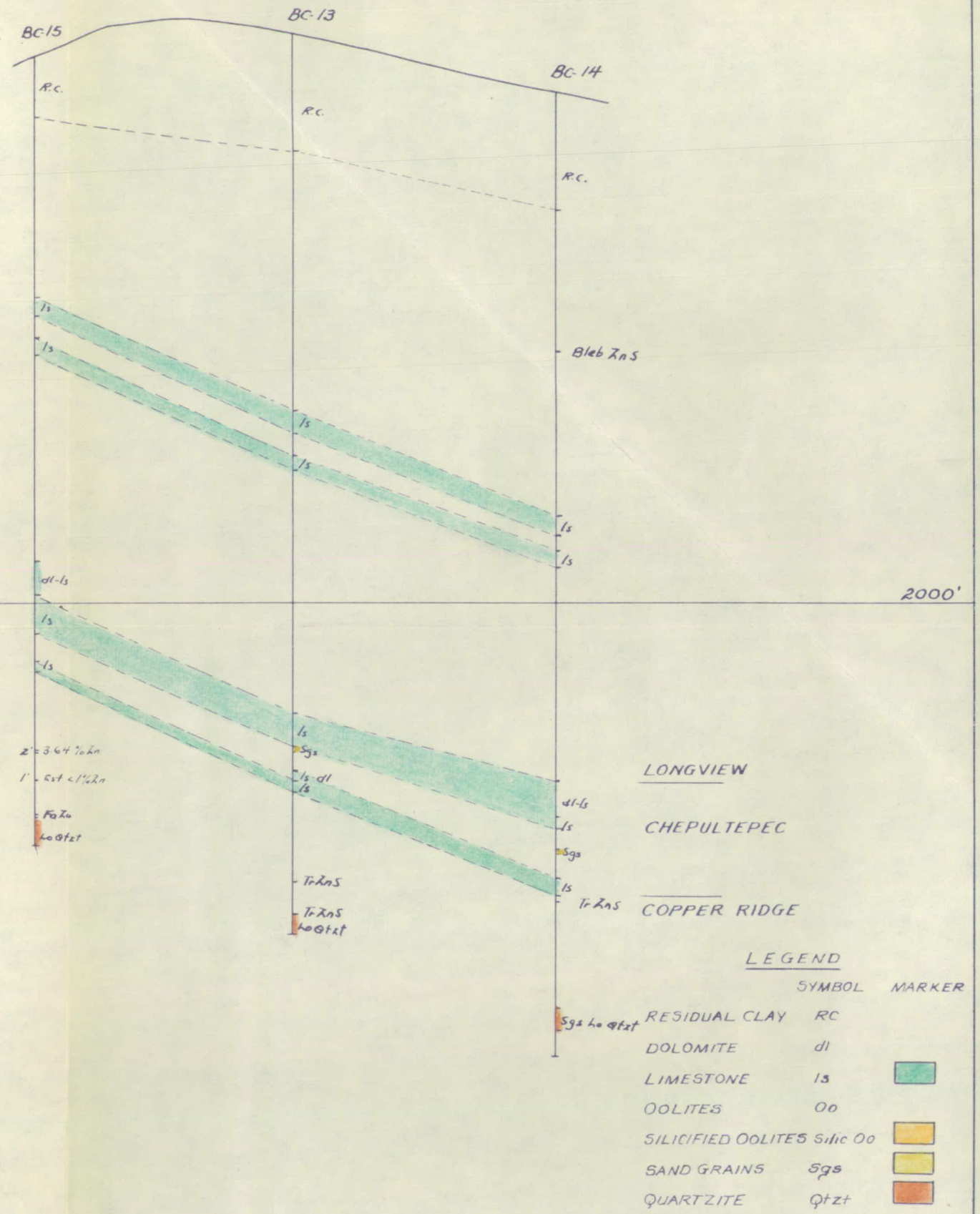
X 5407 B 1M 3-53



Note: Rock is dolomite unless otherwise indicated.

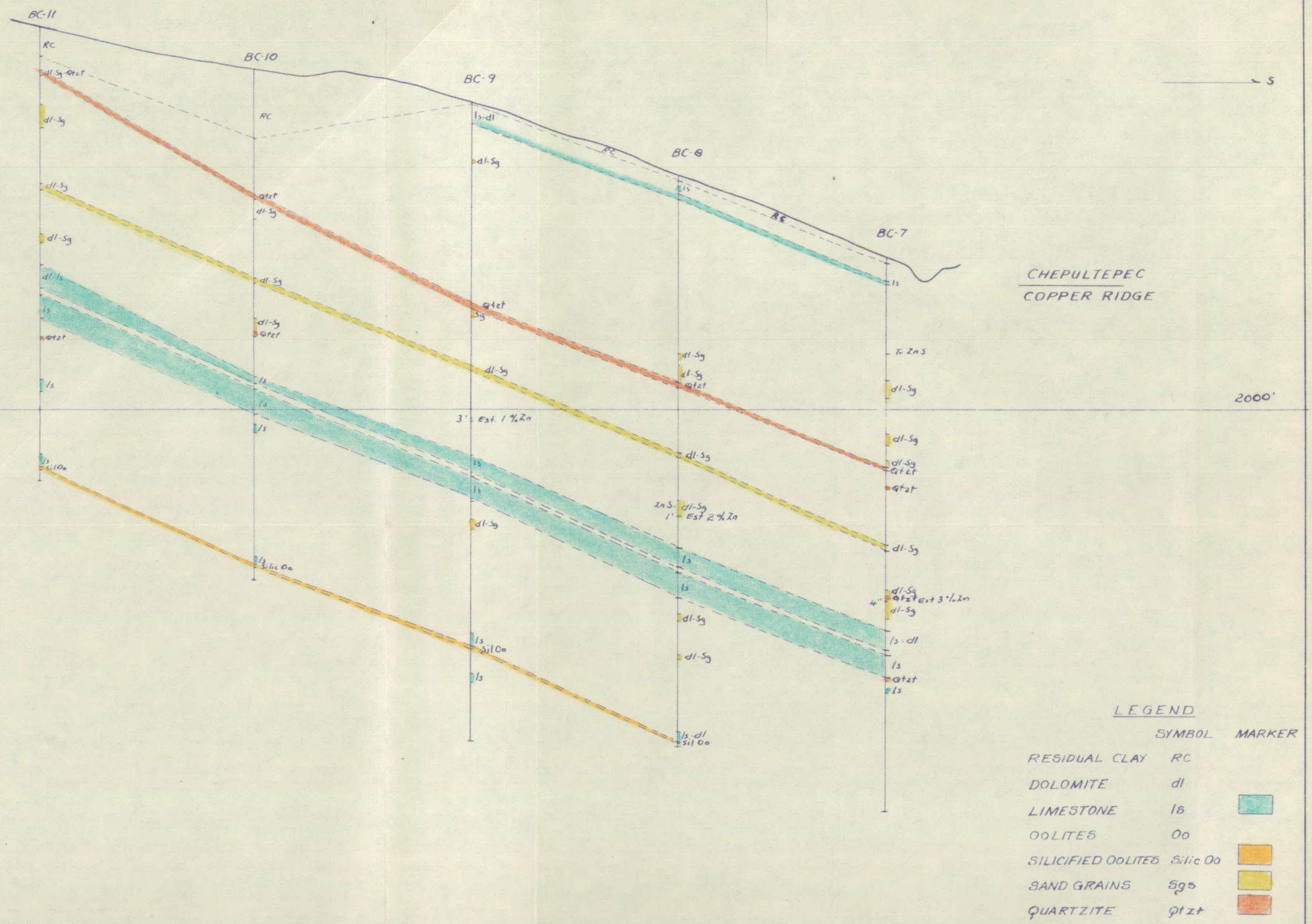
THE NEW JERSEY ZINC COMPANY	DRAWN R.C.G. DATE 10-10-56 TRACED SCALE 1" = 100'	GEOLOGIC SECTION NO. 1 BEAVER CREEK AREA I	DISTRICT SMYTH COUNTY, VA. FILE NO. 7GB-4223

X 5407 B 1M 3-53



THE NEW JERSEY ZINC COMPANY	DRAWN R.C.G. DATE 7-8-57 TRACED SCALE 1"=100'	GEOLOGIC SECTION II BEAVER CREEK AREA I	DISTRICT SMYTH CO., VA. FILE NO. 7GB-4312

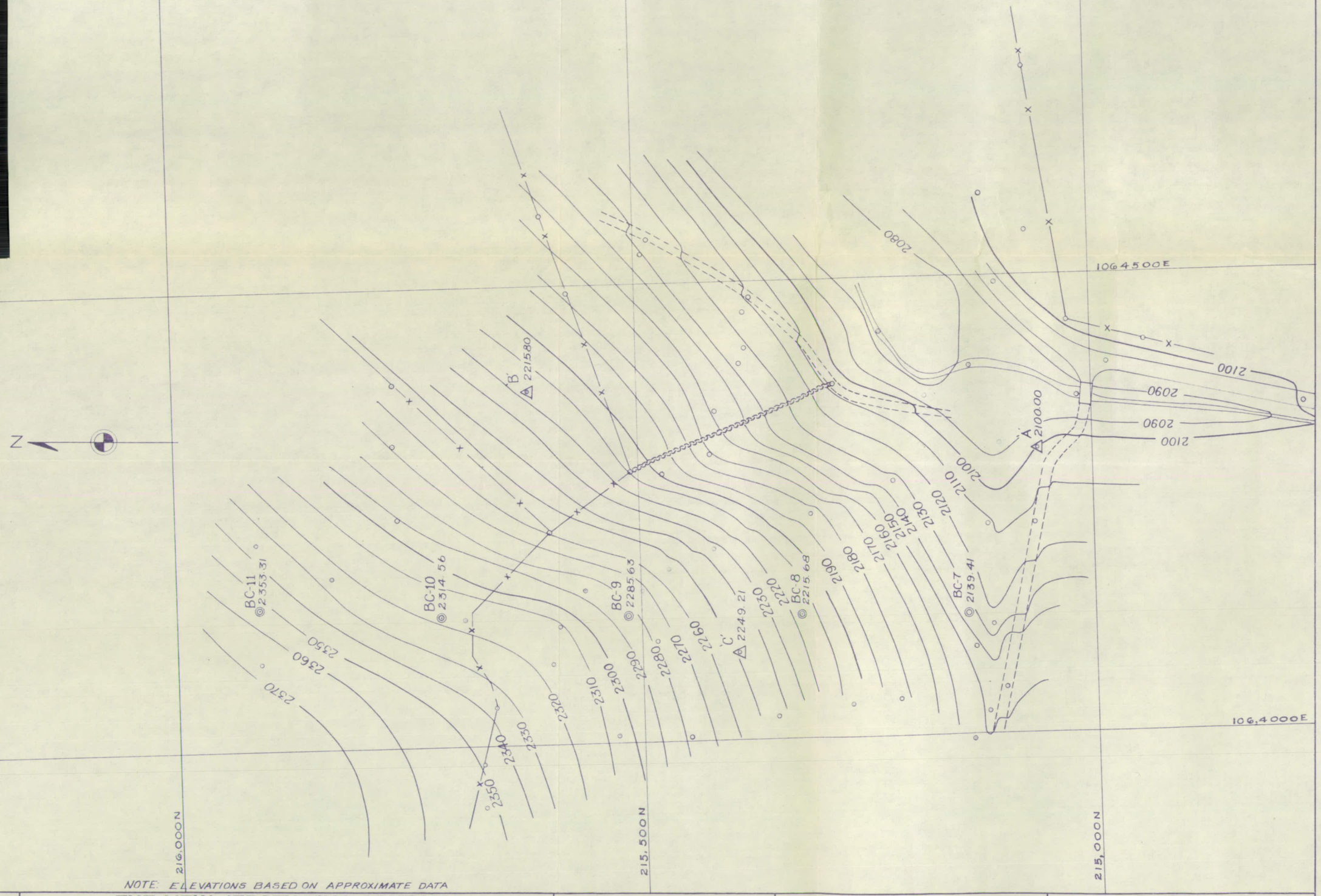
X 5407 B 1M 3-53



Note: Rock is dolomite unless otherwise indicated

THE NEW JERSEY ZINC COMPANY	DRAWN R.C.G. DATE 1-3-57 TRACED SCALE 1"=100'	GEOLOGIC SECTION NO. I BEAVER CREEK AREA II	DISTRICT SMYTH COUNTY, VA. FILE NO. 7GB-4286

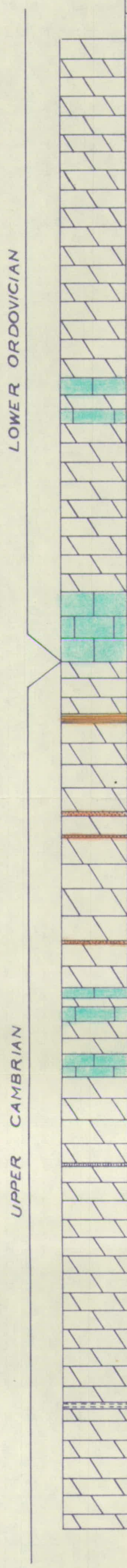
X 5407 B 1M 3-53



NOTE: ELEVATIONS BASED ON APPROXIMATE DATA

POSTED TO DATE	THE NEW JERSEY ZINC COMPANY AUSTINVILLE, VIRGINIA.	DRAWN DATE 12/13/56 TRACED E.E.F. SCALE 1"=100'	BEAVER CREEK AREA II McALLISTER PROPERTY	DISTRICT SMYTH COUNTY, VA. FILE NO. 7GB-4285

X 5407 B 1M 3-53



COLLAR	MARKER	COLOR	THICKNESS	TEXTURE
BC-14				
BC-13				
BC-16				Longview Formation
BC-15		LM-DGy	300'	Fine Grained dolomite Local Diagnetic Breccia Local chert lenses Few shale partings Rare sand grains
BC-12				
BC-6 BC-5				
BC-4				
		L-MGy	40'	Fine grained limestone Local abundant shale partings, local dolomite
BC-3				
		LMGy	150'	Fine grained dolomite Local diagenetic breccia Local shale partings, rare chert.
BC-2,7,8,9		MGy	60'	Chepultepec Formation Fine grained limestone Abundant wavy shale partings, local dolomite
BC-10		MGy	46'	Copper Ridge Formation
BC-11		LMGy	10'	Mineralized zone
BC-1		MGy	77'	Fine grained dolomite Local shale partings, rare sand grains
		LMGy	118'	Fine grained dolomite, abundant sand grains local thin quartzite shale partings Arenaceous zone.
		MGy	40'	Fine grained dolomite shale partings
		MGy	80'	Fine grained Oolitic limestone, local dolomite Limy zone
		MGy	77'	Fine grained dolomite local diagenetic breccia, shale partings
		DGy	2'	Silicified Do in Chert
		MGy	215'	Fine grained dolomite local abundant shale partings, locally contains limestone
		MGy	5'	Abundant Thin Straight Pts
		MGy	110'	Fine grained generally abundant shale partings

LEGEND

- DOLOMITE
- LIMESTONE
- QUARTZITE
- OOLITES
- SHALE

POSTED TO DATE

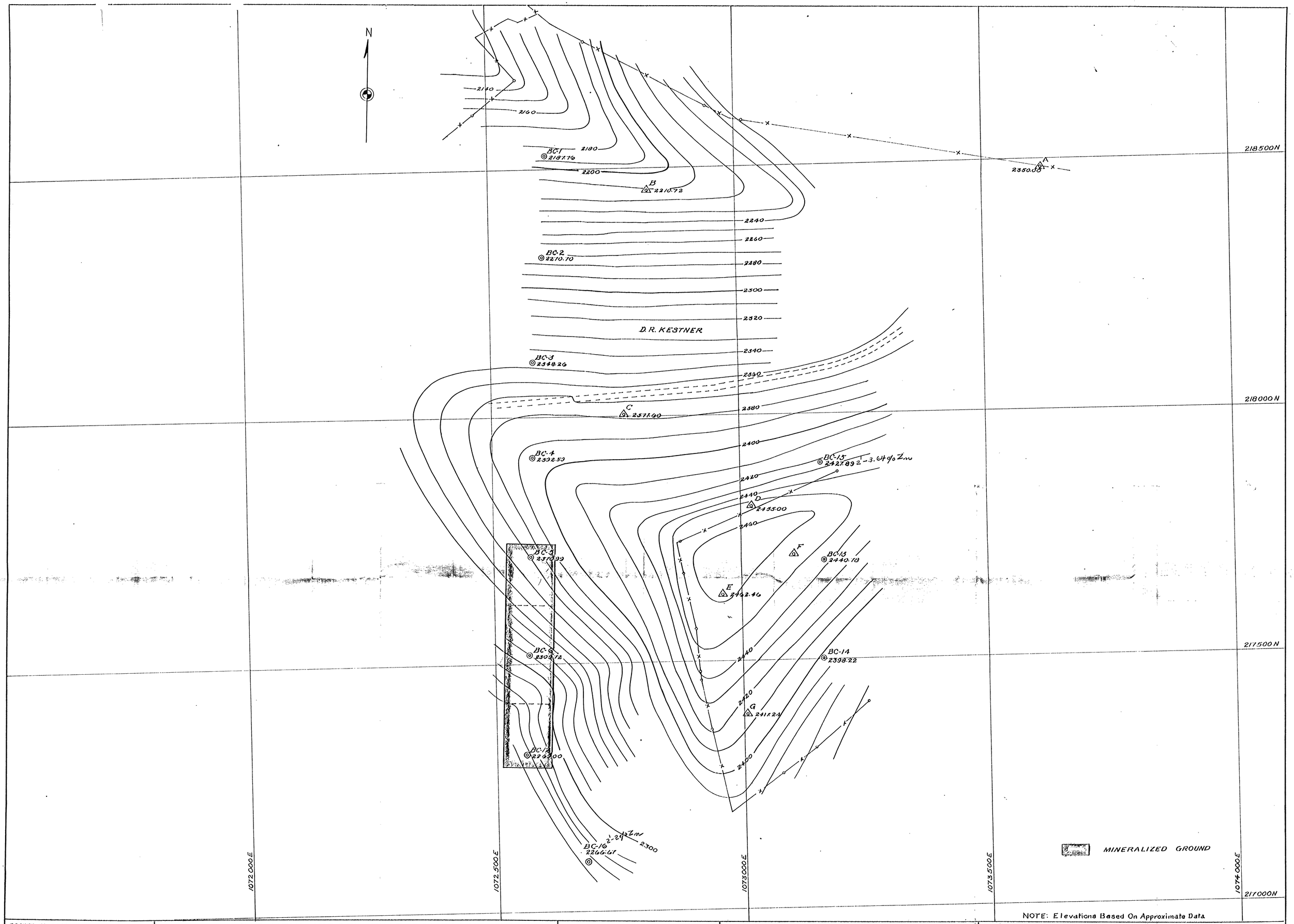
THE NEW JERSEY ZINC COMPANY
AUSTINVILLE, VA.

DRAWN R.G.G. DATE 10-10-57
TRACED E.E.F. SCALE 1"=100'

STRATIGRAPHIC INTERVAL ENCOUNTERED
BEAVER CREEK DRILLING PROJECT

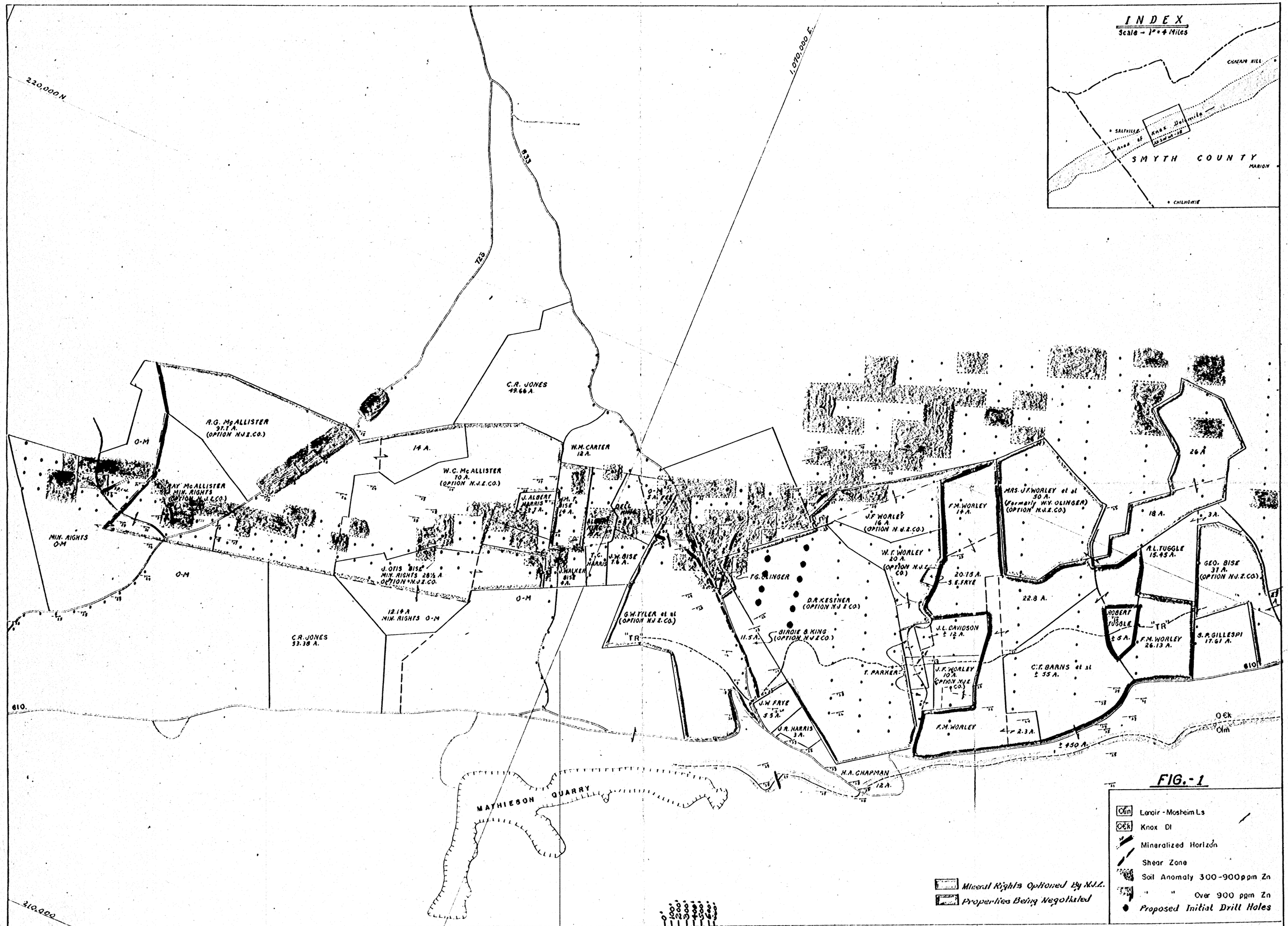
DISTRICT SMYTH CO., VA.
FILE NO. 7GB-4316

X 5407 B 1M 3-53



NOTE: Elevations Based On Approximate Data

POSTED TO DATE	THE NEW JERSEY ZINC COMPANY AUSTINVILLE, VIRGINIA	DRAWN E.E.F. DATE 5/9/51 TRACED E.E.F. SCALE 1"=100'	BEAVER CREEK AREA I KESTNER PROPERTY	DISTRICT SMYTH COUNTY, VA. FILE NO. 7GB-4222


INDEX
Scale - 1" = 4 Miles
CHAFFIN HILL
SALTVILLE
Area of Knox Dolomite
SMYTH COUNTY
MARION
CHILHOWIE
220,000 N.
1,010,000 E.
633
725
C.R. JONES 49.66 A.
R.G. McALLISTER 91.1 A. (OPTION N.J.Z.CO.)
O-M
14 A.
W.M. CARTER 12 A.
W.C. McALLISTER 70 A. (OPTION N.J.Z.CO.)
RAY McALLISTER MIN. RIGHTS (OPTION N.J.Z.CO.)
MIN. RIGHTS O-M
J. ALBERT HARRIS 7 A.
W.M. T. BISE 14 A.
O-M 5 A.
J.F. WORLEY 16 A. (OPTION N.J.Z.CO.)
F.M. WORLEY 14 A.
MRS. J.F. WORLEY et al 50 A. (Formerly W.V. OLINGER) (OPTION N.J.Z.CO.)
26 A.
18 A.
3 A.
W.F. WORLEY 20 A. (OPTION N.J.Z.CO.)
20.75 A. S.E. FRYE
R.L. TUGGLE 15.45 A.
GEO. BISE 37 A. (OPTION N.J.Z.CO.)
J. OTIS BISE MIN. RIGHTS 28½ A. OPTION N.J.Z.CO.
J. WALKER BISE 4 A.
T.G. HARRIS
J.W. BISE 7.6 A.
T.G. OLINGER
D.R. KESTNER (OPTION N.J.Z.CO.)
22.8 A.
12.14 A. MIN. RIGHTS O-M
G.W. TYLER et al (OPTION N.J.Z.CO.)
"TR"
11.5 A.
BIRDIE & KING (OPTION N.J.Z.CO.)
J.L. DAVIDSON ± 1½ A.
ROBERT TUGGLE ± 5 A.
F.M. WORLEY 26.13 A.
S.P. GILLESPI 17.61 A.
C.R. JONES 53.38 A.
T. PARKER
J.F. WORLEY 10 A. (OPTION N.J.Z.CO.)
C.F. BARNS et al ± 55 A.
610
J.W. FRYE ± 5 A.
J.R. HARRIS 3 A.
F.M. WORLEY
2.3 A.
± 450 A.
O€k
Olm
H.A. CHAPMAN 12 A.
MATHIESON QUARRY
310,000
FIG.-1
Olm Lenoir-Mosheim Ls
O€k Knox Dl
Mineralized Horizon
Shear Zone
Soil Anomaly 300-900 ppm Zn
" " Over 900 ppm Zn
Proposed Initial Drill Holes
Mineral Rights Optioned By N.J.Z.
Properties Being Negotiated
SCALE
POSTED TO DATE
THE NEW JERSEY ZINC COMPANY
MARION, VIRGINIA
DRAWN P.A.R.
DATE JAN. 1954
TRACED
SCALE 1" = 660'
BEAVER CREEK AREA
DISTRICT DMEA-4178.
FILE NO. AX-SW VA-98
THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N.Y.

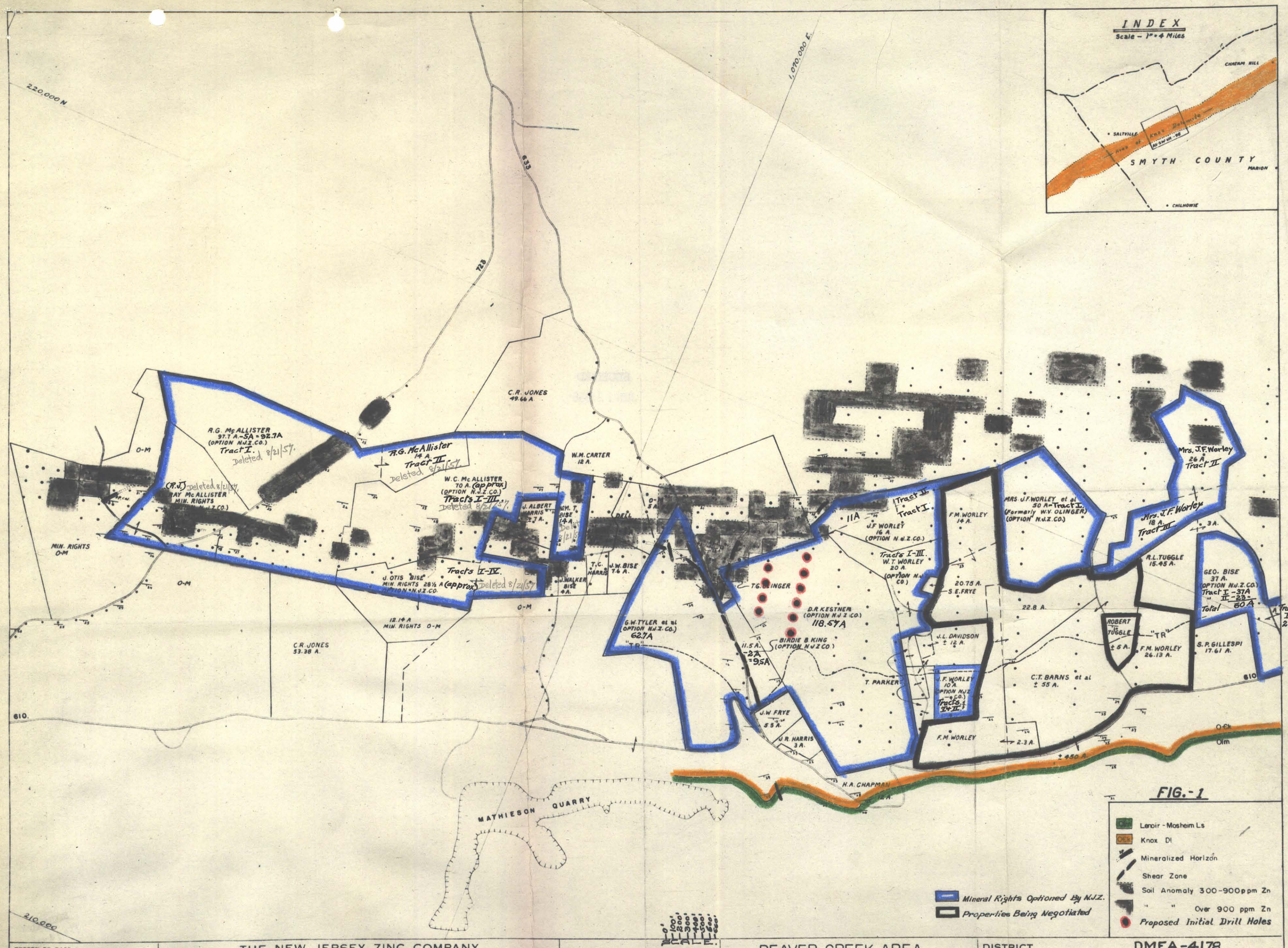


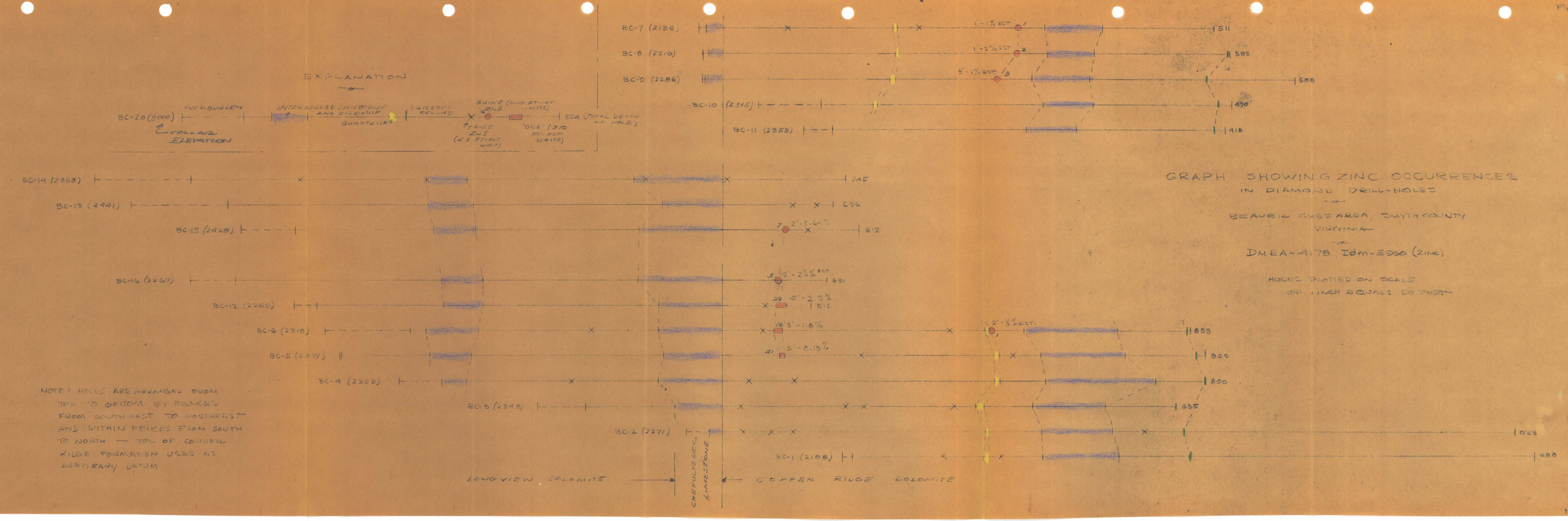
FIG.-1

Lenoir - Mosheim Ls
Knox Dl
Mineralized Horizon
Shear Zone
Soil Anomaly 300-900ppm Zn
" " Over 900 ppm Zn
Proposed Initial Drill Holes

POSTED TO DATE	THE NEW JERSEY ZINC COMPANY MARION, VIRGINIA	DRAWN P.A.R. TRACED	DATE JAN. 1954 SCALE 1" = 660'	BEAVER CREEK AREA	DISTRICT DMEA-4178. FILE NO. AX-SW VA-98

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N.Y.

FIGURE 2



NOTE: HOLES ARE ARRANGED FROM TOP TO BOTTOM BY FENCES FROM SOUTHWEST TO NORTHEAST AND WITHIN FENCES FROM SOUTH TO NORTH — TOP OF COPPER RIDGE FORMATION USED AS ARBITRARY DATUM

GRAPH SHOWING ZINC OCCURRENCES IN DIAMOND DRILL-HOLES

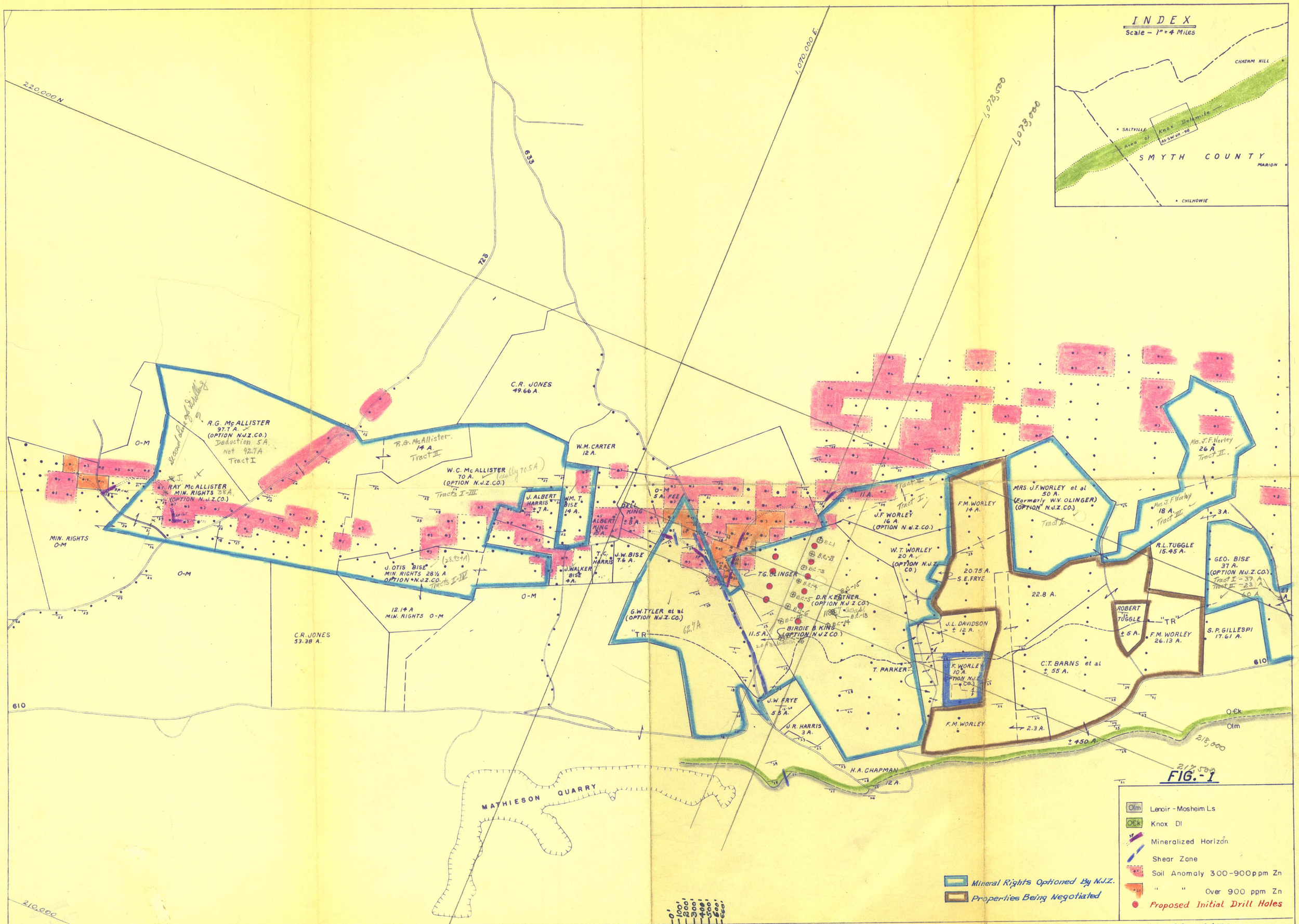
BEAVER CREEK AREA, SMYTH COUNTY, VIRGINIA

DMEA-4178, Idm-2960 (ZINC)

HOLES PLOTTED ON SCALE OF 1 INCH EQUALS 50 FEET

HW-1/69

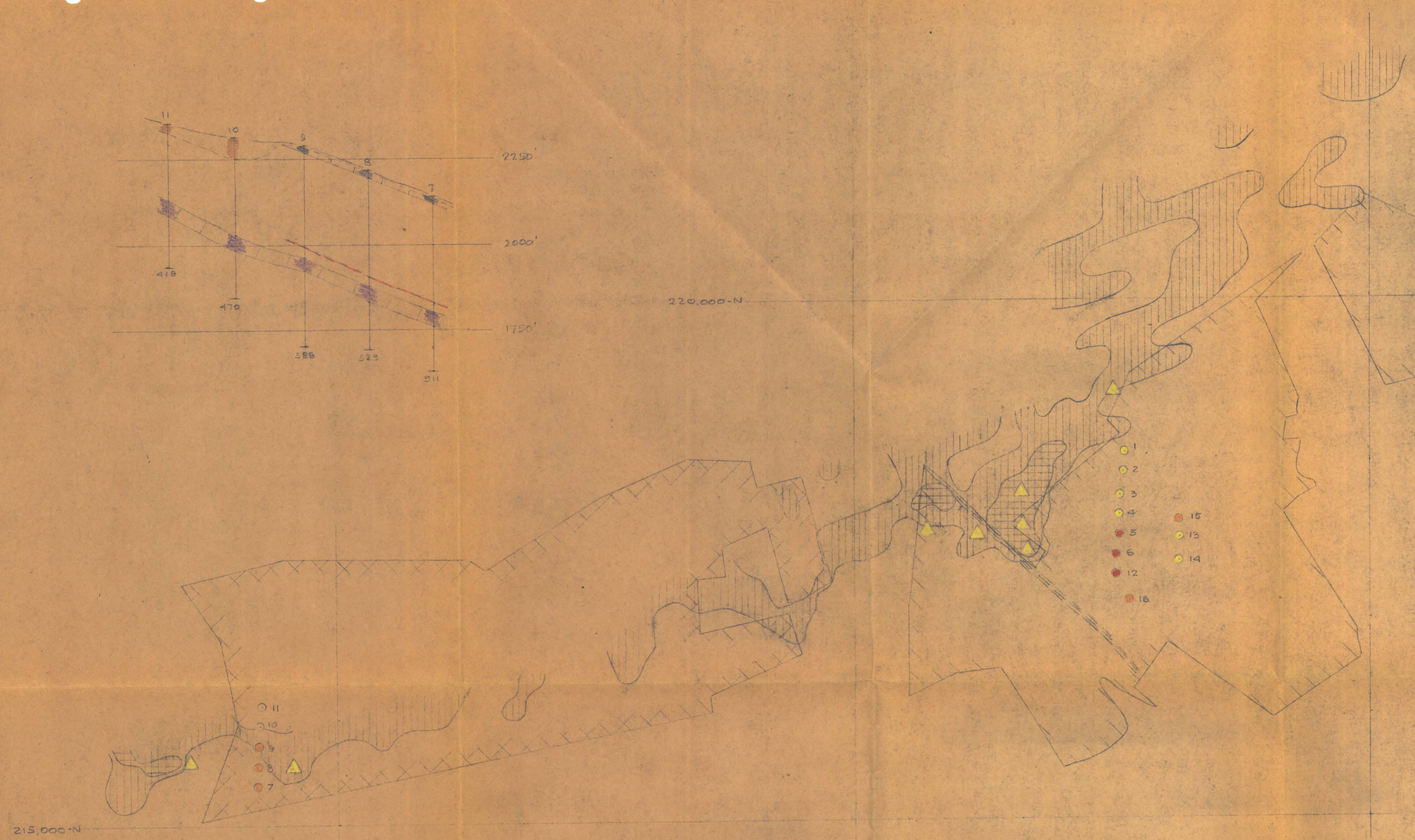
DMEA-4178
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
STATE OF VIRGINIA
Scale 1/500000
Miles
Kilometers
A. F. Hassan, Cartographic Engineer
Compiled in 1914 in cooperation with the State of Virginia
Revised in 1930
State capital
County seat
Large city
City or village
Railroads
Relation of the State of Virginia to sheets of the Map of the World on the scale of 1:1,000,000
Lambert conformal conic projection
North American datum
Edition of 1926, reprinted 1946
KENTUCKY
WEST VIRGINIA
MARYLAND
TENNESSEE
NORTH CAROLINA
ATLANTIC OCEAN
CHESAPEAKE BAY

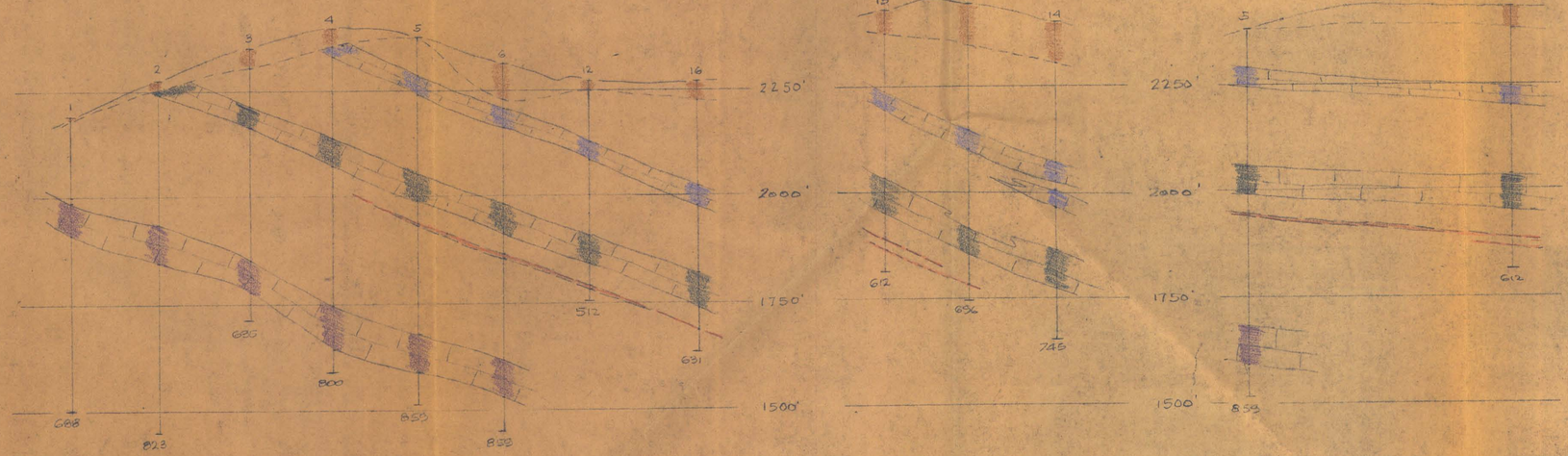


POSTED TO DATE	THE NEW JERSEY ZINC COMPANY MARION, VIRGINIA	DRAWN P.A.R. DATE JAN. 1954 TRACED SCALE 1" = 660'	BEAVER CREEK AREA	DISTRICT DMEA-4178. FILE NO. AX-SW VA-98

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK N.Y.

FIGURE 2





EXPLANATION

EXTENT OF PROPERTY AT TIME OF DRILLING

PROPERTY DELETED BY AMENDMENT NO. 1

GEOCHEMICAL SOIL ANOMALY CONTAINING 300 TO 900 PPM ZINC

GEOCHEMICAL SOIL ANOMALY CONTAINING MORE THAN 900 PPM ZINC

SURFACE OCCURRENCES OF SPHALERITE OR SECONDARY ZINC MINERALS

DIAMOND DRILL-HOLE (RED > 10 FEET-PERCENT UNITS OF ZINC; ORANGE 1-10 UNITS; YELLOW < 1 UNIT; PLAIN - BARREN)

HOLE NUMBER

OVERBURDEN

INTERBEDDED LIMESTONE AND DOLOMITE IN LONGVIEW FORMATION

LONGVIEW DOLOMITE

CHEPULTEPEC LIMESTONE (WITH SOME INTERBEDDED DOLOMITE)

MINERALIZED ZONE

COPPER RIDGE DOLOMITE

INTERBEDDED LIMESTONE AND DOLOMITE IN COPPER RIDGE FORMATION

700 TOTAL DEPTH OF HOLE

SHEAR ZONE

DIAMOND DRILL-HOLE PATTERNS

BEAVER CREEK AREA

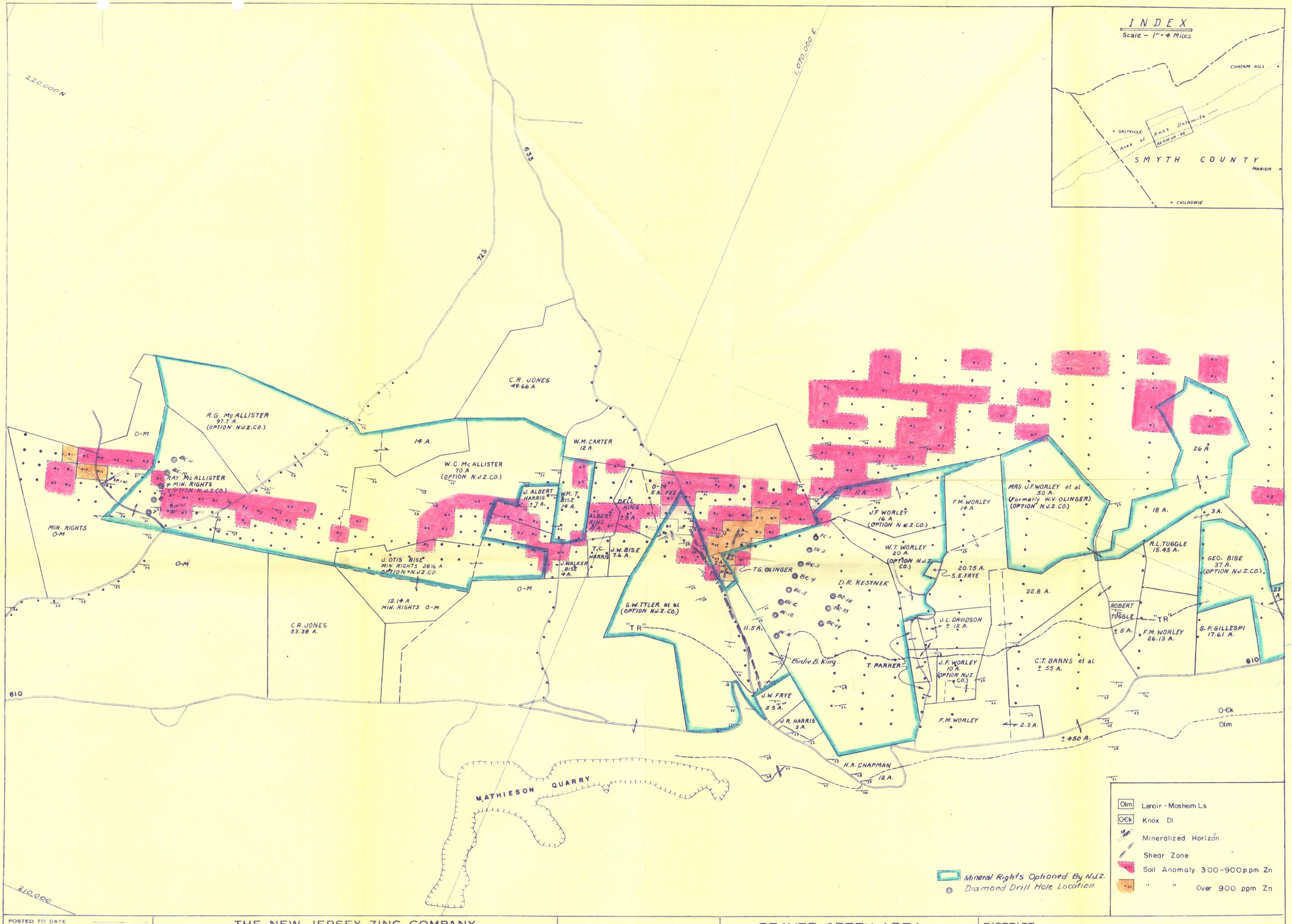
SMYTH COUNTY, VIRGINIA

DMEA-478, Idm-E360 (Zinc)

VERTICAL AND HORIZONTAL SCALES IN SECTIONS — 1" = 200'

SCALE OF MAP 1" = 660'

HW-1/80



POSTED TO DATE 10-28-54	THE NEW JERSEY ZINC COMPANY MARION, VIRGINIA	DRAWN P.A.R. DATE JAN. 1954 TRACED SCALE 1" = 660'	BEAVER CREEK AREA	DISTRICT FILE NO. AX-SW VA-98