DMA Form 1

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DMA Docket No. 13214

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To:	[illegible]	Date SEP 7 1951
To:	Production Expansion Division	Date 9/10/51
To:	[illegible]	Date [illegible]
To:		Date
To:	Frank E. Johnson	Date 12/20/51
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FILE COPY
SURNAME:

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

Houk
Davis
Van Alstine
Nelges
Kaye
Fr Johnson

FEB 15 1952

Arthur J. Lay, Inc.
864½ Logan Street
Noblesville, Indiana

Subject: Docket No. DMEA-1321 - Fluorspar
Lamar Tract, Pope County
Illinois

Gentlemen:

Your application for exploration assistance on the Lamar Tract, Pope County, Illinois, has been reviewed by this office.

Projects for approval by the Defense Minerals Exploration Administration must, in its judgment, show definite promise of yielding fluorspar in quantities that will significantly improve the minerals supply position of the National Defense. Your request for exploration assistance is not granted because the probability of disclosing minable reserves is not sufficiently encouraging to justify Government participation.

The Defense Minerals Exploration Administration wishes to thank you for making this application, and regrets that we cannot approve the expenditure of United States Government funds for exploration on your property.

Sincerely yours,

C. O. Mittendorf (for) 2/15

Acting Administrator
Defense Minerals Exploration
Administration

LGHouk:gad
2/5/52
Copy to: Admin. Reading File
Docket File
Region VIII (2)
Mr. H. W. Davis, 3519
Mr. R. E. Van Alstine, G-232 GSA Bldg.
Mr. Houk

OFFICE OF THE ADMINISTRATOR

UNITED STATES
DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS ADMINISTRATION

~~WASHINGTON 25, D.C.~~

College Park, Maryland

December 21, 1951

Memorandum

To: Frank E. Johnson, Chairman
Operating Committee, DMEA

From: Executive Officer
DMEA Field Team, Region VIII

Subject: DMA Docket No. 1321X, Arthur J. Lay, Inc.
Lamar Tract, Pope County, Illinois
(Fluorite)

Attached in quadruplicate are the sheets on drill holes which were omitted from the Field Team's report on subject docket sent to you yesterday.

W. T. Millar

W. T. Millar for
McHenry Mosier

by
RWA

Attachments

DEFENSE MINERALS ADMINISTRATION WASHINGTON, D. C.
JAN 8 8 23 AM '52

OFFICE OF THE ADMINISTRATOR

UNITED STATES
DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS ADMINISTRATION

~~WASHINGTON 25, D. C.~~

College Park, Maryland

Direct Operating Cons
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1/21/52

December 20, 1951

Memorandum

To: Frank E. Johnson, Chairman
Operating Committee, DMEA

From: Executive Officer
DMEA Field Team, Region VIII

Subject: DMA Docket No. 1321X, Arthur J. Lay, Inc.
Lamar Tract, Pope County, Illinois
(Fluorite)

Attached in quadruplicate is Field Team's report on the subject docket. We are also returning herewith the Washington Office file on this docket.

W. T. Millar

W. T. Millar for
McHenry Mosier

Attachments

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
DEC 26 1951

GEOLOGY OF THE ARTHUR S. LAY, INC. PROPERTY, POPE COUNTY, ILLINOIS
(Report on D.M.A. Request 1321X)

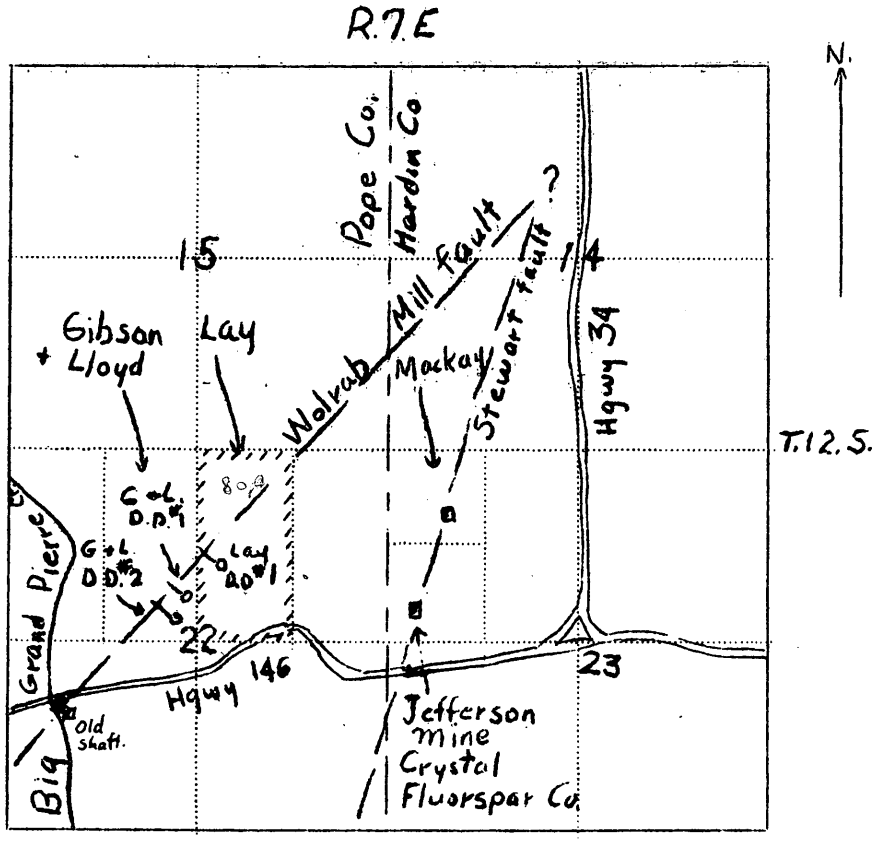
by
Harry J. Klepser

November 14, 1951

INTRODUCTION

The Arthur S. Lay Inc. property is located approximately five miles N.60°W. of Rosiclare, Illinois in the W½ NE¼ sec. 22, T. 12 S., R.7 E., Pope County, Illinois (see fig. 1 and Golconda quadrangle). Access to the property from Rosiclare is north to State Highway 146, and west along that highway for a distance of about one mile west of the junction with State Highway 34. Highway 146 crosses the southern edge of the Lay property. The property was visited by Mr. Gus Newmann of the U. S. Bureau of Mines, Mr. Benjamen Gildersleeve of the U. S. Geological Survey and the writer on October 12 and 13, 1951.

The property is known as the Louis Lamar tract and is leased by Arthur S. Lay Inc. No fluorspar has been mined from this property, but the Jefferson mine (Crystal Fluorspar Company) and the Mackay Mine, (see fig. 1) less than half a mile to the east are in operation and mine a good grade of fluorspar, with some sphalerite and galena. The latter two mines, however, are located on the Stewart fault, whereas the Wolrab Mill fault crosses the Lay property. A small amount of fluorspar is reputed to have been mined from a shallow shaft one-half mile southwest of the Lay property where the Wolrab Mill fault crosses Big Grand Pierre Creek. This old shaft is located a short distance south of State Highway 146 on the east side of Big Grande Pierre Creek.



Scale $\frac{1}{31250}$

Fig. 1. Index map of sections 14, 15, 22 & 23, T 12 S, R. 7 E showing location of Arthur S. Lay, Inc. property, Pope Co., Illinois

GEOLOGY

The rock formations exposed in the vicinity of the Lay property belong to the Chester series of Late Mississippian age. A detailed study of the stratigraphy was not made by the writer, but outcrops of buff to yellow-buff, fine-grained sandstone were observed in a small ravine and adjacent hillside slopes in the southern portion of the Lay property. This sandstone, on the southeast, or hanging-wall side of the Wolrab Mill fault, is probably the Cypress. On the footwall side of the fault, to the northwest, outcrops of similar sandstone were observed at elevations of 40 to 50 feet higher, and are also probably Cypress.

The Lay property is crossed by 1600 to 1800 feet of the Wolrab Mill fault, which strikes approximately N.45°E. and dips to the southeast. The angle of dip was not determined,but it is assumed to be 80 to 85 degrees, the average dip of faults in the Kentucky-Illinois fluorspar district. The displacement of the Wolrab Mill fault in the vicinity of the Lay property is about 100 feet. This figure was determined from a study of the logs (prepared by Frank Tippie of the Illinois Geological Survey) of two diamond drill holes drilled in about 1942 on the Gibson and Lloyd property immediately west of the Lay property (see Fig. 1).

Time did not permit a detailed tracing of the Wolrab Mill fault, but northeastward it probably joins the Stewart fault on the Stewart property, about one mile south of Eichorn, Illinois (see Fig. 1). Southwestward it was traced to Big Grand Pierre Creek, but how much farther it extends to the southwest was not determined.

EXPLORATION AND DEVELOPMENT OF THE LAY PROPERTY

No mining has been done, nor is there any surface indication of mineralization on the Lay property. One diamond drill hole was recently completed to a depth of 500 feet and cut the Wolrab Mill fault at about 400 feet. The writer examined the core, but unfortunately only the first 400 feet of core was found at the drilling site; the rest of the core having been removed. The writer did see about three inches of calcite with a trace of fluorspar in the fault zone at about 400 feet. The driller's log of this hole also indicated only traces of fluorspar at this point. A trace of mineralization at a hole depth of 175 feet suggests the possibility of a second, minor slip.

As previously mentioned, two holes were drilled on the Gibson and Lloyd property, immediately west of the Lay property, but logs of these holes, likewise indicate only minor traces of fluorspar in thin veins of calcite. A shallow test pit on the Gibson and Lloyd property, within a few hundred feet of the Lay property, exposed the fault zone, but no fluorspar was noted. One half-mile to the southwest of the Lay property, along Grand Pierre Creek, a shallow shaft was sunk on the Wolrab Mill fault, and a small amount of fluorspar was mined. No figures are available as to the fluorspar production from this shaft.

Considerable fluorspar has been mined from the Stewart fault, near the junction with the Wolrab Mill fault, approximately one mile northeast of the Lay property, and at present two mines are in operation one-half mile east of the Lay property on the Stewart fault (see Fig. 1). In one of these, the Jefferson Mine, operated by the Crystal Fluorspar Company, mining is from the 260 feet level and they are at present sinking a winze to the 400 feet level. The other, known as the Mackay Mine, is operating from the 240 feet level. Both mines produce a good quality of fluorspar, with associated sphalerite and galena.

RECOMMENDATIONS

The request for a loan by Arthur S. Lay Inc. proposed a drilling program consisting of six holes to cut the fault at a vertical depth of about 290 feet, and a shaft, or shafts, for exploratory purposes. Evidence at hand does not warrant granting this loan, since no fluorspar is known to occur on the property or at any place on the Wolrab Mill fault, within half a mile of the property line.

It is recommended that the owner continue the drilling program already started and drill a 50 degree hole, approximately 200 feet north of hole number 1, already completed, and cut the fault at a vertical depth of 250 to 300 feet. If this drilling indicates the presence of fluorspar in sufficient quantities, additional holes should be drilled at intervals of 200 feet northeastward to the property line. If the drilling does not indicate the existence of any more fluorspar than seen in the first drill hole, the drilling program should be terminated. If drilling is continued, all holes should be drilled from the hanging-wall, or southeast side, for the following reasons: First, although the fault planes in this district are essentially vertical, they occasionally flatten out, and hence the drill hole might parallel the fault plane and never cross it; second, the hanging wall side of the fault is topographically about 60 feet lower than the footwall side and thus a greater vertical depth can be reached with less drilling.

GEOLOGY OF THE ARTHUR S. LAY, INC. PROPERTY,
POPE COUNTY, ILLINOIS
(Report on D.M.A. Request 1321X)

by
Harry J. Klepser

November 14, 1951

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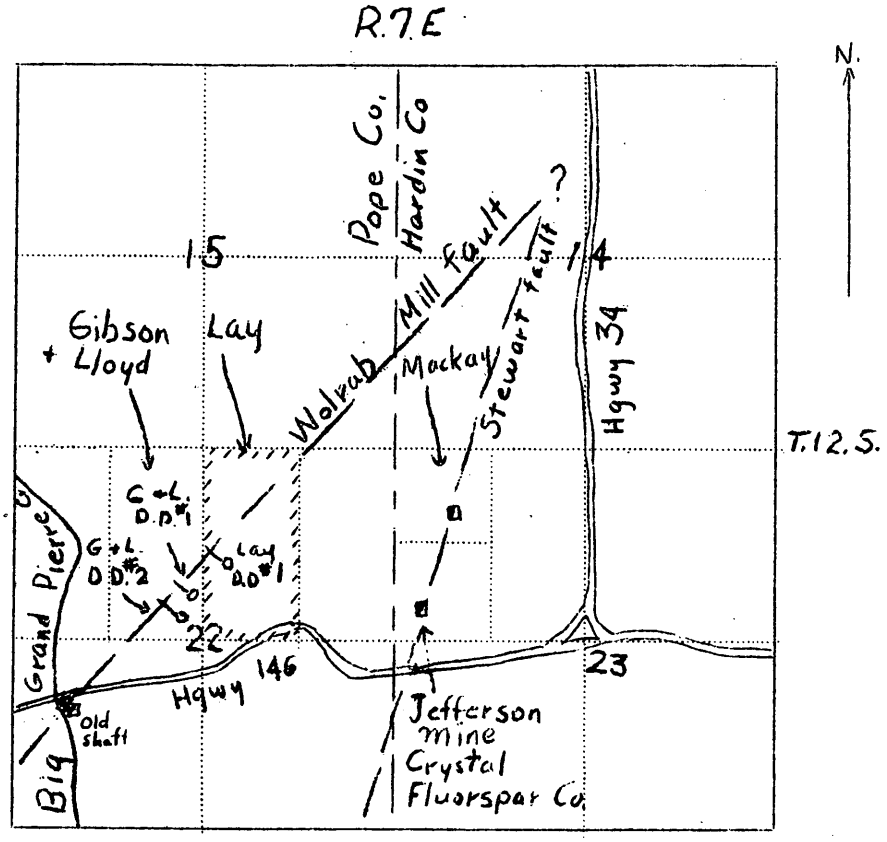

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GEOLOGY OF THE ARTHUR S. LAY, INC. PROPERTY,
POPE COUNTY, ILLINOIS
(Report on D.M.A. Request 1321X)

by
Harry J. Klepser

November 14, 1951

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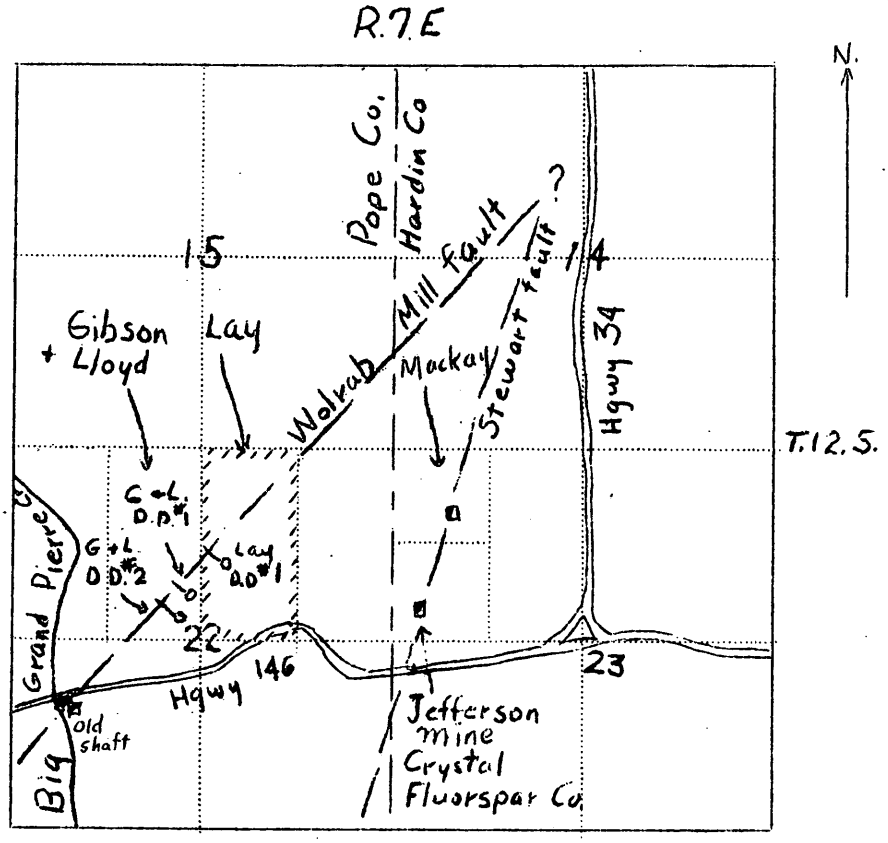

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UNITED STATES
DEPARTMENT OF THE INTERIOR
OSCAR L. CHAPMAN, SECRETARY

DEFENSE MINERALS ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION VIII

DMA-1321X, Arthur J. Lay, Inc.

Lamar Tract, Pope County, Illinois

G. L. Neumann, Mining Engineer
U. S. Bureau of Mines

Harry J. Klepser, Geologist
U. S. Geological Survey

Benjamin Gildersleeve, Geologist
U. S. Geological Survey

November 2, 1951

Arthur J. Lay, Inc.
P. O. Box 11A
Elizabethtown
Illinois

FLUORITE

SUMMARY AND CONCLUSION

DMA Docket No. 1321X, an application for an exploratory loan by Arthur J. Lay, Inc. in the amount of $30,000 with a Government participation of 50 percent or $15,000, was checked by the Field Team, October 10 to 20, 1951. Harry J. Klepser and Benjamin Gildersleeve represented the U. S. Geological Survey, and G. L. Neumann represented the Bureau of Mines. This application does not show enough merit to warrant such a program and is hereby recommended for denial.

GENERAL

Property

Site of the deposit on which an exploratory loan is being petitioned is known as the Lamar Tract. Comprised of 80 acres (See fig. 1) now under lease to Arthur J. Lay and sublease to Arthur J. Lay, Inc., it is situated in the W half of the NE quarter of Section 22, Township 12S, Range 7E, 3rd principal meridian, Pope County, Illinois.

Arthur J. Lay, Inc. also has under lease the Rains and Robinette Tracts in Pope County, and the Twitchell Tract in Hardin County, Illinois.

The Rains Tract consists of 40 acres in the SW quarter and 20 in the S half of the SW quarter, both of the SE quarter of Section 15, Township 12S, Range 7E. This is an unexplored territory and adjoins the Lamar Tract.

The Robinette Tract comprises 48½ acres, 20 of which are located in the S half of the NW quarter of the SW quarter of Section 26, and 28½ of which are in the SW part of the NW quarter of the NE quarter of Section 34, both in Township 14S, Range 6E, 3rd principal meridian. This is an unexplored property in an isolated territory.

The Twitchell Tract comprises 119 acres, of which 79 are in the W half of the NW quarter of Section 19, Township 12S, Range 8E and 40 in the NE quarter of the NE quarter of Section 24, Township 12S, Range 7E. This mine has been rehabilitated and is now in production.

The closest production to the Lamar Tract is on the Stewart Fault at the Crystal Fluorite Company's Jefferson Mine and adjoining Mackey Mine. It is approximately ½ mile from the Lamar. Both the Jefferson and Mackey are now producing good fluorite ore with considerable associated galena and sphalerite.

Personnel

Arthur J. Lay, who will superintend operations, has been closely associated with the fluorspar industry in this southern Illinois district since 1929. He enjoys a good reputation in the district, and through his efforts, the Crystal and Mahoning properties both in the flat bed deposits near Cave-in-Rock were developed into large producers. He is probably more of a promotional man than an operator. Most of his previous work has been on flat bed deposits, although he seems to have a good understanding of the fault vein deposits. None of the other officers of the corporation have any mining background.

Finances

Arthur J. Lay, Inc. shows a cash balance of $4,163.80 on Form MF-103, question 8; but since filing, approximately $3000 additional capital has been raised. Some expenditure has been made on the Twitchell Tract, but enough money should be available for their share of the diamond drilling program.

Geology

The Lamar Tract is supposedly on the western extremity of the Wolrab Mill Fault which has never been a big producer and where very little exploration has been done. A small prospect with some reported production was operated on the east bank of Grand Pierre Creek. This was probably on the Wolrab Mill Fault. Arthur J. Lay, Inc. has already put down one 506-foot AX diamond drill hole at 45° inclination (See fig. 2), which cut 17 feet of calcite and had a trace of spar and sphalerite. Two AX diamond drill holes, sunk in 1942 on the adjoining tract to the west, showed a wide calcite zone with traces of spar and sphalerite. A parallel fault or split is indicated in these three holes, and copies of the three logs are attached.

RECOMMENDATIONS

The Lamar is a wildcat venture. From the drilling on the Wolrab Mill Fault in the vicinity of the Lay Property, it appears unlikely that any worth-while discovery of fluorite would be made. Further drilling does not seem warranted.

It is therefore recommended to deny this application.

UNITED STATES
DEPARTMENT OF THE INTERIOR
OSCAR L. CHAPMAN, SECRETARY

DEFENSE MINERALS ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION VIII

DMA-1321X, Arthur J. Lay, Inc.

Lamar Tract, Pope County, Illinois

G. L. Neumann, Mining Engineer
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November 2, 1951

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P. O. Box 11A
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The closest production to the Lamar Tract is on the Stewart Fault at the Crystal Fluorite Company's Jefferson Mine and adjoining Mackey Mine. It is approximately ¾ mile from the Lamar. Both the Jefferson and Mackey are now producing good fluorite ore with considerable associated galena and sphalerite.

Personnel

Arthur J. Lay, who will superintend operations, has been closely associated with the fluorspar industry in this southern Illinois district since 1929. He enjoys a good reputation in the district, and through his efforts, the Crystal and Mahoning properties both in the flat bed deposits near Cave-in-Rock were developed into large producers. He is probably more of a promotional man than an operator. Most of his previous work has been on flat bed deposits, although he seems to have a good understanding of the fault vein deposits. None of the other officers of the corporation have any mining background.

Finances

Arthur J. Lay, Inc. shows a cash balance of $4,163.80 on Form MF-103, question 8; but since filing, approximately $3000 additional capital has been raised. Some expenditure has been made on the Twitchell Tract, but enough money should be available for their share of the diamond drilling program.

Geology

The Lamar Tract is supposedly on the western extremity of the Wolrab Mill Fault which has never been a big producer and where very little exploration has been done. A small prospect with some reported production was operated on the east bank of Grand Pierre Creek. This was probably on the Wolrab Mill Fault. Arthur J. Lay, Inc. has already put down one 506-foot AX diamond drill hole at 45° inclination (See fig. 2), which cut 17 feet of calcite and had a trace of spar and sphalerite. Two AX diamond drill holes, sunk in 1942 on the adjoining tract to the west, showed a wide calcite zone with traces of spar and sphalerite. A parallel fault or split is indicated in these three holes, and copies of the three logs are attached.

RECOMMENDATIONS

The Lamar is a wildcat venture. From the drilling on the Wolrab Mill Fault in the vicinity of the Lay Property, it appears unlikely that any worth-while discovery of fluorite would be made. Further drilling does not seem warranted.

It is therefore recommended to deny this application.

FILE COPY
SURNAME:

Fielder
Mittendorf

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

OCT 4 1951

Memorandum

To: Mr. McHenry Mosier, Executive Officer
DMA Field Team, Region VIII

From: C. O. Mittendorf, Director
Production Expansion Division

Subject: Docket DMA 1321X, Fluorite
Arthur J. Lay, Inc.
Box 11A
Elizabethtown, Illinois

The subject application was received in this office September 10, 1951 from the Supply Division.

The proposed exploration consists of 3000 feet of diamond drilling and a 6' x 8' shaft, 350 feet deep, if the diamond drilling results are favorable.

The cost of the project is estimated as follows:

Stage "A"

3000 feet of diamond drilling @ $3.25 per foot BX or larger by contract	$ 9,750.00
Extra rig time, cementing, etc., 60 hours @ $5.00 per hour	300.00
Core handling, assaying, etc.	300.00
Total Stage "A"	$10,350.00

Stage "B"

350 feet of shaft 6' x 8' at $30.00 per foot by contract	$10,500.00
Headframe, hoist, pump and compressor	6,350.00
Miscellaneous equipment	1,000.00
Timber for shaft	450.00
Supplies, transportation, water, power, incidentals	1,350.00
Total Stage "B"	$19,650.00

A review of the application indicates that although the basic Exploration proposal has some geologic justification, the proposal for implementation without a field examination contains a number of inadequacies and points of doubt not consonant with good geologic, engineering, or fiscal procedure.

It is recommended that the application be referred to the Field Team for a report on the following points:

Fiscal

Obtain subordination in sextuplicate from Arthur J. Lay, an individual, as lessor to Arthur J. Lay, Inc., a corporation, the applicant.

Geologic

Verify recommendations based on the office review as suggested by the reviewer.

Spot drill holes to assure proper exploration of the area included in the application.

Verify the need for diamond drill holes "BX or larger".

The sketch map in the application indicates that two holes have been drilled just east of the area to be explored. The log of hole No. 1 has been submitted. Obtain the log and assays for hole No. 2.

On the assumption that Stage "B" of the program is intended to determine the extent of mineralization found by Stage "A", determine whether the desired information would most properly be obtained through Stage "B" by:

1. Providing for additional diamond drilling.
2. Sinking a shaft and drifting.
3. An alternate method.

Engineering

Investigate the background and experience of the applicant with special reference to ability properly to carry out the underground work proposed.

Report on the volume of water being pumped from neighboring mines.

Report on adequacy in this district of estimates for:

1. Extra drill rig time of 10 hours, per 500 foot hole.
2. Cost of drilling "BX or larger" holes.
3. Cost of sinking a 6' x 8' shaft 350 feet.
4. Pumping
5. Purchase of equipment and supplies.

C. O. Mittendorf (J.H.) S.A. 10-4

C. O. Mittendorf, Director
Production Expansion Division

APPROVED:

Chairman, Coordinating Committee

Member, Bureau of Mines

Member, Geological Survey

SAFeitler/hmj/fw
Sept. 27, 1951

cc: Reports & Records
Admr. Reading File
Mr. Mittendorf, Mr. Olund
Mr. Barr
Mr. Feitler
Docket

FILE COPY
SURNAME:

Barr

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

370

September 28, 1951

Memorandum

To: Director, Production Expansion Division, DMA

From: Director, Supply Division, DMA

Subject: DMA 1321-X - Arthur J. Lay, Inc.

Referring to Mr. Feitler's memorandum of September 21, the points which Mr. Feitler wishes referred to Field Team have been considered by the Commodity Branch and are covered as follows:

Fiscal

Subordination Agreements which are considered adequate, subject to review by General Counsel's Office, have been submitted.

Geologic

Mr. Feitler's memorandum has been examined by Mr. Van Alstine, USGS Fluorspar Specialist, who states that in his opinion a Field Team examination at this time would supply no pertinent geologic data on the situation which we do not already have.

Spotting of the drill holes as proposed by applicant appears entirely satisfactory in view of USGS data now at hand.

A core size larger than BX was proposed by applicant in accordance with local practice. One hole only has been drilled on applicant's holdings and the log has been submitted. We can hardly require an applicant to supply logs of drilling in which he has not direct interest.

Applicant's program for Stage "B" is approved by the Commodity Branch, the USGS Specialist and the USBM Specialist. Should a revision appear desirable after completion of Stage "A" such revision may be made at that time under contract provisions recommended.

Engineering

Applicant's background and experience have been checked by Mr. Hubert Davis, USBM Fluorspar Specialist, whose memorandum is attached. Mr. Davis and the Commodity Branch regard the applicant as being entirely competent to undertake the proposed exploration.

a.e.

Drilling cost estimates are substantiated by letter commitment from drilling contractor.

Other cost estimates submitted by applicant and in subsequent letters are regarded as being entirely adequate by Commodity Branch.

Mr. Waskey of the Commodity Branch discussed subject proposal in detail with Mr. Feitler and reports that Mr. Feitler's objections to approval without Field Team examination appeared to be based on no sound engineering or geologic basis but on the following:

1) Mr. Feitler's personal opinion of Mr. Davis.

2) A theory that the proposed contract could not be properly administered by Field Team unless Field Team had personal contact with applicant prior to approval.

In conclusion we again recommend that contract be granted in accordance with previous recommendation of Commodity Branch without Field referral.

Tom Lyon
Tom Lyon not stricken R+R
Director, Supply Division

RWASKEY:esf
9/28/51
cc: DMA Docket File
Mr. Lyon
Mr. Barr

FILE COPY
SURNAME:

Blakemore
Mittendorf

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

September 24, 1951

Memorandum

To: Tom Lyon, Director
Supply Division

From: C. O. Mittendorf, Director
Production Expansion Division

Subject: Docket DMA 1321X, Arthur J. Lay, Inc.

Please find herewith four copies of a memo dated September 21, 1951 to C. O. Mittendorf, Director from S. A. Feitler on the above docket.

I would like very much to have the Field Team report, particularly, on the items listed by Mr. Feitler.

C. O. Mittendorf

Attachments-4

Not stripped
R + R

PBBlakemore/meh
cc to: Reports and Records
Messrs. Mittendorf, Olund
Mr. Blakemore
Docket

G.E.C.

FILE COPY
SURNAME:
400
Feitler

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

September 21, 1951

Memorandum

To: C. O. Mittendorf, Director

From: S. A. Feitler

Subject: Docket DMA 1321X, Fluorite
Arthur J. Lay, Inc.
Box 11A
Elizabethtown, Illinois

The subject application was received in this office September 10, 1951 from the Supply Division.

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Total Stage "B"	$19,650.00

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It is recommended that the application be referred to the Field Team for a report on the following points:

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Obtain subordination in sextuplicate from Arthur J. Lay, an individual, as lessor to Arthur J. Lay, Inc., a corporation, the applicant.

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Verify recommendations based on the office review as suggested by the reviewer.

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On the assumption that Stage "B" of the program is intended to determine the extent of mineralization found by Stage "A", determine whether the desired information would most properly be obtained through Stage "B" by:

1. Providing for additional diamond drilling.
2. Sinking a shaft and drifting.
3. An alternate method.

Engineering

Investigate the background and experience of the applicant with special reference to ability properly to carry out the underground work proposed.

Report on the volume of water being pumped from neighboring mines.

Report on adequacy in this district of estimates for:

1. Extra drill rig time of 10 hours, per 500 foot hole.
2. Cost of drilling "BX or larger" holes.
3. Cost of sinking a 6' x 8' shaft 350 feet.
4. Pumping
5. Purchase of equipment and supplies.

S. A. Feitler

SAFeitler/meh cc to: Reports and Records, Docket, Mr. Feitler

FILE COPY
SURNAME:

370 Barr

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

SEP 21 1951

a.f.c.

Mr. Frank W. Campbell
Campbell, Campbell & Malan
Attorneys at Law
Nobelsville, Indiana

Subject: DMA-1321X - Fluorspar
Arthur J. Lay, Inc.

Dear Mr. Campbell:

We have your letter of September 18, 1951, in regard to application DMA-1321X.

The processing of the application has been completed in this Branch and forwarded to the next Division for final processing and action which should be completed in a few days.

In regard to your question on special tax exemptions.

There are two special Acts covering this subject i.e., "percentage Depletion and Exemption from excess profits tax". These Acts are in the process of being revised and we suggest that you write to the Bureau of Internal Revenue, Minerals Division, Washington 25, D.C., for the latest list of minerals included in these Acts.

Sincerely yours,

SIGNED

9/21

James A. Barr, Sr., Chief
Industrial Minerals Branch

JABARR:mp
9-21-51
cc: DMA Docket File
Mr. Barr

Incoming ltr. held in our file.

Mr. Frank W. Campbell
Campbell, Campbell & Malan
Attorneys at Law
Nobelsville, Indiana

Subject: DMA-1321X - Fluorspar
Arthur J. Lay, Inc.

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Sincerely yours,

James A. Barr, Sr., Chief
Industrial Minerals Branch

JABARR:mp
9-21-51
cc: DMA Docket File
Mr. Barr

Ans Jul Barr 9/21

CAMPBELL, CAMPBELL & MALAN
ATTORNEYS AT LAW
NOBLESVILLE, INDIANA

FRANK S. CAMPBELL
FRANK W. CAMPBELL
C. V. MALAN

TELEPHONE 494

DEFENSE MINERALS ADMINISTRATION WASHINGTON, D. C.
SEP 20 9 07 AM '51

September 18, 1951

Mr. James A. Parr, Sr.
U. S. Industrial Minerals Branch
U. S. Department of Interior
Defense Minerals Administration
Washington 25, D. C.

Re: D.M.A. 1321X

Dear Sir:

As attorneys for Arthur J. Lay, Inc., we have been instructed to make an inquiry as to the present status of their application for federal aid by way of a loan for exploration and development purposes. Would you be so kind as to bring us up to date on this matter?

We would also like to inquire as to another phase of your program which has to do with a special exemption for tax purposes. We have not been able to find any law or regulation on the subject but have been informed that there is such a possibility for persons who seek to develop any sources of strategical minerals such as fluorspar. Will you please give us whatever information that there is available and forward to us a copy of the law or regulation pertaining to the same?

Thanking you in advance, we are

Very truly yours,

CAMPBELL, CAMPBELL & MALAN

By Frank W Campbell

FWC:va

OFFICIAL FILE COPY

To	Init.	Date
370	G.E.C.	9-20
210		

FILE COPY
SURNAME:

Wisdom
Barr
Parsons/Rep

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

370

Memorandum

To: Chief, Industrial Minerals Branch, DMA

From: Chief, Programming and Planning, DMA

Subject: DMA-1321X, Arthur J. Lay, Inc.
Noblesville, Indiana
Commodity: Fluorspar
Amount: $30,000
Government participation: 50% - $15,000

The prospective available supply of Fluorspar is far short of meeting defense requirements. Consequently, it is highly desirable that exploration for new domestic deposits be stimulated by any reasonable Government assistance to private interests. Any exploration project that holds promise of finding significant new reserves, merits consideration by Defense Minerals Administration.

A. B. Parsons

A. B. Parsons

RWASKEY:mp
9-6-51
cc: Mr. Barr
Mr. Parsons
Mr. Norton
Mr. Mittendorf
DMA Docket File

Memorandum

To: Chief, Industrial Minerals Branch, DMA

From: Chief, Programming and Planning, DMA

Subject: DMA-1321X, Arthur J. Lay, Inc.
Noblesville, Indiana
Commodity: Fluorspar
Amount: $30,000
Government participation: 50% - $15,000

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A. B. Parsons

RWASKEY:mp
9-6-51
cc: Mr. Barr
Mr. Parsons
Mr. Norton
Mr. Mittendorf
DMA Docket File

MEMORANDUM

To: Director, Production Expansion Division
Defense Minerals Administration

From: Director, Supply Division
Defense Minerals Administration

Subject: Recommendation for Contract approval

Name of Applicant: Arthur J. Ley, Inc.
864½ Logan Street
Noblesville, Indiana

DMA No. 1321X

Commodity: Fluorspar

Amount requested: $30,000

Amount approved: $30,000

Government participation: 50% - $15,000

Tom Lyon

RECOMMENDATIONS

1. That an Exploration Aid Contract be granted in the amount of $30,000, Government participation 50%, in accordance with Exhibit "A" attached.

2. That the project be authorized in two Stages, "A" and "B". Stage "A" to consist of 6 diamond drill holes to a maximum total of 3000', BX core or larger, Stage "B" an approximately 6' x 8' vertical shaft to a maximum depth of 350'. Stage "B" will be authorized subject to satisfactory completion of Stage "A", if, in the opinion of Field Team such additional work is necessary and justified by results of STAGE "A".

3. That operator be allowed 30 days from contract date to begin work on project.

EXHIBIT "A"

DESCRIPTION OF PROJECT

Stage "A"

6 diamond drill holes, BX core or larger, will be drilled to a maximum individual length of 500' and maximum total length of 3000'. The holes are intended to intersect the Wolrab Mill Fault at a vertical depth of approximately 300' in the St. Genevieve Limestone. To interest the fault normal to its dip the holes will be inclined at an approximately 45° angle. One hole has already been completed and is shown on attached map; the first hole to be drilled under the contract will be about 100' Northeast of this hole along the fault strike. The additional 5 holes will be spaced along the fault strike at intervals of 150' to 300' at the discretion of operator. Drilling will be by contract, core testing to be done by operator. Total allowable cost - $10,350.00, time limit - 4 months.

Stage "B"

Subject to satisfactory completion of Stage "A" and approval of Field Team, an approximately 6' x 8' vertical shaft will be sunk to a maximum depth of 350' to further explore deposits which maybe indicated by drilling under Stage "A". Location of shaft will be mutually agreeable to operator and Field Team. Total allowable cost - $19,650.00, time limit - 4 months.

RECAPITULATION OF PROJECT COSTS

Stage "A"

3000' Diamond drilling by contract @ 3.25 per ft.	$9,750.00
Extra rig time, cementing etc. - 60 hrs. @ 5.00	300.00
Core handling, assaying, etc.	300.00
TOTAL	$ 10,350.00

Stage "B"

350' shafting by contract @ 30.00 per ft.	10,500.00
Headframe, hoist, pump & compressor	6,350.00
Miscellaneous equipment	1,000.00
Timber for shaft	450.00
Supplies, transportation, water, power, incidentals	1,350.00
TOTAL	$19,650.00

FIXTURES AND IMPROVEMENTS

Stage "A"

Not applicable.

Stage "B"

1 Headframe, complete	$ 800.00

OPERATING EQUIPMENT

Stage "A"

All necessary equipment will be furnished by drilling contractor.

Stage "B" - Equipment

1 Hoist	$ 2,000.00
1 Pump	550.00
1 Compressor	3,000.00
Jackhammer, steel, pipe, hoist bucket, rail, track, etc.	1,000.00
TOTAL	$ 6,550.00

The above equipment will be selected as suitable for sinking the shaft at the discretion of operator and may be gasoline, diesel or electric powered and will be complete with all necessary incidental items to assure their satisfactory operation.

SUPPLIES

Supplies, including fuel, lubricants, bits, small tools, power, transportation, contingencies $1,350.00

LABOR & SUPERVISION

General supverision will be supplied by operator without cost to the project.

All labor will be included in contracts for the drilling and shaft sinking.

CONTRACTS

Stage "A"

Diamond drilling will be done under contract at the rate of $3.25 per foot plus $5.00 per hour for lost rig time with a limit of 10 hours lost time per hole.

Stage "B"

All work will be done by contract or contracts, allowing a maximum of $800.00 for headframe installation and $30.00 per foot for shafting. The rate of $30.00 per foot will include all labor, powder, fuel, caps, carbide, tool and bit sharpening, etc.

REHABILITATION AND REPAIRS

Not applicable.

RWASKEY:mp
9-6-51

1321

CHARGED TO	PERIOD	DATE	SE'DEP'S INITIALS	DWAIS NOS.
Armiale				
Bauerman				
Carr				
Cert. Admin				
Bacon				
Bowler, Dr.				
Bourget				
Caden				
Chandler				
Crim				
FIELD TEAM				
Gugsallwa				
Harlan				
Josephson				
Kemp				
Ivon				
Macdonald				
Mafaun				
Marsh				
Moon				
Littondorf				
Mogler				
Norton				
Parsons				
Strebel				
Van Alstine				
Vaggerman				
Vogler				
Watts				
Weber				

REMARKS:

6-5

Letter to app. more info

FILE COPY
SURNAME:

Barr

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

370

August 6, 1951

Arthur J. Lay, Inc.
864 Logan Street
Noblesville, Indiana

Dear Mr. Lay:

Subject: DMA-1321X

We acknowledge receipt of your letter of July 24, together with plan of prospect drilling and bid for core drilling. Regarding the bid for core drilling, we note that the charge would be $3.25 per foot, plus $5.00 per hour for rig time; we assume that the hourly charge for rig time refers to lost time, that is time when the drilling is not advancing in a normal fashion. Will you please furnish an estimate of the amount of time which might be chargeable against the proposed drilling at this rate, so that we may estimate the total cost of the drilling.

Please estimate also the cost for necessary core handing, assaying, etc., which we assume is not included in the footage bid.

Regarding the proposal to sink one or more shafts subject to drilling results, please specify the approximate size of the shaft, whether one or two compartment and about how much timbering might be required. Would pumping be required? Does the estimate of $30.00 per foot include installation of head-frame and hoist, pump, compressor, etc.?

Sincerely yours,

James Barr

James A. Barr, Sr., Chief
Industrial Minerals Branch

RWASKEY:mp
cc: Reports and Records
Mr. Barr
DMA Files

370

August 6, 1951

a. E. C.

Arthur J. Lay, Inc.
864 Logan Street
Noblesville, Indiana

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Sincerely yours,

James A. Barr, Sr., Chief
Industrial Minerals Branch

RWASKEY:mp
cc: Reports and Records
Mr. Barr
DMA Files

Noblesville, Ind., July 24, 1951

Defense Minerals Administration
Department of the Interior
Washingtom 25, D.C.

Attention of Mr. May, please.

Re: Application for Government aid for Minerals Exploration.

Dear Sir:

In accordance with your suggestion to our attorney, Mr. Campbell, we wish to modify our application for assistance by dividing the project into two parts, as follows:

Stage "A" - Drilling approximately 6 exploratory D.D. holes along the line of the Stewart Fault as shown in the attached sketch. Said holes to drilled at an angle of 45° and to a vertical depth of about 290 feet, and the diameter of such holes will be at least 1½ inches. D.D. - AX hole

Stage "B" - Depending upon the results of drilling operations and upon the finding of suitable fluorspar or other minerals in commercial quantities, a shaft or shafts will be sunk for exploration, development and mining purposes at the most advantageous locations.

Also, in accordance with your request, we enclose herewith and make a part of our application a larger and more detailed sketch of our property, showing the approximate length and depth of the Stewart Fault and the location, approximately, of the proposed drilling operations, which would range along the fault line.

In order to give further information concerning the cost of the drilling operations, we also enclose a signed statement in which B. W. Bales, of Cave In Rock, Illinois, contracts and agrees to drill the exploratorynholes for the price of $3.25 per foot, as outlined in the said letter or statement. AX hole.

As Mr. Campbell told you over the phone, the land-owners involved are somewhat scatterd and it will take some time to obtain their signatures to the forms as required. However, the subordination agreement is now being circulated to them and same will be forwarded to you, if and when obtained, at the earliest possible moment.

Very Truly Yours,

ARTHUR J. LAY, INC.

By Arthur J. Lay
Pres.

ajl/k

Arthur J. Lay, Inc.,
Noblesville, Indiana and
Elizabethtown, Ill.
Drilled on Lamar Tract

Log of D.D. hole No.1 at 45° angle in N.W. portion of the S.W. quarter of the N.E. quarter of section 22, Twp. 12-S., range 7 east, Pope County, Illinois. Completed 6/30/1951.

Formation.	Thickness.	Depth.
Boulders	5'	5'
Sandstone	45'	50'
Shale	2'	52'
Limestone	4' 6"	56' 6"
Shale	21' 6"	78'
Sandstone	87'	165'
Sandstone (traces lead & fluorspar; faulted)	2' 6"	167' 6"
Sandstone	114' 6"	279' 6"
Shale	31' 6"	301'
Limestone & shale	6'	307'
Limestone	69'	376'
Calcite	6"	376' 6"
Limestone	13' 6"	390'
Rosiclare Sandstone	11'	401'
Calcite;(traces of fluorspar)	17'	418'
Limestone (traces of fluorspar and lead; (fault here) faulted)	6"	418' 6"
Limestone	12' 6"	431'
Limestone	75'	506' T.D.

Drilled and certified by B. W. Bales,
Drilling contractor,
P.O.Box 73, Cave In Rock, Illinois

Box 73
Cave-In-Rock, Illinois
July 18, 1951

Arthur J. Lay, Inc.
Elizabethtown, Illinois

Gentlemen:

It is my desire to submit the following bid for core drilling on the Lamar Tract, Pope County, Illinois, W $\frac{1}{2}$ of NE$\frac{1}{4}$ of Section 22, Township 12 S, Range 7 E. $3.25 for coring AX size hole and $5.00 per hour for rig time running or drilling cement or any other rig time that may be necessary for the completion of these holes.

B.W.B.

Thanking you for the priviledge of submitting this bid, I am,

Yours very truly,

B. W. Bales

BWBep

B. W. Bales

ARTHUR J. LAY, inc.

BOX 11-A
ELIZABETHTOWN, ILLINOIS

HOME OFFICE
BOX 263
NOBLESVILLE, IND.

SHIPPING POINT
ROSICLARE, ILL.

August 31,1951

United States Dept. of Interior
Defense Minerals Administration
Washington 25, D.C.

Mr.James A.Barr Sr.
Chief Industrial Minerals Branch

Re: DMA 1321 X

Dear Mr.Barr:

This is in reply to yours of August 6th.

The amount of rig-time would be negligible. It might average ten hours per hole for possible cementing etc.

The cost of assaying etc. would be about $75.00 per hole.

The proposed shaft would be about 6'x 8', ~~one~~ Two compartment, which allows room for a small ladder-way.

There would possibly be 30 feet of timbering at $15.00 per foot and a small pump might be needed after reaching 100 feet.

The estimated cost of $30.00 per foot for sinking shaft does not include installation of head-frame, hoist, pump compressor etc.

Not Exploration price $50.00 a foot more realistic LH.

The estimated cost of these are as follows:

Head-Frame		$800.00
Hoist	(used)	2000.00
Pump	(used)	550.00
Compressor	(used)	3000.00

These figures are estimates only but we believe they are about correct.

Sincerely yours

ARTHUR J.LAY, INC.

Louis Hill

Louis Hill sec.

SEP 4 10 54 AM '51
DEFENSE MINERALS ADMINISTRATION WASHINGTON, D.C.

ARTHUR J. LAY, inc.

BOX 11-A

ELIZABETHTOWN, ILLINOIS

HOME OFFICE
BOX 263
NOBLESVILLE, IND.

SHIPPING POINT
ROSICLARE, ILL.

August 31,1951

United States Dept. of Interior
Defense Minerals Administrations
Washington 25, D.C.

Mr.James A.Barr Sr. Chief
Industrials Minerals Branch

Re: DMA 1321 X

Dear Mr.Barr:

We enclose herewith four copies "Landlords Subordination Agreement" signed by all necessary parties.

Sincerely yours

ARTHUR J.LAY,INC.

Louis Hill

Louis Hill Sec.

DEFENSE MINERALS ADMINISTRATION WASHINGTON, D.C.
SEP 4 10 56 AM '51

MF-202

LANDLORD'S SUBORDINATION AGREEMENT

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, the undersigned is the owner in fee simple of that certain parcel of ground in the county of Pope, State of Illinois, described in a certain Exploration Project Contract dated May 24, 1951, 195__, between Arthur J. Lay, the Lessee of said property, and the United States of America;

NOW, THEREFORE, the undersigned, as Lessor of said property under lease dated Feburary 7th. 1951, does by these presents subordinate all of his right, title, and interest under the provisions of said lease to the right, title, and interest of the United States of America under the provisions of said Exploration Project Contract, and agrees that the lien and claim of the United States of America under the provisions of said contract shall be prior to the undersigned's rights to rentals or royalties under the terms of said lease; and

The undersigned further agrees that if said leasehold interest should be surrendered or if said lease should terminate at any time prior to the expiration of the rights of the United States of America under said Exploration Project Contract, the undersigned shall assume and does hereby assume all of the obligations of the Lessee under said Exploration Project Contract to make repayment to the United States of America according to the terms of said contract; and

The undersigned agrees to commit no act, nor assert any claim under judicial process or otherwise that may contravene or conflict with the prior lien and claim of the United States of America under the provisions of said Exploration Project Contract.

This undertaking and covenant shall be binding upon the heirs, successors, and assigns of the undersigned.

Dated this 19th. day of June, 1951., 195__

W. J. Costigan
(W.J.Costigan)

Mary Jane Van Schalkwyk
(Mary Jane Van Schalkwyk)

Virginia Lee Costigan
(Virginia Lee Costigan)

Willem Dirkse Van Schalkwyk
(Willem Dirkse Van Schalkwyk)

Louis Lamar
(Louis Lamar)

Effie B Lamar
(Effie Lamar)

U. S. GOVERNMENT PRINTING OFFICE 7-910768

MF-202

LANDLORD'S SUBORDINATION AGREEMENT

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, the undersigned is the owner in fee simple of that certain parcel of ground in the county of Pope, State of Illinois, described in a certain Exploration Project Contract dated May 24, 1951, 195__, between Arthur J. Ray, the Lessee of said property, and the United States of America;

NOW, THEREFORE, the undersigned, as Lessor of said property under lease dated February 7th, 1951, does by these presents subordinate all of his right, title, and interest under the provisions of said lease to the right, title, and interest of the United States of America under the provisions of said Exploration Project Contract, and agrees that the lien and claim of the United States of America under the provisions of said contract shall be prior to the undersigned's rights to rentals or royalties under the terms of said lease; and

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(W. J. Costigan)

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(Mary Jane Van Schalkwyk)

Virginia Lee Costigan
(Virginia Lee Costigan)

William Dirkes-van Schalkwyk
(William Dirkes Van Schalkwyk)

Louis Lamar
(Louis Lamar)

Effie B Lamar
(Effie Lamar)

GOVERNMENT PRINTING OFFICE: 940769

MF-202

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NOW, THEREFORE, the undersigned, as Lessor of said property under lease dated February 7th, 1951, does by these presents subordinate all of his right, title, and interest under the provisions of said lease to the right, title, and interest of the United States of America under the provisions of said Exploration Project Contract, and agrees that the lien and claim of the United States of America under the provisions of said contract shall be prior to the undersigned's rights to rentals or royalties under the terms of said lease; and

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U.S. GOVERNMENT PRINTING OFFICE 940768

MF-202

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NOW, THEREFORE, the undersigned, as Lessor of said property under lease dated Feburary 7th. 1951, does by these presents subordinate all of his right, title, and interest under the provisions of said lease to the right, title, and interest of the United States of America under the provisions of said Exploration Project Contract, and agrees that the lien and claim of the United States of America under the provisions of said contract shall be prior to the undersigned's rights to rentals or royalties under the terms of said lease; and

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U. S. GOVERNMENT PRINTING OFFICE 940768

MF-202

LANDLORD'S SUBORDINATION AGREEMENT

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, the undersigned is the owner in fee simple of that certain parcel of ground in the county of Pope, State of Illinois, described in a certain Exploration Project Contract dated _____, 195__, between Arthur J. Lay, Incorporated, the Sub Lessee of said property, and the United States of America;

NOW, THEREFORE, the undersigned, as Lessor of said property under Sub lease dated May 24, 1951, does by these presents subordinate all of his right, title, and interest under the provisions of said lease to the right, title, and interest of the United States of America under the provisions of said Exploration Project Contract, and agrees that the lien and claim of the United States of America under the provisions of said contract shall be prior to the undersigned's rights to rentals or royalties under the terms of said lease; and

The undersigned further agrees that if said leasehold interest should be surrendered or if said lease should terminate at any time prior to the expiration of the rights of the United States of America under said Exploration Project Contract, the undersigned shall assume and does hereby assume all of the obligations of the Lessee under said Exploration Project Contract to make repayment to the United States of America according to the terms of said contract; and

The undersigned agrees to commit no act, nor assert any claim under judicial process or otherwise that may contravene or conflict with the prior lien and claim of the United States of America under the provisions of said Exploration Project Contract.

This undertaking and covenant shall be binding upon the heirs, successors, and assigns of the undersigned.

Dated this 22nd day of October, 1951

Arthur J. Lay

U. S. GOVERNMENT PRINTING OFFICE 16—64582-1

MF-202

LANDLORD'S SUBORDINATION AGREEMENT

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, the undersigned is the owner in fee simple of that certain parcel of ground in the county of Pope, State of Illinois, described in a certain Exploration Project Contract dated _____, 195__, between Arthur J. Lay, Incorporated, the Sub Lessee of said property, and the United States of America;

NOW, THEREFORE, the undersigned, as Lessor of said property under Sub lease dated May 24, 1951, does by these presents subordinate all of his right, title, and interest under the provisions of said lease to the right, title, and interest of the United States of America under the provisions of said Exploration Project Contract, and agrees that the lien and claim of the United States of America under the provisions of said contract shall be prior to the undersigned's rights to rentals or royalties under the terms of said lease; and

The undersigned further agrees that if said leasehold interest should be surrendered or if said lease should terminate at any time prior to the expiration of the rights of the United States of America under said Exploration Project Contract, the undersigned shall assume and does hereby assume all of the obligations of the Lessee under said Exploration Project Contract to make repayment to the United States of America according to the terms of said contract; and

The undersigned agrees to commit no act, nor assert any claim under judicial process or otherwise that may contravene or conflict with the prior lien and claim of the United States of America under the provisions of said Exploration Project Contract.

This undertaking and covenant shall be binding upon the heirs, successors, and assigns of the undersigned.

Dated this 22nd day of October, 1951.

Arthur J. Lay

U. S. GOVERNMENT PRINTING OFFICE 16—64582-1

MF-202

LANDLORD'S SUBORDINATION AGREEMENT

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, the undersigned is the owner in fee simple of that certain parcel of ground in the county of Pope, State of Illinois, described in a certain Exploration Project Contract dated _____, 195__, between Arthur J. Ley, Incorporated, the Lessee of said property, and the United States of America;

NOW, THEREFORE, the undersigned, as Lessor of said property under lease dated May 21, 1951, does by these presents subordinate all of his right, title, and interest under the provisions of said lease to the right, title, and interest of the United States of America under the provisions of said Exploration Project Contract, and agrees that the lien and claim of the United States of America under the provisions of said contract shall be prior to the undersigned's rights to rentals or royalties under the terms of said lease; and

The undersigned further agrees that if said leasehold interest should be surrendered or if said lease should terminate at any time prior to the expiration of the rights of the United States of America under said Exploration Project Contract, the undersigned shall assume and does hereby assume all of the obligations of the Lessee under said Exploration Project Contract to make repayment to the United States of America according to the terms of said contract; and

The undersigned agrees to commit no act, nor assert any claim under judicial process or otherwise that may contravene or conflict with the prior lien and claim of the United States of America under the provisions of said Exploration Project Contract.

This undertaking and covenant shall be binding upon the heirs, successors, and assigns of the undersigned.

Dated this 22nd day of October, 1951

Arthur J. Ley

U. S. GOVERNMENT PRINTING OFFICE 16—64582-1

MF-202

LANDLORD'S SUBORDINATION AGREEMENT

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, the undersigned is the owner in fee simple of that certain parcel of ground in the county of ----------, State of ----------, described in a certain Exploration Project Contract dated ----------, 195__, between ----------, the Lessee of said property, and the United States of America;

NOW, THEREFORE, the undersigned, as Lessor of said property under lease dated ----------, does by these presents subordinate all of his right, title, and interest under the provisions of said lease to the right, title, and interest of the United States of America under the provisions of said Exploration Project Contract, and agrees that the lien and claim of the United States of America under the provisions of said contract shall be prior to the undersigned's rights to rentals or royalties under the terms of said lease; and

The undersigned further agrees that if said leasehold interest should be surrendered or if said lease should terminate at any time prior to the expiration of the rights of the United States of America under said Exploration Project Contract, the undersigned shall assume and does hereby assume all of the obligations of the Lessee under said Exploration Project Contract to make repayment to the United States of America according to the terms of said contract; and

The undersigned agrees to commit no act, nor assert any claim under judicial process or otherwise that may contravene or conflict with the prior lien and claim of the United States of America under the provisions of said Exploration Project Contract.

This undertaking and covenant shall be binding upon the heirs, successors, and assigns of the undersigned.

Dated this 22nd day of October, 1951

Arthur J. Kelly

U. S. GOVERNMENT PRINTING OFFICE 16—64582-1

6/5/51

Defense Minerals Administration

Review of Application for Exploration Assistance

Docket No. DMA-1321X

Commodity Fluorspar

Total Amount $30,000

Govt. Participation 50%

1. Name and Address of Applicant Arthur J. Lay, Inc., 864½ Logan St., Noblesville, Indiana

2. Location of Property W½ NE¼ Sec. 22, T. 12 S., R. 7 E., Pope Co., Ill., 8 mi. W. of Elizabethtown on N. side of State Hwy. 146.

3. Mineral or metal Fluorspar Is it listed in Section 9 of MO-5?

If not, application will be rejected. Yes

4. Geologic probability of discovery—based on data in application (question #16, 17, 18, 20 and 22)*

Mines or Survey reports, etc., do you rate chances:

a) Good ✓

b) Poor

c) None

d) Don't know—needs field examination

e) Is there an alternative and favorable project? (If so, attach an explanation)

5. Is the applicant's right to the property clearly stated? (question 5, 6, 7)*

6. If applicant is a lessee, is a copy of the lease attached?

Does the lease have sufficient time to run to cover a future productive period?

*question numbers are those of MF-103

7. Are subordination agreements necessary?_____

a) MF-201?_____

b) MF-202_____

8. From the data presented, does the proposed project appear feasible from the point of view of:

a) Available manpower_____

b) Equipment and supplies_____
(Question 14 plus general knowledge of availability)*

c) Accessibility (question 12)*_____

d) Water (question 13)*_____

e) Power (question 13)*_____

Is a field check needed on any of these points?_____

9. Does the experience of the applicant appear to be adequate to assure that he can properly conduct the proposed project? (question 4)*_____

Is a field check needed on this point?_____

10. Exhibit A. (questions 21 and 22)*

a) Is the project adequately described? No

If not, are there sufficient data given so that you can describe the project? No If so, attach a draft.

b) Is there an adequate map or sketch of the proposed work? No -- location and spacing of definite number of holes should be shown. Applicant's sketch shows location of 2 holes not on his leased property.

c) Is the proposed work "exploration" under the definition of Section 8, MO-5? Yes, for the drilling; possibly , for the shafting, depending upon results of drilling.

If not, what part of it is? Drilling is.

Is this part a worthwhile exploration project? Yes

d) Are the cost estimates detailed? _____

Can they be summarized, as on page 2 of Procedural Instruction 5-A, from the available data? _____ If so, attach a draft.

e) Are the cost estimates reasonable? _____

f) Should more information be requested from applicant? Yes

g) Is a field examination necessary to complete Exhibit A? No

11. Exhibit B (question 23-d)*

a) Is it applicable? _____

b) If so, are sufficient data furnished? _____ If so, attach a draft.

c) Is a field check needed? _____

12. Exhibit C (question 23-e, f and g)*

a) Is it applicable? _____

b) Sufficient data? _____ If so, attach a draft.

c) Are rents and charges reasonable? _____

d) Is a field check needed? _____ _____

13. Exhibit D (question 23-a, b)*

a) Are there sufficient data? _____

b) Is the schedule adequate for the work proposed? _____

c) Is the schedule excessive for the work proposed? _____

d) Are the proposed wages and salaries reasonable? _____

e) Is a field check needed? _____

14. Exhibit E (question 23-c)*

a) Is it applicable?_____

b) Sufficient data?_____

c) Reasonable?_____

d) Field check needed?_____

15. In your judgment, can the proposed work be done in the proposed time?_____

(All exploration must be completed within two years)

16. If field examination is not needed, attach your recommendation. --See below

17. If field examination is needed, do you have any special instructions for the field team not indicated by your answers to the foregoing question? Applicant has about 1500 feet of Wolrab Mill fault to explore on his leased property. If holes were spaced 150 feet apart and drilled to depth of 300 feet (Ste. Genevieve limestone), 10 holes could be drilled for less than $10,000 (based on applicant's figure of $3 per foot). Such a plan might be regarded as the first phase of an exploration program and might be followed by the second phase, sinking of a shaft, if the results of the drilling show that shafting would still be exploration and not development. Applicant's proposed date of production of Nov. 1, 1951 is unrealistic.

Reviewed by: Van Alstine, U. S. G. S.

Date 7/5/51

97692

6/5/51

Defense Minerals Administration

Review of Application for Exploration Assistance

Docket No. DMA-1321X

Commodity Fluorspar

Total Amount $30,000

Govt. Participation 50%

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2. Location of Property W½ NE¼ Sec. 22, T. 12 S., R. 7 E., Pope Co., Ill., 8 mi. W. of Elizabethtown on N. side of State Hwy. 146.

3. Mineral or metal Fluorspar Is it listed in Section 9 of MO-5?

If not, application will be rejected. Yes

4. Geologic probability of discovery—based on data in application (question #16, 17, 18, 20 and 22)*

Mines or Survey reports, etc., do you rate chances:

a) Good ✓

b) Poor

c) None

d) Don't know—needs field examination

e) Is there an alternative and favorable project? (If so, attach an explanation)

5. Is the applicant's right to the property clearly stated? (question 5, 6, 7)*

6. If applicant is a lessee, is a copy of the lease attached?

Does the lease have sufficient time to run to cover a future productive period?

*question numbers are those of MF-103

7. Are subordination agreements necessary? _____

a) MF-201? _____

b) MF-202 _____

8. From the data presented, does the proposed project appear feasible from the point of view of:

a) Available manpower _____

b) Equipment and supplies _____
(Question 14 plus general knowledge of availability)*

c) Accessibility (question 12)* _____

d) Water (question 13)* _____

e) Power (question 13)* _____

Is a field check needed on any of these points? _____

9. Does the experience of the applicant appear to be adequate to assure that he can properly conduct the proposed project? (question 4)* _____

_____

Is a field check needed on this point? _____

10. Exhibit A. (questions 21 and 22)*

a) Is the project adequately described? **No**

If not, are there sufficient data given so that you can describe the project? **No** If so, attach a draft.

b) Is there an adequate map or sketch of the proposed work? **No --**

location and spacing of definite number of holes should be shown. Applicant's sketch shows location of 2 holes not on his leased property.

c) Is the proposed work "exploration" under the definition of Section 8, MO-5? **Yes, for the drilling; possibly, for the shafting, depending upon results of drilling.**

If not, what part of it is? **Drilling is.**

_____

_____

_____

Is this part a worthwhile exploration project? Yes

d) Are the cost estimates detailed? _____

Can they be summarized, as on page 2 of Procedural Instruction 5-A, from the available data? _____ If so, attach a draft.

e) Are the cost estimates reasonable? _____

f) Should more information be requested from applicant? Yes

g) Is a field examination necessary to complete Exhibit A? No

11. Exhibit B (question 23-d)*

a) Is it applicable? _____

b) If so, are sufficient data furnished? _____ If so, attach a draft.

c) Is a field check needed? _____

12. Exhibit C (question 23-e, f and g)*

a) Is it applicable? _____

b) Sufficient data? _____ If so, attach a draft.

c) Are rents and charges reasonable? _____

d) Is a field check needed? _____

13. Exhibit D (question 23-a, b)*

a) Are there sufficient data? _____

b) Is the schedule adequate for the work proposed? _____

c) Is the schedule excessive for the work proposed? _____

d) Are the proposed wages and salaries reasonable? _____

e) Is a field check needed? _____

14. Exhibit E (question 23-c)*

a) Is it applicable?_____

b) Sufficient data?_____

c) Reasonable?_____

d) Field check needed?_____

15. In your judgment, can the proposed work be done in the proposed time?_____

(All exploration must be completed within two years)

16. If field examination is not needed, attach your recommendation. **--See below**

17. If field examination is needed, do you have any special instructions for the field team not indicated by your answers to the foregoing question? **Applicant has about 1500 feet of Wolrab Mill fault to explore on his leased property. If holes were spaced 150 feet apart and drilled to depth of 300 feet (Ste. Genevieve limestone), 10 holes could be drilled for less than $10,000 (based on applicant's figure of $3 per foot.). Such a plan might be regarded as the first phase of an exploration program and might be followed by the second phase, sinking of a shaft, if the results of the drilling show that shafting would still be exploration and not development. Applicant's proposed date of production of Nov. 1, 1951 is unrealistic.**

Reviewed by: **Van Alstine, U. S. G. S.**

Date 7/5/51

97692

MR. JAMES A. BARR, SR., INDUSTRIAL MINERALS BRANCH

INTER OFFICE MEMO FORM NO. 1.

THIS FORM MUST REMAIN IN THIS FILE JACKET AT ALL TIMES

DMA-

TA-

CHARGED TO	DATE	SEND. R'S INITIALS	RET'D	REMARKS
ARONDALE				
BANNERMAN				
BARR				
BOYD, ADMIN.				
BACON				
BOWLES, DR.				
BOURRET				
BRYSON				
CADZM				
CHANDLER				
CHIM				
FIELD TEAM				
GUNNSALLUS				
JOSEPHSON				
KEMP				
LYON				
MCCANN				
FLURY				
MITTENDORF				
MARSH				
MOON				
MOSIER				
NORTON				
PARSONS				
STROBEL				
VAN ALSTINE				
WASNEY	✓			
WEBER				

NAME OF APPLICANT: ARTHUR J. LAY, INC.

BUS. ADDRESS: 864½ Logan Street, Noblesville, Indiana

PLANT SITE: Pope County, Illinois

TYPE OF LOAN: Exploration

TA:

DMA & AMOUNT: 1321-X $30,000 - 50%

COMMODITY & QUANTITY OR PURPOSE: Fluorspar

FINAL ACTION: APPROVED 7-3-51.

Report Return to Draft file

BN 8/6

Arthur J Jay, Inc
2641½ Jason St.
Noblesville, Indiana

Surv. #: DMH 1321-8

Gentlemen -

We acknowledge receipt of your letter of July 27th regarding your plan of permit drilling and test for oil drilling. Regarding the test for oil drilling we note that the charge would be $3.25 per ft. plus $500 per hour for rig time; we assume that the hourly charge for rig time applies the least time, that is, time when the drilling is not a throwing in a normal fashion. Will you please ~~[illegible]~~ furnish an estimate of the amount of time which might be charged against the proposed drilling of this well, or at least we may estimate the total cost of the drilling.

Please advise also the cost of necessary casing, casing, and tubing, and the bill of lading and in detail in the footage and.

Regarding the proposal to sink one or more shafts suggest the drilling vault, please

specify the approximate size of the shaft, whether one or two compartment and what how much timbering might be required. Would pumping be required? Does the estimate of 30^{00} per foot include installation of hoist, gears and hoist, pump, compressor, etc?

Ben

FILE COPY
Surname:

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

Davis
Josephson

July 2, 1951

Memorandum

To: James A. Barr, Sr., Chief, Industrial Minerals Branch, DMA

From: H. W. Davis, Commodity Specialist, Ferrous Metals & Alloys Br.

Subject: DMA 1321x - application of Arthur J. Lay, Inc., 864½ Logan St., Noblesville, Indiana, for exploration loan (fluorspar)

The applicant has had much experience in developing fluorspar properties and producing fluorspar in the southern Illinois field. In 1929 and several years thereafter he was manager of the Crystal Fluorspar Co. and had much to do with developing the Crystal mine, which is now one of the important producers in the United States.

Mr. Lay also did much of the early drilling at the properties now operated by Ozark-Mahoning Co. in the Cave in Rock area of Illinois. Concerning this work, the following is quoted from Minerals Yearbook 1938:

Prospecting by Arthur J. Lay and others, who acquired options on some 2,000 acres about 8 miles north of Cave in Rock, indicated the existence of fluorspar at lower horizons of the limestone. The options were acquired by the Mahoning Mining Co. The property was prospected to a depth of 350 feet by drilling, which revealed sphalerite, fluorspar, and galena in quantities apparently worth exploiting.

Based on Mr. Lay's past experience in prospecting, developing, and producing fluorspar in southern Illinois, it is believed that his application for exploration loan should be approved.

H. W. Davis

HWDavis:cb

Copy to: Ferrous Metals
H. W. Davis
G. W. Josephson
Files

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

July 2, 1951

Memorandum

To: James A. Barr, Sr., Chief, Industrial Minerals Branch, DMA

From: H. W. Davis, Commodity Specialist, Ferrous Metals & Alloys Br.

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H. W. Davis

H. W. Davis

6/5/51

Defense Minerals Administration

Review of Application for Exploration Assistance

Docket No. DMA-1321X

Commodity Fluorspar

Total Amount $30,000

Govt. Participation 50%

1. Name and Address of Applicant Arthur J. Lay, Inc., 864½ Logan St., Noblesville, Indiana

2. Location of Property W½ NE¼ Sec. 22, T. 12 S., R. 7 E., Pope Co., Ill., 8 mi. W. of Elizabethtown on N. side of State Hwy. 146.

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If not, application will be rejected. Yes

4. Geologic probability of discovery—based on data in application (question #16, 17, 18, 20 and 22)*

Mines or Survey reports, etc., do you rate chances:

a) Good ✓

b) Poor

c) None

d) Don't know—needs field examination

e) Is there an alternative and favorable project? (If so, attach an explanation)

5. Is the applicant's right to the property clearly stated? (question 5, 6, 7)*

6. If applicant is a lessee, is a copy of the lease attached?

Does the lease have sufficient time to run to cover a future productive period?

*question numbers are those of MF-103

7. Are subordination agreements necessary?_____

a) MF-201?_____

b) MF-202_____

8. From the data presented, does the proposed project appear feasible from the point of view of:

a) Available manpower_____

b) Equipment and supplies_____
(Question 14 plus general knowledge of availability)*

c) Accessibility (question 12)*_____

d) Water (question 13)*_____

e) Power (question 13)*_____

Is a field check needed on any of these points?_____

9. Does the experience of the applicant appear to be adequate to assure that he can properly conduct the proposed project? (question 4)*_____

Is a field check needed on this point?_____

10. Exhibit A. (questions 21 and 22)*

a) Is the project adequately described? No

If not, are there sufficient data given so that you can describe the project? No If so, attach a draft.

b) Is there an adequate map or sketch of the proposed work? No -- location and spacing of definite number of holes should be shown. Applicant's sketch shows location of 2 holes not on his leased property.

c) Is the proposed work "exploration" under the definition of Section 8, MO-5? Yes, for the drilling; possibly, for the shafting, depending upon results of drilling.
If not, what part of it is? Drilling is.

Is this part a worthwhile exploration project? Yes

d) Are the cost estimates detailed? _____

Can they be summarized, as on page 2 of Procedural Instruction 5-A, from the available data? _____ If so, attach a draft.

e) Are the cost estimates reasonable? _____

f) Should more information be requested from applicant? Yes

g) Is a field examination necessary to complete Exhibit A? No

not accepted to Van Alstine should be Yes

11. Exhibit B (question 23-d)*

a) Is it applicable? _____

b) If so, are sufficient data furnished? _____ If so, attach a draft.

c) Is a field check needed? _____

12. Exhibit C (question 23-e, f and g)*

a) Is it applicable? _____

b) Sufficient data? _____ If so, attach a draft.

c) Are rents and charges reasonable? _____

d) Is a field check needed? _____

13. Exhibit D (question 23-a, b)*

a) Are there sufficient data? _____

b) Is the schedule adequate for the work proposed? _____

c) Is the schedule excessive for the work proposed? _____

d) Are the proposed wages and salaries reasonable? _____

e) Is a field check needed? _____

14. Exhibit E (question 23-c)*

a) Is it applicable? _____

b) Sufficient data? _____

c) Reasonable? _____

d) Field check needed? _____

15. In your judgment, can the proposed work be done in the proposed time? _____

(All exploration must be completed within two years)

16. If field examination is not needed, attach your recommendation. --See below

17. If field examination is needed, do you have any special instructions for the field team not indicated by your answers to the foregoing question? Applicant has about 1500 feet of Wolrab Mill fault to explore on his leased property. If holes were spaced 150 feet apart and drilled to depth of 300 feet (Ste. Genevieve limestone), 10 holes could be drilled for less than $10,000 (based on applicant's figure of $3 per foot.). Such a plan might be regarded as the first phase of an exploration program and might be followed by the second phase, sinking of a shaft, if the results of the drilling show that shafting would still be exploration and not development. Applicant's proposed date of production of Nov. 1, 1951 is unrealistic.

Reviewed by: Van Alstine, U. S. G. S.

_____

_____

Date 7/5/51

97692

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION
WASHINGTON 25, D. C. 370

Memorandum

To: Chief, Industrial Minerals Branch, DMA

From: Chief, Programming and Planning, DMA

Subject: DMA-1321X, Arthur J. Lay, Inc.
Noblesville, Indiana
Commodity: Fluorspar
Amount: $30,000
Government participation: 50% - $15,000

The prospective available supply of Fluorspar is far short of meeting defense requirements. Consequently, it is highly desirable that exploration for new domestic deposits be stimulated by any reasonable Government assistance to private interests. Any exploration project that holds promise of finding significant new reserves, merits consideration by Defense Minerals Administration.

A. B. Parsons / J. T. M.
A. B. Parsons

FILE COPY
SURNAME:

Barr

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

June 5, 1951

Campbell & Campbell
Attorney at Law
Noblesville, Indiana

Gentlemen:

Subject: DMA 1321-X

Regarding your application on behalf of Arthur J. Lay, Inc., for aid for Exploration Project on Fluorspar property in Pose County, Illinois, dated May 24, 1951 and docketed as DMA-1321X, it is necessary that we be furnished Landlords Subordination Form MF-202, executed in triplicate, in order to allow us to proceed with processing subject application.

Sincerely yours,

James Barr

James A. Barr, Sr., Chief
Industrial Minerals Branch

Enclosure

RWASKEY:mp

cc: Mr. Strobel
Mr. Barr
DMA Files

DMA 1321

G

FILE COPY
SURNAME:

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

May 31, 1951

Arthur J. Lay, Inc.
604 Logan Street
Noblesville, Indiana

Subject: DMA-1321X
Re: Exploration Loan

Gentlemen:

Receipt is acknowledged of your application and attachments of May 24, 1951 for an exploration loan under the Defense Production Act of 1950.

The application was assigned Docket Number DMA-1321X and was referred to Mr. James A. Barr, Chief, Industrial Minerals Branch on May 31, 1951.

In any future correspondence relating to your application, kindly refer to DMA-1321X.

Sincerely yours,

LANDON F. STROBEL
JHB

Landon F. Strobel
Executive Secretary

LFSTROBEL:jhs
cc: Strobel-2
Files
Barr
Lyon

Dmc 1321

dmd 13211X

CAMPBELL & CAMPBELL
ATTORNEYS AT LAW
NOBLESVILLE, INDIANA

FRANK S. CAMPBELL
FRANK W. CAMPBELL

TELEPHONE 494

May 25, 1951

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

Dear sir:

On behalf of Arthur J. Lay, Inc., an Indiana corporation with authority to do business in the state of Illinois, we are enclosing herewith quadruplicate copies of the following:

Form MF-100 with attached sheet of general technical data
Form MF-103 with answers to questions attached thereto, including a map of the land in question
Original lease and the sublease agreement

Will you please give this matter your prompt attention and advise this office at the earliest possible time concerning your action on the application of said corporation for government aid under the Defense Production Act of 1950.

If any further information is needed, please advise and we will be pleased to supply the same.

Very truly yours,

CAMPBELL & CAMPBELL

By Frank W Campbell

April 21, 1951

Mr. Arthur J. Lay
Ridgeville, Indiana

Subject: Exploration Program

Dear Mr. Lay:

Thank you for your letter of February 26, 1951 regarding Government assistance for the exploration, development and mining of fluorspar and other strategic minerals.

Under the Defense Act of 1950 an applicant having proven reserves of strategic minerals can obtain a procurement contract for such minerals as are in short supply. On the strength of these contracts, the applicant can obtain private financing in most instances.

The program recently approved for encouragement of exploration of strategic minerals calls for participation on the part of the applicant, as shown in Sec. 9 (a) (b) and (c) of the attached Regulation MD-5.

The details of the plan, explaining the projects that will be eligible for assistance, the terms and schedules of financing, repayment, and other pertinent information are enclosed.

Please indicate your willingness to provide your share of the funds needed to carry out the proposed exploration by completing the enclosed Forms MF-103, so that we can proceed further with consideration of your application, which may or may not require a field examination.

Sincerely yours,

James A. Barr, Sr., Chief
Industrial Minerals Branch

JAB:mec
Ext 5273

Enclosures 6

cc: Mr. Barr
Mr. Strobel
F I L E S

April 18, 1951

Mr. Arthur J. Lay
Ridgeville, Indiana

Dear Mr. Lay:

In response to your letter of April 5, 1951, there are enclosed five copies of Form MF-103 and a copy of the regulations pertaining thereto. Also enclosed are five copies of MF-100 "General Technical Data For Use Under The Defense Production Act of 1950," which is to accompany the application. Applications should be submitted in accordance with instructions set forth in Section 3 of Form MO-5; one copy may be retained for filing.

Should you have further questions in connection with this program, you may contact either this office or the Field Team office located in College Park, Maryland, as indicated in Section 3 of Form MO-5.

Sincerely yours,

LANDON F. STROBEL
HB

Landon F. Strobel
Executive Secretary

Enclosures 11

LFSTROBEL:hb

Copy to: Administrator's Reading File
Mr. Paul Ambrose, Region VIII
L. F. Strobel
Files

LANDON F. STROBEL

Ridgeville, Ind. 4/5/1951

U. S. Bureau of Mines
Washington, D. C.

BUREAU OF MINES
MAIL ROOM
WASHINGTON, D. C.
APR 9 2 PM

Dear Sirs:

Regarding the project of advancement of funds to qualified prospectors, who would prospect for critical minerals.

Kindly send me complete information and application blanks.

Yours sincerely,

Arthur J. Lay
Ridgeville, Indiana

4/18/51
Answered by Strobel
per HB

LANDON F. STROBEL

INTERIOR DEPT.
SECRETARY'S
MAIL CENTER
MAR - 5 1951
U.S. MINES

DEPARTMENT OF COMM
OFFICE OF
ADMINISTRATIVE SER

1951 MAR 1 AM 9 16

Ridgeville, Indiana, Feb. 26, 1951

Defense Minerals Admn.
Washi ngton, D. C.

Dear Sirs:

Fluorspar is rapidly becoming a critical and strategic mineral, as we all know.

Since 1930 I have located some of the largest and most profitable fluorspar deposits in the entire Ill.- Ky. district. That statement would doubtlessly be bourne out by statements by Prof. M. M. Leighton of the State Geological Survey in Urbana, Ill. and by Mr. Hubert W. Davis, of the Bureau of Mines there in Washington, or anyone else there in a position to know of the happenings in the fluorspar mining field.

I should be glad to function in the location of other deposits if such efforts could be financed by your department or through the help of your department. At present I have the time to do this and the work is most important, I sincerely believe.

Yours very truly,

Arthur J. Lay
Ridgeville, Indiana

MAR 8 1951
Reply

January 9, 1951

Mr. Arthur J. Lay

Midgeville, Indiana

Dear Mr. Lay:

Mr. Boyd has asked me to reply to your letter of December 23 inquiring concerning Government financial aid in connection with the production of fluorspar in the Illinois-Kentucky fluorspar-zinc-lead mining district.

The attached copy of a press release dated December 5 describes the types of assistance that can be given to mining enterprises. The last paragraph of this release outlines the type of information we need.

Any specific proposals you care to make should be submitted to the Defense Minerals Administration in Washington, D. C.

Sincerely yours,

L. B. MOON

Lowell B. Moon
Assistant to the Administrator

Enclosure 1

LBMoon:GR

Copy to: L. B. Moon
L. F. Strobel - Room 4623
Files
W. G. Agnew - College Park, Maryland

ARTHUR J. LAY
RIDGEVILLE
INDIANA

Dec. 23, 1950

Dear Mr. Boyd:

For many years I have been interested in the location and production of fluorspar in the famous Ill.- Ky. fluorspar-zinc-lead mining district.

Does your department provide for the financing on a small scale, of prospecting operations?

If so please let me have full information.

Yours very truly,

Arthur J. Lay

J. B. Mann
1-5-51

Form MF-100
(March 1951)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Form approved.
Budget Bureau No. 42-R1026.

GENERAL TECHNICAL DATA FOR USE UNDER THE DEFENSE PRODUCTION ACT OF 1950

NOT TO BE FILLED IN BY APPLICANT

Docket No. dma 1321 X

Date received 5-28-51

Arthur J. Ley, Inc.
3647 Boston St.
Cobleville, Indiana

Name and address of applicant

Date May 24, 1951

INSTRUCTIONS

This form is to be filed with Defense Minerals Administration, Department of the Interior, Washington 25, D. C. It should be accompanied by appropriate application form when a specific type of Government assistance is requested, in the form of (1) loan, (2) purchase contract, (3) Government guarantee of a private loan, (4) Necessity Certificate pursuant to the provisions of Sec. 124–A (Amortization Deduction) of Internal Revenue Code, 1950, (5) priorities or allocation of mining equipment, and maintenance, repair and operating supplies, and (6) other forms of Government assistance that might arise under the Act. Submit four (4) signed copies of the form and accompanying papers. Name and address should be stamped or typed on each sheet of this form and all accompanying papers. *When a question is inapplicable it should be so stated on the form.* Additional sheets may be attached in answering any questions or in supplying additional information. (IF YOU CANNOT ANSWER A QUESTION, SO STATE.) If a question is answered elsewhere indicate where answered. It is not necessary to answer it again.

GENERAL TECHNICAL DATA

Supply the following information on separate sheets, arranged, numbered, and lettered as indicated:

1. Materials produced:
   (*a*) What are the chief mine, mill, or smelter products?
   (*b*) What are the byproducts, if any?
2. Name(s) and type(s) of mine(s), mill(s), smelter(s), refinery(ies), pit(s), quarry (ies), drilling operation(s). Include old names of property, if any. Show extent of workings, including the following:
   (*a*) Linear feet of shafts.
   (*b*) Linear feet of drifts and crosscuts.
   (*c*) Linear feet of tunnels or adits.
   (*d*) Linear feet of other mine openings (explain briefly).
   Indicate whether mine is flooded or not. Describe any pumping problems. Give size or productive capacity.
3. For each operation listed above supply the following:
   (*a*) Distance and direction from nearest town and shipping point.
   (*b*) Mining district.
   (*c*) Township, Section, Range.
   (*d*) County, State.
4. (*a*) State whether or not property is now in operation, and if in operation, by whom operated.
   (*b*) Are you operating this property as:
   ☐ Owner.
   ☐ Lessee.
   ☐ Contractor.
5. Number of years in production _____
   If not in production or operation, estimated date when production will begin _____
6. Experience of operators:
   Describe the mining and general business experience of (*a*) the applicant, and (*b*) the person or persons who manage the project.
7. History:
   (*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for suspension of operation.
   (*b*) State briefly the known history and production of adjoining and neighboring properties.
   (*c*) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.

8. Names and addresses of Officers, Directors, or Partners, and in addition thereto, the five largest stockholders if applicant is a corporation.

Name and Address (a)	Official Title (If officer is also director indicate by "D") (b)	Total of Annual Salary, Commissions, Bonuses, Etc., Received From Applicant and Affiliates During Last Fiscal Year (c)	Estimated Net Worth Outside of Interest in Applicant (d)	Number of Shares Held in Applicant Corporation: Common (e)	Number of Shares Held in Applicant Corporation: Preferred (f)	Life Insurance Carried for Benefit of Applicant: Amount (g)	Life Insurance Carried for Benefit of Applicant: Net Cash Surrender Value After Loans (h)
Arthur J. Ley	Pres. & "D"	None		1			
E. J. Ayers	V.P. & "D"	"		10			
Louis Hill	Secy. & "D"	"		10			
Duane Abel	Treas. & "D"	"		10			
Lemuel B. Owens	Director	"		10			
L. E. Summers	Stockholder	"		10			
	Total		x x x x x			x x x x x	x x x x x

If more lines are needed continue on separate sheet.

9. Capital Stock Issues:

For Corporate Applicants

Item	Authorized (a)	Outstanding (b)	Par Value (c)	Number of Shares Outstanding (d)	Dividend Rate Last Paid* (e)
Common stock	$50,000	$4,700.	$No par	94	
Preferred stock	$	$	$		

*Indicate period covered.

10. Production:

Item	Kind of Product (a)	1948 Total (b)	1949 Total (c)	1950 Total (d)	Present Average Monthly (e)
1. Quantity of product mined or quarried (Short, long, metric tons; barrels; pounds; etc.)					
2. Quantity of product processed (specify unit of measure and type of process)					
3. Quantity and grade of product sold or shipped (specify units of measure)					

11. Do you contemplate a change in the present average monthly rate of production? If so, state estimated maximum monthly production and basis of change. No estimate possible.

12. Ore or Mineral Reserves:

(a) Describe the ore or mineral deposit briefly. Accompany the application by any available report on the geology and ore reserves. Information not available until after core drilling.

(*b*) If deposit is other than placer:

(1) Submit assay plans and/or sections showing location and size of proved (measured) and probable (indicated) ore or mineral reserve.

(2) State the tonnage (indicate type of ton) and grade of each class of ore reserve, as above, and show how computed. Tabulated total ore reserve as follows:

TOTAL ORE OR MINERAL RESERVES

Ore or Mineral Reserve	Estimated Tons (a)	Metal or Mineral Content Per Ton (Grade) (b)	Gross Value Per Ton (c)	Recoverable Unit Value Per Ton (d)	Estimated Cost of Production Per Ton (e)
Measured (proved)					
Indicated (probable)					

(*c*) If placer:

(1) Give estimated total yardage and average marketable mineral content of each deposit.

(2) Submit map showing location of placer deposit and surrounding area, with all test holes or pits. Submit logs of each hole and test pit with depth and average value of each.

(3) Describe gravel, stating whether fine, medium or coarse; loose, tight, cemented, or frozen, and whether it contains stumps or boulders more than 1 foot in diameter; if so, how large, and in what proportion.

(4) Describe bedrock, giving type (granite, sandstone, shale, etc.) and state whether it is hard or soft, smooth, uneven or rough.

(5) Describe overburden, stating whether loose, tight, or cemented; fine or coarse textured; furnish estimate of average thickness and total amount.

(6) Tabulate the reserves using the form outlined above for ore or mineral reserves.

13. Access Roads:

Give road distances to shipping, supply and residence points, stating kind and condition of roads.

14. Water Supply:

State source and quantity of water available for operations and whether sufficient for all seasons of year.

15. Power:

State amount of power used, rate per hour, and source thereof.

16. Labor:

State number and classes (miners, muckers, millmen, etc.) of men employed during a recent representative payroll period.

17. Equipment and Facilities:

Describe present equipment on the property, including buildings. (State condition.) List major pieces of equipment now owned or controlled and in serviceable condition available for this operation.

18. Are there any particular conditions or circumstances affecting your operations that are not described above? If so, explain.

CERTIFICATION

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

Arthur J. Lay, Inc.
(Name of company)

By Arthur J. Lay
(Signature of authorized official)

May 24th, 1951.
(Date)

Pres.
(Title)

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—63792-1

GENERAL TECHNICAL DATA

1. Materials produced:
   (a) fluorspar
   (b) galena, sphalerite

2. Names and types of drilling operations. Extent of workings to date - none. Proposed drilling operations of exploratory nature to be commenced immediately by core-drilling to depth of approximately 300 feet.

3. Proposed operations are located as follows:
   (a) 3 miles west of Rosiclare, Illinois, the nearest town and shipping point
   (b) The Illinois Kentucky Fluorspar Mining District
   (c) Section 22, Township 12 South, Range 7 East
   (d) Pope County, Illinois

4. (a) not now in operation
   (b) operations will be conducted on lease

5. Number of years in production - none. Anticipated production will begin November 1st, 1951.

6. Experience of operator: Arthur J. Ley, President and General Manager of applicant has had twenty years in operating and developing fluorspar properties.

7. History:
   (a) no previous operations at said location because no lease was obtainable on property until the present time.
   (b) Crystal Fluorspar Company operates the Jefferson Mine 1/4 mile east of the proposed operations. Also several small mines are being operated along the Stewart Fault from 1/2 mile to 1 mile east of proposed operations.
   (c) Site recommended by Dodd Gibson, Geologist for Crystal Fluorspar Company and other geologists.

For answers to 8, 9, 10, 11 and 12, see Form MF-100.

13. Access Roads: Site of proposed core drilling is located on State Highway #146, a concrete 8-lane, well-improved highway.

14. Water Supply: Immediate need for core drilling purposes supplied by Crystal Fluorspar Company 1/4 mile east of proposed operations. At depth of 100 feet, adequate water can be obtained for all types of operation. Water will be sufficient for all seasons of the year.

15. Power: Power lines of Southeastern Illinois Electric Cooperative, Inc. Interwood property. Rates $5.00 monthly minimum, first 40 kilowatts @5.00, next 60 kilowatts @ 4¢, next 900 kilowatts @ 3¢, next 2,000 @ 2¢, all over @ 1½¢.

16. Labor: None employed to date. Proposed operations will require approximately 10 miners. Supply in community sufficient.

17. Equipment and Facilities: No equipment at present. Core-drilling equipment will be furnished by contractor.

18. Applicant is a new corporation organized for the purpose of exploring for fluorspar and byproducts. Sufficient capital has already been paid in to carry on exploratory work. If mineral is found in paying quantities, additional capital is available to develop and mine the same.

Form MF-103
(April 1951)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Budget Bureau No. 42-R1035.
Approval expires 6-30-51.

APPLICATION FOR AID FOR AN EXPLORATION PROJECT PURSUANT TO MINERAL ORDER 5, UNDER DEFENSE PRODUCTION ACT OF 1950

DO NOT FILL IN THIS BLOCK

Docket No. DMA 13211X

Date received 5-28-51

Participation

Arthur J. Lay, Inc.,
864 Logan St.,
Noblesville,
Indiana.

Name and address of applicant

Date May 24, 1951

FILL IN THIS BLOCK

Date of application May 24, 1951

Estimated cost $ 30,000.00

Mineral or metal Fluorspar

Percentage of Government participation 50%

Location of mine ~~Legal description~~ 8 miles west of Elizabethtown, Ill. on N. side of state road No. 146. The west ½ of the N. E. ¼ of section 22, Twp. 12-south, ~~Range 7-east. In Pope County, Illinois.~~

Date of filing MF-100

DMA Docket Number, if available DMA 13211X

INSTRUCTIONS

Read Mineral Order 5, Regulations Governing Government Aid in Defense Projects, before completing this application. Submit four signed copies of the application to Defense Minerals Administration, Department of the Interior, Washington 25, D. C., or to the nearest field executive officer thereof, with your name and address on each sheet of the application and all accompanying papers. If any question is inapplicable, or if you cannot answer it, so state on the form. Where the space provided for answer is insufficient, answer on a separate sheet, annex it to the application form, and refer to it in space for answer. If the application is approved, you will be presented with an exploration project contract on Form MF-200, for your signature.

THE APPLICANT

*1. Is applicant an individual, partnership, or corporation?
*2. If a partnership, state names and addresses of partners.
*3. If a corporation, state names and addresses of officers, directors, and five largest stockholders.
*4. Describe the mining and general business experience of (*a*) the applicant, and (*b*) the person or persons who will manage the project.
*5. Are you the owner or the lessee of the property?
6. If owner, state what claims, liens, or encumbrances, if any, are against the property.
7. If lessee, attach a copy of the lease and state if it is in good standing.

NOTE.—It will be necessary to procure and attach to the exploration project contract agreements of claimants, lienors, encumbrances and lessors subordinating their interests in the property to the interest of the Government under the contract.

8. Furnish current financial statement, showing assets and liabilities, and a profit and loss statement.
9. How much money is applicant prepared to invest in proposed project? Is it sufficient to pay your part of the cost of the project as detailed in question 23 of this application form, in accordance with the regulations on Government participation (Section 9 of Mineral Order 5)?

*If you have already answered these questions on MF-100, you are not required to answer the questions for this application.

16—64067-1

THE PROPERTY

10. (*a*) Give a description of the real property that will be in any way involved in the exploration project, including any existing mine or operating property.
    (*b*) Give the legal description of the exact parcel, plot, or area upon which the exploration is to be conducted.

    NOTE.—If both areas are the same, so state. The only obligation to repay the Government is from the net earnings from any commercial discovery made in the area specified in (*b*) above in which the exploration is to be conducted, and the expenditure of funds which may be charged as costs of the project must be limited to that area or to work necessary to perform the exploration in that area.

*11. State the present and former names of the property, if any.

*12. State, in detail, the location of the property with reference to towns, railroads, roads, shipping points, including distances and directions and kinds and conditions of roads.

*13. State source and quantity of water available for operations and its sufficiency at all seasons.
State amount of power to be used, rate per hour or other cost, and source.

*14. Describe any existing useable facilities, equipment, buildings, or structure now on the property that will be devoted to the exploration work.

15. State in detail how the ore could be shipped and how and where milled.

*16. History:
    (*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for any past suspensions of operations.
    (*b*) State briefly the known history and production of adjoining and neighboring properties.
    (*c*) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.

*17. Production:
    (*a*) If mine is in production, furnish the following information:

	Tons per day	*Grade or analysis*	*Cost per ton*	*Net value per ton*
(1) Mining				
(2) Milling				
(3) Shipped or sold				

*18. Ore or mineral reserves: (If property is or has been operating.)
    (*a*) Describe the ore or mineral deposits briefly.
    (*b*) Submit available maps and assay data.
    (*c*) Give estimated tonnage and grade of each class of ore reserves.

19. State any conditions or circumstances regarding the property not sufficiently brought out by the foregoing questions.

THE EXPLORATION

20. For what mineral or minerals and for what types of deposits and ores will the exploration be conducted?

21. Describe briefly, but concisely, the proposed work and the estimated time required to complete it.

    NOTE.—The Government will not participate in a project that will require more than 2 years to complete.

22. Furnish statement of the geological basis of the project with particular emphasis on factors leading the operator to expect the finding of commercial ore bodies. This statement should be accompanied by supporting maps such as geological maps, maps of the proposed openings and assay maps, sample lists, and other pertinent data.

THE REQUIREMENTS AND COSTS

23. Tabulate in the form of an itemized statement with a sum for each item the estimated requirements and costs of the project so that the total will give the estimated cost of the project in which the Government will participate, as follows:
    (*a*) Labor, by numbers and classes (miners, muckers, millmen, etc.), with wages of each.
    (*b*) Supervisors, by numbers and positions, with salaries of each.
    (*c*) Cost of necessary repairs to existing facilities, structures, and buildings.
    (*d*) Cost of necessary installation or construction of additional facilities, structures, and buildings.
    (*e*) Cost of items of equipment, not now owned by the applicant which must be purchased for operations at a cost of $50 or more each.
    (*f*) Cost of rental for equipment which the operator proposes to rent.
    (*g*) Rental value of items of equipment which the operator now owns and which will be devoted to the work.
    (*h*) Cost of materials and supplies, including items of equipment costing less than $50 each.
    (*i*) Cost of power, water, utilities, and any other items not provided for above.

24. Furnish a time schedule of the project, stated in terms of months after project is approved, showing progress expected to be accomplished and the money expected to be spent.

CERTIFICATION

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

Arthur J. Lay, Inc.
(Name of company)

By Arthur J. Lay
(Signature of authorized official)

May 24th, 1951.
(Date)

Pres.
(Title)

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.

*Same as footnote on page 1.

16—64067-1 U. S. GOVERNMENT PRINTING OFFICE

Form IF-103

1. Corporation

8. Statement in lieu of financial statement: Assets consist of entire amount of paid in capital to-wit: $4,700 cash on deposit in banks less cost of incorporation and of acquiring leases to-wit: $534.20; balance of cash on hand $4,165.80. No other liabilities have been incurred to date. Corporation holds the attached lease and one other lease for 40½ acres. Value of leases unknown at present.

9. $15,000

10. (a) Property is not improved in so far as exploring and mining facilities are concerned.
(b) The west ½ of the N. E. ¼ of Section 22, Twp. 12-south, Range 7-east in Pope County, Illinois.

11. Unnamed.

15. Ore can be shipped by rail or river barge. Milling facilities will be available on the property and are now available at Rosiclair, Illinois.

16. History: In addition to mines already in operation as listed in Form IF-100, mineral has been found on adjoining property to the west by core drilling. Old workings have revealed mineral deposits on property approximately ½ mile southwest and upon the same Fault that traverses the site of the proposed exploration.

20. See answer to question #1 on Form IF-100.

21. Description of proposed work: Core-drilling operations will be conducted to a depth of approximately 300 feet and will require approximately two months. Shaft will be constructed wherever mineral deposits are located and will require approximately three months. Project should be in operation by approximately November 1st, 1951.

22. Geological basis: As shown in answer to other questions, the proposed site of exploration is virtually surrounded by mines now in operation and by known mineral deposits. The Wolrab Hill Fault where known minerals deposits are located traverses the site of the proposed exploration. From mines now in operation fluorspar, lead and zinc are being obtained in commercial quantities. See attached map for location of Fault and location of proposed exploration.

25. (a) Core drilling will be done by contract at $3.00 per foot. Shaft sinking will be done by contract at approximately $30.00 per foot. Actual mining operations will require approximately 10 miners.

(b) Arthur J. Lay, President and General Manager of the applicant corporation will supervise all operations. In lieu of salary Mr. Lay will receive an overriding royalty of 10% as shown in sub-h see agreement.

(c) No existing facilities and no repairs.

(d) Cost of installations and facilities depends on depth of mineral deposits and nature thereof. Estimated cost not to exceed $10,000.

(e) Not to exceed $5,000.

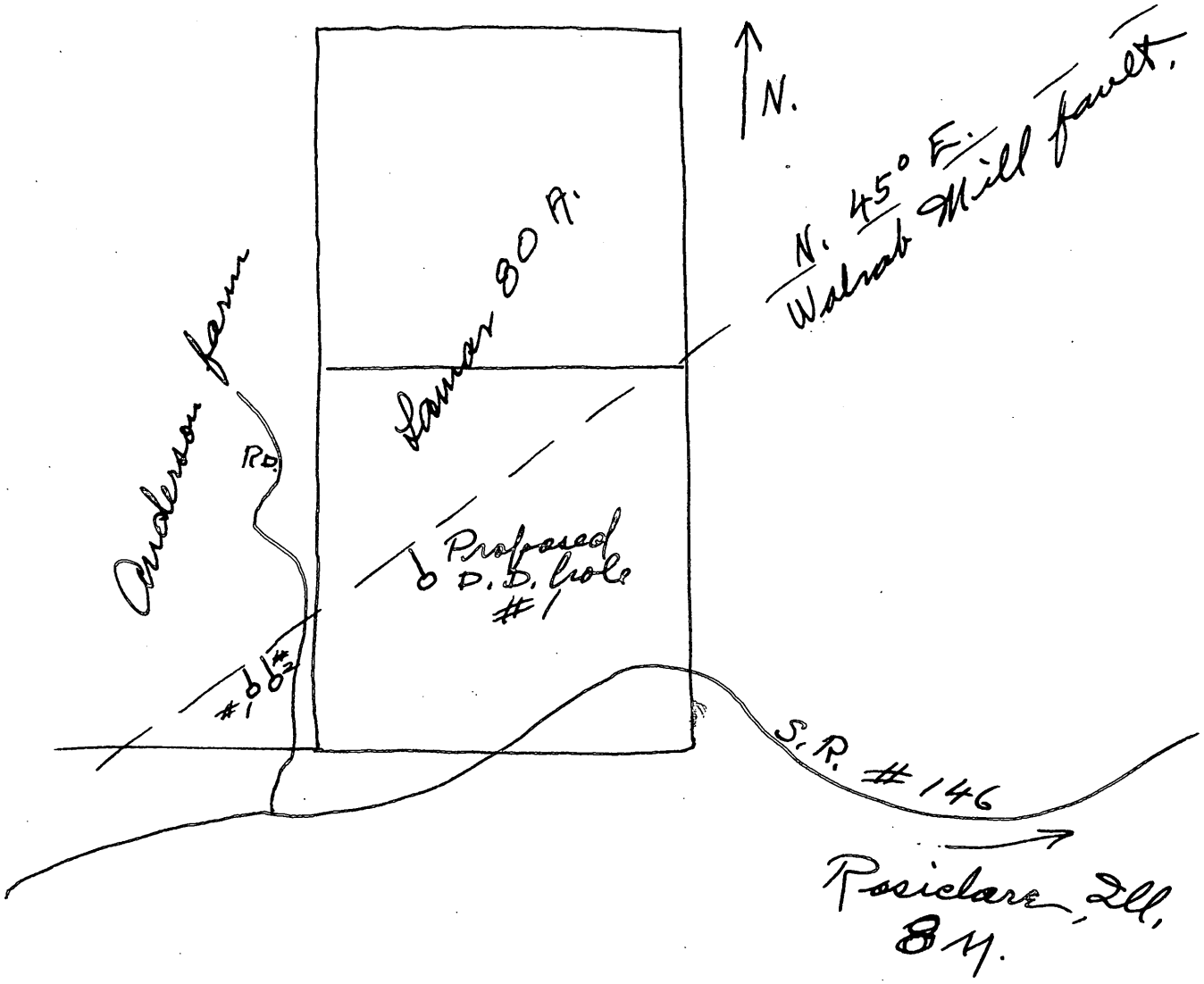
(f) Core drilling and shaft sinking will be done by contract. No actual rental of equipment anticipated.

(g) None.

(h) Not to exceed $1,000.

(i) $500.00.

26. Core drilling to be completed within two months; shaft sinking to be completed within three months after completion of core drilling. Production to commence within five to six months after approval of project. Anticipated expenditure of corporation capital and government aid approximately $30,000.


N.
N. 45° E.
Walnut Mill fault.
Lawson 80 A.
Anderson farm
RD.
Proposed
D.D. hole
#1
#1
#2
S.R. #146
Posiclare, Ill.
8 M.

LEASE AND CONTRACT

THIS LEASE AND CONTRACT, made and entered into this seventh (7th.) day of February, 1951, by and between W. J. Costigan and Virginia Lee Costigan, his wife, of 1510 Salem Hills Drive, Rock Hill, Missouri, and Mary Jane Van Schalkwyk and Willem Dirkse Van Schalkwyk, her husband, of 4836 Loughborough Rd. N.W., Washington, D. C., and Louis Lamar and Effie Lamar, his wife, of Golconda, Illinois, all as one party and hereinafter designated "owners", and Arthur J. Lay, of Ridgeville, Indiana, hereinafter designated "lessee", WITNESSETH:

WHEREAS, owners are the sole and entire owners of the mineral rights to the following described real estate, to-wit:

> The west one-half of the north-east quarter of section twenty-two (22), township twelve (12) south, range seven (7) east, in Pope County, State of Illinois, consisting of eighty (80) acres, more or less, and

WHEREAS, lessee is interested in securing the exclusive right to prospect for, mine, mill and otherwise prepare for market, any and all of the minerals or mineral substances of every kind and nature, in, upon, under or underlying the above described premises, and,

WHEREAS, owners desire to have such minerals or mineral substances, fluorspar, etc., mined from said premises as above stated and having said premises worked by the use of suitable machinery, equipment, fixtures and buildings, to be used directly or indirectly in con-connection with prospecting, mining and milling operations, which lessee may desire to place upon said premises, and prospecting for, mining, milling and recovering from said premises minerals and mineral substances of various kinds, as above stated, for the purpose of sale, and the exploitation and determination of the possibilities obtaining, and the same is agreeable to the owners thereof;

NOW, THEREFORE, in consideration of the sum of one dollar ($1.00) and other good and sufficient considerations paid or to be paid to the owners, the receipt and sufficiency of which is hereby acknowledged, and the covenants and agreements to be kept and performed by the lessee as hereinafter set forth, the owners have and by these presents do give and grant to the lessee the exclusive right to enter upon said premises for the purpose of prospecting, mining, milling and removing said minerals or mineral substances, erecting buildings for mining, milling and related operations in connection with the operations of lessee upon said premises, installing machinery, tipples, tanks, bins, water lines, sinking shafts, drifting, drilling or using and all methods known to the science of prospecting, mining, milling or refining or otherwise preparing ores, minerals, or mineral substances for market, with the exclusive right to so conduct prospecting, mining, milling and any related operations upon the said premises, together with the right of ingress and egress and to build and construct roads, trams and any other means of transportation over and across said premises for the purpose of transporting over and across said premises and therefrom the ores, minerals, mineral substances, fluorspar, etc., which may be found thereon or thereunder, as well as any equipment and supplies.

1. Lessee reserves the right to remove from said premises any of the buildings, machinery, equipment and other personal property of lessee placed thereon by lessee or at the expense of lessee, after the termination, surrender or forfeiture of this lease and contract as provided later herein.

2. Lessee agrees to begin development work or prospecting or mining, in an effort to determine the possibilities as to said premises, within ninety (90) days from the complete signing of this

lease and contract and lessee agrees to carry on such prospecting, mining, milling and related work with all reasonable expediency, insofar as weather, road, labor, market, or other conditions beyond the control of the lessee, will permit, for a period of at least eight (8) months of each year during the life of this instrument or any renewal or extension thereof unless excused from so doing in writing by the owners, and failure upon the part of lessee to do so shall cause this lease and contract to become null and void at the option of the owners, as provided herein.

3. The term of this lease and contract shall be for one year from the date hereof and for as long thereafter as the lessee shall comply with all of the terms, conditons and covenants set forth herein.

4. Lessee agrees to pay to owners a royalty of ten percent (10%) of the selling price of all fluorspar, minerals, or mineral substances mined and sold from off the said premises, All royalties shall be divided into three equal parts and one of said parts shall be paid directly to each of the above designated owners. All royalties accruing during any calendar month shall be paid to owners as above set forth by the last day of the succeeding month.

5. Owners shall have the right to examine any of the records and books of lessee and any of the workings of lessee upon the said premises that may be necessary to determine the amount of royalties due to owners from time to time and to determine the conditions related to the mining operations of lessee, but all such examinations shall be made at the risk of owners.

6. Lessee shall carry workmen's compensation and public liability insurance and shall comply with all of the State and Federal laws governing opprations of lessee upon said premises and, in any event, shall hold owners safe and harmless from any liability for damages occasioned to a stranger or to the employees of lessee resulting from any operations of lessee.

7. Lessee shall have the right to surrender this lease and contract at any time upon the payment of all royalties due to owners and, at the expiration, surrender or cancelation of this lease and contract, lessee shall have the right to remove any buildings, machinery or any other equipment placed thereon by lessee or at the expense of lessee and lessee shall have four (4) months time in which to make such removal.

8. Lessee shall have the right to remove any minerals or mineral substances, fluorspar, etc., mined from said premises for the purpose of milling the same or otherwise preparing the same for market.

9. Owners shall have the right to declare a forfeiture of this lease and contract should lessee neglect or refuse to comply with all of the terms and conditions herein, and should continue in such neglect or refusal for thirty (30) days after the receipt of a written notice from owners setting forth any such specific violation and the intention of owners to declare this lease and contract forfeited and void unless proper steps be taken by lessee within said thirty (30) days to comply with the specified terms and conditions.

10. This lease and contract is granted primarily for the purpose of prospecting for, mining, milling and selling fluorspar from the said premises and, while provision is made herein also for royalty covering other minerals and mineral substances, the prospecting for and the mining of any such other minerals or mineral substances is at the option of the lessee and there is no requirement hereunder for him so to do.

11. All rights hereunder shall inure, continue and apply to the heirs, successors or assigns of the parties hereto, and this lease and

contract is executed upon quadruplicate original copies hereof upon the day and year first above written.

W. J. Costigan	(SEAL)
Virginia Lee Costigan	(SEAL)
Mary Jane Van Schalkwyk	(SEAL)
Willem Dirkse Van Schalkwyk	(SEAL)
Louis Lamar	(SEAL)
Effie Lamar	(SEAL)
Arthur J. Lay	(SEAL)

Delivered and in effect this
the 14th. day of March, 1951.
Chas. Durfee

State of Missouri)
) SS.
St. Louis county)

I, Richard O. Werner, a Notary Public in and for said county, in the state aforesaid, do hereby certify that W. J. Costigan and Virginia Lee Costigan, his wife, personally known to me to be the same persons whose names are subscribed to the foregoing instrument, as having executed the same, 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 seal this 21st. day of February, 1951.

Richard O. Werner
Notary Public

My commission expires February 14, 1953.

State of Illinois)
) SS
Pope County)

I, Verba W. Moore, a Notary Public in and for said county in the state aforesaid, do hereby certify that Louis Lamar and Effie Lamar, his wife, and Arthur J. Lay, personally known to me to be the same persons whose names are subscribed to the foregoing instrument, as having executed the same, 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 10 day of February, 1951.

Verba W. Moore
Notary Public

My commission expires April 15, 1952.

District of)
)
Columbia)

I, Dorothy B. Porto, a Notary Public in and for the said District of Columbia, do hereby certify that Mary Jane Van Schalkwyk and Willem Dirkse Van Schalkwyk, her husband, personally known to me to be the same persons whose names are subscribed to the foregoing instrument, as having executed the same, 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 28th. day of February, 1951.

Dorothy B. Porto
Notary Public

My commission expires March 22, 1951.

SUB-LEASE AND AGREEMENT

THIS AGREEMENT made and entered into this the 24th day of May, 1951, by and between Arthur J. Lay, of Ridgeville, Indiana, hereinafter designated sub-lessor, and Arthur J. Lay, Inc., of Noblesville, Indiana, hereinafter designated sub-lessee, WITNESSETH. THAT WHEREAS, the sub-lessor, by virtue of a lease dated February 7th, 1951, now holds in full force and effect a lease upon the following described real estate;

> The west one-half of the north-east quarter of section twenty-two (22), township twelve (12) south, range seven (7) east, in Pope County in the State of Illinois, consisting of eighty (80) acres, more or less, and

WHEREAS, the sub-lessee herein desires to obtain similar rights and privileges, with some concessions to sub-lessor, to the above described premises, which concessions and terms are fully set forth herein, and

WHEREAS, the sub-lessor is desirous of sub-letting the above described premises to the sub-lessee for the purposes hereinafter set forth and under the following terms and conditions, to-wit:

NOW, THEREFORE, in consideration of the sum of one dollar ($1.00) and other valuable and sufficient considerations paid or to be paid to the sub-lessor, the receipt and sufficiency of which is hereby acknowledged, and the covenants and agreements to be kept and performed by the sub-lessee as hereinafter set out, the sub-lessor has and by these presents does give and grant to the sub-lessee the exclusive right to enter upon the said premises for the purpose of prospecting, mining, milling and removing minerals or mineral substances, erecting buildings for mining, milling and related operations in connection with operations of the sub-lessee upon said premises, installing machinery, tipples, tanks, bins, water lines, sinking shafts, drifting, drilling, or using any and all methods known to the science of prospecting, mining, milling or refining or otherwise preparing ores, minerals or mineral substances for market, with the exclusive right to so conduct prospecting, mining, milling and any related operations upon the said premises, together with the right of ingress and egress and to build and construct roads, trams and any other means of transportation over and across said premises for the purpose of transporting over and across said premises and therefrom the ores, minerals and mineral substances, fluorspar, etc., which may be found thereon or thereunder, as well as any equipment and supplies.

1. Sublessee reserves the right to remove from the said premises any of the buildings, machinery, equipment and other personal property of sub-lessee placed thereon by sub-lessee or at the expense of sub-lessee, after the termination, surrender or forfeiture of this sub-lease and agreement as provided later herein.

2. Sub-lessee agrees to begin development work or prospecting or mining, in an effort to determine the possibilities as to said premises, within twenty (20) days from the date of this sub-lease and agreement and sub-lessee agrees to carry on such prospecting, mining, milling and related work with all reasonable expediency, insofar as weather, road, labor, market, or other conditions beyond the control of the sub-lessee, will permit, for a period of at least eight (8) months of each year during the life of this instrument or

any renewal or extension thereof unless excused from so doing in writing by the sub-lessor hereof, and failure upon the part of the sub-lessee to so do shall cause this sub-lease and agreement to become null and void at the option of the sub-lessor, a s provided herein.

3. The term of this sub-lease and agreement shall be for one year from the date hereof and for as long thereafter as the sub-lessee shall comply with the terms, conditions and covenants set forth herein.

4. Sub-lessee agrees to pay to the sub-lessor a royalty of twenty (20) percent of the selling price of all fluorspar, minerals or mineral substances mined and sold from off the said premises. All royalty accru ing during any calendar month shall be paid to sub-le ssor upon or before the last day of the succeeding month.

5. Sub-le ssor shall have the right to examine any of the records and books of the sub-lessee and any of the workings of sub-lessee upo the said premises that may be necessary to determine the amount of royalties due to sub-lessor hereunder from time to time and to determine the conditions of the mining operations of sub-lessee, but all such examinations shall be made at the risk of the sub-lessor.

6. Sub-lessee shall supply sub-lessor with duplicate sales and weigh tickets upon all fluorspar, minerals, mineral substances, etc. when and as sold by sub-lessee.

7. Sub-lessee shall carry workmen's compensation and public liability insurance and shall comply with all of the State and Federal laws governing operations of sub-le ssee upon the said premises and, in any event, shall hold sub-lessor harmless from any liability for damages occasioned to a stranger or to the employees of sub-lessee or any other person or persons resulting from any of the operations of the sub-lessee.

8. Sub-lessee shall have the right to surrender this sub-lease and agreement at any time upon the payment of all royalties due to sub-le ssor and at the expiration, surrender or cancellation of this sub-le ase and agreement, sub-le ssee shall have the right to remove any buildings, machinery or any other equipment placed thereon by sub-le ssee or at the expense of sub-le ssee and sub-lessee shall have three (3) months time in which to make such removal.

9. Sub-lessee shall have the right to remove any minerals or mineral substances, fluorspar, etc. mined from said premises for the purpose of milling the same or otherwise preparing the same for market.

10. Sub-lessor shall have the right to declare a forfeiture of this sub-le ase and agreement should sub-lessee refuse or neglect to comply with all of the terms and conditions herein, and should continue in such neglect or refusal for fifteen (15) days after the receipt of a written notice from the sub-lessor setting forth any such specific violation and the intention of sub-lessor to declare this lease and agreement forfeited and void unless proper steps be taken by sub-lessee within said fifteen(15) days to properly comply with the t erms and conditions specified in said notice.

11. This sub-lease and agreement is granted primarily for the purpose of prospecting for, mining, milling and selling fluor-spar from the above described premises and, while provision is made herein also for royalty covering other minerals or mineral substances, the prospecting for and the mining of any such other minerals or mineral substances is at the option of the sub-lessee and there is no requirement hereunder for said sub-lessee so to do.

12. All rights hereunder shall inure, continue and apply to the heirs, successors or assigns of the parties hereto, and this sub-lease and agreement is executed upon duplicate original copies hereof upon the day and year first above written.

/s/ Arthur J. Lay (Seal)

ARTHUR J. LAY, INC.

By Arthur J. Lay, (Seal)

Pres.

ATTEST:

/s/Louis Hill

Secretary.

STATE OF INDIANA)
) SS.
HAMILTON COUNTY)

I, Frank W. Campbell, a Notary Public in and for said county in the state aforesaid, do hereby certify that Arthur J. Lay, personally known to me to be the same person whose name is subscribed to the foregoing instrument, as having executed the same, 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 24th day of May, 1951.

Frank W. Campbell,
Notary Public.

My commission expires January 10th, 1955.

STATE OF INDIANA)
) SS.
HAMILTON COUNTY)

I, Frank W. Campbell, a Notary Public in and for said county in the state aforesaid, do hereby certify that Arthur J. Lay, to me personally known as the President of Arthur J. Lay, Inc., and also known to me as the person whose name is signed to the foregoing instrument, and Louis Hill, Secretary of said Arthur J. Lay, Inc., and also known to me as the person whose name is signed to the foregoing instrument, each appeared before me this day in person and each for himself acknowledged that he signed, sealed and delivered the said instrument as his free and voluntary act and as the free and voluntary act of said Arthur J. Lay, Inc., for the uses and purposes therein set forth, and the said Louis Hill also acknowledged that he affixed the seal of said corporation to said instrument, and each acknowledged that the execution of said instrument was duly authorized by the Board of Directors of said Arthur J. Lay, Inc.

Given under my hand and notarial seal this 24th day of May, 1951.

Frank W. Campbell,
Notary Public.

My commission expires January 10th, 1955.

MEMORANDUM:

TO: Director, Production Expansion Division
Defense Minerals Administration

FROM: Director, Supply Division
Defense Minerals Administration

SUBJECT: Recommendation for Contract Approval

Name of Applicant: Arthur J. Dugdale
[illegible]

DMA No. 1321-7

Commodity: Chromite

Amount Requested: $ 30,000

Amount Approved: $ 30,000

Government Participation: 50 % $ 15,000

Tom Lyon

Recommendation

1) That an Exploration Aid Contract be granted in the amount of $30,000, Government Participation 50%, in accordance with Schedule "A" attached.

2) That the project be authorized in two Stages: "A" & "B". Stage "A" to consist of 6 diamond drill holes to a maximum total of 3000', 3" core, [illegible], Stage "B" consisting of approximately 8"x8" underground to a maximum depth of 300'. Stage "B" will be authorized as soon as satisfactory completion of Stage "A" is in the opinion of Federal Team, such additional contract necessary at the effective date of Stage "A".

3) That Director be allowed 30 days from contract date to begin work on project.

Exhibit "A".

Description of Project

Stage "A"

A diamond drill hole, 3X core or larger, will be drilled to a maximum inclined length of 300' and maximum vertical depth of 300'. The hole is intended to intersect the Rollinsville Fault at a vertical depth of approximately 300' in the S.E. Quarter of Section. If intersect the fault at a vertical depth of less than 300' the hole will be stopped at a depth of approximately 150' vertical. One hole has already been completed in the above noted area; the first hole to be drilled under the contract will be a test 100' northeast of this hole along the fault strike. The additional 5 holes will be spaced along the fault strike at intervals of 150' to 300' at the direction of Operator. Drilling will be by contract, core to be logged by Operator. Total allowable cost $10,310, time limit 6 months.

Stage "B"

Subject to satisfactory completion of Stage "A" and approval by Field Team an approximately 6'x8' vertical shaft with

It is to be a working depth of 300' to finish exploration for deposits which may be satisfactorily developed under Stage "A", location of shaft will be determined by results of the Operation of Test Tunnel. Total allowed cost $19,650, time limit 4 months.

Recapitulation of Project Costs

Stage "A"

300' diamond drilling by contract @ $3.25 per ft.	$ 9,750
Extra Reg time, cementing etc 60 hrs @ 50¢	300
Core handling, assaying etc	300
Total	$ 10,350

Stage "B"

350' shafting by contract @ $30 per ft.	$ 10,500
Headframe, Hoist, Pump & Compressor	6,350
Miscellaneous Equipment	1,000
Timber Lagging & Steel	400
Supplies, Transportation to site, power, incidentals	1,350
	$ 19,650

Fixtures and Improvements

Step "A"

Not Applicable

Step "B"

1 - Headframe, complete $800.00

Operating Equipment

Step "A"

All necessary equipment will be furnished by drilling contractor.

Step "B"

Equipment

1 - Hoist	$2000
1 - Pump	150
1 - Compressor	300
Jackhammer, steel, pipe, Hoist buckets, rail track, etc.	1000
	$6550

The above equipment will be selected as suitably for raising the shaft at the discretion of operating and may be greater or less than listed and will be complete with all necessary incidental items to assure their satisfactory operation.

Supplies

Supplies including fuel, lubricants, bits, small tools, etc; power, transportation, contingencies $1,350

Labor & Supervision

General supervision will be supplied by operator without cost to the project.

All labor will be included in contracts for rock building and shaft sinking.

Contracts

Stage "A"

Diamond drilling will be done under contract at a rate of $0.25 per foot plus $0.50 per hour for lost drilling time with a limit of 10 hours lost time per drilling hole.

Stage "B"

All work will be done by contractor contracts allowing a margin of $800 for the first two months and $600 for the subsequent months. The rate of $50 per foot will include all labor, powder,

~~Quality~~ fuel, eyes, contrails, steel and
heat resisting, etc.

Rehabilitation and repairs

Not applicable

Form MF-100
(March 1951)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Form approved.
Budget Bureau No. 42-R1026.

GENERAL TECHNICAL DATA FOR USE UNDER THE DEFENSE PRODUCTION ACT OF 1950

NOT TO BE FILLED IN BY APPLICANT

Docket No. dma 13211X

Date received 5-28-51

Arthur J. Lay, Inc.
8641 Logan St.
Noblesville, Indiana

Name and address of applicant

Date May 24, 1951

INSTRUCTIONS

This form is to be filed with Defense Minerals Administration, Department of the Interior, Washington 25, D. C. It should be accompanied by appropriate application form when a specific type of Government assistance is requested, in the form of (1) loan, (2) purchase contract, (3) Government guarantee of a private loan, (4) Necessity Certificate pursuant to the provisions of Sec. 124-A (Amortization Deduction) of Internal Revenue Code, 1950, (5) priorities or allocation of mining equipment, and maintenance, repair and operating supplies, and (6) other forms of Government assistance that might arise under the Act. Submit four (4) signed copies of the form and accompanying papers. Name and address should be stamped or typed on each sheet of this form and all accompanying papers. *When a question is inapplicable it should be so stated on the form.* Additional sheets may be attached in answering any questions or in supplying additional information. (IF YOU CANNOT ANSWER A QUESTION, SO STATE.) If a question is answered elsewhere indicate where answered. It is not necessary to answer it again.

GENERAL TECHNICAL DATA

Supply the following information on separate sheets, arranged, numbered, and lettered as indicated:

1. Materials produced:
   (*a*) What are the chief mine, mill, or smelter products?
   (*b*) What are the byproducts, if any?
2. Name(s) and type(s) of mine(s), mill(s), smelter(s), refinery(ies), pit(s), quarry (ies), drilling operation(s). Include old names of property, if any. Show extent of workings, including the following:
   (*a*) Linear feet of shafts.
   (*b*) Linear feet of drifts and crosscuts.
   (*c*) Linear feet of tunnels or adits.
   (*d*) Linear feet of other mine openings (explain briefly).

   Indicate whether mine is flooded or not. Describe any pumping problems. Give size or productive capacity.
3. For each operation listed above supply the following:
   (*a*) Distance and direction from nearest town and shipping point.
   (*b*) Mining district.
   (*c*) Township, Section, Range.
   (*d*) County, State.
4. (*a*) State whether or not property is now in operation, and if in operation, by whom operated.
   (*b*) Are you operating this property as:
   - ☐ Owner.
   - ☐ Lessee.
   - ☐ Contractor.
5. Number of years in production _____

   If not in production or operation, estimated date when production will begin _____
6. Experience of operators:

   Describe the mining and general business experience of (*a*) the applicant, and (*b*) the person or persons who manage the project.
7. History:
   (*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for suspension of operation.
   (*b*) State briefly the known history and production of adjoining and neighboring properties.
   (*c*) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.

8. Names and addresses of Officers, Directors, or Partners, and in addition thereto, the five largest stockholders if applicant is a corporation.

Name and Address (a)	Official Title (If officer is also director indicate by "D") (b)	Total of Annual Salary, Commissions, Bonuses, Etc., Received From Applicant and Affiliates During Last Fiscal Year (c)	Estimated Net Worth Outside of Interest in Applicant (d)	Number of Shares Held in Applicant Corporation: Common (e)	Number of Shares Held in Applicant Corporation: Preferred (f)	Life Insurance Carried for Benefit of Applicant: Amount (g)	Life Insurance Carried for Benefit of Applicant: Net Cash Surrender Value After Loans (h)
Arthur J. Ley	Pres. & "D"	None		1			
E. J. Ayers	V.P. & "D"	"		10			
Louis Hill	Secy. & "D"	"		10			
Duane Abel	Treas. & "D"	"		10			
Lemuel B. Owens	Director	"		10			
L. E. Summers	Stockholder	"		10			
	Total		x x x x x			x x x x x	x x x x x

If more lines are needed continue on separate sheet.

9. Capital Stock Issues:

For Corporate Applicants

Item	Authorized (a)	Outstanding (b)	Par Value (c)	Number of Shares Outstanding (d)	Dividend Rate Last Paid* (e)
Common stock	$ 50,000	$ 4,700.	$ No par	04	
Preferred stock	$	$	$		

*Indicate period covered.

10. Production:

Item.	Kind of Product (a)	1948 Total (b)	1949 Total (c)	1950 Total (d)	Present Average Monthly (e)
1. Quantity of product mined or quarried (Short, long, metric tons; barrels; pounds; etc.)					
2. Quantity of product processed (specify unit of measure and type of process)					
3. Quantity and grade of product sold or shipped (specify units of measure)					

11. Do you contemplate a change in the present average monthly rate of production? If so, state estimated maximum monthly production and basis of change. No estimate possible.

12. Ore or Mineral Reserves:

(a) Describe the ore or mineral deposit briefly. Accompany the application by any available report on the geology and ore reserves. Information not available until after core drilling.

16—63792-1

(*b*) If deposit is other than placer:

(1) Submit assay plans and/or sections showing location and size of proved (measured) and probable (indicated) ore or mineral reserve.

(2) State the tonnage (indicate type of ton) and grade of each class of ore reserve, as above, and show how computed. Tabulated total ore reserve as follows:

TOTAL ORE OR MINERAL RESERVES

Ore or Mineral Reserve	Estimated Tons (a)	Metal or Mineral Content Per Ton (Grade) (b)	Gross Value Per Ton (c)	Recoverable Unit Value Per Ton (d)	Estimated Cost of Production Per Ton (e)
Measured (proved)					
Indicated (probable)					

(*c*) If placer:

(1) Give estimated total yardage and average marketable mineral content of each deposit.

(2) Submit map showing location of placer deposit and surrounding area, with all test holes or pits. Submit logs of each hole and test pit with depth and average value of each.

(3) Describe gravel, stating whether fine, medium or coarse; loose, tight, cemented, or frozen, and whether it contains stumps or boulders more than 1 foot in diameter; if so, how large, and in what proportion.

(4) Describe bedrock, giving type (granite, sandstone, shale, etc.) and state whether it is hard or soft, smooth, uneven or rough.

(5) Describe overburden, stating whether loose, tight, or cemented; fine or coarse textured; furnish estimate of average thickness and total amount.

(6) Tabulate the reserves using the form outlined above for ore or mineral reserves.

13. Access Roads:

Give road distances to shipping, supply and residence points, stating kind and condition of roads.

14. Water Supply:

State source and quantity of water available for operations and whether sufficient for all seasons of year.

15. Power:

State amount of power used, rate per hour, and source thereof.

16. Labor:

State number and classes (miners, muckers, millmen, etc.) of men employed during a recent representative payroll period.

17. Equipment and Facilities:

Describe present equipment on the property, including buildings. (State condition.) List major pieces of equipment now owned or controlled and in serviceable condition available for this operation.

18. Are there any particular conditions or circumstances affecting your operations that are not described above? If so, explain.

CERTIFICATION

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

Arthur J. Lay, Inc.
(Name of company)

By William J. Lay
(Signature of authorized official)

May 24th, 1951.
(Date)

Pres.
(Title)

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—63792-1

GENERAL TECHNICAL DATA

1. Materials produced:
   (a) flourspar
   (b) galcena, sphalerite

2. Names and types of drilling operations. Extent of workings to date - none. Proposed drilling operations of exploratory nature to be commenced immediately by core-drilling to depth of approximately 300 feet.

3. Proposed operations are located as follows:
   (a) 3 miles west of Rosecliar, Illinois, the nearest town and shipping point
   (b) The Illinois Kentucky Flourspar Mining District
   (c) Section 22, Township 12 South, Range 7 East
   (d) Pope County, Illinois

4. (a) not now in operation
   (b) operations will be conducted as lessee

5. Number of years in production - none. Anticipated production will begin November 1st, 1951.

6. Experience of operator: Arthur J. Ley, President and General Manager of applicant has had twenty years in operating and developing flourspar properties.

7. History:
   (a) no previous operations at said location because no lease was obtainable on property until the present time.
   (b) Crystal Flourspar Company operates the Jefferson Mine 1/4 mile east of the proposed operations. Also several small mines are being operated along the Stewart Fault from 1/2 mile to 1 mile east of proposed operations.
   (c) Site recommended by Dodd Gibson, Geologist for Crystal Flourspar Company and other geologists.

For answers to 8, 9, 10, 11 and 12, see Form MF-100.

13. Access Roads: Site of proposed core drilling is located on State Highway #146, a concrete 2-lane, well-improved highway.

14. Water Supply: Immediate need for core drilling purposes supplied by Crystal Flourspar Company 1/4 mile east of proposed operations. At depth of 100 feet, adequate water can be obtained for all types of operation. Water will be sufficient for all seasons of the year.

15. Power: Power lines of Southeastern Illinois Electric Cooperative, Inc. intersect property. Rates $5.00 monthly minimum, first 40 kilowatts $3.00, next 60 kilowatts @ 4¢, next 000 kilowatts @ 3¢, next 2,000 @ 2¢, all over @ 1½¢.

16. Labor: None employed to date. Proposed operations will require approximately 10 miners. Supply in community sufficient.

17. Equipment and Facilities: No equipment at present. Core-drilling equipment will be furnished by contractor.

18. Applicant is a new corporation organized for the purpose of exploring for fluorspar and byproducts. Sufficient capital has already been paid in to carry on exploratory work. If mineral is found in paying quantities, additional capital is available to develop and mine the same.

Form MF-103
(April 1951)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Budget Bureau No. 42-R1035.
Approval expires 6-30-51.

APPLICATION FOR AID FOR AN EXPLORATION PROJECT PURSUANT TO MINERAL ORDER 5, UNDER DEFENSE PRODUCTION ACT OF 1950

DO NOT FILL IN THIS BLOCK

Docket No. DMA 13241X

Date received 5-28-51

Participation

[illegible]

Name and address of applicant

Date [illegible]

FILL IN THIS BLOCK

Date of application [illegible]

Estimated cost [illegible]

Mineral or metal [illegible]

Percentage of Government participation [illegible]

Location of mine [illegible]

Date of filing MF-100

DMA Docket Number, if available DMA 13241X

INSTRUCTIONS

Read Mineral Order 5, Regulations Governing Government Aid in Defense Projects, before completing this application. Submit four signed copies of the application to Defense Minerals Administration, Department of the Interior, Washington 25, D. C., or to the nearest field executive officer thereof, with your name and address on each sheet of the application and all accompanying papers. If any question is inapplicable, or if you cannot answer it, so state on the form. Where the space provided for answer is insufficient, answer on a separate sheet, annex it to the application form, and refer to it in space for answer. If the application is approved, you will be presented with an exploration project contract on Form MF-200, for your signature.

THE APPLICANT

*1. Is applicant an individual, partnership, or corporation?
*2. If a partnership, state names and addresses of partners.
*3. If a corporation, state names and addresses of officers, directors, and five largest stockholders.
*4. Describe the mining and general business experience of (*a*) the applicant, and (*b*) the person or persons who will manage the project.
*5. Are you the owner or the lessee of the property?
6. If owner, state what claims, liens, or encumbrances, if any, are against the property.
7. If lessee, attach a copy of the lease and state if it is in good standing.

NOTE.—It will be necessary to procure and attach to the exploration project contract agreements of claimants, lienors, encumbrances and lessors subordinating their interests in the property to the interest of the Government under the contract.

8. Furnish current financial statement, showing assets and liabilities, and a profit and loss statement.
9. How much money is applicant prepared to invest in proposed project? Is it sufficient to pay your part of the cost of the project as detailed in question 23 of this application form, in accordance with the regulations on Government participation (Section 9 of Mineral Order 5)?

*If you have already answered these questions on MF-100, you are not required to answer the questions for this application.

16—64067-1

THE PROPERTY

10. (*a*) Give a description of the real property that will be in any way involved in the exploration project, including any existing mine or operating property.
    (*b*) Give the legal description of the exact parcel, plot, or area upon which the exploration is to be conducted.

    NOTE.—If both areas are the same, so state. The only obligation to repay the Government is from the net earnings from any commercial discovery made in the area specified in (*b*) above in which the exploration is to be conducted, and the expenditure of funds which may be charged as costs of the project must be limited to that area or to work necessary to perform the exploration in that area.

*11. State the present and former names of the property, if any.

*12. State, in detail, the location of the property with reference to towns, railroads, roads, shipping points, including distances and directions and kinds and conditions of roads.

*13. State source and quantity of water available for operations and its sufficiency at all seasons.
State amount of power to be used, rate per hour or other cost, and source.

*14. Describe any existing useable facilities, equipment, buildings, or structure now on the property that will be devoted to the exploration work.

15. State in detail how the ore could be shipped and how and where milled.

*16. History:
    (*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for any past suspensions of operations.
    (*b*) State briefly the known history and production of adjoining and neighboring properties.
    (*c*) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.

*17. Production:
    (*a*) If mine is in production, furnish the following information:

	Tons per day	*Grade or analysis*	*Cost per ton*	*Net value per ton*
(1) Mining				
(2) Milling				
(3) Shipped or sold				

*18. Ore or mineral reserves: (If property is or has been operating.)
    (*a*) Describe the ore or mineral deposits briefly.
    (*b*) Submit available maps and assay data.
    (*c*) Give estimated tonnage and grade of each class of ore reserves.

19. State any conditions or circumstances regarding the property not sufficiently brought out by the foregoing questions.

THE EXPLORATION

20. For what mineral or minerals and for what types of deposits and ores will the exploration be conducted?

21. Describe briefly, but concisely, the proposed work and the estimated time required to complete it.

    NOTE.—The Government will not participate in a project that will require more than 2 years to complete.

22. Furnish statement of the geological basis of the project with particular emphasis on factors leading the operator to expect the finding of commercial ore bodies. This statement should be accompanied by supporting maps such as geological maps, maps of the proposed openings and assay maps, sample lists, and other pertinent data.

THE REQUIREMENTS AND COSTS

23. Tabulate in the form of an itemized statement with a sum for each item the estimated requirements and costs of the project so that the total will give the estimated cost of the project in which the Government will participate, as follows:
    (*a*) Labor, by numbers and classes (miners, muckers, millmen, etc.), with wages of each.
    (*b*) Supervisors, by numbers and positions, with salaries of each.
    (*c*) Cost of necessary repairs to existing facilities, structures, and buildings.
    (*d*) Cost of necessary installation or construction of additional facilities, structures, and buildings.
    (*e*) Cost of items of equipment, not now owned by the applicant which must be purchased for operations at a cost of $50 or more each.
    (*f*) Cost of rental for equipment which the operator proposes to rent.
    (*g*) Rental value of items of equipment which the operator now owns and which will be devoted to the work.
    (*h*) Cost of materials and supplies, including items of equipment costing less than $50 each.
    (*i*) Cost of power, water, utilities, and any other items not provided for above.

24. Furnish a time schedule of the project, stated in terms of months after project is approved, showing progress expected to be accomplished and the money expected to be spent.

CERTIFICATION

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

Arthur J. Lay, Inc.
(Name of company)

By Arthur J. Lay
(Signature of authorized official)

May 24th, 1951.
(Date)

Pres.
(Title)

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.

*Same as footnote on page 1.

16—64067-1 U. S. GOVERNMENT PRINTING OFFICE

Form IP-103

1. Corporation

9. Statement in lieu of financial statement: Assets consist of entire amount of paid in capital to-wit: $4,700 cash on deposit in bank less cost of incorporation and of acquiring leases to-wit: $536.20; balance of cash on hand $4,163.80. No other liabilities have been incurred to date. Corporation holds the attached lease and one other lease for 40 acres. Value of leases unknown at present.

9. $10,000

10. (a) Property is not improved in so far as exploring and mining facilities are concerned.
(b) The west ½ of the N. E. ¼ of Section 22, Twp. 12-south, Range 7-east in Pope County, Illinois.

11. Unknown.

12. Ore can be shipped by rail or river barge. Milling facilities will be available on the property and are now available at Rosiclair, Illinois.

16. History: In addition to mines already in operation as listed in Form IP-100, mineral has been found on adjoining property to the west by core drilling. Old workings have revealed mineral deposits on property approximately ½ mile southwest and upon the same fault that traverses the site of the proposed exploration.

20. See answer to question A on Form IP-100.

21. Description of proposed work: Core-drilling operations will be conducted to a depth of approximately 300 feet and will require approximately two months. Shaft will be constructed thereon mineral deposits are located and will require approximately three months. Project should be in operation by approximately November 1st, 1951.

22. Geological basis: As shown in answer to other questions, the proposed site of exploration is virtually surrounded by mines now in operation and by known mineral deposits. The Hobreb Hill Fault where known mineralis deposits are located traverses the site of the proposed exploration. From mines now in operation Fluorspar, lead and zinc are being obtained in commercial quantities. See attached map for location of Fault and location of proposed exploration.

19. (a) Core drilling will be done by contract at $5.00 per foot. Shaft sinking will be done by contract at approximately $30.00 per foot. Actual mining operations will require approximately 10 miners.

(b) Arthur J. Ley, President and General Manager of the applicant corporation will supervise all operations. In lieu of salary Mr. Ley will receive an overriding royalty of 10% as shown in sub-lease agreement.

(c) No existing facilities and no repairs.

(d) Cost of installations and facilities depends on depth of mineral deposits and nature thereof. Estimated cost not to exceed $10,000.

(e) Not to exceed $5,000.

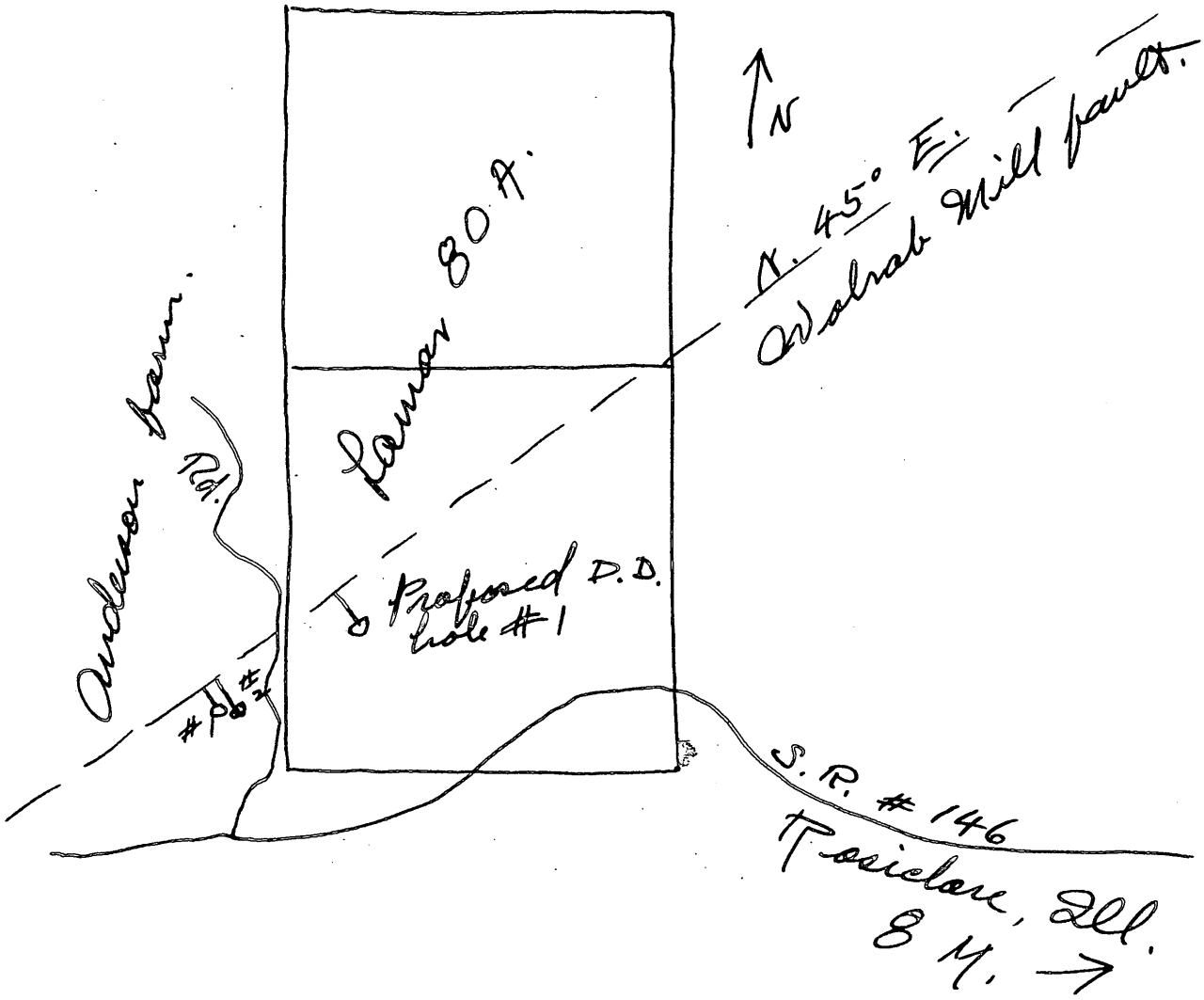
(f) Core drilling and shaft sinking will be done by contract. No actual rental of equipment anticipated.

(g) None.

(h) Not to exceed $1,000.

(i) $100.00.

20. Core drilling to be completed within two months; shaft sinking to be completed within three months after completion of core drilling. Production to commence within five to six months after approval of project. Anticipated expenditure of corporation capital and government aid approximately $30,000.


N
N. 45° E.
Walnut Mill fault.
Lamar 80 A.
Anderson farm.
Rd.
Proposed D.D.
hole #1
#1
#2
S. R. # 146
Pesicleare, Ill.
8 M.

LEASE AND CONTRACT

THIS LEASE AND CONTRACT, made and entered into this seventh (7th.) day of February, 1951, by and between W. J. Costigan and Virginia Lee Costigan, his wife, of 1510 Salem Hills Drive, Rock Hill, Missouri, and Mary Jane Van Schalkwyk and Willem Dirkse Van Schalkwyk, her husband, of 4836 Loughborough Rd. N.W., Washington, D. C., and Louis Lamar and Effie Lamar, his wife, of Golconda, Illinois, all as one party and hereinafter designated "owners", and Arthur J. Lay, of Ridgeville, Indiana, hereinafter designated "lessee", WITNESSETH:

WHEREAS, owners are the sole and entire owners of the mineral rights to the following described real estate, to-wit:

> The west one-half of the north-east quarter of section twenty-two (22), township twelve (12) south, range seven (7) east, in Pope County, State of Illinois, consisting of eighty (80) acres, more or less, and

WHEREAS, lessee is interested in securing the exclusive right to prospect for, mine, mill and otherwise prepare for market, any and all of the minerals or mineral substances of every kind and nature, in, upon, under or underlying the above described premises, and,

WHEREAS, owners desire to have such minerals or mineral substances, fluorspar, etc., mined from said premises as above stated and having said premises worked by the use of suitable machinery, equipment, fixtures and buildings, to be used directly or indirectly in con-connection with prospecting, mining and milling operations, which lessee may desire to place upon said premises, and prospecting for, mining, milling and recovering from said premises minerals and mineral substances of various kinds, as above stated, for the purpose of sale, and the exploitation and determination of the possibilities obtaining, and the same is agreeable to the owners thereof;

NOW, THEREFORE, in consideration of the sum of one dollar ($1.00) and other good and sufficient considerations paid or to be paid to the owners, the receipt and sufficiency of which is hereby acknowledged, and the covenants and agreements to be kept and performed by the lessee as hereinafter set forth, the owners have and by these presents do give and grant to the lessee the exclusive right to enter upon said premises for the purpose of prospecting, mining, milling and removing said minerals or mineral substances, erecting buildings for mining, milling and related operations in connection with the operations of lessee upon said premises, installing machinery, tipples, tanks, bins, water lines, sinking shafts, drifting, drilling or using and all methods known to the science of prospecting, mining, milling or refining or otherwise preparing orew, minerals, or mineral substances for market, with the exclusive right to so conduct prospecting, mining, milling and any related operations upon the said premises, together with the right of ingress and egress and to build and construct roads, trams and any other means of transportation over and across said premises for the purpose of transporting over and across said premises and therefrom the ores, minerals, mineral substances, fluorspar, etc., which may be found thereon or thereunder, as well as any equipment and supplies.

1. Lessee reserves the right to remove from said premises any of the buildings, machinery, equipment and other personal property of lessee placed thereon by lessee or at the expense of lessee, after the termination, surrender or forfeiture of this lease and contract as provided later herein.

2. Lessee agrees to begin development work or prospecting or mining, in an effort to determine the possibilities as to said premises, within ninety (90) days from the complete signing of this

lease and contract and lessee agrees to carry on such prospecting, mining, milling and related work with all reasonable expediency, insofar as weather, road, labor, market, or other conditions beyond the control of the lessee, will permit, for a period of at least eight (8) months of each year during the life of this instrument or any renewal or extension thereof unless excused from so doing in writing by the owners, and failure upon the part of lessee to do so shall cause this lease and contract to become null and void at the option of the owners, as provided herein.

3. The term of this lease and contract shall be for one year from the date hereof and for as long thereafter as the lessee shall comply with all of the terms, conditons and covenants set forth herein.

4. Lessee agrees to pay to owners a royalty of ten percent (10%) of the selling price of all fluorspar, minerals, or mineral substances mined and sold from off the said premises, All royalties shall be divided into three equal parts and one of said parts shall be paid directly to each of the above designated owners. All royalties accruing during any calendar month shall be paid to owners as above set forth by the last day of the succeeding month.

5. Owners shall have the right to examine any of the records and books of lessee and any of the workings of lessee upon the said premises that may be necessary to determine the amount of royalties due to owners from time to time and to determine the conditions related to the mining operations of lessee, but all such examinations shall be made at the risk of owners.

6. Lessee shall carry workmen's compensation and public liability insurance and shall comply with all of the State and Federal laws governing opprations of lessee upon said premises and, in any event, shall hold owners safe and harmless from any liability for damages occasioned to a stranger or to the employees of lessee resulting from any operations of lessee.

7. Lessee shall have the right to surrender this lease and contract at any time upon the payment of all royalties due to owners and, at the expiration, surrender or cancelation of this lease and contract, lessee shall have the right to remove any buildings, machinery or any other equipment placed thereon by lessee or at the expense of lessee and lessee shall have four (4) months time in which to make such removal.

8. Lessee shall have the right to remove any minerals or mineral substances, fluorspar, etc., mined from said premises for the purpose of milling the same or otherwise preparing the same for market.

9. Owners shall have the right to declare a forfeiture of this lease and contract should lessee neglect or refuse to comply with all of the terms and conditions herein, and should continue in such neglect or refusal for thirty (30) days after the receipt of a written notice from owners setting forth any such specific violation and the intention of owners to declare this lease and contract forfeited and void unless proper steps be taken by lessee within said thirty (30) days to comply with the specified terms and conditions.

10. This lease and contract is granted primarily for the purpose of prospecting for, mining, milling and selling fluorspar from the said premises and, while provision is made herein also for royalty covering other minerals and mineral substances, the prospecting for and the mining of any such other minerals or mineral substances is at the option of the lessee and there is no requirement hereunder for him so to do.

11. All rights hereunder shall inure, continue and apply to the heirs, successors or assigns of the parties hereto, and this lease and

contract is executed upon quadruplicate original copies hereof upon the day and year first above written.

W. J. Costigan	(SEAL)
Virginia Lee Costigan	(SEAL)
Mary Jane Van Schalkwyk	(SEAL)
Willem Dirkse Van Schalkwyk	(SEAL)
Louis Lamar	(SEAL)
Effie Lamar	(SEAL)
Arthur J. Lay	(SEAL)

Delivered and in effect this
the 14th. day of March, 1951.
Chas. Durfee

State of Missouri)
) SS.
St. Louis county)

I, Richard O. Werner, a Notary Public in and for said county, in the state aforesaid, do hereby certify that W. J. Costigan and Virginia Lee Costigan, his wife, personally known to me to be the same persons whose names are subscribed to the foregoing instrument, as having executed the same, 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 seal this 21st. day of February, 1951.

Richard O. Werner
Notary Public

My commission expires February 14, 1953.

State of Illinois)
) SS
Pope County)

I, Verba W. Moore, a Notary Public in and for said county in the state aforesaid, do hereby certify that Louis Lamar and Effie Lamar, his wife, and Arthur J. Lay, personally known to me to be the same persons whose names are subscribed to the foregoing instrument, as having executed the same, 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 10 day of February, 1951.

Verba W. Moore
Notary Public

My commission expires April 15, 1952.

District of)
)
Columbia)

I, Dorothy B. Porto, a Notary Public in and for the said District of Columbia, do hereby certify that Mary Jane Van Schalkwyk and Willem Dirkse Van Schalkwyk, her husband, personally known to me to be the same persons whose names are subscribed to the foregoing instrument, as having executed the same, 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 28th. day of February, 1951.

Dorothy B. Porto
Notary Public

My commission expires March 22, 1951.

SUB-LEASE AND AGREEMENT

THIS AGREEMENT made and entered into this the 24th day of May, 1951, by and between Arthur J. Lay, of Ridgeville, Indiana, hereinafter designated sub-lessor, and Arthur J. Lay, Inc., of Noblesville, Indiana, hereinafter designated sub-lessee, WITNESSETH. THAT WHEREAS, the sub-lessor, by virtue of a lease dated February 7th, 1951, now holds in full force and effect a lease upon the following described real estate;

> The west one-half of the north-east quarter of section twenty-two (22), township twelve (12) south, range seven (7) east, in Pope County in the State of Illinois, consisting of eighty (80) acres, more or less, and

WHEREAS, the sub-lessee herein desires to obtain similar rights and privileges, with some concessions to sub-lessor, to the above described premises, which concessions and terms are fully set forth herein, and

WHEREAS, the sub-lessor is desirous of sub-letting the above described premises to the sub-lessee for the purposes hereinafter set forth and under the following terms and conditions, to-wit:

NOW, THEREFORE, in consideration of the sum of one dollar ($1.00) and other valuable and sufficient considerations paid or to be paid to the sub-lessor, the receipt and sufficiency of which is hereby acknowledged, and the covenants and agreements to be kept and performed by the sub-lessee as hereinafter set out, the sub-lessor has and by these presents does give and grant to the sub-lessee the exclusive right to enter upon the said premises for the purpose of prospecting, mining, milling and removing minerals or mineral substances, erecting buildings for mining, milling and related operations in connection with operations of the sub-lessee upon said premises, installing machinery, tipples, tanks, bins, water lines, sinking shafts, drifting, drilling, or using any and all methods known to the science of prospecting, mining, milling or refining or otherwise preparing ores, minerals or mineral substances for market, with the exclusive right to so conduct prospecting, mining, milling and any related operations upon the said premises, together with the right of ingress and egress and to build and construct roads, trams and any other means of transportation over and across said premises for the purpose of transporting over and across said premisea and therefrom the ores, minerals and mineral substances, fluorspar, etc., which may be found thereon or thereunder, as well as any equipment and supplies.

1. Sublessee reserves the right to remove from the said premises any of the buildings, machinery, equipment and other personal property of sub-lessee placed thereon by sub-lessee or at the expense of sub-lessee, after the termination, surrender or forfeiture of this sub-lease and agreement as provided later herein.

2. Sub-lessee agrees to begin development work or prospecting or mining, in an effort to determine the possibilities as to said premises, within twenty (20) days from the date of this sub-lease and agreement and sub-lessee agrees to carry on such prospecting, mining, milling and related work with all reasonable expediency, insofar as weather, road, labor, market, or other conditions beyond the control of the sub-lessee, will permit, for a period of at least eight (8) months of each year during the life of this instrument or

any renewal or extension thereof unless excused from so doing in writing by the sub-lessor hereof, and failure upon the part of the sub-lessee to so do shall cause this sub-lease and agreement to become null and void at the option of the sub-lessor, a s provid ed herein.

3. The term of this sub-lease and agreement shall be for one year from the date hereof and for as long thereafter as the sub-lessee shall comply with the terms, conditions and covenants set forth herein.

4. Sub-lessee agrees to pay to the sub-lessor a royalty of twenty (20) percent of the selling price of all fluorspar, minerals or mineral substances mined and sold from off the said premises. All royalty accru ing during any calendar month shall be paid to sub-le ssor upon or before the last day of the succeeding month.

5. Sub-le ssor shall have the right to examine any of the records and books of the sub-lessee and any of the workings of sub-lessee upo the said premises that may be necessary to determine the amount of royalties due to sub-lessor hereunder from time to time and to determine the conditions of the mining operations of sub-lessee, but all such examinations shall be made at the risk of the sub-lessor.

6. Sub-lessee shall supply sub-lessor with duplicate sales and weigh tickets upon all fluorspar, minerals, mineral substances, etc. when and as sold by sub-lessee.

7. Sub-lessee shall carry workmen's compensation and public liability insurance and shall comply with all of the State and Federal laws governing operations of sub-le ssee upon the said premises and, in any event, shall hold sub-lessor harmless from any liability for damages occasioned to a stranger or to the employees of sub-lessee or any other person or persons resulting from any of the operations of the sub-lessee.

8. Sub-lessee shall have the right to surrender this sub-lease and agreement at any time upon the payment of all royalties due to sub-le ssor and at the expiration, surrender or cancellation of this sub-le ase and agreement, sub-le ssee shall have the right to remove any buildings, machinery or any other equipment placed thereon by sub-le ssee or at the expense of sub-le ssee and sub-lessee shall have three (3) months time in which to make such removal.

9. Sub-lessee shall have the right to remove any minerals or mineral substances, fluorspar, etc. mined from said premises for the purpose of milling the same or otherwise preparing the same for market.

10. Sub-lessor shall have the right to declare a forfeiture of this sub-le ase and agreement should sub-lessee refuse or neglect to comply with all of the terms and conditions herein, and should continue in such neglect or refusal for fifteen (15) days after the receipt of a written notice from the sub-lessor setting forth any such specific violation and the intention of sub-lessor to declare this lease and agreement forfeited and void unless proper steps be taken by sub-lessee within said fifteen(15) days to properly comply with the t erms and conditions dpecified in said notice.

11. This sub-lease and agreement is granted primarily for the purpose of prospecting for, mining, milling and selling fluorspar from the above described premises and, while provision is made herein also for royalty covering other minerals or mineral substances, the prospecting for and the mining of any such other minerals or mineral substances is at the option of the sub-lessee and there is no requirement hereunder for said sub-lessee so to do.

12. All rights hereunder shall inure, continue and apply to the heirs, successors or assigns of the parties hereto, and this sub-lease and agreement is executed upon duplicate original copies hereof upon the day and year first above written.

/s/ Arthur J. Lay (Seal)

ARTHUR J. LAY, INC.

By Arthur J. Lay, (Seal)

Pres.

ATTEST:

/s/Louis Hill

Secretary.

STATE OF INDIANA)
) SS.
HAMILTON COUNTY)

I, Frank W. Campbell, a Notary Public in and for said county in the state aforesaid, do hereby certify that Arthur J. Lay, personally known to me to be the same person whose name is subscribed to the foregoing instrument, as having executed the same, 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 24th day of May, 1951.

Frank W. Campbell,
Notary Public.

My commission expires January 10th, 1955.

STATE OF INDIANA)
) SS.
HAMILTON COUNTY)

I, Frank W. Campbell, a Notary Public in and for said county in the state aforesaid, do hereby certify that Arthur J. Lay, to me personally known as the President of Arthur J. Lay, Inc., and also known to me as the person whose name is signed to the foregoing instrument, and Louis Hill, Secretary of said Arthur J. Lay, Inc., and also known to me as the person whose name is signed to the foregoing instrument, each appeared before me this day in person and each for himself acknowledged that he signed, sealed and delivered the said instrument as his free and voluntary act and as the free and voluntary act of said Arthur J. Lay, Inc., for the uses and purposes therein set forth, and the said Louis Hill also acknowledged that he affixed the seal of said corporation to said instrument, and each acknowledged that the execution of said instrument was duly authorized by the Board of Directors of said Arthur J. Lay, Inc.

Given under my hand and notarial seal this 24th day of May, 1951.

Frank W. Campbell,
Notary Public.

My commission expires January 10th, 1955.

Form MF-100
(March 1951)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Form approved.
Budget Bureau No. 42-R1026.

GENERAL TECHNICAL DATA
FOR USE UNDER THE
DEFENSE PRODUCTION ACT OF 1950

NOT TO BE FILLED IN BY APPLICANT

Docket No. dma 13211X

Date received 5-28-51

Arthur J. Lay, Inc.
864½ Logan St.
Noblesville, Indiana

Name and address of applicant

Date May 24, 1951

INSTRUCTIONS

This form is to be filed with Defense Minerals Administration, Department of the Interior, Washington 25, D. C. It should be accompanied by appropriate application form when a specific type of Government assistance is requested, in the form of (1) loan, (2) purchase contract, (3) Government guarantee of a private loan, (4) Necessity Certificate pursuant to the provisions of Sec. 124–A (Amortization Deduction) of Internal Revenue Code, 1950, (5) priorities or allocation of mining equipment, and maintenance, repair and operating supplies, and (6) other forms of Government assistance that might arise under the Act. Submit four (4) signed copies of the form and accompanying papers. Name and address should be stamped or typed on each sheet of this form and all accompanying papers. *When a question is inapplicable it should be so stated on the form.* Additional sheets may be attached in answering any questions or in supplying additional information. (IF YOU CANNOT ANSWER A QUESTION, SO STATE.) If a question is answered elsewhere indicate where answered. It is not necessary to answer it again.

GENERAL TECHNICAL DATA

Supply the following information on separate sheets, arranged, numbered, and lettered as indicated:

1. Materials produced:
   (*a*) What are the chief mine, mill, or smelter products?
   (*b*) What are the byproducts, if any?
2. Name(s) and type(s) of mine(s), mill(s), smelter(s), refinery(ies), pit(s), quarry (ies), drilling operation(s). Include old names of property, if any. Show extent of workings, including the following:
   (*a*) Linear feet of shafts.
   (*b*) Linear feet of drifts and crosscuts.
   (*c*) Linear feet of tunnels or adits.
   (*d*) Linear feet of other mine openings (explain briefly).

   Indicate whether mine is flooded or not. Describe any pumping problems. Give size or productive capacity.
3. For each operation listed above supply the following:
   (*a*) Distance and direction from nearest town and shipping point.
   (*b*) Mining district.
   (*c*) Township, Section, Range.
   (*d*) County, State.
4. (*a*) State whether or not property is now in operation, and if in operation, by whom operated.
   (*b*) Are you operating this property as:
   - ☐ Owner.
   - ☐ Lessee.
   - ☐ Contractor.
5. Number of years in production _____

   If not in production or operation, estimated date when production will begin _____
6. Experience of operators:
   Describe the mining and general business experience of (*a*) the applicant, and (*b*) the person or persons who manage the project.
7. History:
   (*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for suspension of operation.
   (*b*) State briefly the known history and production of adjoining and neighboring properties.
   (*c*) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.

8. Names and addresses of Officers, Directors, or Partners, and in addition thereto, the five largest stockholders if applicant is a corporation.

Name and Address (a)	Official Title (If officer is also director indicate by "D") (b)	Total of Annual Salary, Commissions, Bonuses, Etc., Received From Applicant and Affiliates During Last Fiscal Year (c)	Estimated Net Worth Outside of Interest in Applicant (d)	Number of Shares Held in Applicant Corporation: Common (e)	Number of Shares Held in Applicant Corporation: Preferred (f)	Life Insurance Carried for Benefit of Applicant: Amount (g)	Life Insurance Carried for Benefit of Applicant: Net Cash Surrender Value After Loans (h)
Arthur J. Lay	Pres. & "D"	None		1			
E. J. Ayers	V.P. & "D"	"		10			
Louis Hill	Secy. & "D"	"		10			
Duane Abel	Treas. & "D"	"		10			
Lemuel B. Owens	Director	"		10			
L. E. Summers	Stockholder	"		10			
	Total		x x x x x			x x x x x	x x x x x

If more lines are needed continue on separate sheet.

9. Capital Stock Issues:

For Corporate Applicants

Item	Authorized (a)	Outstanding (b)	Par Value (c)	Number of Shares Outstanding (d)	Dividend Rate Last Paid* (e)
Common stock	$ 50,000	$ 4,700.	$ No par	94	
Preferred stock	$	$	$		

*Indicate period covered.

10. Production:

Item	Kind of Product (a)	1948 Total (b)	1949 Total (c)	1950 Total (d)	Present Average Monthly (e)
1. Quantity of product mined or quarried (Short, long, metric tons; barrels; pounds; etc.)					
2. Quantity of product processed (specify unit of measure and type of process)					
3. Quantity and grade of product sold or shipped (specify units of measure)					

11. Do you contemplate a change in the present average monthly rate of production? If so, state estimated maximum monthly production and basis of change. No estimate possible.

12. Ore or Mineral Reserves:

(a) Describe the ore or mineral deposit briefly. Accompany the application by any available report on the geology and ore reserves. Information not available until after core drilling.

(*b*) If deposit is other than placer:

(1) Submit assay plans and/or sections showing location and size of proved (measured) and probable (indicated) ore or mineral reserve.

(2) State the tonnage (indicate type of ton) and grade of each class of ore reserve, as above, and show how computed. Tabulated total ore reserve as follows:

TOTAL ORE OR MINERAL RESERVES

Ore or Mineral Reserve	Estimated Tons (a)	Metal or Mineral Content Per Ton (Grade) (b)	Gross Value Per Ton (c)	Recoverable Unit Value Per Ton (d)	Estimated Cost of Production Per Ton (e)
Measured (proved)					
Indicated (probable)					

(*c*) If placer:

(1) Give estimated total yardage and average marketable mineral content of each deposit.

(2) Submit map showing location of placer deposit and surrounding area, with all test holes or pits. Submit logs of each hole and test pit with depth and average value of each.

(3) Describe gravel, stating whether fine, medium or coarse; loose, tight, cemented, or frozen, and whether it contains stumps or boulders more than 1 foot in diameter; if so, how large, and in what proportion.

(4) Describe bedrock, giving type (granite, sandstone, shale, etc.) and state whether it is hard or soft, smooth, uneven or rough.

(5) Describe overburden, stating whether loose, tight, or cemented; fine or coarse textured; furnish estimate of average thickness and total amount.

(6) Tabulate the reserves using the form outlined above for ore or mineral reserves.

13. Access Roads:

Give road distances to shipping, supply and residence points, stating kind and condition of roads.

14. Water Supply:

State source and quantity of water available for operations and whether sufficient for all seasons of year.

15. Power:

State amount of power used, rate per hour, and source thereof.

16. Labor:

State number and classes (miners, muckers, millmen, etc.) of men employed during a recent representative payroll period.

17. Equipment and Facilities:

Describe present equipment on the property, including buildings. (State condition.) List major pieces of equipment now owned or controlled and in serviceable condition available for this operation.

18. Are there any particular conditions or circumstances affecting your operations that are not described above? If so, explain.

CERTIFICATION

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

Arthur J. Lay, Inc.
(Name of company)

By Arthur J. Lay
(Signature of authorized official)

May 24th, 1951.
(Date)

Pres.
(Title)

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—63792-1

GENERAL TECHNICAL DATA

1. Materials produced:
   (a) flourspar
   (b) galeana, sphalerite

2. Names and types of drilling operations. Extent of workings to date - none. Proposed drilling operations of exploratory nature to be commenced immediately by core-drilling to depth of approximately 300 feet.

3. Proposed operations are located as follows:
   (a) 8 miles west of Roseclair, Illinois, the nearest town and shipping point
   (b) The Illinois Kentucky Flourspar Mining District
   (c) Section 22, Township 12 South, Range 7 East
   (d) Pope County, Illinois

4. (a) not now in operation
   (b) operations will be conducted as lessee

5. Number of years in production - none. Anticipated production will begin November 1st, 1951.

6. Experience of operator: Arthur J. Lay, President and General Manager of applicant has had twenty years in operating and developing flourspar properties.

7. History:
   (a) no previous operations at said location because no lease was obtainable on property until the present time.
   (b) Crystal Flourspar Company operates the Jefferson Mine 1/4 mile east of the proposed operations. Also several small mines are being operated along the Stewart Fault from 1/2 mile to 1 mile east of proposed operations.
   (c) Site recommended by Dodd Gibson, Geologist for Crystal Flourspar Company and other geologists.

For answers to 8, 9, 10, 11 and 12, see Form MF-100.

13. Access Roads: Site of proposed core drilling is located on State Highway #146, a concrete 2-lane, well-improved highway.

14. Water Supply: Immediate need for core drilling purposes supplied by Crystal Flourspar Company 1/4 mile east of proposed operations. At depth of 100 feet, adequate water can be obtained for all types of operation. Water will be sufficient for all seasons of the year.

15. Power: Power lines of Southeastern Illinois Electric Cooperative, Inc. intersect property. Rates $3.00 monthly minimum, first 40 kilowatts $3.00, next 60 kilowatts @ 4¢, next 900 kilowatts @ 3¢, next 2,000 @ 2¢, all over @ 1½¢.

16. Labor: None employed to date. Proposed operations will require approximately 10 miners. Supply in community sufficient.

17. Equipment and Facilities: No equipment at present. Core-drilling equipment will be furnished by contractor.

18. Applicant is a new corporation organized for the purpose of exploring for flourspar and byproducts. Sufficient capital has already been paid in to carry on exploratory work. If mineral is found in paying quantities, additional capital is available to develop and mine the same.

Form MF-103
(April 1951)

U[redacted] DEPARTMENT OF THE INTER[redacted]R
DEFENSE MINERALS ADMINISTRATION

Budget Bureau No. 42-R1035.
Approval expires 6-30-51.

APPLICATION FOR AID FOR AN EXPLORATION PROJECT PURSUANT TO MINERAL ORDER 5, UNDER DEFENSE PRODUCTION ACT OF 1950

DO NOT FILL IN THIS BLOCK

Docket No. dma 13211 X

Date received 5-28-51

Participation

Arthur J. Ley, Inc.,
[illegible] Regan Rd.,
Hobloeville,
Illinois.

Name and address of applicant

Date May 24, 1951

FILL IN THIS BLOCK

Date of application May 24, 1951

Estimated cost [illegible]

Mineral or metal Fluorspar

Percentage of Government participation [illegible]

Location of mine 8 miles west of Elizabethtown, Ill. on U. S. Route 45 state road No. 146. [illegible] the west ½ of the N. E. ¼ of section 22, Twp. 10 [illegible], Range 7 east, in Hope County, Illinois.

Date of filing MF-100

DMA Docket Number, if available dma 13211 X

INSTRUCTIONS

Read Mineral Order 5, Regulations Governing Government Aid in Defense Projects, before completing this application. Submit four signed copies of the application to Defense Minerals Administration, Department of the Interior, Washington 25, D. C., or to the nearest field executive officer thereof, with your name and address on each sheet of the application and all accompanying papers. If any question is inapplicable, or if you cannot answer it, so state on the form. Where the space provided for answer is insufficient, answer on a separate sheet, annex it to the application form, and refer to it in space for answer. If the application is approved, you will be presented with an exploration project contract on Form MF-200, for your signature.

THE APPLICANT

*1. Is applicant an individual, partnership, or corporation?
*2. If a partnership, state names and addresses of partners.
*3. If a corporation, state names and addresses of officers, directors, and five largest stockholders.
*4. Describe the mining and general business experience of (*a*) the applicant, and (*b*) the person or persons who will manage the project.
*5. Are you the owner or the lessee of the property?
6. If owner, state what claims, liens, or encumbrances, if any, are against the property.
7. If lessee, attach a copy of the lease and state if it is in good standing.

NOTE.—It will be necessary to procure and attach to the exploration project contract agreements of claimants, lienors, encumbrances and lessors subordinating their interests in the property to the interest of the Government under the contract.

8. Furnish current financial statement, showing assets and liabilities, and a profit and loss statement.
9. How much money is applicant prepared to invest in proposed project? Is it sufficient to pay your part of the cost of the project as detailed in question 23 of this application form, in accordance with the regulations on Government participation (Section 9 of Mineral Order 5)?

*If you have already answered these questions on MF-100, you are not required to answer the questions for this application.

16—64067-1

THE PROPERTY

10. (*a*) Give a description of the real property that will be in any way involved in the exploration project, including any existing mine or operating property.
    (*b*) Give the legal description of the exact parcel, plot, or area upon which the exploration is to be conducted.

    NOTE.—If both areas are the same, so state. The only obligation to repay the Government is from the net earnings from any commercial discovery made in the area specified in (*b*) above in which the exploration is to be conducted, and the expenditure of funds which may be charged as costs of the project must be limited to that area or to work necessary to perform the exploration in that area.

*11. State the present and former names of the property, if any.
*12. State, in detail, the location of the property with reference to towns, railroads, roads, shipping points, including distances and directions and kinds and conditions of roads.
*13. State source and quantity of water available for operations and its sufficiency at all seasons.
State amount of power to be used, rate per hour or other cost, and source.
*14. Describe any existing useable facilities, equipment, buildings, or structure now on the property that will be devoted to the exploration work.
15. State in detail how the ore could be shipped and how and where milled.
*16. History:
    (*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for any past suspensions of operations.
    (*b*) State briefly the known history and production of adjoining and neighboring properties.
    (*c*) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.
*17. Production:
    (*a*) If mine is in production, furnish the following information:

	Tons per day	*Grade or analysis*	*Cost per ton*	*Net value per ton*
(1) Mining				
(2) Milling				
(3) Shipped or sold				

*18. Ore or mineral reserves: (If property is or has been operating.)
    (*a*) Describe the ore or mineral deposits briefly.
    (*b*) Submit available maps and assay data.
    (*c*) Give estimated tonnage and grade of each class of ore reserves.
19. State any conditions or circumstances regarding the property not sufficiently brought out by the foregoing questions.

THE EXPLORATION

20. For what mineral or minerals and for what types of deposits and ores will the exploration be conducted?
21. Describe briefly, but concisely, the proposed work and the estimated time required to complete it.

    NOTE.—The Government will not participate in a project that will require more than 2 years to complete.
22. Furnish statement of the geological basis of the project with particular emphasis on factors leading the operator to expect the finding of commercial ore bodies. This statement should be accompanied by supporting maps such as geological maps, maps of the proposed openings and assay maps, sample lists, and other pertinent data.

THE REQUIREMENTS AND COSTS

23. Tabulate in the form of an itemized statement with a sum for each item the estimated requirements and costs of the project so that the total will give the estimated cost of the project in which the Government will participate, as follows:
    (*a*) Labor, by numbers and classes (miners, muckers, millmen, etc.), with wages of each.
    (*b*) Supervisors, by numbers and positions, with salaries of each.
    (*c*) Cost of necessary repairs to existing facilities, structures, and buildings.
    (*d*) Cost of necessary installation or construction of additional facilities, structures, and buildings.
    (*e*) Cost of items of equipment, not now owned by the applicant which must be purchased for operations at a cost of $50 or more each.
    (*f*) Cost of rental for equipment which the operator proposes to rent.
    (*g*) Rental value of items of equipment which the operator now owns and which will be devoted to the work.
    (*h*) Cost of materials and supplies, including items of equipment costing less than $50 each.
    (*i*) Cost of power, water, utilities, and any other items not provided for above.
24. Furnish a time schedule of the project, stated in terms of months after project is approved, showing progress expected to be accomplished and the money expected to be spent.

CERTIFICATION

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

Arthur J. Lay, Inc.
(Name of company)

By Arthur J. Lay
(Signature of authorized official)

May 24th, 1951.
(Date)

Pres.
(Title)

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.

*Same as footnote on page 1.

16—64067-1 U. S. GOVERNMENT PRINTING OFFICE

Form EP-103

1. Corporation

6. Statement in lieu of financial statement: Assets consist of entire amount of paid in capital to-wit $4,700 cash on deposit in bank less cost of incorporation and of acquiring lease to-wit: $534.50; balance of cash on hand $4,165.50. No other liabilities have been incurred to date. Corporation holds the attached lease and one other lease for 40 acres. Value of leases unknown at present.

9. $15,000

10. (a) Property is not improved in so far as exploring and mining facilities are concerned.
(b) The west ½ of the N. E. ¼ of Section 22, Twp. 10-south, Range 7-east in Pope County, Illinois.

11. Unused.

15. Ore can be shipped by rail or river barge. Milling facilities will be available on the property and are now available at Bonneclair, Illinois.

16. History: In addition to mines already in operation as listed in Form EP-101, mineral has been found on adjoining property to the west by core drilling. Old workings have revealed mineral deposits on property approximately ½ mile southwest and upon the same fault that traverses the site of the proposed exploration.

20. See answer to question 21 on Form EP-100.

21. Description of proposed work: Core-drilling operations will be conducted to a depth of approximately 300 feet and will require approximately two months. Shaft will be constructed wherever mineral deposits are located and will require approximately three months. Project should be in operation by approximately November 1st, 1951.

22. Geological basis: As shown in answer to other questions, the proposed site of exploration is virtually surrounded by mines now in operation and by known mineral deposits. The Vorhes Hill Fault where known minerals deposits are located traverses the site of the proposed exploration. From mines now in operation fluorspar, lead and zinc are being obtained in commercial quantities. See attached map for location of Fault and location of proposed exploration.

23. (a) Core drilling will be done by contract at $[illegible] per foot. Shaft sinking will be done by contract at approximately $[illegible] per foot. Actual mining operations will require approximately 10 miners.

(b) Arthur J. Ley, President and General Manager of the applicant corporation will supervise all operations. In lieu of salary Mr. Ley will receive an ore-mining royalty of 10% as shown in exhibit 2 attached.

(c) No existing facilities and no repairs.

(d) Cost of installations and facilities depends on depth of mineral deposits and mining thereof. Estimated cost not to exceed $10,000.

(e) Not to exceed $5,000.

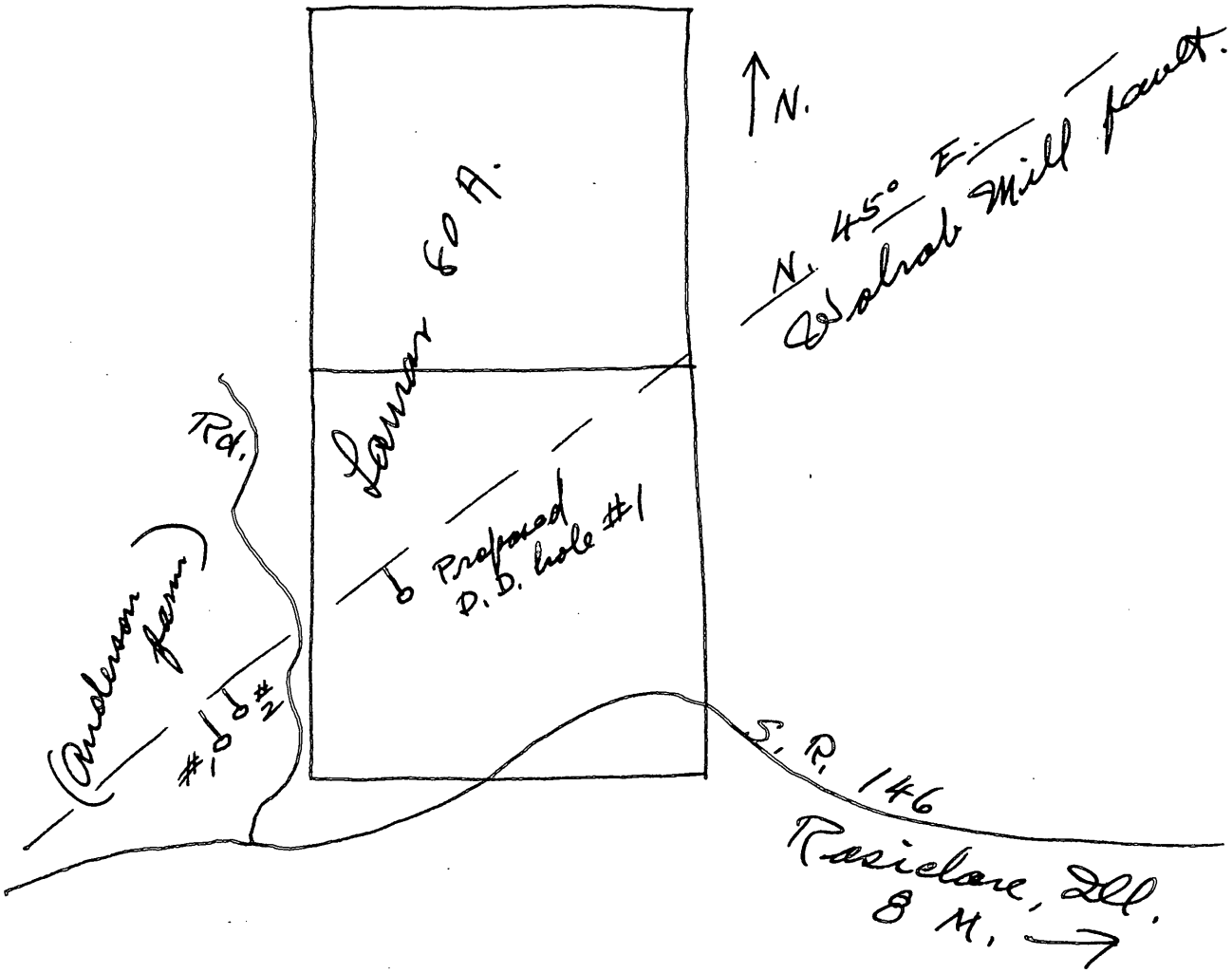
(f) Core drilling and shaft sinking will be done by contract. No actual rental of equipment anticipated.

(g) None.

(h) Not to exceed $1,000.

(i) $500.00.

24. Core drilling to be completed within two months; shaft sinking to be completed within three months after completion of core drilling. Production to commence within five to six months after approval of project. Anticipated expenditure of corporation capital and government aid approximately $50,000.


N.
N. 45° E.
Walnut Mill fault.
Larson 60 A.
Proposed D.D. hole #1
Rd.
(Anderson farm)
#1 #2
S. R. 146
Trenton, Ill.
8 M.

LEASE AND CONTRACT

THIS LEASE AND CONTRACT, made and entered into this seventh (7th.) day of February, 1951, by and between W. J. Costigan and Virginia Lee Costigan, his wife, of 1510 Salem Hills Drive, Rock Hill, Missouri, and Mary Jane Van Schalkwyk and Willem Dirkse Van Schalkwyk, her husband, of 4836 Loughborough Rd. N.W., Washington, D. C., and Louis Lamar and Effie Lamar, his wife, of Golconda, Illinois, all as one party and hereinafter designated "owners", and Arthur J. Lay, of Ridgeville, Indiana, hereinafter designated "lessee", WITNESSETH:

WHEREAS, owners are the sole and entire owners of the mineral rights to the following described real estate, to-wit:

> The west one-half of the north-east quarter of section twenty-two (22), township twelve (12) south, range seven (7) east, in Pope County, State of Illinois, consisting of eighty (80) acres, more or less, and

WHEREAS, lessee is interested in securing the exclusive right to prospect for, mine, mill and otherwise prepare for market, any and all of the minerals or mineral substances of every kind and nature, in, upon, under or underlying the above described premises, and,

WHEREAS, owners desire to have such minerals or mineral substances, fluorspar, etc., mined from said premises as above stated and having said premises worked by the use of suitable machinery, equipment, fixtures and buildings, to be used directly or indirectly in con-connection with prospecting, mining and milling operations, which lessee may desire to place upon said premises, and prospecting for, mining, milling and recovering from said premises minerals and mineral substances of various kinds, as above stated, for the purpose of sale, and the exploitation and determination of the possibilities obtaining, and the same is agreeable to the owners thereof;

NOW, THEREFORE, in consideration of the sum of one dollar ($1.00) and other good and sufficient considerations paid or to be paid to the owners, the receipt and sufficiency of which is hereby acknowledged, and the covenants and agreements to be kept and performed by the lessee as hereinafter set forth, the owners have and by these presents do give and grant to the lessee the exclusive right to enter upon said premises for the purpose of prospecting, mining, milling and removing said minerals or mineral substances, erecting buildings for mining, milling and related operations in connection with the operations of lessee upon said premises, installing machinery, tipples, tanks, bins, water lines, sinking shafts, drifting, drilling or using and all methods known to the science of prospecting, mining, milling or refining or otherwise preparing ores, minerals, or mineral substances for market, with the exclusive right to so conduct prospecting, mining, milling and any related operations upon the said premises, together with the right of ingress and egress and to build and construct roads, trams and any other means of transportation over and across said premises for the purpose of transporting over and across said premises and therefrom the ores, minerals, mineral substances, fluorspar, etc., which may be found thereon or thereunder, as well as any equipment and supplies.

1. Lessee reserves the right to remove from said premises any of the buildings, machinery, equipment and other personal property of lessee placed thereon by lessee or at the expense of lessee, after the termination, surrender or forfeiture of this lease and contract as provided later herein.

2. Lessee agrees to begin development work or prospecting or mining, in an effort to determine the possibilities as to said premises, within ninety (90) days from the complete signing of this

lease and contract and lessee agrees to carry on such prospecting, mining, milling and related work with all reasonable expediency, insofar as weather, road, labor, market, or other conditions beyond the control of the lessee, will permit, for a period of at least eight (8) months of each year during the life of this instrument or any renewal or extension thereof unless excused from so doing in writing by the owners, and failure upon the part of lessee to do so shall cause this lease and contract to become null and void at the option of the owners, as provided herein.

3. The term of this lease and contract shall be for one year from the date hereof and for as long thereafter as the lessee shall comply with all of the terms, conditons and covenants set forth herein.

4. Lessee agrees to pay to owners a royalty of ten percent (10%) of the selling price of all fluorspar, minerals, or mineral substances mined and sold from off the said premises, All royalties shall be divided into three equal parts and one of said parts shall be paid directly to each of the above designated owners. All royalties accruing during any calendar month shall be paid to owners as above set forth by the last day of the succeeding month.

5. Owners shall have the right to examine any of the records and books of lessee and any of the workings of lessee upon the said premises that may be necessary to determine the amount of royalties due to owners from time to time and to determine the conditions related to the mining operations of lessee, but all such examinations shall be made at the risk of owners.

6. Lessee shall carry workmen's compensation and public liability insurance and shall comply with all of the State and Federal laws governing operations of lessee upon said premises and, in any event, shall hold owners safe and harmless from any liability for damages occasioned to a stranger or to the employees of lessee resulting from any operations of lessee.

7. Lessee shall have the right to surrender this lease and contract at any time upon the payment of all royalties due to owners and, at the expiration, surrender or cancelation of this lease and contract, lessee shall have the right to remove any buildings, machinery or any other equipment placed thereon by lessee or at the expense of lessee and lessee shall have four (4) months time in which to make such removal.

8. Lessee shall have the right to remove any minerals or mineral substances, fluorspar, etc., mined from said premises for the purpose of milling the same or otherwise preparing the same for market.

9. Owners shall have the right to declare a forfeiture of this lease and contract should lessee neglect or refuse to comply with all of the terms and conditions herein, and should continue in such neglect or refusal for thirty (30) days after the receipt of a written notice from owners setting forth any such specific violation and the intention of owners to declare this lease and contract forfeited and void unless proper steps be taken by lessee within said thirty (30) days to comply with the specified terms and conditions.

10. This lease and contract is granted primarily for the purpose of prospecting for, mining, milling and selling fluorspar from the said premises and, while provision is made herein also for royalty covering other minerals and mineral substances, the prospecting for and the mining of any such other minerals or mineral substances is at the option of the lessee and there is no requirement hereunder for him so to do.

11. All rights hereunder shall inure, continue and apply to the heirs, successors or assigns of the parties hereto, and this lease and

contract is executed upon quadruplicate original copies hereof upon the day and year first above written.

W. J. Costigan (SEAL)

Virginia Lee Costigan (SEAL)

Mary Jane Van Schalkwyk (SEAL)

Willem Dirkse Van Schalkwyk (SEAL)

Louis Lamar (SEAL)

Effie Lamar (SEAL)

Arthur J. Lay (SEAL)

Delivered and in effect this
the 14th. day of March, 1951.
Chas. Durfee

State of Missouri)
) SS.
St. Louis county)

I, Richard O. Werner, a Notary Public in and for said county, in the state aforesaid, do hereby certify that W. J. Costigan and Virginia Lee Costigan, his wife, personally known to me to be the same persons whose names are subscribed to the foregoing instrument, as having executed the same, 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 seal this 21st. day of February, 1951.

Richard O. Werner
Notary Public

My commission expires February 14, 1953.

State of Illinois)
) SS
Pope County)

I, Verba W. Moore, a Notary Public in and for said county in the state aforesaid, do hereby certify that Louis Lamar and Effie Lamar, his wife, and Arthur J. Lay, personally known to me to be the same persons whose names are subscribed to the foregoing instrument, as having executed the same, 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 10 day of February, 1951.

Verba W. Moore
Notary Public

My commission expires April 15, 1952.

District of)
)
Columbia)

I, Dorothy B. Porto, a Notary Public in and for the said District of Columbia, do hereby certify that Mary Jane Van Schalkwyk and Willem Dirkse Van Schalkwyk, her husband, personally known to me to be the same persons whose names are subscribed to the foregoing instrument, as having executed the same, 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 28th. day of February, 1951.

Dorothy B. Porto
Notary Public

My commission expires March 22, 1951.

SUB-LEASE AND AGREEMENT

THIS AGREEMENT made and entered into this the 24th day of May, 1951, by and between Arthur J. Lay, of Ridgeville, Indiana, hereinafter designated sub-lessor, and Arthur J. Lay, Inc., of Noblesville, Indiana, hereinafter designated sub-lessee, WITNESSETH. THAT WHEREAS, the sub-lessor, by virtue of a lease dated February 7th, 1951, now holds in full force and effect a lease upon the following described real estate;

> The west one-half of the north-east quarter of section twenty-two (22), township twelve (12) south, range seven (7) east, in Pope County in the State of Illinois, consisting of eighty (80) acres, more or less, and

WHEREAS, the sub-lessee herein desires to obtain similar rights and privileges, with some concessions to sub-lessor, to the above described premises, which concessions and terms are fully set forth herein, and

WHEREAS, the sub-lessor is desirous of sub-letting the above described premises to the sub-lessee for the purposes hereinafter set forth and under the following terms and conditions, to-wit:

NOW, THEREFORE, in consideration of the sum of one dollar ($1.00) and other valuable and sufficient considerations paid or to be paid to the sub-lessor, the receipt and sufficiency of which is hereby acknowledged, and the covenants and agreements to be kept and performed by the sub-lessee as hereinafter set out, the sub-lessor has and by these presents does give and grant to the sub-lessee the exclusive right to enter upon the said premises for the purpose of prospecting, mining, milling and removing minerals or mineral substances, erecting buildings for mining, milling and related operations in connection with operations of the sub-lessee upon said premises, installing machinery, tipples, tanks, bins, water lines, sinking shafts, drifting, drilling, or using any and all methods known to the science of prospecting, mining, milling or refining or otherwise preparing ores, minerals or mineral substances for market, with the exclusive right to so conduct prospecting, mining, milling and any related operations upon the said premises, together with the right of ingress and egress and to build and construct roads, trams and any other means of transportation over and across said premises for the purpose of transporting over and across said premisea and therefrom the ores, minerals and mineral substances, fluorspar, etc., which may be found thereon or thereunder, as well as any equipment and supplies.

1. Sublessee reserves the right to remove from the said premises any of the buildings, machinery, equipment and other personal property of sub-lessee placed thereon by sub-lessee or at the expense of sub-lessee, after the termination, surrender or forfeiture of this sub-lease and agreement as provided later herein.

2. Sub-lessee agrees to begin development work or prospecting or mining, in an effort to determine the possibilities as to said premises, within twenty (20) days from the date of this sub-lease and agreement and sub-lessee agrees to carry on such prospecting, mining, milling and related work with all reasonable expediency, insofar as weather, road, labor, market, or other conditions beyond the control of the sub-lessee, will permit, for a period of at least eight (8) months of each year during the life of this instrument or

any renewal or extension thereof unless excused from so doing in writing by the sub-lessor hereof, and failure upon the part of the sub-lessee to so do shall cause this sub-lease and agreement to become null and void at the option of the sub-lessor, a s provid ed herein.

3. The term of this sub-lease and agreement shall be for one year from the date hereof and for as long thereafter as the sub-lessee shall comply with the terms, conditions and covenants set forth herein.

4. Sub-lessee agrees to pay to the sub-lessor a royalty of twenty (20) percent of the selling price of all fluorspar, minerals or mineral substances mined and sold from off the said premises. All royalty accru ing during any calendar month shall be paid to sub-le ssor upon or before the last day of the succeeding month.

5. Sub-le ssor shall have the right to examine any of the records and books of the sub-lessee and any of the workings of sub-lessee upo the said premises that may be necessary to determine the amount of royalties due to sub-lessor hereunder from time to time and to determine the conditions of the mining operations of sub-lessee, but all such examinations shall be made at the risk of the sub-lessor.

6. Sub-lessee shall supply sub-lessor with duplicate dale s and weigh tickets upon all fluorspar, minerals, mineral substances, etc. when and as sold by sub-lessee.

7. Sub-lessee shall carry workmen's compensation and public liability insurance and shall comply with all of the State and Federal laws governing operations of sub-le ssee upon the said premises and, in any event, shall hold sub-lessor harmless from any liability for damages occasioned to a stranger or to the employees of sub-lessee or any other person or persons resulting from any of the operations of the sub-lessee.

8. Sub-lessee shall have the right to surrender this sub-lease and agreement at any time upon the payment of all royalties due to sub-le ssor and at the expiration, surrender or cancellation of this sub-le ase and agreement, sub-le ssee shall have the right to remove any buildings, machinery or any other equipment placed thereon by sub-le ssee or at the expense of sub-le ssee and sub-lessee shall have three (3) months time in which to make such removal.

9. Sub-lessee shall have the right to remove any minerals or mineral substances, fluorspar, etc. mined from said premises for the purpose of milling the same or otherwise preparing the same for market.

10. Sub-lessor shall have the right to declare a forfeiture of this sub-le ase and agreement should sub-lessee refuse or neglect to comply with all of the terms and conditions herein, and should continue in such neglect or refusal for fifteen (15) days after the receipt of a written notice from the sub-lessor setting forth any such specific violation and the intention of sub-lessor to declare this lease and agreement forfeited and void unless proper steps be taken by sub-lessee within said fifteen(15) days to properly comply with the t erms and conditions specified in said notice.

11. This sub-lease and agreement is granted primarily for the purpose of prospecting for, mining, milling and selling fluorspar from the above described premisea and, while provision is made herein also for royalty covering other minerals or mineral substances, the prospecting for and the mining of any such other minerals or mineral substances is at the option of the sub-lessee and there is no requirement hereunder for said sub-lessee so to do.

12. All rights hereunder shall inure, continue and apply to the heirs, successors or assigns of the parties hereto, and this sub-lease and agreement is executed upon duplicate original copies hereof upon the day and year first above written.

/s/ Arthur J. Lay (Seal)

ARTHUR J. LAY, INC.

By Arthur J. Lay, (Seal)

Pres.

ATTEST:

/s/Louis Nill

Secretary.

STATE OF INDIANA)
) SS.
HAMILTON COUNTY)

I, Frank W. Campbell, a Notary Public in and for said county in the state aforesaid, do hereby certify that Arthur J. Lay, personally known to me to be the same person whose name is subscribed to the foregoing instrument, as having executed the same, 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 24th day of May, 1951.

Frank W. Campbell,
Notary Public.

My commission expires January 10th, 1955.

STATE OF INDIANA)
) SS.
HAMILTON COUNTY)

I, Frank W. Campbell, a Notary Public in and for said county in the state aforesaid, do hereby certify that Arthur J. Lay, to me personally known as the President of Arthur J. Lay, Inc., and also known to me as the person whose name is signed to the foregoing instrument, and Louis Hill, Secretary of said Arthur J. Lay, Inc., and also known to me as the person whose name is signed to the foregoing instrument, each appeared before me this day in person and each for himself acknowledged that he signed, sealed and delivered the said instrument as his free and voluntary act and as the free and voluntary act of said Arthur J. Lay, Inc., for the uses and purposes therein set forth, and the said Louis Hill also acknowledged that he affixed the seal of said corporation to said instrument, and each acknowledged that the execution of said instrument was duly authorized by the Board of Directors of said Arthur J. Lay, Inc.

Given under my hand and notarial seal this 24th day of May, 1951.

Frank W. Campbell,
Notary Public.

My commission expires January 10th, 1955.

Form MF-100
(March 1951)

U.S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Form approved.
Budget Bureau No. 42-R1026.

GENERAL TECHNICAL DATA FOR USE UNDER THE DEFENSE PRODUCTION ACT OF 1950

NOT TO BE FILLED IN BY APPLICANT

Docket No. dma 1321 X

Date received 5-28-51

Arthur J. Lay, Inc.
864½ Logan St.
Noblesville, Indiana

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
DEC 26 1951

Name and address of applicant

Date May 24, 1951

INSTRUCTIONS

This form is to be filed with Defense Minerals Administration, Department of the Interior, Washington 25, D. C. It should be accompanied by appropriate application form when a specific type of Government assistance is requested, in the form of (1) loan, (2) purchase contract, (3) Government guarantee of a private loan, (4) Necessity Certificate pursuant to the provisions of Sec. 124-A (Amortization Deduction) of Internal Revenue Code, 1950, (5) priorities or allocation of mining equipment, and maintenance, repair and operating supplies, and (6) other forms of Government assistance that might arise under the Act. Submit four (4) signed copies of the form and accompanying papers. Name and address should be stamped or typed on each sheet of this form and all accompanying papers. *When a question is inapplicable it should be so stated on the form.* Additional sheets may be attached in answering any questions or in supplying additional information. (IF YOU CANNOT ANSWER A QUESTION, SO STATE.) If a question is answered elsewhere indicate where answered. It is not necessary to answer it again.

GENERAL TECHNICAL DATA

Supply the following information on separate sheets, arranged, numbered, and lettered as indicated:

1. Materials produced:
   (*a*) What are the chief mine, mill, or smelter products?
   (*b*) What are the byproducts, if any?
2. Name(s) and type(s) of mine(s), mill(s), smelter(s), refinery(ies), pit(s), quarry (ies), drilling operation(s). Include old names of property, if any. Show extent of workings, including the following:
   (*a*) Linear feet of shafts.
   (*b*) Linear feet of drifts and crosscuts.
   (*c*) Linear feet of tunnels or adits.
   (*d*) Linear feet of other mine openings (explain briefly).

   Indicate whether mine is flooded or not. Describe any pumping problems. Give size or productive capacity.
3. For each operation listed above supply the following:
   (*a*) Distance and direction from nearest town and shipping point.
   (*b*) Mining district.
   (*c*) Township, Section, Range.
   (*d*) County, State.
4. (*a*) State whether or not property is now in operation, and if in operation, by whom operated.
   (*b*) Are you operating this property as:
   - ☐ Owner.
   - ☐ Lessee.
   - ☐ Contractor.
5. Number of years in production .....

   If not in production or operation, estimated date when production will begin .....
6. Experience of operators:
   Describe the mining and general business experience of (*a*) the applicant, and (*b*) the person or persons who manage the project.
7. History:
   (*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for suspension of operation.
   (*b*) State briefly the known history and production of adjoining and neighboring properties.
   (*c*) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.

MAY 31 1951

16—63792-1

5

8. Names and addresses of Officers, Directors, or Partners, and in addition thereto, the five largest stockholders if applicant is a corporation.

Name and Address (a)	Official Title (If officer is also director indicate by "D") (b)	Total of Annual Salary, Commissions, Bonuses, Etc., Received From Applicant and Affiliates During Last Fiscal Year (c)	Estimated Net Worth Outside of Interest in Applicant (d)	Number of Shares Held in Applicant Corporation: Common (e)	Number of Shares Held in Applicant Corporation: Preferred (f)	Life Insurance Carried for Benefit of Applicant: Amount (g)	Life Insurance Carried for Benefit of Applicant: Net Cash Surrender Value After Loans (h)
Arthur J. Lay	Pres. & "D"	None		1			
E. J. Ayers	V.P. & "D"	"		10			
Louis Hill	Secy. & "D"	"		10			
Duane Abel	Treas. & "D"	"		10			
Lemuel B. Owens	Director	"		10			
L. E. Summers	Stockholder	"		10			
	Total		x x x x x			x x x x x	x x x x x

If more lines are needed continue on separate sheet.

9. Capital Stock Issues:

For Corporate Applicants

Item	Authorized (a)	Outstanding (b)	Par Value (c)	Number of Shares Outstanding (d)	Dividend Rate Last Paid* (e)
Common stock	$ 50,000	$ 4,700.	$ No par	94	
Preferred stock	$	$	$		

*Indicate period covered.

10. Production:

Item	Kind of Product (a)	1948 Total (b)	1949 Total (c)	1950 Total (d)	Present Average Monthly (e)
1. Quantity of product mined or quarried (Short, long, metric tons; barrels; pounds; etc.)					
2. Quantity of product processed (specify unit of measure and type of process)					
3. Quantity and grade of product sold or shipped (specify units of measure)					

11. Do you contemplate a change in the present average monthly rate of production? If so, state estimated maximum monthly production and basis of change. No estimate possible.

12. Ore or Mineral Reserves:

(a) Describe the ore or mineral deposit briefly. Accompany the application by any available report on the geology and ore reserves. Information not available until after core drilling.

(*b*) If deposit is other than placer:

(1) Submit assay plans and/or sections showing location and size of proved (measured) and probable (indicated) ore or mineral reserve.

(2) State the tonnage (indicate type of ton) and grade of each class of ore reserve, as above, and show how computed. Tabulated total ore reserve as follows:

TOTAL ORE OR MINERAL RESERVES

Ore or Mineral Reserve	Estimated Tons (a)	Metal or Mineral Content Per Ton (Grade) (b)	Gross Value Per Ton (c)	Recoverable Unit Value Per Ton (d)	Estimated Cost of Production Per Ton (e)
Measured (proved)					
Indicated (probable)					

(*c*) If placer:

(1) Give estimated total yardage and average marketable mineral content of each deposit.

(2) Submit map showing location of placer deposit and surrounding area, with all test holes or pits. Submit logs of each hole and test pit with depth and average value of each.

(3) Describe gravel, stating whether fine, medium or coarse; loose, tight, cemented, or frozen, and whether it contains stumps or boulders more than 1 foot in diameter; if so, how large, and in what proportion.

(4) Describe bedrock, giving type (granite, sandstone, shale, etc.) and state whether it is hard or soft, smooth, uneven or rough.

(5) Describe overburden, stating whether loose, tight, or cemented; fine or coarse textured; furnish estimate of average thickness and total amount.

(6) Tabulate the reserves using the form outlined above for ore or mineral reserves.

13. Access Roads:

Give road distances to shipping, supply and residence points, stating kind and condition of roads.

14. Water Supply:

State source and quantity of water available for operations and whether sufficient for all seasons of year.

15. Power:

State amount of power used, rate per hour, and source thereof.

16. Labor:

State number and classes (miners, muckers, millmen, etc.) of men employed during a recent representative payroll period.

17. Equipment and Facilities:

Describe present equipment on the property, including buildings. (State condition.) List major pieces of equipment now owned or controlled and in serviceable condition available for this operation.

18. Are there any particular conditions or circumstances affecting your operations that are not described above? If so, explain.

CERTIFICATION

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

Arthur J. Lay, Inc.
(Name of company)

By William J. Lay
(Signature of authorized official)

May 24th, 1951.
(Date)

Pres.
(Title)

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—63792-1

GENERAL TECHNICAL DATA

1. Materials produced:
   (a) flourspar
   (b) galena, sphalerite

2. Names and types of drilling operations. Extent of workings to date - none. Proposed drilling operations of exploratory nature to be commenced immediately by core-drilling to depth of approximately 300 feet.

3. Proposed operations are located as follows:
   (a) 8 miles west of Roseclair, Illinois, the nearest town and shipping point
   (b) The Illinois Kentucky Flourspar Mining District
   (c) Section 22, Township 12 South, Range 7 East
   (d) Pope County, Illinois

4. (a) not now in operation
   (b) operations will be conducted as lessee

5. Number of years in production - none. Anticipated production will begin November 1st, 1951.

6. Experience of operator: Arthur J. Lay, President and General Manager of applicant has had twenty years in operating and developing flourspar properties.

7. History:
   (a) no previous operations at said location because no lease was obtainable on property until the present time.
   (b) Crystal Flourspar Company operates the Jefferson Mine 1/4 mile east of the proposed operations. Also several small mines are being operated along the Stewart Fault from 1/2 mile to 1 mile east of proposed operations.
   (c) Site recommended by Dodd Gibson, Geologist for Crystal Flourspar Company and other geologists. Gibson & Lloyd have lease on adjoining 80 Acres to west

For answers to 8, 9, 10, 11 and 12, see Form MF-100.

13. Access Roads: Site of proposed core drilling is located on State Highway #146, a concrete 2-lane, well-improved highway. 1/4 mile N on dirt road to west line of property no road across property.

14. Water Supply: Immediate need for core drilling purposes supplied by Crystal Flourspar Company 1/4 mile east of proposed operations. At depth of 100 feet, adequate water can be obtained for all types of operation. Water will be sufficient for all seasons of the year.

15. Power: Power lines of Southeastern Illinois Electric Cooperative, Inc. intersect property. Rates $3.00 monthly minimum, first 40 kilowatts $3.00, next 60 kilowatts @ 4¢, next 900 kilowatts @ 3¢, next 2,000 @ 2¢, all over @ 1½¢.

16. Labor: None employed to date. Proposed operations will require approximately 10 miners. Supply in community sufficient.

17. Equipment and Facilities: No equipment at present. Core-drilling equipment will be furnished by contractor.

18. Applicant is a new corporation organized for the purpose of exploring for flourspar and byproducts. Sufficient capital has already been paid in to carry on exploratory work. If mineral is found in paying quantities, additional capital is available to develop and mine the same.

Form MF-103
(April 1951)

U. S. DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION

Budget Bureau No. 42-R1035.
Approval expires 6-30-51.

APPLICATION FOR AID FOR AN EXPLORATION PROJECT PURSUANT TO MINERAL ORDER 5, UNDER DEFENSE PRODUCTION ACT OF 1950

DO NOT FILL IN THIS BLOCK

Docket No. dma 13211X

Date received 5-28-51

Participation

Arthur J. Lay, Inc.,
864½ Logan St.
Noblesville, Indiana

Name and address of applicant

Date May 24, 1951

FILL IN THIS BLOCK

Date of application May 24, 1951

Estimated cost $30,000.00

Mineral or metal Fluorspar

Percentage of Government participation 50%

Location of mine 8 miles west of Elizabethtown, Ill. on N. side of state road No.146 Legal description: The west ½ of the N. E. ¼ of section 22, Twp. 12-south, Range 7-east. In Pope County, Illinois.

Date of filing MF-100

DMA Docket Number, if available dma 13211X

INSTRUCTIONS

Read Mineral Order 5, Regulations Governing Government Aid in Defense Projects, before completing this application. Submit four signed copies of the application to Defense Minerals Administration, Department of the Interior, Washington 25, D. C., or to the nearest field executive officer thereof, with your name and address on each sheet of the application and all accompanying papers. If any question is inapplicable, or if you cannot answer it, so state on the form. Where the space provided for answer is insufficient, answer on a separate sheet, annex it to the application form, and refer to it in space for answer. If the application is approved, you will be presented with an exploration project contract on Form MF-200, for your signature.

THE APPLICANT

*1. Is applicant an individual, partnership, or corporation?
*2. If a partnership, state names and addresses of partners.
*3. If a corporation, state names and addresses of officers, directors, and five largest stockholders.
*4. Describe the mining and general business experience of (*a*) the applicant, and (*b*) the person or persons who will manage the project.
*5. Are you the owner or the lessee of the property?
6. If owner, state what claims, liens, or encumbrances, if any, are against the property.
7. If lessee, attach a copy of the lease and state if it is in good standing.

NOTE.—It will be necessary to procure and attach to the exploration project contract agreements of claimants, lienors, encumbrances and lessors subordinating their interests in the property to the interest of the Government under the contract.

8. Furnish current financial statement, showing assets and liabilities, and a profit and loss statement.
9. How much money is applicant prepared to invest in proposed project? Is it sufficient to pay your part of the cost of the project as detailed in question 23 of this application form, in accordance with the regulations on Government participation (Section 9 of Mineral Order 5)?

*If you have already answered these questions on MF-100, you are not required to answer the questions for this application.

16—64067-1

THE PROPERTY

10. (*a*) Give a description of the real property that will be in any way involved in the exploration project, including any existing mine or operating property.

(*b*) Give the legal description of the exact parcel, plot, or area upon which the exploration is to be conducted.

NOTE.—If both areas are the same, so state. The only obligation to repay the Government is from the net earnings from any commercial discovery made in the area specified in (*b*) above in which the exploration is to be conducted, and the expenditure of funds which may be charged as costs of the project must be limited to that area or to work necessary to perform the exploration in that area.

*11. State the present and former names of the property, if any.

*12. State, in detail, the location of the property with reference to towns, railroads, roads, shipping points, including distances and directions and kinds and conditions of roads.

*13. State source and quantity of water available for operations and its sufficiency at all seasons. State amount of power to be used, rate per hour or other cost, and source.

*14. Describe any existing useable facilities, equipment, buildings, or structure now on the property that will be devoted to the exploration work.

15. State in detail how the ore could be shipped and how and where milled.

*16. History:

(*a*) Give a statement, as complete as possible, of previous exploration, development, operation, and production of property, with reasons for any past suspensions of operations.

(*b*) State briefly the known history and production of adjoining and neighboring properties.

(*c*) Furnish any available (private) reports that may apply to this application, including results of mine examinations, recommended exploration and development, and metallurgical investigations.

*17. Production:

(*a*) If mine is in production, furnish the following information:

	Tons per day	*Grade or analysis*	*Cost per ton*	*Net value per ton*
(1) Mining				
(2) Milling				
(3) Shipped or sold				

*18. Ore or mineral reserves: (If property is or has been operating.)

(*a*) Describe the ore or mineral deposits briefly.

(*b*) Submit available maps and assay data.

(*c*) Give estimated tonnage and grade of each class of ore reserves.

19. State any conditions or circumstances regarding the property not sufficiently brought out by the foregoing questions.

THE EXPLORATION

20. For what mineral or minerals and for what types of deposits and ores will the exploration be conducted?

21. Describe briefly, but concisely, the proposed work and the estimated time required to complete it.

NOTE.—The Government will not participate in a project that will require more than 2 years to complete.

22. Furnish statement of the geological basis of the project with particular emphasis on factors leading the operator to expect the finding of commercial ore bodies. This statement should be accompanied by supporting maps such as geological maps, maps of the proposed openings and assay maps, sample lists, and other pertinent data.

THE REQUIREMENTS AND COSTS

23. Tabulate in the form of an itemized statement with a sum for each item the estimated requirements and costs of the project so that the total will give the estimated cost of the project in which the Government will participate, as follows:

(*a*) Labor, by numbers and classes (miners, muckers, millmen, etc.), with wages of each.

(*b*) Supervisors, by numbers and positions, with salaries of each.

(*c*) Cost of necessary repairs to existing facilities, structures, and buildings.

(*d*) Cost of necessary installation or construction of additional facilities, structures, and buildings.

(*e*) Cost of items of equipment, not now owned by the applicant which must be purchased for operations at a cost of $50 or more each.

(*f*) Cost of rental for equipment which the operator proposes to rent.

(*g*) Rental value of items of equipment which the operator now owns and which will be devoted to the work.

(*h*) Cost of materials and supplies, including items of equipment costing less than $50 each.

(*i*) Cost of power, water, utilities, and any other items not provided for above.

24. Furnish a time schedule of the project, stated in terms of months after project is approved, showing progress expected to be accomplished and the money expected to be spent.

CERTIFICATION

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

Arthur J. Lay, Inc.
(Name of company)

By Arthur J. Lay
(Signature of authorized official)

May 24th, 1951
(Date)

Pres.
(Title)

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.

*Same as footnote on page 1.

16—64067-1 U. S. GOVERNMENT PRINTING OFFICE

Form MF-103

1. Corporation

8. Statement in lieu of financial statement: Assets consist of entire amount of paid in capital to-wit: $4,700 cash on deposit in banks less cost of incorporation and of acquiring leases to-w it: $534.20; balance of cash on hand $4,163.80. No other liabilities have been incurred to date. Corporation holds the attached lease and one other lease for 48½ acres. Value of leases unknown at present. 1-lease 119 acres. 1-lease for 60 acres.

9. $15,000

10. (a) Property is not improved in so far as exploring and mining facilities are concerned.
(b) The west ½ of the N. E. ¼ of Section 22, Twp. 12-south, Range 7-east in Pope County, Illinois.

11. Unnamed.

15. Ore can be shipped by rail or river barge. Milling facilities will be available on the property and are now available at Roseclair, Illinois. ? Rosiclare S&L, Ozark-Mahoning, Minerva

16. History: In addition to mines already in operation as listed in Form MF-100, mineral has been found on adjoining property to the west by core drilling? Old workings have revealed mineral deposits on property approximately ½ mile southwest and upon the same Fault that traverses the site of the proposed exploration? Small production.

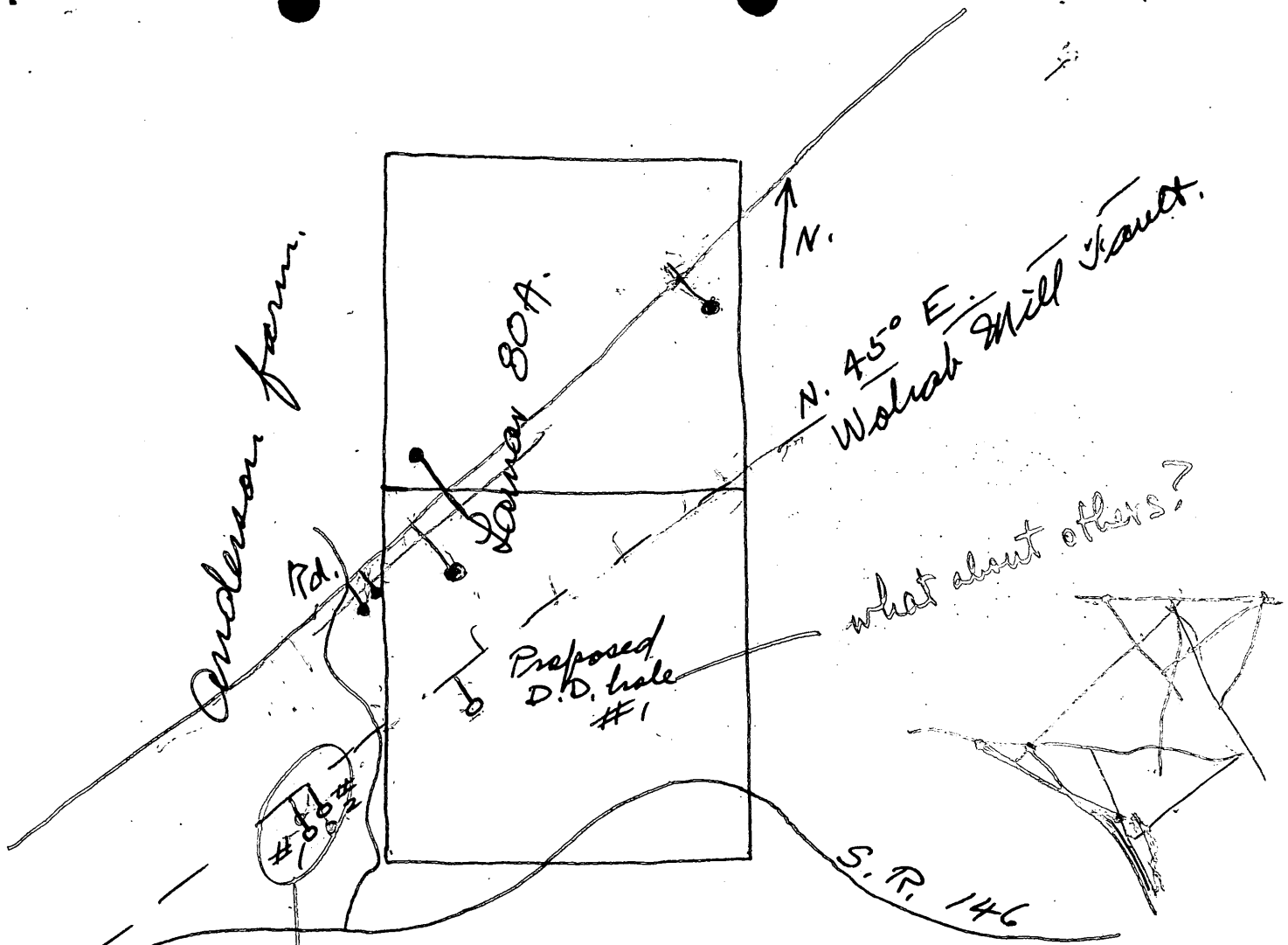
20. See answer to question #1 on Form MF-100.

21. Description of proposed work: Core-drilling operations will be conducted to a depth of approximately 300 feet and will require approximately two months. Shaft will be constructed wherever mineral deposits are located and will require approximately three months. Project should be in operation by approximately November 1st, 1951.

22. Geological basis: As shown in answer to other questions, the proposed site of exploration is virtually surrounded by mines now in operation and by known mineral deposits. The Wolrab Mill Fault where known minerals deposits are located traverses the site of the proposed exploration. From mines now in operation fluorspar, lead and zinc are being obtained in commercial quantities. See attached map for location of Fault and location of proposed exploration.

23. (a) Core drilling will be done by contract at $3.~~00~~ per foot. Shaft sinking will be done by contract at approximately $30.00 per foot. Actual mining operations will require approximately 10 miners.
(b) Arthur J. Lay, President and General Manager of the applicant corporation will supervise all operations. In lieu of salary Mr. Lay will receive an overriding royalty of 10% as shown in sub-lease agreement.
(c) No existing facilities and no repairs.
(d) Cost of installations and facilities depends on depth of mineral deposits and nature thereof. Estimated cost not to exceed $10,000.
(e) Not to exceed $5,000.
(f) Core drilling and shaft sinking will be done by contract. No actual rental of equipment anticipated.
(g) None.
(h) Not to exceed $1,000.
(i) $500.00.

24. Core drilling to be completed within two months; shaft sinking to be completed within three months after completion of core drilling. Production to commence within five to six months after approval of project. Anticipated expenditure of corporation capital and government aid approximately $30,000.



off least property!!

are these holes already drilled or are they also proposed?

Not proposed drilled on adjoining property

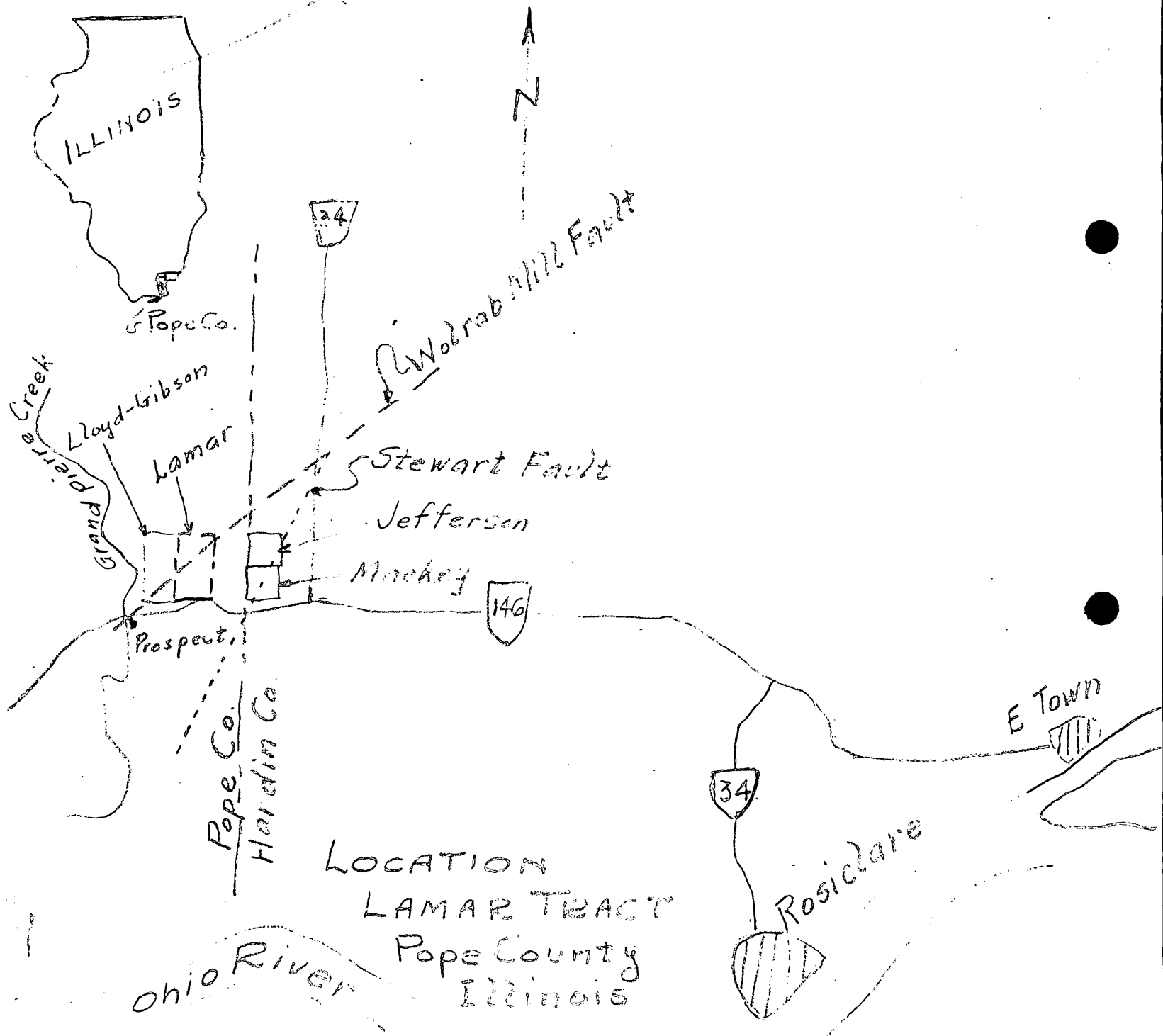

ILLINOIS
Pope Co.
N
34
Wolrab Hill Fault
Grand Pierre Creek
Lloyd-Gibson
Lamar
Stewart Fault
Jefferson
Mackey
146
Prospect
Pope Co.
Hardin Co.
E Town
34
Rosiclare
LOCATION
LAMAR TRACT
Pope County
Illinois
Ohio River

FIGURE 1

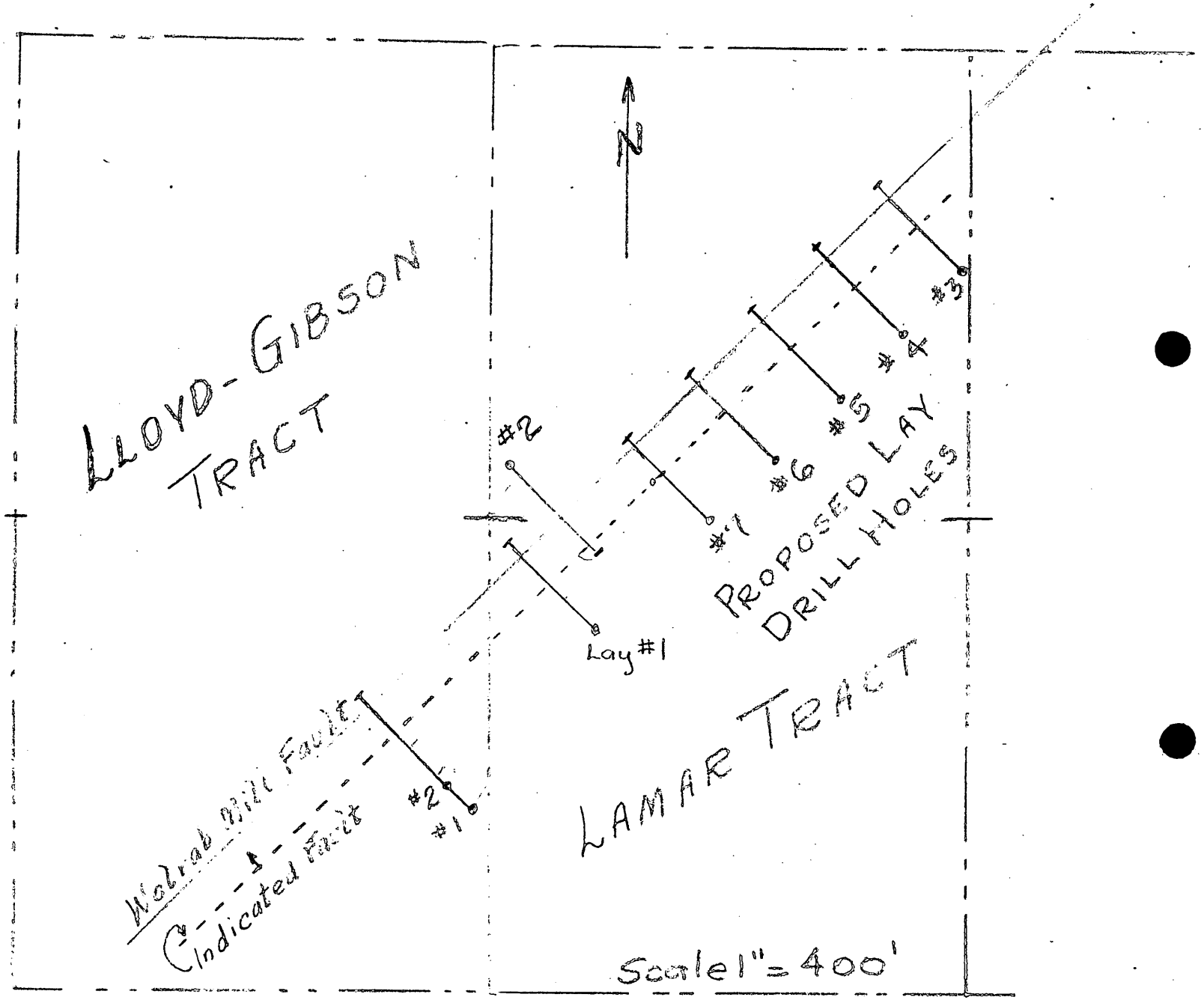
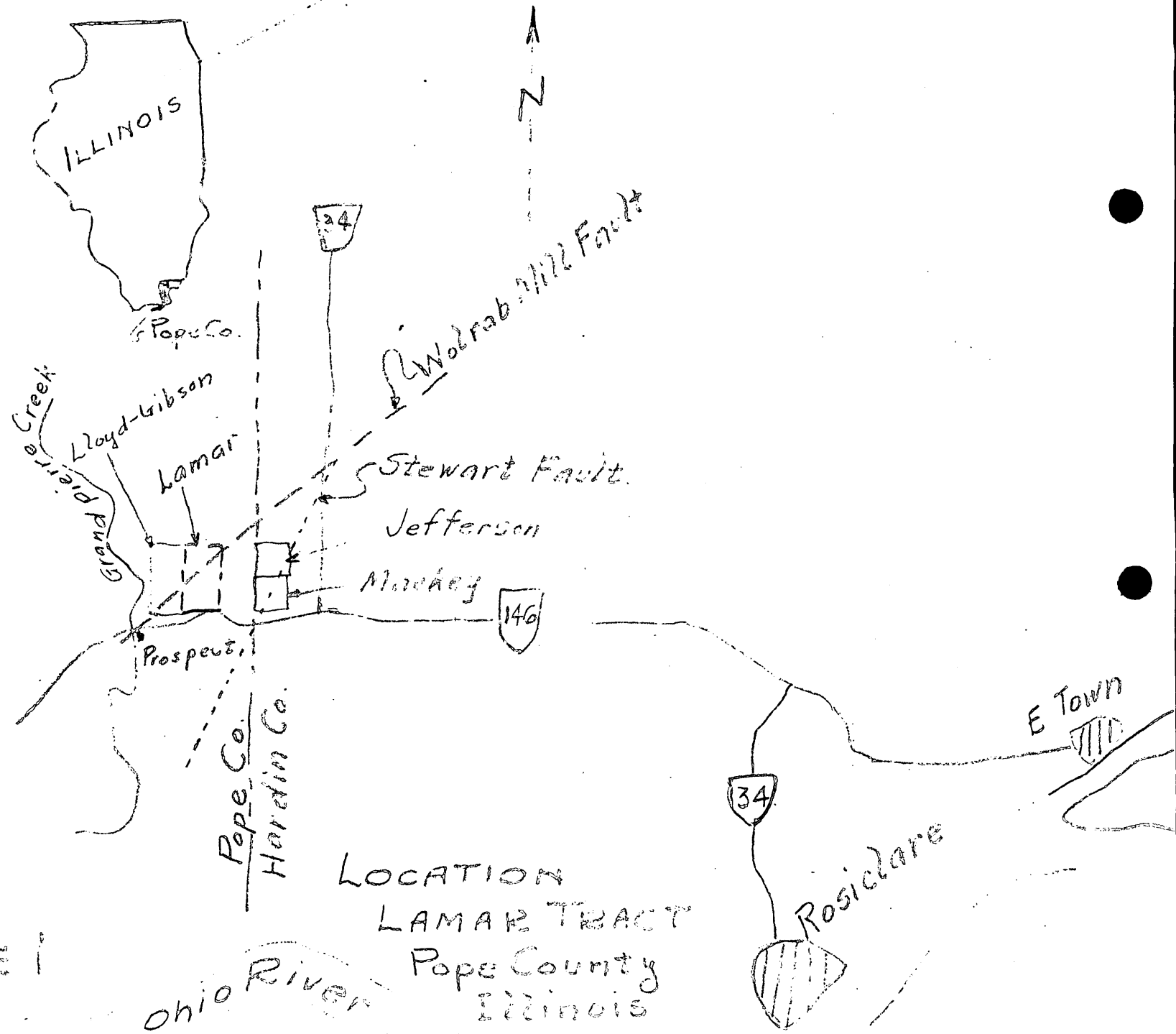


FIGURE 2 - PLAN of LAMAR TRACT
SHOWING DIAMOND DRILL HOLES



LOCATION
LAMAR TRACT
Pope County
Illinois

FIGURE 1

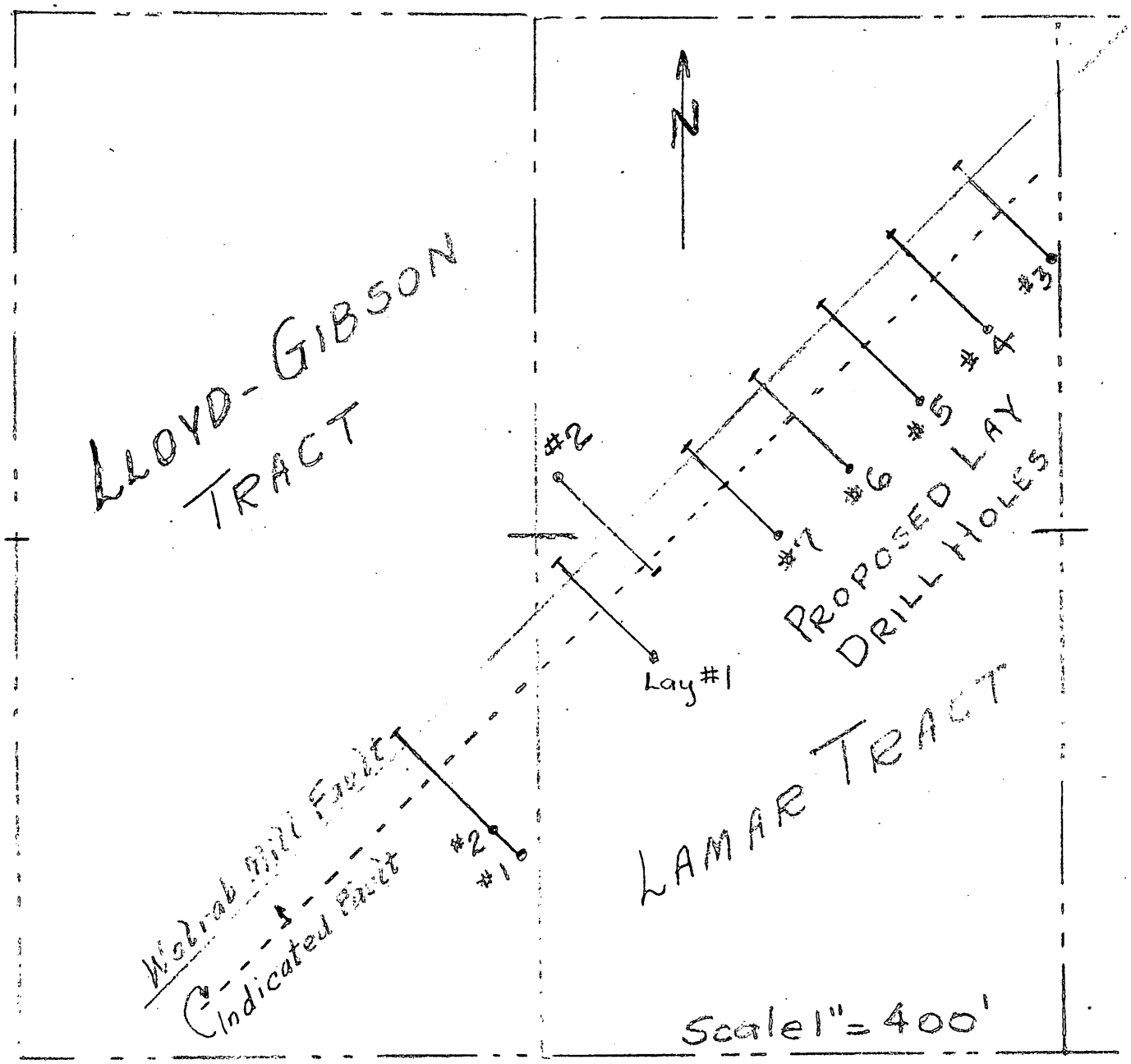
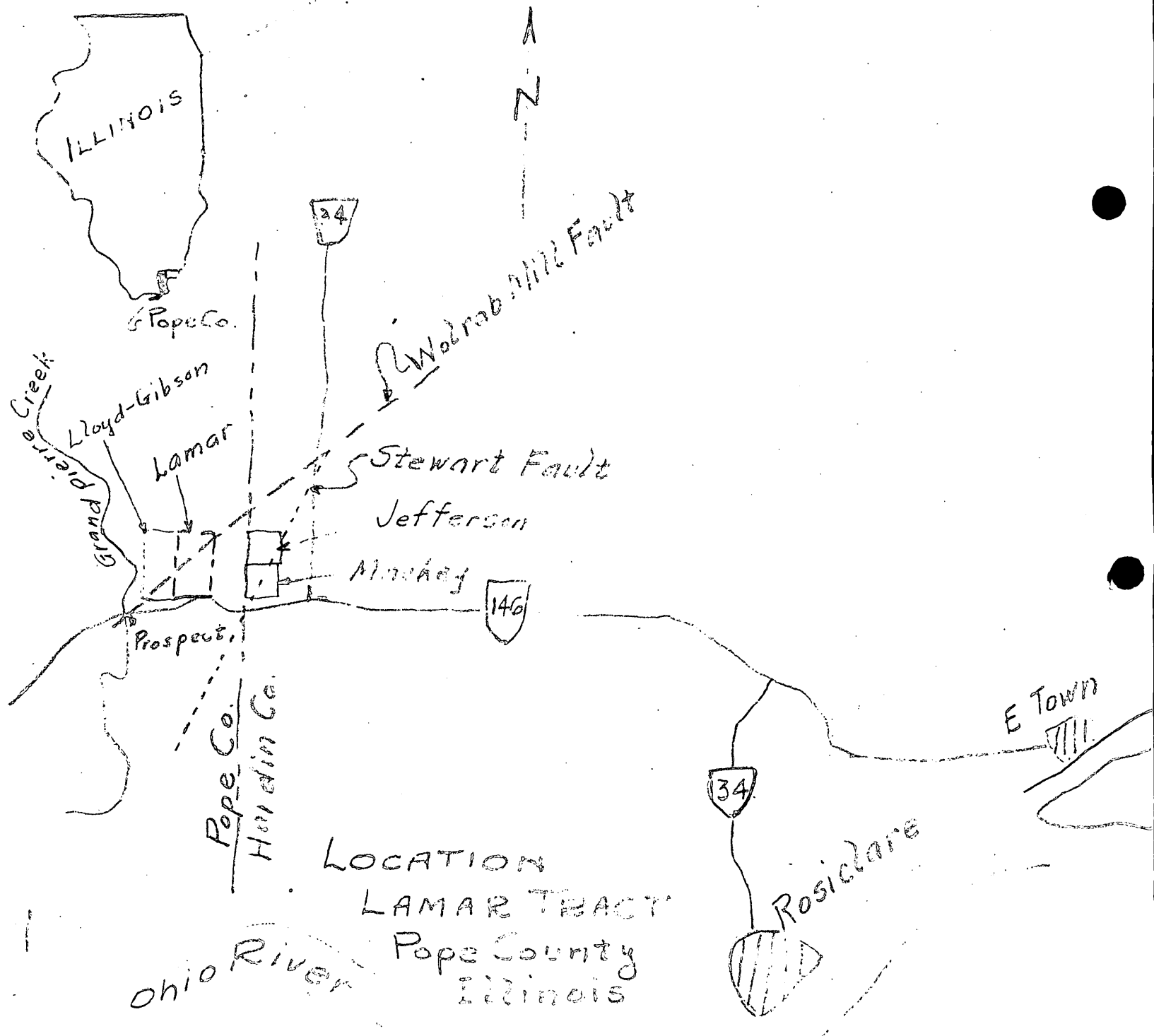


FIGURE 2 - PLAN OF LAMAR TRACT
SHOWING DIAMOND DRILL HOLES


ILLINOIS
Pope Co.
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Wabash Hill Fault
Grand Pierre Creek
Lloyd-Gibson
Lamar
Stewart Fault
Jefferson
Mineral
146
Prospect
Pope Co.
Hardin Co.
34
E Town
Rosiclare
LOCATION
LAMAR TRACT
Pope County
Illinois
Ohio River

FIGURE 1

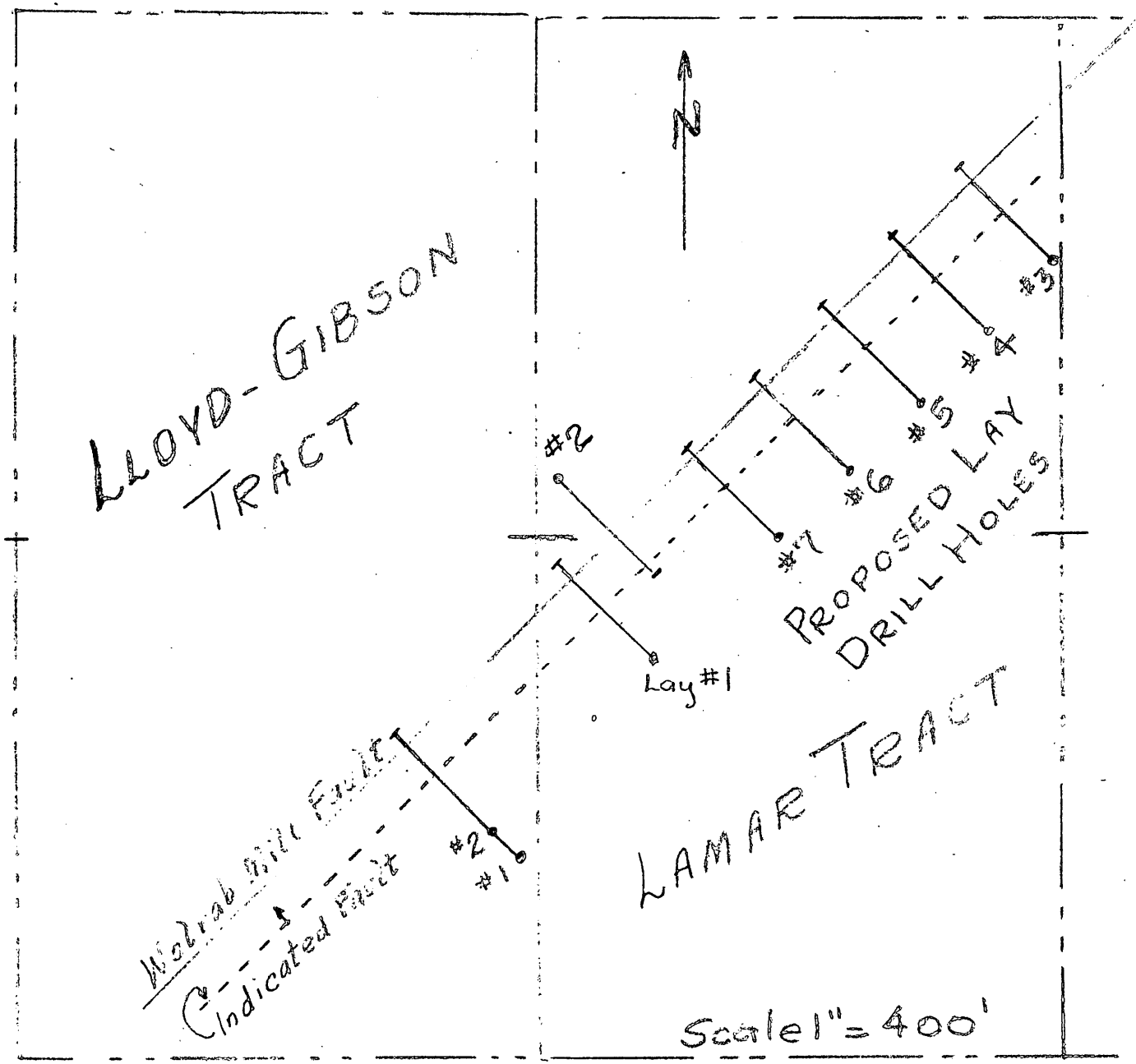
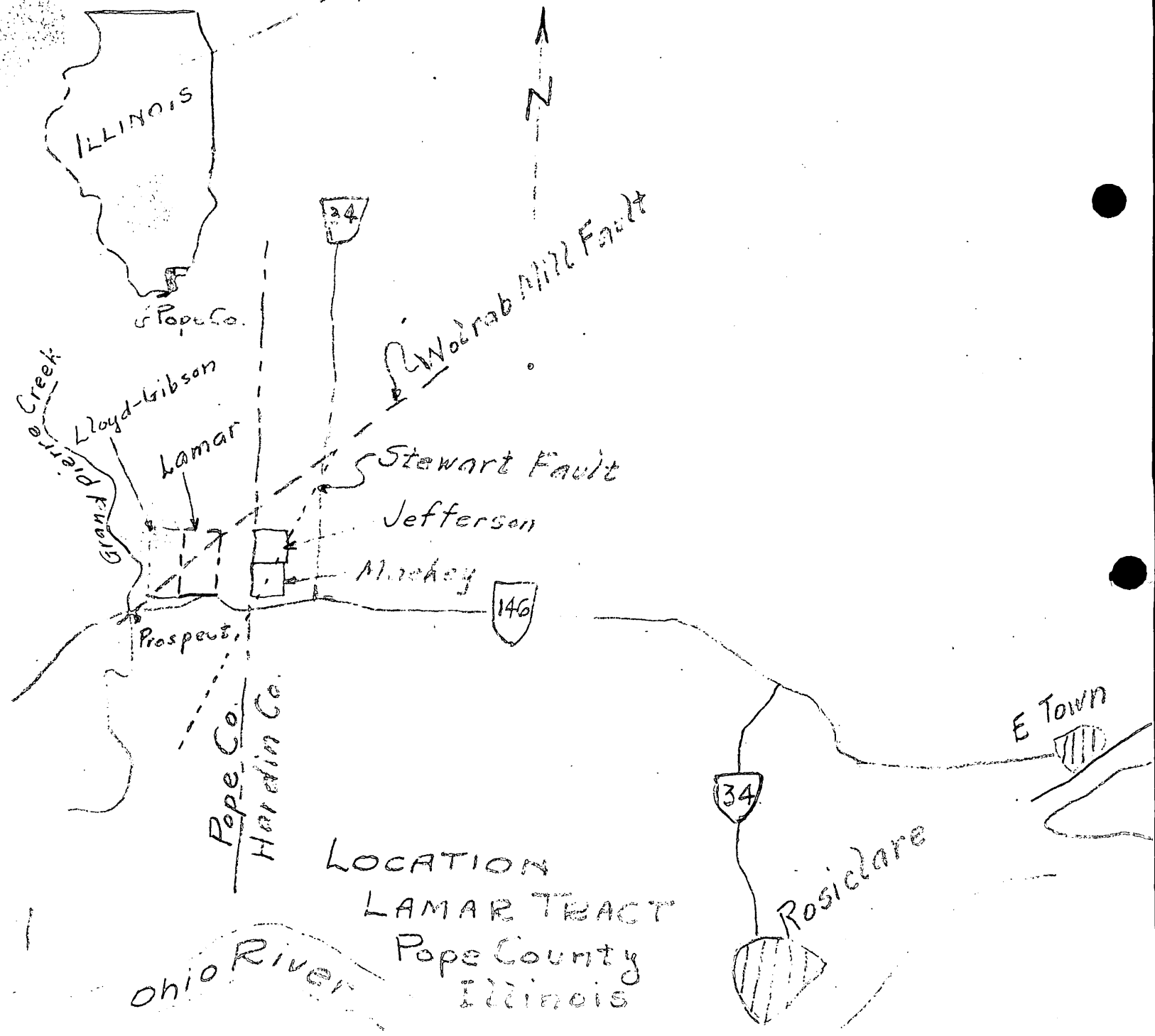


FIGURE 2 - PLAN of LAMAR TRACT
SHOWING DIAMOND DRILL HOLES


ILLINOIS
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LOCATION
LAMAR TRACT
Pope County
Illinois
Ohio River

FIGURE 1

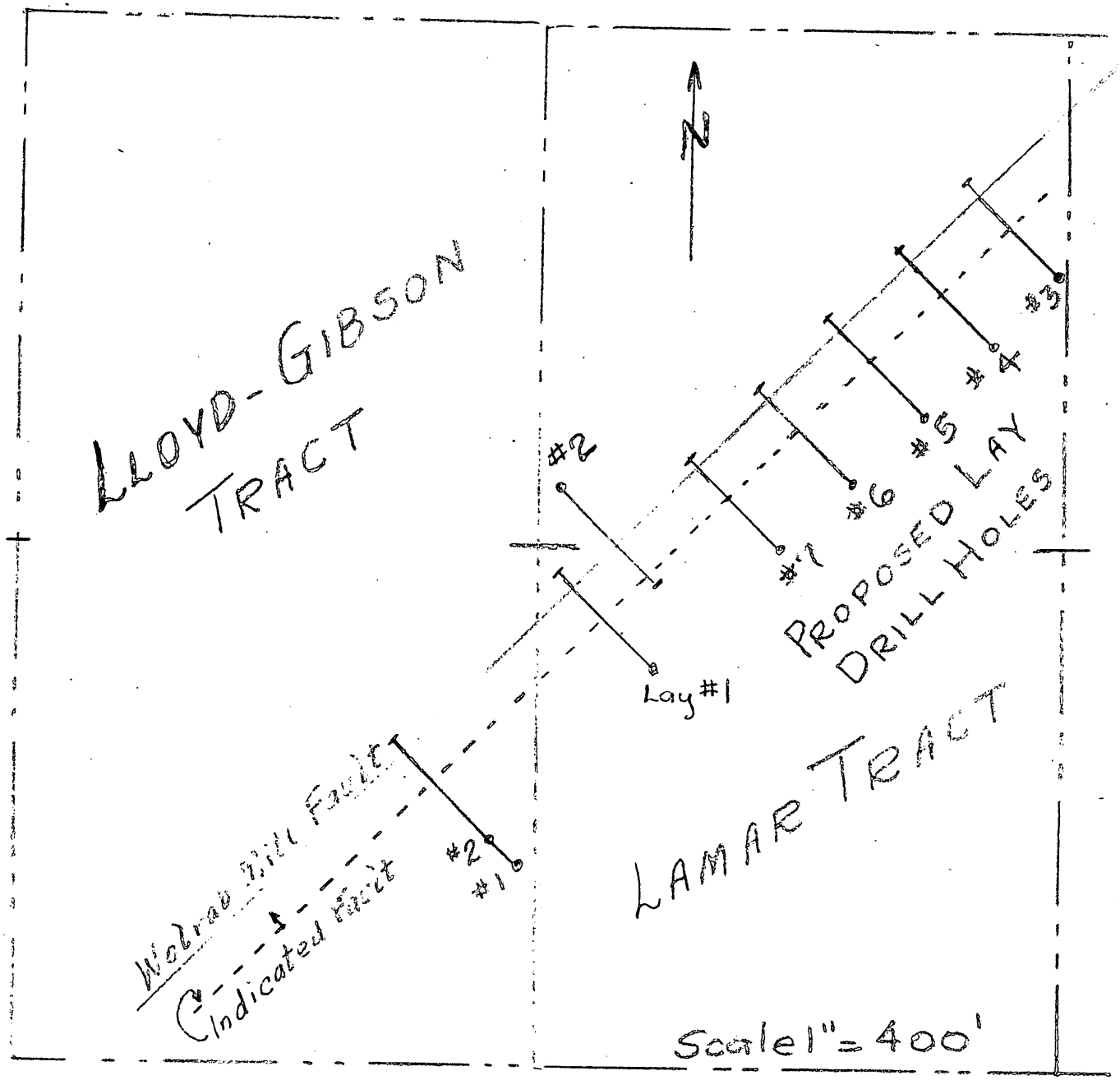
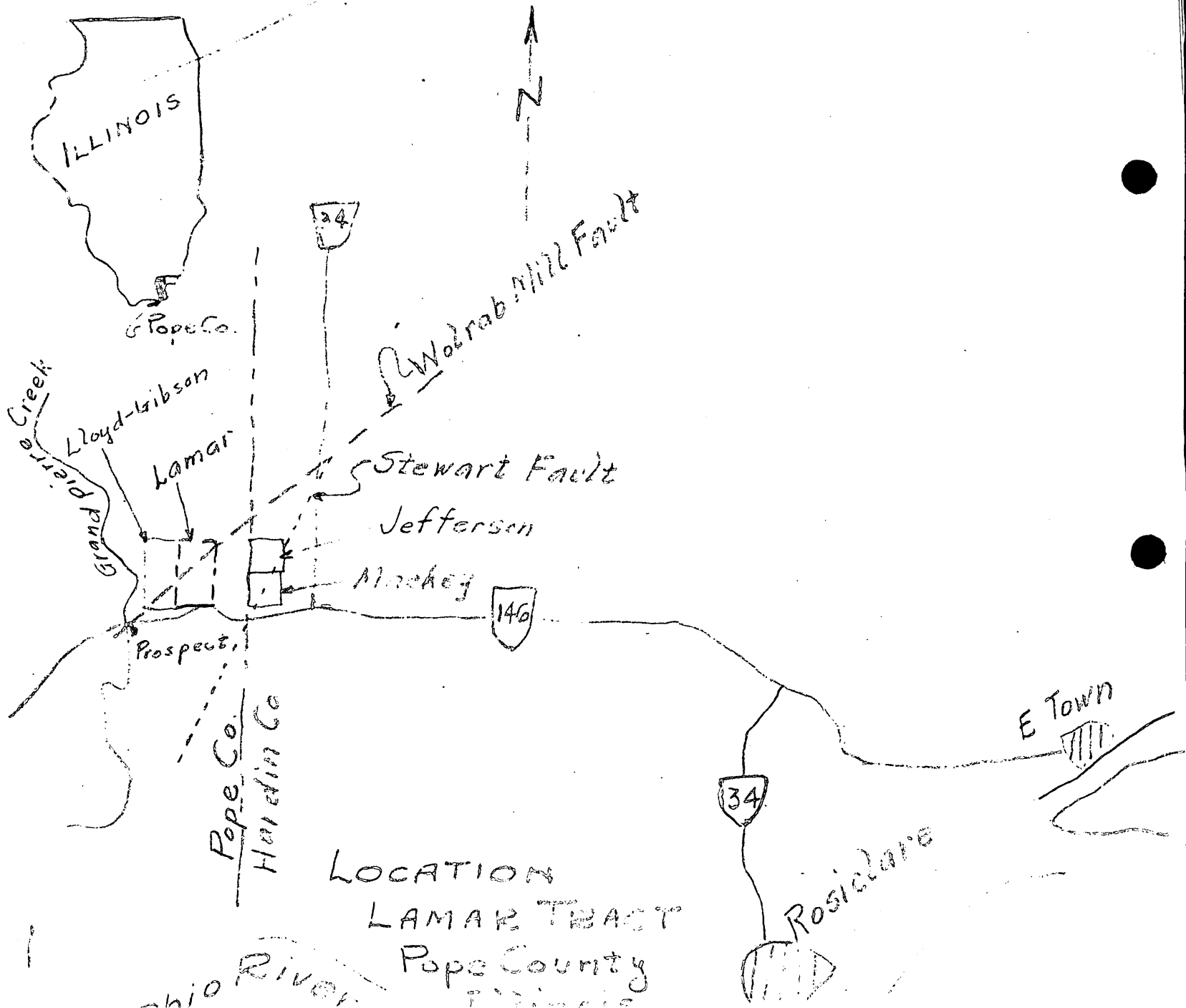


FIGURE 2 - PLAN of LAMAR TRACT
SHOWING DIAMOND DRILL HOLES


ILLINOIS
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Ohio River

FIGURE 1

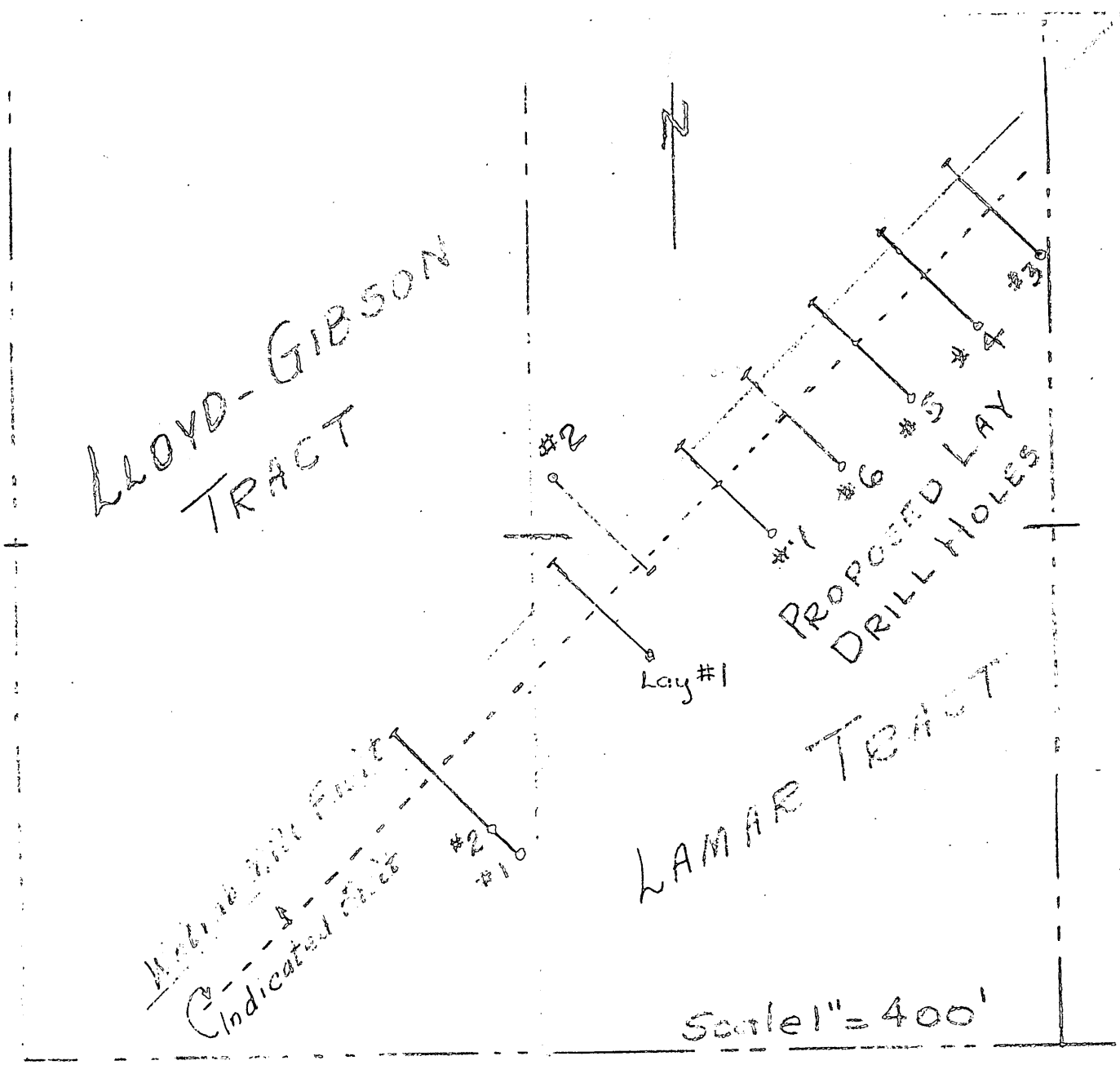


FIGURE 2 - PLAN : LAMAR TRACT
SHOWING PROPOSED DRILL HOLES

LEASE AND CONTRACT

THIS LEASE AND CONTRACT, made and entered into this seventh (7th.) day of February, 1951, by and between W. J. Costigan and Virginia Lee Costigan, his wife, of 1510 Salem Hills Drive, Rock Hill, Missouri, and Mary Jane Van Schalkwyk and Willem Dirkse Van Schalkwyk, her husband, of 4836 Loughborough Rd. N.W., Washington, D. C., and Louis Lamar and Effie Lamar, his wife, of Golconda, Illinois, all as one party and hereinafter designated "owners", and Arthur J. Lay, of Ridgeville, Indiana, hereinafter designated "lessee", WITNESSETH:

WHEREAS, owners are the sole and entire owners of the mineral rights to the following described real estate, to-wit:

> The west one-half of the north-east quarter of section twenty-two (22), township twelve (12) south, range seven (7) east, in Pope County, State of Illinois, consisting of eighty (80) acres, more or less, and

WHEREAS, lessee is interested in securing the exclusive right to prospect for, mine, mill and otherwise prepare for market, any and all of the minerals or mineral substances of every kind and nature, in, upon, under or underlying the above described premises, and,

WHEREAS, owners desire to have such minerals or mineral substances, fluorspar, etc., mined from said premises as above stated and having said premises worked by the use of suitable machinery, equipment, fixtures and buildings, to be used directly or indirectly in con-connection with prospecting, mining and milling operations, which lessee may desire to place upon said premises, and prospecting for, mining, milling and recovering from said premises minerals and mineral substances of various kinds, as above stated, for the purpose of sale, and the exploitation and determination of the possibilities obtaining, and the same is agreeable to the owners thereof;

NOW, THEREFORE, in consideration of the sum of one dollar ($1.00) and other good and sufficient considerations paid or to be paid to the owners, the receipt and sufficiency of which is hereby acknowledged, and the covenants and agreements to be kept and performed by the lessee as hereinafter set forth, the owners have and by these presents do give and grant to the lessee the exclusive right to enter upon said premises for the purpose of prospecting, mining, milling and removing said minerals or mineral substances, erecting buildings for mining, milling and related operations in connection with the operations of lessee upon said premises, installing machinery, tipples, tanks, bins, water lines, sinking shafts, drifting, drilling or using and all methods known to the science of prospecting, mining, milling or refining or otherwise preparing ores, minerals, or mineral substances for market, with the exclusive right to so conduct prospecting, mining, milling and any related operations upon the said premises, together with the right of ingress and egress and to build and construct roads, trams and any other means of transportation over and across said premises for the purpose of transporting over and across said premises and therefrom the ores, minerals, mineral substances, fluorspar, etc., which may be found thereon or thereunder, as well as any equipment and supplies.

1. Lessee reserves the right to remove from said premises any of the buildings, machinery, equipment and other personal property of lessee placed thereon by lessee or at the expense of lessee, after the termination, surrender or forfeiture of this lease and contract as provided later herein.

2. Lessee agrees to begin development work or prospecting or mining, in an effort to determine the possibilities as to said premises, within ninety (90) days from the complete signing of

lease and contract and lessee agrees to carry on such prospecting, mining, milling and related work with all reasonable expediency, insofar as weather, road, labor, market, or other conditions beyond the control of the lessee, will permit, for a period of at least eight (8) months of each year during the life of this instrument or any renewal or extension thereof unless excused from so doing in writing by the owners, and failure upon the part of lessee to do so shall cause this lease and contract to become null and void at the option of the owners, as provided herein.

3. The term of this lease and contract shall be for one year from the date hereof and for as long thereafter as the lessee shall comply with all of the terms, conditons and covenants set forth herein.

4. Lessee agrees to pay to owners a royalty of ten percent (10%) of the selling price of all fluorspar, minerals, or mineral substances mined and sold from off the said premises, All royalties shall be divided into three equal parts and one of said parts shall be paid directly to each of the above designated owners. All royalties accruing during any calendar month shall be paid to owners as above set forth by the last day of the succeeding month.

5. Owners shall have the right to examine any of the records and books of lessee and any of the workings of lessee upon the said premises that may be necessary to determine the amount of royalties due to owners from time to time and to determine the conditions related to the mining operations of lessee, but all such examinations shall be made at the risk of owners.

6. Lessee shall carry workmen's compensation and public liability insurance and shall comply with all of the State and Federal laws governing operations of lessee upon said premises and, in any event, shall hold owners safe and harmless from any liability for damages occasioned to a stranger or to the employees of lessee resulting from any operations of lessee.

7. Lessee shall have the right to surrender this lease and contract at any time upon the payment of all royalties due to owners and, at the expiration, surrender or cancelation of this lease and contract, lessee shall have the right to remove any buildings, machinery or any other equipment placed thereon by lessee or at the expense of lessee and lessee shall have four (4) months time in which to make such removal.

8. Lessee shall have the right to remove any minerals or mineral substances, fluorspar, etc., mined from said premises for the purpose of milling the same or otherwise preparing the same for market.

9. Owners shall have the right to declare a forfeiture of this lease and contract should lessee neglect or refuse to comply with all of the terms and conditions herein, and should continue in such neglect or refusal for thirty (30) days after the receipt of a written notice from owners setting forth any such specific violation and the intention of owners to declare this lease and contract forfeited and void unless proper steps be taken by lessee within said thirty (30) days to comply with the specified terms and conditions.

10. This lease and contract is granted primarily for the purpose of prospecting for, mining, milling and selling fluorspar from the said premises and, while provision is made herein also for royalty covering other minerals and mineral substances, the prospecting for and the mining of any such other minerals or mineral substances is at the option of the lessee and there is no requirement hereunder for him so to do.

11. All rights hereunder shall inure, continue and apply to the heirs, successors or assigns of the parties hereto, and this lease an

contract is executed upon quadruplicate original copies hereof upon the day and year first above written.

W. J. Costigan (SEAL)

Virginia Lee Costigan (SEAL)

Mary Jane Van Schalkwyk (SEAL)

Willem Dirkse Van Schalkwyk (SEAL)

Louis Lamar (SEAL)

Effie Lamar (SEAL)

Arthur J. Lay (SEAL)

Delivered and in effect this
the 14th. day of March, 1951.
Chas. Durfee

State of Missouri)
) SS.
St. Louis county)

I, Richard O. Werner, a Notary Public in and for said county, in the state aforesaid, do hereby certify that W. J. Costigan and Virginia Lee Costigan, his wife, personally known to me to be the same persons whose names are subscribed to the foregoing instrument, as having executed the same, 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 seal this 21st. day of February, 1951.

Richard O. Werner
Notary Public

My commission expires February 14, 1953.

State of Illinois)
) SS
Pope County)

I, Verba W. Moore, a Notary Public in and for said county in the state aforesaid, do hereby certify that Louis Lamar and Effie Lamar, his wife, and Arthur J. Lay, personally known to me to be the same persons whose names are subscribed to the foregoing instrument, as having executed the same, 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 10 day of February, 1951.

Verba W. Moore
Notary Public

My commission expires April 15, 1952.

District of)
)
Columbia)

I, Dorothy B. Porto, a Notary Public in and for the said District of Columbia, do hereby certify that Mary Jane Van Schalkwyk and Willem Dirkse Van Schalkwyk, her husband, personally known to me to be the same persons whose names are subscribed to the foregoing instrument, as having executed the same, 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 28th. day of February, 1951.

Dorothy B. Porto
Notary Public

My commission expires March 22, 1951.

SUB-LEASE AND AGREEMENT

THIS AGREEMENT made and entered into this the 24th day of May, 1951, by and between Arthur J. Lay, of Ridgeville, Indiana, hereinafter designated sub-lessor, and Arthur J. Lay, Inc., of Noblesville, Indiana, hereinafter designated sub-lessee, WITNESSETH. THAT WHEREAS, the sub-lessor, by virtue of a lease dated February 7th, 1951, now holds in full force and effect a lease upon the following described real estate;

> The west one-half of the north-east quarter of section twenty-two (22), township twelve (12) south, range seven (7) east, in Pope County in the State of Illinois, consisting of eighty (80) acres, more or less, and

WHEREAS, the sub-lessee herein desires to obtain similar rights and privileges, with some concessions to sub-lessor, to the above described premises, which concessions and terms are fully set forth herein, and

WHEREAS, the sub-lessor is desirous of sub-letting the above described premises to the sub-lessee for the purposes hereinafter set forth and under the following terms and conditions, to-wit:

NOW, THEREFORE, in consideration of the sum of one dollar ($1.00) and other valuable and sufficient considerations paid or to be paid to the sub-lessor, the receipt and sufficiency of which is hereby acknowledged, and the covenants and agreements to be kept and performed by the sub-lessee as hereinafter set out, the sub-lessor has and by these presents does give and grant to the sub-lessee the exclusive right to enter upon the said premises for the purpose of prospecting, mining, milling and removing minerals or mineral substances, erecting buildings for mining, milling and related operations in connection with operations of the sub-lessee upon said premises, installing machinery, tipples, tanks, bins, water lines, sinking shafts, drifting, drilling, or using any and all methods known to the science of prospecting, mining, milling or refining or otherwise preparing ores, minerals or mineral substances for market, with the exclusive right to so conduct prospecting, mining, milling and any related operations upon the said premises, together with the right of ingress and egress and to build and construct roads, trams and any other means of transportation over and across said premises for the purpose of transporting over and across said premisea and therefrom the ores, minerals and mineral substances, fluorspar, etc., which may be found thereon or thereunder, as well as any equipment and supplies.

1. Sublessee reserves the right to remove from the said premises any of the buildings, machinery, equipment and other personal property of sub-lessee placed thereon by sub-lessee or at the expense of sub-lessee, after the termination, surrender or forfeiture of this sub-lease and agreement as provided later herein.

2. Sub-lessee agrees to begin development work or prospecting or mining, in an effort to determine the possibilities as to said premises, within twenty (20) days from the date of this sub-lease and agreement and sub-lessee agrees to carry on such prospecting, mining, milling and related work with all reasonable expediency, insofar as weather, road, labor, market, or other conditions beyond the control of the sub-lessee, will permit, for a period of at least eight (8) months of each year during the life of this instrument or

any renewal or extension thereof unless excused from so doing in writing by the sub-lessor hereof, and failure upon the part of the sub-lessee to so do shall cause this sub-lease and agreement to become null and void at the option of the sub-lessor, a s provid ed herein.

3. The term of this sub-lease and agreement shall be for one year from the date hereof and for as long thereafter as the sub-lessee shall comply with the terms, conditions and covenants set forth herein.

4. Sub-lessee agrees to pay to the sub-lessor a royalty of twenty (20) percent of the selling price of all fluorspar, minerals or mineral substances mined and sold from off the said premises. All royalty accru ing during any calendar month shall be paid to sub-le ssor upon or before the last day of the succeeding month.

5. Sub-le ssor shall have the right to examine any of the records and books of the sub-lessee and any of the workings of sub-lessee upon the said premises that may be necessary to determine the amount of royalties due to sub-lessor hereunder from time to time and to determine the conditions of the mining operations of sub-lessee, but all such examinations shall be made at the risk of the sub-lessor.

6. Sub-lessee shall supply sub-lessor with duplicate dale s and weigh tickets upon all fluorspar, minerals, mineral substances, etc. when and as sold by sub-lessee.

7. Sub-lessee shall carry workmen's compensation and public liability insurance and shall comply with all of the State and Federal laws governing operations of sub-le ssee upon the said premises and, in any event, shall hold sub-lessor harmless from any liability for damages occasioned to a stranger or to the employees of sub-lessee or any other person or persons resulting from any of the operations of the sub-lessee.

8. Sub-lessee shall have the right to surrender this sub-lease and agreement at any time upon the payment of all royalties due to sub-le ssor and at the expiration, surrender or cancellation of this sub-le ase and agreement, sub-le ssee shall have the right to remove any buildings, machinery or any other equipment placed thereon by sub-le ssee or at the expense of sub-le ssee and sub-lessee shall have three (3) months time in which to make such removal.

9. Sub-lessee shall have the right to remove any minerals or mineral substances, fluorspar, etc. mined from said premises for the purpose of milling the same or otherwise preparing the same for market.

10. Sub-lessor shall have the right to declare a forfeiture of this sub-le ase and agreement should sub-lessee refuse or neglect to comply with all of the terms and conditions herein, and should continue in such neglect or refusal for fifteen (15) days after the receipt of a written notice from the sub-lessor setting forth any such specific violation and the intention of sub-lessor to declare this lease and agreement forfeited and void unless proper steps be taken by sub-lessee within said fifteen(15) days to properly comply with the t erms and conditions specified in said notice.

11. This sub-lease and agreement is granted primarily for the purpose of prospecting for, mining, milling and selling fluorspar from the above described premises and, while provision is made herein also for royalty covering other minerals or mineral substances, the prospecting for and the mining of any such other minerals or mineral substances is at the option of the sub-lessee and there is no requirement hereunder for said sub-lessee so to do.

12. All rights hereunder shall inure, continue and apply to the heirs, successors or assigns of the parties hereto, and this sub-lease and agreement is executed upon duplicate original copies hereof upon the day and year first above written.

/s/ Arthur J. Lay (Seal)

ARTHUR J. LAY, INC.

By Arthur J. Lay, (Seal)

Pres.

ATTEST:

/s/Louis Hill

Secretary.

STATE OF INDIANA)
) SS.
HAMILTON COUNTY)

I, Frank W. Campbell, a Notary Public in and for said county in the state aforesaid, do hereby certify that Arthur J. Lay, personally known to me to be the same person whose name is subscribed to the foregoing instrument, as having executed the same, 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 24th day of May, 1951.

Frank W. Campbell,
Notary Public.

My commission expires January 10th, 1955.

STATE OF INDIANA)
) SS.
HAMILTON COUNTY)

I, Frank W. Campbell, a Notary Public in and for said county in the state aforesaid, do hereby certify that Arthur J. Lay, to me personally known as the President of Arthur J. Lay, Inc., and also known to me as the person whose name is signed to the foregoing instrument, and Louis Hill, Secretary of said Arthur J. Lay, Inc., and also known to me as the person whose name is signed to the foregoing instrument, each appeared before me this day in person and each for himself acknowledged that he signed, sealed and delivered the said instrument as his free and voluntary act and as the free and voluntary act of said Arthur J. Lay, Inc., for the uses and purposes therein set forth, and the said Louis Hill also acknowledged that he affixed the seal of said corporation to said instrument, and each acknowledged that the execution of said instrument was duly authorized by the Board of Directors of said Arthur J. Lay, Inc.

Given under my hand and notarial seal this 24th day of May, 1951.

Frank W. Campbell,
Notary Public.

My commission expires January 10th, 1955.

Town Rosiclare Township Monroe R. 7E

Company Thompson et al No. T. Sec.

Farm Anderson No. 1 12 22

Authority Summary core study S

Elevation

Collector

Confidential Date Drilled 1942

562' N., 115' W. of SE corner SE NW

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Course: N. 51° W.; Dip: 60°.				
	Studied by F.E. Tippie, November 1943.				
	"Surface and boulders"		13.5	13.5	
	MISSISSIPPIAN SYSTEM				
	Chester series				
	Cypress sandstone				
	"Sandstone"		24.5	38.0	
	Sandstone, light gray, very fine to fine, partly iron stained	10.4	10.4	48.4	
	Sandstone, light gray, very fine to fine	9.0	9.3	57.7	
	Paint Creek shale				
	Shale, dark gray, brittle	6.0	7.0	64.7	
	Limestone, gray, fine to coarse	1.9	2.7	67.4	
	Shale, black, brittle	16.4	18.1	85.5	
	"Shale"		2.5	88.0	
	"Sandstone and shale"		5.6	93.6	
	Sandstone, slightly shaly, light gray, very fine to fine	5.7	5.7	99.3	
	Opening		2.2	101.5	
	Bethel sandstone				
	Sandstone, light gray, very fine to fine	17.5	20.9	122.4	
	Sandstone, gray, very fine to fine, quartzitic	3.8	4.3	126.7	
	Sandstone, white to light gray, very fine to fine, quartzitic; trace spar at 183'	59.0	62.0	188.7	

COUNTY Pope 22-12S-7E

SHEET 2 T. 12S R. 7E S. 22
COMPANY Thompson et al HOLE NO.
FARM Anderson HOLE NO. 1

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Opening		1.0	189.7	
	Sandstone as above	8.9	10.5	200.0	
	Renault formation				
	Shale, calcareous, greenish gray	2.0	4.5	204.5	
	Opening		1.5	206.0	
	Limestone, buff, scattered pink crystals, coarse, crinoidal	0.8	0.8	206.8	
	Limestone, buff, coarse, crinoidal	1.9	2.4	209.2	
	Shale, limy, dark gray, some thin limestone streaks	1.5	2.5	211.7	
	Shale, dark gray	1.1	1.1	212.8	
Fa	Calcite; some limestone; trace spar	0.4	0.4	213.2	
LEVIN	Limestone, buff, very fine	1.6	2.6	215.8	
	Limestone, partly oolitic, light buff, fine; 1" calcite veinlet	1.8	2.1	217.9	
	Limestone, light buff, coarse, crystalline	2.2	2.9	220.8	
	Calcite; trace spar; lead sulphide and zinc sulphide	0.2	0.3	221.1	
	Limestone, oolitic, light brownish, fine to medium	1.5	2.4	223.5	
	Limestone, oolitic, buff, fine	1.5	1.5	225.0	
	Rosiclare sandstone				
	Limestone, silty, green	1.2	1.2	226.2	
	Siltstone, calcareous, light green, coarse	2.3	2.3	228.5	
	Siltstone, shaly, calcareous, green, coarse	2.7	2.7	231.2	
	Siltstone, gray, coarse; few calcite veinlets	8.5	9.1	240.3	
	Limestone, very silty,				

COUNTY Pope 22-12S-7E

SHEET 3 T. 12S R. 7E S. 22
COMPANY Thompson et al HOLE NO.
FARM Anderson HOLE NO. 1

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	oolitic, brown, fine	4.2	4.9	247.6	
	Siltstone, calcareous, green, coarse	1.1	1.3	248.9	
	Siltstone, shaly, green	0.9	1.2	250.1	
	Limestone, silty, oolitic, brown, fine to coarse	0.5	0.8	250.9	
	Fredonia limestone				
	Limestone, oolitic, light buff, coarse	1.0	1.6	252.5	
	Limestone, partly oolitic, buff, fine to medium	16.8	17.9	270.4	
	Limestone, light gray, lithographic	2.0	2.1	272.5	
	Limestone, very oolitic, light buff, coarse	10.1	10.8	283.3	
	Limestone, gray, lithographic	2.0	2.2	285.5	
	Limestone, very shaly, dark gray, very fine	2.9	3.3	288.8	
	Limestone, gray, very fine	1.0	1.2	290.0	
	Limestone, shaly, gray, very fine	1.4	1.5	291.5	
	Limestone, gray, extra fine	4.2	4.6	296.1	
	Shale, calcareous, dark gray	0.8	0.9	297.0	
	Limestone, brown, fine, crystalline	2.0	2.3	299.3	
	Limestone, brown, fine to coarse, crystalline	3.0	4.4	303.7	
	Limestone, shaly, brown, very fine	1.0	1.4	305.1	
	Limestone, brown, extra fine	1.8	2.6	307.7	
	Limestone, gray, lithographic	0.6	0.9	308.6	
	Limestone, oolitic, brown, medium	3.8	5.4	314.0	

COUNTY Pope 22-12S-7E

SHEET 4 T. 12S R. 7E S. 22

COMPANY Thompson et al HOLE NO.

FARM Anderson HOLE NO. 1

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Limestone, oolitic, gray, fine to medium	4.5	5.5	319.5	
	Limestone, gray, sub-lithographic	7.8	9.0	328.5	
	Limestone, very oolitic, light gray, coarse	6.2	6.6	335.1	
	Limestone, partly oolitic, brown, fine	10.6	10.6	345.7	
	Limestone, oolitic, brown, fine to medium	3.3	4.3	350.0	
	Driller's log for deflected hole #1:				
	Start of deflection			199.0	
	Shale		5.5	204.5	
	Limestone		4.7	209.2	
	Limestone and shale		2.3	211.5	
	Zinc, spar and calcite		2.0	213.5	
	Limestone		6.5	220.0	

COUNTY Pope 22-12S-7E

Town Rosiclare Township Monroe R. 7E

Company Thompson et al No. 2 T. 12 Sec. 22

Farm Anderson No. 2

Authority Summary core study

Elevation

Collector

Confidential Date Drilled 1942

515' N., 58' W. of SE corner SE NW

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Course: N. 51 W.; Dip: 60°.				
	Studied by Frank E. Tippie, November 1943.				
	Surface and boulders		29.0	29.0	
	MISSISSIPPIAN SYSTEM				
	Chester series				
	Cypress sandstone				
	Sandstone, white, very fine to fine, iron stain	15.0	18.0	47.0	
	Palestine Creek formation				
	Limestone, gray, coarse, crystalline	0.8	1.1	48.1	
	Limestone, sandy, gray, fine to coarse	0.6	0.9	49.0	
	Shale, gray, brittle	2.0	4.0	53.0	
	Sandstone, white, very fine to fine	0.3	1.0	54.0	
	Shale, greenish gray, brittle	3.3	4.0	58.0	
	Limestone, sandy, gray, fine to coarse, crinoidal	0.7	1.0	59.0	
	Shale, greenish gray, brittle	10.0	11.0	70.0	
	Sandstone, slightly shaly, light gray, very fine	9.0	15.0	85.0	
	Shale, very sandy, gray	1.2	2.5	87.5	
	Sandstone, slightly shaly, light gray, very fine	6.5	16.7	104.2	
	Bethel sandstone				
	Sandstone, calcareous, light gray, very fine to fine	8.3	10.3	114.5	
	Sandstone, gray, very fine	5.0	5.3	119.8	
	Sandstone, white, very fine				

COUNTY Pope 22-12S-7E

SHEET 2 T. 12S R. 7E S 22

COMPANY Thompson et al HOLE NO

FARM Anderson HOLE NO 2

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	to fine, quartzitic	9.8	10.5	130.3	
	Sandstone, gray, very fine	3.8	4.3	134.6	
	Sandstone, white, very fine to fine, quartzitic	7.9	8.9	143.5	
	Sandstone, gray, very fine to fine, quartzitic	2.0	2.3	145.8	
	Sandstone, white, very fine to fine, quartzitic	22.0	22.9	168.7	
	Sandstone, light gray, very fine	51.0	52.3	221.0	
	Shale, sandy, green	2.0	3.3	224.3	
	Shale, silty, green	6.0	9.7	234.0	
	Renault formation				
	Limestone, light buff, fine to coarse, scattered pink, crinoidal	0.3	0.4	234.4	
	Limestone, light buff, coarse, crystalline, crinoidal	3.4	4.6	239.0	
	Shale, limy, green	0.4	0.5	239.5	
	Limestone, shaly, buff, very fine, scattered coarse, crinoidal	3.[illegible]	5.1	244.6	
	Limestone, cherty, buff, fine to some coarse, crinoidal, crystalline	3.1	3.1	247.7	
	Limestone, slightly shaly, gray, very fine	3.1	3.1	250.8	
	Limestone, buff, fine, some coarse, crystalline	4.6	4.6	255.4	
	Limestone, shaly, gray, very fine, crinoidal	1.2	1.2	256.6	
	Shale, calcareous, gray	2.1	2.1	258.7	
	Limestone, cherty, buff, fine to coarse, crystalline, crinoidal; 2" calcite vein at 260.5'	4.5	4.5	263.2	

COUNTY Pope 22-12S-7E

SHEET 3 T. 12S R. 7E S. 22

COMPANY Thompson et al HOLE NO.

FARM Anderson HOLE NO. 2

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Shale, silty, limy, green	0.5	0.3	263.5	
	Limestone, silty, gray, very fine	1.4	1.4	264.9	
	Limestone, gray, very fine	4.0	4.0	268.9	
	Limestone, silty, oolitic, dark brown, very fine	3.4	3.4	272.3	
	Limestone, silty, oolitic, brown, fine to medium	5.9	5.9	278.2	
	Limestone, shaly, oolitic, brown, coarse	0.2	0.2	278.4	
	Limestone, slightly argillaceous, shaly, green, buff, sub-lithographic	2.4	2.4	280.8	
	Iowa series				
	Ste. Genevieve formation				
	Levias limestone				
	Limestone, oolitic, brown, fine to coarse; veinlets of calcite and spar	5.0	5.3	286.1	
	Limestone, very oolitic, buff, fine to coarse	2.1	2.1	288.2	
	Limestone, oolitic, light buff, fine to coarse, scattered pink; shaly partings	21.7	23.6	311.8	
	Rosiclare sandstone				
	Limestone, very silty, light gray, very fine	1.9	2.0	313.8	
	Siltstone, green, gray, coarse; 3" calcite vein at 324.0'	10.1	11.0	324.8	
	Fault				
	Calcite	1.0	1.0	325.8	
	Siltstone, gray, coarse	0.7	0.7	326.5	
	Calcite	0.4	0.4	326.9	
	Siltstone, gray, coarse	0.4	0.4	327.3	
	Calcite	3.6	3.6	330.9	
	Calcite; trace zinc sulphide	2.4	2.4	[illegible]	

COUNTY Pope 22-12S-7E

SHEET 4 T. 12 R. 7E S. 2

COMPANY Thompson et al HOLE NO.

FARM Anderson HOLE NO 2

No.	Strata	Thickness Feet	In.	Depth Feet	In.
	Calcite; zinc sulphide; trace lead sulphide	1.1	1.1	354.4	
	Calcite	0.4	0.4	359.8	
	Prodenia limestone				
	Limestone, oolitic, brown, fine	12.2	12.2	372.0	

COUNTY Pope

P-123-7E

Studied by D. Strain Conley, 6/51	Thickness	Top	Bottom
Angle of hole 45°, bearing N. 43° W.			
PLEISTOCENE SYSTEM			
Overburden soil	8		8
MISSISSIPPIAN SYSTEM			
Chester Series			
Cypress formation			
Sandstone, slightly calcareous, yellow to white, very fine, friable to tough, partly oxidized	5		13
Sandstone, slightly calcareous, white, very fine, tough	21		34
Sandstone, as above; partly oxidized, yellow; siltstone pebbles in base, dolomitic, brown	16		50
Paint Creek formation (Kidenhower)			
Shale, dark gray, brittle	2		52
Limestone, very sandy (fine to medium), argillaceous, dark brownish gray, very fine to coarse, fossiliferous; grades to sandstone at top	5		57
Shale, calcareous, slightly sandy, dark gray, brittle, slightly carbonaceous and pyritic	21		78
Sandstone, partly argillaceous, white to gray, very fine to fine; interlaminated shale streaks, dark gray	27		105
Sandstone, argillaceous, carbonaceous, gray, very fine, tough; interbedded shale streaks	21.5		126.5
Sandstone, calcareous, light gray, very fine to medium; conglomeratic siltstone pebbles, calcareous, dolo-			

COMPANY	Arthur J. Lay, Inc.	NO.	
FARM	Lamar	NO.	1
DATE DRILLED	1951	COUNTY NO.	
AUTHORITY	Summary Study Diamond Drill Core		
ELEVATION	380' est. T.H.		
LOCATION	Cen. W/2 SW NE		
COUNTY	POPE	D. D. CORE #2524	22-12S-7E

Strata	Thickness	Top	Bottom
mitic, brown, fossiliferous	1		127.5
Bethel formation			
Sandstone, white, very fine to fine, tough; medium grains in base	33.5		161
Sandstone, as above; few shale streaks	1		162
Sandstone, slightly calcareous, white, very fine to fine, tough	3		165
Sandstone, as above; calcite veinlets, little fluorspar, trace lead	3		168
Sandstone, as above; calcite veinlet at 185', trace lead	60		228
Sandstone, calcareous, white, very fine to fine, tough	15		243
Sandstone, calcareous, dolomitic, light gray to white, very fine to fine, medium in base, tough	36		279
Sandstone, calcareous, dolomitic, light gray, fine to medium; conglomeratic siltstone pebbles, dolomitic, buff	.5		279.5
Downeys Bluff formation (Upper Kinnult)			
Shale, very dolomitic, silty and sandy streaks, greenish gray, pinkish streaks, brittle, fossiliferous; thin interbedded sandstone streaks, light greenish gray, very fine	15.5		295
Shale, dolomitic, calcareous, greenish gray, brittle, fossiliferous; interbedded limestone, dolomitic, argillaceous, buffish gray, extra fine to coarse, fossiliferous	3		298
Limestone, as above; interbedded shale, as above	8		306
Shetlerville formation (Lower Kinnult)			
Limestone, silty, slightly dolomitic, pseudo-oolitic, buff, extra fine to coarse, fossiliferous	4		310

Arthur J. Lay, Inc., Lamar Ill

COUNTY POTB D. D. CORE #2524 22-12S-7E

Strata	Thickness	Top	Bottom
Limestone, silty, dolomitic, slightly siliceous, partly oolitic, buff to brownish gray, extra fine to coarse, fossiliferous	5		315
Limestone, oolitic, slightly silty and dolomitic, buffish gray, very fine to coarse, fossiliferous	6		321
Limestone, argillaceous, dolomitic, greenish to buffish gray, extra fine to coarse, fossiliferous	2		323
Shale, calcareous, dolomitic, silty, greenish gray, brittle, fossiliferous; limestone streaks as above	3		326
Limestone, silty, slightly cherty, buff, very fine to coarse, fossiliferous	7		333
Limestone, very silty, pseudo-oolitic, buffish gray, extra fine to coarse, fossiliferous	3		336
Limestone, very silty and oolitic, sandy, buffish gray, very fine to coarse, fossiliferous, pink grains; grades from very sandy to sandstone beds in base	18		354
Dolomite, silty, slightly argillaceous and calcareous and oolitic, buffish gray, reddish, extra fine to little medium, fossiliferous	4		358
Limestone, oolitic, dolomitic, silty, argillaceous, buffish gray, extra fine to medium, fossiliferous; green shale streaks	2.5		360.5
Shale, very silty, dolomitic, greenish gray, brittle; grades to dolomite as above	2.5		363
Dolomite, silty, calcareous, partly oolitic, buffish gray, extra fine to medium, fossiliferous; shale			

Arthur J. Lay, Inc., Lamar Ill.

COUNTY FORD D. D. OWEN #2524 22-12S-7E

Strata	Thickness	Top	Bottom
streaks as above	4		367
Limestone, very oolitic, light buff, coarse, oolitic and fossiliferous	2		369
Dolomite, very calcareous, silty, partly oolitic and sandy, buffish gray, entre fine to coarse, fossiliferous	5		374
Siltstone, partly dolomitic and argillaceous, greenish gray, brittle; dolomite as above; siliceous in base	2		376
Fault			
Calcite, trace zinc	1		377
Ste. Genevieve formation			
Levins member			
Limestone, oolitic, light buffish gray, very fine to medium; acicular quartz	2		379
Limestone, oolitic, silty, light buffish gray, very fine to coarse, fossiliferous; little acicular quartz	5		384
Limestone, very oolitic, buffish gray, medium to coarse, fossiliferous, quartz crystals	5.5		389.5
Rosiclare member			
Sandstone, dolomitic, calcareous, light greenish gray, very fine	2.5		392
Sandstone, dolomitic, calcareous, argillaceous, greenish gray, very fine to partly coarse, fossiliferous; interbedded shale streaks, very sandy, silty, greenish gray, brittle	5.5		397.5
Sandstone, calcareous, slightly argillaceous and carbonaceous, dark brownish gray, very fine to medium,			

Strata	Thickness	Top	Bottom
fossiliferous; calcite veins	3.5		401
Fault			
Calcite and sandstone as above, broken up; little oyrcaplico	9		410
Calcite	7.5		417.5
Prairie center			
Limestone, partly oolitic, slightly sandy and silty, brownish gray, very fine to coarse fossiliferous; much colcular quartz, few calcite veins	.5		420
Limestone, very oolitic, brownish gray to gray, mottled, fine to coarse, fossiliferous; little angular quartz and calcite veins	21		441
Limestone, dolomitic, silty, sandy, partly oolitic, brownish gray to gray, very fine to coarse fossiliferous	3		444
Dolomite, very silty, calcareous, gray, extra fine to little coarse fossiliferous	2		446
Limestone, slightly dolomitic and silty, partly oolitic, brownish gray to gray, very fine to coarse fossiliferous; little angular quartz; dolomite beds as above	3		449
Limestone, green argillaceous shale, oolitic, brownish gray, very fine to coarse fossiliferous	2.5		451.5
Limestone, partly oolitic or argillaceous, buffish gray, sublithographic to coarse fossiliferous	2.5		454
Dolomite, very silty, argillaceous, gray, extra fine	1.5		455.5
Limestone, partly oolitic, slightly dolomitic, buffish gray, extra fine to coarse fossiliferous; little colcular quartz	32.5		488

Arthur J. Lay, Inc. - Laser Q

COUNTY POTB B.D. Core #2524 23-129-28

Strata	Thickness	Top	Bottom
Limestone, very dolomitic, silty, partly oolitic, brownish gray, extra fine to little coarse fossiliferous	5		493
Limestone, dolomitic, silty, partly oolitic brownish gray to gray, mottled, extra fine to coarse fossiliferous; little acicular quartz; stylolitic; dolomite bots in base	9		502
Limestone, slightly sandy dolomitic and silty, oolitic, gray, extra fine to medium, fossiliferous	2		504
Limestone, oolitic, buffish gray, extra fine to coarse, fossiliferous	2		506 TD

To be attached to Field Report on

DMA-1321X, ARTHUR J. LAY, INC.

1321 X

Town Rosiclare Township Monroe R. 7E

Company Thompson et al No. T. Sec.

Farm Anderson No. 1 12 22

Authority Summary core study S

Elevation

Collector

Confidential Date Drilled 1942

562' N., 115' W. of SE corner SE NW

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Course: N. 51° W.; Dip: 60°.				
	Studied by F.E. Tippie, November 1943.				
	"Surface and boulders"		13.5	13.5	
	MISSISSIPPIAN SYSTEM				
	Chester series				
	Cypress sandstone				
	"Sandstone"		24.5	38.0	
	Sandstone, light gray, very fine to fine, partly iron stained	10.4	10.4	48.4	
	Sandstone, light gray, very fine to fine	9.0	9.3	57.7	
	Paint Creek shale				
	Shale, dark gray, brittle	6.0	7.0	64.7	
	Limestone, gray, fine to coarse	1.9	2.7	67.4	
	Shale, black, brittle	16.4	18.1	85.5	
	"Shale"		2.5	88.0	
	"Sandstone and shale"		5.6	93.6	
	Sandstone, slightly shaly, light gray, very fine to fine	5.7	5.7	99.3	
	Opening		2.2	101.5	
	Bethel sandstone				
	Sandstone, light gray, very fine to fine	17.5	20.9	122.4	
	Sandstone, gray, very fine to fine, quartzitic	3.8	4.3	126.7	
	Sandstone, white to light gray, very fine to fine, quartzitic; trace spar at 183'	59.0	62.0	188.7	

COUNTY Pope 22-12S-7E

SHEET 2 T. 12S R. 7E S. 22
COMPANY Thompson et al HOLE NO.
FARM Andersen HOLE NO. 1

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Opening		1.0	199.7	
	Sandstone as above	8.9	10.5	200.0	
	Renault formation				
	Shale, calcareous, greenish gray	2.0	4.5	204.5	
	Opening		1.5	206.0	
	Limestone, buff, scattered pink crystals, coarse, crinoidal	0.8	0.8	206.8	
	Limestone, buff, coarse, crinoidal	1.9	2.4	209.2	
	Shale, limy, dark gray, some thin limestone streaks	1.6	2.5	211.7	
	Shale, dark gray	1.1	1.1	212.8	
Fay	Calcite; some limestone; trace spar	0.4	0.4	213.2	
LEVIA	Limestone, buff, very fine	1.6	2.6	215.8	
	Limestone, partly oolitic, light buff, fine; 1" calcite veinlet	1.8	2.1	217.9	
	Limestone, light buff, coarse, crystalline	2.2	2.9	220.8	
	Calcite; trace spar; lead sulphide and zinc sulphide	0.2	0.3	221.1	
	Limestone, oolitic, light brownish, fine to medium	1.5	2.4	223.5	
	Limestone, oolitic, buff, fine	1.5	1.5	225.0	
	Rosiclare sandstone				
	Limestone, silty, green	1.2	1.2	226.2	
	Siltstone, calcareous, light green, coarse	2.3	2.3	228.5	
	Siltstone, shaly, calcareous, green, coarse	2.7	2.7	231.2	
	Siltstone, gray, coarse; few calcite veinlets	8.5	9.1	240.3	
	Limestone, very silty,				

COUNTY Pope 22-12S-7E

SHEET 3 T. 12S R. 7E S. 22
COMPANY Thompson et al HOLE NO.
FARM Anderson HOLE NO. 1

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	oolitic, brown, fine	4.2	4.9	247.6	
	Siltstone, calcareous, green, coarse	1.1	1.5	248.9	
	Siltstone, shaly, green	0.9	1.2	250.1	
	Limestone, silty, oolitic, brown, fine to coarse	0.5	0.8	250.9	
	Fredonia limestone				
	Limestone, oolitic, light buff, coarse	1.0	1.6	252.5	
	Limestone, partly oolitic, buff, fine to medium	16.8	17.9	270.4	
	Limestone, light gray, lithographic	2.0	2.1	272.5	
	Limestone, very oolitic, light buff, coarse	10.1	10.8	283.3	
	Limestone, gray, lithographic	2.0	2.2	285.5	
	Limestone, very shaly, dark gray, very fine	2.9	3.3	288.8	
	Limestone, gray, very fine	1.0	1.2	290.0	
	Limestone, shaly, gray, very fine	1.4	1.5	291.5	
	Limestone, gray, extra fine	4.2	4.6	296.1	
	Shale, calcareous, dark gray	0.8	0.9	297.0	
	Limestone, brown, fine, crystalline	2.0	2.3	299.3	
	Limestone, brown, fine to coarse, crystalline	3.0	4.4	303.7	
	Limestone, shaly, brown, very fine	1.0	1.4	305.1	
	Limestone, brown, extra fine	1.8	2.6	307.7	
	Limestone, gray, lithographic	0.6	0.9	308.6	
	Limestone, oolitic, brown, medium	3.8	5.4	314.0	

COUNTY Pope 22-12S-7E

SHEET 4 T. 12S R. 7E S. 22

COMPANY Thompson et al HOLE NO.

FARM Anderson HOLE NO. 1

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Limestone, oolitic, gray, fine to medium	4.5	5.5	319.5	
	Limestone, gray, sub-lithographic	7.8	9.0	328.5	
	Limestone, very oolitic, light gray, coarse	6.2	6.6	335.1	
	Limestone, partly oolitic, brown, fine	10.6	10.6	345.7	
	Limestone, oolitic, brown, fine to medium	3.3	4.3	350.0	
	Driller's log for deflected hole #1:				
	Start of deflection			199.0	
	Shale		5.5	204.5	
	Limestone		4.7	209.2	
	Limestone and shale		2.3	211.5	
	Zinc, spar and calcite		2.0	213.5	
	Limestone		6.5	220.0	

COUNTY Pope 22-12S-7E

13248

Town Rosiclare Township Monroe R. 7E

Company Thompson et al No. T. Sec.

Farm Anderson No. 2 12 22

Authority Summary core study 8

Elevation

Collector

Confidential Date Drilled 1942

515' N., 58' W. of SE corner SE NW

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Course: N. 51 W.; Dip: 60°.				
	Studied by Frank E. Tippie, November 1943.				
	Surface and boulders		29.0	29.0	
	MISSISSIPPIAN SYSTEM				
	Chester series				
	Cypress sandstone				
	Sandstone, white, very fine to fine, iron stain	15.0	18.0	47.0	
	Paint Creek formation				
	Limestone, gray, coarse, crystalline	0.8	1.1	48.1	
	Limestone, sandy, gray, fine to coarse	0.6	0.9	49.0	
	Shale, gray, brittle	2.0	4.0	53.0	
	Sandstone, white, very fine to fine	0.3	1.0	54.0	
	Shale, greenish gray, brittle	3.3	4.0	58.0	
	Limestone, sandy, gray, fine to coarse, crinoidal	0.7	1.0	59.0	
	Shale, greenish gray, brittle	10.0	11.0	70.0	
	Sandstone, slightly shaly, light gray, very fine	9.0	15.0	85.0	
	Shale, very sandy, gray	1.2	2.5	87.5	
	Sandstone, slightly shaly, light gray, very fine	8.5	16.7	104.2	
	Bethel sandstone				
	Sandstone, calcareous, light gray, very fine to fine	8.3	10.3	114.5	
	Sandstone, gray, very fine	5.0	5.3	119.8	
	Sandstone, white, very fine				

COUNTY Pope 22-12S-7E

SHEET 2 T. 12S R. 7E S 22

COMPANY Thompson et al HOLE NO

FARM Anderson HOLE NO 2

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	to fine, quartzitic	9.8	10.5	150.3	
	Sandstone, gray, very fine	3.8	4.3	154.6	
	Sandstone, white, very fine to fine, quartzitic	7.9	8.9	163.5	
	Sandstone, gray, very fine to fine, quartzitic	2.0	2.3	165.8	
	Sandstone, white, very fine to fine, quartzitic	22.0	22.9	168.7	
	Sandstone, light gray, very fine	51.0	52.3	221.0	
	Shale, sandy, green	2.0	3.3	224.3	
	Shale, silty, green	6.0	9.7	234.0	
	Renault formation				
	Limestone, light buff, fine to coarse, scattered pink, crinoidal	0.3	0.4	234.4	
	Limestone, light buff, coarse, crystalline, crinoidal	3.4	4.6	239.0	
	Shale, limy, green	0.4	0.5	239.5	
	Limestone, shaly, buff, very fine, scattered coarse, crinoidal	3.[illegible]	5.1	244.6	
	Limestone, cherty, buff, fine to some coarse, crinoidal, crystalline	3.1	3.1	247.7	
	Limestone, slightly shaly, gray, very fine	3.1	3.1	250.8	
	Limestone, buff, fine, some coarse, crystalline	4.6	4.6	255.4	
	Limestone, shaly, gray, very fine, crinoidal	1.2	1.2	256.6	
	Shale, calcareous, gray	2.1	2.1	258.7	
	Limestone, cherty, buff, fine to coarse, crystalline, crinoidal; 2" calcite vein at 260.5'	4.6	4.5	263.2	

COUNTY Pope 22-12S-7E

SHEET 3 T. 12S R. 7E S. 22

COMPANY Thompson et al HOLE NO.

FARM Anderson HOLE NO. 2

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Shale, silty, limy, green	0.3	0.3	263.5	
	Limestone, silty, gray, very fine	1.4	1.4	264.9	
	Limestone, gray, very fine	4.0	4.0	268.9	
	Limestone, silty, oolitic, dark brown, very fine	3.4	3.4	272.3	
	Limestone, silty, oolitic, brown, fine to medium	5.9	5.9	278.2	
	Limestone, shaly, oolitic, brown, coarse	0.2	0.2	278.4	
	Limestone, slightly argillaceous, shaly, green, buff, sub-lithographic	2.4	2.4	280.8	
	Iowa series				
	Ste. Genevieve formation				
	Levias limestone				
	Limestone, oolitic, brown, fine to coarse; veinlets of calcite and spar	5.0	5.3	286.1	
	Limestone, very oolitic, buff, fine to coarse	2.1	2.1	288.2	
	Limestone, oolitic, light buff, fine to coarse, scattered pink; shaly partings	21.7	23.6	311.8	
	Rosiclare sandstone				
	Limestone, very silty, light gray, very fine	1.9	2.0	313.8	
	Siltstone, green, gray, coarse; 3" calcite vein at 324.0'	10.1	11.0	324.8	
	Fault				
	Calcite	1.0	1.0	325.8	
	Siltstone, gray, coarse	0.7	0.7	326.5	
	Calcite	0.4	0.4	326.9	
	Siltstone, gray, coarse	0.4	0.4	327.3	
	Calcite	3.6	3.6	330.9	
	Calcite; trace zinc sulphide	2.4	2.4	[illegible]	

COUNTY Pope 22-12S-7E

SHEET 4 T. 12S R. 7E S. 22

COMPANY Thompson et al HOLE NO.

FARM Anderson HOLE NO. 2

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Calcite; zinc sulphide; trace lead sulphide	1.1	1.1	334.4	
	Calcite	5.4	5.4	339.8	
	Fredonia limestone				
	Limestone, oolitic, brown, fine	12.2	12.2	352.0	

COUNTY Pope 22-12S-7E

CONFIDENTIAL

ILLINOIS GEOLOGICAL SURVEY, URBANA

Strata	Thickness	Top	Bottom
Studied by D. H. Gordy, 6/51			
Angle of hole 45°, bearing N. 43° W.			
PLEISTOCENE SYSTEM			
Overburden soil	8		8
MISSISSIPPIAN SYSTEM			
Chester Series			
Cypress formation			
Sandstone, slightly calcareous, yellow to white, very fine, friable to tough, partly oxidized	5		13
Sandstone, slightly calcareous, white, very fine, tough	21		34
Sandstone, as above; partly oxidized, yellow; siltstone pebbles in base, dolomitic, brown	16		50
Paint Creek formation (Kinderhook)			
Shale, dark gray, brittle	2		52
Limestone, very sandy (fine to medium), argillaceous, dark brownish gray, very fine to coarse, fossiliferous; grades to sandstone at top	5		57
Shale, calcareous, slightly sandy, dark gray, brittle, slightly carbonaceous and pyritic	21		78
Sandstone, partly argillaceous, white to gray, very fine to fine; interlaminated shale streaks, dark gray	27		105
Sandstone, argillaceous, carbonaceous, gray, very fine, tough; interbedded shale streaks	21.5		126.5
Sandstone, calcareous, light gray, very fine to medium; conglomeratic siltstone pebbles, calcareous, dolo-			

COMPANY	Arthur J. Lay, Inc.	NO.	
FARM	Lemar	NO.	1
DATE DRILLED	1951	COUNTY NO.	
AUTHORITY	Summary Study Diamond Drill Core		
ELEVATION	380' est. T.H.		
LOCATION	Cen. W/2 SW NE		
COUNTY	POPE	D. D. CORE #2524	

22-12S-7E

Strata	Thickness	Top	Bottom
ritic, brown, fossiliferous	1		127.5
Bethel formation			
Sandstone, white, very fine to fine, tough; medium grains in base	33.5		161
Sandstone, as above; few shale streaks	1		162
Sandstone, slightly calcareous, white, very fine to fine, tough	3		165
Sandstone, as above; calcite veinlets, little fluorspar, trace lead	3		168
Sandstone, as above; calcite veinlet at 185', trace lead	60		228
Sandstone, calcareous, white, very fine to fine, tough	15		243
Sandstone, calcareous, dolomitic, light gray to white, very fine to fine, medium in base, tough	36		279
Sandstone, calcareous, dolomitic, light gray, fine to medium; conglomeratic siltstone pebbles, dolomitic, buff	.5		279.5
Downeys Bluff formation (Upper Kenault)			
Shale, very dolomitic, silty and sandy streaks, greenish gray, pinkish streaks, brittle, fossiliferous; thin interbedded sandstone streaks, light greenish gray, very fine	15.5		295
Shale, dolomitic, calcareous, greenish gray, brittle, fossiliferous; interbedded limestone, dolomitic, argillaceous, buffish gray, extra fine to coarse, fossiliferous	3		298
Limestone, as above; interbedded shale, as above	8		306
Shetlerville formation (Lower Kenault)			
Limestone, silty, slightly dolomitic, pseudo-oolitic, buff, extra fine to coarse, fossiliferous	4		310

Arthur J. Lay, Inc., Lamar Ill.

COUNTY POPE D. D. COOK #2524 22-12S-7E

Strata	Thickness	Top	Bottom
Limestone, silty, dolomitic, slightly siliceous, partly oolitic, buff to brownish gray, extra fine to coarse, fossiliferous	5		315
Limestone, oolitic, slightly silty and dolomitic, buffish gray, very fine to coarse, fossiliferous	6		321
Limestone, argillaceous, dolomitic, greenish to buffish gray, extra fine to coarse, fossiliferous	2		323
Shale, calcareous, dolomitic, silty, greenish gray, brittle, fossiliferous; limestone streaks as above	3		326
Limestone, silty, slightly cherty, buff, very fine to coarse, fossiliferous	7		333
Limestone, very silty, pseudo-oolitic, buffish gray, extra fine to coarse, fossiliferous	3		336
Limestone, very silty and oolitic, sandy, buffish gray, very fine to coarse, fossiliferous, pink grains; grades from very sandy to sandstone beds in base	18		354
Dolomite, silty, slightly argillaceous and calcareous and oolitic, buffish gray, reddish, extra fine to little medium, fossiliferous	4		358
Limestone, oolitic, dolomitic, silty, argillaceous, buffish gray, extra fine to medium, fossiliferous; green shale streaks	2.5		360.5
Shale, very silty, dolomitic, greenish gray, brittle; grades to dolomite as above	2.5		363
Dolomite, silty, calcareous, partly oolitic, buffish gray, extra fine to medium, fossiliferous; shale			

Arthur J. Loy, Inc., Lorenz #1

COUNTY FORD D. D. OGE (#252) 22-12S-7E

Strata	Thickness	Top	Bottom
streaks as above	4		367
Limestone, very oolitic, light buff, coarse, oolitic and fossiliferous	2		369
Dolomite, very calcareous, silty, partly oolitic and sandy, buffish gray, extra fine to coarse, fossiliferous	5		374
Siltstone, partly dolomitic and argillaceous, greenish gray, brittle; dolomite as above; siliceous in base	2		376
Fault			
Calcite, trace zinc	1		377
Ste. Genevieve formation			
Levias member			
Limestone, oolitic, light buffish gray, very fine to medium; acicular quartz	2		379
Limestone, oolitic, silty, light buffish gray, very fine to coarse, fossiliferous; little acicular quartz	5-		384
Limestone, very oolitic, buffish gray, medium to coarse, fossiliferous, quartz crystals	5.5		389.5
Rosiclare member			
Sandstone, dolomitic, calcareous, light greenish gray, very fine	2.5		392
Sandstone, dolomitic, calcareous, argillaceous, greenish gray, very fine to partly coarse, fossiliferous; interbedded shale streaks, very sandy, silty, greenish gray, brittle	5.5		397.5
Sandstone, calcareous, slightly argillaceous and carbonaceous, dark brownish gray, very fine to medium			

Strata	Thickness	Top	Bottom
fossiliferous; calcite veins	2.5		401
Fault			
Calcite and sandstone as above, broken up; little syrangites	9		410
Calcite	7.5		417.5
Trenton series			
Limestone, partly oolitic, slightly sandy and silty, brownish gray, very fine to coarse fossiliferous; small colcular quartz, few calcite veins	.5		420
Limestone, very oolitic, brownish gray to gray, mottled, fine to coarse, fossiliferous; little angular quartz and calcite veins	21		441
Limestone, dolomitic, silty, sandy, partly oolitic, brownish gray to gray, very fine to coarse fossiliferous	3		444
Dolomite, very silty, calcareous, gray, extra fine to little coarse fossiliferous	2		446
Limestone, slightly dolomitic and silty, partly oolitic, brownish gray to gray, very fine to coarse fossiliferous; little angular quartz; dolomite beds as above	3		449
Limestone, green argillaceous streaks, oolitic, brownish gray, very fine to coarse fossiliferous	2.5		451.5
Limestone, partly oolitic or argillaceous, buffish gray, oolitic-granitic to coarse fossiliferous	2.5		454
Dolomite, very silty, argillaceous, gray, extra fine	1.5		455.5
Limestone, partly oolitic, slightly dolomitic, buffish gray, extra fine to coarse fossiliferous; little angular quartz	32.5		488

Arthur J. Lay, Inc. - Lawr. Ill.

COUNTY POPE R.D. Oil #2224 22-12-7E

Strata	Thickness	Top	Bottom
Limestone, very dolomitic, silty, partly oolitic, brownish gray, extra fine to little coarse fossiliferous	5		493
Limestone, dolomitic, silty, partly oolitic brownish gray to gray, mottled, extra fine to coarse fossiliferous; little acicular quartz; stylolitic; dolomite beds in base	9		502
Limestone, slightly sandy dolomitic and silty, oolitic, gray, extra fine to medium, fossiliferous	2		504
Limestone, oolitic, buffish gray, extra fine to coarse, fossiliferous	2		506 TD

To be attached to Field Report on

DMA-1321X, ARTHUR J. LAY, INC.

Town Rosiclare Township Monroe R. 7E

Company Thompson et al No. No. 1 T. 12 S Sec. 22

Farm Anderson

Authority Summary core study

Elevation

Collector

Confidential Date Drilled 1942

562' N., 115' W. of SE corner SE NW

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Course: N. 51° W.; Dip: 60°.				
	Studied by F.E. Tippie, November 1943.				
	"Surface and boulders"		13.5	13.5	
	MISSISSIPPIAN SYSTEM				
	Chester series				
	Cypress sandstone				
	"Sandstone"		24.5	38.0	
	Sandstone, light gray, very fine to fine, partly iron stained	10.4	10.4	48.4	
	Sandstone, light gray, very fine to fine	9.0	9.3	57.7	
	Paint Creek shale				
	Shale, dark gray, brittle	6.0	7.0	64.7	
	Limestone, gray, fine to coarse	1.9	2.7	67.4	
	Shale, black, brittle	16.4	18.1	85.5	
	"Shale"		2.5	88.0	
	"Sandstone and shale"		5.6	93.6	
	Sandstone, slightly shaly, light gray, very fine to fine	5.7	5.7	99.3	
	Opening		2.2	101.5	
	Bethel sandstone				
	Sandstone, light gray, very fine to fine	17.5	20.9	122.4	
	Sandstone, gray, very fine to fine, quartzitic	3.8	4.3	126.7	
	Sandstone, white to light gray, very fine to fine, quartzitic; trace spar at 183'	59.0	62.0	188.7	

COUNTY Pope 22-12S-7E

SHEET 2 T. 123 R. 7E S. 22

COMPANY Thompson et al HOLE NO.

FARM Andersen HOLE NO. 1

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Opening		1.0	189.7	
	Sandstone as above	8.9	10.3	200.0	
	Renault formation				
	Shale, calcareous, greenish gray	2.0	4.5	204.5	
	Opening		1.5	206.0	
	Limestone, buff, scattered pink crystals, coarse, crinoidal	0.8	0.8	206.8	
	Limestone, buff, coarse, crinoidal	1.9	2.4	209.2	
	Shale, limy, dark gray, some thin limestone streaks	1.5	2.5	211.7	
	Shale, dark gray	1.1	1.1	212.8	
Fa	Calcite; some limestone; trace spar	0.4	0.4	213.2	
LEVIN	Limestone, buff, very fine	1.6	2.6	215.8	
	Limestone, partly oolitic, light buff, fine; 1" calcite veinlet	1.8	2.1	217.9	
	Limestone, light buff, coarse, crystalline	2.2	2.9	220.8	
	Calcite; trace spar; lead sulphide and zinc sulphide	0.2	0.3	221.1	
	Limestone, oolitic, light brownish, fine to medium	1.5	2.4	223.5	
	Limestone, oolitic, buff, fine	1.5	1.5	225.0	
	Rosiclare sandstone				
	Limestone, silty, green	1.2	1.2	226.2	
	Siltstone, calcareous, light green, coarse	2.3	2.3	228.5	
	Siltstone, shaly, calcareous, green, coarse	2.7	2.7	231.2	
	Siltstone, gray, coarse; few calcite veinlets	8.5	9.1	240.3	
	Limestone, very silty,				

COUNTY Pope 22-123-7E

SHEET 3 T. 12S R. 7E S. 22
COMPANY Thompson et al HOLE NO.
FARM Anderson HOLE NO. 1

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	oolitic, brown, fine	4.2	4.9	247.6	
	Siltstone, calcareous, green, coarse	1.1	1.3	248.9	
	Siltstone, shaly, green	0.9	1.2	250.1	
	Limestone, silty, oolitic, brown, fine to coarse	0.5	0.8	250.9	
	Fredonia limestone				
	Limestone, oolitic, light buff, coarse	1.0	1.6	252.5	
	Limestone, partly oolitic, buff, fine to medium	16.8	17.9	270.4	
	Limestone, light gray, lithographic	2.0	2.1	272.5	
	Limestone, very oolitic, light buff, coarse	10.1	10.8	283.3	
	Limestone, gray, lithographic	2.0	2.2	285.5	
	Limestone, very shaly, dark gray, very fine	2.9	3.3	288.8	
	Limestone, gray, very fine	1.0	1.2	290.0	
	Limestone, shaly, gray, very fine	1.4	1.5	291.5	
	Limestone, gray, extra fine	4.2	4.6	296.1	
	Shale, calcareous, dark gray	0.8	0.9	297.0	
	Limestone, brown, fine, crystalline	2.0	2.3	299.3	
	Limestone, brown, fine to coarse, crystalline	3.0	4.4	303.7	
	Limestone, shaly, brown, very fine	1.0	1.4	305.1	
	Limestone, brown, extra fine	1.8	2.6	307.7	
	Limestone, gray, lithographic	0.6	0.9	308.6	
	Limestone, oolitic, brown, medium	3.8	5.4	314.0	

COUNTY Pope 22-12S-7E

SHEET 4 T. 12S R. 7E S. 22
COMPANY Thompson et al HOLE NO.
FARM Anderson HOLE NO. 1

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Limestone, oolitic, gray, fine to medium	4.5	5.5	319.5	
	Limestone, gray, sub-lithographic	7.8	9.0	328.5	
	Limestone, very oolitic, light gray, coarse	6.2	6.6	335.1	
	Limestone, partly oolitic, brown, fine	10.6	10.6	345.7	
	Limestone, oolitic, brown, fine to medium	3.3	4.3	350.0	
	Driller's log for deflected hole #1:				
	Start of deflection			199.0	
	Shale		5.5	204.5	
	Limestone		4.7	209.2	
	Limestone and shale		2.3	211.5	
	Zinc, spar and calcite		2.0	213.5	
	Limestone		6.5	220.0	
	Oolite - lt.	1.1		334.4	
	"	5.4		339.8	
	Freedom Oolitic	12.2		352.0	
				T.D.	

COUNTY Pope 22-12S-7E

Town Rosiclare Township Monroe R. 7E

Company Thompson et al No. 2 T. 12 Sec. 22

Farm Anderson No. 2

Authority Summary core study

Elevation

Collector

Confidential Date Drilled 1942

515' N., 58' W. of SE corner SE NW

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Course: N. 51 W.; Dip: 60°.				
	Studied by Frank E. Tippie, November 1943.				
	Surface and boulders		29.0	29.0	
	MISSISSIPPIAN SYSTEM				
	Chester series				
	Cypress sandstone				
	Sandstone, white, very fine to fine, iron stain	15.0	18.0	47.0	
	Paint Creek formation				
	Limestone, gray, coarse, crystalline	0.8	1.1	48.1	
	Limestone, sandy, gray, fine to coarse	0.6	0.9	49.0	
	Shale, gray, brittle	2.0	4.0	53.0	
	Sandstone, white, very fine to fine	0.3	1.0	54.0	
	Shale, greenish gray, brittle	3.3	4.0	58.0	
	Limestone, sandy, gray, fine to coarse, crinoidal	0.7	1.0	59.0	
	Shale, greenish gray, brittle	10.0	11.0	70.0	
	Sandstone, slightly shaly, light gray, very fine	9.0	15.0	85.0	
	Shale, very sandy, gray	1.2	2.5	87.5	
	Sandstone, slightly shaly, light gray, very fine	6.5	16.7	104.2	
	Bethel sandstone				
	Sandstone, calcareous, light gray, very fine to fine	8.3	10.3	114.5	
	Sandstone, gray, very fine	5.0	5.3	119.8	
	Sandstone, white, very fine				

COUNTY Pope 22-12S-7E

SHEET 2 T. 12S R. 7E S. 22

COMPANY Thompson et al HOLE NO.

FARM Anderson HOLE NO. 2

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	to fine, quartzitic	9.8	10.5	130.3	
	Sandstone, gray, very fine	3.8	4.3	134.6	
	Sandstone, white, very fine to fine, quartzitic	7.9	8.9	143.5	
	Sandstone, gray, very fine to fine, quartzitic	2.0	2.3	145.8	
	Sandstone, white, very fine to fine, quartzitic	22.0	22.9	168.7	
	Sandstone, light gray, very fine	51.0	52.3	221.0	
	Shale, sandy, green	2.0	3.3	224.3	
	Shale, silty, green	6.0	9.7	234.0	
	Renault formation				
	Limestone, light buff, fine to coarse, scattered pink, crinoidal	0.3	0.4	234.4	
	Limestone, light buff, coarse, crystalline, crinoidal	3.4	4.6	239.0	
	Shale, limy, green	0.4	0.5	239.5	
	Limestone, shaly, buff, very fine, scattered coarse, crinoidal	3.8	5.1	244.6	
	Limestone, cherty, buff, fine to some coarse, crinoidal, crystalline	3.1	3.1	247.7	
	Limestone, slightly shaly, gray, very fine	3.1	3.1	250.8	
	Limestone, buff, fine, some coarse, crystalline	4.6	4.6	255.4	
	Limestone, shaly, gray, very fine, crinoidal	1.2	1.2	256.6	
	Shale, calcareous, gray	2.1	2.1	258.7	
	Limestone, cherty, buff, fine to coarse, crystalline, crinoidal; 2" calcite vein at 260.5'	4.5	4.5	263.2	

COUNTY Pope 22-12S-7E

SHEET 3 T. 12S R. 7E S. 22

COMPANY Thompson et al HOLE NO.

FARM Anderson HOLE NO. 2

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Shale, silty, limy, green	0.3	0.3	263.5	
	Limestone, silty, gray, very fine	1.4	1.4	264.9	
	Limestone, gray, very fine	4.0	4.0	268.9	
	Limestone, silty, oolitic, dark brown, very fine	3.4	3.4	272.3	
	Limestone, silty, oolitic, brown, fine to medium	5.9	5.9	278.2	
	Limestone, shaly, oolitic, brown, coarse	0.2	0.2	278.4	
	Limestone, slightly argillaceous, shaly, green, buff, sub-lithographic	2.4	2.4	280.8	
	Iowa series				
	Ste. Genevieve formation				
	Levias limestone				
	Limestone, oolitic, brown, fine to coarse; veinlets of calcite and spar	5.0	5.3	286.1	
	Limestone, very oolitic, buff, fine to coarse	2.1	2.1	288.2	
	Limestone, oolitic, light buff, fine to coarse, scattered pink; shaly partings	21.7	23.6	311.8	
	Rosiclare sandstone				
	Limestone, very silty, light gray, very fine	1.9	2.0	313.8	
	Siltstone, green, gray, coarse; 3" calcite vein at 324.0'	10.1	11.0	324.8	
	Fault				
	Calcite	1.0	1.0	325.8	
	Siltstone, gray, coarse	0.7	0.7	326.5	
	Calcite	0.4	0.4	326.9	
	Siltstone, gray, coarse	0.4	0.4	327.3	
	Calcite	3.6	3.6	330.9	
	Calcite; trace zinc sulphide	2.4	2.4	333.3	

COUNTY Pope 22-12S-7E

SHEET 4 T. 12S R. 7E S. 22

COMPANY Thompson et al HOLE NO.

FARM Anderson HOLE NO. 2

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Calcite; zinc sulphide; trace lead sulphide	1.1	1.1	334.4	
	Calcite	5.4	5.4	339.8	
	Fredonia limestone				
	Limestone, oolitic, brown, fine	12.2	12.2	352.0	

COUNTY Pope 22-12S-7E

(ITEM-2CM-1-43) ILLINOIS GEOLOGICAL SURVEY, URBANA

CONFIDENTIAL

ILLINOIS GEOLOGICAL SURVEY, URBANA

Studied by D. Strain Lentz, 6/51	Thickness	Top	Bottom
Angle of hole 45°, bearing N. 43° E.			
PLEISTOCENE SYSTEM			
Overburden soil	8		8
MISSISSIPPIAN SYSTEM			
Chester Series			
Cypress formation			
Sandstone, slightly calcareous, yellow to white, very fine, friable to tough, partly oxidized	5		13
Sandstone, slightly calcareous, white, very fine, tough	21		34
Sandstone, as above; partly oxidized, yellow; siltstone pebbles in base, dolomitic, brown	16		50
Paint Creek formation (Kidenhower)			
Shale, dark gray, brittle	2		52
Limestone, very sandy (fine to medium), argillaceous, dark brownish gray, very fine to coarse, fossiliferous; grades to sandstone at top	5		57
Shale, calcareous, slightly sandy, dark gray, brittle, slightly carbonaceous and pyritic	21		78
Sandstone, partly argillaceous, white to gray, very fine to fine; interlaminated shale streaks, dark gray	27		105
Sandstone, argillaceous, carbonaceous, gray, very fine, tough; interbedded shale streaks	21.5		126.5
Sandstone, calcareous, light gray, very fine to medium; conglomeratic siltstone pebbles, calcareous, dolo-			

COMPANY	Arthur J. Lay, Inc.	NO.	
FARM	Lamar	NO.	1
DATE DRILLED	1951	COUNTY NO.	
AUTHORITY	Summary Study Diamond Drill Core		
ELEVATION	380' est. T.B.		
LOCATION	Con. N/2 SW NE		
COUNTY	POPE	D. D. CORE #2524	

22-12S-7E

Strata	Thickness	Top	Bottom
mitic, brown, fossiliferous	1		127.5
Bethel formation			
Sandstone, white, very fine to fine, tough; medium grains in base	33.5		161
Sandstone, as above; few shale streaks	1		162
Sandstone, slightly calcareous, white, very fine to fine, tough	3		165
Sandstone, as above; calcite veinlets, little fluorspar, trace lead	3		168
Sandstone, as above; calcite veinlet at 185', trace lead	60		228
Sandstone, calcareous, white, very fine to fine, tough	15		243
Sandstone, calcareous, dolomitic, light gray to white, very fine to fine, medium in base, tough	36		279
Sandstone, calcareous, dolomitic, light gray, fine to medium; conglomeratic siltstone pebbles, dolomitic, buff	.5		279.5
Downeys Bluff formation (Upper Kenault)			
Shale, very dolomitic, silty and sandy streaks, greenish gray, pinkish streaks, brittle, fossiliferous; thin interbedded sandstone streaks, light greenish gray, very fine	15.5		295
Shale, dolomitic, calcareous, greenish gray, brittle, fossiliferous; interbedded limestone, dolomitic, argillaceous, buffish gray, extra fine to coarse, fossiliferous	3		298
Limestone, as above; interbedded shale, as above	8		306
Shotlerville formation (Lower Kenault)			
Limestone, silty, slightly dolomitic, pseudo-oolitic, buff, extra fine to coarse, fossiliferous	4		310

Arthur J. Lay, Inc., Lamar Ill.

COUNTY POTTS D. D. COLE #2524 22-12S-7E

Strata	Thickness	Top	Bottom
Limestone, silty, dolomitic, slightly siliceous, partly oolitic, buff to brownish gray, extra fine to coarse, fossiliferous	5		315
Limestone, oolitic, slightly silty and dolomitic, buffish gray, very fine to coarse, fossiliferous	6		321
Limestone, argillaceous, dolomitic, greenish to buffish gray, extra fine to coarse, fossiliferous	2		323
Shale, calcareous, dolomitic, silty, greenish gray, brittle, fossiliferous; limestone streaks as above	3		326
Limestone, silty, slightly cherty, buff, very fine to coarse, fossiliferous	7		333
Limestone, very silty, pseudo-oolitic, buffish gray, extra fine to coarse, fossiliferous	3		336
Limestone, very silty and oolitic, sandy, buffish gray, very fine to coarse, fossiliferous, pink grains; grades from very sandy to sandstone beds in base	18		354
Dolomite, silty, slightly argillaceous and calcareous and oolitic, buffish gray, reddish, extra fine to little medium, fossiliferous	4		358
Limestone, oolitic, dolomitic, silty, argillaceous, buffish gray, extra fine to medium, fossiliferous; green shale streaks	2.5		360.5
Shale, very silty, dolomitic, greenish gray, brittle; grades to dolomite as above	2.5		363
Dolomite, silty, calcareous, partly oolitic, buffish gray, extra fine to medium, fossiliferous; shale			

Arthur J. Ley, Inc., Lamar Ft
COUNTY FORT D. D. COX #2524 22-12S-7E

Strata	Thickness	Top	Bottom
streaks as above	4		367
Limestone, very oolitic, light buff, coarse, oolitic and fossiliferous	2		369
Dolomite, very calcareous, silty, partly oolitic and sandy, buffish gray, centre fine to coarse, fossiliferous	5		374
Siltstone, partly dolomitic and argillaceous, greenish gray, brittle; dolomite as above; siliceous in base	2		376
Fault			
Calcite, trace zinc	1		377
Ste. Genevieve formation			
Levias member			
Limestone, oolitic, light buffish gray, very fine to medium; acicular quartz	2		379
Limestone, oolitic, silty, light buffish gray, very fine to coarse, fossiliferous; little acicular quartz	5		384
Limestone, very oolitic, buffish gray, medium to coarse, fossiliferous, quartz crystals	5.5		389.5
Rosiclare member			
Sandstone, dolomitic, calcareous, light greenish gray, very fine	2.5		392
Sandstone, dolomitic, calcareous, argillaceous, greenish gray, very fine to partly coarse, fossiliferous; interbedded shale streaks, very sandy, silty, greenish gray, brittle	5.5		397.5
Sandstone, calcareous, slightly argillaceous and carbonaceous, dark brownish gray, very fine to medium,			

Strata	Thickness	Top	Bottom
fossiliferous; calcite veins	2.5		40
Fault			
Calcite and sandstone as above, broken up; little syringites	2		41.0
Calcite	7.5		41.5
Protonia member			
Limestone, partly oolitic, slightly sandy and silty, brownish gray, very fine to coarse fossiliferous; much calcite or quartz, few calcite veins	.5		42
Limestone, very oolitic, brownish gray to gray, mottled, fine to coarse, fossiliferous; little acicular quartz and calcite veins	21		41
Limestone, dolomitic, silty, sandy, partly oolitic, brownish gray to gray, very fine to coarse fossiliferous	3		44
Dolomite, very silty, calcareous, gray, extra fine to little coarse fossiliferous	2		46
Limestone, slightly dolomitic and silty, partly oolitic, brownish gray to gray, very fine to coarse fossiliferous; little acicular quartz; dolomite bed as above	3		49
Limestone, green argillaceous oncolite, oolitic, brownish gray, very fine to coarse fossiliferous	2.5		51.5
Limestone, partly oolitic or argillaceous, buffish gray, oolitic-fragmic to coarse fossiliferous	2.5		54
Dolomite, very silty, argillaceous, gray, extra fine	1.5		55.5
Limestone, partly oolitic, slightly dolomitic, buffish gray, extra fine to coarse fossiliferous; little acicular quartz	12.5		60

COUNTY Arthur J. Lay, Ins. - Hear A
POINT R.D. Coal Test 22-12-20

ILLINOIS GEOLOGICAL SURVEY, URBANA

Strata	Thickness	Top	Bottom
Limestone, very dolomitic, silty, partly oolitic, brownish gray, extra fine to little coarse fossiliferous	5		493
Limestone, dolomitic, silty, partly oolitic brownish gray to gray, mottled, extra fine to coarse fossiliferous; little acicular quartz; stylolitic; Dolomite beds in base	9		502
Limestone, slightly sandy dolomitic and silty, oolitic, gray, extra fine to medium, fossiliferous	2		504
Limestone, oolitic, buffish gray, extra fine to coarse, fossiliferous	2		506 TD

To be attached to Field Report on

DMA-1321X, ARTHUR J. LAY, INC.

132X

Field: Rosiclare Township: Monroe R. 7E

Company: Thompson et al No. T. Sec.

Farm: Anderson No. 1 12 22

Authority: Summary core study S

Elevation

Collector

Confidential: Date Drilled: 1948

562' N., 115' W. of SE corner SE NW

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Course: N. 51° W.; Dip: 60°.				
	Studied by P.E. Tippie, November 1948.				
	"Surface and boulders"		13.5	13.5	
	MISSISSIPPIAN SYSTEM				
	Chester series				
	Cypress sandstone				
	"Sandstone"		24.5	38.0	
	Sandstone, light gray, very fine to fine, partly iron stained	10.4	10.6	48.6	
	Sandstone, light gray, very fine to fine	9.0	9.5	57.7	
	Paint Creek shale				
	Shale, dark gray, brittle	6.0	7.0	64.7	
	Limestone, gray, fine to coarse	1.9	2.7	67.4	
	Shale, black, brittle	16.4	18.1	85.5	
	"Shale"		2.5	88.0	
	"Sandstone and shale"		5.6	93.6	
	Sandstone, slightly shaly, light gray, very fine to fine	5.7	5.7	99.3	
	Opening		2.2	101.5	
	Bethel sandstone				
	Sandstone, light gray, very fine to fine	17.5	20.9	122.4	
	Sandstone, gray, very fine to fine, quartzitic	3.8	4.3	126.7	
	Sandstone, white to light gray, very fine to fine, quartzitic; trace spar at 183'	59.0	62.0	188.7	

COUNTY Pope 22-12S-7E

SHEET 2 T. 12S R. 7E S. 22

COMPANY Thompson et al HOLE NO.

FARM Anderson HOLE NO. 1

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Opening		1.0	199.7	
	Sandstone as above	8.9	10.3	200.0	
	Renault formation				
	Shale, calcareous, greenish gray	2.0	4.5	204.5	
	Opening		1.5	206.0	
	Limestone, buff, scattered pink crystals, coarse, crinoidal	0.8	0.8	206.8	
	Limestone, buff, coarse, crinoidal	1.9	2.4	209.2	
	Shale, limy, dark gray, some thin limestone streaks	1.5	2.5	211.7	
	Shale, dark gray	1.1	1.1	212.8	
	Calcite; some limestone; trace spar	0.4	0.4	213.2	
	Limestone, buff, very fine	1.6	2.6	215.8	
	Limestone, partly oolitic, light buff, fine; 1" calcite veinlet	1.8	2.1	217.9	
	Limestone, light buff, coarse, crystalline	2.2	2.9	220.8	
	Calcite; trace spar; lead sulphide and zinc sulphide	0.2	0.3	221.1	
	Limestone, oolitic, light brownish, fine to medium	1.5	2.4	223.5	
	Limestone, oolitic, buff, fine	1.5	1.5	225.0	
	Rosiclare sandstone				
	Limestone, silty, green	1.2	1.2	226.2	
	Siltstone, calcareous, light green, coarse	2.3	2.3	228.5	
	Siltstone, shaly, calcareous, green, coarse	2.7	2.7	231.2	
	Siltstone, gray, coarse; few calcite veinlets	8.5	9.1	240.3	
	Limestone, very silty,				

COUNTY Pope 22-12S-7E

SHEET 3 T. 12S R. 7E S. 22
COMPANY Thompson et al HOLE NO.
FARM Anderson HOLE NO. 1

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	oolitic, brown, fine	4.2	4.9	247.6	
	Siltstone, calcareous, green, coarse	1.1	1.3	248.9	
	Siltstone, shaly, green	0.9	1.2	250.1	
	Limestone, silty, oolitic, brown, fine to coarse	0.5	0.8	250.9	
	Fredonia limestone				
	Limestone, oolitic, light buff, coarse	1.0	1.6	252.5	
	Limestone, partly oolitic, buff, fine to medium	16.8	17.9	270.4	
	Limestone, light gray, lithographic	2.0	2.1	272.5	
	Limestone, very oolitic, light buff, coarse	10.1	10.8	283.3	
	Limestone, gray, lithographic	2.0	2.2	285.5	
	Limestone, very shaly, dark gray, very fine	2.9	3.3	288.8	
	Limestone, gray, very fine	1.0	1.2	290.0	
	Limestone, shaly, gray, very fine	1.4	1.5	291.5	
	Limestone, gray, extra fine	4.2	4.6	296.1	
	Shale, calcareous, dark gray	0.8	0.9	297.0	
	Limestone, brown, fine, crystalline	2.0	2.3	299.3	
	Limestone, brown, fine to coarse, crystalline	3.0	4.4	303.7	
	Limestone, shaly, brown, very fine	1.0	1.4	305.1	
	Limestone, brown, extra fine	1.8	2.6	307.7	
	Limestone, gray, lithographic	0.6	0.9	308.6	
	Limestone, oolitic, brown, medium	3.8	5.4	314.0	

COUNTY Pope 22-12S-7E

SHEET 4 T. 12S R. 7E S. 22

COMPANY Thompson et al HOLE NO.

FARM Anderson HOLE NO. 1

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Limestone, oolitic, gray, fine to medium	4.5	5.5	319.5	
	Limestone, gray, sub-lithographic	7.8	9.0	328.5	
	Limestone, very oolitic, light gray, coarse	6.2	6.6	335.1	
	Limestone, partly oolitic, brown, fine	10.6	10.6	345.7	
	Limestone, oolitic, brown, fine to medium	3.3	4.3	350.0	
	Driller's log for deflected hole #1:				
	Start of deflection			199.0	
	Shale		5.5	204.5	
	Limestone		4.7	209.2	
	Limestone and shale		2.3	211.5	
	Zinc, spar and calcite		2.0	213.5	
	Limestone		6.5	220.0	

COUNTY Pope 22-12S-7E

Town: Rosiclare Township: Monroe R. 7E

Company: Thompson et al No. 2 T. 12 Sec. 22

Farm: Anderson No. 2

Authority: Summary core study

Elevation

Collector

Confidential Date Drilled: 1942

515' N., 58' W. of SE corner SE NW

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Course: N. 51 W.; Dip: 60°.				
	Studied by Frank E. Tippie, November 1943.				
	Surface and boulders		29.0	29.0	
	MISSISSIPPIAN SYSTEM				
	Chester series				
	Cypress sandstone				
	Sandstone, white, very fine to fine, iron stain	15.0	18.0	47.0	
	Paint Creek formation				
	Limestone, gray, coarse, crystalline	0.8	1.1	48.1	
	Limestone, sandy, gray, fine to coarse	0.6	0.9	49.0	
	Shale, gray, brittle	2.0	4.0	53.0	
	Sandstone, white, very fine to fine	0.3	1.0	54.0	
	Shale, greenish gray, brittle	3.3	4.0	58.0	
	Limestone, sandy, gray, fine to coarse, crinoidal	0.7	1.0	59.0	
	Shale, greenish gray, brittle	10.0	11.0	70.0	
	Sandstone, slightly shaly, light gray, very fine	9.0	15.0	85.0	
	Shale, very sandy, gray	1.2	2.5	87.5	
	Sandstone, slightly shaly, light gray, very fine	0.5	16.7	104.2	
	Bethel sandstone				
	Sandstone, calcareous, light gray, very fine to fine	8.3	10.3	114.5	
	Sandstone, gray, very fine	5.0	5.3	119.8	
	Sandstone, white, very fine				

COUNTY Pope 22-12S-7E

SHEET 2 T. 12S R. 7E S. 22

COMPANY Thompson et al HOLE NO.

FARM Anderson HOLE NO. 2

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	to fine, quartzitic	9.8	10.5	130.3	
	Sandstone, gray, very fine	3.8	4.3	134.6	
	Sandstone, white, very fine to fine, quartzitic	7.9	8.9	143.5	
	Sandstone, gray, very fine to fine, quartzitic	2.0	2.3	145.8	
	Sandstone, white, very fine to fine, quartzitic	22.0	22.9	168.7	
	Sandstone, light gray, very fine	51.0	52.3	221.0	
	Shale, sandy, green	2.0	3.3	224.3	
	Shale, silty, green	6.0	9.7	234.0	
	Renault formation				
	Limestone, light buff, fine to coarse, scattered pink, crinoidal	0.3	0.4	234.4	
	Limestone, light buff, coarse, crystalline, crinoidal	3.4	4.6	239.0	
	Shale, limy, green	0.4	0.5	239.5	
	Limestone, shaly, buff, very fine, scattered coarse, crinoidal	3.8	5.1	244.6	
	Limestone, cherty, buff, fine to some coarse, crinoidal, crystalline	3.1	3.1	247.7	
	Limestone, slightly shaly, gray, very fine	3.1	3.1	250.8	
	Limestone, buff, fine, some coarse, crystalline	4.6	4.6	255.4	
	Limestone, shaly, gray, very fine, crinoidal	1.2	1.2	256.6	
	Shale, calcareous, gray	2.1	2.1	258.7	
	Limestone, cherty, buff, fine to coarse, crystalline, crinoidal; 2" calcite vein at 260.5'	4.6	4.5	263.2	

COUNTY Pope 22-12S-7E

SHEET 3 T. 12S R. 7E S. 22
COMPANY Thompson et al HOLE NO.
FARM Anderson HOLE NO. 2

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Shale, silty, limy, green	0.5	0.3	263.5	
	Limestone, silty, gray, very fine	1.4	1.4	264.9	
	Limestone, gray, very fine	4.0	4.0	268.9	
	Limestone, silty, oolitic, dark brown, very fine	3.4	3.4	272.3	
	Limestone, silty, oolitic, brown, fine to medium	5.9	5.9	278.2	
	Limestone, shaly, oolitic, brown, coarse	0.2	0.2	278.4	
	Limestone, slightly argillaceous, shaly, green, buff, sub-lithographic	2.4	2.4	280.8	
	Iowa series				
	Ste. Genevieve formation				
	Levias limestone				
	Limestone, oolitic, brown, fine to coarse; veinlets of calcite and spar	5.0	5.3	286.1	
	Limestone, very oolitic, buff, fine to coarse	2.1	2.1	288.2	
	Limestone, oolitic, light buff, fine to coarse, scattered pink; shaly partings	21.7	23.6	311.8	
	Rosiclare sandstone				
	Limestone, very silty, light gray, very fine	1.9	2.0	313.8	
	Siltstone, green, gray, coarse; 3" calcite vein at 324.0'	10.1	11.0	324.8	
	Fault				
	Calcite	1.0	1.0	325.8	
	Siltstone, gray, coarse	0.7	0.7	326.5	
	Calcite	0.4	0.4	326.9	
	Siltstone, gray, coarse	0.4	0.4	327.3	
	Calcite	3.6	3.6	330.9	
	Calcite; trace zinc sulphide	2.4	2.4	333.3	

COUNTY Pope 22-12S-7E

SHEET 4 T. 12S R. 7E S. 22

COMPANY Thompson et al HOLE NO.

FARM Anderson HOLE NO. 2

No.	Strata	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Calcite; zinc sulphide; trace lead sulphide	1.1	1.1	334.4	
	Calcite	6.4	6.4	339.8	
	Fredonia limestone				
	Limestone, oolitic, brown, fine	12.2	12.2	352.0	

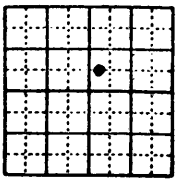
COUNTY Pope 22-12S-7E

ILLINOIS GEOLOGICAL SURVEY, URBANA

13214

Strata	Thickness	Top	Bottom
Stratigraphy [illegible], 6[illegible]			
Angle of hole 45°, bearing N. 45° E.			
PLEISTOCENE SYSTEM			
Overburden soil	8		8
MISSISSIPPIAN SYSTEM			
Chester Series			
Cypress formation			
Sandstone, slightly calcareous, yellow to white, very fine, friable to tough, partly oxidized	5		13
Sandstone, slightly calcareous, white, very fine, tough	21		34
Sandstone, as above; partly oxidized, yellow; siltstone pebbles in base, dolomitic, brown	16		50
Paint Creek formation (Kidenhower)			
Shale, dark gray, brittle	2		52
Limestone, very sandy (fine to medium), argillaceous, dark brownish gray, very fine to coarse, fossiliferous; grades to sandstone at top	5		57
Shale, calcareous, slightly sandy, dark gray, brittle, slightly carbonaceous and pyritic	21		78
Sandstone, partly argillaceous, white to gray, very fine to fine; interlaminated shale streaks, dark gray	27		105
Sandstone, argillaceous, carbonaceous, gray, very fine, tough; interbedded shale streaks	21.5		126.5
Sandstone, calcareous, light gray, very fine to medium; conglomeratic siltstone pebbles, calcareous, dolo-			

COMPANY Arthur J. Lay, Inc. NO.
FARM Lamar NO. 1
DATE DRILLED 1951 COUNTY NO.
AUTHORITY Summary Study Diamond Drill Core
ELEVATION 380' est. T.K.
LOCATION Cen. W/2 SW NE
COUNTY POPE D. D. CORE #2524



[illegible]

Strata	Thickness	Top	Bottom
mitic, brown, fossiliferous	1		127.5
Bethel formation			
Sandstone, white, very fine to fine, tough; medium grains in base	33.5		161
Sandstone, as above; few shale streaks	1		162
Sandstone, slightly calcareous, white, very fine to fine, tough	3		165
Sandstone, as above; calcite veinlets, little fluorspar, trace lead	3		168
Sandstone, as above; calcite veinlet at 185', trace lead	60		228
Sandstone, calcareous, white, very fine to fine, tough	15		243
Sandstone, calcareous, dolomitic, light gray to white, very fine to fine, medium in base, tough	36		279
Sandstone, calcareous, dolomitic, light gray, fine to medium; conglomeratic siltstone pebbles, dolomitic, buff	.5		279.5
Downeys Bluff formation (Upper Renault)			
Shale, very dolomitic, silty and sandy streaks, greenish gray, pinkish streaks, brittle, fossiliferous; thin interbedded sandstone streaks, light greenish gray, very fine	15.5		295
Shale, dolomitic, calcareous, greenish gray, brittle, fossiliferous; interbedded limestone, dolomitic, argillaceous, buffish gray, extra fine to coarse, fossiliferous	3		298
Limestone, as above; interbedded shale, as above	8		306
Chetlerville formation (Lower Renault)			
Limestone, silty, slightly dolomitic, pseudo-oolitic, buff, extra fine to coarse, fossiliferous	4		310

Strata	Thickness	Top	Bottom
Limestone, silty, dolomitic, slightly siliceous, partly oolitic, buff to brownish gray, extra fine to coarse, fossiliferous	5		315
Limestone, oolitic, slightly silty and dolomitic, buffish gray, very fine to coarse, fossiliferous	6		321
Limestone, argillaceous, dolomitic, greenish to buffish gray, extra fine to coarse, fossiliferous	2		323
Shale, calcareous, dolomitic, silty, greenish gray, brittle, fossiliferous; limestone streaks as above	3		326
Limestone, silty, slightly cherty, buff, very fine to coarse, fossiliferous	7		333
Limestone, very silty, pseudo-oolitic, buffish gray, extra fine to coarse, fossiliferous	3		336
Limestone, very silty and oolitic, sandy, buffish gray, very fine to coarse, fossiliferous, pink grains; grades from very sandy to sandstone beds in base	18		354
Dolomite, silty, slightly argillaceous and calcareous and oolitic, buffish gray, reddish, extra fine to little medium, fossiliferous	4		358
Limestone, oolitic, dolomitic, silty, argillaceous, buffish gray, extra fine to medium, fossiliferous; green shale streaks	2.5		360.5
Shale, very silty, dolomitic, greenish gray, brittle; grades to dolomite as above	2.5		363
Dolomite, silty, calcareous, partly oolitic, buffish gray, extra fine to medium, fossiliferous; shale			

Arthur J. Lay, Inc., Lamar Fl

COUNTY FORM D. D. COX #2524 22-123-7E

Strata	Thickness	Top	Bottom
streaks as above	4		367
Limestone, very oolitic, light buff, coarse, oolitic and fossiliferous	2		369
Dolomite, very calcareous, silty, partly oolitic and sandy, buffish gray, extra fine to coarse, fossiliferous	5		374
Siltstone, partly dolomitic and argillaceous, greenish gray, brittle; dolomite as above; siliceous in base	2		376
Fault			
Calcite, trace zinc	1		377
Ste. Genevieve formation			
Levias member			
Limestone, oolitic, light buffish gray, very fine to medium; acicular quartz	2		379
Limestone, oolitic, silty, light buffish gray, very fine to coarse, fossiliferous; little acicular quartz	5		384
Limestone, very oolitic, buffish gray, medium to coarse, fossiliferous, quartz crystals	5.5		389.5
Rosiclare member			
Sandstone, dolomitic, calcareous, light greenish gray, very fine	2.5		392
Sandstone, dolomitic, calcareous, argillaceous, greenish gray, very fine to partly coarse, fossiliferous; interbedded shale streaks, very sandy, silty, greenish gray, brittle	5.5		397.5
Sandstone, calcareous, slightly argillaceous and carbonaceous, dark brownish gray, very fine to medium,			

Strata	Thickness	Top	Bottom
fossiliferous; calcite veins	3.5		401
Fault			
Calcite and sandstone as above, broken up; little syrangites	9		410
Calcite	7.5		417.5
Probable center			
Limestone, partly oolitic, slightly sandy and silty, brownish gray, very fine to coarse fossiliferous; small angular quartz, few calcite veins	.5		428
Limestone, very oolitic, brownish gray to gray, mottled, fine to coarse, fossiliferous; little angular quartz and calcite veins	21		441
Limestone, dolomitic, silty, sandy, partly oolitic, brownish gray to gray, very fine to coarse fossiliferous	3		444
Dolomite, very silty, calcareous, gray, extra fine to little coarse fossiliferous	2		446
Limestone, slightly dolomitic and silty, partly oolitic, brownish gray to gray, very fine to coarse fossiliferous; little angular quartz; dolomite beds as above	3		449
Limestone, green argillaceous shale, oolitic, brownish gray, very fine to coarse fossiliferous	2.5		451.5
Limestone, partly oolitic or argillaceous, buffish gray, sublithographic to coarse fossiliferous	2.5		454
Dolomite, very silty, argillaceous, gray, extra fine	1.5		455.5
Limestone, partly oolitic, slightly dolomitic, buffish gray, extra fine to coarse fossiliferous; little angular quartz	32.5		488

Strata	Thickness	Top	Bottom
Limestone, very dolomitic, silty, partly oolitic, brownish gray, extra fine to little coarse fossiliferous	5		493
Limestone, dolomitic, silty, partly oolitic brownish gray to gray, mottled, extra fine to coarse fossiliferous; little acicular quartz; stylolitic; dolomite beds in base	9		502
Limestone, slightly sandy dolomitic and silty, oolitic, gray, extra fine to medium, fossiliferous	2		504
Limestone, oolitic, buffish gray, extra fine to coarse, fossiliferous	2		506 TD