United States Department of the Interior

GEOLOGICAL SURVEY
BOX 25046 M.S. 939
DENVER FEDERAL CENTER
DENVER, COLORADO 80225

AUG 21 1986

August 6, 1986

Re: DMEA 4153 (zinc)
The New Jersey Zinc Company
Independence and Lawson Areas
Hancock and Hawkins Cos.
Tennessee
Contract Idm 950

Mr. T. J. Montgomery
Property Superintendent
Inspiration Mines, Inc.
Claypool, Arizona 85532

Dear Mr. Montgomery:

After the completion of the approved exploration work under the contract identified above, we asked to be informed about changes in the status of the property and production from it during the period of royalty obligation.

To assist you to furnish this information and to assure the accuracy of our records, please answer the questions on the back of this letter and return two copies to this office with copies of any pertinent documents.

Sincerely,

J. William Hasler

J. William Hasler, Chief
Office of Minerals Exploration

JWH:js

Form MME 63
(May 1970)

REQUEST FOR INFORMATION ON CERTIFIED PROJECT OR PROJECT UNDER ROYALTY AGREEMENT

1. Since June 4, 1985, has there been a change in ownership, lease, or sublease? *If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before.* Yes ☐ No ☒

Since May 11, 1984 has there been any contiguous land acquired? If so, give details.

2. Since June 4, 1985, has there been any production from the land subject to the contract? Yes ☐ No ☒

A. If so and it was shipped, give quantity, value, and name and address of purchaser.

Purchaser (*name and address*)	Quantity	Value

B. If stockpiled awaiting sale, state quantity, grade, and location.

Type	Quantity (*tons*)	Estimated Grade	Location
Ore			
Concentrates			
Other			

3. Since June 4, 1985, has any production been transported through workings (*see* *of contract*)? Yes ☐ No ☒

If so, state quantity, value, and disposition of material.

Disposition of Material	Quantity	Value

Submitted by:

Name	Title
Thomas J. Montgomery	Property Supt
Address	**Date**
Box 5, Claypool Az 85532	August 19, 1986

Rec'd
5/16/84
OME

United States Department of the Interior

GEOLOGICAL SURVEY
BOX 25046 M.S. 939
DENVER FEDERAL CENTER
DENVER, COLORADO 80225

May 3, 1984

Re: DMEA 4153 (zinc)
The New Jersey Zinc Company
Independence and Lawson Areas
Hawkins and Hancock Counties
Tennessee - Contract Idm E-950

Mr. T. J. Montgomery
Property Superintendent
Inspiration Mines, Inc.
P.O. Box 1559
Claypool, Arizona 85532

Dear Mr. Montgomery:

After the completion of the approved exploration work under the contract identified above, we asked to be informed about changes in the status of the property and production from it during the period of royalty obligation.

To assist you to furnish this information and to assure the accuracy of our records, please answer the questions on the back of this letter and return two copies to this office with copies of any pertinent documents.

Sincerely,

J. William Hasler

J. William Hasler, Chief
Office of Minerals Exploration

Form MME 63
(May 1970)

REQUEST FOR INFORMATION ON CERTIFIED PROJECT OR PROJECT UNDER ROYALTY AGREEMENT

1. Since August 5, 1983, has there been a change in ownership, lease, or sublease? *If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before.* Yes ☐ No ☒

Since August 5, 1983 has there been any contiguous land reacquired? If so, give details.

2. Since August 5, 1983, has there been any production from the land subject to the contract? Yes ☐ No ☒

A. If so and it was shipped, give quantity, value, and name and address of purchaser.

Purchaser (*name and address*)	Quantity	Value

B. If stockpiled awaiting sale, state quantity, grade, and location.

Type	Quantity (*tons*)	Estimated Grade	Location
Ore			
Concentrates			
Other			

3. Since August 5, 1983, has any production been transported through workings (*see* *of contract*)? Yes ☐ No ☒

If so, state quantity, value, and disposition of material.

Disposition of Material	Quantity	Value

Submitted by:

Name	Title
T. J. Montgomery	Property Superintendent
Address P. O. Box 1559 Claypool, Arizona 85532	**Date** 11 May 1984

United States Department of the Interior

GEOLOGICAL SURVEY
BOX 25046 M.S. 939
DENVER FEDERAL CENTER
DENVER, COLORADO 80225

May 3, 1984

Re: DMEA 4153 (zinc)
The New Jersey Zinc Company
Independence and Lawson Areas
Hawkins and Hancock Counties
Tennessee - Contract Idm E-950

Mr. T. J. Montgomery
Property Superintendent
Inspiration Mines, Inc.
P.O. Box 1559
Claypool, Arizona 85532

Dear Mr. Montgomery:

After the completion of the approved exploration work under the contract identified above, we asked to be informed about changes in the status of the property and production from it during the period of royalty obligation.

To assist you to furnish this information and to assure the accuracy of our records, please answer the questions on the back of this letter and return two copies to this office with copies of any pertinent documents.

Sincerely,

J. William Hasler

J. William Hasler, Chief
Office of Minerals Exploration

Form MME 63
(May 1970)

REQUEST FOR INFORMATION ON CERTIFIED PROJECT OR PROJECT UNDER ROYALTY AGREEMENT

1. Since August 5, 1983, has there been a change in ownership, lease, or sublease? *If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before.* Yes ☐ No ☒

Since August 5, 1983 has there been any contiguous land reacquired? If so, give details.

2. Since August 5, 1983, has there been any production from the land subject to the contract? Yes ☐ No ☒

A. If so and it was shipped, give quantity, value, and name and address of purchaser.

Purchaser (*name and address*)	Quantity	Value

B. If stockpiled awaiting sale, state quantity, grade, and location.

Type	Quantity (*tons*)	Estimated Grade	Location
Ore			
Concentrates			
Other			

3. Since August 5, 1983, has any production been transported through workings (*see of contract*)? Yes ☐ No ☒

If so, state quantity, value, and disposition of material.

Disposition of Material	Quantity	Value

Submitted by:

Name T. J. Montgomery	*Title* Property Superintendent
Address P. O. Box 1559 Claypool, Arizona 85532	*Date* 11 May 1984

United States Department of the Interior
GEOLOGICAL SURVEY
BOX 25046 M.S. 939
DENVER FEDERAL CENTER
DENVER, COLORADO 80225

IN REPLY REFER TO

August 5, 1983

Mr. T. J. Montgomery
Property Superintendent
Inspiration Mines, Inc.
P.O. Box 1559
Claypool, Arizona 85532

Re: DMEA 4153 (zinc)
The New Jersey Zinc Company
Independence and Lawson Areas
Hawkins and Hancock Counties, Tennessee
Contract Idm E-950

Dear Mr. Montgomery:

Thank you for sending two copies each of two Warranty Deeds conveying the above-referenced property to Inspiration Mines, Inc., pursuant to our request of July 19, 1983.

Should there be any production from the property before the royalty obligation period ends on May 10, 1988, royalty payments should be made payable and mailed to:

Chief, Office of Minerals Exploration
U.S. Geological Survey M.S. 939
Denver Federal Center - Box 25046
Building 25, Rm. 2502
Denver, Colorado 80225

The purchaser should be advised to deduct royalties from the amount due on each shipment. Each check should be accompanied by suitable sales evidence - such as copies of settlement sheets - showing the name of the purchaser, the quantity and grade of the products sold, and the price and charges, certified to be correct by the purchaser.

Sincerely yours,

J. William Hasler

J. William Hasler, Chief
Office of Minerals Exploration

JWH:js

cc: R. Marshall, Vice President, The New Jersey Zinc Company
John J. Ellis, Vice President, Inspiration Mines, Inc.
A. T. Ovenshine, Reston
C. H. Thorman, Denver

INSPIRATION MINES, INCORPORATED

P.O. BOX 1559 CLAYPOOL, ARIZONA 85532

1 August 1983

United States Department of the Interior
Geological Survey
Box 25046, M.S. 933
Denver Federal Center
Denver, Colorado 80225

RECEIVED
AUG 3 1983

Attn: Mr. J. William Hasler

Re: DMEA 4153 (Zinc)
The New Jersey Zinc Company
Independence and Lawson Areas
Hawkins and Hancock Counties, Tennessee
Contract Idm E-950

Dear Mr. Hasler:

I am replying to your letter of July 19, 1983, to Mr. John Ellis. As per your request in the letter, I am enclosing two copies each of the two Warranty Deeds conveying the property to Inspiration Mines, Inc. One Deed conveys the property in Hawkins County and the other the property in Hancock County.

Please note the last paragraph on page 3 of each document which preserves the Government's right to a percentage royalty on production as specified in the contract.

Yours truly,

INSPIRATION MINES, INC.

T. J. Montgomery

T. J. Montgomery
Property Superintendent

TJM:jab
Enclosures

xc: Mr. J. Ellis

This instrument prepared by
Christopher Clark
McCampbell & Young
P.O. Box 550
Knoxville, TN 37901

HAWKINS COUNTY

Book 277
Page 585

277-585

SPECIAL WARRANTY DEED

THIS DEED made as of the 11th day of July, 1983, by and between Gulf & Western Industries, Inc., a Delaware Corporation, authorized to do business in Tennessee, party of the first part, and INSPIRATION MINES, INC., a Delaware Corporation, authorized to do business in Tennessee, party of the second part:

W I T N E S S E T H

That for and in consideration of the sum of ten ($10.00) Dollars, cash in hand paid and other good and valuable considerations, the receipt of which is hereby acknowledged, the party of the first part has this day granted, bargained, and sold and does by these presents grant, bargain, sell and convey unto the party of the second part its successors and assigns, subject to the reservation and exception hereinafter set out, all its right, title and interest in and to all land, real property rights and interests, tenements and hereditaments of the party of the first part situate, lying and being the Third District of Hawkins County, Tennessee, including without limitation all metals, minerals, ores, ore-bearing materials and rocks of any and every kind, including limestone, in, under or upon the same, and all mines, mining rights, water rights, buildings, dwellings, physical plants and facilities, and other improvements thereon.

The property hereby conveyed includes, without limitation, all property acquired by party of the first part and its predecessor in title, The New Jersey Zinc Company, a New Jersey Corporation, under and by virtue of the instruments recorded in the Register's Office for Hawkins County, Tennessee, listed in Exhibit "A" attached hereto, being 3,070.27 acres more or less, and excluding and excepting all property listed therein as heretofore conveyed away, and all of which are made a part hereof, and to which instruments reference is hereby made for a more complete description thereof. Reference is also made to the following documents evidencing successions to title:

(1) Agreement of Merger dated February 25, 1966, Charter Book 2, Page 371, merging The New Jersey Zinc Company, a New Jersey Corporation, into Gulf & Western Industries, Inc., the surviving corporation.

(2) Deed from Gulf & Western Industries, Inc., to ZINMINCO, INC., a Delaware Corporation, dated January 25, 1966, Deed Book 147, Page 483.

(3) Change of name by Charter Amendment, from ZINMINCO, INC., to The New Jersey Zinc Company, a Delaware Corporation, dated June 9, 1966, File No. 1082, in the Office of the Secretary of State, State of Tennessee. Charter Book 2, Page 371.

(4) Merger of The New Jersey Zinc Company into Gulf & Western Industries, a Delaware Corporation, dated May 24, 1974, Deed Book 274, Page 245.

Party of the first part, however, specifically reserves and excepts to itself its successors and assigns forever, all its right, title and interest, in fee simple in and to the freehold mineral estate in all oil and gas, and all hydrocarbons, minerals and substances associated with the extraction thereof, on, in or under the properties herein described and conveyed.

Party of the first part covenants and warrants that the location of any drill site or service installation in regard to oil and gas prospecting or production by party of the first part or its successors and assigns pursuant to the reservation contained herein shall require party of the second part's consent; provided however, that any such consent shall not be unreasonably delayed or withheld. The withholding of consent to the location of any such site or installation within any of the following perimeters, both surface or subsurface, shall be deemed reasonable:

(a) 200 feet from any house or other building, barn or structure now on the land;

(b) 200 feet from any use or restriction heretofore reserved by party of the first part's predecessors in interest or such other areas where such predecessors in interest have agreed to waive the use of the surface thereof by written instrument recorded in the records of the county where the land affected thereby is located; or

(c) 500 feet from active or projected subsurface mining operations or an area of the surface or subsurface where such surface or subsurface mining operation will be adversely affected thereby. The determination by party of the second part of active surface or subsurface mining operation area or projected surface or subsurface mining operation areas shall be made by the party of the second part as a prudent mining operator.

It is the intention of the party of the first part to convey to party of the second part, subject to the reservation and exception above set out, all its right, title and interest in all of the land and real property rights and interests acquired by party of the first part from or through its division, The New Jersey Zinc Company, or the predecessor in interest of said division, The New Jersey Zinc Company, a Corporation, in said Hawkins County, Tennessee, whether described in the instruments hereinbefore referred to or otherwise.

To have and to hold the same, together with all the hereditaments and appurtenances thereto belonging or in any wise appertaining, to the party of second part its successors or assigns forever.

Party of the second part, however, by accepting this conveyance, covenants and agrees on behalf of itself its successors and assigns to be bound by, and does hereby assume, all of the terms, covenants and conditions contained in all conveyances referred to and listed in Exhibit "A" attached hereto and further subject to the right of the US Department of the Interior to a percentage royalty on production and lien

587

for the payment thereof, under party of the first part's agreement with the Defense Minerals Exploration Administration of the US Department of the Interior, dated respectively May 10, 1956, (Contract #Idm E-950) May 22, 1956, (Contract #Idm E-956) June 30, 1958, (Contract #Idm E-982) and February 26, 1958, (Contract #Idm E-1174), and to indemnify and save harmless party of the first part, its successors and assigns, from any and all liabilities hereafter accruing under the provisions of said conveyances.

And the party of the first part, for itself and its successors does hereby covenant with the party of the second part, its successors and assigns that the party of the first part has not made, done, executed or suffered any act or thing whereby the above described premises or any part thereof now are or at any time hereafter shall or may be imperiled, charged or encumbered in any manner whatsoever except for 1983 taxes, which are prorated, and the matters set out above, and the party of the first part will warrant and defend its title thereto against the lawful demands of all persons claiming by, through or under the party of the first part, but not further or otherwise.

IN WITNESS WHEREOF, the party of the first part has caused this deed to be signed by its respective officers, duly authorized as of the date first above written.

GULF & WESTERN INDUSTRIES, INC.

By: [illegible]

Its: Vice President

INSPIRATION MINES, INC.

By: [illegible]

Its: Vice President

STATE OF TENNESSEE)
COUNTY OF KNOX)

Personally appeared before me, the undersigned authority, a Notary Public in and for said County and State, George Yarbenet, Vice President, with whom I am personally acquainted, and who, upon oath, acknowledged himself to be Vice President of Gulf & Western Industries, Inc., the within named bargainor, a corporation, and that he as such Vice President, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself as Vice President.

Witness my hand and official seal at office, this the 11th day of July, 1983.

Mayme W. Harris
Notary Public

My Commission Expires: 12-27-86

STATE OF TENNESSEE)
COUNTY OF KNOX)

Personally appeared before me, the undersigned authority, a Notary Public in and for said County and State, John Ellis, Vice President, with whom I am personally acquainted, and who, upon oath, acknowledged himself to be Vice President of Inspiration Mines, Inc., the within named bargainor, a corporation, and that he as such Vice President being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself as Vice President.

Witness my hand and official seal at office, this the 11th day of July, 1983.

Mayme W. Harris
Notary Public

My Commission Expires: 12-27-86

I hereby swear or affirm that the actual consideration or true value of this transfer, whichever is greater, is $600,000.00. Affiant J. W. Ellis
Subscribed and sworn to before me this 11th day of July 1983.

Mayme W. Harris
Notary Public

My Commission Expires: 12-27-86

RESPONSIBLE TAXPAYER:
Inspiration Mines, Inc.
P.O. Box 1559
Claypool, Arizona 85532

RSM032/J/7/11/83

580

EXHIBIT A

TO DEED DATED July 11, 1983, FROM GULF & WESTERN INDUSTRIES, INC. TO INSPIRATION MINES, INC. Hawkins County

Grantor	Date of Deed	Recorded In Deed Book	Page
June G. Altom, Clerk and Master (Sharp)	6/23/55	118	194
June G. Altom, Clerk and Master (Greene)	8/11/55	118	399
June G. Altom, Clerk and Master	5/7/57	122	325
George L. Amyx, et al	3/15/58	124	307
Maggie Bloomer, et al	10/1/62	135	214
Mary Wolfe Bloomer, et al	2/3/68	152	446
Ruth Short Bloomer, et al	8/23/57	123	175
Eugene Clonce	2/24/61	131	55
Horace L. Davis, et ux	10/17/61	132	446
Mrs. Martin Davis, et al	4/4/53	112	458
Nettie Bloomer Davis, et al	6/12/61	131	504
Myrtle Drinnon	11/7/55	119	161
Hawkins County, et al	2/1/52	109	442
Carson Jones, et ux	7/31/69	166	452
John H. Jones, et ux	7/31/59	166	447
John C. Lawson, et ux	5/27/55	118	105
Nancy Lawson	3/23/57	122	156
[illegible] Mahan	5/20/55	117	561
Ross Moneyhun	12/28/62	135	440
New Jersey Zinc Exploration Company to New Jersey Zinc Company	4/30/52	114	384
I. D. Price, Jr., et al	6/23/55	118	196
J. K. Price, et al	4/4/55	117	377
Sam Price, et al	3/23/57	122	154
Leona Quarry, et ux	5/20/55	118	107
Linda Gay Jones Richardson, et ux	7/31/69	166	443
Guy Seals, et ux	3/30/57	122	194
Cameron Short, et al	1/27/61	130	557
Birdie Smith	12/14/53	114	345
Mrs. Bonnie Brewer Swaney, et ux	9/23/57	123	273
Genelle Jones Trent, et ux	5/27/55	118	109
Ollie Trent, et al	11/16/57	123	436
U. S. Steel Corp.	5/5/61	131	398

EXCEPTING AND EXCLUDING such portions of the foregoing lands, or interests therein, as have been heretofore conveyed by the following deeds to Grantees named:

Grantee	Date of Deed	Recorded In Deed Book	Page
Trustees of Friendship Baptist Church	5/6/71	186	509
United States of America	10/19/71	188	488

NOTE: A portion of the property listed herein is subject to the outcome of a lawsuit styled as:

New Jersey Zinc Division, a
Division of Gulf + Western Industries, Inc.
vs
Ima Lee Eshleman, L. D. Carpenter and
Randy Carpenter, cause no. 8084, pending
in the Chancery Court for Hawkins County, Tennessee

RECEIVED FOR RECORD 12TH
DAY OF JULY 19 83
AT 12:30 P M.
GALE B. CARPENTER

This instrument prepared by:
J. Christopher Kirk
McCampbell & Young
P.O. Box 550
Knoxville, TN 37901

SPECIAL WARRANTY DEED

THIS DEED made as of the 11th day of July, 1983, by and between Gulf & Western Industries, Inc., a Delaware Corporation, authorized to do business in Tennessee, party of the first part, and INSPIRATION MINES, INC., a Delaware Corporation, authorized to do business in Tennessee, party of the second part:

W I T N E S S E T H

That for and in consideration of the sum of ten ($10.00) Dollars, cash in hand paid and other good and valuable considerations, the receipt of which is hereby acknowledged, the party of the first part has this day granted, bargained, and sold and does by these presents grant, bargain, sell and convey unto the party of the second part its successors and assigns, subject to the reservation and exception hereinafter set out, all its right, title and interest in and to all land, real property rights and interests, tenements and hereditaments of the party of the first part situate, lying and being the First, Second and Third Districts of Hancock County, Tennessee, including without limitation all metals, minerals, ores, ore-bearing materials and rocks of any and every kind, including limestone, in, under or upon the same, and all mines, mining rights, water rights, buildings, dwellings, physical plants and facilities, and other improvements thereon.

The property hereby conveyed includes, without limitation, all property acquired by party of the first part and its predecessor in title, The New Jersey Zinc Company, a New Jersey Corporation, under and by virtue of the instruments recorded in the Register's Office for Hancock County, Tennessee, listed in Exhibit "A" attached hereto, being 3,137.47 acres more or less, and excluding and excepting all property listed therein as heretofore conveyed away, and all of which are made a part hereof, and to which instruments reference is hereby made for a more complete description thereof. Reference is also made to the following documents evidencing successions to title:

(1) Agreement of Merger dated November 30, 1965, merging The New Jersey Zinc Company, a New Jersey Corporation, into Gulf & Western Industries, Inc., the surviving corporation.

(2) Deed from Gulf & Western Industries, Inc., to ZINMINCO, INC., a Delaware Corporation, dated February 25, 1966, Deed Book 29, Page 204.

(3) Change of name by Charter Amendment, from ZINMINCO, INC., to The New Jersey Zinc Company, a Delaware Corporation, dated June 9, 1966, File No. 1082, in the Office of the Secretary of State, State of Tennessee.

(4) Merger of The New Jersey Zinc Company into Gulf & Western Industries, a Delaware Corporation, dated May 24, 1974, Miscellaneous Book 14, Page 444.

Party of the first part, however, specifically reserves and excepts to itself its successors and assigns forever, all its right, title and interest, in fee simple in and to the freehold mineral estate in all oil and gas, and all hydrocarbons, minerals and substances associated with the extraction thereof, on, in or under the properties herein described and conveyed.

Party of the first part covenants and warrants that the location of any drill site or service installation in regard to oil and gas prospecting or production by party of the first part or its successors and assigns pursuant to the reservation contained herein shall require party of the second part's consent; provided however, that any such consent shall not be unreasonably delayed or withheld. The withholding of consent to the location of any such site or installation within any of the following perimeters, both surface or subsurface, shall be deemed reasonable:

(a) 200 feet from any house or other building, barn or structure now on the land;

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(b) 200 feet from any use or restriction heretofore reserved by party of the first part's predecessors in interest or such other areas where such predecessors in interest have agreed to waive the use of the surface thereof by written instrument recorded in the records of the county where the land affected thereby is located; or

(c) 500 feet from active or projected subsurface mining operations or an area of the surface or subsurface where such surface or subsurface mining operation will be adversely affected thereby. The determination by party of the second part of active surface or subsurface mining operation area or projected surface or subsurface mining operation areas shall be made by the party of the second part as a prudent mining operator.

It is the intention of the party of the first part to convey to party of the second part, subject to the reservation and exception above set out, all its right, title and interest in all of the land and real property rights and interests acquired by party of the first part from or through its division, The New Jersey Zinc Company, or the predecessor in interest of said division, The New Jersey Zinc Company, a Corporation, in said Hancock County, Tennessee, whether described in the instruments hereinbefore referred to or otherwise.

To have and to hold the same, together with all the hereditaments and appurtenances thereto belonging or in any wise appertaining, to the party of second part its successors or assigns forever.

Party of the second part, however, by accepting this conveyance, covenants and agrees on behalf of itself its successors and assigns to be bound by, and does hereby assume, all of the terms, covenants and conditions contained in all conveyances referred to and listed in Exhibit "A" attached hereto and further subject to the right of the US Department of the Interior to a percentage royalty on production and lien

for the payment thereof, under party of the first part's agreement with the Defense Minerals Exploration Administration of the US Department of the Interior, dated respectively May 10, 1956, (Contract #Idm E-950) May 22, 1956, (Contract #Idm E-956) June 30, 1958, (Contract #Idm E-982) and February 26, 1958, (Contract #Idm E-1174), and to indemnify and save harmless party of the first part, its successors and assigns, from any and all liabilities hereafter accruing under the provisions of said conveyances.

And the party of the first part, for itself and its successors does hereby covenant with the party of the second part, its successors and assigns that the party of the first part has not made, done, executed or suffered any act or thing whereby the above described premises or any part thereof now are or at any time hereafter shall or may be imperiled, charged or encumbered in any manner whatsoever except for 1983 taxes, which are prorated, and the matters set out above, and the party of the first part will warrant and defend its title thereto against the lawful demands of all persons claiming by, through or under the party of the first part, but not further or otherwise.

IN WITNESS WHEREOF, the party of the first part has caused this deed to be signed by its respective officers, duly authorized as of the date first above written.

GULF & WESTERN INDUSTRIES, INC.

By: [illegible]

Its: Vice President

INSPIRATION MINES, INC.

By: J H Ellis

Its: Vice President

STATE OF TENNESSEE)
COUNTY OF KNOX)

Personally appeared before me, the undersigned authority, a Notary Public in and for said County and State, George Yarbenet, Vice President, with whom I am personally acquainted, and who, upon oath, acknowledged himself to be Vice President of Gulf & Western Industries, Inc., the within named bargainor, a corporation, and that he as such Vice President, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself as Vice President.

Witness my hand and official seal at office, this the 11th day of July, 1983.

Maxine W. Harris
Notary Public

My Commission Expires: 12-27-86

STATE OF TENNESSEE)
COUNTY OF KNOX)

Personally appeared before me, the undersigned authority, a Notary Public in and for said County and State, John Ellis, Vice President, with whom I am personally acquainted, and who, upon oath, acknowledged himself to be Vice President of Inspiration Mines, Inc., the within named bargainor, a corporation, and that he as such Vice President being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself as Vice President.

Witness my hand and official seal at office, this the 11th day of July, 1983.

Maxine W. Harris
Notary Public

My Commission Expires: 12-27-86

I hereby swear or affirm that the actual consideration or true value of this transfer, whichever is greater, is $500,000.00. Affiant J. Ellis. Subscribed and sworn to before me this 11th day of July, 1983.

Maxine W. Harris
Notary Public

My Commission Expires: 12-27-86

RESPONSIBLE TAXPAYER:
Inspiration Mines, Inc.
P.O. Box 1559
Claypool, Arizona 85532

RSM032/I/7/11/83

131

STATE OF TENNESSEE)
COUNTY OF KNOX)

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Maxine W. Hanks
Notary Public

My Commission Expires: 12-27-86

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Subscribed and sworn to before me this 11th day of July, 1983.

Maxine W. Hanks
Notary Public

My Commission Expires: 12-27-86

RESPONSIBLE TAXPAYER:
Inspiration Mines, Inc.
P.O. Box 1559
Claypool, Arizona 85532

RSM032/I/7/11/83

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EXHIBIT A

TO DEED DATED July 11, 1983 Hancock County FROM GULF & WESTERN INDUSTRIES, INC. TO INSPIRATION MINES, INC.

Grantor	Date of Deed	Recorded In Deed Book	Page
James Brewer, et ux	3/10/61	26	132
W. M. Brewer, et ux	7/10/61	26	319
Ephraim Clonce, et ux	3/3/59	24	153
Easter V. Wolfe Collins, et ux	5/5/59	24	237
Guy Dalton, et ux	11/23/55	21	91
D. H. Darnell, et ux	5/14/57	22	288
Mattie Pearl Drinnon	5/10/60	25	129
Floyd Edens, et ux	5/27/57	22	294
Ralph Garrett, et ux	5/27/57	22	298
E. F. Gilliam, et ux	8/1/57	22	382
Henry Gilliam, et ux	11/15/57	23	30
W. B. Gordon, et al	6/18/52	18	262
Jack Greene, et ux	11/23/55	21	89
Flora Williams Horton, et al	5/7/57	22	284
George M. Horton, et ux	7/10/61	26	316
L. W. Horton, et ux	5/31/61	26	288
M. B. Horton	4/29/57	22	269
W. H. Horton, et ux	6/10/57	22	372
Roy Hurley, et ux	2/3/61	26	78
Charlie Johns, et ux	9/18/52	18	393
Kyle Johns, et ux	2/20/62	25	460
George H. Lamb, et al	8/1/56	22	20
Mitch Lamb, et ux	8/21/67	21	397
Lewis Setsor, et ux	9/1/56	22	17
Lewis Tunmire, et al	10/27/61	26	386
Mack Tunmire, et al	7/11/60	25	201
Vickie Parker Tunmire, et al	7/11/60	25	214
Willis Tunmire, et ux	7/11/60	25	199
Gale Walker, et ux	7/10/52	18	314
Grant Walker, et ux	5/31/52	18	241
Alice Cope Wilder, et ux	8/28/56	22	14
R. L. Williams, et al.	5/3/61	26	293
Lewis Winstead, et ux	12/29/52	19	46
Lewis Winstead, et ux (Quitclaim Deed and Release)	9/18/72	Misc. 10	4
Lewis Winstead, et ux	11/23/55	21	87

Barnett Wolfe, et ux	3/14/60	25	79
Leonard Williams, et ux	9/18/56	22	37
Bud Wolfe, et al	9/3/52	18	326
Cordie Wolfe, et al	5/25/56	21	343
David Wolfe, et ux	9/26/56	22	34
Henrietta Wolfe, et al	8/16/57	22	395
Jep H. Wolfe, et al	9/26/56	22	40
John B. Wolfe, et al	9/3/52	18	330
L. N. Wolfe, et ux	6/18/52	18	256
L. N. Wolfe, et ux	8/18/56	21	394
L. N. Wolfe	10/5/56	22	66
Mattie Wolfe	7/25/58	23	325
Roy D. Wolfe, et ux	6/11/56	21	351

EXCLUDING AND EXCEPTING such portions of the foregoing lands, or interests therein, as have been heretofore conveyed by the following deeds to Grantees named:

Grantee	Date of Deed	Recorded In Deed Book	Page
Hancock County Board of Education	3/6/58	23	270
Hancock County, Tennessee	8/30/62	Misc. 8	335
MOOSELMAC Corporation	6/30/67	Misc. 9	131
Hancock County Board of Education	3/11/68	29	440
State of Tennessee	3/10/69	Misc. 9	345
Ralph D. Seal, et ux	4/6/82	50	5

STATE OF TENNESSEE, HANCOCK COUNTY

I, or we hereby swear or affirm that the actual consideration for this transfer or value of the property transferred, whichever is greater is $500,000.00 which amount is equal to or greater than the amount which property transferred would command at a fair voluntary sale.

Q. D. Bridges
Affiant

Amt. Tax Paid $ 1,300.00

Subscribed and sworn to before me this the 12 day of July 1983

Hugh E. Hopkins, Reg

STATE OF TENNESSEE
HANCOCK COUNTY

Filed for record this 12 day of July 1983 at 2:30 P M

Noted ... 4 ... page 251

and re... Deed ... Book 52

Page 127 ... Verified.

Hugh E. Hopkins, Register

Reg. Fee ... 21.00

St. Rev. ... 1,300.00

Clk's Fee ... 50

United States Department of the Interior

GEOLOGICAL SURVEY
BOX 25046 M.S. 933
DENVER FEDERAL CENTER
DENVER, COLORADO 80225

IN REPLY REFER TO

July 19, 1983

Mr. John J. Ellis, Vice President
Inspiration Mines Inc.
P.O. Box 1559
Claypool, Arizona 85532

Re: DMEA 4153 (zinc)
The New Jersey Zinc Company
Independence and Lawson Areas
Hancock and Hawkins Counties, Tennessee
Contract Idm E-950

Dear Mr. Ellis:

This office has just been advised through the law offices of McCampbell and Young, Knoxville, Tennessee, that the New Jersey Zinc Company has conveyed its real property in Hancock and Hawkins Counties, Tennessee to Inspiration Mines Inc., subject to the above-referenced contract.

Enclosed is a copy of the certification of discovery or development that covers all the land described in Article 2 of the contract.

By the terms of the Exploration Project Contract, as amended, and the certification, all minerals mined or produced from May 10, 1956, to May 10, 1988, are subject to the Government's percentage royalty as set forth in the contract until the sum of $36,613.56 is repaid to the Government.

Royalty payments should be made payable to Chief, Office of Minerals Exploration and mailed to the U.S. Geological Survey, Mail Stop 933, Denver Federal Center, Building 25, Rm. 2502, Denver, Colorado 80225. The purchaser should be advised to deduct royalties from the amount due on each shipment. Each check should be accompanied by suitable sales evidence - such as copies of settlement sheets - showing the name of the purchaser, the quantity and grade of the products sold, and the price and charges, certified to be correct by the purchaser.

Your attention is called to Article 2(d), particularly, of the contract, relating to the preservation of the Government's right to a percentage royalty on production.

Pursuant to Article 2(d) of the contract, please furnish this office with two copies of the instrument of conveyance showing the lien, or encumbrance for the preservation of the Government's right to a percentage royalty on production and payment thereof.

When production starts, please notify this office. Thereafter, if production ceases for any extended period, please notify this office at six-month intervals.

Sincerely yours,

J. William Hasler

J. William Hasler, Chief
Office of Minerals Exploration

JWH:js

cc: A. T. Ovenshine
C. H. Thorman

Robert P. Marshall, Vice President
The New Jersey Zinc Company
G & W Natural Resources Group
One Commerce Place
Nashville, Tennessee 37239

Enclosures

Rec'd 7/13/83
O ME

July 11, 1983

United States Department of Interior
Geological Survey
P. O. Box 25046 M.S.933
Denver Federal Center
Denver, Colorado 80225

Re: DMEA 4286, 4850, 4177 and 4153 (zinc)
Contract Nos. Idm-E-982, Idm-E-1174,
Idm-E-956, Idm-E-950

Gentlemen:

Please be advised that on the date hereof The New Jersey Zinc Company has conveyed subject to the above referenced contracts all of its real property in Hancock, Hawkins and Grainger Counties, Tennessee, to Inspiration Mines, Inc., which has on the date hereof assumed the said contracts. All correspondence relating to the above contracts should hereafter be addressed to Inspiration Mines, Inc., P. O. Box 1559, Claypool, Arizona, 85532, Attention John Ellis, Vice President.

Yours truly,

THE NEW JERSEY ZINC COMPANY

By Robert D. Marshall
Vice President

INSPIRATION MINES, INC.

By J. Ellis
Vice President

G+W Natural Resources Group
GULF + WESTERN INDUSTRIES INC

The New Jersey Zinc Exploration Company

June 2, 1983

Mr. J. William Hasler, Chief
Office of Minerals Exploration
United States Department of the Interior
Geological Survey
Box 25046 M.S. 933
Denver Federal Center
Denver, CO 80225

Dear Mr. Hasler:

RE: DMEA (zinc) contracts

Enclosed herewith are status reports for DMEA contracts with the New Jersey Zinc Company for projects located in Tennessee and Virginia. The Tennessee reports are for Contracts DMEA 4177, 4286, 4153, 4119, and 4850. The Virginia reports are for Contracts DMEA 5008 and 4681.

Sincerely,

William T. Hill
Vice President - Exploration
G+W Natural Resources Group

WTH/rb
Enclosure

cc: J. E. Nelson
Bruce Granoff

One Commerce Place • Nashville, Tennessee 37239 • (615) 259-1000

United States Department of the Interior
GEOLOGICAL SURVEY
BOX 25046 M.S. 933
DENVER FEDERAL CENTER
DENVER, COLORADO 80225

May 9, 1983

Re: DMEA-4153 (zinc)
The New Jersey Zinc Company
Independence & Lawson Areas
Hancock & Hawkins Counties
Tennessee - Contract Idm-E-950

Mr. Frederic H. Main
Vice President, Mining
G & W Natural Resources Group
One Commerce Place
Nashville, Tennessee 37239

Dear Mr. Main:

After the completion of the approved exploration work under the contract identified above, we asked to be informed about changes in the status of the property and production from it during the period of royalty obligation.

To assist you to furnish this information and to assure the accuracy of our records, please answer the questions on the back of this letter and return two copies to this office with copies of any pertinent documents.

Sincerely,

J. William Hasler

J. William Hasler, Chief
Office of Minerals Exploration

Form MME 63
(May 1970)

REQUEST FOR INFORMATION ON CERTIFIED PROJECT OR PROJECT UNDER ROYALTY AGREEMENT

1. Since April 26, 1982, has there been a change in ownership, lease, or sublease? *If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before.* Yes ☐ No ☒

Since April 26, 1982, has any contiguous land been acquired or any abandoned land been reacquired? If so, please give details.

2. Since April 26, 1982, has there been any production from the land subject to the contract? Yes ☐ No ☒

A. If so and it was shipped, give quantity, value, and name and address of purchaser.

Purchaser (*name and address*)	Quantity	Value

B. If stockpiled awaiting sale, state quantity, grade, and location.

Type	Quantity (*tons*)	Estimated Grade	Location
Ore			
Concentrates			
Other			

3. Since April 26, 1982, has any production been transported through workings (*see of contract*)? Yes ☐ No ☐

If so, state quantity, value, and disposition of material.

Disposition of Material	Quantity	Value

Submitted by:

Name William T. Hill	Title U.P. - Exploration
Address Natural Resources Group, GTW One Commerce Place Nashville, Tenn. 37239	Date 5/16/83

HK 5/18/78 [illegible] 5/17

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

IN REPLY REFER TO: Office of Minerals Exploration
953 National Center

May 10, 1978

Re: DMEA-4153 (Zinc)
The New Jersey Zinc Company
Independence & Lawson Areas
Hannock & Hawkins Counties,
Tennessee
Contract Idm-E950

Mr. K. R. Winslow
Executive Vice President - Mining
The New Jersey Zinc Company
65 E. Elizabeth Avenue
Bethlehem, Pennsylvania 18018

Dear Mr. Winslow:

After the completion of the approved exploration work under the contract identified above, we asked to be informed about changes in the status of the property and production from it during the period of royalty obligation.

To assist you to furnish this information and to assure the accuracy of our records, please answer the questions on the back of this letter and return two copies to this office with copies of any pertinent documents.

Sincerely yours,

Harold Kirkemo

Harold Kirkemo, Chief
Office of Minerals Exploration

Form MME 63
(May 1970)

REQUEST FOR INFORMATION ON CERTIFIED PROJECT OR PROJECT UNDER ROYALTY AGREEMENT

1. Since July 12, 1977, has there been a change in ownership, lease, or sublease? *If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before.* Yes ☐ No ☑

Since July 12, 1977, has any contiguous land been acquired or any abandoned land been reacquired? If so, please give details. Yes ☐ No ☑

2. Since July 12, 1977, has there been any production from the land subject to the contract? Yes ☐ No ☑

A. If so and it was shipped, give quantity, value, and name and address of purchaser.

Purchaser *(name and address)*	Quantity	Value

B. If stockpiled awaiting sale, state quantity, grade, and location.

Type	Quantity *(tons)*	Estimated Grade	Location
Ore			
Concentrates			
Other			

3. Since workings *(see* , has any production been transported through *of contract)*? Yes ☐ No ☑

If so, state quantity, value, and disposition of material.

Disposition of Material	Quantity	Value

Submitted by:

Name K. R. Winslow	*Title* Executive Vice President - Mining
Address 65 E. Elizabeth Ave. Bethlehem, Pa. 18018	*Date* May 15, 1978

✓
HK 5/8/78

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

IN REPLY REFER TO: Office of Minerals Exploration
953 National Center

May 10, 1978

Re: DMEA-4153 (Zinc)
The New Jersey Zinc Company
Independence & Lawson Areas
Hannock & Hawkins Counties,
Tennessee
Contract Idm-E950

Mr. K. R. Winslow
Executive Vice President - Mining
The New Jersey Zinc Company
65 E. Elizabeth Avenue
Bethlehem, Pennsylvania 18018

Dear Mr. Winslow:

After the completion of the approved exploration work under the contract identified above, we asked to be informed about changes in the status of the property and production from it during the period of royalty obligation.

To assist you to furnish this information and to assure the accuracy of our records, please answer the questions on the back of this letter and return two copies to this office with copies of any pertinent documents.

Sincerely yours,

Harold Kirkemo

Harold Kirkemo, Chief
Office of Minerals Exploration

Form MME 63
(May 1970)

REQUEST FOR INFORMATION ON CERTIFIED PROJECT OR PROJECT UNDER ROYALTY AGREEMENT

1. Since July 12, 1977, has there been a change in ownership, lease, or sublease? *If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before.* Yes ☐ No ☑

Since July 12, 1977, has any contiguous land been acquired or any abandoned land been reacquired? If so, please give details. Yes ☐ No ☑

2. Since July 12, 1977, has there been any production from the land subject to the contract? Yes ☐ No ☑

A. If so and it was shipped, give quantity, value, and name and address of purchaser.

Purchaser *(name and address)*	Quantity	Value

B. If stockpiled awaiting sale, state quantity, grade, and location.

Type	Quantity *(tons)*	Estimated Grade	Location
Ore			
Concentrates			
Other			

3. Since workings *(see* , has any production been transported through *of contract)*? Yes ☐ No ☑

If so, state quantity, value, and disposition of material.

Disposition of Material	Quantity	Value

Submitted by:

Name K. R. Winslow	*Title* Executive Vice President - Mining
Address 65 E. Elizabeth Ave. Bethlehem, Pa. 18018	*Date* May 15, 1978

Recd 7/15/77 ✓ HK 7/15/77

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

IN REPLY REFER TO: Office of Minerals Exploration

July 8, 1977

Re: DMEA-4153 (Zinc)
The New Jersey Zinc Company
Indpendence & Lawson Areas
Hannock & Hawkins Counties,
Tennessee
Contract Idm-E950

Mr. K. R. Winslow
Senior Vice President - Mining
The New Jersey Zinc Company
65 E. Elizabeth Avenue
Bethlehem, Pennsylvania 18018

Dear Mr. Winslow:

After the completion of the approved exploration work under the contract identified above, we asked to be informed about changes in the status of the property and production from it during the period of royalty obligation.

To assist you to furnish this information and to assure the accuracy of our records, please answer the questions on the back of this letter and return two copies to this office with copies of any pertinent documents.

Sincerely yours,

Harold Kirkemo

Harold Kirkemo, Chief
Office of Minerals Exploration

Form MME 63
(May 1970)

REQUEST FOR INFORMATION ON CERTIFIED PROJECT
OR PROJECT UNDER ROYALTY AGREEMENT

1. Since May 27, 1976, has there been a change in ownership, lease, or sublease? *If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before.* Yes ☐ No ☒

Since May 27, 1976, has any contiguous land been acquired or any abandoned land been reacquired? If so, Please give details Yes /_/ No /X/

2. Since May 27, 1976, has there been any production from the land subject to the contract? Yes ☐ No ☒

A. If so and it was shipped, give quantity, value, and name and address of purchaser.

Purchaser *(name and address)*	Quantity	Value

B. If stockpiled awaiting sale, state quantity, grade, and location.

Type	Quantity *(tons)*	Estimated Grade	Location
Ore			
Concentrates			
Other			

3. Since workings *(see* , has any production been transported through *of contract)*? Yes ☐ No ☐

If so, state quantity, value, and disposition of material.

Disposition of Material	Quantity	Value

Submitted by:

Name K R Crumlow	*Title* Executive Vice President - Mining
Address 65 East Elizabeth Avenue Bethlehem, Penna. 18018	*Date* 7/12/77 July 12, 1977

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

IN REPLY REFER TO: Office of Minerals Exploration

May 20, 1976

Re: DMEA-4153 (Zinc)
The New Jersey Zinc Company
Independence & Lawson Areas
Hancock & Hawkins Counties,
Tennessee
Contract Idm-E950

Mr. K. R. Winslow
Vice President and
General Manager - Mining
The New Jersey Zinc Company
Jefferson City, Tennessee 37760

Dear Mr. Winslow:

After the completion of the approved exploration work under the contract identified above, we asked to be informed about changes in the status of the property and production from it during the period of royalty obligation.

To assist you to furnish this information and to assure the accuracy of our records, please answer the questions on the back of this letter and return two copies to this office with copies of any pertinent documents.

Sincerely yours,

Harold Kirkemo

Harold Kirkemo, Chief
Office of Minerals Exploration

Copy to R. W.

Form MME 63
(May 1970)

REQUEST FOR INFORMATION ON CERTIFIED PROJECT
OR PROJECT UNDER ROYALTY AGREEMENT

1. Since May 21, 1975, has there been a change in ownership, lease, or sublease? *If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before.* Yes ☐ No ☒

Since May 21, 1975, has any contiguous land been acquired or any abandoned land been reacquired? If so please give details Yes ☐ No ☒

2. Since May 21, 1975, has there been any production from the land subject to the contract? Yes ☐ No ☒

A. If so and it was shipped, give quantity, value, and name and address of purchaser.

Purchaser *(name and address)*	Quantity	Value

B. If stockpiled awaiting sale, state quantity, grade, and location.

Type	Quantity *(tons)*	Estimated Grade	Location
Ore			
Concentrates			
Other			

3. Since workings *(see of contract)*, has any production been transported through Yes ☐ No ☐

If so, state quantity, value, and disposition of material.

Disposition of Material	Quantity	Value

Submitted by:

Name K R Wernlund	*Title* Senior Vice President - Mining
Address The New Jersey Zinc Company 65 E. Elizabeth Avenue, Bethlehem, PA	*Date* May 27, 1976

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

IN REPLY REFER TO: Office of Minerals Exploration

May 19, 1975

Re: DMEA-4153 (Zinc)
The New Jersey Zinc Company
Independence & Lawson Areas
Hancock & Hawkins Counties,
Tennessee
Contract Idm-E950

OFFICIAL COPY
O. M. E.
RECEIVED
MAY 27 1975

INITIALS	CODE
	HK

Mr. K. R. Winslow
Vice President and
General Manager - Mining
The New Jersey Zinc Company
Jefferson City, Tennessee 37760

Dear Mr. Winslow:

After the completion of the approved exploration work under the contract identified above, we asked to be informed about changes in the status of the property and production from it during the period of royalty obligation.

To assist you to furnish this information and to assure the accuracy of our records, please answer the questions on the back of this letter and return two copies to this office with copies of any pertinent documents.

Sincerely yours,

Harold Kirkemo

Harold Kirkemo, Chief
Office of Minerals Exploration

Copy sent to R. IV

Form MME 63
(May 1970)

REQUEST FOR INFORMATION ON CERTIFIED PROJECT OR PROJECT UNDER ROYALTY AGREEMENT

1. Since May 24, 1973, has there been a change in ownership, lease, or sublease? *If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before.* Yes [ ] No [✓]

Since May 24, 1973, has any contiguous land been acquired or any abandoned land been reacquired? If so please give details. Yes [ ] No [✓]

2. Since May 24, 1973, has there been any production from the land subject to the contract? Yes [ ] No [✓]

A. If so and it was shipped, give quantity, value, and name and address of purchaser.

Purchaser *(name and address)*	Quantity	Value

B. If stockpiled awaiting sale, state quantity, grade, and location.

Type	Quantity *(tons)*	Estimated Grade	Location
Ore			
Concentrates			
Other			

3. Since workings *(see* , has any production been transported through *of contract)*? Yes [ ] No [ ]

If so, state quantity, value, and disposition of material.

Disposition of Material	Quantity	Value

Submitted by:

Name	*Title*
K R Crumlaw	Vice President & Gen'l Mgr - Mining
Address	*Date*
Jefferson City, Tennessee 37760	5/21/75

United States Department of the Interior

GEOLOGICAL SURVEY
WASHINGTON, D.C. 20242

IN REPLY REFER TO: Office of Minerals Exploration

May 16, 1973

Re: DMEA-4153 (Zinc)
The New Jersey Zinc Company
Independence & Lawson Areas
Hancock & Hawkins Counties,
Tennessee
Contract Idm-E950

Mr. K. R. Winslow
Manager of Mines
The New Jersey Zinc Company
JeffersonsCity, Tennessee 37760

Dear Mr. Winslow:

After the completion of the approved exploration work under the contract identified above, we asked to be informed about changes in the status of the property and production from it during the period of royalty obligation.

To assist you to furnish this information and to assure the accuracy of our records, please answer the questions on the back of this letter and return two copies to this office with copies of any pertinent documents.

Sincerely yours,

Harold Kirkemo

Harold Kirkemo
Chief, Office of
Minerals Exploration

Copy to R-IV

Cac 120 m
HK ~~120~~

Form MME 63
(May 1970)

REQUEST FOR INFORMATION ON CERTIFIED PROJECT OR PROJECT UNDER ROYALTY AGREEMENT

1. Since May 22, 1972, has there been a change in ownership, lease, or sublease? *If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before.* Yes ☐ No ☑

Since May 22, 1972, has any contiguous land been acquired or any abandoned land been reacquired? If so please give details. Yes ☐ No ☑

2. Since May 22, 1972, has there been any production from the land subject to the contract? Yes ☐ No ☑

A. If so and it was shipped, give quantity, value, and name and address of purchaser.

Purchaser *(name and address)*	Quantity	Value

B. If stockpiled awaiting sale, state quantity, grade, and location.

Type	Quantity *(tons)*	Estimated Grade	Location
Ore			
Concentrates			
Other			

3. Since , has any production been transported through workings *(see of contract)*? Yes ☐ No ☑

If so, state quantity, value, and disposition of material.

Disposition of Material	Quantity	Value

Submitted by:

Name K. R. Winslow	*Title* Manager of Mines
Address Jefferson City, Tennessee 37760	*Date* May 24, 1973

United States Department of the Interior

GEOLOGICAL SURVEY
WASHINGTON, D.C. 20242

IN REPLY REFER TO: Office of Minerals Exploration

May 16, 1972

Mr. K. R. Winslow
~~Divisional~~ Manager of Mines
The New Jersey Zinc Company
Jefferson City, Tennessee 37760

Re: DMEA-4153 (Zinc)
The New Jersey Zinc Company
Independence & Lawson Areas
Hancock & Hawkins Counties,
Tennessee
Contract Idm-E950

Dear Mr. Winslow:

After the completion of the approved exploration work under the contract identified above, we asked to be informed about changes in the status of the property and production from it during the period of royalty obligation.

To assist you to furnish this information and to assure the accuracy of our records, please answer the questions on the back of this letter and return two copies to this office with copies of any pertinent documents.

Sincerely yours,

Harold Kirkemo

Harold Kirkemo
Chief, Office of
Minerals Exploration

OFFICIAL COPY
O. M. E.
RECEIVED
MAY 26 1972

INITIALS	CODE
gla	130
HK	~~120~~
	220

copy to Region II

Form MME 63
(May 1970)

REQUEST FOR INFORMATION ON CERTIFIED PROJECT OR PROJECT UNDER ROYALTY AGREEMENT

1. Since May 13, 1971, has there been a change in ownership, lease, or sublease? *If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before.* Yes [ ] No [X]

Since May 13, 1971, has any contiguous land been acquired or any abandoned land been reacquired? If so, please give details. Yes [ ] No [X]

2. Since May 13, 1971, has there been any production from the land subject to the contract? Yes [ ] No [X]

A. If so and it was shipped, give quantity, value, and name and address of purchaser.

Purchaser *(name and address)*	Quantity	Value

B. If stockpiled awaiting sale, state quantity, grade, and location.

Type	Quantity *(tons)*	Estimated Grade	Location
Ore			
Concentrates			
Other			

3. Since workings *(see* , has any production been transported through *of contract)*? Yes [ ] No [ ]

If so, state quantity, value, and disposition of material.

Disposition of Material	Quantity	Value

Submitted by:

Name K. R. WINSLOW	*Title* MANAGER OF MINES
Address The New Jersey Zinc Company Jefferson City, Tennessee	*Date* May 22, 1972

United States Department of the Interior

GEOLOGICAL SURVEY
WASHINGTON, D.C. 20242

IN REPLY REFER TO: Office of Minerals Exploration

May 10, 1971

MAY 17 '71
INITIALS CODE
gfa 1 20
HK 1 20
220

Mr. K. R. Winslow
Divisional Manager of Mines
The New Jersey Zinc Company
Jefferson City, Tennessee 37760

Re: DMEA-4153 (Zinc)
The New Jersey Zinc Company
Independence & Lawson Areas
Hancock & Hawkins Counties,
Tennessee
Contract Idm-E950

Dear Mr. Winslow:

After the completion of the approved exploration work under the contract identified above, we asked to be informed about changes in the status of the property and production from it during the period of royalty obligation.

To assist you to furnish this information and to assure the accuracy of our records, please answer the questions on the back of this letter and return two copies to this office with copies of any pertinent documents.

Sincerely yours,

Harold Kirkemo

Harold Kirkemo
Chief, Office of
Minerals Exploration

Form MME 63
(May 1970)

REQUEST FOR INFORMATION ON CERTIFIED PROJECT OR PROJECT UNDER ROYALTY AGREEMENT

1. Since May 12, 1970, has there been a change in ownership, lease, or sublease? *If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before.* Yes ☐ No ☑

Since May 1970, has any contiguous land been acquired or any abandoned land been reacquired? If so, please give details. Yes / / No /✓/

2. Since May 12, 1970, has there been any production from the land subject to the contract? Yes ☐ No ☑

A. If so and it was shipped, give quantity, value, and name and address of purchaser.

Purchaser *(name and address)*	Quantity	Value

B. If stockpiled awaiting sale, state quantity, grade, and location.

Type	Quantity *(tons)*	Estimated Grade	Location
Ore			
Concentrates			
Other			

3. Since , has any production been transported through workings *(see of contract)*? Yes ☐ No ☐

If so, state quantity, value, and disposition of material.

Disposition of Material	Quantity	Value

Submitted by:

Name K. R. Winslow	*Title* Manager of Mines
Address Jefferson City, Tennessee	*Date* May 13, 1971

IN REPLY REFER TO:
Office of Minerals Exploration

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON, D.C. 20242

May 8, 1970

Mr. K. R. Winslow
Divisional Manager of Mines
The New Jersey Zinc Company
Jefferson City, Tennessee 37760

Re: DMEA-4153 (Zinc)
The New Jersey Zinc Company
Independence & Lawson Areas
Hancock & Hawkins Counties,
Tennessee
Contract Idm-E950

OFFICIAL COPY
O. M. E.
RECEIVED
MAY 15 1970
INITIALS CODE
Zla 130
JHK 120
220

Dear Mr. Winslow:

After the completion of the approved exploration work under the contract identified above, we asked to be informed about changes in the status of the property and production from it during the period of royalty obligation.

To assist you to furnish this information and to assure the accuracy of our records, please answer the questions on the back of this letter and return two copies to this office with copies of any pertinent documents.

Sincerely yours,

Harold Kirkemo

Harold Kirkemo
Chief, Office of
Minerals Exploration

Copy to R-IV

MME Form 63
Revised 7-65

REQUEST FOR INFORMATION ON CERTIFIED PROJECT AND PROJECT UNDER ROYALTY AGREEMENT

1. Since May 21, 1969, has there been a change in ownership, lease, or sublease? If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before. Yes ☐ No ☑

   Since May 1969, has any contiguous land been acquired or any abandoned land been reacquired? If so, please give details. Yes ☐ No ☑

2. Since May 21, 1969, has there been any production from the land subject to the contract? Yes ☐ No ☑

   A. If so and it was shipped, give quantity, value, and name and address of purchaser.

	Quantity	Value

   B. If stockpiled awaiting sale, state quantity, grade, and location.

Type	Quantity		Estimated Grade	Location
Ore		Tons		
Concentrates		Tons		
Other		Tons		

3. Since , has any production been transported through workings (see of contract)? Yes ☐ No ☐

   If so, state quantity, value, and disposition of material.

Disposition of Material	Quantity	Value

Submitted by:

Name K R Winslow — Title Divisional Manager of Mines

K. R. Winslow

Address — Date May 12, 1970

Excerpt from Robert A. Laurence's memorandum to Harold Kirkemo, Chief, Office of Minerals Exploration, dated August 7, 1969.

Copy of the Form MME-63, addressed to Johnson Crawford, New Jersey Zinc Company . . . has been received.

Mr. Crawford is retiring in a few months, and is currently convalescing from a severe illness. He has been succeeded at Jefferson City by K. R. Winslow, whose title is Division Manager of Mines. All correspondence concerning DMEA contracts with New Jersey Zinc Company in Tennessee should now be addressed to Mr. Winslow.

DMEA - 4153

Proj

IN REPLY REFER TO:
Office of Minerals Exploration

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON, D.C. 20242

May 15, 1969

Mr. Johnson Crawford
Manager, Tennessee Operations
The New Jersey Zinc Company
Jefferson City, Tennessee 37760

Re: DMEA-4153 (Zinc)
The New Jersey Zinc Company
Independence & Lawson Areas
Hancock & Hawkins Counties,
Tennessee
Contract Idm-E950

OFFICIAL COPY
O. M. E.
RECEIVED
MAY 23 1969

INITIALS	CODE
gla	130
HK	70
	220

Dear Mr. Crawford:

After the completion of the approved exploration work under the contract identified above, we asked to be informed about changes in the status of the property and production from it during the period of royalty obligation.

To assist you to furnish this information and to assure the accuracy of our records, please answer the questions on the back of this letter and return two copies to this office with copies of any pertinent documents.

Sincerely yours,

Harold Kirkemo

Harold Kirkemo
Chief, Office of
Minerals Exploration

Copy to R-IV

MME Form 63
Revised 7-65

REQUEST FOR INFORMATION ON CERTIFIED PROJECT AND PROJECT UNDER ROYALTY AGREEMENT

1. Since May 1968, has there been a change in ownership, lease, or sublease? If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before. Yes [ ] No [✓]

   Since May 1968, has any contiguous land been acquired or any abandoned land been reacquired? If so, please give details. Yes [ ] No [✓]

2. Since _____, has there been any production from the land subject to the contract? Yes [ ] No [✓]

   A. If so and it was shipped, give quantity, value, and name and address of purchaser.

	Quantity	Value

   B. If stockpiled awaiting sale, state quantity, grade, and location.

Type	Quantity		Estimated Grade	Location
Ore		Tons		
Concentrates		Tons		
Other		Tons		

3. Since _____, has any production been transported through _____ workings (see _____ of contract)? Yes [ ] No [✓]

   If so, state quantity, value, and disposition of material.

Disposition of Material	Quantity	Value

Submitted by:

Name Johnson Crawford Title Manager - E. Tennessee Operations
The New Jersey Zinc Co.
Address Sefferson City, Tenn. Date May 21, 1969

IN REPLY REFER TO:
Office of Minerals Exploration

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON, D.C. 20242

May 17, 1968

Mr. Johnson Crawford,
Mgr. - Tennessee Operations
The New Jersey Zinc Company
Jefferson City, Tennessee 37760

Re: DMEA-4153 (Zinc)
The New Jersey Zinc Company
Independence & Lawson Areas
Hancock & Hawkins Counties,
Tennessee
Contract Idm-E950

OFFICIAL
COPY
T. E.
RECEIVED
MAY 22 1968
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Gentlemen:

After the completion of the approved exploration work under the contract identified above, we asked to be informed about changes in the status of the property and production from it during the period of royalty obligation.

To assist you to furnish this information and to assure the accuracy of our records, please answer the questions on the back of this letter and return two copies to this office with copies of any pertinent documents.

Sincerely yours,

Frank E. Johnson
Frank E. Johnson
Chief, Office of
Minerals Exploration

Copy to R-IV

MME Form 63
Revised 7-65

REQUEST FOR INFORMATION ON CERTIFIED PROJECT AND PROJECT UNDER ROYALTY AGREEMENT

1. Since June 1967, has there been a change in ownership, lease, or sublease? If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before. Yes [ ] No [X]

   Since June 1967, has any contiguous land been acquired or any abandoned land been reacquired? If so, please give details. Yes [ ] No [X]

2. Since June 1967, has there been any production from the land subject to the contract? Yes [ ] No [X]

   A. If so and it was shipped, give quantity, value, and name and address of purchaser.

	Quantity	Value

   B. If stockpiled awaiting sale, state quantity, grade, and location.

Type	Quantity		Estimated Grade	Location
Ore		Tons		
Concentrates		Tons		
Other		Tons		

3. Since , has any production been transported through workings (see of contract)? Yes [ ] No [X]

   If so, state quantity, value, and disposition of material.

Disposition of Material	Quantity	Value

Submitted by:

Name Johnson Crawford Title Manager - Tennessee Operations
The New Jersey Zinc Company

Address Jefferson City, Tennessee Date May 20, 1968

IN REPLY REFER TO:
Office of Minerals Exploration

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON, D.C. 20242

May 25, 1967

The New Jersey Zinc Company
Jefferson City, Tennessee 37760

Re: DMEA-4153 (Zinc)
The New Jersey Zinc Company
Independence & Lawson Areas
Hancock & Hawkins Counties,
Tennessee
Contract Idm-E950

1967

120 M
~~110~~
HK 120
120 M
2.20

Gentlemen:

After the completion of the approved exploration work under the contract identified above, we asked to be informed about changes in the status of the property and production from it during the period of royalty obligation.

To assist you to furnish this information and to assure the accuracy of our records, please answer the questions on the back of this letter and return two copies to this office with copies of any pertinent documents.

Sincerely yours,

Frank E. Johnson

Frank E. Johnson
Chief, Office of
Minerals Exploration

MME Form 63
Revised 7-65

REQUEST FOR INFORMATION ON CERTIFIED PROJECT AND PROJECT UNDER ROYALTY AGREEMENT

1. Since **July 1966**, has there been a change in ownership, lease, or sublease? If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before. Yes [ ] No [x]

Since July 1966, has any contiguous land been acquired or any abandoned land been reacquired? If so, please give details. Yes/ /No/x/

2. Since **July 1966**, has there been any production from the land subject to the contract? Yes [ ] No [x]

   A. If so and it was shipped, give quantity, value, and name and address of purchaser.

	Quantity	Value

   B. If stockpiled awaiting sale, state quantity, grade, and location.

Type	Quantity		Estimated Grade	Location
Ore		Tons		
Concentrates		Tons		
Other		Tons		

3. Since , has any production been transported through workings (see of contract)? Yes [ ] No [x]

If so, state quantity, value, and disposition of material.

Disposition of Material	Quantity	Value

Submitted by:

Name **Johnson Crawford** Title **Manager-Tennessee Operations The New Jersey Zinc Company**

Address **Jefferson City, Tennessee** Date **June 9, 1967**

TABLE 2.-- PARTIAL STATISTICAL ANALYSIS OF SELECTED STRATIGRAPHIC AND ZINC INTENSITY DATA FROM DMEA DRILLING, INDEPENDENCE SECTOR, INDEPENDENCE-LAWSON AREA

[DMEA-4153.1dm-E 950 (zinc)]

VALUE RANGES	NO. OF HOLES IN RANGE	TOTAL ZINC INTENSITY	AVERAGE ZINC INTENSITY/HOLE	
23-44	6	735	122.5	
49-62	5	347	69.4	
62-66	5	92	18.4	pTr (feet)
67-82	6	86	14.3	
0.18-0.37	6	765	127.5	
0.41-0.47	5	138	27.6	
0.50-0.54	5	153	31.0	Ratio pTr : pTs
0.55-0.86	6	214	35.7	
1.93-2.80	6	36	6.0	
2.81-3.04	5	331	66.2	
3.15-4.13	5	391	78.2	Ratio pTr : pTu
4.50-9.74	6	513	85.5	
0.59-0.92	6	225	37.5	
0.93-1.02	5	186	37.2	
1.06-1.14	5	568	113.6	Ratio pTu : pTl
1.21-2.48	6	292	48.7	

NOTE: pT - drill-hole penetration thickness; u, r, s, & l - upper member, R-bed, S-bed, & lower member, respectively, of Kingsport formation

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON, D.C. 20242

June 29, 1966

The New Jersey Zinc Company

Jefferson City, Tennessee 37760

Re: DMEA-4153 (Zinc)
The New Jersey Zinc Company
Independence & Lawson Areas
Hancock & Hawkins Counties,
Tennessee
Contract Idm-E950

OFFICIAL
COPY
O. M. R.
RECEIVED
JUL 11 1966

INITIALS	CODE
7/11 M	~~120~~
TEJ	~~110~~
HK	~~120~~
	~~120~~
	220

Gentlemen:

After the completion of the approved exploration work under the contract identified above, we asked to be informed about changes in the status of the property and production from it during the period of royalty obligation.

To assist you to furnish this information and to assure the accuracy of our records, please answer the questions on the back of this letter and return two copies to this office with copies of any pertinent documents.

Sincerely yours,

Frank E. Johnson

Frank E. Johnson
Chief, Officeof
Minerals Exploration

MME Form 63
Revised 7-65

REQUEST FOR INFORMATION ON CERTIFIED PROJECT AND PROJECT UNDER ROYALTY AGREEMENT

1. Since May 1965, has there been a change in ownership, lease, or sublease? If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before. Yes [ ] No [✓]

   Since May 1965, has any contiguous land been acquired or any abandoned land been reacquired? If so, please give details. Yes [ ] No [✓]

2. Since May 1965, has there been any production from the land subject to the contract? Yes [ ] No [✓]

   A. If so and it was shipped, give quantity, value, and name and address of purchaser.

	Quantity	Value

   B. If stockpiled awaiting sale, state quantity, grade, and location.

Type	Quantity		Estimated Grade	Location
Ore		Tons		
Concentrates		Tons		
Other		Tons		

3. Since , has any production been transported through workings (see of contract)? Yes [ ] No [✓]

   If so, state quantity, value, and disposition of material.

Disposition of Material	Quantity	Value

Submitted by:

Name Johnson Crawford Title Manager- Tennessee Operations The New Jersey Zinc Co

Address Jefferson City, Tennessee Date July 8, 1966

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

May 20, 1965

Re: DMEA-4153 (Zinc)
The New Jersey Zinc Company
Independence & Lawson Areas
Hancock & Hawkins Counties,
Tennessee
Contract Idm-E950

The New Jersey Zinc Company

Jefferson City, Tennessee

Gentlemen:

After the completion of the approved exploration work under the contract identified above, we asked to be informed about changes in the status of the property and production from it during the period of royalty obligation.

To assist you to furnish this information and to assure the accuracy of our records, please answer the questions on the back of this letter and return two copies to this office with copies of any pertinent documents.

Sincerely yours,

George C. Selfridge

George C. Selfridge, Chief
Division of Exploration Operations

OFFICIAL
COPY
O. M. E.
RECEIVED
MAY 26 1965

INITIALS	CODE
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5/28	120
	120

220

MME Form 63
Revised 3-62

DMEA-4153
Idm-E950

REQUEST FOR INFORMATION ON CERTIFIED PROJECT AND PROJECT UNDER ROYALTY AGREEMENT

1. Since October 1964, has there been a change in ownership, lease, or sublease? If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before. Yes ☐ No ☒

   Since February 1959, has any contiguous land been acquired or any abandoned land reacquired? If so, please give details. Yes ☐ No ☒

2. Since October 1964, has there been any production from the land subject to the contract? Yes ☐ No ☒

   A. If so and it was shipped, give quantity, value, and name and address of purchaser.

	Quantity	Value

   B. If stockpiled awaiting sale, state quantity, grade, and location.

Type	Quantity	Estimated Grade	Location
Ore	Tons		
Concentrates	Tons		
Other	Tons		

3. Since , has any production been transported through workings (see of contract)? Yes ☐ No ☒

   A. If so, state quantity, value, and disposition of material.

Disposition of Material	Quantity	Value

Submitted by:

Name [signature] Title Resident Exploration Geologist

Address Jefferson City, Tennessee Date May 25, 1965

4511

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

September 14, 1964

Re: DMEA-4153 (Zinc)
The New Jersey Zinc Company
Independence & Lawson Areas
Hancock & Hawkins Counties,
Tennessee
Contract Idm-E950

The New Jersey Zinc Company

Jefferson City, Tennessee

Gentlemen:

After the completion of the approved exploration work under the contract identified above, we asked to be informed about changes in the status of the property and production from it during the period of royalty obligation.

To assist you to furnish this information and to assure the accuracy of our records, please answer the questions on the back of this letter and return two copies to this office with copies of any pertinent documents.

Sincerely yours,

George C. Selfridge

George C. Selfridge, Chief
Division of Exploration Operations

OFFICIAL FILE COPY
O. M. E
RECEIVED OCT 5 1964

DATE	INITIALS	CODE
10/5	GEO	800
10-6	[illegible]	100
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10/6	[illegible]	120
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		220

MME Form 63
Revised 3-62

DMEA-4153
Idm-E950

REQUEST FOR INFORMATION ON CERTIFIED PROJECT AND PROJECT UNDER ROYALTY AGREEMENT

1. Since December 1963, has there been a change in ownership, lease, or sublease? If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before. Yes ☐ No ☑

2. Since December 1963, has there been any production from the land subject to the contract? Yes ☐ No ☑

   A. If so and it was shipped, give quantity, value, and name and address of purchaser.

	Quantity	Value

   B. If stockpiled awaiting sale, state quantity, grade, and location.

Type	Quantity	Estimated Grade	Location
Ore	Tons		
Concentrates	Tons		
Other	Tons		

3. Since , has any production been transported through workings (see of contract)? Yes ☐ No ☑

   A. If so, state quantity, value, and disposition of material.

Disposition of Material	Quantity	Value

Submitted by:

Name [signature] Title Chief Geologist-Tennessee

Address Jefferson City, Tennessee Date October 2, 1964

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

November 14, 1963

Re: DMEA-4153 (Zinc)
The New Jersey Zinc Company
Independence & Lawson Areas
Hancock & Hawkins Counties,
Tennessee
Contract Idm-E950

The New Jersey Zinc Company

Jefferson City, Tennessee

Gentlemen:

After the completion of the approved exploration work under the contract identified above, we asked to be informed about changes in the status of the property and production from it during the period of royalty obligation.

To assist you to furnish this information and to assure the accuracy of our records, please answer the questions on the back of this letter and return two copies to this office with copies of any pertinent documents.

Sincerely yours,

F. M. Murphy, Acting Chief
Division of Minerals

RECEIVED
DATE
12/4

MME Form 63
Revised 3-62

REQUEST FOR INFORMATION ON CERTIFIED PROJECT AND PROJECT UNDER ROYALTY AGREEMENT

1. Since August 14, 1962 , has there been a change in ownership, lease, or sublease? If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before. Yes ☐ No ☒

2. Since August 14, 1962 , has there been any production from the land subject to the contract? Yes ☐ No ☒

   A. If so and it was shipped, give quantity, value, and name and address of purchaser.

	Quantity	Value

   B. If stockpiled awaiting sale, state quantity, grade, and location.

Type	Quantity		Estimated Grade	Location
Ore		Tons		
Concentrates		Tons		
Other		Tons		

3. Since , has any production been transported through workings (see of contract)? Yes ☐ No ☒

   A. If so, state quantity, value, and disposition of material.

Disposition of Material	Quantity	Value

Submitted by:

Name [signature] Title Chief Geologist-Tennessee

Address Jefferson City, Tennessee Date December 2, 1963

4511

THE NEW JERSEY ZINC COMPANY

(ORGANIZED 1848)

Jefferson City, Tennessee

August 14, 1962

RECEIVED	
DATE	

Mr. W. E. Grimsley, Chief
Division of Minerals
Office of Mineral Exploration
United States Department of Interior
Washington 25, D. C.

Dear Mr. Grimsley:

Enclosed herewith, are the data you requested in your of August 10, 1962 relative to the following:

DMEA 4132 (Zinc)
Independence & Lawson Areas
[redacted]

[redacted] (Zinc)
[redacted]

[redacted] (Zinc)
[redacted] Plains Area
[redacted]

DMEA 4119 (Zinc)
Talbott Area
[redacted].

Yours very truly,

THE NEW JERSEY ZINC [redacted]

Assistant [redacted]

[redacted]/[redacted]

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

August 10, 1962

Re: DMEA-4153 (Zinc)
The New Jersey Zinc Co.
Independence & Lawson Areas
Hancock & Hawkins Counties, Tennessee
Contract Idm-E950

The New Jersey Zinc Company

Jefferson City, Tennessee

Gentlemen:

After the completion of the approved exploration work under the contract identified above, we asked to be informed about changes in the status of the property and production from it during the period of royalty obligation.

To assist you to furnish this information and to assure the accuracy of our records, please answer the questions on the back of this letter and return two copies to this office with copies of any pertinent documents.

Sincerely yours,

W. R. Griswold

W. R. Griswold, Chief
Division of Minerals

OFFICIAL FILE COPY
O. M. E
RECEIVED AUG 16 1962

DATE	INITIALS	CODE
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		110
8/21	Griswold	500
		220

MME Form 63
Revised 3-62

DMEA-4153
Idm-E950

REQUEST FOR INFORMATION ON CERTIFIED PROJECT AND PROJECT UNDER ROYALTY AGREEMENT

1. Since **July 1, 1960**, has there been a change in ownership, lease, or sublease? If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before. Yes [x] No [ ]

See attached sheets

2. Since **July 1, 1960**, has there been any production from the land subject to the contract? Yes [ ] No [x]

A. If so and it was shipped, give quantity, value, and name and address of purchaser.

	Quantity	Value

B. If stockpiled awaiting sale, state quantity, grade, and location.

Type	Quantity	Estimated Grade	Location
Ore	Tons		
Concentrates	Tons		
Other	Tons		

3. Since , has any production been transported through workings (see of contract)? Yes [ ] No [x]

A. If so, state quantity, value, and disposition of material.

Disposition of Material	Quantity	Value

Submitted by:

Name A. D. Hoagland Title Chief Geologist

Address Jefferson City, Tennessee Date August 14, 1962

4511

The following options have been exercised on the dates indicated and mineral and mining rights are owned by The New Jersey Zinc Company:

5/31/61	L. W. Horton and Maude L. Horton -	Approx.	214.13	acres
5/3/61	R. L. Williams and Mae W. Williams-	"	148.93	"
7/10/61	Geo. M. Horton and Corna E. Horton-	"	56.65	"

MME Form 7
(10-58)

OFFICIAL FILE COPY

Date	Surname	Code
4/11	GCS	120
		225

APR 11 1962

Memorandum

To: Chief, Fiscal Section, Division of Administrative Services, Office of the Secretary

From: Chief, Division of Field Operations, OME

Subject: DMEA-4153 (Zinc)
The New Jersey Zinc Company
Independence and Lawson Areas
Hancock and Hawkins Counties, Tennessee
Contract Idm-8950

Enclosed for your files is the original of a Report of Royalty Review on the subject contract.

George C. Selfridge

Enclosure

GCSelfridge/hb (4/11/62)
cc to: Docket DMEA-4153
Director's Reading File
G. C. Selfridge
CA&A Division
R. A. Laurence, Region IV, w/cy of Report of Royalty Review dtd 3/22/62 & orig. cy of memo dtd 4/10/62 to Chf., Div. of Field Operations from CA&A Division.
Avery Reed, USBM, Reg. IV, w/cy of ea. item sent to Mr. Laurence.

43683

MME Form 7
(10-58)

OFFICIAL FILE COPY

Date	Surname	Code
		220

APR 1 0 1962

Memorandum

To: Chief, Division of Field Operations

From: E. D. Talbert, Acting Chief (Signed) E. D. Talbert
Contract Administration and Audit Division

Subject: DMEA-4155 (Zinc)
The New Jersey Zinc Company
Independence and Lawson Areas
Hancock and Hawkins Counties, Tennessee
Contract Idm-E950

Enclosed are the original and two copies of a Report of Royalty Review covering the subject Region IV contract. If you concur in the facts stated therein, please make the following distribution:

(a) Original to the Fiscal Section, Division of Administrative Services, Office of the Secretary; and

(b) Two copies to Region IV files.

This report is for OME record purposes only; therefore, no copy has been provided for the Operator.

As evidence of your concurrence, a copy of your memorandum transmitting the original of the report to the Department's Fiscal Section should be furnished this Division. If for any reason you do not concur, the original and both copies should be returned to this Division with your comments.

Enclosures

EDTalbert/ama 4-10-62

cc:
Docket
Director's Reading File
CA & A Division
Mr. Rothrock

43683

The New Jersey Zinc Company
Docket No. DMEA-4153
Contract No. Idm-E950

Land Remaining in the Contract

Name of Property Owner	Acreage	*
Henry L. Gilliam and Clara Dillon Gilliam	100	79.08
E. F. Gilliam and Mary Hickman Gilliam	35	32.1
D. H. Darnell and Elizabeth H. Darnell	125	108.7
Floyd Edens and Martha Edens	30	23.1
Ralph Garrett and Sarah Gillam Garrett	30	32.
M. B. Horton	230	186.7
W. H. Horton and Elizabeth Moneyhun Horton	75	75.
Floyd Williams Horton, Jessie Horton Walker and Fred Horton (Flo & Mattie)	62	61
Rectangular area 200 x 780 feet	39	0
G. M. Horton	62	62
R. Williams	187	187
L. W. Horton	250	250

Prepared by:

J. W. Alt, Mining Engineer
Division of Minerals
August 2, 1960

* Note:
Cfr. Final Report shows acreage as listed in pencil above, i.e. 11 parcels totalling 1090.68 acres, rather than 12 tracts adding to 1,225 acres. Talbot 3/20/62

MR. SELFRIDGE:

I have no record of FT's final report on this project having been received????

HBerry
12/21/60

The last sentence is really valuable in view of certification 1½ years ago.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

ROOM 11 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

IN REPLY REFER TO:

OFFICIAL FILE COPY
O. M. E.
RECEIVED DEC 21 1960

DATE	INITIALS	
12/21	LOC	210
		130
		~~700~~
	Previous	500
		110
		220

December 19, 1960

Memorandum

To: George C. Selfridge, Chief, Division of Field Operations
Office of Minerals Exploration, Washington 25, D. C.

Through: Robert A. Laurence, U. S. Geological Survey, Knoxville

From: Helmuth Wedow, Jr., U. S. Geological Survey, Knoxville

Subject: Geologic Review---DMEA-4153, Idm-E950 (Zinc)
Independence-Lawson area
Hancock and Hawkins Counties, Tennessee
The New Jersey Zinc Company

This memorandum is submitted in lieu of the Geology and Ore Reserves Section of the Formal Field Team Report on the subject project in response to the memorandum of L. G. Houk of May 19, 1960.

The Independence-Lawson DMEA project area is the northeasternmost known zinc-bearing area in the Copper Ridge zinc district of East Tennessee. Although most of the project area lies in Hancock County, some of the southwestern tracts of the Lawson sector are in Hawkins County. As elsewhere in the Copper Ridge district, the exploration area is underlain by the Longview, Kingsport, and Mascot formations of the upper part (approximately 1,000 feet) of the Lower Ordovician Knox dolomite group and the basal several hundred feet of the Middle Ordovician Chickamauga limestone group; the two groups are separated by a profound unconformity. The structural setting is

REPORT IN LIEU FINAL FIELD REPORT

generally homoclinal in the northwest limb of the Greendale syncline that lies in the thrust shingle block bounded by the Saltville fault above and to the southeast and by the Copper Creek fault below and to the northwest. Locally, the bedrock attitude averages about N. 60° E., 55° SE. Shear zones and tear faults with steep dips and only small stratigraphic displacement cut the beds at angles close to normal to the strike. Small local warps, generally mostly obscured by the strong regional dip, but with trends at various angles to the general bedrock strike, also occur.

In the search for zinc ores in the project area under the DMEA contract a total of 33 holes was drilled---23 and 10 in the Independence and Lawson sectors respectively---aggregating 24,134 feet. Prior to the DMEA program 47 holes had been drilled and had discovered about a half million tons of 5 percent zinc ore. In addition, one non-DMEA hole was drilled off pattern in the Lawson sector during the program. Hole depths of the DMEA drilling ranged from 325 to 1,329 feet, averaging 733 feet. All holes penetrated to the approximate horizon of the top of the Longview dolomite---the so-called T-bed.

The ore bodies discovered in the Independence area occur mostly in the lower Kingsport limestone member (i. e., R- and S-beds). Such ore as is found in the upper Kingsport member lies in the lower few tens of feet above the top of R-bed. Selected stratigraphic and zinc intensity data for the Independence-Lawson DMEA holes are summarized in table 1. As in other Copper Ridge exploration areas,

the occurrence of zinc mineralization appears to be related closely to: (1) holes with median values of the ratio pTu:pTl, and (2) holes with high values of the ratio pTr:pTs. (Where in both cases, pT is the drill-hole penetration thickness---or isochore value, and u, l, r, and s are the upper member, lower member, R-bed, and S-bed, respectively, of the Kingsport formation.) These relationships appear to be due mostly to the thinning of R-bed and the upper part of S-bed, as can be seen in table 2 where these relationships are compared statistically. The cause of the thinning is probably due mostly to the solution-removal of limestone or to compaction of beds after dolomitization, or both. Conversely, thickening of the upper member occurs generally by collapse into the "void" left by the thinning of the lower units. Both processes develop the porosity needed for the emplacement of the sulfide minerals and their associated gangue. For example, the dolomitization of the limestone, in spite of the later compaction, develops an interrhomb porosity that is filled by the sphalerite and other later minerals of the "disseminated" or so-called replacement type of ore. The collapse of the upper member forms a fracture porosity that was filled by the sphalerite and sparry dolomite of the "fracture-filling" or "crackle-breccia" type.

Of the 33 DMEA holes drilled in the Independence-Lawson area only six are classified as ore, eight are "shine", eight are trace holes, and eleven are barren. The six ore holes, however, made ten separate ore penetrations, that is, a compact run with a minimum of 50 feet-percent units of zinc; three of these runs were in one hole and two

runs in each of two of the others. The locations of these holes are shown on figure 1 where the shape of the ore body is also inferred---such inference being based chiefly on such factors as general distribution of zinc intensity as related to the isochoring of various stratigraphic units and the contouring of the pT ratios mentioned above. Indicated ore, that is, ore in areas of about 10,000 square feet in the vicinity of each ore hole, amounts to about 130,000 tons with an average grade of 6.6 percent. On the basis of the shape of the "DMEA" ore body as interpreted on figure 1 and assuming an average pT of 15 feet, an additional 360,000 tons of similar grade is inferred---for a total of 490,000 tons. This total agrees favorably with that of the Operator whose estimate of the ore shown by the six holes amounted to about 520,000 tons but with only 4.3 percent zinc. The difference in grade is ascribed chiefly to the Operator's inclusion of dilution to a minimum pT of 18 feet for each ore run. The half million tons of ore found in the "DMEA extension" together with the reported half million tons found by the earlier drilling in the area excluded from the DMEA contract brings the total indicated-inferred reserve for the area to about one million tons with a grade of about 5 percent zinc. It is judged that with a like amount of additional drilling, this reserve could be at least doubled, although the additional ore would probably lie in considerably deeper ground, that is, at depths exceeding 1,000 feet. Fruitful areas for additional exploration are the obvious extensions shown on figure 1 and the general area between Holes IN-59 and -49.

Although the contract footage was not completed, sufficient ore was discovered to warrant certification of the project.

Helmuth Wedow, Jr.
Geologist

cc - USBM (2) (Knoxville and Washington)
USGS (2) (Knoxville)
USGS (1) (Washington)

MME Form 7
(10-58)

OFFICIAL FILE COPY

Date	Surname	Code
11-22	gad	220
		500

NOV 22 1960

Mr. V. J. Lynch
Bureau of Mines
Room 1, Post Office Building
Knoxville 2, Tennessee

Dear Vic:

We have located only three of The New Jersey Zinc Company's final reports which you requested while in my office on November 16. These extra copies are being forwarded to you by parcel post:

DMEA-4153, Idm-E 950 Independence Area

DMEA-4177, Idm-E 956 Eidson Area

DMEA-4586, Idm-E1071 Cedar Springs

Sincerely yours,

W. R. Griswold, Chief
Division of Minerals

GLAult/a
Copies 3 dockets

43683

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION
ROOM 11 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

October 2, 1959

OFFICIAL FILE COPY
O. M. E.
RECEIVED OCT 5 1959

DATE	INITIALS	CODE
10/5	RCW	225
10/5	[illegible]	800
10/5	[illegible]	500

Memorandum

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

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

Subject: DMEA-4153, Idm-E950 (zinc) The New Jersey Zinc Co. New York, N.Y. Independence Area, Hancock and Hawkins Counties, Tennessee

Enclosed are three copies of a supplement to the Operator's final report, which provides the additional information requested in our letter of August 21, 1959.

Although the Operators conclusion that the deposit is not economically mineable at the present time is well supported, we consider the certification of discovery to be justified by the definite possibility that this deposit may be economic within the 32-year period which expires on May 10, 1988.

Robert A. Laurence

Robert A. Laurence
EXECUTIVE OFFICER
OME FIELD TEAM
REGION V

V. J. Lynch

V. J. Lynch, Member
Bureau of Mines

OPR'S FINAL REPORT SUPPLEMENT

Independence - Lawson Area

Sector I Copper Ridge Belt

Hancock-Hawkins Counties, Tennessee

DMEA Docket No. 4153 Contract Idm E 950 (Zinc)

Ore Potential

Independence: Twenty-three holes were drilled under DMEA in the vicinity of previously discovered ore. In six of these holes ten ore penetrations were made. These penetrations were used to calculate a tonnage and grade estimate for the area tested.

For purposes of calculation the grade and thickness of a given penetration was extended half way to an adjacent ore hole or 75' along strike and 50' in the dip direction if not adjacent to an ore hole.

Thus, four of the six holes (IN-48, IN-50, IN-61 and IN-62) were calculated on the basis of blocks 100' x 350' or 35,000 square feet. The other two holes (IN-54 and IN-56) were calculated on the basis of blocks 100' x 150' or 15,000 square feet. To obtain cubic footage in each block the vertical thickness of each ore penetration was used, with a minimum of 18'. This is equivalent to a 10' stratigraphic thickness.

A tonnage factor of 11.4 cubic feet per ton was used to convert cubic feet to tons.

The cut-off grade used was about 3% although in I-62 one run, downgraded to 2% by dilution was used because of its proximity to higher grade mineralization.

The tonnage thus calculated is about a half million tons grading about 4¼% zinc as tabulated below:

Hole No.	Thickness	Area	Cu. Feet	Tons	Grade
IN-48	25'	35,000	875,000	76,754	3.00% Zn
	18'	35,000	630,000	55,263	3.81% Zn
	18'	35,000	630,000	55,263	3.41% Zn
IN-50	18'	35,000	560,000	49,123	3.15% Zn
IN-54	22'	15,000	330,000	28,947	11.13% Zn
IN-56	27'	15,000	405,000	35,526	8.19% Zn
IN-61	18'	35,000	630,000	55,263	4.02% Zn
	18'	35,000	630,000	55,263	3.66% Zn
IN-62	18'	35,000	630,000	55,263	5.70% Zn
	18'	35,000	630,000	55,263	2.00% Zn
Total				521,928	4.3% Zn

This estimate includes dilution for those runs of mineralization of less than 18' in thickness but accounts for no dilution of runs in excess of 18'. Insufficient drilling has been done to determine whether or not this mineralization occurs as one body or in several shoots.

It is considered that this deposit is not economically mineable at this time for a combination of reasons.

1. Relatively low tonnage. This would mean a high cost per ton to amortize the initial investment.

2. The thin, steeply dipping nature of the mineralization. The size and attitude of the deposit as it is presently interpreted indicate that mining and development costs per ton would be relatively high.

3. The remote location of the property. The geographically isolated location of deposit would impose higher transportation costs for obtaining supplies and materials and for shipping concentrates.

It must be borne in mind that this tonnage estimate is a generalized figure that is considered reasonable based on the sparse available data. This approximate tonnage estimate is meant to indicate, in a gross way, the amount of ore that might reasonably be expected to exist within the limits of the area tested.

Structure

The accompanying map (see AX-TENN-964-a and AX-TENN-965-a) shows structure contours drawn on the top of the Lower Kingsport (R bed).

While several small structural anomalies are present, no prominent folds or faults are evident. There appears to be no obvious structural control of the ore based on this interpretation.

LEGEND —— TENNESSEE DIAMOND DRILL LOGS

A —— Grade "A" — 1-5% Zn, Pb
Abu —— Abundant
Ae —— Augen
Alt —— Altered
Ang —— Angle, Angular
App —— Apparent
Apr —— Approaching
Argil - Argillaceous
Att —— Attitude
Av —— Average

B —— Grade "B" 5-10% Zn, Pb
Bd —— Bed, Bedding, Bedded
Bear — Bearing
Bkn —— Broken
Bl —— Black
Blu —— Blue
Bn —— Band-ed
Bot —— Bottom
Br —— Breccia
Brm —— Mosaic Breccia
Brn —— Brown
Bro —— Rosette Breccia
Brr —— Rubble Breccia
Bt —— Barite
Btwn — Between
Bu —— Buff
Ble —— Bleached-ing

C —— Grade "C" — 10% & Up Zn, Pb
Є —— Cambrian
Єcr —— Copper Ridge Dolomite
Єm —— Maryville Ls
Єn —— Nolichucky Shale
Єnmdl - Maynardville Dolomite
Єnmls - Maynardville Ls
Єr —— Rome Shale
Єrg —— Rogersville Shale
Єrgc — Craig Ls Member
Єrt —— Rutledge Ls
Єs —— Shady Dolomite
Ca —— Calcite

Ce —— Chert
Cem —— Cemented
Cer —— Cerussite
Calc — Calcareous
Cg —— Conglomerate
Ch —— Chalcopyrite
Chalced Chalcedony
Cm —— Calamine
Comp — Composite
Conc — Concretion
Concr - Concentrated
Condn - Condition
Cons — Considerable-y
Cont — Controted
Cr —— Cream-y
Crs —— Coarse
Cru —— Crushed
Crypt - Cryptozoon
Ct —— Contact
Curv — Curved

D & Dk- Dark-Prefix to color
Decalc- Decalcified
Dis —— Disseminated
Disc — Discontinuous
Displ - Displacement
Dist — Distance
Dl-z — Dolomite-zed
Dlic — Dolomitic
Dlztion - Dolomitization
Dn —— Dense
Dol —— Dolomite (Mineral)

Ed —— Edgewise
Eff —— Effervescence
Ellip - Ellipsoidal

Fa-ng - Fault-ing
Fi —— Fine
Fl —— Fluorite
Fm —— Formation
Fn —— Faint
Fos —— Fossil-iferous
Fr-d-ng - Fracture-ed-ing
Frag — Fragment

Fret —— Fretwork
Fuz —— Fuzzy Metamorphism
FW —— Footwall

G —— Ground
Ga —— Galena
Gd —— Gradational
Gg —— Gouge
Gm —— Groundmass
Gos —— Gossan
Gran —— Granular, Granule
Grn, Grnsh - Green-ish
Gy —— Grey

Horiz —— Horizon
He —— Hematite
Hily —— Highly
Hvy —— Heavy
HW —— Hanging Wall

I & Inter - Interbedded
Inclin — Inclination
Incip —— Incipient
Irreg —— Irregular

K —— Kaolin
KKnFa —— Koppick Knob Fault

L —— Light
Le —— Leached
Lg-er —— Large-r
Lim-ic — Limonite-ic
Lo —— Local-ly
Ls —— Limestone

M —— Medium
Mal —— Malachite
Mash —— Mashed
Mass —— Massive
Md —— Moderate
MF —— Mud Flakes
Min —— Mineralized (0-1% Zn, Pb)
Mkr —— Marker
Mot —— Mottled

Mt —— Metamorphism, Metamorphosed
Mtx —— Matrix
Mylon - Mylonite

Nil —— None
Nod —— Nodule-ar
Nu —— Numerous

Oc —— Occasional
Oo —— Oolite-ic
Or —— Orange
Oxid — Oxidized-ation

Pk —— Pink
P —— Pseudo
Pb, Peb- Pebble
Piso — Pisolite-ic
Por —— Porphyritic
PSg —— Pseudo Sand Grain
Pt —— Parting
Py-ic - Pyrite-ic

Q —— Quartz
Qt, Qtzt - Quartzite

Rd —— Red
R-y —— Ribbon-y
Ra —— Rare
RC —— Red Clay
Reg —— Regular
Rem —— Remnant
Repl — Replacement
Rk —— Rock
Rnd —— Round

S —— Siliceous
Sach — Saccharodial
San —— Sandy
Sc —— Scattered
Sch —— Schard
Sec —— Secondary
Sed —— Sediment-ary
Sg —— Sand Grain
Sh-y — Shale-y
Shat-ng - Shattered-ing
She —— Shear
Shi —— Shine

Si —— Silica
Sk —— Speckled
Sl —— Slight
Sm —— Smithsonite
Sml —— Small
Sp —— Sphalerite
Ss —— Sandstone
St —— Strong
Stn —— Stain
Stp —— Steep
Strat - Straticulate
Sty-ic- Stylolite-ic
Sug —— Suggestive
Sul —— Sulphide

TB —— Thin-bedded
Tk-ns - Thick-ness
Tn —— Thin
Tp —— Top
Tr —— Trace
Trans - Transitional
Text — Texture

Vn —— Vein
Var —— Varied-ious-iable
Vnl —— Veinlet
Vug —— Vuggy, Vug
Vy —— Very

Wd —— Width, Wide
WB —— Well-bedded
We —— Weathered
Wh —— White
Wk —— Weak

Xl —— Crystal
Xln —— Crystalline

Yel —— Yellow

Zn —— Zinc
Zo —— Zone

Oc —— Chepultepec
Ol —— Lenoir
Olv —— Longview
Ok —— Kingsport
Om —— Mosheim
Oma —— Mascot

AEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
9/15	[illegible]	500
9/17	Lloyd	140
		~~140~~
9/18	Talbert	800
		~~130~~
9/18	Lamb	
"	Kirkemo	
		~~110~~
9-21	gad	220
		500

SEP 21 1959

SOLICITOR

SEP 16 1959

INTERIOR DEPT.

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

Re: Docket No. DMEA-4153 (Zinc)
The New Jersey Zinc Company
Independence Area
Hancock and Hawkins Counties, Tennessee
Contract No. Idm-E950

Dear Mr. Goodwin:

Enclosed is a certificate of discovery or development that covers all the land described in Article 2 of the contract.

By the terms of the Exploration Project Contract, as amended, and the certification, all minerals mined or produced from May 10, 1956, to May 10, 1988, are subject to the Government's percentage royalty as set forth in the contract until the sum of $36,613.58 is repaid to the Government.

Royalty payments should be made to the Executive Officer, OME Field Team, Region V, Room 11, Post Office Building, Knoxville 2, Tennessee, by the purchaser with checks drawn payable to the Office of Minerals Exploration. The purchaser should be advised to deduct royalties from the amount due on each shipment and send the check to the Executive Officer. Each check should be accompanied by suitable sales evidence - such as copies of settlement sheets - showing the name of the purchaser, the quantity and grade of the products sold, and the price and charges, certified to be correct by the purchaser.

You are requested to notify the Executive Officer of any changes in ownership or production rights that may have any effect on the Government's right to its percentage royalty. Your attention is called particularly to Article 2 (d) of the contract relating to the preservation of the Government's right to a percentage royalty on production. Also when production starts, please notify the Executive Officer. Thereafter, if production ceases for any extended period, please notify him accordingly at six-month intervals.

Sincerely yours,

George C. Selfridge

Acting Director

Enclosure

WRGriswold/gla 9-15-59
cc to: Director's Reading File
Frank E. Johnson
Operating Committee
Mr. Lamb, USBM
Mr. Kirkemo, USGS
OME Field Team, Region V (2)
Div. of Contract Adm. & Audit
Mr. Griswold
Docket
Chron

8623

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

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9/15	[illegible]	500
9/19	Tilyard	140
		140
9/18	Talbert	800
		~~130~~
9/18	Lamb	
"	Kirkemo	
		~~110~~
9-21	gad	220
		500

SEP 21 1959

Mr. Clarence A. Fredell, Director
Technical Research and Development Division
Defense Materials Service
General Services Administration
6018 GSA Building
Washington 25, D. C.

Re: Docket No. DMEA-4153 (Zinc)
The New Jersey Zinc Company
Independence Area
Hancock and Hawkins Counties, Tennessee
Contract No. Idm-E950

Dear Mr. Fredell:

Enclosed is a copy of a certification of discovery or development related to Exploration Project Contract No. Idm-E950.

The contract was dated May 10, 1956, with the Government participating to the extent of 50 percent in an exploration project estimated to cost $214,300.00. Actual expenditures were $73,227.16, with the Government's share being half of such amount, or $36,613.58.

The total amount of work provided for under the contract consisted of 70,000 feet of diamond drilling and auxiliary churn drilling. Work actually completed consisted of 24,134 feet of such drilling.

The discovery consisted of replacement deposits of zinc ores occurring in the Kingsport (dolomite) formation, lying in the plane of the bedding. The estimated ore reserve resulting from the work of exploration under the contract consists of 500,000 tons, with a grade of 5 percent zinc.

Sincerely yours,

George C. Selfridge
Acting Director

WRGriswold/gla
9-15-59

cc to: Director's Read. File
Mr. Johnson
Operating Committee
Mr. Lamb, USBM
Mr. Kirkemo, USGS
OME Field Team, Reg. V (2)
Docket
Chron

Enclosure

8623

MME Form 7
(10-58)

OFFICIAL FILE COPY

Date	Surname	Code
9/1	gad	220
		500

SEP 1 1959

Memorandum

To: Executive Officer, OME Field Team, Region V

From: E. D. Talbert, Acting Chief (Signed) E. D. Talbert
Contract Administration and Audit Division

Subject: Docket No. DMEA-4153 (Zinc)
The New Jersey Zinc Company
Independence Area
Hancock County, Tennessee
Contract No. Idm-E950

As requested by your August 21 memorandum a Report of Review in lieu of a final audit of the subject contract has been prepared. The original and three copies are enclosed.

If you concur with the facts as stated therein please make the usual distribution. If for any reason you do not concur, please return the original and all copies to this Division with your comments.

The 33 driller's invoices, which are the documentary support of previously paid vouchers and which were submitted for review by Mrs. Miller's August 25 memorandum, are being returned by certified mail with a copy of this memorandum.

Enclosures

EDTalbert/ama
September 1, 1959

Copy to: Docket
Director's Reading File
CA & A Division
Mrs. Helen R. Miller

43

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
REGION V

ELECTROTECHNICAL
EXPERIMENT STATION

P. O. BOX 217
NORRIS, TENNESSEE

REGISTERED MAIL

August 25, 1959

Memorandum

To: E. D. Talbert, Office of Minerals Exploration, Interior Building, Washington 25, D. C.

From: Administrative Assistant, Norris, Tennessee

Subject: Report of Review in Lieu of Final Audit - Contract Idm-E950, Docket No. DMEA-4153, The New Jersey Zinc Company, Independence Area, Hancock and Hawkins Counties, Tennessee

A report of review in lieu of final audit is requested on the subject contract. The following documents are attached:

1. Memorandum from Messrs. R. A. Laurence and V. J. Lynch to you regarding termination of contract

2. Invoices covering previously paid vouchers

Helen Miller
Helen R. Miller

Attachments
/hbm
Copies to R. A. Laurence
V. J. Lynch
Norris files
Day files

OFFICIAL FILE COPY
O. M. E.
RECEIVED AUG 28 1959

DATE	INITIALS	CODE
8/28	gad	VVO
		~~VVO~~
8/31	[illegible]	800
9/3	[illegible]	500

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

August 21, 1959

OFFICIAL FILE COPY O. M. E. RECEIVED AUG 28 1959		
DATE	INITIALS	CODE
8/28	gad	220
		~~120~~
8/31	[illegible]	800
"	[illegible]	500

Memorandum

To: E. D. Talbert, Acting Chief, Contract ~~Administration~~ and Audit Division, OME - Washington

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

Subject: DMEA-4153, Idm-E950(zinc) The New Jersey Zinc Co. Independence Area, Hancock and Hawkins Counties, Tenn.

The subject contract was terminated on February 10, 1959 effective January 15, 1959. However, no work was done after August 1, 1958, when a recess was authorized in Amendment No.10, executed on September 23, 1958.

The July 1958 voucher was forwarded for payment on August 21, 1958; therefore we do not have a final voucher to hold in suspense pending final audit.

The following units of work have been completed and verified by our Field Examiners:

1) A total of 24,134 feet of diamond drilling was completed in 33 drill holes.

2) 56 analyses of core samples were made.

3) A final engineering and geological report has been received.

As this is a "long form" contract, I am requesting Mrs. Helen Miller to send you her file. A report of review is requested.

Note: A mistake of 1-foot was made in the addition of drill footage in our interim reports (see the March 27, 1958 interim report).

Robert A. Laurence

Robert A. Laurence, Executive Officer
Field Team, REgion V

V. J. Lynch

V. J. Lynch, Member
Bureau of Mines

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

August 21, 1959

Memorandum

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

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

Subject: DMEA-4153, Idm-E950 (zinc) The New Jersey Zinc Co. Independence Area, Hancock & Hawkins Counties, Tennessee

Enclosed are three copies of the Operator's final geological and engineering report, and copies of our letter to the Operator requesting some additional information.

Certification of Discovery is recommended by the Field Team.

Robert A. Laurence

Robert A. Laurence
Executive Officer, OME
Region V

V. J. Lynch

V. J. Lynch, Member
Bureau of Mines

OFFICIAL FILE COPY
O. M. E.
RECEIVED AUG 24 1959

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		~~IVO~~
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"		800

COPY'S FINAL REPORT

FINAL REPORT

INDEPENDENCE - LAWSON AREA

SECTOR I COPPER RIDGE BELT

HANCOCK-HAWKINS COUNTIES, TENNESSEE

DMEA DOCKET NO. 4153 CONTRACT Idm E 950 (ZINC)

OFFICIAL FILE COPY
O. M. E.
RECEIVED AUG 24 1959

DATE	INITIALS	CODE

RECEIVED
AUG 17 1959
U. S. Geo[illegible]al Survey
[illegible]

X 1066G 24M 12-55

C.O P.Y

THE NEW JERSEY ZINC COMPANY

EXPLORATION DEPARTMENT

Jefferson City, Tennessee
August 14, 1959

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

Subject: DMEA No. Idm E 950
INDEPENDENCE-LAWSON AREA
COPPER RIDGE BELT, TENNESSEE
FINAL REPORT

Dear Mr. Laurence:

Enclosed, herewith, are four copies of the final report covering the work done under DMEA 4153, Contract Idm E 950 in the Independence-Lawson area of the Copper Ridge Belt.

This report was prepared by Mr. E. W. Renshaw and presents in concise form the essential data obtained in this project. A complete set of detailed logs for each of the holes drilled is included as an appendix to the report.

Very truly yours,

THE NEW JERSEY ZINC COMPANY

Johnson Crawford

Assistant Manager of Mines

A. D. Hoagland/jf
In Quadruplicate (Encl.)

RECEIVED
AUG 17 1959
U. S. Geological Survey
Geologic Division
Knoxville, Tenn.

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

August 21, 1959

Mr. Johnson W. Crawford
Assistant Manager of Mines
The New Jersey Zinc Co.
Johnson City, Tennessee

Re: DMEA-4153, Idm-E950-Zinc.
Independence Area
Hancock & Hawkins Counties
Tennessee

Dear Mr. Crawford:

Receipt of four copies of the final geological report on the Independence project is acknowledged. Three copies have been forwarded to our Washington office for review.

We note with interest the statement that the drilling indicated an additional half million tons which added to the previous reserves indicates a total of about a million tons of 4% zinc. We feel that this statement should be supported by figures showing how the estimate was arrived at. What cut-off grade and thickness was used? How much area was controlled by each drill hole? Is the total in one single orebody, or in several separate shoots? Is the deposit not economically mineable because the total is too small, or because it is scattered in too many shoots, or solely because of present price and market conditions? To properly evaluate the results of the project, we need more basic data to support the generalizations expressed in the report. Also, copies of the structure-contour maps mentioned on page 5 would be most helpful.

To facilitate reading the drill logs, would you please send me four copies of a list of your abbreviations, so that one can be appended to each report? We, in the Field Office, are fairly familiar with your abbreviations, but many of them will be "Greek" to our Washington staff.

Sincerely yours,

Robert A. Laurence
Executive Officer, OME
Field Team, Region V

List of Illustrations

Index Map -	B-1289	Following page 1
Plan Maps -	B-568, 569-A, 570-A	Following page 8
Appendix A	Sections	
	B-1354	In Pocket
	C-1171	" "
	C-1225	" "
	C-1262	" "
	C-1365	" "
Appendix B	Drill Logs	
	Lawson - LA 1-8, 10 & 11	In Pocket
	Independence IN-48-70	" "

Independence - Lawson Area

Sector I Copper Ridge Belt

Hancock-Hawkins Counties, Tennessee

DMEA Docket No. 4153 Contract Idm E 950 (Zinc)

Summary

Exploration in the Independence-Lawson Area of Sector I of the Copper Ridge Belt was conducted from 1952 to 1958. Early in 1956 The New Jersey Zinc Company entered into a contract with the Defense Minerals Exploration Administration to conduct an exploration program for zinc in the Independence Area. Between May 1956 and May 1957 twenty-three holes were drilled under the DMEA contract. In 1958 the Lawson Area was included, by amendment, to the project area. Ten holes were drilled at Lawson under DMEA during 1958.

The diamond drilling done under DMEA is tabulated as follows:

	No. of Holes	Footage	Costs
Independence	23	18,191	$50,249.00
Lawson	10	5,943	22,978.18
	33	24,134	$73,227.18

Independence: Work to date has indicated the possibility of about a million tons of zinc ore with a grade of 4½ to 5% zinc.

Lawson: Only one hole penetrated ore grade mineralization (9 feet of 4.61% zinc).

Location

The Independence-Lawson project covered by DMEA contract Idm E-950 is comprised of 11 properties totalling about 1100 acres

in Hancock and Hawkins Counties, Tennessee. These properties extend along Copper Ridge from a point about 3 miles from the Virginia State line southwesterly about 20,000 feet (see Index Map AX-TENN-B-1289).

History

There are no known exposures of zinc mineralization in the Kingsport formation in the Independence area. Outcrops of this formation are rare except in the cross valleys of War and Willis Creeks where these streams cut through Copper Ridge. In the early months of 1952, geologic mapping and geochemical sampling by The New Jersey Zinc Company revealed the presence of strongly mineralized areas in the soils over the sub-outcrop of the Kingsport formation.

In July of 1952 diamond drilling was begun to test these geochemical anomalies and by February 1954, 47 drill holes totalling 26,480 feet had been completed. This drilling showed extensive zinc mineralization and a zone estimated to contain about a half million tons grading about 4% zinc.

In May 1956, DMEA contract Idm E 950 providing for 35,000 feet of drilling at an estimated cost of $107,150.00 was approved by the government. The purpose of the additional drilling was to further establish the gross ore potential of the area. Drilling under this contract was begun in the same month. By May 1957, twenty-three holes totalling 18,191 feet had been completed under the DMEA contract.

In November 1957, an amendment was made to the subject contract providing for an additional 35,000 feet of diamond drilling and the inclusion of the Lawson area at the southwestern

extremity of the contract area. By July 1958, ten holes totalling 5943 feet were completed in the Lawson area under the DMEA contract.

Property

The properties included within the Independence project area are shown on maps AX-TENN-B-568, AX-TENN-B-569a and AX-TENN-B-570A and are tabulated below:

I. Properties Covered by Contract Idm E 950

M. B. Horton property - purchase of mineral and mining rights to 186.7 acres and surface to 50 acres made 4/29/57

Flora Horton property - purchase of 61 acres of mineral and mining rights made 5/7/57

D. H. Darnell property- purchase of 108.7 acres of mineral and mining rights made 5/14/57

Floyd Edens property - purchase of 23.1 acres of mineral and mining rights made 5/27/57

Ralph Garrett property- purchase of 32.0 acres of mineral and mining rights made 5/27/57

W. H. Horton property - purchase of 75 acres of mineral and mining rights and 18.8 acres of surface made 6/10/57

E. F. Gilliam property- purchase of 32.1 acres of mineral and mining rights made 8/1/57

H. L. Gilliam property- purchase of 73.08 acres of mineral and mining rights made 11/15/57

L. W. Horton property - 250 acres under option

R. Williams property - 187 acres under option

G. M. Horton property - 62 acres under option

II. Properties Dropped from Contract Idm E 950

T. J. McMillan & T. Hilton	104 Acres	✓ Option	terminated
Kyle Johnson	50 Acres	- ✓ "	"
C. C. Lawson (2 tracts)	146 96 Acres	- ✓ "	"
M. C. Herron	61 Acres	- ✓ "	"
Emma Brickey	70 Acres	- ✓ "	"
H. C. Anderson	100 96 ± "	- ✓ "	"
M. B. Horton	53 Acres	- ✓ "	"
N. M. Moneyhun	40 Acres	- ✓ "	"

Geology

The Independence Area lies along the southeast slope of Copper Ridge at elevations ranging from 1300 feet at Willis Creek to 1950 feet at the crest of Copper Ridge. The southeast slope of the ridge is underlain by the Upper Longview, Kingsport, Mascot and Chickamauga formations of Lower and Middle Ordovician Age. These formations form a homoclinal structure dipping southeast about 56°. The strike is quite uniform and averages about N 60° E.

Stratigraphy

Data from the diamond drill core permitted the compilation of a detailed stratigraphic column of the Mascot and Kingsport formations. Correlations of marker beds can be made from hole to hole within the area and major stratigraphic units can be correlated

with other areas on Copper Ridge where drilling has been done.

Mascot Formation: At Independence the Mascot is approximately 410 feet thick. It consists of fine-grained dolomites, dark grey to buff in color and often characterized by reddish mottling particularly in the upper 1/3 - 1/2 of the formation. The lower 1/2 of the formation has numerous sandy zones. These zones are a few inches to a few feet thick and consist of quartz sand grains in a fine dolomite, a chert matrix sandstone or a chert pebble conglomerate. The zones can usually be used as marker beds. One such marker, a few inches of white chert matrix sandstone, marks the base of the Mascot.

Kingsport formation: The Kingsport is about 210 feet thick at Independence. The Upper Kingsport (100') consists of fine-grained light grey to buff dolomites characterized by numerous sandy straticulate zones and fine dolomite beds containing chert nodules. These light colored fine dolomite beds are often bleached almost white near ore. Ore in the Upper Kingsport occurs in white gangue dolomite between breccia blocks of fine dolomite.

The Lower Kingsport (110') consists mostly of limestone with thin interbedded fine dolomites. In and near the ore zones the limestone section is all or partially altered to coarse crystalline dolomite. Ore in the Lower Kingsport occurs as replacement ore in the coarse dolomite and filling openings in breccias in the coarse dolomites.

Structure

Diamond drilling at Independence has revealed no large structural anomalies. Structure contours and sections reveal

several small structures but their relation, if any, to the ore is not understood.

Two drill holes at Lawson penetrated a fault zone with extensive associated mylonite and fracturing. The apparent displacement on this fault is on the order of 150 feet. There is no known ore associated with this fault but there is weak pyrite and very weak sphalerite mineralization in the fault zone.

Drilling

The holes drilled in this area are shown on the plan maps and sections accompanying this report, (Appendix A). Also enclosed are copies of the drill logs (Appendix B). Those holes drilled under the DMEA program were along strike and dip fences at least 400 feet apart with holes at least 100 feet apart on the fences.

Independence: Twenty-three holes were drilled in the vicinity of the previous ore discovery. In six of these holes ten penetrations of mineralization were made having an average grade and drill hole penetration distance of 6.6% zinc and 15.2 feet respectively. The limits of the mineralized zone have not been defined nor has drilling within this zone been at close enough spacing to reveal a detailed picture. The mineralization occurs within the Kingsport formation in relatively thin bodies that lie in the plane of the bedding.

Lawson: No previous diamond drilling had been done in this area but geochemical and geologic data suggest that ore might be present in the area. This area was added to the contract by Amendment No. 5 and eleven holes were drilled. Ten of these were drilled under the DMEA contract. One, not covered by the contract,

was drilled at Company expense. Five other holes penetrated small amounts of sub-ore grade zinc mineralization. Three holes contain substantial amounts of pyrite, but no ore grade zinc mineralization was found associated with it. The chances of discovering an ore body of the magnitude of the Independence ore zone appear to be remote. The Company's property interests in the vicinity of the Lawson drilling have been terminated and the properties deleted from the contract.

Conclusions

Drilling done by the Company, previous to the DMEA contract, had indicated at Independence about half a million tons grading approximately 4% zinc.

Six of the DMEA drill holes made penetrations indicating possibly an additional half a million tons of 4½% to 5% zinc.

The million tons thus indicated occurs in thin, steeply dipping lenses. Because of the nature and attitude of these occurrences there is doubt that they can be mined economically except under extraordinary conditions.

Drilling of the portion of the Lawson Area judged to be most favorable for the occurrence of ore on the basis of geology and geochemistry failed to disclose ore. For this reason and because the results of drilling failed to generate new insight to guide additional exploration the area is now judged to have poor potential.

LOCATION Copper Ridge Belt
Sector I
Area B
PROPERTY M.B. Horton

THE NEW JERSEY ZINC CO.
Jefferson City, Tenn.

X See C 1171

HOLE NO. IN-48
ELEVATION 1742.85'
STARTED 5-29-56 BOTTOMED 6-8-56 LOG BY TEW, RCG, ADH COORDS. 805,644.45 N 900,451.25 E
SHED NO. B-1 DISCARDED BRG. INCL. 90°

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO.	FROM	TO	% Zn	% soluble Zn	
0	43					RC	BX-AX 59							
43	142	99	81	Ok	CeSedBr 98	DI	dip 55° Sgs, 60 Ce, Wk Frng 67, Open 76-86 Ce 87 CeBr 96, 98 Sgs, Grn Sh, Ce Frags, We 99, 102 Sc Crs Sgs 113	Tr Sp 118, Vs+Shi Sp 123 St Shis Sp, Py, 128 Tr Sp 133 Shi Sp 136						
142	148	6	6			AOrc	Sgs 143	Shis Sp in Dol Frs St Shis Py 145-147	6274	142	148	2.02		
									10005	180	185	0.63	0.26	
148	184	36	30			DI	We, Ce Br 149-158 We 164 Hi Ang Fa 165	Shi Py 149 Ox Zn 160-165 Trs, Shis, Sp, Py 168, 169, 174, 182	10006	185	190	4.51	3.94	
									10007	190	195	0.98	0.26	
									10008	195	200	3.35	1.80	
									10009	200	205	5.53	4.50	
					TR 184									
184	229				E 224	DI	Open 187-189 We, Ce Sed Br 189-195 We 195-203 Ls 224-226 possible Ox Ore Zo 184-205	Ox Zn 189, 200-205 Trs Sp 224, 220, 226		Averages: 180	205			
										25	feet	3.00	2.25	
229	236	7	4			Bore	We 232-235	Dissem Sp in Crs Xtaline DI	6273	229	233	10.75	3.57	7'
									6260	233	236	8.50	6.95	9.79 % Zn
236	310	74	44			DI	St Ox, We 257-309	Shi Sp 238 Ox Zn 288, 303-304						
310	317	7	7			Bore		Dissem Sp, Lo Ros	6272	310	317	8.75		
317	369	52	52		J 326	DI	Sgs 326	Shis Py 317-318						
369	379	10	10		Tbcd	DI								
379	399	20	20			DI	Sgs 391							
	399	Bottom												

LOCATION Copper Ridge Belt
Sector I
Area B

PROPERTY

THE NEW JERSEY ZINC CO.
Jefferson City, Tenn.

STARTED 5-24-56 BOTTOMED 6-15-56 LOG BY TEW
SHED NO. B-1 DISCARDED 0-655

X Sec C 1167 HOLE NO. IN-49
ELEVATION 1645.07
COORDS. 805,740.49 N 901,606.04 E
BRG. INCL. 90°

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO.	FROM	TO
0	27					RC	BX-AX 50				
27	690	663	578	Oma -Ok	PbCg 413 BuAe 528 BrnOo? 578 U255 612 LP677	DI	dip 55° We 43 Abu Sgs in Ce 122 OoCe 133 St Mylon 183 Ce Sed Br, Frng 198 Abu Sgs 237 Hi Ang Fa 248, 289 4" Grn Sh 301 15" Ce 329 6" Ce 342 Abu Sgs, OoCe 392 Hi Ang Fa 401 Sgs, Oo in PbCg over Sh 413 (Rock appears ReXln) Bu Ac 427-429 Num Sgs 431-432 St Fa Zo 455-460 Frng 460-474 St Hi Ang Fa 486-488 Sh Pt Zo 506-518 Num Sgs/Grn Sh 531 Abu Sgs, Ce 544 (Wk Sh Ptng Above) Bu Ac Zo 533-538 Num Sgs/Bk Sh 567 St Ce (Oo?) 578 Sgs in Dist Bn Zo 612 Sgs in Hi Ang Fa Zo 616 Sgs 626-628 Num Sgs 651 Ce Sed Br 657 Sgs/Sh 677					
690	800	110	101	Ok	TR690 B 706 E 772	DI	Fi-M, LoCrs Xln Ls 731-732, 775-780	Sc Trs Sp, Py in Dol Frs 708-715			
800	859	59	57			DI	M-Crs Xln Sgs 829	Sc. Trs Py in Dol Frs 803-805, 808-811, 816-819 Syn Py 823, 826 Trs Py in Dol Frs 832, 833			
859	868	9	8			Ls	1' ReXln DI 867-868				
868	873	5	5		Tbed	DI	Fi-Fi Xln Sgs 873				
873	900	27	26			DI	M-Crs Xln				
	900	Bottom									

LOCATION Copper Ridge Belt
Sector I
Area B
PROPERTY M.B. Horton

THE NEW JERSEY ZINC CO.

Jefferson City, Tenn.

X Sec C1171 **HOLE NO.** IN-50

ELEVATION 1709.96

STARTED 6-9-56 BOTTOMED 6-21-56 LOG BY TEW, RCG COORDS. 805,559.06 N 900,498.39 E

SHED NO. DISCARDED BRG. INCL. 90°

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO.	FROM	TO			
0	50					RC	BX-AX 71							
50	110	60	56	Oma		DI	dip 57° CeMtx SS 51							
110	274	164	154	Ok	CeMtx 110 Brn Oo? 210	DI	CeMtx SS 110 (Br Bn Zo above) OoCe 132 Ble 145-162 Sgs in Ce 162 CeSed Br 174 OoCe 210 Sgs 211 Rq Sgs 222 Sc Num Sgs 230-235 Sc Ce Sed Br 243-246 4" Grn Sh w Sgs 247 Sc Sgs in Dist Bn Zo 249-251 Sgs over Blue Sh 256 Ce Sed Br w Sgs 268-269 Sed Br 272-274	Tr Sp, Py in Dol Frs 208, 210 Trs Py in Dol Frs 241 Tr Sp Py in Dol Fr 245 Sc Trs Sp, Py in Dol Frs 249-253 259-262, 272-274						
274	295	21	21	4±% E		Aorc	Fi-Fi Xln Abu Sed Br	Ros Sp in Dol Frs & Sed Br	10001 10002 10003 10004	274 279 284 289	279 284 289 295	1.33 3.16 4.05 3.34	21' 2.99	16' 3.50
295	301	6	6	-	TR 301	DI	Fi-Fi Xln Lo Sed Br	Tr Py 296						
301	304	3	3			DI	Fi-M Xln Lo Sed Br	Tr Sp 303						
304	339	35	34	½% E	B 309	Min	Fi-M Xln Lo Sed Br	Sc Trs Sp, Py in Dol Frs Cds 30 307, 332						
339	506	167	164		E 369 H 428 J 488	DI	dip 47° Sgs 368 We 370-382 (possible Ox Zn) open 395-399 We 399-406 Strat DI 410-412 Abu Sgs 428 Ce Sed Br w Sgs 441 Cot Rk Ce 452, 453, 458 Dk Gy Fi Gr Bn DI 467 Conc Ce Nods 470 Crs Sgs 488 Ce 491, 492, 495, 497 Ce Sed Bn w Sgs 501	Sc Trs Py 460-472 Tr Sp 466 Tr Py 480 Shi Py 496						
506	511	5	2	Olv	Tbcd	DI	Fi Gr							
511	520	9	8			DI	Fi Xln Qtz filled Vugs 517-520							
	520	Bottom												
							Hole cemented to 300' above bottom							

LOCATION Copper Ridge Belt
Sector I
Area B
PROPERTY M. B. Horton

THE NEW JERSEY ZINC CO.
Jefferson City, Tenn.

STARTED 6-16-56 BOTTOMED 8-10-56 LOG BY TEW-RCG
SHED NO. B-1 DISCARDED None

C1167 **HOLE NO.** IN-51
ELEVATION 1568.65
COORDS. 805,466.06 N 901,732.88 E
BRG. INCL. 90°

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO.	FROM	TO
0	30					RC	BX-AX 50				
30	899	869	801	Oma	58°	DI	Dist Bn 41-46 Pb Cg 68 Sc Rddsh 57-83 Frng 106 Sc Rddsh 114-128 Br 129-133 Sc Rddsh Ce 136-138 Sc Rddsh DI 154-199 Sgs 207, 231 Bu Ac Zo 266-270 Ce Mtx Ss 274 Gng Dol Ac 274-275 Sgs 283-285 Rddsh 318-384 Sgs 336, 337 Frng 351 Abu Sgs 366 Ce Mtx Ss 398 Sgs 409 Bu Ac, Sgs 419-421 Wk Lo Ang Fa 425 Frng 435 Sgs 475 Wk Frng 494 Hi Ang Fa 505 Ce Sed Br, Sgs 556 Sgs 561 Oo Ce 563, 564 Hi Ang Fa, Sgs 598 Vugs 604, 615 Ra Sgs 623-626 Sgs 630 Ra Sgs 633 Cot Rk Ce 641 Ce Sed Br, Abu Sgs 660 Ce Mtx Ss 664 Abu Sgs, Cot Rk Ce 670-672 Frng 677-678 Sgs 688(?) Bu Ac 704 We 705-711 Wk Oo Ce 719 Cot Rk Ce 742-744 Ra Sgs 749 Ce Sed Br 769 Hi Ang Fa 772 Gng Dol 776 Wk Hi Ang Fa 808 Oo Ce/Sgs 821 Sgs, Ce Chips 841 Sgs 858 Cot Rk Ce, Sgs 858-860 Hi Ang Fa 897 Strat DI/ Sgs, Ce 899	Ox Sulfides ? 604			
					65°						
					65°						
					CeMtx 899						
899	1120	220	214	OK	Brn Oo 973 60° U255 1027 LP 1093	DI	Sgs 955, 957 Hi Ang Fa 957 Oo Ce 973 Ce Mtx ss 1002 Ce Sed Br 1006 St Oo Ce 1031 Hi Ang Fa 1032 Sgs, Dist Bn 1046-1051 Ce Sed Br 1058 Abu Sgs 1064 Frng, Sgs 1077-1078, 1081 MXln DI 1082-1084 Bddng Pl Fa 1085 Sed Br 1088-1094 Sgs 1093 Sed Br 1112-1120	Shi Py 1027 Tr Py 1065			
1120	1156	36	32		TR 1120 A 1130	Ls	Sc Sed Br, Rddsh 1120-1133 Sgs 1130 Fi Xln DI 1156-1164	Py in Dol 1150-1152 St shi sp 1200			
1156	1218	62	59		E 1164	DI	Fi-MXln Lo Crs Xln 1172-1176, 1200-1218				
1218	1290	71	58		I 1248 J 1277	Ls	Ce Cg 1234 DI 1245-1248 Cot Rk Ce 1247 Sgs in Sh Ptngs 1272, 1277				
1290	1329	39			T bed? 1290-1298 O 1319	DI	Wht Gng Dol Frs 1291 Sgs 1298 Oo Cot Rk Ce 1307-1308 Fi Bu DI, Ce, Oo Ce 1316-1318 Ce Pb Eg (oo?) 1319 Cot Rk Ce 1325-1327 Grn Sh 1328				
	1329	Bottom									

LOCATION Copper Ridge Belt
Sector I
Area B
PROPERTY M. B. Horton

THE NEW JERSEY ZINC CO.

Jefferson City, Tenn.

STARTED 6-21-56 BOTTOMED 7-3-56 LOG BY RCG
SHED NO. B-1 DISCARDED

X 1171 **HOLE NO.** IN-52
ELEVATION 1679.54
COORDS. 805,456.33 N 900,526.85 E
BRG. INCL. 90°

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO.	FROM	TO			
0	65					RC	BX-AX 72							
65	193	129	128	Oma	NumSgs 70 SgsinPb Cg 107 CeMtx	Dl	Sgs, Grn Sh, Ce Nod 70 Ce 72, 75, 78 Sgs, Ce 101 Dl PbCg w Sgs, Ce 107 Abu Bn Sgs 110 Sgs, Grnsh Sed Br 129 Qtz filled Vugs 143 Ce Sed Br 145-147 Ble 149-174 Ce 160 Frng 186-190 VS+HiAng Fa 188 Ce Mtx SS 193							
193	423	229	214	Ok	193 BuAe 220 U 255 251 OoCeMtx SS 260 CeSedBr? 268 LP? 336	Dl	Sgs 195 Sgs in Sed Br 206 Ble 206-226 Ra Sgs 225 Sc-Bn Sgs, Dist Strat Dl 242-251 Sgs in OoCe 250 Ble 251-268 OoCe Sed Br 268 1" Grn Sh 269 Ble 276-302 Ce 296 Sc Sgs, Dist Bn, Ce 298 Ce 306 Ble 314-330 Ce 325 Sgs, Sed Br 329 Cot Rk Ce 331 Oo Ce 333 Ra Sgs 353 Grn Sh 361 Sgs 366 Sgs, Grn Sh 401 Sgs 415	Tr Py 289 Tr Sp 308 Shi Sp 311 Tr Py 393, 401						
423	428	5	3		TR 423	Dl	M-Crs Xln Open 425-427							
428	440	12	11	1.97%Zn	A 428 B 440	A ore	Crs Sgs 428 Fi Gr Bu Bn Dl 440	Dissem Sp in Dl Lo Sp in Dol, Qtz Frs Py 429, 440	10010 10011	428 428	434 440	%Zn 2.68 1.26	12' 1.97 %Zn	
440	444	4	4			Dl	M-Crs Xln							
444	446	2	2	.50%Zn		A ore	M-Crs Xln	Dissem Sp in Dl	10012	444	446	.50		
446	467	21	21		C? 450 E 467	Dl	Fi-Crs Xln Fi Gr Bn Dl 450, 466-471 Cot Rk Ce 467 3" Blk Sh 454	St Dissem Py 446-447, 452 St Shi Dissem Sp 452						
467	472	5	5			Ls								
472	486	14	14			Dl	Fi-Crs Xln OoCe 482							
486	574	88	78		I? 529 J 551	Ls	Bn Fi Gr Dl 529-531 MXln Dl 541-545 Sgs 551							
574	587	13	12			Dl	Fi-MXln							
587	590	3	3	Olv	Tbed	Dl	Fi-Fi Xln Ce 587, 589							

LOCATION

THE NEW JERSEY ZINC CO.

HOLE NO. IN-52 (cont.)

ELEVATION

STARTED BOTTOMED LOG BY RCG COORDS.

PROPERTY SHED NO. DISCARDED BRG. INCL.

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO.	FROM	TO			
590	629	39	36	Olv	U bed O?604	Dl	Fi-Crs Xln							
629	652	23	23		V bed	Dl	Fi Gr-Crs Xln Sgs 638 Ce Nods 643, 644, 645, 646, 647, 648							
	652	Bottom												

LOCATION Copper Ridge Belt
Sector I
Area B
PROPERTY M.B. Horton

THE NEW JERSEY ZINC CO.

Jefferson City, Tenn.

HOLE NO. IN-53
ELEVATION 1644.11
STARTED 7-5-56 BOTTOMED 7-26-56 LOG BY TEW-RCG COORDS. 805,371.63 N 900,572.84 E
SHED NO. B-1 DISCARDED 0-278 BRG. INCL. 90°

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO.	FROM	TO			
0	90					RC	BX-AX 93							
90	481	391	376	Oma		DI	Hi Ang (Bddng) Fa 116 Ce 124 Ce, Cot Rk Ce 134-136 Sgs 140 OoCe 151 Ox, Vugs 168 Sc Wk, Lo St Ble 168-218, 248-266 Sgs 192 Scd Br or PbCg 232-233 Bu Ac 240							
				OK 291	CeMtx 291		Cot Rk Ce 248 Ce Mtx ss 291							
					Brn Oo 359		Ble 300-318 Cot Rk Ce Chips in Brn DI 304 Bu Ac 343 Sgs 347 Ble 366- Cot Rk Ce 350 Sgs 351	St Shi Py 447 Trs						
					U 255 423		OoCe 359 45° @ 350 Sgs, Ce Frags, Dist Bu 380 Cot Rk Ce 387-388, 395 Abu Sgs 421-423 Sgs in Cot Rk	Py 460-462 St Shi Sp, Py 478 Trs Sp,						
					LP 468		433 Sgs 440, 468 Ble 464-473	Py 480						
481	490	9	9		TR 481		Fi-MXln DI	Tr Sp, 484 Tr Py 486 Tr Py, Sp 489-490						
490	512	22	22			A ovc	Fi-Crs Xln DI, Lo Scd Br Cc, Blk Sh 501-502, 506 Qtz fld Vugs 509 1" Cc/1" Fi DI 518	Shis Spin Dolfrs, Lo Rosettes 490-509 St Shi Py 500 Dissem Sp in Crs Xln DI 509-512	10029 10030 10031	488 492 509	492 500 512	%Zn 3.09 .80 5.60	12' 1.56	24' 1.48% Zn
512	526	14	14			DI	Crs Xln							
526	528	2	2			Ls								
528	530	2	2			DI	M Xln							
530	533	3	3			Ls								
533	546	13	13		E 546	DI	Fi-MXln Cot Rk Ce 542, 543							
546	564	18	18			Ls	Dk Shy Ptngs 562-564							
564	580	16	16			DI	Fi-MXln, Lo Mot, Lo Strat 4" Cc 578							
580	668	88			I 626 J 655	Ls	2" Ce 606 1" Ce 607 Crs Xln DI 639-642							
668	681	13	12	Olv	Tbed 668-674	DI								
	681	Bottom					Hole cemented 300' above bottom							

LOCATION Copper Ridge Belt
Sector I
Area B
PROPERTY M. B. Horton

THE NEW JERSEY ZINC CO.

Jefferson City, Tenn.

STARTED 7-30-56 BOTTOMED 8-17-56 LOG BY RCG-TEW

SHED NO. B1- DISCARDED 0-4-50

HOLE NO. IN-54

ELEVATION 1614.92

COORDS. 805,288.17N 900,612.68E

BRG. INCL.

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO.	FROM	TO	Ft.	% Zn
0	105					RC	BX-AX 108						
105	675	570	522	Oma-Ok		DI	Ae 167-172 Ground core 192-193 Sgs, Sed Br 203-204 Re Xln 208-212 Ce Cg, Sgs 246 Ce 248 Sc Sgs, Ce Pbs 266-268 Cot Rk Cg, Lo clear Ce 269-271 Calc Vug 273 Ce Nods 287 Ce/Cot Rk 288-291 Ce 297-298 Ce Pb Cg 303-304 Sc Cot Rk Ce 327-330 Sgs in Ce Nod 331 Ble 338-350 Cot Rk Cg 352 Sgs 357 Grn Sh, We 364 Ce 375 Grn Sh, We 377 We 379 Sgs/Hy Ce 393 Ce 410, 412 We 415, 423 Sgs, Wk Ce Mtx 502 Irreg Ce 511 Ble 525-529, 531-535 Ce 536, 537 Sgs in Ce Cg 538 Ce Nod 546, 548, 556 Grn Sh 557, 560 Blk Sh 565 Ce Nods 567, 571 Dist Bn 570-571 Bn Sgs 571 Oo Ce Nod 576 Bdd Ce 577 Ble 580-587 Red Ce Nods 4 Frags 600-604 Grn Sh 604-606 Grn Sh, Pk Xln Dl 617 Grn Sh 625 Sgs/Grn Sh 637 Grn Sh 642 3" Grn Sh 654 Grn Sh 663, 666	Tr Py 674					
					57° @ 399								
					U 255 571								
					Ce Sed Br 604								
					59° @ 636								
					LP 658								
675	697	22	21	Ok 11.13% Zn	TR 696	Core		St Shis, Rosettes	# 10050	From 675	To 679	Ft. 4	% Zn 0.82
								Sp, Py in Dol Frs	10049	679	684	5	15.80
									10048	684	687	3	1.88
697	720	23	23			DI	Fi-M Xln Vugs 702-704 Fi Bu Dl 704 Ce Sed Br 704-708 Ce Nods Fi Dl 716-717	Tr Sp 705, 709, 710, 711	10047	687	695	8	19.50
									10046	695	697	2	0.48
720	724	4	4	5.14% Zn		Bore			6261	720	724	4'	5.14
724	747	23	23			DI	Ls 732-734 Cot Rk Ce Nods 743		Averages:				
747	764	17	15			Ls				675	697	22	11.13
										679	695	16	15.04
764	780	16	15		F-G 772	DI	Fi-M Xln Dk Mot Dl 765-771 Dk Strat Dl 771-772 Ce Pb Cg 778						
780	897	117	110		I 841 J 863	I ls/dl	Dolimitization 15% Bdd Ce 807 Dk Gy Bu Dl 839-841 Ra Sgs 863						
897	902	5	4	Olv	Tbed 897-900	DI	Fi Gr 897-900 Sc Bn, Dol Ac 897-900						
	902	Bottom											
							Hole cemented 300' above bottom						

LOCATION Copper Ridge Belt
Sector I
Area B
PROPERTY D. H. Darnell

THE NEW JERSEY ZINC CO.

Jefferson City, Tenn.

STARTED 8-17-56 BOTTOMED 9-7-56 LOG BY RCG, TEW
SHED NO. B-6 DISCARDED O-467

X See C Logs HOLE NO. IN-55
ELEVATION 1638.80
COORDS. 806,364.74 N. 902,835.28 E
BRG. INCL.

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO.	FROM	TO
0	50					RC	BX-AX 67				
50	676	626	498	Oma		DI	Cot Rk 51 Grn Sh 62 Ce 67 Grn Sh 71 Rd Ce 72 Open 84-104, 108-118 2' recovery 118-134 Open 148-154 Bx core 154-158 We 159 Ra Sgs 178 Mylon, Fa 195 Ce 197 Cot Rk 198-199 Ra Sgs 204 Bdd Ce 218 Sgs 226 Ce, Sed Br 229-231 Abu Sgs / Ce, Grn Sh 233 Frng 264 Bdd ng Fa 270 Num Sgs 308 Sc Wk Ble 308-370 Sgs 354 Sgs in Cot Rk Pb Cg 376 Hi Ang Fa 387 Sgs in Grn Sh 413 Ce Mtx Ss 452 Sgs 503 Ce Mtx ss 516, 519 Ble 531-535, 538-545 556-572 Ce Mtx 544 Ce Cg 552 Ce Nods 568 Sgs 573 Oo Ce Nod, Sc Sgs in Pb Cg 577 Num Sgs 588-589 Ce Sed Br 600-604 Dist Strat 607-609 Sc Sgs 609 Sgs / Grn Sh 616, 633 Dol Ac 618, 621, 625, 626, 627 Grn Sh 641 Frng 661-666 St Frng 664					
				Ok 516	Ce Mtx 516						
					Bru Oo 577						
					U 255 609						
676	694	18	18		TR 676 B 683	DI	Fi-M Xln Cot Rk Ce w clear Ce Frags 676-682 Cot Rk Ce 684 Pb Cg 685 Grn Sh 687				
694	701	7	7			Ls					
701	708	7	7			DI	Ce Nods & Frags 708				
708	730	22	20			Ls					
730	748	18	18		E 738	DI	Ce Nods, Br, Oos 733 Ce Nods, Br 738				
748	794	46	41		F-G 780	Ls	Dk Gy Ce 748, 761 DI 777-780				
794	870	76	65		I? 824	DI	Fi-M Xln Frng 814-824 Ce Nod 832, 837 Dol Frs 842-847 Cot Rk / Oo Ce 844 Cot Rk / Ce Nods 847 Ce Nod 866				
870	890	20		Olv	Tbed 870-876	DI	Sgs, Ce 875 Sgs 879 Ce Nod 881, 882, 883 Sgs 889				
	890	Bottom									

LOCATION Copper Ridge Belt
Sector I
Area B
PROPERTY M. B. Horton

THE NEW JERSEY ZINC CO.

Jefferson City, Tenn.

X Sec C 1171

HOLE NO. IV-56

ELEVATION 1586.92

STARTED 8-20-56 BOTTOMED 9-7-56 LOG BY RCG-TEW COORDS. 805,192.74 N 900,651.01 E

SHED NO. B-6 DISCARDED 0-1489 BRG. INCL.

DEPTH FROM	DEPTH TO	DIST.	CORE	F.M.	MKRS.	ROCK	REMARKS	MINERALIZATION
0	28					RC		
28	578	550	520	Oma	60° @ 60'	Dl	Fi-Fi Xln, Sc Rddsh 28-51 Blk Sh 72 We 74 Abu Sc Sgs in Dist Bn Dl 81-83 Grn Sh 89 We 98-99 Sc Rddsh 108-134 Intense Red 120-124 Sed Br 137-139 Grn Sh, Rd Ce 140-141 Sed Br 164, 166-167 We 167-168 Qtz lined Vugs 168 Bu Stks in Dk Gy Dl (Wk?) 181, 186, 187, 188 Frug 196 St Ce Mtx ss 197-198 Rd & Grn Ce, Grn Sh 204-205 Sc Sgs 211 Oo Ce Nods 213 We 238 Ce Nod 267 2" Grn Sh 267 Ce 276, 278 We 278-309 Sgs 304, 309, 311 Re Xln Dl 314-315 Wk Bddng Fa 333 Sgs 370 Sgs in Pb Cg 396 Abu Sgs 417 Wk Br 415-452 Sgs 422 Sgs in Pb Cg 444 Sc Sgs in Dist Bn 447 Sgs in Pb Cg 466 Sgs 479-481 Wk Pb Cg Sgs in Bu Zo 519 Frug 516 Sgs 547 Sgs/Grn Sh 569	Tr Py (Syn?) 368 Soft Grn Min 461
578	726	147	139	Ok	Ce Mtx 578 Brn Oo 646 U 255 675	Dl	Ce Mtx ss 578 Ce 584, 609 Bdd Ce, Sgs 610 Ce 616 Cot Rk, Dol Br 620 Oo Ce 646 Cot Rk Cg/6" Cot Rk Ce 647 Strat Dl 665-669 Ce Br 670 14" Ce/4" Grn Sh 671-673 Dist Strat 673-675 Sc Ra Sgs 675 Bdd Ce 700 M Xln Dl 714-716, 720-721	Tr Py 585
726	753	27	27	8.19% Zn	TR 736 B 741	Bore	Sc Ce Nods, Fi Bu Dl 739-741	Shis, Rosettes Sp in Dol Frs, Lo Py
753	880	127	121		E 766 F 779 G 780 H 792 I 815	I 15/dl	Dolomitization 31% Ce Nods, Fi Dl 765-767 Dk Strat Dl 779-780 Ra Sgs/Bdd Ce 792-793	
	880	Bottom						

ANALYSES SMPL. NO.	FROM	TO		

#	From	To	% Zn	Ft.
10081	726	731	2.66	5
82	731	736	14.25	5
83	736	741	3.91	5
84	741	746	2.28	5
85	746	753	15.11	7
Average	726	753	8.19%	27'

LOCATION Copper Ridge Belt
Sector I
Area B
PROPERTY D. H. Darnell

THE NEW JERSEY ZINC CO.
Jefferson City, Tenn.

STARTED 9-7-56 BOTTOMED 10-5-56 LOG BY RCG-TEW
SHED NO. B-6 DISCARDED None

X Sec. C-1299 **HOLE NO.** IN-57
ELEVATION 1570.71
COORDS. 806,111.12 N 902,982.43 E
BRG. INCL.

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO.	FROM	TO
0	22					RC	Bx - Ax 37				
22	857	835	737	Oma		DI	Sc Rddsh Bn 29-193 Pb Cg 55 St Hi Ang Fa 82 Clay 126-128 Sgs 217 Ce Mtx ss 260 Sgs in Dist Bn 267-269 Rddsh 269-274 Sgs 291 Sgs in Ce 331 Rddsh 305-442 Cot Rk, Ce Mtx ss 331 Sgs 370 St Rddsh 355-356 Sgs 375 We 379 Abu Sgs 384-386 St Rddsh 421-423 We, Sed Br 435-439 Ra Sgs, Oo Ce Nod 466-467 Ra Sgs/Rd Sh 496 Sc Sgs 504 Oo Ce Nods 505 Wk Hi Ang Fa 524 Sc-Num Sgs 526 Num Sgs/Cot Rk 564-Ra Sgs 572 Sgs 590 Rd Cc, Grn Sh, Crs Sgs 593-594, 596 Sgs 603 Ce Nods/Sc-Num Sgs 605-608 Ra Sgs 619 Cc Pb Cg 639 Ra Sgs 660, 662 15" Ce 672 Cc, Ra Sgs 682-683 Sgs, Cot Rk Cg 723 Ra Sgs 724 Mylo, Fang? 733 Sgs, Cot Rk Cg 741 8" Oo Ce 753	Grush Min 201			
					TOk		Dk DI 767-826 Ra Sgs 789 Core Spilled 796-811 Sc-Bn				
857	984	127	113	Ok	857	DI	Num Sgs 828-829 Sgs 834, 840 Oo Ce 844 Bott Dk Zo 857 Sgs 864 Ce Nod 877, 888 St Frng, Fa, Oo Ce 894 Cot				
					U25s 916		Rk Cg 894-896 Sc Sgs 905-908 Dist Strat 912-916 Sgs 916 10" Ce 916 Crs Sgs 918 Sc Sgs 930-932 70° Fa 932 Sgs/Grn Sh 937 Cc 937-940 Cc 949 Blk Sh 951,				
					LP965		955 Strat DI/Grn Sh/Mot DI, No Sgs 965				
984	1050	66	59		TR984 A990 C1024 E1050	Ils/dl	Dolomitization 21% Sgs 990 Fi Xln 1021-1024 Ce Nod 1024 DI, Ce Nods 1045-1050				
1050	1200	150	135		G1071 I1124 J1162		Dolomitization 38% Top of T bed 1200				
	1200	Bottom									

LOCATION Copper Ridge Belt
Sector I
Area B
PROPERTY M. B. Horton

THE NEW JERSEY ZINC CO.

Jefferson City, Tenn.

STARTED 9-8-56 BOTTOMED 10-2-56 LOG BY RCG
SHED NO. B-6 DISCARDED 0-627

X Sec C-117 HOLE NO. IN-58
ELEVATION 1564.46
COORDS. 805,095.48 N 900,690.16 E
BRG. INCL.

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO.	FROM	TO
0	48					RC	BX-AX 70				
48	843	795	694	Oma -Ok	51°@ 60, 180	DI	Sgs 82 Open 88-92 Sc Rddsh 81-263 Sgs 116 Bddng Fa 166 Sgs 201 Abu Sgs 211-213 (W Pb Cg) Num Sgs 242 Sgs 258 Sc Sgs, Ce, Cgl 290 Cc Mtxss 320 15" Ce, Grn Sh 326 Oo Ce 332-333 Cc 354 Pb Cg, Sc Sgs 387 Grn Sh 388 Bdd Ce, Grn Sh, Sgs 395 Ra Sgs 404 Ce Grn Sh 405 Calc Vug 418 Dl, Ce Frags 423-424 Sc Sgs 427-428 Sc Sgs, Cot Rk, Sed Br 429-436 MXln Dl 436-444 Wk Hi Ang Fa 462 Cc Pb Cg w sgs 471 Ce frags, Cot Rk 492 Sc Sgs 495, 496 Cot Rk 505-506 Ce 513,-514, 540 Sgs, Cot Rk Cg 563 Abu Sgs, Wk Pb Cg 565 Sgs, Grn Sh, Wk Frng 584 Sc-Abu Sgs, Grn Sh 598-601 Ce Nod 610 Bn Sgs 663 Frng 666, 672 Bat tot Dk Dl Zo 710 Ce Nods 718-719, 728, 729 Frng 733, 736 Grn Sh 739 Sgs 750 Sc-Num Sgs 768 Sc Ce, Cot Rk, Br 777-782 Grn Sh 782 Sc Ra Sgs 784-785 Grn Sh, Xln Dl Br 790-791 Sgs, Grn Sh 812 Ce/Cot Rk 820-821 Fi-MXln Dl 821-831				
					T Ok? 710 Brn Oo? 782			Tr Py 782			
843	851	8	8	OK	TR 843 50°@851	DI	Ce Nods 850 Fi Bu Dl 861				
851	881	30	28		B 861	Ls	Ls Sed Br 864-871 Sgs 871				
881	886	5	5		C 884	DI	MXln Ce Nods 884				
886	902	16	12			Ls					
902	910	8	8		E 910	DI	MXln 902-905 Fi Xln 905-910 Cc Nods 906, 907, 910				
910	924	14	14		F 929	Ls	Grn Sh, Syng Py 910	Tr Syng Py 910			
924	933	9	8		G 930	DI					
933	1020	87	76			Ls	Ce Nod 935 Pb Cg 939-945 Dl 949-952 Ce Nods 964, 965 Pb Cg, Incip Dlztn 983-993 Dl 993-995 Incip Dlztn 995-1002 Dl 1002-1003				
					I 979		Pb Cg, Incip Dlztn 966-976 Ra Sgs 979 Strat Dl 976-979				
1020	1046	26	24		J 1027	DI	Fi-Fi Xln 1020-1027 Sgs 1027 MXln 1027-1034 Fi-Fi Xln 1034-1046 Ce Nod 1036 Cot Rk 1036-1038				
				Olv?	T bed?						
	1046	bottom		1034	1034-1036						

LOCATION Copper Ridge Belt
Sector I
Area B
PROPERTY M.B. Horton

THE NEW JERSEY ZINC CO. X Sec C-1220
Jefferson City, Tenn.

HOLE NO. IN-59
ELEVATION 1660.44
STARTED 10-8-56 BOTTOMED 10-24-56 LOG BY TEW-RCG COORDS. 805,623.44 N 900,896.13 E
SHED NO. DISCARDED BRG. INCL.

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO.	FROM	TO
0	50	—	—			RC	BX-AX 56				
50	544	494	433	Oma-OK		DI	Ce Pb Cg 73 Cot Rk 80-82 Sgs 89 Ce Pb Cg 100 Cot Rk Ae 108 Pb Cg, Oo Ce? 118 Wk Frng 156 Cot Rk Cg 168 Ce 169 We 176 We, Frng 179 Rddsh 190-215 Intense Red 193-197, 207-210 Br, Sgs, MXln DI 207-210 Ce 219 St Hi Ang Fa 221 Frng, Lo St 221-268 Sgs 260 Wk Hi Ang Fa 268 Sc Rddsh 274-305 Intense Red 275-276, 283-289 Dol Fvs, Sed Br 314-315 Sc Num Sgs 323 Frng 324 Sgs in Ce 331 Hi Ang Fa 332 Lo Sed Br 336-350 Sgs 358 Cot Rk Br 363 Sgs 384-385 Sc Rddsh 387-398 Rd Sh 398-400 Hi Ang Fas 426, 427 Sgs 458 Blk-Rd Shy DI 459-464, 469 Sc Rddsh 473-512 Rd Sh 475, 477 Num Sgs, Grn Sh 490 Rd Sh 493 6" Rd Sh 495 Sgs 502 Ra Sgs 504 St Rddsh, Abu Rd Sh, Lo Ble, Grn Sh 512-544 Sgs 540				
				45°53							
				50° 64							
					CeMx? 260						
				56°317							
				57°490	LP?490						
					TR?533						
					A?540						
544	588	44	41	OK	E?566	DI	Fi-MXln, Lo Sed Br, Rddsh DI Rd Ce 547 Brn Mot 578-580 Sgs 588				
588	611	23	20			Ls	Lo Rddsh, Lo Sed Br Pb Cg 598				
611	735	124	108	OK-Olv	Tbed? 643-650	DI	Fi-MXln, Lo Rddsh Oo Ce 617 Ls 615, 624-628 Bddng Fa 647, 682 Sgs 693, 702 Num Sgs 717				
	735	Bottom									

LOCATION Copper Ridge Belt
Sector I
Area B
PROPERTY M.B. Horton

THE NEW JERSEY ZINC CO.
Jefferson City, Tenn

X Sec C-1220

HOLE NO. IN-60

ELEVATION 1716.55

STARTED 10-25-56 BOTTOMED 11-3-56 LOG BY RCG, TEW COORDS. 805,808.11 N 900,913.90 E

SHED NO. DISCARDED BRG. INCL.

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMP. NO.	FROM	TO
0	31					RC	NX-BX 33 BX-AX 41				
31	316	285	219	Oma-OK	62° 50	DI	LoWk Rddsh 31-100 We 31-33 Open 50-53, Sg-63 Sc Frng, Mylon 63-96 CePbCg, Sgs 73 Frng 123, 124, 129, 144, 147, 150-155 OoCc, Sgs 137 St Mybn 161 60° Fa 183 CotRkCg, Sgs 186 Mylon 195 DkGy DI Shy, Ptngs 202-206 Sc Sgs 204-206 Ra Sgs 211 Sgs 225, 226, 237 Sed Br, Sgs 248 Mylon 256 Sed Br 263 Mylon 273 Frng 281-284 Sed Br 286-316 Num Sgs 287, 313	Tr Sp, Py 247 Tr Py 252				
316	361	45	40	OK	TR? 316 B? 318	DI	Fi-MXln, Lo Sed Br Sc Rddsh 344-361 Ls 353-354				
361	417	56	49			Ls	Sc Rddsh Partial Dlztn 361-367 FiXln DI 369-371 Sgs 390 MXln Red DI 388-389, 390-393, 396-397				
417	525	108	98	OK-Olv		DI	Ls, Partial DI 435-437 Ce 449 BrnBn Zo, CcNods 490-493 Frng 505-510 Sc Num Sgs 508-510 Sgs 522				
	525	Bottom									

LOCATION Copper Ridge Belt
Sector 1
Area B
PROPERTY M. B. Horton

THE NEW JERSEY ZINC CO.

Jefferson City, Tenn.

X Sec C-1225

STARTED 11-6-56 BOTTOMED 11-19-56 LOG BY RCG, TEW
SHED NO. B-6 DISCARDED

HOLE NO. IN-61
ELEVATION 1730.24
COORDS. 805,221.37 N 900,097.02 E
BRG. INCL.

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO.	FROM	TO		
0	78					RC	NX-BX 80 BX-AX 91						
78	325	247	204	Oma		DI	Sgs 78 PbCg 92-93 Open 93-96 CotRk 102 RaSgs 115 Ce, CotRk 126-127 Sgs 130, 154 Sgs, Pb Cg 174 Ac 191-200 Ce, CotRk 214-216 Frng, Sc We 241-255 VSt Hi Ang Fa 253 Sgs 312, 318 We 323 CeMtx SS 325						
				55° @ 222									
325	486	161	141	OK	CeMtx 325	DI	Blc 346-348 CeNods, Dist Bu, Sgs 357-359 Sgs 395 Sc Sgs 410-412 Ce Sed Br w CotRk, Sgs 426 Ra Sgs 434 Nu Sgs in Grn Sh 455 Ra Sgs/ Grn Sh 472	Tr Sp 409 Tr Py 40 Shi Sp 418 Tr Sp 484					
					U255 359								
					CeSedBr 426								
					LP472								
486	501	15	14	4.79% Zn	TR495	Aore	Sed Br 499-501 Fi Bu DI Frag 500	Rosettes Sp in Dol Frs	10133	486	490	ft. 6	% Zn 16.00
									10134	490	495	5	0.92
501	528	27	22			DI	MXln, Sed Br 501-503	Shi Py, Tr Sp 526	10135	500	501	1	3.20
528	530	2	2	1½% Zn	Est	Aore	qtz vug 530			486	501	15'	4.79% Zn
530	555	25	22		E551	DI	Fi-M, Lo Crs Xln	Shis Recol Sp Lo Py, CdS 558					
555	561	6	6	10.75% Zn		Core	Crs Xln DI		10136	555	561	6'	10.75
561	562	1	1			DI	Crs Xln						
562	609	47	40			Ls	PbCg 578 Fi Gr DI 589-591 Dol Fr 590						
609	644	35	26		J. 612	DI	M-Crs Xln Ra Sgs in Fi DI 612, 641						
644	675	31	27	Olv	T Bed 644-652 O? 653	DI	Fi-M Xln Hy Ce 651 CotRk 653, PbCg?						
675	682	7	6			Ls							
682	720	38	32			DI	Ra Sgs 698 Brn Bn Zo 704-708						
	720	Bottom											

LOCATION Copper Ridge Belt
Sector I
Area B

PROPERTY M.B. Horton

THE NEW JERSEY ZINC CO.

Jefferson City, Tenn.

X Sec C-1225

STARTED 11-20-56 BOTTOMED 12-1-56 LOG BY TEW, RCG

SHED NO. _____ DISCARDED 0-185

HOLE NO. IN-62

ELEVATION 1760.73

COORDS. 805,307.68 N 900,059.09 E

BRG. _____ INCL. _____

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMP. NO.	FROM	TO			
0	70					RC	BX-AX 80							
70	215	145		Oma		DI	Sgs, Pb Cg 78 We 94-95, 112, 124, 129-132, 134-138 Num Bn Sgs 143 Rddsh DI 168-170 Abu Bn Sgs, Pb Cg, Lo Ce Mtx 213-215							
215	401	186		Ok	CeMtx 215	DI	Sc Ble 233-250 Cot Rk Cg 260-263 Ble 269-270, 274-280 Sgs 281 Oo Ce 287 Sgs, Cot Rk Pb Cg 287-288 Sc Sgs 303-306 Sgs 307-308 Dist Strat 313-317 Cc 317-321 Sgs 323 Dist. Strat 348-359 Sgs/Sh 371 Wk 60° Fa 381	Tr Py 335						
					LP371									
401	450	49	46		TR 401 B? 410 E 450	DI	Fi-MXln Sed Br 401-411 Ls 411-416							
450	461	11	9			Ls	MXln DI 454-456							
461	476	15	13			DI	Fi-MXln We, Ox 471-476							
476	477	1	1	14.35% Zn		Core		Sp + Ox Sul, Cds	10141	476	477	1/1	% Zn 14.35	% Sol Zn 11.30
477	480	3	2			DI	Fi Xln		10142	480	488	3/8	10.95	4.07
480	488	8	3	10.95% Zn		Core	Soft Rk 481-487	Sp + Ox Sul, Cds		476	488	12'	8.50% Zn 3.66% Sol Zn	
488	509	21	20			DI		Sh. Sp 497, 509						
509	519	10	7	3.58% Zn		Aore		Sh. Ox Sul 506 Py 507 Sh. Rosettes Sp Py in Dol Frs, Lo Dissem Sp, Cds	10143	509	514	3½/5	5.63	0.62
									10144	514	519	3½/5	1.52	0.13
										509	519	10'	3.58% Zn .37% Sol Zn	
519	538	19	19			DI								
538	542	4	4			Ls	Blk Sh 541-542							
542	571	29	29			DI								
571	619	48	40	Olv	Tbed 571-587	DI	Fi Fi Xln DI, Cc Nods 571-587 Brn Bng, Hy Cc 609-619							
	619	Bottom												

LOCATION Copper Ridge Belt
Sector I
Area B
PROPERTY M. B. Horton

THE NEW JERSEY ZINC CO. X Sec C-1225
Jefferson City, Tenn.

STARTED 12-3-56 BOTTOMED 12-15-56 LOG BY RCG, TEW
SHED NO. DISCARDED none

HOLE NO. IN-63
ELEVATION 1785.26
COORDS. 805,396.22N 900,006.86E
BRG. INCL.

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION
0	50					RC	BX-AX 60	
50	56	6	6	Oma		DI	Abu Sgs, Ce Mtx, Pb Cg 56	
56	267	211	160	OK	Ce Mtx 56	DI	We 56, 58 Sc Rddsh 58— OoCc, Ra Sgs 64 L+Gy DI, Bng 80-85 Cc, Ra Sgs 97 Open 130-147 Cot Rk 172-174 Ra Sgs 182-184, 194 Wk Ble 207-237 Dist Strat w Cc Nods 214-230 L Phoriz ? 241 Vug 267	Shi Sp 256, 267
267	271	4	4		TR 267	DI	Fi-MXln Fi Bu DI 269-271	
271	288	17	12			Ls		
288	289	1	1			DI	MXln	
289	294	5	5	2-2½%	Zn Est	Aore		
294	318	24	23		E 318	DI	Fi-MXln	
318	340	22	22			Ls	Pb Cg 319	
340	368	28	26			DI	Fi-Fi Xln DI Ac 342-346 Wk OK 346 Ce Sed Br 380-381	
368	374	6	5			Ls		
374	377	3	3			DI	Fi-MXln	
377	384	7	6			Ls	Silic. Gastrpd in Sed Br 380-381	
384	435	51	31			DI	M-Crs Xln We, Ox 391-412 Soft Rk 407-412, 413-417 Sed Br 429	Ox Sul ? 391-412 St Shi Sp 421, Shi Dissem Py 422, 426
435	436	1	1	10% Zn	Est	Bore		
436	459	23	19			DI		Shi Ox Sul 450
459	460	1	1	6% Zn	Est	Bore		
460	490	30	28	OIV? 467	T bed? 467-471	DI		V St Shi Sp 464, 467
	490	Bottom						

ANALYSES SMP. NO.	FROM	TO			

LOCATION Copper Ridge Belt
Sector I
Area B
PROPERTY M. B. Horton

THE NEW JERSEY ZINC CO.

Jefferson City, Tenn.

STARTED 12-17-56 BOTTOMED 1-9-57 LOG BY RCG, TEW
SHED NO. DISCARDED

HOLE NO. IN-64
ELEVATION 1694.79'
COORDS. 805,129.38N 900,139.96E
BRG. INCL.

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO.	FROM	TO
0	64					RC	BX-AX 74				
64	402	338	246	Oma		DI	OoCe 65 PbCg 66 SoftRk 92-104 ScRd Mot 113-178 Intense Red 117-129 Cc, Grn Sh 145 Rd Sh in Ce Sed Br 164-178 Sc Sgs 169-175 DkGy DI 184-217 Sgs 216 Ce Sed Br 237 Sgs, Pbs 255, 270 Fi Bu DI w Ce 292 Cot Rk PbCg 314-316 Abu Sgs in DI-Ce PbCg 320-321 Cot Rk 358-360 Frng 386-389 We 390 DkDI, Shy Ptugs 389-398 Frng 398-402 Ce Mtx ss 402				
402	621	219	194	Ok	CeMtx 402	DI	Sgs 416 Bu Ac 448-450 Sgs 457 Ce Mtx, PbCg 468 Ra Sgs 476 Ce Nods in Lt Bru DI 498, 507 Dist Bm 527-531 Sgs Cot Rk PbCg 535 Abu Sgs 545-546 Sgs 554 Ce Sed Br 555 Sgs 560 Strat DI/Rd Sh/ Fi Xln Mot DI 597-600 Sc Rddsh, Lo Grnsh 597-621				
					LP598						
621	628	7	7		TR621	DI	Fi-M Xln, Grn Sh & Cc, Lo Sed Br 621-625, 627-628 Ls 625-627				
628	654	26	26		A630	Ls	Sgs, Sed Br 630 DI 635-638				
654	683	29	28		D659 E683	DI	Fi-M Xln Sc Ce Nods 654-656 Cot Rk Nods 678-680 Conc Nods Ce 680-681				
683	703	20	18			Ls	PbCg 683				
703	718	15	14			DI	Fi-M Xln				
718	731	13	12			Ls	Incip Dletn				
731	737	6	6			DI	Ls 737-738				
737	776	39	37		I763	Ls					
776	796	20	12			DI	M-Crs Xln				
796	802	6	6			Ls					
802	840	38				DI	Fi-M Xln Ce Nods 825, 826, 834, 839, 836				
	840	Bottom									

LOCATION Copper Ridge Belt
Sector I
Area B
PROPERTY M.B. Horton

THE NEW JERSEY ZINC CO.
Jefferson City, Tenn.

X Sec C-1225

STARTED 1-10-57 BOTTOMED 2-8-57 LOG BY TEW, RCG
SHED NO. _____ DISCARDED _____

HOLE NO. IN-65
ELEVATION 1634.28
COORDS. 804,956.75 N 900,224.84 E
BRG. _____ INCL. _____

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO.	FROM	TO
0	43					RC	NX-BX 44 BX-AX 60				
43	856	813	721	Oma-Ok		DI	Red Ce 43 Sgs 44 Clay 50-54 Dol Fr 65 Sc Rd Strat & Mot 92-126 Hi Aug Fa 115,120 Wk Ce Mtx 55 153 Dist Strat DI/V Abu Sgs 172-175 Rd Mot 222-225 Ra Sgs 231 Qtz Vug 268 Mot DI w Cot Rk 274-284 Pb Cg 285 Abu Sgs 295-297 Fr vug 302 Sed Br 303 Sgs 304 Nu Sgs 341 Sc Rd Mot 341-372 Ce Sed Br, Rd & Grn Sh 372 Rd Sh, Sed Br 378 Grn Sh, Sed Br 388 Calc Vugs 399 Sgs, Grn Sh 403 Sgs, Sh, Ce 407-408 Sgs, Sed Br 416-417 Num Sgs/Grn Sh 421 Sgs, Pb Cg 460-461 Ra Sgs 470 Cot Rk Br 480-483 Ra Sgs in Bu DI 488 6" Ce 501 Cot Rk 508-510 Sgs, Pb Cg 514 Sgs, Dist Br 534 Ra Sgs 536 Cot Rk 540 Sgs 562 Sc Abu Sgs, Pb Cg 565-567 Sgs 568 Sc Rddsh, M Gy DI 572-579 Ce Bl clos 584-585 Ra Sgs 585 Sgs, Grn Cc, Grn Sh 601 Fa 638 Sc Sgs 641-644, 670, 692 Ce Pb Cg, Abu Sgs 703-706 Ce Nod, Wky Oo 710 Sc Rddsh 728-729 Sgs in (Oo?) Ce 734 Ra Sgs 762 Sgs, Cot Rk Cg 765 Sc Abu Sgs 770-779 Dist Strat 782-786 Ra Sgs 786 Sc Sgs 795-797 Sgs w Grn Sh 819 6" Grn Sh 834 Rd & Grn Sh 856				
					CeMtx? 642						
					Bru Oo 710						
					U255						
					779 to 786						
					LP834						
856	896	40	36		TR856	Ls	Rddsh Ce 861, 862, 865 DI 863-865, 873-874 Ra Sgs 886 Ce 896 Ra Sgs				
896	924	28	28		E924	DI					
924	939	15	14			Ls	Sed Br 932-934				
939	952	13	11			DI	Fi-MXln Fossiliferous Zo 944-946				
952	968	16	14			Ls					
968	974	6	6			DI	Fi-MXln				
974	1043	69	63		I1003	Ls	Sgs 996 Dk DI 1001-1003 Ra Sgs? 1023				
1043	1079	36	27		T1048 -1052	DI	M-Crs Xln				
					"O" 1074		Ras bed dolomitization 27%				
	1079	Bottom									

LOCATION Copper Ridge Belt
Sector I
Area B
PROPERTY W. H. Horton

THE NEW JERSEY ZINC CO. X Sec C-1262
Jefferson City, Tenn
STARTED 2-13-57 BOTTOMED 2-16-57 LOG BY RCG
SHED NO. DISCARDED

HOLE NO. IN-66
ELEVATION 1267.38'
COORDS. 803,773.72 N 897,681.73 E
BRG. INCL.

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO.	FROM	TO
0	3					RC	NX-BX 6 BX-AX 14				
3	103	100	96	ox	LP? 85		SS 3 (to 6' probably boulders) Sgs 16 Sc Sgs 25-28 Ce Sed Br 34 Fi-MXln Dl 34-39 Sgs, Small Vugs 50 We 69 72 Ro Sgs/sh 85 Sgs 97, 110, 112				
103	107	4	4	ox	TR 103	Ls					
107	121	14	14		B 112 or 121	Dl	M-CrsXln Ls 113-114				
121	137	16	16			Ls					
137	142	5	5			Dl	MXln				
142	144	2	2			Dl	FiXln, Ce Nods				
144	163	19	16			Ls					
163	168	5	5		E 168	Dl	Fi Xln Ce Nods				
168	181	13	13			Ls					
181	192	11	9		F 188 G 189	Dl	FiXln, M-Dk Gy, Mot Strat 188-189				
192	232	40	35			Ls	Partial Dlztn 230-232				
232	238	6	6			Dl	Fi-MXln				
238	248	10	10			Ls	Partial Dlztd				
248	255	7	7			Dl	MXln, Sc Vugs				
255	280	25	25			Ls	MXln Dl 263-264				
280	288	8	8	Olv	T bed 280-288	Dl	Fi Gr				
288	325	37	37		U-V Beds	Dl	Fi-MXln Ce Nods 293, 295 Sc Cot Rt, Sed Bxfrng 310-324				
	325	Bottom					Rt & S Beds 28% Dolomitized				

LOCATION Copper Ridge Belt
Sector I
Area B
PROPERTY W.H. Horton

THE NEW JERSEY ZINC CO.

Jefferson City, Tenn

X Sec C-1262

STARTED 2-18-57 BOTTOMED 3-1-57 LOG BY RCG
SHED NO. DISCARDED

HOLE NO. IN-67
ELEVATION 1268.93'
COORDS. 803,607.52N 897,797.82E
BRG. INCL.

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO.	FROM	TO		
0	1					RC	NX-AX 10						
1	365	364	336	Oma OK	Vug 20 Vug 36-39, 125 126 CeMtx 191 U255 250	DI	Ce Sed Br 7 Core spilled 19-26 Sgs 18 Frng 14 Sgs 27 Ce Pb Cg Sgs 48-51 Frng 63 Sgs, Pb Cg 64 Sgs/sh 69 Dist St/ Sgs 79 Sc Ble 77-104 Sgs 85 Ra Sgs in Dist St 103 Sc Sgs 105-107 Sgs/sh 122 Sgs/sh 138 St Hi Ang Fa 165 Sgs, Mylon 170 ½" Ce Mtx Sg 191 Co ERK 219 Sg s 222 Ce Mtx Bu Sgs 224 Sc Ce, Sgs Cg 228-230 Ra Sgs, Grn Sh 240 Br/Sgs, Cg 250 Bu/ Sgs 279 Oo Ce 281 Fi-MXln DI 302-309 Sgs in Sed Br 315-317 8" Gr Sh 353	Shi Py 31 Tr Py 136 Flecks Syn Py (242-243)					
365	381	16	16	OK	TR365 A375	Ls	Hy Ce 375-381, Nu Sgs 375						
381	384	3	3			DI	MXln	Ble: 240-250 262-280 288-290 296-300 315-317 320-328 330-353 St Py 381-383					
384	389	5	5	6.60% Zn	B385	Bore			10154	384	389	ft 5	% Zn 6.60
389	405	16	16			DI	M-Chs Xln						
405	422	17	17			Ls							
422	427	5	5		E427	DI	Wht Ce Nods						
427	443	16	15			Ls	Sed Br 427-428						
443	454	11	11		F448 G450	DI							
454	545	91	79			Ls	Ce Nods 457 Incip Dlztn 477-480 Fi Xln DI 499 501 MXln DI 514-519, 526-527 Sgs/sh 530						
545	591	46	41	Olr	Tbed 545-547 "D" 567	DI	Fi-MXln Ls 564-567						
	591	Bottom											

LOCATION Copper Ridge Belt
Sector I
Area B
PROPERTY W. H. Horton

THE NEW JERSEY ZINC CO.

Jefferson City, Tenn

X Sec C.1262

STARTED 3-4-57 BOTTOMED 3-14-57 LOG BY RCG
SHED NO. DISCARDED

HOLE NO. IN-68
ELEVATION 1301.93'
COORDS. 803,513.91N 897,866.48
BRG. INCL.

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO.	FROM	TO	ft	%Zn
0	514	514	462	Oma		DI	BX-AX10						
				OK			Num Sgs 34-35 Ce Mtx 55 63 Sgs 77 Cot RK Cg						
				48°63			in DK DI 55 Cot RK 94 Sgs 116, 134 Sc Sed Bt 127-16	Py in Ce 141					
							Frng 189-190, 197 Cot RK Cg 207 Sgs 218-219 Sgs, Pb						
							Cg 240 Cot RK 242 Sgs 261 276						
					TOKP		St Fa 299-302 St Fa Zo 332-336 Sc Num Bu Sgs						
					336		390-392 Oo Ce 396 Wk Ble, Sc Ce Nods 413-415 Sgs 415						
					U255?		Sc Wk Ble 415-457 Sgs 443 Ra Sgs, Cot RK Cg 446 Sc Num						
					460		Sgs 457-460 Sgs Cot Rk 466 Ce 466-468 Sc Sgs						
							468-469, 473-476 Sc Ble, Strat 479-514						
514	522	8	6	3.97%	WTR514	Aore	Sgs 514	St Shis Dissem SP + Py Gyp517	10160	514	522	8/6	3.97
522	523	1	1		A523	Ls	Sgs 523						
523	529	6	6		B520	DI	Fi Xln						
529	543	14	13			Ls							
543	556	13	13			DI							
556	573	17	15			Ls							
573	579	6	4		E577	DI	Fi Xln						
579	589	10	10			Ls							
589	636	47	34		F597	DI	Partial Ls 606-609 Cts Xln, Si, 609-615 Cts Xln						
					6598		DI 615-636						
636	640	4	4			Ls							
640	663	23	20			DI	Cts Xln Ls 645-646, 652-656						
663	686	23	23			Ls							
686	734	48	39	O/r	Tbed	DI	Fi Xln 686-692 Sgs 692 MXln 692-698 Fi Gr 698-700						
					688-692		MXln 700-712 Ls Sed Bt 712-713 Fi-MXln 713-720 Ls 720-						
							726 Fi-MXln DI 726-734						
	734	Bottom											

LOCATION Copper Ridge Belt
Sector I
Area B
PROPERTY W.H. Horton

THE NEW JERSEY ZINC CO.

Jefferson City, Tenn

X Sec C-1262

STARTED 3-15-57 BOTTOMED 4-1-57 LOG BY RCG-TEW
SHED NO. DISCARDED 0-481

HOLE NO. IN-69
ELEVATION 1350.74
COORDS. 803,436.48N 897,922.71E
BRG. INCL.

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO.	FROM	TO
0	515	515	400	Cma		DI	BX-AX (2' rec) 10 Ce Mtx 55 10 Frng 21 Sc Rddsh 50-181 St Fa 61 Frng 67 St Fa 77 Sgs 118, 127 Dk Gy DI 129-131 Abu Sgs 138-139 Cg 37 sgs/sh 180 Sed Br 181-184 Sgs 187 Sgs in PbCg 211 Abu Sgs 239-240, 244 Fi Xln (Rex ln?) 243-247 Sc Rddsh 279-300 Re Sgs 300 Wh Silica 310-312 Sed Br 334 Sgs in Ce Pb Cg 338 Hilling Fa 337 Sgs in Ce 339 Sgs 351 Ce Pb Cg 411-412 Cot Rk 417-418 Sgs in Ce 422 St Frng 432-434 Sgs PbCg 447 Sc Nu Sgs 450-452 Sgs in Cot Rk 480 Dk DI 500-514 Frng 511-513					
515	695	180	169	Ok	Ce Mtx 515 2255 621	DI	Frng Dk DI, Shy Ptngs 537-547 Sgs 556 Re Sgs, Ce 566 Sgs 569 Abu Br Sgs 570-571 Sc Bu Sgs 596, 621 OoCe Nods/Sgs, Cot Rk Cg/Grn Sh 625 Sc Abu Sgs 633-635 Sc Ce, Sed Br, Grn Sh 641-645 Sgs, Grn Sh 679 Sc Rddsh 683-695				
695	696	1	1		TR695	DI	MXln, Red + Grn				
696	725	29	29		A702 B713	Ls	Incip Dlztn 699-701 MXln DI 701-703 Sgs 702 Fi Bu DI 713 MXln DI 723-724				
725	735	10	10			DI	MXln 725-732 Fi Xln 732-735				
735	752	17	17			Ls					
752	756	4	4		E756	DI	Fi Xln Ce Nods				
756	770	14	13			Ls					
770	779	9	9		F774 G775	DI					
779	854	75	66			Ls	Gastropods in Ce 801 DI 816-819, 822-823, 831-833, 839-842				
854	891	37	31		J760	DI	Sgs 860 Ls 872-876 Crs Xln DI 883-887				
891	893	2	½	Olv	Tbed		Fi Xln Ce Nods				
	893	Bottom									

LOCATION Copper Ridge Belt
Sector I
Area B
PROPERTY M. B. Horton

THE NEW JERSEY ZINC CO.

Jefferson City, Tenn.

STARTED 4-2-57 BOTTOMED 5-9-57 LOG BY RCG, REF
SHED NO. B-6 DISCARDED none

HOLE NO. IN-70
ELEVATION 1397.56'
COORDS. 803,276.53N 898,026.87E
BRG. INCL.

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO.	FROM	TO
0	5	5	–			RC					
5	28	23	18	Oc		Ls	Cgl 26-28				
28	62	34	29	Oc		Dl, Ce	Ce 28-32, 38-41, 49, 56-58, 59-62				
62	1030	968	704	Oma-OK		Dl	Sc Rddsh 104-121 Bu Wy Strat Dl, Ce 131-136 Sc Ct Rk 145-148, 152-153 Sc Rddsh 136-245 Sed Br 213-215 St Hi Ang Fa 245 Sc Frg 245-248 Open 276-277 Mylo 278-300 Ce Mtx SS 315 Red Strat 312-330 Sc Rddsh 351- Sgs 377, 387 Mylo 392, Frg to 401 Abu Sgs in Strat Dl 441-444 Sgs 472 Ra Sgs in Ce 515 Ce Mtx SS 543 Sgs 556, 589 Bu Ra Sgs 607-608 Sgs 612 Cot Rk 613-615 Sed Br 638-641 DK Ce w Wht Gng 676, 683 Cot Rk 701-704 Sc Sgs 731-732 Wk Ble 746-770 Cot Rk, Sgs 802-803 Frg 833-839 Soft Rk 834-837 Num	Hematite 174'			
					Brn Oo 897 U-255 964		Bnd Sgs 891 Brn Oo Ce, Peb Cgl 896-897 Num Sgs, Cot Rk 918-919 Ca Vug 925 Ble 934-959 Sgs 947, 961-964, 974 Sc Sgs 984-986 Ce, Grn Sh 991-992 Sgs, Grn Sh, Sc Sh Sp 1004-1005 Ce Sed Br 1030-1033		2% Zn Est		
1030	1049	19	19		TR-1030	Dl	Fi Crs Dl Buff Dl Br, Grn Sh ("B")? 1039				
1049	1071	22	18			Ls	Ls Lo Rd Ptngs Sed Br 1050				
1071	1078	7	5			Dl	Lt Gy Fi Dl				
1078	1089	11	7			Ls	Ls				
1089	1099	10	8			Dl	D Gy Fi Dl				
1099	1113	14	6			Ls	Gy Fi Dl, Abu Frag	Tr Py 1100			
1113	1115	2	2			Dl	Crs Rexln Dl				
1115	1118	3	3			Ls					
1118	1133	15	15			Dl	Cr Rexln 4" Bd Ce 1133	Tr Sp 1118			
1133	1134	1	1			Ls	Ls				
1134	1211	77	64		"J 1198	Dl	M Gy Crs Rexln Dl Cot Rk 1145 Ra Crs Sgs 1198 "J."				
1210	1218	6	4	Olv	T-Bd	Ls	Fi Dl w/ Sc Ce Nds	Sc St Shis Py 1157-1169			
1218	1241	23	19			Dl	Fi Dl Sc-Abu Sgs 1239 ("O" Sg)	Tr Py 1142, 1147, 1170, 1175, 1176 Approx 5-10% Py			

Bottom 1241

THE NEW JERSEY ZINC CO.

SECT AX-TENN-B. 1354

LOCATION Copper Ridge Belt
Sector I
Area C
PROPERTY

HOLE NO. LA-11
ELEVATION 1803.27
COORDS. 795,953.19N; 885,076.23E
BRG. INCL.

STARTED 7-3-58 BOTTOMED 7-11-58 LOG BY EWR
SHED NO. B-7 DISCARDED None

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO	FROM	TO			
0	52	52	–			RC	Nx-Bx 55 Bx-Ax 60							
52	196	144	131				Open & Soft Rock 262-280 (1½' Core) Abu Sc-Bnd Sgs above Bl Ry Dl 60-62 Sc Sgs in Bu Dl 75 Ce Nd Zo 85-88 Abu Sc-Bnd Sgs w/Ce Pebs & Sgs @ Bs 88-93 Ra Sgs @ Bs 2' Strat 120 Abu Sc-Bnd Sgs in Fi Xln DK Gy Dl 136 Ce Nd Zo 144-146 Ra Bnd Sgs in Fi Strat 151 Sc Sgs in Fi Dl 162-163 Abu Ce 194-196			222	228	3' Core	25%	Pyrite
					TR 196									
196	301	105	63			Dl	Ra Bnd Sgs 239 MXln Dl w/wh Dol & Sp 256-257 Ox 266	St SH. Sp 256-257, 281 Py 283, 312-316						
301	306	5	2			Ls								
306	316	10	8			Dl								
316	320	4	3			Ls		St Py in Crs Rex In 324-326, 336-337, 339-341 1' Py 349 350 Py in Crs Xln 356, 359-360, 363 367-368, 383 SH Sp in Str Py 383						
320	373	53	51			Dl								
373	380	7	7			Ls								
380	401	21	18			Dl								
		Bottom		401			R & S Beds 92% Dolomite							

THE NEW JERSEY ZINC CO.

SECT. AX-TENN C-1365

HOLE NO. LA-10

LOCATION Copper Ridge Belt
Sector I
Area C

PROPERTY Kyle Johnson

STARTED 6-11-58 BOTTOMED 7-2-58 LOG BY EWR

SHED NO. B-7 DISCARDED Nil

ELEVATION 1645.25

COORDS. 795,529.61N; 885,459.30E

BRG. INCL. -90°

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO.	FROM	TO
0	18	18	–			RC	Nx-Bx 20 Bx-Ax 30				
18	1028	1010	861	OMag & OK		DI	Fa Br 18-20 Int Frg 53-57, 65-66 Lo Frg 70-96 Mylo Fa Zo (2") 90 Hi Ang Fa 75° 137 Frg 145-182 Cat RK 162-169, 191-198 Abu Ce 169-191 Frg 219 Ce Nd Zo in Fr DI 241-245 Frg 253-257 3" Mylo 256 Frg 278, 300-302, 309-310 Ra Sgs 326 Sc. Bnd Sgs 332-334 Mylo 348 Int Frg & Mylo 352-354 Bnd Sgs 387-388 Sgs → Ce Mtx w/ Shy Frgs 394 4" Sh 406 Abu Sc Sgs below th Sh 420 Abu Bnd Sgs → Ce Mtx, Pebble Cgl 429-430 Frg 456 Shy Rexln 471-472 Rexln 475 Hi Ang Fa 80° 505-506 Sc-Bnd Sgs → Ce Mtx 514-515 Ra Sgs over 1" Ce 518 Th Sh 540, 549 Ra Sgs over Th Sh 563 6" Rd & Grn Sh 568 8" Wh. Ce 590 Vert Frg 592-594 Sc Sgs & Ce Frags 601 Ra Sgs w/ Ce 602 Ce Mtx below 6" Ce 606 8" Ce w/ DI Rhombs & Ra Sgs 608 Ra Sgs 609 Sgs over 6" Grn Sh 613 Sgs @ Bs of Rexln Mot 620 Ce Nods 626-627 Hi Ang Wk Frg 632 Hi Ang Fr, Fa ? 654 Sc Ce 664-673 Sc Sgs 675-676 2' Wh. Ce 693-695 Hi Ang Frg 700-701, 705-708 Ce Nod Zo 713-719 Sg Ra Sgs → Abu Sgs 713-717 Ra Bnd Sgs 721 Frg 738-739 V Crs Abu Sgs 746 1" Abu Sgs → Sc Sgs → 1" Rexln over 1' Grn Sh 765-767 Vy Abu → Sc Sgs over Rexln 776-777	St Shi Ry 697 Tr Ry 709			
					Ce Mtx Lacking 813?	DI	DK Ry DI 805-813 Fa Zo - Mylo 813-823 (1' Core) Frg, Lo intense 823-837 DK Ry DI 840-854 2" Mylo 850 1' Strat over 1' Sc Sgs 859-861 St Shi Ry 884 Shi	St Shi Ry 884 Shi			
					Brwn Oo ? 878		Frg 865-866 Sgs in 6" Ce 871-872 Abu Bnd Sgs in Strat 873 875 8" Brwn Oo Ce above 2" Grn Sh 878 Sc Abu Sgs above	Ry in Ce 956			
					U-255 935		Thn Sh 888-889 Ce Nd Zo 898-901, 3" Fa Br 901 Sc-Abu Sgs w/ Ce Chips 901-903 Grn Sh 916 Ce Nod Zo 929-935 Bnd Sgs in Strat 935 Hvy Blu Ce 937 Ra Sgs above Grn Sh 939 Frg 943-948 Sc Sgs 946-947 1" Hvy Ce below 3' Strat 955-956 Ce 959 Sc-Bnd Sgs 960 Ra Sc Sgs → Abu Sgs @ Bs 1" Dist Strat 973 1' Ra Sc Sgs over 3" Grn Shy DI 980-984 Thn				
					TR		Grn Sh & Ce @ Bs 3' Fa Strat 994 / 3' Strat w/ Ce @ Bs 998-1001	Shi Sp 1010-1011 Shi Ry 1013-1013, 1018			
1028	1059	31	28		1028	DI	6" Grn Sh w/ Sgs 1028, Ra Sgs 1036 St Frg 1059				
1059	1064	5	5			LS	Hi Ang Frg 1062-1064				
1064	1075	11	11		E	DI	Frg 1064-1065 Hvy Ce 1075				
1075	1079	4	4		1071	LS	70° Fa 1079				
1079	1099	20	15			DI	Mylo 1079-1087 St Frg 1087-1098				
1099	1142	43	25			LS	Ce 1102				
1142	1147	5	5			DI					
1147	1170	23	20			LS					
1170	1172	2	2			DI					
1172	1189	17	15			LS	Ra Sgs 1174				
1189	1221	32	29			DI, LS					
	1221	BOTTOM					R & S Bds 46% Dolomite				

LOCATION Copper Ridge Belt
Sector I
Area C
PROPERTY C.C. Lawson

THE NEW JERSEY ZINC CO.

SECT AX-TENN B-1354

HOLE NO. LA-8

ELEVATION 1839.37
COORDS. 796,065.58N; 885,236.17E
BRG. INCL. -90

STARTED 5-18-58 BOTTOMED 5-26-58 LOG BY W.J.C
SHED NO. B-7 DISCARDED None

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMP. NO	FROM	TO			
0	46	46	-			RC	Bx - Ax 50							
46	244	198	171	OK	Brn Oo? 96	Dl	Crs Bnd Sgs, Ce Frags 46 Bnd Sgs 61 DK Dl w/shy Prgs 59-79 Hi Ang 65° Fa 80 Abu Sgs 92 Oo Ce (Brn Oo)? 96 App Dip 55° @ 99 Sc Sgs in Mx/In 108 Ce Nd Zo in Lt Dl 116-120 Abu Sc-Bnd Sgs w/Ce Pebs 121-126 Ce Nd Zo in Lt Dl 148-156 Abu Sc-Bnd Sgs 167-169 3" Blu Ce 176 Bnd Sgs 181 Ra Crs-Bnd Sgs → Sc Sgs 193-194 App Dip 55° @ 200 Frg 234 60° Fa @ 238							
					TR									
244	261	17	16	OK	244 "A" Sgs 249	Dl	Crs Sgs in Ls 249 (A)							
261	264	3	3			Dl	Crs S Bed Type Dl							
264	267	3	3			Ls								
267	272	5	5			Dl	Fi Grn Bu Dl							
272	281	9	9		E?	Dl	Med Xln Dl							
281	283	2	2		283	Dl	Fi Grn Dl w/Ce Nds E?							
283	305	22	20			Ls								
305	310	5	5			Dl	Fi Grn Bu Dl							
310	328	18	17			Ls								
328	333	5	5			Dl	Dk Fi Dl w/Ae's, 1' Dk Strat @ Bs							
333	352	19	17			Ls								
352	359	7	7			Dl	Fi Grn, Mottled							
359	384	23	23			Ls								
384	388	4	4			Dl	Fi Grn Dl							
388	390	2	2			Ls								
390	410	20	18			Ls	Sc Sgs → Ce Peb Gl 408-410 App Dip 55°							

Bottom 410

R & S Beds 38% Dolomite

THE NEW JERSEY ZINC CO.

SECT AX-TENN C-1365

HOLE NO. LA-7

LOCATION Copper Ridge Belt
Sector I
Area C

PROPERTY Kyle Johnson

STARTED 4-24-58 BOTTOMED 5-17-58 LOG BY EWR-WJC

SHED NO. B-7 DISCARDED None

ELEVATION 1713.75

COORDS. 795,692.89N ; 885,347.91E

BRG. INCL.

DEPTH FROM	DEPTH TO	DIST.	CORE	FM	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO.	FROM	TO		
0	31	31	–			RC	Bx-Ax-40						
31	483	452		Oma		Dl	Frg 40-53 Abu Fi Sgs → Ce Mtx 55 Abu Sgs w/Ce Pebs 56 Sc Sgs in Mot Dl 89 Bnd Sgs w/Ce Pebs @ Bs. 117-118 Hvy Ce 123-124 Abu Sgs above 1" Grn Sh 125 Frs 138, 164-168 Mylon 168-170 Ce Mtx above Ce 171 Ce Nds 190-196 Hvy Bd Ce 196-200 Ce Zo 209-210 Ra Sgs 212 Ce 219 Bnd Sgs w/Ce 220 Oo Ce 229-230 Fi Sgs in Med Xln Dl 239-241, 242-244 Frs 253-257 Int Frg 257-259 Ra Sgs above Ce 289-290 Sc Ox 290-313 Ce 295-297 Sgs 303-308 Ce 311-313 Frd 313-333 Sc Sgs in Br 327-328 Abu Sgs 348 Ce 351-353 Sc Sgs 379-380 Sc Sgs w/Ce 396 Mylo 414-415 Peb Cg 1415 Int Frg 426-429, 435, 438 DK Dl Int Frd 438-458 Frd 458-483	Tr Py 244, 396 Sh Sp, Py 424 St Sh, Sp 470 Sc Tr Sp 492-496, 497-504 Sc Py 513-516 Tr Sp 542		496	497	1'	6% Zn Est
483	550	67		Oma		FaZo	St Fa Zo w/Mylo 483-550 Sgs in Mylo 533 St Fa Pl 50° @ 550						
550	690	140		Oma	Ce Mtx Lacking 690?		Hvy Ce 567-570 Sc-Bnd Sgs → Ce Mtx 583 Ra Sc Sgs 585 Ce 586 Thn Grn Sh 608 Sc-Bnd Sgs 612-613 Bnd Sgs over 1' Shy Dl 632 Sc-Bnd Sgs 639-642 Lt Crs Rex In Dl w/Sgs 642-644 Thn Grn Sh 643, 644 App Dip 53° Frg 707-708						
690	866	176	174	OK	Brn Oo 748 U-255? 769	Dl	DK Shy Dl 678-684 Mylon 712-715 Frg 722 Ra Sgs 732 Sh 733 Hi Ang Fa 733 Crs Bnd Sgs 732 Blk Sh, Py 732 Sgs, Ce 737 Abu Sgs, Ce Mtx 744 Brn Oo Ce 748 Sc Sgs, Grn Sh 746-747 Abu Sgs, Ce Chips 767-768 Lt Dl w/Ce Nds 760-765, 774-782, 784-795 St Frg, Lo Mylo 798-803 Ce Mtx → Sc Crs Sgs 812-813 Hvy Ce 820-821 6" Sc-Bnd Sgs 823 Abu Sc Crs Sgs 833-834 70° Shear Zo 835 6" Grn, Blk Sh 840 App Dip 35° @ 849 App Dip 45° @ 840 St Fr Zo 854-866						
866	906	40	38		TR 866?	Dl	6" Ce 866 Brn Mot 874-878 TR? 878 6" Ls 905 App Dip 30° @ 910						
906	910	4	4			Ls	App Dip 45° @ 912						
910	922	12	12			Dl							
922	933	11	11			Ls	App Dip 40°-45° @ 930 St Fr 933-943						
933	951	18	16			Dl							
951	981	30	27			Ls	App Dip 50° @ 968 St 65° Fa 974-975						
981	989	8	8			Dl	Med Xln Dl						
989	996	7	7			Ls							
996	998	2	2		J Sgs 1010	Dl	Fi Grn Dl						
998	1015	17	15			Ls	App Dip 55° @ 999 Sgs J 1010	Acid Etch @ 808'					
1015	1016	1	1			Dl							
1016	1028	12	12			Ls							
1028	1030	2	2		TBd?	Dl	Fi Grn Dl (TBd?)						
							Bottom 1030	R & S Beds 50% Dolomite					

LOCATION Copper Ridge Belt
Sector I
Area C
PROPERTY Kyle Johnson

THE NEW JERSEY ZINC CO.

SECT. Ax-TENN C-1365

HOLE NO. LA-6

ELEVATION 1781.15

STARTED 4-16-58 BOTTOMED 4-24-58 LOG BY EWR-WJC COORDS. 795,856.65N ; 885,248.22E

SHED NO. B-7 DISCARDED None BRG. INCL. -90

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMP. NO.	FROM	TO
0	30	30	–			RC	No Bx.				
30	323	293	287	Oma		Dl	Cavity 34-40, 46-50, 51-55 St Frg 55-60 Mylo 58 Hi Ang Fa (60°) 68 Ra Sgs 77 Hi Ang Frg 85-87, 90-95 Hvy Ce 95-96 Whi Ce 98-100 Sgs, Ce Peb Cgl 108-109 Whi Co 116-117, 123-124 Fr Zo 141-152 Sc-Bnd Sgs 146-147 Abu Sc Sgs 176 Frg 180, 184-188, 193-196 Abu Sgs, Ce 211 Sgs in Dk Strat 247 Ra Sgs 252 Bnd Sgs 258 Abu Sgs, Ce Frags 291 Oo Ce 307				
					Ce Mtx		Ce Mtx 323? (Lacking)				
323	457	134	129	OK	323?	Dl	Abu Sc-Bnd Sgs w/Ce Pebs @ Base 332-336 App Dip 53° @				
					U-255		333 Grn Sh 347 Ce Nd Zo 360-365 Sc-Bnd Sgs 380-383				
					383		Hily Frd 350-368 Ce 393, 418-420 Ra Sgs 481 Crs Br 512-	Tr Sp 439, 458			
					TR		520 App Dip 50° @ 489	Tr Py 458 V St Py			
457	595	138	116	OK	457	Dl	F. Grn Lt Dl w/Ce E? 510-512	481-484, Trs Py 489-			
					"A" Sgs		F. Grn Lt Dl 521-524	500, 502-507, 510			
					481			Tr Sp 512 Tr Py 526			
					B?			St Py 8% 536-542,			
					487			St Py 8% 551-554			
					E		Crs S Bd Rexln 512-582	St Py 10% 554-555			
					512		F. Grn Dl w/Lo Ce 592-595	St Py 5% 579-591			
					T?						
595	602	7	7	Olv	595	Dl	Med Xln Dl				
602	607	5	5			Ce	Oo Ce, Peb Cgl (Zero Bd?)				
607	609	2	2			Fa Zo	St 45° Fa				
609	650	41				Dl	St Oo Ce (Zero Bd?) V Bd resembling RBd St 60° Fa 650				
							Bottom 650				
							R & S Beds 100% Dolomite				

LOCATION COPPER RIDGE BELT
SECTOR I
AREA C
PROPERTY C.C. LAWSON

THE NEW JERSEY ZINC CO.

SECT AX-TENN B 1354 B 1356 ·· HOLE NO. LA-5

ELEVATION 1905.37

STARTED 4-8-58 BOTTOMED 4-15-58 LOG BY EWR-WJC COORDS. 796,278.43N; 885,473.47E

SHED NO. B-7 DISCARDED NONE BRG. INCL. -90°

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO	FROM	TO
0	24	24	–			RC	Bx-Ax 40				
24	54	30	29	Omn	CeMtx 54	DI	DK DI w/SHY Ptgs 48-54				
54	194	140	117	OK	U-255 119 LP 179	DI, Lo LS	Ce 65 Sc-BndSgs 66-68 PebGl, Sgs 68 LtFi-BuDIw/CeNds 92-94 Sc-Bnd sgs 106-109 Sc Sgs below Dist Strat 118-119 CeNdZo 113-116 Sc Sgs 130 2" Grn Sh 135 Cavity 140-142 Sgs, Grn Sh 179 (LP) Ls 179-188 Sed Br 186 DI 188-190				
194	216	22	21	OK	TR 194	DI	Fi Grn DI w/Ce Nods 202-203, 213-216				
216	235	19	14			LS					
235	241	6	4			DI	Fi Grn DI w/Ae's (E?)				
241	257	16	11			LS					
257	262	5	5			DI	Fi XIn DI w/AEs, Mots				
262	282	20	18			LS					
282	291	9	5			DI	Mot Fi DI w/AE's				
291	310	19	14			LS					
310	311	1	1		JSgs 330	DI	Fi Ox DI				
311	360	49	41			LS	Crs Sc Sgs 330-331				
360	389	29	29		TBd 360-366 ZeroBd 374	DI					

BOTTOM 389
R & S Beds 28% Dolomite

THE NEW JERSEY ZINC CO.

LOCATION: COPPER RIDGE BELT
SECTOR I
AREA C
PROPERTY: C.C. LAWSON

SECT AX-TENN B-1354 C-1365

HOLE NO. LA-4

ELEVATION 1823.75

STARTED 3-31-58 BOTTOMED 4-14-58 LOG BY E.WR-WJC COORDS. 796,031.13 N ; 885,151.37 E

SHED NO. W3-7 DISCARDED NONE BRG. INCL. -90°

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO	FROM	TO		% Zn
0	105	105	–		4-255	RC	Bx-Ax 110						
105	221	116	103	OK	133	DI	CE Nds IN Bu DI 108-116 Sgs w/Ce Pebs 133 CE Nds in Bu						
					LP		DI 136-142 Fr Zo 149-151 Sc-Bnd Sgs Abu @ Bs. 154-155						
					206		Ra Sgs above Sh, Co 159 Fr 168-171 Ox 174-177 Open 183-184 Ra Sgs over Sh 189 Cavity 220-221 Sgs 206						
221	227	6	4	OK	TR	DI	Sc-Crs Sgs 227 "A"? Crs X/n DI 221-225						
					221								
227	235	8	8		E	LS							
235	259	24	24		257-259	DI	Fr Zo 241-242 Crs Ce Pebs 255 F. Grn DI w/Ce Nds "E" 257-259 (Ce Frags in DI)						
259	269	10	8			LS							
269	277	8	8			DI							
277	287	10	10			LS							
287	292	5	5			DI	Mineralized			287	292	5'	4.75
292	296	4	4			LS	Mineralized			292	296	4'	4.43
296	300	4	4			DI			Weighted Average				
300	315	15	14			LS				287	296	9' @	4.61
315	319	4	4			DI							
319	339	20	18		J Sgs	LS							
339	343	4	4		361	DI							
343	388	45	42		T Bd	LS	Sc Sgs 361 J?						
388	391	3	2		388-391	DI	F. Grn. DI						
391	396	5	4		Zero Bd	LS							
396	400	4	4		397-398	DI	Ce Peb Cgl w/oo 397-398 "O" Bd						

BOTTOM 400
R&S Bds 33% Dolomite

THE NEW JERSEY ZINC CO.

SECT. AX-TENN B-1354

HOLE NO. LA-3

LOCATION Copper Ridge Belt
Sector I
Area C

PROPERTY C.C. Lawson

STARTED 3-19-58 BOTTOMED 3-28-58 LOG BY EWR-WJC

SHED NO. Br-7 DISCARDED None

ELEVATION 1879.05

COORDS. 796,689.87 N ; 886,141.29 E

BRG. INCL. -90°

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO.	FROM	TO			
0	43	43	—			RC	BX-AX 50							
43	192	149	95	OK?		DI	OPEN 56-60, 64-66, 124-135 Crs Sgs & CeNtx 97 Lo Ox 43-116 Lo Rd Mot 68-95 Ra Sc Sgs in F. DI 137 Sc-Bnd Sgs over Wy Strat 148-150 Ra Sgs over 6" Grn Sh 158 Hrx Ce 173 CeNd @ base of Strat 183 6" Grn Sh 184 Ce 189 Ox Grn Sh 192							
192	199	7	7			LS								
199	216	17	13		TR	DI	Sed Br 199-202 Sgs over Sh 216							
216	231	15	15		216 "A"?	LS	Sgs w/Sh 225 ("A" Mkr)? CeNd 224							
					225									
231	238	7	7			DI								
238	241	3	—			OPEN								
241	250	9	8		E?	LS								
250	267	17	16		250-267	DI	CeNod Zo 255-263							
267	280	13	11			LS								
280	290	10	10			LS								
290	297	7	5			DI								
297	319	22	18			LS								
319	346	27	26			DI								
346	378	33	28		T Bd	LS								
378	387	9	6		384-387	DI	F. DI w/CE Nds 384-387							
387	400	13	13			LS								
				Bottom 400										
				R&S Bd's 39% Dolomite										

THE NEW JERSEY ZINC CO.

SECTION: AX-TENN B-1954 B-1356

HOLE NO. LA-2

LOCATION: Copper Ridge Belt, Sector I, Area C

PROPERTY: C.C. Lawson

STARTED 3-10-58 BOTTOMED 3-18-58 LOG BY EWR

SHED NO. B-9 DISCARDED NONE

ELEVATION 1930.20

COORDS. 796,492.04 N; 885,789.4 CE

BRG. INCL. -90°

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO.	FROM	TO			
0	55	55	—			RC	Bx-Ax 90							
55	92	37	28	Oma	CeMtx	DI	OPEN 65-71, 76-80, 81-83 CE 91 Sc-Bnd Sgs 94-95							
92	215	123	119	OK	92	DI	Bu CeNd Zo. in Fi DI 121-124 Lo Bnds CeMtx 124 Ra Sc							
					U-255?		Sgs over Grn Sh 129-130 OPEN 140-141 Sc-Bnd Sgs 141-							
					159		142 CeNd Zo 149-155 Sc-Bnd Sgs 157-159 Sed Br 164-174							
							Sc Sgs 174 1' Grn Sh 181-182 CeNds 195, 204, 212							
215	220	5	5		TR	LS								
220	237	17	16		237	DI								
237	255	18	18			LS								
255	264	9	5			DI								
264	271	7	7		E	LS	Ra Sgs 266							
271	288	17	15		281-284	DI	Fi DI w/Ce 281-284							
288	305	17	14			LS								
305	313	8	8			DI								
313	331	18	17			LS								
331	338	7	6			DI	DK DI w/Ae's							
338	360	22	21			LS								
360	369	9	8			DI								
369	396	27	24		T Bd	LS								
396	399	3	3		396-399	DI	Fi DI w/ CeNds							
399	421	22	22			LS								
			Bottom		421									
			R&S Beds		31% Dolomite									

THE NEW JERSEY ZINC CO.

SECT AA-TENN B-1356

LOCATION Copper Ridge Belt
Sector I
Area C

PROPERTY C.C. Lawson

HOLE NO. LA-1

ELEVATION 1865.72

STARTED 2/28-58 BOTTOMED 3-7-58 LOG BY WJC-EWR COORDS. 796,130.89N; 885,588.29

SHED NO. B-7 DISCARDED None BRG. INCL. -90°

DEPTH FROM	DEPTH TO	DIST.	CORE	FM.	MKRS.	ROCK	REMARKS	MINERALIZATION	ANALYSES SMPL. NO.	FROM	TO
0	79	79	–		CeMtx	RC	Bx-Ax 112				
79	294	215	188	Omw	294	DI	Ce 92 Sed Br 111 CeMtx Sgs → Bnd-Sc Sgs 196-197 Sed Br 163-166 F. Grn Rd Mot DI 184-208 Sed Br 173-184, 214-238 Hi Ang Fa Zo (Vert) 255-257, 265 Hi Ang Frg in Dk F. DI 266-280				
294	471	177		OK	U-255 361	DI	Sc-Bnd Sgs 325-328 Ce Chips in F. DI (Brn Oo Ce Zo?) 337-339 2' Sh 352-354 App Dip @ 352 = 60° Ce Nd Zo 354-365 Sc Sgs 361 Sc-Bnd Sgs 374-376 Ce Nd Zo 382-388 Abu Sgs 390 Ra Sgs 393 Sc-Bnd Sgs 405-406 Sh 412 Sgs in Grn Sh 463 Brwn Mot DI 366-370 Ra Sgs in Grn Sh 471				
					TR						
471	493	22	20	OK	471 "A" Sgs 483	Ls	Sgs 483				
493	529	36	34		E 522-525	DI	Med Xln 493-495 F. DI 495-497 Crs Xln DI 497-522 w/Lo Med Xln 2' Crs Sbd-Rex Ln 525-527	St Sh, Br 525			
529	536	7	6			Ls					
536	551	15	15			DI	F. DI 536-542 Crs DI 542-546 F. DI 546-551				
551	569	18	18			Ls	Sed 557-566 Sgs in Ls 568				
569	573	4	4			DI	F. Dk DI w/Ae's 569-573				
573	595	22	20			Ls					
595	599	4	4			DI					
599	621	22	21			Ls		Sh, Sp 609 Tr Sp 616			

Bottom 621
R&S Bds 40% Dolomite

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
	Griswold	500
7/7	Tilfort	800
7/7	GCS	130
7/7	Johnson	110
		~~100~~
		~~HB~~
7-7	gad	220
		500

500

JUL 7 1959

Memorandum

To: Executive Officer, ONE Field Team, Region V

From: Chairman, Operating Committee, ONE

Subject: Docket No. DMEA-4153 (Zinc)
The New Jersey Zinc Company
Independence Area
Hancock and Hawkins Counties, Tennessee
Contract No. Idm-8950

The cited contract was terminated February 20, 1959, effective January 15, 1959. Will you kindly call this Operator's attention to its obligation concerning the rendering of a final report.

/s/
George C. Selfridge

(GCS)

APPROVED:

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

Harold Kirkemo (GCS)
Member, Geological Survey

WRGriswold/hb (7/6/59)
Copy to: Director's Reading File
Operating Committee
O. M. Bishop, USBM
H. Kirkemo, USGS
Mr. Griswold

8623

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

March 30, 1959

OFFICIAL FILE COPY
O. M. E.
RECEIVED APR 1 1959

DATE	INITIALS	CODE
4/1	C	220
4/1	wpb.	~~500~~

Memorandum

To: Operating Committee, OME - Washington

From: Executive Officer, OME - Region V - Knoxville

Subject: Termination Agreement - DMEA-4153, Idm-E950-zinc
The New Jersey Zinc Company. Tennessee

Attached are the original and audit copies of the subject signed termination agreement.

The usual distribution of the other copies has been made by this office.

Robert A. Laurence
Robert A. Laurence

z

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

March 30, 1959

OFFICIAL FILE COPY
O. M. E.
RECEIVED APR 1 1959

DATE	INITIALS	CODE
4/1	C	220
4/1	wpb	500

Memorandum

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

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

Subject: Signed Amendment No. 11. DMEA-4153, Idm-E950
The New Jersey Zinc Co.
Independence Area, Hancock and Hawkins Counties
Tennessee.

Attached is the Government Copy of the subject signed amendment No. 11, and a copy of the Contract and Agreement between L. W. Horton and wife and the New Jersey Zinc Company. Also attached is the signed audit copy of the amendment.

Robert A. Laurence

Robert A. Laurence
Executive Officer, OM E
Region V

V. J. Lynch

V. J. Lynch, Member
Bureau of Mines

MME Form 7
(10-58)

OFFICIAL FILE COPY

Date	Surname	Code
	Rubin	140
	Hoffman	140
3/16	Irving	500
3/17	[illegible]	130
"	Johnson	110
3/18	C	220
		500

MAR 17 1959

Mr. Robert A. Laurence
Executive Officer
OME Field Team, Region V
Room 2-B, Post Office Building
Knoxville 2, Tennessee

Re: Docket No. DMEA-4153 (Zinc)
The New Jersey Zinc Company
Independence Area
Hancock and Hawkins Counties,
Tennessee
Contract No. Idm-E950

Dear Mr. Laurence:

Your memorandum dated February 27, 1959, to the Operating Committee states you recently learned that on April 2, 1958, the Operator obtained a 5-year option on the 35-acre Hiram Herron tract "for the purpose of making detailed geochemical studies along the outcrop" and not for any purposes of the contract. The Herron tract adjoins the L. W. Horton tract which immediately adjoins the contract land. The L. W. Horton tract, optioned to the Operator on June 5, 1956, was added to Annex 1 by Amendment No. 11, dated January 14, 1959. Your memorandum asks whether the Herron tract should be added to the land described in the contract by an amendment, pursuant to the "contiguous" provision of paragraph numbered 1 of Annex 1, prior to execution of the Termination Agreement by the Operator.

It is our view that in the circumstances of this case the parties did not intend and the Operator could not be required by amendment to add the Herron tract as "contiguous" land. Accordingly, there seems to be no obstacle to execution of the Termination Agreement.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee

APPROVED:

H. G. Iverson

Member, Bureau of Mines

Thor H. Kiilsgaard

Member, Geological Survey

HCRubin/hm 3/11/59
cc: Docket
Dir. reading file
Op. Comm.
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Mr. Griswold
Mr. Rubin

43683

Mr. Dulfinger

Fake

ON

Dmen 4/53, 3/13/59

MME Form 7
(10-58)

OFFICIAL FILE COPY

Date	Surname	Code

500

March 3, 1959

Memorandum

To: Associate Solicitor, Division of Minerals Resources

From: Chief, Division of Base Metals

Subject: Review of Memorandum dated February 27, 1959 from Mr. Robert A. Laurence, ExecutiveOfficer, Region V, re Docket No. DMEA-4153, The New Jersey Zinc Company, Independence Area, Hancock and Hawkins Counties, Tennessee, Contract No. Idm-E950, Zinc.

We call your attention to the self-explanatory memorandum of Mr. Laurence, Executive Officer, Region V, dated February 27, 1959, (also to map which we have attached to his memo).

We agree with Mr. Laurence that the Hiram Herron (or Hiram Herring) tract is of no concern to us. Do you concur?

W. R. Griswold

W. R. Griswold

WRGriswold/er
CC: Docket
Dir Read File
Chron.

43683

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 MAR 2 1959

DATE	INITIALS	CODE
3/2	C	220
		130
3/2	WMD.	500

February 27, 1959

Memorandum

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

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

Subject: DMEA-4153, Idm-E950 (Zinc)
The New Jersey Zinc Company, New York, New York
Independence area, Hancock County, Tennessee

This week, we were advised by the Operator that, on June 5, 1956 they had secured a 5-year option to the L. W. Horton property which adjoins the original Independence contract area on the northeast. It is shown on the Operator's map AX-TENN-570 which accompanies the application, but not on the contract map, figure 2A. No contract work has been done on or near this property.

Accordingly, we drafted and forwarded to the Operator, Amendment No. 11, dated January 14, 1959, providing for the addition of this 250-acre tract to the contract, and advised them to withhold signing the Termination Agreement until Amendment 11 had been executed.

However, we now learn that on April 2, 1958, the New Jersey Zinc Company secured a 5-year option on the 35-acre Hiram Herron tract (incorrectly designated as Hiram Herring on map AX-TENN-570). This was not for purposes of the contract, but to enable them to make detailed geochemical studies along the outcrop areas adjacent to the zone "TR" as shown on the map. It appears to us that this property is not automatically added under the provisions of paragraph 1 of "Special Agreement Concerning Land," as it is not "contiguous to the premises described in this Contract" but instead is contiguous to contiguous lands added by amendment, and is more than 3800 feet from the nearest point in the original contract area.

Therefore, we have not prepared an amendment to add this property. The Operator has agreed to postpone execution of the Termination Agreement until we receive a ruling on this.

Will you please advise us whether or not we are required to add the Hiram Herron property, under the terms of the "Special Agreement Concerning Land?"

Robert A. Laurence

Robert A. Laurence
Executive Officer

V. J. Lynch

V. J. Lynch
Member, Bureau of Mines

Form 7
(10-58)

OFFICIAL FILE COPY

Date	Surname	Code
2/18	Griswold	500
2-18	Chamberlin	800
2/20	G.S.	130
"	Johnson	110
		~~100~~
		~~110~~
2/24	C	220
		500

500

FEB 20 1959

Mr. Robert A. Laurence
Executive Officer
OME Field Team, Region V
Room 2-B, Post Office Bldg.
Knoxville 2, Tennessee

Re: Docket No. DMA-4153 (Zinc)
The New Jersey Zinc Company
Independence Area
Hancock and Hawkins Counties,
Tennessee
Contract No. Idm-5950

Dear Mr. Laurence:

This is with reference to your memorandum of February 2, 1959 (pertaining to land deletions) and your other memorandum, of the same date, covering contract termination.

Both features have been provided for in the proposed Termination Agreement (two pages), the original and four copies of which are enclosed. All copies have been signed by the Acting Director for the Government. Also enclosed are two extra copies for the use of the Field Team.

If the agreement meets with your approval, kindly present it to the Operator for approval and signature and, when completed, distribute all the copies in the usual manner. Otherwise, and if any proposed change should lie beyond your delegated authority, return all copies to us with your recommendations.

RECEIVED
FEB 20 1959
ASSOC. SOLICITOR
MINERAL RESOURCES

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (GCS)

Enclosures
APPROVED:

P. F. Yopes (GCS)
Member, Bureau of Mines

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

WRGriswold/er 2/18/59
Copy to: Docket
Dir Read File
Op. Committee
Mr. Bishop, USBM
Mr. Kiilsgaard, USGS
Chron.

43683

2/18/59

I think the parcels of land deleted should be expressed in acreage

Yes. JVC

Omea - 4153
{proposed termination agreement}

Geo. — suggest statement be added as per phone conversation — PD
M.C. Herron (included in area shown on map attached to amendment #5, as subject to contract, but not listed in the body of said amendment)

Government's copy

TERMINATION AGREEMENT

It is agreed this ____ day of _____, 1959, between the United States of America, acting through the Department of the Interior, Office of Minerals Exploration, hereinafter called the "Government," and the New Jersey Zinc Company, hereinafter called the "Operator," parties to that certain Exploration Project Contract No. Idm-E950 (Docket No. DMEA-4153), dated May 10, 1956, as amended, hereinafter called the "Contract," that:

1. Pursuant to the provisions of Article 2 of the Special Agreement Concerning Land in Annex I, the following parcels of land are hereby deleted from the land referred to in Article 2 of the Contract and described in Annex I, as amended:

Name of Property Owner	Acres
M. B. Horton	~~230~~ 283
H. C. Anderson	100
Emma Brickley and L. Brickley	70
C. C. Lawson and Claude Lawson	146
N. M. Moneyhun	40
Kyle Johnson and wife Dinah Johnson	100
Hilton - McMillan	
M. C. Herron	

The Operator:

(a) certifies that 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 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

Long
Lenger
Agr'd Sol. No.
Chambers

lands or any minerals produced therefrom, or derives any benefit therefrom, before the expiration of thirty ~~25~~ 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 ~~25~~ 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.

2. Effective January 15, 1959, the Contract and all obligations of the parties thereunder, except as otherwise herein expressly provided shall be and are hereby terminated.

3. The Government shall contribute only to the allowable costs of work performed prior to January 15, 1959.

4. 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.

5. All rights of the Government respecting certification of discovery or development, percentage royalty and liens to secure the payment thereof, reports (including preservation of Operator's records), accounts, audits, and the right to recover any overpayment, are hereby preserved.

6. 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_____
Acting Director, Office of
Minerals Exploration

THE NEW JERSEY ZINC COMPANY

By_____

Title_____

OFFICIAL FILE COPY

Date	Surname	Code

February 18, 1959

Memorandum for the Docket

From: Chief, Division of Base Metals

Subject: Justification for Termination Agreement for
Docket No. DMEA-4153 (Zinc)
The New Jersey Zinc Company
Independence-Lawson Area
Hancock and Hawkins Counties
Tennessee
Contract No. Idm-E950

In two memorandums, both dated February 2, 1959, the Field Team recommends certain land deletions and likewise a contract termination. The requested land deletions are in order. Likewise, we see no reason to object to a contract termination. An ore discovery has been made and the project will be certified, it appears that the discovery may be in the order of half a million tons, of around 5.5% zinc grade. These figures are, of course, only tentative, subject to the proper final report.

W. R. Griswold

W. R. Griswold

WRG/er
CC: Docket
Dir Read File
Chron.

43683

OFFICIAL FILE COPY

Date	Surname	Code

500

February 6, 1959

Memorandum

To: Associate Solicitor, Division of Minerals Resource

From: Chief, Division of Base Metals

Subject: Termination including Land Deletion for Docket No. DMEA-4153, The New Jersey Zinc Company, Independence-Lawson Areas, Hancock and Hawkins Counties, Tennessee, Contract No. Idm-E950, Zinc.

Will you kindly prepare a Termination Agreement for the cited property, preserving the Government's rights to certify. We shall do this a bit later.

Also please delete the land parcels as requested in the Operator's letter of January 29, 1959.

W. R. Griswold

W. R. Griswold

WRG/er

CC: Docket
Dir Read File
Chron.

43683

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

February 2, 1959

OFFICIAL FILE COPY O. M. E. RECEIVED FEB 4 1959		
DATE	INITIALS	CODE
2-4	C	220
		130
2-5	[illegible]	500

Memorandum

To: Operating Committee, OME - Washington

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

Subject: DMEA-4153, Idm-E 950-Zinc. Independence-Lawson areas, Hancock and Hawkins Counties, Tennessee
The New Jersey Zinc Company, Jefferson City, Tenn.

Enclosed are the original and two copies of a letter from the Operator, requesting termination by mutual agreement.

Although the drilling to date has discovered a significant amount of ore-grade material, the tonnage is not adequate to justify development under present conditions. It is unfortunate that the Operator does not wish to complete the authorized work. Undoubtedly they would have done so, had the zinc market conditions been more favorable.

Work was resumed by January 1, in accordance with Amendment No. 10, but no footage was drilled and therefore there will be no January voucher. Accordingly, the July 1958 voucher, paid in August, becomes the final voucher.

In view of the reluctance (one might almost say refusal)of the Operator to complete the project, we recommend preparation of the requested Termination Agreement, effective January 15, 1959. Certification will be recommended.

Robert A. Laurence

Robert A. Laurence, Executive Officer
OME Field Team, 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.

OFFICIAL FILE COPY
O. M. E.
RECEIVED FEB 4 1959

DATE	INITIALS	CODE

RECEIVED
FEB - 2 1959
U. S. Geological Survey
Geology Building
Knoxville, Tenn.

HORSE HEAD PRODUCTS ®

PLEASE ADDRESS REPLY TO

Jefferson City, Tennessee
January 29, 1959

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

Subject: DMEA 4153, Idm E 950 - ZINC
INDEPENDENCE-LAWSON AREAS
HANCOCK AND HAWKINS COUNTIES, TENNESSEE

Dear Mr. Laurence:

This is to advise you of our desire to terminate DMEA contract Idm E 950 covering exploration diamond drilling in the Independence and Lawson areas of the Copper Ridge Belt.

Diamond drilling in the Independence area was begun under this contract in May, 1956 and 23 holes had been drilled when work was recessed in May, 1957. Six of these holes penetrated zinc mineralization of ore grade and thickness. As of this date, a total of 18,191 feet of drilling had been done at a cost of $55,211.57.

In November 1957, amendment number 5 provided for an additional 35,000 feet of diamond drilling and enlarged the project to include properties within the Lawson area. Drilling under this amendment began in February, 1958 and by July of the same year, 11 holes (10 covered by the contract) were completed. None of these holes found zinc mineralization of ore grade and thickness and only one hole penetrated mineralization in possibly significant amounts. The project was then recessed until January 1, 1959. During the recess period, geochemical material, including auger drill testing on the Lawson area were subjected to additional analytical tests and re-evaluation and the geology and diamond drill results were reviewed in an effort to distinguish exploration targets sufficiently attractive to warrant further diamond drilling.

A crew of geologists and surveyors have resumed

work under the contract on the C. C. Lawson, M. C. Herron, Claude Lawson, Emma Brickey and H. C. Anderson properties. A strike fence of holes was laid out on the Anderson property, lines were cut, and survey control was carried into this area. The purpose of this proposed line of diamond drill holes was to test the weak geochemical anomaly on this property. It has now been concluded that this anomaly does not warrant exploration under present conditions. This conclusion is considerably influenced by the unfavorable results obtained in the test drilling of the similar but larger C. C. Lawson geochemical anomaly. Total drilling under the Independence-Lawson contract has been 24,134 feet at a cost of $73,227.18.

Notwithstanding the considerable portion of the contract remaining unexpended, no further exploration of the Independence-Lawson area is considered warranted at the present time. We regret that approval could not be secured for the proposed amendment to the subject contract so as to permit additional drilling on the adjacent Eidson properties. Here, we feel is an opportunity to prove additional tonnages of zinc ore. Had this amendment been approved, it would not have been necessary to terminate this contract.

Yours very truly,

THE NEW JERSEY ZINC COMPANY

Johnson Crawford

General Superintendent

A. D. Hoagland/jf
In Quadruplicate

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

February 2, 1959

OFFICIAL FILE COPY O. M. E. RECEIVED FEB 4 1959		
DATE	INITIALS	CODE
2-4	C	220
		130
2-5	WRB	500

Memorandum

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

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

Subject: DMEA-4153, Idm-E950 (zinc) Independence-Lawson areas, Hancock and Hawkins Counties, Tennessee The New Jersey Zinc Company, Jefferson City, Tenn.

Enclosed are the original and two copies of a letter from the Operator, requesting deletion of eight tracts, in accordance with the "Special Agreement Concerning Land."

We recommend preparation of an amendment.

Robert A. Laurence

Robert A. Laurence
Executive Officer, OME
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.

RECEIVED
FEB - 4 1959
U. S. Geological Survey
Mineral Division
Knoxville, Tenn.
HORSE HEAD PRODUCTS ®

PLEASE ADDRESS REPLY TO

Jefferson City, Tennessee
January 29, 1959

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

OFFICIAL FILE COPY
O. M. E.
RECEIVED FEB 4 1959

DATE	INITIALS	CODE

Subject: DMEA 4153, Idm E 950 - ZINC
INDEPENDENCE-LAWSON AREAS
HANCOCK AND HAWKINS COUNTIES, TENNESSEE

Dear Mr. Laurence:

Exploration diamond drilling under the subject contract has failed to discover ore in the portion of the contract area referred to as the Lawson area. Although the test of this area is not considered to be conclusive, indications of ore potential are not sufficiently encouraging to warrant further diamond drilling here at the present time. Option agreements are being terminated on the properties listed below and request is hereby made for an amendment deleting these properties from the contract:

- M. B. Horton 230?
- H. C. Anderson 100
- Emma Brickey 70
- C. C. Lawson and Claude Lawson 146
- N. M. Moneyhun 40
- Kyle Johnson (Amendment # 8) 50
- Helton-McMillan (Amendment # 9) 104
- M. C. Herron

The M. C. Herron property, lying between C. C. Lawson and Claude Lawson was originally intended to be included in the contract. This property, although shown as part of the contract area on the map accompanying Amendment # 5, was not specified in the properties listed. Our option on the M. C. Herron property is being terminated and this property should also be deleted from the contract.

Yours very truly,
THE NEW JERSEY ZINC COMPANY

Johnson Crawford
General Superintendent

A. D. Hoagland/jf
In Quadruplicate

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 19 1959

DATE	INITIALS	TO DL
1-19	C	220
1/19	[illegible]	800
		500

January 15, 1959

Mr. Johnson Crawford
General Superintendent
The New Jersey Zinc Co.
Jefferson City, Tennessee

Re: EMRA-4153, Idm-8950-Zinc
Independence area
Hancock and Hawkins Counties,
Tennessee

Dear Mr. Crawford:

We have just been advised by our Washington office that the proposal to combine Contracts Nos. Idm-8950 (Independence) and Idm-8956 (Ridgem), as requested in your letter of December 4, 1958, cannot be done under the existing regulations. This has been discussed with Mr. Hoagland.

Therefore, the drilling remaining under Idm-8950 must be done on the Independence-Lawson area, and should be completed by August 1, 1959, as provided in Amendment No. 10.

Sincerely yours,

Robert A. Laurence
ExecutiveOfficer, OME
Region V

RAL/zm
cc
Opr. Com-2
Lynch-Shirley
Files

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

Date	Surname	Code
1/12	[illegible]	500
1/13	[illegible]	130
"	Johnson	110
		~~100~~
		~~[illegible]~~
1/13	C	225
		500

500

JAN 13 1959

Mr. Robert A. Laurence
Executive Officer
OME Field Team, Region V
Room 2-B, Post Office Bldg.
Knoxville 2, Tennessee

Re: Docket No. DMEA-4153 (Zinc)
The New Jersey Zinc Company
Independence Area
Hancock and Hawkins Counties,
Tennessee
Contract No. Idm-E950

Dear Mr. Laurence:

We have your memorandum of December 11, 1958, regarding the possibility of combining Dockets DMEA-4153 and 4177 into one project.

We can recognize the logic of your recommendation and the matter was referred to the Office of the Associate Solicitor. He has given the proposal a thorough study and has advised us that, under existing regulations, no such action could be taken by us.

Will you please advise the Operator accordingly.

Sincerely yours,

George C. Selfridge

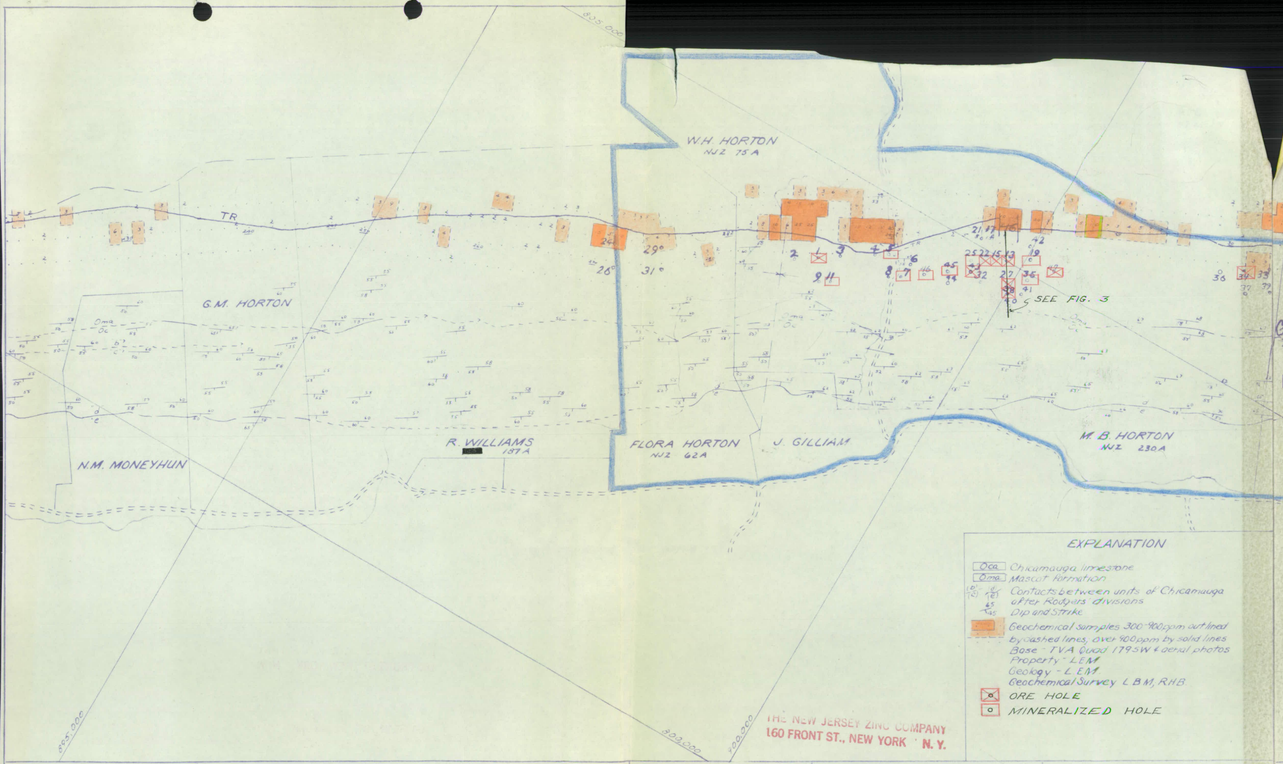
Chairman, Operating Committee (JB)
WRGriswold/er 1-12-59
Copy to: Docket
Dir Read File
Op. Committee
Mr. Bishop, USBM
Mr. Kiildgaard, USGS
Chron.

APPROVED:

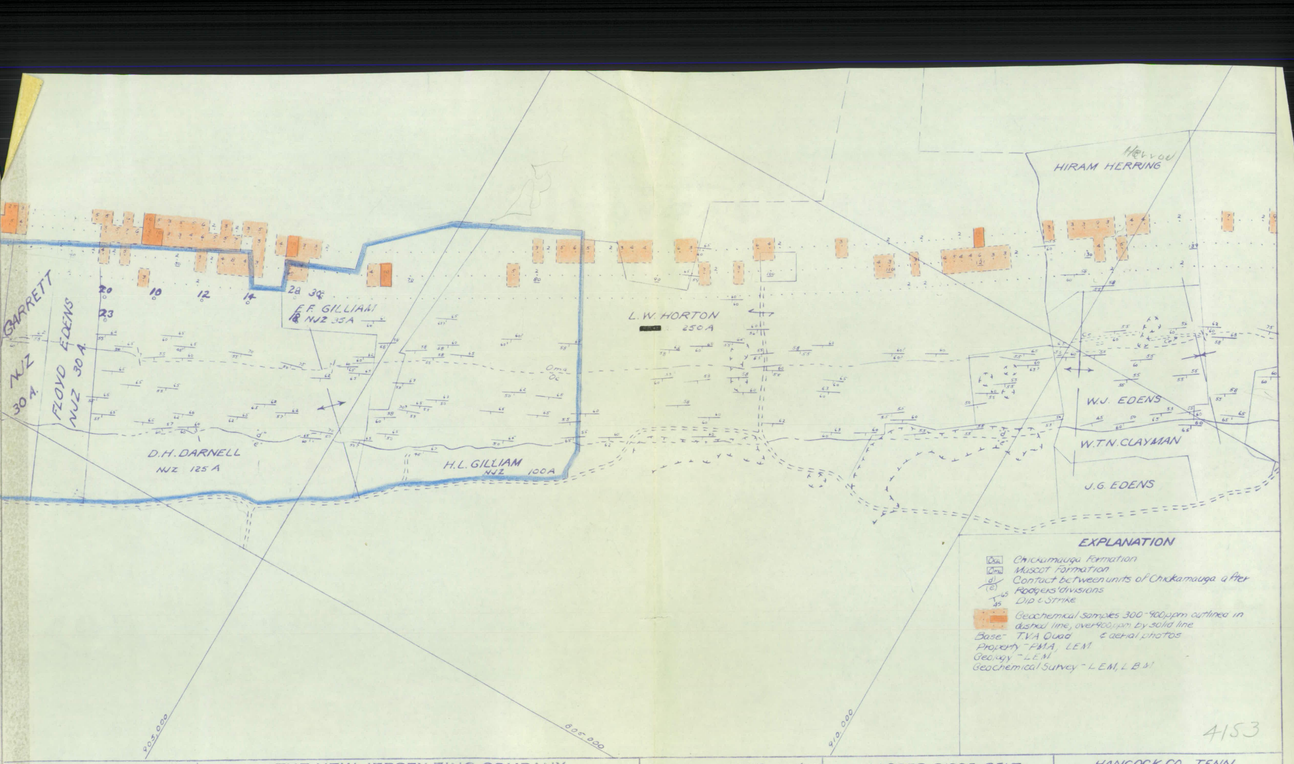
C. T. BAROCH (JB)
Member, Bureau of Mines

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

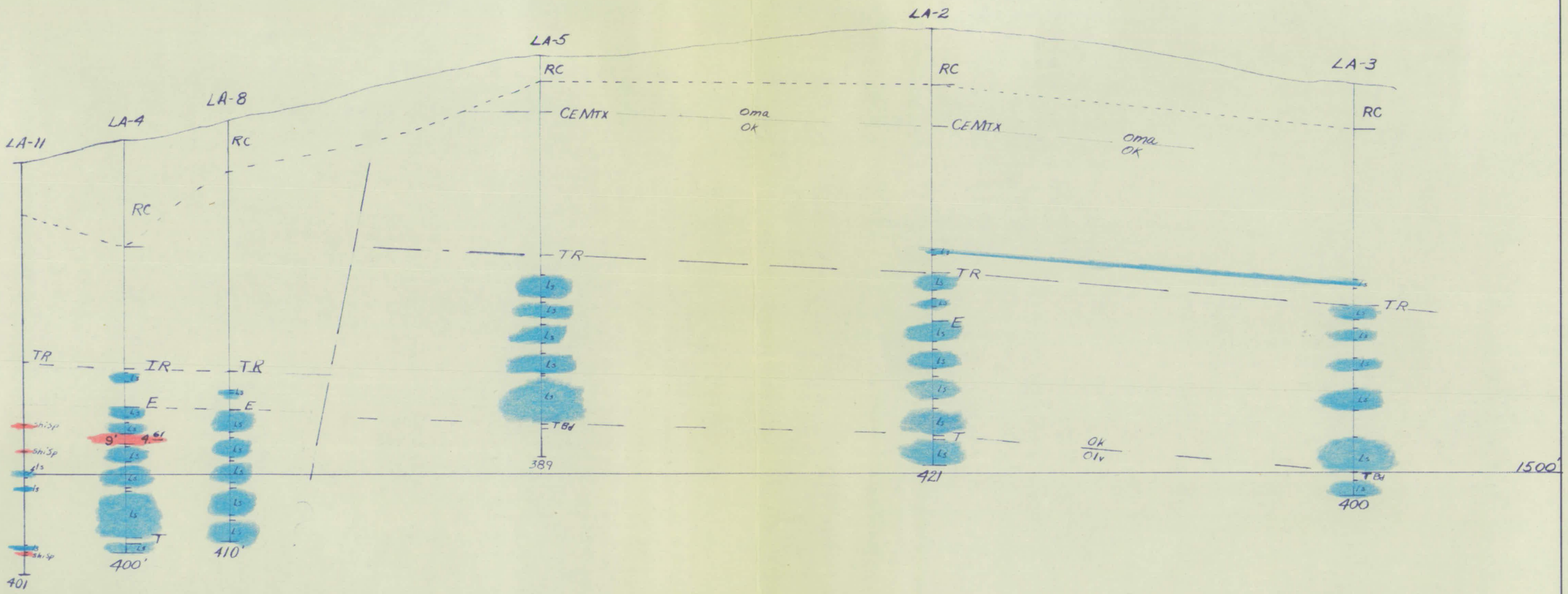
8623



POSTED TO DATE 3/31/53 11/1/54 4/30/55	THE NEW JERSEY ZINC COMPANY ROGERSVILLE TENNESSEE	DRAWN L.E.M. DATE 3-24-53 TRACED S.J.L, J.F.P. SCALE 1" = 660'	COPPER RIDGE BELT SECTOR I SHEET 11NE	HANCOCK CO., TENN FILE NO. AX-TENN 569

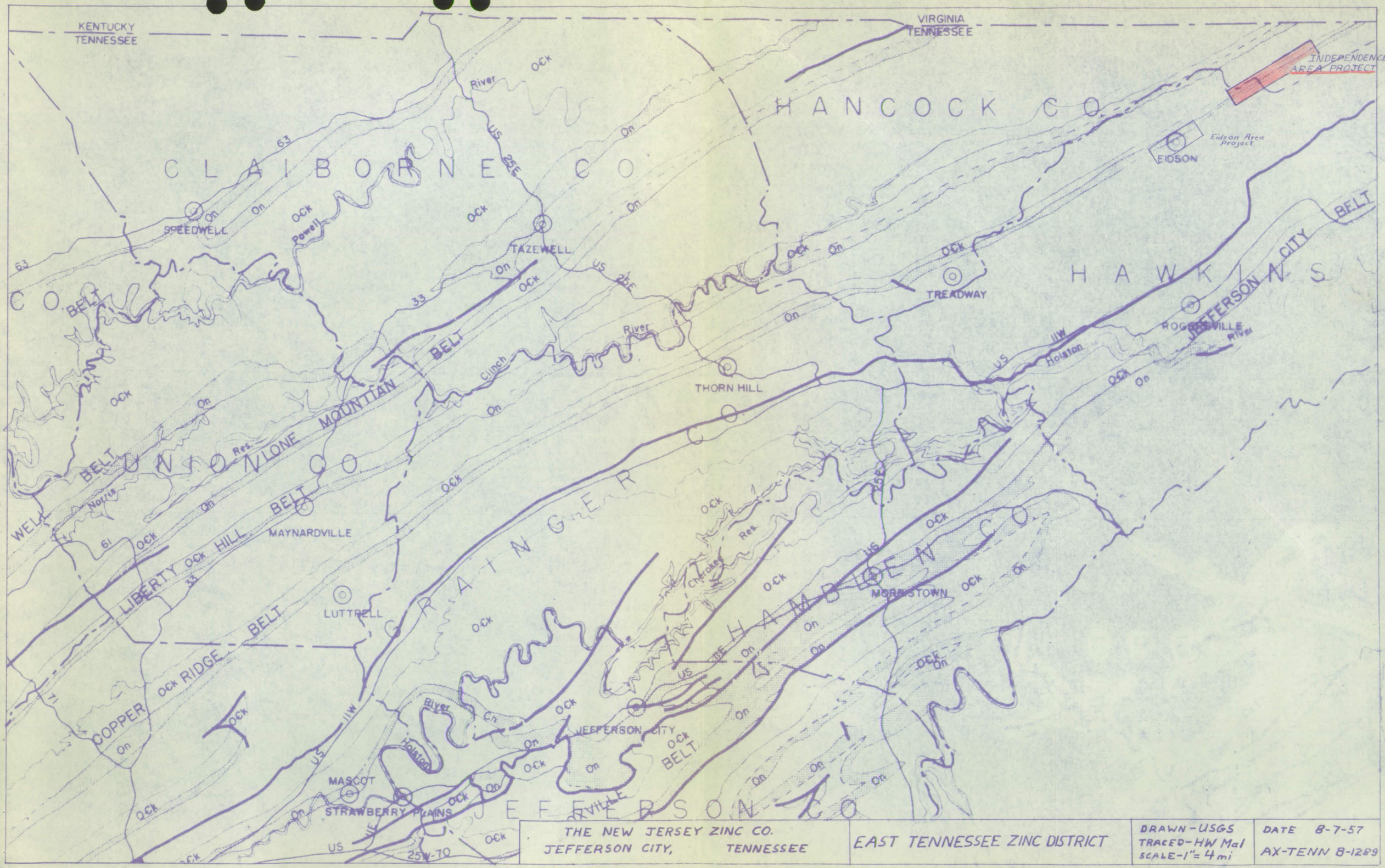


POSTED TO DATE 3/31/53 3-31-53	THE NEW JERSEY ZINC COMPANY ROGERSVILLE TENNESSEE	DRAWN L.E.M. DATE 3-24-53 TRACED S.J.L, J.F.P. SCALE 1" = 660'	COPPER RIDGE BELT SECTOR I SHEET 12NE	HANCOCK CO., TENN. FILE NO. AX-TENN 570



SERIAL NUMBER		DATE ISSUED		REFERENCE DRAWINGS	REVISIONS	THE NEW JERSEY ZINC COMPANY	DRAWN WJC	LONGITUDINAL SECTION LA-4,5,2,3,8,11	DATE 4-14-58
THIS DRAWING IN DESIGN AND DETAIL IS OUR PROPERTY AND MUST NOT BE USED EXCEPT IN CONNECTION WITH OUR WORK. ALL RIGHTS OF DESIGN AND INVENTION ARE RESERVED. THIS DRAWING MUST BE RETURNED TO THE NEW JERSEY ZINC COMPANY.						JEFFERSON CITY, TENNESSEE	TRACED	SECTOR I LAWSON AREA	SCALE 1" = 100
							CHECKED	COPPER RIDGE BELT	AX TENN B-1354
							APPROVED		

X5453B 1M 11-54



THE NEW JERSEY ZINC CO.
JEFFERSON CITY, TENNESSEE

EAST TENNESSEE ZINC DISTRICT

DRAWN - USGS
TRACED - HW Mal
SCALE - 1" = 4 mi

DATE 8-7-57
AX-TENN 8-1289

TABLE 1.-- SELECTED STRATIGRAPHIC AND ZINC INTENSITY DATA FROM DMEA DRILLING IN INDEPENDENCE-LAWSON AREA, COPPER RIDGE ZINC DISTRICT, TENNESSEE [DMEA-4153, 1dm-E 950 (zinc)].

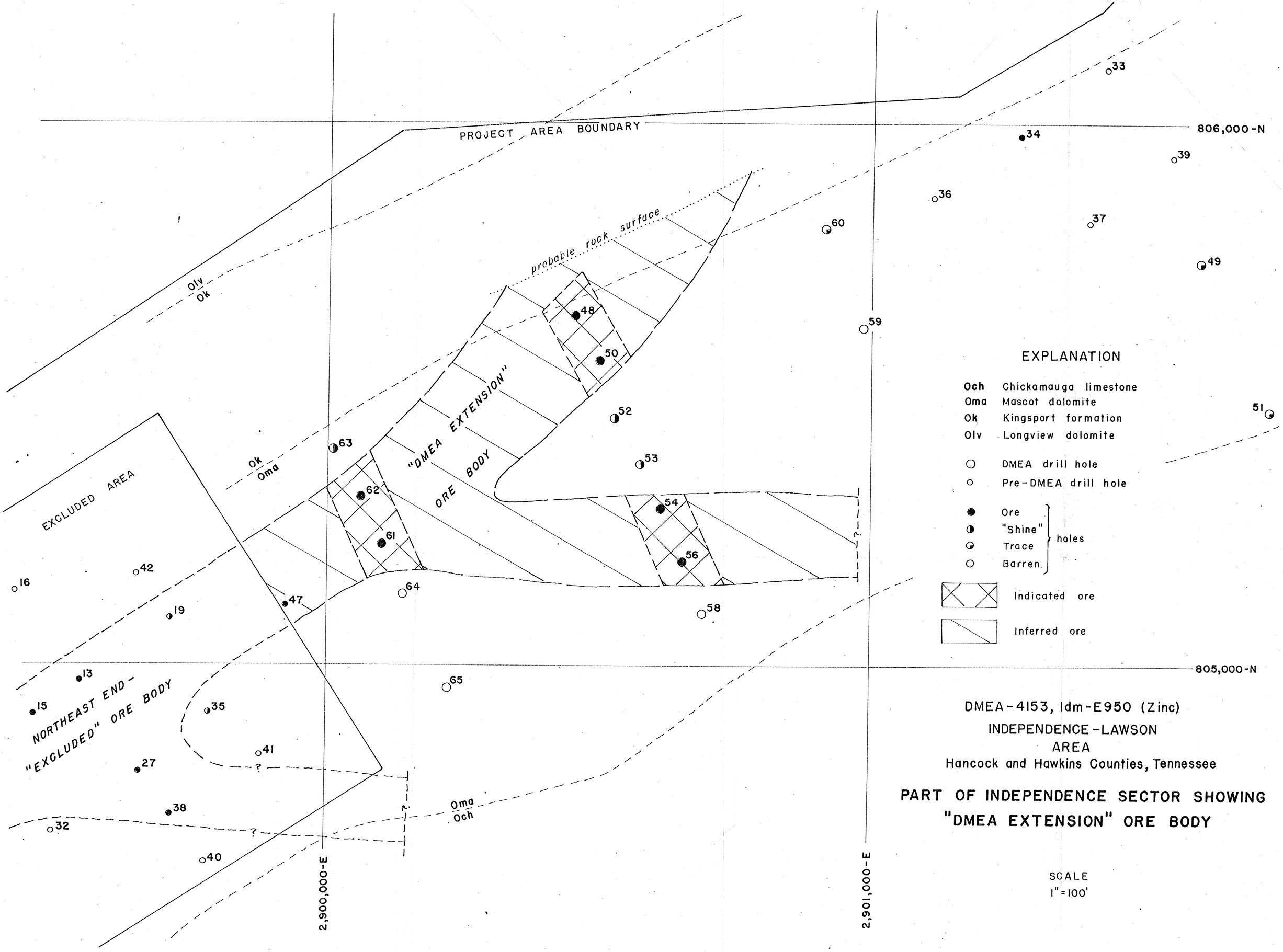
[Explanation of symbols.-- Oku - upper Kingsport member; Okr - R-bed; Oks - S-bed; Okl - lower Kingsport member (i.e., total of R- & S-beds); Ok - total Kingsport; pT - penetration thickness]

	DRILL-HOLE PENETRATION THICKNESSES						pT RATIOS			ZINC INTENSITY VALUES				
Hole no.	Oku	Okr	Oks	Oku+Okr	Okl	Ok	Oku/Okl	Okr/Oks	Oku/Okr	Oku	Okr	Oks	Okl	Ok
IN-48	164?	40	145	204?	185	349?	0.89	0.28	4.10	18	75	130	205	223
-49	172?	82	96	254?	178	350?	0.97	0.86	2.10	0	1	0	1	1
-50	191	68	137	259	205	396	0.93	0.50	2.81	65	18	<1	18	83
-51	221	44	126?	265	170	391?	1.30	0.35	5.04	0	0	<1	<1	<1
-52	230	44	120	274	164	394	1.40	0.37	5.22	1	24	0	24	25
-53	190	65	122	255	187	377	1.02	0.53	2.92	1	36	0	36	37
-54	224?	23	125?	247?	148?	372?	1.51	0.18	9.74	0	0	266	266	266
-55	160	62	132	212	194	354	0.82	0.47	2.58	0	0	0	0	0
-56	158	30	109?	188	139?	297?	1.13	0.28	5.27	85	136	0	136	221
-57	127	66	150	193	216	343	0.59	0.44	1.93	0	0	0	0	0
-58	133?	67	124	200?	191	324?	0.70	0.54	1.98	0	0	0	0	0
-59	273?	33	77?	306?	110?	383?	2.48	0.43	8.29	0	0	0	0	0
-60	243?	54?	67?	297?	121?	364?	2.01	0.81	4.50	<1	0	0	0	0
-61	170	56	93	226	149	319	1.14	0.60	3.04	102	3	64	67	169
-62	186	49	121	235	170	356	1.09	0.41	3.79	0	0	138	138	138
-63	211	51	149?	262	200?	411?	1.06	0.33	4.13	1	0	29	29	30
-64	219	62	119?	281	181?	400?	1.21	0.52	3.54	0	0	0	0	0
-65	214?	68	124	282?	192	406?	1.11	0.55	3.15	0	0	0	0	0
-66	172?	65	112	237?	177	349?	0.97	0.58	2.64	0	0	0	0	0
-67	174	62	118	236	180	354	0.97	0.53	2.80	0	33	0	33	33
-68	178?	63	111	241?	174	352?	1.02	0.57	2.83	0	32	0	32	32
-69	180	61	135	241	196	376	0.92	0.45	2.95	0	0	0	0	0
-70	160?	69?	111?	229?	180	340?	0.89	0.62	2.32	2	0	<1	2	2
LA-1	177	54	110?	231	164?	341?	1.08	0.49	3.28	0	0	1	1	1
-2	115	47	112	192	159	304	0.91	0.42	3.09	0	0	0	0	0
-3	150?	51	117	201?	168	318?	0.89	0.44	2.94	0	0	0	0	0
-4	150?	38	119	188?	157	307?	0.96	0.32	3.95	0	0	41	41	41
-5	140	47?	119?	187?	166	306	0.84	0.39	2.98	0	0	0	0	0
-6	134?	55	83?	189?	138?	272?	0.97	0.36	2.44	<1	<1	0	<1	1
-7	176?	56?	106?	232?	162?	338?	1.09	0.53	3.14	0	0	0	0	7 *
-8	165?	39?	127?	204?	166?	331?	0.99	0.31	4.23	0	0	0	0	0
-9**	188	62?	64?	250?	126	314	1.49	0.96	3.03	0	0	0	0	0
-10	215?	43	126	267?	169	384?	1.27	0.34	5.00	<1	0	0	0	<1
-11	134?	43?	141?	177?	184?	318?	0.73	0.31	3.12	0	<1	<1	1	1

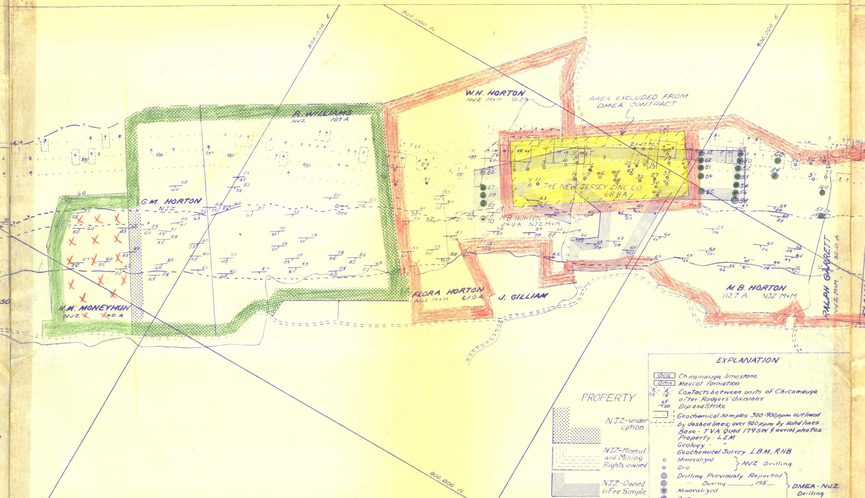
* zinc in Mascot formation
** non-DMEA hole drilled during contract period.

1 - 1 INCH
COMPANY, INC.
.Y.

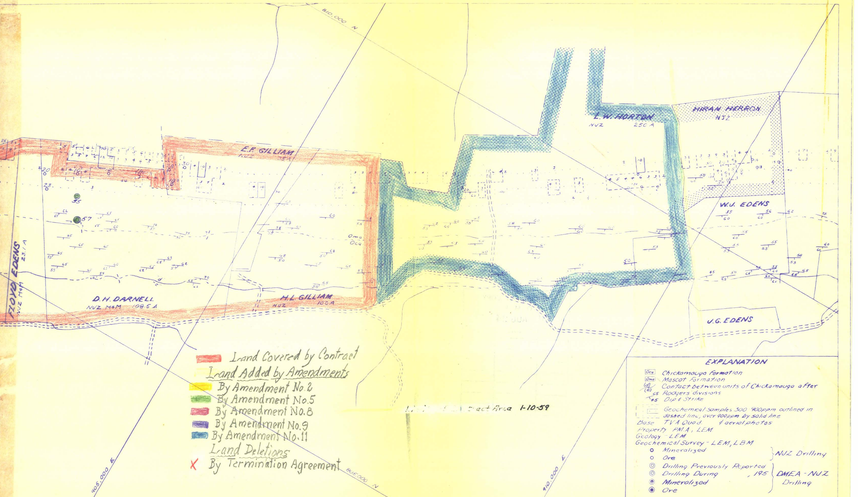
CROSS SECTION 10 X 10 - 1 INCH
AMERICAN BLUE PRINT COMPANY, INC.
NEW YORK, N.Y.
MADE IN U.S.A.


PROJECT AREA BOUNDARY
806,000-N
805,000-N
2,900,000-E
2,901,000-E
probable rock surface
"DMEA EXTENSION" ORE BODY
NORTHEAST END - "EXCLUDED" ORE BODY
EXCLUDED AREA
Olv
Ok
Oma
Och
EXPLANATION
Och Chickamauga limestone
Oma Mascot dolomite
Ok Kingsport formation
Olv Longview dolomite
DMEA drill hole
Pre-DMEA drill hole
Ore
"Shine"
Trace
Barren
holes
Indicated ore
Inferred ore
DMEA-4153, ldm-E950 (Zinc)
INDEPENDENCE-LAWSON
AREA
Hancock and Hawkins Counties, Tennessee
PART OF INDEPENDENCE SECTOR SHOWING
"DMEA EXTENSION" ORE BODY
SCALE
1"=100'

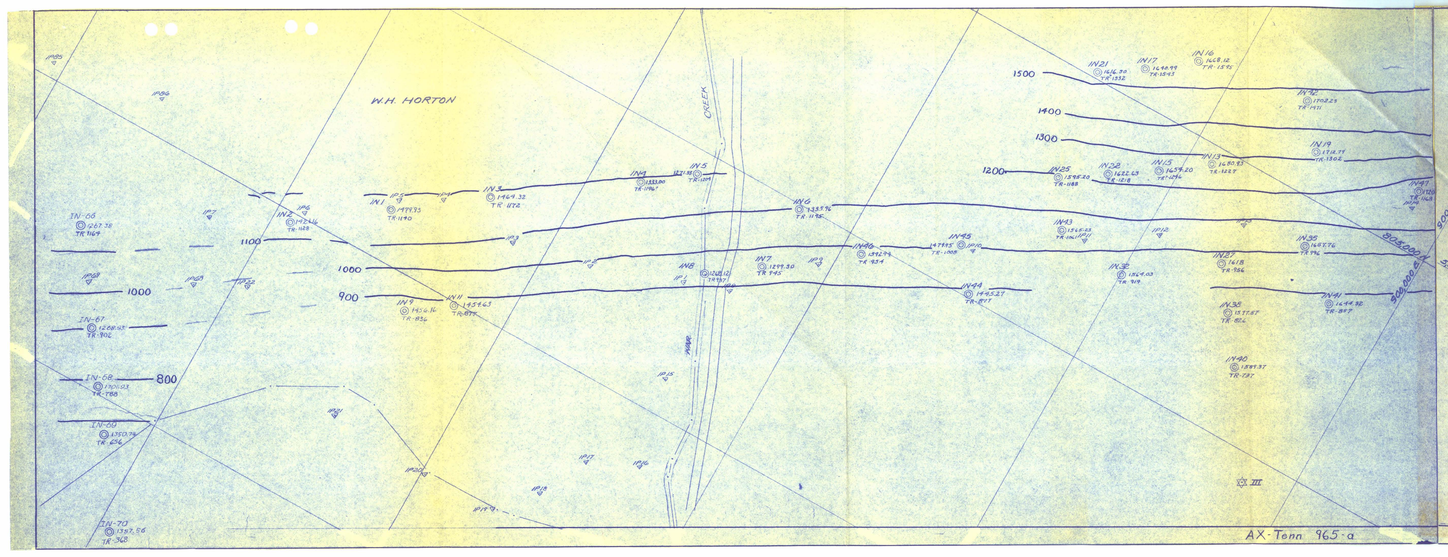
PORTED TO DATE 7-28-72	THE NEW JERSEY ZINC COMPANY	DRAWN SJL, JFP DATE 3-30-53	COPPER RIDGE BELT	HAWKINS CO., TENN.	
	ROGERSVILLE TENNESSEE	TRACED SCALE 1" = 660'	SECTOR I SHEET 10 NE	FILE NO. AX-TENN 568	



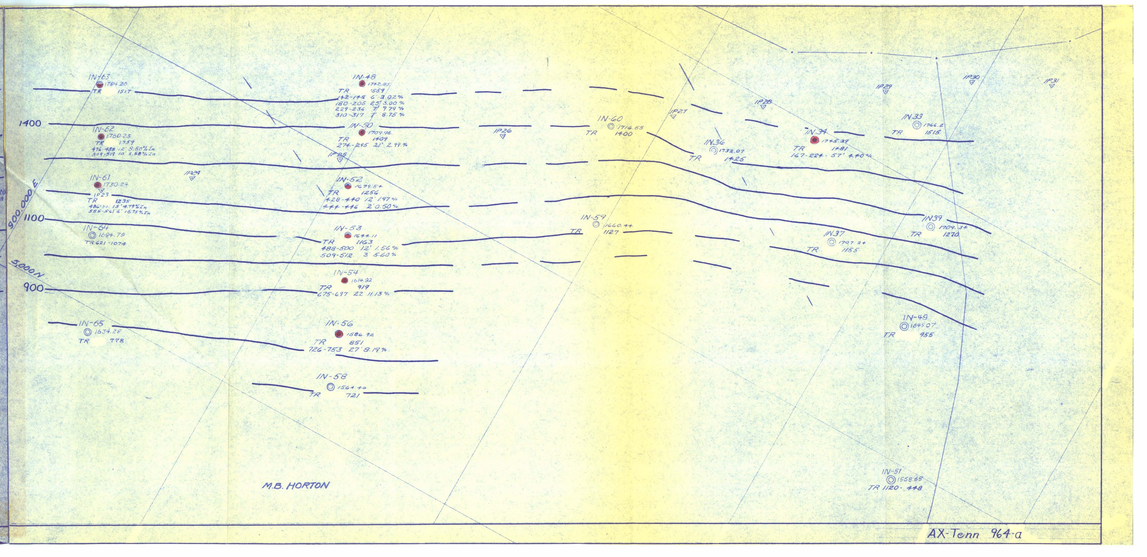
	THE NEW JERSEY ZINC COMPANY	DRAWN STAFF DATE 7-31-56	COPPER RIDGE BELT	HANCOCK CO., TENN.	
	JEFFERSON CITY TENNESSEE	TRACED TEW SCALE 1" = 660'	SECTOR I SHEET 11 NE	FILE NO. AX-TENN 569 A	



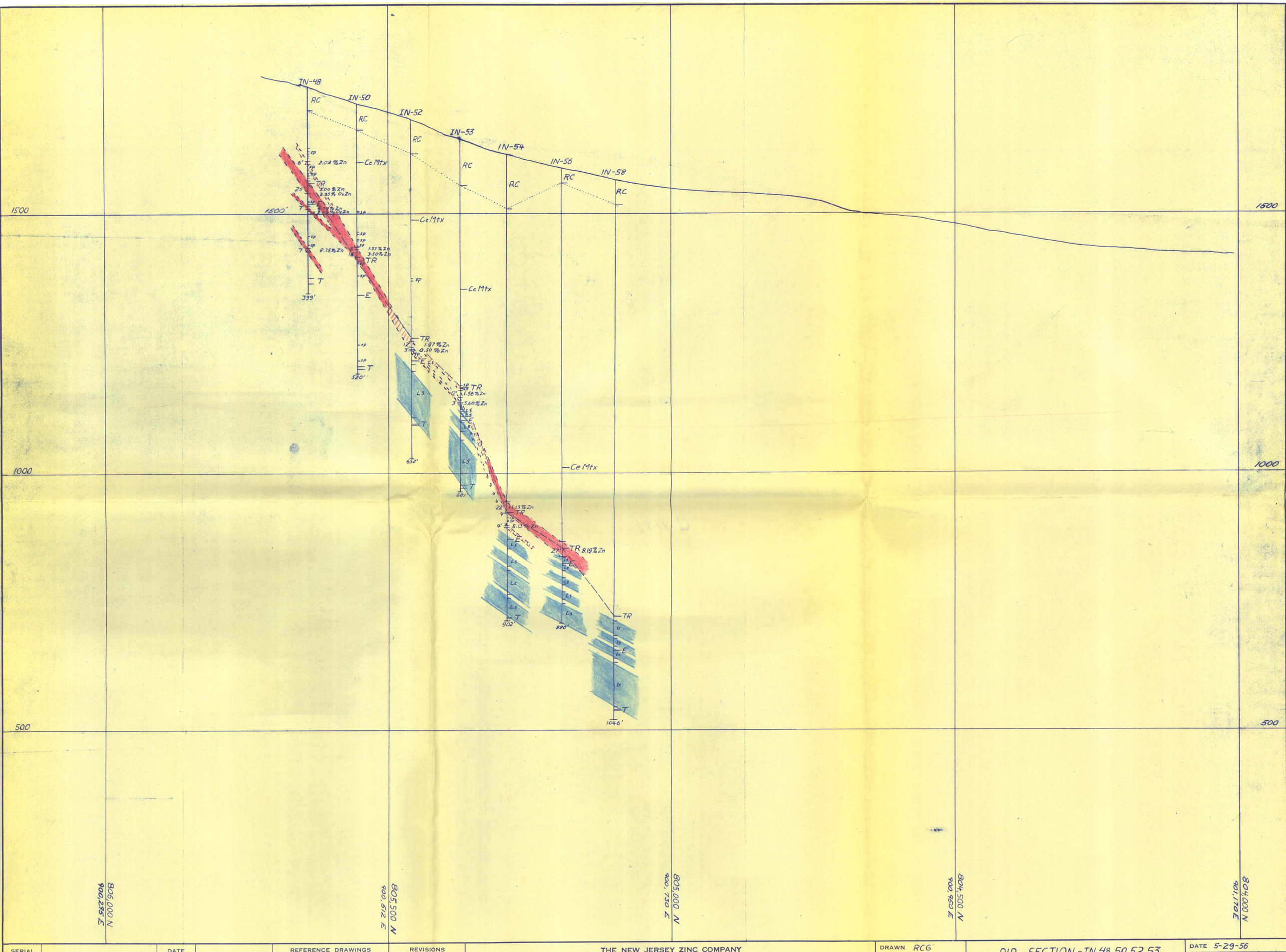
	THE NEW JERSEY ZINC COMPANY	DRAWN STAFF DATE 8-14-56	COPPER RIDGE BELT	HANCOCK CO., TENN.	
	JEFFERSON CITY TENNESSEE	TRACED TEW SCALE 1" = 660'	SECTOR I SHEET 12 NE	FILE NO. AX-TENN 570 A	



AX-Tenn 965-a



AX-Tenn 964-a



SERIAL NUMBER		DATE ISSUED		REFERENCE DRAWINGS	REVISIONS	THE NEW JERSEY ZINC COMPANY	DRAWN RCG	DIP SECTION - IN 48, 50, 52, 53, 54, 56, 58	DATE 5-29-56
				AX-TENN D964	TEW 9-18-56	JEFFERSON CITY TENNESSEE	TRACED RCG	SECTOR I AREA B	SCALE 1" = 100'
							CHECKED	COPPER RIDGE BELT	AX-TENN C-1171
							APPROVED		

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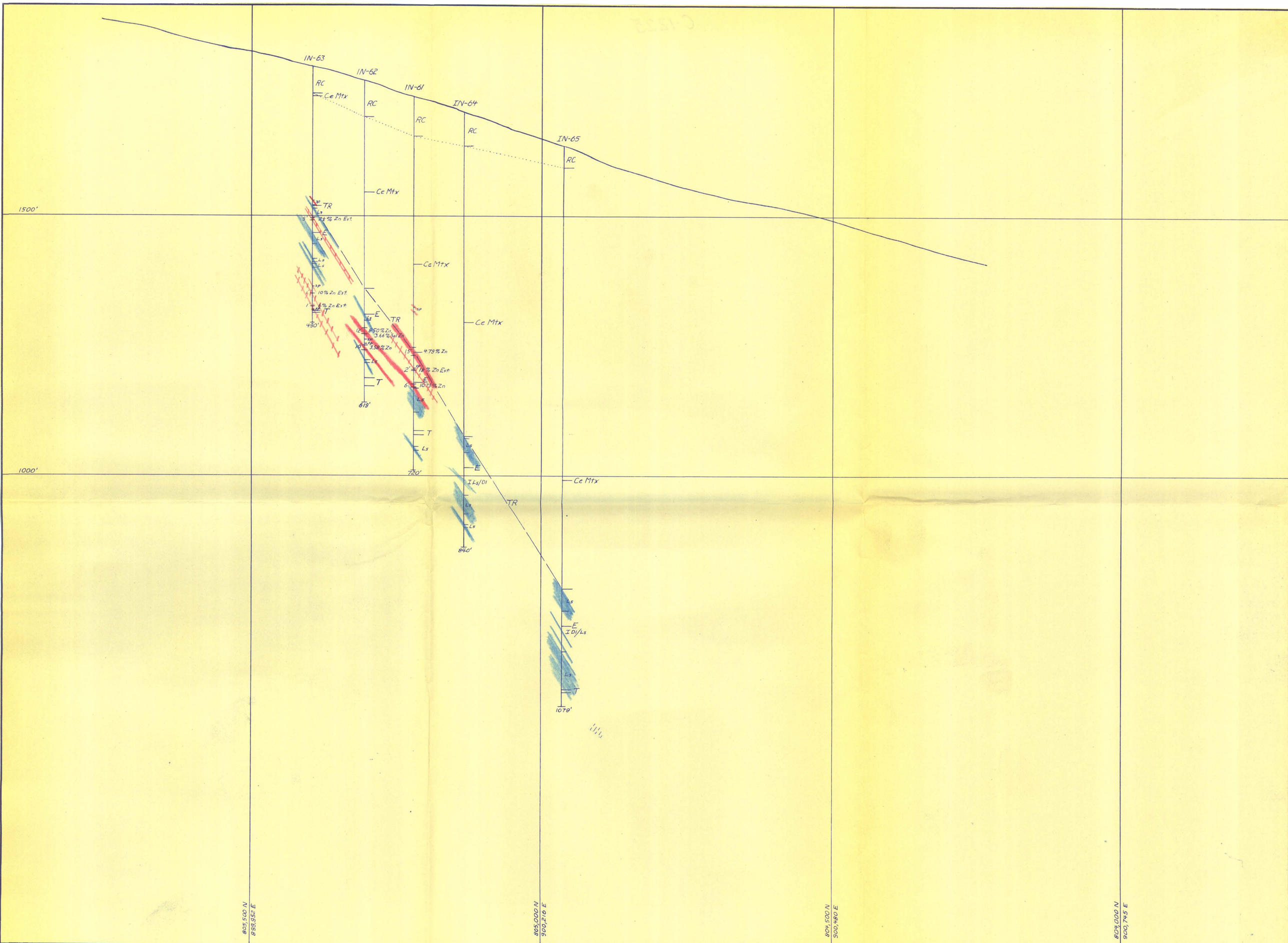

SERIAL NUMBER		DATE ISSUED		REFERENCE DRAWINGS	REVISIONS

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THE NEW JERSEY ZINC COMPANY

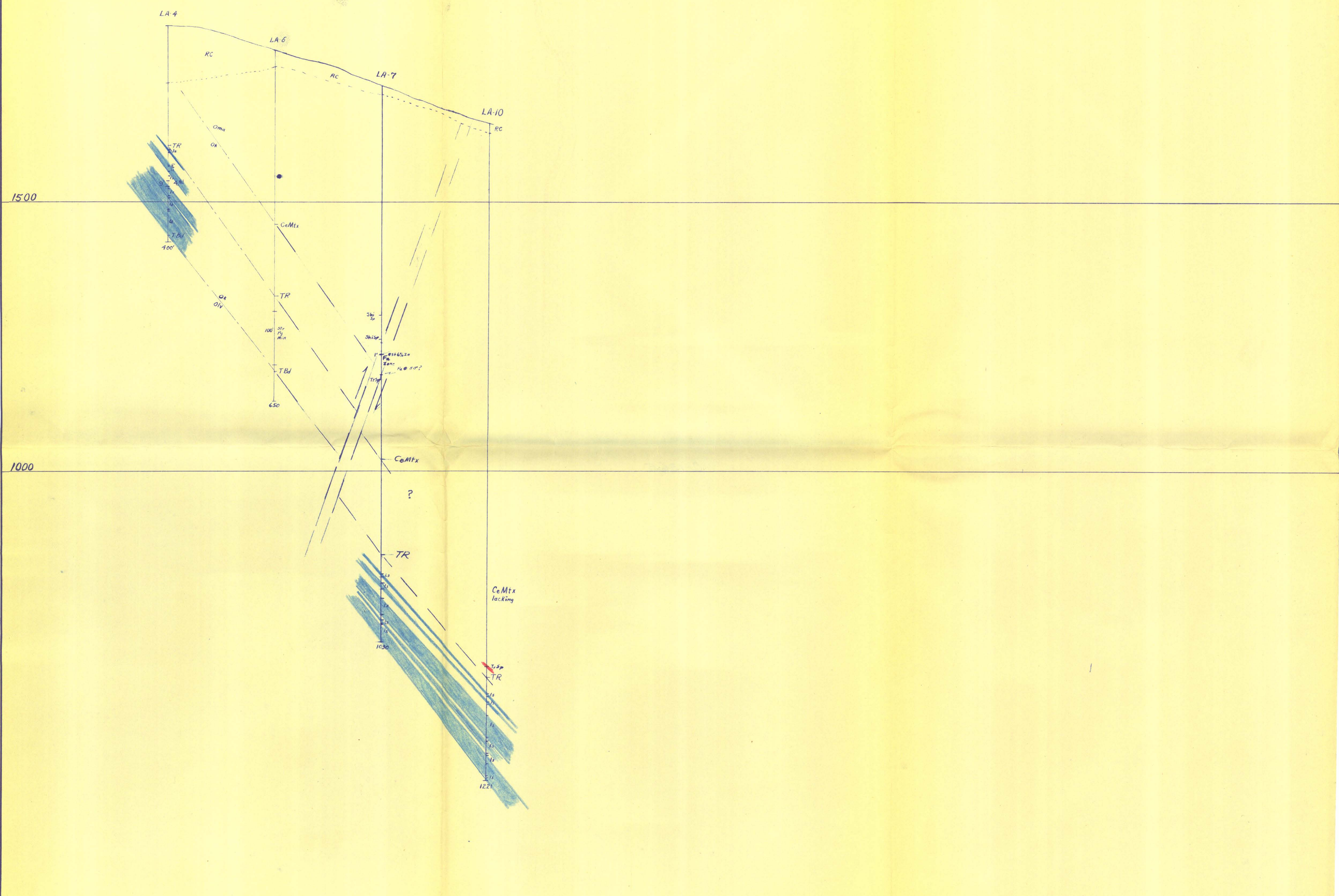
JEFFERSON CITY, TENNESSEE

DRAWN	RCG
TRACED	RCG
CHECKED	
APPROVED	

DIP SECTION IN-63,62,61,64,65
SECTOR I AREA B
COPPER RIDGE BELT

DATE	11-26-56
SCALE	1"=100'

AX-TENN C-1225



SERIAL NUMBER		DATE ISSUED		REFERENCE DRAWINGS	REVISIONS

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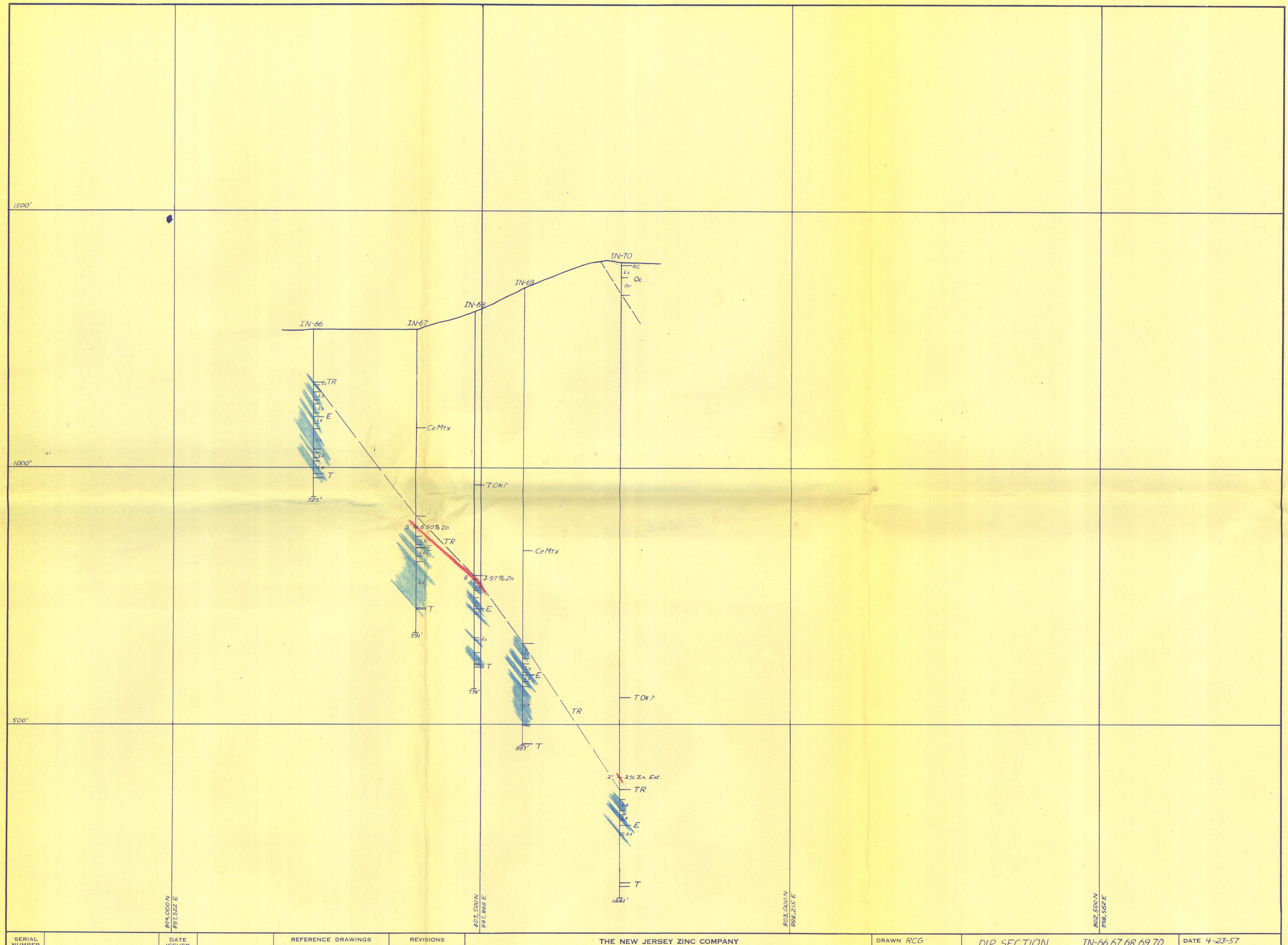
THE NEW JERSEY ZINC COMPANY

JEFFERSON CITY, TENN

DRAWN	Copper Ridge Belt	DATE 5-6-58
TRACED	Sector I Area C	SCALE 1" = 100'
CHECKED	Dip Section LA 4, 6, 7, 10	AX-Tenn C-1365
APPROVED		



SERIAL NUMBER		DATE ISSUED		REFERENCE DRAWINGS	REVISIONS

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THE NEW JERSEY ZINC COMPANY

JEFFERSON CITY, TENNESSEE

DRAWN	RCG
TRACED	RCG
CHECKED	
APPROVED	

DIP SECTION IN-66, 67, 68, 69, 70

SECTOR I AREA B

COPPER RIDGE BELT

DATE	4-23-57
SCALE	1" = 100'
	AX-TENN C-1262

X5453C 1M 11-54