DMEA Form 9
(Rev. 5/57)

UNITED STATES
DEPARTMENT OF THE INTERIOR
Defense Minerals Exploration Administration

OFFICIAL DOCKET FILE | Idm-E No.____ | DMEA NO. 4750

Application (Denied
(Withdrawn
(After disposition, delete items not applicable)

14 NOV 1957

1152
Contract

(Terminated - not Certified
(Cancelled
(Terminated - Certified
(Royalty Agreement

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

Folder No. 1:

**Left Side**

closing letters
Royalty Audits 1/
Certification of Discovery
✓ Cost Audits 2/
✓ Termination Notice or Agreement
Recision Notice
Assignment of Contract
✓ Contract Amendments
✓ Contract with all exhibits and annexes
✓ Owner's Consent to Lien
Subordination Agreement
✓ Application and attachments
Envelope for maps

**Right Side**

✓ Project summary
✓ Work completed analysis
All other material filed in chronological order including the following reports if checked:

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

Additional Folders:

**Left Side**

Folder No.____:
Analysis of Semi-Annual Inspection Reports
Interim Summary Reports by DMEA Engineers

**Right Side**

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

Folder No.____: Maps (Use pocket folder or envelope.)

Folder No.____: Settlement Sheets

Folder No.____: Drill Logs

Folder No.____: Royalty material

1/ Or reports of royalty review
2/ Or cost reports of review

16592

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

| Date | Surname | Code |
|---|---|---|
| 7/21 | Anderson | 600 |
| 7/22 | Houk | 600 |
| 7-22 | Chambers | 800 |
| | Martin | 120 |
| 7/23 | Johnson | 110 |
| 23 | Mittendorf | 100 |
| 7/23 | C | 220 |
| | | 600 |
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600

JUL 23 1958

Reynolds Metals Company
301 East Grace Street
Richmond, Virginia

Re: Docket No. DMEA-475C-Fluorspar
Reynolds Metals Company
Kemper Property
Livingston County, Kentucky
Contract No. Idm-11152

Gentlemen:

Reference is made to your terminated exploration contract with the Government.

We sincerely regret that the work performed did not result in a certification of discovery or development under the provisions of the contract. In the absence of such certification, the Government retains no claim or lien against the property subject to the contract or any future production therefrom. We, therefore, are closing our books and records on this project. Your attention, however, is called to the provisions of the contract which require the Operator to keep and preserve certain records for the period indicated.

Your interest in the DMEA exploration program and participation therein are fully appreciated.

Sincerely yours,

C. O. Mittendorf

Administrator

WCAnderson:rsi 7/21/58
Copy to: Admr. R. File
Mr. Chambers
Field Team, Region V
Mr. Kiilsgaard, 5222
Mr. McDougal, 3522
Mr. Houk
Mrs. Jessie Kemper

8623

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

| Date | Surname | Code |
|---|---|---|
| 7/21 | Anderson | 600 |
| 7/22 | Houk | 600 |
| 7-22 | Chambers | 800 |
| | Martin | 120 |
| 7/23 | Johnson | 110 |
| " | Mittendorf | 100 |
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JUL 23 1958

Mrs. Jessie Kemper

Salem, Kentucky

Re: Docket No. DMEA-4750-Fluorspar
Reynolds Metals Company
Kemper Property
Livingston County, Kentucky
Contract No. Idm-E1152

Dear Mrs. Kemper:

Enclosed is a copy of a self-explanatory letter of today to the Operator under the above-cited contract.

This correspondence relates to the Consent to Lien and Subordination Agreement signed by you on July 16, 1957.

Sincerely yours,

C. O. Mittendorf (for)

Administrator

Enclosure

WCAnderson:rsi 7/21/58
Copy to: Admr. R. File
Mr. Chambers
Field Team, Region V
Mr. Kiilsgaard, 5222
Mr. McDougal, 3522
Mr. Houk

8623

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

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July 18, 1958

Memorandum

To: Mr. C. O. Mittendorf, Administrator

From: L. G. Houk, Director, Division of Nonmetallic Minerals

Subject: DMEA-4750, Contract No. Idm-E1152, Reynolds Metals Company

It is recommended that the closing letter on this case be forwarded forthwith.

Stage I, consisting of 5 holes totalling 1572 feet was completed. No ore grade mineralization was encountered and Stage II was not authorized and contract was terminated on June 3, 1958, effective March 20, 1958.

The Company is desirous of dropping its lease and option to avoid payment of rent. Operator may terminate by giving 30 days notice.

Since the results rule out any possible certification, I recommend the closing letter be sent immediately.

LGHouk:rsi 7/18/58
Copy to: Admr. R. File
Mr. Houk

8623

DEFENSE MINERALS EXPLORATION ADMINISTRATION
CONTRACT ADMINISTRATION AND AUDIT DIVISION

## REPORT OF REVIEW

I have reviewed the Monthly Reports of:

Reynolds Metals Company
301 East Grace Street
Richmond, Virginia

pertaining to Exploration Project Contract No. Idm-E1152, DMEA No. 4750, including Amendment No. 1, for January 1958 to March 1958, inclusive, covering a fluorspar project on the Kemper Property, Livingston County, Kentucky.

My review included an examination of the Monthly Reports (Forms MF-104) and supporting documents, comparison of the claimed costs with the contract and pertinent schedules, verification of work performed by reference to Field Team reports and correspondence, and a determination of the reasonableness and propriety of the costs.

This review was made in lieu of a final audit of the Operator's accounts and records for the reasons given below:

(a) the Monthly Reports were supported by documentary proof of that portion ($6,836.03) of the costs covering work performed at unit rates under independent contract;
(b) the balance ($1,122.90) of the costs was under a contract provision for payment by the Government at fixed unit costs for work performed; and
(c) the administrative cost to the Government of an audit would be excessive in relation to the estimated amount of possible disallowances.

The findings of this review are stated in the following summary:

| | | |
|---|---|---|
| Total cost billed by Operator | | $7,958.93 |
| Exceptions: | | |
| Prior to this review | $ -0- | |
| Herewith | -0- | -0- |
| Accepted cost | | $7,958.93 |

The contract calls for a 50 percent contribution of the allowable costs by the Government. Therefore, if the project is otherwise accepted as having met the terms of the contract, payments as follows are valid and proper:

| | |
|---|---|
| Payable on audited claim | $3,979.46 |
| Paid to date | 2,249.44 |
| Balance due Operator | $1,730.02 |

May 5, 1958

E. D. Teibert, Auditor

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

OFFICIAL FILE COPY
DMEA
RECEIVED JUN 20 1958

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June 18, 1958

Memorandum

To: Operating Committee, Washington

From: Executive Officer, DMEA - Region V - Knoxville, Tenn.

Subject: Termination Agreement - DMEA-4750, Idm-E1152, fluorspar
Reynolds Metals Co. Kemper Property,
Livingston County, Kentucky.

Attached are the Government and Audit copies of the subject signed termination agreement.

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

Robert A. Laurence

Robert A. Laurence

OFFICIAL FILE COPY
DMEA
RECEIVED JUN 20 1958
DATE | INITIALS | CODE

Government's copy

App'd. Sol.

# TERMINATION AGREEMENT

It is agreed this 3rd day of June, 1958, between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, hereinafter referred to as the "Government", and Reynolds Metals Company, hereinafter referred to as the "Operator", parties to that certain Exploration Project Contract Idm-E1152 (Docket No. DMEA-4750), dated November 14, 1957, as amended, hereinafter referred to as the "Contract", that:

1. Effective March 20, 1958, the Contract and all obligations of the parties thereunder, except as otherwise herein expressly provided, shall be and are hereby terminated.

2. The Government shall contribute only to the fixed unit costs of work performed prior to said effective date.

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

4. All rights of the Government respecting Certification of Discovery or Development, percentage royalty and liens to secure payment thereof, reports (including preservation of Operator's records), accounts, audits, and the right to recover any overpayment, are preserved.

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

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

THE UNITED STATES OF AMERICA

By C P Mitteudorf
Administrator, Defense Minerals Exploration Administration

REYNOLDS METALS COMPANY

By C L Cofield

Title Vice President & Treasurer

OFFICIAL FILE COPY
DMEA
RECEIVED JAN 1958
DATE | CODE
600

Government's copy

Robin
Sawyer
Anderson
Talbot
Selfridge

EXPLORATION PROJECT CONTRACT
REYNOLDS METALS COMPANY
DOCKET NO. DMEA-4750

AMENDMENT NO. 1

It is agreed this 10th day of January, 1958, between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, and Reynolds Metals Company, that Exploration Project Contract No. Idm-E1152 (Docket No. DMEA-4750), dated November 14, 1957, is amended as follows:

Article 2(b)(2) is revised to read as follows:

"The Operator's right, title, or interest (whether as owner, lessee, or otherwise) is subject only to the following claims, liens, or encumbrances: a royalty of 10% of the gross price per ton on all minerals mined, payable to lessor, and Indenture of Mortgage and Deed of Trust dated June 1, 1955, held by Manufacturers Trust Company which is by its terms subject to the lien provided for in this contract."

This amendment shall not be construed to increase the estimated total cost of the project, the aggregate amount which the Government may be required to contribute, the amount of any item designated maximum, or the fixed unit cost of any item of work.

Executed in quintuplicate the day and year first above written.

THE UNITED STATES OF AMERICA

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

REYNOLDS METALS COMPANY

By L. E. Coghill

Title Vice President and Treasurer

OFFICIAL FILE COPY
DMEA
RECEIVED DEC 18 1957
DATE | MINERALS | CODE

Government's copy

MF-200
(Revised June 1954)

Docket No. DMEA 4750

Commodity Fluorspar

Contract No. Idm-E 1152

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

## EXPLORATION PROJECT CONTRACT[1]

It is agreed this 14 NOV 1957 day of ....., 195..., between the United States of America, acting through the Department of the Interior, Defense Minerals Exploration Administration, hereinafter called the "Government," and [2] Reynolds Metals Company, a Delaware Corporation, whose mailing address is 301 East Grace Street Richmond, Virginia, hereinafter called the "Operator," as follows:

ARTICLE 1. *This contract* is entered into under the authority of the Defense Production Act of 1950, as amended. It consists of this form (MF–200), the attached Exhibit "A," Annex I, ~~and Annex II, and one map (Figure 2)~~

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

ARTICLE 2. *Operator's property rights.*—(a) The land which is the subject of this contract (hereinafter called "the land") is in the State of Kentucky, County of Livingston, and is described in Annex I.[3]

(b) The Operator represents and undertakes that:

(1) The Operator is the [4] Lessee of [5] the mineral rights in the land, in possession and entitled to possession for all of the purposes of this contract, under and by virtue of a [6] lease, [7] recorded in Book 4, page 100, official records of said County; and

(2) The Operator's right, title, or interest (whether as owner, lessee, or otherwise) is subject only to the following claims, liens, or encumbrances: a royalty of 10% of the gross price per ton on all minerals mined, payable to lessor.

(c) The Subordination Agreement of the holder of any claim, lien, or encumbrance listed above, and (if the Operator does not hold the legal title) the Consent to Lien of any holder of the legal title

[1] If sufficient space is not provided in any blank, use an extra sheet of paper and refer to it in the blank.
[2] Insert name, and if an organization, its nature (corporation and place of incorporation, partnership with names of partners, etc.).
[3] State on a separate sheet marked "Annex I" the legal description or enough to identify the property, particularly excluding any areas from which the production is not to be subject to the Government's percentage royalty.
[4] Insert "owner," "lessee," "contract purchaser," "locator," etc.
[5] Insert "the entire interest," "the mineral rights," "an undivided one-third," etc.
[6] Insert "deed," "lease," "contract," "location notice," "patent," etc.
[7] If not recorded, so indicate by inserting "un."

of the land (lessor, seller, optionor, etc.), are attached, as follows: Consent to Lien and Subordination Agreement executed by the lessor, Mrs. Jessie Kemper

(d) The Operator shall preserve and maintain his right, title, and interest in the land and his right to the possession thereof for the purposes of this contract, and shall devote the land and all existing improvements, facilities, buildings, installations, and appurtenances to the purposes of this contract. Until the lapse of the time within which the Government may make a certification of discovery or development without any such certification having been made, and after any such certification has been made, the Operator shall neither transfer, convey, nor surrender the land nor any right, title, or interest therein, nor permit nor suffer any claim, lien, or encumbrance thereon, without expressly referring to and providing in the instrument of conveyance, lien, or encumbrance for the preservation of the Government's right to a percentage royalty on production and lien for the payment thereof. If the Government makes no certification of discovery or development within the time limited in Article 8, it shall thereafter have no claim against the land or any production therefrom except for any production referred to in Article 8(b)(1).

ARTICLE 3. *The exploration project.*—The project is a search for indicated or undeveloped deposits of Fluorspar. The work to be performed is described in Exhibit "A." The Operator on or before February 1, 1958 shall commence the work, and on or before January 1, 1959 (unless the Operator's obligation to prosecute the work is terminated—see Article 10) shall ~~either~~ have completed the work ~~or shall have incurred allowable costs (see Article 6) in a sum not less than the estimated total allowable cost set forth in Exhibit "A"~~, except as otherwise provided in Exhibit "A" with respect to stages of work. See Annex II.

ARTICLE 4. *Performance of the work.*—(a) *Operator's responsibility.*—The work shall be performed with reasonable diligence, efficiently, expertly, in a workmanlike manner, in accordance with good mining standards and State regulations for health and safety and for liability insurance covering employment; and with suitable and adequate equipment, facilities, materials, supplies, and labor, to bring it to completion within the time fixed.

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

(c) *Government may inspect.*—The Operator shall consult with and inform the Government on all phases of the work as it progresses. The Government may enter at all reasonable times to inspect the work under the contract, and also after a certification of discovery or development to inspect production operations and underground workings. The operator shall provide the Government with all reasonable means of access for such inspections.

ARTICLE 5. *Contribution by the Government.*—The estimated total allowable cost of the project, set forth in Exhibit "A," is the sum of $45,890.00. The Government shall contribute 50 percent of the allowable costs as they are incurred in a total sum not in excess of $22,945.00: *Provided,* That until the Operator has rendered to the Government his final report, and any final auditing required by the Government has been made, and a final settlement of the contract has been made, the Government may withhold from the last

voucher or vouchers such sums as it sees fit not in excess of 10 percent of the estimated total cost of the work or not in excess of the amount of the Government's contribution to the cost of property which is or may become subject to disposal as provided in Article 9(c), whichever is greater. The Government will make its contribution on the basis of the monthly vouchers referred to in Article 7(b), but all payments by the Government are provisional only, subject to audit, until the account between the Operator and the Government is finally audited and settled. "Costs incurred" mean costs that have been paid or have become due and payable, or that in the opinion of the Government have become an obligation. The Government may make payments directly to independent contractors and suppliers for the account of the Operator rather than to the Operator.

ARTICLE 6. *Estimated costs.*—(a) *Categories of costs.*—The allowable costs of the work to which the Government shall contribute are limited to those that are direct, reasonable, necessary, and that are estimated in Exhibit "A" by categories as specified in this article. If any category or subcategory is omitted from the estimate of costs, or if the word "none" is annexed to the listing thereof, costs under such category or subcategory are not allowable. Any excess over any estimate which is indicated as the maximum of any category, subcategory, or item, either as to requirement or related cost, and any excess over the estimated total allowable cost of the work, shall not be allowable. Any excess over the estimate of any category, subcategory, or item, either as to requirement or related cost, not indicated as a maximum shall be allowable within the limit of the estimated total allowable cost of the work. To the extent that excesses over maximums other than the estimated total allowable cost of the work may be necessary for the performance of the work, the Operator shall incur such excesses for his own account without contribution by the Government; ~~but except for any such necessary excesses in categories, subcategories, or items thereunder the Operator is not obligated to incur more than his agreed percentage of the estimated total allowable cost of the work~~ See Annex II.

To the extent specified in this article or in Exhibit "A" the following categories, subcategories, and elements thereof are maximums; but if not so specified either here or in Exhibit "A" they are not maximums, and may be exceeded within the limit of the estimated total allowable cost of the work:

CATEGORY (1)—INDEPENDENT CONTRACTS.—Work to be performed under independent contracts (see Article 4(b)). The estimated total amount of this category and the estimated cost of each unit of work for performance under an independent contract are maximums. See Annex II.

CATEGORY (2)—PERSONAL SERVICES.

*Subcategory (a)—Supervision.*—All elements of this subcategory (number of supervisors, periods of employment, rates of pay, and total) are maximums.

*Subcategory (b)—Technical services.*—All elements of this subcategory (number of technicians, periods of employment, rates of pay, and total) are maximums.

*Subcategory (c)—Labor.*

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

CATEGORY (4)—OPERATING EQUIPMENT.

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

*Subcategory (b)—Purchases.*—The estimated total of this subcategory is a maximum.

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

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

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

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

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

CATEGORY (7)—MISCELLANEOUS.—Repairs and maintenance (other than initial) of operating equipment, analytical work, prints and other reproductions, accounting, Operator's share of payroll taxes, liability insurance covering employment, travel, communications, and any other items of requirement or cost that do not fall within any of the first 6 categories.

THE ESTIMATED TOTAL ALLOWABLE COST of the work is a maximum.

(b) *Nonallowable costs.*—The following costs are not allowable for contribution by the Government:

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

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

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

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

(c) *Reductions in costs.*—The Operator shall account for and give the Government credit for any incidental benefits, credits, or money received in the ordinary course of business in prosecuting the work (as by salvage or sale of materials or equipment, furnishing of room or board, furnishing of power or services to third persons, rebates or discounts on purchases, etc.), in the same ratio in which the Government contributes to costs; and such amounts shall be treated as a reduction in costs incurred so that they are available for use within the limit of the original estimated total cost. This provision does not apply to receipts from production which are subject to the Government's percentage royalty under the provisions of Article ~~9~~. 8. See Annex II.

ARTICLE 7. *Reports, accounts, audits.*—(a) *Operator's records.*—The Operator shall keep suitable records and accounts of the work performed and of any production in which the Government may have an interest; and shall preserve those with respect to work performed for at least three years after final payment by the Government, and those with respect to production for at least three years after any obligation to pay royalties to the Government has terminated. The Government may inspect and audit said records and accounts at any time, either by itself or by a certified public accountant. If the Government elects to audit said records and accounts relating to the exploration work by certified public accountant, it may do so as a cost of the work to which the Operator shall contribute. The Comptroller General of the United States or his representative, until the expiration of said three-year periods, shall have access to and the right to examine any pertinent books, documents, papers, and records of the Operator. All of the Operator's vouchers and records and accounts relating thereto and the Government's payments thereof remain subject to adjustment until final audit by the Government. If work under this contract is carried on in conjunction with any other operations, or if labor, supervision, services, materials, supplies, equipment, facilities, or other requirements for carrying on the work are also used in connection with other operations, the costs shall be segregated and accounted for on a basis and by methods and accounts that are satisfactory to and approved by the Government.

(b) *Progress reports and vouchers.*—The Operator shall provide the Government with five copies of monthly progress reports in three sections as follows: (1) Operator's Monthly Report and Voucher showing detailed costs incurred during the reporting period; (2) Operator's Unit Cost and Progress Report showing the various types of work performed during the reporting period and costs incurred for each type of work; and (3) a Narrative Report of the work performed during the reporting period including adequate engineering-geological maps or sketches, drill hole logs and locations, and assay reports on samples taken concurrently with advance in mineralized ground. (Forms for reporting under (1) and (2) above will be provided by the Government.)

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

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

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

ARTICLE 8. *Repayment by Operator.*—(a) *Certification.*—If the Government considers that a discovery or development from which production may be made has resulted from the work, the Government, at any time not later than six months after a sufficient final report and final account (see Article 7) has been rendered, may so certify in writing to the Operator. Such certification shall describe broadly or indicate the nature of the discovery or development.

(b) *Royalty on production.*—The Operator, as principal if the Operator is the producer, or as surety if the Operator is not the producer, shall pay to the Government a royalty on all minerals mined or produced from the land, as follows: (1) regardless of any certification of discovery or development, from the date of the contract until the lapse of the time within which the Government may make such certification, or until the total net amount contributed by the Government without interest is fully repaid, whichever occurs first; or (2) if the Government makes a certification of discovery or development, within a period of ten years from the date of the contract, or until the total net amount contributed by the Government without interest is fully repaid, whichever occurs first.

(c) *Basis for computation.*—The Government's royalty shall be a percentage of the gross proceeds (including any bonuses, premiums, allowances, or other benefits) from the production sold, in the form sold (ore, concentrates, metal, or equivalent), at the point of delivery (the f. o. b. point); *except,* that charges of *the buyer* arising in the regular course of business, and shown as deductions on the buyer's settlement sheets, on account of the cost of treatment processes performed by *the buyer,* sampling and assaying to determine the value of the production sold, and freight paid by *the buyer* to a carrier (not the Operator), shall be allowed as deductions in arriving at the "gross proceeds" as that term is used herein. Any costs of treatment processes, sampling or assaying, or transportation, performed or paid by the Operator or by anyone other than the buyer, are not deductible in arriving at the "gross proceeds" as that term is here used. The term "treatment processes," as here used, means those processes (such as milling, concentrating, smelting, refining, or equivalent) applied to the crude ore or other production after it is extracted from the ground, to put it into a commercially marketable form; excluding fabricating or manufacturing.

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

(e) *Percentages of royalty.*—The percentages of the Government's royalty shall be as follows:

One and one-half (1½) percent of amounts ("gross proceeds" or "value") not in excess of eight dollars ($8.00) per ton of production in the form in which sold, held, or used, plus one-half (½)

percent for each additional full fifty cents ($0.50) by which such amounts exceed eight dollars ($8.00) per ton, but not in excess of five (5) percent of such amounts.

(For instance: the royalty on an amount of five dollars ($5.00) per ton would be one and one-half (1½) percent; on an amount of ten dollars ($10.00) per ton, three and one-half (3½) percent.)

(f) *Time for computation and payment.*—The Government's royalty shall be computed and paid currently upon each lot sold, held, or used in integrated operations, as the case may be, as above provided in this article.

(g) *Lien for payment.*—To secure the payment of its percentage royalty, there is hereby granted to the Government a lien upon the land or the Operator's interest in the land and upon any production of minerals therefrom, until the royalty claim is extinguished by lapse of time or is fully paid.

(h) *Notice to purchasers.*—The Operator shall give notice of the Government's claim for royalty to any purchaser of the production, and shall authorize and direct such purchaser to pay the royalty directly to the Government and to furnish the Government with copies of the settlement sheets. If the records of any production and sales or other disposition of production, whether the production is by the Operator or by others, are not made available to the Government, the amount of the royalty may be estimated by the Administrator, Defense Minerals Exploration Administration, or his successor, and his estimate thereof shall be final and binding upon the Operator.

(i) *No obligation to produce.*—Nothing in this contract is to be construed as imposing any obligation on the Operator or the Operator's successor in interest to engage in any production operations.

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

ARTICLE 9. *Interests in purchased property.*—(a) *Title and ownership.*—All costs under this contract shall be incurred by the Operator in the Operator's own name and for the Operator's own account; but any property acquired to the cost of which the Government contributes shall belong to the Operator and the Government jointly in proportion to their respective contributions, although title thereto shall be taken in the name of the Operator.

(b) *Preservation of property.*—Until the final disposal of any property in which the Government has an interest the Operator shall preserve and protect same for the best interest of the Government, any reasonable and necessary costs thereof to be treated as an allowable cost of the project. After the completion of the work or termination of the Government's obligation to contribute, or when such property is not in use for or needed for the work, the Operator shall neither use it without the written consent of the Government nor without paying a reasonable rental to be fixed by the Government for its interest.

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

(d) *Default of the Operator re disposal.*—If within 90 days after the completion of the work or termination of the Government's obligation to contribute to costs, or after the property is no longer needed for the work, or after such further time as the Government may in writing allow, the Operator has failed to sell or otherwise liquidate or dispose of any property in which the Government has an interest, the Government, at any time prior to final settlement under the contract, may pursue one of the following two courses: (1) the Government, by written notice to the Operator, may place upon such property what in its opinion is a fair valuation thereof, not in excess of the cost less 1.66 percent per month from the

date such property was purchased under this contract to the termination of said 90-day period; and such property shall thereupon be considered and accounted for as having been purchased by the Operator at the valuation so fixed by the Government; or (2) the Government may enter and take possession of such property wherever it may be found, and remove and dispose of it for the joint account of the parties.

ARTICLE 10. *Termination of the Government's obligations.*—(a) If in the opinion of the Government operations at any time have failed to achieve anticipated results that indicate the probability of making a worthwhile discovery, and in the opinion of the Government further operations are not justified, the Government may give the Operator written notice thereof, and thereupon: (1) the Government shall be free of all obligation to contribute to costs not then incurred other than such as may be allowable under the provisions of the contract as necessary and incidental to winding up, reporting, and accounting; and (2) the Operator shall be free of all obligation to prosecute the work other than such as may be necessary and incidental to winding up, reporting, and accounting.

(b) If in the opinion of the Government the Operator is in any manner in default under the terms of the contract, the Government may give the Operator written notice of such default with a specification of reasonable time within which the default must be cured; and if the Operator fails to cure such default as required, thereupon: (1) the Government shall be relieved of all obligation to contribute to costs not incurred when the notice was given, other than such as may be allowable by the provisions of the contract as necessary and incidental to winding up, reporting, and accounting; and (2) the Operator shall be free of all obligation to prosecute the work other than such as may be necessary and incidental to winding up, reporting, and accounting. The remedy provided for the Government in this paragraph "(b)" is in addition to any other remedy provided in this contract, and in addition to any other remedy the law may provide for breach of contract.

(c) The giving of any notice by the Government under the provisions of this Article 10 shall not affect the Government's rights as provided for in the contract with respect to a percentage royalty, and such rights shall be fully preserved.

ARTICLE 11. *Notices to be given by the Government* may be delivered to the Operator, or may be sent by registered mail addressed to the Operator at his mailing address stated in this contract. If mailed, notices are deemed to have been delivered five days after the date of mailing.

ARTICLE 12. *Officials not to benefit.*—No member of or delegate to Congress or resident commissioner shall be admitted to any share or part of this contract or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

ARTICLE 13. *Changes and added provisions.*—

See Annex II.

Executed in sextuplicate the day and year first above written.

THE UNITED STATES OF AMERICA

By C. D. Mittendorf
Administrator, Defense Minerals
Exploration Administration

REYNOLDS METALS COMPANY
(Operator)

By C. E. Coghill

Title Vice President and Treasurer

---

I, Richard I. Dawes, certify that I am ~~the~~ an assistant secretary of the corporation named as Operator herein; that C. E. Coghill who signed this contract on behalf of the Operator, was then Vice President and Treasurer of said corporation; that said contract was duly signed for and in behalf of said corporation by authority of its governing body, and is within the scope of its corporate powers.

Richard I. Dawes
ASS'T SECRETARY

[ CORPORATE SEAL ]

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

EXPLORATION PROJECT CONTRACT
REYNOLDS METALS COMPANY
DOCKET NO. DMEA-4750

ANNEX I

The land referred to in Article 2 of the Contract, known as the Kemper Property, is situated 1.7 miles southeast of Lola, Kentucky, and 3.7 miles northwest of Salem, Kentucky. The Operator is in possession by virtue of a mineral lease and option agreement executed January 15, 1957, by Jessie Kemper, and recorded in Mineral Lease Book 4, page 100, official records of Livingston County, Kentucky, wherein the leased premises are described as follows:

> All of the mineral, minerals, mineral and mining rights, except oil and gas and gaseous substance in, on, and under a certain tract of land lying in Livingston County, Kentucky, on the north side of the Cumberland River and described as follows:
>
> Beginning at an iron pin in J. E. Guess' line and with said line N 2° 30' W 1830 feet to a 30" hickory and iron pin, with another of said Guess lines S 87° 45' E 1640 feet to an iron pin in a branch and also corner to O. Shucraft with Shucraft's line N 70° 15' W 1650 feet to an iron pin, with Shucraft's line N 18° 30' E 385 feet to a 6" hickory on a county road, then S 45° 30' W 390 feet with county road to an iron pin, also corner to F. Harris, with Harris, line N 5° 30' W 1870 feet to an oak and iron pin being corner to Harris and H. Belt, with belt's line N 76° W 1040 feet, then N 77° W 785 feet, then N 87° W 830 feet, then S 77° 30' W, crossing Deer Creek at 25 feet, then up lane in all 1835 feet, with lane S 67° W 350 feet to southwest side of old road and being the old Bayliss, Kennedy and Robinson corner, now being corner to C. O. Strong, with Strong's line S 46° E 1230 feet to an iron pin on southwest side of old road, with Strong's line S 61° 30' W 235 feet

to an iron pin, with another of Strong's lines S 16° 30' E 690 feet to an iron pin on a lane, with lane S 64° 30' W 200 feet to State Highway No. 133, with Hwy. S 56° E 325 feet then with C. Johnson's line S 16° 30' E 1335 feet to an iron pin, then N 71° 45' E 390 feet to an iron pin, then N 53° E 900 feet to State Highway 133, with Hwy. and its meanders S 68° 30' E crossing Deer Creek and Canada bridge at 210 feet in all 960 feet, with Hwy. S 61° 30' E 1400 feet, then S 45° 30' E 210 feet feet, then S 30 E 195 feet, then S 16° E 325 feet, then leaving Hwy. and running S 87°30' E 190 feet to the beginning, containing 338 acres more or less.

This being part of the same property acquired by Lee Kemper, deceased, in two tracts by deeds from the Master Commissioner of Livingston County, which deeds are of record in Deed Book 54, beginning on page 62, records of the Livingston County Court Clerk's Office, and willed by the said Lee Kemper, deceased, to the lessor herein. See Will Book "D," page 420, Livingston County Court Clerk's Office.

MF-205
(Combines and supercedes MF-201 and MF-203)
June 1956

For Government's Use Only
EXPLORATION PROJECT CONTRACT
Operator
Docket No. DMEA-
Contract No. Idm-E 1152
Contract Date 14 NOV 1957

RECEIVED
SEP 25 1957
D.E.A.

CONSENT TO LIEN
and
SUBORDINATION AGREEMENT 1/

To the United States of America:

Referring to that certain land in the County of Livingston, State of Kentucky, described as follows: 2/

in a mining lease and option agreement dated January 15, 1957, and recorded in Mineral Lease Book 4, page 100, official records of said county.

which is the subject of a proposed exploration project contract, hereinafter called the "contract," with the United States of America, hereinafter called the "Government;" in consideration of the contract and as an inducement to the Government to enter into it, the undersigned hereby--

1. Undertakes and agrees that property in which the Government may acquire an interest or equity under the contract may be dismantled, severed from the land, and removed, as may be provided in the contract; and the Government's interest and equity in such property shall be prior and superior to any adverse right or claim of the undersigned;

2. Grants to the Government a lien upon all of the undersigned's right, title, and interest in the land and upon any production of minerals therefrom, to secure the payment to the Government of a percentage royalty on production as may be provided for by the Contract;

3. Subordinates the undersigned's right, title, claim, or interest in or against the land and in any production therefrom to the rights of the Government under the contract with respect to royalty on production and liens to secure same;

4. Represents and undertakes that there is no claim, lien, or encumbrance upon the undersigned's right, title, claim, or interest in or against the land other than the following: (If "none" insert the word "none." Do not leave lines blank.)

None

1/ Mining or production from the land is not required, and in the absence of production there is no obligation to pay royalty to the Government.

2/ Either (a) insert the legal description of the land, or (b) strike out the words "as follows" and insert "in a lease [or contract, deed, or other document] dated _____, and recorded in Book _____, Page _____, official records of said county." If (b) is used, the book and page of recordation cannot be dispensed with. If the space provided is insufficient, use an Annex, and refer to the Annex in the space.

5. Undertakes and agrees (a) neither to commit any act nor assert any claim in conflict with the provisions of this Agreement; and (b) to give advance notice of the Government's rights under this Agreement to any subsequent transferee, mortgagee, encumbrancer, or lessee of any of the undersigned's right, title, claim, or interest in or against the land, or any production therefrom furnishing the Government with two copies of such notice; and

6. Consents to all amendments (including an agreement of termination) and assignments of the contract without notice thereof, and undertakes and agrees that this Agreement shall extend and apply thereto.

7. Added provision: None (State "None" or "See Annex No.____")

Dated this 16 day of July, 1957.

[illegible] [Seal] [illegible] [Address]

Mrs. Jessie Kempes [Seal] Salem [Address]

[Seal] Ky [Address]

[Seal] [Address]

[Seal] [Address]

[Seal] [Address]

I, _____ certify that I am the _____ (Secretary, etc.) of the corporation named herein; that _____ who signed this agreement was then _____ (President or Vice-President, etc.) of said corporation; that said agreement was duly signed for and in behalf of said corporation by authority of its governing body, and was within the scope of its corporate powers.

_____

[Corporate Seal]

EXPLORATION PROJECT CONTRACT
REYNOLDS METALS COMPANY
DOCKET NO. DMEA-4750

ANNEX II

Article 13. Changes and added provisions.--

(a) That part of the last sentence of Article 3 beginning with the word "either" is deleted and replaced by the words "have completed the work, except as otherwise provided in Exhibit 'A' with respect to stages of work."

(b) That part of the last sentence in the first paragraph of Article 6(a) commencing after the semicolon is deleted.

(c) Categories (2) through (7) of Article 6(a) are deleted.

(d) In addition to the costs of work estimated in Exhibit "A" by categories of actual costs, the costs of work requirements specified in Exhibit "A" as "Fixed Unit Costs" are allowable costs of the project. The Government will contribute to the fixed unit costs as work units are performed. A "Fixed Unit Cost" is an agreed price for each unit of work to be performed regardless of costs incurred by the Operator. Costs set forth in Exhibit "A" include all allowable costs of the work to be performed under the Contract.

(e) In the last sentence of Article 6(c), the words "Article 8" are substituted for the words "Article 9".

(f) Notwithstanding any other provision of the Contract, the allowable unit cost per foot of a drilling item is the average unit cost per foot computed on the basis of all the actual unit costs of said drilling item incurred by the Operator: Provided, That the Government will not contribute to any portion of an average unit cost of a drilling item that exceeds the estimated unit cost of said item set forth in the Contract.

EXPLORATION PROJECT CONTRACT
REYNOLDS METALS COMPANY
DOCKET NO. DMEA-4750

## Exhibit "A"

## Description of the Work

### General Provisions

Exploration for fluorspar shall be performed with conventional BX and/or BXWL core drilling tools in the area indicated on the map, entitled "Reynolds Metals Company, Kemper Property, Livingston County, Ky.", attached hereto and made a part hereof.

The Government shall not contribute to the cost of an uncompleted hole, or one that bottoms less than BXWL size.

Records of each hole drilled, together with assay certificates of samples taken and type of rock penetrated, shall be submitted with the Operator's monthly progress report, which shall also include a map showing the location, inclination and direction of all holes drilled during the reporting period. All samples shall be properly identified as to drill hole number and depths represented.

The holes shall be drilled into the fault zone as indicated on the map. The location, inclination, direction, and extent of all drilling are subject to the approval of the Government.

The work shall be divided into two stages as hereinafter described. The Operator shall complete Stage I, and shall perform as much of Stage II as the Government approves in writing.

Stage I

Drill five diamond core holes averaging approximately 400 feet in length and aggregating not more than 2,000 feet, at the approximate locations indicated on the attached map.

The inclination of the holes shall be from -45° to -60° in order to cut the fault zone in vertical depth, at least 180 feet for holes K-1 and K-2, and at least 120 feet for holes K-3, K-4, and K-5. The holes shall be drilled in the approximate direction of N 50° W, or as nearly normal to the strike of the fault zone as possible.

Stage II

Stage II shall consist of not more than 6500 feet of diamond drilling. The number, locations, inclinations, and depths of the holes shall be determined by agreement of the Operator and the Government. The holes shall be drilled as normal as possible to the strike of the fault zone.

Estimated costs of the Project

Stage I

Actual Costs

Category (1) Independent Contracts

| | |
|---|---|
| 2,000 feet of diamond drilling @ $4.35/ft. 1/ | $8,700.00 |
| Categories (2) through (7) | None |

Fixed Unit Costs (See Article 13 of the Contract)

| | |
|---|---|
| Incidental allowance for each foot of drilling completed 2/, 2,000 feet @ $0.60/ft. | $1,200.00 |
| 60 wooden core boxes @ $3.00 each | 180.00 |

| | | |
|---|---|---|
| 30 samples to be assayed for $CaF_2$, $BaSO_4$, $CaCO_3$, and $SiO_2$ @ $6.00/sample | $180.00 | |
| Estimated total cost, Stage I | | $10,260.00 |

Stage II

Actual Costs

Category (1) Independent Contracts

| | | |
|---|---|---|
| 6500 feet of diamond drilling @ $5.00/ft. 1/ | $32,500.00 | |
| Categories (2) through (7) | None | |

Fixed Unit Costs (See Article 13 of the Contract)

| | | |
|---|---|---|
| Incidental allowance for each foot of drilling completed 2/, 6500 feet @ $0.38/ft. | $2,470.00 | |
| 100 wooden core boxes @ $3.00/ each | 300.00 | |
| 60 samples to be assayed for $CaF_2$, $BaSO_4$, $CaCO_3$, and $SiO_2$ @ $6.00/ sample | 360.00 | |
| Estimated total cost, Stage II | | $35,630.00 |

S U M M A R Y

| | | |
|---|---|---|
| Estimated total cost Stage I | $10,260.00 | |
| Estimated total cost Stage II | 35,630.00 | |
| Estimated total cost of project | | $45,890.00 |
| Government participation @ 50% | | $22,945.00 |

1/ Includes charges for moving in and out, changing of locations, reaming, casing, cementing, water supply, replacement of bits, and all charges which may be incurred by the diamond drill contractor. Casing left in the hole at option of the Operator will not be accepted as a charge to the Contract.

2/ Includes all costs that otherwise would be allowable costs under Categories (1) through (7) except as scheduled in Exhibit "A."

REYNOLDS METALS COMPANY
REYNOLDS METALS BUILDING
RICHMOND 18, VIRGINIA

EXECUTIVE OFFICES

May 29, 1957

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

Re: Kemper Property - Fluorspar -
Livingston County, Kentucky

Gentlemen:

We enclose four copies of form MF-103, Application For Aid In An Exploration Project, Pursuant to DMEA Order 1. All of the enclosed copies have been signed by Reynolds Metals Company and have the appropriate information either stated on the application or attached thereto.

We will appreciate your favorable consideration of this application.

Yours very truly,

John T. Kilpatrick

John T. Kilpatrick

JTK:mjs

Enclosures (4)

cc Mr. C. E. Coghill
Mr. Walter L. Rice
Mr. Richard I. Dawes
Dr. John H. Moses
Mr. John W. Hook

OFFICIAL FILE COPY
DMEA
RECEIVED MAY 31 1957

| DATE | INITIALS | CODE |
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MF-103
(Revised April 1952)

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

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

OFFICIAL FILE COPY
DMEA
RECEIVED MAY 31 1957
DATE
INITIAL
CODE

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

*Not to be filled in by applicant*

Docket No. 4750
Metal or Mineral FLUORSPAR
Date Received 5-31-57
Estimated Cost $72,641.76
Participation (Government %)

## INSTRUCTIONS

1. *Name of applicant.*—(*a*) State here your full legal name, in the form in which you will wish to contract, and your mailing address: Reynolds Metals Company, 301 East Grace Street, Richmond, Virginia. A corporation incorporated in the State of Delaware. See attached rider "Instruction 1. (a)" for list of officers.

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

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

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

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

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

(*b*) State any mine name by which the property is known. Kemper property

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise Lessee of mineral and mining rights with option to purchase same.

(*d*) If you are not the owner, submit with this application a copy of the lease, contract, or other document under which you control the property. See rider 3. (d)

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

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

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

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

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

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

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

See attached rider 4. (e)

16—66551-1

5. *The exploration project.*—(*a*) State the mineral or minerals for which you wish to explore Fluorspar

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

(*c*) The work will start within 60 days and be completed within 12 months from the date of an exploration project contract.

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

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

(*a*) *Independent contracts.*—(Note.—If the applicant does not intend to let any of the work to contractors, write "none" after this item. To the extent that the work is to be contracted, do not repeat the cost of the contract-work in subsequent items.) State the cost of any proposed independent contracts for the performance of all or any part of the work, expressed in terms of units of work (such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, per cubic yard of material moved, etc.). See attached rider 6. (a)

(*b*) *Labor, supervision, consultants.*—Include an itemized schedule of numbers, classes and rates of wages, salaries or fees for necessary labor, supervision and engineering and geological consultants. See attached rider 6. (b)

(*c*) *Operating materials and supplies.*—Furnish an itemized list, including items of equipment costing less than $50 each, and power, water and fuel. See attached rider 6. (c)

(*d*) *Operating equipment.*—Furnish an itemized list of any operating equipment to be rented, purchased, or which is owned and will be furnished by the Operator, with the estimated rental, purchase price, or suggested use-allowance based on present value, as the case may be. See attached rider 6. (d)

(*e*) *Rehabilitation and repairs.*—Furnish a detailed list showing the cost of any necessary initial rehabilitation or repairs of existing buildings, installations, fixtures, and movable operating equipment, now owned by the Operator and which will be devoted to the exploration project. None

(*f*) *New buildings, improvements, installations.*—Furnish a detailed list showing the cost of any necessary buildings, fixed improvements, or installations to be purchased, installed or constructed for the benefit of the exploration project. None

(*g*) *Miscellaneous.*—Furnish a detailed list showing the cost of repairs to and maintenance of operating equipment (not including initial rehabilitation or repairs of the Operator's equipment), analytical work, accounting, workmen's compensation and employers' liability insurance, and payroll taxes. See attached rider 6. (g)

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

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

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

(*b*) How do you propose to furnish your share of the costs? See attached rider 7. (b)

☐ Money ☐ Use of equipment owned by you ☐ Other

Explain in detail on acompanying paper.

## CERTIFICATION

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

Dated May 29, 1957

REYNOLDS METALS COMPANY
(Applicant)

By C. E. Coghill
C. E. Coghill, Vice President & Treasurer

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

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

Reynolds Metals Company
301 East Grace Street
Richmond, Virginia

Instruction 1. (a)

| Title | Name | Address |
|---|---|---|
| President | R. S. Reynolds, Jr. | Reynolds Metals Company<br>Richmond, Virginia |
| Executive Vice President | J. Louis Reynolds | Reynolds Metals Company<br>Richmond, Virginia |
| Vice President | Walter L. Rice | Reynolds Metals Company<br>Richmond, Virginia |
| Vice President | Basil Horsfield | Reynolds Metals Company<br>P. O. Box 191<br>Sheffield, Alabama |
| Vice President | W. G. Reynolds | Reynolds Metals Company<br>2000 South Ninth Street<br>Louisville, Kentucky |
| Vice President | D. P. Reynolds | Reynolds Metals Company<br>2500 South Third Street<br>Louisville, Kentucky |
| Vice President | C. D. Blackwelder | Reynolds Metals Company<br>Richmond, Virginia |
| Vice President | Keen Johnson | Reynolds Metals Company<br>2500 South Third Street<br>Louisville, Kentucky |
| Vice President | C. F. Manning | Reynolds Metals Company<br>2500 South Third Street<br>Louisville, Kentucky |
| Vice President and Director of Purchasing | M. W. Henry | Reynolds Metals Company<br>Richmond, Virginia |
| Vice President and Treasurer | C. E. Coghill | Reynolds Metals Company<br>Richmond, Virginia |

Instruction 1. (a) (Continued)

| Title | Name | Address |
|---|---|---|
| Vice President | John H. Krey | Reynolds Metals Company<br>Richmond, Virginia |
| Vice President | W. Monroe Wells | Reynolds Metals Company<br>Richmond, Virginia |
| Vice President | J. D. Reynolds | Reynolds Metals Company<br>Richmond, Virginia |
| General Counsel | Joseph H. McConnell | Reynolds Metals Company<br>19 East 47th Street<br>New York, N. Y. |
| Secretary | Allyn Dillard | Reynolds Metals Company<br>Richmond, Virginia |
| Controller | W. T. Brunot | Reynolds Metals Company<br>Richmond, Virginia |
| General Solicitor | Gustav B. Margraf | Reynolds Metals Company<br>Richmond, Virginia |
| Assistant Vice President | E. J. Appel | Reynolds Metals Company<br>Richmond, Virginia |
| Assistant Vice President | H. W. Shoemaker | Reynolds Metals Company<br>Sun Dial Road<br>Troutdale, Oregon |
| Assistant Vice President | J. C. Black | Reynolds Metals Company<br>Richmond, Virginia |
| Assistant Vice President | W. W. Binford | Reynolds Metals Company<br>Richmond, Virginia |
| Assistant Vice President | Alan Sparks | Reynolds Metals Company<br>Commonwealth Building<br>Louisville, Kentucky |
| Assistant Vice President | G. S. Nagle | Reynolds Metals Company<br>19 East 47th Street<br>New York, N. Y. |

Instruction 1. (a) (Continued)

| Title | Name | Address |
|---|---|---|
| Assistant Vice President | Maxwell Caskie | Reynolds Metals Company<br>918 - 16th Street, N. W.<br>Washington 6, D. C. |
| Assistant Vice President | C. A. Wishart | Reynolds Metals Company<br>Richmond, Virginia |
| Assistant Treasurer | C. W. Burkholder | Reynolds Metals Company<br>Richmond, Virginia |
| Assistant Treasurer | Roy W. Davis | Reynolds Metals Company<br>Richmond, Virginia |
| Assistant Secretary | Fred R. Edney | Reynolds Metals Company<br>2000 South Ninth Street<br>Louisville, Kentucky |
| Assistant Secretary | B. P. Holland, Jr. | Reynolds Metals Company<br>Richmond, Virginia |
| Assistant Secretary | Richard I. Dawes | Reynolds Metals Company<br>Richmond, Virginia |
| Assistant Controller | J. T. Banisch | Reynolds Metals Company<br>Richmond, Virginia |
| Assistant Controller | J. J. Zich | Reynolds Metals Company<br>Richmond, Virginia |
| Assistant Controller | W. F. Bennett | Reynolds Metals Company<br>Richmond, Virginia |

Reynolds Metals Company
301 East Grace Street
Richmond, Virginia

Instruction 3. (d)

MINING LEASE AND OPTION AGREEMENT

This Mining Lease and Option Agreement is made and entered into as of the 15th day of January, 1957, by and between Jessie Kemper, a Widow of Livingston County, Kentucky, as party of the first part (hereinafter called Lessor), and Reynolds Metals Company, a Corporation organized and existing under the laws of the State of Deleware, with principal offices in Richmond, Virginia, and authorized to do business in the State of Kentucky, as second party (hereinafter called Lessee),

35105

W I T N E S S E T H

WHEREAS, the Lessor is the owner in fee simple, minerals and surface, of a certain tract or parcel of land situated in Livingston County, Kentucky, which tract or parcel of land is more fully described hereinafter by metes and bounds:

NOW THEREFORE, for and in consideration of the sum of $1.00 cash in hand paid, the receipt of which is hereby acknowledged and of the further considerations hereinafter set forth, Lessor hereby grants to Lessee the right to enter upon the following described lands for the purpose of prospecting for and mining lead, zinc, fluorspar, or any and all other minerals, except oil and gas and gaseous substance, that may be found in or on said lands, and of washing, milling and transporting same to market, said tract of land being situated in Livingston County, and described as follows:

> All of the mineral, minerals, mineral and mining rights, except oil and gas and gaseous substance in on and under a certain tract of land lying in Livingston County, Kentucky, on the North side of the Cumberland River and described on Page "2" hereof.

BEGINNING at an iron pin in J. E. Guess' line and with said line N 2° 30' W 1830 ft. to a 30" hickory and iron pin, with another of said Guess lines S 87° 45' E 1640 ft. to an iron pin in a branch and also corner to O. Shucraft with Shucrafts line N 70° 15' W 1650 ft. to an iron pin, with Shucraft's line N 18° 30' E 385 ft. to a 6" hickory on a county road, then S 45° 30' W 390 ft. with county road to an iron pin, also corner to F. Harris, with Harris, line N 5° 30' W 1870 ft. to an oak and iron pin being corner to Harris and H. Belt, with belt's line N 76° W 1040 ft., then N 77° W 785 ft., then N 87° W 830 ft., then S 77° 30' W. crossing Deer Creek at 25 ft. then up lane in all 1835 ft., with lane S 67° W 350 ft. to South West side of old road and being the old Bayliss, Kennedy and Robinson corner now being corner to C. O. Strong, with Strong's line S 46° E 1230 ft. to an iron pin on South West side of old road, with Strong's line S 61° 30' W 235 Ft. to an iron pin, with another of Strong's lines S 16° 30' E 690 ft. to an iron pin on a lane, with lane S 64° 30' W 200 ft. to State Highway No. 133, with Hwy. S 56° E 325 ft. then with C. Johnson's line S 16° 30' E 1335 ft. to an iron pin, then N 71° 45' E 390 ft. to an iron pin, then N 53° E 900 ft. to State Highway 133, with Hwy. and its meanders S 68° 30' E crossing Deer Creek and Canada bridge at 210 ft. in all 960 ft., with Hwy. S 61° 30' E 1400 ft., then S 45° 30' E 210 ft., then S 20 E 195 ft., then S 16° E 325 ft., then leaving Hwy. and running S 87° 30' E 190 ft. to the beginning.
Containing 338 acres more or less.

This being a part of the same property acquired by Lee Kemper, deceased, in two tracts by deeds from the Master Commissioner of Livingston County, which deeds are of record in Deed Book 54, beginning on page 62, records of the Livingston County Court Clerk's Office, and willed by the said Lee Kemper, deceased, to the lessor herein. See Will Book "D", Page 420, Livingston County Court Clerk's Office.

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D M E A
RECEIVED MAY 31 1957

| DATE | INITIALS | CODE |
| --- | --- | --- |
| | | |

All of the above described property is hereinafter referred to as the "leased land", (minerals only).

This agreement is made for a term commencing on the date first above written and continuing thereafter for a period of ten (10) years, subject to prior termination by Lessee as hereinafter provided, and the following terms and conditions shall be binding upon the parties hereto respectively:

Lessors (Parties of the First Part) Agree:

1. To give and grant to the party of the second part (lessee), and Lessee is hereby granted, sole and undisturbed possession of the said "leased land" (minerals only), for the above stated purposes including the use of so much of the surface of said "leased land" (minerals only) as may be necessary and convenient for digging, boring, sinking shafts, erecting buildings and machinery, storing minerals, disposing of waste and waste waters, rights of way for ingress and egress, and for all other purposes necessary and incident to said operations, provided however, that the party of the second part is to sink no shafts, drill no core holes, or disturb any portion of the surface of the "leased land" (minerals only), lying within a radius of 600 feet of the main dwelling house located upon the "leased land" (minerals only), however, the party of the second part may drive a drift in and under and within the 600 feet radius of the main dwelling house provided no damage to the surface or buildings is done.

2. To pay or cause to be paid all taxes and other liens on the "leased land" (minerals only) and to keep same free and clear and unencumbered of all claims or liens and to forever warrant and defend the title to the "leased land" (minerals only) against all claims whatever which might adversely affect Lessee's rights under this agreement.

3. To grant to Lessee, and Lessee is hereby granted the right to terminate this Agreement at any time upon 30 days written notice, and a reasonable time thereafter is granted to Lessee to remove any or all of the buildings and machinery belonging to Lessee, provided all "minimum royalties", if any, are paid up to the date of termination and all "earned royalties" are paid up to the time of removal.

4. To sell and convey the "leased land" (minerals only), in fee simple, by deed of general warranty, to the Lessee, at Lessee's option at any time this Agreement is in effect, for cash, at a price of $40,000.00. The above price of $40,000.00 is to be reduced by the total amounts, including both "earned royalties" and Minimum royalties", which have been paid by Lessee under this Agreement prior to the time of Lessee's election to purchase the "leased land" (minerals only).

LESSEE (Party of the Second part) Agrees:

1. To carry on the operations of the "leased land" (minerals only in such a way as to avoid any unnecessary damage to the surface of said lands or to growing crops.

2. To pay to Lessors as rent for the "leased land" (minerals only) and as consideration for their rights hereunder royalties as follows:

(a) A royalty of ten (10%) per cent of the "gross price per ton" for any and all minerals mined and removed from the "leased land" (minerals only) by Lessee or his agents during the existence of this lease. Such tonnage royalties are referred to in this Agreement as "earned royalties". The "gross price per ton" is hereby defined by the parties to be the most recent published price quotation f.o.b. shipping point appearing in the Engineering and

Mining Journal prior to the start of each calendar month in which the minerals are removed from the "leased land" (minerals only) for the kind and grade of minerals removed, said price to apply to all such minerals removed by Lessee during that calendar month. For any minerals removed which are of a grade or kind not covered by quotations in the Engineering and Mining Journal the gross price per ton, is hereby defined by the parties to be the average of the local market price which would be quoted for such Minerals f.o.b. the "leased land" (minerals only) by local custom millers of such minerals in the area during the calendar month of removal from the property or such average price quoted by other buyers of such minerals f.o.b. the "leased land" (minerals only), if there are no local millers in the area who process such minerals. Any disputes as to the proper "gross price per ton" shall be determined by arbitration with Lessors appointing one arbitrator, Lessee appointing one arbitrator and a third arbitrator to be selected by agreement between the first two arbitrators. The parties agree that the decision of a majority of the three arbitrators shall be final and binding upon them. It is understood and agreed that if Lessee purchases the "leased land" (minerals only) then no "earned royalties" will be due or payable with respect to any tonnage removed from the "leased land" (minerals only), subsequent to such purchase.

(b) For each year during the period commencing January 15, 195~~5~~, and continuing thereafter until the termination of this Agreement Lessee shall pay Lessor an amount

equal to the difference between the amount of "earned royalties" payable with respect to such year and $600.00, if the "earned royalties" payable with respect to such year do not amount to a total of at least $600.00. The payments, if any, are required under this sub-paragraph (b) are referred to in this Agreement as "minimum royalties". If the earned royalties payable with respect to any such year as above specified equal or exceed $600.00 no payment of minimum royalties shall be required for such year and, furthermore, the amount by which such "earned royalties" for any such year or years are in excess of $600.00 shall be applied as a credit until exhausted, against "minimum royalties" which would otherwise be payable in any subsequent years in which "earned royalties" do not equal or exceed $600.00. The first year for which "minimum royalties" may be required hereunder shall commence on the 15th day of January 1950, and the second such year shall commence on the same date one year later and so on until termination of this Agreement. If this Agreement covers any portion of such a year which is less than a full year, the "minimum royalties" otherwise payable for such year shall be pro-rated and paid as if the minimum amount of $600.00 mentioned above had been reduced for such year to a fraction thereof which bears the same proportion to $600.00 as the portion of the year covered by this Agreement bears to the entire year. If Lessee purchases the "leased land"(minerals only), or terminates this Agreement no "minimum royalties" will be due or payable with respect to any time subsequent to such purchase or termination. If such purshase or termination occurs during any year for which "minimum royalties" would be required under this Agreement the above amount of $600.00 shall be reduced to a fraction

thereof, computed to the date of purchase or termination, in the manner provided above with respect to proration of "minimum royalties" for portions of years.

(c) It is understood and agreed between all parties that Lessee shall be under no obligation to perform any minimum amount of exploration or development work nor to mine or remove any minimum quantity of minerals nor to make any minimum payments hereunder except such "minimum royalties" as may be required underthe above provisions and failure of Lessee to Operate the properties shall not be deemed as a ground for cancellation of this Agreement.

3. To Surrender possession of the "leased land" (minerals only) and to release of record this Agreement should Lessee fail to pay any royalty when due, provided, however, that if any such failure should occur Lessee shall be allowed to make such payments and thereby remedy such failure or failures within 30 days grace period following written notice of such failure given by Lessors to Lessee.

4. To permit Lessors or their authorized representatives, to enter upon and inspect the "leased land" (minerals only) and the books of Lessee for the purpose of verifying compliance with the terms hereof, to keep accurate records of the tonnage of all ore removed from the premises and to permit inspection of same for the purpose of verifying royalty payments.

5. Lessee is to carry compensation insurance on all his employees employed on the "leased land" (minerals only) as required by law and Lessors will in no way be held responsible for damage or injury to such employees or for damages of any kind caused by Lessee's Operations.

The parties hereto agree as follows:

1. That the Lessee herein may apply to the United States of America Defense Minerals Exploration Administration (hereinafter referred to as D.M.E.A.) for funds with which to explor the "leased land" (minerals only), and in the event the Lessee does apply to D.M.E.A. for funds then in that event the Lessor agrees to execute such documents or assurances as may be required by D.M.E.A. from time to time in order that the Lessee may obtain D.M.E.A. funds, and in order that D.M.E.A. may secure a lien on the "leased land" (minerals only) as provided by D.M.E.A. regulations, and it is understood that this agreement is entered into under these terms and conditions.

2. Payments of "earned royalties" hereunder shall be made by Lessee to Lessors on the fifteenth day of each calendar month for minerals removed from the "leased land" (minerals only) by Lessee during the preceding calendar month. All payment of "minimum royalties" hereunder shall be made by Lessee to Lessors within 20 days after the end of the year to which they relate or within 20 days after termination of this agreement or purchase of the "leased land" (minerals only) in the event such termination or purchase occurs during any year for which "minimum royalties" are payable. All payments under this Agreement may be made by check of Lessee, such checks being accepted subject to collection in due course of banking transactions.

3. If Lessee elects to purchase the "leased land" (minerals only) it shall give written notice to that effect to Lessors within the time limited by this Agreement and pay to Lessors the amount of purchase price. Said payment shall be made by check (accepted by Lessors subject to collection in due course of banking transactions) to be delivered to Lessors upon delivery by Lessors to Lessee of a deed, complete with legally required amount of documentary stamps, in the form required by this Agreement. No royalties paid by Lessee,

as required by this Agreement, shall be returned to Lessee, regardless of whether or not Lessee purchases the "leased land" (minerals only), said royalties having been paid as rent and to be applied as a reduction in the purchase price in the manner provided in this Agreement only if Lessee elects to purchase the "leased land" (mineral only).

4. All notices of termination, election to purchase, payment and other communications hereunder to be made by Lessee may be made by depositing same in the United States mail, first class postage prepaid, as registered mail addressed to, ~~Kentucky~~ Mrs Jessie Kemper, Route 1, Salem, Kentucky. All notices and other communications to be made to Lessee may be made by depositing same in the United States mail, first class postage prepaid, as registered mail addressed to Reynolds Metals Company, Reynolds Metals Building, Richmond, Virginia.

It is understood and agreed that all of the terms and conditions of this Agreement shall extend and apply to, and be binding upon, the heirs, executors, administrators, assigns and successors of the parties hereto.

This instrument is executed in duplicate originals so that each party will have one original so executed which shall stand as an original and have the same effect as if it were the sole instrument executed between said parties.

In Testimony whereof the parties hereto have hereunto respectively set their hands and signatures and acknowledged the execution of this instrument.

Jessie Kemper
JESSIE KEMPER

REYNOLDS METALS COMPANY

BY: Walter Rice
Walter Rice
Vice-President

ATTEST: Ellen Dillard
Secretary

State of Kentucky

Livingston County

I, T. F. Jessee, a Notary Public in and for the County and State aforesaid do hereby certify that the foregoing Mining Lease and Option Agreement was on the 18th day of January, 1957, produced to me in my said County and State and duly signed and acknowledged before me by Jessie Kemper, party thereto, to be her act and deed.

Witness my hand and seal this Jan 18th, 1957.

My commission expires My Commission Expires November 18, 1957.

T. F. Jessee
NOTARY PUBLIC

STATE OF VIRGINIA

City ~~COUNTY~~ OF Richmond

Personally appeared before me Justine R. Edwards, a Notary Public in and for the County and State aforesaid, Walter Rice, Vice President of Reynolds Metals Company, a corporation duly organized and incorporated and existing under and by virtue of the laws of the State of Deleware, and Allyn Dillard Secretary of said corporation, personally known to me and personally known to me to be such officers and to be the same persons who executed as such officers respectively, the within and foregoing instrument of writing and such persons duly acknowledged the execution of the same to be the act and deed of said corporation.

Subscribed to in me presence this 4 day of January, 1957.

Justine R. Edwards
NOTARY PUBLIC

My commission expires My Commission Expires July 1, 1957.

STATE OF KENTUCKY

LIVINGSTON COUNTY ) SCT.

I, Gabe McCandless, Clerk of the County Court, for the County and State aforesaid, do hereby certify the foregoing was on the 18th day of January, 1957, lodged in my office for record, whereupon the same, the foregoing and this certificate have been duly recorded in Mineral Lease Book 4, at Page 100 of the Records of my said office.

Given under my hand this the 19th day of January, 1957.

Gabe McCandless, Clerk

By Grace McCandless D.C.

Reynolds Metals Company
301 East Grace Street
Richmond, Virginia

Instruction 4. (a)

The Kemper property adjoins the Bill Wright Mines and 2,500 feet of the Bill Wright vein crosses this property on a N40E strike. Shafts and open pits are scattered along the entire strike length and practically all of the dumps show fluorspar and barite mineralization. Plate I shows the location of these workings and the relationship to the Bill Wright Mines.

The previous mining has been done by independent contractors who unfortunately made no mine maps nor preserved records of production. Except for the Jameson Shaft, all of the workings are old and have caved. For the most part, the workings were shallow--none are reported to be deeper than 60 feet.

The most recent work on the property was done by Ralph Jameson of Burna, Kentucky during the summer of 1956. The Jameson shaft is 60 feet deep with a level extending about 30 feet to the northwest at the 54 foot level. Jameson produced a small tonnage of fluorspar and barite from a vein which he reported to be 13 feet wide. The operation was discontinued because of the poor market for the mixed ore. The shaft is in good condition but the workings are now flooded.

The Ried and Mosier shafts were mined between 1941 and 1946. The vein was reported to be 15 to 20 feet wide in the Mosier workings, and the caved stopes at this point indicate that the vein was very wide.

We are presently starting a series of auger drill tests on the Kemper property to test the vein at shallow depths, prior to the core drilling program. This program will be well advanced or completed by the time the DMEA Field Team make their examination and the results will be available.

Instruction 4. (b)

There is no current production and no records of the past production. Production was probably in excess of 10,000 tons.

We expect to find good ore reserves below the old mine workings but at present there are no assay maps or other definite information upon which an ore reserve figure could be based. The strike length of the structure is 2,500 feet and the vein is reported to have been 10 to 20 feet wide in places along this strike. On the adjacent Bill Wright property, the deepest workings were 140 feet deep and in good ore (about 40% $CaF_2$ and 40% $BaSO_4$).

Reynolds Metals Company
301 East Grace Street
Richmond, Virginia

Instruction 4. (c)

The most prominent geologic feature of the Kemper property is the Bill Wright fault which strikes N40E across the property displacing the Chester formations, Bethel to Golconda, on the southeast against St. Louis limestone on the northwest. The displacement along this fault ranges from 300 to 500 feet. The fault is not exposed in outcrop, but the associated zone of fracturing and brecciation is probably 25 to 50 feet wide and mineralization can be expected anywhere within this zone. The dumps of the old mine workings show brecciated limestone, and sandstone with fluorspar, barite, and calcite. While there will probably be high grade shoots of ore within this zone, much of the ore will probably be mixed with the country rock. The over-all grade may be medium to low, but the chances of finding a very large tonnage are good.

Instruction 4. (d)

The Kemper property is on paved highway 133, 3.7 miles northwest of Salem, Kentucky. The nearest railroad is at Marion, Kentucky, 15 miles by highway from the property. Barge shipments could be made from Carrsville, 10.5 miles via paved and good secondary roads.

Instruction 4. (e)

Experienced mining personnel could be obtained from the nearby farms and small towns of Salem and Lola.

Material, supplies and equipment could be shipped into Marion by rail or purchased from dealers at Salem or Marion.

Water pumped from the mines would be more than adequate for milling and other needs.

There are electric power lines along highway 133 on the southwest side of the property and at the Bill Wright Mines on the northeast side.

Reynolds Metals Company
301 East Grace Street
Richmond, Virginia

Instruction 5. (b)

We plan to prospect the Bill Wright fault by core drilling. The exploration program will bein two stages, Stage I to prospect the fault at depths of about 150 feet on 200 foot centers, and Stage II to delineate the horizontal and vertical extention of orebodies found in Stage I.

The tentative locations of the Stage I holes are shown on plate I. The holes will be drilled on a -45° angle, in a N50W direction and are expected to average 260 feet in depth. The 12 holes will total about 3,120 feet of drilling. (To allow for over drilling to sample splits in the vein, mineralization in the footwall etc., the total estimate for Stage I is set at 3,500 feet.)

The ore in the Bill Wright Mine is weathered and broken and we may encounter the same conditions on the Kemper property. Conventional AX or BX wireline drilling methods are not adequate to sample this kind of ore. From the standpoint of core recovery and cost, we find the following procedures to be the most efficient for this kind of drilling:

1. The holes are collared with N or B casing and "dry sampled" (casing with shoe rotated without water through overburden) to solid rock. This gives valuable geological information and prospects for shallow deposits of gravel fluorspar.

2. B casing is set in solid rock and the hole is drilled with BX wireline tools through solid formations.

3. If a zone of soft or broken rock, or a vein of fluorspar is encountered, the wireline tools will be pulled and a BX "L" series (Longyear) or a BX "M" series (Joy) bit with bottom discharge will be used. This gives a BX core which is larger and thus stronger than the BX wireline core and results in better recovery in the stratigic zones of the hole.

4. If clay, gravel fluorspar, or other very soft material is encountered, it is "dry sampled" with a BX wireline drill rod fitted with a shoe bit. Water is used to wash the rods down the hole to the point where the sample is to start and to remove contaminating materials from the core barrels. The water is then turned off and the rods are rotated into the soft material. Before pulling the sample, a 3/4 inch steel ball is dropped into the top of the string of tools and seats in a special coupling at the top of the bottom rod, preventing the head of water in the rods from dislodging the sample as the rods are pulled.

5. If a deep cavity is encountered and the need for casing arises, A casing can be set in the BX hole and the drilling continued with AX tools, thus avoiding costly reaming.

6. Should a zone of soft material be found after the hole was reduced to AX, it could be dry sampled with a barrel made of E casing, fitted with a shoe and a coupling to receive the steel ball.

Reynolds Metals Company
301 East Grace Street
Richmond, Virginia

Instruction 5. (b) (continued)

On a previous contract for this type of drilling, we paid $9.00 per hour for drilling operations (including laying water lines, etc.) for a drill with a two man crew, plus $0.75 per foot for footage drilled, plus bit costs, plus the cost of drill rods and casing lost or rendered unserviceable due to damage caused by other than ordinary wear. These costs were found to average about $6.35 per foot.

It should also be noted that drilling of this type requires very close supervision by the geologic staff and thus it is also more expensive from the standpoint of supervision.

Stage II drilling of deeper holes may prove less expensive per foot because a greater proportion of each hole is expected to be in solid wall rock, and at greater depths, the vein may be solid enough to core with conventional tools. Deep tests under Stage II will probably be designed to cut the vein at vertical depths of 400 feet. However, we prefer to delay the planning of Stage II until we have the information which Stage I will furnish, at which time it can be planned jointly by the DMEA Field Team and the company geologists. Because the holes will be deeper, 6,500 feet of drilling should be available if needed.

Instruction 5. (d)

The company has experienced personnel in the district qualified to carry out the exploration program.

Instruction 6. (a)

The drilling will be done by a competent core drilling company. Competitive bids will be available at the time the DMEA Field Team make their examination. The drilling costs are expected to average about $6.35 per foot as discussed in 5. (b).

| | | | |
|---|---|---|---|
| Stage I | 3,500 feet @ $6.35 | - | $ 22,225.00 |
| Stage II | 6,500 " " " | - | 41,275.00 |
| | 10,000 feet @ $6.35 | - | $ 63,500.00 |

Reynolds Metals Company
301 East Grace Street
Richmond, Virginia

Instruction 6. (b)

Supervision will be by the Resident Geologist, Geological Assistant, and the Engineering Assistant. The type of drilling outlined requires close supervision. The program is expected to last one year.

| | | Stage I | Stage II |
|---|---|---|---|
| Resident Geologist | $3.70/hr. | 200 hrs @ $ 740.00 | 200 hrs @ $ 740.00 |
| Geological Asst. | 2.58/hr. | 400 hrs @ 1032.00 | 400 hrs @ 1032.00 |
| Engineering Asst. | 1.88/hr. | 200 hrs @ 376.00 | 200 hrs @ 376.00 |
| | | $2148.00 | $2148.00 |
| | | | 2148.00 |
| | | Total, Stage I and II | $4296.00 |

Instruction 6. (c)

50 core boxes @ $3.00 -- $150.00

Instruction 6. (d)

Use of company Jeep to check drill rigs:

| | | | |
|---|---|---|---|
| Stage I | 1200 miles @ .07 | -- | $ 84.00 |
| Stage II | 1200 miles @ .07 | -- | 84.00 |
| | | | $168.00 |

(NOTE: Personal cars of employees may also be used for this purpose, at same rate, but the total mileage of cars plus Jeep will not exceed 1200 miles for either stage.)

Instruction 6. (g)

Assays for $CaF_2$, $BaSO_4$, $CaCO_3$ and $SiO_2$ @ $6.00 per sample:

| | | | |
|---|---|---|---|
| Stage I | 60 assays | -- | $360.00 |
| Stage II | 60 assays | -- | 360.00 |
| | | | $720.00 |

Reynolds Metals Company
301 East Grace Street
Richmond, Virginia

Instruction 6. (g) cont'd

Engineering and Accounting Office Expenses:

| | | |
|---|---|---|
| Stage I | 2 months @ $50 per month - | $100.00 |
| Stage II | 2 months @ $50 per month - | 100.00 |

Payroll taxes and insurance - calculated at 6%

| | |
|---|---|
| Stage I | $128.88 |
| Stage II | $128.88 |

Instruction 6. (h)

Contengencies - $3,500.00

Reynolds Metals Company
301 East Grace Street
Richmond, Virginia

Instruction 7. (b)

Furnishing services of geologists, accounting and engineering services and use of jeep as outlined specifically above and payment of invoices submitted by drilling contractor.

DMEA - 4750

Inspection
Line

☐ Audited

☐ Certified

Name Reynolds Metals Co

State Kentucky

# WORK ANALYSIS SHEET - DMEA PROJECT

Analysis as of 3/27/58

Incl. Voucher for Feb-58

Commodity Fluorspar

☑ Actual Cost

☐ Agreed Unit Costs

Docket No. 4750

Idm-E No. 1152

| OPERATION | AUTHORIZED Units | AUTHORIZED Cost | COMPLETED Units | COMPLETED Cost | NET COST |
|---|---|---|---|---|---|
| ~~Drifting & Crosscutting~~ Incidentals per ft. drilling | 8500 | $ 3670.00 | 817.5 | 523.50 | |
| ~~Raising~~ Core boxes | 160 | 480.00 | 60 | 180.00 | |
| ~~Shafts~~ Analysis | 90 Samples | 540.00 | | | |
| Winzes | | | | | |
| Drilling (Specify) BX or BXWL Diamond drilling | 8500 | $ 41,200.00 | 812.5 | 3795.38 | |
| Surface Excavation | | | | | |
| Underground Excavation | | | | | |
| Roads and Trails | | | | | |
| Operating Equipment Purchased | | | | | |
| Surface Rehabilitation & Repairs | | | | | |
| Underground Rehabilitation | | | | | |
| New Building, Improvements, etc. | | | | | |
| Other (Specify) | | | | | |
| Totals | | 45,890.00 | | 4,498.88 | |

Prepared by Walter C. Anderson

71626

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

| Date | Surname | Code |
|---|---|---|
| 7/21 | Anderson | 600 |
| 7/22 | Hook | 600 |
| | | 110 |
| | | 100 |
| | | 220 |
| | | |
| | | |
| | | |
| | | |

600

July 21, 1958

Project Summary Report

By: Walter C. Anderson, Division of Nonmetallic Minerals

1. Docket No. DMEA-4750-Fluorspar
Contract No. Idm-E1152
Kemper Property
Livingston County, Kentucky

Application: Form MF-103(April 1952) received May 31, 1957.
Work proposed by Applicant - Diamond drilling with conventional AX or BX wireline drilling methods in 2 stages as follows:

| | |
|---|---|
| Stage I | |
| 12 holes totalling 3500 feet @ $6.35/ft. | $22,225.00 |
| Stage II | |
| 6500 feet of diamond drilling @ $6.35/ft. | 41,275.00 |
| Total amount requested | $63,500.00 |

Operator: Reynolds Metals Company
301 East Grace Street
Richmond, Virginia

Operator's Property Rights: Mining lease and option agreement on the Jessie Kemper (a widow), 338 acre tract, dated January 15, 1957. Consent to Lien and Subordination Agreement, dated July 16, 1957.

2. Contract: Form MF-200 (June 1954), dated November 14, 1957.
Work authorized: 2 stages

| | |
|---|---|
| Stage I | |
| 2000 feet of diamond drilling @ $4.35/ft. | $8,700.00 |
| Incidental allowance, 2000 feet @ $0.60/ft. | 1,200.00 |
| 60 wooden core boxes @ $3.00 each | 180.00 |
| 30 samples for assaying @ $6.00/sample | 180.00 |
| Estimated total cost, Stage I | $10,260.00 |
| Stage II | |
| 6500 feet of diamond drilling @ $5.00/ft. | $32,500.00 |
| Incidental allowance, 6500 feet @ $0.38/ft. | 2,470.00 |
| 100 wooden core boxes @ $3.00 each | 300.00 |
| 60 samples for assaying @ $6.00/sample | 360.00 |
| Estimated total cost, Stage II | $35,630.00 |
| Estimated total cost of project | $45,890.00 |
| Government participation @ 50% | $22,945.00 |

Amendments: No. 1, 1/10/58, - Defines the terms subject to the lien provided for in contract.

Work completed:

Stage I

| | |
|---|---|
| 5 diamond drill holes totalling 1571.5 feet @ $6.35/ft. | $6,836.03 |
| 60 core boxes @ $3.00/box | 180.00 |
| Incidental allowance, 1571.5 feet @ $0.60/ft. | 942.90 |
| Total accepted cost Stage I | $7,958.93 |

Stage II - none

| | |
|---|---|
| Total project accepted cost | $7,958.93 |
| Government participation @ 50% | $3,979.46 |

Work began January 8, 1958, and was terminated by mutual consent on June 3, 1958, just a little short of completion of Stage I, because of negative results. Field Team Final Report received May 9, 1958. Operator's Final Engineering Report received May 5, 1958. No equipment purchased under contract.

3. Audit: Report of Review issued May 5, 1958.

| | |
|---|---|
| Total accepted cost | $7,958.93 |
| Government participation @ 50% | $3,979.46 |

4. Certification of Discovery - none issued.

5. Comments:

How Conducted: All of the work in which the Government participated was done in an efficient and satisfactory manner.

Operation: Good.

Engineering: Engineering and geological aspects were conducted in a satisfactory manner.

Geologic Premise: The geological conditions which appeared to be favorable for discovery of a significant fluorspar deposit proved to be misleading.

Geologic Criteria upon which work was based:

1. Past production - small amount of "gravel" fluorspar.

2. Favorably located in northeast trending belt that contains most of major mining operations for the Kentucky district.

3. The displacement along the fault system is not so great as to be unfavorable for ore deposition.

4. The most favorable geological horizon is present at reasonable depths below horizon.

5. Where the fault system has been cut by drilling, the vein is wide rather than "tight".

Geologic Criteria developed during project:

1. Formation encountered by drilling -
   (a) Overburden - 14 to 47 feet.
   (b) Golconda shale - 42 to 160 feet.
   (c) Cypress sandstone - 54 to 82 feet.
   (d) Paint creek shale - 27 to 102 feet.
   (e) Bethel sandstone - 5 to 63 feet
   (f) Renault limestone and shale - plus 7 feet.
   (g) Fault zone - 17 to 53 feet.
   (h) St. Louis limestone - 42 to 76 feet.
2. Most favored host rock - Fredonia limestone member of the St. Genevieve formation.
3. Major fault structure encountered in all holes.
4. Traces of fluorspar revealed in only 2 of the 5 holes drilled.

Future Possibilities: None, since no minable reserves indicated.

Recommendations: The Field Team recommends that no certification of discovery be issued, since no ore-grade mineralization was discovered. The Division of Nonmetallic Minerals concurs.

Walter C. Anderson
Walter C. Anderson
Division of Nonmetallic Minerals

WCAnderson:rsi 7/21/58
Copy to: Admr. R. File
Mr. Houk

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

DMEA
RECEIVED JUL 17 1958

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July 15, 1958

Memorandum

To: Operating Committee, DMEA - Washington

From: Acting Executive Officer, DMEA - Region V -

Subject: Letters requesting information concerning completed DMEA contracts - DMEA-4750 and DMEA-4886 Zinc

Enclosed are copies of letters from Reynolds Metals Company and Roland F. Beers, Incorporated, requesting information, and our reply to each letter.

As neither project has been recommended for certification, we assume that both companies will be notified in the usual manner by letter from the Administrator.

V. J. Lynch

V. J. Lynch, Acting

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

July 15, 1958

Mr. John T. Kilpatrick,
Reynolds Metals Company
Richmond 18, Virginia

Re: DMEA-4750 (Fluorspar)
Kemper Property
Reynolds Metals Company
Livingston County, Kentucky
Contract No. Idm-E1152

Dear Mr. Kilpatrick:

Your letter of July 10, to Mr. Laurence requesting an immediate notice that no certification of discovery will be issued on the subject property, has been referred to our Washington office for cnnsideration and reply. You may expect an answer direct from the Washington office concerning your request.

Very truly yours,

V. J. Lynch, Acting
Executive Officer, DMEA
Region V.

RAL/mm
cc
Burmeister
Opr. Com.-2
Files
Lynch

REYNOLDS METALS COMPANY
REYNOLDS METALS BUILDING
RICHMOND 18, VIRGINIA

EXECUTIVE OFFICES

RECEIVED JUL 17 1958

| DATE | INITIALS | CODE |
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July 10, 1958

RECEIVED
JUL 14 1958

Mr. Robert A. Laurence
Executive Officer
Defense Minerals Exploration Administration
United States Department of the Interior
Room 13, Post Office Building
Knoxville 2, Tennessee

Dear Mr. Laurence:

Re: DMEA-4750 - Fluorspar, Kemper Property, Livingston County, Ky., Contract Idm-E1152

In your letter of May 20, 1958 concerning the subject contract you advised that the obligation of Article 2(d) of the contract would remain in force until November 1, 1958 unless we are notified earlier as to whether or not a certification of discovery is to be issued by the Government. You said, therefore, that if we cancelled the lease on this property before receiving such notice or before November 1, 1958, we should provide for the preservation of the Government's right to a percentage royalty as provided in Article 2(d).

As you know, a formal termination agreement of the subject contract has now been executed by the Government and by Reynolds Metals Company. We have not yet cancelled our lease on this property. We would prefer, if possible, to cancel the lease on a clean-cut basis so that the lessor would not be subjected to a continuing cloud on her title. We feel that it would be more equitable for us to cease paying rent upon cancellation if we can cancel in such a fashion that there would be no qualifications on the right of the lessor to deal freely with the property in the future. Therefore, we wonder whether it would be possible for the Government to give us an immediate notice to the effect that no certification of discovery will be issued on this property. Upon receipt of such notice, we presume that we could then cancel the lease without preservation of any rights of either the Government or Reynolds Metals Company so far as the owner of the property is concerned.

We would appreciate it if you will give some consideration to this request and advise me of the position of the Government on this question.

Very truly yours,

John T. Kilpatrick

John T. Kilpatrick

JTK:mjs

cc Dr. John H. Moses
Mr. John W. Hook

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

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JUN 3 1958 600

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

Re: Docket No. DMEA-4750-Fluorspar
Reynolds Metals Company
Kemper Property
Livingston County, Kentucky
Contract No. Idm-K1152

Dear Mr. Laurence:

Pursuant to your recommendation, we have prepared the enclosed original and four copies of a termination agreement signed by the Administrator for the Government. Two extra copies are enclosed for the use of the Field Team.

If the proposed termination agreement meets with your approval present it to the Operator for execution. If any part of this agreement does not have either your approval or that of the Operator, and cannot be amended within your delegated authority, then the original and all copies are to be returned to this office, together with the proposed changes for consideration.

After execution of the termination agreement, the copies are to be distributed in the usual manner.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (GHB)

Approved:

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

Thor H. Kiilsgaard (GHB)
Member, Geological Survey

WCAnderson:rsi 5/28/58
Copy to: Admr. R. File
Operating Committee
Mr. Kiilsgaard, 5222
Mr. Dietrich, 3061
Mr. Houk
Mr. McDougal, 3522

Enclosures 6

8623

DMEA Form 7
(12-56)

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May 22, 1958

Memorandum

To: Mr. C. O. Mittendorf, Administrator

From: Lawrence G. Houk, Director, Division of Nonmetallic Minerals

Subject: Justification for writing Termination Agreement.

Docket No. DMEA-4750-Fluorspar
Reynolds Metals Company
Kemper Property
Livingston County, Kentucky
Contract No. Idm-E1152

Today Mr. Laurence phoned and asked that we prepare a termination agreement for the Reynolds Metals Company on the subject contract.

Ordinarily when Stage I of a contract is completed and the results do not justify proceeding with Stage II, and the Applicant has been notified, (see Mr. Laurence's letter to the Applicant of March 31, 1958, "Stage II of the contract will not be authorized") then a termination agreement is not required. The Applicant requested that Mr. Laurence send them a termination agreement of the contract as they were anxious to forfeit their leases but hesitate to do so without the termination agreement. We told Mr. Laurence we would prepare the termination agreement. Mr. Laurence advised the Applicant that we have the right to certify until November 1, 1958. If no certification is made before November 1, the Applicant and the landowners could expect a letter from the Government stating that the Government has no lien on the land and that no certification of discovery will be made.

The work was unsuccessful and no certification will be made.

LGHouk:gad 5/22/58
Copy to: Admr. R. File
Mr. Houk

8623

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

DMEA
MAY 22 1958

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| 5/22 | J.G. | 225 |
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May 20, 1958

Mr. John T. Kilpatrick
Reynolds Metals Co.
Reynolds Metals Bldg.
Richmond 18, Virginia

Re: DMEA-4750 - Fluorspar
Kemper Property
Livingston County, Ky.
Contract Idm-E1152

Dear Mr. Kilpatrick:

On March 31, I wrote your Company advising you that Stage II of the subject contract will not be approved. This had the effect of terminating the contract as of the completion of Stage I. We have asked the Washington office to prepare a termination agreement and will forward it for signature when it is received.

However, such agreements commonly contain this provision: "All rights of the Government respecting certification of discovery or development, percentage royalty and liens to secure payment thereof, reports (including preservation of Operator's records) accounts, audits and the right to recover any overpayment, are hereby preserved." Therefore, the obligations of Article 2(d) of the contract remain in force until November 1, 1958, unless you are notified earlier whether or not a certification of discovery is to be issued. Thus, if you cancel or terminate the lease before such notice or before November 1, 1958, you should provide for the preservation of the Government's right to a percentage royalty as provided in Article 2(d).

I am referring your letter to our Washington office, for any additional comments they may wish to add.

Sincerely yours,

Robert A. Laurence
Executive Officer, DMEA
Region V

RAL/zm
cc
Opr. Com--2
Burnette
Amos
Fells
Branch

REYNOLDS METALS COMPANY
REYNOLDS METALS BUILDING
RICHMOND 18 VIRGINIA

EXECUTIVE OFFICES

May 13, 1958

DMEA

Mr. Robert A. Laurence, Executive Officer
DMEA, Region V
United States Dept. of the Interior
Defense Minerals Exploration Administration
Room 13, Post Office Building
Knoxville 2, Tennessee

Dear Mr. Laurence:

Re: DMEA - 4750, Contract No. Idm. - E 1192 - Fluorspar - Kemper Property - Livingston County, Kentucky

I understand that the DMEA exploration project on the subject property has been completed and that we were unsuccessful in discovering fluorspar. Our people are anxious to terminate the mining lease and option agreement under which we hold our rights as lessee of this property. We have the right under the lease to terminate it at any time upon thirty days' written notice given to the lessor and we would like to terminate it as soon as possible to avoid continuing payment of rent.

Article 2(d) of the subject DMEA contract imposes some obligations upon us with respect to preservation of our interest in the property for the purpose of carrying out the DMEA project. I assume that the DMEA contract will be promptly formally terminated but have not yet seen any official final termination papers. In the meantime, I am somewhat reluctant to cancel our lease if there is any possibility that such cancellation would constitute even a technical violation of our obligations to the Government under the DMEA contract. I would appreciate it if you would either complete a formal cancellation of the DMEA contract or officially advise us that we are now free to cancel our lease on this property.

Yours very truly,

John T. Kilpatrick

JTK:mjs

cc Mr. Walter L. Rice
Dr. John H. Moses
Mr. John W. Hook

OFFICIAL FILE COPY
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Memorandum

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

Date May 16, 1958

DMEA Docket No. 4750
DMEA Contract No. Idm-E1152
Commodity Fluorspar
Name of Applicant Reynolds Metals Co.
Name of property Kemper Property
Location of property Livingston County, Ky.
Estimated cost of project $45,890.00

To: Lawrence G. Houk, Chief, Nonmetallic Division, Defense Minerals Exploration Administration
From: Robert B. McDougal, Commodity Specialist, Branch of Construction and Chemical Materials
Subject: Review of Field Team Report
(Application, Field Team Report, etc.)

1. Date of subject document: 5/7/58. 2. Date received by reviewer: 5/12/58

3. Prior reports on this property known to reviewer: Yes ☐ No ☐

4. Prior reports on nearby properties known to reviewer: Yes ☐ No ☐

5. Information available on past production: Yes ☐ No ☐

6. Other pertinent factors known to reviewer: Yes ☐ No ☐

7. Explain items marked 'yes' above:

8. Factors meeting special consideration:
a. Location ☐
b. Ownership ☐
c. Evidence of mineralization ☐
d. Geology ☐
e. Proposed exploration method ☐
f. Alternate exploration method ☐
g. Costs
h. _____ ☐

9. Action advised:
a. Obtain information from applicant ☐
b. Refer to Field Team ☐
c. Denial X
d. Agree with Field Team X
e. Disagree with Field Team ☐
f. Suggest alternate plan ☐
g. Request another examination ☐
h. Approval ☐
i. Consult with Mr. _____ at _____ AEC office.

10. Remarks: (Use back of page if necessary)

Copy to: Frank D. Lamb
Thor Killsgaard

Division of Minerals
Br. of Const. & Chem. Mats.
FILES

Robert B. McDougal

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

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May 7, 1958

Memorandum

To: Operating Committee, DMEA- Washington

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

Subject: ~~Operator's~~ Field Team Final Report - DMEA-4750, Idm-E1152, (Fluorspar) Reynolds Metals Company, Richmond, Va. Kemper Property, Livingston County, Kentucky

Transmitted are three copies of the subject report.

Certification is not recommended.

Robert A. Laurence

Robert A. Laurence
Executive Officer, DMEA
Region V

W A Beck

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

z

Field Team Final Rept

Reviewed by
DMEA OPERATING COMMITTEE
5-14-58
(date)

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UNITED STATES
DEPARTMENT OF THE INTERIOR

DEFENSE MINERALS EXPLORATION ADMINISTRATION
REGION V

# FIELD TEAM FINAL REPORT

ON

## DMEA-4750, Idm-E1152 (Fluorspar)
## KEMPER PROPERTY
## Livingston County, Kentucky

By

Dewey H. Amos, Geologist
Geological Survey

and

H. L. Burmeister, Mining Engineer
Bureau of Mines

Reviewed by
DMEA OPERATING COMMITTEE
5-14-58
(date)

Final Report

DMEA-4750, Idm-E1152 (fluorspar)

Operator: Reyholds Metals Company, Richmond, Virginia.

Location: Kemper Property, Livingston County, Kentucky.

## Summary

The work completed under this contract failed to reveal mineralization of ore grade. The contract was terminated by mutual agreement when it became apparent additional exploration was not warranted. It is recommended that no certification of discovery be issued. Additional exploratory work is not warranted.

## Completed Work

Work on the contract began January 8, 1958 when drill hole K-1 was collared at the location shown on the attached map. A total of five diamond drill holes were completed under Stage I of the contract. These holes totaled 1572 feet, 428 feet less than provided for in the contract. Hole locations and summary logs are given on the attached map and logs. Stage II work was not undertaken as ore-grade mineralization was not encountered in the Stage I holes. The contract was terminated by mutual consent, effective March 18, 1958.

## Geology

Mineralization in this district consists of fluorite with subordinate sphalerite and galena in a gangue of calcite and barite. It occurs as cavity-filling and replacement along steeply-dipping, normal faults that displace relatively flat-lying sedimentary beds of the Meramac and Chester groups of Mississippian age. The most favored host rock is the Fredonia limestone member of the Ste. Genevieve formation (Upper Meramacian). Important mineralization also occurs in the upper part of the Renault formation, the lowermost Chesterian unit. Drilling conducted under the contract was directed toward exploration for mineralization at the latter stratigraphic position.

A major fault structure containing heavy gangue mineralization was encountered in all of the holes. The two northeastern-most holes (K-1 and K-2) revealed traces of fluorspar; the remaining holes were barren. The major fault structure strikes about N.40°E. and dips approximately 75 to 80° in a northwesterly direction. The exact displacement cannot be determined but it is greater than 400 feet. A second fault was encountered in the two holes drilled on the northeastern end of the property (K-1 and K-2). This structure has the same attitude as the main fault and occurs in the hanging wall at a distance of about 75 feet from the major structure. In Hole K-1 the minor fault showed a displacement

of about 200 feet but 670 feet southwestward along its strike, it has a displacement of only approximately 85 feet (Hole K-2).

## Recommendations

As ore-grade mineralization was not discovered by the work done under the contract, it is recommended that no certification of discovery be issued. Additional exploration is not warranted on this property.

## Reserves

No reserves were indicated by work done under the contract nor can any be inferred.

## Compentency of Operator

The exploratory work completed under this contract was conducted in an efficient and satisfactory manner.

## Summary Log of Hole K-1

| Depth In Feet | Geologic Description |
|---|---|
| 0-10 | Overburden. |
| 10-90 | Golconda shale and limestone. |
| 90-116 | Cypress sandstone. |
| ±116 | Fault. |
| 116-122 | Paint Creek shale and limestone. |
| 122-176½ | Bethel sandstone. |
| 176½-228 | Renault limestone and shale, numerous fractures filled with coarse, crystalline calcite. |
| 228-267 | Fault zone, calcite-limestone breccia. Scattered shines of fluorspar at 231-242 feet. Estimated 20 per cent fluorspar at 242-243 feet. |
| 267-287 | St. Louis limestone. |
| 287 | Bottom. |
| | Bearing N.50°W. |
| | Inclination -60°. |

## Summary Log of Hole K-2

| Depth in Feet | Geologic Description |
|---|---|
| 0-30 | Overburden. |
| 30-132 | Golconda limestone |
| 132-135 | Fault. Limestone breccia. |
| 135-149 | Cypress sandstone. |
| 149-164 | Fault. Shale and limestone breccia. |
| 164-204 | Bethel sandstone. |
| 204-239 | Renault limestone and shale. |
| 239-269½ | Fault. Limestone breccia with calcite and shines of fluorspar and barite. |
| 269½-293 | St. Louis limestone. |
| 293 | Bottom. |
| | Bearing N.52°W. |
| | Inclination -60° |

## Summary Log of Hole K-3

| Depth in Feet | Geologic Description |
|---|---|
| 0-40 | Overburden. |
| 40-82 | Golconda shale. |
| 82-136½ | Cypress sandstone. |
| 136½-163 | Paint Creek shale. |
| 163-226½ | Bethel sandstone. |
| 226½-233½ | Renault limestone and shale. |
| 233½-250½ | Fault. Limestone and calcite breccia. |
| 250½-292½ | St. Louis limestone. |
| 292½ | Bottom. |
| | Bearing N.48°W. |
| | Inclination -57°. |

## Summary Log of Hole K-4

| Depth in Feet | Geologic Description |
|---|---|
| 0-47 | Overburden. |
| 47-123 | Golconda shale and limestone |
| 123-196 | Cypress sandstone. |
| 196-226½ | Paint Creek shale. |
| 226½-231½ | Bethel sandstone. |
| 231½-284 | Fault zone. Limestone-calcite-shale breccia. |
| 284-307 | St. Louis limestone. |
| 307 | Bottom |
| | Bearing N.53°W. |
| | Inclination -50° |

## Summary Log of Hole K-5

| Depth in Feet | Geologic Description |
|---|---|
| 0-14 | Overburden. |
| 14-34½ | Hardinsburg sandstone. |
| 34½-194½ | Golconda shale and limestone. |
| 194½-276½ | Cypress sandstone. |
| 276½-278½ | Paint Creek shale. |
| 278½-316½ | Fault zone. Limestone-calcite breccia. |
| 316½-392½ | St. Louis limestone. |
| 392½ | Bottom. |
| | Bearing N.48°W. |
| | Inclination -45°. |

## Expenditures

| | |
|---|---|
| Total approved | $45,890.00 |
| Total cost of project, (subject to audit) | 7,958.93 |
| Government's share of cost (subject @ 50% to audit) | 3,979.47 |
| Government's share unexpended (subject to Audit) | 18,965.54 |
| Value of production during exploration | None |
| Royalty due the Government | None |

## Comparative Cost Data

The Operator ask for and received drilling bids on a cost per shift basis rather than on a per foot basis. This was occasioned by his belief that special methods would need to be employed in drilling the ground.

The Operators contract with the drilling company was on a basis of $80.00 per shift for drilling and also moving in and moving out, plus cost of bits. The actual cost of drilling, bits and moving in and moving out was $11,800.71 except for the drilling bit cost in January which would probably increase the total by about $400.00.

It is also of interest to note that an examination of drillers records show that six shifts were used to move the drill to No. 1 hole which was only 200 yards from a paved highway. Ten shifts were used to move the drill out. ?

Dewey H, Amos, Geologist
U. S. Geological Survey

H. L. Burmeister, Mining Engineer
U. S. Bureau of Mines

| | | |
|---|---|---|
| 5/5 | | |
| 5/6 | | |

MAY 6 1958

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

Re: Docket No. DMEA-4750 (Fluorspar)
Reynolds Metals Company
Kemper Property
Livingston County, Kentucky
Contract No. Idm-E1152

Dear Mr. Laurence:

Enclosed are the original and three copies of a Report of Review, as requested by your May 1, 1958, memorandum.

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

Sincerely yours,

(Signed) E. D. Talbert

E. D. Talbert, Acting Director
Contract Administration
and Audit Division

Enclosures

EDTalbert/ama
May 5, 1958

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

8623

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

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May 1, 1958

Memorandum

To: Jay L. Chambers, Director, Contract Administration and Audit Division - DMEA - Washington, D. C.

From: Acting Executive Officer, DMEA - Region V - Knoxville

Subject: Termination of DMEA-4750, Idm-E1152-mica. Kemper Property, Livingston County, Kentucky. Reynolds Metals Company, Richmond, Virginia.

Work on the subject contract was terminated on completion of Stage I, March 18, 1958.

The following units of work have been acceptably performed as vertfied by our Field Examiners:

1) A total of 1572 feet of diamond drilling was completed.

2) Sixty core boxes were used.

An adequate final engineering and geological report has been received. A Report of Review is requested.

V. J. Lynch

VJL/zm
cc
Opr. Com.-2
Lynch
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UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 13 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

May 1, 1958

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Memorandum

To: Operating Committee, DMEA - Washington

From: Executive Officer, DMEA - Region V - Knoxville, Tenn.

Subject: Operator's Final Engineering and Geologic Report - DMEA-4750, Idm-E1152(fluorspar) Kemper Property, Livingston County, Kentucky.
Reynolds Metals Company, Richmond, Virginia

Transmitted are three copies of the subject report received in this office to day.

V. J. Lynch

Operator's Final Rpt

FINAL REPORT
DMEA 4750 Idm-E 1152
Reynolds Metals Company
John W. Hook, Resident Geologist
Kemper Property, Livingston County, Kentucky

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DMEA
RECEIVED 5
DATE | INITIALS

## SUMMARY OF PROJECT

Drilling began on the project January 8, 1958, and finished on March 12, 1958. During this period 5 holes were drilled, all designated under Stage One of the contract.

Stage One

| Hole No. | Depth (feet) |
|---|---|
| K-1 | 287 |
| K-2 | 293 |
| K-3 | 192.5 |
| K-4 | 307 |
| K-5 | 392 |
| Total - | 1,571.5 |

## SUMMARY OF COST

| Items of Cost | Cost/Unit | Total Units | Cost |
|---|---|---|---|
| Core drilling | $4.35/ft. | 1571.5 | $ 6,836.03 |
| Core boxes | 3.00/box ? | 60 | 180.00 |
| Incidental allow. | .60/ft. | 1571.5 | 942.90 |
| Assay | 6.00/assay | 0 | -- |
| | | | $ 7,958.93 |

## SUMMARY OF DRILLING

All the holes penetrated the entire width of the fault zone. In each case vein calcite and limestone breccia were cut plus shines of fluorspar in K-1 and K-2. All holes were drilled on the hanging wall side of the fault.

| Hole No. | Total Depth | Width of fault | Vert. Depth of intercept of fault | Vein Material | % recovery in vein | % recovery for hole |
|---|---|---|---|---|---|---|
| K-1 | 287' | 19' | 170' | Shines of $CaF_2$ 4' width. Ls & calcite breccia, vein calcite, 15' width. | 98 | 85 |
| K-2 | 293' | 25' | 241' | Shines of $BaSO_4$ and $CaF_2$, 1' width. Ls. and calcite breccia 16'; vein calcite 8'. | 100 | 75 |

| Hole No. | Total Depth | Width of fault | Vert. Depth of intercept of fault | Vein Material | % recovery in vein | % recovery for hole |
|---|---|---|---|---|---|---|
| K-3 | 292.5' | 15' | 235' | Ls. & calcite breccia 10'; vein calc. 8'. | 100 | 70 |
| K-4 | 301' | 51' | 220' | Ls.& calcite breccia 51' | 77 | 74 |
| K-5 | 392' | 38' | 185' | Ls.& calcite breccia 27'; vein calcite 11'. | 80 | 72 |

Maps and longitudinal sections are included with this report, cross sections of th4 holes and their logs were included in the monthly reports. The operator's report and voucher forms are enclosed in this report to show the final costs.

COMMENTS

Due to extreme cold weather, heavy rains and frequent snows, the drilling operations were hindered. Moving to new locations was especially slow.

Recovery in the vein material was excellent, using BX Wireline tools.

RESERVES

Since no ore was cut in any of the 5 holes, ore reserves are considered nil.

JWH/njl

RECEIVED
APR 15 1958
ACCOUNTING DEPT.
BAUXITE

Form MF-104A
(April 1952)

Budget Bureau No. 42-R1151.2

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

RECEIVED MAY 5 1958 D.M.E.A.

# OPERATOR'S UNIT COST AND PROGRESS REPORT

Month of April 1958 Docket No. DMEA 4750 Contract No. Idm E-1152
Operator's Name Reynolds Metals Company Minerals fluorspar
Address Reynolds Metals Bldg., Richmond, Virginia

| OPERATION | UNIT | COSTS THIS MONTH | UNITS THIS MONTH | COSTS TO DATE | UNITS TO DATE | UNIT COSTS TO DATE | AUTHORIZED BY CONTRACT | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Units | Unit Costs |
| Drifting | | | | | | | | |
| Crosscutting | | | | | | | | |
| Raising | | | | | | | | |
| Shafts | | | | | | | | |
| Winzes | | | | | | | | |
| Drilling: Core | feet | | | 6836.03 | 1571.5 | | 2000 | 4.35 |
| Churn | | | | | | | | |
| Auger | | | | | | | | |
| Stripping core boxes | 1 | | | 180.00 | 60 | | 60 | 3.00 |
| Trenching | | | | | | | | |
| ~~Test Pits~~ assays | 1 | | | | | | 30 | 6.00 |
| Roads and Trails | | | | | | | | |
| Incidental allow. | feet | | | 947.90 | 1571.5 | | 2000 | 0.60 |
| TOTAL DISTRIBUTED COSTS | | | | 7,958.93 | | | | TOTAL COSTS AUTHORIZED BY CONTRACT |
| Operating Equipment Purchased | | | | | | | | |
| Initial Rehabilitation and Repairs | | | | | | | | |
| New Buildings, Improvements, etc. | | | | | | | | |
| TOTAL COSTS | | | | 7,958.93 | | | | 10,260.00 |

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

Date 4-15-58 Operator Reynolds Metals Company

Per E. F. McDaniel Title Accounting Official

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

REMARKS:

(Instructions on reverse)

(For Government use only)

Item 947.90 should be 942.90

H L Burnette

## INSTRUCTIONS

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

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

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

GPO 872894

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

Budget Bureau No. 42-R1036.5

# UNITED STATES
## DEPARTMENT OF THE INTERIOR
### DEFENSE MINERALS EXPLORATION ADMINISTRATION
## OPERATOR'S MONTHLY REPORT AND VOUCHER

Month of April, 1958 Docket No. DMEA 4750 Contract No. Idm E-1152
Operator's Name Reynolds Metals Company Minerals fluorspar
Address Reynolds Metals Bldg., Richmond, Virginia
Contract Amount, $ 10,260 Government Participation: 50 % Amount, $ 5,130

| ITEMS OF COSTS | FOR OPERATOR'S USE | | | FOR GOVERNMENT USE ONLY | | |
|---|---|---|---|---|---|---|
| | Monthly Total | Totals Previously Reported | Totals To Date | Approved Monthly Total | Approved Totals Previously Reported | Approved Totals To Date |
| (1) Independent / Short Form Contracts: | | | | | | |
| Drilling Core | | | 6836.03 | | | |
| Bulldozing | | | | | | |
| Crosscutting | | | | | | |
| Drifting | | | | | | |
| (2) Labor and Supervision: | | | | | | |
| Labor | | | | | | |
| Supervision | | | | | | |
| Technical Services | | | | | | |
| (3) Operating Mat'ls. and Supplies: | | | | | | |
| Timber | | | | | | |
| Explosives | | | | | | |
| Pipe | | | | | | |
| Track | | | | | | |
| Core boxes | | | 180.00 | | | |
| (4) Operating Equipment: | | | | | | |
| Rental | | | | | | |
| Purchase | | | | | | |
| Depreciation | | | | | | |
| (5) Initial Rehabilitation and Repairs | | | | | | |
| (6) New Bldgs., Improvements, etc. | | | | | | |
| (7) Miscellaneous: | | | | | | |
| Repairs to Equipment | | | | | | |
| Sampling and Analysis | | | | | | |
| Payroll Taxes | | | | | | |
| Liability Insurance | | | | | | |
| Incidental allow. | | | 942.90 | | | |
| Assays | | | -- | | | |
| (8) Contingencies (specify): | | | | | | |
| TOTALS | | | 7958.93 | | | |

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

Date 4-15-58 *Payee Reynolds Metals Company

Per H. E. McDaniel Title Accounting Official

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

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

(Instructions on reverse)

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

$

Signature
(Authorized Certifying Officer)

Date Vou. No.
(See other side)

(For Government use only)

CERTIFICATION BY GOVERNMENT REPRESENTATIVE:

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

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

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

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

# MONTHLY REPORT OF OPERATOR

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

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

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

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

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

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

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

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

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

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

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

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

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

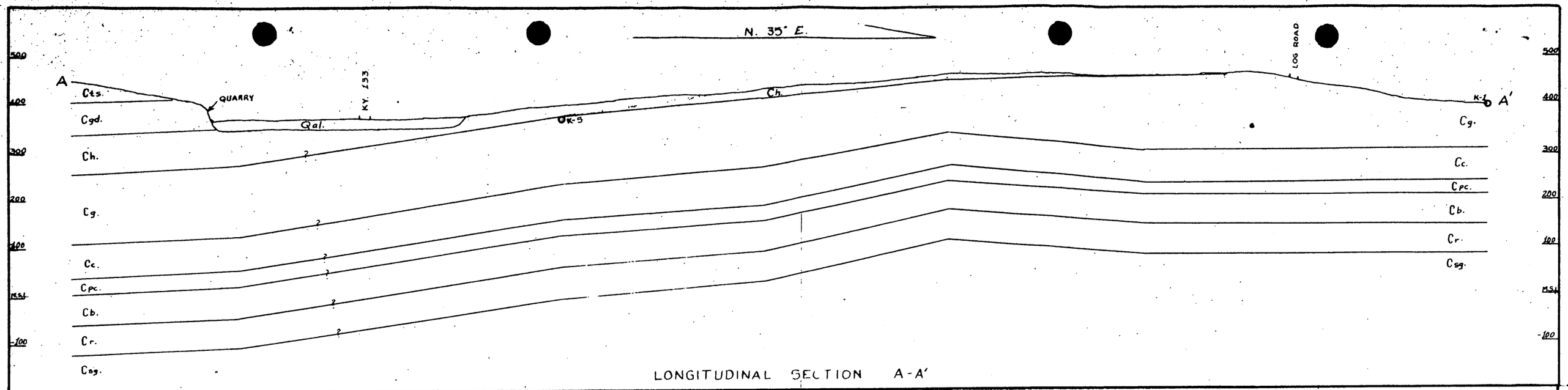
Item (7) covers miscellaneous types of expenditure such as payroll taxes, liability insurance, workmen's compensation insurance, repairs to equipment and sampling and analysis. Only that part of payroll taxes, liability insurance and workmen's compensation which are paid by the operator should be reported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

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

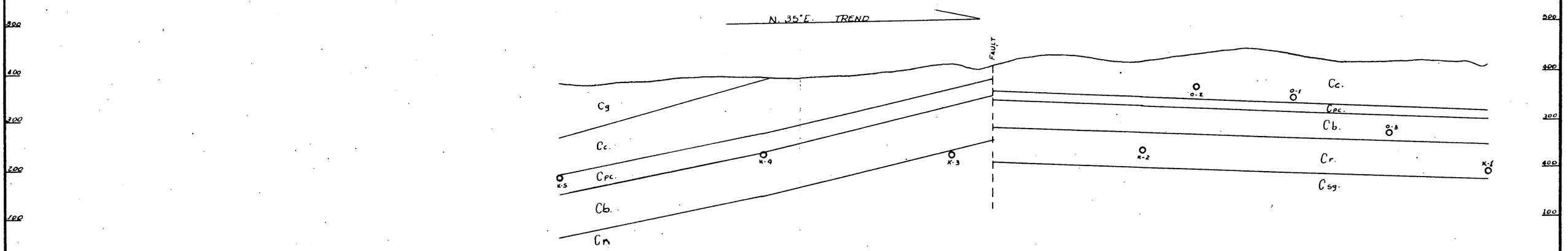
The original of Form MF-104 when submitted for reimbursable expenses incurred under contract Form MF-200 must be supported by original documentation or by certified copies of purchase orders, payrolls or transcripts of payrolls, unless such documentation has been waived by the Regional Executive Officer.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

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

GPO 872893




LONGITUDINAL SECTION A-A'




LONGITUDINAL SECTION ALONG HANGING WALL OF FAULT

# LONGITUDINAL SECTIONS
# KEMPER PROJECT

DMEA - 4750 Idm E 1152

SCALE: 1" = 200'

0 50 100 200 300 400 500 FT.

○ K-1 – INTERSECTION OF DRILL HOLE ℄ SECTION

| | | | |
|---|---|---|---|
| Qal | ALLUVIUM | Cc | CYPRESS Ss. |
| Cts | TAR SPRINGS Ss. | Cpc | PAINT CREEK Sh. |
| Cgd | GLEN DEAN Ls. | Cb | BETHEL Ss. |
| Ch | HARDINSBURG Ss. | Cr | RENAULT Ls. |
| Cg | GOLCONDA Ls. | Csg | ST. GENEVIEVE FM. |

TW. RP. APRIL 1958

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

March 31, 1958

RECEIVED DMEA APR 2 1958

| DATE | INITIALS | |
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| 4/2 | C | 22 |
| 4/3 | Hack | 600 |

Reynolds Metals Company
301 East Grace Street
Richmond, Virginia

Re: DMEA-4750, Idm-E1152-fluorspar
Reynolds Metals Co.
Kemper Property
Livingston County, Kentucky

Gentlemen:

This will confirm the verbal agreement between our Field Examiner and your geologist that the subject contract should be recessed pending termination.

Results of the work completed to date indicates that further work is unwarranted. Therefore, Stage II of the contract will not be authorized.

Very truly yours,

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

VJL/zm
cc
Burmeister
Lynch
Opr. Com-2
Files

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

| Date | Surname | Code |
|---|---|---|
| 4/22 | Talbert | 800 |
| 4/23 | C | 220 |
| 4/23 | Hank | 600 |
| | | |
| | | |
| | | |
| CERTIFIED MAIL | | |
| | | |
| | | |

APR 22 1958

Mrs. Helen R. Miller
Personal Assistant
Bureau of Mines, Region V
P. O. Box 217
Norris, Tennessee

Re: Docket No. DMEA-4750 (Fluorspar)
Reynolds Metals Company
Kemper Property
Livingston County, Kentucky
Contract No. Idm-E1152

Dear Mrs. Miller:

As requested by your April 18 memorandum an audit review has been made of the referenced project. The final (March 1958) MF-104 and attachments, together with the invoices applicable to prior MF-104s, are returned herewith.

A Report of Review will be issued promptly upon submission by the Executive Officer of a memorandum confirming the units of work acceptably performed and the receipt of the Operator's final geological and engineering report.

Sincerely yours,

(Signed) J. L. Chambers

Jay L. Chambers, Director
Contract Administration
and Audit Division

Enclosures

EDTalbert/ama
April 22, 1958

Copy to: Docket
Admr. Reading File
Mr. Laurence
Mr. Chambers
Mr. Talbert

8623

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

ROOM 13 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

March 28, 1958

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Memorandum

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

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

Subject: Docket No. DMEA-4750, Idm-E1152 (Fluorspar)
Reynolds Metals Company, Richmond, Virginia
Kemper Property, Livingston County, Kentucky

Enclosed are the original and two copies of latest interim report on the subject contract.

We agree with the recommendation for termination, effective March 20, 1958, upon completion of Stage I. If you agree, please prepare termination agreement.

Certification will not be recommended.

Robert A. Laurence
Robert A. Laurence
Executive Officer

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

Enclosures 3

COPY
DMEA
MAR 31 1958
DATE | INITIALS | CODE

Interim Report

DMEA-4750, Idm-E1152 (fluorspar)

Operator: Reynolds Metals Company, Richmond, Virginia

Location: Kemper Property, Livingston County, Kentucky

A project inspection of the subject contract was conducted on March 18, 1958. Results of drilling completed since the last project inspection (February 20, 1958) were discussed with the Operator's geologist and cores from recently completed holes were examined.

The five holes authorized under Stage I of the contract have been completed. These holes totaled 1572 feet. Mineralization of ore grade was not encountered but heavy gangue mineralization along a favorable structure was present in all of the holes. Additional exploratory work on this property is not warranted. It is recommended that the contract be terminated by mutual agreement effective March 18, 1958. The Operator is in agreement.

A summary of the two holes completed since the last project inspection is as follows:

| Hole No. | Inclination | Direction Inclination | Depth in feet | Lithology |
|---|---|---|---|---|
| K-4 | -50° | N.53°W. | 0-47 | Overburden. |
| | | | 47-123 | Golconda shale and limestone. |
| | | | 123-196 | Cypress sandstone. |
| | | | 196-226½ | Paint Creek shale. |
| | | | 226½-231- | Bethel sandstone. |
| | | | 231½-284 | Fault zone. |
| | | | (231½-244) | Limestone and calcite breccia. |
| | | | (244-248) | Limestone with calcite stringers. |

| Hole No. | Inclination | Direction Inclination | Depth in Feet | Lithology |
|---|---|---|---|---|
| | | | (248-253) | Limestone and calcite breccia. |
| | | | (253-255½) | Limestone with calcite stringers. |
| | | | (255½-256½) | Shale. |
| | | | (256½-262½) | Limestone with calcite Stringers. |
| | | | (262½-269½) | Shale, limestone and calcite breccia. |
| | | | (269½-284) | Limestone and calcite breccia. |
| | | | 284-307 | St. Louis limestone. |
| K-5 | -45° | N.48°W. | 0-14 | Overburden. |
| | | | 14-34½ | Hardinsburg sandstone. |
| | | | 34½-194½ | Golconda shale. and limestone |
| | | | 194½-276½ | Cypress sandstone. |
| | | | 276½-278½ | Paint Creek shale. |
| | | | 278½-316½ | Fault zone. |
| | | | (278½-279) | Limestone |
| | | | (279-281) | Limestone shale and calcite breccia. |
| | | | (281-282) | Sandstone and calcite breccia. |
| | | | (282-303) | Limestone breccia with calcite veinlets. |
| | | | (303-316½) | Calcite |
| | | | 316½-392½ | St. Louis limestone. |

It was necessary to decrease the inclination of Holes K-4 and K-5 rather than drilling at -60° as originally planned because of a gradaul rise in elevation of the stratigraphic units southwestward along the structure. This necessitated a slight shift of collar locations from the proposed sites shown on the contract map.

Dewey H. Amos
Geologist
U. S. Geological Survey

March 3, 1958

Memo for the files:

Docket No. DMEA-4750-Fluorspar
Reynolds Metals Company
Kemper Property
Livingston County, Kentucky
Contract No. Idm-E1152

Inspection January 23, 1958, by H. L. Burmeister and D. H. Amos. Drilling started January 8th on K-1 as shown on the contract map. The major fault structure was encountered from 228 to 267. It contained 75% quartz crystal and calcite and about 25% limestone blocks. Scattered shines of fluorspar were encountered between 231 and 242. One foot of fluorspar estimated to contain 20% Caf2 was encountered between 242 and 243. Hole bottom at 287 in St. Louis limestone. Drill operated two shifts six day week basis. BX wire line used. Average advance 24 feet per shift. Overall core recovery 85%, in the fault structure 98.

February 20, 1958, inspection by D. H. Amos. K-2 drilled to 293 feet. Bottom in St. Louis limestone. From 239 to 269½ limestone breccia with calcites and shines of fluorite and barite. K-3 minus 57° bottom 292½. 242½ to 250½ limestone and calcite breccia. 233½ to 250½ fault zone. K-4 in progress at 60 feet. Inclination minus 45.

Operator's January, 1958 Report. Started January 8, finished January 15th. 14 shifts 287 equals 20½ feet per shift.

K-2 Started January 22, 1958, finished January 28. 12 shifts 293 feet. 24½ feet per shift.

At the present it looks as though Stage II should not be entered into.

<u>REYNOLDS METALS COMPANY'S</u> February, 1958, Monthly Voucher.

K-3 Started February 3, 1958, finished February 11, 1958. Angle -57° bottom 292.5 feet. Fault from 233 to 250. Recovery in fault 100%.

K-4 Started February 15, 1958, finished February 26, 1958. Bottom 307, angle -50°. Fault 231 to 284. No mineralization. Vouchered 585 feet for the month of February. Units to date 872.5.

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

Budget Bureau No. 42-R1036.5

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

RECEIVED MAY 12 1958 D.M.E.A.

VOUCHER & SCHEDULE OF PAYMENTS R... 56

# OPERATOR'S MONTHLY REPORT AND VOUCHER

Month of March, 1958 Docket No. DMEA 4750 Contract No. 10a-R152
Operator's Name Reynolds Metals Company Minerals Fluorspar
Address Reynolds Metals Bldg., Richmond, Virginia
Contract Amount, $ 10,260.00 Government Participation: 50 % Amount, $ 5,130.00

| ITEMS OF COSTS | FOR OPERATOR'S USE | | | FOR GOVERNMENT USE ONLY | | |
|---|---|---|---|---|---|---|
| | Monthly Total | Totals Previously Reported | Totals To Date | Approved Monthly Total | Approved Totals Previously Reported | Approved Totals To Date |
| (1) Independent Short Form Contracts: | | | | | | |
| Drilling core | 3040.65 | 3795.38 | 6836.03 | | | |
| Bulldozing | | | | | | |
| Crosscutting | | | | | | |
| Drifting | | | | | | |
| (2) Labor and Supervision: | | | | | | |
| Labor | | | | | | |
| Supervision | | | | | | |
| Technical Services | | | | | | |
| (3) Operating Mat'ls. and Supplies: | | | | | | |
| Timber | | | | | | |
| Explosives | | | | | | |
| Pipe | | | | | | |
| Track | | | | | | |
| Core boxes | -- | 180.00 | 180.00 | | | |
| (4) Operating Equipment: | | | | | | |
| Rental | | | | | | |
| Purchase | | | | | | |
| Depreciation | | | | | | |
| (5) Initial Rehabilitation and Repairs | | | | | | |
| (6) New Bldgs., Improvements, etc. | | | | | | |
| (7) Miscellaneous: | | | | | | |
| Repairs to Equipment | | | | | | |
| Sampling and Analysis | | | | | | |
| Payroll Taxes | | | | | | |
| Liability Insurance | | | | | | |
| Incidental allow. | 419.40 | 523.50 | 942.90 | | | |
| Assays | -- | -- | -- | | | |
| (8) Contingencies (specify): | | | | | | |
| TOTALS | 3460.05 | 4498.88 | 7958.93 | $3,460.05 | $4,498.88 | $7,958.93 |

I certify that the above bill is correct and just and that payment therefor has not been received.
Date 4-11-58 *Payee Reynolds Metals Company
Per [signature] Title Accounting Official

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

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

(Instructions on reverse)

1,730.03

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

$1,730.02

Signature [signature]
(Authorized Certifying Officer)

Date MAY 9 1958 Vou. No. 168
(See other side)

(For Government use only)

CERTIFICATION BY GOVERNMENT REPRESENTATIVE:

I certify that to the best of my knowledge and belief the contractor submitting this voucher is operating a Defense Minerals Exploration Administration project under Contract No. E 1152 in accordance with the terms of the contract.

Signature W. Burmeister Title Mining Engr. Date 4/15/58

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

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

# MONTHLY REPORT OF OPERATOR

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Form MF-104A
(April 1952)

Budget Bureau No. 42-R1151.2

RECEIVED MAY 12

# UNITED STATES
# DEPARTMENT OF THE INTERIOR
## DEFENSE MINERALS EXPLORATION ADMINISTRATION
# OPERATOR'S UNIT COST AND PROGRESS REPORT

Month of March 1958 Docket No. DMEA 4750 Contract No. Idm-E1152
Operator's Name Reynolds Metals Company Minerals Fluorspar
Address Reynolds Metals Bldg., Richmond, Virginia

| OPERATION | UNIT | COSTS THIS MONTH | UNITS THIS MONTH | COSTS TO DATE | UNITS TO DATE | UNIT COSTS TO DATE | AUTHORIZED BY CONTRACT | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Units | Unit Costs |
| Drifting | | | | | | | | |
| Crosscutting | | | | | | | | |
| Raising | | | | | | | | |
| Shafts | | | | | | | | |
| Winzes | | | | | | | | |
| Drilling: Core | feet | 3040.65 | 699 | 6836.03 | 1571.5 | | 2000 | 4.35 |
| Churn | | | | | | | | |
| Auger | | | | | | | | |
| ~~xxxxx~~ Core boxes | 1 | | | 180.00 | 60 | | 60 | 3.00 |
| Trenching | | | | | | | | |
| ~~xxxxx~~ Assays | 1 | | | | | | 30 | 6.00 |
| Roads and Trails | | | | | | | | |
| Incidental Allow. | feet | 419.40 | 699 | 942.90 | 1571.5 | | 2000 | 0.60 |
| TOTAL DISTRIBUTED COSTS | | 3460.05 | | 7958.93 | | | | TOTAL COSTS AUTHORIZED BY CONTRACT |
| Operating Equipment Purchased | | | | | | | | |
| Initial Rehabilitation and Repairs | | | | | | | | |
| New Buildings, Improvements, etc | | | | | | | | |
| TOTAL COSTS | | 3460.05 | | 7958.93 | | | | 10,260.00 |

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

Date 4-11-58 Operator Reynolds Metals Company

Per C. D. Duncan Title Accounting Official

REMARKS: Drilling and incidental allowance costs are for holes K-4 and K-5.

All information on K-4 was submitted in February report, except for the Unit Costs Progress Report.

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

(Instructions on reverse)

(For Government use only)

R. H. Burnsciter 4/15/58

## INSTRUCTIONS

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

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

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

GPO 872894

KEMPER PROJECT
DMEA 4750 Idm - K1152

Narrative for March
J. W. Kock, Resident Geologist

Hole K-5 was completed in March. Costs for both K-4 and K-5 are included in this report.

Hole K-5 cut a wide faulted zone of limestone, sandstone and calcite breccia, with more vein calcite than in K-4. The hole contained neither fluorspar nor barite.

Recovery in the vein was 80% using BX Wireline tools.

A detailed log and cross section is enclosed, the summary is as follows:

K-5

Coordinates: N-5801, E-5398 Elevation: 396.0 Bearing: N48W Angle: -45°
Started: 3/3/58 Finished: 3/12/58 Bottom: 392.5 feet

| From | To | Description |
|---|---|---|
| 0 | 14 | Overburden |
| 14 | 34.5 | Hardinsburg sandstone |
| 34.5 | 194.5 | Golconda shale and limestone |
| 194.5 | 276.5 | Cypress sandstone and shale |
| 276.5 | 278.5 | Paint Creek limestone and shale |
| 278.5 | 316.5 | Fault zone. Limestone, sandstone and calcite breccia and vein calcite. |
| 316.5 | 392.5 | St. Louis limestone. |

Bottom depth - 392.5

Total completed - 392.5 feet.
(Completed footage shown on invoice includes K-4 and K-5 - 699 feet.)

RECEIVED
APR 10 1958
ACCOUNTING DEPT.
BAUXITE

# REYNOLDS METALS COMPANY

Diamond Drill Hole No. K-5 Angle: -45° Bearing: N48W Depth: 392.5
Coordinates: N-5801; E-5398 Elevation: 396.0'
Property: Kemper Area: Corn-Wright County: Livingston State: Kentucky
Driller: E. J. Hayes Foreman: E. J. Hayes
Contractor: Joy Manufacturing Company Started: 3/3/58 Finished: 3/12/58

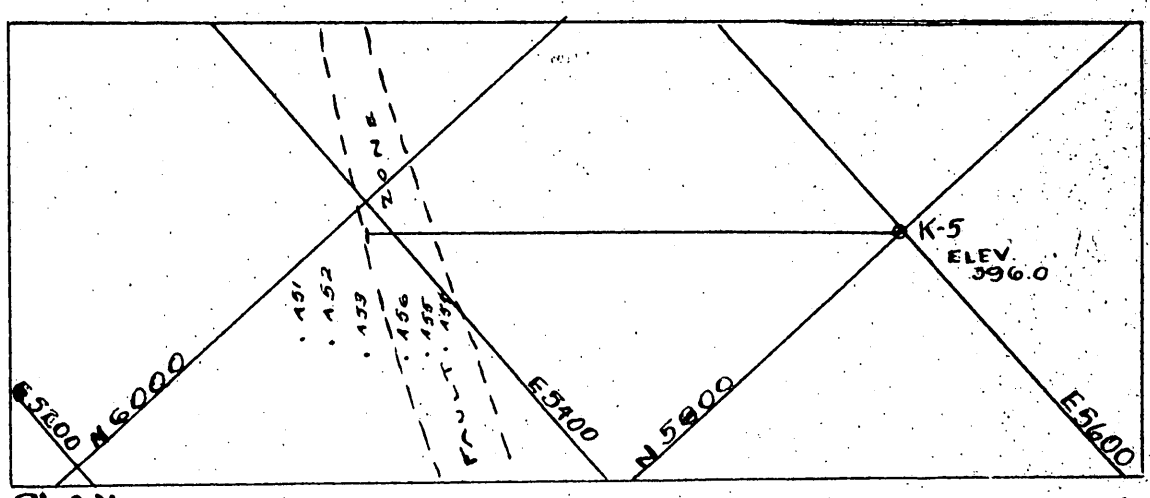
| From | To | Fm | Description |
|---|---|---|---|
| 0 | 12 | | Overburden |
| 14 | 34.5 | Ch | Sandstone, light brown to grey, medium grained, weathered. |
| 34.5 | 55 | Cg | Shale, dark grey, weathered green and brown. |
| 55 | 59.5 | Cg | Limestone, medium grey, coarse crystaline, shaley and fossiliferous, fossils replaced by brown calcite. |
| 59.5 | 62.5 | Cg | Shale, dark grey, slightly calcareous. |
| 62.5 | 73 | Cg | Limestone, medium grey, coarse crystaline, shaley, fossiliferous, fossils replaced by brown calcite, shale zone at 67'. Grades in to limey shale below. |
| 73 | 78 | Cg | Shale, medium grey, calcareous, fossiliferous. Angle of bedding with hole 58°. |
| 78 | 86.5 | Cg | Limestone, dark brown, fine crystaline, few fossils, 6" weathered zone 3" down from top. Calcite stringer at 82', 1" fossiliferous zone at 83' and from 84-85. |
| 86.5 | 91.5 | Cg | Shale, medium grey, calcareous, fossiliferous, angle of bedding with hole 58°. |
| 91.5 | 95.5 | Cg | Limestone, medium grey, coarse crystaline, fossiliferous, few calcite stringers, broken in last 2'. |
| 95.5 | 194.5 | Cg | Shale, grey, with evidence of movement along bedding. 108'-112', 1' recovery. Limestone at 112', fossiliferous. 125-126, fossiliferous limestone, medium grey and coarse crystaline. 129-130, limestone, medium grey and coarse crystaline, fossiliferous. 145-148, limestone as above. At 190.5, sandy lime. |
| 194.5 | 195 | Cc | Cgl, shale, limestone and sand. |
| 195 | 204 | Cc | Sandstone, interbedded with shale. Ss. is grey, medium grained, increase of sand with depth. |
| 204 | 224.5 | Cc | Shale, dark grey, sandy, with some marcasite. |

| FROM | To | Fm | Description |
|---|---|---|---|
| 224.5 | 251.5 | Cc | Sandstone, light grey, medium grained, broken 222-225, 228-231, 235-239. |
| 251.5 | 273 | Cc | Sandstone, brecciated in upper 1.5'. Broken to 273. 3' recovery 251.5-261.5, 2' recovery 262-268. |
| 273 | 274 | Cc | Sandstone, dark grey, brecciated, 1/2" calcite veinlets in lower 6". |
| 274 | 276.5 | Cc | Sandstone, blocky, upper 3" subangular cgl, green shale at 276. |
| 276.5 | 278.5 | Cpc | Shale, brown grey, fossiliferous, calcite stringers, some evidence of movement. |
| 278.5 | 316.5 | | Fault zone:<br>278.5 – 279: limestone, blocky, grey, medium crystalined, slightly shaley.<br>279 – 281: limestone, shale and calcite breccia.<br>281 – 282: Sandstone and calcite breccia.<br>282 – 303: limestone breccia, limestone, light grey, fine crystaline, heavy calcite veinlets, gouge at 291, 4" calcite at 289-290.5, 300-300.5.<br>303 – 316.5: Calcite, with scattered limestone breccia, heavy limestone breccia at 305-306. Increase in limestone breccia in last 2'. |
| 316.5 | 353.5 | Cal | Limestone, brown grey, medium crystaline, chert nodules, stylolitic, with few calcite stringers. Broken and weathered from 344-346, 348-349, and at 353. |
| 353.5 | 371 | Cal | Limestone, brown grey, fine crystaline, cherty. 4" calcite at 366, calcite veinlets up to 1" below this. |
| 371 | 392.5 | Cal | Limestone, brown grey, medium crystaline, fossiliferous, cherty, weathered zone from 387.5-388. |

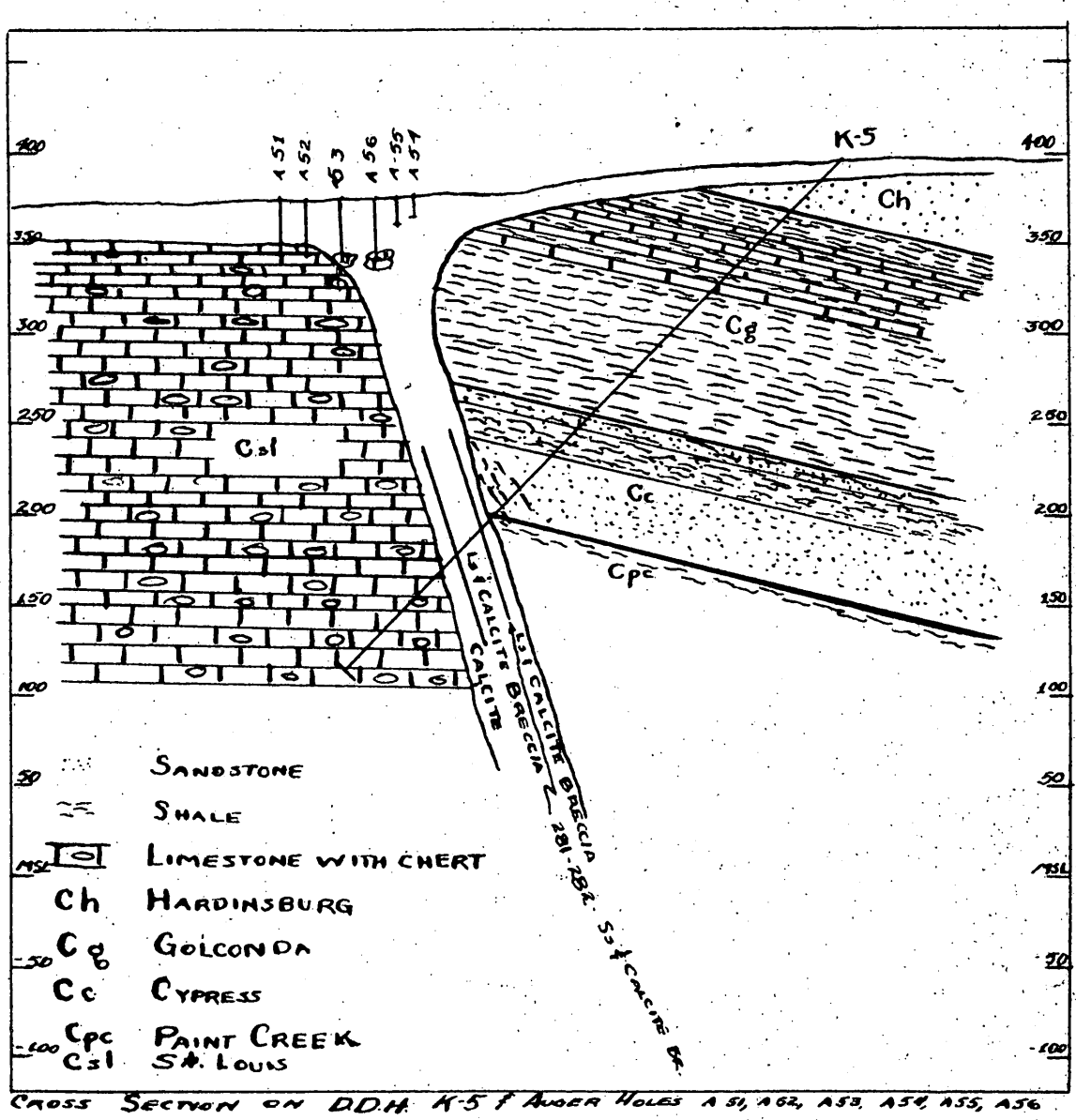
Bottom 392.5

# KEMPER PROPERTY

LIVINGSTON COUNTY, KENTUCKY




PLAN




CROSS SECTION ON D.D.H. K-5 & AUGER HOLES A51, A52, A53, A54, A55, A56

VERT. & HORZ. SCALES 1" = 100'

0 50 100 200 300 FEET

T.R.W. MAR., 1958

EXTRA COPY
D M E A
RECEIVE MAY 12 1958

| DATE | | CODE |
|---|---|---|
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| | | |

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
REGION V

ELECTROTECHNICAL
EXPERIMENT STATION

P. O. BOX 217
NORRIS, TENNESSEE

March 20, 1958

Memorandum

To: Jay L. Chambers, Defense Minerals Exploration Administration, Interior Building, Washington 25, D. C.

From: Personal Assistant, Norris, Tennessee

Subject: Monthly Reports and vouchers

We are enclosing two copies of the following monthly report and voucher:

Idm-E1152 Reynolds Metals Company
Docket No. DMEA-4750
2nd payment - month of February
Amount $1449.12

Helen Miller
Helen R. Miller

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

DMEA
24 1958

| | | |
|---|---|---|
| 3/24 | C | 220 |
| " | FE | 110 |
| 3/24 | Hart | 600 |

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

Budget Bureau No. 42-R1036.5

PAID ON VOUCHER & SCHEDULE OF PAYMENTS K- 50

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

**STAGE ONE**

# OPERATOR'S MONTHLY REPORT AND VOUCHER

1152

Month of February, 1958 Docket No. DMEA 4750 Contract No. Idm: E157

Operator's Name Reynolds Metals Company Minerals Fluorspar

Address Reynolds Metals Building, Richmond, Va.

Contract Amount, $ 10,260.00 Government Participation 50 % Amount, $ 5,130.00

| ITEMS OF COSTS | FOR OPERATOR'S USE | | | FOR GOVERNMENT USE ONLY | | |
|---|---|---|---|---|---|---|
| | Monthly Total | Totals Previously Reported | Totals To Date | Approved Monthly Total | Approved Totals Previously Reported | Approved Totals To Date |
| (1) Independent Short Form Contracts: | | | | | | |
| Drilling Core | 2546.93 | 1248.45 | 3795.38 | | | |
| Bulldozing | | | | | | |
| Crosscutting | | | | | | |
| Drifting | | | | | | |
| (2) Labor and Supervision: | | | | | | |
| Labor | | | | | | |
| Supervision | | | | | | |
| Technical Services | | | | | | |
| (3) Operating Mat'ls. and Supplies: | | | | | | |
| Timber | | | | | | |
| Explosives | | | | | | |
| Pipe | | | | | | |
| Track | | | | | | |
| Core Boxes | | 180.00 | 180.00 | | | |
| (4) Operating Equipment: | | | | | | |
| Rental | | | | | | |
| Purchase | | | | | | |
| Depreciation | | | | | | |
| (5) Initial Rehabilitation and Repairs | | | | | | |
| (6) New Bldgs., Improvements, etc. | | | | | | |
| (7) Miscellaneous: | | | | | | |
| Repairs to Equipment | | | | | | |
| Sampling and Analysis | | | | | | |
| Payroll Taxes | | | | | | |
| Liability Insurance | | | | | | |
| Incidental Allow | 351.30 | 172.20 | 523.50 | | | |
| Assays | -- | 0 | -- | | | |
| (8) Contingencies (specify): | | | | | | |
| TOTALS | 2898.23 | 1600.65 | 4498.88 | 2898.23 | 1600.65 | 4498.88 |

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

Date 3-7-58 *Payee Reynolds Metals Company

Per W. E. McDaniel Title Accounting Official

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

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

(Instructions on reverse)

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

$ 1449.12

Signature Helen R. Miller
(Authorized Certifying Officer)

Date MAR 20 1958 Vou. No. 151

(See other side)

1449.11

(For Government use only)

CERTIFICATION BY GOVERNMENT REPRESENTATIVE:

I certify that to the best of my knowledge and belief the contractor submitting this voucher is operating a Defense Minerals Exploration Administration project under Contract No. E 1152 in accordance with the terms of the contract.

Signature R. L. Burmeister Title Mining Eng'r. Date 3/17/58

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature Robert A. Lawrence Title EXECUTIVE OFFICER DMEA FIELD TEAM REGION V Date MAR 20 1958

# MONTHLY REPORT OF OPERATOR

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Form MF-104A
(April 1952)

Budget Bureau No. 42-R1151.2

# UNITED STATES
# DEPARTMENT OF THE INTERIOR
## DEFENSE MINERALS EXPLORATION ADMINISTRATION
## OPERATOR'S UNIT COST AND PROGRESS REPORT

Month of February 1958 Docket No. DMEA 4750 Contract No. Idm-E1152
Operator's Name Reynolds Metals Company Minerals Fluorspar
Address Reynolds Metals Building, Richmond, Va.

| OPERATION | UNIT | COSTS THIS MONTH | UNITS THIS MONTH | COSTS TO DATE | UNITS TO DATE | UNIT COSTS TO DATE | AUTHORIZED BY CONTRACT | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Units | Unit Costs |
| Drifting | | | | | | | | |
| Crosscutting | | | | | | | | |
| Raising | | | | | | | | |
| Shafts | | | | | | | | |
| Winzes | | | | | | | | |
| Drilling: Core | Feet | 2546.93 | 585.5 | 3795.38 | 872.5 | | 2000 | 4.35 |
| Churn | | | | | | | | |
| Auger | | | | | | | | |
| Core Boxes | 1 | | | 180.00 | 60 | | 60 | 3.00 |
| Trenching | | | | | | | | |
| Assays | 1 | | | | | | 30 | 6.00 |
| Roads and Trails | | | | | | | | |
| Incidental Allow. | Feet | 351.30 | 585.5 | 523.50 | 877.5 | | 2000 | 0.60 |
| TOTAL DISTRIBUTED COSTS | | 2898.23 | | 4498.88 | | | | TOTAL COSTS AUTHORIZED BY CONTRACT |
| Operating Equipment Purchased | | | | | | | | |
| Initial Rehabilitation and Repairs | | | | | | | | |
| New Buildings, Improvements, etc. | | | | | | | | |
| TOTAL COSTS | | 2898.23 | | 4498.88b | | | | 10,260.00 |

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

Date 3-7-58 Operator Reynolds Metals Company

Per H. E. McDaniel Title Accounting Official

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

REMARKS: Drilling and incidental allowance costs are for holes K-2 and K-3.

Hole No. K-4 was bottomed at 307' on February 26, 1958.

Joy Manufacturing invoice includes drilling through February 25, 1958 only.

(Instructions on reverse)

(For Government use only)

W. L. Burmeister 3/17/58

MINING ENGINEER
U. S. BUREAU OF MINES

## INSTRUCTIONS

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

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

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

GPO 872894

KEMPER PROJECT

DMEA 4750 Idm - E1152

Narrative for February
J.W. Hook, Resident Geologist

Holes K-3 and K-4 were completed in February, though K-4 was not completed until after the Joy Manufacturing Company invoice, dated 2/25/58, was compiled. Costs for K-2 and K-3 are included with this report. K-4 costs will be submitted in the March report.

Hole K-3 cut a wide vein of calcite and limestone breccia, similar to holes K-1 and K-2. K-4 cut a much wider vein of calcite, limestone and shale breccia, with less vein calcite than in the previous holes. Neither hole contained fluorspar or barite.

Recoveryin the vein material was 100% for K-3, 77% for K-4, using BX - Wireline tools.

Detailed logs and cross sections are enclosed, the summaries are as follows:

K-3

Coordinates N6517, E5787: Elev. 442': Bearing N50W: Angle -57°
Started 2/3/58 Finished 2/11/58 Bottom 292.5'

| From | To | Description |
|---|---|---|
| 0 | 40 | Overburden |
| 40 | 82 | Golconda Shale |
| 82 | 136½ | Cypress sandstone |
| 136½ | 163 | Paint Creek shale |
| 163 | 266½ | Bethel sandstone |
| 226½ | 233½ | Renault limestone and shale |
| 233½ | 250½ | Fault Zone, calcite and limestone breccia, vein calcite. |
| 250½ | 292½ | St. Louis Limestone |

K-4

Coordinates N6196, E5570: Elev. 420': Bearing N53W: Angle -50°
Started 2/15/58 Finished 2/26/58 Bottom 307'

| From | To | Description |
|---|---|---|
| 0 | 47 | Overburden |
| 47 | 123 | Golconda limestone and shale |
| 123 | 196 | Cypress sandstone |
| 196 | 226½ | Paint Creek Shale |
| 226½ | 231½ | Bethel Sandstone |
| 231½ | 284 | Fault zone, calcite and limestone breccia |
| 284 | 307 | St. Louis limestone |

Summary

| | | | | | |
|---|---|---|---|---|---|
| K-3 | Started | 2/3/58 | Finished | 2/11/58 | Bottom Depth 292.5 |
| K-4 | Started | 2/15/58 | Finished | 2/26/58 | Bottom Depth 307 (not on invoice) |

Total completed 599.5
(Completed footage shown on invoice, excluding hole K-2 582.5)

# REYNOLDS METALS COMPANY

Diamond Drill Hole No. K-3 Angle 57° Bearing N50W Depth 292.5'
Coordinates 6517N : 5787E Elevation 442'
Property: Kemper Area: Corn-Wright County: Livingston State: Kentucky
Contractor: Joy Manufacturing Co. Started: 2/3/58 Finished: 2/11/58

| From | To | Fm | Description |
|---|---|---|---|
| 0 | 40 | | Overburden |
| 40 | 61 | Cg | Shale, dark grey, weathered brown and green. |
| 61 | 70 | Cg | Limestone, green grey, medium grained, partly silicified with thin shale zones from 61-66½. Limestone, fossiliferous with calcite stringers. |
| 70 | 77 | Cc | Sand, grey, weathered, slightly fractured with calcite stringers. |
| 77 | 82 | Cc | Shale, medium grey, irregular bedding, slightly sandy, aragonite along bedding, last 3" is weathered and soft. |
| 82 | 133 | Cc | Sandstone, medium grey, medium grained, 2" shale at 83½'. Slightly fractured with small calcite stringers. Slightly shaley at 88½' increasing to 92'. From 92'-98' sandstone, light brown, slightly shaley to 100'. From 100' to 133', blocky and weathered sandstone. |
| 133 | 136½ | Cc | Conglomerate, sub-angular shale in sandstone matrix. Marcasite along contact at 136½. |
| 136½ | 163 | Pc | Shale, dark grey, interbedded with thin bedded sandstone. Shale is fissile, bractured in places with calcite stringers. Angle of bedding at 137', 70°. 155'-159', sand with shale. 140½-149, 1" core recovery. Fractured at base. |
| 163 | 164½ | Cb | Sandstone and calcite breccia |
| 164½ | 226½ | Cb | Sandstone, light grey, medium grained, with calcite veinlets from 182½-202. Blocky from 201-202, 208-209½, 212-215. |
| 226½ | 227½ | Cr | Shale, green grey, calcareous, fossiliferous, fractured with calcite stringers. |
| 227½ | 231½ | Cr | Limestone, medium grey, fine crystaline, shaley, fractured with calcite stringers. |

| From | To | Fm | Description |
|---|---|---|---|
| 231½ | 233½ | Cr | Shale, green grey, fractured with calcite stringers. Fractured limestone from 333-333½. |
| 233½ | 250½ | | Fault Zone. |
| | | | 233½-234½ Shaley gouge, soft. |
| | | | 234½-238½ Limestone, shale and calcite breccia. |
| | | | 238½-242½ Calcite |
| | | | 242½-244 Limestone, brown, and calcite breccia. |
| | | | 244-245½ Limestone, brown, medium crystaline, fairly undisturbed. |
| | | | 245-250½ Limestone and calcite breccia, 3" calcite at 248'. |
| 250½ | 260½ | Csl | Limestone, brown, medium grained, fossiliferous, cherty. Few calcite stringers, stylolitic. |
| 260½ | 264 | Csl | Limestone, brown, fine crystaline, heavy chert. |
| 264 | 265½ | Csl | Limestone, brown, coarse crystaline. |
| 265½ | 292½ | Csl | Limestone, brown, fine crystaline, cherty, with weathered zones from 268-270, 275-278. Few calcite stringers. |

Bottom 292½'

Recovery for hole 70%
Recovery in vein 100%

BX-WL Tools

REYNOLDS METALS COMPANY

Diamond Drill Hole No. K-4: Angle, 50°: Bearing N53W: Depth, 301'
Coordinates, 6196N : 5570E Elevation 420'
Property; Kemper Area: Corn-Wright County: Livingston State: Kentucky
Contractor: Joy Manufacturing Co. Started: 2/15/58 Finished: 2/26/58

| From | To | Fm | Description |
|---|---|---|---|
| 0 | 47 | | Overburden |
| 47 | 67½ | Cg | Shale, grey green, weathered brown. Fossiliferous, Aragonite along bedding. Thin limestone bed at 65'. Angle of bedding 75°. |
| 67½ | 70½ | Cg | Limestone, medium grey, fine crystaline, fossiliferous, silty. |
| 70.5 | 74.5 | Cg | Shale, dark grey, calcareous, interbedded with silty limestone. |
| 74½ | 76 | Cg | Limestone, dark grey, medium crystaline, silty, grades into shale below. |
| 76 | 79½ | Cg | Shale, dark grey, calcareous, fossiliferous, grades into limestone below. |
| 79½ | 82½ | Cg | Limestone, dark grey, coarse grained, fossiliferous, grades into shale. |
| 82½ | 94½ | Cg | Shale, dark grey, fossiliferous, calcareous, grades into limey shale at 88½'. |
| 94½ | 99 | Cg | Limestone, dark grey, coarse crystaline, slightly shaley, fossiliferous, few calcite stringers. |
| 99 | 123 | Cg | Shale, dark grey, broken in upper 6'. Poor recovery. Some slippage along bedding. Soft at 120'. |
| 123 | 132 | Cc | Sandstone, light grey, medium grained, 2" calcite at top, shaley. |
| 132 | 142½ | Cc | Shale medium grey, sandy, Pyrites throughout. |
| 142½ | 193 | Cc | Sandstone, light grey, medium grained, blocky from 148 - 149. Zones of weathered brown sandstone. Blocky from 160½ - 161. |
| 193 | 196 | Cc | Conglomerate, shale in sandstone matrix, subangular. |
| 196 | 218 | Cpc | Shale, dark grey, fissile, angle of bedding 75°. |
| 218 | 222½ | Cpc | Shale and sandstone irregularly bedded, conglomeritic in zones. Grades into conglomeritic sandy fossiliferous shale. |

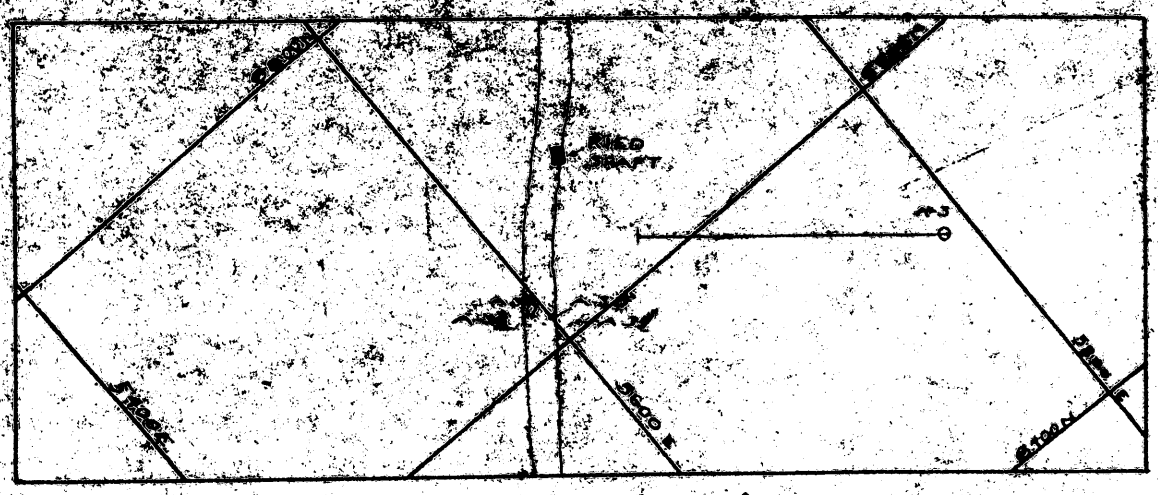
| From | To | Fm | Description |
|---|---|---|---|
| 222½ | 226½ | Cpc | Shale, dark grey, slightly fossiliferous and calcareous at 223. Interbedded with thin sandstone beds. Sandstone increases with depth. |
| 226½ | 231½ | Cb | Sandstone, light grey, medium grained, slightly shaley at top. Cakite veinlets, blocky from 231-231½. |
| 231½ | 284 | | Fault Zone. |
| | | | 231½-244 Limestone and calcite breccia. Few oil stains in calcite. Gouge from 242-242½ with calcite to 243½. Limestone, brown, medium crystaline, with styolites. Fairly undisturbed in upper foot. |
| | | | 244 -248 Limestone, medium brown grey, medium crystaline and slightly fossiliferous, with small calcite veinlets. |
| | | | 248 -253 Limestone and calcite breccia. 3" gouge at 253, 2" calcite below gouge. |
| | | | 253 -255.5 Limestone, dark grey, fine grained, shaley fossiliferous with calcite stringers. |
| | | | 255½-256½ Shale, dark grey, fossiliferous, calcareous. |
| | | | 256½-262½ Limestone, dark brown, fine crystaline, fractured with calcite stringers to 259, 3" calcite at 261½. Broken to 262.5. |
| | | | 262½-269½ Shale, dark grey, slightly sandy, with calcite. Limestone, medium grey, fine crystaline from 264-265. Limestone and calcite breccia 267½-268½. |
| | | | 269½-275 Limestone and calcite breccia. Gouge in lower 6". |
| | | | 275 -284 Limestone and calcite breccia, gouge at 280'. |
| 284 | 289 | Csl | Limestone, medium grey, fine grained, styolitic, slightly fractured with calcite stringers. |
| 289 | 297 | Csl | Limestone, dark grey, coarse grained, few calcite stringers. |
| 297 | 307 | Csl | Limestone, dark grey, medium to fine crystaline, with massive chert nodules. |

Bottom 307'

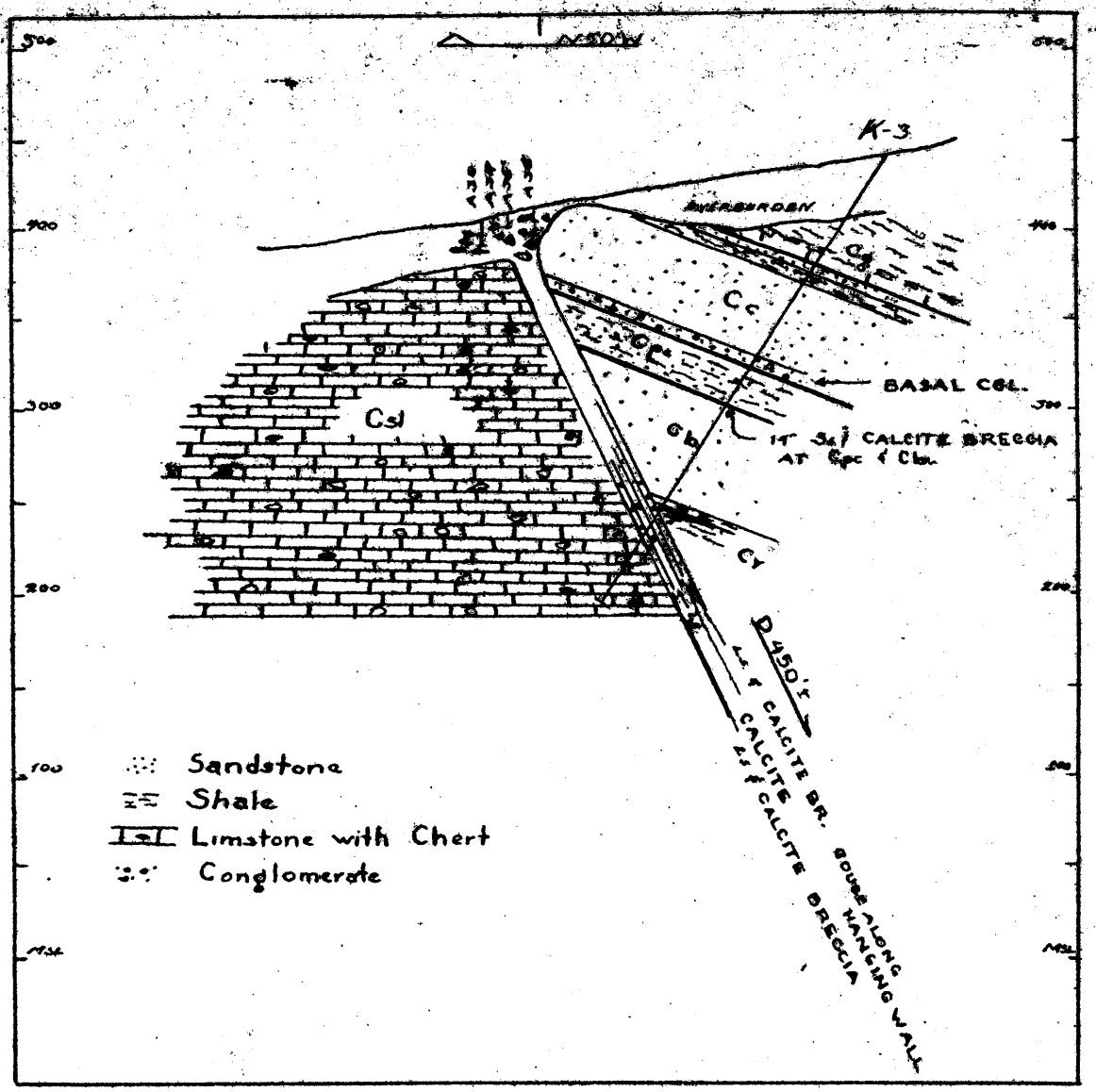
Recovery for hole 74%
Recovery in vein 77%
BX-WL Tools

# KEMPER PROPERTY

Livingston County, Kentucky




PLAN




Cross Section on DDH No K-3 Auger holes A34, A35, A36, A37

VERT. & HORZ. SCALES 1" = 100

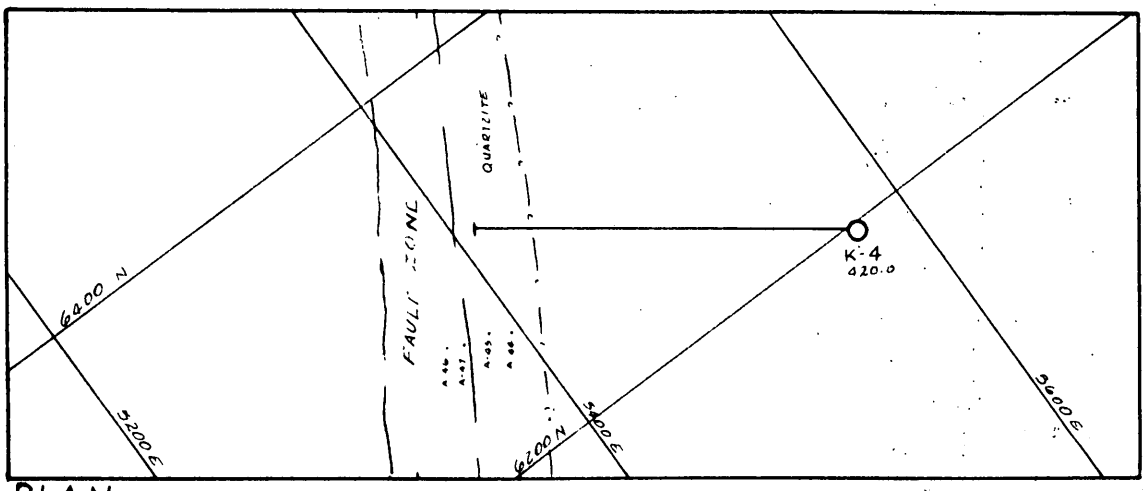
0 50' 100' 200' 300'

TRW Feb. 1958

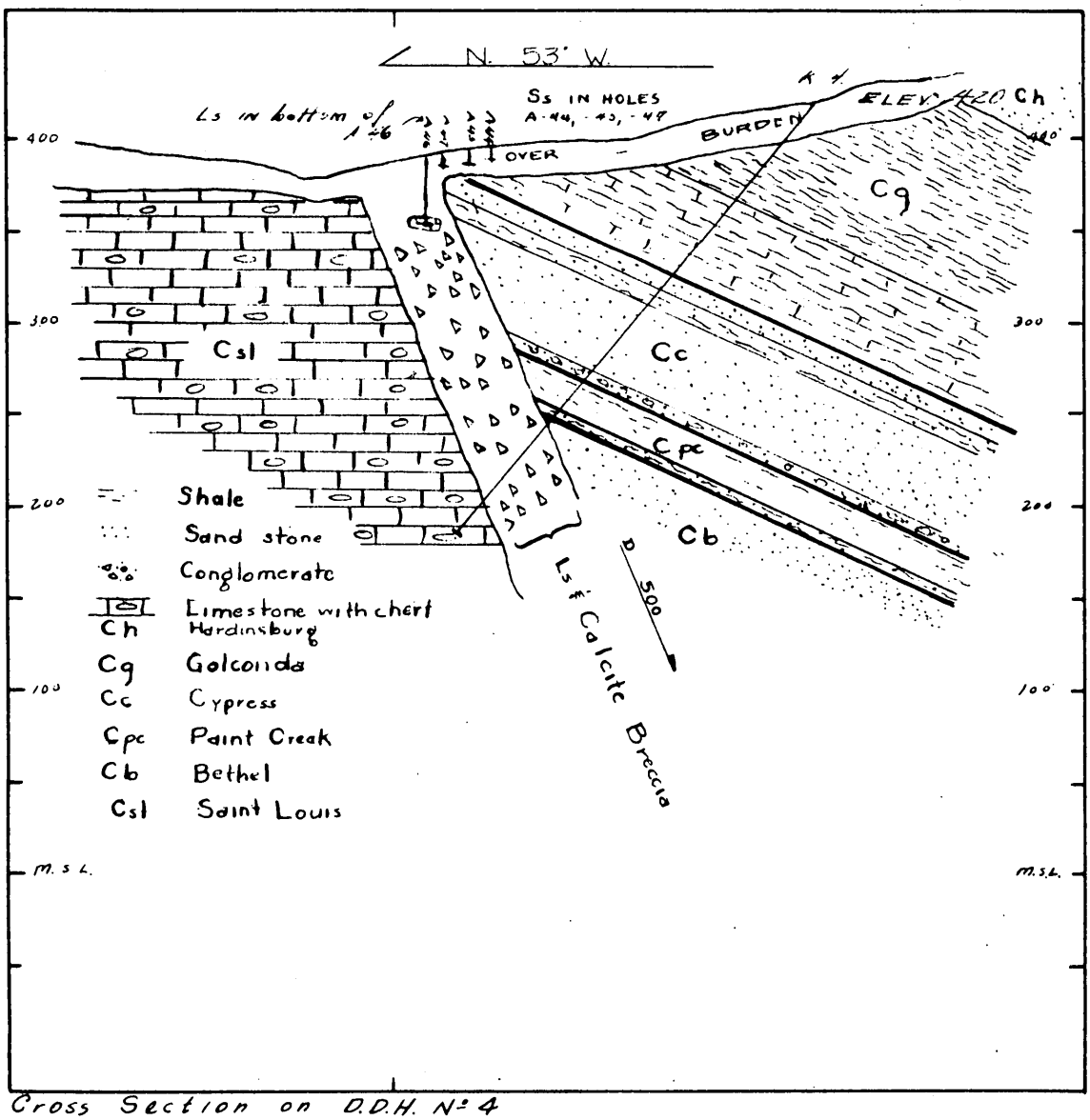
DMEA
RECEIVED 24 1958
DATE

# KEMPER PROPERTY

## Crittenden County, Kentucky




PLAN




Cross Section on D.D.H. No 4

VERT. & HORZ. SCALES: 1" = 100'

0 50 100 200 300 FT.

DW FEB. 1958

ORIGINAL FILE COPY
DMEA
RECEIVED 24 1958

| DATE | | ISSUE |
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Form MF-104 (Rev.)
(April 1952)

Budget Bureau No. 42-R1036.5

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

PAID ON VOUCHER & SCHEDULE OF PAYMENTS K- 43

STAGE I

# OPERATOR'S MONTHLY REPORT AND VOUCHER

Month of January, 1958 — Docket No. DMEA 4750 — Contract No. Idm-K1152
Operator's Name Reynolds Metals Company — Minerals Fluorspar
Address Richmond, Virginia
Contract Amount, $10,260.00 — Government Participation: 50 % — Amount, $ 5,130.00

| ITEMS OF COSTS | FOR OPERATOR'S USE: Monthly Total | Totals Previously Reported | Totals To Date | FOR GOVERNMENT USE ONLY: Approved Monthly Total | Approved Totals Previously Reported | Approved Totals To Date |
|---|---|---|---|---|---|---|
| (1) Independent / Short Form Contracts: | | | | | | |
| Drilling core | 1248.45 | 0 | 1248.45 | | | |
| Bulldozing | | | | | | |
| Crosscutting | | | | | | |
| Drifting | | | | | | |
| (2) Labor and Supervision: | | | | | | |
| Labor | | | | | | |
| Supervision | | | | | | |
| Technical Services | | | | | | |
| (3) Operating Mat'ls. and Supplies: | | | | | | |
| Timber | | | | | | |
| Explosives | | | | | | |
| Pipe | | | | | | |
| Track | | | | | | |
| Core boxes | 180.00 | 0 | 180.00 | | | |
| (4) Operating Equipment: | | | | | | |
| Rental | | | | | | |
| Purchase | | | | | | |
| Depreciation | | | | | | |
| (5) Initial Rehabilitation and Repairs | | | | | | |
| (6) New Bldgs., Improvements, etc. | | | | | | |
| (7) Miscellaneous: | | | | | | |
| Repairs to Equipment | | | | | | |
| Sampling and Analysis | | | | | | |
| Payroll Taxes | | | | | | |
| Liability Insurance | | | | | | |
| Incidental allowance | 172.20 | 0 | 172.20 | | | |
| Assays | -- | 0 | -- | | | |
| (8) Contingencies (specify): | | | | | | |
| TOTALS | 1600.65 | 0 | 1600.65 | 1600.65 | — | 1600.65 |

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

Date 2-11-58 *Payee Reynolds Metals Company

Per H. E. McClamid Title Accounting Official

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

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

(Instructions on reverse)

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

$ 800.22

Signature Helen R. Miller
(Authorized Certifying Officer)

Date FEB 26 1958 Vou. No. 139

(See other side)

800-33

(For Government use only)

CERTIFICATION BY GOVERNMENT REPRESENTATIVE:

I certify that to the best of my knowledge and belief the contractor submitting this voucher is operating a Defense Minerals Exploration Administration project under Contract No. E 1152 in accordance with the terms of the contract.

Signature R. Burmeister Title Mining Engr. Date 2/20/58

APPROVAL BY DMEA EXECUTIVE OFFICER OR ALTERNATE:

Signature Robert A. Lawrence Title EXECUTIVE OFFICER DMEA REGION V Date FEB 21 1958

# MONTHLY REPORT OF OPERATOR

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Form MF-104A
(April 1952)

Budget Bureau No. 42-R1151.2

STAGE I

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

RECEIVED FEB 28 1958 D.M.E.A.

# OPERATOR'S UNIT COST AND PROGRESS REPORT

Month of January 1958 Docket No. DMEA 4750 Contract No. Idm-E1152

Operator's Name Reynolds Metals Company Minerals Fluorspar

Address Richmond, Virginia

| OPERATION | UNIT | COSTS THIS MONTH | UNITS THIS MONTH | COSTS TO DATE | UNITS TO DATE | UNIT COSTS TO DATE | AUTHORIZED BY CONTRACT Units | AUTHORIZED BY CONTRACT Unit Costs |
|---|---|---|---|---|---|---|---|---|
| Drifting | | | | | | | | |
| Crosscutting | | | | | | | | |
| Raising | | | | | | | | |
| Shafts | | | | | | | | |
| Winzes | | | | | | | | |
| Drilling: Core | feet | 1248.45 | 287 | 1248.45 | 287 | | 2000 | 4.35 |
| Churn | | | | | | | | |
| Auger | | | | | | | | |
| ~~xxxxxx~~ core boxes | 1 | 180.00 | 60 | 180.00 | 60 | | 60 | 3.00 |
| Trenching | | | | | | | | |
| ~~xxxxxx~~ Assays | 1 | ---- | 0 | --- | 0 | | 30 | 6.00 |
| Roads and Trails | | | | | | | | |
| Incidental allowance | feet | 172.20 | 287 | 172.20 | 287 | | 2000 | 0.60 |
| TOTAL DISTRIBUTED COSTS | | 1600.65 | | 1600.65 | | | | TOTAL COSTS AUTHORIZED BY CONTRACT |
| Operating Equipment Purchased | | | | | | | | |
| Initial Rehabilitation and Repairs | | | | | | | | |
| New Buildings, Improvements, etc. | | | | | | | | |
| TOTAL COSTS | | 1600.65 | | 1600.65 | | | | 10,260.00 |

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

Date 2-11-58 Operator Reynolds Metals Company

Per H. E. McDaniel Title Accounting Official

REMARKS: Drilling and incidental allowance costs are for hole K-1 only. Hole K-2 bottomed 1-28-58 at 293' but since the bottom depth does not appear on the Joy Mfg. Co. invoice (dated 1-25-58) it cannot be included in this report. K-2 costs will be charged to the February Report.

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

(Instructions on reverse)

(For Government use only)

W. Summerlin 2/20/58

## INSTRUCTIONS

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

GPO 872894

KEMPER PROJECT
Stage I

DMEA- 4750 Idm-K1152

Narrative for January Report
J. W. Hook, Resident Geologist

The first two holes, K-1 and K-2, were completed in January and the drill rig moved to the site of K-3. (Only K-1 was complete by the date of the Joy Mfg. Co. invoice, 1-25-58, and Drilling and Incidental Allowance costs shown on the accounting forms are for this hole only. The costs for K-2 will appear on the February Report.)

Both holes cut wide veins of calcite and limestone breccia with only shines of fluorspar and barite. Excellent recovery, 98% for K-1 and 100% for K-2, was made in the vein material with BX-Wireline tools.

Detailed logs and cross-sections are enclosed. These logs may be summarized as follows:

K-1

Coordinates: N-7,387, E-6,475 Elev.: 394.5 Bearing: N50W Angle: -60°
Started: 1-8-58 Finished: 1-15-58 Bottom: 287'

| From | To | Formation |
|---|---|---|
| 0 | 10 | Overburden. |
| 10 | 90 | Golconda shale and limestone. |
| 90 | 109 | Cypress sandstone. |
| 109 | 116.5 | Fault - brecciated sandstone. |
| 116.5 | 122.5 | Paint Creek limestone and shale. |
| 122.5 | 175.5 | Bethel sandstone. |
| 175.5 | 228 | Renault limestone and shale. |
| 228 | 267 | Vein calcite with limestone breccia and shines of $CaF_2$. |
| 267 | 287 | St. Louis limestone. |

Bottom at 287'

K-2

Coordinates: N-6,838, E-6,018 Elev.: 451.0 Bearing: N50W Angle: -60°
Started: 1-22-58 Finished: 1-28-58 Bottom: 293'

| From | To | Formation |
|---|---|---|
| 0 | 30 | Overburden. |
| 30 | 132 | Golconda limestone. |
| 132 | 135 | Fault, limestone breccia. |
| 135 | 149 | Cypress sandstone. |
| 149 | 155 | Fault, shale and limestone breccia. |
| 155 | 164 | Sandstone and shale breccia, fault at 164. |
| 164 | 204 | Bethel sandstone. |
| 204 | 239 | Renault limestone and shale. |

K-2 (continued)

| From | To | Formation |
|---|---|---|
| 239 | 269.5 | Brecciated limestone and vein calcite with shines of $CaF_2$ and $BaSO_4$. |
| 269.5 | 293 | St. Louis limestone. Bottom at 293' |

SUMMARY

| | | | | |
|---|---|---|---|---|
| K-1 | Started: 1- 8-58 | Finished: 1-15-58 | Bottom Depth: | 287' |
| K-2 | Started: 1-22-58 | Finished: 1-28-58 | Bottom Depth: | 293' (not on invoice) |

Total completed feet: 580

(Completed footage shown on invoice: 287)

# REYNOLDS METALS COMPANY

Diamond Drill Hole No. K-1 Angle: -60° Bearing: N 50° W Depth: 287'
Coordinates: N-7,387, E-6,475 Elevation: 394.5'
Property: Kemper Area: Corn-Wright County: Livingston State: Kentucky
Contractor: Joy Manufacturing Co. Started: 1-8-58 Finished: 1-15-58

20.5' [illegible]

| From | To | Fm | Description |
|---|---|---|---|
| 0 | 10 | | Overburden |
| 10 | 53-8" | Cg | Shale, black, calcareous. 1/2 inch siltstone at 51'. Angle of bedding, 73°. |
| 53'8" | 68 | Cg | Limestone, dark grey, fine crystaline, fossiliferous, shaley, fossils replaced by brown calcite. |
| 68 | 73-8" | Cg | Limestone, medium to dark grey, fine crystaline silicified, with pyrites. |
| 73-8" | 81 | Cg | Shale, black, slightly calcareous. 2 inch limestone, silicified and shaley at 74' 6". Shale grades into shaley limestone (silicified) from 77' - 80-6". Shale grading into silicified limestone, to 81'. |
| 81 | 90 | Cg | Limestone, greenish grey, fine grained, sandy, fossiliferous, grading into sandstone. |
| 90 | 109 | Cc | Sandstone, light brown (oxidized), medium grained, quartzitic. Becomes blocky at 105.5' to 109. |
| 109 | 116.5 | Fault | Sandstone, blocky, quartzitic, poor recovery. |
| 116.5 | 121.5 | Cpc | Shale, dark grey, with some slippage along bedding in lower foot. |
| 121.5 | 122.5 | Cpc | Limestone, medium grey, fine crystaline, partially silicified. Base of Paint Creek. |
| 122.5 | 175.5 | Cb | Sandstone, brown, fine grained, oxidized, slightly quartzitic. Blocky, poor recovery 126.5 to 134.5. |
| 175.5 | 177 | Cr | Limestone, medium grey, fine crystaline, slightly silicified. Marcasite at 177'. |
| 177 | 182.5 | Cr | Shale, dark to dark grey green, calcareous. Marcasite and aragonite along bedding. |
| 182.5 | 184.5 | Cr | Limestone, dark grey, medium grained, shaley (grades into shale above) stylolitic with calcite stringers. |
| 184.5 | 186 | Cr | Limestone, medium grey, fine crystaline, fractured, with calcite stringers. |

| From | To | Fm | Description |
|---|---|---|---|
| 186 | 188 | Cr | Shale, light grey, with calcite stringers, calcareous, with marcasite along bedding. Angle of bedding 75°. Grades into shaley lime. Slippage along some of the bedding planes. |
| 188 | 190.5 | Cr | Limestone, brown, fine crystaline, finely brecciated with zone of limestone residue. Fine calcite veinlets. |
| 190.5 | 197 | Cr | Limestone, medium grey, medium crystaline, fossiliferous, shaley, good shines of $CaF_2$ in fractured zones from 190.5 to 192. Calcite with $CaF_2$. Increase in number of veinlets below 192' with trace of $CaF_2$. |
| 197 | 201 | Cr | Limestone as above with increase of brecciation and calcite with depth. Limestone residue 200' to 201'. |
| 201 | 207 | Cr | Shale, dark grey, fossiliferous, calcareous, with bedding at 45°. Slippage along bedding planes. Soft shale 203.5' to 205'. |
| 207 | 212 | Cr | Limestone, dark grey, medium to fine crystaline, fractured, with calcite veinlets up to 1/2". Blocky from 210' to 210.5'. Grades into limey shale at 212'. |
| 212 | 218 | Cr | Limestone, medium grey medium crystaline, shaley, highly fossiliferous, fractured with calcite veins at 216.5' (2"). Increase in shale at depth. Grades into shale at 218'. |
| 218 | 220.5 | Cr | Shale, dark grey, calcareous. Slippage along bedding in upper part. At 219' angle of bedding is 85°. Calcite veinlets at 220. |
| 220.5 | 228 | Cr | Limestone, medium to dark grey, fine crystaline, fossiliferous slightly fractured. 1" calcite vein at 222.5. |
| 228 | 267 | Fault | 267 - 230 Limestone and calcite breccia.<br>230 - 234 Limestone horst, brown, fine grained, brecciated, few calcite stringers.<br>234 - 241.5 Limestone and calcite breccia. Frace $CaF_2$ at 238.<br>241.5 - 242.5 Good shines of $CaF_2$ in limestone and calcite breccia.<br>242.5 - 250 Calcite.<br>250 - 254.5 Limestone horst, dark grey fine grained, brecciated, few calcite veins.<br>254.5 - 267 Calcite and limestone breccia with chert.<br>(98% recovery with BX-WL tools.) |

| From | To | Fm | Description |
|---|---|---|---|
| 267 | 287 | Cal | Limestone, medium grey, fine crystaline, cherty, few calcite stringers. |

Cavity 270 - 271 2" weathered limestone at 271. Weathered zone at 274.5, blocky at 281.

Bottom 287'

Recovery for hole - 85%

Recovery in vein - 98%

BX-WL Tools

# REYNOLDS METALS COMPANY

Diamond Drill Hole No. K-2 Angle: -60° Bearing: N 50° W Depth: 293'
Coordinates: N-6,838, E-6,018 Elevation: 451.0'
Property: Kemper Area: Corn-Wright County: Livingston State: Kentucky
Driller: E. J. Hayes Foreman: E. J. Hayes
Contractor: Joy Manufacturing Co. Started: 1-22-58 Finished: 1-28-58

24.5' slight

| From | To | Fm | Description |
|---|---|---|---|
| 0 | 30 | | Overburden. |
| 30 | 34 | Cg | Shale, weathered with fossil remnants, few green shale chips. |
| 34 | 36 | Cg | Limestone, medium to dark grey, coarse crystaline, highly fossiliferous, partially oxidized in upper foot. Shaley zones. |
| 36 | 37.5 | Cg | Shale, weathered, green shale in clay, highly fossiliferous. |
| 37.5 | 41.5 | Cg | Shale, light grey green, calcareous, fossiliferous fissile. |
| 41.5 | 44.5 | Cg | Shale fossiliferous, weathered, green. |
| 44.5 | 45 | Cg | Limestone, light grey, fine crystaline, fossiliferous, slightly fractured, mostly oxidized, brown fresh line at the base. |
| 45 | 49.5 | Cg | Shale, green calcareous, fossiliferous in upper few feet, fissile. Weathered zone from 46' to 48'. |
| 49.5 | 67.5 | Cg | Shale, medium to dark grey, calcareous, fossiliferous, fissile slightly sandy, angle bedding 75°. |
| 70.5 | 74 | Cg | Shale, dark grey, calcareous, fossiliferous. Limestone shale contact gradational. |
| 74 | 75 | Cg | Limestone, medium grey, fine crystaline, fossiliferous, few small calcite stringers, grades into shale at 75'. |
| 75 | 77 | Cg | Shale, dark grey, calcareous, fissile. |
| 77 | 78 | Cg | Limestone, medium to dark grey, fine crystaline, shaley, calcite, stringers, fossiliferous. Weathered zones at top and bottom. Grades into calcareous shale at 78'. |
| 78 | 85.5 | Cg | Shale, light grey to green, calcareous, fossiliferous, grades into a shaley limestone from 81-83.5'. |

| From | To | Fm | Description |
|---|---|---|---|
| 85.5 | 88 | Cg | Limestone, dark grey, medium to fine grained, shaley zone from 86' to 86.5'. Limestone is conglomeritic, shaley, fossiliferous. |
| 88 | 102 | Cg | Shale, dark grey, fissile, calcareous, fossiliferous, angle of bedding 75°. |
| 102 | 105.5 | Cg | Limestone, light to medium grey, fine crystaline, shaley, fossiliferous. |
| 105.5 | 132 | Cg | Shale, dark grey, calcareous, light tan siltstone in beds up to 1/2", angle of bedding 75°. |
| 132 | 135 | Cg | Limestone, dark grey, fine crystaline, fractured with calcite veinlet. 3" recovery from 3' run. |
| 135 | 149 | Fault | Sandstone, light grey, fine grained, calcareous, weathered from top to 142'. |
| 149 | 155 | Fault | Limestone, medium grey, medium to coarse crystaline, fractured with slickensides along bedding at 154'. |
| 155 | 157.5 | Fault | Sandstone and shale, distorted and broken, brecciated at 157.5. Angle of bedding nearly parallel to drill hole. |
| 157.5 | 164 | Fault | Shale, dark grey, calcareous, with calcite stringers. |
| 164 | 167 | Cb | Sandstone and shale, interbedded. Sandstone, light grey, fine grained, brecciated with calcite veinlets, calcareous. |
| 167 | 204.5 | Cb | Sandstone, fine grained, weathered brown, blocky from 168' to 170', slightly calcareous, slightly fractured from 170' to 180', blocky 180' to 182', sheared from 184' to 186', shaley zone from 188' to 189.5', angle of bedding 32°. |
| 204.5 | 214.5 | Cr | Shale, med grey, fissile, light grey green in first foot (soft and weathered), calcareous. Grades into limestone at 209.5' to 210.5'. Limestone, light grey shaley, fossiliferous, grades into shale at 210.5 feet. 1/2" calcite stringer at 211.5. Shale fossiliferous from 210.5'. |
| 214.5 | 223 | Cr | Limestone, light brown fine grained shaley fossiliferous, calcite stringer at 216'. 218-221, 1.5' recovery. Blocky lime in lower part of run. From 221 limestone is broken with calcite veinlets, stylitic. |
| 223 | 225.5 | Cr | Limestone as above, in calcite and limestone breccia. |
| 225.5 | 229 | Cr | Limestone as above, less fractured. |
| 229 | 236.5 | Cr | Limestone, fractured, heavy calcite veins. Gouge at 230'. |

| From | To | Fm | Description |
|---|---|---|---|
| 236.5 | 239 | Cr | Shale, dark grey, brecciated, with calcite. |
| 239 | 269.5 | Fault zone | 239 - 241 Fractured limestone and shale.<br>241 - 241.5 Shale gouge.<br>241.5 - 242.5 Calcite with trace of $CaF_2$.<br>242.5 - 250 Limestone with calcite veins. Limestone heavily fractured. Gouge 245.5-246.<br>250 - 252.5 Limestone and shale, fractured with calcite stringers.<br>252.5 - 267 Limestone fractured with calcite veins, limestone is light grey brown, fossiliferous.<br>267 - 268.5 Limestone breccia and calcite.<br>268 - 269 Good shines of $CaF_2$.<br>269 - 269.5 Brecciated limestone.<br>(100% recovery with BX-WL tools). |
| 269.5 | 293 | Csl | Limestone medium grey fine grained, cherty. Broken with calcite veinlets from 269.5 to 271. Brown weathered areas from 275 - 275.5. |

Bottom at 293'.

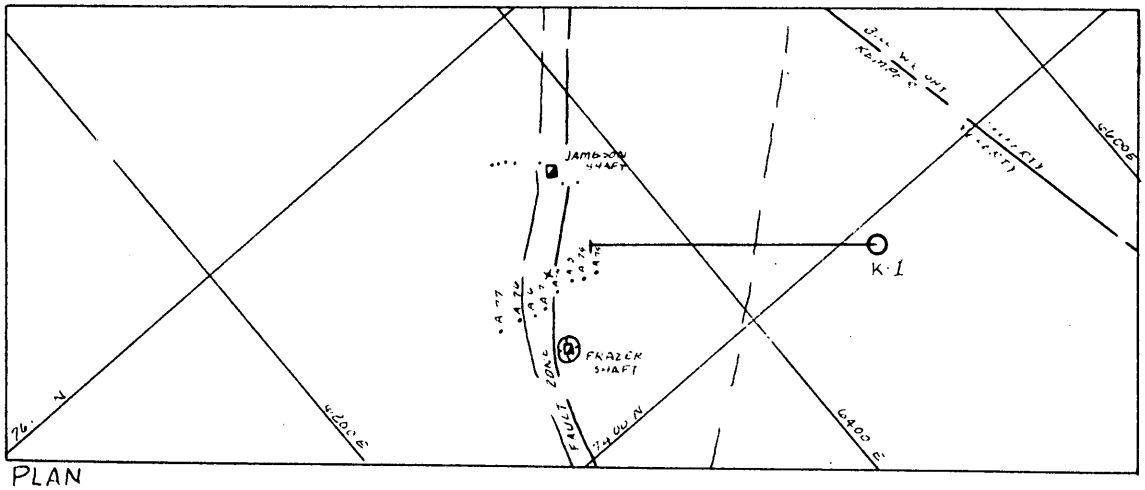
Recovery for hole - 75%

Recovery in vein - 100%

BX-WL Tools.

# KEMPER PROPERTY

## LIVINGSTON COUNTY KENTUCKY

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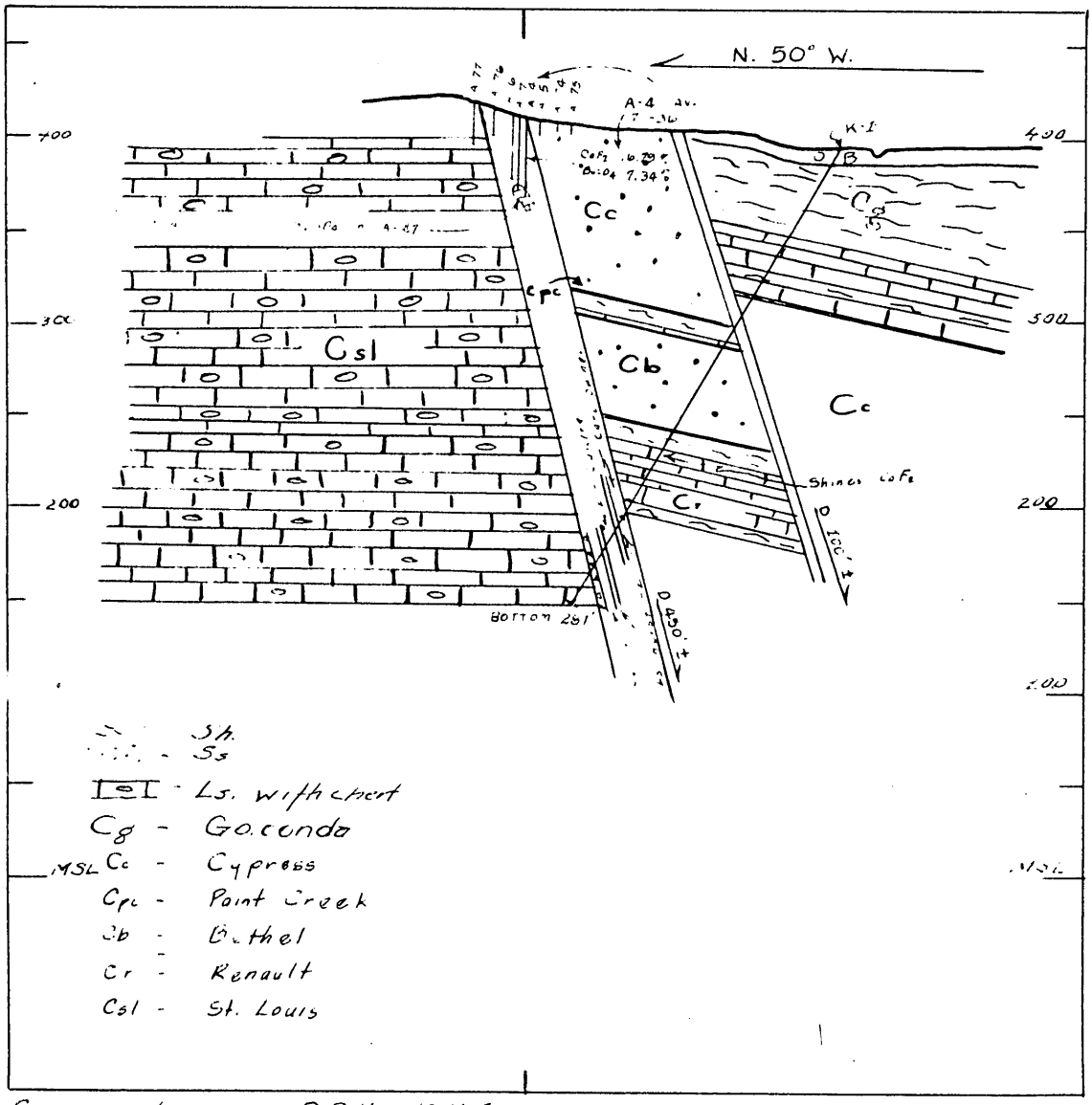


Cross Section on D.D.H. № K-1 and Auger Hole A-4 D.L. 1, T5 T6 T7

VERT. & HORZ. SCALES: 1" = 100'

0 50 100 200 300 FT.

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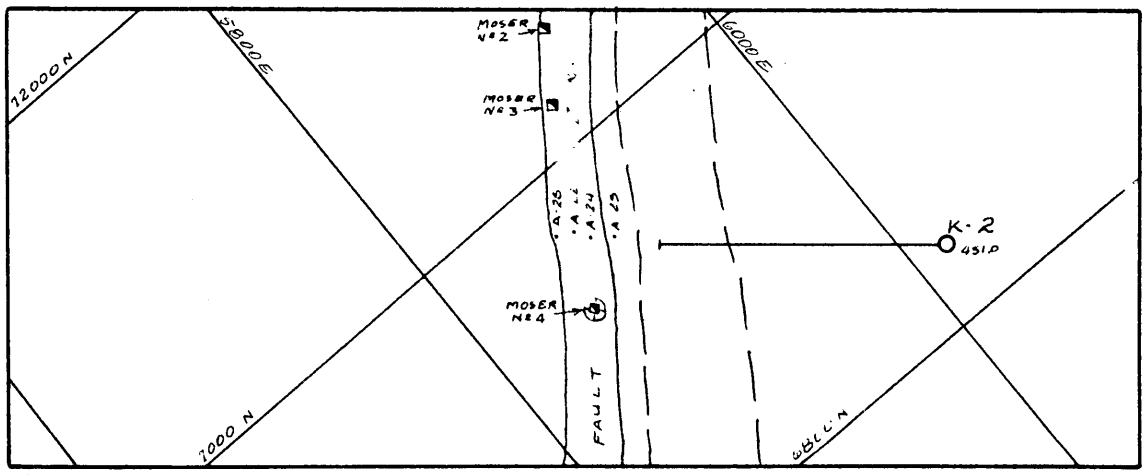
# KEMPER PROPERTY

LIVINGSTON COUNTY, KENTUCKY

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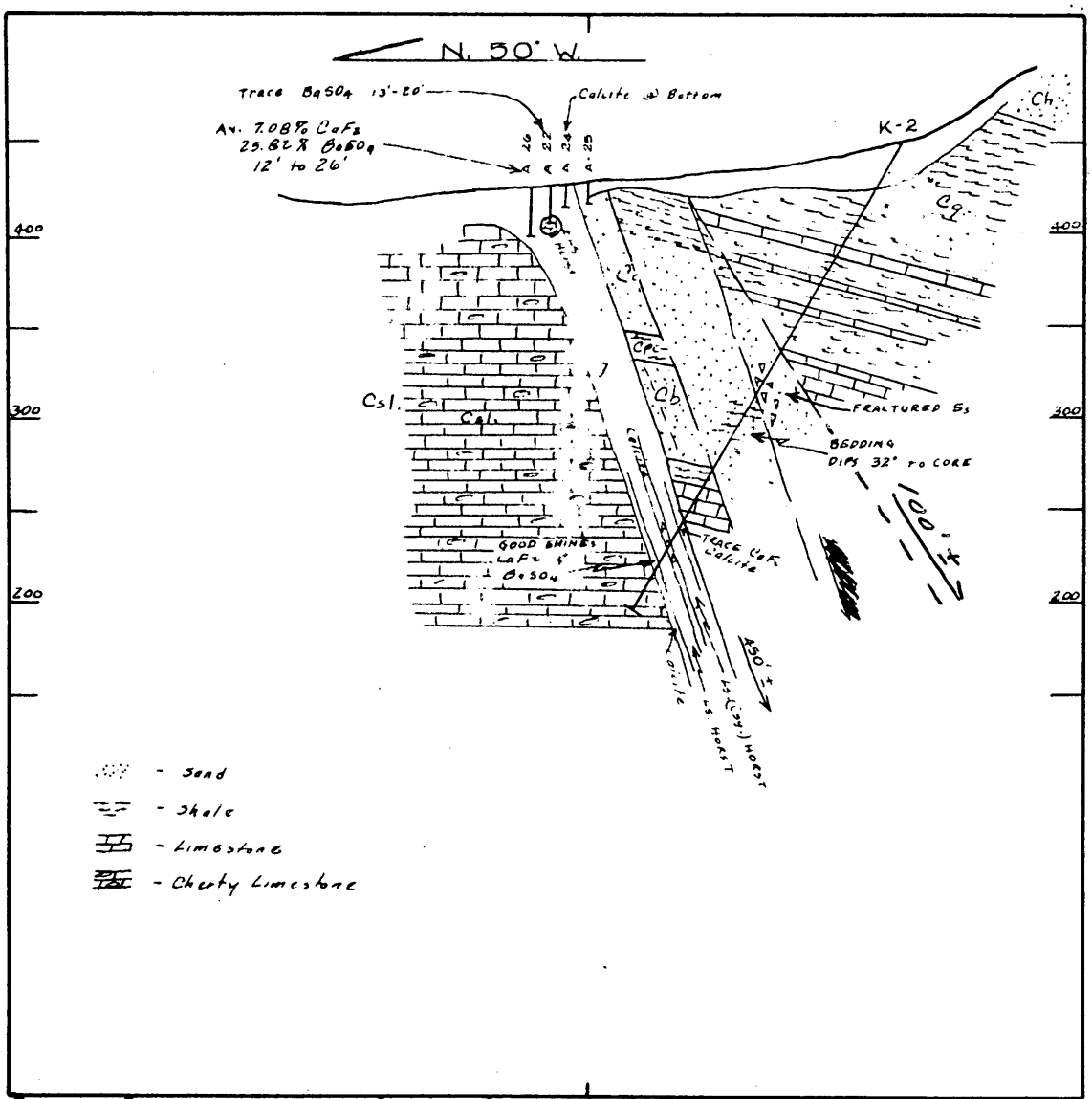


Cross Section on D.D.H. Nº 2 & AUGER Drill Holes 22, 24, 25, & 26

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J.W.H. – JAN. 1958

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Ky. 4/4 Hook 600

Interim Report

DMEA-4750 (fluorspar)

Operator: Reynolds Metals Company, Richmond, Va.

Location: Kemper Property, Livingston County, Ky.

A project inspection of the subject contract was conducted on February 20, 1958. Drilling completed to date and contemplated future work were discussed with Mr. John Hook, the Operator's geologist. Cores from recently completed holes were examined.

A total of three drill holes aggregating 872½ feet has been completed under the contract and a fourth hole is currently being drilled. Progress the last three weeks has been limited due to severe winter weather. Mineralization of ore grade and thickness was not encountered in the completed holes but a favorable structure with heavy gaugue mineralization is present in all three holes.

A summary of the two holes completed since the last inspection of the project is as follows:

| Hole No. | Inclination | Direction of Hole | Depth in Feet | Lithology |
|---|---|---|---|---|
| K-2 | -60° | N.52°W. | 0-30 | Overburden. |
| | | | 30-132 | Golconda limestone. |
| | | | 132-135 | Limestone breccia. Fault. |
| | | | 135-149 | Cypress sandstone. |
| | | | 149-164 | Shale and limestone breccia. Fault. |

| Hole No. | Inclination | Direction of Hole | Depth in Feet | Lithology |
|---|---|---|---|---|
| | | | 164-204 | Bethel sandstone. |
| | | | 204-239 | Renault limestone and shale. |
| | | | 239-269½ | Limestone breccia with calcite and shines of fluorite and barite. |
| | | | 269½-293 | St. Louis limestone. |
| | | | 293 | Bottom. |
| K-3 | -57° | N.48°W. | 0-40 | Overburden. |
| | | | 40-82 | Golconda shale. |
| | | | 82-136½ | Cypress sandstone. |
| | | | 136½-163 | Paint Creek shale |
| | | | 163-226½ | Bethel sandstone. |
| | | | 226½-233½ | Renault limestone and shale. |
| | | | 233½-250½ | Fault zone. |
| | | | (233½-238½) | Shale gouge with calcite and limestone. |
| | | | (238½-242½) | Calcite. |
| | | | (242½-250½) | Limestone and calcite breccia. |
| | | | 250½-292½ | Stl Louis limestone. |
| | | | 292½ | Bottom |

Collar locations Holes K-2 and K-3 are as shown on the contract map.

Hole K-4 is in progress and has been drilled to an inclined depth of 60 feet. The collar of this hole is located as shown on the map attached to the contract. Because of a general rise

in elevation of the stratigraphic units southwestward along the structure being explored, it was necessary to decrease the inclination of the hole to -45° rather than at -60° as originally planned in order to intersect the most favorable stratigraphic unit. Verbal permission was given by the USGS member of the Field Team to make this change in inclination via telephone conversation with the Operator's geologist on February 7, 1958.

Dewey H. Amos

Dewey H. Amos
Geologist
U. S. Geological Survey

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| " | FJ | 110 |
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| 2/21 | [illegible] | 600 |
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Interim Report

DMEA-4750 (fluorspar), Contract Idm-[illegible]

Operator: Reynolds Metals Company

Location: Kemper property, Livingston County, Kentucky (1.7 airline miles southeast of Lola and 3.7 airline miles northwest of Salem).

A project inspection of the subject contract was conducted on January 23, 1958 by H. L. Burmeister, U. S. Bureau of Mines and D. H. Amos, U. S. Geological Survey. Results obtained to date and future work to be conducted under the contract were discussed with Mr. John Hook, the Operator's geologist. All core recovered to date was examined.

Drilling began on this contract January 8, 1958 when drill hole K-1 was collared at the location shown on the contract map. The hole was inclined -60° in a N.50°W. direction. Overburden was encountered in the upper 10 feet of the hole and Golconda shale and limestone and Cypress sandstone in the next 106 feet. Between 116 and 228 a fault block was penetrated, followed by the major fault structure from 228 to 267 feet in depth. The major fault structure consists of about 75 per cent coarse crystalline calcite and approximately 25 per cent limestone blocks. Scattered shines of fluorspar were encountered between 231 and 242 feet. One foot of fluorspar mineralization was discovered between

242 and 243 feet. It is estimated to contain 20 per cent fluorspar. The true width of the mineralization is 0.7 feet. The remainder of the hole which was bottomed at an inclined depth of 287 feet consisted of the St. Louis limestone.

A summary log of drill hole K-1 is attached to this report. Also attached is a geologic section and a plan of the hole which was constructed by the Operator's representatives. Results obtained by auger drilling at the Operator's expense prior to DMEA work is shown on the section and the plan. Auger drill sites, locations of old works and the fault zone were shown on the plan ~~and~~ are placed about 30 feet too far northward.

On drill hole K-1 the drill was operated on a two-shift, 6 day per week basis. All drilling was done with Bx wire line equipment with an average advance of 24 feet per shift. Overall core recovery in hole K-1 was 85 per cent and in the major fault structure, 98 per cent.

The drill was moved to hole site K-2 on January 21, 1958 and was collared on January 22. Geologic data obtained from drill hole K-1 and that available from holes previously drilled by the Ozark-Mahoning Company indicate that drill hole sites K-2 and K-3 as shown on the contract map are the most favorable locations.

H. L. Burmeister
Mining Engineer
U. S. Bureau of Mines

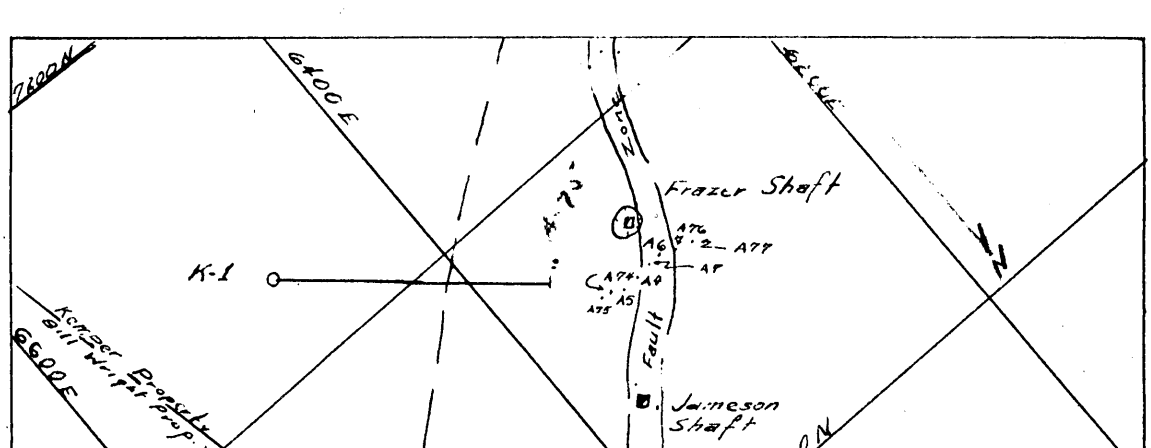
Dewey H. Amos
Geologist
U. S. Geological Survey

SUMMARY LOG OF DRILL HOLE K-1

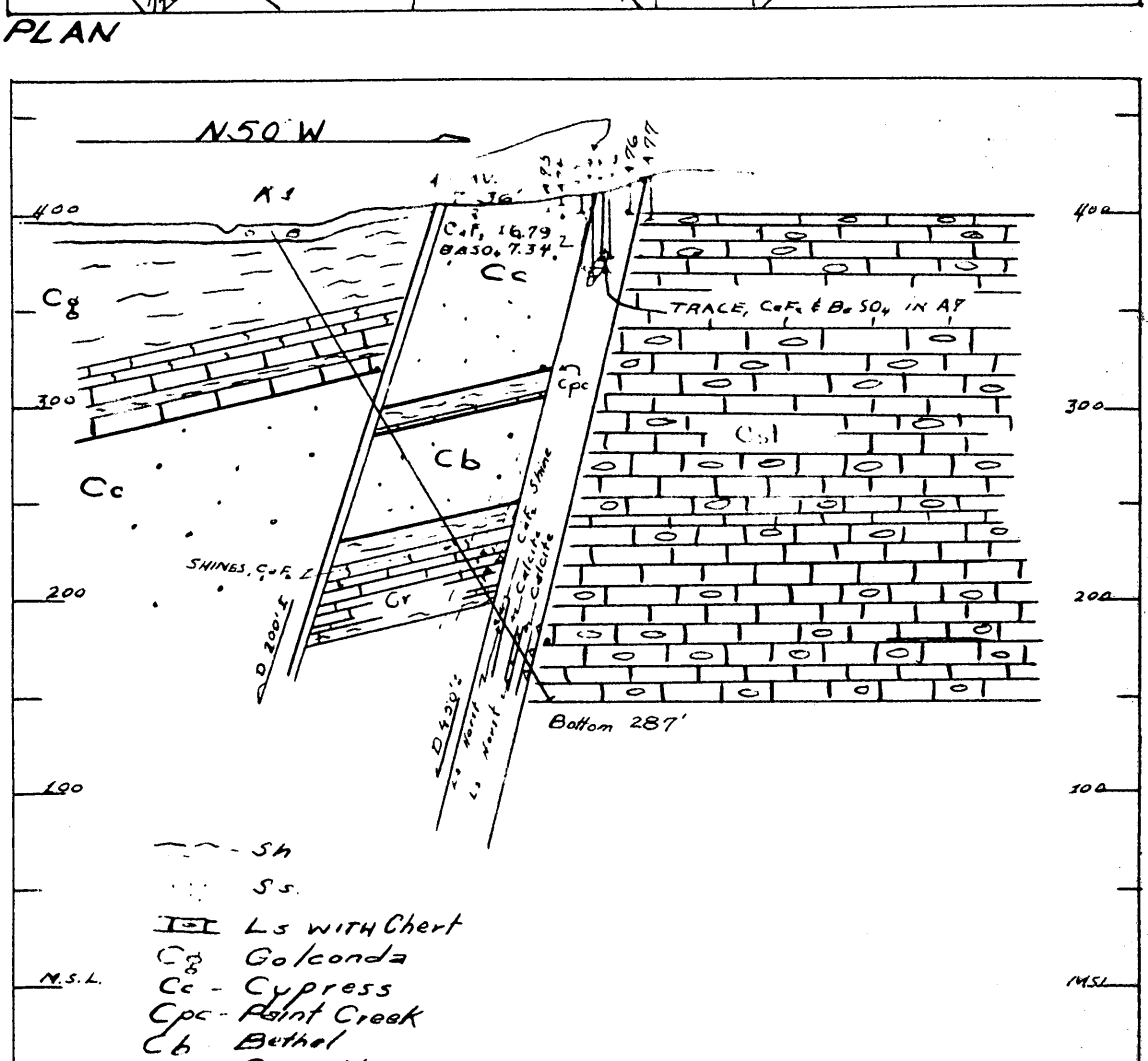
| Depth in Feet | Geologic Unit |
|---|---|
| 0-10 | Overburden. |
| 10-90 | Golconda shale and limestone. |
| 90-116 | Cypress sandstone, blocky at 105-116 feet. |
| 116 | Fault. |
| 116-121 | Paint Creek (?) shale. |
| 121-122 | Paint Creek limestone. |
| 122-176½ | Bethel sandstone. |
| 176½-228 | Renault limestone and shale, numerous fractures filled with coarse, crystalline calcite. |
| 228-267 | Fault zone, calcite-limestone breccia. Scattered shines of fluorspar at 231-242 feet. Estimated 20 per cent fluorspar at 242-243 feet. |
| 267-287 | St. Louis limestone. |
| 287 | Bottom. |

# KEMPER PROPERTY

Livingston County, Kentucky




PLAN




Cross Section on D.D.H. No K-1 & Auger Holes A 4, 5, 6, 7, 75, 76, 77.

VERT. & HORZ. SCALES: 1" = 100'

0 50 100 200 300 FEET

J.W.K - JAN., 1958

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UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
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January 20, 1958

Memorandum

To: Operating Committee, DMEA - Washington

From: Acting Executive Officer, DMEA - Region V

Subject: Signed Amendment No. 1. DMEA-4750, Idm-E1152.
Reynolds Metals Co., Kemper Property, Ky.

Transmitted is the Government and Audit copy of the subject amendment signed by Mr. C. E. Coghill, Vice-President of the Company.

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

V. G. Lynch

V. G. Lynch

zm

DMEA Form 7
(12-56)

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|---|---|---|
| 1/9 | Anderson | 600 |
| 1/9 | Talbert | 800 |
| 1/10 | GLS | 130 |
| " | Johnson | 110 |
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JAN 10 1958

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

Re: Docket No. DMEA-4750-Fluorspar
Reynolds Metals Company
Kemper Property
Livingston County, Kentucky
Contract No. Idm-E1152

Dear Mr. Laurence:

Reference is made to the Field Team memorandum of December 20, 1957, concerning an oversight made in writing the subject contract, due to the fact that the Operator did not give us complete information in his application.

To cover this oversight, we have prepared and enclose the original and four copies of proposed Amendment No. 1, signed by the Administrator for the Government. Two extra copies are enclosed for use of the Field Team. If the proposed amendment meets with your approval present it to the Operator for approval and signature. If any part of this amendment does not have either your approval or that of the Operator and cannot be amended within your delegated authority, then the original and all copies are to be returned to this office, together with the proposed changes for consideration.

After execution of the amendment, the copies are to be distributed in the usual manner.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee (GCS)

WCAnderson:rsi 1/9/58

Copy to: Admr. R. File
Operating Committee
Mr. Kiilsgaard, 5222
Mr. McDougal, 3516
Mr. Houk

Approved:

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

Thor H. Kiilsgaard (GCS)
Member, Geological Survey

Enclosures 7

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DMEA Form 7
(12-56)

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| 1/9 | Anderson | 600 |
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600

January 9, 1958

Memorandum

To: Mr. C. O. Mittendorf, Administrator

From: Walter C. Anderson, Acting Director
Division of Nonmetallic Minerals

Subject: Amendment No. 1 - Docket No. DMEA-4750-Fluorspar
Reynolds Metals Company
Kemper Property
Livingston County, Kentucky
Contract No. Idm-E1152

The proposed Amendment No. 1 to the subject contract, as written in this office, is necessary to cover an oversight in Article 2 (2) of the contract, as cited by the Operator in his letter of December 18, 1957. The information was not contained in his application.

Walter C. Anderson
Walter C. Anderson
Division of Nonmetallic Minerals

Justification should show what the oversight was and effect of amendment — JEP

WCAnderson:rsi 1/9/58
Copy to: Admr. R. File
Mr. Houk

8623

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

WASHINGTON OFFICE

December 20, 1957

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Memorandum

To: Operating Committee, DMEA - Washington

From: Acting Executive Officer, DMEA - Region V-Knoxville

Subject: DMEA-4750, Idm-E1152(fluorspar) Reynolds Metals Co. Kemper Property, Livingston County, Kenturky.

Attached is the original and one copy of a letter received from John T. Kilpatrick of the Reynolds Metals Company, concerning a mistake made in writing the subject contract.

As this may be a matter requiring legal attention it will be appreciated if this can be handled directly by the Washington office.

V. J. Lynch
V. J. Lynch
Acting Executive Officer
DMEA Field Team, Region V

REYNOLDS METALS COMPANY
REYNOLDS METALS BUILDING
RICHMOND 18, VIRGINIA

EXECUTIVE OFFICES

December 18, 1957

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

Dear Mr. Laurence:

Re: Proposed Contract ~~Idm-E 1152~~
DMEA 4750 (fluorspar) Reynolds
Metals Co., Kemper Property
Livingston County, Kentucky

The signed copies of the subject contract were returned to you with my letter of December 13, 1957. It has just come to my attention that we inadvertently made an incorrect representation in Article 2(b)(2) of this contract. Article 2(b)(2) now reads "The Operator's right, title, or interest (whether as owner, lessee, or otherwise) is subject only to the following claims, liens, or encumbrances: a royalty of 10% of the gross price per ton on all minerals mined, payable to lessor". However, I now find that Article 2(b)(2) should read as follows:

> "The Operator's right, title, or interest (whether as owner, lessee, or otherwise) is subject only to the following claims, liens, or encumbrances: a royalty of 10% of the gross price per ton on all minerals mined, payable to lessor, and Indenture of Mortgage and Deed of Trust dated June 1, 1955, held by Manufacturers Trust Company which is by its terms subject to the lien provided for in this contract."

This mistake has arisen because your application form which we filled out and filed for in this contract did not require us to describe the lien or encumbrances on our leasehold interest. By reference to instruction 3(e) of the application, you will see that it states "if you own the land, describe any liens or encumbrances on it". In this case we do not own the land and, therefore, concluded that the application did not call for us to describe liens and encumbrances. Therefore, we did not mention the Indenture of Mortgage and Deed of Trust in the application and the contract form was prepared by the Government without making any reference to this Indenture as being a claim, lien or encumbrance on our leasehold interest. I should have caught this error myself when I reviewed the submitted contract form, but overlooked it and did not realize that our lease had been pledged as collateral subject to the Indenture. I am sorry that I slipped on this

point but I feel that it is only a technical variation which should not affect the substance of the transaction. This is true because the Indenture itself by its terms is subordinated to the Government's rights.

This is most easily explained by reference to the previous DMEA contract No. Idm-E 1015 which we had on the Ben Belt property in Crittenden County, Kentucky. In that case, we owned the land involved and our application for the contract under instruction 3(e) thereof described the Indenture as follows:

> "Applicant's interest in this land is subject to the lien, which is generally applicable to almost all of applicant's property, of an Indenture of Mortgage and Deed of Trust from Reynolds Metals Company and Certain Subsidiary Mortgagors to Manufacturers Trust Company and A. F. Keuthen, as Trustees, dated June 1, 1955, as supplemented from time to time by Supplemental Indentures between the same parties, said Indenture being recorded in the Office of the Clerk of the County Court of Crittenden County, Kentucky on July 22, 1955. The lien of said Indenture, as supplemented, is, pursuant to the granting provisions thereof, expressly made subject to any liens theretofore or thereafter created coming within the provisions of Section 6.12(A)(6) of said Indenture, which reads:
>
> > "Liens upon bauxite and fluorspar lands, or upon mineral estates relating thereto, securing Indebtedness of the Company and Consolidated Subsidiaries in an aggregate principal amount not exceeding $500,000 at any one time outstanding to the United States of America, or a department or agency thereof, with respect to payments or advances made by the Defense Minerals Exploration Administration for the exploration, development and mining of critical or strategic minerals or metals."

This same Indenture has, of course, been separately recorded in Livingston County, Kentucky. I also refer you to Mr. C. O. Mittendorf's letter of August 6, 1956, with respect to our application (Docket No. DMEA-4372) on the Ben Belt property. As a result, the Ben Belt DMEA contract in Article 2(b)(2) contained the above-quoted language which I suggest should be added to the present language of Article 2(b)(2) on the Kemper property contract. It seems to us that this could be easily accomplished by a simple amendment revising the language of Article 2(b)(2) of the subject contract in the manner suggested above. If this is satisfactory to you, you may wish to prepare such an amendment in the form satisfactory to the Government and submit it to us for signature. On the other hand, if you prefer we would be willing to accept a letter from you referring to this letter and acknowledging that Article 2(b)(2) is deemed expanded by mutual consent to correct an inadvertent omission in the manner outlined above.

We will look forward to hearing from you about this.

Yours very truly,

John T. Kilpatrick

John T. Kilpatrick

JTK:mjs

cc Mr. Walter L. Rice
Dr. John H. Moses
Mr. John W. Hook
Mr. C. E. Coghill
Mr. Richard I. Dawes

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 1 POST OFFICE BLDG.
KNOXVILLE 2, TENN.

WASHINGTON, D.C.

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December 16, 1957

Memorandum

To: Operating Committee, DMEA - Washington

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

Subject: Signed Contract - Idm-E1152, DMEA-4750 (fluorspar)
Reynolds Metals Co., 301 East Grace St. Richmond, Virginia

Transmitted are two signed copies of the subject contract received in this office today.

Distribution of the other copies has been made by this office.

V. J. Lynch

V. J. Lynch, Acting Executive Officer
DMEA Field Team, Region V

Helmuth Wedow

Helmuth Wedow, Jr., Geologist
Geological Survey

DMEA Form 7
(12-56)

retyped
~~rewritten~~

OFFICIAL FILE COPY

| Date | Surname | Code |
|---|---|---|
| | Martin | 130 |
| 11/13 | Johnson | 110 |
| " | Butterworth | 100 |
| | | 240 |
| 11/14 | gb | 220 |
| | | 600 |

600

NOV 14 1957

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

Re: Docket No. DMEA-4750-Fluorspar
Reynolds Metals Company
Kemper Property
Livingston County, Kentucky

Dear Mr. Laurence:

Enclosed are the original and four copies of a proposed long-form contract signed by the Administrator for the Government. It consists of the form, Annex I (2 pages), Consent to Lien and Subordination Agreement, Annex II (1 page), Exhibit "A" (3 pages), and one map. Also enclosed are two extra copies of Annex I, Annex II, Exhibit "A", and the map for Field Team use.

If the proposed contract meets with your approval, present it to the Applicant for execution. Copies of the executed contract are to be distributed in the usual manner.

If any part of this proposed contract does not have either your approval or that of the Applicant and cannot be amended within your delegated authority, then the original and all copies of the contract and the two extra copies of Annex I, Annex II, Exhibit "A", and the map are to be returned to this office, together with the proposed changes for consideration.

In estimating costs, the cost of replacing drill bits was reduced from $1.25 to $1.00 per foot.

Copies of memoranda dated September 26 and October 18, 1957, by Mr. N. E. Nelson, USGS, and Mr. Robert B. McDougal, USBM, respectively, relating to the project are enclosed.

Approved:

O. M. Bishop (SHB)
Member, Bureau of Mines

Thor H. Kiilsgaard (SHB)
Member, Geological Survey

Sincerely yours,

ACTING W. S. Martin
Chairman, Operating Committee (SHB)

Copy to: Admr. R. File
Operating Committee
Mr. Kiilsgaard, 5222
Mr. McDougal, 3516
Mr. Houk

Enclosures 11
WCAnderson:gad 11/6/57

Nov. 22

8623

DMEA [redacted]7
(12-56)

OFFICIAL FILE COPY

| Date | Surname | Code |
|---|---|---|
| 11/6 | Anderson | 600 |
| 11/6 | Houk | 600 |
| 11-6 | Chamlee | 800 |
| | | 130 |
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600

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

Re: Docket No. DMEA-4750-Fluorspar
Reynolds Metals Company
Kemper Property
Livingston County, Kentucky

Dear Mr. Laurence:

Enclosed are the original and four copies of a proposed long-form contract signed by the Administrator for the Government. It consists of the form, Annex I (2 pages), Consent to Lien and Subordination Agreement, Annex II (1 page), Exhibit "A" (3 pages), and one map. Also enclosed are two extra copies of Annex I, Annex II, Exhibit "A", and the map for Field Team use.

If the proposed contract meets with your approval, present it to the Applicant for execution. ~~Please explain to the Applicant that the contract is a firm commitment to complete the work outlined at the agreed cost.~~ Copies of the executed contract are to be distributed in the usual manner.

If any part of this proposed contract does not have either your approval or that of the Applicant and cannot be amended within your delegated authority, then the original and all copies of the contract and the two extra copies of Annex I, Annex II, Exhibit "A", and the map are to be returned to this office, together with the proposed changes for consideration.

Copies of memoranda dated September 26 and October 18, 1957, by Mr. N. E. Nelson, USGS, and Mr. Robert B. McDougal, USBM, respectively, relating to the project are enclosed.

Approved:

Sincerely yours,

Member, Bureau of Mines

Chairman, Operating Committee

Member, Geological Survey

Enclosures 11

Copy to: Admr. R. File
Operating Committee
Mr. Kiilsgaard, 5222
Mr. McDougal, 3516
Mr. Houk

WCAnderson:gad 11/6/57

P.S. In estimating costs, the cost of replacing drill bits was reduced from $1.25 to $1.00 per foot.

8623

EXPLORATION PROJECT CONTRACT
REYNOLDS METALS COMPANY
DOCKET NO. DMEA-4750

## EXHIBIT "A"

## Description of the Work

### General Provisions

Exploration for fluorspar shall be performed with conventional BX and/or BXWL core drilling tools in the area indicated on the map, entitled "Reynolds Metals Company, Kemper Property, Livingston County, Ky.," attached hereto and made a part hereof.

The Government shall not contribute to the cost of an uncompleted hole, or one that bottoms less than ~~BX~~ BXWL size.

Records of each hole drilled, together with assay certificates of samples taken and type of rock penetrated, shall be submitted with the Operator's monthly progress report, which shall also include a map showing the location, inclination and direction of all holes drilled during the reporting period. All samples shall be properly identified as to drill hole number, ~~inclination~~ ? and depths represented.

The holes shall be drilled into the fault zone as indicated on the map. The location, inclination, direction, and extent of all drilling are subject to the approval of the Government.

The work shall be divided into two stages as hereinafter described. The Operator shall complete Stage I, and shall perform as much of Stage II as the Government approves in writing.

Omega - 4750

# Work sheet - Exhibit "A"

## Stage I - Actual Costs - Diamond drilling

| | | |
|---|---|---|
| 80 shifts @ $80/shift | | $6,400.00 |
| Bit replacement - 2000 feet @ $1.00/ft. | | 2,000.00 |
| Moving equipment in and out | | 300.00 |
| | 2000 | 8,700.00 |
| | | $4.35/ft. |

### Fixed Unit Costs

| | | |
|---|---|---|
| Supervision | | $1074.00 |
| Engineering and accounting office expense | | 50.00 |
| Payroll taxes + insurance | | 43.98 |
| Use of Company jeep to transport samples | | 42.00 |
| | 2000 | 1209.98 |
| | | $0.60/ft. |

## Stage II Actual Costs - Diamond drilling

| | | |
|---|---|---|
| 325 shifts @ $80/shift | | $26,000.00 |
| Bit replacement - 6500 feet @ $1.00/ft. | | 6500.00 |
| | 6500 | 32,500.00 |
| | | $5.00/ft. |

### Fixed Unit Costs

| | | |
|---|---|---|
| Supervision | | $2,148.00 |
| Eng. + accounting expense | | 100.00 |
| Payroll Taxes + Ins. | | 87.96 |
| Use of Company jeep to transport samples | | 84.00 |
| | 6500 | 2,419.96 |
| | | $.372/ft. |
| | | Use $0.38 |

Guma 4750

Kenzer Property

Drilling costs

| Stage I. As per FER. | | Unit cost/ft. |
|---|---|---|
| 2000' @ 25'/shift - 80 shifts x $80 = | = $6,400 | $ 3.20 |
| Bit replacement 2000 ft @ $1.25/ft = | 2,500 | 1.25 |
| Moving in and out of equipment | 300 | 0.15 |
| Supervision | 1,074 | 0.53 |
| Operating materials + supplies | 180 | 0.09 |
| Miscellaneous | 135.98 | 0.07 |
| Total | $ 10,589.98 | $ 5.30 |

| Stage II | | |
|---|---|---|
| 6500 ft. @ 20 ft/sh - 325 shifts @ $80/sh. | 26,000.00 | $ 4.00 |
| Bit replacement 6500 feet @ 1.25/ft | 8,125.00 | 1.25 |
| Supervision | 2,148.00 | 0.33 |
| Operating materials + supplies | 300.00 | 0.05 |
| Miscellaneous | 271.96 | 0.04 |
| Total | $ 36,844.96 | $ 5.67 |

400 10

(1.25) 1 drill 1 shot

— 400 —

Miller -

— Myslinski — (80) shot [illegible] (drilling 60 shot)

moved 42' shot

8 days for [illegible]

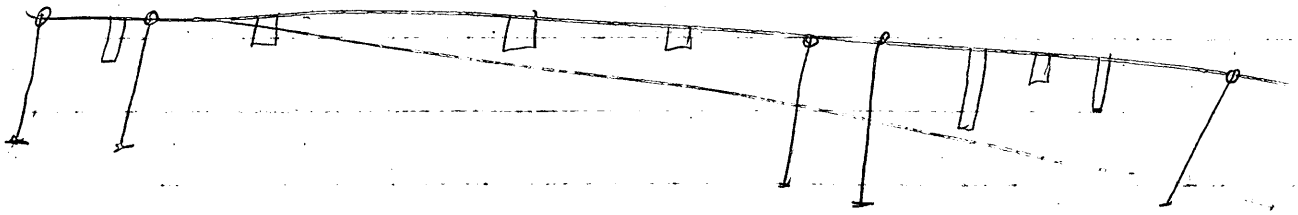
Reynolds

Results of auger drilling

Third bid —

Why are unsound

2500



3.20 Rental shift

25 ) 80
75
50

2 [illegible]

2 Shifts 6 days.

Reynolds

Bids

Aug 24 1956 -

Longyear $3.00 ft BX wireline or AX standard

minimum 1500'

Joy -

NX 3.75 3.25 BX 3.00 4X Stage I

3.50 3.00 2.25 Stage II

Delays $50.00 per shift

Auger Holes

M T W T F S
27 28 29 30 31 1 2
3 4 5 6

December 24 ) 579
50
79

2.3

3.50

7 (?)

$3.00 set up $7.00 mechanical double.

2.3 Times -

Intermediate angles

500' displacement on point - Do all conditions favorable

What is the most favorable hour you

40 days.

9
8
72
18.75
90.75

75
25
375
150
18.75

8 [illegible]

[illegible]

Minimum — 2000'

Minimum average 25' per shaft —

Figure 2 — Doesn't have mineral geology.

| | | | |
|---|---|---|---|
| Rental | $ 6400 | 3.00 | 2 / 11.400 (10) = 5.7 |
| Bulldozer | 2500 | 1.20 | 14 |
| [illegible] | [illegible] | [illegible] | Vertical [illegible] |
| [illegible] | 1074 | [illegible] | [illegible] |
| [illegible] | 180 | | |

4 [illegible] Rental

[illegible] Bulldozer

33 Supervision

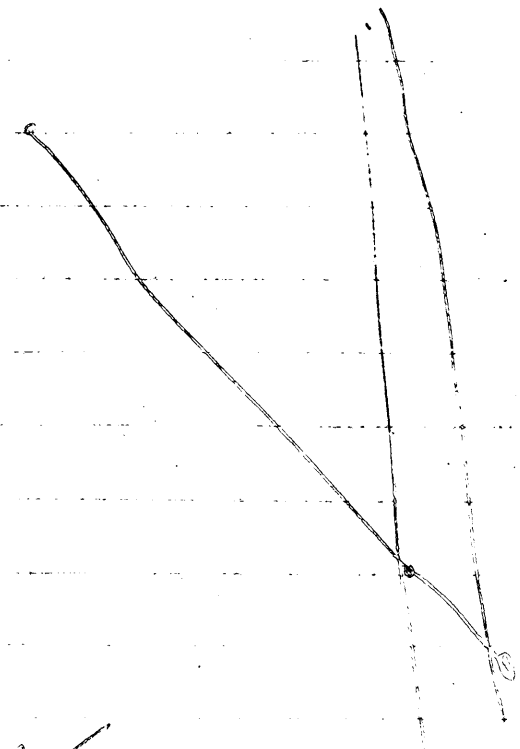
05 [illegible]

04 Misc.

40 [illegible]

50

Mineral BX — AX



2000 minimum

425

# Reynolds Metals

3181
3356
2804

- Bx -

Remarks of auger drilling → No

Thin soil - firm ←

What is the formation on target?

What is the HW rock at the target area

Is not the 500' of displacement concluded from the target 158'

Examination report says Page 2 begins at In as much as quite to operations If method is more definite then necessary drilling recommended.

Page 11 in detail unusual defect as 25' day

But cost of 25' more than but cost

.69

#720 -
270
#990

173
92

35
90
#125

15

15 +
#60

#143 00

340

53 11
48
96

52
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137

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

Date October 18, 1957

DMEA Docket No. 4750
DMEA Contract No.
Commodity Fluorspar
Name of applicant Reynolds Metals Co.
Name of property Kemper Property
Location of property Livingston Co., Ky.
Estimated cost of project $50,444.94 (Revised)

Memorandum ✓

To: Lawrence G. Houk, Chief, Non-Metallic Minerals Division, Defense Minerals Exploration Administration

From: Robert B. McDougal, Commodity Specialist, Branch of Construction and Chemical Materials

Subject: Review of Field Team Report
(Application, Field Team Report, etc.)

1. Date of subject document: 9/23/57. 2. Date received by reviewer: 9/26/57

3. Prior reports on this property known to reviewer: Yes [x] No [ ]

4. Prior reports on nearby properties known to reviewer: Yes [ ] No [x]

5. Information available on past production: Yes [ ] No [x]

6. Other pertinent factors known to reviewer: Yes [ ] No [x]

7. Explain items marked yes above:

3. Liddell, C. A., 1944, Kemper Fluorspar Property, Livingston County, Ky., U. S. Bureau of Mines War Minerals Report, unpublished report in files of U. S. Bureau of Mines.

8. Factors needing special consideration:

a. Location [ ]
b. Ownership [ ]
c. Evidence of mineralization [ ]
d. Geology [ ]
e. Proposed exploration method [ ]
f. Alternate exploration method [ ]
g. Costs [ ]
h. _____ [ ]

9. Action advised:

a. Obtain information from applicant [ ]
b. Refer to Field Team [ ]
c. Denial [ ]
d. Agree with Field Team [x]
e. Disagree with Field Team [ ]
f. Suggest alternate plan [ ]
g. Request another examination [ ]
h. Approval [ ]
i. Consult with Mr. _____ at _____ AEC office.

10. Remarks: (Use back of page if necessary)

Robert B. McDougal
Robert B. McDougal

IN REPLY REFER TO:

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

September 26, 1957
Re: DMEA 4750
Reynolds Metals Co.
Kemper Property
Livingston County, Kentucky
Revised Estimate $50,444.94 - Fluorspar

Memorandum

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

From: N. E. Nelson, U. S. Geological Survey

Subject: Review of Field Team Report

The applicant requested assistance in exploring by angle core drilling a 2,500-foot barite-fluorite-bearing fault structure from which, in this property and the Wright mine, fluorspar has been mined.

The fault vein has been opened in a number of places by pits and shallow shafts in the Kemper property and at least six drill holes have been put down. Only narrow bands of fluorspar appear to have been cut. Except for one section where the new intersection should be deeper, the proposed drilling will explore the long fault structure at places not known to have been tested and at deeper horizons.

The examiners and the Field Team accept the applicant's revised 2-stage proposal and recommend approval of the application, the estimated cost being:-

| | | |
|---|---|---|
| Stage I | 2,000 feet | $10,639.98 |
| Stage II | 6,500 feet | 39,804.96 |
| | Total | $50,444.94 |

I concur with the recommendation.

W. P. Williams
for N. E. Nelson

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UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
ROOM 1[illegible] POST OFFICE BLDG.
KNOXVILLE 2, TENN.

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September 23, 1957

Memorandum

To: Operating Committee, DMEA - Washington

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

Subject: Field Examination Report, DMEA-4750(fluorspar)
Reynolds Metals Co., Richmond, Virginia
Kemper Property, Livingston County, Kentucky

Enclosed are the original and two copies of the subject report.

We recommend approval of a long-form contract, as outlined in the report.

If further details are needed, we suggest that you contact Mr. Millar at College Park, or Mr. Trace at Beltsville (after October 7).

Robert A. Laurence
Robert A. Laurence
Executive Officer, DMEA-Reg.V

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

On-Site Exam Rpt

Reviewed by
DMEA OPERATING COMMITTEE
9/27/57
(date)

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AUG 20 1957
U.S. BUREAU OF MINES
DEP. MIN. INDUS.
KNOXVILLE, TENN.

LETTER OF TRANSMITTAL

Field Team Members
U.S. Bureau of Mines
U.S. Geological Survey

Marion, Kentucky
August 16, 1957

To: V.J. Lynch
Bureau Member of the D.M.A. Field Team
Room 1, Post Office Building,
Knoxville, 2, Tennessee

Submitted are four copies (original and three copies) of the Field Team Report on D.M.E.A. Docket No. 4750 (Fluorspar), Reynolds Metals Company, Kemper Property, Livingston County, Kentucky.

The Reynolds Metals Company intends to drill the property on a one shift per day, six days per week basis until stage I is completed or favorable results indicate the need for an intensified drilling program. The company intends to use conventional and wireline equipment as outlined in their application. The contract bids (drilling) are based on this method.

The report recommends a percentage of the actual cost of the work as they accrue. Estimated Costs, based on the actual drilling costs of the Ben Belt D.M.A contract, are given for appropriation purposes and to set control limits on expenditures and not intended to convey a unit cost basis for any phase of the contract.

Reviewed by
DMEA OPERATING COMMITTEE
9/27/57
(Date)

Respectfully submitted,
Frank J. Myslinski
Frank J. Myslinski
Mine Examination and
Exploration Engineer

C.C. to W.T. Millar

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RECEIVED SEP 25 1957

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# Field Team Report on Examination of Property

by

Robert D. Trace and Frank J. Myslinski 1/

DMEA Docket No. 4750 - Fluorspar
Reynolds Metals Company, Richmond, Virginia
Kemper Property, Livingston County, Kentucky

## SUMMARY

A field team examination of the Kemper property was completed on the 19th of July, 1957.

The original request for assistance in exploring the Kemper property amounted to 3,500 feet of diamond drilling under Stage I and 6,500 feet of drilling under Stage II. The original estimate under Stage I has been revised to drill approximately 2,000 feet of hole as the result of obtaining information which made extensive drilling under Stage I impractical. There are no changes in the drilling program as outlined under Stage II.

The Reynolds Metals Company and the examining team concurred in the above plan under Stage I.

## CONCLUSIONS AND RECOMMENDATIONS

It is recommended that the applicant's revised program of diamond drilling be done in two stages as outlined in this report under "Description of Project" and "Maximum Allowable Costs."

---

1/ Robert D. Trace, Geologist, U. S. Geological Survey
Frank J. Myslinski, Engineer, U. S. Bureau of Mines

Reviewed by
DMEA OPERATING COMMITTEE
9/27/57
(date)

The geological conditions are considered to be reasonably favorable for the possible discovery of a fluorspar deposit at comparatively shallow depth. Justification for a small amount of exploration of the Kemper property is summarized as follows:

1) The Kemper property is favorably located in the northeast trending belt that contains most of the major mining operations for the Kentucky district.

2) A small quantity of "gravel" fluorspar has been mined.

3) The displacement along the fault system is not so great as to be unfavorable for ore deposits.

4) The most favorable geologic horizon is present at reasonable depths below the surface.

5) Where the fault system has been cut by drilling, the vein is wide rather than "tight", although mostly composed of calcite.

It is also recommended that an actual cost contract be negotiated with the Reynolds Metals Company. Inasmuch as the proposed drilling method can be considered a great deal more elaborate than necessary, the choice of methods is a function of the operator who is responsible for the efficiency of the operations. Under normal operations in average ground, cost figures indicate a cost of $2.50 per foot, using the BX Longyear Wireline method of drilling, plus the normal charges, reported as confidential material by the Penn Salt Company, who has done considerable drilling in the Kentucky Fluorspar District. Local drillers generally charge a flat rate covering all normal costs and this cost may range from $3.05 to $3.25 per foot for obtaining AX diamond drill core.

Thru the use of wireline tools and a BX "M" series (Joy) bit with bottom discharge, the contract cost of $80.00/shift plus fringe costs, as submitted in a bid by the Joy Manufactureing Company and favored by the Reynolds Metals Company, can be brought down to a reasonable unit cost, provided a minimum average of 25 feet ~~per day or 12½ feet~~ per shift is maintained. Information obtained from Bob Frazier who operated the Wright Mine stated that at a depth of 160 feet it was necessary to drill and shoot vein material, this information would indicate drilling conditions favorable to obtaining good core recovery below this depth. Three of the five holes to be drilled under Stage I will penetrate a zone well below the elevation of solid vein material as indicated at the Wright mines.

## TIME SPENT ON PROPERTY

A total time of two (2) days were spent in the office and field, discussing feasibility of the project and cost figures with Mr. John Hook, Resident Geologist of the Reynolds Metals Company and his staff.

## LOCATION AND ACCESS TO PROPERTY

The Kemper property, at an average altitude of 400 feet above sea level, and containing 338 acres, more or less, is located in Livingston County, Kentucky. Property can be reached by Highway 133, approximately 1.7 miles southeast of Lola, Livingston County, Kentucky and 3.7 miles northwest of Salem, Kentucky.

Highway 133 is a Macadam surfaced all weather road which borders the property on the south. Access to the property can also be made by a secondary road which parallels the fault and lies, approximately

750 feet east of the fault. (See Plate 1).

## THE COMPETENCY OF APPLICANT AND OPERATING PERSONNEL

The Reynolds Metals Company has proven its financial responsibilities on a previous D.M.E.A. contract and have competent operating personnel to fulfill a drilling contract.

## APPLICANT'S PROPERTY RIGHTS

The Kemper property (minerals only) is held under lease with option to purchase. A consent to lien in favor of the government has been obtained and properly executed.

## DESCRIPTION OF PROPERTY

Ralph Jameson of Burma, Kentucky during the summer of 1956 erected a simple hoisting frame over the former Reed shaft which is shown on Plate 1 as the Jameson shaft. This hoisting frame and the shaft appears to be in serviceable condition. The 4 x 4 foot lagged shaft reaches a depth of 60 feet. At the 54 foot level a drift was driven approximately 30 feet to the northwest. No powder was used in the driving of the shaft or drift.

Other workings are scattered intermittently along the strike of the fault zone in the form of shallow shafts and pits and vary in depth from ten to sixty feet. Most of the workings are not accessible.

Three shafts shown on Fig. 2 as Reed shafts No. 1, 2 and 3 were reported to have been driven to vertical depths of 45, 10 and 45 feet respectively. Shaft No. 1 was driven to a vertical depth of 45 feet from which point a crosscut was driven 25 feet to intersect the

vein. All three shafts encountered mineralization at various depths. 2/

## GEOLOGY

The ore deposits of the Kentucky-Illinois fluorspar district consist of fluorite with subordinate quantities of sphalerite, galena, and barite. Calcite is the principal gangue mineral. The ore deposits occur 1) as veins along vertical or steeply dipping normal faults that displace relatively flat or shallow-dipping shale, sandstone, and limestone beds of the Meramec and Chester series of Mississippian age, and 2) as bedding replacement deposits in the lower part of the Chester series and the upper part of the Meramec series of Mississippian age. With the exception of the Carrsville bedded deposits, the Kentucky part of the district is known to contain only vein deposits. Most of the major vein deposits are in a northeast trending belt that is about 10 miles wide and 20 miles long (Fig. 1). The applicant's Kemper property is in the Corn Area, which is in the northwest side of the belt, about midway along its known length. The Kemper property is on the Lola topographic quadrangle, at the southwest end of a group of small to intermediate-sized mines that include also the Corn, Wright, Cooper, Madry, and others.

The geology of the Kemper property has been mapped by J. W. Hook, Reynolds Metals Company resident geologist. (See Plate 1 accompanying the application and Fig. 2 accompanying this report.)

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2/ Liddell, C.A., 1944 Kemper fluorspar property, Livingston County, Ky. U. S. Bureau of Mines Prel. War. Min. Rept., unpublished report in files of U. S. Bureau of Mines.

The evidence for these maps were examined by the writers in the field.

The rock formations that are either exposed on or underlie the Kemper property at shallow depths include the following formations of upper Mississippian age:

| Chester Series | (thickness in feet) |
|---|---|
| Hardinsburg sandstone (mostly sandstone, some shale) | 120 |
| Golconda formation (mostly shale, some limestone) | 150 |
| Cypress sandstone (sandstone, some shale) | 110 |
| Paint Creek shale (sandstone and shale) | 20-40 |
| Bethel sandstone (sandstone) | 85 |
| Renault formation (limestone and shale) | 115 |
| **Meramec Series** | |
| Ste. Genevieve limestone (mostly limestone, some sandstone) | 200 |
| St. Louis limestone (mostly limestone) | 400 |

As shown on figure 2, a major fault system trends northeast across the Kemper property. Typical of the district, this fault system is not a simple fracture but is composed of a zone 50 or more feet in width in which several fractures are present. The exact details of the complex fracturing cannot be ascertained from the available surface evidence and relatively small amount of drilling.

The formations of the hanging wall at or near the surface include the Hardinsburg sandstone, Golconda formation, and possibly the Cypress sandstone; the footwall is St. Louis limestone, or possibly the Ste. Genevieve limestone. In general the fault is vertical or dips steeply southeast. The total displacement along the fault zone is about 500 feet.

The ore mined on the Kemper property consisted of a mixture of fluorite and barite in deposits of "gravel" fluorspar. Abundance

calcite gangue is present, particularly in the southwestern part of the property. No zinc or lead minerals have been reported. The nearest known unweathered ore deposits (in contrast to "gravel" fluorspar) are about 1,000 feet to the northeast on the Wright property. The Wright mine, now inactive, has been worked to depths of 160 feet and is reported to contain economic deposits of fluorspar and barite.

Six core holes are known to have been drilled on the property, three by C. B. Reed in 1942-43 and three by Ozark-Mahoning Company in 1946 (Fig. 2). The core from the Reed No. 2 hole was examined in early 1943 by G. C. Hardin, Jr. of the Geological Survey. According to his notes, several faults were cut; the widest zone of fault breccia was 20 feet, of which more than 10 feet was vein calcite. At that time, Reed reported to Hardin that Reed hole 1 cut 18 feet of vein calcite. Reed hole No. 3 was drilled underneath the Jameson shaft; no log of this hole is available. All three Reed holes cut the fault zone at vertical depths of less than 100 feet.

In 1946 Ozark-Mahoning drilled three holes (Fig. 2) the logs of which are attached to this report. No economic deposits were found by this drilling, although considerable limestone-calcite breccia and as much as about 1 foot of fluorspar was cut. Hole 1 and 2 cut the fault zone at a vertical depth of about 100 feet and hole 3 at about 150 feet.

Of the several now inaccessible shallow shafts along the fault system, only one is known to have been examined by a government geologist or engineer. In September 1942, James Steele Williams of the

Geological Survey examined the vein at a vertical depth of 45 feet in the Pugh and Wallace shaft. According to him the vein is 5½ feet wide with about 1 foot of fluorspar on the footwall side. 3/

## PAST OPERATIONS

Production figures are not available to determine the amount of production obtained from various workings on the property. The applicant has estimated a production in excess of 10,000 tons of ore bearing rock, which can be considered a realistic figure from evidence of mined workings on the property.

Shaft No. 3 (Fig.2) contained material that analysed 43.42% $CaF_2$, the analytical sample was taken from four tons of sorted material mined from the shaft.

## AVAILABILITY OF MANPOWER, MATERIALS, SUPPLIES, ETC.

Manpower is readily available, actually there is a surplus of men with mining experience. Supplies can be brought to the site by means of rail and road transportation facilities from all parts of the country. Electrical power is readily available thru the REA. Water for drilling is within easy reach of the property and all future needs are anticipated by re-circulating mine water, supplemented by pumping from nearby streams.

## GENERAL DISCUSSION WITH APPLICANT

The original request to drill 3,500 feet of hole under Stage I was reduced to 2,000 feet as a result of information on previous drilling

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3/ Liddell, C.A., 1944 Kemper fluorspar property, Livingston County, Ky. U. S. Bureau of Mines Prel. War. Min. Rept., unpublished report in files of U. S. Bureau of Mines.

on the Kemper property by Ozark-Mahoning Company and independent drillers (see Fig. 2). The field team and the applicant concurred on the number and position of the holes under Stage I.

The drilling will be along a fault which traverses the property for a distance of 2,500 feet on a N 40° E bearing from highway 133 and includes a potential mineralized area up to 50 feet on the apparent hanging wall side of the fault.

The applicant wishes to diamond drill the area within the fault zone and in the process of drilling, to obtain maximum core recovery thru methods as outlined in his application. The applicant has stated that although the cost per foot will be, in all probability, above the average cost per foot for the area, his convictions remain that regardless of cost, the necessity of obtaining maximum core recovery thru the fault zone is of utmost importance. He has also stated that he will make every effort to keep costs down to a minimum and use the revised method of drilling, only when necessary. The maximum allowable costs will be more than adequate to cover the cost of the project.

## OPERATOR'S PROPERTY RIGHTS

Applicant has the right to enter upon the lands, as outlined in agreement between the applicant and the Lessor, for the purpose of prospecting for and mining lead, zinc, fluorspar, or any and all other minerals, except oil and gas and gaseous substance, that may be found in or on said lands, and of washing, milling and transporting same to market. The surface may be used for digging, boring, sinking shafts, erecting buildings and machinery, storing minerals, disposing of waste waters,

rights of way for ingress and egress, and for all other purposes necessary and incident to said operations, provided that the applicant does not sink shafts, drill core holes, or disturb any portion of the surface of the "leased land" (minerals only) lying within a radius of 600 feet of the main dwelling house located upon the "leased lands" (minerals only) however the applicant may drive a drift in and under and within the 600 feet radius of the main dwelling house provided no damage to the surface or buildings is done.

## EXPLORATION PROJECT

The work will start within 60 days and be completed within 12 months from the date of an exploration project contract.

## DESCRIPTION OF PROJECT

The project is to be completed in two stages, by core drilling using a BX wireline (2-3/8 in hole; 1-1/16 in core) or a BX "L" series (Longyear) or a BX "M" series (Joy) bit with bottom discharge will be used where applicable. This method will be used for Stages I and II.

### Stage I

A total of 5 diamond drill holes will be drilled to an average length of 400 feet per hole, for a possible total of 2,000 feet of drilling. The length of holes will vary from 300 to 450 feet per hole to allow for over drilling thru splits in the vein. The approximate location of drill holes is shown on (Fig. 2). The inclination will vary from -45° to a -60°, and the vertical depth at which the fault is cut will depend on any one preceding hole.

Stage II

Stage II is contingent upon results of Stage I and shall not be entered without permission of the Government.

A maximum of 6,500 feet of diamond drilling is recommended. The number, location, inclination and depth of holes is to be determined by agreement of the applicant and Government representatives.

## ESTIMATED COSTS

It is recommended that the diamond drilling of the Kemper property by conventional BX and/or BXWL core drilling tools be put on an $80 cost per shift rental basis as bid by Joy and bit replacement be placed on an actual cost basis as they accrue. It is also recommended that the cost of mobilization and demobilization, materials and supplies, supervision and miscellaneous be put on a unit cost basis.

Stage I

2,000 feet of diamond drilling by conventional BX and/or BXWL core drilling tools on a rental basis of $80.00 per drill shift for a complete drilling unit, which includes an operator, helper, oil, gas, supplies and maintenance. Since there is no anticipation of unusually difficult drilling, an estimated average drilling advance of 25 feet per day, for an average hole depth of 350 feet is expected. A maximum of $6,400.00 is allowed to cover drilling under stage I, which also allows for a nominal amount of over drilling.

2,000 ft. ÷ 25 ft./shift = 80 shifts
80 shifts x $80.00/shift = $6,400.00

3
$3,200/

To allow a cost coverage for bit replacement, an estimated cost of $1.25 per foot (based on past drilling performances) appears to be a sufficient amount to cover actual cost of bit replacement as they accrue. It is therefore recommended that a maximum of $2,500.00 be appropriated to cover this cost.

?

2,000 ft. x $1.25/ft. = $2,500.00

It is anticipated that casing will not be required to be left in place unless absolutely necessary. Casing and drill rods lost or damaged by other than ordinary wear are covered by a contingency cost estimate.

The following items are computed on a Unit Cost Basis -

Mobilization of drilling equipment and crew

1 drill - $175.00

Demobilization of drilling equipment and crew

1 drill - $175.00

Total Cost of Mobilization and Demobilization .....$ ~~300.00~~ 350.00

Supervision

| | | |
|---|---|---|
| Resident Geologist @ $3.70/hr. x 100 hrs. | = $370.00 | |
| Asst. Geologist @ $2.58/hr. x 200 hrs. | = 516.00 | |
| Engineering Asst. @ $1.88/hr. x 100 hrs. | = 188.00 | |
| Total Supervision | $1074.00 | $1074.00 |

(Based on amount of Supervision required on the Ben Belt Property under Stage I)

Operating Materials and Supplies

24 feet per core box (BXWL core Barrel 1 1/8" core)
24 feet of core per box x 60 core boxes = 1440 feet of equivalant drilling, at an estimated 90% recovery
2000 ft. of drilling x 90% = 1800 ft. of core
60 core boxes @ $3.00 ea. .....$ 180.00

Additional core boxes will be supplied by Reynolds Company from core boxes remaining from DMEA Ben Belt Contract.

Miscellaneous

| | | |
|---|---|---|
| Engineering and Accounting Office Expenses 4 months @ $12.50/month = | $50.00 | |
| Payroll taxes and insurance @ 4.095% on $1,074.00 = | 43.98 | |
| Use of Company jeep to check drill rig. Salem Kentucky to Kemper Property and return 7.5 miles. | | |
| 80 trips, based on 80 shifts to complete project, is equivalent to 80 trips x 7.5 miles which is equal to 600 miles of travel for the project. 600 miles @ .07¢/mile = | 42.00 | |
| Total Miscellaneous | $135.98..... | $ 135.98 |
| Total (exclusive of diamond drilling and bit costs) ..... | | $1689.98 |

$\frac{1,689.98}{2,000}$ = $.85 unit cost per foot of drilling (exclusive of diamond drilling and bit costs)

Contingencies

| | |
|---|---|
| 10% of diamond drilling costs 10% x 6,400.00 = | 640.00 |

Assaying

| | |
|---|---|
| Assays for $CaF_2$, $BaSO_4$, $CaCO_3$ and $SiO_2$ @ $6.00 per sample - 30 assays = | 180.00 |

Total Costs (other than diamond drilling and bit replacement costs) ..... $2,509.98

Stage I

6,400.00
2,500.00
11,409.98

Stage II

6500 ~~2,000~~ feet of diamond drilling by BXWL or conventional methods on a rental basis of $80.00 per drill shift for a complete drilling unit, which includes an operator, helper, oil, gas, supplies and maintenance.

Since there is no anticipation of unusually difficult drilling, an estimated average drilling advance of 20 [1] feet per day for an average hole depth of 500 feet is expected. A maximum of $26,000.00 is allowed to cover drilling under Stage II. In the request for 6500 feet, a nominal amount of footage for overdrilling is included in this amount.

6500 feet ÷ 20 feet per shift = 325 shifts
325 shifts x $80/shift = Maximum Allowable .....$26,000.00

To allow a cost coverage for bit replacement, an estimated cost of $1.25 per foot (based on past drilling performances) appears to be of sufficient amount to cover actual cost of bit replacement as they accrue. It is therefore recommended that a maximum of $8,125.00 be appropriated to cover this cost.

6500 feet x $1.25/ ft. = .....$ 8,125.00

It is anticipated that casing will not be required to be left in place unless absolutely necessary. Casing and drill rods lost or damaged by other than ordinary wear are covered by a Contigency Cost estimate.

The following items are computed on a unit cost basis -

Mobilization and Demobilization of drilling unit covered under Stage I.

Supervision

| | |
|---|---|
| Resident Geologist @ $3.70/hr. x 200 hrs. = | $740.00 |
| Asst. Geologist @ $2.58/hr. x 400 hrs. = | 1032.00 |
| Engineering Asst. @ $1.88/hr. x 200 hrs. = | 376.00 |
| Total Cost for Supervision ..... | $ 2,148.00 |

The apparent difference between the cost of supervision under Stage I and Stage II, which is based on the amount of drilling, is due to the requisite of closer supervision in the initial stage.

1/ Drilling progress will be reduced 20% in Stage II due to deeper drilling.

Operating Materials and Supplies

24 feet of core per core box (BXWL Core Barrel 1 1/8" core)
24 feet of core per box x 100 core boxes = 2400 feet of equivalent drilling. At an estimated 90% recovery
6500 feet of drilling x 90% = 5850 feet of core
100 core boxes @ $3.00 ea. .....$ 300.00

When additional core boxes are needed, the Reynolds Metal Company will utilize core boxes available from the Ben Belt DMEA Project.

Miscellaneous

| | |
|---|---|
| Engineering and accounting Office Expenses 6 months @ $16.66/month = | $100.00 |
| Payroll taxes and insurance @ 4.095% on $2,148.00 = | 87.96 |
| Use of Company jeep to check drill rig. 1200 miles @ .07¢/mile. Salem, Kentucky to Kemper Property and return - 7.5 miles. | |
| Based on an estimated 325 shifts of drilling at two shifts per day under Stage II, it is estimated that one trip per day will be needed to check the drill rig. 160 trips x 7.5/miles per trip = 1200 miles 1200 miles x $.07/mile = | 84.00 |

Total Cost Miscellaneous .....$ 271.96

Total (exclusive of diamond drilling and bit costs).....$2,719.96

$\frac{2719.96}{6,500}$ = .42 unit cost per foot of drilling (exclusive of diamond drilling and bit replacement costs)

The difference between the cost per foot in Stage I and Stage II is due to the requisite of closer supervision and the inclusion of the cost of mobilization and demobilization of the drilling unit and crew under Stage I.

Contingencies

10% of diamond drilling costs
10% x 26,000.00 = .....$2,600.00

Assaying

60 assays for $CaF_2$, $BaSO_4$, $CaCO_3$ and $SiO_3$
@ $6.00 per assay .....$ 360.00

Total Costs - Stage II ( other than diamond drilling
and bit replacement costs).....$5,679.96

September, 1957

R. D. Trace

R. D. Trace, Geologist

Frank J. Myslinski

Frank J. Myslinski, Engineer

# MAHONING MINING COMPANY

P. L. Kemper 300 Acres
Diamond Drill Hole No. 3
Elevation: 383.1
Location: 17' south and 318' east of
Kenton and Mosier Shaft
Angle: 45° - Bearing: N. 44° W.
Drilled by: S. N. Eddleman
Examined by: E. A. Brecke

Started: 6-14-46
Finished: 6-27-46

| | | |
|---|---|---|
| 0-20 | Surface | |
| 20-22 | Dark brown lime | |
| 22-112 | Black shale | |
| 112-114 | White sand, shale streaks | |
| 114-118 | Silty shale | |
| 118-122 | White sand with black shale partings | |
| 122-141 | Soft black shale | |
| 141-145 | White sand, black shaly partings, broken and oxidized | |
| 145-190 | Fairly firm white sand, quartzitic | |
| 190-222 | Broken and loose white quartzitic sand | |
| 222-223 | Gray shaly gouge, some quartzite boulders | ) Fault |
| 223-226 | Gray sand, some gray gouge and calcite stringers | ) Zone |
| 226-258 | Gray to brown dense lime, con. chert | |

MAHONING MINING COMPANY

P. L. Kemper 300 Acres
Diamond Drill Hole No. 1
Elevation: 402.0
Location: 138' south and 79' east of
Kenton and Mosier Shaft
Drilled by: S. N. Eddleman
Examined by: E. A. Brecke

Started: 5-27-46
Finished: 6-6-46

| | | |
|---|---|---|
| 0-42 | Yellow mud grading to biff | |
| 42-54 | Dark brown lime, some shale streaks | |
| 54-86 | Black shale | |
| 86-90 | Dark gray fossiliferous lime | |
| 96-114 | White quartzitic sand, slickensides at 96' | |
| 114-129 | Soft shaly gouge | |
| 129-144 | White quartzitic sand, broken | |
| 144-148 | Gray lime-calcite breccia, traces of spar and some leaching | ) |
| 148-150 | Cavity filled with sand and mud | ) Fault |
| 150-160 | Gray lime-calcite breccia, spar shines, some leaching | ) Zone |
| 160-163-1/2 | Calcite | ) |
| 163-1/2-174 | Broken gray lime, thick calcite stringers, slip at 174' | ) |
| 174-188 | Light brown dense lime, con. chert and calcite | |
| 188-197 | Light brown dense lime, con. chert | |

107 7/137.9

144 7/08

MAHONING MINING COMPANY

P. L. Kemper 300 Ac.
D.D.H. No. 2
Elevation: 416.2
Location: 275' south and 68' west of
Kenton and Mosier Shaft
Angle: 45° Bearing N 44° W
Drilled by: S. N. Edleman
Examined by: E.A.B.

Started: 6-6-46
Finished: 6-14-46

| | |
|---|---|
| 0-50 | Surface |
| 50-64 | Black shale, little brown lime |
| 64-100 | White quartzitic sand |
| 100-106 | Black shale |
| 106-110 | Gray oolitic lime |
| 110-113 | Broken gray oolitic lime, con. calcite |
| 113-116 | Mud opening |
| 116-123 | Broken oolitic lime |
| 123-126 | Mud opening |
| 126-129 | Calcite |
| 129-142 | Broken gray oolitic lime, calcite streaks, traces spar and barite |
| 142-147 | Gray sandy lime, few calcite streaks |
| 147-149 | Gray sand, few calcite streaks; Rosiclare? |
| 149-151 | Massive calcite |
| 151-156 | Broken lime, con. calcite |
| 156-159-1/2 | Dense brown lime, trace spar |
| 159-1/2-160-1/2 | Dark brown lime, con. chert |
| 160-1/2-162 | Opening |
| 162-163-1/2 | Calcite-lime breccia 6" fair spar and 6" spar and calcite |
| 163-1/2-167 | Lime calcite breccia, trace spar |
| 167-179 | Broken brown lime, calcite<br>Con. white flint |

Salem, Kentucky
July 17, 1957

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

Re: Docket No. DMEA-4750-Fluorspar
Reynolds Metals Company
Kemper Property
Livingston County, Kentucky

Dear Bob:

As a result of the discovery of some previous drill holes on the Kemper property by Ozark Mahoning, of which I was unaware when the application was prepared, we wish to request the following revisions of Stage I:

a) Reduce the drilling to 5 holes for a total of 2,000 feet. The revised locations are shown on the enclosed map.

b) Reduce all other Stage I items, except coreboxes, by 1/2.

We do not wish to revise Stage II.

There has been some discussion of the estimated $6.35 per foot cost for the drilling. As you know, we had to resort to more expensive drilling procedures on the Ben Belt project to obtain satisfactory cores and to encounter similar conditions on the Kemper property. The vein we wish to prospect was weathered at a depth of 140 feet on the adjacent Bill Wright property. The estimated figure is the average of the Ben Belt drilling costs.

The enclosed Joy and Longyear bids are on a cost plus basis. Under this arrangement we will use the cheaper "standard" procedures where they are effective and resort to the more expensive methods of sampling only when necessary. The fault zone is the target of our drilling and the most difficult part of the hole to core. It is pointless to use drilling methods which will not adequately sample this zone.

The Joy Manufacturing Company has placed the more satisfactory bid. At an average progress rate of 11 feet per day the bids are about equal but above this rate the Joy bid becomes progressively better. Our average will certainly be greater than 11 feet per shift.

Yours very truly,

John H. Hook
Resident Geologist

Enclosures
cc: Mr. R. D. Truce
Mr. Frank Hyslinski
Dr. J. H. Moses

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RECEIVED SEP 25 1957

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Triangle 2-7221

# JOY MANUFACTURING COMPANY

900 WOODLAND AVENUE
MICHIGAN CITY, INDIANA

TA 7-7221

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

April 23, 1957

Mr. John W. Hook, Geologist
c/o Reynolds Metals Company
Box 64
Salem, Kentucky

Dear Mr. Hook:

This will acknowledge receipt of your letter dated April 17th in which you request a bid covering a minimum of 2,500 feet of drilling on the Kemper property situated 3 1/2 miles northwest of Salem, Kentucky.

It would appear to us that because of the unusual ground conditions to be encountered and the method you desire the contractor to follow, a cost-plus arrangement would be the most suitable for both parties.

We will rent one or two Joy #12-B gasoline driven core drills complete with operating equipment as follows:

| | |
|---|---|
| Rent of one drill including wages of foreman-operator, operator and 2 helpers, insurance, gasoline and oil for drill and pump engines and supplies | @$80.00 per shift |
| Rent of two drills including wages of foreman, 4 operators and 4 helpers, insurance, gasoline and oil for drill and pump engines and supplies | @$85.00 per shift |
| Mobilization Drilling Equipment & Crew - 1 Drill | @$175.00 |
| Demobilization Drilling Equipment & Crew - 1 Drill | @$175.00 |
| Mobilization Drilling Equipment & Crew - 2 Drills | @$250.00 |
| Demobilization Drilling Equipment & Crew - 2 Drills | @$250.00 |
| Diamond Bit Losses | - At Cost |
| Casing lost or ordered left in place | - At Cost |
| Drill rods lost or damaged by other than ordinary wear | - At Cost |

We will pump water for drilling purposes provided that an ample source will be located not more than 2,000 feet from the drill holes.

If the proposition as set forth above is acceptable, please advise and we will then forward our formal agreement to cover.

Thanking you for giving us an opportunity of quoting on your requirements, we are,

Yours very truly,

JOY MANUFACTURING COMPANY

W. J. Pilarski, Mgr.
Contract Drill Division

WJP/et

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Longyear

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

5 cys. to Mr. Ho
1 cy. COPY. Mos

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DATE | INITIALS | CODE

May 13, 1957

Reynolds Metals Company
Box #64
Salem, Kentucky

Attention: Mr. John W. Hook
Geologist

EXPLORATORY DRILLING PROGRAM, KEMPER PROPERTY, NEAR SALEM, KENTUCKY

Gentlemen:

1. We are pleased to submit below our proposal for your contemplated exploratory drilling program which is to be carried out on the Kemper Property, which is located approximately 3½ miles northwest of Salem, Kentucky.

2. We understand that the program as now planned will consist of a series of angle holes comprising a minimum of 2500 feet of drilling, with Specifications as follows:

a) Angle of holes - not less than 45 degrees (measured from the horizontal).

b) Size of holes - BX and AX

c) Depth of holes - 200 to 300 feet on initial program, and possibly a series of deeper tests ranging to approximately 500 feet after completion of the shallow holes.

d) Formations - Bethel and Cypress sandstones which are likely to be quartzitic near the vein. Holes to bottom in St. Louis limestone. Vein may contain a weathered mixture of fluor spar, barite, clay, chert, and boulders of limestone and sandstone.

e) Length of water lines -- will not exceed 2,000 feet.

f) Accessibility of drill sites -- Most of the holes will be accessible by truck transportation, skid-mounted rigs may be required at some locations due to rough nature of terrain.

3. For this work we propose to furnish two complete Longyear diamond core drills of suitable design and capacity, together with the necessary accessory items and service equipment required to complete the work as now planned. We further propose to operate the drills on a two shift basis, six days per week, providing requisite number of experienced drill operators are available.

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

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

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

5. Based upon the conditions as outlined above, and as set forth in your letter of April 17, we are pleased to quote as follows:

a) Mobilization and demobilization of personnel and drilling equipment.....$500.00 per unit (This charge to apply only if equipment is not available locally and is supplied from Max Meadows warehouse, or intermediate point.)

b) Drilling operations, with two man crew.....$ 9.00 per hour, plus $0.75 per foot as compensation for footage drilled, plus cost of items specified in c) below.

c) It is understood and agreed that in addition to the foregoing tabulated rate, you will pay for the following items:

1) Bortz bits, reamers, and bortz reaming shells used in the drilling operation, at our listed retail prices less credit received for salvaged stones recovered from worn out bits, reamers and reaming shells.

2) All drill rods and casing left or lost in holes or rendered unserviceable due to damage caused by other than ordinary wear.

6. It is understood and agreed that the $9.00 per hour charge, using a two man crew, will be applicable to the following work: diamond and overburden drilling, rotary drilling with "Poor Boy" core barrel, moving, rigging up and rigging down cementing, waiting for cement to set, and drilling out cement, installing and dismantling water lines; and will cover all operating expenses except those items specified above. Such expenses include overhead, depreciation, labor, fuel, oil, grease, repairs, supplies used, telephone and telegraph services, Federal Old Age Benefits, Workmen's Compensation, Public Liability and Property Damage insurance as required by law, and other miscellaneous expenses.

7. Drill cores will be turned over to your representative at the drill site in receptacles furnished by you.

8. Invoices covering the work performed will be prepared as promptly as possible following the first of each month.

9. We appreciate being given the opportunity to consider this new program. If our proposal is found acceptable, we estimate we would be prepared to furnish the necessary personnel and equipment within a maximum of three weeks after receipt of official notice to proceed.

Sincerely,

E. J. LONGYEAR COMPANY

M. J. Gleason

Manager
Contract Drilling Division

ACCEPTED:

REYNOLDS METALS COMPANY

By:_____

M.J.Gleason:bal

Page 13, 1-57

Reynolds Metals Company

We will also assume the payroll and all old age security, unemployment and Social Security taxes and contributions imposed by federal or state authorities.

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

5. Based upon the conditions as outlined above, and as set forth in part letter of April 17, we are pleased to quote as follows:

a) Mobilization and demobilization of personnel and utility equipment.....$500.00 per unit (This charge to apply only if equipment is not available locally and is supplied from Los Angeles or Longview, or intermediate point.)

b) Drilling operations, with two man crew.....$ 3.00 per hour, plus $0.75 per foot as compensation for footage drilled, plus cost of items specified in c) below.

c) It is understood and agreed that in addition to the foregoing labor-hourly rate, you will pay for the following items:

1) Bore bits, reamers, and bore hole reaming shells used in the drilling operation, at our listed retail prices less credit received for salvaged items recovered from bore hole, reamers and reaming shells.

2) All drill rods and casing left or lost in holes or rendered inoperable due to damage caused by other than ordinary wear.

6. It is understood and agreed that the $3.00 per hour charge, using a two man crew, will be applicable to the following work: Removal and accordion drilling, rotary and cable tool from bore hole, moving, rigging up and rigging down equipment, waiting for casing to set, and drilling out cement, installing and dismantling water lines; and will cover all operating expenses except those specified above. Such expenses include overhead, depreciation, fuel, oil, grease, repairs, supplies used, telephone and telegraph services, local old age benefits, workmen's compensation, public liability and property damage insurance as required by law, and other miscellaneous expenses.

7. Drill crew will be turned over to your representative as soon as drill hole is mechanically prepared by you.

8. Invoices covering the work performed will be prepared on monthly or periodic billing for that of each month.

9. We appreciate being given the opportunity to consider this program. If our proposal is found acceptable, we estimate we should be prepared to furnish the necessary personnel and equipment within a maximum of three weeks after receipt of official notice to proceed.

Sincerely,

ACCEPTED:

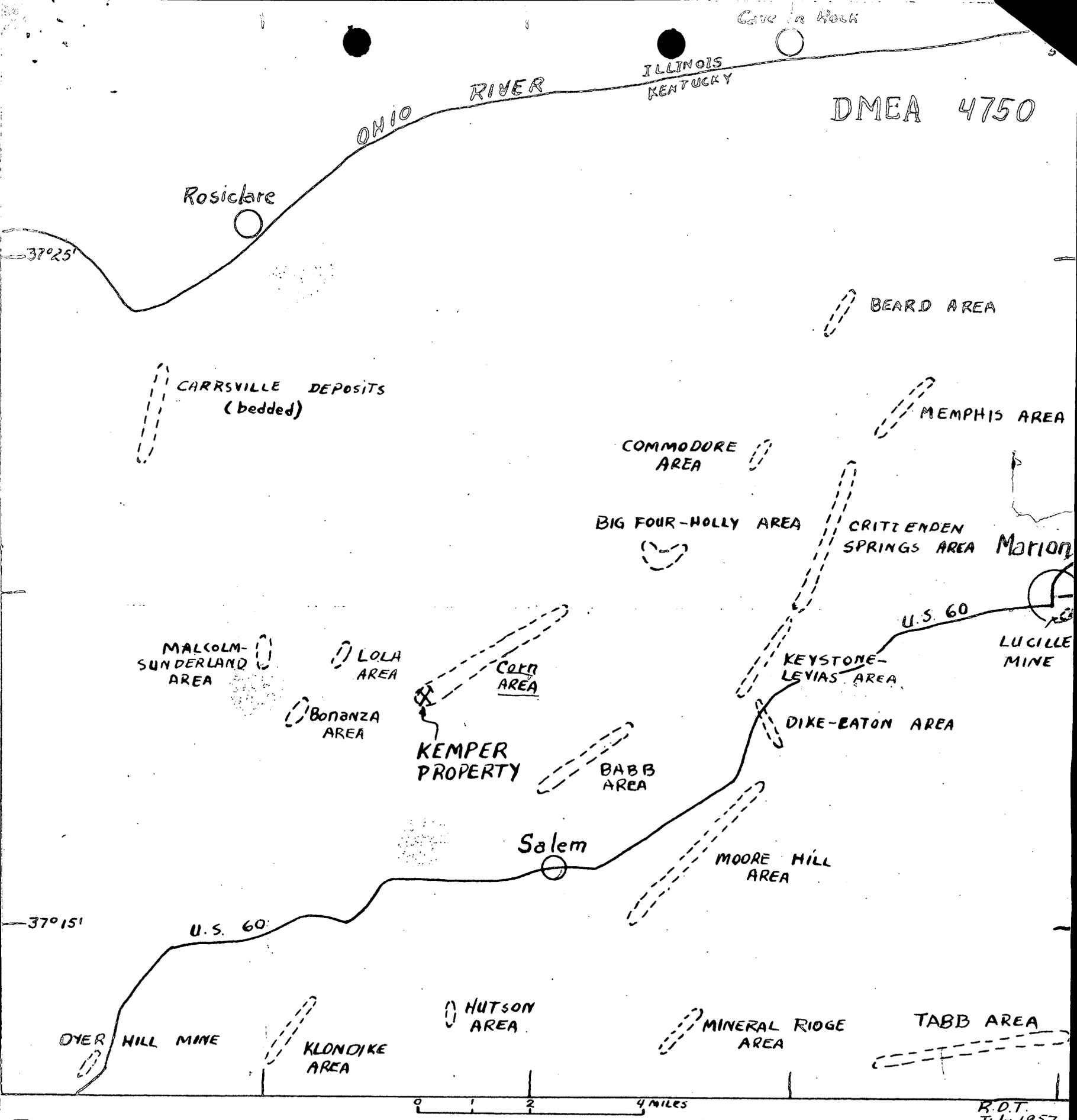
HARDER DRILLING COMPANY

By: _____

Superintendent

J. L. Harder, President

President
Contractor Drilling Division




R.D.T.
July 1957

Figure . .--Index map of western Kentucky fluorspar district, showing approximate location of principal mining areas and known deposits Crittenden, Livingston, and Caldwell Counties.

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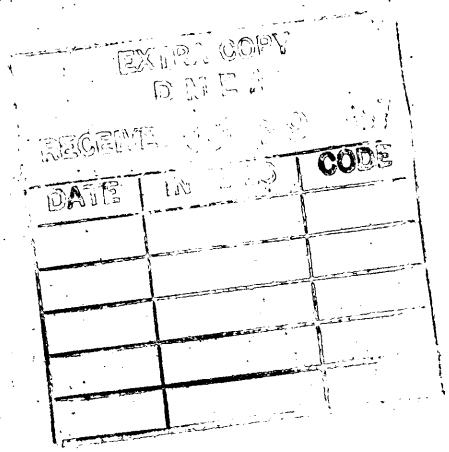


July 25, 1957

Mr. John W. Cook, Geologist
Reynolds Metals Company
Salem, Kentucky

Re: Docket No. DFA-1750 ( Incorpar)
Reynolds Metals Company
Kemper Property
Livingston County, Kentucky

Dear John:

Your letter of July 17, requesting revision of the Kemper application, has been received. I will send it along to the Washington office with the examination report of Trace and Myslinski when it is received.

Can you do anything to speed up the assignment of the Lingang property to Reynolds? We still need a copy of the assignment of the lease, and a letter from Reynolds requesting the assignment of the contract.

Sincerely yours,

Robert S. Laurence
Executive Officer
DMA Field Team, Region V

RSL/mg
cc
Operating Committee 2
Lynch
Trace
Myslinski
File

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REYNOLDS METALS COMPANY
BOYLE BUILDING
LITTLE ROCK, ARKANSAS

RECEIVED
JUL 22 1957

Salem, Kentucky
July 17, 1957

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

Re: Docket No. DMEA-4750-Fluorspar
Reynolds Metals Company
Kemper Property
Livingston County, Kentucky

Dear Bob:

As a result of the discovery of some previous drill holes on the Kemper property by Ozark Mahoning, of which I was unaware when the application was prepared, we wish to request the following revisions of Stage I:

a) Reduce the drilling to 5 holes for a total of 2,000 feet. The revised locations are shown on the enclosed map.

b) Reduce all other Stage I items, except coreboxes, by 1/2.

We do not wish to revise Stage II.

There has been some discussion of the estimated $6.35 per foot cost for the drilling. As you know, we had to resort to more expensive drilling proceedures on the Ben Belt project to obtain satisfactory cores and we may encounter similar conditions on the Kemper property. The vein we wish to prospect was weathered at a depth of 140 feet on the adjacent Bill Wright property. The estimated figure is the average of the Ben Belt drilling costs.

The enclosed Joy and Longyear bids are on a cost plus basis. Under this arrangement we will use the cheaper "standard" proceedures where they are effective and resort to the more expensive methods of sampling only when necessary. The fault zone is the target of our drilling and the most difficult part of the hole to core. It is pointless to use drilling methods which will not adequately sample this zone.

The Joy Manufacturing Company has placed the more satisfactory bid. At an average progress rate of 11 feet per day the bids are about equal but above this rate the Joy bid becomes progressively better. Our average will certainly be greater than 11 feet per shift.

Yours very truly,

John W. Hook
Resident Geologist

Enclosures
cc Mr. R. D. Trace
Mr. Frank Myslinski
Dr. J. H. Moses

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

| Date | Surname | Code |
|---|---|---|
| 6/19 | Anderson | 600 |
| 6/19 | Houk | 600 |
| 6/19 | Selbridge | 130 |
| 6/19 | Lamb | 130 |
| 6 | Johnson | ~~130~~ |
| | | 110 |
| 4 | Mittendorf | 100 |
| | | 220 |
| | | |

600

JUN 20 1957

Reynolds Metals Company
301 East Grace Street
Richmond, Virginia

Re: Docket No. DMEA-4750-Fluorspar
Reynolds Metals Company
Kemper Property
Livingston County, Kentucky

6/19 Nelson (136)

Gentlemen:

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

We note that you will have competitive bids for diamond drilling available at the time the DMEA Field Team makes its examination. We will require three competitive bids. Also, it will be necessary that you furnish a Consent to Lien and Subordination Agreement of the owner. Enclosed are seven copies of this form. Please have these forms executed as indicated and return six copies to this office. The seventh copy may be retained by the Lessor.

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

Sincerely yours,

C. O. Mittendorf (for)

Administrator

Enclosures 7
WCAnderson:rsi 6/18/57
Copy to: Admr. R. File
Operating Committee
Field Team, Region V
Mr. Kiilsgaard, 5222
Mr. McDougal, 3520
Mr. Houk

8623

DMEA Form 7
(12-56)

OFFICIAL FILE COPY

| Date | Surname | Code |
|---|---|---|
| 6/19 | Anderson | 600 |
| 6/19 | Houk | 600 |
| 6/19 | [illegible] | 130 |
| " | Johnson | 110 |
| " | [illegible] | 100 |
| 6/20 | C | 220 |
| | | 600 |
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600

JUN 20 1957

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

Re: Docket No. DMEA-4750-Fluorspar
Reynolds Metals Company
Kemper Property
Livingston County, Kentucky

Dear Mr. Laurence:

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

Copies of memoranda dated June 11 and 17, 1957, by Mr. N. E. Nelson, USGS, and Mr. Robert B. McDougal, USBM, respectively, relating to the application are enclosed. There is also enclosed a copy of the application for the use of the Field Team.

Sincerely yours,

George C. Selfridge

Chairman, Operating Committee

Approved:

Frank D. Lamb

Member, Bureau of Mines

N. E. Nelson

Member, Geological Survey

Enclosures 5
WCAnderson:rsi 6/18/57
Copy to: Admr. R. File
Operating Committee
Mr. Kiilsgaard, 5222
Mr. McDougal, 3520
Mr. Houk

8623

| OFFICIAL FILE COPY DMEA RECEIVED JUN 18 1957 | | |
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| 6/18 | RWD | 220 |
| 6/18 | MWA | 600 |
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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
Washington 25, D. C.

Date June 17, 1957

DMEA Docket No. 4750
DMEA Contract No.
Commodity Fluorspar
Name of applicant Reynolds Metals Co.
Name of property Kemper Property
Location of property Livingston County, Ky.
Estimated cost of project $72,641.76

~~Memorandum~~

To: Lawrence G. Houk, Chief, Non-metallic Division, Defense Minerals Exploration Administration

From: Robert B. McDougal, Commodity Specialist, Branch of Construction and Chemical Materials

Subject: Review of Application
(Application, Field Team Report, etc.)

1. Date of subject document 5-31-57. 2. Date received by reviewer: 5-31-57

3. Prior reports on this property known to reviewer: Yes ☐, No ☒.

4. Prior reports on nearby properties known to reviewer: Yes ☐, No ☒.

5. Information available on past production: Yes ☐, No ☒.

6. Other pertinent factors known to reviewer: Yes ☐, No ☒.

7. Explain items marked yes above:

8. Factors needing special consideration:
   a. Location ☐
   b. Ownership ☐
   c. Evidence of mineralization ☐
   d. Geology ☐
   e. Proposed exploration method ☐
   f. Alternate exploration method ☐
   g. Costs ☐
   h. _____ ☐

9. Action advised:
   a. Obtain information from applicant ☐
   b. Refer to Field Team ☒
   c. Denial ☐
   d. Agree with Field Team ☐
   e. Disagree with Field Team ☐
   f. Suggest alternate plan ☐
   g. Request another examination ☐
   h. Approval ☐
   i. Consult with Mr. _____ at _____ AEC office.

10. Remarks: (Use back of page if necessary)

Robert B. McDougal
Robert B. McDougal
Commodity Specialist

IN REPLY REFER TO:

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

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| DATE | INITIALS | CODE |
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| 6/12 | DWF | 220 |
| 6/12 | Houk | 600 |

June 11, 1957

Re: DMEA 4750
Reynolds Metal Co.,
Kemper Property
Livingston Co., Ky.
$71,791.76 Fluorspar

Memorandum

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

From: N. E. Nelson, U. S. Geological Survey

Subject: Review of application.

The applicant requests assistance in exploring a fluorspar-barite bearing fault structure 10-20 feet x 2,500 feet long by angle core drilling.

The structure is the extension of the Wright vein. Production of the vein in the Kemper property is estimated to be 10,000 tons.

The proposed 2 stage work program consists of:

| | | | | |
|---|---|---|---|---|
| Drilling | Stage I | 3,500 feet | @ $6.35 | $ 22,225.00 |
| | Stage II | 6,500 " | @ " | 41,275.00 |
| | | 10,000 " | @ " | $ 63,500.00 |
| Supervision | Stage I | | | $ 2,148.00 |
| | Stage II | | | $ 2,148.00 |
| Miscellaneous, core boxes transportation, analytical work taxes, etc. | | | | $ 1,495.76 |
| Contingencies | | | | 3,500.00 |
| | | | | $ 71,791.76 |

Referral of the application to the Field Team is recommended.

N. E. Nelson

N. E. Nelson

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

May 31, 1957

Reynolds Metals Company,
301 East Grace Street,
Richmond, Virginia

Subject: DMEA 4750

Gentlemen:

Your application for exploration assistance, dated May 29, 1957, submitted to our office at Washington, D.C., has been assigned Docket Number DMEA 4750 and referred to the Nonmetallic Minerals Division in the Washington office. Kindly identify all future correspondence relating to your application by this Docket Number.

Sincerely yours,

Allen S. Dakan, Director
Operations Control and
Statistics Division

Copy to: Region V.

# REYNOLDS METALS COMPANY
# KEMPER PROPERTY
LIVINGSTON COUNTY, KENTUCKY

0 50 100 200 300 400 FEET

SCALE: 1" = 200' CONTOUR INTERVAL 10'

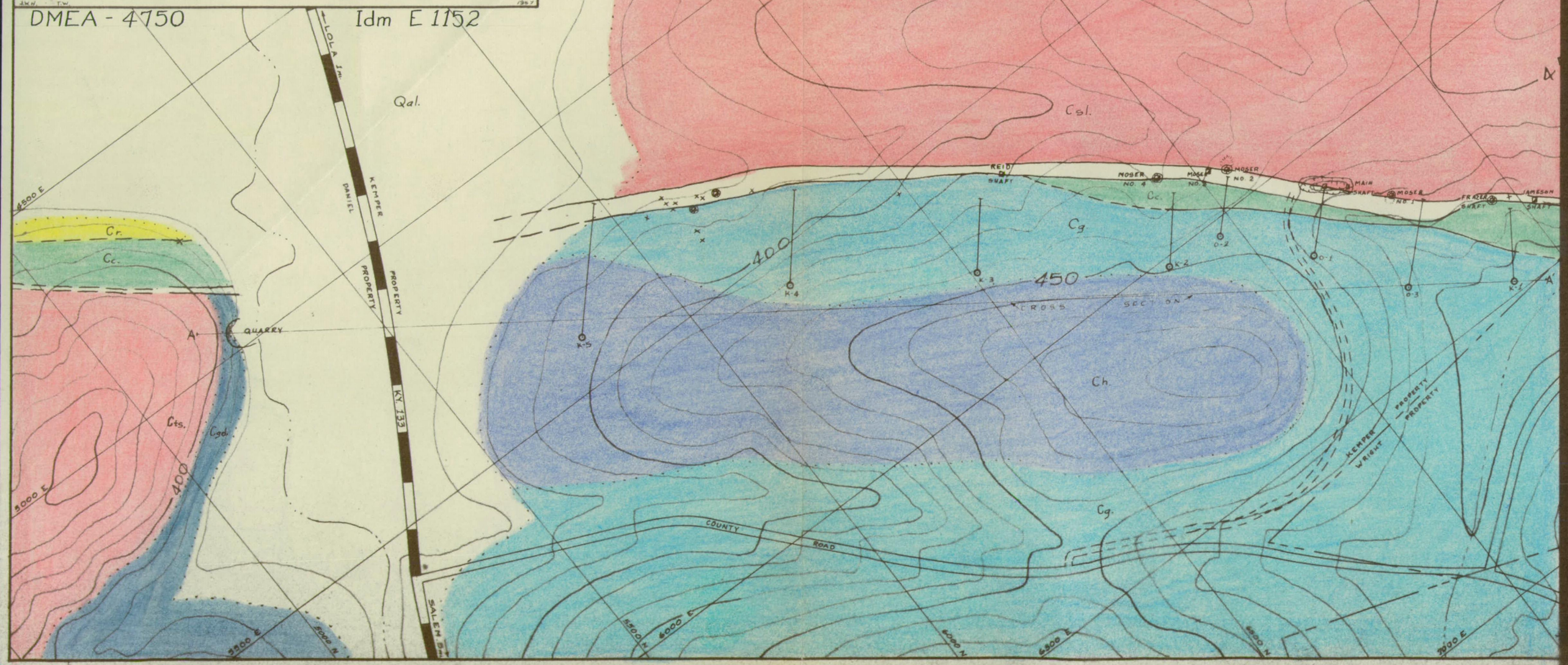
LEGEND

- SHAFT
- CAVED SHAFT
- x PROSPECT PIT
- KNOWN FAULT
- PROBABLE FAULT
- POSSIBLE FAULT
- CONTACT
- DRILL HOLE

| | | | |
|---|---|---|---|
| Cts | TAR SPRINGS Ss. | Cb | BETHEL Ss. |
| Cgd | GLEN DEAN Ls. | Cr | RENAULT Ls. |
| Ch | HARDINSBURG Ss. | Cl | LEVIAS Ls. |
| Cg | GOLCONDA Ls. | Crc | ROSICLARE Ss. |
| Cc | CYPRESS Ss. | Cf | FREDONIA Ls. |
| Cpc | PAINT CREEK Sh. | Csl | ST. LOUIS Ls. |

J.W.H. T.W. 1967

DMEA - 4750 Idm E 1152



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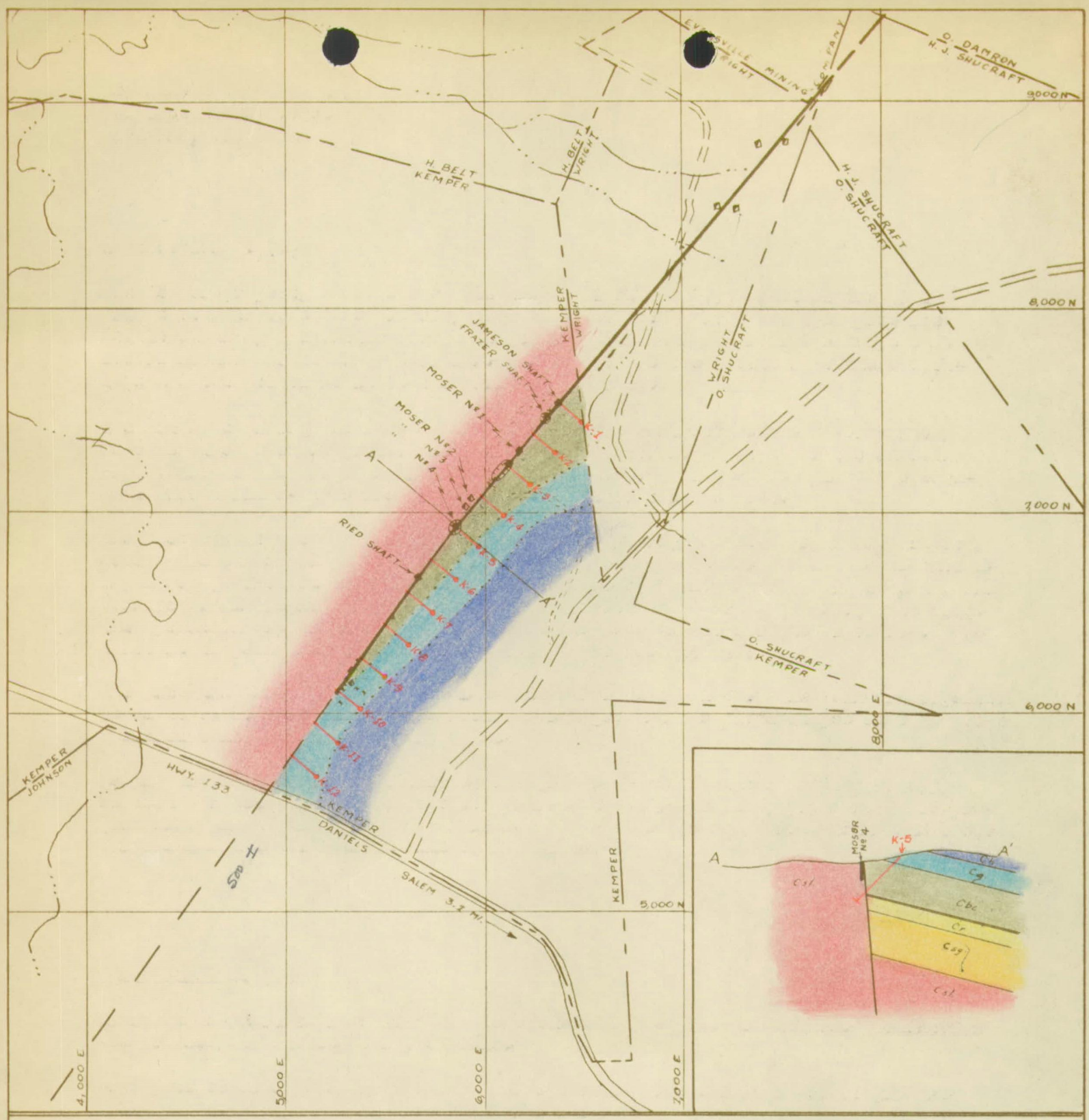


# KEMPER PROPERTY
## LIVINGSTON COUNTY, KY.

SCALE: 1" = 660'

0 200 500 1,000 FEET

FAULT — PROJECTED FAULT

NORMAL CONTACT

Cb 120 HARDINSBURG SANDSTONE

Cg 150 GOLCONDA LIMESTONE

Cbc 110 BETHEL AND CYPRESS SANDSTONE

K-1 PROPOSED DRILL HOLE - STAGE 1

Cr 115 RENAULT FORMATION

Csg 200 ST. GENEVIEVE LIMESTONE

Csl 450 ST. LOUIS LIMESTONE

J.W.H. 1957

PLATE 1

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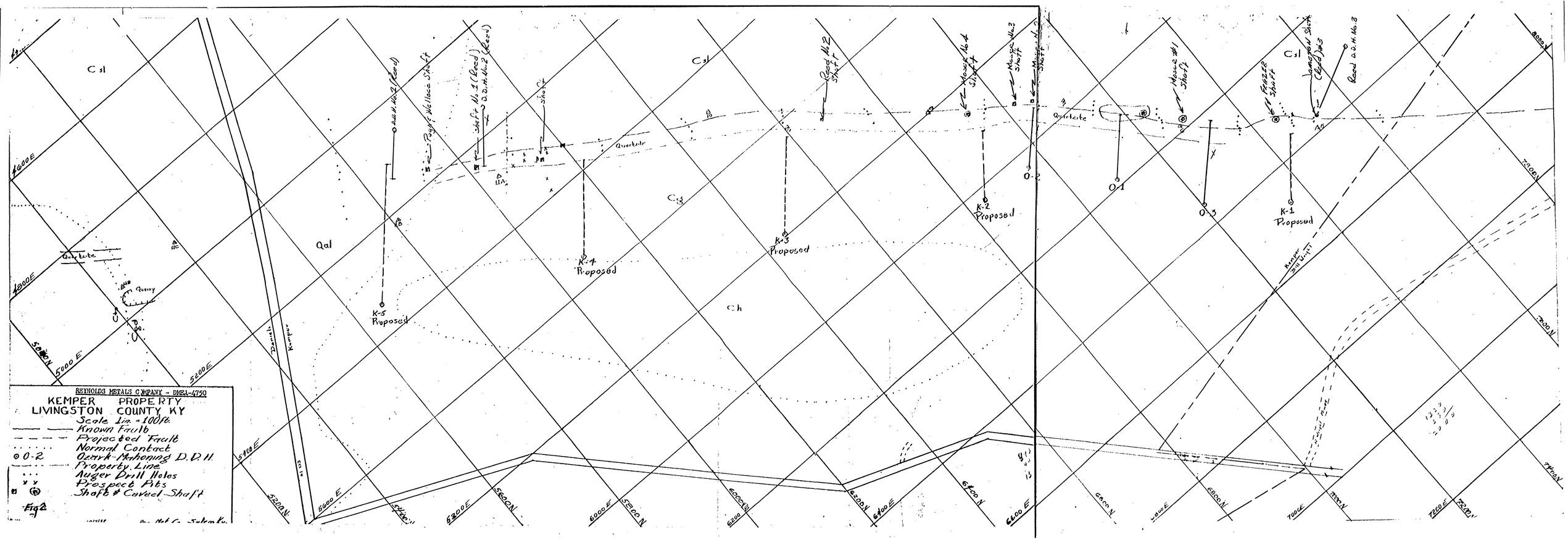
REYNOLDS METALS COMPANY - DMRA-4750
KEMPER PROPERTY
LIVINGSTON COUNTY KY
Scale 1in. = 100ft.
Known Fault
Projected Fault
Normal Contact
O-2 Ozark-Mahoning D.D.H.
Property Line
Auger Drill Holes
Prospect Pits
Shaft # Caved Shaft
Fig 2
Csl
Qal
Ch
Quartzite
Quarry
Property Line
Rogers Wallace Shaft
D.D.H. No. 2 (Reed)
Shaft No. 1 (Reed)
D.D.H. No. 1 (Reed)
Reed No. 2 Shaft
Mack No. 4 Shaft
Mack No. 3 Shaft
Mack No. 2 Shaft
Mack #1 Shaft
Fraze Shaft
Langan Shaft
Reed D.D.H. No. 3
Kemper Drill Shaft
K-5 Proposed
K-4 Proposed
K-3 Proposed
K-2 Proposed
K-1 Proposed
O-2
O-1
O-3
4600 E
4800 E
5000 E
5200 E
5400 E
5600 E
5800 N
6000 N
6200 N
6400 N
6600 N
6800 N
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7600 N
7800 N
7000 E
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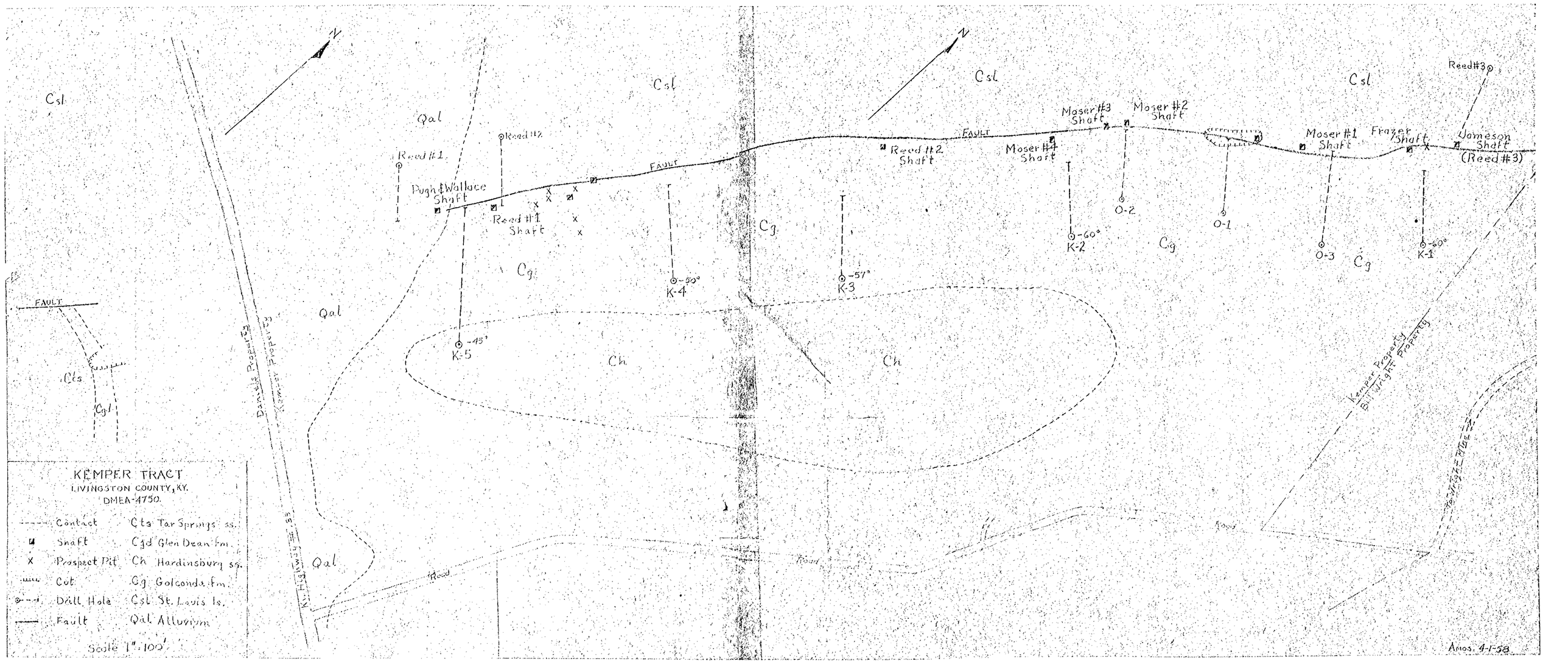
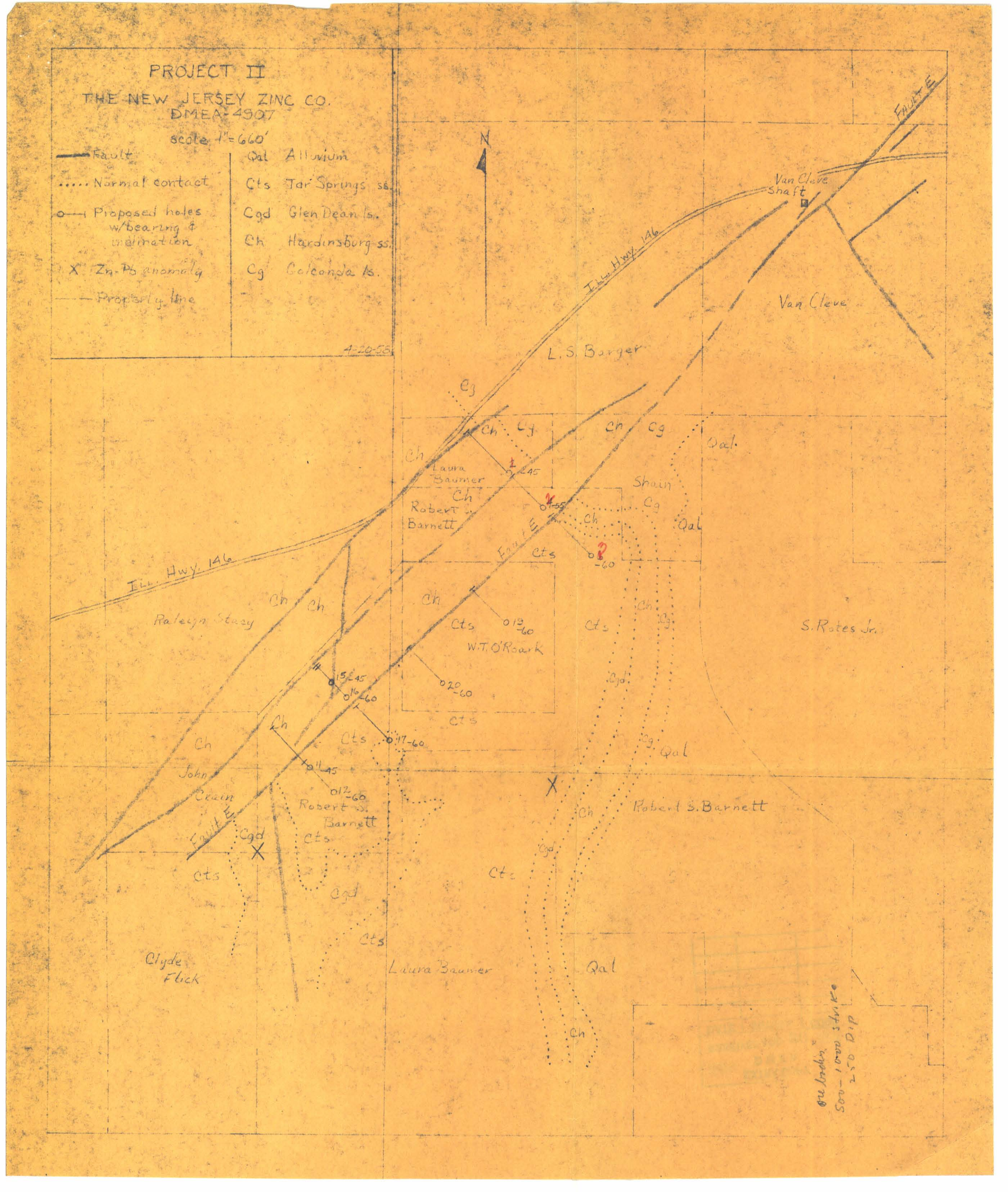

KEMPER TRACT
LIVINGSTON COUNTY, KY.
DMEA-4750.
Contact
Shaft
Prospect Pit
Cut
Drill Hole
Fault
Cts Tar Springs ss.
Cgd Glen Dean fm.
Ch Hardinsburg ss.
Cg Golconda fm.
Csl St. Louis ls.
Qal Alluvium
Scale 1" = 100'
Csl
Qal
Cg
Ch
Cts
Cgd
FAULT
Reed #1
Reed #2
Reed #3
Pugh & Wallace Shaft
Reed #1 Shaft
Reed #2 Shaft
Moser #4 Shaft
Moser #3 Shaft
Moser #2 Shaft
Moser #1 Shaft
Frazer Shaft
Jameson Shaft (Reed #3)
K-1
K-2
K-3
K-4
K-5
O-1
O-2
O-3
-60°
-57°
-50°
-45°
Daniels Property
Kemper Property
Blackwright Property
Road
Amos. 4-1-58


PROJECT II
THE NEW JERSEY ZINC CO.
DMEA-4907
scale 1"=660'
Fault
Normal contact
Proposed holes w/bearing & inclination
Zn-Pb anomaly
Property line
Qal Alluvium
Cts Tar Springs ss.
Cgd Glen Dean ls.
Ch Hardinsburg ss.
Cg Golconda ls.
4-20-56
N
Van Cleve Shaft
Fault E
Ill. Hwy. 146
Van Cleve
L. S. Barger
Laura Baumer
Robert Barnett
Shain
Raleigh Stacy
W.T. O'Roark
S. Rates Jr.
John Crain
Robert S. Barnett
Clyde Flick
Laura Baumer
Ore body
Sub-horiz. strike
25° Dip