MME Form 9
Rev. Nov. 65

UNITED STATES
DEPARTMENT OF THE INTERIOR
Geological Survey

OFFICIAL DOCKET FILE Contract No. 2306 Docket No. 6873

Application
- [ ] Denied
- [ ] Withdrawn

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

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

Folder No. 1:

Left Side

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

Right Side

- [ ] Project Summary (final)
- [ ] Work Completed Analysis (final)

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

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

Additional Folders:

Left Side

Folders No. _____: Reports
- [ ] Analysis of Semiannual Inspection Reports
- [ ] Project Summary (Interim) by MME Engineers

Right Side

- [ ] Field Team Semiannual Report for Certified Project
- [ ] Field Team Interim Reports
- [ ] Operator's Monthly Reports with Transmittal, Narrative and Maps

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

Folders No. _____: Settlement Sheets

Folders No. _____: Drill Logs

Folders No. _____: Royalty Material

72195-65

Robert D. Force
208 South Darby Street
Princeton, Kentucky 42445
Phone: (502) 365-6177

Hicks Dome account.

Government's Copy

EXPLORATION CONTRACT
HICKS DOME ACCOUNT
OME-6873

AMENDMENT NO. 4

It is agreed this _____ day of _____, 1974, between the United States of America, acting through the Department of the Interior, U.S. Geological Survey, hereinafter called the "Government", and Gilbert Kerlin, Robert G. Goelet, Francis Goelet, d/b/a Hicks Dome Account, hereinafter called the "Operator", that Exploration Contract 2306 (OME-6873), dated September 26, 1972, as amended, is further amended effective _____, as follows:

1. Article 1(b) of the Contract, as amended by Amendment No. 1, page 1, is further amended in its entirety to read as follows:

"(b) The total allowable cost of the work set forth in Exhibit A is $276,110.00. The Government will contribute 50 percent of the allowable costs as they are incurred in Stages I, III, and IV, and 35 percent in Stage II, in a total sum not in excess of $118,558.00 in accordance with the provisions of Articles 3, 4, 5, and 6, ~~and SUMMARY in Exhibit A in Amendment No. 4~~. 'Costs incurred' means costs that have been paid or have become due and payable or that the Government determines have become obligations."

2. Article 1(c) of the Contract as amended by Amendment No. 2, page 1, is further amended in its entirety by deleting the existing paragraph and substituting in lieu thereof the following:

"(c) Interest computation.--Simple interest at the rates specified in (i), (ii), (iii), and (iv) below shall accrue from the dates Federal funds are made available until the period specified for payment of royalty expires, or until the amount of Federal funds contributed is fully repaid with interest, whichever occurs first:

(i) 8-1/4 percent on the Government's contribution not in excess of $47,725.00, toward allowable cost for work performed.

(ii) 9 percent on the Government's contribution over $47,725.00 but not in excess of $67,493.00 toward allowable cost for work performed.

(iii) 8-3/4 percent on the Government's contribution over $67,493.00 but not in excess of $113,558.00 toward allowable cost for work performed."

(iv) _____ percent on the Government's contribution over $113,558.00 but not in excess of $118,558.00 toward allowable cost for work performed."

3. Article 16 of the Contract is further revised to read as follows:

"The Government shall not make or be obligated to contribute to the cost of work performed under the individual stages of this contract until the Operator has submitted and the Government has approved a performance bond or bonds adequate to cover a total penal sum of $118,558.00."

4. Exhibit A of the Contract is further amended as follows:

a. Under the heading "General Provisions", the new paragraph added by Amendment No. 1, page 2 and revised by Amendment No. 2, page 2, is ~~further~~ revised in its entirety to read as follows:

"The work shall be divided into four stages. Government funds not expended in prior stages may be applied to the costs incurred in the succeeding stages. Estimated numbers of units such as hours, months, feet, samples, and total costs of individual categories and total costs for each stage may be exceeded to the extent that funds from the preceding stages are made available."

b. Under the heading "Description of the Work", the first paragraph, as revised by Amendment No's. 1 and 2, page 2, is further revised to read as follows:

"The work shall consist of bulldozing access roads, preparing drill sites, and drilling four vertical diamond drill holes as Stage I of the Contract, rotary and core drilling three vertical holes as Stage II, about four vertical holes as Stage III of the Contract for an estimated drilling total on the three stages of about 28,000 feet, and analytical work and related services on samples from drilling in the deposit as Stage IV of the Contract. The approximate locations of the holes are shown on Figure 1, revision 2. If it should be decided to deepen existing drill holes or to drill branch holes, reentry may be made for additional drilling, either vertically or wedging to a predetermined course."

c. Under the heading "Estimated Costs of the Work", a new section applicable to Stage IV is added to read as follows:

"Stage IV

Actual Costs

Category (7) Miscellaneous

Sample Selection, field preparation, and data interpretation
2 months at $500.00/month[1/] $1,000.00

Analytical work at prices per analysis as follows:

Niobium (colorimetric)	$5.00
CaF_2	3.00
(Less than 10% F)	2.00
Lead, zinc (each)	2.00
Beryllium	3.00
$BaSO_4$	4.50
Rare earth elements, niobium, and thorium, per element	1.00
Emission spectrographic scans	9.00
Lab preparation of samples (if under 1 lb. add $0.15/lb.)	0.90

3,000 samples at various prices per analysis 9,000.00

Total Category (7) $10,000.00

Government Participation at 50 percent 5,000.00 "

1/ Funds may be applied to defray analytical costs.

d. The "Summary", as revised by Amendments Nos. 1 and 2 is revised in its entirety to read as follows: " SUMMARY

Total Estimated Cost of Stage I			$95,450.00
Government Participation at 50%			47,725.00
Total Estimated Cost of Stage II			56,480.00
Government Participation at 35%			19,768.00
Total Estimated Cost of Stage III			114,180.00
Government Participation at 50%			57,090.00
Total Estimated Cost of Stage IV			10,000.00
Government Participation at 50%			5,000.00
Total Estimated Cost of Project			276,110.00
Government Participation:			
Total estimated Stages I, II, III, IV		$129,583.00	
Less:			
Stage I, estimate	$47,725.00		
Stage I, probable	$36,700.00		
Available for Stages III, IV		11,025.00	
Total			$118,558.00 "

This amendment increases the estimated total cost of the Contract by $10,000.00 and the amount of Government participation by $5,000.00.

Except as herein amended, Exploration Contract 2306 (OME-6873), dated September 26, 1972, shall remain in full force and effect.

Executed in quadruplicate the day and year first above written.

THE UNITED STATES OF AMERICA

HICKS DOME ACCOUNT

By_____
Title, General Partner

By_____
Title, General Partner

By_____
Title, General Partner

By_____
Contracting Officer
U.S. Geological Survey

Field Office Extra Copy

EXPLORATION CONTRACT
HICKS DOME ACCOUNT
OME-6873

AMENDMENT NO. 3

It is agreed this 26th day of June, 1974, between the United States of America, acting through the Department of the Interior, U.S. Geological Survey, hereinafter called the "Government", and Gilbert Kerlin, Robert G. Goelet, Francis Goelet, d/b/a Hicks Dome Account, hereinafter called the "Operator", that Exploration Contract 2306 (OME-6873), dated September 26, 1972, as amended by Amendment No. 1 dated June 29, 1973, and Amendment No. 2, dated January 31, 1974, is further amended effective June 26, 1974, as follows:

1. The date fixed by Article 1(a) of the Contract as amended by Amendment No. 2 for completion of the work is extended from twenty-one (21) to twenty-seven (27) months from the date of the Contract, or until December 26, 1974.

2. The maximum period for payment of royalty set forth in Article 7(b) of the Contract and for the lien to secure payment thereof set forth in Article 7(e) of the Contract is extended from fifteen (15) to seventeen (17) years from the date of the Contract, or until September 26, 1988.

3. On page 3 of Annex I to the Contract:

A. The first paragraph is revised to read as follows:

"In the event the Operator or any subsidiary thereof at any time during the period expiring seventeen (17) years from the date of this Contract acquires any right, title or interest in or to any land situated within one thousand (1000) feet of the heavy boundary lines shown on Figure 1 previously referred to the Operator shall promptly notify the Government of such acquisition and furnish a description of the land, the acreage involved and the nature of the right, title or interest acquired, maps and such other data as the Government may require, and such land automatically shall become subject to the provisions of this Contract as of the date of acquisition."

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AUG 1 - 1974
U. S. Geological Survey
Oil & Gas Division
Knoxville, Tenn.

B. The third paragraph is revised to read as follows:

"If, upon receipt of such report and certification, the Government is satisfied with the representations and showing made by the Operator an amendment shall be prepared and executed deleting such land from the land referred to in Article 2 and listed in this Annex I. Upon execution of an Amendment such land shall be freed from any obligation under the Contract, and withdrawn from the land described in Annex I. However, should the Operator or any subsidiary thereof at any time reacquire any right, title, or interest in land withdrawn from this contract before the expiration of seventeen (17) years from the date of the Contract, the Operator or any subsidiary thereof shall promptly notify the Government of such reacquisition and such land automatically shall become subject to the provisions of this Contract as of the date of reacquisition."

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

Except as herein amended, Exploration Contract 2306 (OME-6873), dated September 26, 1972, shall remain in full force and effect.

Executed in quadruplicate the day and year first above written.

THE UNITED STATES OF AMERICA

HICKS DOME ACCOUNT

Attorneys-in-fact for:

By Francis Goelet
Title, General Partner

By
Title, General Partner

By
Title, General Partner

By
Chief, Office of Minerals Exploration
U.S. Geological Survey

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

Messrs. Gilbert Kerlin, Robert G. Goelet,
Francis Goelet d/b/a Hicks Dome Account
c/o Mr. John L. Carroll
Room 4120, 345 Park Avenue
New York, New York 10022

Re: OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Pursuant to Article 7 of the referenced contract, as amended, the Government hereby certifies that mineral or metal production may be possible as a result of the exploration work.

Therefore, royalties shall be paid to the Government as provided in the contract on all production from the land described in the contract from September 26, 1972, to September 26, 1989, or until the total amount contributed by the Government under the contract ($118,206.55, plus accrued interest) is fully repaid, whichever occurs first. Under provisions of Article 1(c) of the Contract, as amended, and Paragraph 2 of Amendment No. 4, thereto, simple interest accrues on the amount contributed by the Government at the annual rate of:

8-1/4 percent on the first $47,725.00,
9 percent on the amount between $47,725.00 and $67,493.00,
8-3/4 percent on the amount between $67,493.00 and $113,558.00, and
9-3/4 percent on the balance to $118,206.55.

The payment of royalties is secured by Performance Bonds executed by the Aetna Insurance Company under dates of September 29, 1972, June 22, 1973, January 28, 1974, and July 5, 1974.

Royalty payments on any production computed as provided in the contract should be made in favor of the U.S. Geological Survey and mailed or delivered to the Chief, Office of Minerals Exploration, U.S. Geological Survey, National Center, 12201 Sunrise Valley Drive, Reston, Virginia 22092. Each payment should be accompanied by two copies of settlement sheets or other

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

suitable sales evidence showing the date of sale, name of the purchaser, the quantity and grade of the production sold, the price per unit, and the gross proceeds and allowable deductions therefrom. The purchaser should be notified of the Government's royalty on production and directed to pay the royalty, computed as provided in the contract, directly to the Government.

The Office of Minerals Exploration should be promptly notified upon the commencement of any production and upon any extended cessation thereof. Production unsold or unused six months after extraction from the ground should be reported promptly to the Office of Minerals Exploration.

Attention is specifically invited to the provisions of Article 2(c) of the Contract referring to the preservation of the Government's royalty rights. Two true copies of any instrument transferring, surrendering or encumbering any of said rights shall be furnished to the Office of Minerals Exploration.

Dated this 21st day of April, 1976.

THE UNITED STATES OF AMERICA

Harold Kirkemo

Chief, Office of Minerals Exploration
U.S. Geological Survey

Martin 4/20/76

cc:
DRF
MR Rdg.
OME Rdg.
OME Files
Mr. Kirkemo
Trace, Laurence
Heyl,
Br. Financial Mgmt
Mr. Porter

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

April 9, 1976

Mr. John L. Carroll
Room 4120, 345 Park Avenue
New York, New York 10022

Re: OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Dear Mr. Carroll:

Enclosed for your files is a copy of a Memorandum Audit Report and Cost Review of Contract 2306 prepared by the Office of Audit and Investigation, Department of the Interior.

The facts and figures noted agree with the records in our files.

We will issue a Certification of Possible Production on this project in the near future.

Sincerely yours,

Harold Kirkemo, Chief
Office of Minerals Exploration

Enclosure

Copy to: Joseph A. Porter, Geologist
P.O. Box 3
Herod, Illinois 62947

cc: R. Trace
R. Laurence

DRF
MR Rdg.
OME Rdg./Files
Mr. Kirkemo

HKirkemo/gpw

I-C-DC-OME-76(a)

M.R. 9H

(201 Hag copies)

United States Department of the Interior

OFFICE OF THE SECRETARY
OFFICE OF AUDIT AND INVESTIGATION
EASTERN REGION
Ballston Towers #1
800 N. Quincy Street, Room 401
Arlington, Virginia 22217

April 1, 1976

OFFICIAL COPY
O. M. E.
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APR 8 1976

INITIALS	CODE
	HK

Memorandum Audit Report

To: Director, Geological Survey

From: Regional Audit Manager

Subject: Cost Review of Contract No. 2306 Docket No. OME-6873 (Fluorspar, beryllium, rare earths, thorium, niobium) Hicks Dome Account

At the request of the Chief, Office of Minerals Exploration (OME), we have made a cost review of OME files applicable to the subject contract. Our review, which was conducted in Washington, D.C., was completed in March 1976.

Contract No. 2306 (Contract) was awarded September 26, 1972 at a maximum allowable cost of $95,450 with OME participating to a maximum of $47,725. Work under the Contract was to begin on October 10, 1972, and was to be completed by June 10, 1973. Contract Amendments extended the contract completion date to June 26, 1975, and revised the estimated cost from $95,450 to $276,110.

The contractor was to explore, by diamond core drilling, for fluorspar-beryllium-rare earths-thorium-niobium ores in mineralized breccias in the Hicks Dome cryptovolcanic structure.

Repayment of the disbursed Federal funds plus simple interest set at a different rate for each Contract stage was to be made on the basis of established royalties on all commodities produced from the land during the exploration operations and for a period of 17 years from the date of the Contract should a certification of possible production be issued by OME.

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

The contractor submitted 19 vouchers showing costs incurred of $259,137 of which OME accepted $255,516 and reimbursed the Operator $118,207 for OME participation.

The units of work authorized and approved under the Contract are summarized on the attached exhibit. In our opinion, the claimed and accepted costs were properly incurred and are allowable under the terms of the contract.

Frank V. Tassitt

Attachment

EXHIBIT

Cost Review of Contract No. 2306
Docket No. OME-6873 (Fluorspar, beryllium, rare earths, thorium, niobium)
Hicks Dome Account, A Partnership
Hardin County, ~~Meridian~~, Illinois
October 10, 1972, through June 26, 1975

Allowable Costs	Costs claimed and approved by Audit
Stage I	
Category:	
(1) Independent Contracts	$60,436
(2) Personal Services	9,314
(3) Operating Materials and Supplies	1,491
(7) Miscellaneous	2,144
Stage II	
Category:	
(1) Independent Contracts	53,679
(2) Personal Services	6,802
(3) Operating Materials and Supplies	797
(7) Miscellaneous	2,399
Stage III	
Category:	
(1) Independent Contracts	98,007
(2) Personal Services	14,280
(3) Operating Materials and Supplies	1,553
(7) Miscellaneous	3,961
Stage IV	
Category:	
(7) Miscellaneous	4,274
Total Allowable Cost	259,137 a/
Government Participation	118,207

a/ Includes $3,621 of excess allowable type costs not accepted by OME.

RECEIVED
U.S. GEOLOGICAL SURVEY
APR 6 10 09 AM 1976
OFFICE OF THE DIRECTOR

Government's Copy

EXPLORATION CONTRACT
HICKS DOME ACCOUNT
OME-6873

AMENDMENT NO. 5

It is agreed this 20th day of December, 1974, between the United States of America, acting through the Department of the Interior, U.S. Geological Survey, hereinafter called the "Government", and John Carroll, Gilbert Kerlin, Robert G. Goelet, Francis Goelet, d/b/a Hicks Dome Account, hereinafter called the "Operator", that Exploration Contract 2306 (OME-6873), dated September 26, 1972, as amended, is further amended effective December 26, 1974, as follows:

1. The date fixed by Article 1(a) of the Contract as amended by Amendments 1, 2, and 3 for completion of the work is extended from twenty-seven (27) to thirty-three (33) months from the date of the Contract, or until June 26, 1975.

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

Except as herein amended, Exploration Contract 2306 (OME-6873) dated September 26, 1972, shall remain in full force and effect.

Executed in quadruplicate the day and year first above written.

THE UNITED STATES OF AMERICA

By Harold Kirkemo
Chief, Office of Minerals Exploration
U.S. Geological Survey

Award. Sol. Office Martin 12/18/74

HICKS DOME ACCOUNT

By John Carroll
Title, General Partner

Francis Goelet
Title, General Partner

R G Goelet
Title, General Partner

Robert J Kerlin
Title, General Partner

Government's Copy

EXPLORATION CONTRACT
HICKS DOME ACCOUNT
OME-6873

AMENDMENT NO. 4

It is agreed this 28th day of June, 1974, between the United States of America, acting through the Department of the Interior, U.S. Geological Survey, hereinafter called the "Government", and Gilbert Kerlin, Robert G. Goelet, Francis Goelet, d/b/a Hicks Dome Account, hereinafter called the "Operator", that Exploration Contract 2306 (OME-6873), dated September 26, 1972, as amended, is further amended effective June 28, 1974, as follows:

1. Article 1(b) of the Contract, as amended by Amendment No. 1, page 1, is further amended in its entirety to read as follows:

"(b) The total allowable cost of the work set forth in Exhibit A is $276,110.00. The Government will contribute 50 percent of the allowable costs as they are incurred in Stages I, III, and IV, and 35 percent in Stage II, in a total sum not in excess of $118,558.00 in accordance with the provisions of Articles 3, 4, 5, and 6. 'Costs incurred' means costs that have been paid or have become due and payable or that the Government determines have become obligations."

2. Article 1(c) of the Contract as amended by Amendment No. 2, page 1, is further amended in its entirety by deleting the existing paragraph and substituting in lieu thereof the following:

"(c) Interest computation.--Simple interest at the rates specified in (i), (ii), (iii), and (iv) below shall accrue from the dates Federal funds are made available until the period specified for payment of royalty expires, or until the amount of Federal funds contributed is fully repaid with interest, whichever occurs first:

(i) 8-1/4 percent on the Government's contribution not in excess of $47,725.00, toward allowable cost for work performed.

(ii) 9 percent on the Government's contribution over $47,725.00 but not in excess of $67,493.00 toward allowable cost for work performed.

(iii) 8-3/4 percent on the Government's contribution over $67,493.00 but not in excess of $113,558.00 toward allowable cost for work performed.

(iv) 9-% percent on the Government's contribution over $113,558.00 but not in excess of $118,558.00 toward allowable cost for work performed."

3. Article 16 of the Contract is further revised to read as follows:

"The Government shall not make or be obligated to contribute to the cost of work performed under the individual stages of this contract until the Operator has submitted and the Government has approved a performance bond or bonds adequate to cover a total penal sum of $118,558.00."

4. Exhibit A of the Contract is further amended as follows:

a. Under the heading "General Provisions", the new paragraph added by Amendment No. 1, page 2 and revised by Amendment No. 2, page 2, is revised in its entirety to read as follows:

"The work shall be divided into four stages. Government funds not expended in prior stages may be applied to the costs incurred in the succeeding stages. Estimated numbers of units such as hours, months, feet, samples, and total costs of individual categories and total costs for each stage may be exceeded to the extent that funds from the preceding stages are made available."

b. Under the heading "Description of the Work", the first paragraph, as revised by Amendment Nos. 1 and 2, page 2, is further revised to read as follows:

"The work shall consist of bulldozing access roads, preparing drill sites, and drilling four vertical diamond drill holes as Stage I of the Contract, rotary and core drilling three vertical holes as Stage II, about four vertical holes as Stage III of the Contract for an estimated drilling total on the three stages of about 28,000 feet, and analytical work and related services on samples from drilling in the deposit as Stage IV of the Contract. The approximate locations of the holes are shown on Figure 1, revision 2. If it should be decided to deepen existing drill holes or to drill branch holes, reentry may be made for additional drilling, either vertically or wedging to a predetermined course."

c. Under the heading "Estimated Costs of the Work", a new section applicable to Stage IV is added to read as follows:

"Stage IV

Actual Costs

Category (7) Miscellaneous

Sample selection, field preparation and data interpretation 2 months at $500.00/month[1/]		$1,000.00	
Analytical work at prices per analysis as follows:			
Niobium (colorimetric)	$5.00		
CaF_2	3.00		
(Less than 10% F)	2.00		
Lead, zinc (each)	2.00		
Beryllium	3.00		
$BaSO_4$	4.50		
Rare earth elements, niobium, and thorium, per element	1.00		
Emission spectrographic scans	9.00		
Lab preparation of samples (if under 1 lb. add $0.15/lb.)	0.90		
3,000 samples at various prices per analysis		9,000.00	
Total Category (7)			$10,000.00
Government Participation at 50 percent			5,000.00"

1/ Funds may be applied to defray analytical costs.

d. The "Summary", as revised by Amendments Nos. 1 and 2 is revised in its entirety to read as follows:

"SUMMARY

Total Estimated Cost of Stage I			$95,450.00
Government Participation at 50%			47,725.00
Total Estimated Cost of Stage II			56,480.00
Government Participation at 35%			19,768.00
Total Estimated Cost of Stage III			114,180.00
Government Participation at 50%			57,090.00
Total Estimated Cost of Stage IV			10,000.00
Government Participation at 50%			5,000.00
Total Estimated Cost of Project			276,110.00
Government Participation:			
Total estimated Stages I, II, III, IV		$129,583.00	
Less:			
Stage I, estimate	$47,725.00		
Stage I, probable	36,700.00		
Available for Stages III, IV		11,025.00	
Total			$118,558.00"

This amendment increases the estimated total cost of the Contract by $10,000.00 and the amount of Government participation by $5,000.00.

Except as herein amended, Exploration Contract 2306 (OME-6873), dated September 26, 1972, shall remain in full force and effect.

Executed in quadruplicate the day and year first above written.

THE UNITED STATES OF AMERICA

HICKS DOME ACCOUNT

RGGoeler Attorneys-in-fact for Francis Goelet

By P.L.B. Fr Francis Goelet
Title, General Partner

By RGGoeler
Title, General Partner

By Secret Helen C.K.
Title, General Partner

By William A Burk
Contracting Officer
U.S. Geological Survey

Appd. Sol. [redacted] Martin 6/27/74
Kierbemo 6/27/74
Brobst 6/27/74
Davis 6/27
Edwards 6/28

STANDARD FORM 25
JUNE 1967 EDITION
GENERAL SERVICES ADMINISTRATION
FED. PROC. REG. (41 CFR) 1-16.801

PERFORMANCE BOND

(See Instructions on reverse)

DATE BOND EXECUTED *(Must be same or later than date of contract)* 7/5/74

PRINCIPAL *(Legal name and business address)*

Gilbert Kerlin, Francis Goelet and Robert G. Goelet, doing business as Hicks Dome Account
c/o 53 Wall Street, New York, N.Y.

TYPE OF ORGANIZATION *("X" one)*

☐ INDIVIDUAL ☒ PARTNERSHIP
☐ JOINT VENTURE ☐ CORPORATION

STATE OF INCORPORATION

SURETY(IES) *(Name(s) and business address(es))*

Aetna Insurance Company
95 Wall Street
New York, N. Y.

PENAL SUM OF BOND			
MILLION(S)	THOUSAND(S)	HUNDRED(S)	CENT(S)
	5	000	00

CONTRACT DATE	CONTRACT NO.
9/26/72	OME 2306

KNOW ALL MEN BY THESE PRESENTS, That we, the Principal and Surety(ies) hereto, are firmly bound to the United States of America (hereinafter called the Government) in the above penal sum for the payment of which we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally: *Provided,* That, where the Sureties are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety, but if no limit of liability is indicated, the limit of liability shall be the full amount of the penal sum.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal entered into the contract identified above;

NOW, THEREFORE, if the Principal shall:

(a) Perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the Government, with or without notice to the Surety(ies), and during the life of any guaranty required under the contract, and shall also perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the Surety(ies) being hereby waived; and

(b) If the said contract is subject to the Miller Act, as amended (40 U.S.C. 270a-270e), pay to the Government the full amount of the taxes imposed by the Government which are collected, deducted, or withheld from wages paid by the Principal in carrying out the construction contract with respect to which this bond is furnished; then the above obligation shall be void and of no effect.

IN WITNESS WHEREOF, the Principal and Surety(ies) have executed this performance bond and have affixed their seals on the date set forth above.

PRINCIPAL

	1.	2.	
Signature(s)	Gilbert Kerlin (Seal)	Recovery Pat B. Fran Attorneys-in-fact for: Francis Goelet (Seal)	Corporate Seal
Name(s) & Title(s) *(Typed)*	John Lee Carroll	Robert G. Goelet	

INDIVIDUAL SURETY(IES)

	1.	2.
Signature(s)	(Seal)	(Seal)
Name(s) *(Typed)*		

CORPORATE SURETY(IES)

SURETY A					
Name & Address	AETNA INSURANCE COMPANY 100 WILLIAM STREET, N.Y., NY		STATE OF INC. CONN.	LIABILITY LIMIT	Corporate Seal
Signature(s)	1. BY: Rose Spataro	2.			
Name(s) & Title(s) *(Typed)*	1. ROSE SPATARO, ATTORNEY-IN-FACT	2.			

25-105

S-737037

CORPORATE SURETY(IES) (Continued)

SURETY B	Name & Address		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1.	2.		
	Name(s) & Title(s) *(Typed)*	1.	2.		
SURETY C	Name & Address		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1.	2.		
	Name(s) & Title(s) *(Typed)*	1.	2.		
SURETY D	Name & Address		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1.	2.		
	Name(s) & Title(s) *(Typed)*	1.	2.		
SURETY E	Name & Address		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1.	2.		
	Name(s) & Title(s) *(Typed)*	1.	2.		
SURETY F	Name & Address		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1.	2.		
	Name(s) & Title(s) *(Typed)*	1.	2.		
SURETY G	Name & Address		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1.	2.		
	Name(s) & Title(s) *(Typed)*	1.	2.		

BOND PREMIUM ▶	RATE PER THOUSAND	TOTAL
	$ 10.00 PER M	$ 150.00

INSTRUCTIONS

1. This form is authorized for use in connection with contracts for construction work or the furnishing of supplies or services. There shall be no deviation from this form without approval by the Administrator of General Services.

2. The full legal name and business address of the Principal shall be inserted in the space designated "Principal" on the face of this form. The bond shall be signed by an authorized person. Where such person is signing in a representative capacity (e.g., an attorney-in-fact), but is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved, evidence of his authority must be furnished.

3. (a) Corporations executing the bond as sureties must be among those appearing on the Treasury Department's list of approved sureties and must be acting within the limitations set forth therein. Where more than a single corporate surety is involved, their names and addresses (city and State) shall be inserted in the spaces (Surety A, Surety B, etc.) headed "CORPORATE SURETY(IES)", and in the space designated "SURETY(IES)" on the face of this form only the letter identification of the Sureties shall be inserted.

(b) Where individual sureties execute the bond, they shall be two or more responsible persons. A completed Affidavit of Individual Surety (Standard Form 28), for each individual surety, shall accompany the bond. Such sureties may be required to furnish additional substantiating information concerning their assets and financial capability as the Government may require.

4. Corporations executing the bond shall affix their corporate seals. Individuals shall execute the bond opposite the word "Seal"; and, if executed in Maine or New Hampshire, shall also affix an adhesive seal.

5. The name of each person signing this performance bond should be typed in the space provided.

☆ U.S. GOVERNMENT PRINTING OFFICE : 1967 O—255-154 (80G)

ÆTNA INSURANCE COMPANY

OF HARTFORD, CONNECTICUT

POWER OF ATTORNEY

Know all Men by these Presents, That ÆTNA INSURANCE COMPANY, a corporation created by and existing under the laws of the State of Connecticut, having its principal office in the City of Hartford, State of Connecticut, does hereby nominate, constitute and appoint

William J. Flaherty or George P. Symonds or Theodore A. Bauman or Rose Okretich or Rose Spataro of New York, N. Y.

its true and lawful Attorney-in-Fact, with full power and authority hereby conferred to make, sign, execute, acknowledge and affix the Corporate Seal of the Corporation, as Surety, as its act and deed, any and all bonds and undertakings of suretyship, recognizances or other written obligations in the nature thereof and to bind ÆTNA INSURANCE COMPANY thereby as fully and to the same extent as if such bond was signed by the duly authorized officers of ÆTNA INSURANCE COMPANY, and all the acts of said attorney, pursuant to the authority herein given, are hereby ratified and confirmed.

This power of attorney is granted under and by the authority of the following applicable paragraphs of ARTICLE 11 of the BYLAWS of the company:

The president or a vice president may execute fidelity and surety bonds and other bonds, contracts of indemnity, recognizances, stipulations, undertakings, receipts, releases, deeds, releases of mortgages, contracts, agreements, policies, notices of appearance, waivers of citation and consents to modifications of contracts as may be required in the ordinary course of business or by vote of the directors, and such execution may be attested where necessary or desirable and the seal of the company where necessary or desirable may be affixed to the specific instrument by a secretary or an assistant secretary.

The president or a vice president may with the concurrence of a secretary or an assistant secretary appoint and authorize an attorney-in-fact or any other person to execute on behalf of the company any such instruments and undertakings and to affix the seal of the company thereto where necessary or desirable.

The attorneys-in-fact under the preceding paragraphs of this article are authorized and empowered to certify to a copy of any of the bylaws of the company or any resolutions adopted by the directors or to the financial statement of the condition of the company and to affix the seal of the company thereto where necessary or desirable.

This power of attorney is signed and sealed by facsimile under and by the authority of the following Resolution adopted by the Board of Directors of the ÆTNA INSURANCE COMPANY at a meeting duly called and held on the 11th day of February, 1966.

RESOLVED THAT, in the execution, attestation and sealing of any instrument or undertaking authorized by Article 11 of the Bylaws, the facsimile signatures of the officers and the facsimile seal of the Company affixed thereto shall be valid and binding upon the Company.

IN WITNESS WHEREOF, ÆTNA INSURANCE COMPANY has caused these presents to be signed by its President and its Secretary and its corporate seal to be hereunto affixed, attested by its Secretary, this 8th day of March, 1974.

ÆTNA INSURANCE COMPANY

F. D. Watkins
President

Attest: J. J. Murphy
Secretary

HARTFORD ÆTNA INSURANCE CO. CONNECTICUT

J. J. Murphy
Secretary

State of Connecticut,
City of Hartford, } ss.

On this 8th day of March, 1974, before me, the undersigned, a Notary Public in and for the City of Hartford, in the State of Connecticut, duly commissioned and qualified, came F. D. WATKINS, President, and J. J. MURPHY, Secretary, of ÆTNA INSURANCE COMPANY, to me personally known to be the individuals and officers described in, and who executed, the preceding instrument, and they each acknowledged the execution of the same and being by me duly sworn, severally, and each for himself deposeth and saith, that they are the said officers of the Corporation aforesaid, and that the Seal affixed to the preceding instrument is the Corporate Seal of said Corporation, and that the said Corporate Seal and their signatures as such officers were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporation.

OLIVE E. MACKEY NOTARY PUBLIC HARTFORD, CONN.

Olive E. Mackey
Notary Public

State of Connecticut,
City of Hartford, } ss.

My commission expires April 1, 1977.

CERTIFICATE

I, the undersigned, Secretary of the ÆTNA INSURANCE COMPANY, a Connecticut corporation, DO HEREBY CERTIFY that the above and foregoing Power of Attorney remains in full force and has not been revoked; and, furthermore, that the above quoted applicable paragraphs of ARTICLE 11 of the BYLAWS of the company, as set forth in the Power of Attorney, are now in force.

Signed and Sealed at Hartford, Connecticut, this 26TH day of JULY, 19 74

HARTFORD ÆTNA INSURANCE CO. CONNECTICUT

J. J. Murphy
Secretary

State of New York,
County of New York,
City of New York, } ss.

On this 26TH day of JULY, 19 74, before me personally appeared ROSE SPATARO, ..., to me known, who being by me duly sworn, did depose and say that he resides in BROOKLYN, KINGS CO., N.Y.; that he is Attorney-in-Fact of ÆTNA INSURANCE COMPANY, the corporation described in and which executed the foregoing instrument; that he knows the seal of the said Corporation; that the seal affixed to such instrument is such corporate seal and was attached thereto by authority granted under the By-Laws of said Corporation, and that he signed his name thereto as Attorney-in-Fact by authority granted under the By-Laws of said Corporation, and that the said Corporation has received from the Superintendent of Insurance of the State of New York a certificate of solvency and of its sufficiency as surety or guarantor under Section 327, Chapter 882 of the Laws of 1939, being Chapter 28 of the Consolidated Laws of the State of New York for the year 1939, and as amended and that such certificate has not been revoked.

(SEAL)

GEORGE P. SYMONDS
NOTARY PUBLIC, State of New York
No. 30-4600600
Qualified in New York County
Certificate filed in New York County
Commission Expires March 30, 1976

George P. Symonds
Notary Public

Form 630-1154 (N.Y.)

(OVER)

ÆTNA INSURANCE COMPANY

Financial Statement December 31, 1973

ASSETS	
Bonds	$424,130,950
Stocks	181,124,005
Real Estate	3,765,589
Cash on Hand and in Bank	6,995,169
Premiums in Course of Collection	63,913,238
Interest Accrued	7,758,603
Other Assets	37,174,536
TOTAL	$724,862,090

LIABILITIES	
Reserve for Unearned Premiums	$221,064,103
Reserve for Losses and Loss Expenses	284,609,856
Reserve for Taxes	7,630,100
Reserve for Dividends	0
Funds Held under Reinsurance Treaties	1,185,307
Other Liabilities	36,444,511
TOTAL LIABILITIES	$550,933,877
Capital: 1,000,000 Shares, $10 Par Value	$ 10,000,000
Voluntary Security Valuation Reserve	20,940,127
Surplus (Unassigned)	142,988,086
SURPLUS TO POLICYHOLDERS	$173,928,213
TOTAL	$724,862,090

I, L. B. Bogart, Vice President of ÆTNA INSURANCE COMPANY, certify that the foregoing is a true and correct statement of the financial condition of the Company as of December 31, 1973.

L. B. Bogart
Vice President

ON BEHALF OF.....

IN FAVOR OF.....

Aetna Insurance Company
HARTFORD, CONNECTICUT

PRINTED IN U.S.A.

Aetna INSURANCE COMPANY
TOUR Insurance Help-advisor AGENT

Proven Symbols of Professional Service

Aetna Insurance Company
55 ELM STREET
HARTFORD, CONNECTICUT 06115

Government's File Copy

EXPLORATION CONTRACT
HICKS DOME ACCOUNT
OME-6873

AMENDMENT NO. 3

It is agreed this 26th day of June, 1974, between the United States of America, acting through the Department of the Interior, U.S. Geological Survey, hereinafter called the "Government", and Gilbert Kerlin, Robert G. Goelet, Francis Goelet, d/b/a Hicks Dome Account, hereinafter called the "Operator", that Exploration Contract 2306 (OME-6873), dated September 26, 1972, as amended by Amendment No. 1 dated June 29, 1973, and Amendment No. 2, dated January 31, 1974, is further amended effective June 26, 1974, as follows:

1. The date fixed by Article 1(a) of the Contract as amended by Amendment No. 2 for completion of the work is extended from twenty-one (21) to twenty-seven (27) months from the date of the Contract, or until December 26, 1974.

2. The maximum period for payment of royalty set forth in Article 7(b) of the Contract and for the lien to secure payment thereof set forth in Article 7(e) of the Contract is extended from fifteen (15) to seventeen (17) years from the date of the Contract, or until September 26, 198~~8~~9.

3. On page 3 of Annex I to the Contract:

A. The first paragraph is revised to read as follows:

"In the event the Operator or any subsidiary thereof at any time during the period expiring seventeen (17) years from the date of this Contract acquires any right, title or interest in or to any land situated within one thousand (1000) feet of the heavy boundary lines shown on Figure 1 previously referred to the Operator shall promptly notify the Government of such acquisition and furnish a description of the land, the acreage involved and the nature of the right, title or interest acquired, maps and such other data as the Government may require, and such land automatically shall become subject to the provisions of this Contract as of the date of acquisition."

B. The third paragraph is revised to read as follows:

"If, upon receipt of such report and certification, the Government is satisfied with the representations and showing made by the Operator an amendment shall be prepared and executed deleting such land from the land referred to in Article 2 and listed in this Annex I. Upon execution of an Amendment such land shall be freed from any obligation under the Contract, and withdrawn from the land described in Annex I. However, should the Operator or any subsidiary thereof at any time reacquire any right, title, or interest in land withdrawn from this contract before the expiration of seventeen (17) years from the date of the Contract, the Operator or any subsidiary thereof shall promptly notify the Government of such reacquisition and such land automatically shall become subject to the provisions of this Contract as of the date of reacquisition."

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

Except as herein amended, Exploration Contract 2306 (OME-6873), dated September 26, 1972, shall remain in full force and effect.

Executed in quadruplicate the day and year first above written.

THE UNITED STATES OF AMERICA

HICKS DOME ACCOUNT

By Francis Goelet
Title, General Partner

By
Title, General Partner

By
Title, General Partner

Attorneys-in-fact for:

By
Chief, Office of Minerals Exploration
U.S. Geological Survey

Martin 6/26/74
Ferguson 6/26/74

STANDARD FORM 25
JUNE 1967 EDITION
GENERAL SERVICES ADMINISTRATION
FED. PROC. REG. (41 CFR) 1-16.801

PERFORMANCE BOND

(See Instructions on reverse)

DATE BOND EXECUTED *(Must be same or later than date of contract)* 7/5/74

PRINCIPAL *(Legal name and business address)*
Gilbert Kerlin, Francis Goelet and Robert G. Goelet, doing business as Hicks Dome Account
c/o 53 Wall Street, New York, N.Y.

TYPE OF ORGANIZATION *("X" one)*
☐ INDIVIDUAL ☒ PARTNERSHIP
☐ JOINT VENTURE ☐ CORPORATION

STATE OF INCORPORATION

SURETY(IES) *(Name(s) and business address(es))*
Aetna Insurance Company
95 Wall Street
New York, N. Y.

PENAL SUM OF BOND			
MILLION(S)	THOUSAND(S)	HUNDRED(S)	CENT(S)
	5	000	00

CONTRACT DATE	CONTRACT NO.
3/26/72	OME 2306

KNOW ALL MEN BY THESE PRESENTS, That we, the Principal and Surety(ies) hereto, are firmly bound to the United States of America (hereinafter called the Government) in the above penal sum for the payment of which we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally: *Provided,* That, where the Sureties are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety, but if no limit of liability is indicated, the limit of liability shall be the full amount of the penal sum.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal entered into the contract identified above;

NOW, THEREFORE, if the Principal shall:

(a) Perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the Government, with or without notice to the Surety(ies), and during the life of any guaranty required under the contract, and shall also perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the Surety(ies) being hereby waived; and

(b) If the said contract is subject to the Miller Act, as amended (40 U.S.C. 270a-270e), pay to the Government the full amount of the taxes imposed by the Government which are collected, deducted, or withheld from wages paid by the Principal in carrying out the construction contract with respect to which this bond is furnished; then the above obligation shall be void and of no effect.

IN WITNESS WHEREOF, the Principal and Surety(ies) have executed this performance bond and have affixed their seals on the date set forth above.

PRINCIPAL

Signature(s)	1. Gilbert Kerlin (Seal)	2. R G Goelet — Pat B. Fr[illegible] Attorney-in-fact for: Francis Goelet (Seal)	Corporate Seal
Name(s) & Title(s) *(Typed)*	1. John Lee Carroll	2. Robert G. Goelet	

INDIVIDUAL SURETY(IES)

Signature(s)	1. (Seal)	2. (Seal)	
Name(s) *(Typed)*	1.	2.	

CORPORATE SURETY(IES)

SURETY A	Name & Address	AETNA INSURANCE COMPANY 100 WILLIAM STREET, N.Y., NY	STATE OF INC. CONN.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1. BY: Rose Spataro	2.		
	Name(s) & Title(s) *(Typed)*	1. ROSE SPATARO, ATTORNEY-IN-FACT	2.		

25-105

S-737037

CORPORATE SURETY(IES) (Continued)					
SURETY B	Name & Address		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1.	2.		
	Name(s) & Title(s) *(Typed)*	1.	2.		
SURETY C	Name & Address		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1.	2.		
	Name(s) & Title(s) *(Typed)*	1.	2.		
SURETY D	Name & Address		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1.	2.		
	Name(s) & Title(s) *(Typed)*	1.	2.		
SURETY E	Name & Address		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1.	2.		
	Name(s) & Title(s) *(Typed)*	1.	2.		
SURETY F	Name & Address		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1.	2.		
	Name(s) & Title(s) *(Typed)*	1.	2.		
SURETY G	Name & Address		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1.	2.		
	Name(s) & Title(s) *(Typed)*	1.	2.		

BOND PREMIUM ▶	RATE PER THOUSAND	TOTAL
	$ 10.00 PER M	$ 150.00

INSTRUCTIONS

1. This form is authorized for use in connection with contracts for construction work or the furnishing of supplies or services. There shall be no deviation from this form without approval by the Administrator of General Services.

2. The full legal name and business address of the Principal shall be inserted in the space designated "Principal" on the face of this form. The bond shall be signed by an authorized person. Where such person is signing in a representative capacity (e.g., an attorney-in-fact), but is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved, evidence of his authority must be furnished.

3. (a) Corporations executing the bond as sureties must be among those appearing on the Treasury Department's list of approved sureties and must be acting within the limitations set forth therein. Where more than a single corporate surety is involved, their names and addresses (city and State) shall be inserted in the spaces (Surety A, Surety B, etc.) headed "CORPORATE SURETY(IES)", and in the space designated "SURETY(IES)" on the face of this form only the letter identification of the Sureties shall be inserted.

(b) Where individual sureties execute the bond, they shall be two or more responsible persons. A completed Affidavit of Individual Surety (Standard Form 28), for each individual surety, shall accompany the bond. Such sureties may be required to furnish additional substantiating information concerning their assets and financial capability as the Government may require.

4. Corporations executing the bond shall affix their corporate seals. Individuals shall execute the bond opposite the word "Seal"; and, if executed in Maine or New Hampshire, shall also affix an adhesive seal.

5. The name of each person signing this performance bond should be typed in the space provided.

☆ U.S. GOVERNMENT PRINTING OFFICE : 1967 O—255-154 (80G)

ÆTNA INSURANCE COMPANY

OF HARTFORD, CONNECTICUT

POWER OF ATTORNEY

Know all Men by these Presents, That ÆTNA INSURANCE COMPANY, a corporation created by and existing under the laws of the State of Connecticut, having its principal office in the City of Hartford, State of Connecticut, does hereby nominate, constitute and appoint

William J. Flaherty or George P. Symonds or Theodore A. Bauman or Rose Okretich or Rose Spataro of New York, N. Y.

its true and lawful Attorney-in-Fact, with full power and authority hereby conferred to make, sign, execute, acknowledge and affix the Corporate Seal of the Corporation, as Surety, as its act and deed, any and all bonds and undertakings of suretyship, recognizances or other written obligations in the nature thereof and to bind ÆTNA INSURANCE COMPANY thereby as fully and to the same extent as if such bond was signed by the duly authorized officers of ÆTNA INSURANCE COMPANY, and all the acts of said attorney, pursuant to the authority herein given, are hereby ratified and confirmed.

This power of attorney is granted under and by the authority of the following applicable paragraphs of ARTICLE 11 of the BYLAWS of the company:

The president or a vice president may execute fidelity and surety bonds and other bonds, contracts of indemnity, recognizances, stipulations, undertakings, receipts, releases, deeds, releases of mortgages, contracts, agreements, policies, notices of appearance, waivers of citation and consents to modifications of contracts as may be required in the ordinary course of business or by vote of the directors, and such execution may be attested where necessary or desirable and the seal of the company where necessary or desirable may be affixed to the specific instrument by a secretary or an assistant secretary.

The president or a vice president may with the concurrence of a secretary or an assistant secretary appoint and authorize an attorney-in-fact or any other person to execute on behalf of the company any such instruments and undertakings and to affix the seal of the company thereto where necessary or desirable.

The attorneys-in-fact under the preceding paragraphs of this article are authorized and empowered to certify to a copy of any of the bylaws of the company or any resolutions adopted by the directors or to the financial statement of the condition of the company and to affix the seal of the company thereto where necessary or desirable.

This power of attorney is signed and sealed by facsimile under and by the authority of the following Resolution adopted by the Board of Directors of the ÆTNA INSURANCE COMPANY at a meeting duly called and held on the 11th day of February, 1966.

RESOLVED THAT, in the execution, attestation and sealing of any instrument or undertaking authorized by Article 11 of the Bylaws, the facsimile signatures of the officers and the facsimile seal of the Company affixed thereto shall be valid and binding upon the Company.

IN WITNESS WHEREOF, ÆTNA INSURANCE COMPANY has caused these presents to be signed by its President and its Secretary and its corporate seal to be hereunto affixed, attested by its Secretary, this 8th day of March, 1974.

ÆTNA INSURANCE COMPANY

F. D. Watkins
President

Attest: J. J. Murphy
Secretary

HARTFORD ÆTNA INSURANCE CO. CONNECTICUT

J. J. Murphy
Secretary

State of Connecticut,
City of Hartford, } ss.

On this 8th day of March, 1974, before me, the undersigned, a Notary Public in and for the City of Hartford, in the State of Connecticut, duly commissioned and qualified, came F. D. WATKINS, President, and J. J. MURPHY, Secretary, of ÆTNA INSURANCE COMPANY, to me personally known to be the individuals and officers described in, and who executed, the preceding instrument, and they each acknowledged the execution of the same and being by me duly sworn, severally, and each for himself deposeth and saith, that they are the said officers of the Corporation aforesaid, and that the Seal affixed to the preceding instrument is the Corporate Seal of said Corporation, and that the said Corporate Seal and their signatures as such officers were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporation.

OLIVE E. MACKEY NOTARY PUBLIC HARTFORD, CONN.

Olive E. Mackey
Notary Public

State of Connecticut,
City of Hartford, } ss.

My commission expires April 1, 1977.

CERTIFICATE

I, the undersigned, Secretary of the ÆTNA INSURANCE COMPANY, a Connecticut corporation, DO HEREBY CERTIFY that the above and foregoing Power of Attorney remains in full force and has not been revoked; and, furthermore, that the above quoted applicable paragraphs of ARTICLE 11 of the BYLAWS of the company, as set forth in the Power of Attorney, are now in force.

Signed and Sealed at Hartford, Connecticut, this ... 26TH ... day of ... JULY ..., 19 74.

HARTFORD ÆTNA INSURANCE CO. CONNECTICUT

J. J. Murphy
Secretary

State of New York,
County of New York,
City of New York, } ss.

On this ... 26TH ... day of ... JULY ..., 19 74, before me personally appeared ... ROSE SPATARO, ..., to me known, who being by me duly sworn, did depose and say that he resides in BROOKLYN, ... KINGS CO., N.Y. ...; that he is Attorney-in-Fact of ÆTNA INSURANCE COMPANY, the corporation described in and which executed the foregoing instrument; that he knows the seal of the said Corporation; that the seal affixed to such instrument is such corporate seal and was attached thereto by authority granted under the By-Laws of said Corporation, and that he signed his name thereto as Attorney-in-Fact by authority granted under the By-Laws of said Corporation, and that the said Corporation has received from the Superintendent of Insurance of the State of New York a certificate of solvency and of its sufficiency as surety or guarantor under Section 327, Chapter 882 of the Laws of 1939, being Chapter 28 of the Consolidated Laws of the State of New York for the year 1939, and as amended and that such certificate has not been revoked.

(SEAL)

GEORGE P. SYMONDS
NOTARY PUBLIC, State of New York
No. 30-9269030
Qualified in Nassau County
Certificate filed in New York County
Commission Expires March 30, 1976

George P. Symonds
Notary Public

Form 630-1154 (N.Y.)

(OVER)

ÆTNA INSURANCE COMPANY

Financial Statement December 31, 1973

ASSETS	
Bonds	$424,130,950
Stocks	181,124,005
Real Estate	3,765,589
Cash on Hand and in Bank	6,995,169
Premiums in Course of Collection	63,913,238
Interest Accrued	7,758,603
Other Assets	37,174,536
TOTAL	$724,862,090

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Reserve for Losses and Loss Expenses	284,609,856
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Reserve for Dividends	0
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TOTAL LIABILITIES	$550,933,877
Capital: 1,000,000 Shares, $10 Par Value	$ 10,000,000
Voluntary Security Valuation Reserve	20,940,127
Surplus (Unassigned)	142,988,086
SURPLUS TO POLICYHOLDERS	$173,928,213
TOTAL	$724,862,090

I, L. B. Bogart, Vice President of ÆTNA INSURANCE COMPANY, certify that the foregoing is a true and correct statement of the financial condition of the Company as of December 31, 1973.

L. B. Bogart
Vice President

ON BEHALF OF.....

IN FAVOR OF.....

Ætna Insurance Company
HARTFORD, CONNECTICUT

PRINTED IN U.S.A.

Ætna INSURANCE COMPANY
YOUR Independent Insurance AGENT

Proven Symbols of Professional Service

Ætna Insurance Company
55 ELM STREET
HARTFORD, CONNECTICUT 06115

Government's Copy

EXPLORATION CONTRACT
HICKS DOME ACCOUNT
OME-6873

AMENDMENT NO. 2

It is agreed this 31st day of January, 1974, between the United States of America, acting through the Department of the Interior, U.S. Geological Survey, hereinafter called the "Government", and Gilbert Kerlin, Robert G. Goelet, Francis Goelet, d/b/a Hicks Dome Account, hereinafter called the "Operator", that Exploration Contract 2306 (OME-6873), dated September 26, 1972, as amended by Amendment No. 1 dated June 29, 1973, is further amended effective August 29, 1973, as follows:

1. The date fixed by Article 1(a) of the Contract as amended by Amendment No. 1 for completion of the work is extended from fifteen (15) to twenty-one (21) months from the date of the Contract, or until June 26, 1974.

2. Article 1(b) of the Contract, as amended by Amendment No. 1, page 1, is further amended in its entirety to read as follows:

"(b) The total allowable cost of the work set forth in Exhibit A is $266,110.00. The Government will contribute 50 percent of the allowable costs as they are incurred in Stages I and III and 35 percent in Stage II, in a total sum not in excess of $113,558.00 in accordance with the provisions of Articles 3, 4, 5, and 6, and SUMMARY in Exhibit A in Amendment No. 2. 'Costs incurred' means costs that have been paid or have become due and payable or that the Government determines have become obligations."

3. Article 1(c) of the Contract as amended by Amendment No. 1, page 1, is further amended in its entirety by deleting the existing paragraph and substituting in lieu thereof the following:

"(c) Interest computation.--Simple interest at the rates specified in (i), (ii), and (iii) below shall accrue from the dates Federal funds are made available until the period specified for payment of royalty expires, or until the amount of Federal funds contributed is fully repaid with interest, whichever occurs first:

(i) 8-1/4 percent on the Government's contribution not in excess of $47,725.00, toward allowable cost for work performed.

(ii) 9 percent on the Government's contribution over $47,725.00 but not in excess of $67,493.00 toward allowable cost for work performed.

(iii) 8-¾ percent on the Government's contribution over $67,493.00 but not in excess of $113,558.00 toward allowable cost for work performed."

4. Article 16 of the Contract is further revised to read as follows:

"The Government shall not make or be obligated to contribute to the cost of work performed under the individual stages of this contract until the Operator has submitted and the Government has approved a performance bond or bonds adequate to cover a total penal sum of $113,558.00."

5. Exhibit A of the Contract is further amended as follows:

a. Under the heading "General Provisions", the new paragraph added by Amendment No. 1, page 2, is revised to read as follows:

"The work shall be divided into three stages. Government funds not expended in the first or second stages may be applied to the costs incurred in the succeeding stages. Estimated numbers of units such as hours, months, feet, samples, and total costs of individual categories and total costs for each stage may be exceeded to the extent that funds from the preceding stages are made available."

b. Under the heading "Description of the Work", Amendment No. 1, page 2, the first paragraph is further revised to read as follows:

"The work shall consist of bulldozing access roads, preparing drill sites, and drilling four vertical diamond drill holes as Stage I of the Contract, and rotary and core drilling three vertical holes as Stage II, and about four vertical holes as Stage III of the Contract for an estimated drilling total on the three stages of about 28,000 feet. The approximate locations of the holes are shown on Figure 1, revision 2. If it should be decided to deepen existing drill holes or to drill branch holes, reentry may be made for additional drilling, either vertically or wedging to a predetermined course."

c. Under the heading "Estimated Costs of the Work", the existing section in Exhibit A of the Contract applies to Stage I, the section added by Amendment No. 1 applies to Stage II, and a new section applicable to Stage III is added to read as follows:

"Stage III

Actual Costs

Category (1) Independent Contracts

Bulldozing access roads and drill sites 68 hours at $12.50/hr.	$ 850.00
Tractor transport of supplies, etc. 69 hours at $4.00/hr.	276.00

Except as herein amended, Exploration Contract 2306 (OME-6873) dated September 26, 1972, shall remain in full force and effect.

THE UNITED STATES OF AMERICA

By William A. Bush
For Director, U.S. Geological Survey

HICKS DOME ACCOUNT

By _____
Title, General Partner

By _____
Title, General Partner

By _____
Title, General Partner

Hickman 1/3/74
Toohey 1/4/74
Davis 1/4/74

BOND NO. S-708597

STANDARD FORM 25
JUNE 1967 EDITION
GENERAL SERVICES ADMINISTRATION
FED. PROC. REG. (41 CFR) 1-16.801

PERFORMANCE BOND

(See Instructions on reverse)

DATE BOND EXECUTED *(Must be same or later than date of contract)*
January 28, 1974.

PRINCIPAL *(Legal name and business address)*
Gilbert Kerlin, Francis Goelet and
Robert G. Goelet, doing business as
Hicks Dome Account.
c/o 53 Wall Street New York, NY

TYPE OF ORGANIZATION *("X" one)*
☐ INDIVIDUAL ☒ PARTNERSHIP
☐ JOINT VENTURE ☐ CORPORATION

STATE OF INCORPORATION

SURETY(IES) *(Name(s) and business address(es))*
AEtna Insurance Company
100 William Street
New York, N.Y.

PENAL SUM OF BOND

MILLION(S)	THOUSAND(S)	HUNDRED(S)	CENT(S)
	46	065	

CONTRACT DATE	CONTRACT NO.
9/26/72	OME 2306

KNOW ALL MEN BY THESE PRESENTS, That we, the Principal and Surety(ies) hereto, are firmly bound to the United States of America (hereinafter called the Government) in the above penal sum for the payment of which we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally: *Provided,* That, where the Sureties are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety, but if no limit of liability is indicated, the limit of liability shall be the full amount of the penal sum.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal entered into the contract identified above;

NOW, THEREFORE, if the Principal shall:

(a) Perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the Government, with or without notice to the Surety(ies), and during the life of any guaranty required under the contract, and shall also perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the Surety(ies) being hereby waived; and

(b) If the said contract is subject to the Miller Act, as amended (40 U.S.C. 270a–270e), pay to the Government the full amount of the taxes imposed by the Government which are collected, deducted, or withheld from wages paid by the Principal in carrying out the construction contract with respect to which this bond is furnished; then the above obligation shall be void and of no effect.

IN WITNESS WHEREOF, the Principal and Surety(ies) have executed this performance bond and have affixed their seals on the date set forth above.

PRINCIPAL

Signature(s)	1. Francis Goelet (Seal)	2. Gilbert Kerlin (Seal)	Corporate Seal
Name(s) & Title(s) *(Typed)*	1.	X3. Robert G. Goelet	

INDIVIDUAL SURETY(IES)

Signature(s)	1. Francis Goelet (Seal)	2. Gilbert Kerlin (Seal)	
Name(s) *(Typed)*	1. Robert G. Goelet	2.	

CORPORATE SURETY(IES)

SURETY A	Name & Address	AETNA INSURANCE COMPANY 100 WILLIAM ST. NY NY	STATE OF INC. CONN.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1. George P. Symonds	2.		
	Name(s) & Title(s) *(Typed)*	1. GEORGE P. SYMONDS, ATTORNEY-IN-FACT	2.		

25-105

(3) cts.

CORPORATE SURETY(IES) (Continued)					
SURETY B	Name & Address		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1.	2.		
	Name(s) & Title(s) *(Typed)*	1.	2.		
SURETY C	Name & Address		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1.	2.		
	Name(s) & Title(s) *(Typed)*	1.	2.		
SURETY D	Name & Address		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1.	2.		
	Name(s) & Title(s) *(Typed)*	1.	2.		
SURETY E	Name & Address		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1.	2.		
	Name(s) & Title(s) *(Typed)*	1.	2.		
SURETY F	Name & Address		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1.	2.		
	Name(s) & Title(s) *(Typed)*	1.	2.		
SURETY G	Name & Address		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1.	2.		
	Name(s) & Title(s) *(Typed)*	1.	2.		

BOND PREMIUM ▶	RATE PER THOUSAND	TOTAL
	$ 10. per M.	$ 1383.00

INSTRUCTIONS

1. This form is authorized for use in connection with contracts for construction work or the furnishing of supplies or services. There shall be no deviation from this form without approval by the Administrator of General Services.

2. The full legal name and business address of the Principal shall be inserted in the space designated "Principal" on the face of this form. The bond shall be signed by an authorized person. Where such person is signing in a representative capacity (e.g., an attorney-in-fact), but is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved, evidence of his authority must be furnished.

3. (a) Corporations executing the bond as sureties must be among those appearing on the Treasury Department's list of approved sureties and must be acting within the limitations set forth therein. Where more than a single corporate surety is involved, their names and addresses (city and State) shall be inserted in the spaces (Surety A, Surety B, etc.) headed "CORPORATE SURETY(IES)", and in the space designated "SURETY(IES)" on the face of this form only the letter identification of the Sureties shall be inserted.

(b) Where individual sureties execute the bond, they shall be two or more responsible persons. A completed Affidavit of Individual Surety (Standard Form 28), for each individual surety, shall accompany the bond. Such sureties may be required to furnish additional substantiating information concerning their assets and financial capability as the Government may require.

4. Corporations executing the bond shall affix their corporate seals. Individuals shall execute the bond opposite the word "Seal"; and, if executed in Maine or New Hampshire, shall also affix an adhesive seal.

5. The name of each person signing this performance bond should be typed in the space provided.

U.S. GOVERNMENT PRINTING OFFICE : 1967 O—255-154 (80G)

ÆTNA INSURANCE COMPANY

OF HARTFORD, CONNECTICUT

POWER OF ATTORNEY

Know all Men by these Presents, That ÆTNA INSURANCE COMPANY, a corporation created by and existing under the laws of the State of Connecticut, having its principal office in the City of Hartford, State of Connecticut, does hereby nominate, constitute and appoint

William J. Flaherty or George P. Symonds or Theodore A. Bauman or Rose Okretich or Rose Spataro of New York, N. Y.

its true and lawful Attorney-in-Fact, with full power and authority hereby conferred to make, sign, execute, acknowledge and affix the Corporate Seal of the Corporation, as Surety, as its act and deed, any and all bonds and undertakings of suretyship, recognizances or other written obligations in the nature thereof and to bind ÆTNA INSURANCE COMPANY thereby as fully and to the same extent as if such bond was signed by the duly authorized officers of ÆTNA INSURANCE COMPANY, and all the acts of said attorney, pursuant to the authority herein given, are hereby ratified and confirmed.

This power of attorney is granted under and by the authority of the following applicable paragraphs of ARTICLE 11 of the BYLAWS of the company:

The president or a vice president may execute fidelity and surety bonds and other bonds, contracts of indemnity, recognizances, stipulations, undertakings, receipts, releases, deeds, releases of mortgages, contracts, agreements, policies, notices of appearance, waivers of citation and consents to modifications of contracts as may be required in the ordinary course of business or by vote of the directors, and such execution may be attested where necessary or desirable and the seal of the company where necessary or desirable may be affixed to the specific instrument by a secretary or an assistant secretary.

The president or a vice president may with the concurrence of a secretary or an assistant secretary appoint and authorize an attorney-in-fact or any other person to execute on behalf of the company any such instruments and undertakings and to affix the seal of the company thereto where necessary or desirable.

The attorneys-in-fact under the preceding paragraphs of this article are authorized and empowered to certify to a copy of any of the bylaws of the company or any resolutions adopted by the directors or to the financial statement of the condition of the company and to affix the seal of the company thereto where necessary or desirable.

This power of attorney is signed and sealed by facsimile under and by the authority of the following Resolution adopted by the Board of Directors of the ÆTNA INSURANCE COMPANY at a meeting duly called and held on the 11th day of February, 1966.

RESOLVED THAT, in the execution, attestation and sealing of any instrument or undertaking authorized by Article 11 of the Bylaws, the facsimile signatures of the officers and the facsimile seal of the Company affixed thereto shall be valid and binding upon the Company.

IN WITNESS WHEREOF, ÆTNA INSURANCE COMPANY has caused these presents to be signed by its President and its Secretary and its corporate seal to be hereunto affixed, attested by its Secretary, this 9th day of March, 1973.

ÆTNA INSURANCE COMPANY

F. D. Watkins
President

Attest: J. J. Murphy
Secretary

HARTFORD ÆTNA INSURANCE CO. CONNECTICUT

J. J. Murphy
Secretary

State of Connecticut,
City of Hartford, } ss.

On this 9th day of March, 1973, before me, the undersigned, a Notary Public in and for the City of Hartford, in the State of Connecticut, duly commissioned and qualified, came F. D. WATKINS, President, and J. J. MURPHY, Secretary, of ÆTNA INSURANCE COMPANY, to me personally known to be the individuals and officers described in, and who executed, the preceding instrument, and they each acknowledged the execution of the same and being by me duly sworn, severally, and each for himself deposeth and saith, that they are the said officers of the Corporation aforesaid, and that the Seal affixed to the preceding instrument is the Corporate Seal of said Corporation, and that the said Corporate Seal and their signatures as such officers were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporation.

OLIVE E. MACKEY NOTARY PUBLIC HARTFORD, CONN.

Olive E. Mackey
Notary Public

State of Connecticut,
City of Hartford, } ss.

My commission expires April 1, 1977.

CERTIFICATE

I, the undersigned, Secretary of the ÆTNA INSURANCE COMPANY, a Connecticut corporation, DO HEREBY CERTIFY that the above and foregoing Power of Attorney remains in full force and has not been revoked; and, furthermore, that the above quoted applicable paragraphs of ARTICLE 11 of the BYLAWS of the company, as set forth in the Power of Attorney, are now in force.

Signed and Sealed at Hartford, Connecticut, this 28 day of JANUARY, 19 74

HARTFORD ÆTNA INSURANCE CO. CONNECTICUT

J. J. Murphy
Secretary

State of New York,
County of New York,
City of New York, } ss.

On this 28 day of JANUARY, 19 74, before me personally appeared GEORGE P. SYMONDS EAST ROCKAWAY NASSAU CO. NY, to me known, who being by me duly sworn, did depose and say that he resides in ; that he is Attorney-in-Fact of ÆTNA INSURANCE COMPANY, the corporation described in and which executed the foregoing instrument; that he knows the seal of the said Corporation; that the seal affixed to such instrument is such corporate seal and was attached thereto by authority granted under the By-Laws of said Corporation, and that he signed his name thereto as Attorney-in-Fact by authority granted under the By-Laws of said Corporation, and that the said Corporation has received from the Superintendent of Insurance of the State of New York a certificate of solvency and of its sufficiency as surety or guarantor under Section 327, Chapter 882 of the Laws of 1939, being Chapter 28 of the Consolidated Laws of the State of New York for the year 1939, and as amended and that such certificate has not been revoked.

(SEAL)

ROSE OKRETICH
NOTARY PUBLIC, State of New York
No. 4-5307150
Qualified in Kings County
Certificate filed in New York County
Commission Expires March 30, 1974

Rose Okretich
Notary Public

Form 630-1154 (N.Y.)

(OVER)

ÆTNA INSURANCE COMPANY

Financial Statement December 31, 1972

ASSETS	
Bonds	$397,522,418
Stocks	195,432,110
Real Estate	3,966,466
Cash on Hand and in Bank	8,293,919
Premiums in Course of Collection	60,310,692
Interest Accrued	7,132,471
Other Assets	31,560,290
TOTAL	$704,218,366

LIABILITIES	
Reserve for Unearned Premiums	$215,238,680
Reserve for Losses and Loss Expenses	251,384,623
Reserve for Taxes	7,473,800
Reserve for Dividends	0
Funds Held under Reinsurance Treaties	1,502,907
Other Liabilities	38,119,350
TOTAL LIABILITIES	$513,719,360
Capital: 1,000,000 Shares, $10 Par Value	$ 10,000,000
Voluntary Security Valuation Reserve	59,631,440
Surplus (Unassigned)	120,867,566
SURPLUS TO POLICYHOLDERS	$190,499,006
TOTAL	$704,218,366

I, L. B. Bogart, Vice President of ÆTNA INSURANCE COMPANY, certify that the foregoing is a true and correct statement of the financial condition of the Company as of December 31, 1972.

L. B. Bogart
Vice President

ON BEHALF OF.....

IN FAVOR OF.....

Ætna Insurance Company
HARTFORD, CONNECTICUT

PRINTED IN U.S.A.

Ætna Insurance Company
INSURANCE COMPANY
YOUR Independent Insurance AGENT

Proven Symbols of Professional Service

MARSH & McLENNAN
Tel. 212-997-2000
1221 Avenue of the Americas, New York, New York 10020

Ætna Insurance Company
55 ELM STREET
HARTFORD, CONNECTICUT 06115

SHEARMAN & STERLING

53 WALL STREET

NEW YORK 10005

(212) 483-1000

CABLE: "NUMLATUS" TELEX: ITT 421295 WU 128103

399 PARK AVENUE
NEW YORK 10022

23, RUE ROYALE
PARIS VIII
265 10-23
"NUMLATUS PARIS"
TELEX: 842-65286

40 BASINGHALL STREET
LONDON EC2V 5DE
01-628 8865
"NUMLATUS LONDON EC2"
TELEX: 851-884274

July 12, 1973.

OFFICIAL
COPY
O. M. E.
RECEIVED
JUL 16 1973
INITIALS | CODE
HK
Cee 12 Mo.

Harold Kirkemo, Esq., Chief,
Office of Mineral Exploration,
United States Department
of the Interior,
Geological Survey,
Washington, D.C. 20242.

Dear Mr. Kirkemo:

Pursuant to our telephone conversation of this morning, I send herewith the Government's, Branch of Financial Management's and Field Office's copies of Amendment No. 1, dated June 29, 1973, re the Hicks Dome Account Exploration Contract No. OME-6873, which Amendment No. 1, among other things, extends the Contract to December 26, 1973.

Please note that each of the copies of Amendment No. 1 has been signed personally by all of the members of Hicks Dome Account. The Performance Bond attached to the Government's Copy was signed by Francis Goelet and me, personally, and by Peter B. Freeman and me, as Attorneys-in-Fact for Robert G. Goelet. I suggest that the fact that Mr. Robert G. Goelet has personally signed each of the copies of Amendment No. 1 would confirm the acts of his Attorneys-in-Fact (Mr. Freeman and me) in signing the Performance Bond on his behalf. However, to satisfy the Government with respect to Mr. Freeman's and my power to act for and on behalf of Robert G. Goelet, I enclose a photocopy of the Power of Attorney, dated June 8, 1971, under which Robert G. Goelet authorizes Mr. Freeman and me (among others) to act in the premises. As you will note, the Power of Attorney was recorded in the Office of the City Register of New York County, Reel 228, Page 1200, on January 14, 1972, has not been revoked and is still in full force and effect.

Please call me if you have any questions.

Sincerely,

Gilbert Kerlin
ac
encs.
registered:
return receipt requested

Government's copy

EXPLORATION CONTRACT
HICKS DOME ACCOUNT
OME-6873

AMENDMENT NO. 1

It is agreed this 29th day of June, 1973, between the United States of America, acting through the Department of the Interior, U. S. Geological Survey, hereinafter called the "Government," and Gilbert Kerlin, Robert G. Goelet, Francis Goelet, d/b/a Hicks Dome Account, hereinafter called the "Operator," that Exploration Contract 2306 (OME-6873), dated September 26, 1972, is amended effective May 14, 1973, as follows:

1. The date fixed by Article 1(a) of the Contract for completion of the work is extended from eight (8) months to fifteen (15) months from the date of the Contract, or until December 26, 1973.

2. Article 1(b) of the Contract is hereby amended in its entirety to read as follows:

"(b) The total allowable cost of the work set forth in Exhibit A is $151,930.00. The Government will contribute 50 percent of the allowable costs as they are incurred in Stage I and 35 percent of the allowable costs as they are incurred in Stage II, in a total sum not in excess of $67,493.00 in accordance with the provisions of Articles 3, 4, 5, and 6. 'Costs incurred' means costs that have been paid or have become due and payable or that the Government determines have become obligations."

3. Article 1(c) of the Contract is hereby amended in its entirety by deleting the existing paragraph and substituting in lieu thereof the following:

"(c) Interest computation. -- Simple interest at the rates specified in (i) and (ii) below shall accrue from the dates Federal funds are made available until the period specified for payment of royalty expires, or until the amount of Federal funds contributed is fully repaid with interest:

(i) 8-1/4 percent on the Government's contribution not in excess of $47,725.00, toward allowable cost for work performed.

(ii) Nine (9) percent on the Government's contribution over $47,725.00 but not in excess $67,493.00 toward allowable cost for work performed."

4. Article 16 of the Contract is revised to read as follows:

"The Government shall not make or be obligated to make any contribution to the cost of work performed under this contract until the Operator has submitted a performance bond, or bonds, adequate to cover penal sums of $47,725.00 for Stage I and $19,768.00 for Stage II, for a total penal sum of $67,493.00, and the bond, or bonds, have been approved by the Government."

5. Exhibit A of the Contract is hereby amended as follows:

a. The first paragraph is revised to read as follows:

"The purpose of the project is to explore by rotary and diamond core drilling for fluorspar-beryllium-rare earths-thorium-niobium ores in mineralized breccias in the Hicks Dome cryptovolcanic structure."

b. Under the heading "General Provisions", the texts of the fifth and seventh paragraphs on Page 1 are revised to read as follows:

"Significantly mineralized core recovered from the drilling shall be split and one split assayed for fluorspar. The remaining core shall be stored in proper sequence with the unsampled core. The stored core shall be available for additional analyses as necessary and for Government inspection and possible use. With prior Government approval, the Operator may dispose of the stored core."

True copies of certificates of assay or analysis of all samples analyzed shall be submitted with the Operator's monthly reports, which shall include a log of drilling completed, and the location and width of all samples collected and assayed or analyzed."

A new paragraph is added to read as follows:

"The work shall be divided into two stages. Government funds not expended in the first stage may be applied to the costs incurred in the second stage."

c. Under the heading "Description of the Work", on page 2, the first paragraph is revised to read as follows:

"The work shall consist of bulldozing access roads, preparing drill sites, and drilling four vertical diamond drill holes as Stage I of the Contract, and rotary and core drilling two additional vertical holes as Stage II of the Contract for an estimated drilling total on both stages of 15,000 feet. The approximate locations of the six holes are shown on Figure 1, revised. If it should be determined that any existing drill holes should be extended, reentry may be made and the hole deepened by additional drilling, either on a vertical course or directed by wedging to a predetermined course."

One additional paragraph is added reading as follows:

"An air rotary drill equipped to use a down-hole-hammer may be used to drill from the surface to an estimated depth of 750 feet or more in each of the two holes in Stage II. The remaining distance to be explored in these two holes shall be core drilled."

Amend #1

d. Under the heading "Estimated Costs of the Work", the existing section shall apply in its entirety to Stage I, and a new section applicable to Stage II is added to read as follows:

"Stage II

Actual Costs

Category (1) Independent Contracts

Bulldozing access roads and drill sites 40 hours at $12.50/hr.	$ 500.00
Tractor transport of supplies, etc. 40 hours at $4.00/hr.	160.00
Mobilization-demobilization rotary drill rig	350.00
Rotary drilling 1,451 feet at $4.00/ft. rounded	5,805.00
Service time 20 hours at $40.00/hr	800.00
Drill muds or chemicals, various unit prices	700.00
Lost casing, 5-1/2 - inch, 1,500 ft. at $1.40/ft.	2,100.00

Diamond drilling

Mobilization-demobilization	1,000.00
Set up rig and set initial casing, 40 hrs. at $19.50/hr.	780.00
Diamond drilling, 3,500 feet	23,675.00

Depth Feet	Rate per Foot NXWL	BXWL
0-500	At rotary drill rate of $4.00/ft.	
500-1000	$5.85	$5.70
1000-1500	6.35	6.25
1500-2000	6.90	6.80
2000-2500	7.50	7.40

Bit costs (diamond loss) in excess of $0.85/ft., 3,500 ft. at $0.65/ft.	2,275.00

Reaming, 80 hours at $22.50.hr.	$ 1,800.00	
Reaming bit cost, 1,000 ft. at $1.00/ft.	1,000.00	
Install and remove casing 20 hrs. at $19.50/hr.	390.00	
Standby time, 60 hrs. at $18.75/hr.	1,125.00	
Cementing and redrilling 40 hrs. at $19.50/hr.	780.00	
Cement, drill muds, additives 40 bags cement at $2.00/bag 20 bags Lumnite at $12.00/bag	320.00	
Lost casing in completed holes, 400 ft. NX casing at $2.90/ft. BX casing at $2.20/ft.	1,160.00	
Water supply by truck or pump 3 months at $300.00/month	900.00	
Total Category (1)		$45,620.00
Category (2) Personal Services		
None except:		
1 Supervisor-geologist 4 months at $1,400.00/month	$ 5,600.00	
1 Assistant geologist-sampler 4 months at $600.00/month	2,400.00	
Total Category (2)		$ 8,000.00
Category (3) Operating Materials and Supplies		
Core boxes, 400 at $1.25/box	$ 500.00	
Sample bags, 300 at $0.50/bag	150.00	
Total Category (3)		$ 650.00
Category (7) Miscellaneous		
Office and accounting services, including part time secretarial services, printing, supplies, postage, telephone 4 months at $150.00/month	$ 600.00	

Category (7) Miscellaneous continued

Transportation of samples, 100 at $0.60/each	$ 60.00	
Analytical work		
Prepare and assay for fluorspar, specific ion electrode method, 100 samples at $2.50 each	250.00	
Wet assays (CaF_2, Pb, Zn, and others) 200 samples at ranging prices per determination	800.00	
Spectrographic and X-ray emission analyses (multiple components) 50 samples at $10.00 sample	500.00	
Total Category (7)		$ 2,210.00
Total Estimated Actual Costs, Stage II		$56,480.00
Government Participation at 35%		$19,768.00

SUMMARY

Total Estimated Cost of Stage I	$95,450.00
Government Participation at 50%	$47,725.00
Total Estimated Cost of Stage II	$56,480.00
Government Participation at 35%	$19,768.00
Total Estimated Cost of Project	$151,930.00
Government Participation	$67,493.00

Except as herein amended, Exploration Contract 2306 (OME-6873) dated September 26, 1972, shall remain in full force and effect.

THE UNITED STATES OF AMERICA

By William A Bach
For Director, U. S. Geological Survey

HICKS DOME ACCOUNT

By Robert Z. Gomez
Title General Partner

By Francis Gomez
Title, General Partner

By [illegible]
Title, General Partner

Appl. Sol. Office Martin 6/12/73
Appl. Sol. Office Chapman 6/12/73
Shirbemo 6/13/73
Toolan 6/18/73

STANDARD FORM 25
JUNE 1967 EDITION
GENERAL SERVICES ADMINISTRATION
FED. PROC. REG. (41 CFR) 1-16.801

PERFORMANCE BOND

(See Instructions on reverse)

DATE BOND EXECUTED (or later than date of c[illegible]): 6/22/73

PRINCIPAL *(Legal name and business address)*

Gilbert Kerlin, Francis Goelet and Robert G. Goelet, doing business as Hicks Dome Account
c/o 53 Wall Street, New York, N.Y.

TYPE OF ORGANIZATION *("X" one)*

☐ INDIVIDUAL ☒ PARTNERSHIP
☐ JOINT VENTURE ☐ CORPORATION

STATE OF INCORPORATION

SURETY(IES) *(Name(s) and business address(es))*

Aetna Insurance Company
95 Wall Street
New York, N. Y.

PENAL SUM OF BOND			
MILLION(S)	THOUSAND(S)	HUNDRED(S)	CENT(S)
	19	768	00

CONTRACT DATE	CONTRACT NO.
9/26/72	OME 2306

KNOW ALL MEN BY THESE PRESENTS, That we, the Principal and Surety(ies) hereto, are firmly bound to the United States of America (hereinafter called the Government) in the above penal sum for the payment of which we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally: *Provided,* That, where the Sureties are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety, but if no limit of liability is indicated, the limit of liability shall be the full amount of the penal sum.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal entered into the contract identified above;

NOW, THEREFORE, if the Principal shall:

(a) Perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the Government, with or without notice to the Surety(ies), and during the life of any guaranty required under the contract, and shall also perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the Surety(ies) being hereby waived; and

(b) If the said contract is subject to the Miller Act, as amended (40 U.S.C. 270a–270e), pay to the Government the full amount of the taxes imposed by the Government which are collected, deducted, or withheld from wages paid by the Principal in carrying out the construction contract with respect to which this bond is furnished; then the above obligation shall be void and of no effect.

IN WITNESS WHEREOF, the Principal and Surety(ies) have executed this performance bond and have affixed their seals on the date set forth above.

PRINCIPAL

Signature(s)	1. GK Gilbert Kerlin (Seal)	2. FG Francis Goelet (Seal) RGG Gilbert Kerlin	Corporate Seal
Name(s) & Title(s) *(Typed)*	1.	2. PBF Peter B. Freeman Attorneys in Fact for Robert G. Goelet	Peter B. Freeman

INDIVIDUAL SURETY(IES)

Signature(s)	1. (Seal)	2. (Seal)
Name(s) *(Typed)*	1.	2.

CORPORATE SURETY(IES)

SURETY A	Name & Address	AETNA INSURANCE COMPANY 95 WALL STREET, NY NY	STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1. George P. Symonds	2.		
	Name(s) & Title(s) *(Typed)*	1. GEORGE P. SYMONDS, ATTORNEY-IN-FACT	2.		

25-105

3 CTS.

BOND NO. S_708201

CORPORATE SURETY(IES) (Continued)					
			STATE OF INC.	LIABILITY LIMIT	Corporate Seal
		2.			
	Name(s) & Title(s) (Typed)	1.	2.		
SURETY C	Name & Address		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1.	2.		
	Name(s) & Title(s) (Typed)	1.	2.		
SURETY D	Name & Address		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1.	2.		
	Name(s) & Title(s) (Typed)	1.	2.		
SURETY E	Name & Address		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1.	2.		
	Name(s) & Title(s) (Typed)	1.	2.		
SURETY F	Name & Address		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1.	2.		
	Name(s) & Title(s) (Typed)	1.	2.		
SURETY G	Name & Address		STATE OF INC.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1.	2.		
	Name(s) & Title(s) (Typed)	1.	2.		

BOND PREMIUM ▶	RATE PER THOUSAND $ 10.00 PER M	TOTAL $ 593.00

INSTRUCTIONS

1. This form is authorized for use in connection with contracts for construction work or the furnishing of supplies or services. There shall be no deviation from this form without approval by the Administrator of General Services.

2. The full legal name and business address of the Principal shall be inserted in the space designated "Principal" on the face of this form. The bond shall be signed by an authorized person. Where such person is signing in a representative capacity (e.g., an attorney-in-fact), but is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved, evidence of his authority must be furnished.

3. (a) Corporations executing the bond as sureties must be among those appearing on the Treasury Department's list of approved sureties and must be acting within the limitations set forth therein. Where more than a single corporate surety is involved, their names and addresses (city and State) shall be inserted in the spaces (Surety A, Surety B, etc.) headed "CORPORATE SURETY(IES)", and in the space designated "SURETY(IES)" on the face of this form only the letter identification of the Sureties shall be inserted.

(b) Where individual sureties execute the bond, they shall be two or more responsible persons. A completed Affidavit of Individual Surety (Standard Form 28), for each individual surety, shall accompany the bond. Such sureties may be required to furnish additional substantiating information concerning their assets and financial capability as the Government may require.

4. Corporations executing the bond shall affix their corporate seals. Individuals shall execute the bond opposite the word "Seal"; and, if executed in Maine or New Hampshire, shall also affix an adhesive seal.

5. The name of each person signing this performance bond should be typed in the space provided.

☆ U.S. GOVERNMENT PRINTING OFFICE : 1967 O—255-154 (80G)

ÆTNA INSURANCE COMPANY

OF HARTFORD, CONNECTICUT

POWER OF ATTORNEY

Know all Men by these Presents, That ÆTNA INSURANCE COMPANY, a corporation created by and existing under the laws of the State of Connecticut, having its principal office in the City of Hartford, State of Connecticut, does hereby nominate, constitute and appoint

William J. Flaherty or George P. Symonds or Theodore A. Bauman or Rose Okretich or Rose Spataro of New York, N. Y.

its true and lawful Attorney-in-Fact, with full power and authority hereby conferred to make, sign, execute, acknowledge and affix the Corporate Seal of the Corporation, as Surety, as its act and deed, any and all bonds and undertakings of suretyship, recognizances or other written obligations in the nature thereof and to bind ÆTNA INSURANCE COMPANY thereby as fully and to the same extent as if such bond was signed by the duly authorized officers of ÆTNA INSURANCE COMPANY, and all the acts of said attorney, pursuant to the authority herein given, are hereby ratified and confirmed.

This power of attorney is granted under and by the authority of the following applicable paragraphs of ARTICLE 11 of the BYLAWS of the company:

The president or a vice president may execute fidelity and surety bonds and other bonds, contracts of indemnity, recognizances, stipulations, undertakings, receipts, releases, deeds, releases of mortgages, contracts, agreements, policies, notices of appearance, waivers of citation and consents to modifications of contracts as may be required in the ordinary course of business or by vote of the directors, and such execution may be attested where necessary or desirable and the seal of the company where necessary or desirable may be affixed to the specific instrument by a secretary or an assistant secretary.

The president or a vice president may with the concurrence of a secretary or an assistant secretary appoint and authorize an attorney-in-fact or any other person to execute on behalf of the company any such instruments and undertakings and to affix the seal of the company thereto where necessary or desirable.

The attorneys-in-fact under the preceding paragraphs of this article are authorized and empowered to certify to a copy of any of the bylaws of the company or any resolutions adopted by the directors or to the financial statement of the condition of the company and to affix the seal of the company thereto where necessary or desirable.

This power of attorney is signed and sealed by facsimile under and by the authority of the following Resolution adopted by the Board of Directors of the ÆTNA INSURANCE COMPANY at a meeting duly called and held on the 11th day of February, 1966.

RESOLVED THAT, in the execution, attestation and sealing of any instrument or undertaking authorized by Article 11 of the Bylaws, the facsimile signatures of the officers and the facsimile seal of the Company affixed thereto shall be valid and binding upon the Company.

IN WITNESS WHEREOF, ÆTNA INSURANCE COMPANY has caused these presents to be signed by its President and its Secretary and its corporate seal to be hereunto affixed, attested by its Secretary, this 9th day of March, 1973.

ÆTNA INSURANCE COMPANY

F. D. Watkins
President

Attest: J. J. Murphy
Secretary

HARTFORD ÆTNA INSURANCE CO. CONNECTICUT

J. J. Murphy
Secretary

State of Connecticut,
City of Hartford, } ss.

On this 9th day of March, 1973, before me, the undersigned, a Notary Public in and for the City of Hartford, in the State of Connecticut, duly commissioned and qualified, came F. D. WATKINS, President, and J. J. MURPHY, Secretary, of ÆTNA INSURANCE COMPANY, to me personally known to be the individuals and officers described in, and who executed, the preceding instrument, and they each acknowledged the execution of the same and being by me duly sworn, severally, and each for himself deposeth and saith, that they are the said officers of the Corporation aforesaid, and that the Seal affixed to the preceding instrument is the Corporate Seal of said Corporation, and that the said Corporate Seal and their signatures as such officers were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporation.

OLIVE E. MACKEY NOTARY PUBLIC HARTFORD, CONN.

Olive E. Mackey
Notary Public

State of Connecticut,
City of Hartford, } ss.

My commission expires April 1, 1977.

CERTIFICATE

I, the undersigned, Secretary of the ÆTNA INSURANCE COMPANY, a Connecticut corporation, DO HEREBY CERTIFY that the above and foregoing Power of Attorney remains in full force and has not been revoked; and, furthermore, that the above quoted applicable paragraphs of ARTICLE 11 of the BYLAWS of the company, as set forth in the Power of Attorney, are now in force.

Signed and Sealed at Hartford, Connecticut, this 22ND day of JUNE, 19 73.

HARTFORD ÆTNA INSURANCE CO. CONNECTICUT

J. J. Murphy
Secretary

State of New York,
County of New York,
City of New York, } ss.

On this 22ND day of JUNE, 1973, before me personally appeared GEORGE P. SYMONDS, to me known, who being by me duly sworn, did depose and say that he resides in E. ROCKAWAY, NASSAU CO. N.Y.; that he is Attorney-in-Fact of ÆTNA INSURANCE COMPANY, the corporation described in and which executed the foregoing instrument; that he knows the seal of the said Corporation; that the seal affixed to such instrument is such corporate seal and was attached thereto by authority granted under the By-Laws of said Corporation, and that he signed his name thereto as Attorney-in-Fact by authority granted under the By-Laws of said Corporation, and that the said Corporation has received from the Superintendent of Insurance of the State of New York a certificate of solvency and of its sufficiency as surety or guarantor under Section 327, Chapter 882 of the Laws of 1939, being Chapter 28 of the Consolidated Laws of the State of New York for the year 1939, and as amended and that such certificate has not been revoked.

(SEAL)

.....
Notary Public

Form 630-1154 (N.Y.)

(OVER)

ÆTNA INSURANCE COMPANY

Financial Statement December 31, 1972

ASSETS

Bonds	$397,522,418
Stocks	195,432,110
Real Estate	3,966,466
Cash on Hand and in Bank	8,293,919
Premiums in Course of Collection	60,310,692
Interest Accrued	7,132,471
Other Assets	31,560,290
TOTAL	$704,218,366

LIABILITIES

Reserve for Unearned Premiums	$215,238,6
Reserve for Losses and Loss Expenses	251,384,6
Reserve for Taxes	7,473,8
Reserve for Dividends	0
Funds Held under Reinsurance Treaties	1,502,9
Other Liabilities	38,119,3
TOTAL LIABILITIES	$513,719,3
Capital: 1,000,000 Shares, $10 Par Value	$ 10,000,0
Voluntary Security Valuation Reserve	59,631,4
Surplus (Unassigned)	120,867,5
SURPLUS TO POLICYHOLDERS	$190,499,0
TOTAL	$704,218,366

I, L. B. Bogart, Vice President of ÆTNA INSURANCE COMPANY, certify that the foregoing is a true and correct statement of the financial condition of the Company as of December 31, 1972.

L. B. Bogart
Vice President

ON BEHALF OF.....

IN FAVOR OF.....

Ætna Insurance Company
HARTFORD, CONNECTICUT

PRINTED IN U.S.A.

Ætna INSURANCE COMPANY
YOUR Independent Insurance AGENT

Proven Symbols of Professional Service

Ætna Insurance Company
55 ELM STREET
HARTFORD, CONNECTICUT 06115

RECORDED IN THE OFFICE OF
THE CITY REGISTER OF NEW YORK
COUNTY, REEL 228, PAGE 1200,
ON JANUARY 14, 1972.

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS:

That I, ROBERT G. GOELET, residing at No. 7 Sutton Place, New York, N.Y. 10022, have nominated, constituted and appointed, and by these presents do nominate, constitute and appoint FRANCIS GOELET, residing at No. 16 Sutton Square, New York, N.Y. 10022, HENRY B. GUTHRIE, residing at No. 169 East 70th Street, New York, N.Y. 10021, GILBERT KERLIN, residing at 700 West 247th Street, Riverdale, New York, N.Y. 10471, HENRY S. ZIEGLER, residing at 151 East 79th Street, New York, N.Y. 10021, and PETER B. FREEMAN, residing at 118 East 60th Street, New York, N.Y. 10022, my true and lawful attorneys-in-fact, with power to be exercised by any two of them, for me and in my name, place and stead:

To sell, assign, transfer and deliver all stocks, bonds, or other securities now or hereafter belonging to me, to transfer upon the books of any corporation any stocks, bonds or other securities which may be registered in my name or which may require to be transferred, to collect and receive all dividends or interest (including stock dividends and extraordinary distributions of capital, surplus, profits or interest) which may be or become payable to me upon any shares of stock or upon any bonds, notes or other securities now or hereafter belonging to me, to make, execute and deliver dividend orders or other similar instruments, to receive, exercise, purchase, sell or otherwise dispose of, any and all rights or subscriptions or other rights or privileges which may accrue upon any stocks, bonds or other securities now or hereafter owned by me, to subscribe for and purchase with my funds such stocks, bonds, or other securities as they may deem proper;

To vote, or to appoint any other person or persons to vote, on my behalf, at any annual or special meeting, or meetings, of the stockholders of any association, joint stock company or corporation, domestic or foreign, in which I am or may be hereafter a stockholder or a member, and at any adjournment of any such meeting, upon any and all shares of stock and with respect to any interest which is, are or may be registered hhereafter in my name and upon or with respect to which I would be entitled to vote if there personally present, and WITH POWER to them and to such person or persons as they may appoint to vote for the election of directors of any such association, joint stock company or corporation, and also to vote according to their discretion upon any special propositions or other matters or business which may be brought before any such meeting, or any adjournment thereof, and likewise to execute in my behalf such stockholders' or members' consents as they may deem proper;

To endorse for collection or otherwise all checks, drafts, notes or other instruments drawn to my order, to sign receipts in my name for all money due or which may become due to me, to deposit checks and moneys for me in such banks and trust companies, or with such bankers, as they may from time to time select, and to draw checks in my name upon such banks, trust companies or bankers for any and all purposes;

To ask, demand, sue for, levy recover and receive any and all manner of goods, chattels, debts, duties, claims, or sums of money whatsoever, due or hereafter to become due and owing to me, and upon the receipt thereof to make, give and execute acquittances, receipts or other discharges for the same under seal or otherwise, to prosecute or defend, in my name or otherwise, all suits and actions, as well as real or personal or mixed, which they may deem advisable to institute in my behalf or which may be brought against me by any person whomsoever, to pay and discharge all debts, liabilities or obligations now or hereafter due and payable by me, and to settle and adjust with any person or persons all accounts, dues or demands subsisting or to subsist between me and them, and to release, compound, arbitrate and agree to the same in such manner as to them shall seem proper;

To make any agreements for the sale and/or exchange of, and to grant, bargain, sell, partition and exchange all and every the lands, tenements and hereditaments wheresoever situated, with the appurtenances thereto appertaining and the fixtures thereon, to me in any wise belonging or that may hereafter belong to me, or any part or parts thereof, or any interest or interests therein, for such sum or sums, for such consideration or considerations, at such time or times, on such terms, including purchase money mortgage or mortgages, and in such parcels, as they shall in their discretion deem to be in my interest, and for me and in my name to make, execute, acknowledge and deliver full and sufficient contracts, deeds and conveyances for the same, either without covenants, or with such covenants as may to them seem proper;

To purchase for me upon any terms that may to them seem proper any property, real or personal, and to take the title thereof to any corporation or person;

To lease and demise any and all such real estate or any parts or portions thereof, or interests therein, for such periods, and upon such terms and conditions, as they shall in their discretion deem to be in my interest;

To exercise general control and supervision over all such real estate and interests therein, and to make such repairs or alterations or additions thereto, and to erect buildings or other improvements thereon, and to raze or demolish the whole or any part of any building or buildings now or hereafter on any portion of any of said premises, as they shall deem advisable, and to effect and maintain any and all kinds of insurance thereon in such amounts as they may deem proper, and to collect, compromise or adjust claims arising under any such insurance, and in case of payment for any losses sustained under any such policies of insurance, to execute and deliver proper receipts therefor, and to ask, demand, sue for, collect and receive, and to compromise, compound, remit and release all rents and arrears of rent and all other sums which may be or become due or owing to me from tenants or other persons whomsoever;

To collect, satisfy and discharge any and all mortgages owned by me on real or personal property, or to extend or renew such mortgages, or accept payment prior to due date, on such terms as they may deem proper, and to execute, acknowledge and deliver acquittances, satisfaction pieces or releases, and to institute and prosecute proceedings for the foreclosure of any such lien, in my name or otherwise;

To employ, pay and discharge such agents, assistants, employees and servants as they may deem necessary or desirable for better enabling them to protect my property or to promote my interest;

To make, sign, execute and deliver in my behalf any and all manner of contracts and agreements, under seal or otherwise, as they may deem advisable in my interest;

To pay, compromise, compound or recover back any and all taxes, assessments or other charges which may be levied, assessed or imposed upon my real or personal property or income, or which otherwise may become payable by me, to pay any and all expenses and charges in connection therewith, to make, sign and verify in my behalf such statements, reports or returns relating to any tax or taxes as may be required by any law or laws now or hereafter enacted as they may deem proper, to contest by legal proceedings or otherwise the validity or legality of any such taxes, assessments or other charges, and, by legal proceedings or otherwise, to protect, demand, sue for, recover back and collect any sums which may be recoverable by reason of any such taxes, assessments or other charges, heretofore or hereafter paid;

AND generally to exercise any and all of the powers herein conferred as fully and effectually in all respects as I myself could do, it being my intention that all questions which may arise hereunder concerning the extent of any of the powers, general or specific, hereby granted to my said attorneys-in-fact, shall be resolved in favor of the possession by my said attorneys-

in-fact of such powers in the broadest and most discretionary sense;

AND FURTHER, notwithstanding the above mentioned specific powers given to my said attorneys, and in addition thereto, I give to my said attorneys the power and authority to do and perform all acts and deeds with relation to my personal affairs which I myself might or could do and perform and which can be delegated to attorneys, HEREBY GIVING AND GRANTING unto my said attorneys and proxies, and their appointee or appointees full power and authority to do and perform all and every act and thing whatsoever requisite and necessary to be done in and about the premises as fully to all intents and purposes as I might or could do if personally present, hereby ratifying and confirming that all my said attorneys and proxies, and their appointee or appointees shall lawfully do or cause to be done by virtue hereof.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 8th day of JUNE, 1971.

In the Presence of: Robert R. Grant (L.S.)

William F. Oswald

STATE OF NEW YORK)
)
COUNTY OF NEW YORK)

On the 8th day of June, 1971, before me personally came ROBERT G. GOELET to me known and known to me to be the individual described in and who executed the foregoing instrument, and acknowledged to me that he executed the same.

Antoinette M. Ingenito
Notary Public

ANTOINETTE M. INGENITO
NOTARY PUBLIC, State of New York
No. 41-7036375
Qualified in Queens County
Cert. filed in New York County
Commission Expires March 30, 1972

The following are the signatures of
the Attorneys-in-Fact authorized to
sign on behalf of

ROBERT G. GOELET

in accordance with the foregoing
Power of Attorney, executed by

ROBERT G. GOELET

under date of JUNE 8, 1971:

Francis Goelet

Gilbert Kerlin

Henry B. Guthrie

Henry S. Ziegler

Peter B. Freeman

SIGNATURE GUARANTEED
CHEMICAL BANK
425 PARK AVENUE (55th Street)
NEW YORK

William H. Schofield
AUTHORIZED SIGNATURE

Signatures Guaranteed

EXHIBIT C

CERTIFICATION OF NONSEGREGATED FACILITIES

(Applicable to federally assisted construction contracts and related subcontracts exceeding $10,000 which are not exempt from the Equal Opportunity clause.)

The federally assisted construction contractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally assisted construction contractor certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally assisted construction contractor agrees that a breach of this certification is a violation of the Equal Opportunity clause in this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. The federally assisted construction contractor agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certifications in his files.

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

BOYLES BROTHERS DRILLING CO.

(s) Wallace Woodcock
Signature

Eastern District Manager
Title

June 28, 1973
Date

vernment's copy

MME Form 50
July 1965

UNITED STATES OF AMERICA
DEPARTMENT OF THE INTERIOR
U. S. GEOLOGICAL SURVEY

EXPLORATION CONTRACT
(Long Form)

Docket No.	Commodity	Contract No.	County	State
OME -6873	Fluorspar-beryllium-rare earths-thorium-niobium	[illegible]	Hardin	Illinois

It is agreed SEP 26 1972 (Date), between the United States of America, acting through the Department of the Interior, U. S. Geological Survey, hereinafter called the "Government," and

Gilbert Kerlin, Robert G. Goelet, Francis Goelet, d/b/a
Hicks Dome Account, a partnership

whose mailing address is c/o Gilbert Kerlin, Esq. Sherman and Sterling, 53 Wall Street, New York, N. Y. 10005 hereinafter called the "Operator," as follows:

ARTICLE 1. Authority and scope.--(a) This contract entered into under the authority of Public Law 701, 85th Cong., 2d sess. (72 Stat. 700; 30 U.S.C. § 641 - 646), consists of this form, the attached Annex I (land description), Exhibit A (work and costs), and the maps and documents listed. The work is a search for new or unexplored deposits of the commodity designated above. The Operator shall begin the work on or before October 10, 1972 (Date), and, subject to the provisions of Article 9 and Exhibit A, shall either have completed the work within 8 months from the date of the contract or shall have incurred allowable costs (see Article 6) in a sum not less than the total cost set forth in Exhibit A.

(b) The total allowable cost of the work set forth in Exhibit A is $95,450.00. The Government will contribute 50 percent of the allowable costs as they are incurred, in a total sum not in excess of $47,725.00 in accordance with the provisions of Articles 3, 4, 5, and 6. "Costs incurred" means costs that have been paid or have become due and payable, or that the Government determines have become obligations.

(c) Interest computation.--Simple interest at the rate of 8½ percent shall accrue from the dates Federal funds are made available until the period specified for payment of royalty expires, or until the amount of Federal funds contributed is fully repaid with interest.

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

ARTICLE 2. Operator's right in land.--(a) The Operator represents and undertakes that Annex I correctly describes the land which is the subject of this contract and the nature of the Operator's right of property and possession therein (whether as owner, lessee, or otherwise), and that such right, title, or interest is subject only to the following claims, liens, or encumbrances:

See Annex I

(b) The Subordination Agreement of the holder of any claim, lien, or encumbrance listed above and (if the Operator does not hold the legal title) the lien agreement of any holder of the legal title of the land (lessor, seller, optionor, etc.) are attached as follows:

See Article 16

(c) The Operator shall preserve and maintain his right, title, or interest in the land and his right to the possession thereof for the purposes of this contract, and shall devote the land and all existing improvements, facilities, buildings, installations, and appurtenances to the purposes of this contract. The Operator shall neither transfer, convey, nor surrender the land nor any right, title, or interest therein, nor permit nor suffer any claim, lien, or encumbrance thereon, without expressly referring to and providing in the instrument of conveyance, lien, or encumbrance for the preservation of the Government's right to a royalty on production and liens for the payment thereof. Two true copies of such instrument shall be furnished to the Government. If the Government's rights to royalty as provided in Article 7 have been terminated, the provisions of this paragraph (c) shall become inapplicable.

ARTICLE 3. Performance of the work.--(a) Operator's responsibility.--The work shall be performed diligently, efficiently, in a workmanlike manner in accordance with good mining standards, and in compliance with State laws governing health, safety, and liability insurance covering employment. The Operator shall provide suitable and adequate equipment, facilities, materials, supplies, and labor to complete the work as specified in Article 1(a).

(b) Independent contracts.--To the extent that the allowable costs are estimated in Exhibit A with express reference to performance by independent contractors on a unit-price basis (such as per foot of drilling, per foot of drifting, per hour of bulldozer operations), the work may be so performed (see Article 6(a), Category (1)). Any such independent contract shall refer to some specific and identifiable part of the work, and shall be subject to all of the pertinent terms and conditions of this exploration contract; but the Government shall not be considered a party thereto, and its rights under this contract, including the right to terminate its contributions, shall not be affected thereby. Regardless of the provisions of any such independent contract, the Government will participate in payments to the independent contractor only as to work performed in accordance with the provisions of this exploration contract, and only to the extent that the Government deems the unit prices for the work under the independent contract to be reasonable.

(c) Government may inspect.--The Operator shall consult with and inform the Government on all phases of the work as it progresses. The Government may enter at all reasonable times to inspect the work under the contract and production operations during the period that royalty is payable to the Government. The Operator shall provide the Government with all reasonable means of access for such inspections.

ARTICLE 4. Contribution by the Government.-- The Government will make its contribution on the basis of the monthly vouchers referred to in Article 5(b), but all payments by the Government are provisional only, subject to audit. Until the account between the Operator and the Government is finally audited and settled and the Operator's final report has been received, the Government may withhold such sums as are necessary to protect its interests. The Government may make payments for the account of the Operator directly to independent contractors and suppliers rather than to the Operator.

ARTICLE 5. Reports, accounts, audits.--(a) Operator's records.--The Operator shall keep suitable records and accounts of the work performed and of any production in which the Government may have an interest; and shall preserve those with respect to work performed for at least three years after final payment by the Government, and those with respect to production for at least three years after any obligation to pay royalties to the Government has terminated. The Government may inspect and audit said records and accounts at any time, either by itself or by a certified public accountant. The Comptroller General of the United States or his representative, until the expiration of said three-year periods, shall have access to and the right to examine all pertinent books, documents, papers, and records of the Operator. If work under this contract is carried on in conjunction with any other operations, or if labor, supervision, services, materials, supplies, equipment, facilities, or other requirements for carrying on the work are also used in connection with other operations, the costs shall be segregated and accounted for on a basis and by methods and accounts that are satisfactory to and approved by the Government.

(b) Monthly reports.--The Operator shall provide the Government with four copies of monthly reports in three sections as follows:

(1) Operator's Monthly Voucher claiming costs for work performed;

(2) Operator's Progress Report showing the number of units of the various types of work performed; and

(3) a narrative report of the work performed during the reporting period, including adequate engineering-geological maps or sketches, drill hole logs and locations, and assay reports on samples taken concurrently with advance in mineralized ground.

(Forms for reporting under (1) and (2) above will be provided by the Government; however, the original of the Operator's Monthly Voucher shall be supported by documentary evidence, such as certified copies or transcripts of payrolls and invoices, for all costs claimed under Article 6 (a) (1).)

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

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

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

ARTICLE 6. Costs.--(a) Allowable costs.--The allowable costs of the work to which the Government will contribute are limited to:

(1) the necessary, reasonable, and direct actual costs that are estimated in Exhibit A by categories as specified in this article; and

(2) fixed costs for units of work to be performed (per foot, per hour, etc.) agreed upon in lieu of actual costs and set forth in Exhibit A.

The Government will not contribute to costs under any category or subcategory omitted from the estimate of costs in Exhibit A. Any excess over any estimate which is indicated as the maximum of any category, subcategory, or item, either as to requirement or related cost; any excess over a fixed unit cost; and any excess over the total allowable cost of the work are not allowable. The Operator shall incur such excesses for his own account without contribution by the Government, but the Operator is not obligated to incur more than his agreed percentage of the total allowable cost of the work.

Any category or subcategory or element thereof not designated as a maximum in this article, or in Exhibit A may be exceeded, provided that the total allowable cost of the work, which is a maximum, is not exceeded.

CATEGORY (1)--INDEPENDENT CONTRACTS.--(See Article 3(b)). The total of this category and the average unit cost estimated for each type of work to be performed under an independent contract are maximums.

CATEGORY (2)--PERSONAL SERVICES.

Subcategory (a)--Supervision and Technical Services--All elements of this subcategory (number of supervisors, technicians, outside consultants, periods of employment, rates of pay, and total) are maximums.

Subcategory (b)--Labor.

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

CATEGORY (4)--OPERATING EQUIPMENT.

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

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

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

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

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

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

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

CATEGORY (7)--MISCELLANEOUS.--Includes requirements and costs that do not fall within any of the first six categories, such as repairs other than initial and maintenance of operating equipment, analytical work, prints and other reproductions, accounting, Operator's share of payroll taxes, liability insurance covering employment, travel, and communications.

(b) Nonallowable costs.--In addition to the limitations imposed by paragraph (a) of this Article 6 the Government will not contribute to the following costs:

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

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

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

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

(c) Reductions in costs.--The Operator shall account for and give the Government credit for any incidental benefits, credits, or money received in the ordinary course of business in prosecuting the work (as by salvage or sale of materials or equipment, furnishing of room or board, furnishing of power or services to third persons, rebates or discounts on purchases, etc.), in the same ratio in which the Government contributes to costs; and such amounts shall be treated as a reduction in costs incurred so that they are available for use within the limit of the original total cost. The provision does not apply to receipts from production which are subject to the Government's royalty under the provisions of Article 7.

ARTICLE 7. Repayment by Operator.--(a) Certification.--If the Government considers that mineral or metal production from the land covered by the contract may be possible as a result of the exploration work, it shall so certify in writing to the Operator at any time not later than six months after a sufficient final report and final accounting (see Article 5) have been furnished.

(b) Royalty on production.--The Operator, whether or not the producer (for example, if the Operator either transfers or does not retains his interest in the land), shall pay to the Government a royalty on all minerals and metals mined or produced from the land as follows:

(1) irrespective of any certification of possible production--from the date of the contract until the lapse of the time within which the government may issue such certification or until the total net amount contributed by the Government is fully repaid with interest, whichever occurs first; or

(2) if the Government issues a certification of possible production--for a period of ~~twenty~~ fifteen years from the date of the contract, or until the total net amount contributed by the Government is fully repaid with interest, whichever occurs first.

(c) Payment of royalty.--(1) The Government's royalty shall be five percent of the gross proceeds (including any bonuses, premiums, allowances, or other benefits) from the production sold, in the form sold (ore, concentrate, metal or equivalent), at the point of delivery (the f.o.b. point); except, that charges of the buyer arising in the regular course of business and shown as deductions on the buyer's settlement sheets (such as treatment processes performed by the buyer, sampling and assaying to determine the value of the production sold, and freight payable by the buyer to a carrier (not the Operator or producer)), shall be allowed as deductions in arriving at the "gross proceeds" as that term is used herein. No costs of the Operator or Producer are deductible in arriving at the "gross proceeds" as that term is here used.

The term "treatment processes" means those processes (such as milling, concentrating, smelting, refining, or equivalent, but excluding fabricating or manufacturing) applied to the crude ore or other production after it is extracted from the ground to put it into a commercially marketable form.

(2) The Government's royalty shall be computed and paid currently upon each lot sold, held, or used in integrated operations, as the case may be.

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

(e) Lien for payment.--To secure the payment of royalty (see Article 7(b)), the Operator hereby grants to the Government a lien upon his interest in the land and upon any production of minerals and metals therefrom until the royalty claim is extinguished by lapse of time or is fully paid.

(f) Notice to purchasers.--The Operator or producer shall give notice of the Government's claim for royalty to any purchaser of the production, and shall authorize and direct such purchaser to pay the royalty directly to the Government and to furnish the Government with copies of the settlement sheets. If the records of any production and sales or other disposition of production, whether the production is by the Operator or by others, are not made available to the Government, the amount of the royalty may be estimated by the Government, and this estimate shall be final and binding upon the Operator or producer.

(g) No obligation to produce.--Nothing in this contract shall be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any production operations.

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

ARTICLE 8. Interests in purchased property.--(a) Title and ownership.--All costs under this contract shall be incurred by the Operator in the Operator's own name and for the Operator's own account; but any property acquired to the cost of which the Government contributes shall belong to the Operator and the Government jointly in proportion to their respective contributions although title thereto shall be taken in the name of the Operator.

(b) Preservation of property.--Until the final disposal of any property in which the Government has an interest, the Operator shall preserve and protect same for the best interest of the Government, and any reasonable and necessary cost thereof will be treated as an allowable cost of the exploration. After the completion of the work, termination of the Government's obligation to contribute, or when such property is not being used for the work, the Operator shall not use it elsewhere without the written consent of the Government and without paying a reasonable rental to be fixed by the Government for its proportionate interest.

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

(d) Default of the Operator re disposal.--If within 90 days after the completion of the work, termination of the Government's obligation to contribute to costs, or after the property is no longer needed for the work, the Operator has failed to sell or otherwise liquidate or dispose of any property in which the Government has an interest, the Government, at any time prior to final settlement under the contract, may:

(1) in writing extend the time within which the Operator must dispose of or liquidate the property;

(2) by written notice to the Operator, place upon such property what it determines to be a fair valuation thereof, not in excess of the cost less 1.66 percent per month from the date such property was purchased under this contract to the termination of said 90-day period; and such property shall thereupon be considered and accounted for as having been purchased by the Operator at the valuation so fixed by the Government; and

(3) enter and take possession of such property wherever it may be found, and remove and dispose of it for the joint account of the parties.

ARTICLE 9. Termination of the Government's obligations.--(a) If the Government determines that operations at any time have failed to achieve anticipated results and further work is not justified, the Government may give the Operator written notice thereof, and thereupon:

(1) the Government shall be free of all obligation to contribute to costs not then incurred other than such as may be allowable under the provisions of the contract as necessary and incidental to final accounting and reporting; and

(2) the Operator shall be free of all obligation to prosecute the work other than such as may be necessary and incidental to final accounting and reporting.

(b) If the Government determines that the Operator is in default under the terms of the contract, the Government may give the Operator written notice of such default with a specification of reasonable time within which the default must be cured; and if the Operator fails to cure such default as required, thereupon:

(1) the Government shall be relieved of all obligation to contribute to costs not incurred when the notice was given, other than such as may be allowable by the provisions of the contract as necessary and incidental to final accounting and reporting; and

(2) the Operator shall be free of all obligation to prosecute the work other than such as may be necessary and incidental to final accounting and reporting.

The Government may also avail itself of any other remedy the law may provide for breach of contract, including the right to rescind the contract and to demand repayment of all moneys contributed by the Government under the contract.

(c) The giving of any notice by the Government under the provisions of this Article 9 shall not affect the Government's rights as provided for in the contract with respect to royalty and liens to secure the payment thereof, and such rights shall be fully preserved.

(d) The determinations of the Government are subject to appeal under Article 13.

ARTICLE 10. Notices to be given by the Government may be delivered to the Operator, or may be sent by certified mail addressed to the Operator at his mailing address stated in this contract. If mailed, notices are deemed to have been delivered five days after the date of mailing.

ARTICLE 11. Officials not to benefit.--No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this contract or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE 12. Nondiscrimination in Employment. The provisions respecting nondiscrimination in employment which are required by section 301 of Executive Order 10925, dated March 6, 1961 as amended and supplemented are attached hereto as Exhibit B and are hereby incorporated in and made a part of this contract.

ARTICLE 13. Disputes.--Any dispute arising under this contract which is not disposed of by agreement shall be decided by the Director, U. S. Geological Survey, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Operator. The decision of the Director, U. S. Geological Survey, shall be final and conclusive unless, within 30 days from the date of receipt of such copy, the Operator mails or otherwise furnishes to the Director, U. S. Geological Survey, a written appeal addressed to the Secretary of the Interior. The decision of the Secretary or his duly authorized representative for the determination of such appeals shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or not supported by substantial evidence.

The term "Director, U. S. Geological Survey," as used herein includes his duly authorized representative.

ARTICLE 14. Work Hours Act of 1962 - Overtime Compensation.--This contract, to the extent that it is of a character specified in the Work Hours Act of 1962 (Public Law 87-581, 76 Stat. 357-360) and is not covered by the Walsh-Healey Public Contracts Act (41 U.S.C. 35-45), is subject to the following provisions and to all other provisions and exceptions of said Work Hours Act of 1962.

(a) Overtime requirements.--No Operator or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any laborer or mechanic to be employed on such work in excess of eight hours in any calendar day or in excess of forty hours in any workweek unless such laborer or mechanic receives compensation at a rate of not less than one and one-half times his basic rate of pay for all hours worked in excess of eight hours in any such calendar day or in excess of forty hours in any such workweek, as the case may be.

(b) Violations; liability for unpaid wages; liquidated damages.--In the event of any violation of the clause set forth in subparagraph (a) of this paragraph, the Operator and any subcontractor responsible therefor shall be liable to any affected employee for his unpaid wages. In addition, such Operator and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for

liquidated damages. Such liquidated damages shall be computed, with respect to each individual laborer or mechanic employed in violation of the clause set forth in subparagraph (a) of this paragraph, in the sum of $10 for each calendar day on which such employee was required or permitted to work in excess of eight hours or in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in subparagraph (a) of this paragraph.

(c) Withholding for unpaid wages and liquidated damages.--The U. S. Geological Survey may withhold or cause to be withheld, from any moneys payable on account of work performed by the Operator or subcontractor, such sums as may administratively be determined to be necessary to satisfy any liabilities of such Operator or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (b) of this paragraph.

ARTICLE 15. Copeland (Anti-Kickback) Act--Nonrebate of wages.--The regulations of the Secretary of Labor applicable to contractors and subcontractors (29 CFR, Part 3), made pursuant to the Copeland Act, as amended (40 U. S. C. 276c) and to aid in the enforcement of the Anti-Kickback Act (18 U. S. C. 874) are made a part of this contract by reference. The Operator will comply with these regulations and any amendments or modifications thereof and will be responsible for the submission of affidavits required of independent contractors thereunder. The foregoing shall apply except as the Secretary of Labor may specifically provide for reasonable limitations, variations, tolerances, and exemptions.

ARTICLE 16. Changes and added provision.--
The Government shall not make or be obligated to make any contribution to the cost of work performed under this contract until the Operator has submitted an adequate performance bond in the penal sum of $47,725.00, and the bond has been approved by the Government.

Executed in ~~quintuplicate~~ quadruplicate the day and year first above written.

THE UNITED STATES OF AMERICA

HICKS DOME ACCOUNT
(Operator)

By [signature]
Title General Partner

By [signature]
Title General Partner

By [signature]
Title General Partner

Acting Assistant
By Director for Administration
U. S. Geological Survey

9/20/72 Martin
Gamb 9/20/72
App'd Sol. Off.
Kirkemo
E Towber 9/21
Allers 9/22
Sauer 9/25

I, _____, certify that I am the
(Name)

_____ secretary of the corporation named as Operator herein; that

_____, who signed this contract on behalf of the Operator, was then
(Name)

_____ of said corporation; that said contract was duly signed for
(Title)

and in behalf of said corporation by authority of its governing body, and is within the scope of its corporate powers.

[CORPORATE SEAL]

EXPLORATION CONTRACT

HICKS DOME ACCOUNT
OME-6873

ANNEX I

The land, including all rights pertaining thereto, referred to in Article 2 of the Contract consists of eight contiguous tracts of leased land or mineral rights thereto totalling approximately 615 acres in section 25, T. 11 S., R. 7 E., and sections 30 and 31, T. 11 S., R. 8 E., Third Principal Meridian, Hardin County, Illinois. It is shown on Figure 1 entitled, "Map showing leased land and proposed drill holes, Hicks Dome Account, Hardin County, Illinois," which is attached and made part hereof.

Date of lease or deed	Acres	Parties to lease or deed	Description
March 20, 1970	160	First State Bank of Elizabethtown, Illinois, lessor, Industrial Minerals Exploration Co., lessee.	E-1/2 NE-1/4 sec. 25, T. 11S., R.7E., and W-1/2 NW-1/4, Sec. 30, T. 11 S., R. 8 E.
March 13, 1971	79.543	Mabel A. Pankey, grantor Industrial Minerals Exploration Co., grantee. (17/21st interest in tract)	NE-1/4 NW-1/4 and SE-1/4 NW-1/4, Sec. 30, T. 11 S., R. 8 E., less a parcel containing approximately 0.457 acre excepted in lease
July 30, 1971		Etta Irby and Iley "Doc" Pankey, lessors, Antaeus Resources Corp., lessee. (4/21st interest in tract)	Same as above
March 12, 1970	40	Florence F. Loyd, Fluorine Loyd, S. D. Loyd, Beulah Loyd, Marybelle L. McLin, W. R. McLin, lessors, Industrial Minerals Exploration Co., lessee.	SW-1/4 NE-1/4 sec. 30, T. 11 S, R. 8 E.,less a parcel containing approximately 0.45 acre excepted in lease
Feb. 18, 1972	61.5	William L. Hamp, Applena Hamp, James E. Hamp, Diane K. Hamp, Franklin E. Hamp, and Mary H. Hamp, lessors, Antaeus Resources Corp., lessee.	N-1/2 NW-1/4 SW-1/4 Sec. 30, and portion of E-1/2 SW-1/4 sec. 30, T. 11 S., R. 8 E.

Date of lease or deed	Acres	Parties to lease or deed	Description
April 14, 1970	40	Lola Ewell Fredricks, Jack L. Fredricks, and Sophia Coy, lessors, Industrial Minerals Exploration Co., lessee	N-1/2 SW-1/4, SW1/4 and S-1/2 NW-1/4 SW-1/4 sec. 30, T. 11 S., R. 8 E.
March 9, 1970	20	Emma D. Jenkins, Eulala Wunderlich and Fred Wunderlich, lessors, Industrial Minerals Exploration Co., lessee	Portion of E-1/2 SW-1/4 sec. 30, T. 11 S., R. 8 E.
May 14, 1971	90	Edwin E. Rose, Gladys Rose, Thomas Rose, Vivian Rose, Veloise Zeller, William Zeller, Maude E. Williams and Virgil H. Williams, lessors, Antaeus Resources Corp., lessee.	N-1/2 SE-1/4, sec. 30, and E-1/4 NE-1/4 SW-1/4 sec. 30, T. 11 S., R. 8 E.
Feb. 22, 1972	105	J. J. Coan Co., Inc., International Fastener Research Corp., J. D. Quarant, Allene B. Quarant, lessors, Antaeus Resources Corp., lessee	S-1/2 SE-1/4 sec. 30, T. 11 S., R. 8 E. except the north 15 acres of SE-1/4 SE-1/4; and the NW-1/4 NE-1/4 sec. 31, T. 11 S., R. 8 E.

Copies of the leases, deed of mineral interest and subsequent assignments are contained in the docket of this Contract and are incorporated herein by reference.

The Operator is in possession of these parcels of land or mineral rights under terms of an Agreement dated May 10, 1971, between Hicks Dome Account and Antaeus Resources Corporation, a copy of which is contained in the docket of this Contract and is incorporated herein by reference.

It is agreed that the requirements for payment of royalty to the Government on mineral production set forth in Article 7 of this Contract shall not apply to any mineral production which results from mining operations conducted on the 80-acre portion of the Rose-Zeller-Williams tract located in the NW-1/4 SE-1/4, section 30, T. 11 S., R. 8 E., above the 200 foot level below the surface. It is further agreed that mineral production resulting from mining operations conducted below the 200 foot level shall be subject to payment of royalty as required by Article 7.

In the event the Operator or any subsidiary thereof at any time during the period expiring fifteen years from the date of this Contract acquires any right, title or interest in or to any land situated within one thousand (1000) feet of the heavy boundary lines shown on Figure 1 previously referred to the Operator shall promptly notify the Government of such acquisition and furnish a description of the land, the acreage involved and the nature of the right, title or interest acquired, maps and such other data as the Government may require, and such land automatically shall become subject to the provisions of this Contract as of the date of acquisition.

With respect to any land which is subject to this Contract, the Operator may at any time not exceeding six months after the date of completion of the exploration work or termination thereof report and certify to the Government the following:

(a) That the land specified has no known value for mineral production; and

(b) That the Operator has surrendered or otherwise disposed of all its right, title, and interest in such land without consideration therefore other than relief from the cost of maintaining such right, title, or interest.

If, upon receipt of such report and certification, the Government is satisfied with the representations and showing made by the Operator an amendment shall be prepared and executed deleting such land from the land referred to in Article 2 and listed in this Annex I. Upon execution of an amendment such land shall be freed from any obligation under the Contract, and withdrawn from the land described in Annex I. However, should the Operator or any subsidiary thereof at any time reacquire any right, title, or interest in land withdrawn from this contract before the expiration of fifteen (15) years from the date of the Contract, the Operator or any subsidiary thereof shall promptly notify the Government of such reacquisition and such land automatically shall become subject to the provisions of this Contract as of the date of reacquisition.

A Performance Bond in lieu of Consent to Lien and Subordination Agreements is attached and made a part hereof.

BOND NO. S-707585

STANDARD FORM 25
JUNE 1967 EDITION
GENERAL SERVICES ADMINISTRATION
FED. PROC. REG. (41 CFR) 1-16.801

PERFORMANCE BOND

(See Instructions on reverse)

DATE BOND EXECUTED *(Must be same or later than date of contract)* 9-29-72

PRINCIPAL *(Legal name and business address)*
Gilbert Kerlin, Francis Goelet and Robert G. Goelet, doing business as Hicks Dome Account
c/o 53 Wall Street New York, NY

TYPE OF ORGANIZATION *("X" one)*
☐ INDIVIDUAL ☒ PARTNERSHIP
☐ JOINT VENTURE ☐ CORPORATION

STATE OF INCORPORATION

SURETY(IES) *(Name(s) and business address(es))*
AEtna Insurance Company
95 Wall Street
New York, N. Y.

PENAL SUM OF BOND

MILLION(S)	THOUSAND(S)	HUNDRED(S)	CENT(S)
	47	725	

CONTRACT DATE: SEP 26 1972

CONTRACT NO.: OME 2306

KNOW ALL MEN BY THESE PRESENTS, That we, the Principal and Surety(ies) hereto, are firmly bound to the United States of America (hereinafter called the Government) in the above penal sum for the payment of which we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally: *Provided,* That, where the Sureties are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety, but if no limit of liability is indicated, the limit of liability shall be the full amount of the penal sum.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal entered into the contract identified above;

NOW, THEREFORE, if the Principal shall:

(a) Perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the Government, with or without notice to the Surety(ies), and during the life of any guaranty required under the contract, and shall also perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the Surety(ies) being hereby waived; and

(b) If the said contract is subject to the Miller Act, as amended (40 U.S.C. 270a-270e), pay to the Government the full amount of the taxes imposed by the Government which are collected, deducted, or withheld from wages paid by the Principal in carrying out the construction contract with respect to which this bond is furnished; then the above obligation shall be void and of no effect.

IN WITNESS WHEREOF, the Principal and Surety(ies) have executed this performance bond and have affixed their seals on the date set forth above.

PRINCIPAL

Signature(s)	1. Gilbert Kerlin (Seal)	2. FG Francis Goelet 3. RG Robert G. Goelet (Seal)	Corporate Seal
Name(s) & Title(s) *(Typed)*	1.	2.	

INDIVIDUAL SURETY(IES)

Signature(s)	1. (Seal)	2. (Seal)
Name(s) *(Typed)*	1.	2.

CORPORATE SURETY(IES)

SURETY A	Name & Address	AEtna Insurance Company 95 Wall Street NY NY	STATE OF INC. Conn.	LIABILITY LIMIT	Corporate Seal
	Signature(s)	1. William J. Flaherty	2.		
	Name(s) & Title(s) *(Typed)*	1. William J. Flaherty, Attorney-In-Fact	2.		

25-105

(3) cts.

CORPORATE SURETY(IES) (Continued)					
SURETY B	Name & Address		STATE OF INC.	LIABILITY LIMIT	*Corporate Seal*
	Signature(s)	1.	2.		
	Name(s) & Title(s) *(Typed)*	1.	2.		
SURETY C	Name & Address		STATE OF INC.	LIABILITY LIMIT	*Corporate Seal*
	Signature(s)	1.	2.		
	Name(s) & Title(s) *(Typed)*	1.	2.		
SURETY D	Name & Address		STATE OF INC.	LIABILITY LIMIT	*Corporate Seal*
	Signature(s)	1.	2.		
	Name(s) & Title(s) *(Typed)*	1.	2.		
SURETY E	Name & Address		STATE OF INC.	LIABILITY LIMIT	*Corporate Seal*
	Signature(s)	1.	2.		
	Name(s) & Title(s) *(Typed)*	1.	2.		
SURETY F	Name & Address		STATE OF INC.	LIABILITY LIMIT	*Corporate Seal*
	Signature(s)	1.	2.		
	Name(s) & Title(s) *(Typed)*	1.	2.		
SURETY G	Name & Address		STATE OF INC.	LIABILITY LIMIT	*Corporate Seal*
	Signature(s)	1.	2.		
	Name(s) & Title(s) *(Typed)*	1.	2.		

BOND PREMIUM ▶	RATE PER THOUSAND	TOTAL
	$ 10. per M.	$ 1431.00

INSTRUCTIONS

1. This form is authorized for use in connection with contracts for construction work or the furnishing of supplies or services. There shall be no deviation from this form without approval by the Administrator of General Services.

2. The full legal name and business address of the Principal shall be inserted in the space designated "Principal" on the face of this form. The bond shall be signed by an authorized person. Where such person is signing in a representative capacity (e.g., an attorney-in-fact), but is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved, evidence of his authority must be furnished.

3. (a) Corporations executing the bond as sureties must be among those appearing on the Treasury Department's list of approved sureties and must be acting within the limitations set forth therein. Where more than a single corporate surety is involved, their names and addresses (city and State) shall be inserted in the spaces (Surety A, Surety B, etc.) headed "CORPORATE SURETY(IES)", and in the space designated "SURETY(IES)" on the face of this form only the letter identification of the Sureties shall be inserted.

(b) Where individual sureties execute the bond, they shall be two or more responsible persons. A completed Affidavit of Individual Surety (Standard Form 28), for each individual surety, shall accompany the bond. Such sureties may be required to furnish additional substantiating information concerning their assets and financial capability as the Government may require.

4. Corporations executing the bond shall affix their corporate seals. Individuals shall execute the bond opposite the word "Seal"; and, if executed in Maine or New Hampshire, shall also affix an adhesive seal.

5. The name of each person signing this performance bond should be typed in the space provided.

U.S. GOVERNMENT PRINTING OFFICE : 1967 O—255-154 (80G)

ÆTNA INSURANCE COMPANY

OF HARTFORD, CONNECTICUT

POWER OF ATTORNEY

Know all Men by these Presents, That ÆTNA INSURANCE COMPANY, a corporation created by and existing under the laws of the State of Connecticut, having its principal office in the City of Hartford, State of Connecticut, does hereby nominate, constitute and appoint

William J. Flaherty or George P. Symonds or Theodore A. Bauman or H. F. Tame of New York, N. Y.

its true and lawful Attorney-in-Fact, with full power and authority hereby conferred to make, sign, execute, acknowledge and affix the Corporate Seal of the Corporation, as Surety, as its act and deed, any and all bonds and undertakings of suretyship, recognizances or other written obligations in the nature thereof and to bind ÆTNA INSURANCE COMPANY thereby as fully and to the same extent as if such bond was signed by the duly authorized officers of ÆTNA INSURANCE COMPANY, and all the acts of said attorney, pursuant to the authority herein given, are hereby ratified and confirmed.

This power of attorney is granted under and by the authority of the following applicable paragraphs of ARTICLE 11 of the BYLAWS of the company:

The president or a vice president may execute fidelity and surety bonds and other bonds, contracts of indemnity, recognizances, stipulations, undertakings, receipts, releases, deeds, releases of mortgages, contracts, agreements, policies, notices of appearance, waivers of citation and consents to modifications of contracts as may be required in the ordinary course of business or by vote of the directors, and such execution may be attested where necessary or desirable and the seal of the company where necessary or desirable may be affixed to the specific instrument by a secretary or an assistant secretary.

The president or a vice president may with the concurrence of a secretary or an assistant secretary appoint and authorize an attorney-in-fact or any other person to execute on behalf of the company any such instruments and undertakings and to affix the seal of the company thereto where necessary or desirable.

The attorneys-in-fact under the preceding paragraphs of this article are authorized and empowered to certify to a copy of any of the bylaws of the company or any resolutions adopted by the directors or to the financial statement of the condition of the company and to affix the seal of the company thereto where necessary or desirable.

This power of attorney is signed and sealed by facsimile under and by the authority of the following Resolution adopted by the Board of Directors of the ÆTNA INSURANCE COMPANY at a meeting duly called and held on the 11th day of February, 1966.

RESOLVED THAT, in the execution, attestation and sealing of any instrument or undertaking authorized by Article 11 of the Bylaws, the facsimile signatures of the officers and the facsimile seal of the Company affixed thereto shall be valid and binding upon the Company.

IN WITNESS WHEREOF, ÆTNA INSURANCE COMPANY has caused these presents to be signed by its President and its Secretary and its corporate seal to be hereunto affixed, attested by its Secretary, this 3rd day of March, 1972.

ÆTNA INSURANCE COMPANY

F. D. Watkins
President

Attest: J. J. Murphy
Secretary

HARTFORD ÆTNA INSURANCE CO. CONNECTICUT

J. J. Murphy
Secretary

State of Connecticut,
City of Hartford, } ss.

On this 3rd day of March, 1972, before me, the undersigned, a Notary Public in and for the City of Hartford, in the State of Connecticut, duly commissioned and qualified, came F. D. WATKINS, President, and J. J. MURPHY, Secretary, of ÆTNA INSURANCE COMPANY, to me personally known to be the individuals and officers described in, and who executed, the preceding instrument, and they each acknowledged the execution of the same and being by me duly sworn, severally, and each for himself deposeth and saith, that they are the said officers of the Corporation aforesaid, and that the Seal affixed to the preceding instrument is the Corporate Seal of said Corporation, and that the said Corporate Seal and their signatures as such officers were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporation.

OLIVE E. MACKEY NOTARY PUBLIC HARTFORD, CONN.

Olive E. Mackey
Notary Public

My commission expires April 1, 1977.

State of Connecticut,
City of Hartford, } ss.

CERTIFICATE

I, the undersigned, Secretary of the ÆTNA INSURANCE COMPANY, a Connecticut corporation, DO HEREBY CERTIFY that the above and foregoing Power of Attorney remains in full force and has not been revoked; and, furthermore, that the above quoted applicable paragraphs of ARTICLE 11 of the BYLAWS of the company, as set forth in the Power of Attorney, are now in force.

Signed and Sealed at Hartford, Connecticut, this 29 day of SEPTEMBER, 19 72

HARTFORD ÆTNA INSURANCE CO. CONNECTICUT

J. J. Murphy
Secretary

State of New York,
County of New York,
City of New York, } ss.

On this 29 day of SEPTEMBER, 19 72 before me personally appeared WILLIAM J. FLAHERTY KEARNY, to me known, who being by me duly sworn, did depose and say that he resides in HUDSON CO. NJ; that he is Attorney-in-Fact of ÆTNA INSURANCE COMPANY, the corporation described in and which executed the foregoing instrument; that he knows the seal of the said Corporation; that the seal affixed to such instrument is such corporate seal and was attached thereto by authority granted under the By-Laws of said Corporation, and that he signed his name thereto as Attorney-in-Fact by authority granted under the By-Laws of said Corporation, and that the said Corporation has received from the Superintendent of Insurance of the State of New York a certificate of solvency and of its sufficiency as surety or guarantor under Section 327, Chapter 882 of the Laws of 1939, being Chapter 28 of the Consolidated Laws of the State of New York for the year 1939, and as amended and that such certificate has not been revoked.

(SEAL)

(N.Y.)

ROSE ORBACH
NOTARY PUBLIC, State of New York
No. 24-9207150
Qualified in Kings County
Certificate filed in New York County
Commission Expires

.....

ÆTNA INSURANCE COMPANY

Financial Statement December 31, 1971

ASSETS

Bonds	$362,344,263
Stocks	176,216,086
Real Estate	4,117,360
Cash on Hand and in Bank	3,969,581
Premiums in Course of Collection	50,568,813
Interest Accrued	5,956,644
Other Assets	23,333,345
TOTAL	$626,506,092

LIABILITIES

Reserve for Unearned Premiums	$207,239,774
Reserve for Losses and Loss Expenses	217,210,924
Reserve for Taxes	7,367,265
Reserve for Dividends	0
Funds Held under Reinsurance Treaties	1,539,533
Other Liabilities	28,248,177
TOTAL LIABILITIES	$461,605,673
Capital: 1,000,000 Shares, $10 Par Value	$ 10,000,000
Voluntary Security Valuation Reserve	63,589,122
Surplus (Unassigned)	91,311,297
SURPLUS TO POLICYHOLDERS	$164,900,419
TOTAL	$626,506,092

I, L. B. Bogart, Vice President of ÆTNA INSURANCE COMPANY, certify that the foregoing is a true and correct statement of the financial condition of the Company as of December 31, 1971.

L. B. Bogart
Vice President

ON BEHALF OF.....

IN FAVOR OF.....

Ætna Insurance Company
HARTFORD, CONNECTICUT

PRINTED IN U.S.A.

Ætna INSURANCE COMPANY
YOUR Independent Insurance AGENT

Proven Symbols of Professional Service

Ætna Insurance Company
55 ELM STREET
HARTFORD, CONNECTICUT 06115

EXPLORATION CONTRACT

HICKS DOME ACCOUNT
OME-6873

EXHIBIT A

The purpose of the project is to explore by diamond core drilling for fluorspar-beryllium-rare earths-thorium-niobium ores in mineralized breccias in the Hicks Dome cryptovolcanic structure.

General Provisions

A bulldozer no smaller than a Caterpillar D-4 shall be used to prepare access roads and drill sites.

All drill holes shall be cased as necessary and completed not less than standard BX (nominal diameter 1-5/8 inches) core size or equivalent wire line size.

The Government will not contribute to the cost of holes abandoned without prior Government approval confirmed in writing, casing left in the hole at the request of the Operator, or holes drilled closer than 100 feet to the outer boundary of the project area.

All drill core shall be stored in boxes identified as to hole number, with markers in the core sections indicating the depths represented.

Significantly mineralized core recovered from hole intervals not exceeding 5 feet shall be split and one split assayed for fluorspar. The remaining core shall be stored in proper sequence with the unsampled core. The stored core shall be available for additional analyses as necessary and for Government inspection and possible use. With prior Government approval, the Operator may dispose of the stored core.

Preliminary assays of the fluorspar content of sampled intervals may be used to select samples for subsequent more detailed and confirmatory analyses of the fluorspar content, and to determine the content of beryllium, lead, zinc, rare earths, thorium, and niobium.

True copies of certificates of assay or analysis of all samples analyzed shall be submitted with the Operator's monthly reports, which shall include a log of the drilling completed and the location of all samples collected and assayed or analyzed.

The Operator shall provide such supervision, labor, and technical services as may be required to complete the work in a satisfactory manner.

Description of the Work

The work shall consist of bulldozing access roads, preparing drill sites, and core drilling four vertical diamond drill holes, one at each of four surface sites, for an estimated drilling total of 10,000 feet. The approximate locations of the first holes to be drilled, OME-1 and OME-2, are shown on Figure 1. The location and extent of the third and fourth drill holes shall be subject to prior Government approval confirmed in writing. If it should be determined that any existing drill holes should be extended, reentry may be made and the hole deepened by additional drilling, either on a vertical course or directed by wedging to a predetermined course.

No drill hole shall exceed 3,000 feet in depth, and all holes are to be directed into breccia zones.

Upon completion of the work, the Operator shall restore to its approximate original condition any land surface where land use has been impaired by the project work.

Estimated Costs of the Work

Actual Costs

Category (1) Independent Contracts

Bulldozing access roads and drill sites 60 hours at $12.50/hr	$ 750.00
Diamond drilling from surface sites 10,000 feet	56,200.00

Depth Feet	Rate per Foot NXWL	Rate per Foot BXWL
0-300 (rotary non-coring)	$3.90	
0-500 core drilling	4.40	$4.20
500-1,000	4.80	4.60
1,000-1,500	5.40	5.20
1,500-2,000	6.30	6.10
2,000-2,500	7.50	7.30
2,500-3,000	9.00	8.80

Bit costs (diamond loss) 10,000 feet at $0.50/ft.	5,000.00

Reaming, 1,200 feet at $3.00/ft.	$ 3,600.00	
Standby time, 160 hours at $14.00/hr.	2,240.00	
Cement, drill muds, additives 250 sacks materials at driller's invoice prices, but not exceeding $9.00/100 lb. for cement, $5.50/100 lbs. for drill mud, $16.00/100 lbs. for caustic soda, or $65.00/50 lb. for Cellex.	2,000.00	
Cementing and redrilling 80 hours at $16.00/hr.	1,280.00	
Water supply by pump or truck 6 months at $300.00/month	1,800.00	
Lost casing in completed holes, 1,200 feet NX casing at $3.50/foot BX casing at $2.50/foot	4,200.00	
Total Category (1)		$77,070.00
Category (2) Personal Services		
None except:		
1 Supervisor-geologist, 7 months at $1,250.00 month	$ 8,750.00	
1 Sampler, 7 months at $500.00/month	3,500.00	
Total Category (2)		$12,250.00
Category (3) Operating Materials and Supplies		
Road metal, 200 tons at $2.00 ton	$ 400.00	
Core boxes, 880 at $1.25/box	1,100.00	
Sample bags, 300 at $0.30/bag	90.00	
Total Category (3)		$ 1,590.00

Category (7) Miscellaneous

Office and accounting services, including part time secretarial services, printing, supplies, postage, and telephone, 7 months at $100.00/month	$ 700.00	
Transportation of samples, 400 at $0.60/each	240.00	
Analytical work		
Fluorspar assays, specific ion electrode method 400 at $2.50/sample	1,000.00	
Wet assays ($Ca\ F_2$, Pb, Zn, and others) 400 samples, at ranging prices per determination	1,600.00	
Spectrographic and X-ray emission analyses (multiple components) 100 samples at $10.00/sample	1,000.00	
Total Category (7)		$ 4,540.00
Total Estimated Cost of the Project		$95,450.00
Government Participation at 50 percent		$47,725.00

EXHIBIT B

EQUAL OPPORTUNITY CLAUSE (FEDERALLY ASSISTED CONSTRUCTION)

EQUAL OPPORTUNITY (APPLICANT)

(a) The applicant hereby agrees to incorporate, or cause to be incorporated, into any contract for construction work, or modification thereof, as defined in the rules and regulations of the Secretary of Labor at 41 CFR, Chapter 60, which is paid for, in whole or in part, with funds obtained from the Federal Government or borrowed on the credit of the Federal Government pursuant to grant, contract, loan, insurance, or guarantee, or undertaken pursuant to any Federal program involving such grant, contract, loan, insurance, or guarantee, the following Equal Opportunity (Federally Assisted Construction) clause:

EQUAL OPPORTUNITY [1] (FEDERALLY ASSISTED CONSTRUCTION)

During the performance of this contract, the Contractor agrees as follows:

(a) The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, creed, color, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this Equal Opportunity (Federally Assisted Construction) clause.

(b) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, or national origin.

(c) The Contractor will send to each labor union or representative of workers, with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) The Contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(e) The Contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(f) In the event of the Contractor's noncompliance with the Equal Opportunity (Federally Assisted Construction) clause of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended, in whole or in part, and the Contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as provided by law.

(g) The Contractor will include this Equal Opportunity (Federally Assisted Construction) clause in every subcontract or purchase order unless exempted by the rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: *Provided, however,* That in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

(b) The applicant further agrees that it will be bound by the above Equal Opportunity (Federally Assisted Construction) clause with respect to its own employment practices when it participates in federally assisted construction work: *Provided, however,* That if the applicant so participating is a State or local government, the above Equal Opportunity (Federally Assisted Construction) clause is not applicable to any agency, instrumentality, or subdivision of such government which does not participate in work on or under the contract.

(c) The applicant agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of Contractors and subcontractors with the Equal Opportunity (Federally Assisted Construction) clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance.

(d) The applicant further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order No. 11246 of September 24, 1965, with a Contractor debarred from, or who has not demonstrated eligibility for, Government contracts and Federally assisted construction contracts pursuant to the Executive order and will carry out such sanctions and penalties for violation of the Equal Opportunity (Federally Assisted Construction) clause as may be imposed upon Contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D, of the Executive order. In addition, the applicant agrees that if it fails or refuses to comply with these undertakings the administering agency may take any or all of the following actions: Cancel, terminate, or suspend, in whole or in part, this grant [contract, loan, insurance, guarantee]; refrain from extending any further assistance to the applicant under the program with respect to which its failure or refusal occurred until satisfactory assurance of future compliance has been received from such applicant; and refer the case to the Department of Justice for appropriate legal proceedings.

---

[1] On and after Oct. 14, 1968, the term "race, color, religion, sex, or national origin" is substituted for the term "race, creed, color, or national origin," as provided by Executive Order No. 11375, Oct. 13, 1967 (32 F.R. 14303).

EXHIBIT B -1

CERTIFICATION OF NONSEGREGATED FACILITIES

The undersigned hereby certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. He certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location under his control, where segregated facilities are maintained. He further agrees that a breach of this certification is a violation of the Equal Opportunity clause in OME Exploration contracts. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. He further agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause; that he will retain such certifications in his files; and that he will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods):

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENT FOR CERTIFICATIONS OF NONSEGREGATED FACILITIES

A Certification of Nonsegregated Facilities must be submitted prior to the award of a subcontract exceeding $10,000 which is not exempt from the provisions of the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

Joseph C. Pont
Signature

Geologist
Title

Sept. 8, 1972
Date

EXHIBIT C

CERTIFICATION OF NONSEGREGATED FACILITIES

(Applicable to federally assisted construction contracts and related subcontracts exceeding $10,000 which are not exempt from the Equal Opportunity clause.)

The federally assisted construction contractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally assisted construction contractor certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally assisted construction contractor agrees that a breach of this certification is a violation of the Equal Opportunity clause in this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. The federally assisted construction contractor agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certifications in his files.

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

Signature

Manager - Bid Division

Title

9-11-72

Date

AGREEMENT

between

HICKS DOME ACCOUNT

and

ANTAEUS RESOURCES CORPORATION

Dated: May 10, 1971

GASPERINI, KOCH & SAVAGE
277 PARK AVENUE
NEW YORK, N. Y. 10017

THIS AGREEMENT, made this 10th day of May, 1971, between HICKS DOME ACCOUNT, a partnership organized under the laws of the State of New York with offices at 53 Wall Street, New York, New York 10005 ("HDA") and ANTAEUS RESOURCES CORPORATION, a Delaware corporation with offices at 345 Park Avenue, New York, New York 10022 ("Antaeus").

WITNESSETH:

WHEREAS, Antaeus holds under mining leases certain leasehold interests in properties located in Hardin County, Illinois (the "Properties"), as more particularly set forth in Schedule "A" attached hereto and made a part hereof; and

WHEREAS, the parties wish to have HDA conduct further exploration and development of the Properties under the terms and conditions hereinafter set forth;

NOW, THEREFORE, in consideration of the mutual covenants herein contained, it is agreed by and between the parties as follows:

1. Interests of Antaeus. Antaeus represents that it holds under mining leases the Properties listed in Schedule "A" hereto, located in the Hicks Dome area of Hardin County, Illinois, and that such leases are in full force and effect according to their

terms. A copy of each of the leases and related assignments has been delivered separately to HDA.

2. Lease from Antaeus to HDA. Antaeus hereby leases its interest in the Properties to HDA for a period of ten (10) years from the date of this Agreement, and for so long thereafter as mining operations are being conducted on the Properties by HDA or any successor in interest thereto. During the period of such lease, Antaeus hereby grants to HDA the exclusive right to examine, explore, develop, mine and extract from the Properties the ores and minerals contained therein. HDA may remove from the Properties such sample of ore and minerals as are in its opinion necessary or desirable to enable it to evaluate the Properties to determine whether it is suitable for a commercial mining operation.

3. Obligations of HDA. During the period of this Agreement, HDA hereby assumes all of the obligations of Antaeus with respect to the Properties, including royalty or rental payments to the landowners of the Properties as provided in each of said leases.

4. Expenditures by HDA. HDA agrees to expend at least $50,000 in the exploration and development of the Properties. Although HDA is not required to expend any monies in excess of $50,000, it is contemplated that HDA will expend a cumulative total

of $250,000 in the exploration and development of the Properties by the end of a period of five years from the date of this Agreement, and a cumulative total of $750,000 in the exploration and development of the Properties by the end of a period of ten years from the date of this Agreement. It is understood that the provisions of this Paragraph 4 shall no longer apply at such time as HDA has elected to place the Properties into production.

5. Reconveyance. At any time during the period of this Agreement after HDA has expended at least $50,000 but less than $150,000, HDA may notify Antaeus in writing that it does not wish to proceed with further exploration and development of the Property. In such event, HDA will reconvey its interests in the Properties to Antaeus, and the parties will have no further obligation to each other under this Agreement. In any event HDA will reconvey its interests in the Properties to Antaeus if it has not expended $250,000 in exploration and development on the Properties by the end of a period of five years from the date of this Agreement; provided, however, that if at least $150,000 has been expended by HDA in exploration and development, HDA shall retain a one-third (1/3) net profits interest in the Properties being reconveyed.

6. Reconveyance Subject to Net Profits Interest. At such time as HDA has spent $150,000 pursuant to the provisions of

Paragraph 4, it shall have the right:

(a) to reconvey its interest in the Properties to Antaeus, retaining a one-third (1/3) net profits interest in the Properties in recognition of the expenditures which HDA has made; or

(b) to proceed to go forward with the exploration and development of the Properties.

7. Options of HDA. If HDA proceeds to go forward with the exploration and development of the Properties, as provided in Paragraph 6(b), it shall have the right:

(a) to place the Properties into production and pay Antaeus a royalty of either (i) 10% of gross receipts from the Properties ("gross receipts" for the purpose of this clause to mean the amount of money received from purchasers, net of royalty payments to landowners, from the sale of ores, minerals, concentrates or any other form in which the minerals or materials, whether metallic or non-metallic, produced from the Properties are sold, after deduction of all transportation costs paid by the seller in delivering the products from the Properties to the purchaser, sampling and assaying costs paid by the seller), or at the option of HDA (ii) twenty-four (24%) percent of the net profits from the Properties; or

(b) to elect to spend additional monies in exploration and development of the Properties.

8. If HDA elects to expend additional monies in exploration

and development of the Properties as provided in Paragraph 7(b), at any time after HDA has spent at least $300,000, it shall have the right:

(a) to elect to place the Properties into production and pay Antaeus royalties therefrom according to the following schedule:

10% of the net profits from the production of the Properties, if the production is 1,000 tons or more of ore per day;

14% of the net profits from the production of the Properties if the production is from 400 to 999 tons of ore per day; and

18% of the net profits from the production of the Properties if the production is less than 400 tons per day; or

(b) place the Properties into a corporation or joint venture with Antaeus, in which the percentage ownership of HDA will be that percentage obtained by dividing the expenditures of HDA to date by the sum of (1) the expenditures of HDA to date, plus (2) $200,000.

9. Exchange of Information. It is understood and agreed that the parties will prepare and deliver and exchange such additional or more detailed documents which may be necessary or

desirable to carry out the purposes of this agreement, including the mutual exchange of all reports, data, essays and other information relating to the research, exploration, drilling and sampling of the Properties.

10. Notices. All notices required to be given pursuant to this Agreement to Antaeus shall be sent c/o John L. Carroll, 345 Park Avenue, New York, New York 10022, or to such other person and address as may be designated in writing by Antaeus. Any notices to HDA shall be sent to HDA, c/o Gilbert Kerlin, Esq., 53 Wall Street, New York, New York 10005, or to such other person and address as HDA may designate in writing.

11. Assignment. The rights and obligations under this Agreement may be assigned by either party hereto, but it is understood that the assignment of any rights of either party hereunder shall not be assigned without the assignment to and assumption by the same third party of all of the obligations of the assigning party.

12. Governing Law. This Agreement shall be construed and enforced according to the laws of the State of New York.

IN WITNESS WHEREOF, the parties have hereunto set their

hands as of the date and year above written.

HICKS DOME ACCOUNT

By _____
A Partner

ANTAEUS RESOURCES CORPORATION

By _____
Vice President

SCHEDULE "A"

1. MINING LEASE entered into on March 20, 1970 by and between FIRST STATE BANK OF ELIZABETHTOWN, Hardin County, Illinois ("Lessor") and INDUSTRIAL MINERALS EXPLORATION COMPANY ("Lessee") of certain mining properties belonging to Lessor and containing in the aggregate 160 acres, more or less, situated in Hardin County, Illinois, the interest of INDUSTRIAL MINERALS EXPLORATION COMPANY as Lessee having been assigned to ANTAEUS RESOURCES CORPORATION on January 20, 1971.

2. MINING LEASE AND OPTION TO PURCHASE entered into on March 9, 1970 by and between EMMA D. JENKINS, EULALA WUNDERLICH and FRED WUNDERLICH, ("Lessor") and INDUSTRIAL MINERALS EXPLORATION COMPANY ("Lessee") of certain mining properties belonging to Lessor and containing 20 acres, more or less, situated in Hardin County, Illinois, the interest of INDUSTRIAL MINERALS EXPLORATION COMPANY as Lessee having been assigned to ANTAEUS RESOURCES CORPORATION on January 20, 1971.

3. MINING LEASE entered into on April 14, 1970 by and between LOLA EWELL FREDRICKS, JACK L. FREDRICKS and SOPHIA COY, ("Lessor") and INDUSTRIAL MINERALS EXPLORATION COMPANY, ("Lessee") of certain mineral properties belonging to Lessor and containing in the aggregate 40 acres, more or less, situated in Hardin County, Illinois, the interest of INDUSTRIAL MINERALS EXPLORATION COMPANY as Lessee having been assigned to ANTAEUS RESOURCES CORPORATION on January 20, 1971.

4. MINING LEASE entered into on March 12, 1970 by and between FLORENCE F. LOYD, FLUORINE LOYD, S. D. LOYD, BEULAH LOYD, MARYBELLE L. McLIN and W. R. McLIN, ("Lessor") and INDUSTRIAL MINERALS EXPLORATION COMPANY, ("Lessee") of certain mineral properties belonging to Lessor, situated in Hardin County, Illinois, the interest of INDUSTRIAL MINERALS EXPLORATION COMPANY as Lessee having been assigned to ANTAEUS RESOURCES CORPORATION on January 20, 1971.

5. LEASE AND AGREEMENT entered into on May 14, 1971, by and between EDWIN E. ROSE, GLADYS ROSE, THOMAS ROSE, VIVIAN ROSE, VELOISE ZELLER, WILLIAM ZELLER, MAUDE E. WILLIAMS and

VIRGIL H. WILLIAMS ("Lessor") and ANTAEUS RESOURCES CORPORATION ("Lessee") of certain mining properties containing in the aggregate 90 acres, more or less, situated in Hardin County, Illinois, recorded April 5, 1971 in Book 8 of Miscellaneous, Page 558.

6. MINING LEASE AND OPTION TO PURCHASE entered into on July 17, 1963, by and between MABEL PANKEY, ETTA IRBY, and AGNES PANKEY ("Lessor") and INDUSTRIAL MINERALS EXPLORATION COMPANY ("Lessee") of certain mining properties belonging to Lessor containing 79 acres, more or less, situated in Hardin County, Illinois, and amendment thereto dated October 17, 1963, the 17/21 interest of the Lessor owned by MABEL PANKEY having been purchased by INDUSTRIAL MINERALS EXPLORATION COMPANY on March 13, 1971, recorded March 15, 1971, in Book 8 of Miscellaneous, Page 550, and assigned to ANTAEUS RESOURCES CORPORATION on April 1, 1971; and the remaining 4/21 interest of INDUSTRIAL MINERALS EXPLORATION COMPANY as Lessee having been assigned to ANTAEUS RESOURCES CORPORATION on January 20, 1971.

7. OIL,GAS AND MINERAL LEASE, entered into on April 1, 1963,by and between JAMES E. HAMP ("Lessor") and TRAIN, CABOT & ASSOCIATES ("Lessee") of certain mining properties belonging to Lessor containing 61 1/2 acres, more or less, situated in Hardin County, Illinois,the interest of TRAIN, CABOT & ASSOCIATES as Lessee having been assigned to INDUSTRIAL MINERALS EXPLORATION COMPANY on May 24, 1963,recorded May 29, 1963, in Book 7 of Miscellaneous, Page 12, and amendments thereto dated September, 1963 and December, 1965, the interest of INDUSTRIAL MINERALS EXPLORATION COMPANY having been assigned to ANTAEUS RESOURCES CORPORATION on January 20, 1971.

SCHEDULE "A"

STATE OF NEW YORK)
) ss.:
COUNTY OF NEW YORK)

On this 10th day of May, 1971, before me personally came JOHN L. CARROLL, to me known, who, being by me duly sworn, did depose and say that he is Vice President of Antaeus Resources Corporation, a Delaware corporation with offices at 345 Park Avenue, New York, New York 10022, the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that it was so affixed by order of the board of directors of said corporation, that the seal affixed to said instrument is such corporate seal, and that he signed his name thereto by like order.

MARSHALL JAY GLUCK
NOTARY PUBLIC, State of New York
No. [illegible] 6755
Qualified in New York County
Certificate Filed in Nassau County
Commission Expires March 30, 1972

Marshall Jay Gluck
Notary Public

STATE OF NEW YORK)
) ss.:
COUNTY OF NEW YORK)

On this 10th day of May, 1971, before me personally came Herbert Kelin, to me known, who, being by me duly sworn, did depose and say that he is the General Partner of Hicks Dome Account, a General Partnership having its principal place of business at 52 Wall Street, New York, New York 10005, and who executed the foregoing instrument, and he duly acknowledged to me that he executed the same as the act and deed of the Partnership.

Marion Bannon
Notary Public

MARION BANNON
Notary Public, State of New York
No. 31-5169913
Qualified in New York County
Commission Expires March 30, 1972

A291 - Statutory Form C. Bargain and Sale Deed, with Covenant against Grantor - Individual.

JULIUS BLUMBERG, INC., LAW BLANK PUBLISHERS
80 EXCHANGE PLACE AT BROADWAY, NEW YORK

THIS IS A LEGAL INSTRUMENT AND SHOULD BE EXECUTED UNDER SUPERVISION OF AN ATTORNEY

This Indenture,

Made the 1st *day of* April *nineteen hundred and* seventy-one

Between

INDUSTRIAL MINERALS EXPLORATION COMPANY, a Limited Partnership organized under the laws of the State of New York, with offices at 345 Park Avenue, New York, New York;

party of the first part,

and

ANTAEUS RESOURCES CORPORATION, a Delaware corporation with offices at 345 Park Avenue, New York, New York

party of the second part,

Witnesseth; *that the party of the first part, in consideration of*

---------- Ten ($10.00) ----------*Dollars,*

lawful money of the United States, and other good and valuable consideration

paid by the party of the second part

does *hereby grant and release unto the party of the second part,*

and assigns forever,

All of the 17/21 undivided interest of the Grantor in and to the ores, minerals, and mineral substances of every kind and character including oil and gas together with the right to mine, remove and produce the same as heretofore reserved by the grantor, in, upon and under the following lands:

"The NE 1/4 of the NW 1/4 (except a parcel described as follows: Commencing at the SE corner of said forty acre tract and from thence running north a distance of one hundred ten (110) feet to a point wereon the south right of way line of the Church Public Road entering from the Hicks Town-Elizabethtown Gravel Public Road intersects the division line between the NW 1/4 of the NE 1/4 and the NE 1/4 of the NW 1/4 and from thence running west twelve degrees (12°) south a distance of one hundred eighty-six and five-tenths (186.5) feet along the south right of way line of said Church Public Road to a point whereon said south right of way line intersects the east right of way line of the Public Gravel Hicks Town-Elizabethtown Road, and from thence running in a general southeasterly direction along the course of the east right of way line of the Public Gravel Hicks Town-Elizabethtown Road to point whereon said east right of way line intersects the division line between the NE 1/4 and the SE 1/4 of the NW 1/4 and from thence running east along the last above mentioned division line a distance of ninety-three and five-tenths (93.5) feet to the point of beginning, containing thirty-one one-hundredths (.31) acres,

Together *with the appurtenances and all the estate and rights of the party of the first part in and to said premises.*

To have and to hold *the premises herein granted unto the party of the second part, and assigns forever.*

And *the said* party of the first part *covenants that* ~~xx~~ it *has not done or suffered anything whereby the said premises have been incumbered in any way whatever.*

The grantor, in compliance with Section 13 of the Lien Law, covenants that the grantor will receive the consideration for this conveyance and will hold the right to receive such consideration as a trust fund to be applied first for the purpose of paying the cost of the improvement and that the grantor will apply the same first to the payment of the cost of the improvement before using any part of the total of the same for any other purpose.

In Witness Whereof, *the party of the first part has hereunto set* its *hand and seal the day and year first above written.*

In presence of:

INDUSTRIAL MINERALS EXPLORATION COMPANY

By ..... *L. S.*
General Partner

..... *L. S.*

..... *L. S.*

..... *L. S.*

County of NEW YORK

On the 1st *day of* April *nineteen hundred and* seventy-one

before me came JOHN LEE CARROLL, personally known

a General Partner of Industrial Minerals Exploration

to me ~~known and known to me to be the individual described in and who executed the foregoing instrument and acknowledged to me that he executed the same.~~

Company, a limited partnership having its principal place of business at 345 Park Avenue, New York, New York 10022, and who executed the foregoing instrument, and duly acknowledged to me that he executed the same as the act and deed of said partnership.

Marshall J. Gluck

Notary Public

MARSHALL JAY GLUCK
NOTARY PUBLIC, State of New York
No. 31-6596700
Qualified in New York County
Certificate Filed in Nassau County
Commission Expires March 30, 1972

State of
County of } ss.:

On the *day of* *nineteen hundred and*

before me came *the subscribing*

witness to the foregoing instrument, with whom I am personally acquainted, who, being by me duly sworn, did depose and say that he resides in

that he knows

to be the individual described in, and who executed the foregoing instrument; that he, said subscribing witness, was present, and saw execute the same; and that he, said witness, at the same time subscribed h name as witness thereto.

Dated, ..., *19*.....

The land affected by the within instrument lies in

RECORD AND RETURN TO

Reserve this space for use of Recording Office.

RIDER

INDENTURE, made the 1st day of April, 1971, between INDUSTRIAL MINERALS EXPLORATION COMPANY, a Limited Partnership organized under the laws of the State of New York, with offices at 345 Park Avenue, New York, New York and ANTAEUS RESOURCES CORPORATION, a Delaware corporation with offices at 345 Park Avenue, New York, New York

"The SE 1/4 of the NW 1/4 (except a parcel described as follows: Commencing at the NE corner of the SE 1/4 of the NW 1/4 and running west a distance of ninety-three and five-tenths (93.5) feet along the division line between the SE 1/4 and the NE 1/4 of the NW 1/4 to a point wereon said division line intersects the east right of way line of the Public Gravel Road running from Hicks Town to Elizabethtown, and from thence running in a general southeasterly direction along the course of the east right of way line of said gravel road a distance of one hundred fifty-six (156) feet to a point whereon said east right of way line intersects the division line between the East and West Halves of the N 1/2 of Section Thirty (30) and from thence running north on the last above mentioned division line a distance of one hundred thirty-seven and five-tenths (137.5) feet to the point of beginning, containing one hundred forty-seven one-thousandths (.147) acres, and also except a tract of land described as follows:
Beginning twelve (12) rods south of the NE corner of the SW 1/4 of the NE 1/4, running south thirteen (13) rods, thence west thirteen (13) rods, thence north thirteen (13) rods, thence east thirteen (13) to the place of beginning, containing one (1) acre, more or less, said last described tract lying and being in said SW 1/4 of the NE 1/4 and said SE 1/4 of the NW 1/4, the part of said last described tract lying in said SE 1/4 of the NW 1/4 being about one-half (1/2) acre, more or less),

all in Section Thirty (30) Township Eleven (11) South, Range Eight (8) East of the Third Principal Meridian, containing in the aggregate seventy-nine and forty-three thousandths (79.043) acres, more or less."

The above described interest of the Grantor was conveyed by MABEL A. PANKEY, a widow, to the Grantor on March 13, 1971, and recorded on March 15, 1971, in Book 8 of Miscellaneous, Page 550.

THIS INDENTURE WITNESSETH, That the Grantor MABLE PANKEY, a widow by death

of the City of Harrisburg in the County of Saline

and State of Illinois FOR AND IN CONSIDERATION of

Good and valuable consideration and One and No/100---------- DOLLARS

in hand paid, CONVEY and WARRANT to INDUSTRIAL MINERALS EXPLORATION COMPANY, A limited Partnership organized under the laws of the State of New York and whose address is 345 Park Avenue, New York, N.Y.

of the of County of and

State of the following described real estate to-wit:

All of the undivided interest of the Grantor in and to the ores, minerals and mineral substances of every kind and character including oil and gas together with the right to mine, remove and produce the same as heretofore reserved by the grantor, in, upon and under the following lands:

"The NE¼ of the NW¼ (except a parcel described as follows: Commencing at the SE corner of said forty acre tract and from thence running north a distance of one hundred ten (110) feet to a point wereon the south right of way line of the Church Public Road entering from the Hicks Town-Elizabethtown Gravel Public Road intersects the division line between the NW¼ of the NE¼ and the NE ¼ of the NW¼ and from thence running west twelve degrees (12°) south a distance of one hundred eighty-six and five-tenths (186.5) feet along the south right of way line of said Church Public Road to a point whereon said south right of way line intersects the east right of way line of the Public Gravel Hicks Town-Elizabethtown Road, and from thence running in a general southeasterly direction along the course of the east right of way line of the Public Gravel Hicks Town-Elizabethtown Road to point whereon said east right of way line intersects the division line between the NE¼ and the SE¼ of the NW¼ and from thence running east along the last above mentioned division line a distance of ninety-three and five-tenths (93.5) feet to the point of beginning, containing thirty-one one-hundredths (.31) acres),

"The SE¼ of the NW¼ (except a parcel described as follows: Commencing at the NE corner of the SE¼ of the NW¼ and running west a distance of ninety-three and five-tenths (93.5) feet along the division line between the SE¼ and the NE¼ of the NW¼ to a point wereon said division line intersects the east right of way line of the Public Gravel Road running from Hicks Town to Elizabethtown, and from thence running in a general southeasterly direction along the course of the east right of way line of said gravel road a distance of one hundred fifty-six (156) feet to a point whereon said east right of way line intersects the division line between the East and West Halves of the N½ of Section Thirty (30) and from thence running north on the last above mentioned division line a distance of one hundred thirty-seven and five-tenths (137.5) feet to to the point of beginning, containing one hundred forty-seven one-thousandths (.147) acres, and also except a tract of land described as follows: Beginning twelve (12) rods south of the NE corner of the SW¼ of the NE¼, running south thriteen (13) rods, thence west thirteen (13) rods, thence north thirteen (13) rods, thence east thirteen (13) to the place of beginning, containing one (1) acre, more or less, said last described tract lying and being in said SW¼ of the NE¼ and said SE¼ of the NW¼, the part of said last described tract lying in said SE¼ of the NW¼ being about one-half (½) acre, more or less),

all in Section Thirty (30) Township Eleven (11) South, Range Eight (8) East of the Third Principal Meridian, containing in the aggregate seventy-nine and forty-three thousandths (79.043) acres, more or less."

situated in the County of Hardin

in the State of Illinois hereby releasing and waiving all right under and by virtue of the Homestead exemption Laws of the State wherein said land is located.

DATED this 13th day of March 19 71

_____ (SEAL)	x Mabel Pankey (SEAL)
	Mable Pankey
_____ (SEAL)	_____ (SEAL)
_____ (SEAL)	_____ (SEAL)
_____ (SEAL)	_____ (SEAL)

Received 9/5/72

ASSIGNMENT

In consideration of the premises and for other good and valuable consideration, the receipt of which is hereby acknowledged, INDUSTRIAL MINERALS EXPLORATION COMPANY, a limited partnership organized under the laws of the State of New York, having its principal place of business at 345 Park Avenue, New York, New York 10022, does hereby sell, transfer and assign to ANTAEUS RESOURCES CORPORATION, a Delaware corporation, having its principal place of business at 345 Park Avenue, New York, New York 10022, its entire right, title and interest as Lessee under the Mining Lease dated March 20, 1970 between FIRST STATE BANK OF ELIZABETHTOWN, Hardin County, Illinois, as Lessor, and INDUSTRIAL MINERALS EXPLORATION COMPANY as Lessee, of the property containing one hundred sixty (160) acres, more or less, in Hardin County, Illinois, more particularly described as follows:

> The East Half (E 1/2) of the North East Quarter (NE 1/4) of Section Twenty-five (25), Township Eleven South (T 11 S), Range Seven East (R 7 E) of the third Principal Meridian; And the West Half (W 1/2) of the North West Quarter (NW 1/4) of Section Thirty (30), Township Eleven South (T 11 S), Range Eight East (R 8 E) of the Third Principal Meridian, and containing in the aggregate one hundred sixty (160) acres, more or less.

Dated: New York, New York
January 20, 1971

INDUSTRIAL MINERALS EXPLORATION

By Glen T. Carter
General Partner

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

On this 20th day of January, 1971, before me personally appeared John Lee Carroll, personally known to me to be a General Partner of Industrial Minerals Exploration Company, a limited partnership having its principal place of business at 345 Park Avenue, New York, New York 10022, and who executed the foregoing assignment, and duly acknowledged to me that he executed the same as the act and deed of said partnership.

Notary

71

Recei[illegible] 6/72

ASSIGNMENT

In consideration of the premises and for other good and valuable consideration, the receipt of which is hereby acknowledged, INDUSTRIAL MINERALS EXPLORATION COMPANY, a limited partnership organized under the laws of the State of New York, having its principal place of business at 345 Park Avenue, New York, New York 10022, does hereby sell, transfer and assign to ANTAEUS RESOURCES CORPORATION, a Delaware corporation, having its principal place of business at 345 Park Avenue, New York, New York 10022, its entire right, title and interest as Lessee under the Mining Lease and Option to Purchase dated March 9, 1970 between EMMA D. JENKINS, a widow never having remarried, and EULALA WUNDERLICH and FRED WUNDERLICH, her husband, as Lessor, and INDUSTRIAL MINERALS EXPLORATION COMPANY, as Lessee, said Mining Lease and Option to Purchase having succeeded, amended and replaced a Mining Lease and Option to Purchase made between and executed by the parties on July 5, 1963, and recorded on page 29, Book 7 of Miscellaneous in the Recorder's Office at the Hardin County Courthouse, Elizabethtown, Illinois, of the property containing twenty (20) acres, more or less, in Hardin County, Illinois, more particularly described as follows:

> A part of the east half of the South West Quarter (SW-1/4) of Section Thirty (30), Township Eleven (11) South, Range Eight (8) East of the Third Principal Meridian described by metes and bounds as follows: Beginning at a point on the south line of the North East Quarter (NE-1/4) of the South West Quarter (SW-1/4), forty (40) rods east of the South West (SW) corner thereof, thence running north thirty (30) rods, thence east thirty-three (33) rods to the west line of the Pleas Rose land, thence south thirty (30) rods to the south line of the North East Quarter (NE-1/4) of the South West Quarter (SW-1/4), thence east to the southeast corner of the said North East Quarter (NE-1/4) of the South West Quarter (SW-1/4), thence south to a point that is halfway to the southeast corner of the South East Quarter (SE-1/4) of the South West Quarter

(SW-1/4), being the northeast corner of the Silas Stacy tract, thence due west to a point forty (40) rods east of the west line of the South East Quarter (SE-1/4) of the South West Quarter (SW-1/4), thence north to the place of beginning, containing twenty (20) acres, more or less.

Dated: New York, New York
January 20, 1971

INDUSTRIAL MINERALS EXPLORATION

By _____
General Partner

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

On this 20th day of January, 1971, before me personally appeared John Lee Carroll, personally known to me to be a General Partner of Industrial Minerals Exploration Company, a limited partnership having its principal place of business at 345 Park Avenue, New York, New York 10022, and who executed the foregoing assignment, and duly acknowledged to me that he executed the same as the act and deed of said partnership.

_____
Notary

JOHN J. TRACK JR.
Notary Public, State of New York
Qualified in New York County
Commission Expires Feb. 30, 19[illegible]

Received 9/1/72

ASSIGNMENT

In consideration of the premises and for other good and valuable consideration, the receipt of which is hereby acknowledged, INDUSTRIAL MINERALS EXPLORATION COMPANY, a limited partnership organized under the laws of the State of New York, having its principal place of business at 345 Park Avenue, New York, New York 10022, does hereby sell, transfer and assign to ANTAEUS RESOURCES CORPORATION, a Delaware corporation, having its principal place of business at 345 Park Avenue, New York, New York 10022, its entire right, title and interest as Lessee under the Mining Lease dated April 14, 1970 between LOLA EWELL FREDRICKS and JACK L. FREDRICKS, her husband, and SOPHIA COY as Lessor, and INDUSTRIAL MINERALS EXPLORATION COMPANY as Lessee, of the property containing forty (40) acres, more or less, in Hardin County, Illinois, more particularly described as follows:

> The North Half of the South West Quarter and the South Half of the North West Quarter of the South West Quarter, all in Section Thirty (30), Township Eleven (11) South, Range Eight (8) East of the Third Principal Meridian, containing in the aggregate forty (40) acres, more or less.

Dated: New York, New York
January 20, 1971

INDUSTRIAL MINERALS EXPLORATION

By _____
General Partner

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

On this 20th day of January, 1971, before me personally appeared John Lee Carroll, personally known to me to be a General Partner of Industrial Minerals Exploration Company, a limited partnership having its principal place of business at 345 Park Avenue, New York, New York 10022, and who executed the foregoing assignment, and duly acknowledged to me that he executed the same as the act and deed of said partnership.

Notary

ASSIGNMENT

In consideration of the premises and for other good and valuable consideration, the receipt of which is hereby acknowledged, INDUSTRIAL MINERALS EXPLORATION COMPANY, a limited partnership organized under the laws of the State of New York, having its principal place of business at 345 Park Avenue, New York, New York 10022, does hereby sell, transfer and assign to ANTAEUS RESOURCES CORPORATION, a Delaware corporation, having its principal place of business at 345 Park Avenue, New York, New York 10022, its entire right, title and interest as Lessee under the Mining Lease dated March 12, 1970 between FLORENCE F. LOYD, a widow, FLUORINE LOYD, a widow, S.D. LOYD and BEULAH LOYD, his wife, and MARYBELLE L. McLIN, and W.R. McLIN, her husband, as Lessor, and INDUSTRIAL MINERALS EXPLORATION COMPANY as Lessee, said Mining Lease having succeeded, amended and replaced a Mining Lease made between and executed by the parties on August 12, 1963, and recorded on page 38, Book 7 of Miscellaneous in the Recorder's Office at the Hardin County Courthouse, Elizabethtown, Illinois, of the property in Hardin County, Illinois, more particularly described as follows:

> The South West Quarter of the North East Quarter of Section Thirty (30), Township Eleven South (T 11 S), Range Eight East (R 8 E), except a piece of land described as follows: Beginning at a point twelve (12) rods south of the northwest corner of said forty acre tract, thence running south twenty (20) rods, thence east twelve (12) rods to the road ditch, thence in a northwesterly direction with said ditch to a point directly east of the place of beginning, thence west to the place of beginning.

Dated: New York, New York
January 20, 1971

INDUSTRIAL MINERALS EXPLORATION

By _____
General Partner

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

On this 20th day of January, 1971, before me personally appeared John Lee Carroll, personally known to me to be a General Partner of Industrial Minerals Exploration Company, a limited partnership having its principal place of business at 345 Park Avenue, New York, New York 10022, and who executed the foregoing assignment, and duly acknowledged to me that he executed the same as the act and deed of said partnership.

Barbara McC. Sloan
Notary

BARBARA Mc C. SLOAN
Notary Public, State of New York
No. 31-3706458
Qualified in New York County
Commission Expires March 30, 1974

ASSIGNMENT

In consideration of the premises and for other good and valuable consideration, the receipt of which is hereby acknowledged, INDUSTRIAL MINERALS EXPLORATION COMPANY, a limited partnership organized under the laws of the State of New York, having its principal place of business at 345 Park Avenue, New York, New York 10022, does hereby sell, transfer and assign to ANTAEUS RESOURCES CORPORATION, a Delaware corporation, having its principal place of business at 345 Park Avenue, New York, New York 10022, its entire right, title and interest as Lessee under the Mining Lease dated March 12, 1970 between FLORENCE F. LOYD, a widow, FLUORINE LOYD, a widow, S.D. LOYD and BEULAH LOYD, his wife, and MARYBELLE L. McLIN, and W.R. McLIN, her husband, as Lessor, and INDUSTRIAL MINERALS EXPLORATION COMPANY as Lessee, said Mining Lease having succeeded, amended and replaced a Mining Lease made between and executed by the parties on August 12, 1963, and recorded on page 38, Book 7 of Miscellaneous in the Recorder's Office at the Hardin County Courthouse, Elizabethtown, Illinois, of the property in Hardin County, Illinois, more particularly described as follows:

> The South West Quarter of the North East Quarter of Section Thirty (30), Township Eleven South (T 11 S), Range Eight East (R 8 E), except a piece of land described as follows: Beginning at a point twelve (12) rods south of the northwest corner of said forty acre tract, thence running south twenty (20) rods, thence east twelve (12) rods to the road ditch, thence in a northwesterly direction with said ditch to a point directly east of the place of beginning, thence west to the place of beginning.

Dated: New York, New York
January 20, 1971

INDUSTRIAL MINERALS EXPLORATION

By _____
General Partner

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

On this 20th day of January, 1971, before me personally appeared John Lee Carroll, personally known to me to be a General Partner of Industrial Minerals Exploration Company, a limited partnership having its principal place of business at 345 Park Avenue, New York, New York 10022, and who executed the foregoing assignment, and duly acknowledged to me that he executed the same as the act and deed of said partnership.

Barbara Mc. Sloan
Notary

BARBARA Mc C. SLOAN
Notary Public, State of New York
No. 31-3706458
Qualified in New York County
Commission Expires March 30, 1974

ASSIGNMENT

In consideration of the premises and for other good and valuable consideration, the receipt of which is hereby acknowledged, INDUSTRIAL MINERALS EXPLORATION COMPANY, a limited partnership organized under the laws of the State of New York, having its principal place of business at 345 Park Avenue, New York, New York 10022, does hereby sell, transfer and assign to ANTAEUS RESOURCES CORPORATION, a Delaware corporation, having its principal place of business at 345 Park Avenue, New York, New York 10022, its entire right, title and interest as Lessee under the Mining Lease dated March 12, 1970 between FLORENCE F. LOYD, a widow, FLUORINE LOYD, a widow, S.D. LOYD and BEULAH LOYD, his wife, and MARYBELLE L. McLIN, and W.R. McLIN, her husband, as Lessor, and INDUSTRIAL MINERALS EXPLORATION COMPANY as Lessee, said Mining Lease having succeeded, amended and replaced a Mining Lease made between and executed by the parties on August 12, 1963, and recorded on page 38, Book 7 of Miscellaneous in the Recorder's Office at the Hardin County Courthouse, Elizabethtown, Illinois, of the property in Hardin County, Illinois, more particularly described as follows:

> The South West Quarter of the North East Quarter of Section Thirty (30), Township Eleven South (T 11 S), Range Eight East (R 8 E), except a piece of land described as follows: Beginning at a point twelve (12) rods south of the northwest corner of said forty acre tract, thence running south twenty (20) rods, thence east twelve (12) rods to the road ditch, thence in a northwesterly direction with said ditch to a point directly east of the place of beginning, thence west to the place of beginning.

Dated: New York, New York
January 20, 1971

INDUSTRIAL MINERALS EXPLORATION

By _____
General Partner

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

On this 20th day of January, 1971, before me personally appeared John Lee Carroll, personally known to me to be a General Partner of Industrial Minerals Exploration Company, a limited partnership having its principal place of business at 345 Park Avenue, New York, New York 10022, and who executed the foregoing assignment, and duly acknowledged to me that he executed the same as the act and deed of said partnership.

Barbara Mc. Sloan
Notary

BARBARA Mc C. SLOAN
Notary Public, State of New York
No. 31-3706458
Qualified in New York County
Commission Expires March 30, 1974

Box 506

Telephone (618) 285-6685

Joseph A. Porter
Geologist
Rosiclare, Illinois
62982

April 14, 1972

OFFICIAL
COPY
O. M. E.
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INITIALS | CODE
Rad

Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
United States Department of Interior
Geological Survey
Washington, D. C. 20242

Dear Mr. Kirkemo:

As agent for the Hicks Dome Account I am submitting herewith two copies of Form MME-40 with all of the necessary supplementary data. Several additional items are being submitted under separate cover. I will be happy to furnish any further information you might require.

To summarize, work to date has shown considerable potential for development of a large tonnage fluorspar ore body with interesting byproducts.

Four diamond drill holes costing $93,180 are proposed. They have an excellent chance of blocking out a substantial ore reserve and if successful would reduce to a minimum the risks in further development of the property.

Respectfully submitted,

Joseph A. Porter

Joseph A. Porter

JP:vb
Enclosures
Copies 4

MME Form 40
(Revised Nov. 71)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

OFFICIAL COPY
APR 20 1972
INITIALS | CODE

O. Form approved
Budget Bureau No. 42-R1368

APPLICATION FOR FINANCIAL ASSISTANCE IN MINERALS EXPLORATION

Pursuant to Public Law 85—701 (72 Stat. 700; 30 U.S.C. 641)

NAME OF APPLICANT *(Full legal name and mailing address as they should appear on contract if one is executed.)*

Hicks Dome Account
c/o Gilbert Kerlin, Esq.
Shearman and Sterling
53 Wall Street
New York, NY 10005

APPLICANT DO NOT USE THIS BLOCK

DOCKET NUMBER: 6873

DATE RECEIVED: 4-20-72

REGION: IV

DIVISION CODE:

BUSINESS ORGANIZATION *(Check one)*

- INDIVIDUAL [ ]
- CORPORATION [ ]
- PARTNERSHIP [X]
- OTHER *(Specify)* [ ]

STATE IN WHICH FIRM IS ORGANIZED: New York

LIST CORPORATE OFFICERS OR PARTNERS HERE, IF APPLICABLE

NAME	ADDRESS	TITLE
Gilbert Kerlin	as above	
Robert Goelet	425 Park Ave., New York, NY	10022
Francis Goelet	" " " " " "	"

MINERAL(S) FOR WHICH YOU WISH TO EXPLORE: Fluorspar, Niobium, Beryllium, Rare Earths, Thorium

ESTIMATED COST OF PROJECT: $93,180.00

PROPERTY NAME	LOCATION COUNTY	STATE
Hicks Dome	Hardin	Illinois

GENERAL INSTRUCTIONS

Before filling out this application, please read the *OME Regulations for Obtaining Federal Assistance in Financing Explorations for Mineral Reserves* (30 CFR Chap. II). To assure prompt action, your application must provide all applicable material and information specified on the back of this application form. Avoid unnecessary correspondence and delays by submitting complete and accurate information. *Please submit two copies of this application and all accompanying papers* except as otherwise noted. Place your name and address on each sheet. Each item of information, maps, and reports required as a part of this application is described on the back of this form. Identify each attached statement by the item number to which it applies. If an item does not apply to your application, show the item number on your statement and after it write "not applicable." Maps or sketches should be used to supplement narrative descriptions of the property location and boundaries in item 2, existing mine workings and geology in item 3, and the proposed exploration work in item 5. When this information is not too complex, all of it may be shown on one map or sketch. All documents and other attachments submitted as a part of this application, except those in item 3(g) which you mark to be returned, become the property of the Government and will not be returned to the applicant. Send true copies, *not originals*, of leases, contracts, and other documents which are an essential part of your business records. *File this application with the Department of the Interior, U.S. Geological Survey, Office of Minerals Exploration, Washington, D. C., 20242, or with the nearest OME Field Office.*

CERTIFICATION

The undersigned, whether as an individual, corporate officer, partner, or otherwise, both in his own behalf and acting for the applicant, certifies that the information set forth in this form and accompanying papers is correct and complete, to the best of his knowledge and belief, and that he would not ordinarily undertake the proposed exploration under current conditions and circumstances at his sole expense.

Joseph A. Porter

April 14, 1972
DATED

BY *(Signature)*

Geologist
TITLE

A wilfully false statement or certification to any Department or Agency of the United States Government is a criminal offense. U. S. Code, Title 18, Sec. 1001.

INFORMATION REQUIRED WITH THIS APPLICATION

(submit on accompanying pages)

1. Financial Eligibility:

(a) Submit evidence of efforts made within 90 days preceding the filing of this application to obtain credit from your bank of account and at least one other banking institution or other private source of credit. Such evidence shall include (1) *true copies of your letters to credit sources* which show date of loan request, amount and terms requested, and proposed use of loan funds and (2) *true copies of replies from credit sources.* If the loan was offered under terms which you consider unreasonable, state why you consider them so.

(b) List names and addresses of affiliated, parent, or controlling companies or organizations and state extent and nature of their interest.

(c) State how you propose to furnish your share of the cost of the exploration work.

2. Applicant's Rights in Land:

(a) State your interest in the land and mineral rights, whether owner, lessee, purchaser under contract, or other. If you are not the owner, submit one true copy of the lease, contract, or other document (with address of owner) under which you control the property. Describe all liens, mortgages, or other encumbrances on the land and state book and page number and official place where recorded.

(b) State the legal description (section, township, and range; metes and bounds; patent number of claims) of the land upon which you wish to explore and all adjacent land which you own or control. Describe any part of the land or workings which should not be subject to Government royalty and liens. If the land consists of unpatented claims, state book and page number for each recorded location notice, including amended locations, and official place where recorded. State all the names by which you know the property.

(c) For all land or mineral rights encumbered or not owned, submit five copies of Lien and Subordination Agreements signed by owner on MME Form 52. If the agreements cannot be obtained, state reasons and whether you can furnish a performance bond.

3. Physical Description:

(a) Describe in detail and illustrate with maps or sketches all mining or exploration operations which you know have been or are being conducted upon the land. Include existing mine workings and all production facilities.

(b) State your interest, if any, in operations described in (a)

(c) State, if you know, the past and current production, supporting your statement with copies of settlement sheets, mine records, or published data if available.

(d) Describe known ore reserves, giving quantities and grades.

(e) Describe by narrative and maps or sketches the geologic features of the property, including ore minerals, geologic formations if known, and type of deposit (vein, bedded, etc.).

(f) If you have sampled the area you propose to explore, show where the samples were taken, describe sampling methods used, and provide copies of assay certificates. State your reasons for expecting to find ore.

(g) Send with your application at least *two* copies of all geologic or engineering reports, assay maps, or technologic information which you have, indicating whether you require their return.

4. Accessibility of Property:

(a) To aid the OME representative who may examine the property state name, address, and telephone number of person who will meet him; give directions for reaching the property; and describe accessibility of property and of any mine workings.

(b) Name the shipping and supply points and state the distances to the property.

5. Exploration Work:

(a) Describe fully the proposed exploration work giving individual footages and sizes of openings *for each item of work.* Use narrative, maps, plans, and sections as necessary. Show location of the proposed work as related to geologic features such as veins, ore-bearing beds, contacts of rock formations, etc. Show on maps also the relation of the proposed work to any existing mine workings and to *claim boundaries* or to the closest identifiable corner.

(b) If an access road must be built, show the proposed location on the property map and state the length, type and construction methods proposed.

(c) If an OME contract is executed, state how soon thereafter work would be started and finished. State your anticipated average daily or monthly rate of progress for each type of work.

6. Experience:

State your operating experience and background to conduct this exploration work and also that of the person who will supervise the work.

7. Estimate of Costs:

Furnish detailed estimates of the necessary costs for time and materials *for each item of the work proposed in 5(a)* under the headings listed below with a total for each heading and the estimated total cost of the work. Costs for any work to be performed by an independent contractor should be listed separately under category (a) below. Costs for any work that is not to be performed by an independent contractor should be listed under categories (b) through (g).

(a) Independent contracts. State the total cost of any proposed independent contract for all or any part of the work, and the number of units and the unit cost for each type of work, such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, or per cubic yard of material moved. Cost estimates should be supported by bids from three contractors if possible. (*Note*—If none of the work is to be contracted, write "none" after this item.)

(b) Personal services. The cost of supervision, engineering and geological services, outside consultants, and labor should be itemized by numbers and classes of employees; rates of wages, salaries or fees; and periods of employment. State whether these services are available.

(c) Operating materials and supplies. List items of material and supplies giving quantity and price of each. Include under this heading power, water, and fuel, and units of equipment and tools costing less than $50 each.

(d) Operating equipment. List items of equipment and tools costing $50 or more per unit. Give specifications and indicate how each item is to be acquired—i. e., rented, purchased or provided by the applicant. If rented or purchased, state the estimated rental or purchase price and mobilization charge. If furnished by the applicant, state condition and present fair market value.

(e) Initial rehabilitation and repairs. Describe the type and the cost of *initial* rehabilitation or repair of existing buildings, fixtures, installations (exclusive of mine workings), and movable operating equipment now owned by the applicant which will be used in the exploration work.

(f) New buildings, fixtures, installations. Describe each building, fixed improvement, and installation to be purchased, constructed, or installed for the exploration work, stating specifications and cost including labor, and materials.

(g) Miscellaneous. Describe the type and estimate the cost of repairs and maintenance of the operating equipment listed in 7(d). Do not repeat initial repairs listed in 7(e). Show also the costs of analytical work, accounting, workmen's compensation and employees' liability insurance, payroll taxes, and other required costs that do not fall within the previous categories. [*Note*—The Government will not contribute to costs incurred before the date of the contract, or to costs of or incident to: (1) acquiring, using, or possessing land and any existing improvements, facilities, buildings, installations, and appurtenances, or the depreciation and depletion thereof; (2) general overhead, corporate management, interest and taxes (other than payroll and sales taxes); (3) insurance (other than employees' liability insurance); and (4) damages to persons or property (other than authorized repair to or replacement of equipment or other property used in the work).]

HICKS DOME ACCOUNT

APPLICATION TO OME
FOR
EXPLORATION ASSISTANCE

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LIST OF ACCOMPANYING MATERIAL

1.	Exhibit 3-1, Areal Geologic Map by Illinois Geologic Survey	Separate Cover
2.	Exhibit 3-2, Map Showing Geology, Topography and Drill Holes, 1"=100'	" "
3.	Exhibit 3-3, Sections Based on Drilling	" "
4.	Exhibit 3-4, Composite Strip Logs of Drill Holes	" "
5.	Appendix A, Copies of Lease and/or Option Agreements	" "

1. FINANCIAL ELIGIBILITY

(a) Efforts to Obtain Credit: Evidence of efforts to obtain credit from private sources is given on the following pages and consists of correspondence with the First National City Bank and Morgan Guaranty Trust Company, both of New York, New York.

The First National City Bank is applicant's Bank of account.

MORGAN GUARANTY TRUST COMPANY
OF NEW YORK
FIFTH AVENUE AT 44TH STREET, NEW YORK, N.Y. 10036

New York March 20, 1972

RICHARD FLENDER
Vice President

Mr. John L. Carroll
Room 4120
345 Park Avenue
New York, New York 10022

Dear Mr. Carroll:

Thank you for your letter of March 15, 1972. I have considered carefully its contents with some of my associates. We are sorry to have to advise you that Hicks Dome Account's situation does not appear to be one with respect to which we would be in a position to make it a loan.

With my best regards,

Sincerely,

Rich Flender

Financial management

FIRST NATIONAL CITY BANK 55 WALL STREET, NEW YORK, N.Y. 10015

March 16, 1972

Mr. John Lee Carroll
345 Park Avenue
New York, N.Y. 10022

Re: Hicks Dome Account

Dear Mr. Carroll:

Thank you for your letter of March 10, 1972 outlining the exploration work being done by your group and requesting a commercial loan of approximately $80,000 to the Hicks Dome account to defray the expenses of exploration work on the property known as Hicks Dome in the Flurospar District, Hardin County, Illinois.

We have examined this application, and while we wish to respond favorably to your request, we must conclude that the properties in their present condition do not lend themselves as a basis for the credit requested. If and when flurospar is developed on the properties in proven commercial quantities, and provided an acceptable plan of exploitation is developed, we would be pleased to review with you the possibility of a loan at that time.

With kindest regards.

Sincerely,

Robert P. Fallon

Robert P. Fallon
Assistant Vice President

March 15, 1972

Mr. Richard Flender
Morgan Guaranty Trust Company
522 Fifth Avenue
New York, N. Y. 10015

Hicks Dome Account

Dear Mr. Flender:

During the past year we have been engaged in exploration work on a group of mineral properties located on a geologic structure known as Hicks Dome, in the fluorspar district, Hardin County, in extreme southern Illinois. The results of this work were encouraging and we strongly feel that these properties merit additional exploration work.

Hicks Dome Account is a partnership set up to pursue this activity, and has no substantial assets other than the mineral leases themselves.

During 1971 a total of three holes were completed. Two of the drill holes encountered substantial but subeconomic mineralization at a depth of approximately 2,000 feet. It consisted of low grade fluorspar mineralization in thicknesses exceeding 100 feet. Associated with the fluorspar are various amounts of rare earth and beryllium. The thicknesses encountered and the horizontal extent indicate an excellent chance of discovering a large tonnage, low grade fluorspar deposit.

In view of this, we would like to apply to your bank for a loan with which to undertake additional exploration work on these properties in the coming year. We need approximately $80,000 for the work we propose to do this year. We would hope that you could make this available to us at the normal commercial rates, but would be willing to discuss any terms that you might feel appropriate.

We presently control approximately 600 acres of land by virtue of various mining leases and/or purchase options. The individual leases are generally for long term and cite production royalty payments which are generally less than those that are ordinarily common in the fluorspar mining district.

In the event this could be viewed favorably by your bank, we would be happy to submit to you all the necessary information to substantiate our lease-hold plus all technical data resulting from our previous work.

Thank you for your consideration.

With kindest regards,

Sincerely yours,

JLC:AG

March 10, 1972

Mr. Robert P. Fallon, Asst. Vice President
First National City Bank
55 Wall Street
New York, N. Y. 10005

Hicks Dome Account

Dear Mr. Fallon:

During the past year we have been engaged in exploration work on a group of mineral properties located on a geologic structure known as Hicks Dome, in the fluorspar district, Hardin County, in extreme southern Illinois. The results of this work were encouraging and we strongly feel that these properties merit additional exploration work.

During 1971 a total of three holes were completed. Two of the drill holes encountered substantial but subeconomic mineralization at a depth of approximately 2,000 feet. It consisted of low grade fluorspar mineralization in thicknesses exceeding 100 feet. Associated with the fluorspar are various amounts of rare earth and beryllium. The thicknesses encountered and the horizontal extent indicate an excellent chance of discovering a large tonnage, low grade fluorspar deposit.

In view of this, we would like to apply to your bank for a loan with which to undertake additional exploration work on these properties in the coming year. We need approximately $80,000 for the work we propose to do this year. We would hope that you could make this available to us at the normal commercial rates, but would be willing to discuss any terms that you might feel appropriate.

We presently control approximately 600 acres of land by virtue of various mining leases and/or purchase options. The individual leases are generally for long term and cite production royalty payments which are generally less than those that are ordinarily common in the fluorspar mining district.

In the event this could be viewed favorably by your bank, we would be happy to submit to you all the necessary information to substantiate our lease-hold plus all technical data resulting from our previous work.

Thank you for your consideration.

With kindest regards,

Sincerely yours,

JLC:AG

(b) <u>Affiliations</u>: None.

(c) Applicant's Share of Cost: If an OME contract is executed, Hicks Dome Account will deposit funds sufficient to meet the first month's operating expenses and pay applicant's share of the cost of the project. Deposit will be in applicant's bank of account, the First National City Bank, 55 Wall Street, New York, New York 10015.

2. APPLICANT'S RIGHTS IN LAND

(a) Applicant's Interest: Applicant's interest in land, mineral rights and mining rights is in most instances by virtue of various mining leases with or without purchase options. The majority interest in one tract has been purchased.

The main lease block consists of eight contiguous properties totalling approximately 615 acres. Continuing efforts are being made to acquire additional adjoining properties.

A map given on the following page shows the relationship of the subject properties. Properties are named for the principal lessor. Copies of the agreements by which the properties are held are submitted as Appendix A.

To the best of our knowledge, all the subject lands are free and clear of liens, mortgages, or other encumbrances, except for the leases or options described herein.

Most of the leases presently held are not recorded. They will be recorded when all the desired adjoining ground has been acquired. Pertinent recording data will be furnished when available.

Most of the subject land was originally leased by Industrial Minerals Exploration Company in 1963 and 1964. The leases were essentially kept in effect until they were superseded by new leases either with Industrial Minerals or their successor, Antaeus Resources Corporation. As of this date all the original leases have been renegotiated. Several adjoining tracts of land have been acquired, and negotiations are continuing to acquire additional adjoining land.

Industrial Minerals Exploration Company was dissolved and the subject leases were assigned to Antaeus Resources Corporation on January 20, 1971. Antaeus Resources subsequently entered into an agreement whereby the leases were conveyed to Hicks Dome Account. Under this agreement dated May 10, 1971, Antaeus Resources retains an interest in net profits which may result, and Hicks Dome Account agrees to provide funds for exploration on the properties.

Though basically similar, terms and conditions vary slightly for each of the eight agreements covering the subject properties. A summary of the history, terms, and available recording data of the individual agreements follows.

1. First State Bank, Lease: This property is held by virtue of a Mining Lease, dated March 20, 1970, made initially to Industrial Minerals Exploration Company. It was assigned to Antaeus Resources who in turn assigned it to Hicks Dome Account. This lease takes the place of a similar lease made by the principals in 1963. ? X

The land consists of 160 acres of mineral and mining rights.

The lease is for a primary term of ten years and for so long thereafter as mining, development, exploration, or prospecting is conducted. Production royalties are based on mine mouth values and escalate from 5% of the "net proceeds" for ore having values of $0 to $12.00 per ton to 12% for ores having a "net proceeds" value exceeding $22.00 per ton. Annual advance minimum royalties are in the amount of $500.00 per year.

The lease and the subsequent assignments have not been recorded.

2. Antaeus-Pankey, Own-Lease: A 17/21sts interest in the mineral and mining rights was purchased by Industrial Minerals Exploration Company. This interest was subsequently deeded to Antaeus Resources, who in turn have assigned it to Hicks Dome Account. ? X

The remaining 4/21sts of the mineral rights and all of the surface rights are covered by a Mining Lease from Etta Irby and Iley Pankey to Antaeus Resources, dated July 30, 1971. This lease has subsequently been assigned to Hicks Dome Account. ? X

The property consists of 79.53 acres.

The lease on the 4/21sts interest is for a primary term of five years. Production royalties escalate from 5% for ore having from $0 to $12.00 per ton "net proceeds" value to 12% for ores having a "net proceeds" value exceeding $22.00 per ton. Annual minimum royalty amounts to approximately $95.00 per year.

p 17/21 and 12/21 see Pankey letter 6/21/72

The deed for the 12/21sts interest, between Mrs. Mabel Pankey and Industrial Minerals Exploration Company, dated March 13, 1971, is recorded in Miscellaneous Book 8, page 50 in the Hardin County Court House. The Mining Lease is recorded in Miscellaneous Book 9, page 66. ? X

3. Loyd, Lease: The Loyd property is held by virtue of a Mining Lease dated March 12, 1970, between three principal lessors and their spouses and Industrial Minerals Exploration Company. The lease was subsequently assigned to Antaeus Resources who in turn have assigned their interest to Hicks Dome Account. This lease takes the place of an earlier agreement dated in August, 1963. ?

The land covered consists of mineral and mining rights only and totals forty acres.

This lease is for a primary term of ten years and for so long thereafter as any mining development, exploration, or prospecting is conducted. Production royalties escalate from 5% for ores having from $0 to $12.00 per ton "net proceeds" value to 12% for ores having a "net proceeds" value exceeding $22.00 per ton. Annual advance or minimum royalties are in the amount of $240.00 per year.

This lease has not as yet been recorded.

4. Hamp, Lease: The Hamp property was acquired by virtue of a Mining Lease, dated February 18, 1972, between three principal lessors and their spouses and Antaeus Resources Corporation. This agreement supersedes an oil, gas, and mineral lease dated in 1963 between the lessors and Industrial Minerals Exploration Company. This new lease was acquired after the previously described agreement between Antaeus Resources and Hicks Dome Account was made. It is presently in process of being assigned to Hicks Dome Account.

The land covered by the Hamp Lease consists of mineral and mining rights only and totals sixty-one acres.

This lease is for a primary term of ten years and for so long thereafter as mining development, exploration, or prospecting is conducted. Minimum average expenditure of $2,000.00 per year is required. Production royalties have been based on mine mouth values and escalate from 5% of the "net proceeds" for ore having value of $0 to $12.00 per ton to 12% for ores having a "net proceeds" value exceeding $22.00 per ton. Annual advance minimum royalties are $2,160.00.

This lease has not as yet been recorded.

5. Fredericks-Coy, Lease: Rights to this property were obtained by virtue of a Mining Lease, dated April 14, 1970, between Lola and Jack Fredericks and W. F. Coy, Lessors, and Industrial Minerals Exploration Company. This lease was subsequently assigned to Antaeus Resources Corporation on January 20, 1971, and later assigned by Antaeus to Hicks Dome Account. This new lease takes the place of an earlier lease made by the principals in 1963.

The property consists of forty acres of mineral and mining rights only.

This lease is for a primary term of ten years and for so long thereafter as mining development, exploration, or prospecting is being conducted. Production royalties are based on mine mouth values and escalate from 5% of the "net proceeds" for ore having a value of $0 to $12.00 per ton to 12% for ores having a "net proceeds" value exceeding $22.00 per ton. Advance or minimum royalties in the amount of $80.00 per year are due.

This lease has not as yet been recorded.

6. Jenkins-Wunderlich, Lease-Option: Rights to this tract are held by virtue of a Mining Lease and Option to Purchase dated March 9, 1970, between the two principal lessors and Industrial Minerals Exploration Company. Industrial Minerals subsequently assigned its interests to Antaeus Resources on January 20, 1971. Antaeus in turn subsequently assigned the lease to Hicks Dome Account. This takes the place of an earlier agreement made by the principals in 1963.

Subject lands consist of mineral and mining rights only and total twenty acres. This agreement is for primary term of ten years and for so long thereafter as mining development, exploration, or prospecting is conducted. Production royalties are based on mine mouth values and escalate from 5% of the "net proceeds" for ores having values of $0 to $12.00 per ton to 12% for ores having a "net proceeds" value exceeding $22.00 per ton. Advance or minimum royalties are $100.00 per year.

The option price is $20,000.00.

The present Lease-Option has not been recorded.

7. Rose, et al., Lease: Mineral and mining rights to the Rose property are held by virtue of a Mining Lease dated May 14, 1971, between four principal lessors and their spouses and Antaeus Resources Corporation. Antaeus Resources subsequently assigned the lease to the Hicks Dome Account. This lease takes the place of an agreement made between Industrial Minerals and present lessors in 1964.

Land covered consists of surface and mineral rights totaling ninety acres.

This lease is for a primary term of five years and for so long thereafter as any mining, development, or prospecting is conducted. Royalty due is in the amount of 12% of the net returns, defined essentially as the value of the ore at the mouth of the mine. Annual advance rental payments are in the amount of $1,200.00 per year.

This lease is recorded in Miscellaneous Book 8, page 558, in the Hardin County Court House.

8. Coan-Quarant, Lease-Option: Rights to this tract of land are held by virtue of a Mining Lease with Option to Purchase, dated February 22, 1972, between three principal lessors and Antaeus Resources Corporation. Antaeus Resources will assign the Lease-Option to the Hicks Dome Account.

This lease covers the mineral and mining rights only and totals 105 acres. The primary term is for a period of eight years, and it may be extended so long thereafter as any mining development or exploration is being conducted. Production royalty is 10% of the value of the ore at the mouth of the mine. Minimum royalty for the first year is $750.00. After the first year minimum royalties are $1,500.00 per year.

Lessee has an option to purchase the entire 105 acres for $157,500.00.

This lease has not as yet been recorded.

9. Adjoining Ground: Land presently controlled is adequate for the development of a large ore body. Efforts are currently being made however, to acquire as much adjoining ground as is reasonably possible.

Application has been made for a prospecting permit and a Preference Rights Lease for land owned by the U. S. Forest Service in Section 30 and the surrounding Sections. In addition, contact has been made with all the owners shown on the mineral ownership map on page 5.

(b) Legal Description: The proposed exploration work will be done on one or more of the eight properties described herein. The subject properties are contained principally in Section 30, Township 11 South, Range 8 East, with minor adjoining acreage in Section 31, Township 11 South, Range 8 East, and Section 25, Township 11 South, Range 7 East, all east of the third principal meridian in Hardin County, Illinois. Legal description of the individual properties follows:

1. First State Bank:
   E½ of the NE¼, Section 25, T. 11 S., R. 7 E.; and W½ of the NW¼ of Section 30, T. 11 S., R. 8E., containing 160 acres.

2. Antaeus-Pankey:
   NE¼ of the NW¼ (except a parcel containing 0.31 acres in the SE¼); and the SE¼ of the NW¼ (except a parcel containing 0.147 acres), all in Section 30, T. 11 S., R. 8 E. (the exceptions being more fully described by metes and bounds on the appended Mining Lease), containing 79.5 acres.

3. Loyd: SW¼ of the NE¼, Section 30, T. 11 S., R. 8 E. (except a small tract more fully described by metes and bounds on the appended Mining Lease) containing 40 acres.

4. Hamp: N½ of the NW¼ of the SW¼, and a part of the E½ of the SW¼ described by metes and bounds as follows:

4. <u>Hamp</u>: (Continued)

Beginning at the NW corner of the said E½ of the SW¼, thence running South with the West line thereof to the center point of the West line of the SE¼ of the SW¼, being the NW corner of the Lilas Stacy tract, thence East 40 rods, thence North to a point 30 rods North of the North line of the SE¼ of the SW¼, thence East 33 rods to the West line of the Pleas Rose tract, thence, North to the North line of the said E½ SW¼, thence West to the place of beginning, all in Section 30, Township 11 South, Range 8 East of the Third Principal Meridian, containing in the aggregate, 61½ acres, more or less.

5. <u>Frederick-Coy</u>:

N½ of the SW¼ of the SW¼; and the S½ of the NW¼ of SW¼, Section 30, containing 40 acres.

6. <u>Jenkins-Wunderlich</u>:

A part of the E½ of the SW¼ of Section 30, T. 11 S., R. 8 E. of the Third Principal Meridian described by metes and bounds as follows: Beginning at a point on the south line of the NE¼ of the SW¼, 40 rods east of the SW corner thereof, thence running north 30 rods, thence east 33 rods to the west line of the Pleas Rose land, thence south 30 rods to the south line of the NE¼ of the SW¼, thence east to the SE corner of the said NE¼ of the SW¼, thence south to a point that is halfway to the SE corner of the SE¼ of

6. Jenkins-Wunderlich: (Continued)
the SW$\frac{1}{4}$, being the NE corner of the Silas Stacy tract, thence due west to a point 40 rods east of the west line of the SE$\frac{1}{4}$ of the SW$\frac{1}{4}$, thence north to the place of beginning, containing 20 acres, more or less.

7. Rose:
NW$\frac{1}{4}$ of the SE$\frac{1}{4}$ and NE$\frac{1}{4}$ of the SE$\frac{1}{4}$; and 10 acres off the east side of the NE$\frac{1}{4}$ of the SW$\frac{1}{4}$, all in Section 30, T. 11 S., R. 8 E., containing 90 acres.

8. Coan-Quarant:
The S$\frac{1}{2}$ of the SE$\frac{1}{4}$, except the north 15 acres of the SE$\frac{1}{4}$ of the SE$\frac{1}{4}$, Section 30; and the NW$\frac{1}{4}$ of the NE$\frac{1}{4}$, Section 31, T. 11 S., R. 8 E., containing 105 acres.

As of this writing, no additional adjoining ground is controlled. If any adjoining ground is acquired it could be included here and made subject to the government royalty and lien.

The Rose property, down to 200 feet of depth, should not be subject to government royalty or lien. A small block of drill indicated ore exists on the Rose property. It is described more fully in Part 3 (a) and (d). It is the result of considerable diamond drilling, rotary drilling, and digging, which has been done in the past. Attempts to prove continuity vertically or laterally have been unsuccessful. It is possible that this small block of ore could sustain a small sublessee operation. None of the proposed work will be in the vicinity of this small ore body.

(c) Lien and Subordination Agreements: Because of the number of properties and the multiple ownership of each, lien subordination agreements would be very difficult and expensive to obtain. For the previously described eight properties, a total of thirty-seven signatures would be required on the lien subordination agreements.

In lieu of the lien subordination agreements, we propose to furnish, and can furnish, a performance bond.

3. PHYSICAL DESCRIPTION

(a) Previous Work: Work done on the subject properties has been almost entirely of an exploratory nature. Most of the work has been relatively recent and has been done by Hicks Dome Account and predecessor organizations. A property map given on page 5 shows the location of the holes which have been drilled and of the only mining which has been done in the vicinity.

The work to date has been directed at two separate targets; the shallow material in the vicinity of the Rose Mine near the flanks of the central part of the dome and the deep ore potential in the explosion breccias near the geometric and geologic center of the dome.

None of the work proposed herein will be directed at the shallow ore potential on the Rose property. Though of minor importance, as a matter of background the work done on the Rose property will be discussed first.

It was previously thought that the mineralized breccias on the Rose property were somehow connected or associated with the deeper seated breccias. Though a considerable amount of work has been done based on this premise, it has not been demonstrated that there is any geometric, geologic, mineralogic or genetic continuity between these and the mineralized breccias intersected at depth by drill holes.

A detailed report by Porter summarizing the work done up to 1970 is appended. This report summarized history, geology and the results of drilling and digging. At that time there were a number of core and air rotary holes intersecting mineralization. They were not sufficient to indicate whether the mineralization persisted vertically or laterally. A drill indicated tonnage of ten to fifteen thousand tons between 30% and 40% CaF_2 could be postulated.

In 1971 five additional diamond drill holes were drilled beneath and on strike of the known mineralization. All of these were barren. It was concluded that the oreshoot found by the previous drilling was a small, isolated pod or lense and does not persist vertically or laterally. The information pertaining to these holes is added to the Porter report.

No additional work is presently proposed for the Rose mine area. It may be possible to justify a small lessee operation on the known small oreshoot but no firm plans exist at this time.

Deep holes which have been completed in the central part of Hicks dome consist of two oil well tests and four diamond drill core holes. These and two uncompleted holes are described here in the sequence in which they were drilled. The results and interpretations of the holes are given in parts (e) and (f) to follow.

First exploration done on Hicks dome was done as oil exploration. First hole of any consequence is the Fricker well which was churn drilled in 1935 to a depth of 3,306 feet. No oil was encountered. A lithologic log was made by the Illinois Geologic Survey. It is doubtful the hole could be precisely located.

Another oil well test was drilled by St. Joseph Lead Company in 1952. It was located near what is taken to be the center of the dome. Rotary oil field equipment was used and the hole was drilled to 2,944 feet. Samples consisted of cuttings. The samples apparently were not complete, due to lost circulation. Some side wall coring was done. Surface casing was left in the hole and it is still open to at least 300 feet. This hole can and has been used to furnish water for drilling.

As an oil test this hole was unsuccessful. It did however provide data which on later analysis contributed substantially to the working knowledge of the Hicks dome structure and mineralization. Subsequent analysis of the data provided the basis for additional drilling.

The hole intersected rather intense brecciation at about 1,600 feet and was in similar breccia to its total depth of 2,944 feet. Brown et al., (1954), based on the character and distribution of the breccia interpreted Hicks dome as an incipient cryptovolcanic structure. The breccia was mineralized with fluorite throughout, usually in minor amounts, occasionally in amounts of seven or eight percent CaF_2. In addition to the fluorite, it was reported to contain thorium, barite, calcite, quartz, pyrite, sphalerite and galena.

Reports of thorium, uranium and radioactivity in the center part of the dome partly contributed to a minor uranium boom in 1955. Some minor exploration in the form of diamond drilling

was directed at radioactive breccias found near the St. Joseph Well. The work was largely unsuccessful. Thorium was eventually identified as the source of radioactivity, and there was no subsequent interest in uranium exploration.

Additional mineralogic work was reported by Trace (1960). According to him radioactivity at the surface was due to high thorium monazite. In addition he reported the results of semi-quantitative spectrographic analysis of some of the well cuttings. These tests disclosed anomalous quantities of thorium, rare earths, niobium, zirconium and beryllium.

Some of the subject properties were acquired by International Minerals and Chemicals in 1961. Several shallow holes were attempted and abandoned, probably short of bedrock. It is believed that their major interest was the beryllium fluorite mineralization.

Industrial Minerals Exploration Company acquired leases on the subject properties in 1963 and '64. The first hole, Hamp #1, was drilled in 1964. It is located approximately 200 feet northeast of the St. Joseph Well and was drilled to test the continuity of the mineralization and the breccia. The hole was rotary drilled to solid rock at about 118 feet. It was then cored with BXWL tools to a total depth of 2,499 feet. No particular problems were encountered. Recovery was good throughout except for a section around 1,500 feet where trouble was experienced with mis-latching of the inner-tube. BX casing was left in the hole and it could be re-entered with little trouble.

Some subsequent drilling was attempted by Industrial Minerals in 1966 and 1968. Two holes were started. Both were abandoned. Hole Pankey #1 was located in the center of the outcropping of the Pankey breccia. This hole did not reach solid bedrock. It was drilled principally by rotary methods. Several unsuccessful attempts were made to core. The hole was abandoned about 400 feet deep. It was still in loose, caving and broken chert breccia.

Hole Hamp #2 was started when Pankey #1 was abandoned. It was drilled to about 200 feet with air rotary. Caving ground and heavy water necessitated abandoning the hole at 200 feet. In 1968 an attempt was made to continue the hole with mud rotary. It was drilled with mud rotary down to approximately 610 feet where solid rock was thought to have been encountered. Casing was set and an attempt was made to core. The hole was advanced

to 645 feet. Little core was recovered. A number of twist-offs were experienced, and the hole was abandoned at 645 feet. Various tools were left on the bottom of the hole. Surface casing is still in the hole. Very little useful information was obtained from this hole. Several pieces of core that were recovered indicate that the hole probably bottomed in Bailey limestone.

The leases were ultimately assigned to Hicks Dome Account, who successfully completed three diamond drill holes in 1971. No particular problems were experienced. Core recovery was generally excellent throughout. Surface casing through overburden was left in all the holes, and they could all be re-entered with a minimum of difficulty.

Hamp #3 was rotary drilled to about 200 feet and then cored with NXWL to its total depth of 2,622 feet. Core recovery was excellent throughout except for a zone from 2,135 feet to 2,155 feet where the hole is thought to have passed through 20 feet of open ground.

Two hundred feet of NX casing was left in the hole. The hole should be open at least to 2,135 feet where the open ground was encountered. Two attempts were made to drill Hamp #4. The first attempt was abandoned at about 240 feet because NX casing was set before the hole was into solid bedrock. On the second attempt Hamp #4 was rotary drilled to approximately 292 feet. NX casing was then set and the hole was drilled NXWL to approximately 985 feet here encountered some loose ground, and it was again cased and reduced to BXWL. It was then drilled BX to its total depth of 2,380 feet. Core recovery was excellent throughout.

Eighty-four feet of five and one half inch surface casing and 292 feet of NX casing were left in the hole. This hole should be easy to re-enter.

Pankey #2 was rotary drilled to a depth of 205 feet. Solid rock was encountered, and five and one half inch surface pipe was set to a depth of 143 feet. The hole was then reduced to four and seven-eighths inches and drilled to 205 feet where NX casing was set. It was then drilled NXWL to approximately 980 feet. Because of some caving in the hole it was again reduced to BXWL. It was then cored to its total depth of 2,485 feet.

All BX casing was removed. An attempt was made to remove all of the NX casing, but several joints were left at 205 feet. The five and one half inch surface casing was left in the hole.

Detailed logs were made of all the holes. Results of the holes are discussed more fully in parts (e) and (f).

There are no known production facilities on the property. There are no known mine workings outside those previously discussed on the Rose property.

(b) Applicant's Interest in Previous Work: None of the operators pre-dating Industrial Minerals Exploration Company retained any interest in the properties. The interest of Industrial Minerals Exploration Company was wholly assigned to Antaeus Resources on May 10, 1971, when Industrial Minerals was essentially dissolved. Antaeus Resources subsequently entered into an agreement with Hicks Dome Account, whereby Antaeus reserved an interest in any net profits, and Hicks Dome Account agreed to furnish certain exploration funds. No other persons or entities have an interest.

(c) Production: There has been no production in the vicinity at the depths at which the proposed work is directed.

The only production in the near vicinity is that by small lessees at shallow depths on the Rose property. No record was made of this production. Based on the size of the old works it is estimated that probably less than 5,000 tons have been produced.

Some crude ore was produced by Industrial Minerals Exploration in 1969 and 1970 on the Rose property. This was the result of digging and an attempt to determine the attitude and nature of the existing oreshoot. A total of 436 tons averaging 53% CaF_2 were saved and sold.

(d) Ore Reserves: There are no known reserves in the vicinity of the targets of the work proposed here.

A small drill-indicated tonnage of fluorspar ore has been drilled out immediately north of the Rose pit at depths less than 120 feet. This tonnage probably ranges from ten to fifteen thousand tons, grading between 32% and 37% CaF_2. None of the proposed work is directed at extending this tonnage.

(e) Geology: Considerable geologic data are available as a result of the work done on Hicks dome to date. Space and time preclude inclusion of all available data or discussion of all facets and possible interpretations.

Summary

The work done to date and the proposed work are directed at targets previously unrecognized in the Illinois-Kentucky fluorspar district. Future success could establish ore in a unique mineralogic suite, at a stratigraphic horizon and in a geologic environment previously untested.

All interpretations are presently necessarily rather tenuous. Data are sparse in comparison with the complexity of the structure involved. Present data suggest certain interpretations which are summarized below.

1. The existence of a very large mass or body of intensely brecciated rock has been established. The exact shape of the breccia mass is not presently known but information suggests a rather broad based, inverted funnel configuration.

At depth the brecciation is known to exist over a lateral extent of at least 1,200 feet in an east-west direction across the center of the dome. A vertical extent of over 2,000 feet has been shown for the breccia zone. The brecciation penetrates upward to the surface through unbrecciated rocks of Ordovican, Silurian and Devonian age. Diameter of the breccia body at the surface has not been determined.

2. The breccia mass consists principally of fine, angular fragments of sedimentary rocks in a rock flour matrix. The fragments and the matrix grossly reflect the mineralogic and lithologic composition of unbrecciated rocks occupying the same stratigraphic position. This is particularly evident and most definitive where distinctive lithologies such as brick red streaks in Silurian limestones, Maquoketa shale or St. Peter sandstone have been included in the brecciation.

This feature allows a broad classification of the breccias on the basis of the matrix material. Those with a rock flour matrix can be further classified as calcareous, dolomitic, siliceous or argillaceous--or fluoritic if replaced by fluorite.

3. Individual breccia fragments have been moved a considerable distance. Though fragments of a stratigraphic unit are usually dominant at any one point within the breccia, considerable vertical mixing has occurred. Fragments of distinct, recognizable units can be found above and below their anticipated stratigraphic position. Some of these may have been moved as much as 500 feet up or down. Some fragments have also moved laterally and down.

4. The breccias are more or less mineralized throughout. The most common mineral of economic importance is fluorite. Pyrite is common, often associated with the fluorite. Galena, sphalerite and barite are usually associated with the fluorite and traces occur throughout.

5. Mineralization is in places substantial in quantity and quality. Best mineralization occurs in a rather distinct "purple breccia" zone. Purple coloration has been imparted by dark purple fluorite which replaces matrix material.

In Hamp No. 3 the purple breccia was approximately 235 feet thick, including most of the transitional zone. The main part was 214 feet thick and averaged 11.1% CaF_2. The best zone was 97 feet averaging 17.4% CaF_2. In Hamp No. 4 the purple breccia was approximately 240 feet thick and averaged 8.44% CaF_2. Best zone was 112 feet thick and averaged 14.15% CaF_2. The zones were correlative in terms of stratigraphic position and elevation. Both contain significant amounts of thorium, yttrium, niobium and beryllium plus interesting amounts of other elements, including other rare earths. A substantial contribution to the economics of the property and the mineral economy in general might result from the establishment of a cheap, byproduct source of these materials.

Hamp No. 1 intersected similar material at about the same stratigraphic horizon. It was less definitive and was distinctly less mineralized.

6. Several factors influencing localization of mineralization are suggested. These are principally influence of stratigraphy and degree of comminution. A combination stratigraphy and overall intensity of brecciation may be a localizing factor in a very broad sense.

Certain stratigraphic positions within the breccia body seem to be more favorable for mineralization. The purple breccia zone occurs approximately from 500 feet to 750 feet beneath the base of the Maquoketa shale. This is the approximate stratigraphic position of the lower part of the Plattin limestone. The bottom of the purple breccia roughly coincides with the top of the Joachim dolomite.

Fluorite replacement within the purple breccia zone is noticeably more intense in zones where the limestone is very finely comminuted. Replacement is most thorough in the rock flour matrix. Small fragments appear to be only partly replaced. Larger fragments are only replaced around the margins and on sharp corners.

In a more general sense, changes in the overall character of the breccia may have a localizing effect on the purple breccia. A distinct change in the character of the breccia is evident at the bottom of the purple breccia zone. This is marked by a rather abrupt transition from generally fine breccia to coarse breccia. The fragments are generally much larger and there is noticeably less mixing. These may actually be best defined as "mega-breccias." Some fine breccia is present but it appears to be injected between the larger fragments. These breccias appear to be only sparsely mineralized.

7. A large tonnage, low grade, multimineral ore body is possible on the subject properties. Brecciation is wide spread and continuous and a favorable stratigraphic zone over 200 feet thick exists over a wide area. The result is a combination of two favorable loci over an area sufficient to provide room for a multimillion ton ore body.

8. Breccia fragments in a crystalline calcite matrix are found in the upper portions of the main breccia body. Fragments are generally coarse (+1"). They often contain fair amount of fluorite as encrustations surrounding fragments. These are presently thought to be collapse breccias and late fluorite mineralization.

9. Several generations of brecciation are indicated. In the part of the breccia which extends to the surface, small angular fragments of fine breccia are common. Fragments of the igneous dike material are also common.

7 Multi-mineral property

10. The central core of the breccia does not presently appear to be an attractive target. It is sparsely mineralized throughout but not in any appreciable quantity. A possible explanation is the central core or diatreme is the result of second generation, post-mineralization brecciation that brecciated and scattered existing mineralized breccia to such an extent it is no longer recognizable as a discrete entity. Supporting this is the fact that small angular fragments of purple breccia, closely resembling the previously described material are fairly common in the central core.

The lack of significant mineralization in the central core may also have been due to extreme mixing before mineralization. A favorable horizon that did exist might be so highly mixed that the fragments and matrix amenable to replacement have been too scattered to constitute a continuous favorable zone.

General Geology

Hicks dome is a rather prominent domal structure located on the south rim of the Illinois basin in the complexly faulted, broadly folded Illinois-Kentucky fluorspar district. It is commonly referred to as an incipient cryptovolcanic structure. It was first defined as such by Brown, et al. (1954). It is one of a number of grossly similar structures generally aligned in an east-west direction that range from Pennsylvania to western Kansas. This general trend constitutes the 38th Parallel Lineament.

Hicks dome differs from the other aligned structures and similar structures in that it is within the geologic if not geographic center of an active, producing mining district. Some of the other structures appear to be loosely associated with a mineral district, particularly if plotted on a large scale map. Others have no known association.

These structures have been the subject of much research and discussion in recent years. No attempt will be made here to go into the details of the other structures or of the theoretical considerations of these structures. The reader is referred specifically to the papers by Heyl (1965, 1968) and Snyder (1965, 1970) cited in the bibliography for discussions and summaries. Excellent bibliographies are given therein for further reference.

Basic geology of the Illinois-Kentucky district is fairly well documented. The reader is referred to a paper by Heyl (1965) which delineates the regional structural setting of Hicks dome and the Illinois-Kentucky district. The geology and mineralization of the district is best summarized by Grogan and Bradbury (1968). The surficial geology of the Illinois part of the district has been mapped in detail by Baxter, et al. (1963, 1965, 1967). Copies of the maps covering the subject area are submitted here as Exhibit 3-1.

Hicks dome is situated on the northwest extremity of the Kattawa arch, an elongated, complexly faulted anticlinal flexure trending approximately N. 40° W. The dome itself has a nearly circular diameter of approximately nine miles. Central uplift and annular folding and faulting are prominent. Stratigraphic displacement at the surface is approximately 4,000 feet. Dips are steepest toward the center of the dome and diminish gradually toward the extremity. Lower or middle Devonian rocks are at the surface in the center of the dome and lower Pennsylvanian rocks are at the furthest margin. The furthest margins of the dome are roughly coincident with the margins of the gentler, more broadly defined Kattawa arch.

The project area is located in the central portion of Hicks dome. The central portion is marked by an elliptical outcrop ring of New Albany shale which forms an annular valley. The valley is surrounded by a rather prominent elliptical cuesta formed by the resistant Fort Payne chert. The ellipse is oriented with its long axis striking N. 40° w., roughly in accordance with the axis of the Kattawa arch.

The area of maximum interest is that bordered by the outcrop of the base of the New Albany shale. This area is approximately 6,000 feet long in a northwest direction and 3,500 feet wide in a northeasterly direction.

This central area of maximum interest is shown on the map given on the following page which shows the location and extent of outcrops. Parts of this area are also shown on the 1"=100' scale map which is included as Exhibit 3-2. It also shows the location of the existing drill holes, topography and other relevant features.

Surface geology in the center part of Hicks dome is effectively masked by bedded chert residuum. This material, apparently the result of deep leaching is approximately 20 feet thick around the margins of the dome but toward the center may be as much as 400 feet thick.

The only rocks exposed in the center part of the dome are several small outcrops of silicified, very hard, resisant breccias. Most prominent of these is the Pankey breccia which is exposed in the northeast quadrant of the interior part of the dome. In outcrop it consists of coarse and fine angular fragments of chert or silicified limestone in siliceous, hematitic rock flour matrix. Accicular quartz crystals are common and the matrix contains shows of barite.

The Hamp breccia occurs diametrically opposite the Pankey breccia on the southwest flank of the dome. It differs from the Pankey in that it is much smaller and contains no barite. It may also be somewhat more hematitic. A minor outcrop of similar breccia occurs between the two.

Considerable annular faulting probably exists within this central area. One or more of these may account for the variations in thickness of the deeply weathered chert residuum. If they exist they are hidden by the residuum.

Present information is not sufficient to fully describe or interpret Hicks dome. Drill hole information indicates it is composed essentially of two elements--a central mass or core of intensely brecciated rock and unbrecciated sedimentary rocks that dip steeply away from the breccia core.

A section based on the current drilling information is included here as Exhibit 3-3.

The central mass of breccia provides the exploration targets for the proposed work.

An inverted funnel configuration is suggested for the breccia mass. Drill hole information indicates that the central mass or core probably represents the geologic and geometric center of the dome. Intense brecciation comes to the surface in what is thought to be a pipe like body centered in the vicinity of drill hole Pankey #2. This central core may be more properly described as a diatreme. It has penetrated through and is surrounded by unbrecciated rocks of Ordovician, Silurian and Devonian age.

Brecciation persists to depths of approximately 3,000 feet in the St. Joseph well. None of the core holes got out of breccia at depth. A change in breccia character is evident at approximately 2,100 feet in all of the holes. Above this horizon the breccia

consists of rather fine, intensely brecciated material. Below this the brecciation is less intense, fragments are generally larger and less mixing is evident. The change is transitional and coincides with a lithologic change from limestone to dolomite. Degree or intensity of brecciation could be expected to diminish at depth due to increases in confining pressure. The abruptness of the change here is difficult to explain.

The breccia body in places is wider at depth. Three of the core holes passed through from 1,350 feet to 1,900 feet of unbrecciated rock before intersecting breccia. The brecciation was intense down to approximately 2,100 where it appeared to diminish in intensity. This gives a crude inverted funnel appearance, at least to the intensely brecciated portion.

The unbrecciated rocks in the center part of the dome area consist of the normal sequence of Devonian, Silurian and Ordovician strata. They appear to be dipping away from the central core. Dips may be as much as 20°. Though unbrecciated, these rocks are commonly well fractured. Slight displacements are common on the fractures. These may be appreciable in total. The composite displacement and possible irregular folding may account for inconsistencies in thicknesses of stratigraphic units.

Details of petrography and petrofabrics, certain interpretations and classification of the breccias within the central breccia mass are given in parts to follow (page 38). Since stratigraphic interpretation is necessary for and contributes to interpretation of the breccia, stratigraphy will be discussed first.

Stratigraphy

Ordovician, Silurian and Devonian stratigraphy has never been well defined in southeastern Illinois. Nearest outcrop of these units is about 80 miles to the west along the Mississippi River Valley in southwestern Illinois and southeastern Missouri. Until recently the only data available was cuttings from the Fricker and St. Jeseph wells. Recently completed core drill holes provide excellent data for stratigraphic interpretation.

Definition of stratigraphy is presently somewhat cursory. It is sufficient to contribute to interpretation of the breccia. At least parts of most of the units have some distinctive feature that can be distinguished in small breccia fragments. More detailed stratigraphic differentiation is probably warranted and can be done at a later date. Stratigraphic terminology assigned here is subject to change.

A generalized geologic column is given on the following page.

Ordovician

pre-St. Peter dolomites: This stratigraphic horizon has been penetrated by all of the holes on the central part of the dome. Each intersection, however, was within the breccias zone. Consequently the lithology of these units is somewhat speculative. These units are made up principally of fine grained gray dolomites which are sometimes sandy and cherty and contain varying amounts of quartzite and quartzitic sandstones. Because of the mixing of fragments within the breccia it is impossible to determine the top of these units.

St. Peter sandstone: Stratigraphic position thought to be occupied by St. Peter was also intersected within the breccia masses. St. Peter is only vaguely recognizable as a unit but is easily recognized as fragments. Fragments characteristically consist of well rounded and sorted frosted quartz grains.

The St. Peter is estimated to be approximately 1,000 feet deep beneath the base of the Maquoketa. Thickness in the area has been estimated at 100 feet. Because of the brecciated character where encountered in the drill holes, no estimate of thickness is justified in the center part of Hicks dome.

Joachim-Dutchtown dolomites: These formations have also been intersected within the breccia zone. No attempt is made here to distinguish them. Where intersected the breccias occupying this stratigraphic position are made up of gray, crystalline dolomites, mostly fine grained. Scattered throughout are fragments of fine grained, sub-rounded sandstone and quartzite. Fairly abundant fragments of siltstone and some chert is also present.

This zone is thought to be 400 to 450 feet thick. Where encountered in the Fricker well, Joachim dolomite was 312 feet thick.

The bottom is not defined. The top however is probably represented by a rather abrupt transition from domination of the breccias by Plattin limestone fragments to domination of the breccias by the dolomite and sandstone fragments of the Joachim.

STRATIGRAPHIC COLUMN

Formation	Thickness
Devonian system	
Lower Devonian Series	
Clear Creek limestone	470 (?)
Backbone limestone	23-38
Grassy Knob chert	272-291
Bailey limestone	201-260
Silurian system	
Niagaran series	
Moccasin Springs limestone	121-127
St. Clair-Sexton Creek limestone	57-67
Alexandrian series	
Edgewood limestone	84-107
Ordovician system	
Cincinnatian series	
Maquoketa shale	208-235
Champlainian series	
Kimmswick limestone	72-101
Decorah limestone	
Plattin limestone	700-(?)[1]
Joachim dolomite	312[2]
Dutchtown dolomite	143[2]
St. Peter sandstone	100

[1]Bottom not seen out of breccia.

[2]Based on Fricker well.

Decorah-Plattin limestone: Most of the holes in the center portions of Hicks dome penetrated the Plattin limestone in breccia. Some data are available. The Fricker well on the flanks of the dome indicated 785 feet of Decorah-Plattin. Hamp No. 4 passed through 400 feet of unbrecciated Decorah-Plattin limestone, giving a fair idea of its lithology.

It consists principally of a very fine grained, dark gray limestone with fairly distinct, wavy, interlaminated argillaceous streaks. There are a few lighter and darker gray limestones and an occasional cherty zone. It generally appears to be a rather high calcium limestone but in places is somewhat dolomitic.

Best mineralization seems to occur in fine breccia in the bottom 250 feet of the stratigraphic position of the Plattin limestones.

Kimmswick limestone: Kimmswick limestone has been logged as being between 75 and 100 feet thick. It differs from the underlying Decorah-Plattin in that it is lighter in color and distinctly more coarse grained. It is essentially free of chert and argillaceous material and from appearances would qualify as a high calcium limestone.

The bottom contact is not sharp or clear and no great amount of effort has been made to distinguish the contact except in a general way. The upper contact with the overlying Maquoketa is distinct.

This unit should be an excellent host rock where brecciated.

Maquoketa shale: Maquoketa shale ranges from 208 feet thick in the Hamp No. 1 hole to about 240 feet in the vicinity of the Hamp No. 3 and 4 holes. It consists principally of very dark gray to black hard and brittle, silty, well laminated shale. It is in places very fissile. It contains occasional interbedded, fine grained sandstones streaks and a few limestone streaks. The bottom 25 feet consists largely of a very argillaceous sandstone. Pyrite is fairly abundant throughout.

The top and the bottom of the Maquoketa is easily recognized in the core.

Silurian

Edgewood limestone: The Edgewood limestone varies from 84 feet in Hamp No. 1 to 107 feet in Hamp No. 3. It consists principally of extra fine to sub-lithographic, gray and dark gray limestone. It contains abundant wavy, interlaminated argillaceous streaks which give the limestone a somewhat nodular appearance. Chert is fairly abundant throughout and is generally light brown to tan with some gray and dark gray. Parts of the Edgewood are fairly silty.

The bottom of the Edgewood is easy to distinguish. The top can be picked principally on the basis of the increased chert and darker color. Fragments of this formation where brecciated are fairly easy to distinguish.

St. Clair-Sexton Creek limestone: This section varies from 57 feet in Hamp No. 1 to 67 feet in Hamp No. 4. No attempt has been made to differentiate between the two.

This unit consists principally of gray to light gray very fine grained limestone. The upper part is generally lighter gray and contains distinct coarse pink grains. Occasional zones are distinctly streaked with pink and also contain large pink crystals. It is slightly silty throughout and occasionally dolomitic. In places it contains fairly abundant interlaminated darker gray streaks which are generally very silty. The bottom part probably contains more pink grains and more pink streaks.

Neither the top or bottom of this unit is very distinct. Where brecciated it can sometimes be distinguished by its pink streaks and coarse pink grains.

Moccasin Springs limestone: The Moccasin Springs limestone varies from 122 feet in Hamp No. 1 to 127 feet in Hamp No. 4.

It consists of fine to very fine light gray to gray limestone. It is characterized by interbedded streaks of orange, pink and slightly green limestone and commonly has distinct scattered pink grains. It is commonly very pyritic. Some units are distinctly brick red. It commonly contains rather wavy, interlaminated argillaceous streaks or darker gray streaks which are distinctly silty. The entire unit is somewhat silty throughout, in places in excess of 50%. Few places are sandy and dolomitic streaks are fairly common.

Though the bottom of the Moccasin Springs is somewhat vague, the top can be picked exactly. Where encountered as fragments in the breccia the brick red, orange, pink or green limestones are fairly distinct.

Devonian

Bailey limestone: No differentiation was made between the Bailey limestone and the Grassy Knob formation in the study of the Fricker well cuttings. Though the contact between the two is transitional and difficult to pick, contrasting lithology justifies the differentiation. The Bailey varies from 201 feet thick in the Hamp No. 3 to 260 feet thick in the Hamp No. 1. More detailed study may allow for the contact to be picked more consistently.

It consists of extra fine to sublithographic, very silty and slightly sandy limestone and very calcareous siltstone. It is generally gray and light gray and very uniform in appearance. It contains fairly abundant thin, interlaminated argillaceous streaks throughout and distinct darker gray splotches parallel to the bedding. It contains occasional interbedded nodular and white novaculitic chert.

The bottom contact is very distinct. These fragments are very distinct when encountered within the breccia. Most distinguishing characteristic is the high percentage of silt which is readily apparent after slight etching.

Grassy Knob formation: Grassy Knob formation appears to vary from 272 feet in the Hamp No. 1 to 291 feet in the Hamp No. 3. It consists of very fine grained dark gray very argillaceous limestone with abundant nodular and interbedded, tan and brown novaculitic chert. Total chert in the unit probably exceeds 40%. Besides the abundant chert this formation can be distinguished by the very irregular, dark gray to black interlaminated argillaceous streaks in the limestone surrounding the bedded and nodular chert. These streaks give the unit a sort of sheared or "gniessic" texture.

Both the bottom and top contact to the Grassy Knob is somewhat vague. Detailed stratigraphic study could probably make a concise differentiation. Angular fragments of the Grassy Knob are easy to distinguish in breccia.

Backbone limestone: The Backbone limestone is difficult to differentiate from the overlying Clear Creek. It is thought to consist of about 38 feet of fine grained crystalline, light gray limestone. It differs from the Clear Creek in that Clear Creek contains much less chert and is lighter in color.

Both bottom and top contacts are transitional.

Clear Creek limestone: According to the sample study of the Fricker well the Clear Creek limestone probably is about 470 feet thick. All the drilling described here collared in Clear Creek. The maximum thickness penetrated was about 250 feet.

It consists principally of light tan to light gray very fine grained limestone which is partly sublithographic. There are some interbedded coarse zones. Chert is rather abundant and is generally light brown and somewhat sandy in appearance. It occurs as irregular bands and nodules. In places chert can exceed 50%.

Upper parts of the formation have not been seen in drill core. The bottom contact is somewhat vague.

Overburden (bedded chert residuum): The entire central part of the dome is mantled by a thick layer of bedded chert residuum. This residuum is approximately 20 feet thick in the vicinity of the Rose Mine but is generally over 200 feet thick in the center part of the dome. It was approximately 250 feet thick in Hamp No. 4. In Hamp No. 2, the hole that was abandoned, it may have been as much as 600 feet thick.

This material consists of crudely bedded rather massive, brittle chert and red clay. It contains fairly abundant fossil casts. It is commonly fairly sandy in appearance. It contains no calcareous material. Best explanation for this material is that it represents the decalcified cherty limestone. However, its thickness and wide extent plus its occurence over upper and middle Devonian limestones creates certain problems in interpretation.

This material creates a drilling problem. It is impossible to core. The individual fragments of chert are too loose and tend to roll into the hole and wipe out the diamonds very quickly. It does however drill rather rapidly with a rock bit. The problem encountered with the rock bit is maintaining adequate circulation and keeping the hole open. It is sometimes necessary to resort to casing and to reduction of the hole size in order to get through to solid rock.

Igneous Rocks

Numerous igneous dikes have been described around Hicks dome. These are principally mica peridotite dikes. Several thin dikes or sills were encountered in Hamp No. 4. The best intersection was at about 1,125 feet where approximately 10 feet of dike material was cut. It was not possible to determine the attitude. All the intrusives contained various sized angular fragments of surrounding wall rock and fragments of other material.

These were all logged as peridotites. Subsequent petrographic work by Bradbury (person communication) indicate that the matrix of this material consists of rock flour and carbonates. Carbonate replacement obscures identification of the original constituents. The most numerous fragments that he found are composed of light gray granite which in turn are composed of orthoclase quartz and minor albite. No dark minerals were seen. The granite was apparently being replaced by carbonate. It was also mineralized with fluorite. Finely disseminated pyrite occurs throughout in the matrix.

Coarse angular fragments of this material is common in the Pankey No. 2 hole indicating that at least one stage of the brecciation post dated these intrusions.

No interpretation is made at this time.

Breccia

In terms of mineralization the breccias are the most important lithologic units in the subject area. The brecciation and fine comminution serve as ground preparation for mineralization. Brecciation is thought to have provided the permeability and porosity necessary for mineralization.

The breccias underlying Hicks dome are commonly considered explosion breccias resulting from cryptovolcanic explosions. The main mass consists principally of fine angular fragments, well cemented in a rock flour matrix. The breccias are rather dense and appear to make up competent rock throughout.

The breccias are more or less uniform in appearance. Some classification can be done on type of matrix material. Subclasses could probably be formed on the basis of size and character of the breccia fragments. Any lines drawn between classes are imprecise, and the breccias grade from one type to another.

Two basic types of matrix material are recognized, rock flour and monomineralic. Most of the breccia mass is made up of breccias with rock flour matrix. In places they contain substantial mineralization. The breccias with a monomineralic composition make up a small percent of the total and are less important.

(Rock Flour Matrix) Breccias with a rock flour matrix can be classified according to their mineralogic and chemical composition. They are classified here as calcareous, dolomitic, siliceous or argillaceous, with some modifications applied if altered or mineralized.

Stratigraphic position is the most dominant factor controlling composition of the breccia matrix. Though a certain amount of mixing of fragments is evident, most are more or less in situ in terms of stratigraphic position. The rock flour matrix is principally the result of comminution of the fragments, hence they will have the same composition. Therefore, the composition of the matrix material will also grossly reflect stratigraphic position.

Classification of the breccias by composition of the matrix is considered important. Best mineralization seen to date consists principally of replacement of rock flour matrix. In the Illinois-Kentucky fluorspar district fluorite replacement mineralization exhibits a marked preference for calcareous environments. Identification of stratigraphic units providing this environment in a brecciated condition should help identify favorable loci for mineralization.

Breccias with a calcareous rock flour matrix are probably best developed in hole Hamp No. 1, No. 3 and No. 4, where intense brecciation was encountered in the rather pure Plattin limestone. In these holes the breccia generally consists of fine and very fine angular fragments of Plattin limestone in a very calcareous, rock flour groundmass. Occasional fragments and grains of sandstone and dolomite are scattered throughout as fragments and matrix.

Rock flour breccias classified as dolomitic, siliceous, or argillaceous were encountered in stratigraphic positions dominated respectively by dolomite, sandstone or shale. Dolomitic and siliceous rock flour breccias occur at depths exceeding 750 feet beneath the base of the Maquoketa shale. They are generally quite coarse. Fragments and matrix reflect the lithologies of the Joachim dolomite and sandstone, St. Peter sandstone or other dolomites. In the Pankey No. 2 drill hole at the stratigraphic position of the Maquoketa shale, the breccia consisted of shale fragments in an argillaceous matrix.

(Fluoritic "Purple Breccia" Matrix) Best and most consistent mineralization found to date is localized in the calcareous breccias in the stratigraphic position occupied by the lower part of the Plattin limestone. This zone occurs at depths ranging from 500 feet to 750 feet beneath the base of the Maquoketa shale. The base of this zone is at about the anticipated stratigraphic position of the contact with the underlying Joachim dolomite.

These zones are termed here purple breccias. These purple breccias represent very finely comminuted limestone in which the calcareous rock flour matrix has been extensively replaced by deep purple fluorite. This gives the rock a distinct purple cast. These breccias consist mainly of rock flour and very fine and fine angular to sub-rounded fragments. Replacement is most intense in the fine rock and smaller fragments. In places the outer margins or sharp corners of the coarser fragments have been replaced. In general, the higher the degree of comminution the greater the percentage of fluorite. Conversely, zones within the purple breccia with abundant larger fragments (+½") contain correspondingly less fluorite.

Though the purple breccia zone is rather distinct it grades into and is transitional to calcareous, rock flour breccias.

Substantial mineralization was encountered in this purple breccia zone in the three completed Hamp holes, particularly in Hamp No. 3 and No. 4. The relationship of these intersections to each other and other stratigraphic units is shown on the strip logs submitted here as Exhibit 3-4.

A total of approximately 240 feet of purple breccia was intersected in Hamp No. 3. It was more or less mineralized with fluorite throughout and a 214 foot zone averaged nearly 11.1%. One section 97 feet thick averaged 17.4% CaF_2. This intersection also averaged from 0.4% to 0.5% zinc and 0.3% to 0.4% lead. Purple breccia was also 240 feet thick in Hamp No. 4. It occurred at the same approximate stratigraphic horizon and elevation. The entire 240 feet averaged 8.4% CaF_2. A high grade zone roughly correlating with that in Hamp No. 3 was intersected. This zone was 112 feet thick and averaged 14.1% CaF_2. At the bottom of this zone was a zone 15.5 feet wide which averaged 21.4% CaF_2. Zinc and lead assays have not been completed.

Of possible equal ultimate importance are the significant and anomolous amounts of other elements detected by spectrographic analysis. Of particular economic interest are the analyses of the intersection in Hamp No. 3, particularly in the 97 foot zone of higher grade material. These analyses indicated beryllium in amounts exceeding 1%, niobium up to 0.15%, titanium from 0.5% to 1%, and yttrium ranging from 0.15 to 1%. Other analyses indicated 0.7% thorium in one fragment of the material. Other rare earths and other elements were also detected in anomolous amounts.

Detailed assay graphs of purple breccia intersections in Hamp No. 3 and No. 4 holes are given on the following pages. Assay certificates, comparisons and complete spectrograph analyses are given in part (f) to follow.

There was a corresponding intersection of purple breccia at a comparable stratigraphic position in the Hamp No. 1. It was less purple and less distinct. It contained anomolous fluorite and other elements but in less amounts than the Hamp No. 3 and No. 4 intersections.

(Monomineralic Matrix) Breccias with the monomineralic matrix consisting principally of crystalline calcite make up a recognizable class. Calcite as matrix material occurs scattered throughout all the previously described types. In places the

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

21 APR 1976

Messrs. Gilbert Kerlin, Robert G. Goelet,
Francis Goelet d/b/a Hicks Dome Account
c/o Mr. John L. Carroll
Room 4120, 345 Park Avenue
New York, New York 10022

Re: OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Pursuant to Article 7 of the referenced contract, as amended, the Government hereby certifies that mineral or metal production may be possible as a result of the exploration work.

Therefore, royalties shall be paid to the Government as provided in the contract on all production from the land described in the contract from September 26, 1972, to September 26, 1989, or until the total amount contributed by the Government under the contract ($118,206.55, plus accrued interest) is fully repaid, whichever occurs first. Under provisions of Article 1(c) of the Contract, as amended, and Paragraph 2 of Amendment No. 4, thereto, simple interest accrues on the amount contributed by the Government at the annual rate of:

8-1/4 percent on the first $47,725.00,
9 percent on the amount between $47,725.00 and $67,493.00,
8-3/4 percent on the amount between $67,493.00 and $113,558.00, and
9-3/4 percent on the balance to $118,206.55.

The payment of royalties is secured by Performance Bonds executed by the Aetna Insurance Company under dates of September 29, 1972, June 22, 1973, January 28, 1974, and July 5, 1974.

Royalty payments on any production computed as provided in the contract should be made in favor of the U.S. Geological Survey and mailed or delivered to the Chief, Office of Minerals Exploration, U.S. Geological Survey, National Center, 12201 Sunrise Valley Drive, Reston, Virginia 22092. Each payment should be accompanied by two copies of settlement sheets or other

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

suitable sales evidence showing the date of sale, name of the purchaser, the quantity and grade of the production sold, the price per unit, and the gross proceeds and allowable deductions therefrom. The purchaser should be notified of the Government's royalty on production and directed to pay the royalty, computed as provided in the contract, directly to the Government.

The Office of Minerals Exploration should be promptly notified upon the commencement of any production and upon any extended cessation thereof. Production unsold or unused six months after extraction from the ground should be reported promptly to the Office of Minerals Exploration.

Attention is specifically invited to the provisions of Article 2(c) of the Contract referring to the preservation of the Government's royalty rights. Two true copies of any instrument transferring, surrendering or encumbering any of said rights shall be furnished to the Office of Minerals Exploration.

Dated this 21st day of April, 1976.

THE UNITED STATES OF AMERICA

Harold Kirkemo

Chief, Office of Minerals Exploration
U.S. Geological Survey

Martin 4/20/76

cc:
DRF
MR Rdg.
OME Rdg.
OME Files
Mr. Kirkemo
Trace, Laurence
Heyl,

Mr. Porter

Eastern Regional Audit Manager

Supervisory Auditor, Contract and Grant

Request of contract cost review, Office of Mineral Exploration
Geological Survey, Assignment No. I-C-DC-OME-76(a)

Please make a cost review of the Hicks Dome Account, covering contract no. 2306 docket no. 6873.

OME has furnished the accompanying three packets of data for use in making the review. A copy of the OME request is also enclosed.

/s/ V. H. Nash

V. H. Nash

Enclosure

cc: EGS -- Harold Kirkemo
AAI -- Patterson/Asgt.
AAI -- Alfreda

AAI/DSavage/saw/3/3/76/x39421

calcite matrix dominates. This is particularly evident in the upper part of the Pankey No. 2, the upper part of the breccia zone in Hamp No. 1, and the upper part of the breccia zone in the Hamp No. 3. It is thickest and most distinct in Hamp No. 3.

In the Hamp No. 3 the calcite breccia was intersected at 1,575 feet and persisted to approximately 1,925 feet, where it graded into the gray rock flour breccia. They are considered here to be typical of the calcite breccias. They consist of fairly coarse (+1") angular to sub-angular fragments of Plattin limestone in a milky white crystalline calcite matrix. The percent of matrix material varies considerably. It probably makes up about one third of the total.

The fragments in the calcite breccia are distinctly more angular than in the breccias with the rock flour matrix. In general they do not seem to have moved very far.

In the calcite breccias in Hamp No. 3 the breccia fragments are commonly coated or encrusted with pale blue to purple crystalline fluorite. These fluorite encrustations are commonly around the upper part of the fragment, the encrustations being very thin or absent on the bottom parts of the fragments. Vugs with clear hexagonal calcite crystals are common, and they in turn are commonly coated with pyrite and small blue fluorite crystals.

One possibly significant mineralized zone of particular interest was intersected in calcite breccia at about 1,750 feet in Hamp No. 3. This intersection consisted of approximately 10 feet of fine breccia fragments in a matrix consisting of approximately 33% barite and 2.6% lead. Similar zones may be encountered by future drill holes.

These calcite breccias are rather loosely thought of as representing collapse breccias and very late fluorite mineralization. Little mixing or moving of fragments is evident.

Some monomineralic breccia occurs at the Rose mine. Here coarse angular chert fragments are contained in a matrix of crystalline fluorite. Their relationship to the other breccias is not known.

(Movement of Breccia Fragments) Though a certain amount of stratigraphic identity has been preserved within the breccia zones and the dominant breccia fragments reflect the stratigraphy, a considerable amount of movement by fragments is evident. This could be shown with all units but is best shown by lithologies with very distinct characteristics, such as the distinct pink and red Silurian fragments, fragments of Maquoketa shale or fragments of St. Peter type sandstone.

Vertical movement and mixing is probably greatest in the breccia that penetrates to the surface. In hole Pankey No. 2 Silurian fragments were first seen at depths of 300 to 350 feet. They became the dominant fragment at depths of 950 to 1,100 feet and were still occasionally visible down to depths of 1,500 feet. Fragments of Maquoketa shale appeared at approximately 700 feet and were still visible down to 1,600 feet. It is interesting to note that Maquoketa was dominant from approximately 1,100 feet to 1,200 feet in hole Pankey No. 2. Where encountered elsewhere the normal thickness of the Maquoketa was slightly over 200 feet.

This same mixing phenomenon is apparent and can be shown with other less distinct stratigraphic units in the Pankey No. 2.

Vertical mixing was less distinct in holes Hamp No. 1, 3, and 4. This is because brecciation was encountered where there was less variation in lithologic character. However in these holes fragments of St. Peter sandstone and sand grains were encountered several hundred feet above the anticipated stratigraphic horizon.

It was also noted that in general the further out of place an individual fragment was, the finer it tended to be, and the coarser the brecciation the less mixing was apparent. This does not imply that all very fine breccia has been moved a long distance.

Fragments in the calcite breccias are rather uniform as to lithology and size. They do not appear to have been subjected to much mixing. They are generally more angular and little rock flour is found in the matrix.

A certain amount of horizontal mixing is evident in addition to the vertical movement. This is best illustrated in Hamp No. 1 hole. This hole penetrated a normal sequence of unbrecciated

stratigraphy well down into the Plattin limestone. At a depth of 1,350 feet massive breccia was intersected. In the upper parts of this massive fine breccia distinct, pyritic red limestone fragments typical of Silurian units were scattered throughout. These fragments would have had to have been moved vertically down from 500 feet to 600 feet and would have had to move a certain distance laterally.

(Coarse Breccias) A possibly important feature of the breccia mass is that brecciation becomes distinctly less intense at depths below 2,100 feet. Fragments are much larger and appear to be much less mixed. Though the transition from fine to coarse breccia is rather abrupt, no contact per se is evident.

This feature is evident in all of the holes. The transition was somewhat less distinct and brecciation more intense in the central core or diatreme where cut by the Pankey No. 2.

The change in character may be due to differing physical properties of the brecciated rock. It vaguely reflects the contact of the Plattin limestone and Joachim dolomite. It may also be due to an increase in confining pressure due to depth.

The effect of the change in character of the brecciation on mineralization is entirely speculative. It is possible that the coarse brecciation may have had some effect on localizing the better mineralization in the lower part of the fine, calcareous breccia, just above the coarse dolomitic breccias. Assuming ascending mineralizing solutions, it may be that the coarse breccias were rather unfavorable for deposition and allowed the mineralizing solutions to pass upward before becoming impoverished in fluorine.

Ore Minerals

The economic mineral of most interest is fluorite. It occurs as finely disseminated material replacing rock flour matrix and breccia fragments. Associated with the fluorite are minor amounts of galena and sphalerite. Barite in varying quantities also occurs.

No work has been done as yet to determine the minerals containing the beryllium, niobium, titanium and yttrium. Isolation of the minerals containing these elements will probably require a rather comprehensive laboratory research program.

As yet no metallurgical testing has been done to determine the milling characteristics of the fluorspar, galena and sphalerite.

Type of Deposit

Present data are insufficient to determine the geometry or form of the known mineralization. Data suggest a rather broad replacement zone, confined to the bottom 250 feet of the Plattin limestone and roughly conforming to the geometry of the central part of the dome. The fluorite values contained are the result of replacement of finely comminuted limestone within this zone, the best values being found where the comminution is the most complete.

The thickness of the favorable zone and the total acreage within the central part of the dome provide adequate room for a multimillion ton ore body.

(f) Sampling and Assays:

Sampling

All drill core, particularly the more mineralized portions in the breccia zone, have been extensively sampled. Locations of the samples taken and the results of the assays are best shown on Exhibit 3-4.

The samples assayed consisted entirely of split core. Most of the core was split by the writer. Attempts were made to split the core in a representative manner. Inasmuch as the material is rather homogenous this was not a problem.

The cores, including the remaining one-half of the split portion, are essentially intact and are in storage at Rosiclare. Since the samples were generally quite large, a considerable portion of the split which was assayed remains. This is also in storage and is available for inspection and future work.

Assaying

Calcium fluoride is difficult to assay. Considerable experience is necessary plus some trial and error to assay accurately calcium fluoride ores. Different methods are available. An experienced assayer usually uses some judgment as to what method is best suited for an individual ore.

Most of the samples of interest have been run by several different methods. The results were not consistent. Table I and Table II on the following pages give and compare the assay results of several methods and several assayers of the purple breccia zones in Hamp No. 3 and Hamp No. 4. Relevant assay certificates are given following each table.

Frazer Laboratories employed the Bidtel and calcium oxalate methods. Neither of these methods is considered to be very accurate or reliable for the type of mineralization involved here. Frazer Laboratories assays have not been consistent, and they probably will not be employed for future work.

Best method for this material is the Willard-Winter method. By this method the fluorine is distilled off in the presence of perchloric acid and the amount of fluorine in the distillate is then determined by a thorium nitrate titration. Again a certain amount of experience is required in determining the amount of the original sample to use and determining the end point of the titration.

TABLE I
Comparison of Assay Results by
Assayer and Method
Drill Hole Hamp No. 3

SAMPLE	DEPTH	TOTAL	PERCENT CALCIUM FLUORIDE				
		Assayer Method	Frazer Calcium Oxalate	Broeman Willard Winter	MacDonald Willard Winter	Porter Estimate	Skyline Specific Ion Electrode
		thickness					
507	1981.0-1987.3	6.3	2.26			6.0	
508	1987.3-1995.0	7.7	5.91			8.0	
509	1995.0-2001.0	6.0	7.02		8.75	9.0	
510	2001.0-2005.0	4.0	16.37			12.0	
511	2005.0-2015.0	10.0	14.74	15.05	18.75	14.0	
512	2015.0-2026.5	11.5	14.29	13.75	15.12	15.0	15.2
513	2026.5-2036.0	9.5	13.61	14.89	20.11	20.0	
514	2036.0-2045.0	9.0	10.49	8.78	13.52		14.8
515	2045.0-2052.0	7.0	14.19	11.67	15.48	18.0	
516	2052.0-2058.5	6.5	18.62	16.95	18.76	22.0	17.3
517	2058.5-2063.0	4.5	15.37	14.34	20.10	20.0	
518	2063.0-2068.0	5.0	11.52	10.94	12.60	15.0	14.4
519	2068.0-2076.5	8.5	20.46	17.25	23.10	20.0	22.6
520	2076.5-2082.5	6.0	7.02	6.01	7.70	7.0	

TABLE I CONTINUED

SAMPLE	DEPTH	TOTAL	PERCENT CALCIUM FLUORIDE				
		Assayer Method	Frazer Calcium Oxalate	Broeman Willard Winter	MacDonald Willard Winter	Porter Estimate	Skyline Specific Ion Electrode
		Thickness					
521	2082.5-2089.5	7.0	21.14	20.30	26.40	15.0	
522	2089.5-2098.0	8.5	19.29	19.18	22.20	15.0	22.6
523	2098.0-2105.0	7.0	6.93	6.75	8.34	8.0	
524	2105.0-2111.0	6.0	8.67	10.21	10.91	8.0	
525	2119.0-2125.0	6.0	9.84	9.44	9.28	5.0	8.6
526	2125.0-2135.0	10.0	9.02	5.23	6.34	3.0	
527	2111.0-2118.0	7.0	10.21	8.10			
528	2154.0-2165.0	11.0	8.81	3.71		3.0	
529	2165.0-2170.0	5.0	13.63	11.23		13.0	
530	2170.0-2175.0	5.0	8.26	9.67		16.0	7.8
531	2175.0-2185.0	10.0	8.14	11.25	12.1	20.0	
532	2185.0-2195.0	10.0	13.08	13.50	12.4	22.0	12.7
533	2195.0-2205.0	10.0	10.29	10.50	12.2	22.0	
534	2205.0-2215.5	10.5	13.79	13.00			12.2
535	2215.5-2222.0	6.5	6.91	5.53		10.0	
536	2222.0-2229.0	7.0	3.72	4.14		1.0	
537	2229.0-2241.0	12.0	1.73			1.0	4.8

FRAZER LABORATORIES

MARION, KY. 42064

July 9,1971

Mr.Joseph A.Porter
Rosiclare.Ill.

Certificate of analysis

Sample	No.	CaF_2	SiO_2	$CaCO_3$		ZN
#505	9463	2.91	6.18	86.04	95.13	0.00
#506	9464	5.06	10.68	75.56		0.00
#507	9465	2.26	7.46	84.96	94.78	0.11
#508	9466	5.91	15.52	70.48	92.07	0.16
#509	9467	14.02	13.68	61.66	89.92	0.56
#510	9468	35.14	11.44	39.02	86.03	0.43
#511	9469	30.22	14.86	39.96	85.55	0.51
#512	9470	37.14	14.22	32.68	84.63	0.59
#513	9471	37.39	11.76	34.56	84.09	0.38
#514	9472	28.26	11.32	43.64	83.46	0.34

Error Bad

C. L. Frazer

Chemist

FRAZER LABORATORIES

MARION, KY. 42064

July 15,1971

Mr.Joseph A.Porter
Rosiclare,Ill.

Certificate of analysis

Sample	No.	CaF_2	SiO_2	$CaCO_3$	Pb
#509	9467				0.32
#510	9468				0.27
#511	9469				0.37
#512	9470				0.31
#513	9471				0.33
#514	9472				0.24
#515	9473	14.19	23.04	53.02	0.33
#516	9474	18.62	24.42	45.58	0.31
#517	9475	15.37	17.78	53.42	0.35
#518	9476	11.52	18.68	59.28	0.39
#519	9477	20.46	18.28	45.52	0.44
#520	9478	7.02	18.08	69.48	0.17
#521	9479	21.14	17.82	54.02	0.38
#522	9480	19.29	17.64	54.84	0.36
#523	9481	6.93	20.46	64.88	0.27

C. L. Frazer
Chemist

FRAZER LABORATORIES

MARION, KY. 42064

July 25,1971

Mr.Joseph A.Porter
Rosiclare,Ill.

Certificate of analysis

Sample	No.	CaF_2	SiO_2	$CaCO_3$	ZN	Pb
#524	9482	8.67 ~~13.04~~	23.22	53.56	0.00	0.23
#525	9483	9.84 ~~15.96~~	15.72	58.64	0.00	0.16
#526	9484	9.02 ~~17.21~~	18.72	50.52	0.00	0.21
#527	9485	10.21 ~~14.96~~	19.02	56.56	0.00	0.33
#528	9486	8.81	23.08	61.28	0.00	0.11
#529	9487	13.63	24.22	47.42	0.00	0.17
#530	9488	8.26 ~~12.14~~	26.03	55.82	0.00	0.39
#531	9489	8.14 ~~11.17~~	25.82	54.70	0.00	0.23
#532	9490	13.08	25.56	51.12	0.00	0.31
#533	9491	10.29	25.28	52.12	0.00	0.17
#534	9492	13.79	26.22	50.78	0.00	0.42
#535	9493	6.91	15.92	69.64	0.00	0.14
#536	9494	3.72	10.06	81.96	0.00	0.00

O. L. Frazer
Chemist

FRAZER LABORATORIES

MARION, KY. 42064

August 9,1971

Mr. Joseph A. Porter
Rosiclare, Ill.

Certificate of analysis

Sample	No.	CaF_2	$BaSO_4$	SiO_2	$CaCO_3$	Pb	ZN
#501	9455	3.21	36.58	9.44	42.56	2.11	
#502	9456	4.18	31.02	8.32	48.52	3.16	
#662	9458	34.14		48.02	15.68		
#665	9459	20.08		54.66	21.52		
#509	9467	7.02	6.82	13.68	61.66	0.32	0.56
#510	9468	16.37	10.82	11.44	39.02	0.27	0.43
#511	9469	14.74	9.76	14.86	39.96	0.37	0.51
#512	9470	14.29	10.94	14.22	32.68	0.31	0.59
#513	9471	13.61	12.36	11.76	34.56	0.33	0.38
#514	9472	10.49	7.62	11.32	43.64	0.24	0.34

C. L. Frazer
Chemist

Check-Assays

FRAZER LABORATORIES
MARION, KY.

Sept.3,1971

Mr.Joseph A.Porter
Rosiclare,Ill.

Certificate of analysis

Sample	No.	CaF_2
#524	9482	8.67
#525	9483	9.84
#526	9484	9.02
#527	9485	10.21
#530	9488	8.26
#531	9489	8.14
#387	9502	14.27

C.D.Frazer
Chemist

F. C. BROEMAN & CO.
ESTABLISHED 1904
ANALYTICAL AND CONSULTING
CHEMISTS
1926 RACE STREET - - PHONE 621-5441
CINCINNATI 10, OHIO

Lamp #3

August 11, 1971

Mr. Joseph A. Porter
P. O. Box 506
Rosiclare, Illinois 62982

Dear Mr. Porter:

The following results were obtained upon samples submitted to us for testing.

Sample	Calcium Fluoride	Sample	Calcium Fluoride	Sample	Calcium Fluoride
510	16.37%	519	17.25%	528	3.71%
511	15.05% 15.2	520	6.01% out	529	11.23% 7.89
512	13.75%	521	20.30%	530	9.67%
513	14.89%	522	19.18% 22.4	531	11.25%
514	8.78% 14.8	523	6.75%	532	13.50% 12.7
515	11.67% 17.3	524	10.21%	533	10.50%
516	16.95%	525	9.44% 8.4	534	13.00% 13.2
517	14.34% 14.4	526	5.23%	535	5.53%
518	10.94%	527	8.10%	536	4.14% 4.8

Samples 510 - 511

Major	Calcium, Magnesium, Silicon
Minor	Aluminum, Iron, Titanium
Heavy Trace	Barium
Trace	Beryllium, Cobalt, Sodium, Phosphorus, Vanadium
Slight Trace	Manganese, Lead
Detected	Copper, Molybdenum, Zinc

Samples 521 - 522

Major	Calcium, Magnesium, Silicon
Minor	Aluminum, Iron, Titanium
Heavy Trace	Barium
Trace	Beryllium, Cobalt, Sodium, Phosphorus, Vanadium
Slight Trace	Molybdenum, Manganese, Lead
Detected	Copper

Cont'd.

F. C. BROEMAN & CO.
ESTABLISHED 1904
ANALYTICAL AND CONSULTING
CHEMISTS
1926 RACE STREET - - PHONE 621-5441
CINCINNATI 10, OHIO

August 11, 1971

Samples 532 - 533

Major	Calcium, Magnesium, Silicon
Minor	Aluminum, Iron, Titanium
Heavy Trace	Barium
Trace	Cobalt, Sodium, Phosphorus, Vanadium
Slight Trace	Beryllium, Manganese, Molybdenum, Lead
Detected	Copper

Sample 512

Further chemical analysis on this sample indicates the following:

Barium sulfate	10.70%
Silica (volatile with HF)	16.60%
Calcium fluoride	18.10%

(calculated from calcium insoluble in 30% acetic acid)

A calcium fluoride determination based on the residue obtained after treating a sample with acetic acid to remove calcium carbonate and with hydrofluoric acid to volatilize silica is inaccurate because of the presence of barium sulfate and complex silicates of aluminum, calcium, and magnesium. A direct fluoride determination is a more satisfactory method for evaluating these samples.

Yours very truly,

F. C. BROEMAN & COMPANY

F. I. BROEMAN

FIB:dr

BC2633-59

SKYLINE LABS, INC.
SPECIALISTS IN GEOCHEMICAL EXPLORATION
12090 WEST 50TH PLACE • WHEAT RIDGE, COLORADO 80033 • TEL.: (303) 424-7718

REPORT OF ANALYSIS

Job No. M-1220
October 6, 1971

Mr. J. Porter
P. O. Box 506
Rosiclare, Illinois 62982

11 Crushed rock samples

Item	Sample No.	CaF_2 (%)
1.	819	3.9
2.	820	15.2
3.	821	14.8
4.	822	17.3
5.	823	14.4
6.	824	22.6
7.	825	8.6
8.	826	7.8
9.	827	12.7
10.	828	13.2
11.	829	4.8

DDH
All Hanson #3

Charles E. Thompson
Chief Chemist

SKYLINE LABS, INC.
SPECIALISTS IN GEOCHEMICAL EXPLORATION
12090 WEST 50TH PLACE • WHEAT RIDGE, COLORADO 80033 • TEL.: (303) 424-7718

REPORT OF SPECTROGRAPHIC ANALYSIS

Job No. M-1220
October 6, 1971

Mr. J. Porter
P. O. Box 506
Rosiclare, Illinois 62982

Values are reported in parts per million, except where noted otherwise, to the nearest number in the series 1, 1.5, 2, 3, 5, 7 etc.

	Sample Numbers					
Element	819	820	821	822	823	824
Fe	2%	3%	3%	3%	2%	2%
Ca	>20%	20%	20%	20%	20%	20%
Mg	3%	5%	5%	5%	7%	7%
Ag	<1	<1	<1	<1	<1	<1
As	<500	<500	<500	<500	<500	<500
B	20	20	20	20	20	20
Ba	3,000	>10,000	>10,000	>10,000	>10,000	>10,000
Be	200	>10,000	>10,000	>10,000	10,000	5,000
Bi	<10	30	30	50	30	20
Cd	<50	<50	<50	<50	<50	<50
Co	<5	<5	<5	<5	<5	<5
Cr	70	50	70	50	50	70
Cu	5	10	10	15	10	10
Ga	<10	<10	<10	<10	<10	<10
Ge	<20	<20	<20	<20	<20	<20
La	50	<20	<20	<20	<20	<20
Mn	700	1,500	1,000	1,000	1,000	1,000
Mo	<2	<2	<2	<2	<2	<2
Nb	300	700	1,000	1,500	1,500	700
Ni	5	10	10	15	10	10
Pb	3,000	2,000	5,000	2,000	2,000	2,000
Sb	<100	<100	<100	<100	<100	<100
Sc	100	200	150	150	100	100
Sn	<10	<10	<10	<10	<10	<10
Sr	2,000	2,000	3,000	3,000	2,000	2,000
Ti	5,000	7,000	7,000	10,000	5,000	5,000
V	300	200	200	200	200	200
W	<50	<50	<50	<50	<50	<50
Y	1,500	10,000	7,000	10,000	7,000	5,000
Zn	<200	1,500	1,000	200	<200	<200
Zr	200	300	300	300	200	150

Element	Sample Numbers 825	826	827	828	829
Fe	2%	2%	2%	2%	1%
Ca	20%	20%	20%	20%	20%
Mg	7%	7%	7%	7%	10%
Ag	2	<1	<1	1	<1
As	<500	<500	<500	<500	<500
B	20	20	20	20	20
Ba	>10,000	>10,000	>10,000	>10,000	10,000
Be	200	200	300	500	50
Bi	10	10	15	10	<10
Cd	<50	<50	<50	<50	<50
Co	<5	<5	<5	<5	<5
Cr	50	50	50	50	20
Cu	10	10	15	15	3
Ga	<10	<10	<10	<10	<10
Ge	<20	<20	<20	<20	<20
La	<20	<20	<20	50	<20
Mn	1,000	1,500	1,000	1,500	700
Mo	<2	<2	<2	<2	<2
Nb	500	700	700	500	100
Ni	10	5	10	5	<5
Pb	1,000	3,000	7,000	>10,000	700
Sb	<100	<100	<100	<100	<100
Sc	70	70	150	100	15
Sn	<10	<10	<10	<10	<10
Sr	1,000	1,500	1,000	1,500	500
Ti	3,000	5,000	7,000	5,000	1,500
V	150	200	300	200	200
W	<50	<50	<50	<50	<50
Y	1,500	1,500	3,000	2,000	200
Zn	<200	<200	<200	<200	<200
Zr	150	200	300	200	50

Charles E. Thompson
Chief Chemist

Box 592
Rosiclare, Ill. 62982

V. C. McDonald
Chemist Assayer
Lab. Flotation Research

Telephone 285-6823
(Area Code 618)

2-28-72

Mr. Joe Porter
Rosiclare, Illinois

RESULTS OF SIX CORE DRILL SAMPLES

W Winter

Sample No-	CaF_2	SiO_2	Total Calcium
517	20.10	13.00	19.86
518	12.60	17.40	19.05
519	23.10	12.78	19.44
520	7.70	16.00	20.22
512	15.12	13.78	16.04
513	20.11	16.78	19.36

V.C.McDonald

Box 592
Rosiclare, Ill. 62982

V. C. McDonald
Chemist Assayer
Lab. Flotation Research

Telephone 285-6823
(Area Code 618)

3-20-72

Mr. Joe Porter Geogolist
Rosiclare, Illinois

ASSAYS OF CORE SAMPLES

Sample No	CaF_2	SiO_2	Total Calcium	$BaSO_4$	Zn	Pb	Al_2O_3 Fe_2O_3
157 5 L 3	17.51	21.68	20.31				
518	12.60	17.40	19.05				
519	23.10	12.78	19.44				
520	7.70	16.00	20.22				
512	15.12	13.78	16.04				
513	20.11	16.78	19.36				
508	7.80	15.08	24.78				
510	21.0	12.80	24.88				
Composite	21.51	14.84	20.04	1.14	0.28	0.16	8.45
509	8.75	13.80	17.54				
511	18.75	16.38	19.35				
521	22.31	14.78	22.57				
522	22.20	14.52	19.35				
514	13.52	13.66	19.02				
515	15.48	12.42	19.36				
516	18.76	12.20	19.17				
523	8.34	14.42	18.50				
524	10.91	17.48	18.79				
525	9.28	17.90	20.72				
526	6.34	16.52	18.96				
560	10.32	20.44	19.93				
572	21.24	16.04	19.70				

22 Samples

V. C. McDonald

FRAZER LABORATORIES
MARION, KY. 42064

August 9,1971

Mr. Joseph A. Porter
Rosiclare, Ill.

Certificate of analysis

Sample	No.	CaF_2	Sample	No.	CaF_2
#537	9497	1.73	#801	9516	2.21
#538	9498	1.49	#802	9517	2.43
#539	9499	2.64	#803	9518	3.56
#540	9500	3.07	#804	9519	2.97
#541	9501	1.82	#805	9520	1.61
#387	9502	52.21	#806	9521	3.09
#388	9503	6.04	#807	9522	2.12
#389	9504	4.53	#808	9523	4.79
#390	9505	3.59	#809	9524	1.38
#391	9506	0.84	#810	9525	1.03
#392	9507	0.53	#811	9526	1.92
#393	9508	0.49	#812	9527	4.86
#394	9509	8.38	#813	9528	3.11
#395	9510	3.11	#814	9529	1.86
#396	9511	1.24			
#397	9512	1.97			
#398	9513	0.61			
#399	9514	0.36			
#400	9515	3.38			

O. L. Frazer
Chemist

TABLE II
Comparison of Assay Results by
Assayer and Method
Drill Hole Hamp No. 4

SAMPLE	DEPTH	TOTAL PERCENT CALCIUM FLUORIDE					
		Assayer Method	Frazer Calcium Oxalate	Broeman Willard Winter	MacDonald Willard Winter	Porter Estimate	Skyline Specific Ion Electrode
		Thickness					
543	1895.5-1906.0	10.5	4.41			3.0	
544	1906.0-1913.0	7.0	9.27			4.5	
545	1913.0-1925.0	12.0	4.86			2.0	
546	1925.0-1932.5	7.5	5.28			3.0	
547	1932.5-1942.5	10.0	4.44				
548	1942.5-1948.5	6.0	2.79			2.0	
549	1948.5-1955.0	6.5	3.44			3.5	
550	1955.0-1963.5	8.5	2.17			3.0	
551	1963.5-1970.0	6.5	4.08			3.5	
552	1970.0-1978.0	8.0	4.79			4.0	
553	1978.0-1985.0	7.0	5.12			6.0	↑
554	1985.0-1992.0	7.0	6.61	7.93		5.0	7.79
555	1992.0-1999.5	7.5	6.57	6.36		6.0	↓ ↑
556	1999.5-2007.0	7.5	6.48	7.36	7.24	8.5	11.07

TABLE II CONTINUED

SAMPLE	DEPTH	TOTAL PERCENT CALCIUM FLUORIDE					
		Assayer Method	Frazer Calcium Oxalate	Broeman Willard Winter	MacDonald Willard Winter	Porter Estimate	Skyline Specific Ion Electrode
557	2007.0-2014.5	7.5	9.89	9.67	11.83	12.0	[illegible]
558	2014.5-2018.0	3.6	13.16	14.10	15.06	20.0	15.17
559	2018.0-2023.5	5.5	7.54	8.68	9.44	12.0	11.45
560	2023.5-2039.0	5.5	9.02	10.23		10.0	[illegible]
561	2029.0-2038.0	9.0	10.54	9.24	14.50	14.0	12.91
562	2038.0-2038.5	.5					5.94
563	2038.5-2045.0	6.5	11.88	14.60	17.51	11.0	↑
564	2045.0-2050.5	5.5	11.39	12.18	15.30	13.0	13.53
565	2050.5-2056.0	5.5	9.44	10.06	11.83	15.0	↓
566	2056.0-2063.0	7.0	12.39	13.54	16.50	12.0	15.17
567	2063.0-2068.0	5.0	15.57	16.53	20.31	15.0	20.09
568	2068.0-2073.0	5.0	9.08	13.07	15.06	16.0	↑
569	2073.0-2081.0	8.0	8.93	9.91	10.33	17.0	13.12
570	2081.0-2086.0	5.0	15.17	15.46	15.02	22.0	↑

TABLE II CONTINUED

SAMPLE	DEPTH	TOTAL	PERCENT CALCIUM FLUORIDE				
		Assayer Method	Frazer Calcium Oxalate	Broeman Willard Winter	MacDonald Willard Winter	Porter Estimate	Skyline Specific Ion Electrode
571	2086.0-2090.0	4.0	11.36	12.42	9.02	20.0	24.60
572	2090.0-2092.5	2.5	16.38	17.15	21.24	20.0	
573	2092.5-2103.0	10.5	3.13	7.36	6.19		4.10
574	2103.0-2107.0	4.0	22.49	26.40	25.29	35.0	30.75
575	2107.0-2109.5	2.5	12.78	14.59	16.77	17.0	
576	2109.5-2115.5	6.0	17.53	18.17	20.90	14.0	18.86
577	2115.5-2118.5	3.0	16.82	17.42	19.35	15.0	
578	2118.5-2126.0	7.5	6.74	9.16	8.80	7.0	
579	2126.0-2136.0	10.0	3.43			4.0	
580	2136.0-2146.0	10.0	6.85			3.0	
581	2146.0-2156.0	10.0	2.92				

FRAZER LABORATORIES

MARION, KY. 42064

Oct. 4, 1971

Mr. Joseph A. Porter
Rosiclare, Ill.

Certificate of analysis

Sample	No.	CaF_2
#573	9541	3.13
#574	9542	22.49
#575	9543	12.78
#576	9544	17.55
#577	9545	16.82
#561	9546	10.54
#563	9547	11.88
#564	9548	11.39
#565	9549	9.44
#566	9550	12.39
#567	9551	15.57
#568	9552	9.08
#569	9553	8.93
#570	9554	15.17
#571	9555	11.36
#572	9556	16.38
#543	9557	4.41
#544	9558	9.27
#545	9559	4.86
#546	9560	5.28
#547	9561	4.44
#548	9562	2.79
#549	9563	3.44
#550	9564	2.17
#551	9565	4.08
#552	9566	4.79
#553	9567	5.12
#554	9568	6.61
#555	9569	6.57
#556	9570	6.48
#557	9571	9.89
#558	9572	13.16
#559	9573	7.54
#560	9574	9.02
#578	9575	6.74
#579	9576	3.43
#580	9577	6.85
#581	9578	2.92

C. D. Frazer
Chemist

F. C. BROEMAN & CO.
Established 1904
ANALYTICAL AND CONSULTING
CHEMISTS
1926 RACE STREET - - PHONE 621-5441

REPORT OF ANALYSIS

SAMPLE OF 24 Ore Samples

CINCINNATI, OHIO 45210 October 12, 1971

FROM Joe Porter

RECEIVED October 4, 1971

Sample	Calcium Fluoride	Sample	Calcium Fluoride
554	7.93%	567	16.53%
555	6.36%	568	13.07%
556	7.36%	569	9.91%
557	9.67%	570	15.46%
558	14.10%	571	12.42%
559	8.68%	572	17.15%
560	10.23%	573	7.36%
561	9.24%	574	26.40%
563	14.6%	575	14.59%
564	12.18%	576	18.17%
565	10.06%	577	17.42%
566	13.54%	578	9.16%

FIB:dr

BC3627-50

SKYLINE LABS, INC.
SPECIALISTS IN GEOCHEMICAL EXPLORATION
12090 WEST 50TH PLACE • WHEAT RIDGE, COLORADO 80033 • TEL.: (303) 424-7718

REPORT OF ANALYSIS

Job No. M-1234
October 26, 1971

Mr. J. Porter
P. O. Box 506
Rosiclare, Illinois 62982

14 Crushed rock chip samples

Item	Sample No.	F (%)
1.	830	3.8
2.	831	5.4
3.	832	7.4
4.	833	5.6
5.	834	6.3
6.	835	2.9
7.	836	6.6
8.	837	7.4
9.	838	9.8
10.	839	6.4
11.	840	12.
12.	841	2.8
13.	842	15.
14.	843	9.2

Charles E. Thompson
Chief Chemist

cc. John Carroll
New York, New York

SKYLINE LABS, INC.
SPECIALISTS IN GEOCHEMICAL EXPLORATION
12090 WEST 50TH PLACE • WHEAT RIDGE, COLORADO 80033 • TEL.: (303) 424-7718

REPORT OF SPECTROGRAPHIC ANALYSIS

Job No. M-1234
October 26, 1971

Mr. J. Porter
P. O. Box 506
Rosiclare, Illinois 62982

Values are reported in parts per million, except where otherwise noted, to the nearest number in the series 1, 1.5, 2, 3, 5, 7, etc.

Element	Sample Numbers 830	831	832	833	834	835	836
Fe	7%	10%	7%	7%	10%	20%	5%
Ca	>20%	20%	20%	20%	15%	2%	20%
Mg	5%	5%	5%	5%	5%	1%	5%
Ag	<1	<1	<1	<1	<1	<1	<1
As	<500	<500	<500	<500	<500	1,000	<500
B	50	50	50	50	50	70	30
Ba	10,000	>10,000	>10,000	>10,000	>10,000	5,000	>10,000
Be	1,000	1,000	1,500	1,500	2,000	1,000	1,500
Bi	10	15	20	15	20	<10	20
Cd	<50	<50	<50	<50	<50	<50	<50
Co	10	10	20	10	20	50	5
Cr	150	150	150	150	200	50	100
Cu	20	20	30	20	20	50	15
Ga	10	10	10	10	10	20	10
Ge	<20	<20	<20	<20	<20	<20	<20
La	100	100	100	150	100	<20	100
Mn	1,000	1,000	1,000	1,500	1,000	200	1,000
Mo	<2	2	<2	2	5	10	2
Nb	500	500	700	500	1,000	500	500
Ni	20	50	50	50	50	100	20
Pb	500	500	1,000	700	700	500	2,000
Sb	<100	<100	<100	<100	<100	300	<100
Sc	200	200	200	300	200	50	150
Sn	<10	<10	<10	<10	<10	<10	<10
Sr	7,000	5,000	7,000	7,000	7,000	5,000	7,000
Ti	5,000	5,000	5,000	5,000	5,000	5,000	5,000
V	200	500	200	200	300	150	200
W	<50	50	70	50	100	50	50
Y	2,000	2,000	5,000	3,000	3,000	1,000	2,000
Zn	<200	<200	<200	<200	<200	<200	200
Zr	200	200	200	200	200	100	200
CaF2	7.8	11.1	15.1	11.4	12.9	5.9	13.5

Element	Sample Numbers 837	838	839	840	841	842	843
Fe	7%	7%	10%	5%	1%	2%	7%
Ca	>20%	>20%	>20%	>20%	>20%	20%	20%
Mg	7%	7%	7%	7%	15%	10%	10%
Ag	<1	<1	<1	<1	<1	<1	<1
As	<500	<500	<500	<500	<500	<500	<500
B	30	50	50	50	20	20	30
Ba	>10,000	>10,000	>10,000	>10,000	>10,000	>10,000	>10,000
Be	1,500	3,000	2,000	2,000	500	1,500	2,000
Bi	20	30	20	20	10	30	20
Cd	<50	<50	<50	<50	<50	<50	<50
Co	10	20	10	10	<10	20	10
Cr	150	150	100	150	20	30	30
Cu	20	20	15	15	7	10	10
Ga	10	<10	10	<10	<10	<10	<10
Ge	<20	<20	<20	<20	<20	<20	<20
La	100	100	100	100	50	70	50
Mn	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Mo	2	2	2	2	2	<2	<2
Nb	700	700	500	700	500	700	700
Ni	30	50	50	50	10	10	15
Pb	1,500	700	700	500	500	700	500
Sb	<100	<100	<100	<100	<100	<100	<100
Sc	200	200	150	150	50	100	100
Sn	<10	<10	<10	<10	<10	<10	<10
Sr	10,000	10,000	7,000	7,000	5,000	10,000	10,000
Ti	7,000	5,000	5,000	3,000	2,000	5,000	3,000
V	500	300	200	200	100	200	100
W	50	70	50	50	50	50	<50
Y	5,000	5,000	2,000	3,000	500	5,000	3,000
Zn	300	200	<200	<200	<200	<200	<200
Zr	200	200	200	300	50	300	200
CaF2	15.2	20.1	13.1	24.4	4.1	30.7	18.9

Charles E. Thompson
Chief Chemist

cc. John Carroll
New York, New York

Box 592
Rosiclare, Ill. 62982

V. C. McDonald
Chemist Assayer
Lab. Flotation Research

Telephone 285-6823
(Area Code 618)

December 23rd, 1971

Mr. Joe Porter
Rosiclare, Illinois

RE: RESULTS OF TEN CORE DRILL SAMPLES

Sample No.	CaF_2	SiO_2	Al_2O_3 Fe_2O_3	Total Calcium
533	12.22	17.90	8.80	9.98
557	11.83	18.82	8.80 m	20.36
558	15.06	21.38	10.00	18.08
559	9.44	18.60	9.60	18.93
565	11.83	19.30	8.96	19.38
568	15.06	16.00	12.80	19.38
~~569~~ 570	15.02	16.78	8.44	19.63
~~570~~ 569	10.33	18.40	9.00	10.67
571	9.02	19.20	8.80	9.90

Note- The above fluorides were run by the Willard Winter Distillation method.

V.C.McDonald
Chemist

Box 592
Rosiclare, Ill. 62982

V. C. McDonald
Chemist Assayer
Lab. Flotation Research

Telephone 285-6823
(Area Code 618)

2-15-72

Mr. Joe Porter
Rosiclare, Illinois

Dear Sir:

The following will give you the results of ten core samples submitted to me recently.

Sample No	CaF_2	SiO_2	Total Ca
575	16.77	15.60	16.62
576	20.90	18.00	20.30
577	19.35	15.85	19.41
578	8.80	13.70	19.86
556	7.24	22.18	20.22
567	20.31	16.22	20.51
564	15.30	18.40	19.41
566	16.50	21.02	20.58
561	14.50	20.36	18.96
563	17.51	21.68	20.31

V.C.McDonald
Chemist

V. C. McDonald

Both Broeman and MacDonald used the Willard-Winter method. MacDonald's assays are thought to be the best because of his considerable experience under a wide variety of conditions. By the ordinary Willard-Winter method 200 milligrams are digested. MacDonald, however, when assaying these lower grade samples distills off the fluorine from a one-gram sample. This is thought to contribute substantially to the accuracy and reliability of MacDonald's assays.

Another method used was the specific ion electrode used by Skyline Laboratories. Since they have a proprietary interest in this method they prefer that the procedures used are kept confidential. Generally this method should be rather accurate except that the amount of sample digested is only 25 milligrams. One of the principal advantages of Skyline is that they are very fast and can process a large batch of samples rather promptly.

8-2-72 checked procedure with Lowry Roy. Specific ion electrode is probably okay for screening value reported probably within 10% of precise analysis result. RCM

In the future it will be preferable to split the core and crush the sample here and send a split of the crushed sample to Skyline Laboratories in Golden, Colorado, for the initial CaF_2 assays. Samples of interest will then be submitted to V. C. MacDonald at Rosiclare, Illinois, for additional CaF_2 assay. For zones of interest the samples should be resplit, renumbered and submitted again to either Skyline or MacDonald for check assays.

J. May says U.S.G.S. might release if necessary. Huffman & Norton USGS, Denver have good specific ion technique.

Reasons for Expecting to Find Ore:

Various geologic, physical and mineralogic factors indicate that there are reasonable expectations of finding commercial ore on the subject properties.

Two holes, the Hamp No. 3 and No. 4, have indicated the possibility of a large vertical thickness of commercial ore containing fluorspar and other products. The holes are located on what is apparently the east flank of the dome and it is likely that additional holes in this area will encounter similar mineralization. The size of this potential ore zone is sufficient to allow for the existence of a very large tonnage ore body amenable to block caving or large room and pillar operations. The drill holes have tested a small area in terms of total extent of the favorable geologic environment. Additional holes have a reasonable chance of intersecting areas which are more intensely mineralized. The favorable zone probably has not been intersected in either its highest or lowest grade area.

Chances for blocking out the necessary tonnage to amortize an operation are improved by the fact that a multimineral operation might be possible. Besides lead and zinc by-products of the fluorspar, considerable potential is indicated for niobium, beryllium, thorium, yytrium and other rare earths. If the minerals containing these elements can be separated they will contribute substantially to the value per ton, thereby reducing the required tonnage or alternatively expanding the tonnage by allowing a lower grade material to be mined. !!

Presently there is only a limited demand for the exotic elements cited above. Uncertain supply has created high costs and a certain reluctance on the part of designers to utilize these materials. An operation on the scope conceived of here would furnish certain market stability for these commodities as they would be by-products of an operation predicated on the more stable fluorspar market.

(g) Reports: Two copies of the following are submitted under separate cover.

Reports

1. Porter Report on Rose Mine Work.

Maps

1. Exhibit 3-1, Copies of Illinois Geologic Survey maps of subject area.
2. Exhibit 3-2, Copies of 1"-100' showing topography, geology, holes drilled and proposed holes.
3. Exhibit 3-3, Cross Section of drilling.
4. Exhibit 3-4, Composite strip logs.

Return of the above cited material is not required.

Detailed logs of the drill holes are not included because of their bulk. These are available for inspection and can be furnished if required. All pertinent data are reported or shown herein.

4. ACCESSIBILITY OF PROPERTY

(a) Access: In the event an examination by an O.M.E. representative is necessary, the person to contact would be:

Joseph A. Porter
P.O. Box 447
Rosiclare, Illinois 62982
Telephone (618) 285-6685

The map given on the following page shows the location of the property and how it can be reached. Easiest access to the property is by a gravel road, which is located approximately five miles due north of the intersection of Illinois Routes 146 and 34. The properties are then easily reached by following said gravel road for approximately one mile to the east. An all weather gravel road maintained by the County circumscribes the lease-block.

The surface consists of modest hills with a maximum relief of approximately 200 feet. Most of the surface is either pasture land or timber. Access to any point is relatively easy but some dozing is usually required to shape and maintain access roads to the actual drill sites.

Electric power, water, labor and industrial service and supplies are easily available.

There are no mine workings.

(b) Shipping and Supply Points: These facilities are shown on the map on the preceding page. A paved concrete slab highway, Illinois Route 34, passes within approximately one mile of the property. Nearest rail shipping point is approximately eight miles south of the property at Shetlerville, Illinois, or ten miles to the south and east at Rosiclare, Illinois. Both of these shipping points are on the Ohio River, and barge loading facilities are available at each. Additional rail facilities are located in Harrisburg, Illinois, approximately sixteen miles to the north.

5. EXPLORATION WORK

(a) Drill Holes: Work proposed here consists of diamond drilling and the attendant test work on the core. The holes are to be directed at the favorable zones within the main breccia body. Four holes are posposed, each approximately 2,500 feet deep. Total footage will approximate 10,000 feet.

The tentative locations of the proposed holes are given on Exhibit 3-2 and on the following page. They are titled A, B, C and D. Though A and B are interchangeable in terms of sequence, they are to be drilled first. Holes C and D locations may be drastically changed, depending on the results of the first two holes.

Holes A and B are designed to test for continuity of the mineralization in the previously intersected purple breccia zone. Success in either or both holes would give a strike length of over 600 feet.

Holes C and D are designed to test the broader aspects of the dome and to look for favorable areas at other places surrounding the dome. Hopefully the same general condition found in the Hamp No. 3 and No. 4 can be duplicated. This should contribute substantially to the knowledge of the geology and mineralization.

Experience has shown that the most expensive footage on the subject properties is at depths of 0 - 300 feet. This is due to the bedded chert residuum. It is suggested that the first hole will be tried with the prime contractor's core drill and a rock bit. If this is unsuccessful a combination air-water rotary will be tried. Use of the rotary is also conditional on availability. NX casing will be set in the holes through overburden.

An attempt will be made to drill the holes to their total depth with NXWL tools. If bad ground is encountered they can be cased and reduced. NX is preferred because of the larger sample and better recovery. It would also be easier to wedge off for additional intersections if required.

(b) Access Road: Most of the required access road already exists. It will require some rock in muddy places and occasional maintenance work. Location of access road is shown on the previous page.

(c) Work Rate: If an OME contract is issued it should be possible to start work in approximately two weeks. An additional seven months will probably be required to finish the work.

Present schedule calls for two shifts per day, six days per week. This should give an average of about 1,400 feet drilled per month.

6. EXPERIENCE

Direct responsibility for the work will fall to the same people who conducted the previously described work by Industrial Minerals Exploration and Hicks Dome Account.

Direct supervision on the property will be furnished by Mr. Joseph A. Porter. Mr. Porter holds a Master's Degree in Geology and has had approximately thirteen years experience in mining, mine geology and exploration. Of this, approximately five years was spent employed as an engineer-geologist for Minerva Oil Company in the fluorspar mines and district in Illinois and Kentucky. Since 1965 he has been employed by the principals hereto and has conducted a wide variety of projects for a variety of commodities in the U.S. and Canada.

Mr. Porter works under the supervision of Mr. John L. Carroll. Mr. Carroll holds a Master's Degree in Geology and is the Vice President in charge of mining for Antaeus Resources Corporation and President of the Silver Resources Corporation. He was formerly the General Partner for Industrial Minerals Exploration. Mr. Carroll has had the primary responsibility for a wide variety of exploration projects, both domestic and foreign. Like Mr. Porter, he has contributed a substantial amount of time and work to the various problems encountered in the Hicks Dome Area.

In addition to the above cited personnel, liberal use has been made of personnel of the U.S. Geological Survey and the Illinois Geological Survey. In several instances consultants have been employed. Among these have been Mr. E. A. Brecke, who is well recognized as an authority on fluorspar, and Mr. Frank Snyder, who is a recognized authority on structures of this type and on Mississippi Valley type ore deposits.

7. ESTIMATE OF COSTS

(a) Independent Contracts: Bids for the drilling were requested from Boyles Brothers, Joy Manufacturing and Dikor, a local contractor. Dikor declined to bid on the coring but did furnish a bid for rotary or air hammer work if required. Copies of the bids follow.

The bid from Joy Manufacturing is considered the best and serves as the basis for the cost estimation.

Bids were not requested for dozer work. A dozer is available on short notice from a farmer living nearby. When not in use elsewhere he leaves it on the property at no additional cost. The machine is a D-4 and is in excellent shape. Charge is in the amount of $12.50 per hour and includes operator and fuel.

Present plans are to drill one hole at a time. It might be possible to drill either C or D while A or B is being drilled. This would result in some saving.

Cost estimates are itemized by the following. A summary of total project costs is given at the end of this section.

Drilling (per hole)

0'-500'	
Rotary Drilling, (0-300') X $3.90/ft.=	$ 1,170
NX Coring (300-500') X $4.40/ft.=	880
500'-1,000'	
NX Coring, 500' @ $4.80/ft.=	2,400
1,000'-1,500'	
NX Coring, 500' @ $5.40/ft.=	2,700
1,500'-2,000'	
NX Coring, 500' @ $6.30/ft.=	3,150
2,000'-2,500'	
NX Coring, 500' @ $7.50/ft.=	3,750

Bit Costs, 2,500' @ $0.50/ft.=	$ 1,250	
Reaming, 300' @ $3.00/ft.=	900	
Standby (Survey, etc.), 40 hrs. @ $14.00/hour=	560	
Cementing time, 20 hrs. @ $16/hr.=	320	
Water, 1.5 months @ $300/month=	450	
Casing left in hole, 300' @ $3.50/ft.=	1,050	
<u>Other (per hole)</u>		
Dozing, 15 hours @ $12.50/hr.=	~~192~~ 187.50	
TOTAL CONTRACT COST/HOLE	$18,772	
NO. OF HOLES	X 4	
TOTAL PROJECT CONTRACT COST		~~$75,088~~ 75,070

January 28, 1972

Mr. Joseph A. Porter
Geologist
Post Office Box 447
Rosiclare, Illinois 62982

Dear Mr. Porter:

Quentin Donithan gave us a detailed report on the conditions we might expect to encounter on your drilling program, which will be undertaken on Hicks Dome.

Our prices are based on a minimum of 4,000 feet of drilling in two (2) vertical holes.

Our prices follow:

	Non-Core Rotary	NX Wire Line	BX Wire Line
0. to 500. feet	$3.90/ft.	$4.40/ft.	$4.20/ft.
500. to 1000. feet	- - - - -	$4.80/ft.	$4.60/ft.
1000. to 1500. feet	- - - - -	$5.40/ft.	$5.20/ft.
1500. to 2000. feet	- - - - -	$6.30/ft.	$6.10/ft.
2000. to 2500. feet	- - - - -	$7.50/ft.	$7.30/ft.
2500. to 3000. feet	- - - - -	$9.00/ft.	$8.80/ft.
Standby Time for your convenience			$14.00/hr.
Cementing, if necessary			$16.00/hr.
Reaming, if necessary			$3.00/ft.
Drilling Mud and Additives used			At job site cost.
NX Casing lost or left in place			$3.50/ft.
BX Casing lost or left in place			$2.50/ft.
Weather-Treated Core Boxes holding 10 feet of core			$1.25 each.

Sheet No. 2 To: Mr. Joseph A. Porter, Geologist

January 28, 1972

Diamond Loss in excess of $1.00 per foot	At actual cost.
Water Provision (either trucking or pumping)	$300.00/mo.

Diamond loss in excess of $1.00 per foot will be figured on the basis of the costs encountered over the entire drill hole.

We will expect you to furnish and maintain suitable access roads, drill sites, and necessary permits.

We trust that our prices will receive favorable consideration.

Yours truly,

JOY MANUFACTURING COMPANY

J. M. Murray, General Manager
Drill Division

JMM:rh

DIAMOND CORE DRILLING
DIAMOND DRILLING EQUIPMENT
GROUTING
FOUNDATION TESTING
MINING
QUARRYING
SHAFT SINKING
TUNNEL DRIVING
MINE PLANT DESIGN
AND FABRICATION

Boyles Bros.
DRILLING COMPANY

CONTRACTORS—ENGINEERS—GEOLOGISTS

Industrial Park Samsonite Blvd.
P. O. Box 1158
MURFREESBORO, TENNESSEE 37130
Phone (615) 896-5132

General Offices and Plant
1624 Pioneer Road P. O. Box 58
SALT LAKE CITY, UTAH 84110
Phone (801) 487-3671

BRANCH OFFICES
ARIZONA (PHOENIX)
CALIFORNIA (AUBURN)
COLORADO (GOLDEN)
NEVADA (SPARKS)
TENNESSEE (MURFREESBORO)
WASHINGTON (SPOKANE)
CHILE (SANTIAGO)
CABLE: BOYLESBROS
MEXICO, D.F.
PERU (LIMA)
CABLE: BOYLESCOP

January 21, 1972

Hicks Dome Account
Sherman & Sterling
53 Wall Street
New York, New York 10005

ATTENTION: Mr. Gilbert Kerlin, Esq.

Re: Core drilling in Hicks Dome Area
Hardin County, Illinois

Gentlemen:

We are pleased to quote on the above drilling program. Prices to cover a minimum of approximately 8,000 feet.

1. Mobilization - $ 800.00

2. a. Overburden and top sections of holes - to be drilled and cased with rotary drill.

   b. Coring

	NX Size	BX Size
0 - 500	$ 5.10 per foot	$ 4.95 per foot
500 - 1000	5.80 " "	5.65 " "
1000 - 1500	6.25 " "	6.10 " "
1500 - 2000	6.75 " "	6.60 " "
2000 - 2500	7.40 " "	7.25 " "
2500 - 3000	8.15 " "	8.00 " "

3. Reaming, if required - $ 3.75 per foot

4. Setting up on holes drilled by rotary drills and cleaning out holes in preparation to core - $ 19.50 per hour.

5. Installing and removal of casing - $ 19.50 per hour.

6. Casing, requested left in hole, damaged or lost in hole -
   NX size - $ 2.92 per foot
   BX size - $ 2.20 per foot

7. Cementing, to include cementing, waiting on cement to set and coring cement - $ 19.50 per hour plus cement and additives at cost f.o.b. jobsite.

8. Drill mud, if needed - At cost f.o.b. jobsite.

9. Delays for customer's convenience - $ 18.50 per hour.

10. Antaeus Resources Corporation agrees to reimburse Boyles Bros. for diamond bit cost in excess of eighty-five cents ($ .85) per foot.

11. Surveying of holes - $ 19.50 per hour plus rental on instrument.

12. Suitable roads and drill sites, if needed, to be provided by Antaeus Resources.

13. Directional wedging - $ 19.50 per hour plus wedges, bits, surveying instrument, setting over previously drilled holes, cleaning out holes and any materials or time required to accomplish this work.

We thank you for the opportunity of submitting this quote and will look forward to working for your company again.

Very truly yours,
BOYLES BROS. DRILLING COMPANY

Wallace Woodcock
Wallace Woodcock
Eastern District Manager

WW:dh

cc: Boyles Bros.-Salt Lake City

PHONE 618/382-4184

P. O. BOX 389

DiKor

a division of serv-kor inc.

CARMI, ILLINOIS 62821

March 3, 1972

Hicks Dome Account
c/o Joe Porter
Box 506
Rosiclare, Ill. 62982

Re: Drill Rig Quote

Dear Joe:

DiKor would like to quote the following equipment, tools and services for your consideration with regard to drilling holes to 800' - 1000' level before continuous coring (by others) would begin:

1 - CP-650 Reichdrill - 2 man crew, pusher, water truck, extra mud pump (if needed) - All hours, with crew	$ 45.00
Air Hammer for 6-1/4" Hole - per foot	.25
Air Hammer for 4-7/8" Hole - per foot	.15
Bits for Hammer Drill or regular tri=cone bits - DiKor cost plus 10%	
Transportation - Rig @ 50¢ per mile	
Truck and float trailer @ 50¢/mile	
Truck without float trailer @ 30¢/mile	
Mud, or any other services - DiKor cost plus 10%	
7" Used Casing - per foot	1.60
5½" Used Casing, per foot	1.35

Joe, we would recommend drilling 8-3/4" hole to rock, setting 7" OD casing (good used), drilling 6-1/4" hole with hammer drill as far as possible; reducing to 4-7/8" hammer, if necessary; or using tri-cone bits and reducing hole as required to the coring depth. Believe we can end up with hole large enough for your use at the 800 - 1000' depth. Use of air hammer drill as much as possible would help control vertical deviation.

Talk to Gene Graddy about any of this; I'll call you about the 15th when I get back.

Regards,

DiKor

B. G. Harmon

B. G. Harmon

BGH:db

(b) Personal Services: Cost for personal services cited herein are all based on a seven month period.

1 - Geologist Supervisor @ $1,250/month	$8,750	
1 - Geologic Assistant @ $500/month	3,500	
1 - Secretarial (part time) @ $100/month	700	
TOTAL COST, PERSONAL SERVICES		$12,950

Above cited services are available.

(c) Operating Material and Supplies: The following are the material and supplies necessary for the proposed work.

200 tons Road Rock @ $2.00/ton	$ 400.00	
Core boxes - 880 boxes @$1.25	1,100.00	
Sample bags - 300 @ $0.30	90.00	
TOTAL		$1,590.00

(d) Operating Equipment: Not applicable.

(e) Initial Rehabilitation and Repair: Not applicable.

(f) Building, Fixtures, Installations: Not Applicable.

(g) Miscellaneous: Miscellaneous costs will consist principally of analytical work. Estimated costs are as follows:

Wet Assays (CaF_2, some Pb, Zn and other) 400 at $4.00 each=	$1,600.00	
Specific ion electrode 400 @ $2.50 each=	1,000.00	
Spectrographic Analyses 100 at $10=	1,000.00	
TOTAL		$3,600.00

Summary of Estimate of Costs:

Total cost of the proposed project is as follows:

(a)	Contract Costs	$75,040
(b)	Personal Services	12,950
(c)	Operating Material and Supply	1,590
(d)	Operating Equipment	None
(e)	Rehabilitation	None
(f)	Buildings	None
(g)	Miscellaneous (Assays)	3,600
	Total Project Cost	$93,180
	Government Share	$46,590

REFERENCES

1. Baxter, J. W., et al., "Areal Geology of the Illinois Fluorspar District, Part 1--Saline Mines, Cave in Rock, Dekoven, and Repton Quadrangles," Illinois Geological Survey Circular 342, 1963, 43 pp.

2. Baxter, J. W., and Desborough, G. A., "Areal Geology of the Illinois Fluorspar District, Part 2--Karbers Ridge and Rosiclare Quadrangles," Illinois Geological Survey Circular 385, 1965, 40 pp.

3. Baxter, J. W., et al., "Areal Geology of the Illinois Fluorspar District, Part 3--Herod and Shetlerville Quadrangles," Illinois Geological Survey Circular 413, 1967, 41pp.

4. Brown, J. S., et al., "Explosion Pipe in Test Well on Hicks Dome, Hardin County, Illinois," Economic Geology, Vol. 49, 1954, pp. 891-902.

5. Grogan, R. M., and Bradbury, J. C., "Fluorite-Zinc-Lead Deposits of the Illinois-Kentucky Mining District," Ore Deposits in the United States, Ridge, J. D., ed., AIME, New York, 1968, pp. 370-399.

6. Heyl, A. V., et al., "Regional Structure of the Southeast Missouri and Illinois-Kentucky Mineral Districts," U. S. Geological Survey Bulletin 1202-B, 1965, 20 pp.

7. Heyl, Allen V., "The 38th Parallel Lineament and Its Relationship to Ore Deposits," Economic Geology, Vol. 63, Jan.-Feb. 1968, p. 88.

8. Snyder, F. G., and Gerdemann, P. E., "Explosive Igneous Activity Along an Illinois-Missouri-Kansas Axis," Amer. Jour. Science, Vol. 263, June 1965, pp. 465-493.

9. Trace, R. D., "Significance of Unusual Mineral Occurrence at Hicks Dome, Hardin County, Illinois," U. S. Geological Survey Professional Paper 400-B, 1960, pp. 63-64.

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

August 29, 1975

Mr. John L. Carroll
Room 4120, 345 Park Avenue
New York, New York 10022

Re: OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Dear Mr. Carroll:

An opportunity has developed for our Denver staff to obtain a substantial quantity of core samples from the Hicks Dome property for analytical study in the Denver laboratories of the Geological Survey. The purpose of this letter is to obtain your permission for members of our staff to pick up the material.

Allen Heyl, who is leading the laboratory and field studies of the Hicks Dome area, has the services of a geology graduate student, David Jones, for a few weeks, and proposes to have Mr. Jones pick up certain drill core samples at the property and transport them by truck to the Denver laboratory. Jones could be at the property on or about September 5 and would be assisted by Robert Trace, U.S.G.S., Kentucky, in selecting and loading the core boxes.

Heyl wishes to obtain alternate boxes of core from holes OME-2 and OME-7. As in the past, results of studies on this core would be furnished to Mr. Porter.

This proposal was discussed with Mr. Porter by Heyl, and then referred to me after Heyl was unable to contact you by phone because of your absence from the office.

I understand that you are expected to be in your office on Wednesday, September 3. I will phone you on Wednesday, and hope that you will have had an opportunity to read this beforehand. I have to contact Heyl on the same day if the proposed schedule is to be met.

In the event we have future opportunities to obtain core, we would appreciate retention of all core now in storage at the property.

Sincerely yours,

Harold Kirkemo, Chief
Office of Minerals Exploration

HKirkemo/gpw

cc: Porter
Heyl
Trace
DRF/MR Rdg.
OME Rdg./OME Files
Mr. Kirkemo

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

SPECIAL

Jack Martin
Office of the Solicitor

Rm 6022

Interior

DI-17

SPECIAL

Harold Kirkemo
USGS - Reston

Please call x 6681 for pick up.

United States Department of the Interior

GEOLOGICAL SURVEY
BOX 25046 M.S. 905
DENVER FEDERAL CENTER
DENVER, COLORADO 80225

BRANCH OF CENTRAL MINERAL RESOURCES

IN REPLY REFER TO:
(303) 236-5568

September 27, 1989

Mr. John Lee Carroll
515 Madison Avenue
32nd floor
New York, N.Y. 10052

Re: OME 6873 (fluospar, et al)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Dear Mr. Carroll:

Under the terms of Contract 2306, OME 6874 and the Certification of Possible Production, the period for which production was subject to royalty payments began September 26, 1972 and has now expired, September 26, 1989.

According to present records, the Government retains no claims or liens against the property subject to the contract or any production therefrom. Therefore, we are closing our books and records on this contract.

Sincerely yours,

David A. Lindsey

David A. Lindsey, Chief
Branch of Central Mineral Resources

DALindsey:js

Copies to: G. H. Allcott
H. A. Tourtelot
Robert Edwards
J. W. Hasler file
Contract File

C-2

Moved out in 1972

Mr. Robert D. Trace
~~208 So. Darby St.~~
EAGLE Princeton , KY 42445

Winter home

TRA 12 T021910C1 02/19/86

TRACE
RT 1'BOX 143A
EDINBURG TX 78539

Addresses

±Dec 1 – May 1

MR. & MRS. ROBERT D. TRACE
ROUTE 1, BOX 143A
EDINBURG, TEX. 78539

ROBERT D. TRACE
412 EAGLE ST.
PRINCETON, KY 42445

J. Will. Hasler ±May 1 – Dec 1
USGS
Denver, Colo

RECEIVED
FEB 25 1985

2-22-86

Dear Bill,

Received copy of your letter to John Carroll re. Hicks Dome.

I doubt that anything has (or will) happen. Saw Joe Porter last summer. Nothing as of then. Joe was his usual UNcommunicative self.

If I ever hear of any activity on the Dome -- I'll let you know.

As you see (above) we spend about 5 months (winter) in the Rio Grande Valley citrus belt in a mobile home. The other 7 months in the usual place in Kentucky.

Regards

Bob Trace

Tell A.V. H. (Allen) hello!

JOHN LEE CARROLL
515 MADISON AVENUE
32ND FLOOR
NEW YORK, N. Y. 10022

RECEIVED
FEB 25 1985
J.W. Hasler

(212) 688-3353

February 19, 1986

Mr. J. William Hasler
Office of Minerals Exploration
United States Department of the Interior
Geological Survey
Box 25046 M.S. 939
Denver Federal Center
Denver, CO 80225

Re: OME (fluorspar, et al)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Dear Mr. Hasler:

Thank you for your letter of February 12th, regarding the above contract.

To answer your questions: 1. The property is not currently under commercial development. Conditions in the fluorspar industry have been very depressed for a number of years, and there is little or no demand for thorium at the present time. The remaining minerals you mention would qualify commercially as by-products. 2. A very limited amount of metallurgical work was done with respect to fluorspar and barite, but nothing with respect to the other minerals. 3. The core and cuttings have been appropriately stored.

I don't know what purpose would be served by your visiting the property at this time, but if you wish to do so, please contact me at the above address.

Sincerely,

John Lee Carroll

JLC:grv

United States Department of the Interior

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

IN REPLY
REFER TO:

BRANCH OF CENTRAL MINERAL RESOURCES

February 12, 1986

Mr. John Lee Carroll, Manager
Silver Resources Corporation
515 Madison Avenue, 32nd floor
New York City, New York 10022

Re: OME 6873 (fluospar, et al)
Kerlin, Goelet and Goelet d/b/a/
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Dear Mr. Carroll:

Last year we received the return of our copy of Form MME-63 informing us that the property referred to above has not changed in ownership, lease, or sublease, and that there has been no production on the Hicks Dome Property.

It is known that Hicks Dome contains one of the largest resources of thorium in the United States, as well as a large resource of niobium, rare earths, beryllium, and fluorite. Is the property being developed so as to mine multi-products or has it remained essentially the same since April 1976, the date of our Certification of Discovery?

Has there been any metallurgical work completed on the potential ore to bring the property into production?

Part of the reason we entered into an exploration program with you was to expand the potential occurrence of thorium, niobium, rare earths, beryllium, and fluorite in the Hicks Dome's highly unusual type of mineralization. Our country, as you well know, is poorly developed in the readily available resources of these particular minerals.

Twelve holes were completed - OME 1 through OME 12, totalling 29,339 feet of which 3,670 feet were rotary drilled with 25,669 feet cored. We assume that you are keeping the core and cuttings as prescribed in the contract; that is, keeping them stored in boxes identified with the hole number, with markers in the core sections indicating the depths represented. This was to be done in anticipation that we might need them at a later date.

Your thoughts and plans concerning Hicks Dome and its potential will be greatly appreciated. I would like to visit the property later on in the year.

Thank you for your cooperation.

Sincerely yours,

J. William Hasler

J. William Hasler, Chief
Office of Minerals Exploration

JWHasler:js

Copies to: G. H. Allcott
H. A. Tourtelot
C. H. Thorman
R. D. Trace
A. V. Heyl

United States Department of the Interior

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

May 8, 1985

Re: OME 6873 (fluospar, etc.)
Kerlin, Goelet and Goelet d/b/a/
Hicks Dome Account
Hardin County, Illinois
Contract 2306

Mr. John Lee Carroll
Silver Resources Corporation
515 Madison Ave. 2nd floor
New York, New York 10022

Dear Mr. Carroll:

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

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

Sincerely,

J. William Hasler

J. William Hasler, Chief
Office of Minerals Exploration

Rec'd
6/17/85
OME

Form MME 63
(May 1970)

REQUEST FOR INFORMATION ON CERTIFIED PROJECT OR PROJECT UNDER ROYALTY AGREEMENT

1. Since May 8, 1984, has there been a change in ownership, lease, or sublease? *If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before.* Yes ☐ No ☒

2. Since May 8, 1984, has there been any production from the land subject to the contract? Yes ☐ No ☒

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

Purchaser (*name and address*)	Quantity	Value

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

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

3. Since May 8, 1984, has any production been transported through workings (*see* *of contract*)? Yes ☐ No ☐

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

Disposition of Material	Quantity	Value

Submitted by:

Name J. L. CARROLL	Title Manager
Address 515 MADISON AVE, 32nd FLOOR NEW YORK, N.Y. 10022	Date 6/14/85

United States Department of the Interior

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

Rec'd 5/14/84 OME

May 4, 1984

Re: OME 6873 (fluorspar, etc.)
Kerlin, Goelet and Goelet d/b/a/
Hicks Dome Account
Hardin County, Illinois
Contract 2306

Mr. John Lee Carroll
Silver Resources Corporation
515 Madison Ave. 2nd floor
New York, New York 10022

Dear Mr. Carroll:

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

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

Sincerely,

J. William Hasler

J. William Hasler, Chief
Office of Minerals Exploration

Form MME 63
(May 1970)

REQUEST FOR INFORMATION ON CERTIFIED PROJECT OR PROJECT UNDER ROYALTY AGREEMENT

1. Since May 16, 1983, has there been a change in ownership, lease, or sublease? *If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before.* Yes ☐ No ☒

2. Since May 16, 1983, has there been any production from the land subject to the contract? Yes ☐ No ☒

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

Purchaser (*name and address*)	Quantity	Value

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

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

3. Since May 16, 1983, has any production been transported through workings (*see of contract*)? Yes ☐ No ☐

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

Disposition of Material	Quantity	Value

Submitted by:

Name John L. Carroll	*Title* Agent
Address 515 Madison Avenue New York, N.Y. 10022	*Date* 5/8/84

JOHN LEE CARROLL
515 MADISON AVENUE
32ND FLOOR
NEW YORK, N.Y. 10022

5/16/83

As per your request.

United States Department of the Interior

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

May 9, 1983

Re: OME 6873 (fluorspar, et al)
Kerlin, Goelet and Goelet dba
Hicks Dome Account
Hardin County, Illinois
Contract 2306

Mr. John Lee Carroll
Silver Resources Corporation
515 Madison Ave., 32nd floor
New York, NY 10022

Dear Mr. Carroll:

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

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

Sincerely,

J. William Hasler

J. William Hasler, Chief
Office of Minerals Exploration

Form MME 63
(May 1970)

REQUEST FOR INFORMATION ON CERTIFIED PROJECT OR PROJECT UNDER ROYALTY AGREEMENT

1. Since May 11, 1982, has there been a change in ownership, lease, or sublease? *If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before.* Yes ☐ No ☒

2. Since May 11, 1982, has there been any production from the land subject to the contract? Yes ☐ No ☒

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

Purchaser (*name and address*)	Quantity	Value

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

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

3. Since May 11, 1982, has any production been transported through workings (*see of contract*)? Yes ☐ No ☒

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

Disposition of Material	Quantity	Value

Submitted by:

Name: Edwin Tom Carroll	Title: General Partner
Address: 515 MADISON AVE. NEW YORK, N.Y. 10022	Date: 5/16/83

OME 6873
Contract 2306

RECEIVED
MAY 14 1982

Hidr Dome Acct

April 12, 1982

To Our Correspondents:

We have moved from our old offices at 345 Park Avenue. Our new address is:

515 Madison Avenue
32nd Floor
New York, N.Y. 10022

The entrance to the building is on the north side of 53rd Street between Madison Avenue and Park Avenue.

Our telephone number remains the same: (212)688-3353.

Silver Resources Corporation
John Lee Carroll

RECEIVED
MAY 14 1982

Form MME 63
(May 1970)

REQUEST FOR INFORMATION ON CERTIFIED PROJECT OR PROJECT UNDER ROYALTY AGREEMENT

1. Since 1974, has there been a change in ownership, lease, or sublease? *If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before.* Yes ☐ No ☒

2. Since 1974, has there been any production from the land subject to the contract? Yes ☐ No ☒

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

Purchaser (*name and address*)	Quantity	Value

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

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

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

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

Disposition of Material	Quantity	Value

Submitted by:

Name John L. Carroll	*Title* General Partner
Address 515 Madison Ave., 32nd Fl. New York, N.Y. 10022	*Date* May 11, 1982

File

United States Department of the Interior

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

IN REPLY REFER TO:

May 5, 1982

Mr. John Lee Carroll
345 Park Avenue, Rm. 4120
New York, NY 10022

Re: OME 6873 (fluorspar, et al)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hardin County, Illinois
Contract 2306

Dear Mr. Carroll:

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

To assist you in furnishing this information and to assure the accuracy of our records please answer the questions on the attached form and return two copies to this office with copies of any pertinent documents.

We are interested in the long-range possibility for development and production from the Hicks Dome deposit of fluorite, barite, and especially any progress which may have been made with the combined elements - beryllium, niobium, lead, yttrium, thorium, insofar as mining, development, and their metallurgical treatment is concerned.

Sincerely yours,

J. William Hasler, Chief
Office of Minerals Exploration

JWH:js

File

United States Department of the Interior

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

IN REPLY REFER TO

May 5, 1982

Mr. John Lee Carroll
345 Park Avenue, Rm. 4120
New York, NY 10022

Re: OME 6873 (fluorspar, et al)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hardin County, Illinois
Contract 2306

Dear Mr. Carroll:

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

To assist you in furnishing this information and to assure the accuracy of our records please answer the questions on the attached form and return two copies to this office with copies of any pertinent documents.

We are interested in the long-range possibility for development and production from the Hicks Dome deposit of fluorite, barite, and especially any progress which may have been made with the combined elements - beryllium, niobium, lead, yttrium, thorium, insofar as mining, development, and their metallurgical treatment is concerned.

Sincerely yours,

J. William Hasler, Chief
Office of Minerals Exploration

JWH:js

United States Department of the Interior

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

June 23, 1981

Re: OME 6873 (fluorspar, et al)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Mr. John Lee Carroll
345 ParkAvenue, Rm. 4120
New York, NY 10022

Dear Mr. Carroll:

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

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

Sincerely,

J. William Hasler

J. William Hasler, Chief
Office of Minerals Exploration

Form MME 63
(May 1970)

REQUEST FOR INFORMATION ON CERTIFIED PROJECT OR PROJECT UNDER ROYALTY AGREEMENT

1. Since Sept. 26, 1972, has there been a change in ownership, lease, or sublease? *If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before.* Yes ☐ No ☒

2. Since Sept. 26, 1972, has there been any production from the land subject to the contract? Yes ☐ No ☒

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

Purchaser *(name and address)*	Quantity	Value

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

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

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

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

Disposition of Material	Quantity	Value

Submitted by:

Name JOHN L. CARROLL	Title MGR.
Address 345 PARK AVE. NEW YORK, N.Y. 10154	Date 6/25/81

UPDATE ON THORIUM RESOURCES

Mortimer H. Staatz
Branch of Uranium and Thorium Resources
Geologic Division
U. S. Geological Survey
Denver, Colorado

October 1978

The prime strategy for producing electricity from nuclear energy, until recently, has been based on the employment of uranium-using reactors, followed by the development of the plutonium-using breeder reactor. The government-policy change in nuclear reactor strategy has allowed the consideration of reactors that use thorium, and the consequent reduction of the risk of nuclear weapons proliferation. The high-temperature gas reactor is generally thought of when thorium is mentioned as a fuel, but other reactors may also use thorium. The light-water reactor can become an advanced converter on the thorium-uranium 233 cycle. The spectral-shift reactor is another possibility, and the Canadians have proposed using the heavy-water reactor with a thorium cycle. If part of our future nuclear reactors are based on the thorium cycle, do we have resources to supply them?

To answer this question my colleagues and I in the U.S. Geological Survey have put together data we have collected during studies of various thorium districts, as well as material compiled from the literature (Figure 1). To date we have covered thorium resources in the major vein districts, large disseminated deposits, massive carbonatites, and the Carolina placers. These data probably represent a major part of the thorium resources in this country, but other, smaller, resources occur in the Idaho stream placers, in beach placers of Florida, Georgia, and the Carolinas, in consolidated and unconsolidated sedimentary rocks, in carbonatite dikes, and in small vein districts.

The four principal types of deposits that will be discussed today have reserves of 553,000 short tons of ThO_2 and probable-potential resources or inferred reserves of 2,610,000 short tons of ThO_2 (Figure 2). In order to compare the reserve and resource figures for thorium with those for uranium, the approximate cost of producing a pound of ThO_2 from various deposits has been calculated. Approximately two-thirds of the listed reserves and half of the probable-potential resources can be produced at less than $30 a pound of ThO_2.

Veins are the highest grade resource in the United States and have reserves of 142,000 short tons of ThO_2 and probable-potential resources of 361,000 tons (Figure 3). About 91 percent of the reserves and 92 percent of the probable-potential resources can be produced at less than $30 a pound of ThO_2.

Most of the veins are quartz-feldspar iron oxide thorium-bearing veins, which are known from at least 17 widely scattered areas in the United States. This resource study evaluates only the seven largest and best known districts. These districts are: (1) Lemhi Pass, Montana-Idaho, (2) Wet Mountains, Colorado, (3) Powderhorn, Colorado, (4) Hall Mountain, Idaho, (5) Diamond Creek, Idaho, (6) Bear Lodge, Wyoming, and (7) Mountain Pass, California. Eighty-seven percent of the total reserves and probable-potential resources are in the Lemhi Pass and Wet Mountains districts. The Lemhi Pass district has reserves of 66,900 short tons of ThO_2 and probable-potential resources of 142,000 tons that can be produced at less than $30 a pound; the Wet Mountains district has 55,000 tons of reserves and 136,000 tons of probable-potential resources producible at less than $30 a pound. Rare earths commonly are a byproduct, and in many veins they are from half to several times as abundant as thorium. In both the Wet Mountains and the Lemhi Pass districts more than 100 veins have been found. Some districts are small—the veins at Hall Mountain are localized in an area of only half a square mile—but in some districts the veins are scattered over a large area. The veins in the Lemhi Pass district occur across at least 160 square miles and those of the Wet Mountains over at least 350 square miles. The greater part of all the ThO_2 reserves in a district generally are in a few veins.

FIGURE 1
MAP SHOWING LOCATION OF THORIUM DEPOSITS IN THE UNITED STATES

FIGURE 2

ThO_2 RESERVES AND PROBABLE POTENTIAL RESOURCES IN SHORT TONS

TYPE OF DEPOSIT	TOTAL RESERVES	TOTAL PROBABLE POTENTIAL RESOURCES
Veins	142,000	361,000
Disseminated Deposits	365,000	2,090,000
Massive Carbonatites	40,800	125,000
Carolina Placers	5,270	36,800
Total	553,070	2,612,800

FIGURE 3

ThO_2 RESERVES AND RESOURCES IN SHORT TONS FROM VARIOUS VEIN DISTRICTS

DISTRICT	TOTAL RESERVES	TOTAL PROBABLE POTENTIAL RESOURCES
Lemhi Pass, Idaho-Montana	67,700	146,900
Wet Mountains, Colorado	66,700	158,000
Powderhorn, Colorado	1,900	8,500
Hall Mountain, Idaho	5,210	29,900
Diamond Creek, Idaho	250	15,900
Bear Lodge Mountains, Wyoming	55	275
Mountain Pass, California	280	1,160
Total Above Districts	142,095	360,635

Undiscovered thorium resources in veins are likely to equal those already discovered. Thorium, unlike uranium, has been prospected little during the past 20 years. The lack of economic incentive has hampered exploration on most veins, and only a few have been traced their entire lengths on the surface or have been explored at depth. Thus, the size of many known deposits is likely to increase with future exploration, new deposits will be discovered in the known districts, and new districts will be found.

The thorium-bearing veins generally are tabular bodies several feet to at least 5,000 feet long. Some are narrow lenses. Many veins are more than several hundred feet long, and in the Lemhi Pass district 12 veins are over 1,000 feet in length. Veins range in thickness from 1/64 inch to 50 feet. The mineralogy of the thorium veins generally is similar; quartz or feldspar is the principal gangue mineral. Iron oxide veinlets, which are accompanied in some places by manganese oxides, commonly cut the earlier gangue minerals. Thorite is the most common thorium mineral, although in individual veins monazite, allanite, or brockite may be the principal thorium-bearing mineral. Many other minerals occur locally in some veins. For example, a total of 42 minerals has been identified in the veins of the Lemhi Pass district.

Disseminated deposits are lower grade than the veins but contain 78 percent of the United States' thorium resources. They have reserves of 365,000 short tons of ThO_2 and probable-potential resources of over 2,000,000 tons (Figure 4). The two principal deposits evaluated are a large mineralized explosion breccia pipe at Hicks Dome, Illinois, and a deposit made up of fractured and veined trachyte and phonolite in the Bear Lodge Mountains, Wyoming. Hicks Dome has reserves of 22,000 tons of ThO_2 and probable-potential resources of 803,000 tons. The Bear Lodge deposit has reserves of 200,000 tons of ThO_2 and probable-potential resources of 183,000 tons. The Hicks Dome and Bear Lodge deposits probably would be multiproduct operations. The Hicks Dome deposit (Figure 5) is a complex ore that has large resources of thorium, niobium, rare earths, beryllium, barite, and fluorite. Although thorium could be produced at less than $30 a pound without the aid of byproducts, this property probably would be operated for several products. The Hicks Dome deposit is a breccia containing fragments of sedimentary rocks with a mineralized matrix. This deposit was found in a test hole by the St. Joseph Lead Company while drilling on the apex of Hicks Dome. During drilling a mineralized breccia was found beneath a thick sequence of sedimentary rocks at a depth of 1,607 feet. The hole was still in breccia at its bottom at a depth of 2,944 feet.

Several small bodies of breccia are exposed on the top of the dome. These appear to be the uppermost extensions of the much larger body of explosion breccia encountered in the drill hole. This breccia is believed to underlie the center of the dome and gives rise to a threefold to fourfold increase in radioactivity that occurs over the apex area. The size and shape of the radioactive anomaly, plus the data obtained from the St. Joseph's drillhole, indicate that the thorium-bearing breccia body has the general form of an oval-shaped pipe with a vertical extent of at least a few thousand feet. The mineralization occurs in the matrix of the breccia, as incipient veinlets, and as replacement of limestone and dolomite fragments. Hydrothermal minerals are exposed in this hole and in a nearby surface trench 260 feet long. Thorium occurs in the Hicks Dome deposit in the minerals brockite and thorite. Niobium is found in brookite, rutile, anatase, and possibly in other unidentified minerals. Rare earths occur principally in xenotime and bastnaesite but some also are found in florencite and brockite. Beryllium occurs in bertrandite.

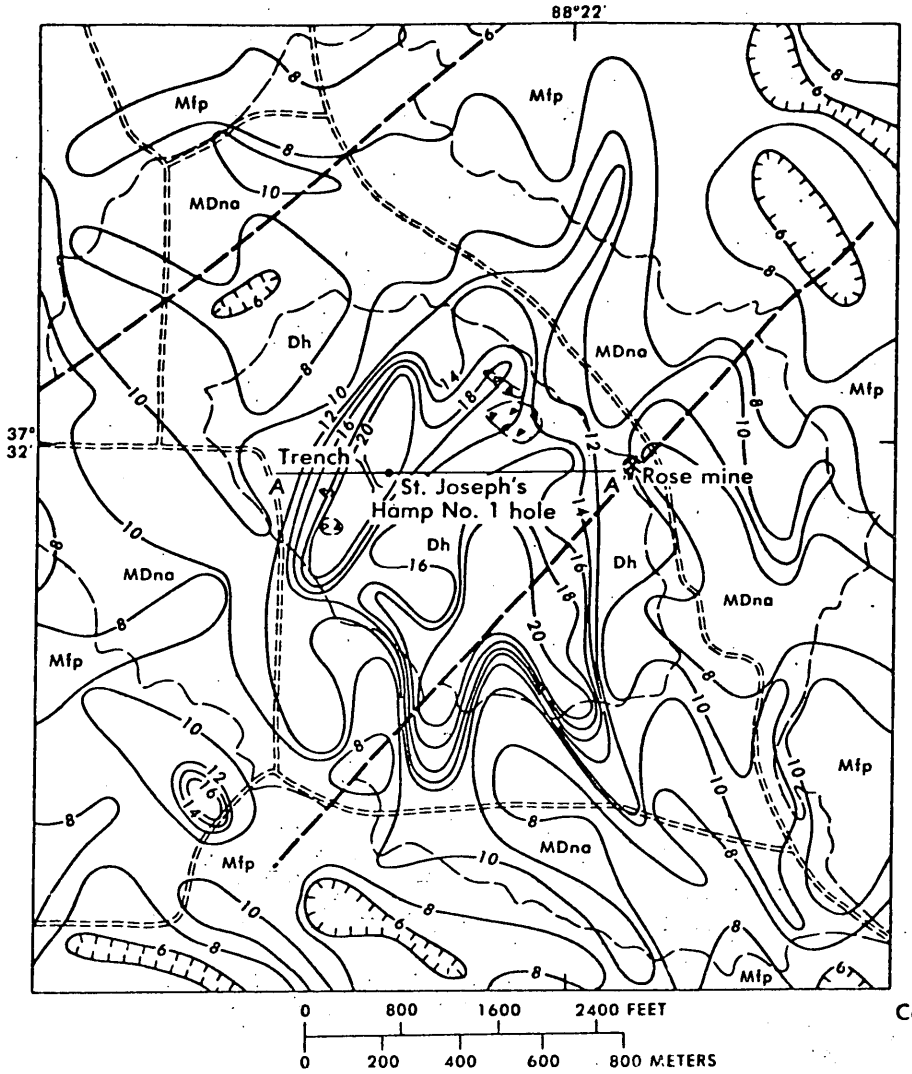
Analytical data presented here are from a very small part of the orebody. Many more samples are needed to give an accurate picture of the grade. The ThO_2 content varies from a few hundredths of a percent to more than 0.5 percent. Many parts of the breccia probably contain from 0.1 to 0.2 percent ThO_2, as is indicated by the high radiation over the center of the dome and by the analytical data. Niobium-oxide content ranges from a few hundredths of a percent to about three quarters of a percent. Rare-earth oxides constitute from a few hundredths of a percent to more than one percent. The rare earths are of particular interest because of the abundance of the yttrium group of rare earths. Beryllium varies widely, and values lie in the range of a few thousandths of a percent to almost 1 percent. The fluorite content ranges from less than 1 to as much as 20 percent. The reserves and probable-potential resources of products other than ThO_2 probably would range from 550,000 to 1,650,000 tons of Nb_2O_5; from 1,650,000 to

FIGURE 4

ThO_2 RESERVES AND RESOURCES IN SHORT TONS FROM DISSEMINATED DEPOSITS

DISTRICT	TOTAL RESERVES	TOTAL PROBABLE POTENTIAL RESOURCES
Hicks Dome	22,000	803,000
Bear Lodge	338,000	1,280,000
Powderhorn	5,000	9,000
Total Above Districts	365,000	2,092,000

FIGURE 5
GEOLOGIC AND AERORADIOMETRIC MAP AND CROSS SECTION OF HICKS DOME, ILLINOIS



EXPLANATION

MISSISSIPPIAN

Mfp — Fort Payne Formation and Springville Shale

MDna — New Albany Group

DEVONIAN

Dh — Hunton Limestone

Dbb — Backbone and Bailey Limestones

SILURIAN

Sms — Moccasin Springs, St. Clair, Sexton, and Edgewood Limestones

ORDOVICIAN

Om — Maquoketa Shale

Ok — Kimmswick Limestone

Odp — Decorah and Plattin Limestones

Od — Dutchtown Formation

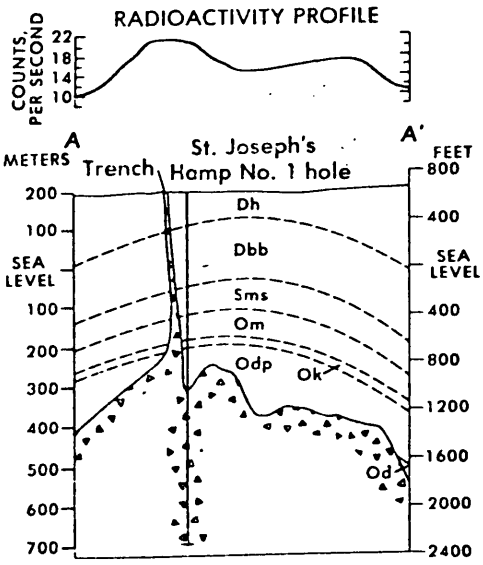
Explosion breccia

Approximate contact

12

14

Contours drawn on lines of equal gamma-ray intensity of the 2.62 MeV (million electron volts) photopeaks of thallium -208 in the thorium -232 decay series. Contour interval is two counts per second.



$3/4 \times 10^6$ Tons ore

3,020,000 tons of total rare earths; from 390,000 to 1,360,000 tons of BeO; from 5,760,000 to 16,500,000 tons of barite; and from 44,300,000 to 83,000,000 tons of fluorite. Normally this property would be operated as a multiproduct mining and milling venture. If, however, the Hicks Dome property were to be operated exclusively for thorium, the cost would still be less than $30 a pound. Hicks Dome contains one of the largest resources of ThO_2 in the United States. In addition, it also has one of the largest resources of niobium, rare earths, beryllium, and fluorite.

The Bear Lodge deposit consists of a composite trachyte phonolite host rock that has been altered and cut by numerous thin crisscrossing veinlets containing both rare earths and thorium. Potassium feldspar is the principal gangue mineral. Monazite, thorite, and brockite are the identified thorium-bearing minerals. In addition, rare earths occur in minor amounts in xenotime. The grade of rock containing disseminated veinlets increases from about 46 ppm ThO_2 for almost unmineralized blocks up to about 1200 ppm for samples with many veinlets. Rare earths are much more abundant than thorium in the disseminated deposit, and most of the analyses contain from 1,200 to 18,000 ppm total rare-earth oxides.

The part of the intrusive complex that contains numerous small veinlets is an area about a mile and a half long and a little over a mile wide. In other parts of the intrusive complex, especially to the south, the fracturing and alteration diminish. The area of the veining and thorium mineralization can be separated from the less mineralized areas by its high radioactivity.

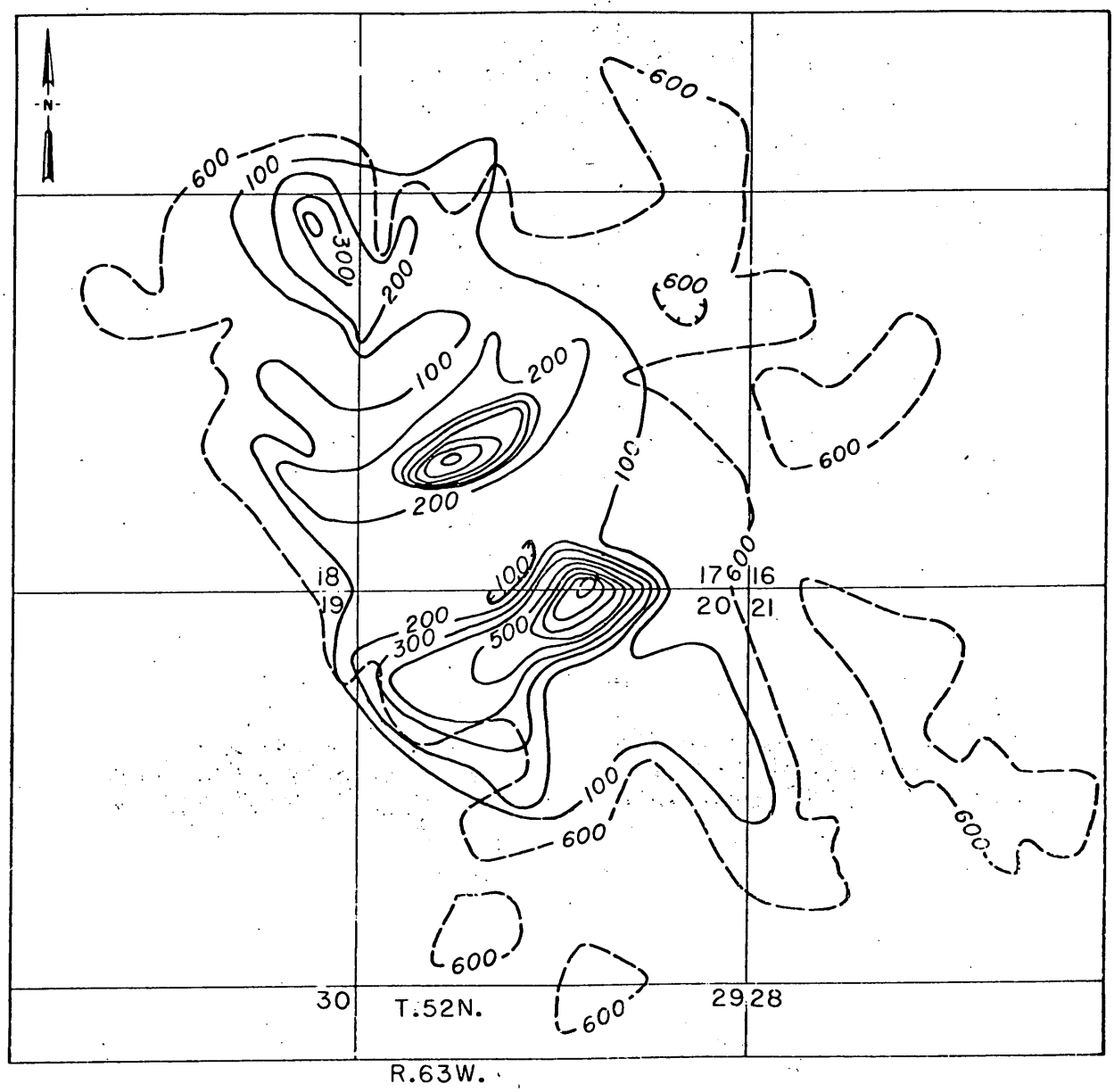
Samples of the intrusive complex were taken within the veined area and analyzed for thorium. From these data a contour map was made using a contour interval of 100 ppm thorium (Figure 6).

This map shows three areas where the quantity of thorium exceeds 200 ppm. Each area is considered a possible site for an open-pit mine. These three areas are referred to as the north, central, and south blocks. The average grade of the north block is 0.023 percent ThO_2 and 0.75 percent combined rare-earth oxides; the central block 0.042 percent ThO_2 and 1.71 percent combined rare-earth oxides; and the south block 0.035 percent ThO_2 and 1.35 percent combined rare-earth oxides. Drilling indicates that the veining extends at least 1,200 feet below the surface. Although mineralization is known to this depth, grade data are scarce. Hence, reserves are only carried to a depth of 500 feet. Probable-potential resources might well be predicted to twice the known depth of mineralization. Even without byproduct rare earths, a total of 200,000 tons of ThO_2 reserves can be recovered from the three thorium-rich veined areas at less than $30 a pound and another 47,000 tons can be produced at between $30 and $50 a pound. In addition, the three blocks have probable-potential resources of 183,000 tons of ThO_2 that can be produced at less than $30 a pound, and 38,400 tons of ThO_2 that can be produced at between $30 and $50 a pound. The reserves also contain 9,480,000 tons of total rare-earth oxides, and the probable-potential resources another 8,520,000 tons.

Massive carbonatites represent a large low-grade source of byproduct thorium. Data are available on two massive carbonatites in the United States: (1) the Iron Hill carbonatite in the Powderhorn district of Colorado, and (2) the Sulphide Queen carbonatite in the Mountain Pass district of California. The Iron Hill carbonitite underlies an area of more than a square mile. The Sulphide Queen carbonatite is an irregular body a little less than a half mile long, and is the site of the largest rare-earth mine in the United States. The two massive carbonatites contain an estimated total of 165,000 short tons of ThO_2 in reserves and probable-potential resources (Figure 7). ThO_2 from these two bodies should be considered a byproduct, as none of it could be produced at costs of less than $30 a pound on thorium values alone. If other economic products were recovered, then 83 percent of this total, or 137,500 tons of ThO_2, are producible at less than $30 a pound.

The Iron Hill carbonatite near Powderhorn, Colorado is the largest exposed massive carbonatite in the United States. The Iron Hill body consists primarily of dolomitic carbonatite. Pyrochlore is the dominant niobium mineral and fluorapatite probably is the most important rare-earth-bearing mineral. Most of the thorium is contained in the pyrochlore. The average ThO_2 content is 0.0043 percent. The carbonatite also contains 0.057 percent Nb_2O_5, 0.4 percent total rare-earth oxides, and 0.0013 percent U_3O_8. In addition to ThO_2, this carbonatite would contain reserves and probable-potential resources of 1,940,000 short tons of

FIGURE 6
THORIUM CONTENT AND RADIOMETRIC MAP OF THE NORTHERN PART OF THE ALKALIC INTRUSIVE CORE IN THE BEAR LODGE MOUNTAINS, WYOMING



Explanation

100 — Thorium contour

Drawn on points of equal thorium content with an interval of 100 parts per million thorium

600 — 600 radioactivity contour

Drawn on all points that have a total gamma plus high energy beta radioactivity of 600 counts per second

FIGURE 7

ThO_2 RESERVES AND RESOURCES IN SHORT TONS FROM TWO MASSIVE CARBONATITES

CARBONATITE	TOTAL RESERVE	TOTAL PROBABLE POTENTIAL RESOURCES
Iron Hill	31,080	114,900
Sulphide Queen	9,750	9,750
Total	40,830	124,650

Nb_2O_5, 13,500,000 tons of total rare-earth oxides, and 33,900 tons of U_3O_8. Mining on this property would be by open pit.

The Sulphide Queen massive carbonatite is an irregularly shaped body elongate in a north-south direction, having an overall length of 2,400 feet and an average width of about 400 feet (Figure 8). It varies considerably in width; its maximum width in the southern part is 700 feet, but in the northern part, it is less than 100 feet wide. This carbonatite mostly is a gray rock that contains 40 to 70 percent calcite, 15 to 50 percent barite, and 5 to 15 percent bastnaesite. The ThO_2 content of the carbonatite, based on the early work of Dan Shawe and Jerry Olson, is 0.026 percent. Olson and others (1954, p. 68) noted that the total rare-earth oxide content of 59 samples ranged from 0 to 38.9 percent. Only eight of these samples contained less than 1 percent total rare-earth oxides. The Sulphide Queen carbonatite represents one of the world's largest resources of rare earths. A mill constructed within a few hundred yards of the orebody separates bastnaesite and several types of rare-earth products. The cost of producing thorium from this property would be that of adding a separate thorium circuit to the present mill.

Monazite-bearing stream placers in the Carolina Piedmont (Figure 9) were the world's first source of thorium, with production starting in 1887. These placers, which were mined in the years 1887-1911 and 1915-1917, are located at the headwaters of streams that drain the monazite-bearing crystalline rocks. Total production during this period amounted to 5,483 tons of monazite. Mining ceased in 1917 because the cost of producing Carolina monazite was greater than that of monazite produced from beach placers in India and Brazil, and not because the reserves were depleted. The Piedmont placers lie in a northeast-trending belt of rocks that extends for 600 miles from Virginia to Georgia. Most of the placers, and those of highest grade, lie in the Piedmont of North and South Carolina. Other placers occur just east of the Fall Line where second generation heavy minerals are reworked from formations of the Coastal Plain. In the Piedmont, heavy mineral concentrations are greatest near the headwaters of the streams. Here, where the streams start and the placer deposits are thin, narrow, and short, is where mining was carried out at the turn of the century. As one progresses downstream, the streams have more water and the placers commonly are thicker, wider, and longer. Unfortunately, the grade of the heavy minerals, including monazite, decreases as the distance from the source increases. Stream placers are multiproduct deposits. The heavy minerals are recovered by some form of gravity separation and then the individual heavy minerals are separated from each other. Thorium, along with rare earths and a little uranium, occurs in monazite. Other possibly economic products in these placers include ilmenite, rutile, zircon, garnet, sillimanite, and kyanite. The heavy mineral content of the placers is fairly low, and ranges from about 0.15 to 2.0 percent. Monazite makes up from 3.5 to 13.0 percent of the heavy minerals. The proportions of various other heavy minerals vary widely between individual placers.

Monazite is principally a rare-earth mineral, commonly containing 60 to 63 percent total rare-earth oxides. Its average ThO_2 content for the river basins in this area ranges from 4.2 to 6.0 percent, and its U_3O_8 content from 0.2 to 1.0 percent.

Reserves, which have been sampled both on the surface and in depth by drilling, contain 5,270 short tons of ThO_2 and 99,500 tons of monazite. Potential resources of the Carolinas probably are about 36,000 short tons of ThO_2 in 725,000 tons of monazite. Cost studies made on 16 of the largest and best known placers in the Piedmont, and on one east of the Fall Line, indicate that only the placer east of the Fall Line could produce ThO_2 at less than $30 a pound. The Piedmont placers, although probably the best known source of thorium in the United States, are too small and low grade to be mined and milled under present economic conditions.

REFERENCE

Olson, J. C.; Shawe, D. R.; Pray, L. D.; and Sharp, W. N., 1954, Rare-earth mineral deposits of the Mountain Pass district, San Bernardino County, California: U.S. Geol Survey Prof. Paper 261, 74 p.

FIGURE 8
GENERALIZED MAP AND SECTION OF THE ORIGINAL SURFACE OF THE SULPHIDE QUEEN CARBONATITE

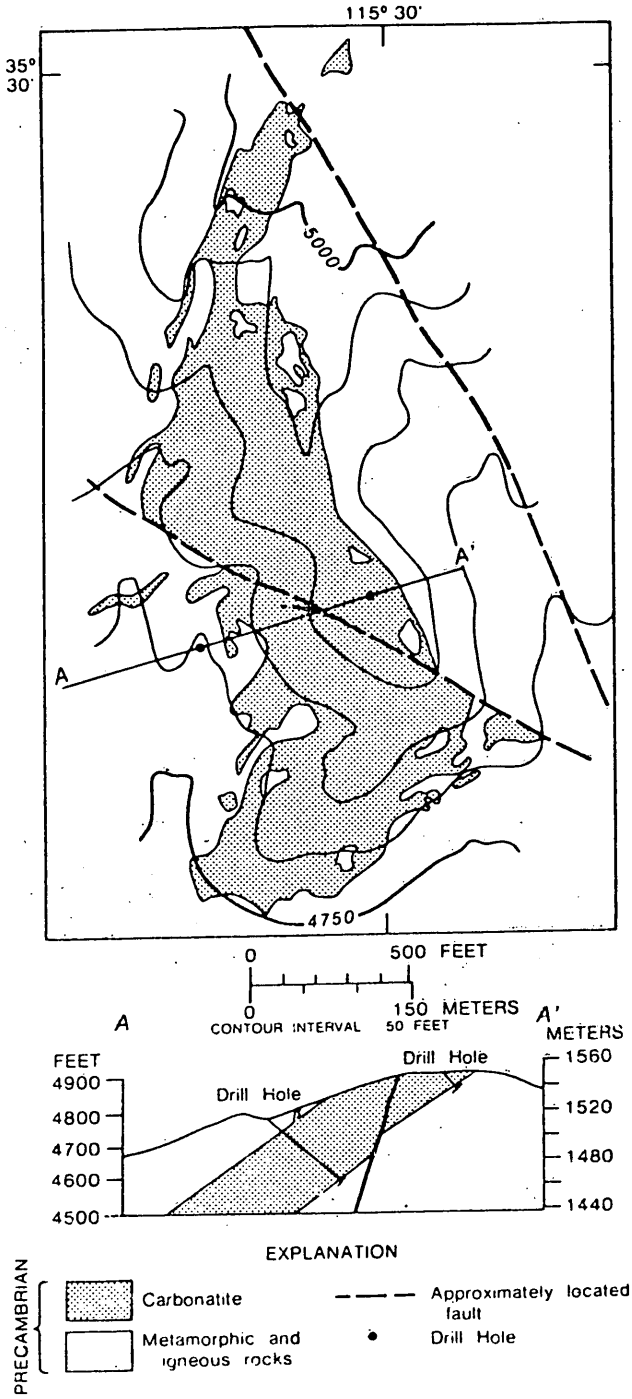
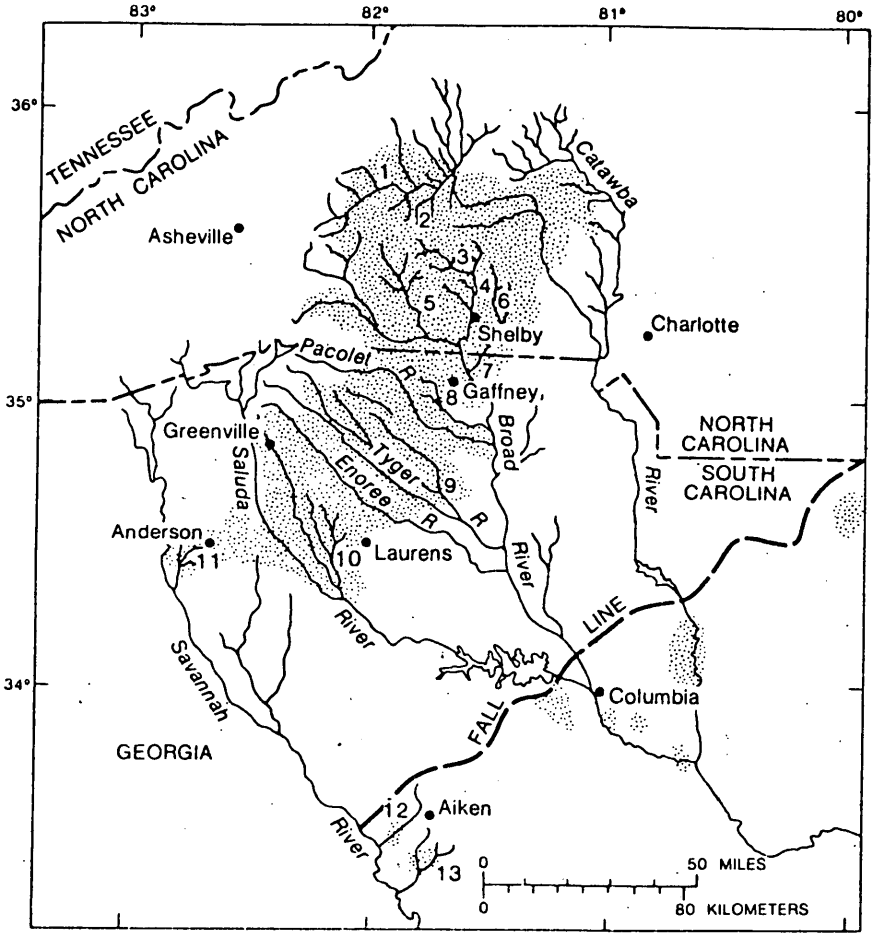


FIGURE 9
MAP SHOWING KNOWN STREAM PLACER AREAS IN NORTH AND SOUTH CAROLINA



EXPLANATION

General area containing placers

Placers mentioned in text

1. South Muddy Creek
2. Silver Creek
3. First Broad River and its tributaries-Hinton Creek, Duncans Creek, and Ward Creek
4. Knob Creek
5. Sandy Run Creek
6. Buffalo Creek
7. Broad River at its junction with Buffalo Creek
8. Thicketty Creek
9. North Tyger River at its junction with Middle Tyger River
10. North and South Rabon Creeks
11. Big Generostee Creek
12. Horse Creek
13. Hollow Creek

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

In Reply Refer To:
Mail Stop 953

October 24, 1978

Memorandum

To: Chief, Branch of Uranium and Thorium Resources
Chief, Branch of Eastern Mineral Resources

From: Chief, Office of Minerals Exploration

Subject: Discussion with Joseph Porter, consulting geologist, regarding Staatz' paper on thorium resources

Re: OME-6873 (Fluorspar et al.)
Kerlin, Goelet and Goelet d/b/a (Operator)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Mr. Porter, who was in charge of the OME project at Hicks Dome and is the Operator's field representative, phoned me this morning to express concern about release of thorium and rare-earth resources data by Staatz in Grand Junction, Colorado, on October 17, 1978.

Porter had been informed of Staatz' paper by John Lee Carroll, New York, who represents the Operator. Porter said it was impossible for Staatz' data not to have been based on information derived from the OME project, and that release of the information without the prior consent of the Operator was a violation of confidentiality of OME data.

In replying to Porter's question if I had seen a copy of Staatz' paper, I replied that I had not, and that I would likely receive a statement from Offield about the source of the data. Also, I stated that if Offield's information suggests that legal guidance is needed, I would refer the problem to the Solicitor's office for review and opinion.

Porter said he was in an attorney's office on October 17 negotiating for some land in the Hick's Dome district, a long continuing procedure because of complicated ownerships, heirs, etc. Unauthorized publicity about possible thorium resources could scuttle the Operator's efforts to acquire, on reasonable terms, the land needed to undertake a mining operation. Possible abandonment of the effort by the Operator would mean, too, that the Government would have no chance to recover, through royalties on production, the $118,206.55 it expended as its share of the project costs. The period of obligation for payment of royalty continues to September 26, 1989.

If it cannot be shown without a doubt that Staatz' data are based on previously released information that was available to anyone interested, consideration should be given to stop publication by DOE or by the Survey of the numbers objectionable to the Operator. DOE, to whom the data is of prime interest, was informed by the Survey of the potential importance of the Hicks Dome deposit so the Nation's interest has been served. Preservation of the Survey's reputation for maintaining confidentiality of privileged information is of greater immediate concern to the Survey.

Harold Kirkbenco

Land aquisition
Kirk

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

October 31, 1978

Memorandum

To: The Record

From: Harold Kirkemo, Chief Harold Kirkemo
Office of Minerals Exploration

Subject: Further discussion with Joseph Porter, consulting geologist, regarding Staatz' paper on thorium resources

Re: OME-6873 (Fluorspar et al.)
Kerlin, Goelet and Goelet d/b/a (Operator)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Mr. Porter phoned me today and inquired if I had received a copy of Staatz' paper. I replied that I had not, and I expected only to receive a statement from Terry Offield concerning the source of data used by Staatz to support his resource figures. Porter asked if I had referred or discussed the matter with attorneys in the Solicitor's office. I said I had not and would refer the matter to that office if the statement from Offield indicated to me that we needed legal advice.

Porter said the Operator was very disturbed about Staatz' paper, and that the data almost certainly had to be based on information obtained from the OME contract. Disclosure of confidential, proprietary information without prior approval of the Operator was, in Porter's opinion, a violation of USGS's long standing practice not to release such information, and in this instance, the Operator would be seriously harmed.

Porter asked me if there was a written code of ethics or a law concerning unauthorized disclosure of company confidential information. I replied that I was not aware of a specific written code or law on this matter, but I said that we knowingly did not disclose OME data without the Operator's permission.

Porter said he would phone again in a few days to inquire about the matter. Pending receipt of a statement from Offield and possibly a copy of Staatz' paper, I will discuss the matter informally with an attorney in the Solicitor's office.

cc: Offield
Staatz
Brobst
R. Taylor

Kirkemo
received 11/9/78

Mail Stop 916
Office of Energy Resources
Branch of Uranium and Thorium Resources

October 27, 1978

Mr. John L. Carroll
345 Park Avenue
New York, New York 10022

Dear Mr. Carroll:

As a result of our recent talk I have made a number of changes in the paper I gave at Grand Junction and which will be published in their proceedings. Before I left Grand Junction I had a talk with Roger Malan of the Department of Energy and he assured me that they would use the revised report in their proceeding. In the new paper all the data on the Hicks Dome area has been removed and even the name of the area is not mentioned in the report.

I had also promised to send you a copy of the material on Hicks Dome we intended to use in the circular. At present this is not practical. The problem is that since I talked to you an inter-Governmental discussion started on the methodology used in calculating various types of resources. Hence, until a general overall method is accepted by all parties it is premature really to consider finishing off a report in which there is so much resource data. When this problem is resolved and I get the paper rewritten I will send you a copy for your perusal.

Sincerely,

Mortimer H. Staatz

bcc: TWOffield
MHStaatz:mt

Staatz to
Carroll

FINAL REPORT--OME EXPLORATION PROJECT

OME-6873 (Fluorspar-beryllium-rare earths-thorium-niobium)
Gilbert Kerlin, Robert G. Goelet, Francis Goelet, d/b/a
Hicks Dome Account, a partnership
Hicks Dome Property
Hardin County, Illinois
Contract 2306 (Long Form)

by
Harold Kirkemo, Chief
Office of Minerals Exploration
November, 1978

Preface

This report summarizes the program of work, costs, and results of the Hicks Dome OME project. The report is based on detailed and voluminous reports, monthly and final, by Joseph A. Porter, the Operator's project representative, memoranda by Robert D. Trace, Allen V. Heyl and other USGS geologists who frequently visited the project while drilling was in progress and who (Heyl in particular) carefully studied the drill core, and on the final audit and cost review of the project.

1. Operator: Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
53 Wall Street
New York, New York 10005

John Lee Carroll, geologist and agent for Operator
345 Park Avenue
New York, New York 10022
Phone: (212) 688-3353

Joseph A. Porter, geologist and project representative
for Hicks Dome Account
P.O. Box 3
Herod, Illinois 62947
Phone: (618) 264-2873

Mr. Porter stated in a letter dated September 11, 1972, that Hicks Dome Account is a General Partnership and all expenditures were to be made solely for the Account and not for the account of any other person, corporation, or entity in the mining industry or otherwise.

Property: The land included in the Contract consisted of eight (8) contiguous tracts of leased land or mineral rights thereto totalling approximately 615 acres in section 25, T. 11 S., R. 7 E., and sections 30 and 31, T. 11 S., R. 8 E., Third Principal Meridian, Hardin County, Illinois. Information on the leases follows:

Final Field Report

Date of lease or deed	Acres	Parties to lease or deed	Description
March 20, 1970	160	First State Bank of Elizabethtown, Illinois, lessor, Industrial Minerals Exploration Co., lessee.	E-1/2 NE-1/4 sec. 25, T. 11 S., R. 7 E., and W-1/2 NE-1/4, Sec. 30, T. 11 S., R. 8 E.
March 13, 1971	79.543	Mabel A. Pankey, grantor Industrial Minerals Exploration Co., grantee. (17/21st interest in tract)	NE-1/4 NW-1/4 and SE-1/4, NW-1/4, Sec. 30, T. 11 S., R. 8 E, less a parcel containing approximately 0.457 acre excepted in lease.
July 30, 1971	Same as above	Etta Irby and Iley "Doc" Pankey, lessors, Antaeus Resources Corp., lessee. (4/21st interest in tract)	Same as above
March 12, 1970	40	Florence F. Loyd, Fluorine Loyd, S. D. Loyd, Beulah Loyd, Marybelle L. McLin, W. R. McLin, lessors, Industrial Minerals Exploration Co., lessee.	SW-1/4 NE-1/4 sec. 30, T. 11 S., R. 8 E., less a parcel containing approximately 0.45 acre excepted in lease.
Feb. 18, 1972	61.5	William L. Hamp, Applena Hamp, James E. Hamp, Diane K. Hamp, Franklin E. Hamp, and Mary H. Hamp, lessors, Antaeus Resources Corp., lessee.	N-1/2 NW-1/4 SW-1/4 Sec. 30, and portion of E-1/2 SW-1/4 sec. 30, T. 11 S., R. 8 E.
April 14, 1970	40	Lola Ewell Fredericks, Jack L. Fredericks, and Sophia Coy, lessors, Industrial Minerals Exploration Co., lessee	N-1/2 SW-1/4 SW1/4 and S-1/2 NW-1/4 SW-1/4 sec. 30, T. 11 S., R. 8 E.
March 9, 1970	20	Emma D. Jenkins, Eulala Wunderlich and Fred Wunderlich, lessors, Industrial Minerals Exploration Co., lessee.	Portion of E-1/2 SW-1/4 sec. 30, T. 11 S., R. 8 E.
May 14, 1971	90	Edwin E. Rose, Gladys Rose, Thomas Rose, Vivian Rose, Veloise Zeller, William Zeller, Maude E. Williams, and Virgil H. Williams, lessors, Antaeus Resources Corp., lessee.	N-1/2 SE-1/4, sec. 30, and E-1/4 NE-1/4 SW-1/4 sec. 30, T. 11 S., R. 8 E.
Feb. 22, 1972	105	J. J. Coan Co., Inc. International Fastener Research Corp., J.D. Quarant, Allene B. Quarant, lessors, Antaeus Resources Corp., lessee.	S-1/2 SE-1/4 sec. 30, T. 11 S., R. 8 E. except the north 15 acres of SE-1/4 SE-1/4; and the NW-1/4 NE-1/4 sec. 31, T. 11. S., R. 8 E.

These tracts are shown on Figure 1, revision 2, which was adapted from the figure in Amendment No. 2 to the Contract.

Ownership: The Operator is in possession of this land or mineral rights under terms of an Agreement dated May 10, 1971, between Hicks Dome Account and Antaeus Resources Corporation, which granted to Hicks Dome Account all of the leases held by Antaeus Resources. The lease with J. J. Coan Company was entered into after the Agreement was executed. The requirement for payment of royalty to the Government on mineral production does not apply to production obtained from mining above the 200-foot level in the NW¼ SE¼, section 30, T. 11 S., R. 8 E. of the Rose-Zeller-Williams tract.

2. Purpose of Project: The purpose of the project was to explore by diamond core drilling for fluorspar-beryllium-rare earths-thorium-niobium ores in mineralized breccias in the Hicks Dome cryptovolcanic structure.

3. Contract: Dated September 26, 1972, for a term of eight (8) months, or to June 10, 1973. Extended by amendments to June 26, 1975. Original contract amount $95,450 (Gov't share at 50 percent, $47,725).

If a certification of possible production is issued on this Contract, the period of royalty obligation would be fifteen (15) years. In lieu of a Consent to Lien and Subordination Agreements, the Operator posted a performance bond for $47,725 (Aetna Insurance Co.).

Amendments:

No. 1: June 29, 1973, extended time for completion of work from 8 to 15 months, or to December 26, 1973, increased the total allowable cost of the work to $151,930.00 (Government share at 50 percent on the first $47,725, and 35 percent on an additional $19,768.00 for a total of $67,493.00), revised Article 1(c) of the Contract concerning interest computation to:

8¼ percent on Government's contribution to $47,725.00 and

9 percent on Government's contribution over $47,725.00 but not in excess of $67,493.00.

It also required the Operator to post another performance bond to cover the penal sum of $19,768.00 for Stage II.

Exhibit A of the Contract was revised by adding rotary drilling to the statement on purpose of the project, establishing a 2-stage work program, and changing the Actual Costs section in Exhibit A of the Contract.

No. 2: January 31, 1974, extended time for completion of work from fifteen (15) months to twenty-one (21) months from date of the Contract, or to June 26, 1974, increased the the total allowable cost of the work to $266,110.00 (Government share at 50 percent for Stages 1 and III, and 35 percent for Stage II for a total sum of $113,558.00), revised interest computation to:

8-1/4 percent on Government's contribution to $47,725.00,

9 percent on Government's contribution over $47,725.00 but not in excess of $67,493.00, and

8-3/4 percent on Government's contribution over $67,493.00 but not in excess of $113,558.00.

The Operator was required to post an additional bond to cover Government's share of the added cost of the work, and the work plan was revised to three stages.

No. 3: June 26, 1974, extended time for completion of work from twenty-one (21) to twenty-seven (27) months from date of Contract, or to December 26, 1974, extended period of obligation for payment of royalty from fifteen (15) to seventeen (17) years from the date of Contract, or until September 26, 1989 (incorrectly stated originally in the Amendment), substituted 17 years for 15 years in paragraph on page 3 of Annex I to the Contract which pertains to extending obligation for royalty payments to lands acquired within 1,000 feet of the boundaries of the land described in the Contract, and allowing deletion of lands and reacquisition.

No. 4: June 28, 1974, increased the total allowable cost of the work to $276,110.00 (Government's share at 50 percent in Stages I, III, and IV, and 35 percent in Stage II for a total sum of $118,558.00), revised interest computation to:

8-1/4 percent on Government's contribution to $47,725.00,

9 percent on Government's contribution over $47,725.00 but not in excess of $67,493.00,

8-3/4 percent on Government's contribution over $67,493.00 but not in excess of $113,558.00, and

9-3/4 percent on Government's contribution over $113,558.00, but not in excess of $118,558.00.

Required the Operator to post performance bonds adequate to cover $118,558.00.

The work plan was revised to four stages with Stage IV allowing analytical work and related services on samples obtained from drilling.

No. 5: December 20, 1974, extended time for completion of work from twenty-seven (27) to thirty-three (33) months from date of Contract, or to June 26, 1975.

4. Project Work: Drilling started October 5, 1972, was completed May 10, 1974, and analytical work was completed in March 1975. The Operator's report on Stage IV (analytical work) was dated June 25, 1975, and the Operator's Final Report was dated November 26, 1975.

The project was conducted in four stages. Stages I, II, and III involved drilling, assaying, services, and items necessary to complete work set forth in the Contract. Stage IV consisted of additional analytical work and interpretation.

Work completed on the Contract consisted of 12 drill holes totalling 29,339 feet of which 3,670 feet were rotary drilled and 25,669 feet were diamond drilled.

A total of 2,043 analyses were made of drill core and cuttings for specific elements of which 610 were for CaF_2. In addition, 143 spectrographic analyses and 229 x-ray fluorescence determinations were made.

The Operator submitted 19 vouchers showing costs of $259,137 of which OME accepted $255,516 and reimbursed the Operator $118,207 for Government participation. The units of work authorized and approved under the Contract were summarized as follows in the final audit dated April 1, 1976:

Allowable Costs	Costs claimed and approved by Audit
Stage I	
Category:	
(1) Independent Contracts	$60,436
(2) Personal Services	9,314
(3) Operating Materials and Supplies	1,491
(7) Miscellaneous	2,144
Stage II	
Category:	
(1) Independent Contracts	53,679
(2) Personal Services	6,802
(3) Operating Materials and Supplies	797
(7) Miscellaneous	2,399
Stage III	
Category:	
(1) Independent Contracts	98,007
(2) Personal Services	14,280
(3) Operating Materials and Supplies	1,553
(7) Miscellaneous	3,961
Stage IV	
Category:	
(7) Miscellaneous	4,274
Total Allowable Cost	259,137 a/
Government Participation	118,207

a/ Includes $3,621 of excess allowable type costs not accepted by OME.

A summary of drilling completed, shown as Table 1 in the Operator's Final Report, was the basis for the following compilation:

Summary of drilling

Hole no.	Land tract	Started	Finished	Feet Drilled Rotary	Feet Drilled Cored	Total depth, feet
OME-1	Hamp	10/5/72	12/2/72	141	2,185	2,326
OME-2	Fredericks	12/5/72	1/20/73	120	2,080	2,200
OME-3	Pankey	12/11/72	3/26/73	361	2,016	2,377
OME-4	Hamp	2/5/73	5/25/73	166	2,034	2,200
OME-5	FSB[1/]	5/16/73	8/2/73	325	2,080	2,405
OME-6	Hamp	8/6/73	9/8/73	719	1,685	2,404
OME-7	FSB	9/10/73	10/6/73	785	1,760	2,545
OME-8	FSB[2/]	10/25/73	2/1/74	105	2,892	2,997
OME-9	Hamp	10/25/73	1/16/74	676	1,717	2,393
OME-10	Fredericks	11/28/74	3/15/74	128	2,339	2,467
OME-11	FSB	2/2/74	4/6/74	64	2,452	2,516
OME-12	Fredericks	3/18/74	5/10/74	80	2,429	2,509
			Total	3,670	25,669	29,339

1/ FSB - First State Bank

2/ Represents second attempt to drill this hole. First attempt totaled 720 feet of rotary. Hole was abandoned and is not included in the totals.

Locations of these holes are shown on Figure 1, revision 3, which follows.

The Government retained no equity in any of the materials or equipment used.

Effectiveness of the Work: The target area was explored satisfactorily considering the amount of Federal funds available. Adequate funding would have enabled the Operator to drill more holes to better determine the extent and grade of mineralized material within the property.

Efficiency of Operation: The extended duration of the project from the original 8 months to 33 months was due to:

1. Inability of the first drilling contractor to continue with the project.

2. Need to recast Estimated Costs and to prepare amendments to the Contract allowing more realistic prices for goods and services.

3. Long period of time required to obtain results from a commercial analytical laboratory.

5. Reports:

Operator's Final Report: A final report, dated June 20, 1975, on all assay data resulting from analytical work completed under Stage IV of the Contract was submitted by Joseph A. Porter. An acceptable Final Report, also by Mr. Porter, dated November 26, 1975, was received December 5, 1975.

Cost Review: A Memorandum Audit Report and Cost Review of the Contract was issued April 1, 1976, by the Office of Audit and Investigation, Eastern Region.

Royalty Review: There was no production from the project area during the OME project, and none to date (November 1978), therefore, a Royalty Review has not been requested.

6. Project Results:

Discoveries: In a memorandum dated May 17, 1974, Allen V. Heyl, geologist, USGS, reported as follows in support of the Operator's request for increased funding for additional funding (subsequently provided in Amendment No. 4 to the Contract):

"Examination of the analysis results completed to date show a very large mineral body, which is not only enriched in fluorspar, beryllium, niobium, yttrium, and barite, but also in thorium and the specific yttrium family, heavy rare earth elements such as ytterbium, gadolinium, dysprosium, holmium, erbium, and thulium. Thorium is becoming of increased importance in new-phase nuclear reactors, and this body at Hicks Dome may be the largest single thorium resource in the country of great future value. The yttrium family heavy rare earth elements are very recently of great value for color television screens, electronic uses, petroleum-cracking catalysts, and high intensity lighting. Again, the Hicks Dome body may be a major potential source of these elements.

"The analyses completed to date show that parts of the mineral body lean in fluorspar may be enriched in the other elements, Be, Nb, rare earths, Ti, Th, and yttrium. Much of this lower grade ore needs analyses for these elements, which together make up the potentially most valuable parts of the deposit. For example, the better fluorspar (i.e., 50 - 20%) if recovered, has a potential value of $15 to $25 per ton, but the average niobium content of 0.2% Nb has a potential value of about $25 per ton and the average total heavy rare earth (from sparse analyses) of one to two per cent would have a potential value of $40 to $80 per ton in the ore in the ground. Hence, the average value of rock in the ground would probably be increased from perhaps $20 per ton to about $100, or to $150 per ton if the values of all the major elements are known and successful recovery methods developed."

The Operator estimated resources indicated by the OME drilling (page 4 of Final Report) to be as follows:

Total mineralized material 11,324,000 tons (rounded)

Average Grade

11.45% CaF_2	0.209% Thorium
3.64% $BaSO_4$	0.177% Yttrium
0.155% Niobium	

The resources were calculated to be in seven blocks of which four were based on or influenced by more than one drill hole, and three were based on one hole each, as shown in the following tabulation:

SUMMARY OF TONNAGE AND AVERAGE GRADE

Resource block	Tons	CaF_2	$BaSO_4$	Nb	Th	Y
		(Percent)				
		Based on or influenced by more than one hole				
Hamp A	4,462,500	9.90	N.A.	.159	.239	.193
Hamp B	2,649,375	9.36	3.26	.159	.239	.193
FSB-A	1,880,000	15.30	5.36	.119	.147	.157
FSB-B	662,000	22.22	2.89	.250	.180	.176
		Based on one hole				
FSB-C	870,000	10.67	2.00	.149	.144	.114
FSB-D	295,000	9.27	2.78	.117	.104	.045
Fred-A	523,333	10.33	3.57	.133	.232	.214
Total	11,342,208	11.45	3.64 1/	.155	.209	.177

1/ Block Hamp-A is not included in weighted average.

Depths to the top and bottom of drill hole intersections with the mineralized material included in the Operator's resource estimates, and the average thickness of the mineralized zone in each resource block were as follows:

Resource block	Intersection, range in feet from surface	Average thickness, feet
Hamp-A	1906-2262	238
Hamp-B	1906-2224	157
FSB-A	2055-2243	188
FSB-B	2300-2366	66
FSB-C	2233-2494	261
FSB-D	2154-2243	89
Fred-A	1908-2065	157

Since the project work was completed, the Operator has been arranging more permanent rights to the land tracts than the leaseholds which had been signed with the property owners prior to the OME contract. This is a long, protracted, procedure because of the many landowners, heirs, and claimants involved. Upon completing these negotiations, presumably the next goal of the Operator will be to further evaluate the Hicks Dome deposit, and eventually to undertake production.

Certification: A Certification of Possible Production was issued on April 21, 1976. The Government's lien for payment of royalties expires on September 26, 1989, or earlier if the total amount ($118,206.55) contributed by the Government and accrued interest are repaid in full. Interest is charged at varying rates as set forth in Amendment No. 4 to the Contract.

Royalties: No ore or concentrate was sold during the period of the exploration work and no royalties were paid or due the Government.

7. Environmental Considerations: Work done under the Contract was not a major Federal action significantly affecting the quality of the environment. Therefore, an environmental impact statement as specified under section 102 of the National Environmental Policy Act as amended and Executive Order No. 11514, 35 F.R. 4247 (1970) was not required.

8. Geologic Summary: Hicks Dome is located on the south rim of the Illinois basin in complexly faulted, broadly folded Paleozoic strata underlying the Illinois-Kentucky fluorspar district. The project area is located in the central portion of the dome, and is about 6,000 feet long in a northwest direction and 3,500 feet wide. Sedimentary rocks in the area, either exposed or cut in deep drill holes, consist of dolomites, sandstone, chert, and shale of Ordovician, Silurian, or Devonian age. Total thickness of these strata is several thousand feet.

The only igneous rocks in the area are a few mica peridotite dikes which have been cut in some of the drill holes.

The economically important lithologic structures in the dome are explosion or cryptovolcanic breccias which penetrate into the sedimentary rocks. An inverted funnel configuration is suggested for these bodies. The main breccia mass which was the exploration target for this project consists of intensely brecciated fragments of the enclosing rocks to a depth of about 2,500 feet and coarser, larger and less well mixed fragments below that depth. The better grade and more persistent mineralization occurs as finely disseminated minerals replacing rock flour matrix and breccia fragments. The more common location for the consistently mineralized material is in the breccias occupying the stratigraphic position of the lower part of the Decorah-Plattin limestone in the Ordovician strata. The coarser matrix referred to by Porter as "monomineral" is not as well mineralized.

Heyl concludes that drilling on the OME project showed a very large mineral body. Its future development will require extensive, additional exploration drilling followed by shaft sinking, crosscutting, and drifting to determine the lateral extent, thickness, and grade of the mineralized material.

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

In Reply Refer To:
Mail Stop 953

October 20, 1978

Memorandum

To: Chief, Branch of Uranium and Thorium Resources
Chief, Branch of Eastern Mineral Resources

From: Chief, Office of Minerals Exploration

Subject: Concern regarding thorium resources in the Hicks Dome district, Illinois

Re: OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

On October 19, 1978, Terry W. Offield, Denver, Chief, Branch of Uranium and Thorium Resources, phoned me to discuss a problem concerning thorium resources in the Hicks Dome district, Illinois, which is to be included in a report on the thorium resources of the United States.

The Survey, on behalf of the Department of Energy (DOE), is studying the thorium resources of the nation. An open meeting, sponsored by DOE, to report on Phase 1 of this study was held on October 17, 1978, in Grand Junction, Colorado. Mort Staatz, one of the principal Survey geologists on the study, reported potentially significant thorium and rare-earth resources in the Hicks Dome district; in fact, the numbers were so large that they could not be assimilated with those for deposits elsewhere to avoid disclosing the magnitude of thorium resources in that district. Offield understood that Staatz' data are based on information available to the public and includes information obtained from one drill hole (not an OME drill hole). Offield had not yet discussed with Staatz the basis for the estimate of resources in the Hicks Dome district.

John Lee Carroll, New York City, representing the Operator, Kerlin, Goelet and Goelet d/b/a Hicks Dome Account, OME-6873, was at the meeting in Grand Junction. Offield understands that Carroll was upset by the disclosure of such large numbers for the thorium resources of the

Hicks Dome district, and believed that confidentiality of OME data had been violated by the Government. He did not want the data published by DOE (or the Survey). Carroll for some years has been negotiating for property in the Hicks Dome district, and believes that publicity would not be beneficial to his client's interests. Staatz met with Carroll at breakfast the next day, but the nature of their discussion is not known to Offield. Offield said he later saw Carroll and reported that Carroll thought potential damage to his clients' interests might not be too serious because the report distributed as a preprint at the Grand Junction meeting would not have wide circulation, and perhaps would not come to the attention of property owners in the Hicks Dome district.

Offield will review Staatz' estimates for the Hicks Dome district to ensure that they are based entirely on information that is already available to the public, and does not include information derived from the OME project. He will forward the results of his review to this office. If there is need to obtain legal opinion about releasing the Survey's contribution to DOE for publication by DOE or the Survey, I will refer the matter to the Solicitor's Office.

Harold Kirkemo

Harold Kirkemo

✓ HK 10/30/78

JOHN LEE CARROLL
345 PARK AVENUE
NEW YORK, N. Y. 10022

(212) 688-3353

September 25, 1978

Mr. Harold Kirkemo, Chief
Office of Minerals Exploration
U. S. Department of the Interior
Geological Survey
Reston, Virginia 22092

Re: OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Dear Mr. Kirkemo:

Thank you for your letter and enclose the forms requested.

Mr. Porter is still our employee and his address is as previously reported (P.O. Box 3, Herod, Illinois 62947).

Sincerely yours,

J. L. Carroll

JLC:AG
Encs.

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

September 14, 1978

Mr. John Lee Carroll
345 Park Avenue, Rm. 4120
New York, New York 10022

Re: OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Dear Mr. Carroll:

As you know, we inquire annually of the Operator of each certified OME and DMEA contract if there has been any production or changes in land ownership in the previous year or stated period of time. We have not made such inquiry in previous years concerning the Hicks Dome property because we were informed during the year about activities at the property, but we have not communicated with you in the past year so we enclose (reverse side) the usual form (MME 63) for your attention. Please report where applicable and return two copies to us at your convenience.

Is Mr. Porter still in the employe of the Operator, and is his address as reported in December 1975 (P.O. Box 3, Herod, Illionois 62947)?

Sincerely yours,

Signed

Harold Kirkemo, Chief
Office of Minerals Exploration

Form MME 63
(May 1970)

REQUEST FOR INFORMATION ON CERTIFIED PROJECT OR PROJECT UNDER ROYALTY AGREEMENT

1. Since April 21, 1976, has there been a change in ownership, lease, or sublease? *If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before.* Yes ☐ No ☒

2. Since April 21, 1976, has there been any production from the land subject to the contract? Yes ☐ No ☒

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

Purchaser *(name and address)*	Quantity	Value

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

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

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

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

Disposition of Material	Quantity	Value

Submitted by:

Name J. L. Carroll	*Title* General Partner
Address 345 Park Avenue New York, N.Y. 10022	*Date* 9/21/78

✓ HK
10/30/78

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

September 14, 1978

Mr. John Lee Carroll
345 Park Avenue, Rm. 4120
New York, New York 10022

Re: OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

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Signed

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Office of Minerals Exploration

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

Disposition of Material	Quantity	Value

Submitted by:

Name J. L. Carroll	*Title* General Partner
Address 345 Park Avenue New York, N. Y. 10022	*Date* 7/21/78

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

In Reply Refer To:
Mail Stop 953

October 20, 1978

Memorandum

To: Chief, Branch of Uranium and Thorium Resources
Chief, Branch of Eastern Mineral Resources

From: Chief, Office of Minerals Exploration

Subject: Concern regarding thorium resources in the Hicks Dome district, Illinois

Re: OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

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Harold Kirkemo

Harold Kirkemo

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

September 14, 1978

Mr. John Lee Carroll
345 Park Avenue, Rm. 4120
New York, New York 10022

Re: OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Dear Mr. Carroll:

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Is Mr. Porter still in the employe of the Operator, and is his address as reported in December 1975 (P.O. Box 3, Herod, Illionois 62947)?

Sincerely yours,

Harold Kirkemo, Chief
Office of Minerals Exploration

Form MME 63
(May 1970)

REQUEST FOR INFORMATION ON CERTIFIED PROJECT OR PROJECT UNDER ROYALTY AGREEMENT

1. Since April 21, 1976, has there been a change in ownership, lease, or sublease? *If yes, please state details of the transaction below and provide a true or signed copy of the pertinent documents, unless they have been provided before.* Yes ☐ No ☐

2. Since April 21, 1976, has there been any production from the land subject to the contract? Yes ☐ No ☐

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

Purchaser *(name and address)*	Quantity	Value

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

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

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

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

Disposition of Material	Quantity	Value

Submitted by:

Name	*Title*
Address	*Date*

6/14/77 (212) 688-3353

Carroll —

Lawsuit with a landowner re title — will occupy better part of year.

What use to be made of data? and of report?

Staatz 8-234-2986.

Ohfield.

Armbrustmacher.

Recd 6/16/77

JOHN LEE CARROLL
345 PARK AVENUE
NEW YORK, N. Y. 10022

(212) 688-3353

June 14, 1977

Your Ref.: Mail Stop 953

Mr. Harold Kirkemo, Chief
Office of Minerals Exploration
United States Department of the Interior
Geological Survey
Reston, Virginia 22092

Re: OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Dear Mr. Kirkemo:

Confirming our telephone conversation this morning with regard to your letter of June 7th, I understand that you will supply me with the name of the branch which is carrying out the study referred to and the person to contact in that branch so that I may discuss our problem with him.

As I indicated on the phone, total confidentiality is still required with respect to our data on the property.

With kindest regards,

Sincerely yours,

John Carroll

JLC:AG

Note indicates that Kirkemo & Carroll discussed this problem again on June 14, 1977 and that state, OAfield, and Armbustmakes were mentioned to Carroll. Presumably, Carroll's question was answered.

H. Kirkemo 9/14/78

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

In Reply Refer To:
Mail Stop 953

June 7, 1977

Mr. John L. Carroll
Room 4120, 345 Park Avenue
New York, New York 10022

Re: OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Dear Mr. Carroll:

The U.S. Geological Survey is making a survey of domestic thorium resources--a task requiring sample collecting, laboratory analyses, and resource appraisals of the principal thorium deposits, and preparation of a report by May 1, 1978.

Preliminary mineralogical studies some years ago by Allen Heyl and Mortimer Staatz, USGS geologists, of a few samples of core obtained from the OME drilling project cited above confirmed that the Hicks Dome deposit contains thorium. In order to determine whether or not a large resource of thorium is present, investigation of the core, cuttings, or pulp obtained under the OME contract is needed, and we would appreciate access to the material for examination and sampling for this purpose.

The data obtained from our studies will be shared with the Operator as we have shared the results of previous investigations.

Because of the tight schedule for the thorium project, we would appreciate an early response to this request. Unless otherwise advised, we assume that the OME material is in the custody of Mr. Joseph A. Porter, and that USGS personnel would contact him to make arrangements for access. The latest addresses we have for Mr. Porter are:

Business:
P.O. Box 3
Herod, Illinois 62947

Home:
104 E. Walnut Street
Harrisburg, Illinois 62946

Sincerely yours,

Harold Kirkemo, Chief
Office of Minerals Exploration

HKirkemo/gpw

cc: Allen F. Heyl
R. Laurence
R. Trace
E. Staatz
OME Files (4)
DRF
MR Rdg.

rcvd 6/6/77

United States Department of the Interior

GEOLOGICAL SURVEY
Box 25046
Denver Federal Center
Denver, Colorado 80225

IN REPLY REFER TO: Mail Stop 916

Office of Energy Resources
Branch of Uranium and Thorium Resources

June 2, 1977

Memorandum

To: Harold Kirkemo

From: Mortimer Staatz
Branch of Uranium and Thorium Resources

Subject: OME drill core of the Hicks Dome, Illinois project

Since the de-emphasizing of the breeder reactor, there has been considerable interest in thorium. As a result the thorium group of the Uranium and Thorium Resources Branch has recently been assigned the task of making a one year survey of the United State's principal thorium resources. The Hicks Dome deposit is known to have thorium, and it may be one of the United States larger resources of this metal. Thus, it is important to obtain as reliable data as possible on this deposit. Because of the Hicks Dome thorium content I made a visit several years ago to this area with Allan Heyl, and have done some preliminary mineralogy on this deposit. The holders of the OME loan have been most interested in this property as a possible source of fluorspar and or barite and hence have many analyses for these two minerals. The property is probably more valuable for its combined minor elements, and the company has had a number of analyses made for beryllium, niobium, lead, and yttrium. As thorium has had no viable market in the past, they have not had any thorium analyses made. The only ones present are on a few samples collected by me or Allan Heyl. In order to obtain a representative grade for thorium in this large deposit, I would like to obtain permission to sample core from various OME drill holes. We would appreciate your contacting Mr. Carroll, who represents the company, to clear the way for us to get some of the core obtained under the OME contract. We would be more than willing to share the data obtained on the drill cores with the company. Hopefully we can get started as soon as possible, as the samples have to be collected and analyzed, resources calculated, and final report finished by May 1, 1978.

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

Recd 1/28/77
✓
HK 1/28/77

JOHN LEE CARROLL
345 PARK AVENUE
NEW YORK, N. Y. 10022

(212) 688-3353

January 24, 1977

Mr. Harold Kirkemo, Chief
Office of Minerals Exploration
United States Department of the Interior
Geological Survey
Reston, Virginia 22092

Re: OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Dear Mr. Kirkemo:

Thank you for your letter of January 13th, in response to my inquiry regarding the performance bond. I appreciate your taking the trouble to do this for us. I will review the various options outlined in your letter and be back to you in due course.

With kindest regards,

Sincerely yours,

John Carroll

JLC:AG

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

January 13, 1977

Mr. John L. Carroll
Room 4120, 345 Park Avenue
New York, New York 10022

Re: OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Dear Mr. Carroll:

This is in response to your recent inquiry by phone regarding possible relief from payments of premiums on performance bonds required for the subject certified contract.

We referred the problem to the Assistant Solicitor, Division of Energy and Minerals, Department of the Interior, on December 22, 1976, and received a memorandum reply dated January 11, 1977. A copy of the memorandum is enclosed together with copies of regulations referred to in the memorandum.

In lieu of lien and subordination agreements, the Operator appears to have four options, namely:

1. A pledge by the Operator to a third party, acting as a trustee, of securities totalling $118,206.55 to be held under terms and conditions acceptable to the Government for the duration of the period of obligation (to September 29, 1989).

2. An agreement between the Operator and an individual who would agree with the Government to act as surety for the payment of royalties to the Government.

3. A determination by the Secretary of the Interior that no lien or other undertaking is necessary, other than the lien upon the Operator's own interest.

4. Posting the Operator's personal bond in lieu of a surety bond with the deposit of negotiable Federal securities of a par value equal to $118,206.55.

Please note that if any of these options are of interest to the Operator, Mr. Ferguson and Mr. Martin will be glad to assist in any way they can to pursue one of the options mentioned. We, too, will do whatever we can to help.

Of course, if the Operator could secure lien and subordination agreements from the owner of the various parcels of land described in the contract, the requirement for and expense of performance bonds would be eliminated.

Sincerely yours,

Harold Kirkemo

Harold Kirkemo, Chief
Office of Minerals Exploration

Enclosures

(c) Prior to entry on surface of patented lands.

(d) Prior to issuance of a competitive lease.

§ 3104.1-3 Form of bonds.

The bonds furnished will be on forms approved by the Director.

§ 3104.2 Operator's bond.

§ 3104.2-1 Compliance.

An operator or, if there is more than one operator covering different portions of the lease, each operator may furnish a $10,000 general lease bond in his own name as principal on the bond in lieu of the lessee. Where there are one or more operator's bond affecting a single lease, each such bond must be conditioned upon compliance with all lease terms for the entire leasehold.

§ 3104.2-2 Approval.

An operator's bond will not be accepted unless the operator holds an operating agreement which has been approved by the Department or has pending an operating agreement in proper condition for approval. The mere designation as operator will not suffice.

§ 3104.2-3 Default.

Where a bond is furnished by an operator, suit may be brought thereon without joining the lessee if he is not a party to the bond.

§ 3104.3 Individual sureties.

§ 3104.3-1 Protection.

(a) Entry to leased lands.

(b) Bonds with individual sureties may be furnished for the protection of the entrymen or owner of surface rights.

§ 3104.3-2 Net worth statement.

Each surety must execute a statement showing that he is worth in real property not exempt from execution, double the sum specified in the undertaking, over and above his just debts and liabilities and that he is either a resident of the same State and the U.S. Judicial District as the principal on the bond, or of the State and the Judicial District in which the lands involved are located.

§ 3104.3-3 Certificate required.

There also must be furnished a certificate by a judge or clerk of a court of record, a U.S. Attorney, a U.S. Commissioner, or a U.S. Postmaster, as to the identity, signature, and financial competency of the sureties.

§ 3104.3-4 Requirements.

All bonds furnished with individual sureties will be examined every 2 years, or at any other time when found advisable, and the principal on the bond will be required to furnish new statements of justification by the sureties and a new certificate of financial competency, and if such sureties are unable to qualify additional security will be required.

§ 3104.3-5 Terms.

Where surety bonds are tendered with individuals as sureties they must be executed by not less than two qualified individual sureties to cover compliance with all terms and conditions of the lease or permit or the applicable law or regulations.

§ 3104.3-6 Forms.

The statement of justification required to be furnished by the sureties, and the certificate of competency should be on a form approved by the Director.

§ 3104.4 Personal bond or corporate bond.

§ 3104.4-1 Amount.

(a) *Personal bond.* In lieu of a surety bond, a personal bond in a like amount may be given by the obligor with the deposit as security therefor of negotiable bonds of the United States of a par value equal to the amount specified in the bond.

(b) *Corporate bond.*

§ 3104.4-2 Deposit of securities.

Personal bonds must be accompanied by a deposit of negotiable Federal securities in a sum equal at their par value to the amount of the bond and by a proper conveyance to the Secretary of full authority to sell such securities in case of default in the performance of the conditions of the lease bond.

§ 3104.4-3 Qualified sureties.

(U.S. Treasury list.)

§ 3104.5 Nationwide bond.

§ 3104.5-1 Amount.

The holder of leases or of operating agreements approved by the Department or holder of operating rights by virtue of being designated operator or agent by the lessees pending departmental approval of operating agreements, may furnish a bond the amount of which must be

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF THE SOLICITOR
WASHINGTON, D.C. 20240

JAN 11 1977

Memorandum

To: Chief, Office of Minerals Exploration, Geological Survey

From: Assistant Solicitor--Minerals, Division of Energy and Resources

Subject: Possible relief from payment of premiums on performance bonds, OME-6873, Hicks Dome Account, Hordin County, Illinois

Your memorandum of December 22, 1976, requests our opinion on the possibilities of relieving the Operator of the subject OME contract from payment for premiums on performance bonds. Specifically, you ask whether any alternative to the performance bond, such as a pledge of securities, is possible.

We understand that the Operator is at present paying premiums of $1,431 per annum for four performance bonds executed by Aetna Insurance Company having a total penal sum of $118,558, which is sufficient to cover the total amount contributed by the Government under the OME contract. The contract file shows a Certification of Possible Production was executed April 21, 1976 and that the period of obligation for payment of royalty on production continues until September 26, 1989.

The Act of August 21, 1958, as amended (72 Stat. 700; 30 U.S.C. §§ 641-646), provided in Section 2(c) (30 U.S.C. § 642(c)) that, upon certification of possible production, payment of royalties shall be a charge against production for the full period specified in the contract or until the obligation has been discharged. The Act does not specify any type of security to assure payment to the Government's royalty. However, the Department's regulations issued pursuant to Section 2 of the Act provide in 30 CFR § 229.11(f)(1) that to secure payment of such royalty the contract shall provide for a lien upon the operator's interest in the land, upon any production from the land,

and upon any interests in the land other than the operator's interest. However, under the regulations the Secretary may accept the undertaking of a surety company or "third person" in lien upon interests in the land other than the operator's interest. Finally, the Secretary may omit from the contract the requirement for a lien or other undertaking concerning interests in land if he deems it to be in the public interest.

Thus, under the regulations now in effect, except in those cases where it is deemed to be in the public interest not to require any security for the payment of the Government's royalty, the alternatives are limited to either a lien and subordination agreement or an "undertaking" of a surety company or a third person. As the cost of maintaining a surety company bond appears to be the operator's principal concern we have considered the possibilities afforded by the provision in the regulations relating to an undertaking of a "third person" and under what terms and conditions a pledge of securities might be legally acceptable.

We have concluded that under the Department's regulations use of the term "third person" in the provision discussed above must be interpreted to preclude an arrangement with the Government whereby an operator himself pledges some form of securities such as stocks or bonds to the United States in lieu of a lien and subordination agreement or a surety company bond to secure payment of the Government's royalty, because such an arrangement would not be an undertaking of a "third party". On the other hand, an agreement, under which an individual or institution received from the operator pledged securities to hold as trustee, would qualify as an undertaking by a third party, and could be substituted for a surety company performance bond assuming the term and conditions of the agreement were acceptable to the Government. We seriously doubt, however, that such an agreement would satisfy the operator's desire to reduce the costs of providing security because any such agreement would have to require the operator to pledge and maintain securities in the trustee's possession which are equal to the total sum contributed by the Government ($118,206.55) for the entire period of obligation to pay royalty on production, i.e., until September 29, 1989.

Another alternative, authorized by the regulations, is an agreement between the operator and an individual who would in turn agree with the Government to act as surety for the payment of royalties. Conceivably, were the operator to agree with such individual to pledge securities to indemnify the individual surety, the latter might assume the responsibility for little or no expense to the operator.

Yet another alternative possible under the present regulations is a determination by the Secretary that no lien or other undertaking, other than the lien upon the operator's own interest, is necessary. Whether this alternative should be adopted is entirely a question of policy. I merely point out that the regulation (30 CFR 229.11(f)(1)) provides for it.

Finally, there is the possibility of an amendment to the Department's regulations explicitly authorizing operators to post a personal bond in lieu of a surety bond with the deposit of negotiable Federal securities of a par value equal to the total amount contributed by the Government under the OME contract. (See 43 CFR § 3104.4-1 and .4-2). This type of regulation is legally permissible under the statute, and its adoption is entirely a question of policy.

In the event you or the operator elect to pursue further any of the alternatives discussed above Mr. C.L. Martin (telephone 343-4803) and I are prepared to assist in any way we can.

Frederick N. Ferguson

Frederick N. Ferguson

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

December 22, 1976

Memorandum

To: Assistant Solicitor
Division of Energy and Resources

From: Chief, Office of Minerals Exploration
Geological Survey

Subject: Possible relief from payment of premiums on performance bonds
OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Mr. John L. Carroll, geologist and agent for the Operator, phoned me last week to inquire about possible relief from payments for premiums on performance bonds required for the subject certified contract. Mr. Carroll reports that present premiums total $1,431 per year for the following performance bonds executed by the Aetna Insurance Company:

Date of bond	Penal sum of bond
9/29/72	$ 47,725
6/22/73	19,768
1/28/74	46,065
7/5/74	5,000
Total	$118,558

The total amount contributed by the Government under the contract was $118,206.55, and the period of obligation for payment of royalty on production continues to September 26, 1989.

The only option, other than a performance bond or sole ownership of the land, that an Operator has under OME to secure payment of royalties to the Government is to obtain lien and subordination agreements from the property owners. In not electing this option, the Operator (then an Applicant) in its application on page 14 states as follows:

"(c) Lien and Subordination Agreements: Because of the number of properties and the multiple ownership of each, lien subordination agreements would be very difficult and expensive to obtain. For the previously described eight properties, a total of thirty-seven signatures would be required on the lien subordination agreements.

"In lieu of the lien subordination agreements, we propose to furnish, and can furnish, a performance bond."

Accordingly, leases for the land included in the Contract were listed in Schedule "A" of the Contract and performance bonds were posted as required originally and by subsequent amendments.

There is no hope now or in the near future for production from this property. The contract was certified because it offers a long range possibility for development and production.

The Operator proved his reliability and responsibility in performing the contract work faithfully and expeditiously. Mr. Carroll stated that premium rates have escalated to the point where the cost is of serious concern to the Operator, and over the remaining years to 1989 would total a considerable sum of money.

Is there another alternative, such as a pledge of securities, that we could suggest to Mr. Carroll for the Operator's consideration?

Harold Kirkemo

Harold Kirkemo

Enclosure
Docket (1) w/Contract

Copies to:
DRF
MR Rdg.
OME Rdg.
OME Files
Mr. Kirkemo

HKirkemo/gpw

MME Form 14
July 1965

Contract No. Idm-E 14-23 2306

Docket No. DMEA MME 6873

Date of Action August 25, 1976
Release of Funds

DEPARTMENT OF THE INTERIOR
U. S. Geological Survey

OBLIGATION DOCUMENT

To: Chief, Branch of Budget & Finance

From: Chief, Office of Minerals Exploration

Please enter the amounts shown below on the accounts of the Office of Minerals Exploration.

Name and Address of Contractor:
Gilbert Kerlin, Robert G. Goelet, Francis Goelet d/b/a Hicks Dome Account
c/o Gilbert Kerlin (a partnership)
Esq. Sherman and Sterling
53 Wall Street
New York, N. Y. 10005

Date of Contract	Region	State	Commodity
Sept. 26, 1972	IV	Illinois	Fluorspar, beryllium, rare earths, thorium, niobium

	Reserve	Obligation
Prior Amount		$351.00
Increase		0
Decrease		351.00
Revised Amount		0

Remarks:

$351.00 to be released.

cc: 110
800
210

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

21 APR 1976

Mr. John L. Carroll
Room 4120, 345 Park Avenue
New York, New York 10022

Re: OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Dear Mr. Carroll:

Please forward the original copy of the enclosed Certification of Possible Production to the Operator, and retain a copy for your files.

The total amount of surety covered by the performance bonds may be reduced to $118,206.55 from $118,558.00. Possibly this may reduce the amount of premiums on these bonds.

The Operator should understand that royalty is to be paid only on production during the period of royalty obligation. Any payments received are applied first to pay accrued interest, and the balance, if any, is applied to reduce the principal.

In preparing the Certification, I discovered that Amendment 3, paragraph 2, erroneously stated September 26, 1988, as the end of the seventeenth year from the date of the Contract. The correct date is September 26, 1989.

Sincerely yours,

Harold Kirkemo

Harold Kirkemo, Chief
Office of Minerals Exploration

cc:
DRF
MR Rdg.
OME Rdg.
OME Files
Mr. Kirkemo
Region III
R. Trace
R. Laurence
A. Heyl

HKirkemo/gpw

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

February 27, 1976

I-C-DC-OME-76(a)

Memorandum

To: Program Audit Manager
Office of Audit and Investigations

From: Chief, Office of Minerals Exploration
Geological Survey, 953 National Center, Reston, Va.

Subject: Report of Cost Review

Please prepare a Report of Cost Review on:

Docket No.	Operator	Contract No.
OME-6873	Hicks Dome Account	2306

Harold Kirkemo

Harold Kirkemo

Enclosures

Mr. Kirkemo:

The above Docket No. OME-6873 and Contract No. 2306 are returned this date, April 1, 1976.

Frank V. Tassitt

Eastern Regional Audit Manager
Audit and Investigation

(Three packages)

United States Department of the Interior

GEOLOGICAL SURVEY
Reston, Virginia 22092

December 5, 1975

Mr. Joseph A. Porter
P.O. Box 3
Herod, Illinois 62947

Re: OME-6873 (Fluorspar, et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Dear Mr. Porter:

Thank you for the three copies of the final report on the subject contract, which we received today.

As soon as I can assemble the necessary data, I will refer the contract to Audit, and then prepare a Certification of Possible Production.

Have you, perchance, compiled a final cost summary for each item in the contract, or for each drill hole? If so, please send me a copy. This would save much time and effort in preparing data for an audit. Otherwise, I will have to compile the figures from monthly vouchers and narrative reports.

Thanks again for the Summary and Results report.

Sincerely yours,

Harold Kirkemo, Chief
Office of Minerals Exploration

Copy to Mr. John L. Carroll

cc: DRF
MR Rdg.
OME Rdg.
OME Files
Mr. Kirkemo

HKirkemo/crw 12-5-75

This is to advise that I have changed the location of my office from Rosiclare, Illinois to Eichorn, Illinois.

My mailing addresses are as follows:

Business:
Joseph A. Porter
P. O. Box 3
Herod, Illinois 62947
Phone (618) 264-2873

Home:
104 E. Walnut Street
Harrisburg, Illinois 62946
Phone (618) 253-3401

Box 447

264-2873
Telephone (618) 235-5683

HK 12/5/75

Joseph A. Porter

Geologist

Rosiclare, Illinois
62982

December 3, 1975

Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
U.S. Geological Survey
National Center, Mail Stop 953
12201 Sunrise Valley Drive
Reston, VA 22092

Re: OME-6873 (Fluorspar, et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Kirkemo:

I am sending under separate cover three copies of the final report on the drilling done by OME-Hicks Dome Account. I have retained the original film tracings and can make additional blue print copies if necessary.

Please contact me if you have any questions.

Sincerely,

Joseph A. Porter

Joseph A. Porter
P.O. Box 3
Herod, IL 62947

JAP:kt

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

September 3, 1975

Memorandum

To: Allen Heyl
Geologist, Central Mineral Resources

From: Harold Kirkemo
Chief, Office of Minerals Exploration

Subject: Your request for drill core from OME-6873 (Fluorspar, et al)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

I talked with Mr. John L. Carroll this morning concerning your request to acquire additional drill core from the Operator's Hicks Dome property.

Mr. Carroll regrets that he has to decline your request at this time. He now is in a critical stage of land dealings in the Hicks Dome area and hopes by the end of the year to have entered into negotiations with possible investors to finance development of the deposit. He wants the drill core intact and available on the property in the event the prospective investors wish to examine it. As these reasons are logical, I could not argue against them, especially since any repayment to the Government of its investment depends on getting the property into operation.

Mr. Carroll is very concerned about keeping a tight lid on information obtained from the OME drilling project. He said that premature or unauthorized publicity about these findings could jeopardize return of the investment of several hundreds of thousands of dollars by the Operators of the OME project. He mentioned that news about the project already was causing problems for them. I assured him that we would not issue any information to anyone about the project.

This is a difficult situation for us because some factual information has been released, inadvertently I'm sure, but we must keep a tight lid on everything from now on. Carroll assured me that upon conclusion of their present negotiations, presumably if successful, you again would be allowed access to whatever you need at the project. He will talk with Mr. Porter regarding disposal of core and said he believed that all of the OME core was intact.

Mr. Porter is agent for Mr. Carroll and the Operator and acts only on their behalf and at their specific request. His inability or reluctance to accede to your request for the core was based on his responsibility to Mr. Carroll.

Harold Kirkemo

Harold Kirkemo

Copies to E. W. Tooker
Robert Trace
J. W. Hasler
R. A. Laurence

cc:
DRF
MR Rdg.
OME File
OME Reading
Mr. Kirkemo

GD:HKirkemo:dw:9/3/75

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

August 29, 1975

Mr. John L. Carroll
Room 4120, 345 Park Avenue
New York, New York 10022

Re: OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Dear Mr. Carroll:

An opportunity has developed for our Denver staff to obtain a substantial quantity of core samples from the Hicks Dome property for analytical study in the Denver laboratories of the Geological Survey. The purpose of this letter is to obtain your permission for members of our staff to pick up the material.

Allen Heyl, who is leading the laboratory and field studies of the Hicks Dome area, has the services of a geology graduate student, David Jones, for a few weeks, and proposes to have Mr. Jones pick up certain drill core samples at the property and transport them by truck to the Denver laboratory. Jones could be at the property on or about September 5 and would be assisted by Robert Trace, U.S.G.S., Kentucky, in selecting and loading the core boxes.

Heyl wishes to obtain alternate boxes of core from holes OME-2 and OME-7. As in the past, results of studies on this core would be furnished to Mr. Porter.

This proposal was discussed with Mr. Porter by Heyl, and then referred to me after Heyl was unable to contact you by phone because of your absence from the office.

I understand that you are expected to be in your office on Wednesday, September 3. I will phone you on Wednesday, and hope that you will have had an opportunity to read this beforehand. I have to contact Heyl on the same day if the proposed schedule is to be met.

In the event we have future opportunities to obtain core, we would appreciate retention of all core now in storage at the property.

Sincerely yours,

Harold Kirkemo, Chief
Office of Minerals Exploration

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

August 29, 1975

Mr. John L. Carroll
Room 4120, 345 Park Avenue
New York, New York 10022

Re: OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

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In the event we have future opportunities to obtain core, we would appreciate retention of all core now in storage at the property.

Sincerely yours,

Harold Kirkemo, Chief
Office of Minerals Exploration

HKirkemo/gpw

cc: Porter DRF/MR Rdg.
Heyl OME Rdg./OME Files
Trace Mr. Kirkemo

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

File in
Hicks Dome
docket

Rec'd 7/11/75 KHK

July 1, 1975

MEMORANDUM REPORT

TO: Walden Pratt or Don Brobst, Office of Mineral Resources

FROM: Robert D. Trace, Geologist, Princeton, Ky. RDT

SUBJECT: Illinois-Kentucky fluorspar-zinc-lead-barite district

In accordance with the Mineral Resources appraisal program--hereby submitted is an informal summary concerning the subject district. The report is primarily designed to keep the Commodity Geologist for Fluorspar informed of developments in the subject district during the 1975 fiscal year. This report is not for publication as it includes some COMPANY CONFIDENTIAL information. Production figures are not available to the writer, but presumably are available from the Bureau of Mines. Data on Hicks Dome activities are not given here, but would be available from Harold Kirkemo in Reston or Allen Heyl in Denver. See the attached map for the location of mines described in the text, i.e. map 1 to 15. Needless to say, this report has NOT been edited for conformity to Survey style.

Mining and/or exploration by drilling is being done primarily by four companies, two operating mostly in Illinois and two mostly in Kentucky; also, two smaller operations are being conducted, one in Illinois and one in Kentucky. Activities of the district are given below, company by company.

Ozark-Mahoning Company, now a subsidiary of Penn Walt Corporation, has four operating mines, all in Illinois. The vein deposit Barnett Mine (map 1) is 873 feet deep, with levels at 600, 700, and 800 feet. This mine has operated for several years. The Knight Mine (map 2), also a vein deposit, is a relatively new deposit near Rosiclare that was discovered on property acquired from Alcoa(who missed the boat). The shaft is 851 feet deep with levels at 700 and 800. The fault at those depths has a displacement of about 400 feet, with footwall Ste. Genevieve and hanging wall Cypress and Golconda. The writer has not been underground in these two mines, but apparently both have excellent mining records and/or potential.

Ozark-Mahoning also is mining two bedded deposits from their No. 7 Shaft (map 3) and Heavy Media Shaft (map 4). According to the Company geologist, Bob Perry, mining is going about "as usual".

The Company has six drill rigs going, five in Illinois and one in Kentucky. The Kentucky drilling is on the Mexico fault (Fredonia quad), on property previously drilled by Penn Walt (prior to their takeover of Ozark-Mahoning.

After protracted negotiations, the Minerva Oil Company (Fluorspar Division) was taken over by Allied Chemical in March 1975.

Operations by Minerva (now Allied) during fiscal 75 included: 1) the Deardorf Mine (map 5), primarily operated for bedded sphalerite deposits 10 to 50 feet below the sub Rosiclare horizon that had been mined for fluorspar and sulphides by Ozark-Mahoning several years ago. 2) Mine No. 1 (map 6), a bedded fluorspar deposit that

has supplied the bulk of the Company bedded ore for many years, 3) the old Crystal Mine (map 7), also a bedded deposit, and 4) one vein deposit, the Gaskins Mine (map 8). The Gaskins is described in the guidebook for Field Trip No. 1 of the 9th Annual Forum on the Geology of Industrial Minerals. Reading between the lines, I suspect that the Gaskins may be nearing its end. 5) The vein deposit Spivey Mine (map 9) is being developed and mining will start soon. I suspect that the Spivey will replace the Gaskins as a source of high grade mill feed for blending with the more typically lower grade bedded ore.

Currently Allied is not mining in Kentucky, but until a few months ago, ore was being produced (by Minerva) from the old U. S. Steel Lafayette Mine, Tabb No. 1 shaft (map 10). The Company geologist indicated that operations may start again later this year on the 400 level. A small operation also may be started on the Big 4 property (map 11, also see Bulletin 1042-S).

Allied Chemical has 4 drill rigs currently operating, all in Illinois.

The Cerro Corporation started "serious" mining on their Babb Mine (map 12) in May 1974. The geology of the mine is described by Moodie and McGrain in the 9th Forum on Geology of Industrial Minerals at Paducah, Ky. Also see the Cerro release given out at the Forum meeting. (Anyone who doesn't have--and wants--let me know.)

The shaft is approximately 800 feet deep with 100 to 200-foot crosscuts at the 300, 500, and 700 levels. Currently(June 1975) drifting on both the 500 and 700 levels have gone 700 to 800 feet north of the shaft and about 1,000 feet south of the shaft. Four stopes are going. Current monthly production is only about 1,000 tons of acid grade concentrate, well below the rated capacity of the heavy media and flotation mills at the minehead.

The ore deposits being mined occur along the west fault (of the Babb complex) and dip 75-80 degrees west. The vein contains much high grade brown or colorless fluorite with substantial (2 to 5 percent overall) cadmium-bearing sphalerite, commonly near the edges of the fluorite veins. Galena is fairly scarce although some is being separated by the flotation mill and stockpiled. I understand it is too impure to sell. Barite is present rarely.

In late 1974, Cerro took a 3-year lease-option on all of the old Rosiclare Lead and Fluorspar Company Illinois properties and the Pygmy property in Kentucky.

Cerro has been doing extensive drilling in Kentucky and some in Illinois (on Ros. L. and F. Co. properties).

The Campbell-Crotser property (map 13) in Kentucky, Shetlerville quad, contains a vein deposit that has been extensively drilled and may contain half a million tons containing about 50 percent CaF_2 and 2 to 3 percent zinc. I think that Cerro is studying the feasibility of starting a mine, in order to beef up the much needed raw ore supply for the mill at the Babb Mine.

Drilling is also being done again on the Robinson tract (map 14). See also Trace, 9th Ind. Min. Gorum, p. 73. This is a hybrid vein-bedded deposit of both high grade sphalerite and some fmuorspar that occur along and near a lamprophyre dike and small displacement faults. The zinc occurs mainly as bedded deposits below the sub Rosiclare. As much as half a million tons of 15 percent sphalerite MAY BE present. This property has certain geologic similarities to the Hutson Mine, formerly operated by Alcoa and Eagle Picher.

Other drilling by Cerro in Kentucky include parts of the Dyers Hill fault zone in the Lola quad (approved by Director but not yet published). Cerro completed some drilling on the Pygmy property (Tabb fault, Fredonia quad) last year but had no success and gave the property back. In Illinois, Cerro is drilling on the Myers property (leased from Ros. L. and F. Co.) which adjoins on the north the Ozark-Mahoning Knight Mine.

Reynolds Metal Company is continuing to drill in areas near Salem, Kentucky, mostly on faults in the Lola and Burna quadrangles. It is reasonable to assume that Reynolds probably could open two mines, one northeast of Cerro's Babb and one north of the old Klondike, whenever the economics of their Mexican operation so dictates. Incidentally, John Hook, long-time geologist for Reynolds in the district, left the Company in the summer of 1974, and was replaced by Don Fulkerson. John now is doing consulting in Salem, Oregon on geothermal projects

Minerals Exploration Co. Limited, Bill Collett, supervising geologist from Rollo, Missouri, has leased (or bought?) some of Bob Fraser's properties in Kentucky and also his flotation mill in Marion. The mill, however, burnt to the ground in June 1975. The Company has done extensive trenching on the Blue-Haffaw property (just east of the Lafayette Mine) and has started a washing operation on gravel spar uncovered by the trenching. They say that they may sink a shaft, but only time will tell. Incidentally, John Tibbs, long-time geologist for Penn Walt and more recently consulting for Min. Exp. Co. Ltd., died of a heart attack in May 1975.

In Illinois, the Hastie Mining Co. (Hastie Brothers) is doing some small scale surface and shallow underground mining of the Rosiclare and sub Rosiclare horizons bedded deposits near their surface exposures (map 15). Hastie operates a heavy media mill at the mine.

Copies to: Pratt
Brobst
Olive
Van Alstine
Heyl
Kirkemo

Box 447

Telephone (618) 285-6685

Joseph A. Porter

Geologist

Rosiclare, Illinois
62982

OFFICIAL COPY
O. M. E.
RECEIVED
JUN 23 1975

INITIALS	CODE
H.K.	

June 20, 1975

Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
U.S. Geological Survey
National Center, Mail Stop 953
12201 Sunrise Valley Drive
Reston, VA 22092

Re: OME-6873 (Flourspar, et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Kirkemo:

Enclosed is the final voucher for Stage IV of the contract. You will note that the assaying costs ran less than the contract amount.

I am sending one bound copy of all the assay data to you and one copy to Allen Heyl. In view of the difficulty and expense of copy work here I hope this is sufficient and will serve as the operators "monthly" report.

Please advise if there are any questions.

Sincerely,

Joseph A. Porter

JAP:km
Encs.

Box 447

Telephone (618) 285-6685

Joseph A. Porter

Geologist

Rosiclare, Illinois
62982

OFFICIAL
COPY
O. M. E.
RECEIVED
APR 25 1975

INITIALS	CODE
HK	HR

April 23, 1975

Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
U.S. Geological Survey
National Center, Mail Stop 953
12201 Sunrise Valley Drive
Reston, Virginia 22092

Re: OME-6873 (Fluorspar, et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Kirkemo:

For various reasons, not all samples were assayed by both Skyline and McDonald. This accounts for the lack of assays which you cited.

Sample #338-380 (OME-9) were all relatively low grade by McDonald's assays and by visual estimates. Therefore it was unnecessary to duplicate the fluorspar assays. They were however, submitted later for Nb, etc. as part of the Stage IV assaying program. Results will be furnished in the geologic report for Stage IV.

A compilation of Stage IV is being prepared and a voucher and report should shortly follow.

Sincerely,

Joseph A. Porter

JAP:km

United States Department of the Interior
GEOLOGICAL SURVEY
RESTON, VIRGINIA 22092

APRIL 11, 1975

Mr. Joseph A. Porter
Geologist
Box 447
Rosiclare, Illinois 61982

Re: OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Dear Mr. Porter:

Thank you for the geologic and assay data on holes OME-7 through OME-12. Assay data from the assay labs indicated for the following samples were not included in the material received:

Hole No.	Samples for which assay data were not furnished	
	McDonald	Skyline
8		085, 112, 113
9		H338 thru 380
11		114
12	631 thru 636	

We would appreciate receiving these assays, too, if they are available.

I hope that you can submit the final voucher(s) in the near future. I will be out of the country between May 28 and June 19, and from about July 14 to August 7, and would appreciate being able to process the voucher or vouchers necessary to complete this contract before I leave on the first trip. If that is not possible, I would try to process them between trips. The termination date of the contract is June 26. We should have the voucher processing done before then, if possible.

Your final report on the project, required by Article 5(c) of the contract, will entail considerable consolidation of the extensive information obtained from drilling and analytical work. I suggest that you consider summarizing the overall geology and economic results of the work in brief statements illustrated with maps and cross-sections, and referring to previously-submitted drill logs, sections, and assay summaries and descriptions of individual holes. Cost data will have to be compiled from individual hole records and vouchers. We will be unable to have the contract audited before receiving your final report. These suggestions are offered in order to ease the task of preparing it.

Sincerely yours,

Harold Kirkemo, Chief
Office of Minerals Exploration

Copies to: Heyl
Trace
Laurence

cc:
DRF
MR Rdg.
OME Rdg.
OME Files
Mr. Kirkemo

HKirkemo/gpw

Box 447 Telephone (618) 285-6685

Joseph A. Porter

Geologist

Rosiclare, Illinois
62982

OFFICIAL COPY
O. M. E.
RECEIVED
APR 3 1975

INITIALS	CODE
JK	

April 1, 1975

Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
U.S. Geological Survey
National Center, Mail Stop 953
12201 Sunrise Valley Drive
Reston, VA 22092

Re: OME-6873 (Fluorspar, et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Kirkemo:

Enclosed are two copies of geologic reports on holes OME-7, OME-8 and OME-9. The holes are located on the 1" = 400' scale map previously submitted.

This should complete the geologic data for the drilling stages of the program. Reports on the additional assay work will follow.

I am sending identical copies of this material to Allen Heyl directly.

With best regards,

Sincerely,

Joseph A. Porter

Joseph A. Porter

JAP:km
Encs.

April 1, 1975

Mr. Allen Heyl
U.S. Geological Survey
Federal Center
Denver, CO 80202

Dear Allen:

Enclosed are copies of the reports on holes OME-7, OME-8 and OME-9. This should complete the coverage for the drilling phases of the project. I am presently working up the data on the additional assaying for Nb, etc. and will send copies when completed.

With best regards,

Sincerely,

Joseph A. Porter

JAP:km
cc. H. Kirkemo
Enc.

Box 447

Telephone (618) 285-6685

Joseph A. Porter

Geologist

Rosiclare, Illinois
62982

February 24, 1975

OFFICIAL COPY
O. M. E.
RECEIVED
2/26/1975
INITIALS
HK

Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
U.S. Geological Survey
National Center, Mail Stop 953
12201 Sunrise Valley Drive
Reston, VA 22092

Re: OME-6873 (Fluorspar, et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Kirkemo:

Enclosed are geologic reports for holes OME-10, OME-11 and OME-12 and a copy of a map made from the air photo at 1" = 400' showing the location of all the OME holes. I will try to get reports in on the other holes as soon as possible.

I am sending one copy to Allen Heyl.

With best regards,

Sincerely,

Joseph A. Porter

JAP:km
Enc. 4

See Map folder
Envelope Marked Feb. 24, 1975

Box 447

Telephone (618) 285-6685

Joseph A. Porter

Geologist

Rosiclare, Illinois
62982

OFFICIAL COPY
O. M. E.
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INITIALS | CODE
MR

December 13, 1974

Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
U.S. Geological Survey
National Center, Mail Stop 920
12201 Sunrise Valley Drive
Reston, VA 22092

Re: OME-6873 (Fluorspar, et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Kirkemo:

With concurrence of the partners and as agent for Hicks Dome Account I hereby request an extension of the exploration contract from December 26, 1974, the present expiration date, to June 26, 1975. An extension in time will be necessary to complete the project.

Time required for the assay work is more than anticipated. This has been due principally to the fact Skyline Labs have been swamped with work from other on-going exploration projects, imposing a limit on the time available to work on our project.

In an attempt to make best use of available funds the samples are being submitted in relatively small groups. Subsequent groups are not selected until the results of previous groups have been studied. This also contributes to the greater amount of time required.

I will furnish any additional information you might require.

Sincerely,

Joseph A. Porter

JAP:kt
cc. J. Carroll
G. Kerlin
file

December 17, 1974

Jack:

I talked with Mr. Joe Porter, the Operator's project representative, this morning by phone. He sent me a letter dated December 13, 1974, requesting a six-month extension on this contract for the purpose of completing the analytical work. The letter has not yet arrived in my office. I asked Mr. Porter to send me a copy of his letter of Dec. 13 in the event the original is delayed or lost.

Kirk

Harold Kirkemo, Chief
Office of Minerals
Exploration

P.S. A telegram has to be mailed at some point - I believe at receiving city - so we are still at the mercy of the mail system.

Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code

December 16, 1974

Memorandum

To: The File

From: Chief, Office of Minerals Exploration

Subject: OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Justification for Amendment No. 5

The Operator's project representative has requested an extension of six months for completion of work on the contract.

Amendment No. 4 to the Contract authorized, under a new Stage IV, additional analytical work on samples obtained from core resulting from diamond drill holes completed on earlier stages of the contract. These analyses are important for determining the potential value of the deposit, and would be made by a commercial analytical laboratory.

Because of the work load in this laboratory, including the Hicks Dome samples, and the complexity of the analytical procedures for some of the metals sought, work on the Operator's samples has not been completed. It is hoped that the analyses can be completed in the next six months.

I recommend approval of the request to extend the completion date of the contract to June 26, 1975.

Harold Kirkemo

Harold Kirkemo

Box 44

Telephone (618) 285-6685

Joseph A. Porter

Geologist

Rosiclare, Illinois
62982

ORIGINAL
COPY
O. M. L.
RECEIVED
DEC
INITIALS
HR

December 11, 1974

Mr. Allen Heyl
U.S. Geological Survey
Federal Center
Denver, CO

Dear Allen:

Enclosed is 1" = 400' scale map of the drilling completed under the OME contract. This is a copy of the map to be included with the final voucher for Stage III of the contract.

Stage IV is progressing very slowly. Little new information has been received since I last talked to you. It seems Skyline's facilities are badly jammed right now.

Give me a call if you need anything.

With best regards,

Sincerely,

Joseph A. Porter

JAP:kt
Enc. 1
cc. H. Kirkemo
file

June 26, 1974

HKirkemo/gpw

Messrs. Gilbert Kerlin, Robert G. Goelet,
Francis Goelet d/b/a Hicks Dome Account
c/o Mr. John L. Carroll
Room 4120, 345 Park Avenue
New York, New York 10022

Re: OMM-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Dear Sirs:

Enclosed are the original and three copies of proposed Amendment No. 3 (two pages) to the subject contract, signed for the Government. An extra copy of the amendment is being sent to Mr. Joseph A. Porter, Geologist, Rosiclare, Illinois, who is in charge of the project work for you.

If the proposed amendment is satisfactory to you, all copies should be signed on page 2 by each of the three general partners, and the following copies returned to this office:

Government Copy
Field Office Copy
Branch of Financial Management

The Operators' copy should be retained for your files.

If any part of the proposed amendment does not meet with your approval, please return the original and all copies to this office together with your comments for our consideration.

Sincerely yours,

Harold Kirkemo, Chief
Office of Minerals Exploration

Enclosure

Copy to: Joseph A. Porter

Mr. Robert D. Trace
Region IV (Laurence)
Allen Heyl

cc: DKF
MR Rdg.
OME Rdg./OME Files
Mr. Kirkemo

MME Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code

June 25, 1974

Memorandum

To: The Files

From: Chief, Office of Minerals Exploration

Subject: OME-6873 (Fluorspar, et al)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Justification for Amendment No. 4

The Operator has requested an increase in funding for this contract in order to support additional analytical work on samples obtained from the Hicks Dome deposit. Mr. Allen V. Heyl, Geologist, USGS, who has studied this deposit for many years strongly recommends additional analyses. I concur in this recommendation.

A number of possibly valuable elements are present besides the principal commodities sought. If recoverable, these would add to the potential value of the deposit and may be the deciding factor in whether or not the deposit can be developed and mined. Mr. Heyl in a memorandum dated May 17, 1974, to the Chief, OME, describes the need for additional analyses and explains the potential importance of these elements to the value of the deposit.

Amendment No. 4 increases Government particpation in this contract by $5,000, raising the total to $118,558.00 and the total value of the contract to $276,110.00. The Operator's request to increase the total value by $15,740.00 (Government's share, $7,870.00) could not be met because of lack of funds.

Harold Kirkemo

Harold Kirkemo

cc:
DRF
MR Rdg.
OME Rdg.
Mr. Kirkemo

HKirkemo/gpw

MME Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code

June 25, 1974

Memorandum

To: The Files

From: Chief, Office of Minerals Exploration

Subject: OME-6873 (Fluorspar, et al)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Pursuant to the National Environmental Policy Act, as amended (83 Stat. 852; 42 U.S.C. 4321 et seq.) and Executive Order No. 11514, 35 F.R. 4247 (1970) we have considered the work to be done under the above contract in the light of its probable affect upon the environment, and have concluded approval of the contract is not a major Federal action significantly affecting the quality of the human environment. Consequently, an environmental impact statement as required by section 102 of the Act (42 U.S.C. §4332) is not required.

Harold Kirkemo

Harold Kirkemo

cc:

DRF
MR Rdg.
OME Rdg.
Mr. Kirkemo

MME Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code

June 25, 1974

Memorandum

To: The Files

From: Chief, Office of Minerals Exploration

Subject: OME-6873 (Fluorspar, et al)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Justification for Amendment No. 3

The Operator's project representative, Mr. Joseph A. Porter, on June 11, 1974, requested a six-month extension in the contract from June 26 to December 26, 1974, in order to provide time for additional analytical work on samples obtained from drilling.

Analytical work to date has been generally routine determination of the major elements present. This work has indicated the presence of lesser known elements which may be of economic interest. Analyses for these will require special handling and laboratory techniques, and should be completed in the next six months. Provision for this work will be included in a proposed Amendment No. 4 now in preparation.

I recommend that the request for an extension to the Contract be granted.

Harold Kirkemo

Harold Kirkemo

Box 447 Phone (618) 285-6685

Joseph A. Porter

Geologist

Rosiclare, Illinois
62982

June 11, 1974

Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
U.S. Geological Survey
National Center, Mail Stop 920
12201 Sunrise Valley Drive
Reston, VA 22092

Re: OME-6873 (Fluorspar, et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Kirkemo:

Pursuant to our recent conversations pertaining to additional assay work under the OME-Contract, I am submitting here my proposal outlining the work to be done.

Generally, the proposal calls for rather complete assaying of the better mineralized zones plus other assay work which may expand the zone of interest or give clues to factors controlling mineralization.

The amounts cited for secondary assaying are necessarily vague. Exact amounts cannot be determined until the program is at least one-half completed. Some check work will be attempted as soon as first results are in.

In view of the additional work we hereby request the contract be extended from June 26, 1974 to December 26, 1974.

Please advise if you need additional information.

Sincerely,

Joseph A. Porter

Joseph A. Porter

Enc. 1
cc. J.L. Carroll
file

PROPOSAL FOR ADDITIONAL ASSAY WORK

OME-6873 (Fluorspar, et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

INTRODUCTION: As a result of various assay, routine spectrographic analysis and work by U.S.G.S. staff, additional assays of existing samples are indicated. Proposed assays are principally for Niobium, Yttrium, Beryllium, Lead, Zinc, $BaSO_4$ and CaF_2. Also included are assays for the rare earth elements Ytterbium, Gadolinium, Dysprosium, Holmium and Erbium. Some of the above duplicate previous work but should be done to check previous methods and results.

Completion of the program depends on results. The program can be altered according to the results of the initial assays. To this end Holes OME-1 (Hamp 5) and OME-5 (FSB-1) will be submitted first. The program may require some of the assay density be altered; either increased or decreased.

All holes drilled under the existing contract plus holes Hamp 1, Hamp 3, Hamp 4 and Pankey 2 are included in the proposed work.

An estimated five months will be required to finish the work.

COSTS: A copy of a summary of assay methods and costs submitted by Skyline Labs, Inc. is attached. Pulps of most of the samples involved are presently in their storage facility.

Total cost of the work is $15,740.00. Cost factors consist principally of 1) assay work 2) secondary assay work and 3) personnel services. Major cost elements are outlined by the following.

Assay Work

Hamp 1

CaF_2	21	42.00	
$BaSO_4$	21	94.50	
Nb	21	105.00	
Th	21	21.00	
ReO	21	105.00	
Be	21	63.00	
Y	21	21.00	
Pb	21	42.00	
Zn	21	42.00	$ 535.50

Hamp 3

$BaSO_4$	39	175.50	
Nb	39	195.00	
Th	39	39.00	
ReO	39	175.50	
Be	39	117.00	
Y	39	39.00	
Pb	39	78.00	
Zn	39	78.00	$ 916.50

Hamp 4

CaF_2	25	50.00	
$BaSO_4$	39	175.50	
Nb	39	195.00	
Th	39	39.00	
ReO	39	195.00	
Be	39	117.00	
Y	39	39.00	
Pb	39	78.00	
Zn	39	78.00	966.50

Hamp 5 (OME-1)

Nb	22	110.00	
Th	22	22.00	
ReO	21	105.00	
Be	21	63.00	
Y	22	22.00	
Pb	18	36.00	
Zn	18	36.00	394.00

Hamp 6 (OME-4)

Nb	26	130.00	
Th	26	26.00	
ReO	26	130.00	
Be	26	78.00	
Y	26	26.00	
Pb	26	52.00	
Zn	26	52.00	494.00

Hamp 7 (OME-6)

Nb	38	190.00	
Th	38	38.00	
ReO	38	190.00	
Be	38	114.00	
Y	38	38.00	
Pb	35	70.00	
Zn	35	70.00	710.00

Hamp 8 (OME-9)

Nb	43	215.00	
Th	43	43.00	
ReO	11	55.00	
Be	12	36.00	
Y	43	43.00	392.00

Fredricks 1 (OME-2)

$BaSO_4$	25	112.50	
Nb	29	145.00	
Th	29	29.00	
ReO	25	125.00	
Be	25	75.00	
Y	25	25.00	
Pb	25	50.00	
Zn	25	50.00	611.50

Pankey 2

CaF_2	9	18.00	
$BaSO_4$	5	22.50	
Nb	68	340.00	
Th	53	53.00	
ReO	35	140.00	
Be	28	84.00	
Y	29	29.00	
Pb	8	16.00	
Zn	6	12.00	
Spec.	5	45.00	759.50

Pankey 3 (OME-3)

Nb	22	110.00	
Th	22	22.00	
ReO	15	75.00	
Be	12	36.00	
Y	14	14.00	
Pb	5	10.00	
Zn	5	10.00	277.00

FSB-1 (OME-5)

Nb	27	135.00	
Th	27	27.00	
ReO	35	175.00	
Be	27	81.00	
Y	35	35.00	
Pb	27	54.00	
Zn	27	54.00	561.00

FSB-2 (OME-7)

Nb	36	180.00	
Th	41	41.00	
ReO	41	205.00	
Be	41	123.00	
Y	41	41.00	
Pb	11	22.00	
Zn	11	22.00	634.00

FSB-3 (OME-8)

Nb	13	65.00	
Th	14	14.00	
ReO	30	150.00	
Be	30	90.00	
Y	30	30.00	
Pb	30	60.00	
Zn	30	60.00	469.00

FSB-4 (OME-11)

CaF_2	29	58.00	
$BaSO_4$	29	130.50	
Nb	29	145.00	
Th	29	29.00	
ReO	29	145.00	
Be	29	87.00	
Y	29	29.00	
Pb	29	58.00	
Zn	29	58.00	739.00

Fredrick 2 (OME-10)

$BaSO_4$	11	49.50	
Nb	17	85.00	
Th	17	17.00	
ReO	12	85.00	
Pb	11	22.00	
Zn	11	22.00	280.50

8,740.00

Secondary Assay Work These items are for better control and are necessarily estimates.

Check assays by other labs	1,200.00
Repeat assays by Skyline	1,200.00

Personnel Work proposed will require considerable personnel time for correlation, analysis, sample preparation, interpretation, plotting and posting of assay results. Additional core study will also be needed. The following time is estimated to be required, spread out over the life of the project.

Geologist 2 months @ $1500/mo	$ 3,000.00
Sampler & Assistant 2 months @ $400	800.00
Secretarial (posting & plotting) 2 months @ $400	800.00
Total	$ 15,740.00

Respectfully submitted,

Joseph A. Porter

SKYLINE LABS, INC.
SPECIALISTS IN EXPLORATION GEOCHEMISTRY
12090 WEST 50TH PLACE • WHEAT RIDGE, COLORADO 80033 • TEL.: (303) 424-7718

May 31, 1974

Mr. Joseph A. Porter
P.O. Box 447
Rosiclare, Illinois 62982

Dear Mr. Porter:

Thanks for visiting the lab several days ago to discuss further analysis of existing pulps and new samples from your fluorspar-barite project. I have reviewed the requirements for analytical services with Charles Thompson, and have come up with the following comments:

1. The colorimetric procedure for niobium is probably still the most precise and accurate available for the money. The method was developed by the U.S.G.S. using quantitative emission spectrographic analysis for control. We are prepared to do some research investigating the application of the procedure to your materials, and we'll see if we can obtain some standard samples containing known amounts of niobium from the Survey to use as controls. You may want to consider scanning all samples by XRF and checking only those above a certain threshold value by the colorimetric procedure.

2. Charlie feels that there may be a consistent small loss of fluorine in distillation, and there may be a slight difference in standardization, both of which could result in a more-or-less constant difference between our specific ion electrode values and your distillation values for CaF_2. At this stage, we don't know for sure which values are the more accurate, but we'll try to resolve the question as soon as possible. We'll also investigate what happens to the naturally occurring thorium during Willard-Winter assays.

3. Re-running the lead and zinc should present no problem. We'll use our quantitative technique involving an aqua regia digestion, and should get all the lead and zinc dissolved. In this range of concentration, atomic absorption should produce the most accurate values.

4. We'll have to work out a digestion procedure for the beryllium analyses to insure getting all the Be into solution, especially if it is possibly tied up with the barite. Once the beryllium is in solution, measuring its concentration by atomic absorption is straightforward.

5. The best approach to the analysis of the rare earth elements and thorium seems to be by X-Ray fluorescence. This can be accomplished locally with no problem.

6. We don't anticipate any problems from strontium in the barite, but will check for potential problems before embarking on routine analyses.

We can get 20 to 30 X-Ray fluorescence analyses per day, and one shift would produce about the same number of niobium, fluorine, barium etc. determinations. Thus, we're looking at about 150 samples per 5-day week on a regular basis for productivity.

Costs for this work are as follows:

Niobium (colorimetric)	$5.00
CaF_2	3.00
<10% F	2.00
Pb	2.00
Zn	2.00
Be	3.00
$BaSO_4$	4.50
Rare Earth Elements, Niobium and Thorium per element	1.00
Emission Spec Scans	9.00
Sample preparation on new samples ..... >1 lb, add $0.15/lb.	.90

If more than 1,000 samples are processed, a discount of 5 percent is applied. In practise, this is credited to all work performed exclusive of the emission specs and sample preparation, at the time 1,000 samples have been processed.

We are confident that, with a little investigation of procedures most suitable for the material at hand, we can provide accurate values adequate for an assessment of the grade of the material. It will take a few days to work out techniques, and from then on, we should be able to handle about 150 samples per week routinely.

Sincerely,

SKYLINE LABS, INC.

Edwin V. Post

Edwin V. Post

EVP:bw

OME-6873 (Fluorspar et al)
Hicks Dome Account
Hicks Dome Property
Hardin County, Ill.

INTERIM REPORT NO. 6

To: Harold Kirkemo, Chief
Office of Min. Explor.
U. S. Geol. Survey
Reston, Virginia

From: Robert D. Trace
U. S. Geol. Survey
Princeton, Ky. 42445

On April 8, 1974, the writer visited the subject project. Since Interim Report 5 dated October 31, 1973, drill holes OME 8 through 11 have been completed. OME 7 had been completed in October 1973, but no data were reported.

OME 7 was drilled to 2,545. As Porter sent me an assay graph of this hole--I presume you have one also. This hole contained 332 feet averaging plus 10 percent CaF_2

OME 8, total depth 2,997-- Several zones of mineralized breccia were present, but the best being 2,299-2,354, about 25 percent CaF_2.

OME 9, total depth 2,392.5--Mineralized breccia 1780-2,080 estimated to contain only 3-5 percent CaF_2

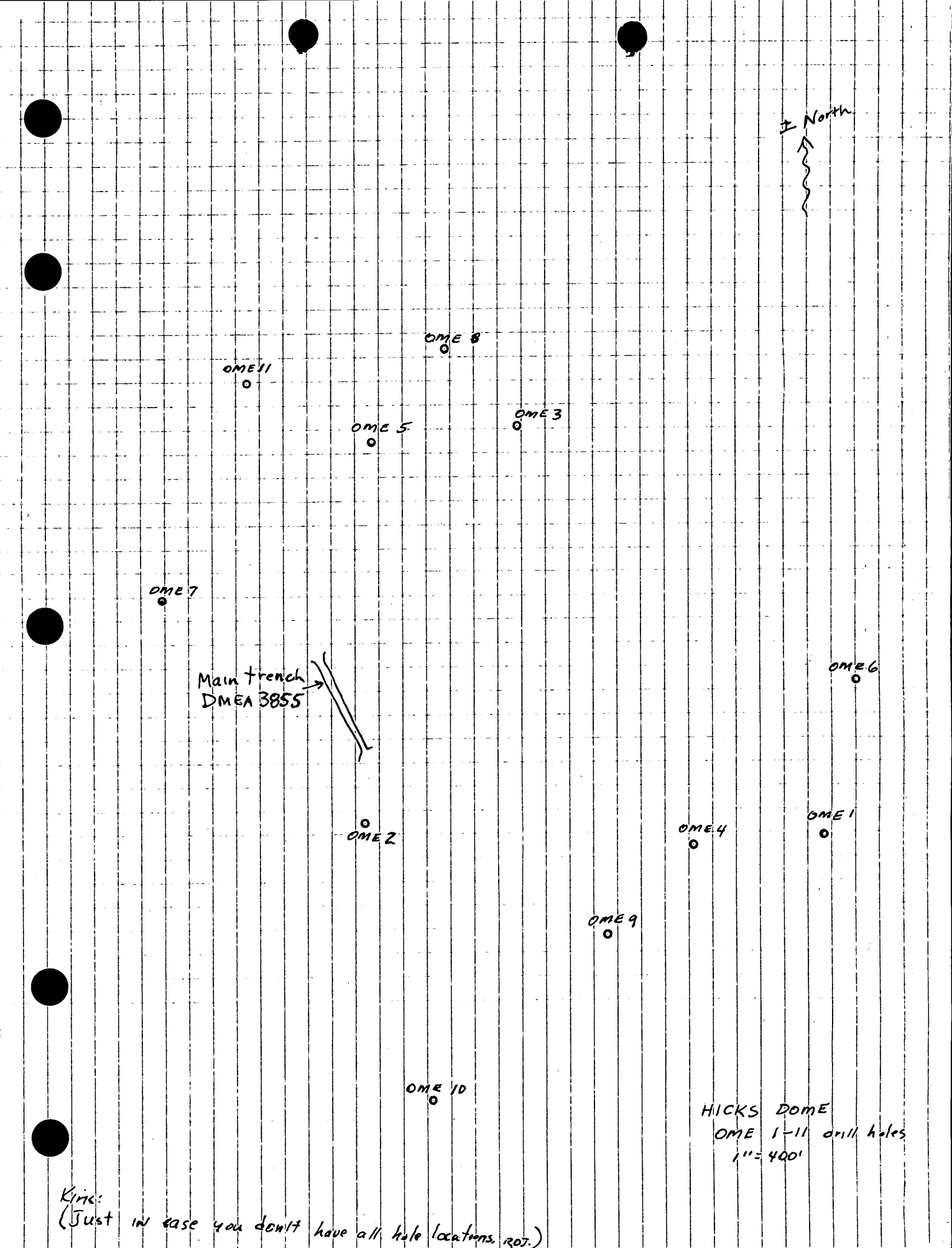
OME 10, total depth 2,467--Mineralized breccia 2,090-2,200 estimated to contain only 3-5 percent CaF_2

OME 11, total depth 2,513--This hole has not yet been logged in detail. Breccia started at a shallow depth of 770 feet and continued to the bottom. Porter's rough guess is that mineralization is comparable to OME 2.

Holes 9 and 10 were disappointing, but complete evaluation should be done after assays are in.

The main purpose of this visit was to obtain samples for mineralogical study by Heyl and associates. Thirteen samples were obtained and are being forwarded to Heyl in Denver. A secondary purpose was to needle Porter into furnishing more geologic data. The writer is hopeful that this will be forthcoming. Part of the problem is the astonishing slowness of assays from Skyline.

Robert D Trace



Kirk:
(Just in case you don't have all hole locations, ROJ.)

Hole #	Collar Elevation	Depth to Base Bailey	Sea Elevation	Thickness Maquoketa
Hemp 3	667'	943'	276'	245'
Hemp 4	630'	886.5'	256.5'	239.5'
Hemp 5 (OME-1)	663'	998'	335'	240.5'
Hemp 6 (OME-4)	633'	885.5'	247.5'	217'
Hemp 7 (OME-6)	648'	1074'	426'	205'
Hemp 8 (OME-9)	600'	854'	254'	202'
Pankey 2	570'	UNKNOWN (All breccia) R.D.T.		
Pankey 3 (OME-3)	592'	827'	252'	224'
FSB-1 (OME-5)	575'	979'	387'	179'
FSB-2 (OME-7)	692'	872'	251'	200'
FSB-3 (OME-8)	621'	943'1	392'1	
FSB-4 (OME-11)	551'	811.5'	233.5'	277'
Fredrick 1 (OME-2)	578'	1016'	461'	215.3'
Fredrick 2 (OME-10)	555'	943'	347'	
Fredrick 3	595'	795'	165'	225'
St. Joseph	630'	734'	109'	208'
Hemp 1	625'			

1) Based on Grassy Knob - Bailey contact @ 758 and 195' thick Bailey

Hicks Dome

Princeton, Ky.
Tues eve

Dear Kirk,

I must apologize for the rather cryptic report - but I don't really have much to pass on. It has been the "best of the year" time for field work and I just haven't taken the time to get deeply involved in Hicks Dome.

I made some rather "pointed" comments to Joe Porter about keeping me up to date on the geologic data - & I hope I'll begin to get some results.

Do you plan any more money for H.D.? Or is OME defunct? Sometime, when things aren't too busy for you, perhaps you could get on the horn - just for some general conversation - nothing specific.

Bob Tener

File in waste basket.

Say Hi to Gus.

Heyl
memo
re
Results
to
May 17,
1974

United States Department of the Interior
GEOLOGICAL SURVEY
Denver Federal Center
Denver, Colorado 80225

20 1974

HK

IN REPLY REFER TO:

Office of Minerals Exploration
Building 53 Room 28

May 17, 1974

Memorandum

To: Chief, Office of Minerals Exploration

From: Allen V. Heyl

Subject: OME-6873 (Fluorspar, et. al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Operator's request for increased funding for additional analyses of subject contract

Examination of the analysis results completed to date show a very large mineral body, which is not only enriched in fluorspar, beryllium, niobium, yttrium, and barite, but also in thorium and the specific yttrium family, heavy rare earth elements such as ytterbium, gadolinium, dysprosium, holmium, erbium, and thulium. Thorium is becoming of increased importance in new-phase nuclear reactors, and this body at Hicks Dome may be the largest single thorium resource in the country of great future value. The yttrium family heavy rare earth elements are very recently of great value for color television screens, electronic uses, petroleum-cracking catalysts, and high intensity lighting. Again, the Hicks Dome body may be a major potential source of these elements.

The analyses completed to date show that parts of the mineral body lean in fluorspar may be enriched in the other elements, Be, Nb, rare earths, Ti, Th, and yttrium. Much of this lower grade ore needs analyses for these elements, which together make up the potentially most valuable parts of the deposit. For example, the better fluorspar (i.e., 50 - 20%) if recovered, has a potential value of $15 to $25 per ton, but the average niobium content of 0.2% Nb has a potential value of about $25 per ton and the average total heavy rare earth (from sparse analyses) of one to two per cent would have a potential value of $40 to $80 per ton in the ore in the ground. Hence, the average value of rock in the ground would probably be increased from perhaps $20 per ton to about $100, or to $150 per ton if the values of all the major elements are known and successful recovery methods developed.

It is recommended that the operator's request be granted for additional funds for analyses which will enable us to more adequately appraise the size and grade of all the very large resources within the Hicks dome exploration project.

Allen V Heyl

ALLEN V. HEYL
Geologist

cc - Trace
- Parker
- Heyl
- Tooker
- Hasler

January 31, 1974

Messrs. Gilbert Kerlin, Robert G. Goelet,
Francis Goelet d/b/a Hicks Dome Account
c/o Mr. John L. Carroll
Room 4120, 345 Park Avenue
New York, New York 10022

Re: OMK-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Dear Sirs:

The original and three copies of proposed Amendment No. 2 (six pages, performance bond, and one map, Figure 1, revision 2) to the subject contract, signed for the Government, are enclosed. Because only two copies of the performance bond are required, we enclose the third copy which was sent to us. An extra copy of the amendment will be mailed to Mr. Joseph A. Porter, Geologist, Rosiclare, Illinois.

Mr. Francis Goelet and Mr. Robert G. Goelet signed the performance bond in the space for Individual Sureties rather than in the space for Principals. Please sign in the correct space, and the three partners should strike out their signatures as individual sureties. Signatures were entered correctly on the previous bonds so reference to them will illustrate what is required.

If the proposed amendment is acceptable to you, all copies should be signed, on page 6, by each of the three general partners, retain the Operator's copy, and return the following copies to this office:

Government's copy
Field Office's copy
Branch of Financial Management's copy

If any part of the proposed amendment does not meet with your approval, please note your comments, and return all copies to this office for consideration.

The 8-3/4 percent interest in Article 1(c), as amended by paragraph 3(c)(iii), applies to the additional funds ($46,065.00) authorized by this amendment.

Sincerely yours,

Harold Kirkemo, Chief
Office of Minerals Exploration

Enclosures

cc:
DRF
MR Rdg.
OME Rdg.
OME Files
Mr. Kirkemo
Mr. Trace
R. IV

HKirkemo/gpw

Copy to: Joseph Porter

January 23, 1974

Mr. George Symonds
Aetna Insurance Co.
15th Floor
100 Williams Street
New York, New York 10038

Re: OMX-6873 (Fluorspar, et al)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Dear Mr. Symonds:

In response to your request relayed to us today by Mr. John L. Carroll's secretary for documented evidence of an increase in funds for the subject contract, we enclose a copy of proposed Amendment No. 2, which has been signed for the Director, U.S. Geological Survey. The original and three copies of this amendment together with the necessary additional performance bond will be sent to the Operator for signature upon receipt of the bond.

We hope the bond can be furnished and returned to this office before the end of January in order to post the current interest rate of 8-3/4 percent for the additional funds. Otherwise, the rate for February must be used and we will not be advised of it until mid-February.

Sincerely yours,

Harold Kirkemo, Chief
Office of Minerals Exploration

cc:
DRF
MR Rdg.
OME Rdg.
OME Files
Mr. Kirkemo

cc: John L. Carroll

HKirkemo/gpw

GEOLOGICAL SURVEY
National Center, Mail Stop 920
12201 Sunrise Valley Drive
Reston, Virginia 22092

January 8, 1974

Messrs. Gilbert Kerlin, Robert G. Goelet,
Francis Goelet d/b/a Hicks Dome Account
c/o Mr. John L. Carroll
Room 4120, 345 Park Avenue
New York, New York 10022

Re: OME-6873 (Fluorspar, et al)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Dear Sirs:

As per our phone conversation of today, enclosed are two sets of Form 25, Performance Bonds; one of which is partially filled out.

Thank you.

Sincerely yours,

Gail P. Wiegand

for Harold Kirkemo, Chief
Office of Minerals Exploration

cc:
DRF
MR Rdg.
OME Rdg.
OME Files
Mr. Kirkemo

HKirkemo/gpw

Box 447

Phone (618) 285-6685

Joseph A. Porter
Geologist
Rosiclare, Illinois
62982

OFFICIAL COPY
O. M. E.
RECEIVED
JAN 7 1974
INITIALS CODE
HK

RECEIVED
JAN 7 P.M.

December 13, 1973

Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
U.S. Geological Survey
National Center, Mail Stop 920
12201 Sunrise Valley Drive
Reston, VA 22092

Re: OME-6873 (Fluorspar, et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Kirkemo:

To date I have not been able to get any written bids for rotary drilling for the subject contract. One contractor, Eatherly and Jackson Drilling Company, verbally agreed to do the work for $5/foot. He later changed his mind about prices and his latest quote was $6.50/foot for drilling, $3/foot for casing the hole and $1,000 for mobilization from Lebanon, Tennessee. As of our last conversation, his ability to do the work was contingent on us being able to furnish fuel.

We feel his prices are too high and have rejected the bid.

So far efforts to get other contractors have been futile. There is presently a great demand for drilling rigs and it now appears doubtful we will be able to get a rotary rig to start the last two holes.

Sincerely,

Joseph A. Porter

Joseph A. Porter

JAP:kt

Joseph A. Porter
Geologist
Box 447
Rosiclare, Illinois
62982

AIR MAIL

ROSICLARE, ILL
DEC 13
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1973

U S AIR MAIL 11¢

Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
U.S. Geological Survey
National Center, Mail Stop 920
12201 Sunrise Valley Drive
Reston, VA 22092

MME Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code

December 11, 1973

Memorandum

To: The File

From: Chief, Office of Minerals Exploration

Subject: OME-6873 (Fluorspar, et. al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Justification for Amendment No. 2

The Operator on April 17, 1973, proposed six additional drill holes costing an estimated $144,000. The initial four holes drilled on the contract were widely spaced, and, although the average grade of fluorspar in the drill core was low, large tonnages were indicated. Additional exploration was required to further evaluate the extent, grade, and nature of the deposit. The area showed great potential as a future resource of fluorspar.

A revised proposal was submitted on April 26 for only 2 additional holes as Stage II at an estimated cost of $56,600. Accordingly, Amendment No. 1 to the contract executed June 29, 1973, provided $19,768 (the balance of FY 1973 contract funds) for 2 holes with Government participation at 35 percent.

After FY 1974 funds became available, the Operator was authorized by letter dated August 30, 1973, to proceed with additional drilling on Stage II, then already in progress, at the same per unit costs and using surplus funds from completed Stage I, and was advised that an Amendment No. 2 would be prepared at a later date.

Subsequently, it became apparent from bids received for additional drilling that unit costs in Amendment No. 1 were too low. Unit costs in Amendment No. 2 reflect current prices, and therefore a Stage III is established in the contract so that all items of service, supplies, and equipment are accounted for under realistic price levels.

This is one of the most promising OME projects undertaken since the program was transferred to the Geological Survey. Preliminary estimates of tonnage and grade range from 10 million to 20 million tons of 8 to 22 percent fluorspar with associated barite, rare earth, beryllium, niobium, lead, zinc, and thorium. Results to date of drilling in an area 2,000 feet by 2,400 feet suggest a mineralized stratigraphic zone in the Plattin limestone formation of Ordovician age. The zone is 180 to 200 feet thick, occurs at depths of 1800 to 2200 feet below the surface, and consists of fine to coarse breccia fragments with disseminated fluorite and other minerals. Additional drilling and continued metallurgical testing will be necessary to determine the potential size, grade, and economic value of the deposit. The provisions of Amendment No. 2 and funds made available thereby will help in the evaluation.

Harold Kirkemo

Harold Kirkemo

cc:
DRF
MR Rdg.
OME File
OME Reading
Mr. Kirkemo

HKirkemo/gpw

DRAFT
HKirkemo/12-11-73

EXPLORATION CONTRACT
HICKS DOME ACCOUNT
OME-6873

AMENDMENT NO. 2

It is agreed this _____ day of _____, 197 , between the United States of America, acting through the Department of the Interior, U.S. Geological Survey, hereinafter called the "Government", and Gilbert Kerlin, Robert G. Goelet, Francis Goelet, d/b/a Hicks Dome Account, hereinafter called the "Operator", that Exploration Contract 2306 (OME-6873), dated September 26, 1972, as amended by Amendment No. 1 dated June 29, 1973, is further amended effective August 29, 1973, as follows:

1. The date fixed by Article 1(a) of the Contract as amended by Amendment No. 1 for completion of the work is extended from fifteen (15) to twenty-one (21) months from the date of the Contract, or until June 26, 1974.

2. Article 1(b) of the Contract, as amended by Amendment No. 1, page 1, is further amended in its entirety to read as follows:

"(b) The total allowable cost of the work set forth in Exhibit A is $266,110.00. The Government will contribute 50 percent of the allowable costs as they are incurred in Stages I and III and 35 percent in Stage II, in a total sum not in excess of $113,558.00 in accordance with the provisions of Articles 3, 4, 5, and 6, and SUMMARY in Exhibit A in Amendment No. 2. 'Costs incurred' means costs that have been paid or have become due and payable or that the Government determines have become obligations."

Draft submitted to and approved by Mr. Ferguson for Solicitor.

3. Article 1(c) of the Contract as amended by Amendment No. 1, page 1, is further amended in its entirety by deleting the existing paragraph and substituting in lieu thereof the following:

"(c) Interest computation.--Simple interest at the rates specified in (i), (ii), and (iii) below shall accrue from the dates Federal funds are made available until the period specified for payment of royalty expires, or until the amount of Federal funds contributed is fully repaid with interest, whichever occurs first:

(i) 8-1/4 percent on the Government's contribution not in excess of $47,725.00, toward allowable cost for work performed.

(ii) 9 percent on the Government's contribution over $47,725.00 but not in excess of $67,493.00 toward allowable cost for work performed.

(iii) _____ percent on the Government's contribution over $67,493.00 but not in excess of $113,558.00 toward allowable cost for work performed."

4. Article 16 of the Contract is further revised to read as follows:

"The Government shall not make or be obligated to contribute to the cost of work performed under the individual stages of this contract until the Operator has submitted and the Government has approved a performance bond or bonds adequate to cover a total penal sum of $113,558.00."

5. Exhibit A of the Contract is further amended as follows:

a. Under the heading "General Provisions", the new paragraph added by Amendment No. 1, page 2, is revised to read as follows:

"The work shall be divided into three stages. Government funds not expended in the first or second stages may be applied to the costs incurred in the succeeding stages. Estimated numbers of units such as hours, months, feet, samples, and total costs of individual categories and total costs for each stage may be exceeded to the extent that funds from the preceding stages are made available."

b. Under the heading "Description of the Work", Amendment No. 1, page 2, the first paragraph is further revised to read as follows:

"The work shall consist of bulldozing access roads, preparing drill sites, and drilling four vertical diamond drill holes as Stage I of the Contract, and rotary and core drilling three vertical holes as Stage II, and about four vertical holes as Stage III of the Contract for an estimated drilling total on the three stages of about 28,000 feet. The approximate locations of the holes are shown on Figure 1, revision 2. If it should be decided to deepen existing drill holes or to drill branch holes, reentry may be made for additional drilling, either vertically or wedging to a predetermined course."

c. Under the heading "Estimated Costs of the Work", the existing section in Exhibit A of the Contract applies to Stage I, the section added by Amendment No. 1 applies to Stage II, and a new section applicable to Stage III is added to read as follows:

"Stage III

Actual Costs

Category (1) Independent Contracts

Bulldozing access roads and drill sites 68 hours at $12.50/hr.	$ 850.00
Tractor transport of supplies, etc. 69 hours at $4.00/hr.	276.00
Mobilization-demobilization rotary drill rig	595.00
Rotary drilling 2,800 feet at $5.00/ft. rounded	14,000.00
Service time 34 hours at $40.00/hr.	1,360.00
Drill muds or chemicals, various unit prices	1,190.00
Lost casing, 5-1/2 - inch, 2,550 ft. at $1.50/ft.	3,825.00

Diamond drilling

Moblization-demobilization	1,700.00
Set up rig and set initial casing, 68 hrs. at $19.50/hr.	1,326.00
Diamond drilling, 7,700 ft.	52,275.00

Depth Feet	Rate per Foot NXWL	BXWL
0-500	At rotary drill rate of $5.00/ft.	
500-1000	$5.85	$5.70
1000-1500	6.35	6.25
1500-2000	6.90	6.80
2000-2500	7.50	7.40
2500-3000	8.10	8.00 (Not bid)

Bit costs (diamond loss) in excess of $0.85/ft., 5,950 ft. at $0.65/ft.	$ 3,868.00	
Casing shoes, 4 at $200.00 each	800.00	
Reaming, 1,360 hours at $22.50/hr.	3,060.00	
Reaming bit cost, 1,700 ft. at $1.00/ft.	1,700.00	
Install and remove casing 34 hrs. at $19.50/hr.	663.00	
Standby time, 102 hrs. at $18.75/hr.	1,913.00	
Cementing and redrilling 68 hrs. at $19.50/hr.	1,326.00	
Cement, drill muds, additives--100 bags Cement at $2.00/bag, Lumnite at $12.00/bag	545.00	
Lost casing in completed holes, 680 ft. NX casing at $2.90/ft. BX casing at $2.20/ft.	1,973.00	
Total Category (1)		$93,245.00

Category (2) Personal Services

None except:

1 Supervisor-geologist 6.8 months at $1,400.00/month	$ 9,520.00	
1 Assistant geologist-sampler 6.8 months at $700.00/month	4,760.00	
Total Category (2)		$14,280.00

Category (3) Operating Materials and Supplies		
Core boxes, 680 at $1.25/box	$ 850.00	
Sample bags, 510 at $0.50/bag	255.00	
Total Category (3)		$ 1,105.00
Category (7) Miscellaneous		
Office and accounting services, including part time secretarial services, printing, supplies, postage, telephone 6.8 months at $150.00/month	$ 1,020.00	
Transportation of samples, 170 at $0.60/each	102.00	
In-hole survey instrument rental and shipping	800.00	
In-hole surveying, 44 hours at $22.50/hr.	990.00	
Analytical work		
Prepare and assay for fluorspar, specific ion electrode method, 170 samples at $2.50 each.	425.00	
Wet assays (CaF_2, Pb, Zn, and others) 340 samples at ranging prices per determinations	1,363.00	
Spectrographic and X-ray emission analyses (multiple components) 85 samples at $10.00 sample	850.00	
Total Category (7)		$ 5,550.00
Total Estimated Actual Costs, Stage III		$114,180.00
Government Participation at 50%		$57,090.00

SUMMARY

Estimated Total/Cost of Stage I	$95,450.00
Government Participation at 50%	$47,725.00
Total Estimated Cost of Stage II	$56,480.00
Government Participation at 35%	$19,768.00
Total Estimated Cost of Stage III	$114,180.00
Government Participation at 50%	$57,090.00

Total Estimated Cost of Project			$266,110.00
Government Participation			
Total estimated Stages I, II, III		$124,583.00	
Less:			
Stage I, estimate	$47,725.00		
Stage I, probable	$36,700.00		
Available for Stage III		11,025.00	
			$113,558.00

This amendment increases the estimated total cost of the Contract by $114,180.00 and the amount of Government participation by $46,065.00.

Except as herein amended, Exploration Contract 2306 (OME-6873) dated September 26, 1972, shall remain in full force and effect.

THE UNITED STATES OF AMERICA

By_____
Director, U.S. Geological Survey

HICKS DOME ACCOUNT

By_____
Title, General Partner

By_____
Title, General Partner

By_____
Title, General Partner

Ferguson 12/5/73

Appd. Sol. Office

Box 447

Phone (618) 285-6685

Joseph A. Porter

Geologist

Rosiclare, Illinois
62982

OFFICIAL COPY
O. M. E.
RECEIVED
NOV 26 1973

INITIALS	CODE
HK	—

November 19, 1973

Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
U.S. Geological Survey
National Center, Mail Stop 920
12201 Sunrise Valley Drive
Reston, Virginia 22092

Re: OME-6873 (Fluorspar, et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Kirkemo:

Enclosed is the map you requested showing the location of the drill holes which have been spotted. I will update it after talking with Bob Trace. I am having prints made and can forward more copies if you like.

I will summarize the changes which we discussed.

Category (1)

Rotary Drilling	2,800'	@	$5.00/ft.
Lost Casing	2,550'	@	$1.50/ft.
Diamond Drilling	7,700'		
Survey Time	44 hrs.	@	$22.50/hr.
Instrument Rental	$200/hole		
Water Supply	delete		

Category (2)

Assistant Geologist-Sampler	$700/month

I still do not have any bids from a rotary contractor. I will forward any received.

In the interest of time, we have brought in another contractor, Sprague and Henwood, to speed up the coring. Enclosed is a copy of their proposal. You will note their prices are slightly below Boyles.

Please let me know if you need any additional information.

Sincerely,

Joseph A. Porter

Joseph A. Porter

FILE COPY

October 17, 1973

Mr. Joseph Porter
Geologist
Rosiclare, Illinois 62982

Re: OME-6873 (Fluorspar, et al.)
Karlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Dear Mr. Porter:

Enclosed are two copies of a draft of proposed Amendment No. 2 to the Contract. As I mentioned to you yesterday by phone, I arbitrarily increased the numbers of units and total costs in Amendment No. 1 for Stage II by a factor of 1.7 to determine the units and costs for Stage III. This was based on the ratio of estimated feet of drilling in Stage II to the drilling estimated for Stage III.

Please review this draft, make such changes as you wish, and return a copy to me. I will review it, and the copy of your estimates, which you are sending, and prepare a final draft of the amendment based on mutually acceptable data. I expect that you will offer more realistic numbers based on the current situation with respect to completed drilling and possibly new bids. Also, please indicate on Figure 1, revision 2, the location of OME Hole 7 drilled on Stage II, and the proposed locations of OME 8, 9, and 10 to be drilled on Stage III, and return one copy to me.

I haven't yet reached Bob Trace to discuss the proposed additional drilling with him, but will do so before preparing the final draft of the amendment.

Sincerely yours,

Harold Kirkemo

Harold Kirkemo, Chief
Office of Minerals Exploration

Enclosures

cc:
DRF/MR Rdg.
OME Rdg./OME Files/MR. Kirkemo
R. Trace

Box 447

Phone (618) 285-6685

Joseph A. Porter
Geologist
Rosiclare, Illinois
62982

October 5, 1973

Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
U.S. Geological Survey
Matomic Building
Room 865
1717 H. Street NW
Washington, D. C. 20006

Re: OME-6873 (Fluorspar et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Kirkemo:

Enclosed are copies of the Final Voucher and Operator's Monthly Report for Stage I. I would appreciate it if you would let me know of any errors or disallowances.

Sincerely yours,

Joseph A. Porter

Joseph A. Porter

JAP:kt
Encl.

FILE COPY

August 30, 1973

Messrs. Gilbert Karlin, Robert C. Goelet
Francis Goelet d/b/a Ricks Dome Account
c/o Mr. John L. Carroll
Room 4120, 345 Park Avenue
New York, New York 10022

Re: OMM-4873 (Flanagan, et al.)
Karlin, Goelet and Goelet d/b/a
Ricks Dome Account
Ricks Dome Property
Martin County, Illinois
Contract 2306

Gentlemen:

This letter will authorize additional drilling on Stage II of the subject contract, effective as of August 29, 1973, and utilizing funds unexpended on Stage I.

An amendment (proposed No. 2) to the contract for this purpose will be prepared after my return to duty on or about September 24, 1973. The amendment will specify the same per-unit costs as are set forth in Amendment No. 1 to the contract, and will not increase the estimated cost of the contract, or the aggregate amount which the Government may be required to contribute.

I agree with the recommendation offered by Mr. Joseph A. Porter, project geologist, that these funds should be used to drill a hole tentatively located on the First State Bank lease about 800 feet southeast of Drill Hole OMM-5.

Sincerely yours,

Harold Kirkemo

Harold Kirkemo, Chief
Office of Minerals Exploration

Copy to: J. A. Porter
Robert B. Trace
R. A. Lawrence

cc: DRF
MR Rdg.
OMM Files
OMM Rdg./Mr. Kirkemo

HKirkemo/gpw

Box 447

Phone (618) 285-6685

Joseph A. Porter

Geologist

Rosiclare, Illinois
62982

June 11, 1974

Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
U.S. Geological Survey
National Center, Mail Stop 920
12201 Sunrise Valley Drive
Reston, VA 22092

Re: OME-6873 (Fluorspar, et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Kirkemo:

Pursuant to our recent conversations pertaining to additional assay work under the OME-Contract, I am submitting here my proposal outlining the work to be done.

Generally, the proposal calls for rather complete assaying of the better mineralized zones plus other assay work which may expand the zone of interest or give clues to factors controlling mineralization.

The amounts cited for secondary assaying are necessarily vague. Exact amounts cannot be determined until the program is at least one-half completed. Some check work will be attempted as soon as first results are in.

In view of the additional work we hereby request the contract be extended from June 26, 1974 to December 26, 1974.

Please advise if you need additional information.

Sincerely,

Joseph A. Porter

Joseph A. Porter

Enc. 1
cc. J.L. Carroll
file

PROPOSAL FOR ADDITIONAL ASSAY WORK

OME-6873 (Fluorspar, et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

INTRODUCTION: As a result of various assay, routine spectrographic analysis and work by U.S.G.S. staff, additional assays of existing samples are indicated. Proposed assays are principally for Niobium, Yttrium, Beryllium, Lead, Zinc, $BaSO_4$ and CaF_2. Also included are assays for the rare earth elements Ytterbium, Gadolinium, Dysprosium, Holmium and Erbium. Some of the above duplicate previous work but should be done to check previous methods and results.

Completion of the program depends on results. The program can be altered according to the results of the initial assays. To this end Holes OME-1 (Hamp 5) and OME-5 (FSB-1) will be submitted first. The program may require some of the assay density be altered; either increased or decreased.

All holes drilled under the existing contract plus holes Hamp 1, Hamp 3, Hamp 4 and Pankey 2 are included in the proposed work.

An estimated five months will be required to finish the work.

COSTS: A copy of a summary of assay methods and costs submitted by Skyline Labs, Inc. is attached. Pulps of most of the samples involved are presently in their storage facility.

Total cost of the work is $15,740.00. Cost factors consist principally of 1) assay work 2) secondary assay work and 3) personnel services. Major cost elements are outlined by the following.

Assay Work

Hamp 1	No. Samples			
CaF_2	21	$ 42.00	@ $2	
$BaSO_4$	21	94.50		
Nb	21	105.00		
Th	21	21.00		
ReO	21	105.00		
Be	21	63.00		
Y	21	21.00		
Pb	21	42.00		
Zn	21	42.00		$ 535.50
	189 ✓			

Hamp 3

$BaSO_4$	39	175.50		
Nb	39	195.00		
Th	39	39.00		
ReO	39	175.50	@ 4.50 ? 195.00 @ 5	
Be	39	117.00		
Y	39	39.00		
Pb	39	78.00		897.00
Zn	39	78.00	$	~~916.50~~
	312			

Hamp 4

CaF_2	25	50.00	
$BaSO_4$	39	175.50	
Nb	39	195.00	
Th	39	39.00	
ReO	39	195.00	
Be	39	117.00	
Y	39	39.00	
Pb	39	78.00	
Zn	39	78.00	966.50
	337		

Hamp 5 (OME-1)

Nb	22	110.00	
Th	22	22.00	
ReO	21	105.00	
Be	21	63.00	
Y	22	22.00	
Pb	18	36.00	
Zn	18	36.00	394.00
	144		

Hamp 6 (OME-4)

Nb	26	130.00	
Th	26	26.00	
ReO	26	130.00	
Be	26	78.00	
Y	26	26.00	
Pb	26	52.00	
Zn	26	52.00	494.00
	182		

Hamp 7 (OME-6)

Nb	38	190.00	
Th	38	38.00	
ReO	38	190.00	
Be	38	114.00	
Y	38	38.00	
Pb	35	70.00	
Zn	35	70.00	710.00
	260		

Hamp 8 (OME-9)

Nb	43	215.00	
Th	43	43.00	
ReO	11	55.00	
Be	12	36.00	
Y	43	43.00	392.00
	152		

Fredricks 1 (OME-2)

$BaSO_4$	25	112.50	
Nb	29	145.00	
Th	29	29.00	
ReO	25	125.00	
Be	25	75.00	
Y	25	25.00	
Pb	25	50.00	
Zn	25	50.00	611.50
	208		

Pankey 2

CaF_2	9	18.00	
$BaSO_4$	5	22.50	
Nb	68	340.00	
Th	53	53.00	
ReO	35	140.00	
Be	28	84.00	
Y	29	29.00	
Pb	8	16.00	
Zn	6	12.00	
Spec.	5	45.00	759.50
	246		

Pankey 3 (OME-3)

Nb	22	110.00	
Th	22	22.00	
ReO	15	75.00	
Be	12	36.00	
Y	14	14.00	
Pb	5	10.00	
Zn	5	10.00	277.00
	95		

FSB-1 (OME-5)

Nb	27	135.00	
Th	27	27.00	
ReO	35	175.00	
Be	27	81.00	
Y	35	35.00	
Pb	27	54.00	
Zn	27	54.00	561.00
	205		

FSB-2 (OME-7)

Nb	36	180.00	
Th	41	41.00	
ReO	41	205.00	
Be	41	123.00	
Y	41	41.00	
Pb	11	22.00	
Zn	11	22.00	634.00
	222		

FSB-3 (OME-8)

Nb	13	65.00	
Th	14	14.00	
ReO	30	150.00	
Be	30	90.00	
Y	30	30.00	
Pb	30	60.00	
Zn	30	60.00	469.00
	177		

FSB-4 (OME-11)

CaF_2	29	58.00	
$BaSO_4$	29	130.50	
Nb	29	145.00	
Th	29	29.00	
ReO	29	145.00	
Be	29	87.00	
Y	29	29.00	
Pb	29	58.00	
Zn	29	58.00	739.00
	261		

Fredrick 2 (OME-10)

$BaSO_4$	11	49.50	
Nb	17	85.00	
Th	17	17.00	
ReO	12	85.00	
Pb	11	22.00	
Zn	11	22.00	280.50
	79		
	3069 samples		8,740.00

Secondary Assay Work These items are for better control and are necessarily estimates.

Check assays by other labs	1,200.00
Repeat assays by Skyline	1,200.00

Personnel Work proposed will require considerable personnel time for correlation, analysis, sample preparation, interpretation, plotting and posting of assay results. Additional core study will also be needed. The following time is estimated to be required, spread out over the life of the project.

Geologist 2 months @ $1500/mo	$ 3,000.00
Sampler & Assistant 2 months @ $400	800.00
Secretarial (posting & plotting) 2 months @ $400	800.00
Total	$ 15,740.00

Respectfully submitted,

Joseph A. Porter

SKYLINE LABS, INC.
SPECIALISTS IN EXPLORATION GEOCHEMISTRY
12090 WEST 50TH PLACE • WHEAT RIDGE, COLORADO 80033 • TEL.: (303) 424-7718

May 31, 1974

Mr. Joseph A. Porter
P.O. Box 447
Rosiclare, Illinois 62982

Dear Mr. Porter:

Thanks for visiting the lab several days ago to discuss further analysis of existing pulps and new samples from your fluorspar-barite project. I have reviewed the requirements for analytical services with Charles Thompson, and have come up with the following comments:

1. The colorimetric procedure for niobium is probably still the most precise and accurate available for the money. The method was developed by the U.S.G.S. using quantitative emission spectrographic analysis for control. We are prepared to do some research investigating the application of the procedure to your materials, and we'll see if we can obtain some standard samples containing known amounts of niobium from the Survey to use as controls. You may want to consider scanning all samples by XRF and checking only those above a certain threshold value by the colorimetric procedure.

2. Charlie feels that there may be a consistent small loss of fluorine in distillation, and there may be a slight difference in standardization, both of which could result in a more-or-less constant difference between our specific ion electrode values and your distillation values for CaF_2. At this stage, we don't know for sure which values are the more accurate, but we'll try to resolve the question as soon as possible. We'll also investigate what happens to the naturally occurring thorium during Willard-Winter assays.

3. Re-running the lead and zinc should present no problem. We'll use our quantitative technique involving an aqua regia digestion, and should get all the lead and zinc dissolved. In this range of concentration, atomic absorption should produce the most accurate values.

4. We'll have to work out a digestion procedure for the beryllium analyses to insure getting all the Be into solution, especially if it is possibly tied up with the barite. Once the beryllium is in solution, measuring its concentration by atomic absorption is straightforward.

5. The best approach to the analysis of the rare earth elements and thorium seems to be by X-Ray fluorescence. This can be accomplished locally with no problem.

6. We don't anticipate any problems from strontium in the barite, but will check for potential problems before embarking on routine analyses.

We can get 20 to 30 X-Ray fluorescence analyses per day, and one shift would produce about the same number of niobium, fluorine, barium etc. determinations. Thus, we're looking at about 150 samples per 5-day week on a regular basis for productivity.

Costs for this work are as follows:

Niobium (colorimetric)	$5.00
CaF_2	3.00
<10% F	2.00
Pb	2.00
Zn	2.00
Be	3.00
$BaSO_4$	4.50
Rare Earth Elements, Niobium and Thorium per element	1.00
Emission Spec Scans	9.00
Sample preparation on new samples ..... >1 lb, add $0.15/lb.	.90

If more than 1,000 samples are processed, a discount of 5 percent is applied. In practise, this is credited to all work performed exclusive of the emission specs and sample preparation, at the time 1,000 samples have been processed.

We are confident that, with a little investigation of procedures most suitable for the material at hand, we can provide accurate values adequate for an assessment of the grade of the material. It will take a few days to work out techniques, and from then on, we should be able to handle about 150 samples per week routinely.

Sincerely,

SKYLINE LABS, INC.

Edwin V. Post

Edwin V. Post

EVP:bw

official file copy

June 29, 1973

Note to Mr. Carroll:

Please attach the original copy of this performance bond to the Government's copy (original) of Amendment No. 1.

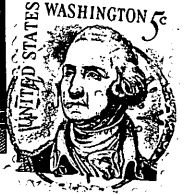
In accordance with Instruction 5 on the reverse side of the bond, please type somewhere in the limited space available, the name of each person who signed the bond.

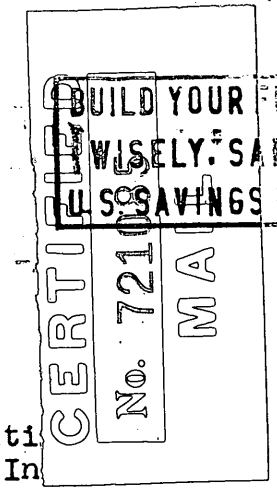
Please send us proof of Power of Attorney for the individuals who signed the bond for Robert G. Goelet.

Harold Kirkemo

Harold Kirkemo
Chief, Office of
Minerals Exploration

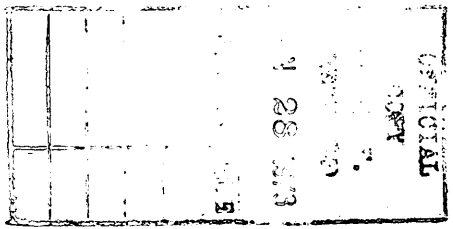
JOHN LEE CARROLL
345 PARK AVENUE
NEW YORK, N. Y. 10022





RETURN RECEIPT REQUESTED

Mr. Harold Kirkemo
Chief, Office of Mineral Explorati
United States Department of the In
Geological Survey
Washington, D. C. 20242



MME Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code
6/13/73	Kirkemo	
6/12/73	Toohey	
6/14	Albers	
6/19	[illegible]	

June 29, 1973

Messrs. Gilbert Kerlin, Robert G. Goelet,
Francis Goelet d/b/a Hicks Dome Account
c/o Mr. John L. Carroll
Room 4120, 345 Park Avenue
New York, New York 10022

Re: OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Gentlemen:

Enclosed are the original and three copies of proposed Amendment No. 1 (five pages, performance bond, and one map, Figure 1, revised) to the subject contract, signed for the Government. An extra copy of the amendment is being sent to Mr. Joseph A. Porter, Geologist, Rosiclare, Illinois, who is in charge of the project work for you.

If the proposed amendment is satisfactory to you, all copies should be signed on page 5 by each of the three general partners, and the following copies returned to this office:

Government Copy
Field Office Copy
Branch of Financial Management

The Operators' copy should be retained for your files.

If any part of the proposed amendment does not meet with your approval, please return the original and all copies to this office together with your comments for our consideration.

The 9 percent interest in Article 1(c), as amended by paragraph (ii), applies to the additional funds (19,768.00) authorized by this amendment.

Sincerely yours,

Harold Kirkemo
Chief, Office of
Minerals Exploration

Enclosure

cc: Director's reading file
Mineral Resources
OME reading file
Region IV-Robert A. Laurence, USGS
Mr. Robert D. Trace, Geologist USGS
Princeton, Ky.
OME Docket
Mr. Kirkemo
H Kirkemo/cac 6/13/73

MME Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code

JUN 13 1973

Mr. Joseph Porter
Geologist
Rosiclare, Illinois 62982

Re: OME-6873 (Fluorspar, et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Dear Mr. Porter:

The enclosed copy of proposed Amendment No. 1, and transmittal letter to the Operator, which will be sent after the Government has signed the amendment, are self explanatory.

Enclosed also is a copy of Exhibit C which the diamond drill contractor should sign and return to you for transmittal to this office. It is not likely that the rotary drill contractor will incurr expenses requiring Government participation in excess of $10,000, so a similar document is not required for his signature.

Should you have any questions concerning the amendment please contact this office at once.

Sincerely yours,

Harold Kirkemo

Harold Kirkemo
Chief, Office of
Minerals Exploration

Enclosures

cc: Director's reading file
Mineral Resources
OME reading file
Mr. Kirkemo
HKirkemo/cac 6/13/73

JOHN LEE CARROLL
345 PARK AVENUE
NEW YORK, N. Y. 10022

(212) 753-9280

June 8, 1973

OFFICIAL
COPY
CODE
120

Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
U. S. Geological Survey
Matomic Building
Room 865
1717 H Street NW
Washington, D. C. 20006

Dear Mr. Kirkemo:

In accordance with our telephone conversation of today, this will advise you that we have furnished our share of the proposed exploration expenditures under the extension of Contract #2306. The funds have been supplied by the partners of Hicks Dome Account and are in the partnership's bank account at the present time.

Please advise if you need further confirmation as to the above.

With kindest regards,

Sincerely yours,

John L. Carroll

for Hicks Dome Account

JLC:AG

120 HR 6/7/73
120M

EXPLORATION CONTRACT
HICKS DOME ACCOUNT
OME-6873

AMENDMENT NO. 1

It is agreed this_____day of_____,1973, between the United States of America, acting through the Department of the Interior, U. S. Geological Survey, hereinafter called the "Government," and Gilbert Kerlin, Robert G. Goelet, Francis Goelet, d/b/a Hicks Dome Account, hereinafter called the "Operator," that Exploration Contract 2306 (OME-6873), dated September 26, 1972, is amended effective May 14, 1973, as follows:

1. The date fixed by Article 1(a) of the Contract for completion of the work is extended from eight (8) months to fifteen (15) months from the date of the Contract, or until December 26, 1973.

2. Article 1(b) of the Contract is hereby amended to read as follows:

"(b) The total allowable cost of the work set forth in Exhibit A is $151,930.00. The Government will contribute 50 percent in Stage I and 35 percent in Stage II of the allowable costs as they are incurred, in a total sum not in excess of $67,493.00 in accordance with the provisions of Articles 3, 4, 5, and 6. "Costs incurred" means costs that have been paid or have become due and payable or that the Government determines have become obligations."

3. Article 1(c) of the Contract is hereby amended by deleting the existing paragraph in its entirety and substituting in lieu thereof the following:

"(c) Interest computation. -- Simple interest at the rates specified in (i) and (ii) below shall accrue from the dates Federal funds are made available until the period specified for payment of royalty expires, or until the amount of Federal funds contributed is fully repaid with interest.

(i) 8-½ percent on the Government's contribution not in excess of $47,725.00, toward allowable cost for work performed.

(ii) _____ percent on the Government's contribution over $47,725.00 but not in excess $ 67,493.00 toward allowable cost for work performed."

4. Article 16 of the Contract is revised to read as follows:

"The Government shall not make or be obligated to make any contribution to the cost of work performed under this contract until the Operator has submitted a performance bond, or bonds, adequate to cover the penal sum of $47,725.00 for Stage I, and $19,768.00 for Stage II for a total of $67,493.00, and the bond, or bonds, have been approved by the Government."

5. Exhibit A of the Contract is hereby amended as follows:

a. The first paragraph is revised to read as follows:

"The purpose of the project is to explore by rotary and diamond core drilling for fluorspar-beryllium-rare earths-thorium-niobium ores in mineralized breccias in the Hicks Dome cryptovolcanic structure."

b. Under the heading "General Provisions", the texts of the fifth and seventh paragraphs on Page 1 are revised to read as follows:

"Significantly mineralized core recovered from the drilling shall be split and one split assayed for fluorspar. The remaining core shall be stored in proper sequence with the unsampled core. The stored core shall be available for additional analyses as necessary and for Government inspection and possible use. With prior Government approval, the Operator may dispose of the stored core."

"True copies of certificates of assay or analysis of all samples analyzed shall be submitted with the Operator's monthly reports, which shall include a log of drilling completed, and the location and width of all samples collected and assayed or analyzed."

A new paragraph is added to read as follows:

"The work shall be divided into two stages. Government funds not expended in the first stage may be applied to the costs incurred in the Second stage."

c. Under the heading "Description of the Work", on page 2, the first paragraph is revised to read as follows:

" The work shall consist of bulldozing access roads, preparing drill sites, and drilling four vertical diamond drill holes as Stage I of the Contract, and rotary and core drilling two additional vertical holes as Stage II of the Contract for an estimated drilling total on both stages of 15,000 feet. The approximate locations of the six holes are shown on Figure 1, revised. If it should be determined that any existing drill holes should be extended, reentry may be made and the hole deepened by additional drilling, either on a vertical course or directed by wedging to a predetermined course."

One additional paragraph is added reading as follows:

"An air rotary drill equipped to use a down-hole-hammer may be used to drill from the surface to an estimated depth of 750 feet or more in each of the two holes in Stage II. The remaining distance to be explored in these two holes shall be core drilled."

d. Under the heading "Estimated Costs of the Work", the existing section applies in its entirety to Stage I, and a new section is added to read as follows:

"Stage II

Actual Costs

Category (1) Independent Contracts

Bulldozing access roads and drill sites 40 hours at $12.50/hr.	$500.00 ~~$750.00~~
Tractor transport of supplies, etc. 40 hours at $4.00/hr.	160.00
Mobilization-demobilization rotary drill rig	350.00
Rotary drilling 1451 ~~1,380~~ feet at $4.00/ft., rounded	5,805.00 ~~5,555.00~~
Service time 20 hours at $40.00/hr.	800.00
Drill muds or chemicals, various unit prices	700.00
Lost casing, 5½ - inch, 1,500 ft. at $1.40/ft.	2,100.00

Diamond drilling

Mobilization-demobilization	1,000.00
Set up rig and set initial casing, 40 hrs. at $19.50/hr.	780.00
Diamond drilling, 3,500 feet	23,675.00

Depth Feet	Rate per Foot NXWL	BXWL
0-500	At rotary drill rate of $4.00/ft.	
500-1000	$5.85	$5.70
1000-1500	6.35	6.25
1500-2000	6.90	6.80
2000-2500	7.50	7.40

Bit costs (diamond loss) in excess of $0.85/ft., 3,500 ft. at $0.65/ft.	$2,275.00	
Reaming, 80 hours at $22.50/hr.	1,800.00	
Reaming bit cost, 1,000 ft. at $1.00/ft	1,000.00	
Install and remove casing 20 hrs. at $19.50/hr.	390.00	
Standby time, 60 hrs. at $18.75/hr.	1,125.00	
Cementing and redrilling 40 hrs. at $19.50/hr.	780.00	
Cement, drill muds, additives 40 bags cement at $2.00/bag 20 bags Lumnite at $12.00/bag	320.00	
Lost casing in completed holes, 400 ft. NX casing at $2.90/ft. BX casing at $2.20/ft.	1,160.00	
Water supply by truck or pump 3 months at $300.00/month	900.00	
Total Category (1)		$45,620.00
Category (2) Personal Services		
None except:		
1 Supervisor-geologist 4 months @ $1,400.00/month	$5,600.00	
1 Assistant geologist-sampler 4 months @ $600.00/month	2,400.00	
Total Category (2)		$ 8,000.00
Category (3) Operating Materials and Supplies		
Core boxes, 400 at $1.25/box	$ 500.00	
Sample bags, 300 at $0.50/bag	150.00	
Total Category (3)		$ 650.00

Category (7) Miscellaneous

Office and accounting services, including part time secretarial services, printing, supplies, postage, telephone 4 months at $150.00/month	$600.00	
Transportation of samples, 100 at $0.60/each	60.00	
Analytical work		
Prepare and assay for fluorspar, specific ion electrode method, 100 samples at $2.50/each	250.00	
Wet assays (CaF_2, Pb, Zn, and others) 200 samples at ranging prices per determination	800.00	
Spectrographic and X-ray emission analyses (Multiple components) 50 samples at $10.00/sample	500.00	
Total Category (7)		$ 2,210.00
Total Estimated Actual Costs, Stage II		$56,480.00
Government Participation at 35%		$19,768.00

SUMMARY

Total Estimated Cost of Stage I	$95,450.00
Government Participation at 50%	$47,725.00
Total Estimated Cost of Stage II	$56,480.00
Government Participation at 35%	$19,768.00
Total Estimated Cost of Project	$151,930.00
Government Participation	$67,493.00

Except as herein amended, Exploration Contract 2306 (OME-6873) dated September 26, 1972, shall remain in full force and effect.

THE UNITED STATES OF AMERICA

By_____
Director, U. S. Geological Survey

HICKS DOME ACCOUNT

By_____
Title General Partner

By_____
Title General Partner

PLEASE FURNISH SERVICE(S) INDICATED BY CHECKED BLOCK(S). REQUIRED FEE(S) PAID.

☐ Show to whom, date and address where delivered

☑ Deliver ONLY to addressee

RECEIPT

Received the numbered article described below.

[redacted]

CERTIFIED NO. 1[illegible]

INSURED NO.

DATE DELIVERED 7/2/73

1 SIGNATURE OR NAME OF ADDRESSEE (*Must always be filled in*)

2 SIGNATURE OF ADDRESSEE'S AGENT, IF ANY

3 SHOW WHERE DELIVERED (*only if requested*)

OME-6873

c55—16—71548-11 347-198 GPO

POST OFFICE DEPARTMENT
OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE TO AVOID
PAYMENT OF POSTAGE, $300

POD Form 3811 Apr. 1969 c55—16—71548-11

POSTMARK OF DELIVERING OFFICE

Print your name and address below. If you want to restrict delivery, or to have the address of delivery shown on this receipt, check block(s) on other side. Moisten gummed ends and attach this card to back of article.

RETURN TO

OFFICE OF MINERALS EXPLORATION
U. S. GEOLOGICAL SURVEY
DEPARTMENT OF THE INTERIOR
WASHINGTON, D. C. 20244

MMS FORM
(2/63)

OFFICIAL FILE CO

Date	Surname	Co

June 6, 1973

Memorandum

To: The File

From: Chief, Office of Minerals Exploration

Subject: OME-6873 (Fluorspar, et al)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Justification for Amendment No. 1

Work initially provided for by the contract has been completed at a total estimated cost of $80,000 with the Governments' participation at 50 percent totalling about $40,000 of the $47,725 authorized. This work is referred to as Stage I in the amendment.

Amendment No. 1 provides for a second stage of work consisting of rotary and diamond core drilling at a total estimated cost of $56,480 with the Government's share at 35 percent totalling $19,768. The total estimated cost of the contract is thereby increased to $151,930 and the Governments' share to $67,493.

Funds not expended in Stage I may be used for work in Stage II. Interest on such funds shall be at the rate of 8¼ percent as established when the contract was executed in September 1972. Interest on the additional funds provided by Amendment No. 2 shall be at the rate set for June 1973.

The reduced percentage of Government participation in Stage II is due to the insufficiency of OME contract funds in FY 1973 to provide support at the 50 percent rate for which fluorspar is eligible. The estimated per-unit costs for work on Stage II are higher than for Stage I because of the general increase in costs for labor, equipment, and supplies in the past year. Also, the drilling contractor on Stage I could not continue on the project, so new contractors have been engaged to drill the two holes on Stage II. Their bid prices reflect current price levels.

The purpose of the Hicks Dome project is to explore for fluorspar and associated minerals in or near the Hicks Dome cryptovolcanic structure. The economic zone was believed to be either mineralized pipelike bodies or generally horizontal, mineralized rock layers surrounding the central breccia core of the dome. The latter occurrence was found to be the principal zone in the four holes completed on Stage I.

Geologic information derived from these holes indicate an unusually thick, low grade fluorspar-bearing zone in the Plattin limestone formation at depths of about 2,000 to 2,200 feet. Although the holes are scattered in an area 1,500 feet long by 1,300 feet wide, they intersected mineralized material of similar character, grade (8 - 12 percent fluorspar), and stratigraphic position, which suggest that a large resource of fluorspar is present possibly in the range of 10 to 20 million tons. Minor quantities of lead and sinc were noted and tests are in progress to determine the presence and grade of beryllium, rare earths, thorium, and niobium.

The two holes proposed for Stage II are intended to intersect the mineralized zone at optimum locations based on information obtained from the previous holes. If Government funds had been available to assist in a more thorough investigation, 6 rather than 2 additional holes would have been recommended.

I concur in the field examiner's recommendation dated April 30, 1973, to amend the contract.

Harold Kirkemo

Harold Kirkemo

cc: Director's file
Mineral Resources
OME reading file
Mr. Kirkemo
HKirkemo/cac 6/6/73

Box 447

Phone (618) 285-6685

Joseph A. Porter

Geologist

Rosiclare, Illinois
62982

May 16, 1973

COPY
O. M. E.
RECEIVED
MAY 22 1973
INITIALS | CODE
Cae 120
HK A20

Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
U. S. Geological Survey
Matomic Building
Room 865
1717 H Street NW
Washington, D. C. 20006

Re: OME-6873 (Fluorspar, et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Kirkemo:

This is to advise you that work commenced on Hole OME-5 on Monday, May 14, 1973. Initial work done consisted of bulldozing access and drill site set-up. An air rotary rig was mobilized to the property on Tuesday, May 15. I will keep you advised on the progress of the hole.

Sincerely yours,

Joseph A. Porter

JAP:vb

MME Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code

MAY 11 1973

Mr. Joseph A. Porter
Geologist
Rosiclare, Illinois 62982

Re: OME-6673 (Fluorspar, et al)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois
Contract 2306

Dear Mr. Porter:

This is to confirm our telephone conversation on May 10, 1973, concerning Government assistance to drill two additional holes on the subject contract.

Any expenditures for such drilling in excess of funds remaining on the contract upon completion of the first four holes must be done entirely on the Operator's account until an amendment adding additional funds is prepared and executed, and additional bond posted. Upon execution of the amendment, the Government can participate in the cost of the drilling from the effective date set forth in the amendment.

Sincerely yours,

Harold Kirkemo
Chief, Office of
Minerals Exploration

Copy to: Messrs. Gilbert Karlin,
Robert G. Goelzt, Francis Goelzt
c/o John L. Carroll

John L. Carroll

cc: Director's reading file
Mineral Resources
OME reading file
Mr. Trace
Mr. Laurence
H. Kirkemo

HKirkemo/cac 5/11/73

Box 447

Phone (618) 285-6685

Joseph A. Porter
Geologist
Rosiclare, Illinois
62982

April 26, 1973

Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
U. S. Geological Survey
Matomic Building
Room 865
1717 H Street NW
Washington, D.C. 20006

Re: OME-6873 (Fluorspar, et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Kirkemo:

Enclosed is an original and two copies of my estimate of costs for Stage II of the proposed extension of the Exploration Contract. Bids are included. This is to supplement the previously submitted application.

The application was for a total of six holes. The costs cited here are for two holes. If it is possible to drill more than two holes the estimate can be revised essentially directly proportional to the number drilled.

You will note the estimate and plans for drilling methods are not concise. This is a result of past experience which indicates costs and conditions of the individual holes can vary widely.

Total estimated costs for the two holes is $54,602.00. Minimum attainable dost is probably between $45,000 and $48,000. Cost per hole would tend to be reduced if it is possible to sustain a continuing program beyond two holes.

Sincerely yours,

Joseph A. Porter

JAP/kt

Enclosures: 3
Copies: G. Kerlin
J. L. Carroll
file

PROPOSED AMENDMENTS TO EXHIBIT A

for

STAGE II

of

EXPLORATION CONTRACT

HICKS DOME ACCOUNT
OME-6873

The purpose of Stage II is to continue to explore by rotary and diamond core drilling for fluorspar-beryllium-rare earths-thorium-niobium ores in mineralized breccias in the Hicks Dome cryptovolcanic structure, as outlined in the original application and Exhibit A of the contract.

The following general modifications are proposed for Stage II work.

The holes will be started with air rotary and down-hole-hammer. The objective of using air rotary is to attempt to get through cherty overburden, cavities and the very hard Grassy Knob chert in the top 750 to 900 feet of hole. Experience has shown that this section has been the most expensive to drill in terms of direct costs and time. Boyles Bros. have made their coring bid on this basis and do not want to drill this section unless on an hourly basis.

The present contractor has declined to bid on more work. Boyles Bros. have submitted a bid which is essentially $1.20 per foot higher. In addition, they will charge for running casing and certain other specified items.

With the present arrangement, the geologist-supervisor, with only casual help handling core, is probably spread too thin for best use. The situation will be aggravated by use of air rotary which will speed up the rate of drilling and increase the rate at which core and cuttings will have to be examined, sampled, processed and interpreted. In order to help alleviate the situation provisions are made herein to hire an assistant geologist and/or sampler at a combined rate of $600/month. If an assistant can be hired to work under Porter's supervision, it may not be necessary to charge all of Porter's time to the project. This would allow staying within the budget of $2,000 per month if an assistant is hired at a rate not exceeding $600 per month.

General Provisions

A bulldozer no smaller than a Caterpillar D-4 shall be used to prepare access roads and drill sites.

All drill holes shall be cased as necessary and completed not less than standard BX (nominal diameter 1-5/8 inches) core size or equivalent wire line size.

The Government will not contribute to the cost of holes abandoned without prior Government approval confirmed in writing, casing left in the hole at the request of the Operator, or holes drilled closer than 100 feet to the outer boundary of the project area.

Significantly mineralized core recovered shall be split and one split assayed for fluorspar. Intervals selected shall be determined by the geologist-supervisor in charge. The remaining core shall be stored in proper sequence with the unsampled core. The stored core shall be available for additional analyses as necessary and for Government inspection and possible use. With prior Government approval, the Operator may dispose of the stored core.

Preliminary assays of the fluorspar content of sampled intervals may be used to select samples for subsequent more detailed and confirmatory analyses of the fluorspar content, and to determine the content of beryllium, lead, zinc, rare earths, thorium, and niobium.

True copies of certificates of assay or analysis of all samples analyzed shall be submitted with the Operator's monthly reports, which shall include a log of the drilling completed and the location of all samples collected and assayed or analyzed.

The Operator shall provide such supervision, labor, and technical services as may be required to complete the work in a satisfactory manner.

Description of the Work

The work shall consist of bulldozing access roads, preparing drill sites and drilling with rotary and/or diamond core drilling equipment sets of two drill holes to depths of approximately 2,500 feet.

An air rotary drill equiped also to use a down-hole-hammer will be utilized to start OME-5 and OME-6 at the same time. It will then be demobilized and diamond core equipment will be used to complete the holes. If additional holes beyond OME-5 and OME-6 are drilled, it should be possible to mobilize the air rotary equipment to start at least two holes at a time.

An attempt will be made to drill with air rotary to at least 750 feet. If excessive cavities or underground water are encountered, it may be necessary to case the hole and then commence coring before that depth is reached.

The locations and sequence of holes to be drilled was previously given.

None of the proposed holes shall exceed 3,000 feet in depth and all are to be directed into breccia zones.

Upon completion of the work the Operator shall restore to its approximate original condition any land surface where land use has been impaired by the project work.

Estimate of Cost

Utilization of the two different methods of drilling and the difficulties that are commonly encountered in drilling on the subject properties make cost estimation difficult. Availability and questionable applicability of the rotary may dictate that the core drill should be used for the top 750 feet. For this reason, an estimate of the cost on an hourly basis is also given though not included in the total cost.

The costs cited here are for two holes. If it is possible to drill more the costs should be increased proportionately.

Category (1) Independent Contracts

Bulldozing access roads, drill sites, assisting rotary and core drill on moves, digging water storage and slush pits, clean up and level off drill sites.

40 hrs. @ $12.50	$ 500.00

Miscellaneous tractor time supplying rig, bringing out samples.

40 hrs. @ $4.00	160.00

Drilling - Rotary-Hammer 1500' in two holes

Mobilization	$ 350.00
Mud used	700.00
Rig time	800.00
Drill 1500' @$4/ft.	6,000.00
	$7,850.00

Alternative - Cost if cored from surface to 750' at $22.40/hour plus bits and material.

8 hrs. x $22.50 = $180/shift	
Estimate 30 shifts to 750'	
30 x $180 =	5,400.00
Bits @ $2.50/ft.	1,875.00
Mud 20 bags @ $4.00	80.00
Cement:	
Lumnite 10 bags @ $12.00	120.00
Portland 10 bags @ $2.00	20.00
Cost/hole	$7,495.00

Mobilization	$1,000.00

Basic Cost (Minimum) Diamond Drilling 3500' NX	23,675.00
Rig up & set casing 40 hrs. @ $19.50	780.00
Survey, 16 hrs. @ $19.50	312.00
Pull casing 20 hrs. @ $19.50	390.00
Additional bit cost @ $0.65/ft.	2,275.00
Total Basic Cost	$27,432.00

Additional Possible Cost for Hole Stabilization

Reaming 80 hrs. @ $22.50	1,800.00
Bits for reaming @ $1/ft., 1000	1,000.00
Installing and Reaming Casing 80 hrs. @ $19.50	1,560.00
Cement Time 40 hrs. @ $19.50	780.00
Lumnite 20 bags @ $12/bag	240.00
Portland 40 bags @ $2/bag	80.00
Casing lost 400' NX @ $2.90	1,160.00
Total Hole Stabilization Cost	6620 ~~$6,580.00~~

TOTAL COST OF CONTRACTS $43,542.00

Category (2) Personal Services

1 Supervisor-Geologist 4 months @ $1400 per month	$ 5,600.00	
1 Assistant Geologist-Sampler 4 months @ $600 per month	2,400.00	$ 8,000.00

Category (3)

Core boxes 400 @ $1.25	500.00	
Sample bags 300 @ $0.50 (rotary samples @ 10' intervals)	150.00	650.00

Category (7)

Office and accounting services, including part time secretarial and drafting, copy work or printing, supplies postage and telephone.

4 months @ $200 per month	800.00	
Transportation of samples 100 @ $0.60 each	60.00	
Analytical Work		
Prepare and assay for fluorspar, specific ion electrode 100 samples @ $2.50	250.00	
Wet assays - CaF_2, Pb, Zn, others at ranging prices/ determination 200 @ $4.00	800.00	
Spectrographic and X-ray emission analyses, (multiple compounds) 50 samples @ $10.00	500.00	2,410.00

Total Cost	$54,602.00
Government Share, 50%	$27,301.00

Respectfully submitted,

Joseph A. Porter
April 26, 1973

PHONE 618/382-4184 P. O. BOX 389

DiKor

a division of scrw-kor, inc.

CARMI, ILLINOIS 62821

April 13, 1973

Mr. Joe Porter
P. O. Box 447
Rosiclare, Illinois 62982

Re: Air drilling - Rosiclare Area
Hole specifications
Quotation

Dear Joe:

In reply to your verbal request of April 6th, DiKor has developed the following hole specifications and work sequence for your approval or correction:

Move in rig and accessory equipment (see detailed list below)
Drill 7-3/8" hole through overburden and cavities - 200 to 250' estimated depth
Run Range I, 5-1/2" OD casing, set on shoulder
Drill 4-7/8" hole to 1,000', more or less
Run Range I, 3" ID, 10 rd. thrd. tubing to T.D., and set on bottom and clamp.
Move off.

DiKor to furnish:

CP-650 air rig with 2 man crew and pusher, when necessary, on 12 hour/day work schedule.
1100' of 3-1/2" drill pipe
Model 43/15 percussion hammer with 4-7/8" bit
7-3/8" and 4-7/8" tri cone bits, as necessary
Mud pump and mud mixer
Up to $50 mud on footage contract
Time to run 5-1/2" casing when on footage contract

Owner to furnish:

Location and all permits
Roads to location
Move assist, if necessary
Water to location

Owner to furnish (continued):

5-1/2" casing for surface hole
3" ID tubing for long string
All mud - on hourly contract
All mud over $50 on footage contract

Quoted Cost - footage basis

Mobilization and demobilization - lump sum	$350.00
All hole drilling, per foot	$4.00
First $50.00 of mud and/or chemicals required	
Used, range I, 5-1/2" casing, delivered to job per foot	$1.40
Rig time, per hour for coring, testing, wait on orders, run long string of casing, etc.	$40.00

Quoted Cost - Daily rate

Mobilization and Demobilization, lump sum	$350.00
All hours, per hour	$45.00
Percussion hammers, each, lump sum rent	$250.00
All bits, at DiKor cost	
Mud, and/or chemical at DiKor cost plus 10%	
5-1/2", Range I, used casing, delivered, per foot	$1.40

Joe, I believe this covers most of the details we discussed; should you have questions or comments, please let me know. We do have a CP-650 rig in yard at this time and could move on your project within 2-3 days. Thanks for this opportunity of working with you again.

Yours very truly,

DIKOR

B. G. Harmon
President

BGH:kc

BOYLES BROS. DRILLING CO.

COPY

EXHIBIT A

1. Mobilization - $ 1,000.00

2. a. Overburden and top section of holes (approximately 800 feet) to be drilled and cased with rotary drill

   b. Coring -

	NX Size	BX Size
0 - 500 -	$ ----	$ ----
500 - 1000 -	5.85	5.70
1000 - 1500 -	6.35	6.25
1500 - 2000 -	6.90	6.80
2000 - 2500 -	7.50	7.40

3. Reaming, if required - $ 22.50 per hour plus bit cost.

4. Setting up over holes drilled by rotary drill, cleaning out holes and making up drill string in preparation to core - $ 19.50 per hour.

5. Installing and removal of casing - $ 19.50 per hour.

6. Casing lost in hole, damaged or requested left in hole- NX $2.90 per foot
   BX $2.20 per foot

7. Cementing, to include waiting on cement to set and drilling cement, if required - $ 19.50 per hour plus cost of cement and additives f.o.b. jobsite.

8. Drill mud and additives, if needed - List price f.o.b. jobsite.

9. Delays for Client's convenience - $ 18.75 per hour.

10. Reimbursement to Boyles Bros. for bit cost in excess of eighty-five ($ .85) cents per foot.

11. Water truck for hauling water, if required - $ 12.50 per day plus $ .15 per mile driven.

12. Surveying of holes - $ 19.50 per hour plus rental cost of instrument.

13. Adequate roads and drill sites to be furnished at no cost to Boyles Bros.

BOYLES BROS. DRILLING COMPANY

Wallace Woodcock

Eastern District Manager

HICKS DOME ACCOUNT

AGREEMENT

THIS AGREEMENT, made and entered into this _____ day of _____, 19 _____, by and between HICKS DOME ACCOUNT, hereinafter referred to as "Company," and BOYLES BROS. DRILLING COMPANY, a Utah corporation, with its principal place of business at Salt Lake City, Utah, hereinafter referred to as "Contractor."

The Company has requested the Contractor and the Contractor has agreed to perform certain work and/or drilling and other services as hereinafter set forth, subject always to the terms, conditions and provisions herein contained.

In consideration of the payment of the amounts herein stipulated and in consideration of the mutual agreements hereinafter contained, the parties hereby agree as follows:

A. THE CONTRACTOR AGREES:

1. To do the work and provide the services and materials as particularly set forth in Exhibit "A" attached hereto and made a part hereof at the rates set forth therein.

2. Labor and Machinery.

(a) To supply all necessary equipment, industrial diamonds, diamond drill machinery, power therefor, and labor; all labor, diamond wear loss, and all other operating expenses, except as hereinafter specifically provided, shall be at the Contractor's cost and expense.

(b) To supply all necessary rotary drill equipment, separate compressor if required, down-the-hole hammer or drill collars, down-the-hole or tricone bits, labor, and fuel. All operating expenses except as herein specifically provided shall be at the Contractor's cost and expense.

3. Size of Core and Recovery.

(a) That all core holes shall be drilled with double tube core barrels of sizes provided for in Exhibit "A" attached hereto, and that the drill crew shall exercise reasonable care and precaution to recover as high a percentage of core as the nature of the grounds drilled will permit, and shall deliver all such core at the drill site to the person or persons designated by the Company.

(b) That all non-core holes shall be drilled in the manner and size provided for in Exhibit "A" attached, and if required by Exhibit "A", the crews shall collect dust or wash samples and shall deliver them at the drill site to the person or persons designated by the Company.

4. Depth and Measurement of Holes and Completion Thereof.

(a) That no hole shall exceed the maximum depth set forth in Exhibit "A" attached hereto, and Contractor shall use its best endeavors to complete all holes according to the specifications, but should cavities or loose or caving material be encountered of such a nature as to prevent successful completion of any hole, it does not guarantee to drill to any certain depth, but shall drill as deep as practicable, under the conditions, and shall be paid for such hole or holes at the rates specified for all footage completed.

(b) That in the event other work or deeper drilling, other than is provided herein, is desired by the Company, such other work or drilling shall be performed under conditions and at such rates as may be agreed upon in a written instrument supplemental to the within agreement, and such other work or drilling shall not be performed until such supplemental agreement is in writing and executed by the parties.

(c) That measurements of all drill holes shall be from the original contour of the ground except in such cases where the Company prepares drill stations, in which event measurements shall be from the collar of holes.

5. Employer's Liability and Workmen's Compensation.

That it shall be subject to and operate under all applicable Federal and State Enactments regarding Employer's Liability, Workmen's Compensation, Federal Social Security and Unemployment Compensation Insurance, expressly covenanting and agreeing that its employees engage on the work herein undertaken to be done by it are not and shall not be treated or considered as the servants or employees of the Company.

6. Safety Requirements.

That in the prosecution of the work covered by this contract, it shall use such methods as are reasonably consistent with safety, both as concerns its officers, agents and employees, and the property of the Company, its officers, agents and employees, and the public in general.

B. THE COMPANY AGREES:

1. Location of Work and of Holes and Safekeeping of Core.

That prior to any operation it shall have determined the location of the work to be performed by the Contractor and the location, depth, and angle of each drill hole, and shall have made provisions for the safekeeping of all cores and sludges to be recovered. It shall provide containers for the storage of said samples unless specific arrangements that the Contractor supply containers are listed in attachment "A", and shall keep such records as may be deemed advisable in respect to same.

2. Drilling Under Extraordinary Conditions.

That in the event it becomes necessary to drill from any location where barges or the driving of piles are required for foundation, it will furnish and supply all such foundations to the satisfaction of the Contractor.

3. Indemnity for Delays.

That it will save harmless and indemnify the Contractor for and against any delays caused through or by any negligence or fault on its part, its officers or employees, to the extent and in the amount of all labor and expense bills incurred by the Contractor during and by reason of such delays, provided, however, that in the case of underground or surface drilling where the Company supplies power for drilling, the Contractor agrees to accept the usual mine operating conditions, relieving the Company of liability for loss of time occasioned by power interruptions or occasioned by any other cause beyond the Company's control.

4. Terms of Payment.

(a) Contractor shall invoice the Company at the end of each calendar month for work done during such period and the Company will make payments to the Contractor for such work at the rates and according to the terms herein specified, within ten days after presentation of invoice.

(b) That upon execution of this agreement it shall deposit with the Contractor the sum of $_____, it being specifically agreed that such sum or any portion thereof may be drawn upon by the Contractor at any time the Company shall be in arrears of any of the payments as hereinbefore provided, and if the full amount of such deposit is not drawn upon, then such deposit shall apply as far as possible on the final payment and any portion of said deposit remaining after final settlement hereunder shall forthwith be released by the Contractor to the Company.

5. Occupation of Streets, Alleys, and Public Places.

That whenever, in the performance of the work hereunder or in preparation for same, it may be necessary to occupy, use or obstruct any street, highway, private way or public place, or to do anything whatever in connection with public property, or whenever it shall be necessary in order to comply with building laws or local, state or national ordinances, laws or regulations, it shall procure, free of all cost and expense to the Contractor, all necessary permits or permission therefor, and it shall indemnify and save harmless the Contractor from and against all liability, costs or expenses resulting from the failure to secure such permits or permission.

6. Right of Entry and Removal of Property.

(a) To provide at its own expense, all rights of way, both of ingress and egress, and the peaceable possession of all real property that may be required in connection with said work, including real property upon which all necessary temporary buildings and other facilities may be erected, or placed, and to save the Contractor harmless from any and all damages, claims, demands, costs or charges of whatsoever kind or character incident to the occupation and use of said real property.

(b) That upon completion of such work by the Contractor, the Contractor shall have the right to remove, within a reasonable length of time, all temporary buildings and other fixtures, trade fixtures, machinery, equipment, appliances and facilities placed upon such real property.

7. To obtain at its cost all necessary federal, state, county and city and other licenses and permits required for the performance of the work herein.

C. IT IS MUTUALLY UNDERSTOOD AND AGREED BY AND BETWEEN THE COMPANY AND THE CONTRACTOR:

1. Transportation of Crews and Equipment.

That the Contractor shall pay all cost and expense in connection with transportation of crews and equipment to the property and return on completion of work under this agreement.

2. Commencement and Execution of Work.

Work under this agreement shall commence in early May.

3. Force Majeure.

That neither party to the agreement shall be liable for any loss or damage caused by reason of strikes, accidents, acts of God, action of the elements, or any other causes beyond its control.

4. Supplement Agreement.

That no representations, promises, agreements or understandings other than those contained herein shall be binding upon the parties hereto, except where the same are set forth under a written instrument supplemental to or superseding the within agreement and such instrument shall be duly executed by the parties hereto.

5. Notice.

(a) Any notice required to be given by the Company shall be in writing and shall be properly given if such writing is delivered personally to or mailed by registered mail addressed to the Contractor as follows:

Boyles Bros. Drilling Company
~~[illegible]~~ Post Office Box 1158
~~[illegible]~~ Murfreesboro, Tennessee 37130
~~[illegible]~~

(b) Any notice required to be given by the Contractor shall be in writing and shall be properly given if such writing is delivered personally to or mailed by registered mail to the Company as follows:

Mr. Joseph Porter
Post Office Box 447
Rosiclare, Illinois 62982

6. Laws Applicable.

This agreement shall be interpreted and any dispute arising hereunder shall be determined in accordance with the laws of the State of Utah.

7. Assignments.

This agreement shall be binding upon and shall inure to the benefits of the parties hereto, their respective successors and assigns, provided, however, that the same shall not be assignable by the Company until the consent in writing of the Contractor shall have first been had and obtained thereto.

8. The party defaulting under any of the provisions of this agreement shall be liable to the other party for all costs and attorney's fees incurred by the other party in enforcing the terms of this agreement or recovering damages for the breach thereof.

IN WITNESS WHEREOF, the Agreement has been executed by the parties hereto the day and year first above written.

BOYLES BROS. DRILLING COMPANY

ATTEST:

Deborah Harrell
Secretary

Wallace Woodcock
Its Eastern District Manager

HICKS DOME ACCOUNT

ATTEST:

By: John L. Carroll

April 30, 1973

OME-6873 (Fluorspar et. al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

INTERIM REPORT NO. 3

TO: Harold Kirkemo, Chief
Office of Minerals Exploration
Washington, D. C. 20244

FROM: Robert D. Trace
U. S. Geol. Survey
Princeton, Kentucky 42445

On April 25, 1973, Allen Heyl, Ron Worl and the writer visited the subject project, examined new core (OME 3), and discussed future plans with Joe Porter, operator's geologist.

Since the writer's last report (2/12/73):

1. OME 3 was drilled from 943 to 2,377 TD. According to Porter, assays of 72 feet of core (2,038-2,110.5) showed an average of 8.8 percent CaF_2. Heyl took selected samples from the hole for mineralogic work.

2. OME 4 was drilled from 175 to slightly over 1,000. Cavities are causing drilling difficulties.

The principal purpose of the visit was to discuss an extension of the exploration contract. The writer believes that additional drilling is justified. The three holes now bottomed have greatly enlarged the brecciated Plattin Limestone horizon that contains substantial (10 percent plus or minus) fluorite mineralization. Although the grade is below what can be mined currently, the three widely spaced holes suggest that a large area of unusually thick albeit low grade fluorspar is present. Additional drilling stands a fair chance of even further enlarging the mineralized horizon. The area shows great potential as a future resource.

The holes proposed by Porter generally appear to be reasonably located. Drilling to date (private and OME) has roughly outlined the center of the breccia body and the surrounding structure contour pattern (See Porter's map). In simplest terms, Porter proposes to drill additional holes around the unexplored parts of the flanks of the dome, in order to intersect the Plattin horizon at about the same "structural distance" from the dome center as the best mineralized previously drilled holes. This is logical, based on our current state of knowledge.

Porter has suggested that the top 500 to 1,000 feet be drilled with a rotary, rather than cored. Both Heyl and the writer would have preferred to core drill the entire hole, but in view of the drilling difficulties and attendant high costs, and the apparent concentration of mineralization at a predictable elevation--the writer would not object to the rotary rig proposal.

Arthur D. Trace
4/30/73

Cc: Heyl

Kirk,

I presume you got the message via Gus.

Bob

Bob Trace

Box 447 Phone (618) 285-6685

Joseph A. Porter

Geologist

Rosiclare, Illinois

62982

April 26, 1973

INITIALS	CODE
Cal	120
	120

Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
U. S. Geological Survey
Matomic Building
Room 865
1717 H Street NW
Washington, D.C. 20006

Re: OME-6873 (Fluorspar, et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Kirkemo:

Enclosed is an original and two copies of my estimate of costs for Stage II of the proposed extension of the Exploration Contract. Bids are included. This is to supplement the previously submitted application.

The application was for a total of six holes. The costs cited here are for two holes. If it is possible to drill more than two holes the estimate can be revised essentially directly proportional to the number drilled.

You will note the estimate and plans for drilling methods are not concise. This is a result of past experience which indicates costs and conditions of the individual holes can vary widely.

Total estimated costs for the two holes is $54,602.00. Minimum attainable dost is probably between $45,000 and $48,000. Cost per hole would tend to be reduced if it is possible to sustain a continuing program beyond two holes.

Sincerely yours,

Joseph A. Porter

JAP/kt

Enclosures: 3
Copies: G. Kerlin
J. L. Carroll
file

PROPOSED AMENDMENTS TO EXHIBIT A

for

STAGE II

of

EXPLORATION CONTRACT

HICKS DOME ACCOUNT
OME-6873

The purpose of Stage II is to continue to explore by rotary and diamond core drilling for fluorspar-beryllium-rare earths-thorium-niobium ores in mineralized breccias in the Hicks Dome cryptovolcanic structure, as outlined in the original application and Exhibit A of the contract.

The following general modifications are proposed for Stage II work.

The holes will be started with air rotary and down-hole-hammer. The objective of using air rotary is to attempt to get through cherty overburden, cavities and the very hard Grassy Knob chert in the top 750 to 900 feet of hole. Experience has shown that this section has been the most expensive to drill in terms of direct costs and time. Boyles Bros. have made their coring bid on this basis and do not want to drill this section unless on an hourly basis.

The present contractor has declined to bid on more work. Boyles Bros. have submitted a bid which is essentially $1.20 per foot higher. In addition, they will charge for running casing and certain other specified items.

With the present arrangement, the geologist-supervisor, with only casual help handling core, is probably spread too thin for best use. The situation will be aggravated by use of air rotary which will speed up the rate of drilling and increase the rate at which core and cuttings will have to be examined, sampled, processed and interpreted. In order to help alleviate the situation provisions are made herein to hire an assistant geologist and/or sampler at a combined rate of $600/month. If an assistant can be hired to work under Porter's supervision, it may not be necessary to charge all of Porter's time to the project. This would allow staying within the budget of $2,000 per month if an assistant is hired at a rate not exceeding $600 per month.

General Provisions

A bulldozer no smaller than a Caterpillar D-4 shall be used to prepare access roads and drill sites.

All drill holes shall be cased as necessary and completed not less than standard BX (nominal diameter 1-5/8 inches) core size or equivalent wire line size.

The Government will not contribute to the cost of holes abandoned without prior Government approval confirmed in writing, casing left in the hole at the request of the Operator, or holes drilled closer than 100 feet to the outer boundary of the project area.

Significantly mineralized core recovered shall be split and one split assayed for fluorspar. Intervals selected shall be determined by the geologist-supervisor in charge. The remaining core shall be stored in proper sequence with the unsampled core. The stored core shall be available for additional analyses as necessary and for Government inspection and possible use. With prior Government approval, the Operator may dispose of the stored core.

Preliminary assays of the fluorspar content of sampled intervals may be used to select samples for subsequent more detailed and confirmatory analyses of the fluorspar content, and to determine the content of beryllium, lead, zinc, rare earths, thorium, and niobium.

True copies of certificates of assay or analysis of all samples analyzed shall be submitted with the Operator's monthly reports, which shall include a log of the drilling completed and the location of all samples collected and assayed or analyzed.

The Operator shall provide such supervision, labor, and technical services as may be required to complete the work in a satisfactory manner.

Description of the Work

The work shall consist of bulldozing access roads, preparing drill sites and drilling with rotary and/or diamond core drilling equipment sets of two drill holes to depths of approximately 2,500 feet.

An air rotary drill equiped also to use a down-hole-hammer will be utilized to start OME-5 and OME-6 at the same time. It will then be demobilized and diamond core equipment will be used to complete the holes. If additional holes beyond OME-5 and OME-6 are drilled, it should be possible to mobilize the air rotary equipment to start at least two holes at a time.

An attempt will be made to drill with air rotary to at least 750 feet. If excessive cavities or underground water are encountered, it may be necessary to case the hole and then commence coring before that depth is reached.

The locations and sequence of holes to be drilled was previously given.

None of the proposed holes shall exceed 3,000 feet in depth and all are to be directed into breccia zones.

Upon completion of the work the Operator shall restore to its approximate original condition any land surface where land use has been impaired by the project work.

Estimate of Cost

Utilization of the two different methods of drilling and the difficulties that are commonly encountered in drilling on the subject properties make cost estimation difficult. Availability and questionable applicability of the rotary may dictate that the core drill should be used for the top 750 feet. For this reason, an estimate of the cost on an hourly basis is also given though not included in the total cost.

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Category (1) Independent Contracts

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40 hrs. @ $12.50	$ 500.00	500.00

Miscellaneous tractor time supplying rig, bringing out samples.

40 hrs. @ $4.00	160.00	160.00

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Mud used	700.00	
Rig time	800.00	
Drill 1500' @$4/ft.	6,000.00	
	$7,850.00	7,850.00

Alternative - Cost if cored from surface to 750' at $22.40/hour plus bits and material.

8 hrs. x $22.50 = $180/shift		
Estimate 30 shifts to 750'		
30 x $180 =	5,400.00	
Bits @ $2.50/ft.	1,875.00	
Mud 20 bags @ $4.00	80.00	
Cement:		
Lumnite 10 bags @ $12.00	120.00	
Portland 10 bags @ $2.00	20.00	
Cost/hole	$7,495.00	
Mobilization	$1,000.00	1,000.00
Basic Cost (Minimum) Diamond Drilling 3500' NX	23,675.00	
Rig up & set casing		
40 hrs. @ $19.50	780.00	
Survey, 16 hrs. @ $19.50	312.00	
Pull casing 20 hrs. @ $19.50	390.00	
Additional bit cost @ $0.65/ft.	2,275.00	
Total Basic Cost	$27,4~~5~~32.00	27,432

Additional Possible Cost for Hole Stabilization

Reaming 80 hrs. @ $22.50	1,800.00	
Bits for reaming @ $1/ft., 1000	1,000.00	
Installing and Reaming Casing 80 hrs. @ $19.50	1,560.00	
Cement Time 40 hrs. @ $19.50	780.00	
Lumnite 20 bags @ $12/bag	240.00	
Portland 40 bags @ $2/bag	80.00	
Casing lost 400' NX @ $2.90	1,160.00	
Total Hole Stabilization Cost	6 620.00 ~~$6,580.00~~	
TOTAL COST OF CONTRACTS		$43,5~~4~~62.00

Category (2) Personal Services

1 Supervisor-Geologist 4 months @ $1400 per month	$ 5,600.00	@ 1250 =	5000 3000 7,000
1 Assistant Geologist-Sampler 4 months @ $600 per month	2,400.00		$ 8,000.00

Category (3)

Core boxes 400 @ $1.25	500.00	
Sample bags 300 @ $0.50 (rotary samples @ 10' intervals)	150.00	650.00

Category (7)

Office and accounting services, including part time secretarial and drafting, copy work or printing, supplies postage and telephone.

4 months @ $200 per month	800.00	@ 100	400
Transportation of samples 100 @ $0.60 each	60.00		
Analytical Work			
Prepare and assay for fluorspar, specific ion electrode 100 samples @ $2.50	250.00		
Wet assays - CaF_2, Pb, Zn, others at ranging prices/ determination 200 @ $4.00	800.00		
Spectrographic and X-ray emission analyses, (multiple compounds) 50 samples @ $10.00	500.00		2,410.00
			53,220
Total Cost			$54,602.00
Government Share, 50%			$27,301.00
			26,610

Respectfully submitted,

Joseph A. Porter
April 26, 1973

PHONE 618/382-4184 P. O. BOX 389

DiKor

a division of scw-kor, inc.

CARMI, ILLINOIS 62821

April 13, 1973

Mr. Joe Porter
P. O. Box 447
Rosiclare, Illinois 62982

Re: Air drilling - Rosiclare Area
Hole specifications
Quotation

Dear Joe:

In reply to your verbal request of April 6th, DiKor has developed the following hole specifications and work sequence for your approval or correction:

Move in rig and accessory equipment (see detailed list below)
Drill 7-3/8" hole through overburden and cavities - 200 to 250' estimated depth
Run Range I, 5-1/2" OD casing, set on shoulder
Drill 4-7/8" hole to 1,000', more or less
Run Range I, 3" ID, 10 rd. thrd. tubing to T.D., and set on bottom and clamp.
Move off.

DiKor to furnish:

CP-650 air rig with 2 man crew and pusher, when necessary, on 12 hour/day work schedule.
1100' of 3-1/2" drill pipe
Model 43/15 percussion hammer with 4-7/8" bit
7-3/8" and 4-7/8" tri cone bits, as necessary
Mud pump and mud mixer
Up to $50 mud on footage contract
Time to run 5-1/2" casing when on footage contract

Owner to furnish:

Location and all permits
Roads to location
Move assist, if necessary
Water to location

Owner to furnish (continued):

5-1/2" casing for surface hole
3" ID tubing for long string
All mud - on hourly contract
All mud over $50 on footage contract

Quoted Cost - footage basis

Mobilization and demobilization - lump sum	$350.00
All hole drilling, per foot	$4.00
First $50.00 of mud and/or chemicals required	
Used, range I, 5-1/2" casing, delivered to job per foot	$1.40
Rig time, per hour for coring, testing, wait on orders, run long string of casing, etc.	$40.00

Quoted Cost - Daily rate

Mobilization and Demobilization, lump sum	$350.00
All hours, per hour	$45.00
Percussion hammers, each, lump sum rent	$250.00
All bits, at DiKor cost	
Mud, and/or chemical at DiKor cost plus 10%	
5-1/2", Range I, used casing, delivered, per foot	$1.40

Joe, I believe this covers most of the details we discussed; should you have questions or comments, please let me know. We do have a CP-650 rig in yard at this time and could move on your project within 2-3 days. Thanks for this opportunity of working with you again.

Yours very truly,

DIKOR

B. G. Harmon
President

BGH:kc

BOYLES BROS. DRILLING CO.

EXHIBIT A

1. Mobilization - $ 1,000.00

2. a. Overburden and top section of holes (approximately 800 feet) to be drilled and cased with rotary drill

   b. Coring -

	NX Size	BX Size
0 - 500 -	$ ----	$ ----
500 - 1000 -	5.85	5.70
1000 - 1500 -	6.35	6.25
1500 - 2000 -	6.90	6.80
2000 - 2500 -	7.50	7.40

3. Reaming, if required - $ 22.50 per hour plus bit cost.

4. Setting up over holes drilled by rotary drill, cleaning out holes and making up drill string in preparation to core - $ 19.50 per hour.

5. Installing and removal of casing - $ 19.50 per hour.

6. Casing lost in hole, damaged or requested left in hole- NX $2.90 per foot
   BX $2.20 per foot

7. Cementing, to include waiting on cement to set and drilling cement, if required - $ 19.50 per hour plus cost of cement and additives f.o.b. jobsite.

8. Drill mud and additives, if needed - List price f.o.b. jobsite.

9. Delays for Client's convenience - $ 18.75 per hour.

10. Reimbursement to Boyles Bros. for bit cost in excess of eighty-five ($ .85) cents per foot.

11. Water truck for hauling water, if required - $ 12.50 per day plus $ .15 per mile driven.

12. Surveying of holes - $ 19.50 per hour plus rental cost of instrument.

13. Adequate roads and drill sites to be furnished at no cost to Boyles Bros.

BOYLES BROS. DRILLING COMPANY

Wallace Woodcock
Eastern District Manager

HICKS DOME ACCOUNT

COPY

AGREEMENT

THIS AGREEMENT, made and entered into this _____ day of _____, 19 _____, by and between HICKS DOME ACCOUNT, hereinafter referred to as "Company," and BOYLES BROS. DRILLING COMPANY, a Utah corporation, with its principal place of business at Salt Lake City, Utah, hereinafter referred to as "Contractor."

The Company has requested the Contractor and the Contractor has agreed to perform certain work and/or drilling and other services as hereinafter set forth, subject always to the terms, conditions and provisions herein contained.

In consideration of the payment of the amounts herein stipulated and in consideration of the mutual agreements hereinafter contained, the parties hereby agree as follows:

A. THE CONTRACTOR AGREES:

1. To do the work and provide the services and materials as particularly set forth in Exhibit "A" attached hereto and made a part hereof at the rates set forth therein.

2. Labor and Machinery.

(a) To supply all necessary equipment, industrial diamonds, diamond drill machinery, power therefor, and labor; all labor, diamond wear loss, and all other operating expenses, except as hereinafter specifically provided, shall be at the Contractor's cost and expense.

(b) To supply all necessary rotary drill equipment, separate compressor if required, down-the-hole hammer or drill collars, down-the-hole or tricone bits, labor, and fuel. All operating expenses except as herein specifically provided shall be at the Contractor's cost and expense.

3. Size of Core and Recovery.

(a) That all core holes shall be drilled with double tube core barrels of sizes provided for in Exhibit "A" attached hereto, and that the drill crew shall exercise reasonable care and precaution to recover as high a percentage of core as the nature of the grounds drilled will permit, and shall deliver all such core at the drill site to the person or persons designated by the Company.

(b) That all non-core holes shall be drilled in the manner and size provided for in Exhibit "A" attached, and if required by Exhibit "A", the crews shall collect dust or wash samples and shall deliver them at the drill site to the person or persons designated by the Company.

4. Depth and Measurement of Holes and Completion Thereof.

(a) That no hole shall exceed the maximum depth set forth in Exhibit "A" attached hereto, and Contractor shall use its best endeavors to complete all holes according to the specifications, but should cavities or loose or caving material be encountered of such a nature as to prevent successful completion of any hole, it does not guarantee to drill to any certain depth, but shall drill as deep as practicable, under the conditions, and shall be paid for such hole or holes at the rates specified for all footage completed.

(b) That in the event other work or deeper drilling, other than is provided herein, is desired by the Company, such other work or drilling shall be performed under conditions and at such rates as may be agreed upon in a written instrument supplemental to the within agreement, and such other work or drilling shall not be performed until such supplemental agreement is in writing and executed by the parties.

(c) That measurements of all drill holes shall be from the original contour of the ground except in such cases where the Company prepares drill stations, in which event measurements shall be from the collar of holes.

5. Employer's Liability and Workmen's Compensation.

That it shall be subject to and operate under all applicable Federal and State Enactments regarding Employer's Liability, Workmen's Compensation, Federal Social Security and Unemployment Compensation Insurance, expressly covenanting and agreeing that its employees engage on the work herein undertaken to be done by it are not and shall not be treated or considered as the servants or employees of the Company.

6. Safety Requirements.

That in the prosecution of the work covered by this contract, it shall use such methods as are reasonably consistent with safety, both as concerns its officers, agents and employees, and the property of the Company, its officers, agents and employees, and the public in general.

B. THE COMPANY AGREES:

1. Location of Work and of Holes and Safekeeping of Core.

That prior to any operation it shall have determined the location of the work to be performed by the Contractor and the location, depth, and angle of each drill hole, and shall have made provisions for the safekeeping of all cores and sludges to be recovered. It shall provide containers for the storage of said samples unless specific arrangements that the Contractor supply containers are listed in attachment "A", and shall keep such records as may be deemed advisable in respect to same.

2. Drilling Under Extraordinary Conditions.

That in the event it becomes necessary to drill from any location where barges or the driving of piles are required for foundation, it will furnish and supply all such foundations to the satisfaction of the Contractor.

3. Indemnity for Delays.

That it will save harmless and indemnify the Contractor for and against any delays caused through or by any negligence or fault on its part, its officers or employees, to the extent and in the amount of all labor and expense bills incurred by the Contractor during and by reason of such delays, provided, however, that in the case of underground or surface drilling where the Company supplies power for drilling, the Contractor agrees to accept the usual mine operating conditions, relieving the Company of liability for loss of time occasioned by power interruptions or occasioned by any other cause beyond the Company's control.

4. Terms of Payment.

(a) Contractor shall invoice the Company at the end of each calendar month for work done during such period and the Company will make payments to the Contractor for such work at the rates and according to the terms herein specified, within ten days after presentation of invoice.

(b) That upon execution of this agreement it shall deposit with the Contractor the sum of $_____, it being specifically agreed that such sum or any portion thereof may be drawn upon by the Contractor at any time the Company shall be in arrears of any of the payments as hereinbefore provided, and if the full amount of such deposit is not drawn upon, then such deposit shall apply as far as possible on the final payment and any portion of said deposit remaining after final settlement hereunder shall forthwith be released by the Contractor to the Company.

5. Occupation of Streets, Alleys, and Public Places.

That whenever, in the performance of the work hereunder or in preparation for same, it may be necessary to occupy, use or obstruct any street, highway, private way or public place, or to do anything whatever in connection with public property, or whenever it shall be necessary in order to comply with building laws or local, state or national ordinances, laws or regulations, it shall procure, free of all cost and expense to the Contractor, all necessary permits or permission therefor, and it shall indemnify and save harmless the Contractor from and against all liability, costs or expenses resulting from the failure to secure such permits or permission.

6. Right of Entry and Removal of Property.

(a) To provide at its own expense, all rights of way, both of ingress and egress, and the peaceable possession of all real property that may be required in connection with said work, including real property upon which all necessary temporary buildings and other facilities may be erected, or placed, and to save the Contractor harmless from any and all damages, claims, demands, costs or charges of whatsoever kind or character incident to the occupation and use of said real property.

(b) That upon completion of such work by the Contractor, the Contractor shall have the right to remove, within a reasonable length of time, all temporary buildings and other fixtures, trade fixtures, machinery, equipment, appliances and facilities placed upon such real property.

7. To obtain at its cost all necessary federal, state, county and city and other licenses and permits required for the performance of the work herein.

C. IT IS MUTUALLY UNDERSTOOD AND AGREED BY AND BETWEEN THE COMPANY AND THE CONTRACTOR:

1. Transportation of Crews and Equipment.

That the Contractor shall pay all cost and expense in connection with transportation of crews and equipment to the property and return on completion of work under this agreement.

2. Commencement and Execution of Work.

Work under this agreement shall commence **in early May**.

3. Force Majeure.

That neither party to the agreement shall be liable for any loss or damage caused by reason of strikes, accidents, acts of God, action of the elements, or any other causes beyond its control.

4. Supplement Agreement.

That no representations, promises, agreements or understandings other than those contained herein shall be binding upon the parties hereto, except where the same are set forth under a written instrument supplemental to or superseding the within agreement and such instrument shall be duly executed by the parties hereto.

5. Notice.

(a) Any notice required to be given by the Company shall be in writing and shall be properly given if such writing is delivered personally to or mailed by registered mail addressed to the Contractor as follows:

Boyles Bros. Drilling Company
~~[illegible]~~ Post Office Box 1158
~~[illegible]~~ Murfreesboro, Tennessee 37130
~~[illegible]~~

(b) Any notice required to be given by the Contractor shall be in writing and shall be properly given if such writing is delivered personally to or mailed by registered mail to the Company as follows:

Mr. Joseph Porter
Post Office Box 447
Rosiclare, Illinois 62982

6. Laws Applicable.

This agreement shall be interpreted and any dispute arising hereunder shall be determined in accordance with the laws of the State of Utah.

7. Assignments.

This agreement shall be binding upon and shall inure to the benefits of the parties hereto, their respective successors and assigns, provided, however, that the same shall not be assignable by the Company until the consent in writing of the Contractor shall have first been had and obtained thereto.

2

8. The party defaulting under any of the provisions of this agreement shall be liable to the other party for all costs and attorney's fees incurred by the other party in enforcing the terms of this agreement or recovering damages for the breach thereof.

IN WITNESS WHEREOF, the Agreement has been executed by the parties hereto the day and year first above written.

BOYLES BROS. DRILLING COMPANY

ATTEST:

Deborah Harrell

Secretary

Wallace Woodcock

Its Eastern District Manager

HICKS DOME ACCOUNT

ATTEST:

By: John L. Carroll

2

Box 447 Phone (618) 285-6685

Joseph A. Porter

Geologist

Rosiclare, Illinois

62982

April 17, 1973

COPY
O. M. E.
RECEIVED
APR 16 1973

INITIALS	CODE
Cac	120 m
	120

Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
U. S. Geological Survey
Matomic Building
Room 865
1717 H Street NW
Washington, D.C. 20006

Re: OME-6873 (Fluorspar, et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Kirkemo:

Enclosed is an original and one copy of an application for an extension of OME-HDA Exploration Contract 2306.

Costs cited therein should be considered preliminary estimates. I will submit detailed estimates when sufficient bids have been received. At that time I will also submit several suggested amendments that seem reasonable in light of recent experience.

If this application can be viewed favorably HDA would probably increase the existing performance bond in lieu of lein-subordination agreements.

I trust this form of application is satisfactory. Please advise if you need additional data.

Sincerely yours,

Joseph A. Porter

JAP/vb

Enclosures: 2
Copies: G. Kerlin
J. L. Carroll
file

APPLICATION TO EXTEND

OME-HDA EXPLORATION CONTRACT #2306

by

Joseph A. Porter

April 12, 1973

CONTENTS

Summary 1

Proposed Drilling 2

Drilling Methods 5

Status of Present Contract 6

Costs for Proposed Work 6

FIGURES

Location of Proposed Drilling 2

Structure Contours drawn on the base
of the Maquoketa shale 3

APPLICATION TO EXTEND

OME-HDA EXPLORATION CONTRACT #2306

by

Joseph A. Porter

Summary: The present contract is approximately 75%-80% completed. An estimated $15,000 will remain when the contract work is completed. Application is made here to extend the present contract by six drill holes costing an estimated $144,000.

General geologic results and interpretation and operational data have been given in previously submitted monthly reports. Results are considered to be moderately successful and rather encouraging. As outlined in the original application, a favorable zone, probably stratigraphic, in a unique geologic environment has been established. The zone has been shown to be identifiable and persistent.

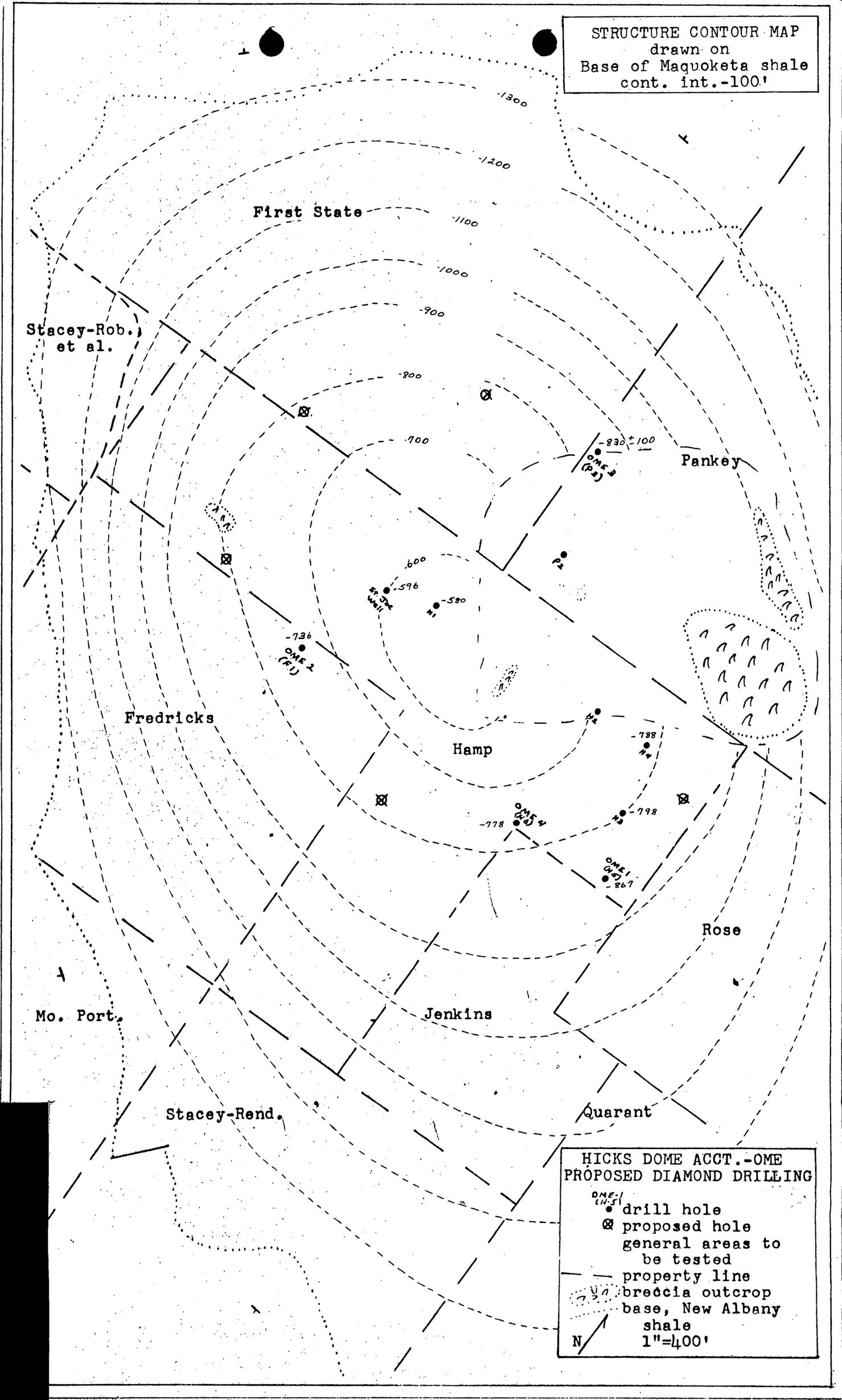
The holes completed are thinly spread over a very large area. Because of the low density of holes the exact form and possible grade of the zone has not been clearly established. Large tonnages are indicated. All of the holes have added to the overall lateral extent of the mineralization. None have tended to limit or restrict the extent. Average grade to date is low.

The drilling as proposed should more comprehensively delineate the extent, trend and character of the mineralization. It is possible that as additional data are acquired subsequent holes may be more judiciously located and higher average grade mineralization will be delineated.

The proposed drilling may not be sufficient to complete the project if results continue to be encouraging. Location of holes beyond those cited herein is not presently feasible.

Proposed Drilling: The six proposed holes will be planned to a depth of 2,500 feet. As was the case in the previous drilling, it may be possible to complete them at shallower depths.

The map given on the following pages shows the general areas to be tested, tentative hole locations and previous drilling. Proposed holes are numbered in the probable sequence in which they will be drilled. Also given is a structure contour map drawn on the base of the Maquoketa shale, based on current information.


STRUCTURE CONTOUR MAP
drawn on
Base of Maquoketa shale
cont. int.-100'
-1300
-1200
-1100
-1000
-900
-800
-700
-600
First State
Stacey-Rob.
et al.
Pankey
Fredricks
Hamp
Rose
Jenkins
Mo. Port.
Stacey-Rend.
Quarant
-830 ±100
OME 3
(P-3)
P2
-596
St. Joe
well
-580
N1
-736
OME 2
(F-1)
N2
-788
N4
-798
N3
-778
OME 4
(H-3)
OME 1
(H-5)
-867
HICKS DOME ACCT.-OME
PROPOSED DIAMOND DRILLING
OME-1
(H-5)
drill hole
proposed hole
general areas to
be tested
property line
breccia outcrop
base, New Albany
shale
N
1"=400'

All locations are tentative. More exact siting will be done when the holes are collared.

1. OME-5. This hole is to be drilled on the northwest flank of the dome in designated Area I. Hole OME-3 intersected recognizable "purple breccia" in or very near the central core or neck of the breccia body. This zone was not recognized in the previously drilled hole P-2, closer to the center of the core. This trend infers that the northwest flank of the dome may be mineralized similar to or better than the southeast flank. Of possible significance is the fact that the beds are probably dipping more steeply on this flank of the dome.

It is presently estimated that this hole will intersect the base of the Maquoketa at approximately the -800' contour. The mineralized zone, if present, should be encountered between hole depth of 1,950' to 2,150'.

Establishing mineralization on the northwest flank would represent a substantial contribution to the tonnage possibilities.

2. OME-6. OME-6 is to be drilled down dip from the intersections in H-3 and H-4 in Area II. This hole should be drilled before efforts are made to extend the known zone to the south and west. This hole should more clearly define the width, test the possible effects of the nearby Pankey breccia and test the effects on grade of pinching down of the breccia body. Another important factor is this hole is in the direction of the Rose mine, the highest grade and best mineralized breccia in the general area.

Depth of hole and position of intersections should be similar to OME-1.

3. OME-7 and OME-10. These holes will be drilled to extend and define the known "purple breccia" in Area III in a south and westerly direction from holes OME-1 and OME-4. It is tentatively located to structurally duplicate Hamp-3.

Regardless of the results of OME-7, one additional hole, tentatively OME-10, should be drilled in the same general area for the same reason.

4. OME-8. This hole is to be drilled in the south part of Area I. The purpose of the hole is to add definition to the mineralization in hole OME-2. If the mineralized zone is encountered in this hole it may serve to greatly extend the zone on the southeast flank or help connect any zone encountered on the northwest flank by OME-5.

This hole should intersect the base of the Maquoketa shale at approximately the -800 foot contour, about 70 feet lower than OME-2.

5. OME-9. This hole is tentatively spotted in Area I but is dependent on the results of OME-5 and OME-8. If both are negative this hole might be better utilized if drilled to help delineate the mineralization on the southeast and south part of the dome.

Another alternative location would be along the northeast flank of the dome in the Pankey breccia, in an attempt to extend the known mineralized zone to the northwest. There is some indication that the Pankey breccia may not persist to depth beneath the apparent outcrop.

Drilling Methods: Most of the drilling problems encountered to date have been the result of cavities and the very hard Grassy Knob chert, both generally occuring at depths of less than 1,000 feet. In an effort to reduce costs and speed up the work an attempt will be made to modify the drilling method. It is proposed that we attempt to do the initial 500 to 1,000 feet of each hole by drilling as far as possible with a combination air or mud rotary and down the hole hammer.

If each hole can be drilled at least 500 feet use of this type of machine should be worthwhile. At this depth there would be reasonable assurance that the hole could be drilled NX size through the Grassy Knob.

The holes will be completed with diamond drilling equipment in a manner similar to that used before. Attempts will be made to keep the hole NX size.

Though bids are not yet in for the rotary work, it is felt that a substantial saving may be effected, particularly if several of the holes can be started at the same time on the same mobilization fee.

Several factors tend to limit the capability of the air rotary-down hole hammer machines. If very heavy ground water is encountered at depth the resulting back pressure makes the hammer ineffective. If drilling rotary with fluids and all are lost, replacement of the fluid may make it too expensive to continue.

Status of Present Contract: The present contract is estimated to be about 80% completed in terms of footage drilled. Expenditures are summarized as follows:

Submitted thru Feb.	$46,469
Estimated March	9,040
Excess bit cost to date	4,500
Estimated to finish OME-4	19,605
Total	$79,614
Budgeted cost of contract	$95,450
Estimated completed cost	79,614
Remaining	$15,836

Costs for Proposed Work: Work being completed on the present contract is based on bids submitted during the early part of 1972. Costs for the extension of the contract will be greater.

Joy Manufacturing, the present contractor has declined to bid on further work. This is because of prior commitments and difficulties encountered on the present job. Other bids are being sought.

Due to general inflationary pressures and poor profit experiences on previous work, I am presently estimating the contract costs to be approximately $20,000 per hole instead of the $18,772 previously estimated. Each hole will cost approximately $24,000 total.

A detailed estimate of all costs based on bids to be received and past experience will be submitted when necessary data are available. A tentative, preliminary breakdown of estimated costs follows:

6 holes X $20,000	=	$120,000
Other costs		22,000
Total		$144,000

Time required to complete the drilling is presently estimated to be eight months.

Respectfully submitted,

Joseph A. Porter
April 12, 1973

INTERIM REPORT NO. 2 February 12, 1973

TO: Harold Kirkemo, Chief
Office of Minerals Exploration
Washington, D. C. 20244

FROM: Robert D. Trace
U. S. Geol. Survey
Princeton, Ky. 42445

OME-6873 (Fluorspar et. al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

OFFICIAL COPY
O. M. E.
RECEIVED
FEB 14 1973
INITIALS | COPY
Cac | 120M
HK | 120
AW

At Joe Porter's request, I visited the subject project on February 9, 1973, and briefly examined core from OME No's 2 and 3. Also, we discussed the status of OME 3, and the possibility of a fifth drill hole.

Since my prior examination on December 3, 1972:

1. OME 1 was completed at 2326 feet TD.
2. OME 2 was drilled from 214 to 2200 feet TD.
3. OME 3 was started and drilled to 943 feet.
4. OME 4 was started and drilled to 175 feet.

(1) OME 1 was discussed in the operator's December monthly report and my December 3 interim report. I have asked Porter to send Allen Heyl, U.S. Geol. Survey, a few pulps to Denver for check assays.

(2) OME 2 may be somewhat leaner in grade than OME 1; it is difficult to judge, however, because of the nature of the mineralization (see below). The assays will have to tell the story.

The breccia in this hole is generally coarser than the fine "purple breccia" ore zone in OME 1. The fluorite also is coarser grained and is in somewhat more discrete but very erratically distributed tiny veinlets and blebs. Only small quantities of the fine "purple breccia" are present. This makes an eyeball grade estimate very difficult. The mineralized zone, roughly from the upper 1800's to between 2000 and 2100, is in approximately the same stratigraphic position as the previously drilled "ore zones". The mineralization, however, does not cut off sharply, either top or bottom. The principal value of this hole is that it shows significant mineralization (whatever the grade) over 1500 feet west of OME 1.

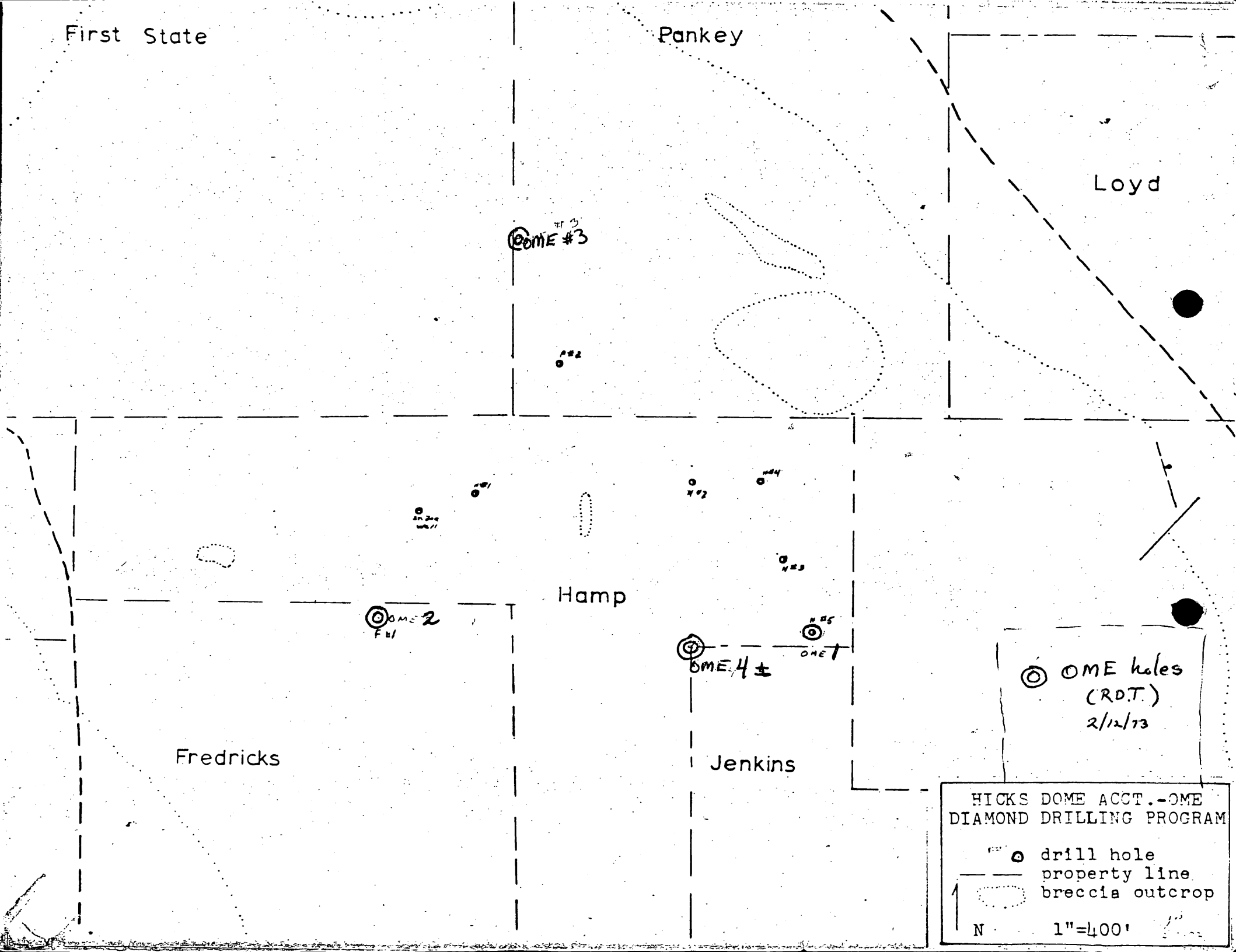
(3) OME 3 has had drilling problems, although at the time of examination, drilling was moving along all right. Porter, however, may want to discontinue this hole around 1200 feet.

Much of this hole has been in coarse breccia--too much so, according to Porter--as in the Pankey No. 2 hole, where much of the hole was in coarse breccia and was very poorly mineralized. He thinks that OME 3 is too close to the central part of the massive coarse breccia that comes to the surface and that the best mineralization is off on the flanks, where late "blowups" have not scattered the "purple breccia" mineralization.

I would be inclined to let Porter drop OME 3 at around 1200 feet plus or minus, if he so requests. If money is available for a fifth hole, then it should be placed in the general vicinity of OME 3 but downdip and away from the central coarse breccia mass. Although the risk is higher in this area, as compared to further south near OME 1 and 2, the possibility of finding significant mineralization in the north part of the area and thus greatly enlarging the target area, makes it worth the risk.

(4) OME 4 is not far enough along for any useful comments.

Robert D Trace
2/12/78


First State
Pankey
Loyd
OME #3
Hamp
OME 2
OME 4 ±
OME 1
Fredricks
Jenkins
OME holes
(RDT)
2/12/73
HICKS DOME ACCT.-OME
DIAMOND DRILLING PROGRAM
drill hole
property line
breccia outcrop
N
1"=400'

MME Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code
1/23/73		120
		220

January 23, 1973

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. John L. Carroll
345 Park Avenue, Room 4120
New York, New York 10022

Re: OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Carroll:

This will acknowledge receipt of the original copy of the Performance Bond for the subject contract which has been signed by the three partners. We will attach this to the Government's copy of the contract. filed

Enclosed is a carbon copy of the Performance Bond, which the partners should sign as principals. The bond should be attached to the Operator's copy of the contract.

Thank you for handling the exchange of copies, and for obtaining the required signatures.

Sincerely yours,

Harold Kirkemo

Harold Kirkemo
Chief, Office of
Minerals Exploration

Enclosure

cc: Director's Reading File
Mineral Resources
OME docket
OME Reading File
Branch of Financial Management
Robert A. Laurence, Knoxville, Tennessee
Mr. Kirkemo

HKirkemo/gla 1-23-73

MME Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code

November 2, 1972

Memorandum

To: The File

From: Robert A. Weeks

Subject: Phone call re: OME-6873 (Fluorspar et al)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Joseph Porter called, November 2. Drilling had progressed to 1236 ft., but is now at 1000 ft., as a result of drilling difficulties experienced in a cavernous section encountered at the Devonian-Silurian boundary at 998 ft. The cavernous part was initially successfully drilled by exercising great care. However, in reentering the hole following the installation of a new bit, a driller experienced difficulty in getting through the caverns, and applied too much pressure, resulting in the whole string dropping over 200 ft. On this occasion, 150 feet of rod, core barrel and bit were lost. An attempt was made to drill again from the 1000 ft. level, and some 30 feet of rod, another core barrel, and new bit twisted off.

They have now set a wedge at 980 ft., and are progressing carefully.

Robert A. Weeks

Robert A. Weeks

cc: H. Kirkemo
R. Weeks

RWeeks:cac 11/6/72

MME Form 7
(2/63)

OCT 27 1972

OFFICIAL FILE COPY

Date	Surname	Code
10/26/72	Kirkemo	120
10/26	Toohn	
		220

Dr. John C. Frye
Chief, Illinois State Geological Survey
Natural Resources Building
Urbana, Illinois 61801

Re: OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hardin County, Illinois
Contract 2306

Dear John:

Our Office of Minerals Exploration (OME) recently executed a minerals exploration contract with the subject Operator, a partnership of three individuals in New York City for the purpose of exploring by diamond core drilling for fluorspar and associated minerals in the mineralized breccias of the Hicks Dome cryptovolcanic structure in Hardin County, Illinois. The total value of the contract is $95,450.00, with the Government's share of allowable costs at 50 percent not to exceed $47,725.00. Total drilling is estimated at about 10,000 feet with no hole to exceed 3,000 feet in depth. Contract work is to be completed within nine months from the date of the contract, September 26, 1972. Drilling on the first of possibly four holes is now in progress.

Mr. Joseph A. Porter, Geologist, Rosiclare, Illinois, is in charge of the contract work for the Operator. Geological Survey geologists will visit the project occasionally to inspect the core. As the Operator is negotiating for leases in addition to those already acquired, he would prefer that publicity about this project be kept at a minimum.

If you or any of your staff have occasion to be in the area of the project, we are confident that Mr. Porter would be pleased to show you the results of the drilling to date.

Sincerely yours,

Chief Geologist

Copies to: Messrs. Gilbert Kerlin,
Robert G. Goelet, Francis Goelet
d/b/a Hicks Dome Account
c/o Mr. John L. Carroll
Room 4120, 345 Park Avenue
New York, New York 10022

Joseph A. Porter, Geologist
Rosiclare, Illinois 62982

cc: Dewson
~~General~~ File
Director's Reading File
Mineral Resources
OME Docket
OME Reading File
Robert A. Laurence-Knoxville
Harold Kirkemo-OME

HKirkemo/gla 10-26-72

MME Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code
	Weeks	
10/26/72	Kirkham	

October 25, 1972

Memorandum

To: The File

From: Robert A. Weeks

Subject: OME-6873 (Fluorspar, et al.)
Hicks Dome Account
Hardin ~~Martin~~ County, Illinois
Contract 2306

Joe Porter called this morning, to report on drilling and other matters.

As of 9:00 PM yesterday the first hole had reached a depth of 1078 feet. The country rock penetrated is quite brecciated, but very little mineralization, only random galena and sphalerite. Several narrow igneous dikes have been cut. These are dark, fine-grained and contain granite fragments and are pyritic. The stratigraphy is running about 60 feet lower then in the Hamp hole. Silurian - Devonian boundary was cut at 998' (base of the Baily formation). The base of the Grassy Knob was cut at 796'. He expects they will cut the base of the Maquoketa today, which will leave them about 700 feet to go before reaching the target horizons.

Drilling has been reasonably uneventful. The cherty (50 percent) Grassy Knob was the slowest drilling (20 feet ± per shift). Bit wear has not been excessive.

He questioned the paragraph in the contract about leaving casing in the hole at the Operator's convenience. He says he has left casing in the holes so that they could be re-entered and deepened, at a savings of $20,000. He understood my discussion that such a decision was "at the Operator's request," and probably would not be eligible for payment.

In discussing stratigraphy, he mentioned that a geologist from the Illinois Survey had obtained the core through the Maquoketa formation from one of the Hamp holes last spring, but that Porter had as yet heard nothing from him about what he had found that might help Porter in present drilling.

Porter said he was going to call Allen Heyl concerning some results he had on flotation tests. He asked if we objected to his direct contacts with Heyl, to which I indicated we were in favor of any such contacts, and that you had talked to Allen recently.

I also mentioned that you were planning on visiting soon. He asked if Bob Trace would also be there, and I said I thought you were going to try to arrange that Bob would accompany you.

He also remarked that possibly the location of the second hole should be changed by a couple of hundred feet, but that he probably would have a better fix on it in a few days.

Robert A. Weeks

Robert A. Weeks

cc: Mr. Kirkemo

RWeeks:cac 10/25/72

October 18, 1972

Col 1:20 PM
~~1:30~~
HK ~~1:20~~
~~Kerr~~ B.W.

Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
United States Department of the Interior
Geological Survey
Washington, D.C. 20242

Re: OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Kirkemo:

In accordance with our telephone conversation this morning, I enclose herewith three copies of the Contract OME-6873 (Fluorspar, et al.).

My understanding is that the first hole is under way and that the drill was able to penetrate to solid rock without serious difficulty.

I will keep you advised of further developments, and look forward to visits in Illinois of Survey personnel.

With kindest regards,

Sincerely yours,

John Carroll

JLC:AG
Encs.

cc; Mr. Harold Kirkemo

JOHN LEE CARROLL
345 PARK AVENUE
NEW YORK, N. Y. 10022

OFFICIAL
COPY
O. M. E.
RECEIVED
OCT 20 1972
Coe 120 M
130
120
B.W.

(212) 753-9280

October 18, 1972

Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
United States Department of the Interior
Geological Survey
Washington, D.C. 20242

Re: OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Kirkemo:

In accordance with our telephone conversation this morning, I enclose herewith three copies of the Contract OME-6873 (Fluorspar, et al.).

My understanding is that the first hole is under way and that the drill was able to penetrate to solid rock without serious difficulty.

I will keep you advised of further developments, and look forward to visits in Illinois of survey personnel.

With kindest regards,

Sincerely yours,

John Carroll

JLC:AG
Encs.

cc; Mr. Harold Kirkemo

MMS Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code
10/20/72		120
		220

October 20, 1972

Mr. Joseph A. Porter
Geologist
Rosiclare, Illinois 62982

Re: OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hardin County, Illinois
Contract 2306

Dear Mr. Porter:

We were pleased this morning to receive the signed copies of the subject contract. A copy of this letter to the Operator c/o Mr. John L. Carroll will acknowledge receipt.

In the event that I am unable to visit the project in the very near future, we enclose a supply of the Operator's monthly voucher (Form 9-1648) sufficient for the eight months' tenure of the contract. Enclosed also is an Equal Opportunity notice which should be posted in a conspicuous location on the project site.

I am pleased to hear that the first hole is progressing without difficulty. Hopefully, it will successfully penetrate into mineralized material.

Sincerely yours,

Harold Kirkemo

Harold Kirkemo
Chief, Office of
Minerals Exploration

Enclosures

Copy to Mr. John L. Carroll

cc: Director's Reading File
Mineral Resources
Robert D. Trace, Princeton, Kentucky
Robert A. Laurence, Knoxville, Tennessee
OME Docket
OME Reading File
Mr. Kirkemo

HKirkemo/gla 10-20-72

MME Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code
9/21/72	Kirkham	120
9/21	Toohey	
9/22	Albers	
[illegible]	[illegible]	220
9/25	[illegible]	
9/25	Hansen	

OCT 4 1972

Messrs. Gilbert Kerlin, Robert G. Goelet,
Francis Goelet d/b/a Hicks Dome Account
c/o Mr. John E. Carroll
Room 4120, 345 Park Avenue
New York, New York 10022

Re: OME-6873 (Fluorspar, et al.)
Kerlin, Goelet and Goelet d/b/a
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Gentlemen:

Enclosed are the original and three copies of a proposed contract to explore the subject property. The contract consists of MME Form 50 (seven pages), Annex I (three pages), one Performance Bond (Standard Form 25)(two pages), Exhibit A (four pages), Exhibit B (one page), Exhibit B-1 (one page), Exhibit C (one page), and one map (Figure 1). All copies of the contract have been signed for the Government.

If the proposed contract is satisfactory to you, all copies of the contract should be signed by each of the three general partners indicated on page 7, MME Form 50, and the following copies returned to us:

Government's Copy
Field Office's Copy
Budget and Finance's Copy

The Operator's copy should be retained for your files.

If any part of the proposed copy does not meet with your approval, the original and all copies should be returned to this office together with your comments for consideration. A copy of the proposed contract is being sent also to Mr. Joseph A. Porter, Geologist, Rosiclare, Illinois, who we understand will be in charge of the project work.

Please note that the 8¼ percent interest in Article 1(c) of the contract accrues from the dates on which individual payments are made by the Government, and like the principal, is repayable from royalty on production.

Should the proposed contract be acceptable to you, we will forward voucher forms to Mr. Porter and be available to answer any questions about the required monthly reports and other matters which may arise during the

course of the project. Mr. Robert D. Trace, Geologist, U. S. Geological Survey, Princeton, Kentucky, also will be available for consultation about the geological aspects of the work.

Sincerely yours,

Harold Kirkemo
Chief, Office of
Minerals Exploration

Enclosures

Copy to Mr. Joseph Porter
Geologist
Rosiclare, Illinois 62982

cc: Director's Reading File
Mineral Resources
Robert D. Trace, Geologist, USGS, Princeton, Kentucky
Robert A. Laurence, USGS, Knoxville, Tennessee
OME docket
OME Reading File
Mr. Kirkemo
130

HKirkemo/gla 9-21-72

Box 447 Phone (618) 285-6685

Joseph A. Porter
Geologist
Rosiclare, Illinois
62982

September 25, 1972

OFFICIAL COPY
O. M. E.
RECEIVED
SEP 28 1972

INITIALS	CODE
Cal	120 m
HK	120
RAW	B.W.

Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
U. S. Geological Survey
Matomic Building
Room 865
1717 H Street NW
Washington, D.C. 20006

Re: OME-6873 (Fluorspar, et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Kirkemo:

Enclosed are copies of two deposit slips evidencing the deposit of $30,000 for the account of Hicks Dome Account. This, plus the previous amount indicated in the account is to be used to defray Hicks Dome Account's share of the expenses in connection with the proposed exploration project.

With best regards,

Sincerely,

Joseph A. Porter

Joseph A. Porter

Enclosures: (2)
Copy: file

MT 509 (L) REV. 4-69

CREDIT ADVICE

FIRST NATIONAL CITY BANK

~~MONEY TRANSFER DEPARTMENT~~ note tellers dept.gl

1

☐ 111 WALL STREET, NEW YORK, N. Y. 10015 ☒ 55 WALL STREET, NEW YORK, N. Y. 10015

D C

DATE 9/21/72

WE CREDIT YOUR ACCOUNT $ 10,000.00*
AMOUNT

RE: Funds transferred per Helen Davenel.
(In accordance with telephone instructions from Miss Cassel)

MAIL TO

Hicks Dome

ACCOUNT NUMBER 0951 3427

INSTRUCTED BY

IN THEIR

ACCOUNT NUMBER 0936 6447

Gilbert Kerlin

E2135

L Muracco
AUTHORIZED SIGNATURE

CUSTOMER'S RECEIPT

IR

ACCOUNT NUMBER 095 13427

FOR ACCOUNT OF (PLEASE PRINT FULL TITLE) HICKS DOME ACCOUNT

ADDRESS 53 WALL ST. '72

N. Y., N. Y.

ACCOUNT AT (INDICATE BRANCH) 55 WALL STREET

DATE SEPT. 21 19 72

DEPOSITED WITH

FIRST NATIONAL CITY BANK
NEW YORK

		DOLLARS	CENTS
CASH			
CHECKS (List Separately)	1	10,000	—
	2	10,000	—
	3		
	4		
	5		
	6		
	7		
	8		
	9		
CHECK COUNT	TOTAL	20,000	—

PLEASE NOTIFY US OF ANY CHANGE IN YOUR ADDRESS, USING SEPARATE FORM OF ADVICE.

SF 3168 REV. 8-50

Box 447

Phone (618) 285-6685

Joseph A. Porter
Geologist
Rosiclare, Illinois
62982

September 15, 1972

OFFICIAL COPY
O. M. E.
RECEIVED
SEP 19 1972

INITIALS	CODE
Ron Weeks	
	120

Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
U. S. Geological Survey
Matomic Building
Room 865
1717 H Street NW
Washington, D.C. 20006

Re: OME-6873 (Fluorspar, et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Kirkemo:

Enclosed is the authorization for me to serve as representative for Hicks Dome Account. It has been signed by the three partners.

With best regards,

Sincerely,

Joseph A. Porter

Joseph A. Porter

Enclosure: (1)
Copies: J. L. Carroll
file

Hicks Dome Account
c/o Shearman & Sterling
53 Wall Street
New York, N. Y. 10005

September 8, 1972

Mr. Harold Kirkemo
Chief, Office of Mineral Exploration
United States Department of the Interior
Geological Survey
Washington, D. C. 20242

Dear Mr. Kirkemo:

In accordance with your request the undersigned, General Partners of Hicks Dome Account, a general partnership organized under the laws of the State of New York, hereby authorize Joseph A. Porter of Rosiclare, Illinois to act as their representative in all matters connected with the drilling program in Hardin County, Illinois which is the subject of a contract with the Office of Minerals Exploration, identified as OME-6873 (fluorspar, et al) Hicks Dome property, Hardin County, Illinois.

Very truly yours,

Francis Goelet

Robert G. Goelet

Gilbert Kerlin

Parties named
Operator's
representat.

Box 447

Phone (618) 285-6685

Joseph A. Porter

Geologist

Rosiclare, Illinois

62982

September 14, 1972

OFFICIAL COPY
O. M. E.
RECEIVED
SEP 20 1972

INITIALS	CODE
RBW	Weeks
	120

Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
U. S. Geological Survey
Matomic Building
Room 865
1717 H Street NW
Washington, D. C. 20006

Re: OME-6873 (Fluorspar, et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Kirkemo:

Attached is a map showing the exceptions in the Loyd and Pankey - Antaeus lands, which we discussed this morning. Also attached are pertinent excerpts from the abstract of title to the Pankey lands. This abstract is dated in 1960 and was given when Mable Pankey's 17/21st interest was purchased.

There are four exceptions in the two properties. The .31 acre tract and the .147 acre tract were deeded to the Richland school district in 1920. A description of that transaction is given on page 26 of the abstract. One description covers both of the cited exceptions. A copy of that transaction is enclosed.

The deed from Mable Pankey to Industrial Minerals includes a third exception of one acre. This is believed to be in error. The abstract of title does not include this one acre exception. When the deed was typed, the description was taken from the first page of a Complaint for Partition filed in 1960. This description is identical to the description of the abstract, except that it includes the one acre tract. Page 6 of the Complaint recognized this, and the description is amended, as shown on Page 42 and 43 of the abstract.

The only other mention of the one acre tract is found on Page 15 of the abstract, whereby a one acre tract was sold in 1898. Abstractor's note at the bottom of the page indicates

that there is some uncertainty as to the location of the property. Besides the errant description on the first page of the Complaint, this is the only other mention of the one acre tract.

I have checked the tax records in the courthouse. Again, there is no record of the one acre tract on the tax books.

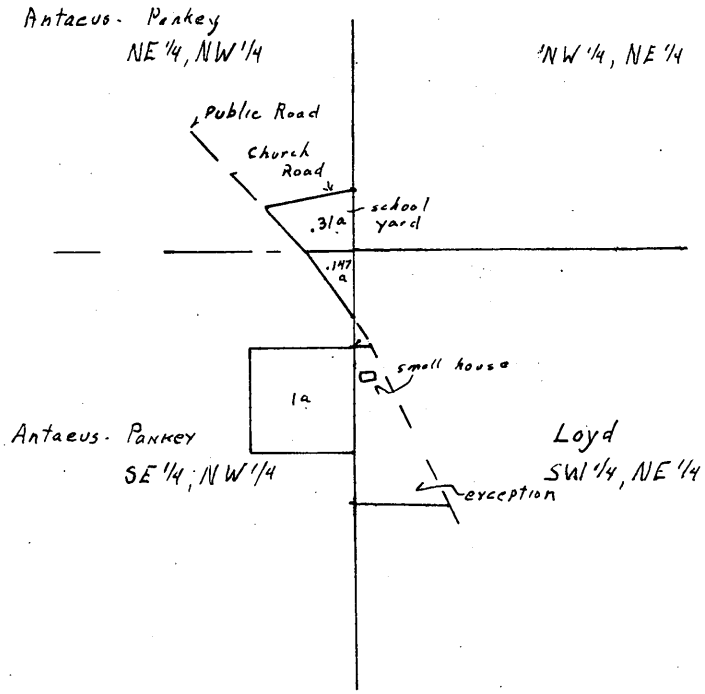
It is possible that the tract was purchased back by the Pankey family at some point and no deed was ever recorded. I understand that this was a fairly common practice in this area in the old days when small tracts of relatively little value were involved.

We will presently have to consider this one acre tract a flaw in our title and leasehold. Inasmuch as it is quite small and located fairly well off the area of interest, it would probably be best to avoid the expense and time of clearing this up at the present time.

Very sincerely yours,

Joseph A. Porter

JAP:vb
Encl. 2



Section 30 T11S. R.8E.

1" = 400'

N

This is the description used on the lease. It should have been used on the Pankey-Ind. Minerals deed.

ABSTRACT OF TITLE

TO

The North East Quarter of the North West Quarter (except a parcel described as follows: Commencing at the southeast corner of said forty acre tract and from thence running north a distance of one hundred ten (110) feet to a point whereon the south right of way line of the Church Public Road entering from the Hicks Town-Elizabethtown Gravel Public Road intersects the division line between the North West Quarter of the North East Quarter and the North East Quarter of the North West Quarter and from thence running west twelve degrees (12°) south a distance of one hundred eighty-six and five-tenths (186.5) feet along the south right of way line of said Church Public Road to a point whereon said south right of way line intersects the east right of way line of the Public Gravel Hicks Town-Elizabethtown Road, and from thence running in a general southeasterly direction along the course of the east right of way line of the Public Gravel Hicks Town-Elizabethtown Road to a point whereon said east right of way line intersects the division line between the North East Quarter and the South East Quarter of the North West Quarter and from thence running east along the last above mentioned division line a distance of ninety-three and five-tenths (93.5) feet to the point of beginning, containing thirty-one one-hundredths (.31) acre),

The South East Quarter of the North West Quarter (except a parcel described as follows: Commencing at the northeast corner of the South East Quarter of the North West Quarter and running west a distance of ninety-three and five-tenths (93.5) feet along the division line between the South East Quarter and the North East Quarter of the North West Quarter to a point whereon said division line intersects the east right of way line of the Public Gravel Road running from Hicks Town to Elizabethtown, and from thence running in a general southeasterly direction along the course of the east right of way line of said gravel road a distance of one hundred fifty-six (156) feet to a point whereon said east right of way line intersects the division line between the East and West Halves of the North Half of Section Thirty (30) and from thence running north on last above mentioned division line a distance

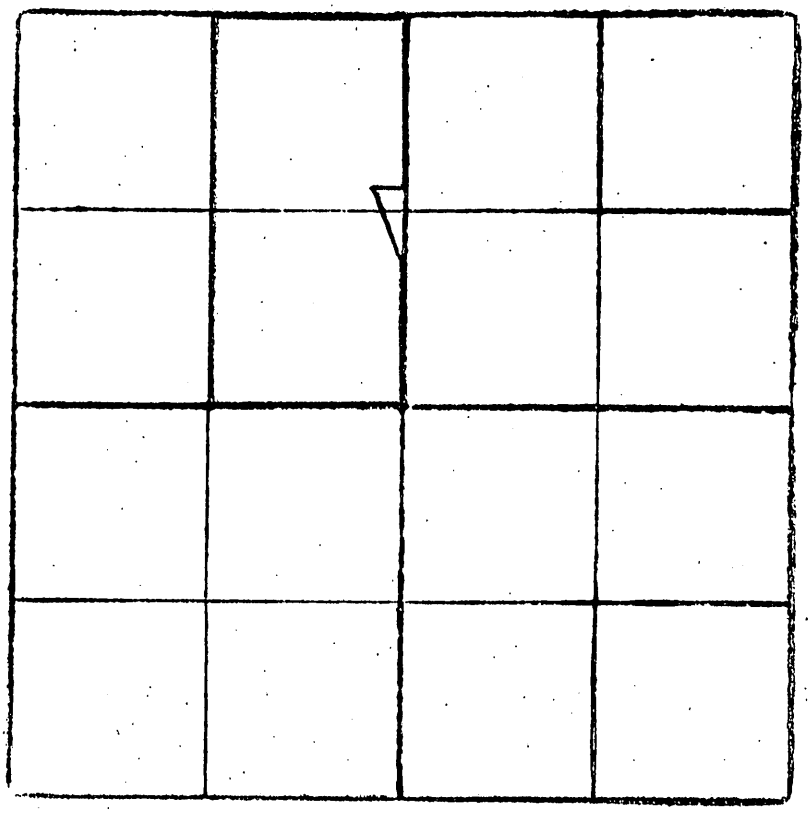
of one hundred thirty-seven and five-tenths (137.5) feet to the point of beginning, containing one hundred forty-seven one-thousandths (.147) acres),

all in Section Thirty (30) Township Eleven (11) South, Range Eight (8) East of the Third Principal Meridian, containing in the aggregate seventy-nine and five hundred forty-three thousandths (79.543) acres, more or less, (except such part of the real estate above described used as public roads), situated in the County of Hardin and the State of Illinois.

LUCIAN PANKEY HEIRS.

.....

Sec. 30 Twp. 11 S. R. 8 E.



This coincides with the description shown on the Parker-Bud Min. Deed and with page 1 of the Complaint (page 37 of the abstract). The starting point coincides with the starting point of the land excepted in the Loyd Lease

CHARLES HICKS and wife,
MAGGIE HICKS

TO

GEORGE BUCHANAN

WARRANTY DEED
Dated August 17, 1898
Recorded January 28, 1899
Warranty Deed Record 7, page 315
Acknowledged August 17, 1898
Before H. A. Hubbard
Justice of the Peace
Hardin County, Illinois
Homestead released
Consideration: $50.00

DESCRIPTION: "One acre of Land Said land Begining Telve Rod from the N E. corner of the East 1/2 S E. N W. and runing Thirteen (13) rod South Thence Thirteen (13) Rod West, Thence (13) Rod North thence (13) rod East to the place of begining amounting in all to one acre more or less", situated in the County of Hardin and the State of Illinois.

REMARKS: Signed: "Charley Hicks (SEAL)
Maggie Hicks (SEAL)",
in presence of "H. A. Hubbard J. P."

Acknowledged by "Charley Hicks and wife Maggie Hicks".

?

.....

ABSTRACTER'S NOTE:

The tract described above is evidently located in the South West Quarter of the North East Quarter of said Section Thirty (30). Information is that a very small part is located in the South East Quarter of the North West Quarter of said Section 30, but the records do not show such a fact to be.

LUCIAN PANKEY Sr. and
EDIE PANKEY, his wife,
and their heirs, executors and assigns,

TO

THE SCHOOL TRUSTEES OF
TOWNSHIP 11, RANGE 8, for
the use of the People of
Richland School Dist. No.
8, County of Hardin and
State of Illinois,

WARRANTY DEED
Dated May 22, 1920
Recorded June 15, 1920
Warranty Deed Record 17, page 267
Acknowledged May 22, 1920
Before Pleasant Rose
Notary Public
Hardin County, Illinois
Notarial seal shown
Homestead released
Consideration: $100.00

DESCRIPTION: "A piece of land lying in Richland School District Section 30 Township 11 S. Range 8 E. County of Hardin State of Illinois Described by metes and Bounds as follows: Beginning at a point on the Harrisburg and Elizabethtown Public Road on the line between the North West quarter (¼) and the North East quarter (¼) of Section 30 Township 11 S. Range 8 E. Thence running North Fifteen (15) Rods to the Church Public Road, Thence running Westerly along said Church Public Road Thirteen (13) Rods to the Elizabethtown and Harrisburg Public Road, thence running South Easterly to the place of Beginning, containing in the aggregate One half (½) acre More or less", situated in the County of Hardin and the State of Illinois.

REMARKS: Signed: "Lucian Pankey Sr. (SEAL)
Edith Pankey (SEAL)",
in presence of "Thomas Rose Loren Baker".

Acknowledged by "Lucian Pankey Sr. and Edie Pankey (his wife".

This plots out essentially the same as the exceptions described in the lease and deed. It is possible a survey was made later to more accurately describe the property, possibly by the School District.

MABEL A. PANKEY,

Plaintiff

VS

AGNES PANKEY and
ETTA IRBY,

Defendants.

HARDIN COUNTY CIRCUIT COURT
In Equity
Complaint for Partition and
other Relief
File No. 61-2023

Plaintiff, Mabel A. Pankey, by James G. Gullett, her attorney, complaining of defendants, Agnes Pankey and Etta Irby, alleges as follows:

1. That plaintiff, Mabel A. Pankey, and defendants, Etta Irby and Agnes Pankey, are owners in fee simple as tenants in common of certain real estate and premises situated in Hardin County, Illinois, described as follows:

"The North East Quarter of the North West Quarter (except a parcel described as follows: Commencing at the southeast corner of said forty acre tract and from thence running north a distance of one hundred ten (110) feet to a point whereon the south right of way line of the Church Public Road entering from the Hicks Town-Elizabethtown Gravel Public Road intersects the division line between the North West Quarter of the North East Quarter and the North East Quarter of the North West Quarter and from thence running west twelve degrees (12°) south a distance of one hundred eighty-six and five-tenths (186.5) feet along the south right of way line of said Church Public Road to a point whereon said south right of way line intersects the east right of way line of the Public Gravel Hicks Town-Elizabethtown Road, and from thence running in a general southeasterly direction along the course of the east right of way line of the Public Gravel Hicks Town-Elizabethtown Road to a point whereon said east right of way line intersects the division line between the North East Quarter and the South East Quarter of the North West Quarter and from thence running east along the last above mentioned division line a distance of ninety-three and five-tenths (93.5) feet to the point of beginning, containing thirty-one one-hundredths (.31) acre),

"The South East Quarter of the North West Quarter (except a parcel described as follows: Commencing at the northeast corner of the South East Quarter of the North West Quarter and running west a distance of ninety-three and five-tenths (93.5) feet along the division line between the South East Quarter and the North East Quarter of the North West Quarter to a point whereon said division line intersects the east right of way line of the Public Gravel Road running from Hicks Town to Elizabethtown, and from thence running in a general southeasterly direction along the course of the east right of way line of said gravel road a distance of one hundred fifty-six (156) feet to a point whereon said east right of way line intersects the division line between the East and West Halves of the North Half of Section Thirty (30) and from thence running north on last above mentioned division line a distance of one hundred thirty-seven and five-tenths (137.5) feet to the point of beginning, containing one hundred forty-seven one-thousandths (.147) acres, and also except a tract of land described as follows: Beginning twelve (12) rods south of the northeast corner of the South West Quarter of the North East Quarter, running south thirteen (13) rods, thence west thirteen (13) rods, thence north thirteen (13) rods, thence east thirteen (13) rods to the place of beginning, containing one (1) acre, more or less, said last described tract lying and being in said South West Quarter of the North East Quarter and said South East Quarter of the North West Quarter, the part of said last described tract lying in said South East Quarter of the North West Quarter being about one-half ($\frac{1}{2}$) acre, more or less),

same as described on page 15

all in Section Thirty (30) Township Eleven (11) South, Range Eight (8) East of the Third Principal Meridian, containing in the aggregate seventy-nine and forty-three thousandths (79.043) acres, more or less, (except such part of the real estate above described used as public roads)".

2. That above named parties derived title to said property in the following manner:

(a) That Lucian Pankey became the owner of the above described East Half ($E\frac{1}{2}$) of the South East Quarter ($SE\frac{1}{4}$) of the North West

according to their respective rights or interests in such proceeds as ascertained and declared by the decree of this court; and

(e) That the court shall determine and allow plaintiff reasonable solicitor's fees as provided by statute.

(f) For such other and further or different relief herein as the court shall deem equitable and proper.

Complaint is signed by Mabel A. Pankey, Plaintiff, James G. Gullett, Attorney for Plaintiff, Elizabethtown, Illinois, Telephone: 287-2491, properly verified on October 6, 1961, filed October 6, 1961.

Summons, issued by Juanita R. Asbell, Clerk, October 6, 1961, in above cause, returnable within thirty days after service, shows personal service on Etta Irby and Agnes Pankey on October 7, 1961, by Oren Gross, Sheriff, Hardin County, Illinois, filed October 9, 1961.

Order Granting Leave to Amend, after style of case as above, recites: This cause coming on to be heard on the motion of plaintiff, Mabel A. Pankey, that she be granted leave to amend instanter the description of real estate in Hardin County, Illinois, described in the third paragraph of paragraph 1 beginning with the ninth line on page 2 of said complaint as set forth in the motion filed in above cause, and defendants having been given due notice thereof and the court being fully advised in the premises, it is ORDERED that the plaintiff be and she is hereby granted leave to amend the complaint instanter, in the following respects:

1. By striking out all the balance of the third paragraph of paragraph 1 beginning with the ninth line on page 2 of said complaint, which now reads as follows:

> "...and also except a tract of land described as follows: Beginning twelve (12) rods south of the northeast corner of the South West Quarter of the North East Quarter running south thirteen (13) rods, thence west thirteen (13) rods, thence north thirteen (13) rods, thence east thirteen (13) rods to the place of beginning, containing one (1) acre, more or less, said last described tract lying and being in said South West Quarter of the North East Quarter and said South East Quarter of the North West Quarter, the part of said last described tract lying in said South East Quarter of the North West

Quarter being about one-half (½) acre, more or less), all in Section Thirty (30) Township Eleven (11) South, Range Eight (8) East of the Third Principal Meridian, containing in the aggregate seventy-nine and forty-three thousandths (79.043) acres, more or less, (except such part of the real estate above described used as public roads),"

and inserting in place of the same the following:

"all in Section Thirty (30) Township Eleven (11) South, Range Eight (8) East of the Third Principal Meridian, containing in the aggregate seventy-nine and five hundred forty-three thousandths (79.543) acres, more or less, (except such part of the real estate above described used as public roads)."

Dated Oct. 23, 1961.

ENTER: Randall S. Quindry,
Judge

Filed October 23, 1961. Recorded in Circuit Court Record U, page 152.

Amendment of Complaint, after style of case, as above: Now comes plaintiff, Mabel A. Pankey, by James G. Gullett, attorney, and by leave of court first had and obtained amends the complaint in the above entitled action as follows:

1. By striking out all the balance of the description of real estate located in Hardin County, Illinois, contained in the third paragraph of paragraph 1 beginning with the ninth line on page 2 of said complaint, which now reads as follows: (setting forth the description as last above).

Signed by said James G. Gullett, filed October 23, 1961.

Motion for Leave to Amend as above, filed October 23, 1961.

.....

Box 447

Phone (618) 285-6685

Joseph A. Porter
Geologist
Rosiclare, Illinois
62982

September 11, 1972

Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
U. S. Geological Survey
Matomic Building
Room 865
1717 H Street NW
Washington, D.C. 20006

Re: OME-6873 (Fluorspar, et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Kirkemo:

In accordance with your request I enclose herewith a copy of the most recent bank statement of Hicks Dome Account, showing a balance of $27,344.34. The partners of Hicks Dome Account will shortly deposit in this account an additional $30,000 to defray the partnership's share of the OME contract and other expenses. The amount cited has been called in and will probably be deposited this week. I will send you copies of the deposit slips as soon as they are available.

Hicks Dome Account is a General Partnership whose partners are Francis Goelet, Robert G. Goelet and Gilbert Kerlin, all of whom are residents of New York State. All expenditures being made by Hicks Dome Account are being made solely for the account of the above named persons and not for the account of any other person, corporation or entity whether in the mining industry or otherwise.

Sincerely,

Joseph A. Porter

Joseph A. Porter

Enclosure (1)
Copies: J. L. Carroll (212) 753-9280
File

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FIRST NATIONAL CITY BANK

NEW YORK

ACCOUNT OF

ROBERT G. GOELET FRANCIS GOELET
GILBERT KERLIN JOINT ACCT
SUBTITLED HICKS DOME ACCT
% SHEARMAN # STERLING
53 WALL STREET N Y 10005

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ACCOUNT NUMBER

09513427
4280

PLEASE NOTIFY US OF ANY CHANGE IN YOUR ADDRESS

DEBITS	CREDITS	DATE	BALANCE
BALANCE BROUGHT FORWARD >>>>	7	14 72	30,488.84
2,500.00		7 25	27,988.84
1,000.00		7 28	26,988.84
	355.50	7 31	27,344.34
E.O.M.BAL.			27,344.34

NO. OF DEBITS 2	NO. OF CREDITS 1	DATE RENDERED 8 10 72 6

PLEASE INFORM US IMMEDIATELY OF ANY EXCEPTION(S) TAKEN BY YOU, GIVING FULL DETAILS AND YOUR ACCOUNT NUMBER.

LAST AMOUNT ABOVE IS YOUR FINAL BALANCE ON DATE RENDERED.

KEY TO SYMBOLS

A-CHARGE MEMO
B-CREDIT MEMO (REFER TO ADVICES)
C-CERTIFIED CHECK (ENCLOSED OR OUTSTANDING)
D-AUTHORIZED DEBIT
E-AUTHORIZED CREDIT
L-LIST
M-MAIL DEPOSIT
N-INDIRECT DRAWING
R-RETURNED ITEM
S-SERVICE AND/OR MAINTENANCE CHARGE
E.O.M. BAL.-END OF MONTH BALANCE

JOY MANUFACTURING COMPANY
707 BOYD BOULEVARD
P. O. DRAWER 489
LaPORTE, INDIANA 46350

September 11, 1972

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Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
U. S. Geological Survey
Matomic Building, Room 865
1717 H Street N. W.
Washington, D. C. 20006

Dear Sir:

I have enclosed two (2) signed copies of Exhibit C that are to be part of a contract covering the proposed core drilling program on Hicks Dome near Rosiclare, Illinois.

Mr. Joseph A. Porter, Geologist, at Rosiclare, Illinois requested that I send these signed papers directly to you.

Yours truly,

JOY MANUFACTURING COMPANY

J. M. Murray, General Manager
Drill Division

JMM:rh
Enclosure

cc: Mr. Joseph A. Porter, Geologist
Rosiclare, Illinois 62982

Box 447

Phone (618) 285-6685

Joseph A. Porter
Geologist
Rosiclare, Illinois
62982

September 9, 1972

OFFICIAL COPY
O. M. E.
RECEIVED
SEP 11 1972

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Mr. Harold Kirkemo, Chief
Office of Minerals Exploration
U. S. Geological Survey
Matomic Building
Room 865
1717 H Street NW
Washington, D.C. 20006

Re: OME-6873 (Fluorspar, et al)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Kirkemo:

This is to confirm the error in the land description in the Fredericks Mining Lease. It should read:

> The North Half of the South West Quarter of the South West Quarter; and the South Half of the North West Quarter of the South West Quarter, all in Section Thirty (30), Township Eleven (11) South, Range Eight (8) East of the Third Principal Meridian, containing in the aggregate forty (40) acres, more or less.

An amendment correcting the description will be sent to the Lessors. A copy will be sent to you when executed copies are received.

Sincerely,

Joseph A. Porter

Copies: JLC
file

DRAFT:HKIRKEMO 9/6/72-cac

MME Form 50
July 1965

UNITED STATES OF AMERICA
DEPARTMENT OF THE INTERIOR
U. S. GEOLOGICAL SURVEY

EXPLORATION CONTRACT
(Long Form)

Docket No.	Commodity	Contract No.	County	State
OME-6873	Fluorspar-beryllium-rare earths-thorium-niobium		Hardin	Illinois

It is agreed _____ (Date), between the United States of America, acting through the Department of the Interior, U. S. Geological Survey, hereinafter called the "Government," and Gilbert Kerlin, Robert G. Goelet, Francis Goelet, d/b/a Hicks Dome Account, a partnership

whose mailing address is c/o Gilbert Kerlin, Esq. Sherman and Sterling, 53 Wall Street, New York, N. Y. 10005 hereinafter called the "Operator," as follows:

ARTICLE 1. Authority and scope.--(a) This contract entered into under the authority of Public Law 701, 85th Cong., 2d sess. (72 Stat. 700; 30 U.S.C. § 641 - 646), consists of this form, the attached Annex I (land description), Exhibit A (work and costs), and the maps and documents listed. The work is a search for new or unexplored deposits of the commodity designated above. The Operator shall begin the work on or before _____ (Date), and, subject to the provisions of Article 9 and Exhibit A, shall either have completed the work within 8 months from the date of the contract or shall have incurred allowable costs (see Article 6) in a sum not less than the total cost set forth in Exhibit A.

(b) The total allowable cost of the work set forth in Exhibit A is $ 95,450.00 . The Government will contribute 50 percent of the allowable costs as they are incurred, in a total sum not in excess of $ 47,725.00 in accordance with the provisions of Articles 3, 4, 5, and 6. "Costs incurred" means costs that have been paid or have become due and payable, or that the Government determines have become obligations.

(c) Interest computation.--Simple interest at the rate of _____ percent shall accrue from the dates Federal funds are made available until the period specified for payment of royalty expires, or until the amount of Federal funds contributed is fully repaid with interest.

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

ARTICLE 2. Operator's right in land.--(a) The Operator represents and undertakes that Annex I correctly describes the land which is the subject of this contract and the nature of the Operator's right of property and possession therein (whether as owner, lessee, or otherwise), and that such right, title, or interest is subject only to the following claims, liens, or encumbrances:

See Annex I

(b) The Subordination Agreement of the holder of any claim, lien, or encumbrance listed above and (if the Operator does not hold the legal title) the lien agreement of any holder of the legal title of the land (lessor, seller, optionor, etc.) are attached as follows:

See Article 16

(c) The Operator shall preserve and maintain his right, title, or interest in the land and his right to the possession thereof for the purposes of this contract, and shall devote the land and all existing improvements, facilities, buildings, installations, and appurtenances to the purposes of this contract. The Operator shall neither transfer, convey, nor surrender the land nor any right, title, or interest therein, nor permit nor suffer any claim, lien, or encumbrance thereon, without expressly referring to and providing in the instrument of conveyance, lien, or encumbrance for the preservation of the Government's right to a royalty on production and liens for the payment thereof. Two true copies of such instrument shall be furnished to the Government. If the Government's rights to royalty as provided in Article 7 have been terminated, the provisions of this paragraph (c) shall become inapplicable.

ARTICLE 3. Performance of the work.--(a) Operator's responsibility.--The work shall be performed diligently, efficiently, in a workmanlike manner in accordance with good mining standards, and in compliance with State laws governing health, safety, and liability insurance covering employment. The Operator shall provide suitable and adequate equipment, facilities, materials, supplies, and labor to complete the work as specified in Article 1(a).

(b) Independent contracts.--To the extent that the allowable costs are estimated in Exhibit A with express reference to performance by independent contractors on a unit-price basis (such as per foot of drilling, per foot of drifting, per hour of bulldozer operations), the work may be so performed (see Article 6(a), Category (1)). Any such independent contract shall refer to some specific and identifiable part of the work, and shall be subject to all of the pertinent terms and conditions of this exploration contract; but the Government shall not be considered a party thereto, and its rights under this contract, including the right to terminate its contributions, shall not be affected thereby. Regardless of the provisions of any such independent contract, the Government will participate in payments to the independent contractor only as to work performed in accordance with the provisions of this exploration contract, and only to the extent that the Government deems the unit prices for the work under the independent contract to be reasonable.

(c) Government may inspect.--The Operator shall consult with and inform the Government on all phases of the work as it progresses. The Government may enter at all reasonable times to inspect the work under the contract and production operations during the period that royalty is payable to the Government. The Operator shall provide the Government with all reasonable means of access for such inspections.

ARTICLE 4. Contribution by the Government.-- The Government will make its contribution on the basis of the monthly vouchers referred to in Article 5(b), but all payments by the Government are provisional only, subject to audit. Until the account between the Operator and the Government is finally audited and settled and the Operator's final report has been received, the Government may withhold such sums as are necessary to protect its interests. The Government may make payments for the account of the Operator directly to independent contractors and suppliers rather than to the Operator.

ARTICLE 5. Reports, accounts, audits.--(a) Operator's records.--The Operator shall keep suitable records and accounts of the work performed and of any production in which the Government may have an interest; and shall preserve those with respect to work performed for at least three years after final payment by the Government, and those with respect to production for at least three years after any obligation to pay royalties to the Government has terminated. The Government may inspect and audit said records and accounts at any time, either by itself or by a certified public accountant. The Comptroller General of the United States or his representative, until the expiration of said three-year periods, shall have access to and the right to examine all pertinent books, documents, papers, and records of the Operator. If work under this contract is carried on in conjunction with any other operations, or if labor, supervision, services, materials, supplies, equipment, facilities, or other requirements for carrying on the work are also used in connection with other operations, the costs shall be segregated and accounted for on a basis and by methods and accounts that are satisfactory to and approved by the Government.

(b) Monthly reports.--The Operator shall provide the Government with four copies of monthly reports in three sections as follows:

(1) Operator's Monthly Voucher claiming costs for work performed;

(2) Operator's Progress Report showing the number of units of the various types of work performed; and

(3) a narrative report of the work performed during the reporting period, including adequate engineering-geological maps or sketches, drill hole logs and locations, and assay reports on samples taken concurrently with advance in mineralized ground.

(Forms for reporting under (1) and (2) above will be provided by the Government; however, the original of the Operator's Monthly Voucher shall be supported by documentary evidence, such as certified copies or transcripts of payrolls and invoices, for all costs claimed under Article 6 (a) (1).)

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

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

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

ARTICLE 6. Costs.--(a) Allowable costs.--The allowable costs of the work to which the Government will contribute are limited to:

(1) the necessary, reasonable, and direct actual costs that are estimated in Exhibit A by categories as specified in this article; and

(2) fixed costs for units of work to be performed (per foot, per hour, etc.) agreed upon in lieu of actual costs and set forth in Exhibit A.

The Government will not contribute to costs under any category or subcategory omitted from the estimate of costs in Exhibit A. Any excess over any estimate which is indicated as the maximum of any category, subcategory, or item, either as to requirement or related cost; any excess over a fixed unit cost; and any excess over the total allowable cost of the work are not allowable. The Operator shall incur such excesses for his own account without contribution by the Government, but the Operator is not obligated to incur more than his agreed percentage of the total allowable cost of the work.

Any category or subcategory or element thereof not designated as a maximum in this article, or in Exhibit A may be exceeded, provided that the total allowable cost of the work, which is a maximum, is not exceeded.

CATEGORY (1)--INDEPENDENT CONTRACTS.--(See Article 3(b)). The total of this category and the average unit cost estimated for each type of work to be performed under an independent contract are maximums.

CATEGORY (2)--PERSONAL SERVICES.

Subcategory (a)--Supervision and Technical Services--All elements of this subcategory (number of supervisors, technicians, outside consultants, periods of employment, rates of pay, and total) are maximums.

Subcategory (b)--Labor.

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

CATEGORY (4)--OPERATING EQUIPMENT.

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

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

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

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

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

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

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

CATEGORY (7)--MISCELLANEOUS.--Includes requirements and costs that do not fall within any of the first six categories, such as repairs other than initial and maintenance of operating equipment, analytical work, prints and other reproductions, accounting, Operator's share of payroll taxes, liability insurance covering employment, travel, and communications.

(b) Nonallowable costs.--In addition to the limitations imposed by paragraph (a) of this Article 6 the Government will not contribute to the following costs:

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

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

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

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

(c) Reductions in costs.--The Operator shall account for and give the Government credit for any incidental benefits, credits, or money received in the ordinary course of business in prosecuting the work (as by salvage or sale of materials or equipment, furnishing of room or board, furnishing of power or services to third persons, rebates or discounts on purchases, etc.), in the same ratio in which the Government contributes to costs; and such amounts shall be treated as a reduction in costs incurred so that they are available for use within the limit of the original total cost. The provision does not apply to receipts from production which are subject to the Government's royalty under the provisions of Article 7.

ARTICLE 7. Repayment by Operator.--(a) Certification.--If the Government considers that mineral or metal production from the land covered by the contract may be possible as a result of the exploration work, it shall so certify in writing to the Operator at any time not later than six months after a sufficient final report and final accounting (see Article 5) have been furnished.

(b) Royalty on production.--The Operator, whether or not the producer (for example, if the Operator either transfers or does not retains his interest in the land), shall pay to the Government a royalty on all minerals and metals mined or produced from the land as follows:

(1) irrespective of any certification of possible production--from the date of the contract until the lapse of the time within which the government may issue such certification or until the total net amount contributed by the Government is fully repaid with interest, whichever occurs first; or

(2) if the Government issues a certification of possible production--for a period of ~~xxx~~ fifteen years from the date of the contract, or until the total net amount contributed by the Government is fully repaid with interest, whichever occurs first.

(c) Payment of royalty.--(1) The Government's royalty shall be five percent of the gross proceeds (including any bonuses, premiums, allowances, or other benefits) from the production sold, in the form sold (ore, concentrate, metal or equivalent), at the point of delivery (the f.o.b. point); except, that charges of the buyer arising in the regular course of business and shown as deductions on the buyer's settlement sheets (such as treatment processes performed by the buyer, sampling and assaying to determine the value of the production sold, and freight payable by the buyer to a carrier (not the Operator or producer)), shall be allowed as deductions in arriving at the "gross proceeds" as that term is used herein. No costs of the Operator or Producer are deductible in arriving at the "gross proceeds" as that term is here used.

The term "treatment processes" means those processes (such as milling, concentrating, smelting, refining, or equivalent, but excluding fabricating or manufacturing) applied to the crude ore or other production after it is extracted from the ground to put it into a commercially marketable form.

(2) The Government's royalty shall be computed and paid currently upon each lot sold, held, or used in integrated operations, as the case may be.

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

(e) Lien for payment.--To secure the payment of royalty (see Article 7(b)), the Operator hereby grants to the Government a lien upon his interest in the land and upon any production of minerals and metals therefrom until the royalty claim is extinguished by lapse of time or is fully paid.

(f) Notice to purchasers.--The Operator or producer shall give notice of the Government's claim for royalty to any purchaser of the production, and shall authorize and direct such purchaser to pay the royalty directly to the Government and to furnish the Government with copies of the settlement sheets. If the records of any production and sales or other disposition of production, whether the production is by the Operator or by others, are not made available to the Government, the amount of the royalty may be estimated by the Government, and this estimate shall be final and binding upon the Operator or producer.

(g) No obligation to produce.--Nothing in this contract shall be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any production operations.

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

ARTICLE 8. Interests in purchased property.--(a) Title and ownership.--All costs under this contract shall be incurred by the Operator in the Operator's own name and for the Operator's own account; but any property acquired to the cost of which the Government contributes shall belong to the Operator and the Government jointly in proportion to their respective contributions although title thereto shall be taken in the name of the Operator.

(b) Preservation of property.--Until the final disposal of any property in which the Government has an interest, the Operator shall preserve and protect same for the best interest of the Government, and any reasonable and necessary cost thereof will be treated as an allowable cost of the exploration. After the completion of the work, termination of the Government's obligation to contribute, or when such property is not being used for the work, the Operator shall not use it elsewhere without the written consent of the Government and without paying a reasonable rental to be fixed by the Government for its proportionate interest.

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

(d) Default of the Operator re disposal.--If within 90 days after the completion of the work, termination of the Government's obligation to contribute to costs, or after the property is no longer needed for the work, the Operator has failed to sell or otherwise liquidate or dispose of any property in which the Government has an interest, the Government, at any time prior to final settlement under the contract, may:

(1) in writing extend the time within which the Operator must dispose of or liquidate the property;

(2) by written notice to the Operator, place upon such property what it determines to be a fair valuation thereof, not in excess of the cost less 1.66 percent per month from the date such property was purchased under this contract to the termination of said 90-day period; and such property shall thereupon be considered and accounted for as having been purchased by the Operator at the valuation so fixed by the Government; and

(3) enter and take possession of such property wherever it may be found, and remove and dispose of it for the joint account of the parties.

ARTICLE 9. Termination of the Government's obligations.--(a) If the Government determines that operations at any time have failed to achieve anticipated results and further work is not justified, the Government may give the Operator written notice thereof, and thereupon:

(1) the Government shall be free of all obligation to contribute to costs not then incurred other than such as may be allowable under the provisions of the contract as necessary and incidental to final accounting and reporting; and

(2) the Operator shall be free of all obligation to prosecute the work other than such as may be necessary and incidental to final accounting and reporting.

(b) If the Government determines that the Operator is in default under the terms of the contract, the Government may give the Operator written notice of such default with a specification of reasonable time within which the default must be cured; and if the Operator fails to cure such default as required, thereupon:

(1) the Government shall be relieved of all obligation to contribute to costs not incurred when the notice was given, other than such as may be allowable by the provisions of the contract as necessary and incidental to final accounting and reporting; and

(2) the Operator shall be free of all obligation to prosecute the work other than such as may be necessary and incidental to final accounting and reporting.

The Government may also avail itself of any other remedy the law may provide for breach of contract, including the right to rescind the contract and to demand repayment of all moneys contributed by the Government under the contract.

(c) The giving of any notice by the Government under the provisions of this Article 9 shall not affect the Government's rights as provided for in the contract with respect to royalty and liens to secure the payment thereof, and such rights shall be fully preserved.

(d) The determinations of the Government are subject to appeal under Article 13.

ARTICLE 10. Notices to be given by the Government may be delivered to the Operator, or may be sent by certified mail addressed to the Operator at his mailing address stated in this contract. If mailed, notices are deemed to have been delivered five days after the date of mailing.

ARTICLE 11. Officials not to benefit.--No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this contract or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE 12. Nondiscrimination in Employment. The provisions respecting nondiscrimination in employment which are required by section 301 of Executive Order 10925, dated March 6, 1961 as amended and supplemented are attached hereto as Exhibit B and are hereby incorporated in and made a part of this contract.

ARTICLE 13. Disputes.--Any dispute arising under this contract which is not disposed of by agreement shall be decided by the Director, U. S. Geological Survey, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Operator. The decision of the Director, U. S. Geological Survey, shall be final and conclusive unless, within 30 days from the date of receipt of such copy, the Operator mails or otherwise furnishes to the Director, U. S. Geological Survey, a written appeal addressed to the Secretary of the Interior. The decision of the Secretary or his duly authorized representative for the determination of such appeals shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or not supported by substantial evidence.

The term "Director, U. S. Geological Survey," as used herein includes his duly authorized representative.

ARTICLE 14. Work Hours Act of 1962 - Overtime Compensation.--This contract, to the extent that it is of a character specified in the Work Hours Act of 1962 (Public Law 87-581, 76 Stat. 357-360) and is not covered by the Walsh-Healey Public Contracts Act (41 U.S.C. 35-45), is subject to the following provisions and to all other provisions and exceptions of said Work Hours Act of 1962.

(a) Overtime requirements.--No Operator or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any laborer or mechanic to be employed on such work in excess of eight hours in any calendar day or in excess of forty hours in any workweek unless such laborer or mechanic receives compensation at a rate of not less than one and one-half times his basic rate of pay for all hours worked in excess of eight hours in any such calendar day or in excess of forty hours in any such workweek, as the case may be.

(b) Violations; liability for unpaid wages; liquidated damages.--In the event of any violation of the clause set forth in subparagraph (a) of this paragraph, the Operator and any subcontractor responsible therefor shall be liable to any affected employee for his unpaid wages. In addition, such Operator and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for

liquidated damages. Such liquidated damages shall be computed, with respect to each individual laborer or mechanic employed in violation of the clause set forth in subparagraph (a) of this paragraph, in the sum of $10 for each calendar day on which such employee was required or permitted to work in excess of eight hours or in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in subparagraph (a) of this paragraph.

(c) Withholding for unpaid wages and liquidated damages.--The U. S. Geological Survey may withhold or cause to be withheld, from any moneys payable on account of work performed by the Operator or subcontractor, such sums as may administratively be determined to be necessary to satisfy any liabilities of such Operator or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (b) of this paragraph.

ARTICLE 15. Copeland (Anti-Kickback) Act--Nonrebate of wages.--The regulations of the Secretary of Labor applicable to contractors and subcontractors (29 CFR, Part 3), made pursuant to the Copeland Act, as amended (40 U. S. C. 276c) and to aid in the enforcement of the Anti-Kickback Act (18 U. S. C. 874) are made a part of this contract by reference. The Operator will comply with these regulations and any amendments or modifications thereof and will be responsible for the submission of affidavits required of independent contractors thereunder. The foregoing shall apply except as the Secretary of Labor may specifically provide for reasonable limitations, variations, tolerances, and exemptions.

ARTICLE 16. Changes and added provision.--

The Government shall not make or be obligated to make any contribution to the cost of work performed under this contract until the Operator has submitted an adequate performance bond in the penal sum of $47,725.00, and the bond has been approved by the Government.

Executed in ~~quadruplicate~~ quadruplicate the day and year first above written.

THE UNITED STATES OF AMERICA

HICKS DOME ACCOUNT
(Operator)

By _____
Title General Partner

By _____
Title General Partner

By _____
Title General Partner

By _____
U. S. Geological Survey

I, _____, certify that I am the
(Name)

_____ secretary of the corporation named as Operator herein; that

_____, who signed this contract on behalf of the Operator, was then
(Name)

_____ of said corporation; that said contract was duly signed for
(Title)

and in behalf of said corporation by authority of its governing body, and is within the scope of its corporate powers.

[CORPORATE SEAL]

EXPLORATION CONTRACT

HICKS DOME ACCOUNT

OME-6873

ANNEX I

The land, including all rights pertaining thereto, referred to in Article 2 of the Contract consists of eight contiguous tracts of leased land or mineral rights thereto totalling approximately 615 acres in section 25, T. 11 S., R. 7 E., and sections 30 and 31, T. 11 S., R. 8 E., Third Principal Meridian, Hardin County, Illinois. It is shown on Figure 1 entitled, "Map showing leased land and proposed drill holes, Hicks Dome Account, Hardin County, Illinois," which is attached and made part hereof.

delete ~~Leased or deeded land~~

Date of lease or deed	Acres	Parties to lease or deed	Description ~~Sec., Township, Range~~
March 20, 1970	160	First State Bank of Elizabethtown, Illinois, lessor, Industrial Minerals Exploration Co., lessee.	E½ NE¼ sec.25, T. 11S., R.7E., and W½ NW¼ Sec.30, T.11S., R.8E.
March 13, 1971	79.543	Mabel A. Pankey, grantor Industrial Minerals Exploration Co., grantee. (17/21st interest in tract)	NE¼ NW¼ and SE¼ NW¼ Sec.30, T.11S., R.8E less a parcel containing 0.457 acre approximately excepted in lease
July 30, 1971		Etta Irby and Iley "Doc" Pankey, lessors, Antaeus Resources Corp., lessee. (4/21st interest in tract)	Same as above

Date of lease or deed	Acres	Parties to lease or deed	Sec., Township, Range
March 12, 1970	40	Florence F. Loyd, Fluorine Loyd S. D. Loyd, Beulah Loyd, Marybelle L. McLin, W. R. McLin, lessors, Industrial Minerals Exploration Co., lessee.	SW¼ NE¼ sec. 30, T.11S., R.8E. less a parcel containing approximately ~~about~~ 0.45 acre excepted in lease
Feb. 18, 1972	61.5	William L. Hamp, Applena Hamp, James E. Hamp, Diane K. Hamp, Franklin E. Hamp, and Mary H. Hamp, lessors, Antaeus Resources Corp., lessee.	N½ NW¼ SW¼ sec. 30, and portion of E½ SW¼ sec.30, T.11S., R.8E.
April 14, 1970	40	Lola Ewell Fredricks, Jack L. Fredricks, and Sophia Coy, lessors, Industrial Minerals Exploration Co., lessee.	N½ SW¼ SW¼ and S½ NW¼ SW¼ sec. 30, T.11S., R.8E.
March 9, 1970	20	Emma D. Jenkins, Eulala Wunderlich and Fred Wunderlich, lessors, Industrial Minerals Exploration Co., lessee.	Portion of E½ SW¼ sec. 30, T.11S., R.8E.
May 14, 1971	90	Edwin E. Rose, Gladys Rose, Thomas Rose, Vivian Rose, Veloise Zeller, William Zeller, Maude E. Williams, and Virgil H. Williams, lessors, Antaeus Resources Corp., lessee	N½ SE¼ sec. 30, and E¼ NE¼ SW¼ sec. 30, T.11S., R.8E.

Date of lease or deed	Acres	Parties to lease or deed	Description ~~Sec., Township, Range~~
Feb. 22, 1972	105	J. J. Coan Co., Inc., International Fastener Research Corp., J. D. Quarant, Allene B. Quarant, lessors, Antaeus Resources Corp., lessee	S 1/2 SE 1/4 sec. 30, T.11S., R. 8E. except the north 15 acres of SE 1/4 SE 1/4; and the NW 1/4 NE 1/4 sec. 31, T.11S., R.8E.

Copies of the leases, deed of mineral interest and subsequent assignments are contained in the docket of this Contract and are incorporated herein by reference.

The Operator is in possession of these parcels of land or mineral rights under terms of an Agreement dated May 10, 1971, between Hicks Dome Account and Antaeus Resources Corporation, a copy of which is contained in the docket of this Contract and is incorporated herein by reference.

It is agreed that the requirements for the payment of royalty to the Government on mineral production set forth in Article 7 of this Contract shall not apply to any mineral production which results from mining operations conducted on the 80-acre portion of the Rose-Zeller-Williams tract located in the NW 1/4 SE 1/4, section 30, T.11S., R.8E., above the 200 foot level below the surface. It is further agreed that mineral production resulting from mining operations conducted below the 200 foot level shall be subject to payment of royalty as required by Article 7.

In the event the Operator or any subsidiary thereof at any time during the period expiring fifteen years from the date of this Contract acquires any right, title or interest in or to any land situated within one thousand (1000) feet of the heavy boundary lines shown on Figure 1 previously referred to the Operator shall promptly

notify the Government of such acquisition and furnish a description of the land, the acreage involved and the nature of the right, title or interest acquired, maps and such other data as the Government may require, and such land automatically shall become subject to the provisions of this Contract as of the date of acquisition.

With respect to any land which is subject to this Contract, the Operator may at any time not exceeding six months after the date of completion of the exploration work or termination thereof report and certify to the Government the following:

(a) That the land specified has no known value for mineral production; and

(b) That the Operator has surrendered or otherwise disposed of all its right, title, and interest in such land without consideration therefore other than relief from the cost of maintaining such right, title, or interest.

If, upon receipt of such report and certification, the Government is satisfied with the representations and showing made by the Operator an amendment shall be prepared and executed deleting such land from the land referred to in Article 2 and listed in this Annex I. Upon execution of ~~such~~ an amendment such land shall be freed from any obligation under the Contract, and withdrawn from the land described in Annex I. However, should the Operator or any subsidiary thereof at any time reacquire any right, title, or interest in land withdrawn from this contract before the expiration of fifteen (15) years from the date of the Contract, the Operator or any subsidiary thereof shall promptly notify the Government of such reacquisition and such land automatically shall become subject to the provisions of this Contract as of the date of reacquisition.

A Performance Bond in lieu of Consent to Lien and Subordination Agreements is attached and made a part hereof.

EXPLORATION CONTRACT

HICKS DOME ACCOUNT

OME-6873

EXHIBIT A

The purpose of the project is to explore by diamond core drilling for fluorspar-beryllium-rare earths-thorium-niobium ores in mineralized breccias in the Hicks Dome cryptovolcanic structure.

General Provisions

A bulldozer no smaller than a Caterpillar D-4 shall be used to prepare access roads and drill sites.

All drill holes shall be cased as necessary and completed not less than standard BX (nominal diameter 1-5/8 inches) core size or equivalent wire line size.

Insert 2nd paragraph from next page

All drill core shall be stored in boxes identified as to hole number, with markers in the core sections indicating the depths represented.

Significantly mineralized core recovered from hole intervals not exceeding 5 feet shall be split and one split assayed for fluorspar. The remaining core shall be stored in proper sequence with the unsampled core. The stored core shall be available for additional analyses as necessary and for Government inspection and possible use. With prior Government approval, the Operator may dispose of the stored core.

Insert 1st paragraph on next page

True copies of certificates of assay or analysis of all samples analyzed shall be submitted with the Operator's monthly reports, which shall include a log of the drilling completed and the location of all samples collected and assayed or analyzed.

Preliminary assays of the fluorspar content of sampled intervals may be used to select samples for subsequent more detailed and confirmatory analyses of the fluorspar content, and to determine the content of beryllium, lead, zinc, rare earths, thorium, and niobium.

The Government will not contribute to the cost of holes abandoned without prior Government approval confirmed in writing, casing left in the hole at the request of the Operator, or holes drilled closer than 100 feet to the outer boundary of the project area.

The Operator shall provide such supervision, labor, and technical services as may be required to complete the work in a satisfactory manner.

Description of the Work

The work shall consist of bulldozing access roads, preparing drill sites, and core drilling four vertical diamond drill holes, one at each of four surface sites, for an estimated drilling total of 10,000 feet. The approximate locations of the first holes to be drilled, OME-1 and OME-2, are shown on Figure 1. The location and extent of the third and fourth drill holes shall be subject to prior Government approval confirmed in writing. If it should be determined that any existing drill holes should be extended, reentry may be made and the hole deepened by additional drilling, either on a vertical course or directed by wedging to a predetermined course.

No drill hole shall exceed 3,000 feet in depth, and all holes are to be directed into breccia zones.

Upon completion of the work, the Operator shall restore to its approximate original condition any land surface where land use has been impaired by the project work.

Estimated Costs of the Work

Actual Costs

Category (1) Independent Contracts

Bulldozing access roads and drill sites 60 hours @ $12.50/hr.			$ 750.00
Diamond drilling from surface sites, 10,000 feet			56,200.00
Depth Feet	Rate per Foot NXWL	Rate per Foot BXWL	
0-300 (rotary non-coring)	$3.90		
0-500 core drilling	4.40	$4.20	
500-1,000	4.80	4.60	
1,000-1,500	5.40	5.20	
1,500-2,000	6.30	6.10	
2,000-2,500	7.50	7.30	
2,500-3,000	9.00	8.80	
Bit costs (diamond loss) 10,000 feet @ $0.50/ft.			5,000.00
Reaming, 1,200 feet @ $3.00/ft.			3,600.00
Standby time, 160 hours @ $14.00/hr.			2,240.00
Cement, drill muds, additives 250 sacks materials at driller's invoice prices, but not exceeding $9.00/100 lb. for cement, $5.50/100 lb. for drill mud, $16.00/100 lb. for caustic soda, or $65.00/50 lb. for Cellex.			2,000.00
Cementing and redrilling 80 hours @ $16.00/hr.			1,280.00
Water supply by pump or truck 6 months @ $300.00/month			1,800.00
Lost casing in completed holes, 1,200 feet NX casing at $3.50/foot BX casing at $2.50/foot			4,200.00
Total Category (1)			$77,070.00

Category (2) Personnal Services

None except:

1 Supervisor-geologist, 7 months @ $1,250.00/month	$8,750.00	
1 Sampler, 7 months @ $500.00/month	3,500.00	
Total Category (2)		$12,250.00

Category (3) Operating Materials and Supplies

Road metal, 200 tons @ $2.00 ton	$ 400.00	
Core boxes, 880 @ $1.25/box	1,100.00	
Sample bags, 300 @ $0.30/bag	90.00	
Total Category (3)		$ 1,590.00

Category (7) Miscellaneous

Office and accounting services, including part time secretarial services, printing, supplies, postage, and telephone, 7 months @ $100.00/month	$ 700.00	
Transportation of samples, 400 @ $0.60/each	240.00	
Analytical work		
Fluorspar assays, specific ion electrode method 400 @ $2.50/sample	$1,000.00	
Wet assays (Ca F_2 BeO, Pb, Zn, Th, Rare earths) 400 samples, at ranging prices per determination	$1,600.00	
Spectrographic analyses (multiple components) 100 samples @ $10.00/sample	$1,000.00	
Total Category (7)		$ 4,540.00
Total Estimated Cost of the Project		$95,450.00
Government Participation at 50 percent		$47,725.00

Box 447

Phone (618) 285-6685

Joseph A. Porter

Geologist

Rosiclare, Illinois

62982

Sept. 8, 1972

OFFICIAL COPY

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Brwtz

Mr. Harold Kirkemo, Chief
Office of Minerals Exploration
U. S. Geological Survey
Matomic Building
Room 865
1717 H. Street NW
Washington, D.C. 20006

Re: OME-6873 (Fluorspar, et al)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Kirkemo:

Enclosed are two signed copies of Exhibit B-1 as per your request. I have forwarded the two copies of Exhibit C to Mr. Murray of Joy Manufacturing, the drilling contractor for the proposed work. I am suggesting to him that he forward the signed copies to you in order to minimize mailing time.

With best regards,

Sincerely,

Joseph A. Porter

Joseph A. Porter

Enclosures (2)
Copy: file

MME Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code

SEP 7 1972

Memorandum

To: Field Officer, Region III

From: Chief, Office of Minerals Exploration

Subject: OME-6873 (Fluorspar-Beryllium et al)
Hicks Dome Account
Hicks Dome
Hardin County, Illinois

Enclosed is a draft copy of a proposed contract to explore the Hicks Dome property. The draft was submitted to the Solicitor's office on September 6 for review and final preparation. In the meantime would you please review this copy and if you have any comments or corrections to offer, please call us at once so that any corrections can be relayed to Mr. C. L. Martin, attorney, before the final draft is typed.

We will send the signed copies of the contract directly to the Operator for approval and signature. We appreciate your significant contributions to the discussions regarding this proposed project, and your assistance in estimating the costs. Because the property is located in OME Region IV, we will administer the contract in this office with Bob Trace, Princeton, Kentucky, assisting with field inspections.

Harold Kirkemo

Harold Kirkemo

Enclosure

Copy of memo. to Robt. D. Trace
and Region IV

cc: Director's reading file
Mineral Resources
OME reading file
Mr. Kirkemo
130

HKirkemo/cac 9-7-72

MME Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code

SEP 6 1972

Mr. Joseph A. Porter
Geologist
Rosiclare, Illinois 62982

Re: OME-6873 (Fluorspar, et al)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Porter:

As mentioned to you today during our telephone conversation, all OME contracts now require certifications of nonsegregated facilities from the Operator and the independent contractors of projects exceeding $10,000. Prior to the award by the Operator of any contract for work to be done on the proposed OME contract to explore the Hicks Dome property, the Operator shall require the prospective drilling contractor to submit two signed Certificates of Nonsegregated Facilities (Exhibit C). Also enclosed are two copies of Exhibit B-1, Certificate of Nonsegregated Facilities, which should be signed by an authorized representative of Hicks Dome Account. Please return the four signed copies to this office. Copies will be attached to the Government's and the Operator's copies of the contract now in preparation.

Three copies of a performance bond (Standard Form 25) are being sent to Mr. John L. Carroll as you suggested. A bond in the penal sum of $47,725.00 should be furnished by Hicks Dome Account as soon as the proposed contract has been prepared and the date and contract number determined. We will advise Mr. Carroll of this data as soon as possible.

Sincerely yours,

Harold Kirkemo

Harold Kirkemo
Chief, Office of
Minerals Exploration

Enclosures

Copy to: Mr. John L. Carroll
41st Floor
345 Park Avenue
New York, New York 10022

Robt. D. Trace USGS
Mr. Kirkemo
HKirkemo/cac 9-6-72

Director's reading file
Mineral Resources
OME reading file
Region IV
Region III

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
FEDERAL CENTER, DENVER, COLORADO 80225

Office of Minerals Exploration
Building 53 Room 28

OFFICIAL COPY
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August 23, 1972

Memorandum

To: Chief, Office of Minerals Exploration

From: Field Officer, Region III

Subject: OME-6873 (Fluorspar, et al)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Enclosed is the copy of the draft of the Hicks Dome Contract, with some suggested changes.

There should be an insert under General Provisions providing for the use of a Caterpillar D-4, as I have indicated for INSERT A.

I would recommend that the portion under Description of the Work concerning the Government's non-payment for incomplete holes, be deleted in this particular case because of the nature of the target area. These breccia zones are different than a regular vein type target where you at least have an idea of where to bottom a particular hole. Each hole may not need to go the full 2,500 feet, however enough drilling should be completed to adequately explore the breccia zone or zones, whichever the case may be. A "completed hole" should be based upon the kind and the amount of information obtained after penetrating mineralized zones, and determined by the supervising geologist upon concurrence with the Field Officer or the inspecting geologist representing the Government.

I have substituted OME for holes to be completed with OME assistance rather than to use holes A and B. (See enclosed map).

Allen Heyl suggested that should OME hole No. 1 prove unfavorable, OME hole 2 should be drilled approximately 300 feet northwest of OME No. 1, then if OME hole No. 2 is unfavorable, perhaps the Hamp 2 hole should be deepened, from 645 to 2500 feet, or a hole north of the OME No. 2 hole some 300 feet might then be considered, depending, of course, on how unfavorable the OME holes might be.

Enclosure
cc: Al Heyl

J. William Hasler

J. William Hasler, Field Officer, Region III
Office of Minerals Exploration

Box 447 Phone (618) 285-6685

Joseph A. Porter
Geologist
Rosiclare, Illinois
62982

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Aug. 17, 1972

Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
U. S. Geological Survey
Rm. 865, Matomic Building
1717 H. Street NW
Washington, DC 20006

Re: OME-6873 (Fluorspar, et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Kirkemo:

Enclosed is a map showing the part of the Rose property which we are requesting be exempted from the terms of the proposed exploration contract. It can be described as the NW$\frac{1}{4}$, SW$\frac{1}{4}$, Section 30, T. 11 S., R. 8 E.

Sincerely yours,

Joseph A. Porter

Joseph A. Porter

Encl: 1
copies JLC
file

file C, 1

August 2, 1972

Memorandum

To: Robert D. Trace, Geologist, USGS

From: Chief, Office of Minerals Exploration

Subject: OME-6873 (Fluorspar, et. al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Thank you for your services to date on the subject property. We are preparing a draft contract for the project now with the assistance of J. W. Hasler for costs and Allen Hayl for plans.

For expenses already incurred and future expenses you may incur when the project is underway, charge your vouchers to Account # 9330-90090 which is the accounting number for the Washington, D.C. office of OME. You may send the vouchers either to this office or directly to Lois F. Williams, Administrative Officer, Office of Mineral Resources, Geologic Division, Washington, D.C.

Your memo of July 3 arrived while I was on leave, July 5 - 24, hence the belated reply. Incidently, while I was on leave, the OME offices were transferred to Room 865, Masonic Building, 1717 H Street, N.W., Washington, D.C. Continue to send correspondence to us at the usual Survey address.

Harold Kirkemo

Harold Kirkemo

cc: L.P. Williams
W. Olive/USGS, Lexington
R. A. Laurence/USGS, Knoxville

Director's Reading File
Mineral Resources
OME Reading File

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

Memorandum

TO : Harold Kirkemo, Chief, OME

DATE: July 3, 1972

FROM : Robert D. Trace, Geologist
U. S. Geol. Survey
Princeton, Ky. 42445

SUBJECT: OME-6873 (Fluorspar et. al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

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Environmental impact supplement

The sites for the proposed diamond drilling are in an area of low rolling hills, part of which is wooded and partly in unused pasture~~land.~~ No farming would be disturbed. Few, if any, small trees will have to be removed, as the area needed for a drill set-up is small.

Water will be obtained from existing ponds. If return drill water is obtained, in general it will be returned to the same ponds.

Based on previous experience with similar drilling in this area, no adverse effect on the environment is anticipated.

Robert D Trace
7/3/72

5010-108

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

OPTIONAL FORM NO. 10
5010-103

UNITED STATES GOVERNMENT

Memorandum

TO : Kirk

DATE: July 3, 72

FROM : Bob Trace

SUBJECT: Environmental impact

I had almost forgotten about the "environment". I received a copy of Allen's memo. Incidentally, the only out of pocket expenses that I have had, and anticiplate having in the future, is the ferry at Cave in Rock. It costs 1.50 per crossing, i.e. 3.00 per round trip. So far, I've had 4 trips. If the project "goes", then I'll have some more. Is there any way of recovering this?

Bob

United States Department of the Interior

GEOLOGICAL SURVEY
Denver Federal Center
Denver, Colorado 80225

IN REPLY REFER TO:

Re: OME 6873 (Fluorspar et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

MEMORANDUM REPORT 6/27/72

TO: Harold Kirkemo, Chief, O.M.E.

FROM: Allen V. Heyl, Geologist
U.S. Geological Survey
Denver Federal Center, Bldg. 25
Denver, Colorado 80225

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I have recently visited Hicks Dome, Illinois and have reviewed the geological, geophysical and exploration aspects of the Hicks Dome property, and the available core and records from the previous drilling. Robert D. Trace has also recently examined the property and has reported to you on May 26, 1972 on the results of his examination. Trace and John Adams, expert mineralogist, also accompanied us during the examination.

The applicant's report is unusually complete and well prepared, and can be used to understand the broad aspects of the problem except for a few points:

(1) Examination in the field and of the core indicate that the fluorspar is pervasively deposited in explosion breccia, which occurs as large breccia pipes and lateral, thick, sill-shaped extensions that lie between capping strata and a less finely ground breccia of perhaps an earlier stage in the central core of Hicks Dome. The so-called "bedded ore" consists of large injected sill-like bodies of fluorspar-rich micro-explosion breccia. Some of the capping strata also is shattered to a crackle breccia and mineralized with fluorspar, barite and calcite.

Although much of the fluorspar breccia is capped with 1500 to 2000 feet of strata, locally mineralized breccia pipes and dikes of at least 2 ages extend to the surface. One of these breccia pipes was cut in Panky No. 2 hole. The breccia in it contains about 5 percent fluorspar. Such 5% breccia was intersected from the surface to the total depth of about 2500 feet. The coarser breccias that lie beneath the main ore zone in Hamp 3 and 4 drill holes at about 2200 feet are also mineralized as far as drilled with about 5 to 10 percent fluorspar. Fragments of mafic intrusive

igneous rocks and of Precambrian basement granite and quartzite are found scattered sparsely in the explosion breccias indicating their origin from deep-seated volcanic explosions. These fragments may have been blown upward 5000 or 10,000 feet.

(2) Almost none of the fluorite breccia ore seen fits the term "bedded replacements," although the largest and richest body found in Hamp holes 3 and 4 are tabular, and injected laterally between beds.

(3) Because of the hundreds of feet of low-grade fluorspar breccia cut in all of the five deep holes completed to date, much of the lower grade material has not been analysed. For example, the entire Panky hole No. 2 core will probably contain fluorspar in about the same percentage as the parts analysed. Thus in addition to the 200-250 feet of best fluorspar material which is the target proposed for further exploration, a very large tonnage of lower grade material containing at least 5% fluorspar and in places 10 percent has been cut in all of the drill holes. In no place has any of the five drill holes gone out of this low-grade material when drilling was stopped. Thus a very large low-grade deposit is indicated, which unless future drilling negates the present results, contains a very large fluorspar resource.

(4) Except where locally silicified, the rock drills very well and the core and sludge recovery to date has been quite good--85% or better. Future hole locations should avoid the highly silicified areas exposed at the surface which are very expensive to drill.

(5) The best 200-250 ft thick fluorspar zone cut in Hamp holes 3 and 4 and in somewhat a leaner zone in Hamp 1 is much thicker than any presently mined ore body, and if continuity between holes exists, it probably contains more than 5,000,000 tons. The average grade is lower than presently mined. Possibly, however, it will be amenable to large production methods; the lower costs that could result, places it within the realm of economic possibility.

(6) Local zones 1 to 20 feet thick that contain .5 to 5 percent lead and zinc combined will provide potential byproduct values.

(7) The fluorspar breccia contains rare earth, niobium and beryllium values. The beryllium values in Hamp hole 3 are much higher for 220 feet than in the presently productive Spor Mountain, Utah beryllium mine; the niobium values approach that of Oka, Quebec, thus other major byproduct values are indicated, <u>if</u> the metallurgical problems can be successfully handled. High beryllium rare earth zones correspond, in general, to the high fluorspar zones.

(8) Surface field checking of the recent U.S.G.S. aerial radioactivity survey indicate that any area of regolith or bed rock in the center of Hicks Dome is quite radioactive. In local areas such as the old trenches the radioactivity is very high. Elsewhere it is extensive and pervasive over about a square mile. It appears local and spotty only because of a partly eroded cap of non radioactive loess that covers much of the central domal crest. Thus the surface radioactive anomalies can be used in a very general way to assist in exploration. They will only reflect exposures of mineralized rock, and are of no help to find 2000-foot deep breccia bodies.

(9) Porter's analyses in his application appear to be excellent, both for fluorspar and the other elements. His sampling is well done, and his estimates of fluorspar are quite good, generally falling within a percent or two of the analysed results.

Recommendations:

I strongly recommend a drilling project for the Hicks Dome prospect. This fluorspar prospect is very different and geologically unusual, and the possibility exists for a very large ore body that could become a major resource. The results to date have been excellent. Every completed hole on a very wide spacing is mineralized with hundreds of feet of fluorspar. There are no known limits to the bodies in any lateral direction except the barren Fricker oil test one-half mile towards the southeast. Vertically the best material is in a zone 200-250 feet thick at depths of about 1900 to 2150 feet, but no hole to date has ever extended into barren unbrecciated rock at depth. There could be barren spots between holes, but none have been found as yet. Quite obviously there is sufficient mineralization to warrant further exploration. The previous exploration work has been handled carefully and properly.

I would like to suggest that the first hole be proposed hole A, then hole B. The third and fourth holes should be located depending on the results found in A and B.

Allen Heyl

Allen V. Heyl

Box 447

Phone (618) 285-6685

Joseph A. Porter

Geologist

Rosiclare, Illinois
62982

OFFICIAL COPY
O. M. E.
RECEIVED
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CAC	120
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June 21, 1972

Mr. Harold Kirkemo
Chief, Office of Minerals Exploration
United States Department of the Interior
Geological Survey
Washington, D.C. 20242

Re: OME-6873 (Fluorspar, et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Dear Mr. Kirkemo:

Thank you for your letter of June 9th which I will answer on behalf of Mr. Gilbert Kerlin.

With respect to the additional documents required in connection with the various leases, we enclose copies in triplicate of the following:

1. Agreement, dated May 10, 1971, between Antaeus Resources Corporation and Hicks Dome Account. "Schedule A" of this agreement describes the various leases assigned under this agreement.

2. Assignment of the Loyd Lease from Industrial Minerals Exploration Company to Antaeus Resources Corporation.

Referring to the numbered paragraphs in your letter, I would like to provide further information as follows:

1. First State Bank Lease

The assignment, Antaeus Resources Corporation to Hicks Dome Account, is a part of the May 10th, 1971 Agreement submitted herewith.

2. Antaeus-Pankey Lease

The 17/21sts interest formerly owned by Mrs. Mabel Pankey was conveyed by her to Industrial Minerals Exploration Company by deed dated March 13, 1971, and by Industrial Minerals to Antaeus Resources Corporation on April 1st, 1971. The assignment

of this 17/21sts interest from Antaeus to Hicks Dome Account was a part of "Schedule A" of the enclosed agreement.

The remaining 4/21sts interest is the subject of the Irby-Pankey lease with Antaeus Resources Corporation dated July 30th, 1971. This lease was made for convenience with Antaeus Resources Corporation as the lessee. It was intended that it be subject to the May 10th, 1971 agreement with Hicks Dome Account. We will shortly forward to you a document evidencing this assignment.

Although the 4/21sts interest of Irby-Pankey is not specifically referred to in the lease, the lease does state that if Lessor owns less than the entire mineral interest, royalty payments shall be in proportion to the fraction owned. The amount of the Irby-Pankey interest is a fact of courthouse record.

There is no additional 12/21st interest. The 12/21st interest referred to in the first sentence, last paragraph of page 6 of the application is a typing error which should have read "17/21sts".

3. Loyd Lease

A copy of the assignment to Antaeus Resources Corporation is enclosed. The lease was then assigned to Hicks Dome Account per the enclosed agreement.

4. Hamp Lease

The 1972 lease supersedes in all provisions the agreement made in 1963. No provisions of the earlier lease are still in effect. We will shortly provide you with a document evidencing the assignment to Hicks Dome Account.

5. Fredericks-Coy Lease

All provisions of the earlier lease were superseded. The enclosed agreement assigns the property to Hicks Dome Account.

6. Jenkins-Wunderlich Lease

Same comments as for Fredericks.

7. Rose, et al. Lease

Same comments as for Fredericks.

8. Coan-Quarant Lease-Option

We will shortly forward a copy of the assignment to Hicks Dome Account.

With regard to the earlier leases: as we have commented above, the provisions of the earlier leases are similar to those of the current leases, and all of the provisions of the earlier leases have been superseded. There are no provisions of the earlier leases still in effect. We can, nevertheless, provide copies of these earlier leases if desired.

We will be happy to provide the recording data as requested, and will hold the Performance Documents until we hear from you further.

We are making an effort to acquire some adjoining properties. If we are successful we will advise you so that the OME contract, if issued could be amended to include these.

Please do not hesitate to let me know if there is any further questions relative to the above.

With kindest regards,

Sincerely yours,

Joseph A. Porter

JAP:km
Encl. 6
cc. J.L. Carroll
file

MME Form 7
(2/63)

OFFICIAL FILE COPY

Date	Surname	Code
6/9/72		120
6-9	Weeks	
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		120M

June 9, 1972

Hicks Dome Account
c/o Gilbert Kerlin, Esquire
Shearman and Sterling
53 Wall Street
New York, New York 10005

Re: OME-6873 (Fluorspar, et al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

Gentlemen:

In reviewing your application for financial assistance to explore the Hicks Dome property, we note that copies of a number of legal documents pertaining to the various leases should have accompanied the application. These should be submitted to complete the application. Our comments on each of the leases are as follows:

1. First State Bank lease

Assignment, Antaeus Resources Corp. to Hicks Dome Account, was not submitted.

2. Antaeus-Pankey lease

No copies submitted of deed and assignment of 17/21sts interest in property to Hicks Dome Account.

Percentage interest (4/21sts) of Irby-Pankey is not stated in lease. Copy of assignment to Hicks Dome Account not submitted.

The 12/21sts interest formerly held by Mrs. Mabel Pankey is not explained. Total interests in property appear to exceed 100 percent (4/21sts, 17/21sts, and 12/21sts). Please explain.

3. Loyd lease

No documentation submitted for assignment to Antaeus and to Hicks Dome Account.

4. Hamp Lease

Lease supersedes agreement made in 1963, but no mention in new lease that prior lease is superseded. Document assigning lease to Hicks Dome Account was being prepared when application submitted. When completed, please send copy.

5. Fredricks-Coy lease

Lease supersedes agreement made in 1963, but no mention of earlier agreement in new lease. No document submitted for assignment from Antaeus to Hicks Dome Account.

6. Jenkins-Wunderlich lease-option

Earlier agreement made by principals in 1963. Same comments apply as for Fredricks lease.

7. Rose, et al., lease

Earlier agreement made by principals in 1964. Same comments apply as for Fredricks lease.

8. Coan-Quarant lease-option

Please submit copy of assignment Antaeus to Hicks Dome Account when complete.

We note that you will furnish the recording data for leases not yet recorded.

With reference to agreements executed in 1963 and 1964, were any provisions in these agreements in effect when the new leases were executed, and are they still in effect? If so, copies of the earlier agreements should be submitted.

In the event adjoining ground is acquired after an OME contract is executed, the contract would be amended to include these lands under the lien and royalty provisions of the contract.

We enclose for information only one copy each of a Performance Bond (SF 25) and an Affidavit of Individual Surety (SF 28) because you state that a performance bond would be submitted in lieu of lien and subordination agreements. One or both of these documents would be required in the event of a contract, but do not proceed with these at this time.

As you know, we are considering your project proposal and, if the application is approved, perhaps a contract could be offered in FY 1973. The same budget constraints that we have had in the past several years are in effect for FY 1973, beginning July 1, 1972. The assistance that OME can offer will continue to be modest and restricted to only a few of the more promising proposals.

Nothing in this letter should be construed as a commitment by the Government to grant an exploration contract.

Sincerely yours,

Harold Kirkemo

Harold Kirkemo
Chief, Office of
Minerals Exploration

Enclosures

Copy to: Mr. Joseph A. Porter
Geologist
Rosiclare, Illinois 62982

cc: Director's Reading File
Mineral Resources
OME docket
OME Reading File
R. A. Laurence, Knoxville, Tennessee
R. D. Trace, Princeton, Kentucky
Mr. Kirkemo

HKirkemo/gla 6-9-72

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Princeton, Ky.
M ~~ay~~ 26, 1972

OFFICIAL
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O. M. E.
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Dear Kirk,

Have sent samples, OME docket, and my memo report to Allen (also a copy for Hasler). Also sent Bob Laurence a copy.

Am taking a trip west for the next two weeks, starting tomorrow.

Bob

Re: OME-6873(Fluorspar et. al.)
Hicks Dome Account
Hicks Dome Property
Hardin County, Illinois

MEMORANDUM REPORT 5/26/72

To: H arold Kirkemo, Chief, OME

From: Robert D. Trace, Geologist
U. S. Geol. Survey
Princeton, Kentucky 42445

This brief report is in response to your request to "review the geologic and explorational aspect" of the above listed OME application.

The completeness of the applicant's report and the existence of a previous report by the writer on the broad aspects of the area, precludes the necessity of a complete formal report at this time. Please refer to DMEA Docket 3855, which describes the general area and the results of an earlier, albeit shallower than here proposed, exploration project on the same property.

Since the earlier project in 1956, the present applicant has completed four diamond drill core holes to depths of approximately 2,500 feet. The present objective of the writer was:

1. To examine and sample some of the results of this deep exploration
2. To evaluate the potential economic possibilities of the property
3. And to discuss the exploration proposed by the applicant.

The writer conferred with Joe Porter, applicant's geologist, in Rosiclare, Illinois on May 19, 1972. Hamp Hole No. 3 was examined and sampled, and the proposed project was discussed in some detail with Porter.

ON-SITE REPORT OF EXAMINATION

1. Hamp No. 3 core was examined from about 1,400 to the bottom (2,621), and 10 samples were taken. These samples have been sent to Allen Heyl in Denver for whatever confirmatory analyses you or he may deem necessary. Visual examination by the writer would tend to confirm that this hole does contain 5-10 to 20 percent CaF_2 in a rather thick zone at in-hole depths of about 2,000 to over 2,200 feet. The fluorite-bearing zone is a breccia that consists of scattered country rock fragments generally about 1/4 inch in diameter in a purplish fine-grained ground mass

2. Economic possibilities: No mining at depths of 2,000 feet has been done in this area nor has any metallurgical work been completed on the potential ore--so the writer can only compare with the present type of fluorspar operation, and speculate!

Currently, bedded-type fluorspar ore bodies are from 50 to 200 feet wide, 5 to 20 feet thick, and vary in length or "run" from 200 feet to 2 miles, in mines that are usually a few hundred feet deep. Mine-run ore cutoff varies, but in general 20 to 25 percent CaF_2 ore can be handled. Small zinc and lead values are commonly in the ore, and assist in lowering the CaF_2 cutoff.

In contrast, the potential Hicks Dome ore body is about 2,000 feet in depth, might average from 100 to 200 feet in thickness, and appears to average 10 to 15 percent CaF_2.

Obviously a comparison is extremely difficult because: although Porter suggests that the possibly economic zone may be bedlike, data are still too incomplete to prove this. Several pipe-like mineralized zones are within the realm of possibility. Therefore the area extent is difficult to evaluate at this time. Mining and metallurgical problems and costs are outside my field of competence and I will not even speculate.

An important factor, heretofore unmentioned by me, is the highly unusual rare earth and beryllium content. Based primarily on work by Heyl, there appears to be some correlation between the fluorite and rare earths and possibly beryllium. If the fluorite ore does contain significant quantities of rare earths and beryllium--and the metallurgical problems canbe handled--then their byproduct value might be substantial.

3. The applicant is flexible upon location of drill holes. Holes A and B basically are simple offsets of Hamp Nos. 3 and 4. Holes C and D are essentially wildcat holes. I understand via phone and memo from Heyl that Geophysics has flown a closely spaced network over the area and has come up with several anomalies. These data are not available to me as yet, but if they can be available soon, then I suggest that they might be used to assist in hole location. My uncertainty here reflect my wondering whether or not surface anomalies will reflect 2000-foot deep possibly bedded-type ore. Certainly at least one hole south of H amp 3 and 4 should bethe first hole. Further holes should be predicated on the results of the first, as well as Geophysics' anomaly data.

RECOMMENDATIONS:

I strongly recommend a drilling project for the area. These completely different and highly unusual types of mineralization(perhaps the most unusual in the country, and certainly the most unusual in my limited experience) are present in sufficient quantities to warrant further exploration. The exact location of the proposed drilling should be left open, pending Geophysics' data. Perhaps we can all agree on the first hole(at this time, either H ole A or B would be satisfactory to me) and the remainder of the drilling be set up on a contingency basis.

Robert D Trace
5/26/72

PLEASE FURNISH SERVICE(S) INDICATED BY CHECKED BLOCK(S). REQUIRED FEE(S) PAID.

☐ Show to whom, date and address where delivered

☐ Deliver ONLY to addressee

RECEIPT

Received the numbered article described below.

REGISTERED NO.

CERTIFIED NO. 13[illegible]8

INSURED NO.

DATE DELIVERED

MAY 1 1972

(1) SIGNATURE OR NAME OF ADDRESSEE (*Must always be filled in*)

Robert D Trace

(2) SIGNATURE OF ADDRESSEE'S AGENT, IF ANY

(3) SHOW WHERE DELIVERED (*only if requested*)

c55—16—71548-11 347-198 GPO

POST OFFICE DEPARTMENT
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PRINCETON, KY 42445
MAY 1
PM
1972

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Print your name and address below. If you want to restrict delivery, or to have the address of delivery shown on this receipt, check block(s) on other side. Moisten gummed ends and attach this card to back of article.

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Office of Minerals Exploration
U. S. Geological Survey
Interior Dept.
Washington, D. C. 20242

POD Form 3811 Apr. 1969 c55—16—71548-11

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(2/63)

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4/27/72		120
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APR 28 1972

Memorandum

To: Robert D. Trace, 208 South Darby Street, Princeton, Kentucky 42445

From: Chief, Office of Minerals Exploration

Subject: OME-6873 (Fluorspar, et al.)
Hicks Dome Account
Hicks Dome property
Hardin County, Illinois

The subject application is referred to you for further study and your recommendations.

We do not expect you to be concerned with the legal and non-technical matters involved in the application as we will handle those matters from this office in the event a contract is prepared.

Please review the geologic and exploration aspects of the proposal, and advise us whether or not the proposed project warrants the expenditure of Government funds in a contract.

For your general information and possibly to serve as a check list for items you may note, we enclose a copy of a Report of Examination and a recent contract we had with Porter's associates. We do not expect you to prepare an on-site report in such detail but both documents may be useful as references. Contracts are prepared in this office. Please return these to us when they have served your needs.

We agree with you that it would be desirable to send the application to Allen Heyl when you are finished with it. As you know, he and the OME representatives in Denver conferred on January 27, 1972, with Porter about this proposal.

Any expenses you may incur in a field examination or, in the event of a contract, in interim inspections should be charged to OME (FY 1972 project number 938010 or FY 1973 project number 3-80-00463).

We sincerely appreciate the time and effort you may spend on this application, and we are especially grateful for your advice and recommendation.

Harold Kirkemo

Harold Kirkemo

Enclosures

cc: Wilds W. Olive, U. S. Geological Survey, 710 W. High Street, Lexington, Kentucky 40508
Robert A. Laurence, USGS, Knoxville, Tennessee
A. V. Heyl, Jr., Room 2443, Building 25, Denver Federal Center
J. W. Hasler, Field Officer, OME, Denver

cc: Director's Reading File
Mineral Resources
OME docket
OME Reading File
Mr. Kirkemo
Mr. Weeks

HKirkemo/gla 4-28-72

MME Form 7
(2/63)

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Date	Surname	Code
4/28/72		120
		220
		120M

APR 28 1972

Hicks Dome Account
c/o Gilbert Kerlin, Esquire
Shearman and Sterling
53 Wall Street
New York, New York 10005

Re: OME-6873 (Fluorspar, et al.)
Hicks Dome account
Hicks Dome Property
Hardin County, Illinois

Gentlemen:

Your application for exploration assistance, dated April 14, 1972, has been assigned Docket No. OME-6873. Please identify all future correspondence relating to your application by this docket number.

We enclose for your information a copy of Exhibit A, entitled "Notice to Prospective Federally Assisted Construction Contracts", which describes certain recent additional regulations and requirements. This should be filed with your copy of the application.

The application has been reviewed in this office and referred to Mr. Robert D. Trace, U. S. Geological Survey, 208 South Darby Street, Princeton, Kentucky 42445.

Mr. Trace will contact you if additional information concerning the application is needed. In the event a field examination is necessary, he will arrange a suitable schedule with you or Mr. Porter.

Sincerely yours,

Harold Kirkemo

Harold Kirkemo
Chief, Office of
Minerals Exploration

Enclosure

Copy to: Mr. Joseph A. Porter
Geologist
Rosiclare, Illinois 62982

Robert A. Laurence, Knoxville, Tenn.
Robert D. Trace, Princton, Kentucky
Mr. Kirkemo
Mrs. Weeks

cc: Director's Reading File
Mineral Resources
OME docket
OME Reading File

RAWeeks/gla 4-28-72

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
FEDERAL CENTER, DENVER, COLORADO 80225

Office of Minerals Exploration
Building 53 Room 28

OFFICIAL COPY
O. No. B
B 88
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February 24, 1972

Memorandum

To: Chief, Office of Minerals Exploration

From: J. W. Hasler and W. L. Emerick

Subject: Meeting in OME Region III office on Hicks Dome area, Illinois

A pre-application meeting for the purpose of discussing the geology, previous exploration, and proposed exploration of the Hicks Dome area in southern Illinois was held in the OME office, Room 28, Building 53, Denver Federal Center, on February 17, 1972. In attendance were Joseph Porter, a consulting geologist for a Mr. Carroll of New York City, Alan Heyl, J. W. Hasler and W. L. Emerick, all of the U. S. Geological Survey.

The enclosed sketch by Heyl shows the approximate relationship of surface trenches, drill holes, breccia pipe, and project boundaries in the area under consideration. All of the proposed exploration is to be done in the Hamp project area covering the lower two-thirds of the sketch.

Porter gave a fairly complete run down on the stratigraphy of the drill holes shown on the sketch. Pankey No. 1 was stopped at a total depth of 250 feet owing to silica. It was drilled in the center of the Pankey Breccia Pipe and there was no fluorite. Pankey No. 2 was drilled to a total depth of 2,485 feet and was in breccia all the way. There was minor fluorite throughout the total depth but in the interval 2,000 to 2,400 feet there was an increase in fluorite content in the core of 2 to 8%. No analyses were made for Be, Rhe, or Y. Porter called the breccia in this hole a grey breccia.

The Hamp holes were put down by the Carroll interests. Hamp Well Hole and Hamp No. 1 contained minor fluorite and Hamp No. 2 (not shown on sketch) was a shallow, barren hole bottomed in silica. Hamp No. 3 was the richest hole. Beginning at 2,000 feet it went into a purple microbreccia that continued to 2,240 feet. This 240 foot interval ran 12 to 20% fluorite, locally 30%, 1% Be, 0.15% Nb, 1% Y, 0.5% Zn, and 0.3% Pb. The top 60 feet of this 240 foot interval averaged greater

than 1% Be. Above 2,000 feet the hole was leaner in fluorite and not ore. The upper part of the hole was a coarse breccia of crackled limestone cemented by calcite and purple fluorite. The hole was breccia most of the way to the bottom. Porter stated that the tops of the breccia fragments have more fluorite deposited on them than the bottom and sides, suggesting upward flow of solutions. Hamp No. 4 is similar to Hamp No. 3. The best microbreccia fluorite interval was from 1,900 to 2,150 feet with leaner fluorite continuing from this interval to the bottom of the hole at 2,380 feet. This interval is the same zone as the 2,000 to 2,240 feet interval in Hamp No. 3 and at the St. Peter-Pottsville contact. There was little breccia above 1,900 feet in this hole and it is leaner in fluorite and Be (about 0.5% Be) than Hamp No. 3.

Heyl does not agree with Porter's idea of a N-S crescent-shaped trend for the fluorite zone because it heads directly for the barren Pankey Breccia Pipe which contains no fluorite. Heyl favors a south trend because of a radiometric anomaly in that direction. Porter is not aware of the radiometric anomaly as it is confidential U.S.G.S. data.

Porter's proposal included the drilling of 4 diamond drill core holes, each approximately 2,500 feet in depth, at a total cost of about $80,000. It was also stated that the anticipated work may include wedging to the east in the Hamp No. 3 and No. 4 holes from an approximate 1,000 foot depth in the two holes, and then continuing the wedge drilling for approximately 1,000 to 1,200 feet to the target zone. The bottoms of the wedged holes when completed would be in the same line as the 4 proposed vertical holes. Spacing of the proposed holes would be at intervals suitable for projecting reserves of rather thick fluorite-bearing breccia zones. It was not clearly stated whether the wedging in the Hamp Nos. 3 and 4 would be at the applicants' expense or included as part of the project.

Because there are so many owners of fractional land shares involved, the applicant will propose to furnish a performance bond in lieu of Lien and Subordination Agreements. The applicant wants his land acquisition activities kept quiet because of possible involvement of other mine operators in the district.

J. William Hasler

J. William Hasler,
Field Officer, Region III
Office of Minerals Exploration

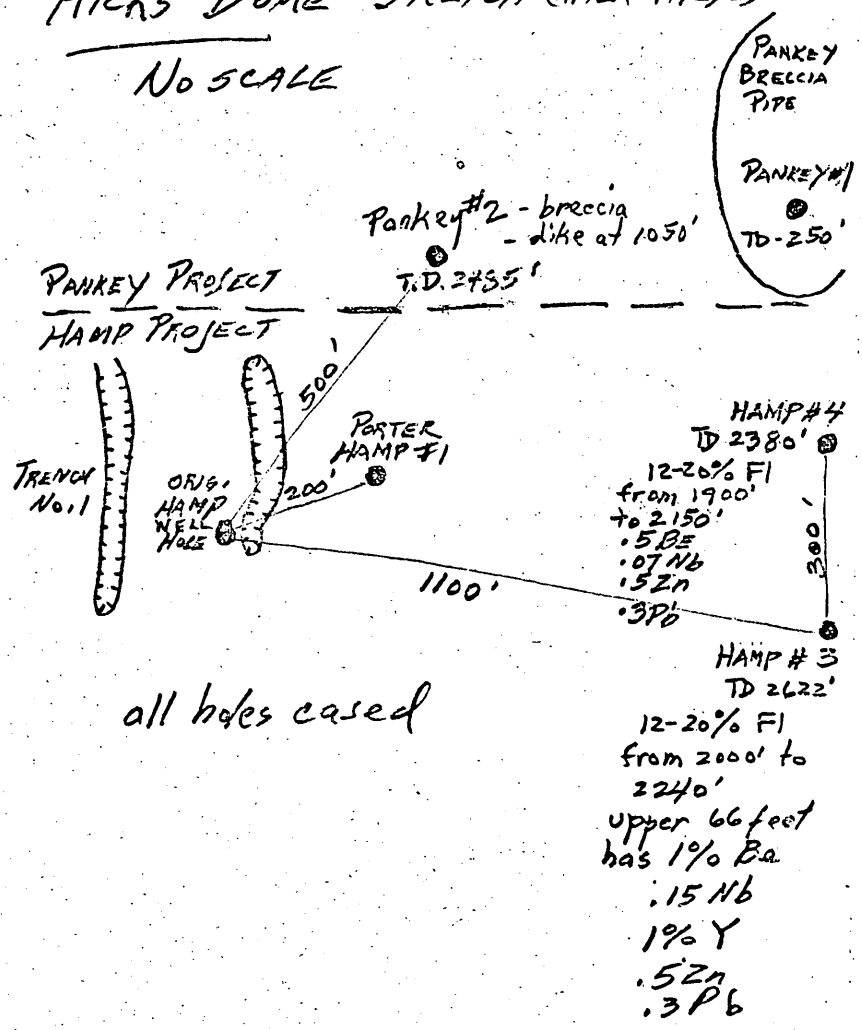
and

William L. Emerick

William L. Emerick,
Assistant Chief,
Office of Minerals Exploration

Hicks Dome Sketch (after A. Heyl)

No scale



all holes cased

HICKS DOME AREA, ILLINOIS

Alan Heyl notes per Joe Porter 2/17/72

Pankey #1 is 250' deep and stopped owing to silica. It lies in topographic center of Pankey Breccia. Cut breccia cemented by barite. No fluorite.

Pankey #2 cut breccia all the way down for 2,485 feet. Cut well-defined inclined dike of peridotite at 1050 feet, but all holes (Hamp 1, 2, 3, and Pankey 2) cut fragments of peridotite cemented by breccia. Other peridotite in Pankey 2 at 700'±. Upper part of hole is mostly breccia cemented by white "calcite"; locally purple fluorite breccia fragments cemented by calcite breccia high in hole. Minor fluorite throughout. More in lower part 2,000' - 2,400 feet. 2 to 8% Fl, only 1 cut 12. Last 40 - 80 feet not logged. No analyses for Be, Re, Y, only for Fl! Porter calls this hole a gray breccia.

Hamp 3 goes into purple breccia at 2,000 feet and continues to 2,240. Breccia continues to bottom but less Fl. Lower rich purple breccia at St. Peter-Pottsville boundary and top of dolomite section. Limestone above. From 2,000 to 2,240 feet hole runs 12 to 20% Fl, locally 30%, 1% Be and much is greater than 1% Be by spec. The 66 feet from 2,000 to 2,066 feet will average 1%+ Be. The 240 feet (2,000 to 2,240) will average .15 Nb, 1% Y, 0.5% Zn and 0.3% Pb. 50 - 100 ppm W, 10-20 ppm Bi. Not analyzed for Th or U. Specs showed 1.5 Re.

Hamp 2 Shallow, barren, in SiO_2 - gave up.

Hamp 3 is richest hole but #4 is similar. There is crackle and some leaner fluorite breccia above 2,000 but not ore. Top of hole barren. Dike rock in spots. Richest fluorite is microbreccia of purple fluorite and round eyes of pale greasy yellow barite (checked) up to .7 cm., also rock fragments of limestone. Upper part of hole is coarse breccia of crackled limestone cemented by 4 mm. bands of normal purple fluorite and centers of calcite. Big thickness, so this hole was breccia most of way. Porter says top of fragments have more fluorite than bottoms and sides suggesting upward solution flow.

Hamp #4 is similar to #3 with best microbreccia black purple fluorite zone from 1,900 - 2,150 feet. Breccia leaner in fluorite continues to bottom according to log. Ore is same zone and at Pottsville - St. Peter contact. Log shows but little breccia above 1,900 feet and Porter mentioned none. He thinks of ore zone as northward trending breccia blanket through holes 3 and 4 and discounts Hamp #1 and Hamp well hole even though he agrees they are probably continuous. Hamp 4 has almost same grade as Hamp 3 but is leaner in fluorite and Be (0.5% Be). Talks (Porter) of N - S crescent trend, but this heads right for Pankey Breccia which is free of fluorite! I (Heyl) don't agree. May go south but not N. as big radiometric

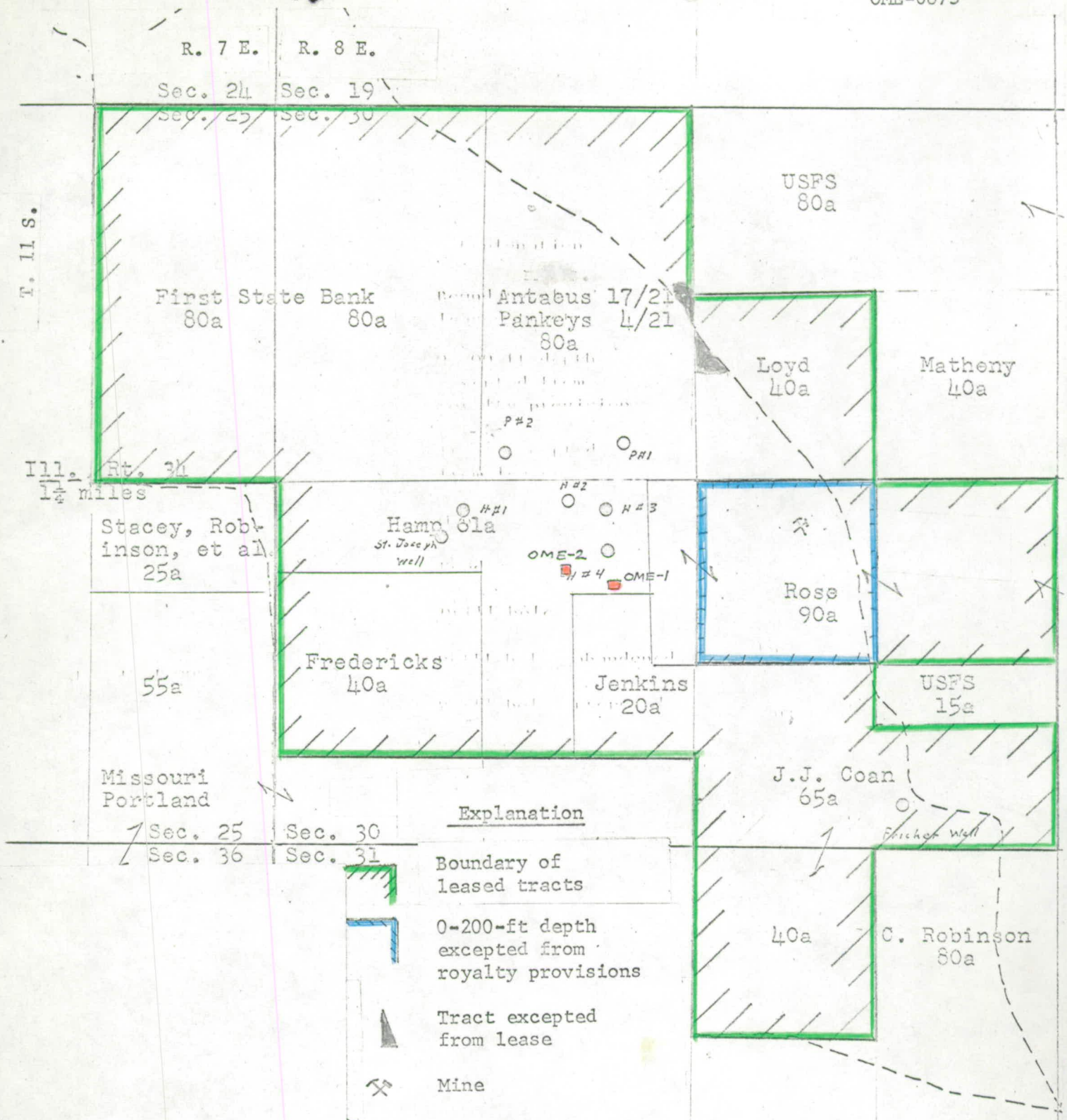
anomaly to S. (Porter does not know of radiometric high, as it is Survey data, keep Q.T.) Holes 4 and 3 both have peridotite fragments cemented by purple fluorite breccia. Porter says beds dip eastward from Hamp 1 at 10° - 15°. Breccia zones also. Have given all of stratigraphic core to Illinois Survey. Note: Best in Hamp 1 and Hamp hole are almost same grade as in Hamp 4; but they have more vertical breccia and less stratigraphic continuity.

Porter says H_2S comes out cracks all over district and is a distinct danger. Porter says Frontier Resources got most of Alcoa property. Minerva and Ozark Mahoning the rest. Not much activity in Illinois part of district. Porter wants his land acquisition kept quiet.

Pankey hole 2 has most breccia but poorest fluorite. Porter says later calcite and grey breccia cut dikes and breccia. Fluorite breccia cuts dikes too.

U. S. Geological Survey
Office of Minerals Exploration

Hicks Dome Account
OME-6873



Scale: 1"=1,000'

Figure 1

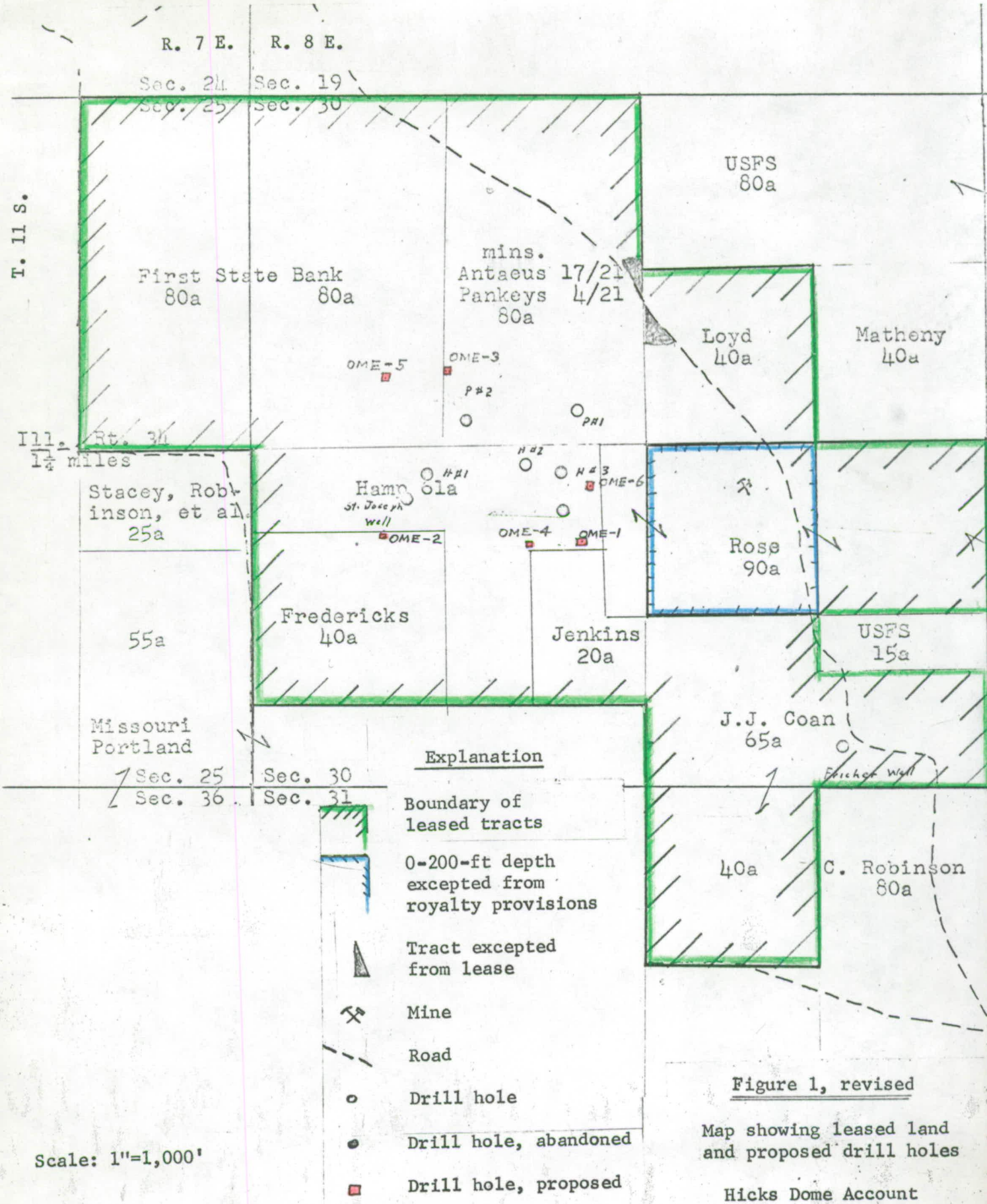
Map showing leased land and proposed drill holes

Hicks Dome Account

Hardin County, Illinois

U. S. Geological Survey
Office of Minerals Exploration

Hicks Dome Account
OME-6873



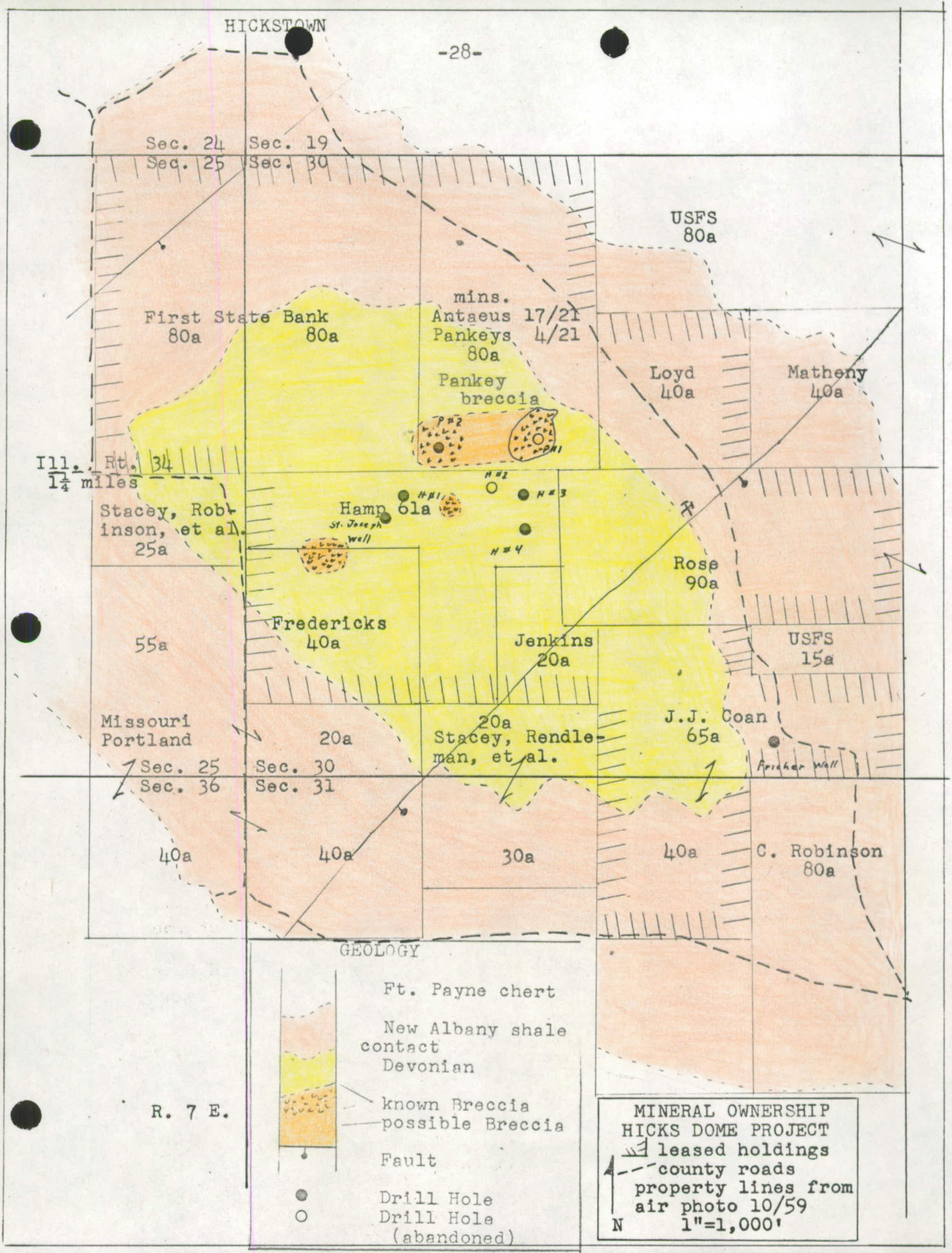
Scale: 1"=1,000'

Figure 1, revised

Map showing leased land and proposed drill holes

Hicks Dome Account

Hardin County, Illinois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Stacey, Robinson, et al.
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Hamp 61a
St. Joseph well
Rose
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USFS
15a
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Portland
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J.J. Coan
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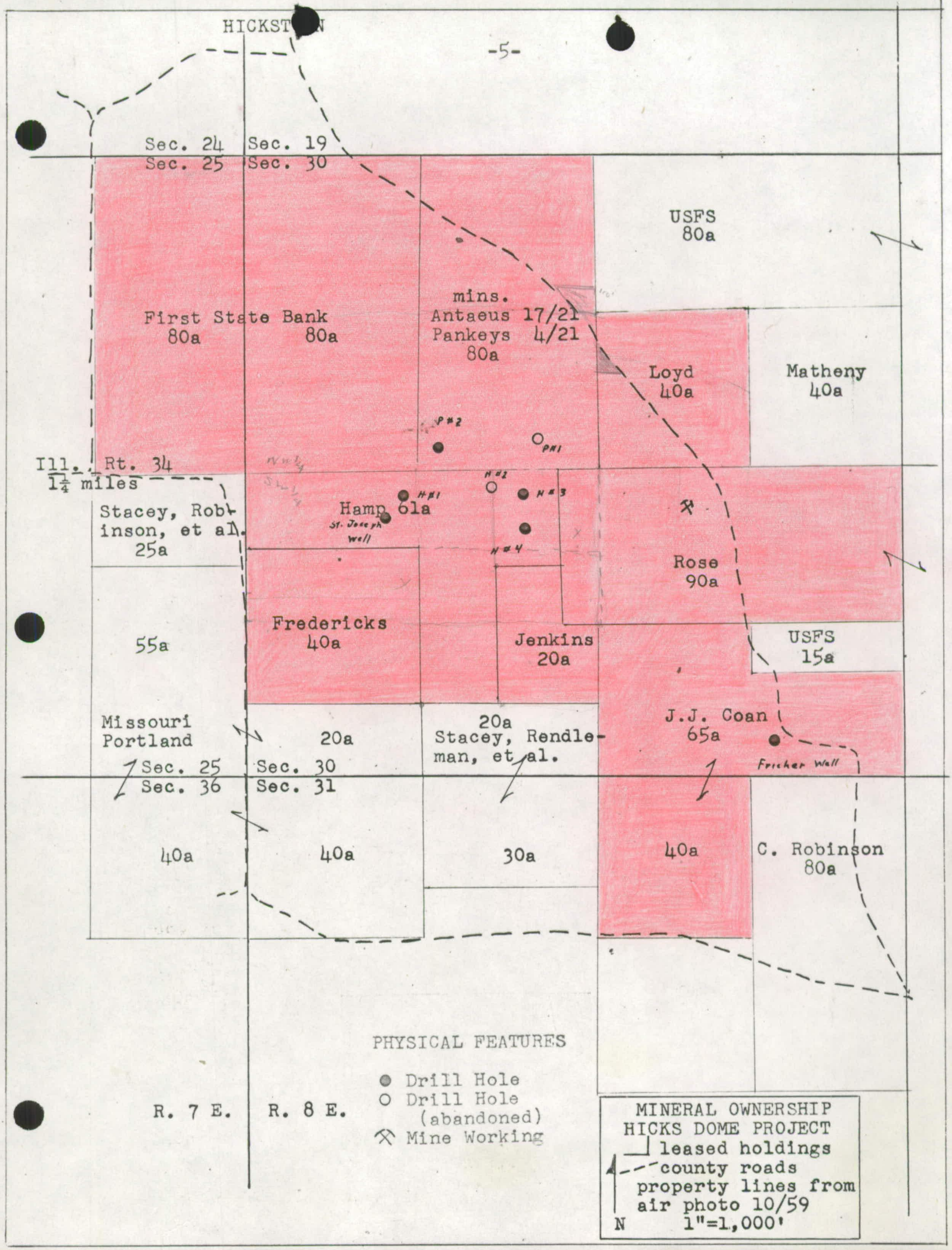
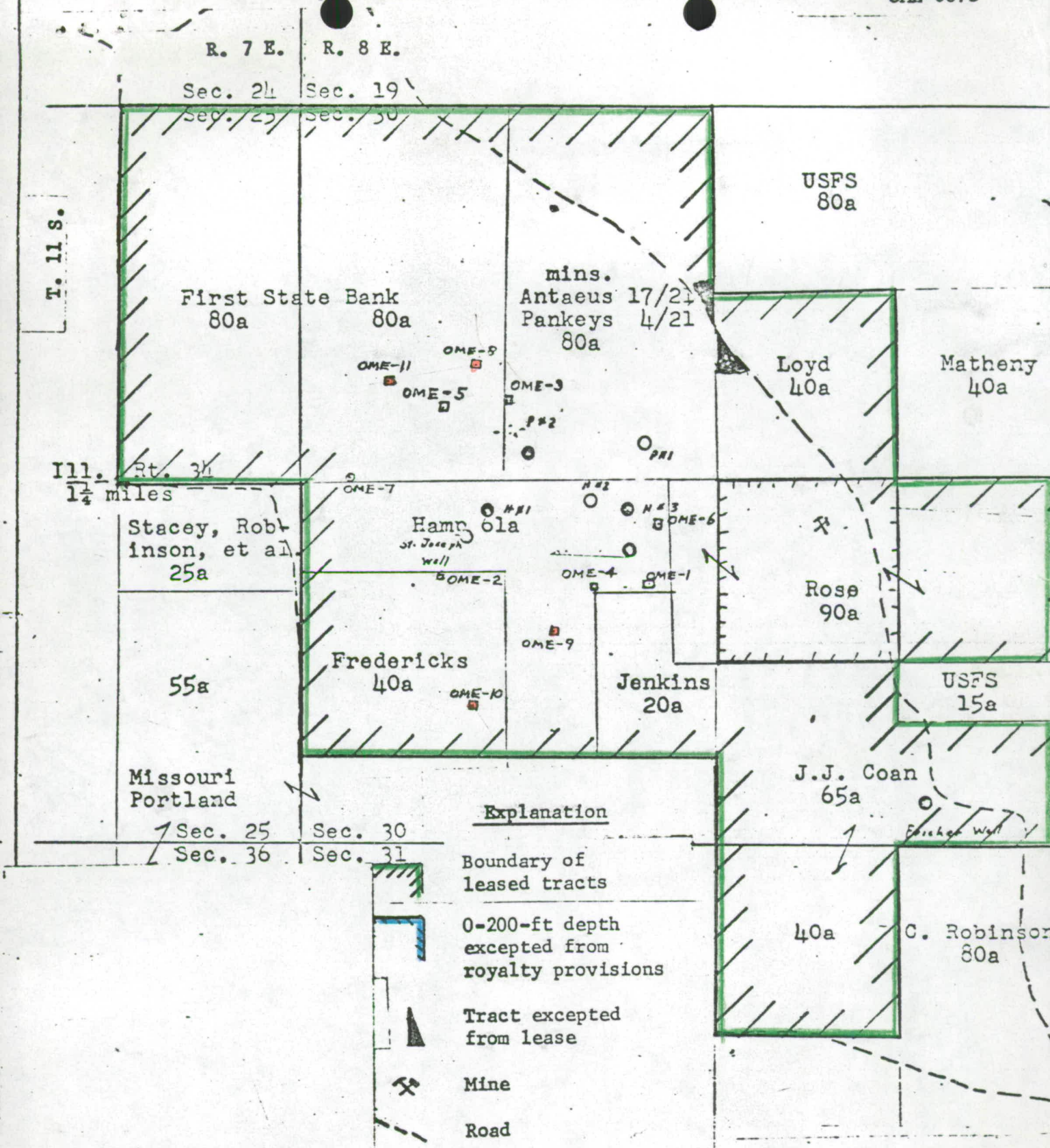
Sec. 25
Sec. 36
Sec. 30
Sec. 31
40a
40a
30a
40a
C. Robinson
80a
GEOLOGY
Ft. Payne chert
New Albany shale contact
Devonian
known Breccia
possible Breccia
Fault
Drill Hole
Drill Hole (abandoned)
R. 7 E.
MINERAL OWNERSHIP
HICKS DOME PROJECT
leased holdings
county roads
property lines from air photo 10/59
N
1"=1,000'


HICKSTON
Sec. 24
Sec. 25
Sec. 19
Sec. 30
USFS
80a
First State Bank
80a
80a
mins.
Antaeus 17/21
Pankeys 4/21
80a
Loyd
40a
Matheny
40a
P #2
P #1
Ill. Rt. 34
1¼ miles
Stacey, Robinson, et al.
25a
Hamp 61a
St. Joseph well
H #1
H #2
H #3
H #4
Rose
90a
55a
Fredericks
40a
Jenkins
20a
USFS
15a
Missouri Portland
20a
20a
Stacey, Rendleman, et al.
J.J. Coan
65a
Fricker Well
Sec. 25
Sec. 36
Sec. 30
Sec. 31
40a
40a
30a
40a
C. Robinson
80a
R. 7 E.
R. 8 E.
PHYSICAL FEATURES
Drill Hole
Drill Hole (abandoned)
Mine Working
MINERAL OWNERSHIP
HICKS DOME PROJECT
leased holdings
county roads
property lines from air photo 10/59
N
1"=1,000'

U. S. Geological Survey
Office of Minerals Exploration

Hicks Dome Account
OME-6873



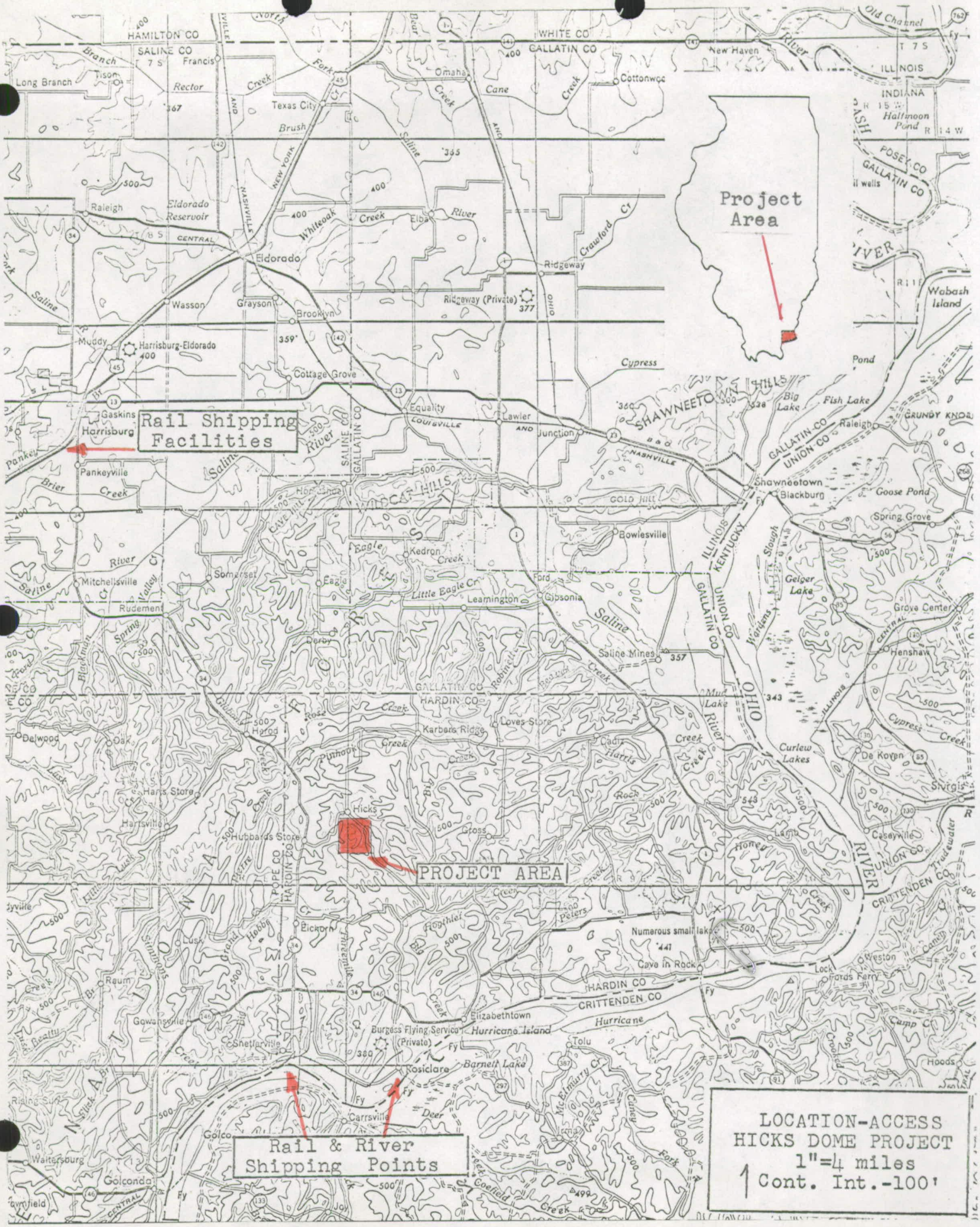
Scale: 1"=1,000'

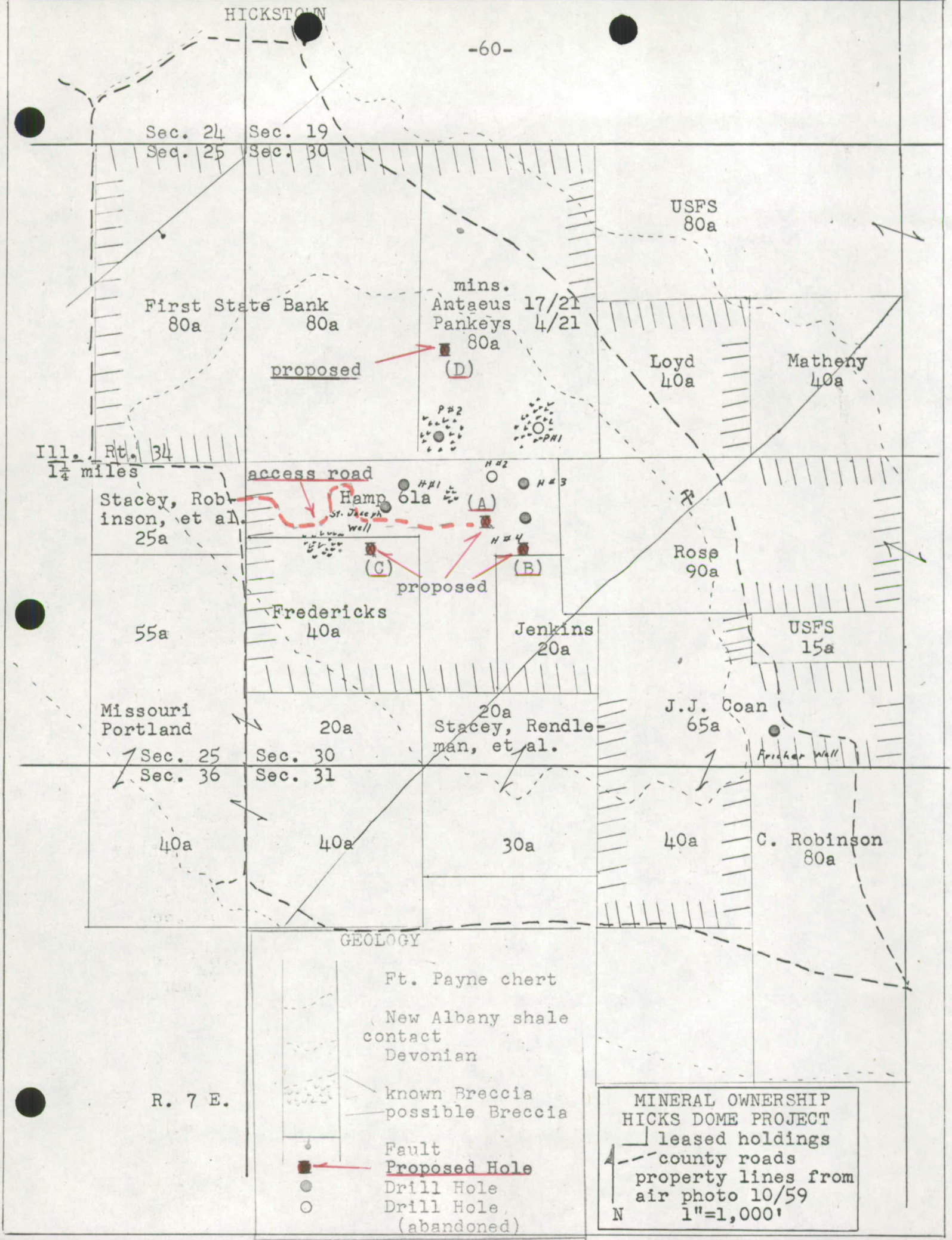
Figure 1, revision 2

Map showing leased land and proposed drill holes

Hicks Dome Account

Hardin County, Illinois


Project Area
Rail Shipping Facilities
PROJECT AREA
Rail & River Shipping Points
HAMILTON CO
SALINE CO
WHITE CO
GALLATIN CO
HARDIN CO
CRITTENDEN CO
UNION CO
ILLINOIS
INDIANA
KENTUCKY
Harrisburg
Eldorado
Raleigh
Shawneetown
Elizabethtown
Rosiclare
Golconda
Cave in Rock
Hicks Dome
Saline River
Ohio River
Wabash River
Eldorado Reservoir
Harrisburg-Eldorado
Ridgeway (Private)
Burgess Flying Service (Private)
Hurricane Island
Barnett Lake
Numerous small lakes
LOCATION-ACCESS
HICKS DOME PROJECT
1"=4 miles
Cont. Int.-100'


HICKSTOWN
Sec. 24
Sec. 25
Sec. 19
Sec. 30
USFS
80a
First State Bank
80a
80a
mins.
Antaeus 17/21
Pankeys 4/21
80a
proposed
(D)
Loyd
40a
Matheny
40a
Ill. Rt. 34
1¼ miles
access road
Stacey, Robinson, et al.
25a
Hamp 61a
(A)
St. Joseph well
(C)
(B)
proposed
Rose
90a
Fredericks
40a
55a
Jenkins
20a
USFS
15a
Missouri
Portland
20a
20a
Stacey, Rendleman, et al.
J.J. Coan
65a
Archer well
Sec. 25
Sec. 36
Sec. 30
Sec. 31
40a
40a
30a
40a
C. Robinson
80a
GEOLOGY
Ft. Payne chert
New Albany shale
contact
Devonian
known Breccia
possible Breccia
Fault
Proposed Hole
Drill Hole
Drill Hole
(abandoned)
R. 7 E.
MINERAL OWNERSHIP
HICKS DOME PROJECT
leased holdings
county roads
property lines from
air photo 10/59
N
1"=1,000'

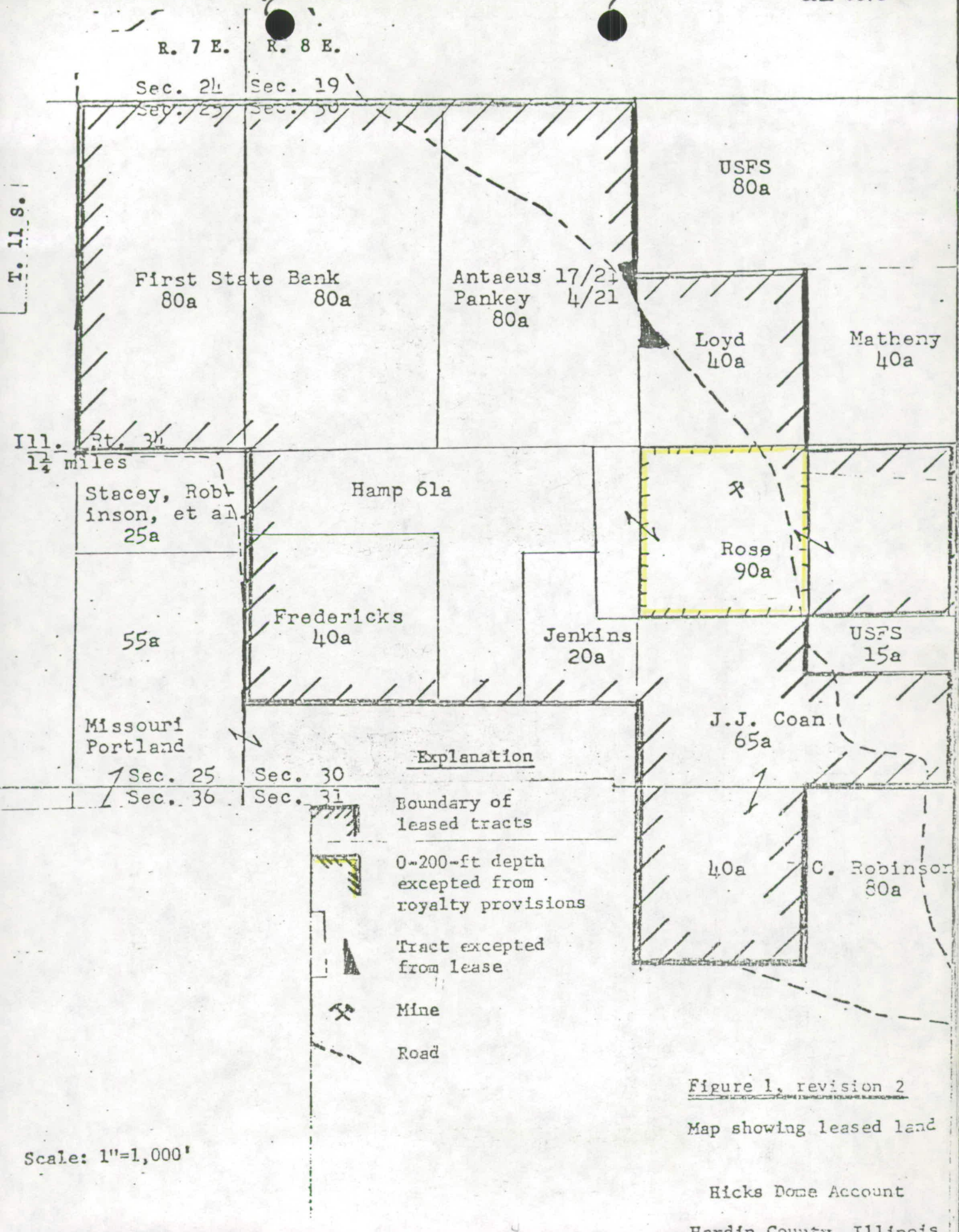


Figure 1, revision 2

Map showing leased land

Hicks Dome Account

Hardin County, Illinois

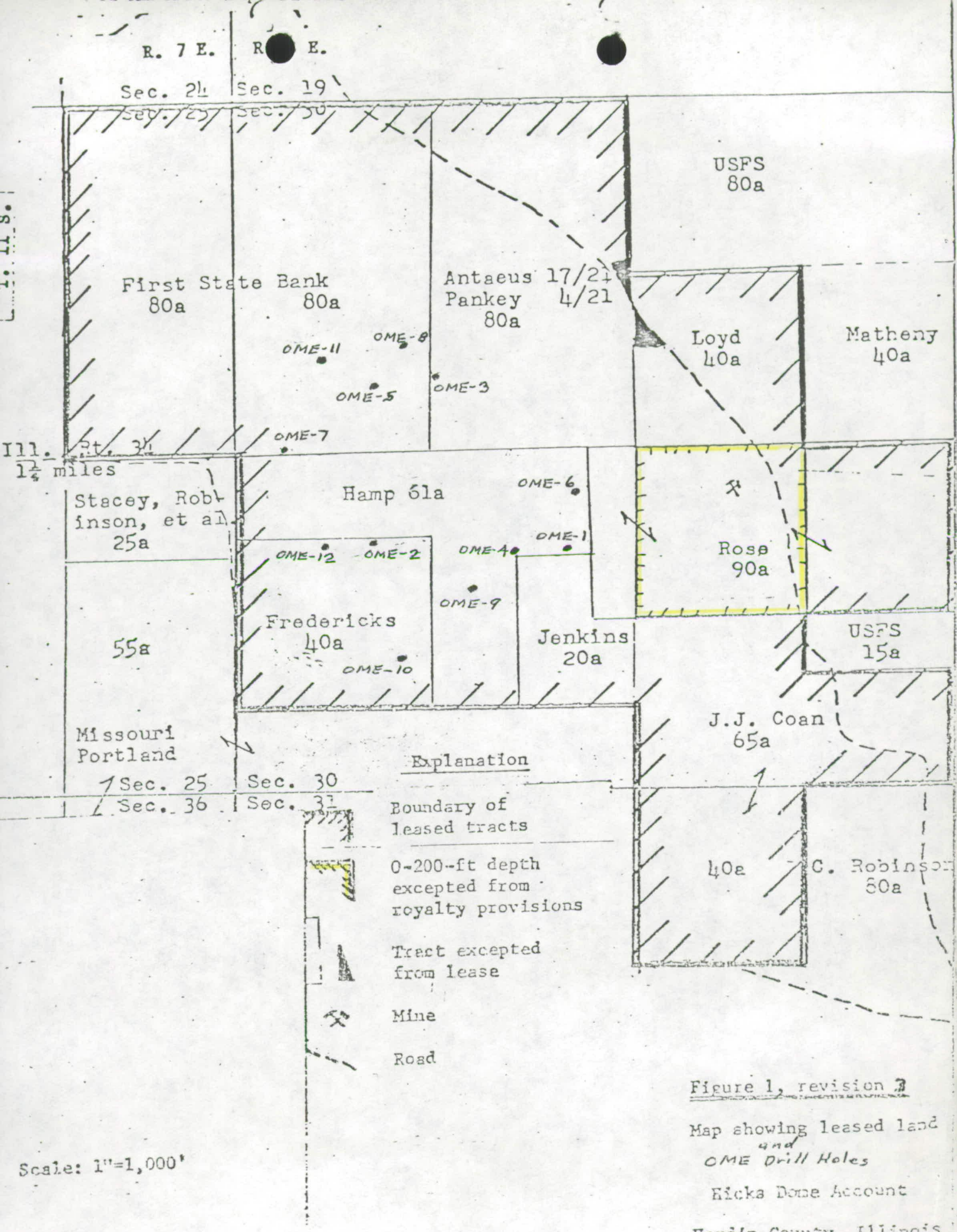


Figure 1, revision 3

Map showing leased land and OME Drill Holes

Hicks Dome Account

Hardin County, Illinois

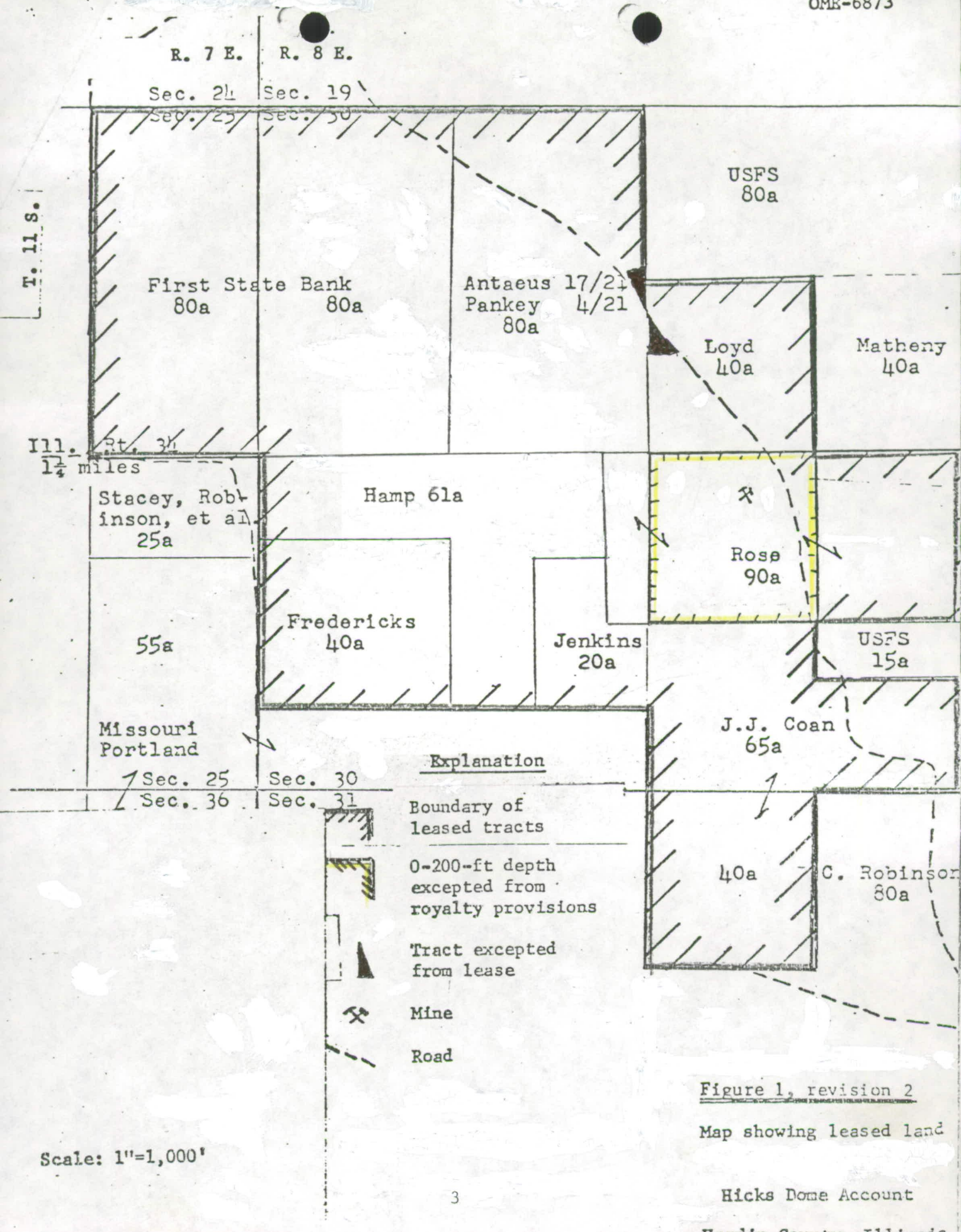


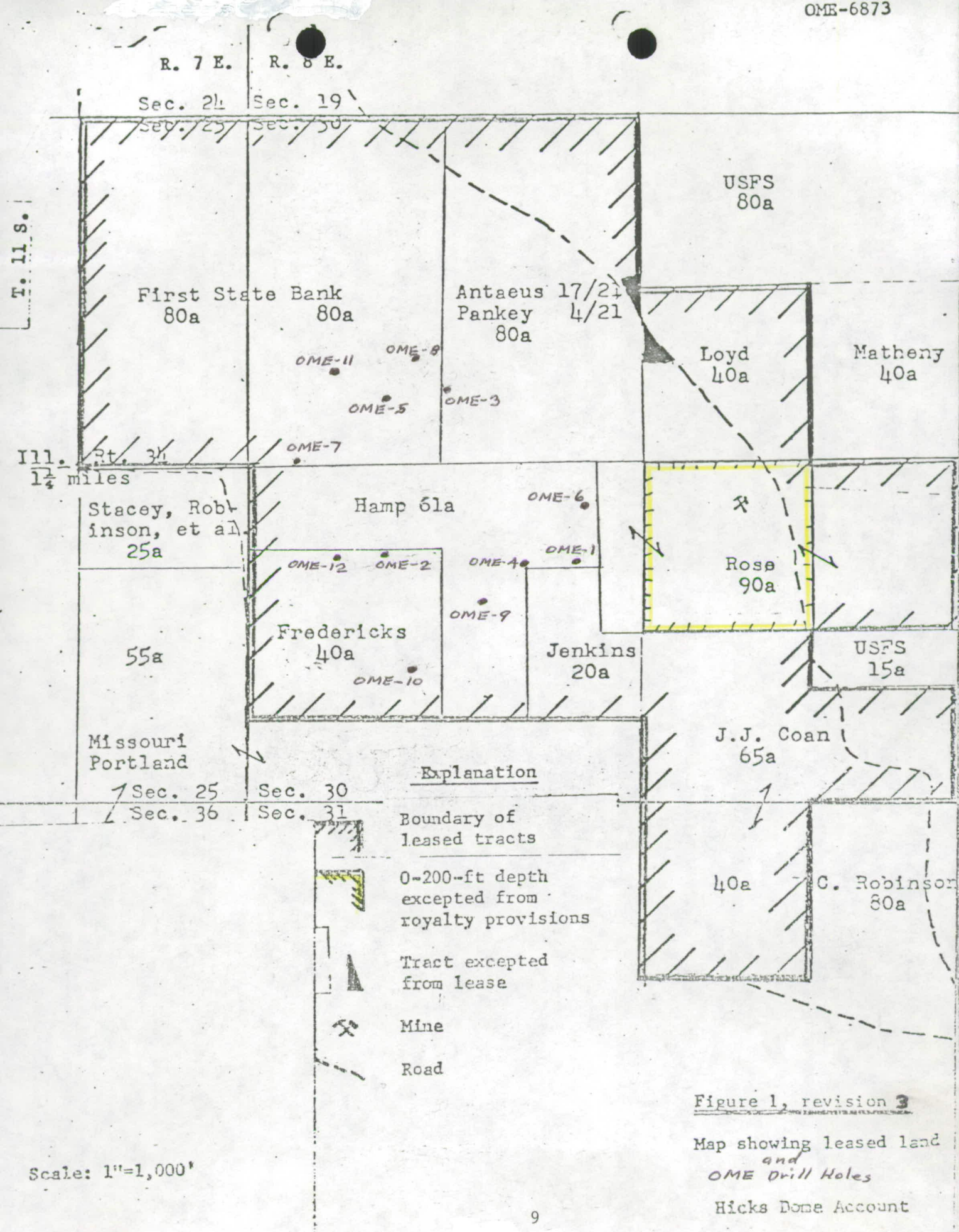
Figure 1, revision 2

Map showing leased land

Hicks Dome Account

Hardin County, Illinois

Land Status



Scale: 1"=1,000'

Figure 1, revision 3

Map showing leased land and OME Drill Holes

Hicks Dome Account

Hardin County, Illinois

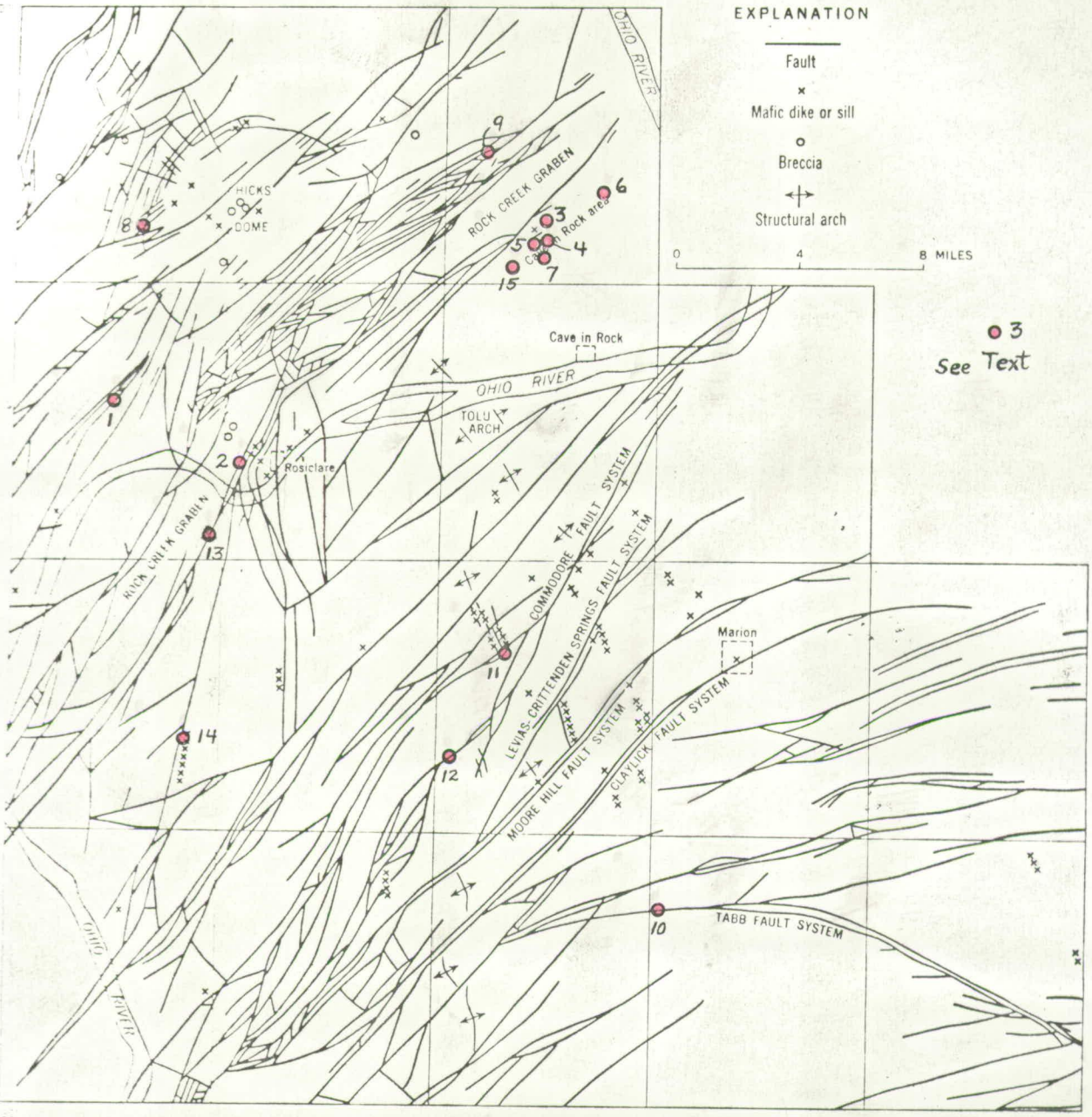
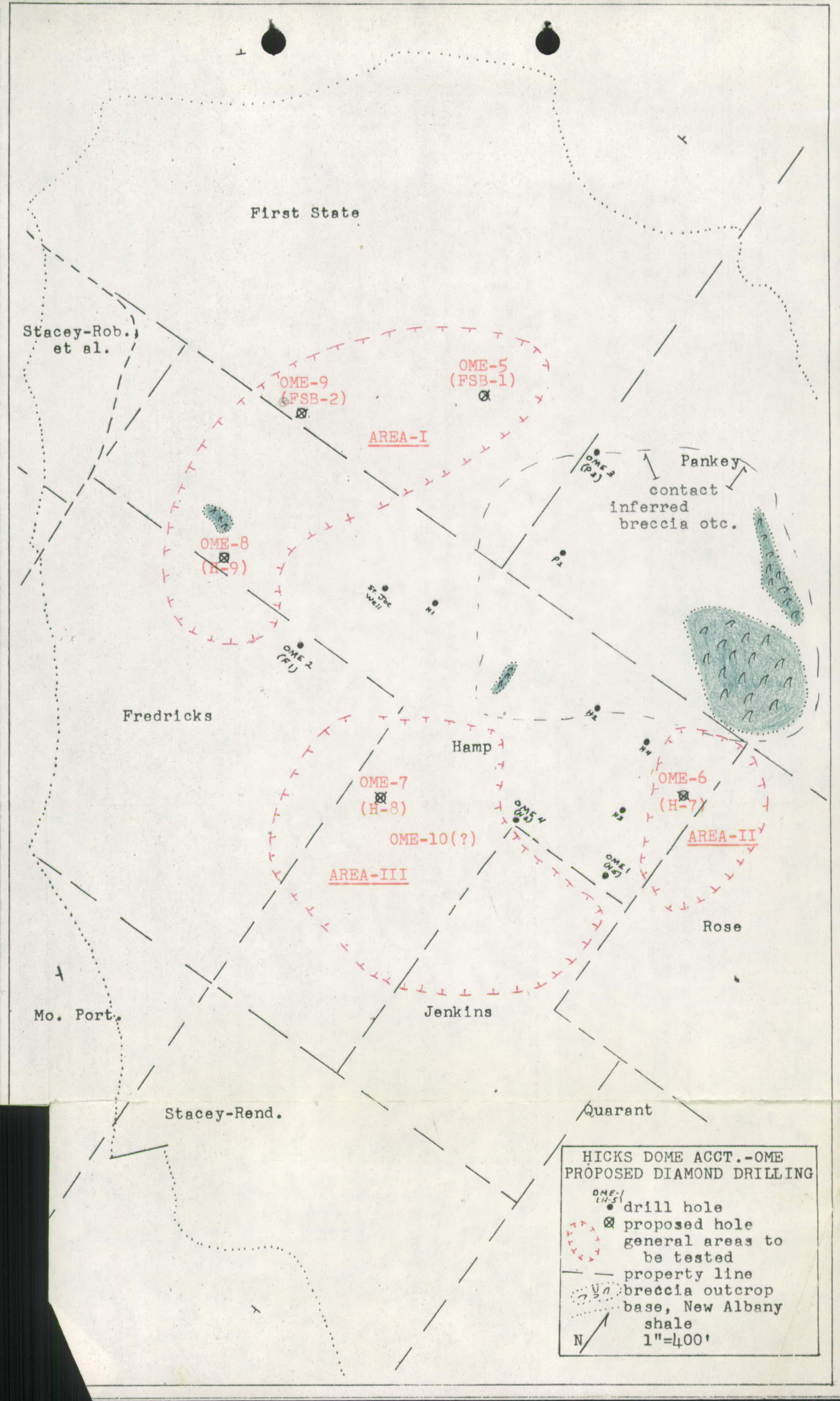
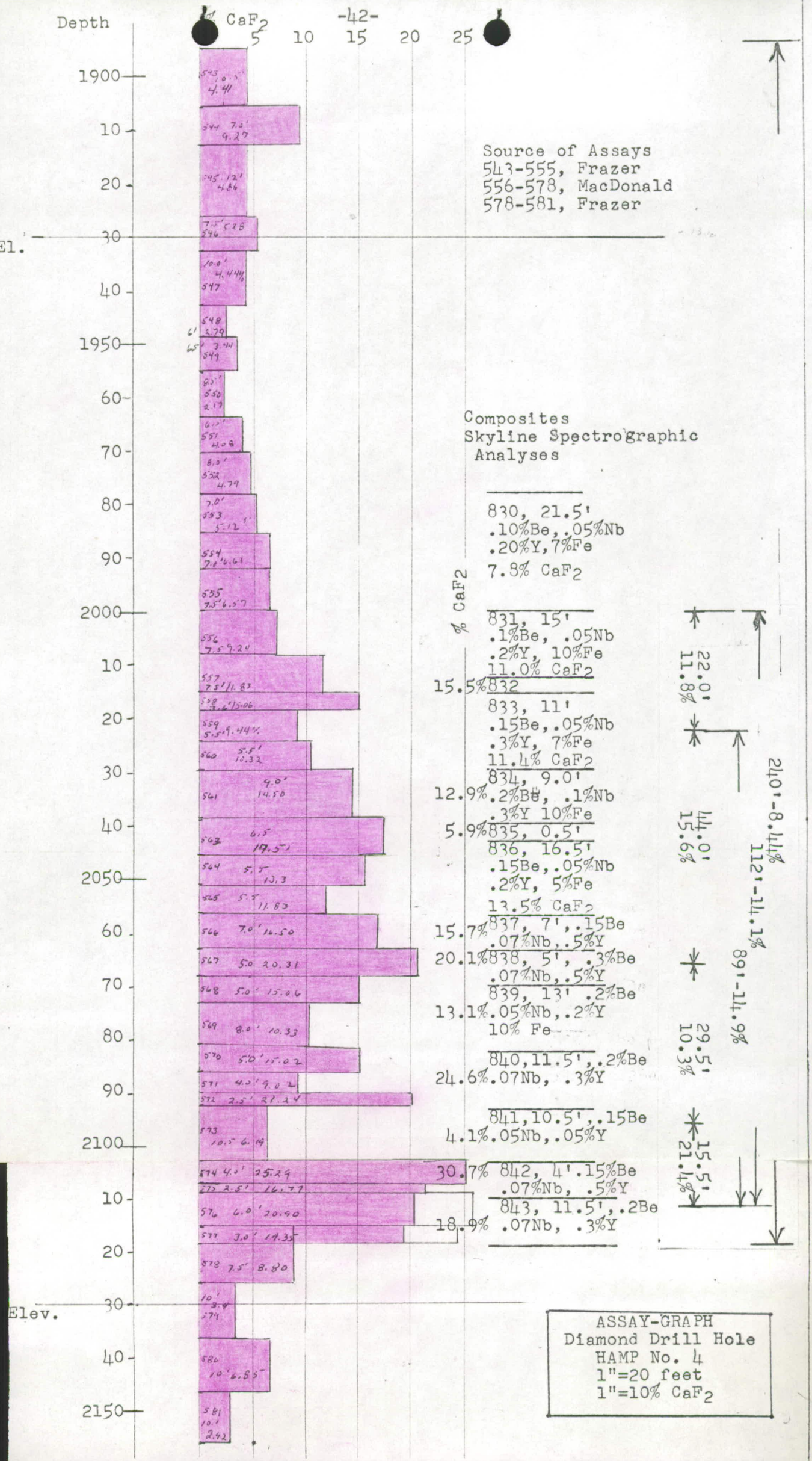


Figure 1. Major structural features of the Illinois-Kentucky fluorspar district (compiled from 17 published and unpublished geologic maps of 7.5-minute quadrangles, 1962-1972, by the Illinois State Geological Survey and U. S. Geological Survey).

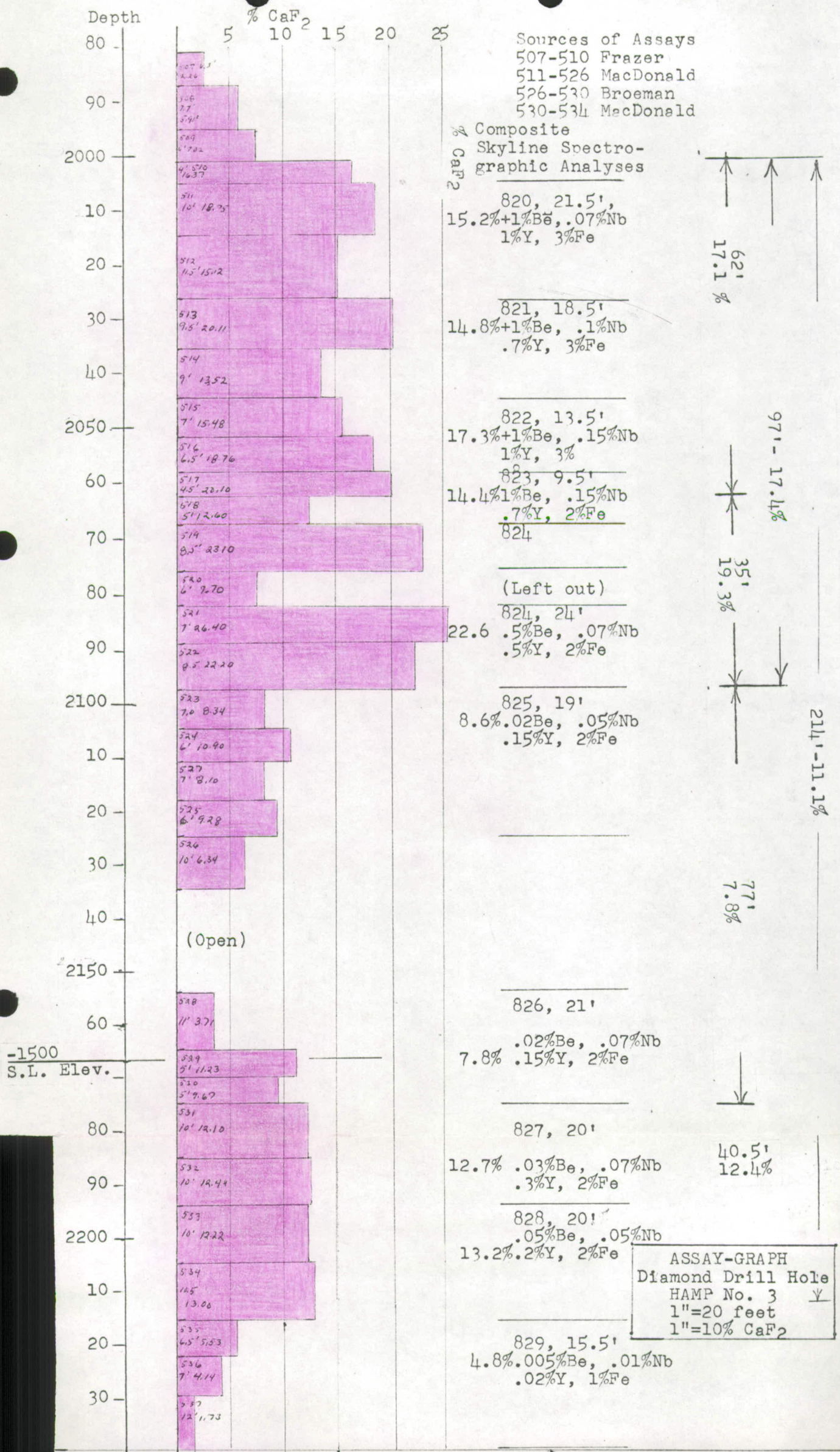
ILLINOIS-KENTUCKY FLUORSPAR DISTRICT[1]

ROBERT D. TRACE
U.S. Geological Survey
Madisonville, Kentucky


First State
Stacey-Rob.
et al.
OME-9
(FSB-2)
OME-5
(FSB-1)
AREA-I
Pankey
contact
inferred
breccia otc.
OME-8
(H-9)
St. Joe
Well
OME 2
(F1)
Fredricks
Hamp
OME-7
(H-8)
OME-6
(H-7)
OME-10(?)
AREA-II
AREA-III
Rose
Mo. Port.
Jenkins
Stacey-Rend.
Quarant
HICKS DOME ACCT.-OME
PROPOSED DIAMOND DRILLING
drill hole
proposed hole
general areas to
be tested
property line
breccia outcrop
base, New Albany
shale
1"=400'
N



ASSAY-GRAPH
Diamond Drill Hole
HAMP No. 4
1"=20 feet
1"=10% CaF_2


Depth
% CaF2
5 10 15 20 25
80
90
2000
10
20
30
40
2050
60
70
80
90
2100
10
20
30
40
2150
60
-1500
S.L. Elev.
80
90
2200
10
20
30
(Open)
Sources of Assays
507-510 Frazer
511-526 MacDonald
526-530 Broeman
530-534 MacDonald
% CaF2
Composite
Skyline Spectro-
graphic Analyses
820, 21.5',
15.2%+1%Be, .07%Nb
1%Y, 3%Fe
821, 18.5'
14.8%+1%Be, .1%Nb
.7%Y, 3%Fe
822, 13.5'
17.3%+1%Be, .15%Nb
1%Y, 3%
823, 9.5'
14.4%1%Be, .15%Nb
.7%Y, 2%Fe
824
(Left out)
824, 24'
22.6 .5%Be, .07%Nb
.5%Y, 2%Fe
825, 19'
8.6%.02Be, .05%Nb
.15%Y, 2%Fe
826, 21'
.02%Be, .07%Nb
7.8% .15%Y, 2%Fe
827, 20'
12.7% .03%Be, .07%Nb
.3%Y, 2%Fe
828, 20'
.05%Be, .05%Nb
13.2%.2%Y, 2%Fe
829, 15.5'
4.8%.005%Be, .01%Nb
.02%Y, 1%Fe
62'
17.1 %
97'- 17.4%
35'
19.3%
214'-11.1%
77'
7.8%
40.5'
12.4%
ASSAY-GRAPH
Diamond Drill Hole
HAMP No. 3
1"=20 feet
1"=10% CaF2