Docket Copy
Surname:

Houk
Lamb
Kiilsgaard
Selfridge

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C. 600

OCT 15 1956

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

Re: Docket Nos. DMEA-4358,4359,4360
Fluorspar, Lead and Zinc
The New Jersey Zinc Company
Projects 1A, 1B, and 1C
Hardin County, Illinois

Gentlemen:

Your applications for aid for an exploration project and other reports available to us in Washington relating to the subject property have been reviewed.

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

Careful study of all our information indicates to us that the probability of disclosing significant reserves of fluorspar, lead and zinc is not sufficiently promising to justify Government participation. We regret to advise you, under these circumstances, that your applications for exploration assistance are denied. We are cognizant of the U. S. Geological Survey classification of the lands in the Shawnee National Forest as mineral bearing but this in itself does not qualify them for DMEA assistance. Such denial, however, is made without prejudice to the property. However, if you do additional work on these properties of sufficient scope to obtain favorable information, we shall be pleased to consider new applications. In submitting a new application you should refer to the original application by docket number describing the work accomplished and the results achieved in detail.

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

Sincerely yours,

C.O. Mittendorf
Administrator

LGHouk:gad 10/12/56
Copy to: Admr. R. File
Docket
Operating Committee
Field Team, Reg. V
Mr. Kiilsgaard, 5222
Mr. McDougal, 3522
Mr. Hopkins
Mr. Houk

Reviewed by
DMEA Operating Committee
10/15/56

IN REPLY REFER TO:

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

October 12, 1956

Memorandum

To: George C. Selfridge, Defense Minerals Exploration Administration

From: Thor H. Kiilsgaard, U. S. Geological Survey

Subject: Comments on the letter from Mr. John Hague, New Jersey Zinc Co., contained in DMEA Docket 4358, dated September 17, 1956.

Mr. Hague's letter suggests there is confused reasoning between personnel in the Conservation Division, U. S. Geological Survey, and Survey personnel assigned to DMEA field examinations. He points out that New Jersey Zinc applied for prospecting permits in the Shawnee National Forest, which were denied. Instead, the company was informed the Survey had determined the presence of mineral deposits in the areas involved, and that these areas could be worked only by a lease agreement obtainable under competitive bid. By contrast, Hague implies that if the New Jersey Zinc fluorspar applications are denied it will be because the proposed work is considered as prospecting and not exploration.

To clarify these apparently conflicting views, I contacted Mr. E. A. Finley, Conservation Division, U. S. Geological Survey, who originally recommended for the Survey that the cited areas in which New Jersey Zinc is now interested be classified as subject to lease agreements and not to prospecting permits. Mr. Finley informed me that prospecting permits give the holder the right to explore public lands for various non-metallic minerals, and to determine the extent and workability of any deposits found. A permit does not, however, allow mining of the deposit. If a permit holder finds a deposit and wishes to mine it he must convert his prospecting permit to a lease agreement. Such a lease stipulates royalties on production that must be paid to the Government.

In classifying public lands, the practice of the Conservation Division is to wait until an application for a prospecting permit or lease is received at which time they determine from available data which type of permit is applicable. If nothing is known of the area involved or if it would appear to be to the best interests of the Government to stimulate activity in the area they classify it for a prospecting permit. On the other hand, if area has mineralized outcrops, properties that were formerly

productive, adjoins areas currently being mined, or contains favorable geologic indications of ore they usually classify it as subject to lease agreements. Classification made on an area at any given time may be changed by subsequent examination, the latter classification being dependent upon results of previous work. No classification is permanent. Of the two classifications, they prefer to classify in favor of lease agreements wherever possible, because deposits worked under lease pay royalties whereas those explored under prospecting permits do not.

The conference with Finley pointed out to me that the present instance is a case wherein two parties operating under different regulations and with different objectives have arrived at different conclusions. Finley, because of former producers in the area, active producers in nearby areas, and the geologic probability of more minable deposits, deemed it to the best interests of the Government to classify the ground as suitable for leasing. In this respect I might add that Finley did not state the Survey had determined the presence of mineral deposits in the area, as quoted by Hague, but that the area could contain mineral deposits. On the other hand, DMEA field examiners, while recognizing the possible existence of minable deposits in the area, could see no evidence of specific exploration targets. They have pointed out that favorable outcrops and old producers have already been further explored by drilling but with negative results. They conclude that the applicant simply wishes to prospect the area for a favorable target which he could then explore. As DMEA does not participate in such generalized prospecting they recommend denial of the application.

I think both parties have presented fitting recommendations with regard to their respective opinions. Further, I do not think DMEA should try and coincide their decisions on exploration with decisions rendered by the Conservation Division because of the obviously different objectives and regulations under which the two agencies function.

I understand the New Jersey Zinc applications will be denied without prejudice and with this I concur. To forestall other letters pertaining to the same subject as Hague's, which may come from the applicant, while at the same time giving notice that all facets of the application have been carefully considered, I suggest the Administrator's letter of denial to the applicant include an excerpt from Houk's review of October 10, 1956. The third paragraph of the letter might read: " . . . is not sufficiently promising to justify Government participation. In this respect, we note that two of your proposed projects are on lands previously classified by the Conservation Division of the Geological Survey as mineral bearing but such classification does not qualify them for DMEA assistance. . . . we shall be pleased to consider a new application."

m. itself

Thor H. Kiilsgaard

Thor H. Kiilsgaard

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

RECEIVED
OCT - 1 1956

September 28, 1956

Re: DMEA 4358, 4359, 4360;
CaF_2, Zn, Pb
Projects A, B, and C
Hardin County, Illinois

Memorandum

To: W. R. Griswold, DMEA

From: O. M. Bishop, Branch of Base Metals

Subject: Review of field team report, dated September 5, 1956, received September 10, 1956, on exploration application.

The New Jersey Zinc Co. proposes diamond drill coring in the fault blocks lying between the Goose Creek and Lee faults. The drilling will serve to explore the area for bedding replacement ores, and will test the Wolrab and Lee veins for vein deposits.

The field examiners agree that the area may have a potential, but they consider the work outlined as prospecting and suggest that additional evidence is needed before the proposal can be evaluated. I concur with this view noting that no specific target is given, and that more evidence is needed.

O. M. Bishop

O. M. Bishop

Copy to: Division of Minerals
Mr. Kiilsgaard
Mr. Lamb
Mr. Bishop
Files

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D.C.
ROOM 151 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

September 24, 1956

Memorandum

To: Operating Committee, DMEA, Washington 25, D. C.

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

Subject: DMEA-4358, 4359 and 4360 (Fluorspar, lead, zinc)
The New Jersey Zinc Company, New York, New York
Projects 1-A, 1-B, 1-C, Hardin County, Illinois

Enclosed are one copy each of the following:

Geologic Map, Project One
Cross-section of proposed drill holes, Project One

These have just been received from Mr. John W. Hague, of the Company's field office at Platteville, Wisconsin.

Mr. Hague states that "the key to the colors used on the map is the same as that in the columner section which is attached to each application."

Only one copy of each drawing was submitted and we are forwarding them to you immediately so that they may be considered along with the field examination report. When you are through with them, we would appreciate it if you will return them so that we may have copies made for our files, or if you prefer, have them copied and send us two copies of each drawing.

Robert A. Laurence
Robert A. Laurence
Executive Officer

Wm. A. Beck
Wm. A. Beck for V. J. Lynch
Member, Bureau of Mines

Enclosures 2

RECEIVED
SEP 25 1956

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.
ROOM 15 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

September 19, 1956

Memorandum

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

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

Subject: DMEA-4358, 4359, 4360 (Fluorspar, lead, zinc)
The New Jersey Zinc Company, New York, New York
Projects 1-A, 1-B, 1-C, Hardin County, Illinois

Enclosed are two copies of a letter from the Applicant's geologist, with supplementary information concerning this application. With reference to the second paragraph, it is probable that Mr. Finley of the Conservation Branch, Geological Survey (extension 3738), can supply further information concerning the classification of these tracts.

Robert A. Laurence
Robert A. Laurence
Executive Officer

Wm. A. Beck
Wm. A. Beck for V. J. Lynch
Member, Bureau of Mines

Enclosures 2

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

RECEIVED
SEP 19 1956
W. B. Geer
Geologist (Retired)
Knoxville, Tenn.

PLEASE ADDRESS REPLY TO
Box 217
Platteville, Wisconsin
September 17, 1956

Mr. Robert A. Laurence, Executive Officer
D. M. E. A. Region V
Room 13, Post Office Building
Knoxville 2, Tennessee

D.M.E.A. Applications for Southern Illinois

Dear Mr. Laurence:

An interesting letter just received from the Bureau of Land Management may have some bearing on our applications for D.M.E.A. assistance on fluorspar-zinc-lead projects in Southern Illinois. The Company had applied for prospecting permits with rights to lease on certain forest land tracts in the Shawnee National Forest. The permits were refused on a few tracts for several reasons. I shall quote a portion of their "Decision" (5.21:ESLM, BLM-A 036431) as it applies to tracts along the Lee Fault.

"The application is also rejected as to the lands described below for the reason that the United States Geological Survey has determined the presence of mineral deposits in these areas, and recommends that they be offered competitively in 3 units to the highest bidders:

T. 11 S., R. 8 E., 3rd Principal Meridian, Illinois
Sec. 11, SW¼SW¼SE¼, and west 10 acres of SE¼SE¼
Sec. 14, W½SW¼, W½SW¼
Sec. 15, west 19 acres NW¼SW¼
Sec. 16, northeast 21 acres NE¼SE¼
Sec. 17, SE¼NE¼ "

All of these tracts are embraced by our Projects 1-C or 1-B. The B.L.M. decision appears to indicate that someone in the Geological Survey believes that mineral deposits are present and that exploration has proceeded beyond the prospecting stage in this area.

Whether or not this evidence is of any help in deciding the merits of our D.M.E.A. applications, I thought you would be interested in seeing it. Our Forest Land Applications were reviewed by the Conservation Branch in Miami, Oklahoma.

Sincerely yours,

Jack Hague

John M. Hague

Oper. Comm.

September 19, 1956

Mr. John M. Hague
The New Jersey Zinc Company
Box 217
Platteville, Wisconsin

Re: DMEA-4358, -59, 60
(Fluorspar, lead, zinc)
Hardin County, Illinois

Dear Mr. Hague:

Thanks for your letter of September 17, and the information relating to your Bureau of Land Management applications. I have forwarded this to our Washington office for consideration as supplementary information to your application. The report by Trace and Burmeister has been sent to the Washington office, and the application is now being reviewed there.

I had hoped that, by this time, I could also send to Washington a copy of the large-scale geologic map which you showed me when you were here in July. While there's no assurance that the map would necessarily affect the final decision on the application, there is no doubt in my mind that the application is incomplete without it.

Sincerely yours,

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

RAL/mg
cc
Operating Committee (2)
Lynch
Millar
File

IN REPLY REFER TO:

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

RECEIVED
SEP 20 1956

September 19, 1956

Memorandum

To: L. G. Houk, Defense Minerals Exploration Administration

From: W. P. Williams, U. S. Geological Survey

Subject: Review of field examination report, DMEA 4358, 4359, 4360 (fluorspar, lead, zinc), The New Jersey Zinc Co., Hardin County, Illinois.

The subject three applications are considered together because the property involved consists of three partly contiguous tracts, all with similar geologic conditions.

The examining team recommends denial of all three applications on the chief grounds that no definite exploration targets are presented. Instead, the applicant proposes a prospecting program between widely separated faults in the hope of encountering significant mineralization.

The examining team's recommendations were made without benefit of the applicant's geologic map described by the Field Team, Region V, in their memo of Sept. 5, 1956. As suggested by the Field Team, final action probably should not be taken on the applications until the applicant has been asked to submit his geologic map and Government representatives, especially the examining team, have had a chance to evaluate the map.

It would not seem to be amiss to inform this applicant in a diplomatic manner that inasmuch as the Government assumes, in DMEA contracts, an equal or major proportion of the finanical burdens and risks the least that can be expected of an applicant is that he submit all of the information and data at his disposal.

W. P. Williams

W. P. Williams

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.
ROOM 13 POST OFFICE BLDG
KNOXVILLE 2, TENN.

RECEIVED
SEP 10 1956

September 5, 1956

Memorandum

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

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

Subject: Field Examination Reports
DMEA-4358, DMEA-4359 and DMEA-4360 (Fluorspar, lead, zinc)
The New Jersey Zinc Company, New York, New York
Projects located in Hardin County, Illinois

With apologies to all file clerks who handle them, we are transmitting herewith a combination report on the three subject applications which, together, make an essentially single project.

It appears that the Applicant has defeated, or at least injured its own cause by failing to submit adequate justification for these projects. Decision to approve or deny rests chiefly on whether this is considered prospecting or exploration. The Applicant's geologist, Mr. John Hague, spent a half day at the Field Team office on August 9, discussing this application. Unfortunately, at that time we had not yet received the field examination report. Mr. Hague showed us a large, fairly detailed geologic map of the entire project area, which he said was the product of two years' field work by a Mr. Conroe, formerly geologist with George M. Fowler, now with U. S. Smelting and Refining at Salt Lake City. When it was pointed out to Mr. Hague that Conroe's map and report, if appended to the applications, would have been most helpful, he agreed to send copies of the map, but has not yet done so. It was Mr. Hague's idea that Conroe's work fulfilled the prospecting stage, and that his recommendations, on which the applications are based, constituted exploration of targets based on geologic inference.

On the other hand, it must be admitted that some past DMEA contracts seem to be as much prospecting projects as this one. Examples which come to mind are DMEA-3377 (Lucy McLaren, Missouri), DMEA-4178 (New Jersey Zinc Co., Virginia).

Reviewed by
DMEA OPERATING COMMITTEE
9-14-56
(date)

Considering the amount of geologic work which apparently has gone into this application, we are reluctant to recommend outright denial at this time.

Therefore, we recommend that the Applicant be requested to submit additional justification, including the detailed geologic map and any geologic reports, and any new information obtained since the application was filed, before a definite decision is made.

Robert A. Laurence

Robert A. Laurence
Executive Officer

Wm. A. Beck

Wm. A. Beck for V. J. Lynch
Member, U. S. Bureau of Mines

Enclosures

RECEIVED
SEP 10 1956

Field Team Report on Examination of Property

by

Robert D. Trace and H. L. Burmeister[1/]

Docket No. DMEA 4358, 4359 and 4360 (fluorspar, lead, zinc)
New JerseyZinc Company, 160 Front St., New York 38, N. Y.
Location: Hardin County, Illinois

SUMMARY

These properties were examined on July 10, 11, 1956. A great deal of time was consumed in searching for the very limited workings and structures to be seen. Only one small prospect working is found on these properties.

The object of these programs as submitted by the applicant is to diamond core drill two fault structures of indefinite location for vein type deposits and churn drill the areas between faults for bedded replacement deposits. The applicant has done no work of any kind in these areas nor furnished data on old workings to justify his belief in the presence of possible ore bodies.

Several companies operating in this general area have done exploratory drilling in and near the immediate area concerned in this report and made the results obtained available to the writers at the time of examination. None of the results were encouraging.

CONCLUSIONS AND RECOMMENDATIONS

The writers believe that the applicant's analogy between the Cave in Rock district, east of the Peters Creek graben, and the applicant's property to the west of the graben is not justified by available data.

Reviewed by
DMEA OPERATING COMMITTEE
9-14-56
(date)

1/ Robert D. Trace, geologist, U. S. Geological Survey
H. L. Burmeister, engineer, U. S. Bureau of Mines

For example, according to the map in Ill. Geol. Survey Bull. 76, the area east of the graben is not cut by major faults, whereas the area west of the graben has at least three major zones of faulting. Further, the large Goose Creek-Hoeb deposit is along veins whereas no sizeable vein deposits are known to occur along the east-bounding fault of the graben or in the Cave in Rock district.

The area in which it is proposed to explore for vein deposits contains only faults that have been relatively unproductive or about which little is known.

In summary, only a small amount of mining, exploration or prospecting has been done in the general area. One good vein deposit area has been discovered and other scattered and primarily "gravel" or weathered deposits or prospects have been found. These data are insufficient to properly evaluate the area, and the writers feel therefore that the data are insufficient to justify DMEA exploration. The applicant's drilling is proposed in order to make such an evaluation, rather than exploring specific targets or areas within the general area.

The applicant's property is in the same general area and has the same general geology as DMEA 4284 (D. G. Gibson, Jr.). The field examiners' report on DMEA 4284 (also by Burmeister and Trace) concluded that there was at the time insufficient favorable geologic evidence to justify exploration under the DMEA program.

The writers do not mean to say that they believe no minable deposits exist on the applicant's property, but rather that what evidence is known does not suggest specific targets for exploration, and therefore, that the proposed project should be considered as prospecting on a large scale.

In view of the evidence leading to the above conclusions, it is recommended that all three applications (DMEA 4358, 4359 and 4360) be denied.

Time Spent on Property

The examiners spent 16 hours in the field on this examination in company with Mr. John M. Hague, geologist for New Jersey Zinc Co. Much time was consumed in locating points referenced by the applicant but the location of which was not known to Mr. Hague

Name and Location of Properties

These properties have no name other than the Project "A", "B" and "C" designation given them by the applicant and their corresponding DMEA Docket Nos. 4358, 4359, 4360.

The three projects are in part contiguous and are located in R8 and 9 E-T11S in Hardin County, Illinois. All projects may be reached from Elizabethtown, Ill. to the south via Rt. 146 and gravel road or from the north via Karbers Ridge Road from Rt. 1 to the east or Rt. 34 to the west as indicated on Fig. 1. Inquiry must be made locally regarding farm or woods roads leading to various parts of the projects.

Project "A" or DMEA 4359 contains approximately 1,680 acres in portions of sections 17, 18 and 19, R 9E-T11S and sections 13 and 24, R8E-T11S all in Hardin County, Illinois.

Project "B" or DMEA 4358 contains approximately 2,060 acres in portions of sections, 11, 12, 13, 14, 21, 22, 23, 26 and 27, R8E-T11S, all in Hardin County.

Project "C" or DMEA 4360 contains approximately 960 acres in portions of sections 9, 15, 16 and 22, R8E-T11S.

Condition of Roads

Karbers Ridge Road which has recently been blacktopped, terminates to the west at Rt. 34 at a point about 4.5 miles west of Karbers Ridge village and terminates to the east at Rt. 1, about 8.3 miles east of Karbers Ridge village. The north and south trending road which connects Karbers Ridge road and Rt. 146 to the south has been recently graveled. All of the above roads are open for year round travel but many of the interconnecting dirt roads would be in poor condition during periods of heavy rain or snow. (Fig. 1).

Competency of Applicant

The New Jersey Zinc Company is without doubt technically competent to carry on the exploration program proposed in the application. It is assumed that this company would be financially responsible for any commitments entered into.

Applicant's Property Rights

The major part of the property involved in these three exploration programs is held under option to purchase mineral and mining rights from a large number of individual property owners. The applicant's proposal and property map also includes various parcels of Federal reforistation land on which prospecting permits have been applied for.

Options to purchase mining rights on private land are standard in form and include a royalty payment lease clause effective as long as mining work is done. Most options are for 10 years although some are for 5 years. On most options 2 years have elapsed since being acquired. Permits to prospect on Federal forest land had not been granted at the time of examination and if not granted would interupt the continuity of the

project area. It is understood from the Washington Office that in contracts resulting from similar applications by New Jersey Zinc Co., procurement of "Consent to Lien" has been waived.

Description of Property and Facilities

The property concerned lies in an area of low rolling hills and is made up of natural woods, reforested land and numerous farms. A number of creeks traverse the area and power lines supply the farms with electricity. Property boundaries, roads, faults, mine workings and sections lines are shown in Figs. 1 and 2. Descriptions of the few mine workings in the area are incorporated in the section on geology because of their relationship to structure and the extent of the areas. No mining facilities are found on the properties.

Geology

The ore deposits of the general area consist of fluorite with subordinate quantities of sphalerite and galena. Calcite and barite are the principal gangue minerals. The ore deposits occur 1) as veins along steeply dipping normal faults that displace relatively flat or shallow-dipping shale, sandstone, and limestone beds of Mississippian age, and 2) as bedding replacement deposits commonly at the base of the Rosiclare sandstone member of the Ste. Genevieve formation or at the base of the Bethel sandstone. The Ste. Genevieve formation is in the Meramec group and the Bethel Sandstone is in the Chester group, both of Mississippian age. Faults of small displacement generally are associated with the bedding replacement deposits.

The applicant's property covers a large area in the northern part of the Illinois fluorspar district. (See applicant's map and geologic

section, and "Geology of the fluorspar deposits of Illinois", by Weller, Grogan, and Tippie, Ill. Geol. Survey Bull. 76, 1952). One small working, the Renfro, is on the applicant's property. Other properties nearby include the Lee mine, and the Goose Creek-Hoeb mine area, (Fig. 2).

The Renfro prospect may be a small weathered bedding replacement deposit which was prospected by a 22-foot shaft and a level for 28 feet, according to Bastin, Ill. Geol. Survey Bull. 58, p. 95, 1931. No other reliable data are available about the workings, and at present all are caved. Some purple fluorite fragments and small fossils (Penetremites) that have been completely silicified or replaced by purple fluorite can be found on the dumps. In 1948, Ozark-Mahoning Company drilled about 8 vertical holes, completely circling the prospect. The ground was deeply weathered, and by the time the drill reached solid rock, the potential ore-bearing formation had been passed. Traces of fluorite were found in the sludge while drilling the weathered material.

The Lee mine (U. S. Bur. Mines R.I. 3996) has produced about 20,000 tons of crude ore from a deposit mostly above a 100-foot depth. According to local operators, most of the ore was "gravel" fluorspar, although solid vein ore was found near the bottom of the workings. The 100-foot and lower levels are said to have been uneconomic, and drilling in 1922 by U. S. Steel Co. and by the U. S. Bureau of Mines in 1945 are reported to have found no ore. About 1,000 feet southwest of the Lee mine and along the same fault system, James Sneed sunk an 80-foot shaft in the early 1950's. The dump contains some fluorite and large quantities of massive vein calcite. The short life of the operation suggests that it was uneconomic.

The Goose Creek-Hoeb mine area is in the central and northeastern part of sec. 17, a short distance east of the easternmost boundary of project 1A as outlined by the applicant. None of the Goose Creek-Hoeb fault zone appears to cross the applicant's property. The Goose Creek-Hoeb mine area is different from the Renfro and Lee area in that it probably contains more than 300,000 tons of ore in an area of about half a mile along a fault system. The Goose Creek deposit has been outlined by mining and is about 300 to 400 feet long, has a vertical extent of over 200 feet, and averages about 20 feet wide of fluorspar containing an average of approximately 50 percent CaF_2.

The Hoeb deposit, about half a mile northeast of the Goose Creek deposit, has been opened only recently and mining operations have not outlined its size. Based upon diamond drilling, however, the deposit may be larger even than the Goose Creek deposit. (Some of these drilling data are given by Neumann and Trace in a report on the Thurston Patton tract, DMEA 3321, Contract Idm-E701).

From the Goose Creek property line and southwest across secs. 20 and 19, Alcoa (Aluminum Co. of America) drilled about 70 holes on the Goose Creek-Hoeb fault system. The best fluorspar cut by this drilling was less than a foot wide.

The only other exploration known to the writers in the general area was by Alcoa, who did considerable drilling on the Gook property in the east half of sec. 23 and the west half of sec. 24, T.11 S., R. 8 E., on the Wolrab Mill fault (Ill. Geol. Survey Bull. 76). Alcoa geologists described this fault as "full of gouge and shale". No ore was found.

The primary purpose of the proposed drilling is to find bedding replacement ore bodies. In the most simple terms, the applicant believes that the west side of the Peters Creek graben should contain deposits like those on the east side of the graben, i.e. the Cave in Rock district. As corroboration of this, the Renfro deposit is noted. We know so little about the Renfro, however, that it is practically useless in an evaluation. Evidence is suggestive that it is a bedding replacement deposit, although rather small. The evidence is just as suggestive, however, that the Rehfro is what the Illinois Geological Survey calls a "mixed deposit". A mixed deposit is where fluorspar occurs both as a vein along a fault and also has spread out horizontally for a few feet along certain bedding planes.

Availability of Manpower, Supplies,etc.

Equipment, supplies and manpower are all easily available in this district due to the number of operating mines. A number of contract drillers of both diamond core and churn drill holes operate in this district more or less steadily.

Diesel or gasoline engine power would have to be used for exploration work although high voltage power lines are only several miles away. Water is fairly plentiful as a number of creeks flow through the areas under consideration.

Applicant's Proposal

The applicant has submitted these three very similar applications for the purpose of exploring and prospecting for fluorspar, lead and zinc on three partially contiguous tracts. The purpose was to find if bedded deposits similar to those near Cave in Rock could be discovered between the Goose Creek fault and the Lee fault in the northern part of Hardin

County. Another purpose was to test the Walrab and Lee faults for possible vein type deposits.

Following is a brief of the applicant's exploration or prospecting plans for the three applications:

Docket No. DMEA 4358 - Applicant's "B"

Churn drill a total of 20,000 feet in holes spaced in a 660 foot pattern in an effort to discover bedded replacement deposits between the Lee and Wolrab faults and diamond drill a total of 3,500 feet in an unspecified number of holes to explore the Wolrab fault structure for a vein type deposit. Total cost of this project was estimated at $70,093.00.

Docket No. DMEA 4359 - Applicant's "A"

This project was divided into Stage I and Stage II. Stage I consists of diamond drilling a total of 12,000 feet in 16 holes spaced approximately 660 feet apart in patterns. The diamond drilling to test structural relations between the Wolrab and Goose Creek faults. Stage II consists of churn drilling 10,000 feet in an unspecified number of holes in a closer pattern to test favorable areas developed in Stage I. No target, such as bedded or vein type deposits is sited in either Stage I or Stage II. Total cost of this project was estimated to be $69,918.00

Docket No. DMEA 4360 - Applicant's "C"

This project involved diamond drilling 5 holes, 660 feet apart in a row for a total of 4,000 feet to prospect for vein type deposits on the Lee fault structure. In addition it was proposed to churn drill a total of 9,000 feet of churn drill hole in a widely spaced pattern in an effort to locate bedded replacement deposits.

Total cost of this project was estimated at $45,850.00.

None of these three applications envision a definite target, but rather propose prospecting programs on or between widely separated faults in the hope of encountering significant mineralization. Valid reasons or data are not sited for doing what must be considered prospecting in the areas concerned. The applicant has done no work of any kind on any of the three areas except to obtain land agreements.

Mr. Hague, the New JerseyZinc Company representative stated that his company did not understand that the DMEA program supported only exploration and not prospecting.

The writers make no alternate proposal, for the reason that by using all available data any work done in these areas at this time would still be prospecting.

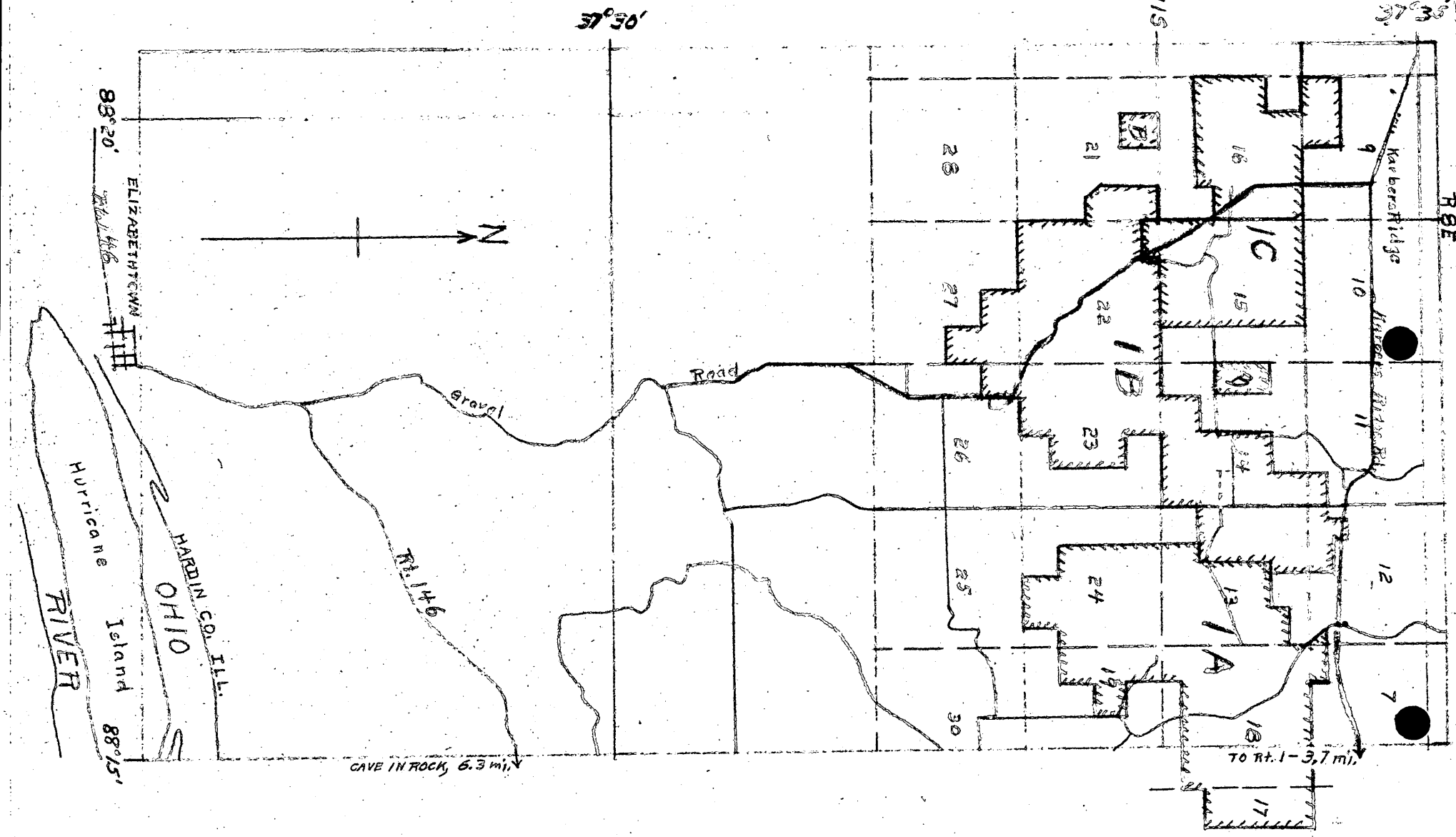
Funds requested in each application are considered to have been ample. Considering the applications together, supervision accounted for 16.6 percent of total funds requested.

Robert D. Trace
by J. K. Fleming

Robert D. Trace, geologist

H. L. Burmeister

H. L. Burmeister, engineer



PROJECT AREAS

NEW JERSEY ZINC CO.
DMEA DOCKETS, 4358-4359-4360
HARDIN COUNTY, Ill.
State of Ill.- Ky. Ill. Golconda, Ill. and Equality, Ill. Quads.

0 miles 1

FIG-1

July, 1956

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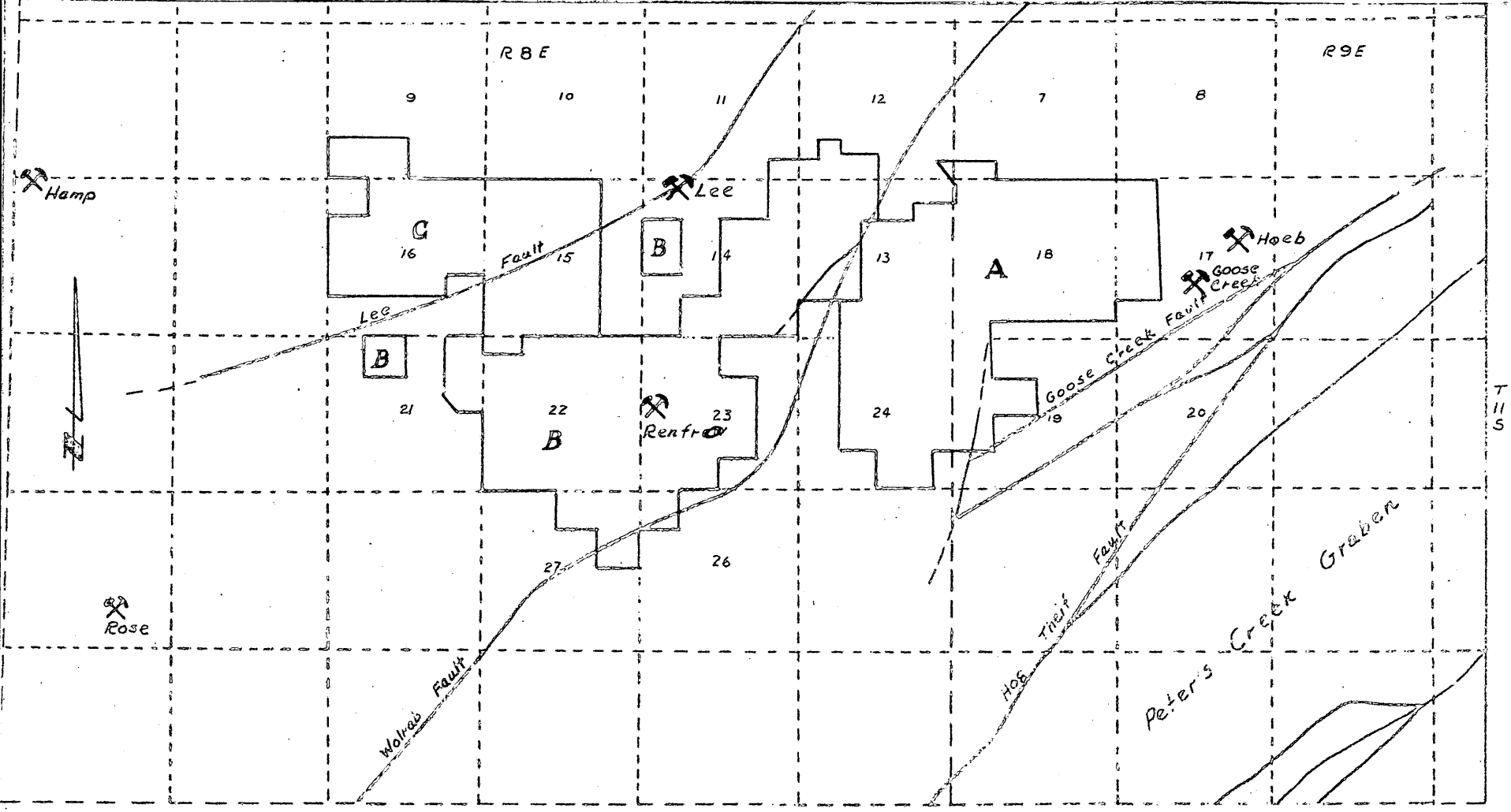

PUBLISHED FAULT PATTERN IN THE GOOSE CREEK AREA IS KNOWN BY THE ILL. GEOL. SURVEY TO BE INCORRECT

R.D. TRACE

NEW JERSEY ZINC CO.
DMEA DOCKETS, 4358-4359-4360
HARDIN COUNTY, ILL.

FROM HARDIN COUNTY GEOLOGIC MAP BY ILL. and U.S.G.S. SURVEYS

FIG. 2

0 miles 1

RECEIVED
SEP 10 1956

DOCKET COPY
Surname:

Hopkins
Houk
F Johnson

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C. 600

19 JUL 1956

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

Re: Docket Nos. DMEA-4358, 4359, 4360
Fluorspar, Lead and Zinc
New Jersey Zinc Company
Projects 1A, 1B, and 1C
Hardin County, Illinois

Gentlemen:

Your applications for assistance in exploring the subject properties have been reviewed by the Nonmetallic Minerals Division of the Defense Minerals Exploration Administration and have been referred to Mr. Robert A. Lawrence, Executive Officer, DMEA Field Team, Region V, Room 13, Post Office Building, Knoxville, 2, Tennessee, for further consideration.

If the Regional Office has not yet contacted you, it will do so at an early date with respect to further information and a field examination if deemed necessary.

Sincerely yours,

C. O. Mittendorf

Administrator

JHopkins/FJohnson:ms 7/18/56
Copy to: Docket(3)
Operating Committee
Field Team, Region V
Mr. Kiilsgaard, 5222
Mr. McDougal, 3522
Mr. Houk(3)
Admr. R. File

DOCKET COPY
Surname:

Hopkins
Zink
Kiilsgaard
Yoder

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C. 600

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

Re: Docket Nos. DMEA-4358, 4359, 4360
Fluorspar, Lead and Zinc
New Jersey Zinc Company
Projects 1A, 1B, and 1C
Hardin County, Illinois

Gentlemen:

Your applications for assistance in exploring the subject properties have been reviewed by the Nonmetallic Minerals Division of the Defense Minerals Exploration Administration and have been referred to Mr. Robert A. Lawrence, Executive Officer, DMEA Field Team, Region V, Room 13, Post Office Building, Knoxville, 2, Tennessee, for further consideration and possibly a field examination.

The Regional Office will contact you at an early date if an examination is to be made. Any assistance you may give the members of the Field Team during the examination will be appreciated.

Sincerely yours,

Administrator

JHopkins:ms 7/16/56
Copy to: Docket(3)
Operating Committee
Field Team, Region V
Mr. Kiilsgaard, 5222
Mr. McDougal, 3522
Mr. Houk(3)
Admr. R. File

DOCKET COPY
Surname:

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C. 600

Selfridge

18 JUL 1956

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

Re: Docket Nos. DMEA-4358, 4359, 4360
Fluorspar, Lead, and Zinc
New Jersey Zinc Company
Projects 1A, 1B, and 1C
Hardin County, Illinois

Dear Mr. Laurence:

Please review the subject applications and arrange for a field examination if you deem it necessary.

Copies of memoranda dated July 2 and 16, 1956, by Mr. T. H. Kiilsgaard, USGS, and Mr. R. B. McDougal, USBM, respectively, relating to the projects are enclosed.

If exploration is recommended for each tract, we suggest that the projects be consolidated into one single proposal.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (GCS)

JHopkins:ms 7/16/56

Copy to: Docket(3)
Operating Committee
Mr. Kiilsgaard, 5222
Mr. McDougal, 3522
Mr. Houk(3)
Admr. R. File

Approved:

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

Thor H. Kiilsgaard (THK)
Member, Geological Survey

Enclosures: 10

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

July 3, 1956

Air Mail

Mr. Robert D. Trace
P. O. Box 305
Marion, Kentucky

Dear Bob:

Yesterday Bob Laurence informed me over the telephone that he had mailed to you the applications submitted by New Jersey Zinc to explore for fluorspar in Hardin County, Illinois. I think it was an excellent idea of Bob's to get those applications to you so that you could go over them with Harry Burmeister and perhaps with a New Jersey Zinc representative while Harry is out there on his trip; otherwise we would undoubtedly have to wait for Harry to make another trip back to Illinois which might be several weeks.

I have told Larry Houk that Bob had sent the applications to you and he is in agreement with this action. Larry said a field referral would be made as soon as he had received the commodity reviews of the Survey and the Bureau. With this thought in mind I am sending you the Survey review which I made with some help from Van Alstine. As you will see, the proposals look to me to be more prospecting than exploration but you are far better acquainted with the geology of that area than I am and perhaps I may be wrong in my views. In any event I don't mean to attempt to prejudice your mind by sending the review but merely to let you know how the applications appear to a party uninformed on the geology of that area.

If you need anything in the way of library information, etc., in the preparation of your report on these applications please let us know and we will send them to you.

Sincerely,

Thor H. Kiilsgaard
Staff Assistant for DMEA

Enclosure 1

cc: L. G. Houk, 4453

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

RECEIVED
JUL 5 - 1956

July 2, 1956

Memorandum

To: L. G. Houk, Defense Minerals Exploration Administration

From: Thor H. Kiilsgaard, U. S. Geological Survey

Subject: Review of New Jersey Zinc applications to explore for fluorspar in Hardin County, Illinois, Projects 1-A, 1-B, and 1-C; Dockets 4359, 4358, and 4360, respectively.

INTRODUCTION

All three of the cited New Jersey Zinc applications are reviewed in this memorandum, such action being taken because the three proposed projects are in close proximity to each other, are in the same geologic environment, and have similar objectives. All three could have been combined into one application.

The proposed projects will explore for two types of fluorspar ore bodies: 1) veins of fluorspar along prominent faults, and 2) replacement bodies in favorable limestones. The area to be explored is a heretofore unproductive part of a productive fluorspar district. As shown on the applicant's geologic map, the area is roughly four miles west of the Cave-In-Rock replacement bodies of fluorspar but separated from that area by the Peter's Creek graben (see Geologic Map, The Fluorspar District of Southern Illinois, Bulletin No. 76, Illinois Geological Survey). Southwest of the area about seven miles lies the Rosiclare district, notable for its vein-type fluorspar deposits.

PROJECT 1-A (Docket 4359)

This project is to be the first work done of that proposed by the applicant. The work is to be in two stages, the first stage consisting of 12,000 feet of diamond drilling, the second stage to be 10,000 feet of churn drilling. Cost of the project is estimated at $69,918.00.

Stage I diamond drilling is to be done as rows of holes, the holes 660 feet apart. The purpose is to test the structural relations of the country between the Wolrab and Goose Creek faults. Stage II churn drilling is not shown on the map but would be laid out to test favorable areas found in Stage I work.

There are no fluorspar outcrops within the Project 1-A area. East of the area, in the southern part of section 17, the Goose Creek mine -- along the Goose Creek fault -- was described by Newman and Trace (DMEA Docket 3321) as having a 10,000 ton fluorspar ore body. Largely on the basis of this ore body, Newman and Trace recommended approval for DMEA exploration on the Thurston Patton tract in section 16 northeast of the Goose Creek mine but along the Goose Creek fault. This contract was terminated before completion, presumably because the holes that were drilled failed to find significant amounts of fluorspar. While there may be other mineralized faults in the area none are shown on either the applicant's map nor the Illinois Survey map; hence the chance of finding a vein-type deposit must be considered as remote. This remoteness is emphasized by the absence of fluorspar float -- the so-called gravel spar of that area. Elsewhere in the district, gravel spar, because of its insolubility and resistance to erosion, has been found overlying or near to vein-type deposits.

The applicant's proposal to drill the area for replacement deposits in the underlying limestone is speculation based on geologic similarity with Cave-In-Rock deposits. It should be noted, however, that to date no workable replacement bodies of the Cave-In-Rock type have been reported west of the Peter's Creek graben.

Conclusions

The proposed work is prospecting and as such does not warrant DMEA assistance. The applicant should initiate the program at his own expense and find targets worthy of exploration. With such targets in hand and with definite proposed drilling programs DMEA assistance might be justified. As it is, the proposed work is simply blind drilling in an unproductive area with no outcrops and with a dearth of supporting geologic evidence. The only supporting feature is that favorable limestones underlie the area, but this may be said of a good part of Illinois and surrounding states.

PROJECT 1-B (Docket 4358)

This proposal consists of 3,500 feet of diamond drilling and 10,000 feet of churn drilling, to be followed by an additional 10,000 feet of churn drilling if initial drilling results prove favorable. Cost of the project is estimated at $70,093.00.

From a geologic standpoint this project would appear to be more justifiable than Project 1-A. In the central part of the project area there is the Renfro prospect, described in the Illinois Survey bulletin as having been explored by a 22-foot shaft, and showing weathered gravel spar and bedding replacement by fluorspar. The Fredonia limestone, the district's more favorable limestone for replacement ore bodies, also crops out around the Renfro prospect. As the rocks have relatively flat dips, the Fredonia limestone could be tested some distances away from the prospect with shallow churn drill holes.

A short distance northwest of the project, in the northwest corner of section 14, a fluorsper vein deposit was formerly mined from along the Lee fault, the westernmost of the faults shown on the applicant's map. This property was subsequently diamond drilled by the U. S. Bureau of Mines; the results of their work are described in R. I. 3996. During the period the Lee mine was active it produced about 14,000 tons of fluorspar concentrate. Bureau drilling, however, gave discouraging results, as did earlier drilling on the property by U. S. Steel Company. The Lee fault is west of the project area and would not be tested by any of the proposed drilling; however, it is described as a complex shear zone and perhaps strands of it may pass into the project area.

The Wolrab fault crosses the eastern side of the project area; the proposed diamond drilling is to test this structure. The fault is described as a complex fault, more as a zone of shearing than a simple fracture. No outcrops of fluorspar or gravel spar are reported along its outcrop.

Conclusions

From the information submitted the Project 1-B area would appear to warrant DMEA assistance more than Project 1-A. This would be particularly so if the fluorspar outcrop at the Renfro prospect proved to be a replacement deposit of the type that could be extensive. Diamond drilling along the Wolrab fault would appear to be prospecting.

PROJECT 1-C (Docket 4360)

Exploration work in this project consists of 4,000 feet of diamond drilling and 9,000 feet of churn drilling, the cost of which is estimated at $45,850.00. The chief exploration target is the Lee fault, which is to be tested by diamond drilling; the churn drilling is for the underlying limestone.

As described under Project 1-B, the Lee mine produced about 14,000 tons of fluorspar concentrate, but it was drilled with five holes by the Bureau of Mines after it ceased to be productive and all holes were discouraging. Furthermore, the Bureau R I report mentions that previous to the Bureau drilling the Lee property and other optioned properties were tested by 18 diamond drill holes put down by U. S. Steel Company. The results of the latter drilling are not known but could not have been too good, otherwise U. S. Steel would have held on to the property rather than let it go as they did.

From the geologic map in Illinois Survey Bulletin 76, the Hamp mine is seen to be about 2 miles west of the westernmost property held by the applicant in area 1-C. The Hamp fault extends eastward from the mine but apparently weakens to the point where it cannot be accurately plotted in area 1-C. Production from the Hamp mine is not known, but from the description in bulletin 76 it must be small.

Conclusions

On the basis of work done to date along the Lee fault, the applicant's proposed diamond drilling of the fault would not be warranted. Perhaps the applicant could do some work along the fault on his own account, and if this disproved the negative results of earlier work and established a definite target, some DMEA assistance might be warranted. The proposed churn drilling appears to be entirely prospecting.

RECOMMENDATIONS

I recommend that all three applications be sent to the field for further review. To expedite the processing of the applications and simplify field review, it is suggested that the Field Team prepare one report to cover all three applications. Unless field reviewers produce adequate reasons to support the applicant's proposals it would seem to me that Projects 1-A and 1-C should be denied, with a possible more limited program approved for Project 1-B.

THKiilsgaard:iml
G-7/2/56
cc: Director's reading, 4212
Branch reading, 4212
DMEA (3); Docket file
John E. Holtzinger, 3522

Thor H. Kiilsgaard

THE NEW JERSEY ZINC COMPANY
(ESTABLISHED 1848)

HORSE HEAD PRODUCTS ®

OFFICE OF THE
VICE PRESIDENT

100 FRONT STREET
NEW YORK 38, N.Y.

RECEIVED
JUN 26 1956

June 25, 1956

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

D.M.E.A. Exploration Project 1-B
Hardin County, Illinois
The New Jersey Zinc Company

Gentlemen:

Submitted herewith by The New Jersey Zinc Company is an application for aid in an exploration project in Hardin County, Illinois. Form MF-103 has been prepared in quadruplicate pursuant to D.M.E.A. Order 1, under the Defense Production Act of 1950, as amended.

This is one of three projects in Hardin County for which we are making applications. We would prefer to drill these projects in the following sequence: 1-A, 1-B, and 1-C. Item 5-C in each application indicates the order of work; but since more than one prospecting drill will be in service, the three projects may overlap to some extent.

Pending your acceptance of these projects, we are ready to proceed within a few weeks after the contract is received.

Very truly yours,

S. S. Goodwin
Vice President

SSGei

For attachments see following page.

ATTACHMENTS

RECEIVED
JUN 2 6 1956

Form MF-103

Sheet #1 - Corporation officers

Sheet #2 - List of Options

Sheet #3 - Applicant's Property rights

Sheet #4 - Physical description

Sheet #5 - Description of the Exploration Project

Sheet #6 - Estimated Costs

Exhibit B for 1-B -- Agreements with property owners

Map AX-Ill-16 Project Map

AX-Ill-18 Geologic Map

AX-Ill-12 Stratigraphic Section

Exhibit D - Copies of Proposals by contract drillers

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

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

RECEIVED
JUN 26 1956

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

Not to be filled in by applicant

Docket No. 4358
Metal or Mineral Manganese-Prod. Zinc
Date Received 6/26/56
Estimated Cost $ 70,093.00
Participation (Government %)

INSTRUCTIONS

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

(*b*) If other than an individual, add to your name above whether a corporation, partnership, etc., and the name of the State in which incorporated or otherwise organized.

(*c*) If a corporation, add to above statement, titles, names and addresses of officers. See sheet 1 attached.

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

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

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract See sheet 2 attached.

(*b*) State any mine name by which the property is known. See sheet 3 attached.

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise See sheet 3 attached.

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

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

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

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

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades. See sheet 4.

(*c*) Describe the geologic features of the property, including mineralization, type of deposit (vein, bedded, etc.), and your reasons for wishing to explore. Illustrate with maps or sketches. Send with your application (but not necessarily as a part of it) any geologic or engineering report, assay maps, or other technologic information you may have, indicating on each whether you require its return to you. See sheet 4 attached.

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

(*e*) State the availability of manpower, materials, supplies, equipment, water, and power. Ample man-power, materials, supplies, equipment, water and power are available in Hardin County.

16—6655-1

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK 38, N. Y.

5. *The exploration project.*—(*a*) State the mineral or minerals for which you wish to explore This project will explore for fluorspar, lead and zinc ore.

(*b*) Describe fully the proposed work, including a map or sketch of the property showing a plan (and cross sections if needed) of any present mine workings, and the location of the proposed exploration work as related to such features as contacts, veins, ore-bearing beds, etc. See sheet 5 attached.

(*c*) The work will start within 90 days after contract is received and be completed within 24 months from the date of an exploration project contract. Work on this project will begin after the commencement of 1-A and before beginning 1-C.

(*d*) State the operating experience and background of the applicant with relation to the ability to carry out such exploration project, and also that of the person or persons who will supervise the operations. See sheet 5 attached.

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

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

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

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

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

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

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

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

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

NOTE.—No items of general overhead, corporate management, interest, taxes (other than payroll and sales taxes), or any other indirect costs, or work performed or costs incurred before the date of the contract, should be included in the estimate of costs. See sheet 6 attached.

7. (*a*) Are you prepared to furnish your share of the cost of the proposed project in accordance with the regulations on Government participation (Sec. 7, DMEA No. 1)? Yes

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

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

Explain in detail on accompanying paper.

CERTIFICATION

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

Dated 25 June 1956, 195_6

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK 38, N. Y.
(Applicant)

By J Boslewin

VICE PRESIDENT

Title 18, U. S. Code (Crimes), Section 1001, makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

U. S. GOVERNMENT PRINTING OFFICE 16—66551-1

June 26, 1956

Memorandum

To: Executive Officer, DMEA Field Team, Region V

From: Chief, Operation's Control and Statistics Division

Subject: Assignment of Docket Number

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

DMEA
- 4358 New Jersey Zinc Co.

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

June 26, 1956

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

Subject: DMEA 4358
Re: Exploration Assistance

Gentlemen

The receipt of your application dated June 25, 1956 for exploration assistance under the Defense Production Act of 1950, as amended, is hereby acknowledged.

Your application has been assigned Docket Number DMEA 4358 and referred to the Nonmetallic Mineral Division.

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

Sincerely yours,

Robert E. Adams, Chief
Operations Control and
Statistics Division

S H E E T 1

RECEIVED
JUN 2 6 1956

1. (c.)
Names, Titles, and Addresses of Officers

Mr. R. L. McCann, President	160 Front Street, New York 38, N. Y.
Mr. C. Howard George, Executive Vice President	"
Mr. S. S. Goodwin, Vice President	"
Mr. Walter R. Anyan, Secretary	"
Mr. E. E. Schwegler, Comptroller	"
Mr. Samuel Riker, Treasurer	"
Mr. R. G. Kenly, Vice President	"
Mr. F. H. Baxter, Vice President	"
Mr. L. F. Johnson, Vice President	"
Mr. P. M. Ginder, Vice President	"
Mr. R. A. Oberfell, Assistant Secretary	"
Mr. W. L. Brookfield, Assistant Secretary	"
Mr. W. W. Gamwell, Assistant Treasurer	"

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK 38, N. Y.

SHEET 2

The land in Project 1-B consists of a group of properties shown in red outline on maps AX-111-16 and Ax-111-18. The legal description of each tract is included in the agreement under which the property has been optioned by the Company. A copy of the recorded short form for each of these agreements is attached to this application as Exhibit B.

Name of Property Owner	Acreage	Date of Expiration of Option
John Vaughn	51	2/12/64
Lawrence Lane	21	1/7/64
Alvis Suits	215.4	4/11/59
Wm. A. Porter	73.6	2/4/64
Everett Patton	160	2/16/64
Everett Patton	80	12/15/63
James Sneed	60	3/3/64
Asa Decker	80.61	11/19/63
Bertis Renfro	105	11/17/63
* Clara Hale	40	6/17/59
* Pearl Beck	110	12/10/63
Chas. Carr	39.73	9/4/64
Earl Hubbard	3	12/7/64
Pet Wathen	40	12/18/63
A. B. Cook	156	2/1/59
Clem Richter	116	2/9/59
James Joyce	80 (1/3)	6/7/59
Effie Drumm	80 (1/3)	6/7/59
Catherine Davis	80 (2/9)	6/3/59
Erma Edwards	80 (1/9)	2/26/64
* Harold Price	77	11/19/63
Newell Smith	164	12/21/63
* Milford Ginger	4	1/25/64
J. A. Milligan	75	12/12/63
Verba Dusch	40	9/14/59
Lucy Joyce (1/7 Rachel Conn)	80	6/24/59
Nora Bennett "	80	9/2/59
Lillian Henderson "	80	9/2/59
Lydia Eckert	80	7/13/59
Clara Hale	45	6/17/59

* The mineral title in portions of the property may be in third parties; and, therefore, no part of the drilling program will be performed on such tracts.

b. The only mining that has been done on this project in the past was at the Renfro Prospect on the Bertis Renfro property.

c. The New Jersey Zinc Company holds options for the purchase of mineral and mining rights on each of the properties listed on Sheet 2 and has limited rights to purchase surface. Application has been made to the U. S. Bureau of Land Management for prospecting permits on forest lands adjacent to the private land in the project. Forest land included within the red outline of the project is covered by Application BLM-A-036104.

4. (a.) No previous exploration or mining has been done on this project except in the immediate vicinity of the Renfro prospect. In 1926, this prospect was developed by a small open pit and a shaft twenty-two feet deep. The form of the deposit cannot be investigated because it is now caved, but it is reported to have been banded fluorite in a small bedding replacement type deposit.

(b.) The past production from the Renfro prospect must have been quite small; there are no known ore reserves.

(c.) Project 1-B lies in the northern part of the Southern Illinois fluorspar district, immediately west of Project 1-A. The local geology is shown on map AX-Ill-18. In this district, fluorspar ore bodies occur either in fissure veins or in bedding replacement deposits.

A stratigraphic section is shown in drawing AX-Ill-12. Ore commonly occurs either in the Downey's Bluff limestone (at the base of the Bethel sandstone) or in the Fredonia limestone (beneath the Rosiclare sandstone). Fluorspar mineralization in the vein type of deposit may exist along the Wolrab fault. Several diamond drill holes are proposed to test this possibility, in conjunction with churn drill holes used to prospect blocks of ground adjacent to the fault.

The main target of this project is a replacement deposit similar to those found in the Cave-in-Rock district. Systematic prospecting of the area between the Wolrab fault and the Lee fault should point to minor structures which may localize a bedded replacement deposit. The neighborhood of the Renfro

NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK 38, N. Y.

prospect should be well prospected to test for a down-dip or down-pitch extension of this small deposit.

Churn drilling is proposed for the vertical holes of Project 1-B rather than diamond drilling because, in general, the holes are shallower than Project 1-A and we should be able to obtain a contract at a lower price per foot. By the time Project 1-B is started, our geologist will have enough knowledge of the local stratigraphy to be able to identify formations from churn drill cuttings.

(d.) The project is located seven miles north of Elizabethtown. The nearest railroad shipping point is Rosiclare, three miles southwest of Elizabethtown. A recently paved road runs across the northeastern edge of the property from Karbers Ridge to Illinois State Highway 1. Local rural roads are gravel and passable most of the year. The major sources of supply for the area are Rosiclare, Illinois or Harrisburg, Illinois. Harrisburg is about twenty-seven miles northwest of the project. The nearest residential areas are Rosiclare, Elizabethtown and Cave-in-Rock.

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK 38, N. Y.

5. (b.) The New Jersey Zinc Company proposes to explore the property covered by this project by means of diamond drilling and churn drilling.

Diamond drill holes will be used to test the possibility of vein type mineralization in the Wolrab fault. Three proposed locations are shown on Map AX-Ill-16.

Churn drill holes spaced on a 660 foot pattern are proposed to test the country between the two faults. Proposed holes are shown on Map AX-Ill-16. If favorable trends are discovered, holes will be drilled at a closer spacing to trace ore. But it is not the purpose of this project to outline individual ore bodies completely.

Project 1-B is estimated to require 3500 feet of diamond drilling and 10,000 feet of churn drilling for the initial testing stage and perhaps another 10,000 feet of churn drilling for the tracing stage. The plan is to drill project 1-B after the initial effort has been made on project 1-A.

(d.) The New Jersey Zinc Company has had long experience in developing mineralization of this general type in Virginia and Tennessee. A program similar to the one proposed is now under way in southwest Wisconsin. This Illinois project will be under the general supervision of Mr. W. H. Callahan, Manager of Exploration, and under the direct supervision of John M. Hague, Resident Geologist, at Platteville, Wisconsin.

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK 38, N. Y.

S H E E T 6

Estimated Costs

a.	Independent Contracts		
	Diamond Drilling		
	3,500 feet @ $2.65/foot	$9,275	
	Churn drilling		
	20,000 feet @ $2.25/foot	45,000	
			$54,275
b.	Labor, Supervision, Consultants		
	Supervision:		
	1 geologist, half time for 8 mos.	2,500	
	1 geologist, full time for 8 mos.	4,000	
	Technical Service		
	2 Surveyors, half time for 8 mos.	3,500	
	Accounting and secretarial salary charges. $37.50 for 8 mos.	300	
			$10,300
c.	Operating Materials and Supplies		
	Core boxes	250	
	Cuttings storage supplies	400	
	Surveying supplies 1/3 x 1200	400	
	Office Equipment 1/3 x 1050	350	
			1,400
d.	Operating Equipment		
	Automobile Expense 10,000 mi. @ 8¢		800
e.	Rehabilitation and Repairs		
	None		
f.	New Buildings, Improvements		
	Core shed 1/3 x 4500		1,500
g.	Miscellaneous:		
	Chemical Assays - 200 at $6.00	1200	
	Workmen's Compensation 1% x 10300	103	
	Insurance, Payroll Taxes 5% x 10300	515	
			$1,818
			$70,093

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK 38, N. Y.

INDUSTRIAL
AND
ANALYTICAL
CHEMISTS

The Bruce Williams Laboratories

ESTABLISHED 1898

MAIN OFFICE 618-622 JOPLIN STREET
TELEPHONE MAYFAIR 3-1556

Joplin, Missouri

ENGINEERING
INSPECTIONS
AND
TESTS

BRANCH OFFICES:

306 VALLEY DRIVE
ST. LOUIS, MISSOURI
TELEPHONE HOBART 7-3226

219 TERMINAL WAREHOUSE BLDG.
LITTLE ROCK, ARKANSAS
TELEPHONE FRANKLIN 2-0693

CONNELL HOTEL BLDG.
PICHER, OKLAHOMA
TELEPHONE 710

RECEIVED
JUN 26 1956

April 28, 1956

The New Jersey Zinc Company
P. O. Box 217
Platteville, Wisconsin

Attention: John H. Hagae

Gentlemen:

Thank you for your inquiry of April 23rd.

Our charge for determinations on fluorspar are as follows:

Lead - $1.50 Zinc - $1.50 and Fluorspar - $3.00

We would be very pleased to represent you on any tests or analysis on fluorspar or other materials.

We are representing the General Services Administration on fluorspar shipments that they are now buying from Southern Illinois. We also did the original work on drilling campaign of the Ozark Mahoning Company and the Minerva Oil Company when they opened up those fields and are very familiar with fluorspar analyses.

Very truly yours,

THE BRUCE WILLIAMS LABORATORIES

Bruce Williams

Bruce Williams

BW-jc

P. S. -- This is a personal invitation for you to visit our main laboratories in Joplin, Missouri and --- "See for Yourself"

THE NEW JERSEY ZINC CO.
160 FRONT ST., NEW YORK 38, N.

RECEIVED
JUN 26 1956

EXHIBIT D

Copies of Proposals by Contract Drillers

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK 38, N. Y.

Office Phone 476

P. O. Box 298

Wm. Taylor Drilling Company

Marion, Kentucky

May 8, 1956

RECEIVED
JUN 2 6 1956

New Jersey Zinc Company
160 Front Street
New York 38, New York

Attention: A. E. Turner

Churn Drilling - Hardin County, Illinois, 1-AX-524

Dear Sir:

The information furnished below is in regard to the above captioned drilling:

Q.1. What portion of the program the bidder is bidding for and the date he can start drilling?
A. I would like to bid on the proposed 20000 feet of churn drilling. I can start drilling in the next six weeks.

Q.2. Type of rig to be used on the job?
A. 24 Bucyrus drill rig.

Q.3. Price per foot of drilling?
A. $3.00 per foot. (any time unprofitable drilling is encountered I want a $5.00 per hour guarantee, due to the lack of information, and bad drilling experience in this area.)

Q.4. Hourly rate for time spent surveying, casing holes at Company's request, or other specified tasks not covered by the footage rate?
A. Hourly rate will be $8.00 per hour.

Q.5. Type of Insurance carried by bidder?
A. -Bituminous Casualty Corporation - Bodily Injury $25,000.00 and $50,000.00 (application has been made to raise this to $50,000.00 and $100,000.00) Property Damage $10,000.00 and $25,000.00 (application has been made to raise this to $25,000.00 and $50,000.00)
-Continental Casualty Company - Workman's Compensation - Policy ISP-1924773
-State Automobile Mutual Insurance Company - Fleet Policy #1907802 (cars, trucks)

Q.6. Experience of bidder?
A. Contracting in all types of oil field and mining prospect work since 1937. From 24" holes down, with 4000 foot depth. States of Kansas, Missouri, Illinois, Indiana, and Kentucky.

Q.7. Two references for whom bidder has done drilling, and one credit reference?
A. Minerva Oil Company, Ozark Mahoning Company, and Alcoa Mining Company. Credit Reference, The Peoples Bank, Marion, Kentucky.

WM. TAYLOR DRILLING COMPANY

Don Taylor

Donald Taylor

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK 38, N. Y.

MOORE & SIEGAL

GENERAL CONTRACTORS

EXCAVATING
EARTHMOVING
SEWER, WATER
TRENCHING
CEMENT WORK
WELL DRILLING

PHONE 6661

SHULLSBURG, WISCONSIN
May 17, 1956

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

Attention: Mr. A. E. Turner,
Assistant Manager of Purchasing

Re: Diamond Drilling and Churn Drilling -
Hardin County, Illinois
1 - AX - 524.

Gentlemen:

After careful study of your letter and attached specifications for the above drilling program in Hardin County, Illinois, dated March 27, 1956, we submit hereunder our bid proposal for such drilling and other information as requested in your specifications. Our bid proposal is confined to the churn drilling part of the above program.

BID PROPOSAL

We do hereby bid and propose as follows on your diamond and churn drilling program for Hardin County, Illinois (1-AX-524), all to be done and performed in accordance with terms and requirements of New Jersey Zinc Company specifications, as contained with your letter of March 27, 1956:

1. Portion of Program Bid and Starting Date. We enter our bid for the churn drilling portion only of the program outlined in your specifications, for the minimum of 20,000 feet of churn drilling, or more as desired, and with one or two, or more, churn drill machines, as required.

   We could commence such churn drilling operations at any time within ten (10) days after awarding of contract, at the requested date by your company.

2. Type of Drill Rigs to be Used on Job. Type of churn drill rigs to be used are Bucyrus-Erie, Model 22-W and one Sanderson-Cyclone, ST-44, truck mounted or trailer mounted.

3. Price per Foot of Drilling. We bid and propose to perform said churn drilling at the straight price of Two and 25/100 ($2.25) Dollars per foot of drilling.

THE NEW JERSEY ZINC COMPANY
160 FRONT St., NEW YORK 38, N. Y.

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JUN 2 0 1956

4. Hourly Rate For Time Surveying, Casing Holes, or Other Specified Tasks, etc. The only additional or extra charge for work customarily or normally included in churn drilling operation would be for casing left in holes at company's request at the bidder's current cost of such casing and plugs. Any other extra ordinary or specified tasks at such price or rate as mutually agreed upon with company.

5. Type and Amount of Public Liability and Property Damage Insurance of Bidder. This information is covered and provided in your files under our other current drilling contracts with your company.

6. and 7. Experience and References. In view of our drilling record and work for your company in the Southwestern Wisconsin area during the past four years, we assume that no further information is necessary on these points.

The above and foregoing bid proposal is made in accordance with your company's specifications as herein referred to, and all terms and conditions of said specifications are understood and assumed to be part of this bid proposal, and are hereby incorporated as part thereof.

Dated this 17th day of May, 1956.

Respectfully Submitted,

MOORE & SIEGAL

By: Eddie Siegal
Eddie Siegal, Partner

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK 38, N. Y.

CLARK DRILLING COMPANY

801 EAST COLLEGE

Fredericktown, Missouri

April 21,1956.

ACT

The New Jersey Zinc Company,
160 Front Street,New York 38,N.Y.
Mr.A.E.Turner,Assistant Manager of Purchasing

Gentlemen: Bid for Churn Drilling only,Hardin County,Illinois

1. This bid is for churn drilling only.
   If I am the succesful bidder I agree to start drilling within five (5) days of notification.
2. I will use late model Bucyrus-Erie rigs.I have (1) Model 24L Machine and (3) Model 22W Machines
   These rigs are all truck mounted and are all in good condition.

3. Prices per foot on sliding depth scale:
   For the first 500 feet ---------- $ 2.20 per foot
   From 500 feet to 1000 feet ---------- $ 2.35 per foot
   From 1000 feet to 1100 feet ---------- $ 2.50 per foot
4. Hourly work rate for specified work desiginated by the company and not covered by footage price will be $ 6.00 per hour.
5. Certificate of public liability and other insurance enclosed.
6. I have owned and operated churn drills since 1934,most of my work has been drilling test holes for various mining companies,with quite a lot of the work more than 1000 feet in depth.
7. Drilling references:
   The Minerva Oil Company,Fluorspar mining division near Cave-in-Rock,Illinois
   The National Lead Company,St.Louis Smelting and Refining Division,Fredericktown Mo.
   The American Metals Company of New York, work did near Potosi Mo.

Credit reference:
The Bucyrus-Erie Company
South Milwaukee Wisconsin

Bidder: Clark Drilling Company
Fredericktown Mo.

Signed Glen E. Clark

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK 38, N. Y.

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

EXECUTIVE OFFICES
HENRY W. OLIVER BUILDING
PITTSBURGH 22, PA.

April 25, 1956

AIR MAIL

The New Jersey Zinc Company
160 Front St.
New York 38, N. Y.

Attention: Mr. A. E. Turner
Asst. Manager of Purchasing

Subject: Diamond Drilling
Hardin County, Ill. - 1-X524

Gentlemen:

This will acknowledge receipt of your letter dated March 27th requesting prices on Diamond Core and Churn Drilling in Hardin County, Illinois.

Since we do not have any churn drilling equipment in our contract service, we cannot quote prices on the churn drilling, but we are interested in the proposed diamond core drilling and are quoting prices on that particular type of drilling.

Minimum 12,000 feet of drilling

	BX Core	AX Core
From 0. to 600. ft.	$2.90 ft.	$2.65 ft.
From 600. to 1200. ft.	3.15 "	2.90 "

Above prices based on our furnishing water up to one mile.

	BX Core	AX Core
From 0. to 600. ft.	$3.15 ft.	$2.90 ft.
From 600. to 1200. ft.	3.40 "	3.15 "

Above prices based on our furnishing water in excess of one mile.

BX Casing left in holes at your request	$1.96 ft.
AX Casing left in holes at your request	$1.54 "
Surveying drill holes, acid test, if any	$7.50 per hr.
Capping drill holes, etc.	$4.50 per hr.

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK 38, N. Y.

If it is your desire to save cores of the drilling, then it will be necessary that you furnish the proper containers for same.

We will furnish for this proposed drilling one of our gasoline driven core drills complete with operating equipment, and can start the work to meet your schedule.

We will appreciate an early decision concerning the above proposition so that we can schedule the work accordingly.

Yours very truly,

JOY MANUFACTURING COMPANY

W. J. Pilarski, Mgr.
Contract Drill Division

WJP/et

MANUFACTURERS OF
DIAMOND DRILLS
DRILLING EQUIPMENT
DIAMOND BITS

BRANCH OFFICES
NEW YORK · PITTSBURGH
PHILADELPHIA
GRAND JUNCTION, COLO.

EXECUTIVE OFFICES & PLANT
821 W. OLIVE STREET
SCRANTON, PA.

SINCE 1889

SPRAGUE & HENWOOD, INC.

CONTRACTORS FOR
DIAMOND DRILLING
SHOT DRILLING · SOIL SAMPLING · PRESSURE GROUTING
WATER WELLS & CHURN DRILLING

MAIL ADDRESS · P. O. BOX 448
SCRANTON 2, PA.
DIAMOND 4-8507

RECEIVED
JUN 26 1956

May 1, 1956

RE:- Diamond Drilling
Hardin County, Illinois
1-AX-524

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

Attention:- Mr. A. E. Turner,
Assistant Manager of Purchasing

Gentlemen:-

As requested in your letter of March 27th we are pleased to quote you on diamond drilling in the area south of Karbers Ridge and Sparks Hill, Hardin County, Illinois about seven miles north of Elizabethtown.

Our quotation is based on drilling a minimum of 12,000 feet of diamond drilling, holes in depths from 200 feet to 1,200 feet, mostly vertical, but some may be angle and we are pleased to quote you as follows:-

ITEM NO.

1 - Diamond Drilling AX holes -

0'	to	500'	-	$ 2.25 per lin.ft.
500'	to	750'	-	$ 2.50 per lin.ft.
750'	to	1000'	-	$ 3.00 per lin.ft.
1000'	to	1250'	-	$ 3.75 per lin.ft.

2 - Reaming and casing holes -

Reaming AX to BX and inserting AX casing --- $ 1.00 per lin.ft.

3 - Casing lost in holes or left in holes by your request

AX casing --- $ 1.54 per lin.ft.

4 - Surveying holes or delays - for use of drill crew, surveying holes or delays caused by you - $ 12.00 per hour.

5 - Cementing holes -

For cementing holes, waiting for cement to set, drilling out cement - $ 12.00 per hour, plus cost of cement

We are quoting you only on the portion of your inquiry covering diamond drilling.

We operate one Sprague & Henwood type 140 skid mounted diamond drill rigs. We have the necessary equipment and experienced personnel available to take care of this work.

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK 38, N. Y.

To:-
The New Jersey Zinc Company
Att:- Mr. A. E. Turner,
Assistant Manager of Purchasing

5/1/56

Payments to be made monthly within 30 days after date of our invoice.

We trust you will find this quotation acceptable.

We wish to thank you for the opportunity of quoting on this work.

Very truly yours,

SPRAGUE & HENWOOD, INC.,

Wm. J. Schenk,
Vice President

WJS:GT
In Triplicate

Longyear

E. J. LONGYEAR COMPANY

General Offices, Foshay Tower
Minneapolis 2, Minnesota, U.S.A.
TELEPHONE: FEDERAL 3-2447 • CABLE: LONGYEAR

JUN 2 8

May 11, 1956

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

Attention: Mr. A. E. Turner
Assistant Manager of Purchasing

Gentlemen:

Diamond Core Drilling -
Hardin County, Illinois - 1-12-56

1. Pursuant to Mr. Elmir's recent conversation with Mr. J. H. Hagne, and your letter of March 27th, we are pleased to submit below proposal for your contemplated exploratory drilling program which is to be carried out in the above-described area.

2. We understand that the program as now planned will consist of a series of both vertical and angle holes with a minimum inclination of 60 degrees measured from the horizontal, ranging up to a maximum of 1250 feet in depth, with a minimum aggregate footage of 12,000 feet; that the materials to be drilled will consist of any one or possibly all of the following: nearly horizontally-bedded, moderately-soft sandstone, limestones, and shales; that the water required for drilling operations is available from streams which traverse the area. We further understand that the terrain is gentle, rolling and that most of the sites will be accessible by truck.

3. For this work we propose to furnish one complete Longyear truck-mounted diamond core drill, together with the necessary accessory and service equipment required to complete the work as now planned. We further propose to operate the drill either on a one or two shift basis, depending upon the availability of competent drill operators.

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

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

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

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

a) Overburden Drilling

0 to 100 feet in depth, measured from the collar of the hole.....$2.95 per foot

THE NEW JERSEY ZINC COMPANY
160 FRONT ST. NEW YORK 38, N. Y.

DIAMOND CORE DRILL MANUFACTURERS • MINING ENGINEERING AND GEOLOGICAL CONSULTANTS • CORE DRILLING CONTRACTORS

b) Diamond Core Drilling

Top of Bedrock to 1000 feet (measured from the collar of the hole)

AX-size, recovering core approximately 1-1/8" in diameter.....$2.65 per foot

BX wire line, recovering core approximately 1-1/8" in diameter.....$2.55 per foot

BX-size, standard tools, recovering core approximately 1-5/8" in diameter.....$2.85 per foot

NX-size, recovering core approximately 2-1/8" in diameter (to be confined to collaring of holes)...$3.25 per foot

1,000 feet to 1500 feet in depth (measured from the collar of the hole) -

AX-size .....$2.85 per foot
BX wire line.....$2.75 per foot.

c) Drill Hole Inclination Tests.....$7.00 per hour.

d) Cementing, waiting for cement to set and drilling out cement.....$7.00 per hour.

e) Lumnite Cement.....$3.50 per bag

f) Delays for your convenience or for which You are responsible.....$7.00 per hour.

6. All casing left in the drill holes at the request of the New Jersey Zinc Company, will be charged at current retail list prices.

7. Reaming and casing will be carried out at the sole expense of the Longyear Company.

8. Cores will be turned over to your representative at the drill site in receptacles furnished by you.

9. Statements covering the work performed will be rendered as promptly as possible after the first of each month.

10. We are very pleased to have the opportunity to make our services available for this work. As Mr. Blair has already discussed with Mr. Hague, if our proposal is found acceptable, we are prepared to commence the operations sometime in July or August.

Very truly yours,

E. J. LONGYEAR COMPANY

F. M. Burnhart

F. M. Burnhart
Operations Manager

ACCEPTED:

THE NEW JERSEY ZINC COMPANY

By: _____

Date: _____

JCCB:bal

THE NEW JERSEY ZINC COM
160 FRONT ST., NEW YORK 38

EXHIBIT B

Agreements with Property Owners

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK 33, N. Y.

RECEIVED

JUN 2 3 1958

THIS AGREEMENT made and entered into on this 12th day of February, 1954, by and between John H. Vaughn and Esther Vaughn, his wife,

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

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals, ores, ore-bearing materials and rock of every kind in, under or on all of the following described premises:

A parcel of land located in the North West Fourth (NW¼) of the North West Quarter (NW¼), of Section 13, Township 11 South, Range 8 East of the Third Principal Meridian, in Hardin County, Illinois, described by metes and bounds as follows: Beginning at the South East (SE) corner of said 40 acre tract, thence running North along the East line thereof for a distance of 780 feet, thence West 700 feet to the public road, thence South with the public road to the South line of said 40 acre tract, thence East to the place of beginning, containing 10 acres, more or less. (Owners do not own the surface of this said parcel); also all of the remaining part of the said northwest fourth of the northwest quarter (NW¼ NW¼) which lies east of the Sparks Hill - Elizabethtown road;

That part of the west half of the southwest quarter (W½ SW¼) of Section 12, Township 11 South, Range 8 East which lies south of the Karber's Ridge road and east of the Sparks Hill - Elizabethtown road.

Said premises in all contain 54.5 acres more or less and are located in Hardin County, Illinois.

JHV
EV

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to February 12, 1964, all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

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

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

(Seal)

(Seal)

Approved as to form
RBC

ATTEST:

Walter R. Ausman
its Secretary

THE NEW JERSEY ZINC COMPANY

By
its Vice President

STATE OF ILLINOIS)
) SS:
COUNTY OF HARDIN)

I, Lowden F. Pruett, a Notary Public in and for said County, in the State aforesaid, do hereby certify that John H. Vaughn and Esther Vaughn, his wife,

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 12th day of February, 1954.

Lowden F. Pruett
Notary Public

Commission expires April 30, 1957

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, John T. Hourigan, a Notary Public; do hereby certify that C. H. Genros to me personally known to be the Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and Walter R. Anyan, personally known to me to be the Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 19th day of February, 1954.

John T. Hourigan
Notary Public

JOHN T. HOURIGAN
Notary Public, State of New York
No. 30-6977000
Qualified in Nassau County
Certificates filed with New York
County Clerk and Register
Commission expires March 30, 1954

STATE OF ILLINOIS, } ss. No. 9014
Hardin County

This instrument was filed for record in the Recorder's Office of Hardin County aforesaid, on the 1st day of March A.D. 1954 at 3:20 o'clock P. M., and recorded in Book 5 of Misc. on page 44

J. H. Henry Recorder

Recording Fee $3.75

6-ACD-11A

THIS AGREEMENT made and entered into on this 7th day of January, 1954 by and between Lawrence Lane and Edith Irene Lane, his wife, of Sparks Hill, Illinois

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

RECEIVED
JUN 26 1953

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals, ores, ore-bearing materials and rock of every kind in, under or on all of the following described premises:

The North West Fourth (NW¼) of the South East Fourth (SE¼) of the North West Quarter (NW¼), 10 acres, and eleven (11) acres out of the North East (NE) portion of the South West Fourth (SW¼) of the North West Quarter (NW¼), being 40 rods wide north and south and 44 rods wide east and west, all the above described land being in Section 13, Township 11 South, Range 8 East of the Third Principal Meridian, in Hardin County, Illinois, and containing in the aggregate 21 acres, more or less.

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to January 7, 1964 all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

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

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

Lawrence Lane (Seal)

Edith Irene Lane (Seal)

Approved as to form
ROC

ATTEST:

Walter R. Ayyan
its Secretary

THE NEW JERSEY ZINC COMPANY

By
its Vice President

STATE OF ILLINOIS)
) SS:
COUNTY OF Hardin)

I, Lowden F. Prueett, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Lawrence Lane and Edith Irene Lane, his wife, of Sparks Hill, Illinois

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 7th day of January, 1954.

Lowden F. Prueett
Notary Public

Commission expires April 30, 1957

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, John T. Hourigan, a Notary Public; do hereby certify that C. H. Gerrai to me personally known to be the Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and Walter R. Anyan, personally known to me to be the Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 14th day of January, 1954.

John T. Hourigan
Notary Public

JOHN T. HOURIGAN
Notary Public, State of New York
No. 30-6977000
Qualified in Nassau County
Certificates filed with New York
County Clerk and Register
Commission expires March 30, 1954

No. 2019

STATE OF ILLINOIS, }
Hardin County } ss.

This instrument was filed for record in the Recorder's Office of Hardin County aforesaid, on the 21st day of January A. D. 1954 at 2:30 o'clock P. M., and recorded in Book 5 on page 20

R. H. Henry Recorder

Recording Fee $ 3.75

324

RECEIVED
JUN 2 5 1956

THIS AGREEMENT made and entered into on this 1st. day of April, 1954, by and between Alvis Suits and Hester Suits, his wife

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

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations ~~in hand paid~~ as set forth in a certain Lease and Option Agreement of even date herewith, ~~the receipt of which is hereby acknowledged~~ Owners lease to the Company for a period of ~~two~~ five years from the date hereof, with the ~~privilege of extension for further one year periods thereafter upon payment of sums of money mentioned upon the~~ exclusive right to and in case of the exercise of the option to purchase the right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals, ores, ore-bearing materials and rock of every kind in, under or on all of the following described premises:

The surface and all underlying minerals in and to the following:

The South West Fourth (SW¼) of the North West Quarter (NW¼) except for 11 acres out of the Northeast portion of said quarter quarter section, described as being 40 rods wide north and south and 44 rods long east and west, and except that part of the said quarter quarter section, containing 3.6 acres, more or less, that lies north and west of the Decker's Spring and Sparks Hill Public Road, (25.4 acres, more or less); the West Three-fourths of the North One-half (N½) of the South West Quarter (SW¼), (60 acres, more or less); the South West Fourth (SW¼) of the South East Fourth (SE¼) of the North West Quarter (NW¼), (10 acres, more or less); all in Section 13.

The minerals underlying the following:

The North East Fourth (NE¼) of the North West Quarter (NW¼), (40 acres, more or less), in Section 13 and the South One-half (S½) of the South East Quarter (SE¼), (80 acres, more or less), of Section 14.

All the above land being in Township 11 South, Range 8 East of the Third Principal Meridian, in Hardin County, Illinois, and being in all 215.4 acres.

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to April 1 , 1959, all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

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

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

Alvis Smith (Seal)

Hester Smith (Seal)

Approved as to form
ZBC

ATTEST:

Walter P. Runyan
Its Secretary

THE NEW JERSEY ZINC COMPANY

By
Its Vice President

STATE OF ILLINOIS)
) SS:
COUNTY OF HARDIN)

I, Sandra F. Pennell, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Alvis Suits and Hester Suits, his wife

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 21st day of April, 1954.

Sandra F. Pennell
Notary Public

[redacted]

Commission expires April 30, 1957

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, John T. Hourigan, a Notary Public; do hereby certify that C. H. George to me personally known to be the Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and Walter R. Anyan, personally known to me to be the Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 13th day of May, 1954.

John T. Hourigan
Notary Public

JOHN T. HOURIGAN
NOTARY PUBLIC, State of New York
No. 30-6977000
Qualified in Nassau County
Cert. filed with New York County clerk
Commission Expires March 30, 1955

STATE OF ILLINOIS, } ss. No.....
Hardin County

This instrument was filed for record in the Recorder's Office of Hardin County aforesaid, on the 25th day of May A. D. 1954 at 11:30 o'clock A.M., and recorded in Book 5 of Misc on page 92

J. F. Henry
Recorder

Recording Fee .....

THIS AGREEMENT made and entered into on this 4th day of Febraury, 1954, by and between W. A. Porter and Mary Porter, his wife, of Sparks Hill, Hardin County, Illinois,

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

RECEIVED
JUN 2 6 1956

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals, ores, ore-bearing materials and rock of every kind in, under or on all of the following described premises:

The South One-half (S½) of all that part of the South West Fourth (SW¼) of the South West Quarter (SW¼) which lies West of the gravel road, in Section 12, (5 acres, more or less);

The North One-half (N½) of all that part of the North West Fourth (NW¼) of the North West Quarter (NW¼) in Section 13 which lies west of the gravel road;

It being understood that the two tracts above described contain 10 acres, more or less, in the aggregate, and that the boundary on the South side thereof is the private gravel road as now located and the North boundary is an extension of the north line of the land now occupied by W. A. Porter.

The West 5 acres of the North West Fourth (NW¼) of the North West Quarter (NW¼) in Section 13;

All that part of the South West Fourth(SW¼) of the North West Quarter(NW¼) that lies North and West of Docker Springs and Sparks Hill Road, (3.6 acres, more or less) in Section 13;

The East 35 acres of the North East Fourth (NE¼) of the North East Quarter (NE¼), Section 14;

The South One-half (S½) of the East 35 acres of the South East Fourth (SE¼) of the South East Quarter (SE¼), (17½ acres, more or less), in Section 11;

The South One-half (S½) of the West 5 acres of the South West Fourth (SW¼) of the South West Quarter (SW¼), (2½ acres, more or less), in Section 12;

All the above land being in Township 11 South, Range 8 East of the Third Principal Meridian, in Hardin County, Illinois, and containing in the aggregate 73.6 acres, more or less.

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to February 4, 1964, all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

N.A.B. MO

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

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

N. A. Porter (Seal)

Mary Porter (Seal)

Approved as to form
KBC

ATTEST:

Walter R. Ousan
its Secretary

THE NEW JERSEY ZINC COMPANY

By
its Vice President

STATE OF ILLINOIS)
) SS:
COUNTY OF HARDIN)

I, LOWDEN F. PRUETT, a Notary Public in and for said County, in the State aforesaid, do hereby certify that W. A. Porter and Mary Porter, his wife,

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 4th day of February, 1954.

Lowden F. Pruett
Notary Public

Commission expires April 30, 1957.

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, *John T. Hourigan*, a Notary Public; do hereby certify that *C. H. George* to me personally known to be the Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and *Walter R. Anyen*, personally known to me to be the Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 16th day of February, 1954.

John T. Hourigan
Notary Public

JOHN T. HOURIGAN
Notary Public, State of New York
No. 30-6977000
Qualified in Nassau County
Certificates filed with New York
County Clerk and Register
Commission expires March 30, 1954

STATE OF ILLINOIS, } ss. No. 6109
Hardin County

This instrument was filed for record in the Recorder's Office of Hardin County aforesaid, on the 9th day of May A. D. 1955 at 8:30 o'clock A. M., and recorded in Book 5 of Misc. on page 340

F. H. Henry Recorder

Recording Fee $3.75

Replaces 21 A

JUN 25 1956

M.T.P.
E.T.P.

THIS AGREEMENT made and entered into on this ~~16th~~ 4th day of ~~February~~ March, 1954, by and between Everett T. Patton and Mildred Jean Patton, his wife, of Sparks Hill, Hardin County, Illinois

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

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals, ores, ore-bearing materials and rock of every kind in, under or on all of the following described premises:

The South West Fourth (SW¼) of the North East Quarter (NE¼) of Section 14, (40 acres, more or less);

The North West Fourth (NW¼) of the South East Quarter (SE¼) of Section 14, (40 acres, more or less);

The South East Fourth (SE¼) of the South West Quarter (SW¼) of Section 14, (40 acres, more or less);

The North East Fourth (NE¼) of the North West Quarter (NW¼) of Section 23, (40 acres, more or less);

All the above being in Township 11 South, Range 8 East of the Third Principal Meridian, in Hardin County, Illinois.

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to February 16 , 1964, all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

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

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

Everett T. Patton (Seal)

Mildred Jean Patton (Seal)

Approved as to form
RBC

ATTEST:

Walter P. Cuyler
its Secretary

THE NEW JERSEY ZINC COMPANY

By
its Vice President

STATE OF ILLINOIS)
) SS:
COUNTY OF HARDIN)

I, Lowden F. Pruett, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Everett T. Patton and Mildred Jean Patton, his wife,

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 4th day of March, 1954.

Lowden F. Pruett
Notary Public

Commission expires April 30, 1955

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, John T. Hourigan, a Notary Public; do hereby certify that C. V. George to me personally known to be the Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and Walter R. Angus, personally known to me to be the Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 15th day of March, 1954.

John T. Hourigan
Notary Public

JOHN T. HOURIGAN
Notary Public, State of New York
No. 30-6977000
Qualified in Nassau County
Certificates filed with New York
County Clerk and Register
Commission expires March 30, 1954

No. 2052

STATE OF ILLINOIS, }
Hardin County } ss.

This instrument was filed for record in the Recorder's Office of Hardin County aforesaid, on the 19th day of March A. D. 1954 at 2:00 o'clock P. M., and recorded in Book 5 of Misc on page 59

J. H. Henry Recorder

Recording Fee $3.75 pd

PK

THIS AGREEMENT made and entered into on this 15th day of December, 1953, by and between Everett T. Patton and Mildred Jean Patton, his wife, Sparks Hill, Illinois E.T.P. M.J.P.,

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

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals, ores, ore-bearing materials and rock of every kind in, under or on all of the following described premises:

Southeast Fourth (SE¼) of the Northeast Fourth (NE¼), 40 acres more or less; Northeast Fourth (NE¼) of the Southeast Fourth (SE¼), 40 acres more or less, in Section Fourteen (14), Township Eleven (11) South, Range Eight (8) East of the Third Principal Meridian in Hardin County, Illinois.

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to December 15, 1963, all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

E.T.P.
M.J.P.

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

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

Everett T. Patton (Seal)

Mildred Jean Patton (Seal)

Approved as to form
JRC

ATTEST:

Walter R. Anyan
its Secretary

THE NEW JERSEY ZINC COMPANY

By
its Vice President

STATE OF ILLINOIS)
) SS:
COUNTY OF Hardin)

I, Jordan F. Pruitt, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Everett M. Pattan and Mildred Jean Pattan, his wife

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 15 day of December, 1953.

Jordan F. Pruitt
Notary Public

Commission expires April 30, 1957

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, JOHN T. HOURIGAN, a Notary Public; do hereby certify that C. H. GEORGE to me personally known to be the Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and WALTER R. ANYAN, personally known to me to be the Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 22nd day of December, 1953.

John T. Hourigan
Notary Public

JOHN T. HOURIGAN
Notary Public, State of New York
No. 30-6977000
Qualified in Nassau County
Certificates filed with New York
County Clerk and Register
Commission expires March 30, 1954

No.

STATE OF ILLINOIS, }ss.
Hardin County

This instrument was filed for record in the Recorder's Office of Hardin County aforesaid, on the 7th day of January A. D. 1954 at 2:30 o'clock P. M. and recorded in Book 5 of Misc on page 13

L. H. Henry Recorder

Recording Fee

1-ACD 274

THIS AGREEMENT made and entered into on this 3rd day of March , 1954, by and between James Sneed and Leona Sneed, his wife, of Sparks Hill, Hardin County, Illinois

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

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals, ores, ore-bearing materials and rock of every kind in, under or on all of the following described premises:

The South West Fourth (SW¼) of the North West Quarter (NW¼), (40 acres, more or less), and the North One-Half (N½) of the North West Fourth (NW¼) of the South West Quarter (SW¼), (20 acres, more or less), all in Section 14, Township 11 South, Range 8 East of the Third Principal Meridian, in Hardin County, Illinois.

(IT IS UNDERSTOOD that the owners have heretofore conveyed the fee in and to the above premises to the UNITED STATES OF AMERICA, reserving unto themselves, their heirs, executors, administrators and assigns the fluorspar, oil, iron ore and coal in, upon and under the above described premises for a period of FIFTY YEARS from the date of such conveyances).

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to March 3rd, 1964, all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

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

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

James Sneed (Seal)

Leona Sneed (Seal)

Approved as to form
XBC

ATTEST:

Walter R. Ruegan
its Secretary

THE NEW JERSEY ZINC COMPANY

By
its Vice President

STATE OF ILLINOIS)
) SS:
COUNTY OF HARDIN)

I, Lowden F. Pruett, a Notary Public in and for said County, in the State aforesaid, do hereby certify that James Sneed and Leona Sneed, his wife,

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 3rd day of March, 1954.

Lowden F. Pruett
Notary Public

Commission expires April 30, 1957

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, John T. Hourigan, a Notary Public; do hereby certify that C. H. George to me personally known to be the Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and Walter R. Anyan, personally known to me to be the Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

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

John T. Hourigan
Notary Public

JOHN T. HOURIGAN
Notary Public, State of New York
No. 04-77000
Qualified in Nassau County
Certificates filed with New York
County Clerk and Register
Commission expires March 30, 1954

STATE OF ILLINOIS, } ss. No. 3036
Hardin County

This instrument was filed for record in the Recorder's Office of Hardin County aforesaid, on the 12th day of March A. D. 1954 at 8:30 o'clock A. M., and recorded in Book 5 of Miscellaneous on page 48

L. H. Henry Recorder

Recording Fee $3.75 paid

RECEIVED
JUN 3 1963

6-ACD-1A

THIS AGREEMENT made and entered into on this 19th day of November, 1953, by and between Asa S.Decker and Savannah Decker, his wife of Karber's Ridge,Illinois.RFD

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

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals, ores, ore-bearing materials and rock of every kind in, under or on all of the following described premises:

The SE¼ NW¼, SW¼ NE¼ and a strip of land 20 feet wide of even width off the South side of the SE¼ NE¼,aggregating 80.61 acres, more or less, in Section 23, Township 11 South, Range 8 East in Hardin County, Illinois.

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to November 19th, 1943, all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, ~~and the right to purchase surface acreage,~~ all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

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

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

Alice L. Decker (Seal)

Savannah Decker (Seal)

THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation

By [signature]

Its C. H. George
VICE PRESIDENT

Approved as to form
XBC

Attest: [signature]

STATE OF ILLINOIS)
) SS:
COUNTY OF HARDIN)

I, Lowden E. Pruett, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Asa S. Decker and Savannah Decker, his wife

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 19th day of November, 1953.

Commission expires April 30, 1957

Lowden E. Pruett
Notary Public

STATE OF NEW YORK,)
) SS.
County of New York.)

I, JOHN T. HOURIGAN, A Notary Public, do hereby certify that C. H. GEORGE to me personally known to be the Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and WALTER R. ANYAN, personally known to me to be the Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing instrument, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered such instrument as such Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

GIVEN under my hand and seal this 30th day of November, 1953.

John T. Hourigan
Notary Public

JOHN T. HOURIGAN
Notary Public, State of New York
No. 30-6977000
Qualified in Nassau County
Certificates filed with New York
County Clerk and Register
Commission expires March 30, 1954

My Commission expires _____

STATE OF ILLINOIS, } ss. No. 985
Hardin County

This instrument was filed for record in the Recorder's Office of Hardin County aforesaid, on the 8th day of December A. D. 1953 at 3:00 o'clock P. M., and recorded in Book 5 of Misc on page 1

L. H. Henry Recorder

Recording Fee

THIS AGREEMENT made and entered into on this 17th day of November, 1953, by and between Bertis Renfro and Ida Mae Renfro, his wife, of Hardin County, Illinois

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

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals, ores, ore-bearing materials and rock of every kind in, under or on all of the following described premises:

The North Three-fourths (N. 3/4) of the West One-half (W. ½) of the South West Quarter (S.W. ¼) (60 acres, more of less), and the South Nine-Sixteenths (S. 9/16) of the West One-half (W. ½) of the North West Quarter (N.W. ¼) (45 acres, more or less), all in Section 23, Township 11 South, Range 8 East, of the Third Principal Meridian, in Hardin County, Illinois

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to November 17, 1963, all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

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

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

Burris Renfro (Seal)

Ida Mae Renfro (Seal)

THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation

By _____

Its C. H. George
VICE PRESIDENT

Approved as to form
LBC

Attest:

Walter R. Anyan
Walter R. Anyan Secretary

STATE OF ~~ILLINOIS~~ Kentucky
COUNTY OF Carlisle } SS:

I, Nicholas A. Mabry, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Bertis Renfro and his Wife Ida Mae Renfro

personally known to me to be the same persons whose names are subscribed to the foregoing contract and Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as Their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 17th day of November, 1953

My Commission expires Aug. 2d 1957

Nicholas A. Mabry,
Notary Public

STATE OF NEW YORK,)
) SS.
County of New York.)

I, JOHN T. HOURIGAN, A Notary Public, do hereby certify that C. H. GEORGE to me personally known to be the Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and WALTER R. ANYAN, personally known to me to be the Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing instrument, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered such instrument as such Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

GIVEN under my hand and seal this 30th day of November, 1953.

John T. Hourigan
Notary Public
JOHN T. HOURIGAN
Notary Public, State of New York
No. 30-6977000
Qualified in Nassau County
Certificates filed with New York
County Clerk and Register
Commission expires March 30, 1954

My Commission expires _____

No. 986

STATE OF ILLINOIS, } ss.
Hardin County

This instrument was filed for record in the Recorder's Office of Hardin County aforesaid, on the 8th day of December A. D. 1953 at 3:00 o'clock P. M., and recorded in Book 5 of misc. on page 2

J. H. Henry Recorder

Recording Fee

THIS AGREEMENT made and entered into on this 17th day of June, 1954 by and between Thomas J. Hale and Clara Hale, his wife, of Lincoln, Logan County, Illinois

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

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals ores, ore-bearing materials and rock of every kind in, under or on all of the following described premises:

All of the minerals in, on and under the North East Fourth (NE¼) of the South West Quarter (SW¼), containing 40 acres, more or less, all in Section 23, Township 11 South Range 8 East of the Third Principal Meridian, in Hardin County, Illinois.

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to June 17th, 1959, all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, except gas & oil in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, [redacted] all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

T.J.H. C.H. T.J.H. C.H. T.J.H. C.H.

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

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

Approved as to form

Clara Hale (Seal)

Thomas J. Hale (Seal)

ATTEST:

Walter R. Ausman
its Secretary

THE NEW JERSEY ZINC COMPANY

By
EXECUTIVE Vice President

STATE OF ILLINOIS)
) SS:
COUNTY OF LOGAN)

I, Patricia M. Beckholt, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Thomas J. Hale and Clara Hale, his wife

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 17th day of June, 1954.

Patricia M. Beckholt
Notary Public

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, John T. Hourigan, a Notary Public; do hereby certify that C. H. George to me personally known to be the EXECUTIVE Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and Walter R. Anwan, personally known to me to be the Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such EXECUTIVE Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 7th day of July, 1954.

John T. Hourigan
Notary Public
JOHN T. HOURIGAN
NOTARY PUBLIC, State of New York
No. 30-6977000
Qualified in Nassau County
Cert. filed with New York County clerk
Commission Expires March 30, 1956

No. 4709

STATE OF [illegible]
Hardin County

This instrument [illegible]

Recorded [illegible]

7th December

A. D. 1954 1:45 P. M.

recorded 5 min

of 196

R. H. Henry Recorder

Recording Fee 3.25 pd

1-ACD-14

THIS AGREEMENT made and entered into on this 10th day of December, 1953, by and between Pearl M. Beck, a widow of Herrick, Illinois; Clarice C. Cable and LeRoy Cable, her husband, of Herrick, Illinois; Challyn J. Beck, a spinster, of Herrick, Ill. Bradley B. Beck, a bachelor, of Herrick, Illinois; and Elaine Beck, a spinster, of Herrick, Illinois hereinafter called the Owners, parties of the first part, and THE NEW JERSEY ZINC COMPANY, a New Jersey corporation, authorized to do business in the State of Illinois, party of the second part, hereinafter called the Company:

RECEIVED
JUN 26 1956

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals, ores, ore-bearing materials and rock of every kind in, under or on all of the following described premises:

The North Part of the West One-half (W½) of the South East Quarter (SE¼) of Section 23, 50 acres; the North East Fourth (NE¼) of the North West Quarter (NW¼), 40 acres, more or less; and the South One-half (S½) of the North West Fourth (NW¼) of the North West Quarter (NW¼), 20 acres, of Section 22; all the above described lands being in Township 11 South, Range 8 East of the Third Principal Meridian, in Hardin County, Illinois.

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to December 10, 1963, all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

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

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

Claire C. Cable (SEAL) Pearl M. Beck (Seal)

Chellyn J. Beck (SEAL)

Elaine Beck (SEAL) Bradley B. Beck (Seal)

Le Roy Cable (SEAL)

Approved as to form TBC

ATTEST:

Walter R. Ingram
Its Secretary

THE NEW JERSEY ZINC COMPANY

By
Its Vice President

STATE OF ILLINOIS)
) SS:
COUNTY OF Shelby)

I, Byron Austin, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Paul M. Beck, Clarence C. Cable, Lilly Cable, Chellyn J. Beck, Bradley B. Beck, Elaine Beck

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 12 day of June 1954

Byron Austin
Notary Public

STATE OF _____)
) SS:
COUNTY OF _____)

I, _____, a Notary Public in and for said County, in the State aforesaid, do hereby certify that

_____

_____

personally known to me to be the same person__ whose name__ are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that__he__ signed, sealed and delivered the said instrument as_____ free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this_____ day of_____ 1953.

_____
Notary Public

STATE OF ILLINOIS)
) SS:
COUNTY OF _____)

I, , a Notary Public in and for said County, in the State aforesaid, do hereby certify that _____

_____

_____

_____

personally known to me to be the same person_ whose name_ are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that _he_ signed, sealed and delivered the said instrument as _____ free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this _____ day of _____, 195_.

_____
Notary Public

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, *John T. Hourigan* , a Notary Public; do hereby certify that *C. H. George* to me personally known to be the Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and *Walter R. Arnon* , personally known to me to be the Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 18th day of January, 1954.

John T. Hourigan
Notary Public

JOHN T. HOURIGAN
Notary Public, State of New York
No. 41-6977600
Qualified in Nassau County
Certificate filed with New York
County Clerk and Register
Commission expires March 30, 1954

STATE OF ILLINOIS, }ss. No. 2020
Hardin County

This instrument was filed for record in the Recorder's Office of Hardin County, aforesaid, on the 21st day of January A. D. 1954 at 2:30 o'clock P. M., and recorded in Book 5 of Mtg on page 21

L. H. Henry

Recorder

3.75 pd

274

6 1956

THIS AGREEMENT made and entered into on this 4th day of September, 1954 by and between Charlie Carr and Amy Carr, his wife, of Elizabethtown, RFD#3, Hardin County, Illinois

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

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals, ores, ore-bearing materials and rock of every kind in, under or on all of the following described premises:

The North West Fourth (NW¼) of the North West Quarter (NW¼) except a tract described as follows: Beginning at a point 9 rods West of the NE Corner of said quarter quarter section, thence running west along the north line of said quarter quarter section a distance of 33 rods, thence in a southerly direction a distance of 15 rods to the north side of the gravel road, thence in a south easterly direction along the north side of said road to the east line of said quarter quarter section, thence north along the east line of said quarter quarter section a distance of 12 rods, thence in a northwesterly direction to the place of beginning, containing 2.6 acres, more or less; and also except a tract described as follows: Beginning at the NE Corner of said quarter quarter section, thence running due South 2.69 chains along the East line of said quarter quarter section to the center line of a public road, thence following the meanderings of said road on the following courses: N. 69° 30' W., 3.48 chains, N. 31° 18' W. 1.74 chains to the North boundary of the said quarter quarter section, thence leaving said road and proceeding due East along said north boundary of said quarter quarter section 4.15 chains to the place of beginning, containing 0.77 of an acre, more or less; all the above being in Section 26, Township 11 South, Range 8 East of the Third Principal Meridian, in Hardin County, Illinois, the premises covered by this agreement being 36.73 acres, more or less.

Also three (3) acres off the South side of the South West Fourth (SW¼) of the South West Quarter (SW¼), in Section 23, Township 11 South, Range 8 East of the Third Principal Meridian, in Hardin County, Illinois.

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to September 4th, 1964 all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

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

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

Approved as to form

Charlie Carr (Seal)

Amy Carr (Seal)

ATTEST:

W. L. Bonfield
Its Secretary

THE NEW JERSEY ZINC COMPANY

By _____
Its Vice President

STATE OF ILLINOIS)
) SS:
COUNTY OF HARDIN)

I, Lowden F. Pruett, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Charlie Carr and Amy Carr, his wife

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 4th day of September, 1954.

Lowden F. Pruett
Notary Public

Commission expires April 30, 1957

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, John T. Hourigan, a Notary Public; do hereby certify that C. H. Gamme to me personally known to be the EXECUTIVE Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and Wm. L. Brookfield, personally known to me to be the ASSISTANT Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such EXECUTIVE Vice President and ASSISTANT Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 16th day of September, 1954.

John T. Hourigan
Notary Public

JOHN T. HOURIGAN
NOTARY PUBLIC, State of New York
No. 30-6977000
Qualified in Nassau County
Cert. filed with New York County clerk
Commission Expires March 30, 1956

STATE OF ILLINOIS, } ss. No. 4475
Hardin County

This instrument was filed for record in the Recorder's Office of Hardin County aforesaid, on the 24th day of September A. D. 1954 at 1:45 o'clock P. M., and recorded in Book 5 of Misc. on page 130

J. H. Henry Recorder

Recording Fee $3.75

52 A

THIS AGREEMENT made and entered into on this 7 day of December, 1954 by and between Earl Hubbard and Arvetta Hubbard, his wife, of RFD#3, Elizabethtown, Hardin County, Illinois

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

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals ores, ore-bearing materials and rock of every kind in, under or on all of the following described premises:

A tract of land described as follows: Beginning at a point nine (9) rods west of the northeast corner of the North West Fourth of the North West Quarter of Section Twenty-six (26) Township Eleven (11) South, Range Eight (8) East of the Third Principal Meridian, thence running west along the north line of said forty acre tract a distance of thirty-three (33) rods, thence in a southerly direction a distance of fifteen (15) rods to the north side of the gravel road, thence in a southeasterly direction along the north side of said road to the east line of said forty acre tract, thence north along the east line of said forty acre tract a distance of twelve (12) rods, thence in a northwesterly direction to the place of beginning, the County of Hardin, State of Illinois, containing 3 acres, more or less.

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to December 7, 1964, all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, ~~and the right to purchase surface acreage~~ all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

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

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

Approved as to form

Earl Hubbard (Seal)

Annetta Hubbard (Seal)

ATTEST:

Walter R. Amyx
Its Secretary

THE NEW JERSEY ZINC COMPANY

By
EXECUTIVE Vice President

STATE OF ILLINOIS)
) SS:
COUNTY OF HARDIN)

I, LOWDEN F. PRUETT, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Earl Hubbard and Arvetta Hubbard, his wife,

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 7 day of December, 1954.

Lowden F. Pruett
Notary Public

Commission expires April 30, 1957

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, John T. Hourigan, a Notary Public, do hereby certify that C. H. George to me personally known to be the EXECUTIVE Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and Walter R. Anyan, personally known to me to be the Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such EXECUTIVE Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 7th day of January, 1955.

John T. Hourigan
Notary Public

JOHN T. HOURIGAN
NOTARY PUBLIC, State of New York
No. 30-6977000
Qualified in Nassau County
Cert. filed with New York County clerk
Commission Expires March 30, 1956

No. 48035

STATE OF ILLINOIS, } ss.
Hardin County

This instrument was filed for record in th
Recorder's Office of Hardin County aforesaid, on th
25th day of January
A. D. 1955 at 3:30 o'clock P. M., an
recorded in Book 5 of Misc.
on page 208

L. H. Henry Recorder

Recording Fee $2.75 pd.

THIS AGREEMENT made and entered into on this 8 day of December, 1953, by and between Pet L. Wathen, a widow of Equality, Illinois, and Joseph A. Wathen, a bachelor of St. Louis, Mo., and John L. Wathen and Pauline Wathen, his wife of Chicago, Illinois, and Charles F. Wathen and Florence Wathen, his wife of St. Louis, Mo., and Robert W. Wathen and Freda Wathen, his wife of Equality, Illinois, hereinafter called the Owners, parties of the first part, and THE NEW JERSEY ZINC COMPANY, a New Jersey corporation, authorized to do business in the State of Illinois, party of the second part, hereinafter called the Company:

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals, ores, ore-bearing materials and rock of every kind in, under or on all of the following described premises:

The Northeast Fourth (NE¼) of the Northeast Quarter (NE¼) of Section 22, Township 11 South, Range 8 East of the Third Principal Meridian, in Hardin County, Illinois, 40 acres, more or less.

It Is Understood that the Owners conveyed the fee simple title in and to said premises to the UNITED STATES OF AMERICA by deed dated January 16, 1936, recorded in Deed Record 21, page 451, in the Office of the Recorder of Hardin County, Illinois, reserving, however, in and by the said deed, unto the said granters all iron ore, fluorspar, and all in, upon, or under the said real estate, together with the right to prospect for and remove the same for a period of fifty years from the date of said deed, and the minerals so reserved are the subject matter of this agreement. IT IS FURTHER understood that the Company shall conduct and carry on its operations on said premises in accordance with the rules and regulations prescribed by the Secretary of Agriculture and fully set forth in the deed above referred to.

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to December 8, 1963, all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

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

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

Pet L. Wathen (Seal)
Pet L. Wathen

Charles F. Wathen (Seal)
Charles F. Wathen

Joseph A. Wathen (Seal)
Joseph A. Wathen

Florence Wathen (Seal)
Florence Wathen

John L. Wathen (Seal)
John L. Wathen

Robert W. Wathen (Seal)
Robert W. Wathen

Pauline Wathen (Seal)
Pauline Wathen

Freda Wathen (Seal)
Freda Wathen

Approved as to form
ZBC

ATTEST:
Walter R. Ansay
Its Secretary

THE NEW JERSEY ZINC COMPANY
By
Its Vice President

STATE OF ILLINOIS)
) SS:
COUNTY OF GALLATIN)

I, Lucille D. Pennell, a Notary Public in and for Hardin ~~said~~ County, ~~in~~ the State aforesaid, do hereby certify that Pet L. Wathen, a widow and Robert W. Wathen and Freda Wathen, his wife

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 8 day of December, 1953.

Lucille D. Pennell
Notary Public
Commission expires April 30, 1957

Commission expires April 30, 1957

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, John T. Hourigan, a Notary Public; do hereby certify that C. H. George to me personally known to be the Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and Walter R. Anyan, personally known to me to be the Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 28th day of Dec., 1953.

John T. Hourigan
Notary Public
JOHN T. HOURIGAN
Notary Public, State of New York
No. 30-6977000
Qualified in Nassau County
Certificates filed with New York
County Clerk and Register
Commission expires March 30, 1954

STATE OF Missouri
City
~~COUNTY~~ OF St Louis } SS.

I, Delia G. Gilbert, a Notary Public in and for said County, in the State aforesaid, do hereby certify that

Joseph A. Wathen, a bachelor, and
Charles F. Wathen and Florence Wathen, his wife

personally known to me to be the same person s whose name s subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that They signed, sealed and delivered the said instrument as Their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 12 day of December 1953

My Commission Expires March 1st 1957

Delia G. Gilbert
Notary Public

STATE OF ILLINOIS
COUNTY OF COOK } SS.

I, WILL MAINZER, a Notary Public in and for said County, in the State aforesaid, do hereby certify that

JOHN L. WATHEN AND PAULINE WATHEN, HIS WIFE

personally known to me to be the same persons whose names subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that They signed, sealed and delivered the said instrument as THEIR free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this N day of DECEMBER 1953.

My Commission Expires October 1954

Will Mainzer
Notary Public

STATE OF _____
COUNTY OF _____ } SS.

I, _____, a Notary Public in and for said County, in the State aforesaid, do hereby certify that

_____

personally known to me to be the same person whose name _____ subscribed to the foregoing Lease and OptionAgreement appeared before me this day in person, and acknowledged that he signed, sealed and delivered the said instrument as _____ free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this ___ day of _____ 1953.

_____
Notary Public

STATE OF ILLINOIS, } ss. No. 1088
Hardin County

This instrument was filed for record in the Recorder's Office of Hardin County aforesaid, on the 7th day of January A. D. 1954 at 2:30 o'clock P. M., and recorded in Book 5 of Miscellaneous on page 10

J. H. Henry Recorder

Recording Fee

JUN 2 . 1956

THIS AGREEMENT made and entered into on this 1st day of February, 1954, by and between Arthur B. Cook and Juanita Cook, his wife, of Route No. 3, Elizabethtown, Illinois

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

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals, ores, ore-bearing materials and rock of every kind except oil and gas in, under or on all of the following described premises: A.B.C.

The South East Fourth (SE¼) of the North East Quarter (NE¼), 40 acres, more or less, in Section 22, Township 11 South, Range 8 East of the Third Principal Meridian:

All the surface of, and an undivided 2/3rds interest in the minerals in, upon, and underlying, the following: The East One-half(E½) of the South East Quarter, (SE¼), 80 acres, more or less, and the North West Fourth (NW¼) of the South East Quarter (SE¼) except 4 acres in the North West (NW) Corner thereof, 36 acres more or less, all in Section 22, Township 11 South Range 8 East, of the Third Principal Meridian.

All the above land being in Hardin County, Illinois.

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to February 1, 1959, all the a.n.c. minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

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

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

Arthur B. Cook (Seal)

Jeanita Cook (Seal)

ATTEST:

Walter R. Amyx
Its Secretary

THE NEW JERSEY ZINC COMPANY

By
Its Vice President

STATE OF ILLINOIS)
) SS:
COUNTY OF Hardin)

I, Lowden F. Pruett, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Andrew B. Cook and Juanita Cook, his wife

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 1st day of February, 1954.

Lowden F. Pruett
Notary Public

Commission expires April 30, 1957

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, John T. Hourigan, a Notary Public; do hereby certify that C. H. George to me personally known to be the Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and Walter R. Anyan, personally known to me to be the Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 15th day of February, 1954.

John T. Hourigan
Notary Public
JOHN T. HOURIGAN
Notary Public, State of New York
No. 30-6977000
Qualified in Nassau County
Certificates filed with New York
County Clerk and Register
Commission expires March 30, 1954

STATE OF ILLINOIS, }
Hardin County } ss.

No. 2080

This instrument [illegible] in the Recorder's Office of [illegible] on the 18th day of February A. D. 1954 at 11:45 A. M. recorded in Book 5 of Misc on page 38

L. W. Henry Recorder

Recording Fee .....

RECEIVED
NOV 28 1956

THIS AGREEMENT made and entered into on this 9th day of February, 1954, by and between Clem J. Richter, a widower; Golden Rogers and Ben Rogers, her husband, Philbrey Volkert and Earl Volkert her husband; Hessie Parker and L.D. Parker, her husband of Rosiclare, Hardin County, Ill.; Mary Kirby and Claude Kirby, her husband of St. Louis, St. Louis County, Missouri. DOROTHY MILK AND WALTER E. MILK, OF 1415 N. PRIES AVE., WILMINGTON, CALIF. COUNTY OF LOS ANGELES.

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

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals, ores, ore-bearing materials and rock of every kind in, under or on all of the following described premises, except oil and gas:

An undivided 1/3 interest in the mineral rights on:
The east half of the southeast quarter and the northwest quarter of the southeast quarter, except four (4) acres in the northwest corner thereof, all in Section twenty-two (22) Township 11 South Range 8 East, and containing in the aggregate one hundred and sixteen (116) acres, more or less, situated in Hardin County, Illinois.

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to February 9, 1959, all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises, except oil and gas, together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, and ~~the right to purchase surface acreage~~ all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

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

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

Hepsia Pankey	(Seal)		(Seal)
L. H. Pankey	(Seal)		(Seal)
Mary Kirby	(Seal)	Golden Rogers	(Seal)
Claude Kirby	(Seal)	Ben Rogers	(Seal)
Dorothy Mick	(Seal)	Hildred Valent	(Seal)
Walter E. Mick	(Seal)	Earl Valent	(Seal)

Approved as to form

ATTEST:

Walter P. Cooper
Its Secretary

THE NEW JERSEY ZINC COMPANY

By
Its Vice President

STATE OF ILLINOIS)
) SS:
COUNTY OF Hardin)

I, Sandra F. Pruitt, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Sulan Rodgers and Ben Rodgers, her husband

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 10th day of March, 1954.

Sandra F. Pruitt
Notary Public

Commission expires April 30, 1957

STATE OF ILLINOIS)
) SS:
COUNTY OF Hardin)

I, Sandra F. Pruitt, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Hiedgd Wallbert and Earl Wallbert, her husband

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed sealed and delivered the said instrument as their free and vouluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 19th day of March, 1954.

Sandra F. Pruitt
Notary Public

Commission expires April 30, 1957

STATE OF ILLINOIS)
) SS:
COUNTY OF Hardin)

I, Sandra F. Pruitt, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Josephine Pankey and S.D. Pankey, her husband

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 24th day of May, 1954.

Sandra F. Pruitt
Notary Public

Commission expires April 30, 1957

STATE OF ~~ILLINOIS~~)
) SS:
COUNTY OF Hardin)

I, Sandra F. Pruitt, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Mary Kirby and Claude Kirby, her husband

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 6th day of July, 1954.

Sandra F. Pruitt
Notary Public

Commission expires April 30, 1957.

STATE OF ~~ILLINOIS~~ CALIFORNIA)
) SS:
COUNTY OF LOS ANGELES)

I, Clifford F. Ellis, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Dorothy Mick and Walter E. Mick, her husband

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed sealed and delivered the said instrument as their free and vouluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 29th day of July, 1954.

Clifford F. Ellis
Notary Public
My Comm. Exp. June 9,1958

STATE OF ILLINOIS)
) SS:
COUNTY OF _____)

I, _____, a Notary Public in and for said County, in the State aforesaid, do hereby certify that _____

personally known to me to be the same person whose name are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that he signed, sealed and delivered the said instrument as _____ free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this _____ day of _____, 195_.

_____
Notary Public

STATE OF ILLINOIS)
) SS:
COUNTY OF Pope)

I, Frances Baker, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Clem J. Richter, a widower

personally known to me to be the same person whose name ~~are~~ is subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that he signed, sealed and delivered the said instrument as his free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 9th day of February, 1954.

Frances Baker
Notary Public
My Cmsn Exp 8/19/55

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, John T. Hourigan, a Notary Public; do hereby certify that S. S. Goodwin to me personally known to be the Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and Walter R. Anyan, personally known to me to be the ——— Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such Vice President and ——— Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 23rd day of June, 1955.

John T. Hourigan
Notary Public
JOHN T. HOURIGAN
NOTARY PUBLIC, State of New York
No. 30-6977000
Qualified in Nassau County
Cert. filed with New York County clerk
Commission Expires March 30, 1956

No. 62258

STATE OF ILLINOIS, } ss.
Hardin County

This instrument was filed for record in the Recorder's Office of Hardin County, aforesaid, on the 30th day of June A. D. 1955 at 1:00 o'clock P. M., and recorded in Book 5 of Misc. page 367

J. H. Henry Recorder

Recording Fee $3.75 pd.

6-ACD 294

RECEIVED
JUN 23 1953

THIS AGREEMENT made and entered into on this 7th day of June, 1954, by and between James H. Joyce and Jessie Violet Joyce, his wife, of Stockton, California

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

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals ores, ore-bearing materials and rock of every kind in, under or on all of the following described premises:

An undivided one third interest in and to the following:

The South West Fourth (SW¼) of the South East Quarter (SE¼), in Section 22, (40 acres, more or less);
The North West Fourth (NW¼) of the North East Quarter (NE¼), in Section 27, (40 acres, more or less);

All the above being in Township 11 South, Range 8 East of the Third Principal Meridian, in Hardin County, Illinois.

IT IS UNDERSTOOD AND AGREED that at the time of the acquisition of the fee to the above described lands by the UNITED STATES OF AMERICA only the fluorspar, oil, and iron ore were reserved to the Owners.

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to June 7, 1959, all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

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

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

James H. Joyce (Seal)

Lessie V. Joyce (Seal)

Approved as to form XEC

ATTEST:

Hattie R. Anyon
Its Secretary

THE NEW JERSEY ZINC COMPANY

By
Its Vice President

STATE OF CALIFORNIA)
) SS:
COUNTY OF SAN JOAQUIN)

I, A. Sestoni, a Notary Public in and for said County, in the State aforesaid, do hereby certify that James H. Joyce and Jessie Violet Joyce

personally known to me to be the same person whose name are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 1st day of June, 1954.

A. Sestoni
Notary Public
NOTARY PUBLIC
In and for the County of San Joaquin, State of California
My Commission Expires March 17 1956

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, John T. Hourigan, a Notary Public; do hereby certify that C. H. George to me personally known to be the Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and Walter R. Angus, personally known to me to be the Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 22nd day of June, 1954.

John T. Hourigan
Notary Public
JOHN T. HOURIGAN
NOTARY PUBLIC, State of New York
No. 30-6977000
Qualified in Nassau County
Cert. filed with New York County clerk
Commission Expires March 30, 1956

STATE OF ILLINOIS, } ss. No. 4217
Hardin County

This instrument was filed for record in the Recorder's Office of Hardin County aforesaid, on the 29th day of June A. D. 1954 at 8:20 o'clock A. M., and recorded in Book 5 of Miscellaneous on page 102

J. H. Henry, Recorder

Recording Fee $2.75

JJA

RECEIVED
JUN 3 1956

WED

THIS AGREEMENT made and entered into on this 7th day of June, 1954 by and between Effie Drumm and Willie B. Drumm, her husband, of RFD#3, Elizabethtown, Illinois

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

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals, ores, ore-bearing materials and rock of every kind in, under or on all of the following described premises:

An undivided one third interest in and to the following:

The South West Fourth (SW¼) of the South East Quarter (SE¼), in Section 22, (40 acres, more or less); The North West Fourth (NW¼) of the North East Quarter (NE¼), in Section 27, (40 acres, more or less);
All the above being in Township 11 South, Range 8 East of the Third Principal Meridian, in Hardin County, Illinois.

IT IS UNDERSTOOD AND AGREED that at the time of the acquisition of the fee to the above described lands by the UNITED STATES OF AMERICA only the fluorspar, oil, and iron ore were reserved to the Owners.

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to JUNE 7, 19~~64~~ 59, all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, ~~and the right to purchase surface acreage,~~ all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

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

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

Willie E. Drumm (Seal)

Effie Drumm (Seal)
mark

Irene Drumm

Witnesses to her mark - Effie Drumm

Appr. as to form
XBC

ATTEST:

Walter R. Ayres
Its Secretary

THE NEW JERSEY ZINC COMPANY

By _____
Its Vice President

STATE OF ILLINOIS)
) SS:
COUNTY OF HARDIN)

I, Lowden F. Pruett, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Effie Drumm and Willie E. Drumm, her husband,

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 7th day of June, 1954.

Lowden F. Pruett
Notary Public

Commission expires April 30, 1957

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, John T. Hourigan, a Notary Public; do hereby certify that C. H. Gerrie to me personally known to be the Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and Walter R. Anyan, personally known to me to be the Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 22nd day of June, 1954.

John T. Hourigan
Notary Public
JOHN T. HOURIGAN
NOTARY PUBLIC, State of New York
No. 30-6977000
Qualified in Nassau County
Cert. filed with New York County clerk
Commission Expires March 30, 1956

No. 4217

STATE OF ILLINOIS, }
Hardin County } ss.

This instrument was filed for record in the Recorder's Office of Hardin County, aforesaid, on the 29th day of June A. D. 1954 at 2:30 o'clock P.M., and recorded in Book 5 of Mortgages on page 108

D. H. Henry
Recorder

Recording Fee $2.75

3-4

HJ
WD
CD

JUN 2 6 1954

THIS AGREEMENT made and entered into on this 3rd day of June, 1954 by and between Catherine Davis and Wayne Davis, her husband, of Karber's Ridge, Illinois; and Harvey Joyce, divorced and not remarried, of Rosiclare, Illinois,

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

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals, ores, ore-bearing materials and rock of every kind in, under or on all of the following described premises:

An undivided two ninths interest in and to the following:

The South West Fourth (SW¼) of the South East Quarter (SE¼), in Section 22, (40 acres, more or less); The North West Fourth (NW¼) of the North East Quarter (NE¼), in Section 27, (40 acres, more or less);

All the above being in Township 11 South, Range 8 East of the Third Principal Meridian, in Hardin County, Illinois.

IT IS UNDERSTOOD AND AGREED that at the time of the acquisition of the fee to the above described lands by the UNITED STATES OF AMERICA only the fluorspar, oil, and iron ore were reserved to the Owners.

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to June 3, 1959, all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, ~~and the right to purchase surface acreage~~, all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

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

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

Catherine Davis (Seal) Wayne Davis (Seal)

Harvey Joyce (Seal)

Approved as to form XBC

ATTEST:

Walter R. Ayman
Its Secretary

THE NEW JERSEY ZINC COMPANY

By
Its Vice President

STATE OF ILLINOIS)
) SS:
COUNTY OF HARDIN)

I, Lowden F. Pruett, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Catherine Davis and Wayne Davis, her husband; and Harvey Joyce, divorced and not remarried

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 3rd day of June, 1954.

Lowden F. Pruett
Notary Public

Commission expires April 30, 1957

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, John T. Hourigan, a Notary Public; do hereby certify that C. H. George to me personally known to be the Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and Walter R. Anyan, personally known to me to be the Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 22nd day of June, 1954.

John T. Hourigan
Notary Public

JOHN T. HOURIGAN
NOTARY PUBLIC, State of New York
No. 30-6977000
Qualified in Nassau County
Cert. filed with New York County clerk
Commission Expires March 30, 1956

No. 4220

STATE OF ILLINOIS, } ss.
Hardin County

This [illegible] for record in the Recorder's [illegible] and on the 20th day of June A. D. 1954 at 2:15 o'clock P. M., and recorded in Miscellaneous Book 5 on page 104

J. H. Henry Recorder

Recording Fee $3.75 paid

JUN 26

THIS AGREEMENT made and entered into on this 26th day of February, 1954, by and between ~~Emma Helen Edwards and Ben Edwards, her husband, of Terre Haute, Indiana~~ Erma E. H. E. B. E.

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

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals, ores, ore-bearing materials and rock of every kind in, under or on all of the following described premises:

An undivided one ninth interest in and to the following:

The South West Fourth (SW¼) of the South East Quarter (SE¼), in Section 22, (40 acres, more or less); The North West Fourth (NW¼) of the North East Quarter (NE¼), in Section 27, (40 acres, more or less);

All the above being in Township 11 South, Range 8 East of the Third Principal Meridian, in Hardin County, Illinois.

IT IS UNDERSTOOD AND AGREED that at the time of the acquisition of the fee to the above described lands by the UNITED STATES OF AMERICA only the fluorspar, oil, and iron ore were reserved to the owners.

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to February 26, 1964, all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

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

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

Ben Edwards (Seal)

Esma Helen Edwards (Seal)

Approved as to form
KBC

ATTEST:

Walter R. Amyan
its Secretary

THE NEW JERSEY ZINC COMPANY

By
its Vice President

STATE OF ~~ILLINOIS~~ INDIANA)
) SS:
COUNTY OF Vigo)

I, Rosalinda meyer, a Notary Public in and for said County, in the State aforesaid, do hereby certify that ~~Sam Helen Edwards and Ben Edwards, her husband, of Vincennes, Indiana,~~

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 26 day of February, 1954.

My Commission Expires June 4, 1957

Rosalinda Meyer
Notary Public

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, John T. Hourigan, a Notary Public; do hereby certify that C. H. George to me personally known to be the Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and Walter R. Anyan, personally known to me to be the Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 29th day of March, 1954.

John T. Hourigan
Notary Public

JOHN T. HOURIGAN
Notary Public, State of New York
No. 30-6977000
Qualified in Nassau County
Certificates filed with New York
County Clerk and Register
Commission expires March 30, 1954

No. 3096

STATE OF ILLINOIS, }ss.
Hardin County

This instrument was filed for record in the Recorder's Office of Hardin County aforesaid, on the 5th day of April A. D. 1954 at 9:15 o'clock A. M., and recorded in Book 5 of Misc. on page 65

J. H. Henry Recorder

Recording Fee $3.75

THIS AGREEMENT made and entered into on this 26th day of February, 1954, by and between ~~Emma~~ Erma Helen Edwards and Ben Edwards, her husband, of Terre Haute, Indiana

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

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals, ores, ore-bearing materials and rock of every kind in, under or on all of the following described premises:

An undivided one ninth interest in and to the following:

The South West Fourth (SW¼) of the South East Quarter (SE¼), in Section 22, (40 acres, more or less); The North West Fourth (NW¼) of the North East Quarter (NE¼), in Section 27, (40 acres, more or less);

All the above being in Township 11 South, Range 8 East of the Third Principal Meridian, in Hardin County, Illinois.

IT IS UNDERSTOOD AND AGREED that at the time of the acquisition of the fee to the above described lands by the UNITED STATES OF AMERICA only the fluorspar, oil, and iron ore were reserved to the owners.

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to February 26, 1964, all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

B.E. E.H.E.

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

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

Ben Edwards (Seal)

Emma Helen Edwards (Seal)

Approved as to form
HSP

ATTEST:

Walter R. Runyan
its Secretary

THE NEW JERSEY ZINC COMPANY

By
its Vice President

STATE OF ~~ILLINOIS~~ INDIANA)
) SS:
COUNTY OF Vigo)

I, Rosalinde Meyer, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Helen Edwards and Ben Edwards, her husband, of Vincennes, Indiana,

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 26 day of February, 1954.

My Commission Expires June 4, 1957

Rosalinde Meyer
Notary Public

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, John T. Hourigan, a Notary Public; do hereby certify that C. H. George to me personally known to be the Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and Walter R. Anyan, personally known to me to be the Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 29th day of March, 1954.

John T. Hourigan
Notary Public
JOHN T. HOURIGAN
Notary Public, State of New York
No. 30-6977000
Qualified in Nassau County
Certificates filed with New York
County Clerk and Register
Commission expires March 30, 1954

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK 38, N. Y.

STATE OF ILLINOIS, }
Hardin County } ss.

No. 3915

This instrument was filed for record in the Recorder's Office of Hardin County aforesaid, on the 25th day of March A. D. 1954 at 10:30 o'clock A. M., and recorded in Book 5 of Misc. on page 60

J. H. Henry
Recorder

Recording Fee, 3.75 pd.

5 A

No short form executed

JUN 2 0 1958

LEASE AND OPTION

This AGREEMENT made and entered into this 19th day of November, 1953, by and between Harold Price and Hester Price, his wife,

of Hardin County, State of Illinois, parties of the first part, hereinafter called the "Owners," and THE NEW JERSEY ZINC COMPANY, a Corporation qualified to do business in Illinois, party of the second part, hereinafter called the "Company."

1. In consideration of Three Hundred Eight dollars ($ 308.00) cash in hand paid, the receipt whereof is hereby acknowledged, the Owners hereby lease and grant to the Company for a period of two years from the date hereof the rights hereinafter set forth with respect to the following described premises:

The South one-half (S½) of the Northwest Quarter (NW¼), except that part thereof described as follows: All that part of the Southeast Quarter (SE¼) of the Northwest Quarter (NW¼) that lies northeast of the gravel road as it now runs (said exception containing four acres, more or less); and one (1) acre, more or less, in the Northwest corner of the Northwest Quarter (NW¼) of the Southwest Quarter (SW¼) described as follows: Beginning at the Northwest corner of said Northwest Quarter (NW¼) of said Southwest Quarter (SW¼), thence running south to the creek, thence in a northeasterly direction with said creek to the north line of said Northwest Quarter (NW¼) of said Southwest Quarter (SW¼), thence west on said north line to the place of beginning, containing in the aggregate seventy-seven (77) acres, more or less, all of said land being situated within Section Twenty-Two (22), Township Eleven (11) South, Range Eight (8) East of the Third Principal Meridian, in the County of Hardin in the State of Illinois.

2. The Company shall have, the exclusive right to prospect for, explore, examine, mine or remove, process and store all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, (all of which are hereinafter referred to as Minerals), in, under or on the premises, including the following rights for said purposes: the right to enter upon the premises with workmen, tools, rigs, appliances and other property necessary or convenient for said purposes; the right to remove samples; the right, insofar as the Owners have the right to grant the same, to utilize and divert water upon or appurtenant to the premises; the right to drain into any water course on the premises, and to drain through and from the premises, any water from operations conducted therein or thereon or from other properties in, or with respect to which, the Company has or may acquire any right or interest; the right to use so much surface as may be necessary for the said purposes or any thereof; the free and uninterrupted right of ingress and egress in, on, from, through, under and across the premises for said purposes, or any thereof, and for the purpose of conducting operations on, in or under any other properties in, or with respect to which, the Company has or may acquire any right or interest; and all other rights of any kind necessary or convenient in order to exercise the rights hereinabove set forth. It is understood that the Company shall have title to any and all waste and tailings resulting from the exercise of the aforesaid rights.

3. The Company may extend this agreement (hereinafter sometimes referred to as "lease") for additional periods of one year each, by tendering to the Owners the sum of One Hundred Fifty-Four dollars ($154.00) for each yearly extension, on or before the first day of each such year period. The

provisions of this agreement shall be in full force and effect during each extended period. Any sums paid or tendered in accordance with this paragraph and the sum paid upon execution hereof shall be considered as advance royalties and shall go to reduce the subsequent royalty payments to become due hereunder and shall be applied against the purchase price in the event that the option to purchase hereinafter set forth is exercised. Payment or tender may be made by Company check.

4. The Company will pay for all damages done by its mining, removing and prospecting activities to the fences, buildings, structures and growing crops on the premises while it holds said lease. If the parties hereto should not be able to agree upon the amount or extent of such damage, the same shall be determined by arbitration, the Owners to select one arbitrator, the Company to select one arbitrator and the two arbitrators so selected to select a third arbitrator. The award made by a majority of said arbitrators shall be binding and conclusive upon the parties hereto. Should the Company exercise its option to purchase, the deed shall contain the foregoing provisions as to damages.

5. Minerals removed from the leased premises may be commingled and may be processed with other Minerals, as the Company may elect. However, before commingling, any ores from the leased premises shall be weighed and assayed. All net weights shall be determined by the Company's scales or on public scales in the area and shall be computed on a dry weight basis. The Owners shall have the right to check weights and assays at any reasonable time.

6. The Company agrees to pay royalties to the Owners on all Minerals mined or removed from the leased premises during the term of this lease at the rate of twelve and one-half (12.5%) per cent

of the value thereof in their crude state at the ground level as follows: if such crude Minerals are sold, the "value" shall be deemed to be the gross price received from such sale less all surface transportation and handling costs; if they are not sold and the Company processes such crude Minerals or has them processed, the "value" thereof shall be the price which responsible buyers in the area would have paid for such crude Minerals at the time and place the same were raised from underground. All royalties shall be due and payable on the last day of the month following the month in which said crude Minerals are removed from the leased premises. All royalties paid to Owners shall be deductible from the purchase price herein described in the event the Company shall exercise its option to purchase as set forth in Paragraph 10 hereof.

Owners shall have no interest in any subsidy, bonus, premium, or similar payment made by any government or any agency thereof with respect to the Minerals mined or removed from the leased premises and no royalty shall be paid on any such payment received by the Company.

7. At the termination of this lease, other than by the exercise of the option to purchase, the Company will, if requested by the Owners within 30 days of such termination, furnish to the Owners a factual record of any holes drilled in the premises together with a map showing the location of such holes.

8. The Company agrees to keep an accurate record of all Minerals mined or removed from the leased premises and of all calculations relative to royalty payments hereunder. Such records may be inspected by the Owners at all reasonable times.

9. In case of failure of the Company to keep and perform the terms and obligations of this lease, the Owners may give thirty (30) days written notice of the breach, violation or default complained of, in which case the Owners shall specify the details of

the same in order that the Company may be fully informed with respect thereto, and the Company shall have said thirty (30) days within which to remedy the same, if it can reasonably be remedied within such period, and if not, the Company shall within said thirty (30) days period take action to remedy the same and diligently prosecute it to completion. In the event the Company shall fail to do so, then this lease shall terminate at the option of the Owners which shall be evidenced by notice in writing to the Company, and which remedy shall be exclusive. No forfeiture, however, shall be asserted or based on a breach, violation or default hereunder or on a failure to remedy or correct the same, when occasioned by fire, riot or civil commotion, strikes or other labor controversies, inability to obtain labor or materials or equipment on the open market, delay of carriers, breakage of machinery or equipment, government regulation or interference, war, whether declared or not, acts of nature, or any other cause beyond the control of the Company, whether or not of a like nature to the foregoing and whether or not the same could have been foreseen or prevented.

10. The Owners also grant to the Company the exclusive option to purchase at any time during the term of this lease or any extension thereof but not later than November 1974, 19[illegible], for Eleven Thousand Five Hundred Fifty dollars ([illegible]1,550.00), all Minerals in, under or on the premises, together with the rights mentioned in Paragraph 2 hereof.

11. The Company shall have the right to remove from the premises all of its property of every kind and description within 60 days after the expiration or termination of this lease other than by the exercise of the option to purchase. If the Company exercises its option to purchase, the deed shall provide that the Company may at any time or times remove any or all property of every kind and description which it at any time may have placed upon the premises.

12. Should the Company elect to purchase hereunder, it will mail written notice to the Owners, including therein the identification of any surface which it desires to purchase. The said notice shall set forth the time and place for delivery by the Owners of a proper deed, which time shall in any case be not more than sixty days subsequent to the expiration of the lease period then in effect. The Owners will deliver to the Company a General Warranty deed with the following covenants: that at the time of making and delivery of such deed they were lawfully seized of an indefeasible estate in fee simple in and to the premises therein described, and had good right and full power to convey the same; that the same were then free from all encumbrances; that they warrant to the Company, its successors and assigns, the quiet and peaceable possession of such premises, and will defend the title thereto against all persons who may lawfully claim the same; that the Owners have committed no act or acts which will at any time in the future encumber, or cause a lien to be placed against, the premises; and for further assurances of title. Said deed will convey to the Company, by metes and bounds description to be furnished by the Company, a good, marketable title to the said Minerals, together with the rights herein referred to, and to so much of the surface as the Company may, in accordance with the provisions of Paragraph 14 hereof, elect to purchase. Upon purchase of said surface area as above provided the Company shall have the entire ownership of that portion of the premises with respect to which the surface purchase is made, and the deed shall so provide. Upon delivery of the deed the Company will pay to the Owners the agreed purchase price which may be due under Paragraphs 10 and 14 hereof, less any monies deductible as provided for in Paragraphs 3 and 6 hereof. If the

title tendered is not, in the judgment of the Company, a good, marketable title, the Company may notify the Owners, and if the defects are not promptly remedied, the Company may proceed to remedy the defects and retain sufficient from the purchase price to cover the necessary costs thereof.

13. During the original term hereof, or any extension thereof, the Company may terminate this lease at any time by giving written notice thereof to the Owners, and thereupon any liabilities or obligations of the Company hereunder, excepting those that may have already accrued, shall immediately cease and terminate. Such notice shall be of sufficient formality to be admitted on record and to release the premises from the terms of this lease.

14. The Owners also grant to the Company the right to purchase not exceeding 20 acres of surface of the above described premises by the payment of Seventy-Five dollars ($ 75.00) per acre, the location thereof to be determined by the Company and designated by metes and bounds. Such surface area so designated shall not however include property upon which the present residence and attendant outbuildings are located, or within a distance of 300 feet of any such building. The Company may purchase such surface area only if it exercises the option to purchase set forth in Paragraph 10 hereof, and if it desires to purchase such surface area, it must do so at the time it exercises said option.

15. Notices and tenders to the Owners pursuant hereto shall be addressed to them at Route 3, Elizabeth Town, ~~Karbers Ridge~~, Illinois. Notice to the Company shall be addressed to it at No. 160 Front Street, New York 38, New York. Either party may, by written notice to the other, designate another address to which notice or tender is to be sent. Any notice or tender shall be deemed given or made when mailed by registered mail, postage prepaid, addressed as above provided, or when delivered personally to either one of the Owners.

16. The parties hereto agree that the whole agreement between them is written herein and in a short form agreement of even date herewith which is intended to be recorded, and the parties hereto are not bound by any agreements, understandings or conditions otherwise than as set forth herein and in said short form agreement.

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

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

Harold Price (Seal)

Hester Price (Seal)

THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation

By

Its C. H. George
VICE PRESIDENT

Approved as to form
KBC

Attest:
Walter R. Anyan
Walter R. Anyan Secretary.

STATE OF ILLINOIS)
) SS:
COUNTY OF Hardin)

I, Lowden F. Pruett, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Harold Price and Hester Price,

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 19th day of November, 1953.

Commission expires April 30, 1957.

Lowden F. Pruett
Notary Public

[redacted]

[redacted]

STATE OF NEW YORK,)
) SS.
County of New York.)

I, JOHN T. HOURIGAN, A Notary Public, do hereby certify that C. H. GEORGE to me personally known to be the Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and WALTER R. ANYAN, personally known to me to be the Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing instrument, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered such instrument as such Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

GIVEN under my hand and seal this 30th day of November, 1953.

John T. Hourigan
Notary Public

JOHN T. HOURIGAN
Notary Public, State of New York
No. 30-6977000
Qualified in Nassau County
Certificates filed with New York
County Clerk and Register
Commission expires March 30, 1954

My Commission expires _____

No. 787

STATE OF ILLINOIS, }
Hardin County } ss.

This instrument was filed for record in the Recorder's Office of Hardin County aforesaid, on the 8th day of December A. D. 1953 at 3:00 o'clock P. M., and recorded in Book 5 of Misc. on page 4

L. H. Henry Recorder

Recording Fee

6-ACD1 dt

THIS AGREEMENT made and entered into on this 21st day of December, 1953, by and between Charles Newell Smith and Freda Smith, his wife of Route #3, Elizabethtown, Illinois CNS FS

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

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals, ores, ore-bearing materials and rock of every kind in, under or on all of the following described premises:

All of the real estate which we own situated in the Northwest Quarter (NW¼) of the Southeast Quarter (SE¼) of Section Twenty-two (22), Township Eleven (11) South, Range Eight (8) East, which parcel of real estate is described on previous deeds as being a piece of land out of the Northwest corner of said Northwest Quarter (NW¼) of the Southeast Quarter (SE¼), containing four (4) acres more or less, and described as follows: Beginning at the Northwest corner of said forty (40) acre tract, thence running East and South with the public road as far as the land is cleared and thence back to the line;

All of the Southwest Quarter (SW ¼) of Section Twenty-two (22) Township Eleven (11) South, Range Eight (8) East, containing 160 acres, more or less,
containing in all 164 acres, more or less, all situated in the County of Hardin, in the State of Illinois.

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to **December 21**, 1963, all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

C N S
F S

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

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

Grosvenor Lowell Smith (Seal)

Frida Smith (Seal)

Approved as to form
ZKC

ATTEST:

Walter R. Ayman
its Secretary

THE NEW JERSEY ZINC COMPANY

By
its Vice President

STATE OF ILLINOIS)
) SS:
COUNTY OF HARDIN)

I, Lowden F.Pruett, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Charles Newell Smith and Freda Smith, his wife of RFD #3, Elizabethtown, Ill.,

personally known to me to be the same persons whose name s are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 21st day of December, 1953.

Lowden F. Pruett
Notary Public

Commission expires April 30, 1957

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, John T. Hourigan, a Notary Public; do hereby certify that C. H. George to me personally known to be the Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and Walter R. Anyan, personally known to me to be the Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 14th day of January, 1954.

John T. Hourigan
Notary Public
JOHN T. HOURIGAN
Notary Public, State of New York
No. 30-6977000
Qualified in Nassau County
Certificates filed with New York
County Clerk and Register
Commission expires March 30, 1954

STATE OF ILLINOIS, } ss. No.....
Hardin County

This instrument was filed for record in the Recorder's Office of Hardin County aforesaid, on the 19th day of January A. D. 1954 at 9:00 o'clock A. M. and recorded in Book 5 of Misc on page 18

L. H. Henry Recorder

Recording Fee .....

THIS AGREEMENT made and entered into on this 25 day of January, 1954, by and between Milford Ginger and Bertha Ginger, his wife

_____,

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

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals, ores, ore-bearing materials and rock of every kind in, under or on all of the following described premises:

> All that part of the South East Fourth (SE¼) of the North West Quarter(NW¼) that lies northeast of the gravel road as it now runs, in Section 22 Township 11 South, Range 8 East of the Third Principal Meridian, in Hardin County, Illinois, containing 4 acres, more or less.

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to January 25, 1964 all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

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

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

Milford Gingras (Seal)

Bertha Gingras (Seal)

ATTEST:

Walter R. Auman
Its Secretary

THE NEW JERSEY ZINC COMPANY

By
Its Vice President

STATE OF ILLINOIS)
) SS:
COUNTY OF HARDIN)

I, Lowden F. Pruett, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Wilford Ginger and Bertha Ginger, his wife

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as Their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 25 day of January, 1954.

Lowden F. Pruett
Notary Public

Commission expires April 30, 1957

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, John T. Hourigan, a Notary Public; do hereby certify that C. H. George to me personally known to be the Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and Walter R. Anyan, personally known to me to be the Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 5th day of February, 1954.

J. T. Hourigan
Notary Public
JOHN T. HOURIGAN
Notary Public, State of New York
No. 30-6977000
Qualified in Nassau County
Certificates filed with New York
County Clerk and Register
Commission expires March 30, 1954

STATE OF ILLINOIS, } ss. No. 2069
Hardin County

This instrument was filed for record in the Recorder's Office of the county aforesaid, on the 15th day of February A. D. 1954 at 2:00 o'clock P. M., and recorded in Book 5 of Misc on page 25

J. H. Henry Recorder

Recording Fee $3.75

74

RECEIVED
JUN 26 1956

THIS AGREEMENT made and entered into on this 12th day of December, 1953 by and between Jesse A. Milligan Beatrice Milligan, his wife, of Route #3, Elizabethtown, Illinois,

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

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals, ores, ore-bearing materials and rock of every kind in, under or on all of the following described premises:

The East one-half of the Northeast Quarter (E½ NE¼) Section Twenty-one (21), Township Eleven (11) South, Range Eight (8) East of the Third Principal Meridian, situated in the County of Hardin, in the State of Illinois, except five (5) acres in the southwest corner of the southeast quarter (SE¼) of said northeast quarter (NE¼).

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to December 12, , 1963, all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, and the right to purchase surface acreage, all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

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

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

Jesse A Milligan (Seal)

Beatrice Milligan (Seal)

Approved as to form KBC

ATTEST: Walter P. Runyan
its Secretary

THE NEW JERSEY ZINC COMPANY

By
Its Vice President

STATE OF ILLINOIS)
) SS:
COUNTY OF Bordin)

I, Gunhan F. Pennell, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Jesse H. Milligan and Beatrice Milligan his wife,

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 12 day of December, 1953.

Gunhan F. Pennell
Notary Public

Commission expires April 30, 1957

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, JOHN T. HOURIGAN, a Notary Public; do hereby certify that C. H. GEORGE to me personally known to be the Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and WALTER R. ANYAN, personally known to me to be the Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 22nd day of December, 1953.

John T. Hourigan
Notary Public
JOHN T. HOURIGAN
Notary Public, State of New York
No. 30-6977000
Qualified in Nassau County
Certificates filed with New York
County Clerk and Register
Commission expires March 30, 1954

STATE OF ILLINOIS, } ss. No.
Hardin County

This instrument was filed for record in the Recorder's Office of Hardin County aforesaid, on the 7th day of January A. D. 1954 at 3:30 o'clock P. M., and recorded in Book 5 of Misc on page 12

J. H. Henry Recorder

Recording Fee

RECEIVED
JUN 2 6 1973

THIS AGREEMENT made and entered into on this 14th day of September, 1954, by and between Verba Dusch, divorced and not remarried, of Qulin, Butler County, Missouri

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

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, but not beyond September 14, 1959, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, all the minerals, mineral substances, metals ores, ore-bearing materials and rock of every kind in, under or on all of the following described premises: X V. D.

The North East Fourth (NE¼) of the North West Quarter (NW¼) of Section 21, Township 11 South, Range 8 East of the Third Principal Meridian, in Hardin County, Illinois, 40 acres, more or less. X V. D.

the right of ingress and egress, V.D.
together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to September 14, 1959, all the V.D.
minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises ~~together with the right to prospect for, mine or remove, produce or~~ ~~extract the same, together with the right of ingress and egress~~ and V.D.
the right to purchase all of the surface acreage, all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

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

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

Approved as to form

Verba Dusch (Seal)

_____ (Seal)

ATTEST:

Walter P. Cheyan
its Secretary

THE NEW JERSEY ZINC COMPANY

By _____
EXECUTIVE ~~Vice~~ Vice President

STATE OF ILLINOIS)
) SS:
COUNTY OF Hardin)

I, Lourdan F. Pruitt a Notary Public in and for said County, in the State aforesaid, do hereby certify that Verba Lusch, divorced and not remarried

personally known to me to be the same person whose name ~~are~~ is subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that she signed, sealed and delivered the said instrument as her free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 5th day of October, 1954.

Lourdan F. Pruitt
Notary Public

Commission expires April 30, 1957

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, Richard J. Mackessy, a Notary Public; do hereby certify that C. H. Genrer to me personally known to be the EXECUTIVE Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and Walter R. Anuan, personally known to me to be the EXECUTIVE Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 21st day of October, 1954.

Richard J. Mackessy
Notary Public

RICHARD J. MACKESSY
NOTARY PUBLIC State of New York
No. 60-7654700
Qualified in Westchester County
Cert. filed in New York County
Commission expires March 30, 1956

No. 4685

STATE OF ILLINOIS,
Hardin County } ss.

This instrument was filed for record in the Recorder's Office of Hardin County aforesaid, on the 29th day of November A. D. 1954 at 8:00 o'clock A. M. and recorded in Book 5 of Misc on page 192

L. H. Henry Recorder

Recording Fee $3.25

34 A

THIS AGREEMENT made and entered into on this 24thday of June, 1954, by and between Lucy Joyce and James Joyce, her husband, of RFD # 3, Elizabethtown, Illinois

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

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals ores, ore-bearing materials and rock of every kind except oil and gas, in, under or on all of the following described premises:

An undivided one-seventh interest in and to The East One-half (E½) of the North East Quarter (NE¼) of Section 27, Township 11 South, Range 8 East of the Third Principal Meridian, in Hardin County, Illinois, 80 acres, more or less.

IT IS AGREED that while this Agreement recites that it covers an undivided one-seventh interest in and to the minerals in, on and under the above-described premises (except oil and gas), it is the intent of the Owners that all their interest, whatever it may be, shall be subject to this Agreement. If it is subsequently determined that the interest of the Owners in said minerals exceeds one-seventh, then the fraction of "one-seventh" appearing above herein shall be deemed to be amended so as to reflect the Owners' increased interest.

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to June 24, 1959, all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, ~~the right to purchase surface rights~~, all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

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

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

Lucy Joyce (Seal)

James Joyce (Seal)

Approved as to form

ATTEST:

Walter P. Amyan
its Secretary

THE NEW JERSEY ZINC COMPANY

By
EXECUTIVE Vice President

STATE OF ILLINOIS)
) SS:
COUNTY OF HARDIN)

I, Lowden F. Pruett, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Lucy Joyce and James Joyce, her husband

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 24th day of June, 1954.

Lowden F. Pruett
Notary Public

Commission expires April 30, 1957

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, Richard J. Mackessy, a Notary Public; do hereby certify that C. H. Gerrer to me personally known to be the EXECUTIVE Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and Walter R. Anyan, personally known to me to be the Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such EXECUTIVE Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 22nd day of July, 1954.

Richard J. Mackessy
Notary Public

RICHARD J. MACKESSY
NOTARY PUBLIC State of New York
No. 60-7654200
Qualified in Westchester County
Cert. filed in New York County
Commission expires March 30, 1956

STATE OF ILLINOIS, } ss. No. 4210
Hardin County

This instrument was filed for record in the Recorder's Office of Hardin County aforesaid, on the 27th day of July A. D. 1957 at 8:30 o'clock A M., and recorded in Book 5 of Misc on page 115

L. H. Henry
Recorder

Recording Fee $3.75

6-ACD-364

RECEIVED
JUN 2 1956

THIS AGREEMENT made and entered into on this 2nd day of September, 1954, by and between Nora Bennett and Gordon Bennett, her husband, of Rosiclare, Hardin County, Illinois

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

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals ores, ore-bearing materials and rock of every kind in, under or on all of the following described premises:

An undivided one-seventh interest in and to the East one-half (E½) of the North East Quarter (NE¼) of Section 27, Township 11 South, Range 8 East of the Third Principal Meridian, in Hardin County, Illinois, 80 acres, more or less.

IT IS AGREED that while this Agreement recites that it covers an undivided one-seventh interest in and to the minerals in, on and under the above-described premises (except oil and gas), it is the intent of the Owners that all their interest, whatever it may be, shall be subject to this Agreement. If it is subsequently determined that the interest of the Owners in said minerals exceeds one-seventh, then the fraction of "one-seventh" appearing above herein shall be deemed to be amended so as to reflect the Owners' increased interest.

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to September 2nd, 1959, all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, except oil and gas in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, ~~and the right to purchase surface acreage~~ all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

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

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

Mara Bennett (Seal)

Gordon Bennett (Seal)

ATTEST:

THE NEW JERSEY ZINC COMPANY

By

Assistant Secretary

Executive Vice President

STATE OF ILLINOIS)
) SS:
COUNTY OF HARDIN)

I, Lowden F. Pruett, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Nora Bennett and Gordon Bennett, her husband,

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 2nd day of September, 1954.

Lowden F. Pruett
Notary Public

Commission expires April 30, 1957

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, John T. Hourigan, a Notary Public; do hereby certify that J. H. Gaskill to me personally known to be the EXECUTIVE Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and Wm. L. Brookfield, personally known to me to be the ASSISTANT Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such EXECUTIVE Vice President and ASSISTANT Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 16th day of September, 1954.

John T. Hourigan
Notary Public
JOHN T. HOURIGAN
NOTARY PUBLIC, State of New York
No. 30-6977000
Qualified in Nassau County
Cert. filed with New York County clerk
Commission Expires March 30, 1956

STATE OF ILLINOIS, } ss. No. 4489
Hardin County

This instrument was filed for record in the Recorder's Office of Hardin County aforesaid, on the 30th day of September A. D. 1954 at 9:30 o'clock A. M. and recorded in Book 5 of Misc. on page 132

J. H. Henry Recorder

Recording Fee $3.75

424

JUN 2 5 1956

THIS AGREEMENT made and entered into on this ~~[illegible]~~ 2nd day of SEPTEMBER, 1954, by and between ~~Lily~~ William Henderson and James Henderson, her husband, of Evanston, Cook County, Illinois

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

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals, ores, ore-bearing materials and rock of every kind except oil and gas in, under or on all of the following described premises:

An undivided one-seventh interest in and to The East One-half (E½) of the North East Quarter (NE¼) of Section 27, Township 11 South, Range 8 East of the Third Principal Meridian, in Hardin County, Illinois, 80 acres, more or less.

IT IS AGREED that while this Agreement recites that it covers an undivided one-seventh interest in and to the minerals in, on and under the above-described premises (except oil and gas), it is the intent of the Owners that all their interest, whatsever it may be, shall be subject to the Agreement. If it is subsequently determined that the interest of the Owners in said minerals exceeds one-seventh, then the sums mentioned in Paragraphs 1, 3 and 10 hereof, being figures computed at 1/7th of the entire respective amounts, shall be deemed to be amended as to reflect the Owners increased interest and the fractions set forth in Paragraphs 1 and 6 hereof shall also be deemed so amended; and any payments previously made hereunder to the Owners by the Company, which would have been greater had the Owners' interest been reflected as herein determined, shall be deemed so increased and the excess hereunder over the payments previously made shall become immediately due and payable.

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to SEPTEMBER 2ND, 1959, all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

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

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

Approved as to form

Lillian Henderson (Seal)

James Henderson (Seal)

ATTEST:

ASSISTANT Secretary

THE NEW JERSEY ZINC COMPANY

By

EXECUTIVE Vice President

STATE OF ILLINOIS)
) SS:
COUNTY OF COOK)

I, Lowden T. Pruett, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Lillian Henderson and James Henderson, her husband

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 2nd day of September, 1954.

Lowden T. Pruett
Notary Public

Commission expires April 30, 1957

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, John T. Hourigan, a Notary Public; do hereby certify that C. H. Gamm to me personally known to be the EXECUTIVE Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and Wm. L. Brookfield, personally known to me to be the ASSISTANT Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such EXECUTIVE Vice President and ASSISTANT Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 16th day of September, 1954.

John T. Hourigan
Notary Public
JOHN T. HOURIGAN
NOTARY PUBLIC, State of New York
No. 30-6977000
Qualified in Nassau County
Cert. filed with New York County clerk
Commission Expires March 30, 1956

STATE OF ILLINOIS, }ss. No. 4476
Hardin County

This instrument was filed for record in the Recorder's Office of Hardin County aforesaid, on the 24th day of September A. D. 1954 at 3:00 o'clock P. M., and recorded in Book 5 of Misc on page 131

J. H. Henry Recorder

Recording Fee $3.75 pd

446

THIS AGREEMENT made and entered into on this 13th day of July, 1954 by and between Lydia E. Eckert and Wilbert F. Eckert, her husband, of Jeffersonville, Clark County, Indiana

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

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals, ores, ore-bearing materials and rock of every kind except oil and gas, in, under or on all of the following described premises:

An undivided one-seventh interest in and to The East One-half (E½) of the North East Quarter (NE¼) of Section 27, Township 11 South, Range 8 East of the Third Principal Meridian, in Hardin County, Illinois, 80 acres, more or less.

IT IS AGREED that while this Agreement recites that it covers an undivided one-seventh interest in and to the minerals in, on and under the above-described premises (except oil and gas), it is the intent of the Owners that all their interest, whatever it may be, shall be subject to the Agreement. If it is subsequently determined that the interest of the Owners in said minerals exceeds one-seventh, then the sums mentioned in Paragraphs 1, 3 and 10 hereof, being figures computed at 1/7th of the entire respective amounts, shall be deemed to be amended as to reflect the Owners increased interest and the fractions set forth in Paragraphs 1 and 6 hereof shall also be deemed so amended; and any payments previously made hereunder to the Owners by the Company, which would have been greater had the Owners' interest been reflected as herein determined, shall be deemed so increased and the excess hereunder over the payments previously made shall become immediately due and payable.

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to July 13th. , 1959, all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, [redacted], all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

W.T.E.
L.E.E.

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

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

Approved as to form

Lydia E. Eckert (Seal)

Walbert T. Eckert (Seal)

ATTEST:

Walter R. Amyan
its Secretary

THE NEW JERSEY ZINC COMPANY

By
EXECUTIVE [redacted] Vice President

STATE OF ~~ILLINOIS~~ INDIANA)
) SS:
COUNTY OF CLARK)

I, G. Florine Spellman, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Lydia Eckert and Wilbert Eckert, her husband

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 29th day of September, 1954.

My Commission Expires:
May 3, 1955

G. Florine Spellman
Notary Public

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, John T. Hourigan, a Notary Public; do hereby certify that C. H. George to me personally known to be the EXECUTIVE Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and Walter R. Anyan, personally known to me to be the Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such EXECUTIVE Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 7th day of October, 1954.

John T. Hourigan
Notary Public
JOHN T. HOURIGAN
NOTARY PUBLIC, State of New York
No. 30-6977000
Qualified in Nassau County
Cert. filed with New York County clerk
Commission Expires March 30, 1956

No. 4561

STATE OF ILLINOIS, }ss.
Hardin County

This instrument was filed for record in the Recorder's Office of Hardin County aforesaid, on the 20th day of October A. D. 1954 at 10:20 o'clock A.M., and recorded in Book 5 of Misc on page 156

H. Henry Recorder

Recording Fee $3.75 pd

454

THIS AGREEMENT made and entered into on this 17th day of June, 1954, by and between Thomas J. Hale and Clara Hale, his wife, of Lincoln, Logan County, Illinois

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

W I T N E S S E T H :

That for and in consideration of the sum of ONE ($1.00) DOLLAR and other good and valuable considerations in hand paid, the receipt of which is hereby acknowledged, Owners lease to the Company for a period of two years from the date hereof, with the privilege of extension for further one year periods thereafter, upon payment of sums of money agreed upon, the exclusive right to prospect for, explore and examine, mine or remove, process and store all the minerals, mineral substances, metals ores, ore-bearing materials and rock of every kind in, under or on all of the following described premises:

An undivided three fourths interest in the minerals in, on and under the following: The South One-half (S½) of the South East Fourth (SE¼) of the South West Fourth (SW¼) of the South West Quarter (SW¼) and the South East Fourth (SE¼) of the South West Quarter (SW¼), containing 45 acres, more or less, all in Section 23, Township 11 South Range 8 East of the Third Principal Meridian, in Hardin County, Illinois.

together with the right to enter thereon, to use available water and to remove samples, in accordance with the terms of a LEASE AND OPTION AGREEMENT of even date herewith entered into between the parties hereto. Also for and in the same consideration the Owners grant to the Company the option to purchase, at any time during the life of the aforesaid lease up to June 17th , 1959, all the minerals, mineral substances, metals, ores, ore-bearing materials, and rock of every kind, except gas & oil in, under or on the above described premises together with the right to prospect for, mine or remove, process or store the same, water rights, the right of ingress and egress, ~~and the right to purchase such acreage,~~ all in accordance with the terms of the said LEASE AND OPTION AGREEMENT of even date herewith. The terms of this agreement are fully set out in said LEASE AND OPTION AGREEMENT, which is here referred to and made a part hereof as if fully set out at length.

T.J.H. C.H. T.J.H. C.H. T.J.H. C.H.

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

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

Approved as to form

Clara Hale (Seal)

Thomas J. Hale (Seal)

ATTEST:

Walter R. Ayman
Its Secretary

THE NEW JERSEY ZINC COMPANY

By
Executive Vice President

STATE OF ILLINOIS)
) SS:
COUNTY OF LOGAN)

I, Patricia M. Beckholt, a Notary Public in and for said County, in the State aforesaid, do hereby certify that Thomas J. Hale and Clara Hale, his wife

personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement appeared before me this day in person, and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and notarial seal this 17th day of June, 195[illegible].

Patricia M. Beckholt
Notary Public

STATE OF NEW YORK)
) SS:
COUNTY OF NEW YORK)

I, John T. Hourigan, a Notary Public; do hereby certify that C. H. Genrod to me personally known to be the EXECUTIVE Vice President of THE NEW JERSEY ZINC COMPANY, a New Jersey Corporation, and Walter R. Anyan, personally known to me to be the Secretary of said Corporation, and personally known to me to be the same persons whose names are subscribed to the foregoing Lease and Option Agreement, appeared before me this day in person and severally acknowledged that they signed, sealed and delivered the said instrument as such EXECUTIVE Vice President and Secretary respectively, and caused the Corporate Seal to be affixed thereto, pursuant to authority given by the Board of Directors of said Corporation, as their free and voluntary act and as the free and voluntary act and deed of said Corporation, for the use and purposes therein set forth.

Given under my hand and notarial seal this 7th day of July, 1954.

John T. Hourigan
Notary Public

JOHN T. HOURIGAN
NOTARY PUBLIC, State of New York
No. 30-6977000
Qualified in Nassau County
Cert. filed with New York County clerk
Commission Expires March 30, 1956

STATE OF ILLINOIS, }
Hardin County } ss.

No. 4708

This instrument was filed for record in the Recorder's Office of Hardin County aforesaid, on the 7th day of December A. D. 1954 at 1:45 o'clock P. M., and recorded in Book 5 of Misc. on page 195

L. H. Henry Recorder

Recording Fee 2.75 pd.

STRATIGRAPHIC SECTION

SOUTHERN ILLINOIS FLUORSPAR DISTRICT

Data from Illinois State Geological Survey Bulletin 76

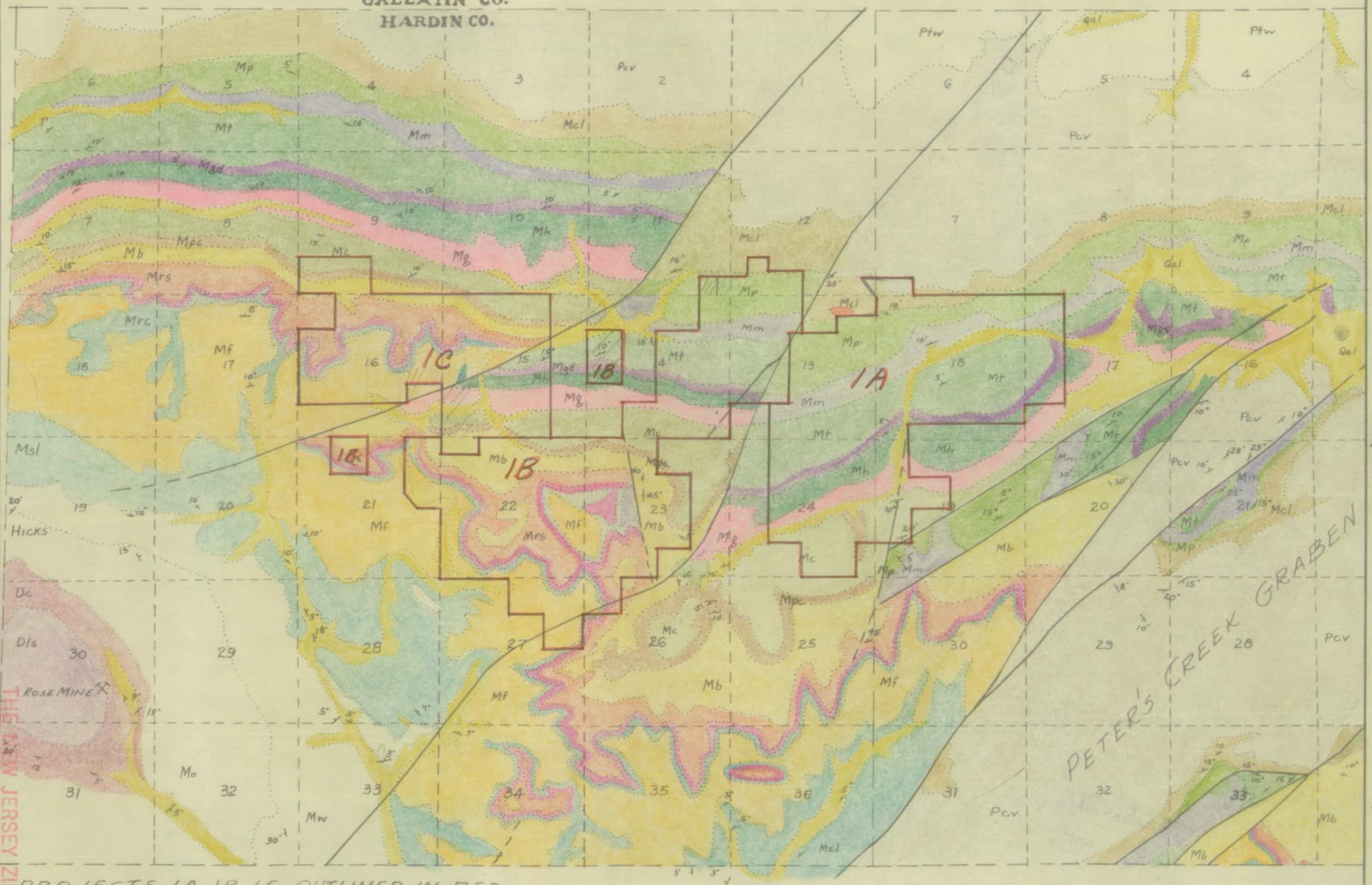
				Average thickness in feet.
PENNSYLVANIAN		Caseyville Sandstone	Pcv	460
MISSISSIPPIAN	CHESTER	Kinkaid Formation Degonia Sandstone Chlore Formation	McT	260
		Palestine Sandstone	Mp	60
		Menard Limestone and Shale	Mm	120
		Waltersburg Sandstone (Mw)	Mt	40
		Vienna Limestone and Shale (Mv)		20
		Tar Springs Sandstone		90
		Glen Dean Limestone and Shale	Mgd	60
		Hardinsburg Sandstone	Mh	90
		Golconda Limestone and Shale	Mg	145
		Cypress Sandstone	Mc	110
		Paint Creek Formation (Mpc)		25
		Bethel Sandstone	Mb	25
		Downey's Bluff Limestone (Mdb)	Mrs	30
		Shetlerville Limestone and Shale (Ms)		60
	IOWA	Levias Limestone (Mlo)	Mf	20
		Rosiclare Sandstone (Mrc)		20
		Fredonia Limestone		205
		St. Louis Limestone	Msl	500
		Warsaw Limestone	Mw	250
		Osage Formation	Mo	550
		Kinderhook Group (shale)		410
DEVONIAN		Lower New Albany Shale	Dc	
		Devonian Limestone and Chert	Dls	350

THE NEW JERSEY ZINC COMPANY
160 FRONT ST., NEW YORK 38, N. Y.

POSTED TO DATE	THE NEW JERSEY ZINC COMPANY HARRISBURG, ILL.	DISTRICT SO. ILLINOIS
DRAWN JMC DATE 12-23-54 TRACED JEL SCALE 1"=500'	STRATIGRAPHIC SECTION	FILE NO. AX-ILL.-12

X 5407 C 1M 3-53

RECEIVED
JUN 2 6 1956



PROJECTS 1A, 1B, 1C OUTLINED IN RED

1 ½ 0 1
Scale of Miles

From Hardin Co. Geologic Map
by Illinois and U.S. Geological Surveys
and from G. M. Fowler

POSTED TO DATE

DRAWN H.C. DATE 3/26/56
TRACED J.L. SCALE 1" = 5280'

THE NEW JERSEY ZINC COMPANY

GEOLOGIC MAP
PROJECTS 1-A, 1-B, 1-C, HARDIN COUNTY, ILL.

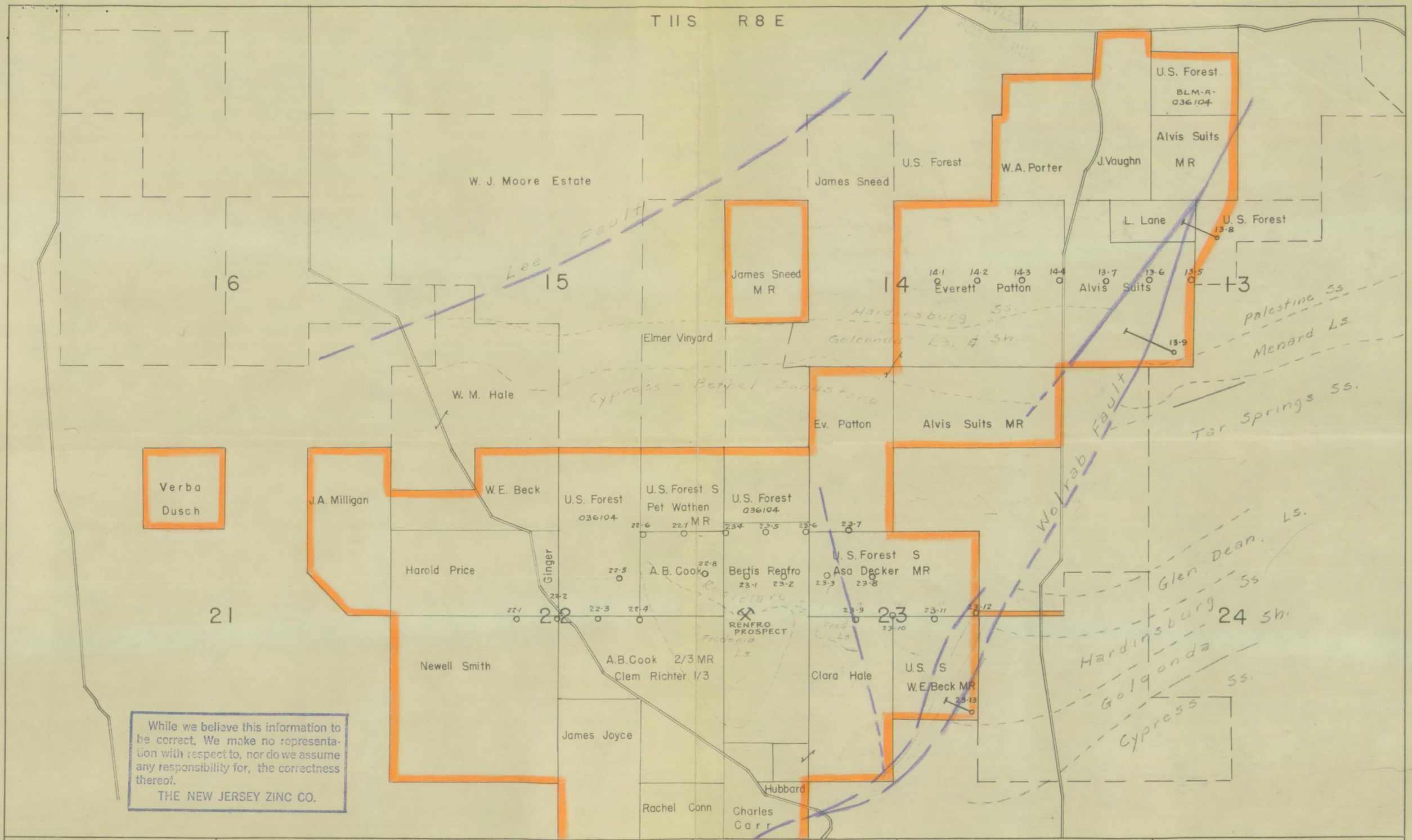
THE NEW JERSEY ZINC COMPANY
160 FRONT ST. NEW YORK 38, N. Y.

DISTRICT
Southern Illinois

FILE NO.
AX - ILL - 18

X 5407 C 1M 3-53

RECEIVED
JUN 26 1956



While we believe this information to be correct, We make no representation with respect to, nor do we assume any responsibility for, the correctness thereof.
THE NEW JERSEY ZINC CO.

POSTED TO DATE	THE NEW JERSEY ZINC COMPANY PLATTEVILLE, WISC.	DRAWN LEA DATE 3-21-56 TRACED J L SCALE 1"=1320'	PROJECT I-B PROPERTY MAP	DISTRICT HARDIN CO., ILL. FILE NO. AX-ILL-16

THE NEW JERSEY ZINC COMPANY

X 5407 B 1M 3-53

RECEIVED
JUN 26 1956